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PATENT AND TRADEMARK OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of December 1975

Examiner affirmed	168
Examiner affirmed in part	44
Examiner reversed	68
Total	280

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,802,760. Derick and Frosch, OXIDATION OF SEMICONDUCTIVE SURFACES FOR CONTROLLED DIFFUSION, **filed** Sept. 17, 1975, D.C., N.D. Tex. (Dallas), Doc. CA3–75–1142, *Western Electric Company, Incorporated* v. *Mostek Corporation.*

3,043,045. L. P. Martuch, FLY FISHING LINE, **filed** July 10, 1975, D.C., N.D. Iowa (Sioux City), Doc. C–75–4039, *Minnesota Mining and Manufacturing Company* v. *Berkley & Company, Inc.*

3,216,459. Schroeder and Clark, FLEXIBLE INSULATED DUCT; **3,240,643,** same, METHOD AND APPARATUS FOR MAKING A FLEXIBLE INSULATED DUCT, **filed** June 20, 1967, D.C., C.D. Calif. (Los Angeles), Doc. 67–869–PH, *Clifford A. Schroeder, Quentin L. Clark, Glass Insulation and Pittsburgh Plate Glass Co.* v. *Owens-Corning Fiberglas Corp. et al.* Partial summary judgment, summary judgment and judgment of dismissal of second cause of action were all entered June 27, 1973, judgment from the United States Court of Appeals, Ninth Circuit, San Francisco, reversing the decision of said District Court, Apr. 15, 1975.

3,240,643. (See 3,216,459.)

3,341,348. C. O. Letendre, RELEASE SURFACES AND PROCESSES, **filed** Sept. 19, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c3131, *Chromium Industries, Inc.* v. *Mirror Polishing & Plating Co., Inc.*

3,475,070. T. C. Hoshall, DISPLAY CASE, **filed** May 2, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72–300–C, *Thomas C. Hoshall and Rainbo Photo Color, Inc.* v. *Dillard Department Stores, Inc. et al.* Upon stipulation of parties, action dismissed by Court without prejudice, Sept. 18, 1975.

3,489,498. Brody and Chaney, FLAME PHOTOMETRIC DETECTOR WITH IMPROVED SPECIFITY TO SULFUR AND PHOSPHORUS, **filed** Oct. 29, 1971, D.C., S.D. W. Va. (Charleston), Doc. 71–222–CH, *American Standard Inc. and Meloy Laboratories* v. *The Bendix Corporation.* The parties hereby stipulate to the dismissal of all claims and counterclaims of this action pursuant to Rule 41(a) and (c), FRCP, with prejudice, Aug. 18, 1975.

3,512,594. Grusin and Logan, BATHROOM SCALE, **filed** Apr. 29, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c1365, *Gerald M. Grusin et al.* v. *Terraillon et al.* On motion of plaintiffs order cause is dismissed with prejudice and without costs, Sept. 29, 1975.

3,650,460. B. P. Lokey, PAPER BAG; **Re. 28,317,** T. W. Johnson, CULTIVATOR; **Re. 28,318,** W. W. Sloane, DRIVE MECHANISMS FOR SHAKER CONVEYORS, **filed** Aug. 20, 1975, D.C. Del. (Wilmington), Doc. 75–247, *St. Regis Paper Company* v. *Olinkraft, Inc.*

3,705,976. M. M. Platzman, REVENUE CONTROL SYSTEM FOR TOLL ROADS, **filed** Sept. 26, 1975, D.C., N.D. Ohio (Cleveland), Doc. C75–851, *Michael M. Platzman* v. *Electron, Inc.*

3,717,963. W. A. Brady, Jr., PACKAGING COMPRESSIBLE MATERIAL, **filed** Sept. 29, 1975, D.C., N.D. Tex. (Dallas), Doc. CA–3–75–1195, *Roby Industries, Inc.* v. *Bass & Hayes Foundry, Inc. and Polyfoam, Inc.*

3,733,230. A. R. Prittie, LABEL INSPECTION SLITTER/REWINDER, **filed** Apr. 25, 1975, D.C., E.D. Mo. (St. Louis), Doc. 75–391C(4), *Arpeco Engineering Limited* v. *Allied Gear and Machine Company.* The complaint and counterclaim shall be and are hereby dismissed with prejudice, Sept. 19, 1975.

Re. 28,317. (See 3,650,460.)

Re. 28,318. (See 3,650,460.)

TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

Chapter 1—Patent and Trademark Office, Department of Commerce

PART 1—RULES OF PRACTICE IN PATENT CASES

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

PART 4—FORMS FOR TRADEMARK CASES

Revised Rules and Procedures

On February 11, 1975, a notice of proposed rulemaking was published in the Federal Register (40 FR 6361) regarding the proposal by the Patent and Trademark Office to amend Title 37 of the Code of Federal Regulations by revising or amending §§ 1.12, 1.136, 1.197, 1.244, 1.256, 1.304, 2.18, 2.37, 2.75, 2.80, 2.85, 2.101, 2.102, 2.103, 2.105, 2.111, 2.112, 2,120, 2.123, 2.127, 2.129, 2.141, 2.144, 2.145, 2.162, 2.172, 2.183, 2.185, 2.187, and 4.2. Interested persons were given until May 1, 1975, to submit written comments and suggestions. Full and careful consideration was given to all written comments submitted and some changes in the original proposal have been made in view thereof.

Amendments are also now being made in sections which were not included in the published proposal, namely, §§ 2.11, 2.14, 2.15, 2.19, 2.93, 2.99, 2.113, 2.119, and 2.161; and section 4.3 is being deleted. Since these amendments are in accord with changes as to related matters in other sections which were contained in the published proposal, notice and public procedures thereon are deemed unnecessary.

The additional amendments, as well as changes from the text of the sections as published in the original proposal, are described below:

Paragraph (b) of § 1.197, paragraph (b) of § 1.256, paragraph (c) of § 2.129 and § 2.144 are being revised to include the name of the Board which may grant extension of time for requesting rehearing or reconsideration of a decision, that is, the Board of Appeals, the Board of Patent Interferences, or the Trademark Trial and Appeal Board.

Paragraph (a) of §1.304 (second sentence) and paragraph (d)(1) of § 2.145 (second sentence) are being revised to state more clearly that the time for filing a request for rehearing or reconsideration is determined under § 1.197(b) or § 1.256(b) in patent cases and § 2.129(c) or section 2.144 in trademark cases. These paragraphs are also being revised to make clear that if a request for rehearing or reconsideration, or modification of a decision, is acted on less than thirty days after the date of the decision, an appeal may still be filed or a civil action commenced within the original sixty-day period.

As to representation and powers of attorney, § 4.2 is being revised to state that individuals must be appointed in a power of attorney in order for the document to be regarded as a power, and §4.3, which is a form for the authorization of an agent, is being cancelled because normally persons who are recognized to practice before the Patent and Trademark Office in trademark cases are not designated as agents (see § 2.12). The form is outmoded and inaccurate, and in view of the relatively small amount of use which will probably be made of a form for authorizing representation by a person who is not an attorney, it is not believed necessary to provide a form for that purpose. In line with this change, the wording as to "agent" where it appears in either existing or proposed §§ 2.11, 2.14(c), 2.15, 2.18, 2.19, 2,93, 2,99(a) and (b), 2.102(a), 2.103, 2.113, 2.119(a) and (b) 2.123(e)(2), and 2.129(b), is being changed to "other authorized representative" or equivalent language, as appropriate.

In § 2.75 the word "effective" is being added to the second sentence in describing the original filing date.

In paragraph (e) of § 2.85, the clause which refers to the fee being less than the required amount because "a multiple class application or registration is" involved, is being reworded, for greater accuracy, to refer to the fee being less than the required amount because "multiple classes in an application or registration are" involved. At the end of the paragraph, the following is being added: ", or if action is sought only for the number of classes equal to the number of fees submitted," the purpose of this addition being to make it clear that action may be taken as to less than all of the classes in a multiple class application or registration. In this connection, see also revised § 2,172. In paragraph (e) of § 2.85 the word "Examiner" is being changed to "Office" because the notification referred to is not necessarily handled by an examiner.

In § 2.101 wording is being added to make it clear that an opposition may be filed within an extension of time for filing opposition as well as within thirty days after publication of the mark. Also, the wording "Two or more persons may be joined" is being changed to "If persons are joined," since whether or not persons are properly joined is subject to review by the Trademark Trial and Appeal Board.

In paragraph (b) of § 2.102, the word "written" is being inserted before "request to extend the time" in the first sentence. Also, reference to a time for filing a showing of cause has been deleted as being superfluous. These modifications accord with Pub. L. 93–600, enacted January 2, 1975.

In § 2.103 the words "such filing" have been modified to read "the filing of such opposition" in order to assure the clarity of the meaning.

In addition, §§ 2.101, 2.102, and 2.103 taken as a unit are being reorganized to place topics in better sequence and to consolidate references to each topic in one place. This reorganization is for the purpose of clarity and does not make any change in substance.

The division of § 2.111 into paragraphs (a) and (b) has been eliminated, proposed paragraph (b) relating to insufficient fees being incorporated in the body of the section. The last sentence in proposed § 2.112 relating to insufficient fees has been deleted as being repetitious of § 2.111.

A sentence is being added at the end of section 2.112 indicating that a fee for each person for each class is required if persons are joined in a petition to cancel.

The pertinent wording in each of §§ 2.101, 2.102, 2.103, 2.111, 2.112, 2.141, 2.161, 2.162, and 2.183 is being changed to indicate more plainly that action may be taken on less than the total number of classes in an application or registration, and that in that event the particular class or classes for action should be specified. The pertinent wording in such sections has also been modified to state that action should "include" the appropriate number of fees rather than "be accompanied by" such fees, in order to accord with the present practice of accepting a fee if, it is received within the prescribed period even though it may not physically accompany the action.

Section 2.113 is being revised to change the word "notice" to "notification." In section 2.112 the word "notice" in the first sentence is likewise being changed to "notification." These changes accord with the equivalent change made in § 2.105 in the published proposal. The purpose is to make it clear that the paper which is prepared under these sections is merely a notification of the existence of a cancellation proceeding which commenced when a petition which is correct as to form was filed. The last word of paragraph (b) of § 2.113 is being changed from "registrant" to "respondent party" to agree with cancellation § 2.112.

Paragraph (c) in § 2.120 is being modified to provide that a written statement by the attorney for the moving party, rather than an affidavit or declaration, is sufficient in support of a motion for an order to compel discovery, and that if issues raised by the motion have been subsequently resolved, the attorney should merely advise the Trademark Trial and Appeal Board in writing of the matters which no longer require decision by the Board.

In § 2,162, the wording of paragraph (e) is being modified to indicate that the sixth year affidavit must state that the mark is in use except when there is excusable nonuse under paragraph (f) of such section. The wording of such paragraph also is being expanded to make clear the present practice that the specimen submitted with the sixth year affidavit be a specimen currently in use. In both paragraphs (e) and (f), in the second sentences, the second occurrence of the words "may be" is being deleted as unnceessarily repetitious.

In § 2.172, the proposed third sentence is being reworded to simplify the language, and at the end of the proposed fourth sentence the specific number (2.173) of the section referred to in the sentence is being added.

In § 2.183 the wording of paragraph (a) is being modified to indicate that the renewal application must state that the mark is still in use in commerce except when there is excusable nonuse under paragraph (c) of such section. In the last sentence of paragraph (c), the words "in order to show excusable nonuse" are being added after the word "explanation" for greater clarity, and in the same sentence the second occurrence of the words "may be" is being deleted as unnecessarily repetitious.

Section 2.187 is being reworded to make clear that not only is it permissible for a certificate of registration to issue to an assignee or in a new name of applicant, but that the certificate will be so issued whenever the Office knows of such situation in time to do so. Section 2.187 is being further reworded to clarify that for a certificate of registration to issue to an assignee or in a new name of applicant, the supporting document must be actually recorded by the time indicated; further, if the document is not actually recorded by such time, a statement placed in the application file by the time specified will accomplish the same result. Also added to § 2.187 is the statement that the address of the assignee may be provided by being placed in the recorded document.

In consideration of the comments received and pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123) as amended on January 2, 1975 (Pub. L. 93–596, 88 Stat. 1949), and in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6) as amended on October 5, 1971 (Pub. L. 94–132, 85 Stat. 364) and amended on January 2, 1975 (Pub. L. 93–596, 88 Stat. 1949), Parts 1 and 2 of Chapter I of Title 37 of the Code of Federal Regulations are hereby revised or amended, as follows:

1. Section 1.12 is revised to read as follows:

§ 1.12. *Assignment records open to public inspection.*

The assignment records, relating to original or reissue patents, including digests and indexes, and assignment records relating to pending or abandoned trademark applications and to trademark registrations, are open to public inspection and copies of any instrument recorded may be obtained upon payment of the fee therefor. Assignment records, digests and indexes, relating to any pending or abandoned patent application are not available to the public. Copies of any such patent assignment records and information with respect thereto shall be obtainable only upon written authority of the applicant or his assignee or attorney or agent or upon a showing that the person seeking such information is a bona fide prospective or actual purchaser, mortgagee or licensee of such patent application, unless it shall be necessary to the proper conduct of business before the Office or as provided by these rules. An order for a copy of an assignment should give the identification of the record. If identified only by the name of the patentee and number of the patent, or in the case of a trademark registration by the name of the registrant and number of the registration, or by name of the applicant and serial number of the application, an extra charge will be made for the time consumed in making a search for such assignment.

2. In § 1.136, paragraph (b) is revised. As amended, § 1.136 reads as follows:

§ 1.136 *Time less than six months.*

* * * * *

(b) The time for reply, when a time less than six months has been set, will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the request effect any extension. Only one extension may be granted by the primary examiner in his discretion; any further extension must be approved by the Commissioner. In no case can any extension carry the date on which response to an action is due beyond six months from the date of the action.

3. In § 1.197, paragraph (b) is revised. As amended, § 1.197 reads as follows:

§ 1.197 *Action following decision.*

* * * * *

(b) Any request for rehearing or reconsideration, or modification of the decision, must be filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Appeals so states. Such time may be extended by the Board of Appeals upon a showing of sufficient cause.

* * * * *

4. In § 1.244, paragraph (c) is revised. As amended, § 1.244 reads as follows:

§ 1.244 *Motions; miscellaneous provisions.*

* * * * *

(c) Any request for rehearing or reconsideration, or modification of the decision, must be filed within twenty days after the date of the decision, and any reply thereto shall be filed within twenty days from the date of service of the request.

* * * * *

5. In § 1.256, paragraph (b) is revised. As amended, § 1.256 reads as follows:

§ 1.256 *Final hearing.*

* * * * *

(b) Any request for rehearing or reconsideration, or modification of the decision, must be filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Patent Interferences so states. Any reply thereto shall be filed within fifteen days from the date of service of the request. The times specified herein may be extended by the Board of Patent Interferences upon a showing of sufficient cause. (See § 1.304.)

6. Section 1.304 is revised to read as follows:

§ 1.304 *Time for appeal or civil action.*

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Customs and Patent Appeals (section 1.302) or for commencing a civil action (section 1.303) is sixty days from the date of the decision of the Board of Appeals or the Board of Patent Interferences. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time specified in section 1.197(b) or 1.256 (b), or within any extension of time granted thereunder, the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. The sixty and thirty day periods may be extended by the Commissioner upon a showing of sufficient cause.

(b) The times specified herein are calendar days. If the last day of the time specified for appeal or commencing a civil action falls on a Saturday, Sunday or legal holiday, the time is extended to the next day which is neither a Saturday, Sunday nor a holiday.

(c) If a defeated party to an interference has taken an appeal to the U.S. Court of Customs and Patent Appeals and an adverse party has filed notice under 35 U.S.C. 141 that he elects to have all further proceedings conducted under 35 U.S.C. 146 (§ 1.303(c)), the time for filing a civil action thereafter is specified in 35 U.S.C. 141.

7. Section 2.11 is revised to read as follows:

§ 2.11 *Applicants may be represented by an attorney.*

The owner of a trademark may file and prosecute his own application for registration of such trademark, or he may be represented by an attorney or other person authorized to practice in trademark cases. The Patent and Trademark Office cannot aid in the selection of an attorney or other representative.

8. In § 2.14, paragraph (c) is revised. As amended, § 2.14 reads as follows:

§ 2.14 *Advertising.*

* * * * *

(c) No person not an attorney, solicitor or lawyer shall, in any material specified in paragraph (b) of this section or in papers filed in the Patent and Trademark Office, represent himself to be an attorney, solicitor or lawyer.

9. Section 2.15 is revised to read as follows:

§ 2.15 *Signature and certificate of attorney or other representative.*

Every paper filed by an attorney at law or other person representing an applicant or party to a proceeding in the Patent or Trademark Office must bear the signature of such attorney at law or other person except those papers which are required to be signed by the applicant or party. The signature of an attorney at law or such other person to a paper filed by him, or the filing of any paper by him, constitutes a certificate that the paper has been read; that its filing is authorized; that to the best of his knowledge, information, and belief there is good ground to support it; and that it is not interposed for delay.

10. Section 2.18 is revised to read as follows:

§ 2.18 *Correspondence, with whom held.*

Correspondence will be sent to the applicant or a party to a proceeding at his address unless papers are transmitted by an attorney at law, or a written power of attorney is filed, or written authorization of other person entitled to be recognized is filed, or the applicant or party designates in writing another address to which correspondence is to be sent, in which event correspondence will be sent to the attorney at law transmiting the papers, or to the attorney at law designated in the power of attorney, or to the other person designated in the written authorization, or to the address designated by the applicant or party for correspondence. Correspondence will continue to be sent to such address until the applicant or party, or the attorney at law or other authorized representative of the applicant or party, indicates in writing that correspondence is to be sent to another address. Double correspondence will not be undertaken by the Patent and Trademark Office, and if more than one attorney at law or other authorized representative appears or signs a paper, the Office reply thereto will be sent to the address already established in the file until another correspondence address is specified by the applicant or party or by the attorney or other authorized representative of the applicant or party.

11. Section 2.19 is revised to read as follows:

§ 2.19 *Revocation of power of attorney or of other authorization to represent.*

Authority to represent an applicant or a party to a proceeding may be revoked at any stage in the proceedings of a case upon notification to the Commissioner; and when it is so revoked, the Office will communicate directly with the applicant or party to the proceeding or with such other qualified person as may be authorized. The Patent and Trademark Office will notify the person affected of the revocation of his authorization.

12. Section 2.37 is revised to read as follows:

§ 2.37 *Authorization for representation; U.S. representative.*

The authorization of a qualified person to represent applicant (section 2.17(b)) and the designation of a domestic representative (section 2.24) may be included as a paragraph or paragraphs in the application.

13. Section 2.75 is revised to read as follows:

§ 2.75 *Amendment to change application to different register.*

An application for registration on the Principal Register may be changed to an application for registration on the Supplemental Register and vice versa by amending the application to comply with the rules relating to the requirements for registration on the appropriate register, as the case may be. The original filing date may be considered the effective filing date for the purpose of proceedings in the Patent and Trademark Office provided the application as originally filed was sufficient for registration on the register to which amended. Otherwise, the filing date of the amendment will be considered the effective filing date of the application so amended.

14. Section 2.80 is revised to read as follows:

§ 2.80 *Publication for opposition.*

If, on examination or reexamination of an application for registration on the Principal Register, it appears that the applicant is entitled to have his mark registered, the mark will be published in the OFFICIAL GAZETTE for opposition. The mark will also be published in the case of an application to be placed in interference or concurrent use proceedings, if otherwise registrable.

15. In § 2.85, paragraph (e) is revised. As amended, § 2.85 reads as follows:

§ 2.85 *Classification schedules.*

* * * * *

(e) Where the amount of the fee received on filing an appeal in connection with an application or on filing an affidavit under section 8(a) or 8(b) or on an application for renewal or in connection with an opposition or petition for cancellation is sufficient for at least one class of goods or services but is less than the required amount because multiple classes in an application or registration are involved, the appeal or the affidavit or renewal application or opposition or petition for cancellation will not be refused on the ground that the amount of the fee was insufficient if the required additional amount of the fee is received in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office, or if action is sought only for the number of classes equal to the number of fees submitted.

* * * * *

16. Section 2.93 is revised to read as follows:

§ 2.93 *Declaration of interference.*

An interference is declared and instituted by the mailing of a notice of interference to the parties. The notice shall be sent to each applicant, in care of his attorney or other representative of reord, if any, and if one of the parties is a registrant, the notice shall be sent to him or his assignee of record. The notice shall give the name and address of the adverse party and of his attorney or other authorized representative, if any, together with the serial number and date of filing and publication, if published, of each of the applications or registrations involved.

17. In § 2.99, paragraphs (a) and (b) are revised. As amended, §22.99 reads as follows:

§ 2.99 *Application to register as concurrent user.*

(a) An application for registration as a lawful concurrent user will be examined in the same manner as other applications for registration. When it is determined that the mark is ready for publication or allowance, except for questions relating to concurrent registration, the applicant may be required to furnish as many copies of his written application, specimens and drawing, as may be necessary. The Examiner of Trademarks shall prepare notices for the applicant and for each applicant, registrant, or user specified in the application for registration as a concurrent user. Such notices for the specified parties shall give the name and address of the applicant and of his attorney or other authorized representative, if any, together with the serial number and filing date of the application.

(b) The notices shall be sent to each of the parties, in care of their attorneys or other representatives, if they have attorneys or other representatives of record, and if one of the parties is a registrant, a notice shall also be sent to him or his assignee of record. A copy of the application shall be forwarded with the notices to the parties specified in the application. An answer to the notice is not required in the case of an applicant or registrant whose application or registration is specified in the application to register as concurrent user but a statement, if desired, may be filed within forty days after the mailing of the notice; in the case of other parties specified in th application to register as concurrent user, answer must be filed within forty days after the mailing of the notice.

* * * * *

18. Section 2.101 is revised to read as follows:

§ 2.101 *Filing an opposition.*

(a) Any person who believes that he would be damaged by the registration of a mark upon the Principal Register may oppose the same by filing an opposition in the Patent and Trademark Office within thirty days after publication of the mark sought to be registered (§ 2.80), or within an extension of the time for filing an opposition (§ 2.102). The opposition must be verified, or include a declaration in accordance with § 2.20, unless the opposition is filed by an attorney at law or other authorized representative in accordance with § 2.103.

(b) An opposition must include the required fee for each class sought to be opposed in the application. If fees insufficient to cover all classes in the application are submitted, the particular class or classes in which opposition is sought should be specified. If persons are jointed in an opposition, a fee for each class sought to be opposed in the application for each person so joined is required.

19. Section 2.102 is revised to read as follows:

§ 2.102 *Extension of time for filing opposition.*

(a) A request to extend the time for filing an opposition must be made by a person who believes that he would be damaged by the registration of the mark on the Principal Register, but an attorney at law or other person authorized to represent a party may file the request on behalf of a potential opposer. The potential opposer must be identified with reasonable certainty in the request. Any opposition filed during an extension of time should be in the name of the person to whom the extension was granted, but an opposition may be accepted if the person to whom the extension was granted was misidentified through mistake, or an opposition filed in a different name may be accepted if the person filing the opposition is in privity with the person to whom the extension was granted.

(b) A written request to extend the time for filing an opposition must be received in the Patent and Trademark Office before the expiration of thirty days from the date of publication, and should specify the period of extension desired. A first extension of time will be granted upon request if the extension is for not more than thirty days. Other extensions of time may be granted by the Commissioner for good cause.

20. Section 2.103 is revised to read as follows:

§ 2.103 *Opposition filed by attorney at law or other authorized representative.*

An opposition may be filed in the Patent and Trademark Office by an attorney at law or other person authorized to represent a party, either within thirty days after publication of the mark sought to be registered (§ 2.80), or within an extension of the time for filing an opposition (§ 2.102), but the opposition will be null and void unless confirmed by the opposer by verification, or by declaration in accordance with § 2.20, within thirty days after the filing of the opposition, or within such further time as may be fixed by the Commissioner upon request made before the expiration of the thirty days.

21. Section 2.105 is revised to read as follows:

§ 2.105 *Notification of opposition proceedings.*

A notification of an opposition which has been regularly filed shall be prepared, identifying the title and number of the proceeding and the application involved, and designating a time, not less than thirty days from the mailing date of such notification, within which answer must be filed. Copies of this notification shall be forwarded by the Trademark Trial and Appeal Board to the parties in care of their attorneys or other representatives, if they have attorneys or other representatives of record. The duplicate copy of the opposition and exhibits shall be forwarded with the notification to the applicant.

22. Section 2.111 is revised to read as follows:

§ 2.111 *Time for filing petition for cancellation.*

Any person who believes that he is or will be damaged by a registrant may, upon payment of the required fee for each class sought to be cancelled in the registration, apply to the Commissioner to cancel said registration as to the specified class or classes. A petition to cancel which includes insufficient fees to over all classes in the registration should specify the partiular class or classes for which cancellation is sought. Such petition may be made at any time in the case of registrations on the Supplemental Register or under the act of 1920, or registrations under the act of 1881 or the act of 1905 which have not been published under section 12(c) of the act (§ 2.153), and in cases involving the grounds specified in section 14(c), (d) and (e) of the act. In all other cases such petition must be made within five years from the date of registration of the mark under the act of 1946 or from the date of publication under section 12(c) of the act.

23. Section 2.112 is revised to read as follows:

§ 2.112 *Petition for cancellation.*

The petition to cancel, which must be verified, or include a declaration in accordance with § 2.20, must set forth a short and plain statement showing how the petitioner is or will be damaged by the registration, state the grounds for cancellation, and indicate the respondent party to whom notification shall be sent. A duplicate copy of the petition, including exhibits, shall be filed with the petition. Applications to cancel different registrations owned by the same party may be joined in one petition when appropriate, but the required fee must be included for each class sought to be cancelled in each registration against which each application to cancel is filed. If persons are joined in a petition to cancel, a fee for each class sought to be cancelled for each person so joined is required.

24. In § 2.113, paragraph (b) and the title are revised. As amended, § 2.113 reads as follows:

§ 2.113 *Notification of filing of petition.*

*   *   *   *   *

(b) When the petition is correct as to form, a notification shall be prepared, identifying the title and number of the proceeding and the registration involved, and designating a time, not less than thirty days from the mailing date of such notification, within which answer must be filed. A copy of this notification shall be forwarded to the petitioner in care of his attorney or other representative, if he has an attorney or other representative of record. The duplicate copy of the petition and exhibits shall be forwarded with a copy of such notification to the respondent party.

25. In § 2.119, paragraphs (a) and (b) are revised. As amended, §2.119 reads as follows:

§ 2.119 *Service of papers.*

(a) Every paper filed in the Patent and Trademark Office in inter partes cases, including notice of appeal, must be served upon the other parties except the notice of interference (§ 2.93), the notification of opposition (§ 2.105), the petition for cancellation (§ 2.113), and the notice of a concurrent use proceeding (§ 2.99), which are mailed by the Patent and Trademark Office. Proof of such service must be made before the paper will be considered by the Office. A statement signed by the attorney or other authorized representative, attached to or appearing on he original paper when filed, clearly stating the date and manner in which service was made will be accepted as prima facie proof of service.

(b) Service of papers must be on the attorney or other authorized representative of the party if there be such or on the party if there is no attorney or other authorized representative, and may be made in either of the following ways: (1) By delivering a copy of the paper to the person served; (2) by leaving a copy at the usual place of business of the person served, with someone in his employment; (3) when the person served has no usual place of business, by leaving a copy at his residence, with a member of his family over 14 years of age and of discretion; (4) transmission by first-class mail, which may also be certified or registered. Whenever it shall be satisfactorily shown to the Commissioner that none of the above modes of obtaining service or serving the paper is practicable, service may be by notice published in the OFFICIAL GAZETTE.

*   *   *   *   *

26. In § 2.120, paragraph (c) is revised. As amended, § 2.120 reads as follows:

§ 2.120 *Discovery procedure.*

*   *   *   *   *

(c) Failure to make discovery: Sanctions.

(1) If any party fails or refuses to answer any proper question in taking discovery depositions or fails or refuses to answer any proper question propounded by interrogatories or fails or refuses to comply with a request to produce and permit the inspection and copying of designated things, the party seeking discovery may file a motion with the Trademark Trial and Appeal Board for an order compelling discovery. Such a motion must be supported by a written statement by the attorney for the moving party that the moving party or its attorney has conferred with the opposing party or its attorney in an effort in good faith to resolve by agreement the issues raised by the motion and has been unable to reach agreement. If issues raised by the motion are subsequently resolved between the parties, the attorney for the moving party should advise the Trademark Trial and Appeal Board in writing of the matters in the motion which no longer require decision by the Board.

(2) If a party or an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a party, fails to obey an order to provide or permit discovery, the Trademark Trial and Appeal Board may strike out all or any part of any pleading of that party, dismiss the action or proceeding, or deny any part thereof, enter judgment as by default against that party or take any such other action as may be deemed appropriate.

27. In § 2.123, paragraph (e)(2) is revised, and paragraph (g)(3) is added. As amended, § 2.123 reads as follows:

§ 2.123 *Trial testimony in inter partes cases.*

*   *   *   *   *

(e) * * *

(2) The deposition shall be taken in answer to questions, with the questions and answers recorded in their regular order by the officer, or by some other person (who shall be subject to the provisions of Rule 28 of the Federal Rules of Civil Procedure) in the presence of the officer except when his presence is waived on the record by agreement of the parties. The testimony shall be taken stenographically and transcribed, unless the parties present agree otherwise. In the absence of all opposing parties and their attorneys or other authorized representatives, depositions may be taken in longhand, typewriting, or stenographically.

*   *   *   *   *

(g) * * *

(3) Each deposition must contain an index of the names of the witnesses, giving the pages where their examination and cross-examination begin, and an index of the exhibits, briefly describing their nature and giving the pages at which they are introduced and offered in evidence.

*   *   *   *   *

28. In § 2.127, paragraph (b) is revised. At amended, § 2.127 reads as follows:

§ 2.127 *Motions.*

*   *   *   *   *

(b) Any request for rehearing or reconsideration, or modification of a decision, on a motion which is not finally dispositive of the case, must be filed within thirty days from the date thereof. Any brief in opposition shall be filed within fifteen days after service of the request.

*   *   *   *   *

29. In § 2.129, paragraphs (b) and (c), and the title, are revised. As amended, § 2.129 reads as follows:

§ 2.129 *Oral argument, and reconsideration.*

*   *   *   *   *

(b) Hearings may be advanced or adjourned, as far as is convenient and proper to meet the wishes of the parties and their attorneys or other authorized representatives.

(c) Any request for rehearing or reconsideration, or modification of a decision, including a decision on a motion which is finally dispositive of a case, must be filed within thirty days from the date thereof. Any brief in opposition shall be filed within fifteen days after service of the request. The times specified herein may be extended by the Trademark Trial and Appeal Board upon a showing of sufficient cause.

30. Section 2.141 is revised to read as follows:

§ 2.141 *Ex parte appeals from the Examiner of Trademarks.*

Every applicant for the registration of a mark may, upon final refusal by the Examiner of Trademarks, appeal to the Trademark Trial and Appeal Board upon payment of the prescribed fee for each class in the application for which an appeal is taken. An appeal which includes insufficient fees to cover all classes in the application should specify the particular class or classes in which an appeal is taken. A second refusal on the same grounds may be considered as final by the applicant for purpose of appeal.

31. Section 2.144 is revised to read as follows:

§ 2.144 *Reconsideration of decision on ex parte appeal.*

Any request for rehearing or reconsideration, or modification of the decision, must be filed within thirty days from the date of the decision. Such time may be extended by the Trademark Trial and Appeal Board upon a showing of sufficient cause.

32. In § 2.145, paragraphs (a), (b), and (d) are revised. As amended, § 2.145 reads as follows:

§ 2.145 *Appeal to court and civil action.*

(a) Appeal to U.S. Court of Customs and Patent Appeals. An applicant for registration, or any party to an interference, opposition, or cancellation proceeding who is dissatisfied with the decision of the Trademark Trial and Appeal Board and any registrant who has filed an affidavit or declaration under Section 8 of the act or who has filed an application for renewal and is dissatisfied with the decision of the

Commissioner (§§ 2.165, 2.184), may appeal to the U.S. Court of Customs and Patent Appeals. The appellant must take the following steps in such an appeal: (1) In the Patent and Trademark Office give written notice of appeal to the Commissioner (see paragraphs (b) and (d) of this section); (2) in the court, file a petition of appeal and a certified transcript of the record within a specified time after filing the appeal, and pay the fee for appeal, as provided by the rules of the court. The transcript will be transmitted to the Court by the Patent and Trademark Office on order of and at the expense of the appellant. Such order should be filed with the notice of appeal, but in no case should it be filed later than fifteen days thereafter.

(b) Notice of appeal.

(1) When an appeal is taken to the U.S. Court of Customs and Patent Appeals, the appellant shall give notice thereof in writing to the Commissioner, which notice shall be filed in the Patent and Trademark Office, within the time specified in paragraph (d) of this section. The notice shall specify the party or parties taking the appeal and shall designate the decision or part thereof appealed from.

(2) In inter partes proceedings, the notice must be served as provided in § 2.119.

*   *   *   *   *

(d) Time for appeal or civil action.

(1) The time for filing the notice of appeal to the U.S. Court of Customs and Patent Appeals (paragraph (b) of this section), or for commencing a civil action (paragraph (c) of this section), is sixty days from the date of the decision of the Trademark Trial and Appeal Board or the Commissioner, as the case may be. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time specified in section 2.129(c) or 2.144, or within any extension of time granted thereunder, the time for filing an appeal or commencing a civil action shall expire at the end of the sixty day period or thirty days after action on the request, whichever is later. The sixty and thirty day periods may be extended by the Commissioner upon a showing of sufficient cause.

(2) The times specified herein are calendar days. If the last day of time specified for appeal, or commencing a civil action falls on a Saturday, Sunday or legal holiday, the time is extended to the next day which is neither a Saturday, Sunday nor a holiday.

(3) If a party to an inter partes proceeding has taken an appeal to the U.S. Court of Customs and Patent Appeals and an adverse party has filed notice under section 21(a)(1) of the act that he elects to have all further proceedings conducted under section 21(b) of the act, the time for filing a civil action thereafter is specified in section 21(a)(1) of the act.

33. Section 2.161 is revised to read as follows:

§ 2.161 *Cancellation for failure to file affidavit or declaration during sixth year.*

Any registration under the provisions of the act of 1946 and any registration published under the provisions of section 12(c) of the act (§ 2.153) shall be cancelled as to any class in the registration at the end of six years following the date of registration or the date of such publication, unless within one year next preceding the expiration of such six years the registrant shall file in the Patent and Trademark Office an affidavit or declaration in accordance with § 2.20 showing that said mark is still in use as to such class or showing that its non-use as to such class is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark.

34. Setion 2.162 is revised to read as follows:

§ 2.162 *Requirements for affidavit or declaration during sixth year.*

The affidavit or declaration required by § 2.161 must:

(a) Be executed by the registrant after expiration of the five-year period following the date of registration or of publication under section 12(c) of the act;

(b) Be filed in the Patent and Trademark Office before the expiration of the sixth year following the date of registration or of publication under section 12(c) of the act;

(c) Identify the certificate of registration by the registration number and date of registration;

(d) Include the required fee for each class to which the affidavit or declaration pertains in the registration. If insufficient fees are included to cover all classes in the registration, the particular class or classes to which the affidavit or declaration pertains should be specified;

(e) State that the registered mark is in use (except under paragraph (f) of this section). The statement must be supported by evidence which shows that the mark is still in use, and normally such evidence consists of a specimen or a facsimile specimen which is currently in use, or a statement of facts concerning use. The supporting evidence should be submitted with the affidavit or declaration, but if it is not or if the evidence submitted is found to be deficient, the evidence, or further evidence, may be submitted and considered even though filed after the sixth year has expired;

(f) If the registered mark is not still in use, recite facts to show that nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. If the facts recited are found not to be sufficient, further evidence or explanation may be submitted and considered even though filed after the sixth year has expired; and

(g) Contain the statement of use or statement as to nonuse and appropriate evidence in support thereof, as required in paragraphs (e) and (f) of this section, for each class to which the affidavit or declaration pertains in the registration.

35. Section 2.172 is revised to read as follows:

§ 2.172 *Surrender for cancellation.*

Upon application by the registrant, the Commissioner may permit any registration to be surrendered for cancellation. Application for such action must be signed by the registrant and must be accompanied by the original certificate of registration, if not lost or destroyed. When there is more than one class in a registration, one or more entire class but less than the total number of classes may be surrendered as to the specified class or classes. Deletion of less than all of the goods or services in a single class constitutes amendment of registration as to that class (see § 2.173).

36. In § 2.183, paragraphs (a), (b), and (c) are revised. As amended, § 2.183 reads as follows:

§ 2.183 *Requirements for application for renewal.*

(a) The application for renewal must include a statement which is verified or which includes a declaration in accordance with § 2.20 by the registrant setting forth the goods or services recited in each class for which renewal is sought in the registration on or in connection with which the mark is still in use in commerce, specifying the nature of such commerce (except under paragraph (c) of this section). This statement must be executed not more than six months before the expiration of the registration and must:

(1) Be accompanied by a specimen or facsimile specimen for each class for whih renewal is sought in the registration showing current use of the mark.

(2) Include the required fee for each class for which renewal is sought in the registration, and an additional fee for each class in the case of a delayed application for renewal. If the application for renewal includes insufficient fees to over all classes in the registration, the particular class or classes for which renewal is sought should be specified.

(b) The declaration or verified statement, specimen or facsimile specimen and the fee for each class for which renewal is sought in the registration must be filed within the period prescribed for applying for renewal. If defective or insufficient, they cannot be completed after the period for applying for renewal has passed; if completed after the initial six month period has expired but before the expiration of the three month delay period, the application can be considered only as a delayed application for renewal.

(c) If the mark is not in use in commerce at the time of filing of the declaration or verified statement as to any class for which renewal is sought, facts must be recited to show that nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. There must be a recitation of facts as to nonuse for each class for which renewal is sought or it must be clear that the facts recited apply to each class sought to be renewed. If the facts recited require amplification or explanation in order to show excusable nonuse, further evidence may be submitted and considered even though filed after the period for applying for renewal has passed.

*   *   *   *   *

37. In § 2.185, paragraphs (a)(2) and (a)(4) are revised. As amended, § 2.185 reads as follows:

§ 2.185 *Requirements for assignments.*

(a) Assignments under section 10 of the act of registered marks, or marks for which an application for registration has been filed, will be recorded in the Patent and Trademark Office. Other instruments which may relate to such marks may be recorded in the discretion of the Commissioner. No assignment will be recorded, except as may be ordered by the Commissioner, unless it has been executed and unless:

* * * * *

(2) It is in the English Language or, if not in the English language, accompanied by a translation signed by the translator;

* * * * *

(4) A designation of a domestic representative is made in case the assignee is not domiciled in the United States. The designation must be separate from the assignment and there must be a separate designation for each registration or application assigned in one instrument.

38. Section 2,187 is revised to read as follows:

§ 2.187 *Certificate of registration may issue to assignee.*

The certificate of registration may be issued to the assignee of the applicant, or in a new name of applicant, and certificate of registration will be so issued provided an appropriate document is of record in the Assignment Division of the Patent and Trademark Office no later than the time the notice of publication is mailed, or if such document is not of record, then if a statement that such document has been filed for recordation is in the application file by the time the application is being prepared for issuance of the certificate of registration. The address of the assignee must be made of record in the application file or in the recorded document.

39. Section 4.2 is revised to read as follows:

§ 4.2 *Power of attorney accompanying application.*

Applicant hereby appoints ---------------------------- (8)
---------------------------- to prosecute this application
(address)
to register, to transact all business in the Patent and Trademark Office in connection therewith, and to receive the certificate of registration.

NOTE: (8) An individual must be appointed. If the name of a law firm is given, it will be regarded merely as a designation of address for correspondence.

§ 4.3 [*Removed*]

40. Section 4.3 is removed.

Effective date: These amendments become effective on February 1, 1976.

Dated: December 11, 1975.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Approved: December 24, 1975.

DAVID B. CHANG,
Deputy Assistant Secretary for Science and Technology.

[FR Doc. 75–35246; Filed 12–31–75; 9:53 am]

Second Trial Voluntary Protest Program

A Second Trial Voluntary Protest Program will be conducted during the coming months. It will be increased in scale and somewhat modified in procedure from the first such program. Announcement of and description of the rules for the first program appeared in 923 O.G. 2 on June 4, 1974.

As before, the objective is to gain experience in carrying out such a program and to determine the extent of interest by the public in participating and in supplying pertinent references. To the extent there is participation, the program should be beneficial by bringing new art to the attention of the Office, preventing inadvertent issuance of invalid patents, and increasing confidence in the strength of those patents which survive the protest proceedings.

The first Trial Voluntary Protest Program showed a considerable interest by applicants and the public in taking part in protest proceedings. A summary of the results will be published soon in this Gazette. The second Trial Voluntary Protest Program is designed to gain additional information as to public participation and also to follow more closely the procedures which would be required in a continuing, permanent protest program.

Applications Involved

In the second Trial Voluntary Protest Program, a Request to Participate and Waiver of Confidentiality form (PTOL–224 Temp.) will be sent to each applicant to whom a Notice of Allowance is mailed during a selected three week period, probably in October, 1975. The total number of requests mailed will be about 4,500. Applications for plant patents will be excluded from the program. The reason for this exclusion is the high cost of printing colored drawings and the relatively limited prior art available. No other applications will be excluded from the trial program, regardless of subject matter, type of application or earlier proceedings. ●

Waiver of Confidentiality

Two copies of the form letter requesting voluntary waiver of confidentiality (form PTOL–224 Temp.) will be mailed in the same envelope along with the Notice of Allowance. An additional copy of the form letter will be made of record in each application at the time of mailing. The applicant will have three months from the notice of allowance date in which to either (1) elect to participate in the Trial Voluntary Protest Program by filing a signed waiver of confidentiality, or (2) elect not to participate in the program by paying the issue fee. If he does neither, the application will become abandoned, as provided in 37 C.F.R. 1.316. The waiver of confidentiality is a part of form PTOL–224 Temp. This procedure will avoid any increase in pendency time for those applications in which an election is made not to participate in the program. An early filing of a waiver of confidentiality by the applicant will result in early publication of the application.

Publication

If the applicant decides not to participate in the protest program and payment of the issue fee is timely made, the patent will issue routinely without delay.

If the applicant elects to participate in the protest program and a signed waiver of confidentiality is filed in the Office within 3 months of the notice of allowance date, the Notice of Allowance will be vacated. In such a case the issue fee should not be filed, as it will not be accepted and applied if filed with a signed waiver of confidentiality. An additional Notice of Allowance will be issued after the protest proceedings have been completed if only allowable claims remain in the application.

After a signed waiver has been filed, the application will be printed in the form of a patent and be available for sale as in the first Trial Voluntary Protest Program. At least one claim and a drawing figure, if any, will be printed in the OFFICIAL GAZETTE. These published applications will appear in about 6 to 9 issues of the OFFICIAL GAZETTE early in 1976. Advance notice will be given in the OFFICIAL GAZETTE of the dates on which applications will be published under this program.

Inspection of Files

The Patent and Trademark Office files of the published applications will be available for inspection by the public for a period of three months after publication. The application files will be retained in a single location in the Patent Issue Division during the protest period. This single location will be staffed with personnel to process papers directed to these files, supervise inspection of the files by the public, provide copies of file contents when ordered, and perform other related duties. A coin operated copying machine will also be available at this location.

Filing of Protests

Protests relating to the patentability of any published application must be filed in writing in the Patent and Trademark Office no later than three months after publication of the application. No extension of the three month protest period will be granted. Each protest must be filed in duplicate (one copy will be forwarded to the applicant and the other copy will be placed in the application file) and must indicate the grounds for protesting the allowance of any claim contained in the published application. If the protest

involves prior art not of record in the application, two copies of the alleged prior art, together with an explanation of the relevance of such prior art to the allowed claims, should be included. The protester may also comment on the prior art record in the application and the manner in which it was applied.

In those applications where prima facie evidence of prior public use or sale the claimed invention is presented in accordance with 37 C.F.R. 1.292, public use proceedings will give the protester an opportunity to present evidence.

Should claims be copied from a published application for interference purposes, the applicant copying claims must also file a notice of such copying in the file of the published application to avoid the possibility of inadvertent issuance of the published application as a patent before conclusion of any interference proceedings.

For easy identification, all protests should be headed, "Protest Under Trial Voluntary Protest Program" and be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

The protester should fully identify himself and include his mailing address so that communications may be addressed to him. In view of administrative problems encountered in the first Trial Voluntary Protest Program in protecting the confidentiality of the identity of protesters, no attempt will be made by the Office to maintain the confidentiality of any protester under the new program.

If no protests are received during the protest period, the application file will be rerouted for the mailing of a new Notice of Allowance. The file will not be returned to the examining group except for consideration of matters which normally require return of an allowed file.

If one or more protests are filed in an application, the application file and the protest(s) will be returned to the examining group for consideration.

Consideration of Protest

The examining group will acknowledge receipt of all protests. The authority for deciding whether or not the evidence submitted constitutes a prima facie showing of unpatentability of any allowed claim will reside with the Group Director. If the Group Director decides that no such showing has been made, the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. Protesters will be notified in such cases that prosecution has not been reopened, and the applicant will be sent a duplicate copy of all protests. The decision of the Group Director will be final and will not be subject to petition by a protester.

If the Group Director decides that the submitted evidence constitutes a prima facie showing of unpatentability of any allowed claim, prosecution of the application will be reopened. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim considered unpatentable. The duplicate copy of each protest will be mailed to the applicant with the Office action. Protesters who submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

Response by the Applicant to Subsequent Office Actions

During this period, the applicant may present amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters who submitted evidence on which a rejection in the Office action is based to participate in later prosecution and to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response filed, including any appeal brief. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

Comment on Applicant's Response by the Protester

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent and Trademark Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

Any appeal by the applicant to the Board of Appeals in a protested application will be made special and will be taken up out of order.

Conclusion of Prosecution

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified and the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. A decision of the primary examiner to allow an application will not be subject to petition or appeal by any protester.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Sept. 16, 1975.

[938 O.G. 945]

PATENT NOTICES

Certificates of Correction for the Week of Feb. 3, 1976

Re. 28,593
D. 233,496
D. 234,515
3,489,752
3,577,512
3,637,701
3,752,771
3,759,837
3,788,390
3,794,733
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3,915,794
3,916,138
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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 3, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-19-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-2-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-13-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-3-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-21-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-23-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	2-13-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-7-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-10-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	7-23-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-7-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools: Cutlery; Jacks.	4-15-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-2-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	2-19-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	6-4-75

Expiration of patents: The patents within the range of numbers indicated below expire during January 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,866,973 to 2,871,478 inclusive
Plant Patents	Numbers 1,792 to 1,804 inclusive

PATENT APPLICATIONS

PUBLISHED FEBRUARY 3, 1976
UNDER THE SECOND TRIAL VOLUNTARY PROTEST PROGRAM

NOTE- A copy of the notice setting forth the details of the Second Trial Voluntary Protest Program may be found in the Patent and Trademark Notices section of this issue.

Any protests relating to the patentability of these published applications must be filed in writing before May 3, 1976. These applications are available for inspection in the Allowed Files Branch, Crystal Plaza, Room 2-10C28. All correspondence should be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

Printed copies of the published applications may be purchased from the Patent and Trademark Office at 50 cents each.

An "Index of Applicants and Assignees of Published Applications" and a concordance entitled "Classification of Published Patent Applications" are located in the back of this issue.

GENERAL AND MECHANICAL APPLICATIONS

B 373,344
FUEL TRANSFER SYSTEM FOR A NUCLEAR REACTOR

Leonard R. Katz; James R. Marshall, both of Pittsburgh, and Walter E. Desmarchais, Monroeville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 25, 1973, Ser. No. 373,344
Int. Cl.^{2} F23K *3/00*
U.S. Cl. 214—18 N **5 Claims**

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UNITED STATES PATENTS

2,575,650	11/1951	Alexander	200/52
3,020,225	2/1962	Wootton	176/30
3,194,742	7/1965	Aubert et al.	176/30
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3,637,096	2/1969	Crates	214/18 N
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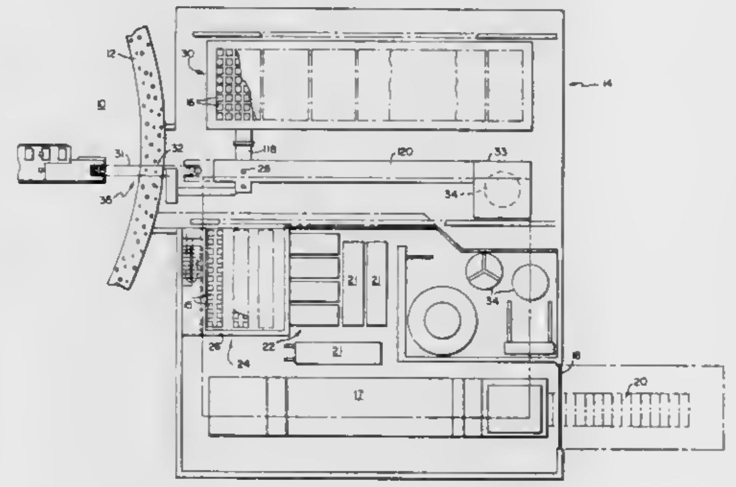

1. A system for transferring fuel assemblies between a fuel handling building and a nuclear reactor wherein the fuel handling building includes new and spent fuel pits and an operating deck on the top surface of walls forming said pits, a reactor containment area separated from said building by a containment wall, and a canal adapted to be filled with water extending from said pits to the reactor containment area to permit submerged movement of the fuel assemblies between the building and the nuclear reactor comprising:

said canal being arranged to extend through said wall and a valve mounted therein for selectively establishing communication between said building and containment area;

a base supporting rails which extend from the building through the canal into the containment area;

a car on said rails and means connected with the car for providing car linear movement between the fuel handling building and containment area;

a fuel assembly handling container rotatably mounted at its midpoint on said car;

first and second power actuating means respectively mounted on the base in the fuel handling building and the containment area, each of said actuating means including a reciprocable arm associated with the container for rotating it between vertical and horizontal positions;

thereby permitting loading and unloading of a fuel assembly therein and facilitating movement of the car through the canal;

car position indicating means for determining the position of said car in the fuel building and in said containment area, said position indicating means including car position indicators on said operating deck connected with switches mounted on said base and at locations where said car is to be stopped at its extreme ends of travel; and

an actuator on said car which cooperates with said switches connected to said car position indicators to thereby show on the operating deck the position of said car; said car position indicating means further includes actuators on said container and switches on said base adapted by said actuators to show the vertical and horizontal orientation of said container.

B 381,985
THIN-FILM OPTICAL WAVEGUIDE

Ivan Paul Kaminow, New Shrewsbury, and Herwig Werner Kogelnik, Fair Haven, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 23, 1973, Ser. No. 381,985
Int. Cl.^{2} G02B *5/14*
U.S. Cl. 350—96 WG **2 Claims**

References Cited
UNITED STATES PATENTS

3,537,020	10/1970	Anderson	350/96 WG X
3,795,433	3/1974	Channin	350/96 WG
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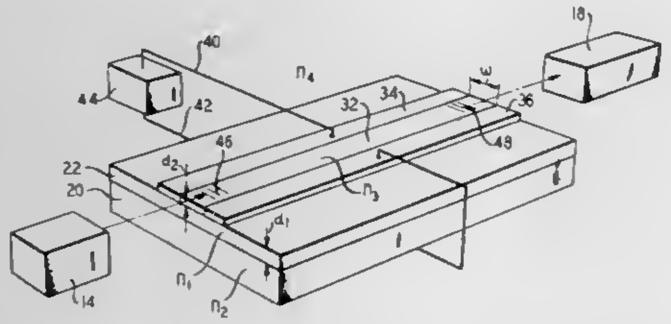
OTHER PUBLICATIONS

Noda et al., "A Novel Optical Waveguide for Integrated Optics" *Digest of Technical Papers, 1973 IEEE/OSA Conference on Laser Engineering Applications*, May 30–June 1, 1973, p. 67.

1. In combination, a planar dielectric thin-film waveguiding layer, passive means in contact with one surface of said layer for defining a said layer a region having an effective index of refraction that is higher than that in the other regions of said layer whereby waveguiding in said planar layer is confined to said defined region, wherein said passive means comprises a single longitudinal dielectric stripe element deposited on a portion of the top surface of said layer directly overlying said defined region, means for coupling an optical beam to one end of said defined region, means for extracting an optical beam

from the other end of said defined region, wherein said layer comprises an electro-optic material, and further including spaced-apart longitudinally extending electrodes deposited on the top surface of said layer on the respective sides of said single dielectric stripe element, and still further comprising an ambient medium in contact with any remaining portions of the top surface of said layer and in contact with the top surfaces of said stripe element and of said electrodes, the index of refraction of said single stripe element being greater than the index of refraction of said medium but less than the index of refraction of said layer.



B 398,220
COOLED IGNITER

Thomas L. DuBell, Maineville, and Thomas C. Campbell, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sept. 17, 1973, Ser. No. 398,220

Int. Cl.² F02C *7/18, 7/26*

U.S. Cl. 431—264 **7 Claims**

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UNITED STATES PATENTS

2,693,082	11/1954	Arthur	60/39.67
2,831,993	4/1958	Lentz	60/39.82 S
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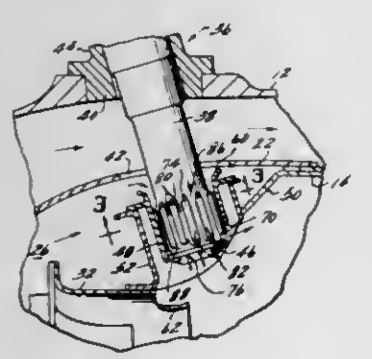

1. In a fuel igniter for use in a combustion chamber, the igniter comprising a cylindrical housing projecting generally radially into the combustion chamber, the housing terminating in a heated tip extending through a generally annular ferrule, the improvement comprising:

  a plurality of first channels spaced circumferentially about the outer surface of said housing and aligned generally axially thereof;

  a circumferential second channel formed within the outer surface of said housing proximate said heated tip and intersecting preselected of said first channels;

  first means for providing a flow of cooling air to said first channels;

  second means for collecting said cooling air within said second channel; and

  third means for exhausting said cooling air from said second channel generally normally of said housing and substantially only in a direction downstream thereof into said combustion chamber.

B 424,989
APPARATUS FOR ARRANGING, AT A PREDETERMINED SPACING ON A RECEPTION CONVEYOR, OBJECTS ORIGINATING IN A DISORDERED MANNER FROM A DELIVERY CONVEYOR

Franco Aiuola, Bologna, Italy, assignor to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A., Bologna, Italy

Filed Dec. 14, 1973, Ser. No. 424,989

Claims priority, application Italy, Dec. 18, 1972, 3619/72

Int. Cl.² B65G *15/00*

U.S. Cl. 198—179 **8 Claims**

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UNITED STATES PATENTS

3,300,063	1/1967	Jensen et al.	198/179
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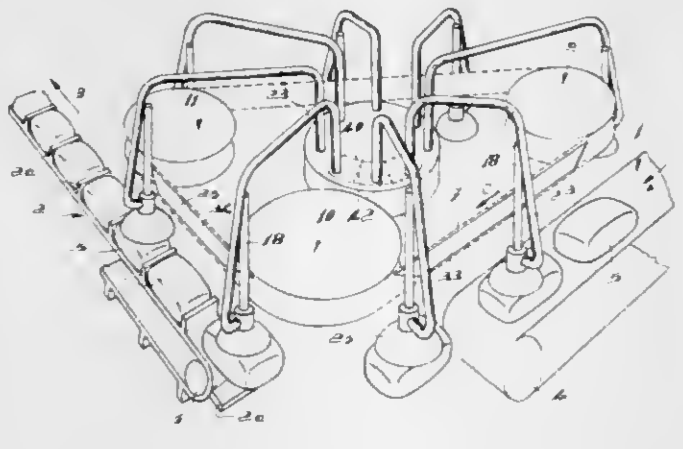

1. An apparatus for arranging, at a predetermined spacing on a reception conveyor, objects originating in an unevenly spaced manner from a delivery conveyor, in which the delivery conveyor is driven with continuous motion whereas the reception conveyor is driven with intermittent motion, and comprising a flexible closed loop member lying in a horizontal plane, of which a first portion extends parallel to the end part of the delivery conveyor and a second portion extends parallel to the initial part of the reception conveyor, a series of suckers distributed along said flexible member and mobile vertically by means of cams disposed along said first and second portions for causing the suckers to move close to the delivery and reception conveyors and a distributor member arranged to connect and disconnect the suckers cyclically to and from suction means for taking the objects from the delivery conveyor and depositing them respectively on the reception conveyor, the speed of said flexible member being constant and different from that of the delivery conveyor, and the reception conveyor during the intermittent advancement stroke being arranged to attain a speed equal and concordant with that of the flexible member.

B 434,206
SKID RESISTANCE OF ASPHALT SURFACE ROADS

Richard J. Bennett; Ollie G. Buck, and John L. Buster, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 17, 1974, Ser. No. 434,206

Int. Cl.² E01C *7/06*

U.S. Cl. 404—77 **8 Claims**

References Cited

UNITED STATES PATENTS

121,082	11/1871	Burlew	106/284
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2,182,837	12/1939	Bacon	404/79
2,254,463	9/1941	Wells	404/95
2,686,166	8/1954	Taylor	404/72 X

1. A method for improving a pavement having an oxidizable surface which is slippery comprising subjecting each portion of the surface of the pavement to flame treatment for one second to 5 minutes with the distance of the flame from the pavement being between impingement and about 24 inches, so that said surface is oxidized sufficiently to improve the skid resistance, said treatment being such that no substantial layer of the surface is melted.

B 437,559
METHOD AND DEVICE OF REBLOCKING TO AN INCREASED OR REDUCED NUMBER OF ROPE PARTS AT A HOISTING GEAR

Rickard Andersson, Vasteras, Sweden, assignor to Linden-Alimak AB, Vasteras, Sweden

Filed Jan. 29, 1974, Ser. No. 437,559

Claims priority, application Sweden, Feb. 9, 1973, 7318228

Int. Cl.² B66D *3/04*

U.S. Cl. 254—188 **7 Claims**

References Cited

UNITED STATES PATENTS

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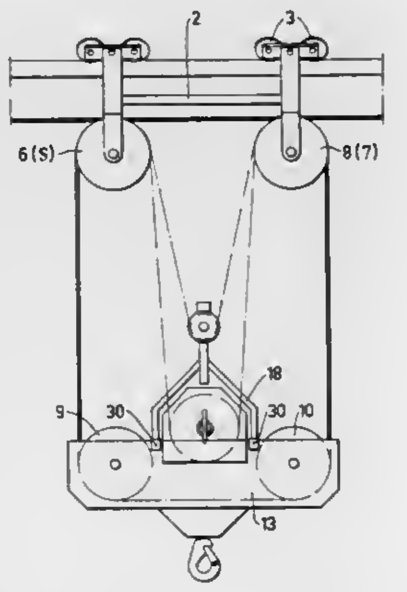
FOREIGN PATENTS OR APPLICATIONS

171,531	10/1965	U.S.S.R.	212/102



1. A method of reblocking a hoisting gear to a different number of cable parts, said hoisting gear including a lifting cable, an upper block means and a lower block means hanging under the upper block means in at least two rope parts of the lifting cable, the upper block means having at least two spaced apart pulleys, between which one part of the lifting cable runs on the same level as the upper block means, characterized in that the lower block means is lifted up to the upper block means and a portion of the cable running between said two spaced apart pulleys is engaged by a cable engaging means attached to the lower block means and also characterized in that the lifting cable pulled down between said two pulleys on said upper block means is moved manually from said engaging means and placed around a special pulley of the lower block means in reblocking to more cable parts and that the reverse procedure is used in reblocking to fewer cable parts.

B 443,163
INFRASTAR CANNISTER CARTRIDGE

Edgar M. Shurtleff, Downey, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 15, 1974, Ser. No. 443,163

Int. Cl.² F42B *7/04, 13/18, 13/48*

U.S. Cl. 102—42 R **3 Claims**

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UNITED STATES PATENTS

1,203,649	11/1916	Papuga	102/42 C
1,292,374	1/1919	Richardson	102/67
2,343,818	3/1944	Sweeley	102/42 R
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3,074,344	1/1963	Devaux	102/42 C
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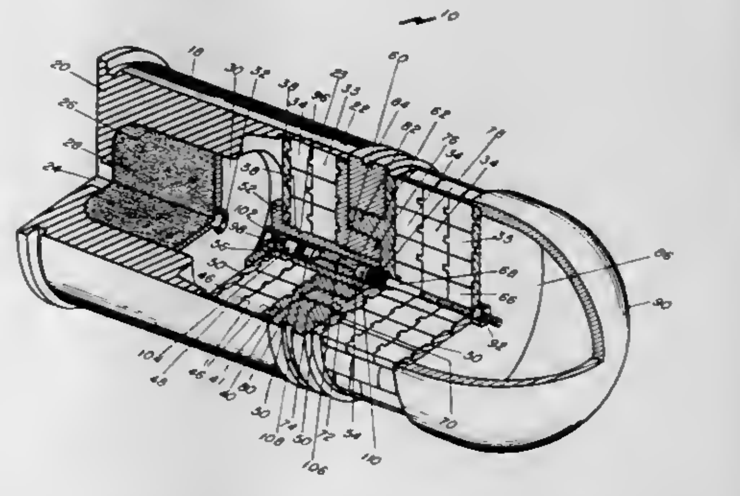

1. An internally fragmenting shape released cartridge which comprises:

  a cup shaped cartridge case having a partialy closed end and an open end;

  a primer fixedly axially positioned in said closed end;

  propellant means operatively positioned within said cartridge case adjacent said primer for generating gas pressure within said cartridge case upon initiation by said primer;

  first fragment means operatively disposed in the open end of said cartridge case and means for holding said first fragment means together during a first interval of time and for releasing said first fragment means after said first interval of time which includes;

  a disc shaped first retainer plate member having a plurality of operatively disposed protrusion line-up bores and an axial clearance hole therein;

  a plurality of interlocking cylindrically shaped fragments operatively arranged in a two-tier annular fragment assembly, said two-tier assembly having protrusions on a first end which slidably engage said line-up bores in said first retainer plate member; and

  a disc shaped second retainer plate member having a plurality of operatively disposed protrusion line-up bores therein, and a central threaded hole therein, said annular fragments assembly also having protrusions on its second

- end which slidably engage said line-up bores in said second retainer plate member;
- second fragment means attached to said first fragment means and means for holding said second fragment means together during said first interval of time and for releasing said second fragment means after a second interval of time; and
- means for releasing said first fragment means comprising delay means axially positioned within said first fragment means operatively disposed adjacent said means for releasing said second fragment means for sequentially initiating the release of said first and second fragment means so that a double cone pattern of shot is generated by firing of said cartridge;
- wherein said delay means passes through said axial clearance hole and said fragment assembly to threadedly engage the central threaded hole of said second retainer plate member.

B 445,459
COWLING ARRANGEMENT FOR A TURBOFAN ENGINE

Anthony Joseph Chamay, Marblehead; James Smith, Topsfield, and Thomas Neil Hull, Jr., Marblehead, all of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Feb. 25, 1974, Ser. No. 445,459
Int. Cl.² F02K *3/02*; B64C *15/06*
U.S. Cl. 60—226 A **9 Claims**

References Cited
UNITED STATES PATENTS

3,047,257	7/1962	Chester	244/42 DA
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3,747,341	7/1973	Davis	60/226 A
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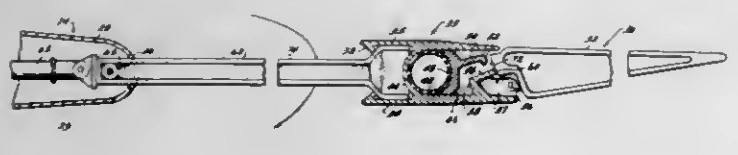

1. A fan cowling for a gas turbofan engine said cowling being spaced apart from a core engine to define an annular bypass duct therebetween and comprising:
- a forward fixed portion;
- an aft variable portion including a unison ring in axial alignment with the fixed portion;
- a plurality of circumferentially spaced apart nozzle flaps disposed to be freely rotatable between limit stops around the aft end of the unison ring such that the differential air pressure existing between the bypass duct airflow and the ambient causes the nozzle flaps to rotate radially outward to a maximum nozzle area position;
- an inflatable bladder in engagement with the unison ring; and
- actuating ring means translatably disposed relative to the unison ring between the bladder and nozzle flaps for translating downstream to engage and rotate the nozzle flaps radially inward upon inflation of the bladder to thereby decrease the exhaust area of the bypass duct and prevent the nozzle flaps from being rotated further radially outward by said differential air pressure.

B 445,690
TRACTION MEANS FOR RESILIENT TIRES OF MOTOR VEHICLES

Alexander Lossev, 1480 Rte. 46, Apt. 294-A, Parsippany, N.J. 07054

Filed Feb. 25, 1974, Ser. No. 445,690
Int. Cl.² B60C *27/08*
U.S. Cl. 152—213 R **3 Claims**

References Cited
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3,079,971	3/1963	Iaquinta	152/179
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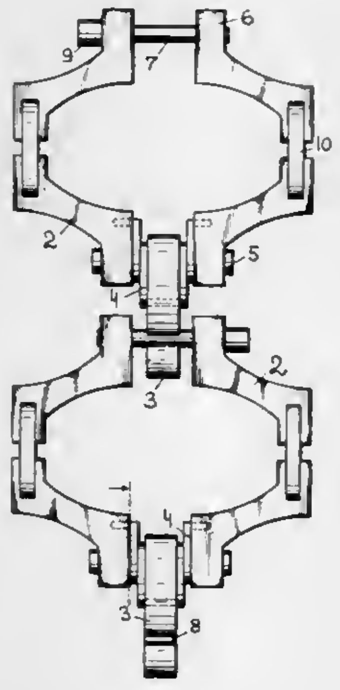

1. A traction attachment for resilient tires comprising a plurality of interlinked traction units each provided with a coupler arm pivotally linking it in releasable relation with the next adjacent unit thus to form catenation of a length sufficient to encircle the peripheral face of a tire; each of said traction units includes:
- a. a number of traction components each having perforations in one end portion thereof,
- b. centrally disposed connector elements extending through said perforations for joining said traction components into pairs extending in use transversely across the ground contacting face of a tire, one of said connector elements in each unit being retractable,
- c. bilaterally disposed resilient elements coupling said pairs of traction components together in angular correlation, and
- d. bilaterally disposed means for engagement with the side portions of a tire between them,

Said traction attachment also includes: self-applicable means comprising a plurality of resilient means interposingly maintaining angular relation between every one of said traction units and thereto attached coupler arm and reciprocally reacting to pressure being exerted by longitudinally rolling the tire over said attachment tire, and interlocking means disposed at one end of said attachment and a retractable element at the other end thereof providing in combination means for securing said attachment on the tire by connecting the opposite ends thereof together by rolling a tire thereover.

B 464,290
LIQUID LEVEL MEASURING AND INDICATING APPARATUS

Charles Guidicelli, 330 Rue de Noisy, Blaynolet 93, France

Filed Apr. 25, 1974, Ser. No. 464,290
Claims priority, application France, May 22, 1973, 73.18497
Int. Cl.² G01F *23/16*
U.S. Cl. 73—302 **3 Claims**

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FOREIGN PATENTS OR APPLICATIONS

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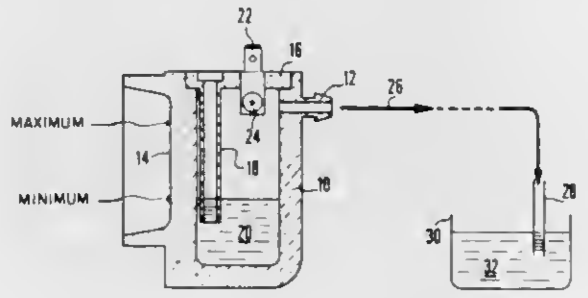

1. In a vehicle, a fluid level indicator for checking the corresponding quantity of lubricant in the crankcase of the vehicle, said fluid level indicator comprising:
- a housing having a reservoir therein for retaining a quantity of fluid, said housing being constructed of a transparent material so that the level of said fluid in the reservior is visible to an operator through a wall therein;
- a liquid column gas-pressure gauge having a straight measuring tube with one end exposed to atmosphere and the other end immersed in said fluid in the reservoir;
- cover means attached to said housing to establish an air filled enclosure above said fluid, said cover means having an opening therein through which air from the atmosphere can freely be communicated;
- conduit means attached to said housing for connecting said air filled enclosure to a probe located in the lubricant in the crankcase;
- valve means associated with said opening in the cover means for sealing said reservoir from the atmosphere; and
- an electrical resistance heating means located in said reservoir and connected to said valve means, said heating means being connected to s source of voltage in parallel with an oil pressure warning light for the vehicle, said voltage being applied to said resistance heating means which will initially operate said valve means to seal said opening and thereafter will generate heat in said reservoir which will cause a thermal expansion of the gases in the sealed enclosure to allow a portion of the gas to escape into the crankcase through said conduit means in opposition to the lubricant therein, said fluid in the reservoir responding to said thermal expansion of the gases by moving in said straight measuring tube to a level corresponding to the opposition of the lubricant to provide an indication of the level of the lubricant in the crankcase, a pressure responsive switch in circuit with said warning light responding to the development of oil pressure in the vehicle to terminate the transmission of voltage to the resistance heating means to permit the valve to move away from the opening and allow the gases in the reservoir to escape to the atmosphere.

B 471,735
POSITIONING DEVICE FOR A TURBINE ROTOR POSITION SENSOR

Karl O. Jaegtnes, Aston, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 20, 1974, Ser. No. 471,735
Int. Cl.² F01D *21/04, 21/06*
U.S. Cl. 415—14 **4 Claims**

References Cited
UNITED STATES PATENTS

2,888,023	5/1959	Eggenberger	415/14
3,002,374	10/1961	Jacobs	415/118
3,100,001	8/1963	Forwald	92/65
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3,861,818	1/1975	Eggenberger	415/118

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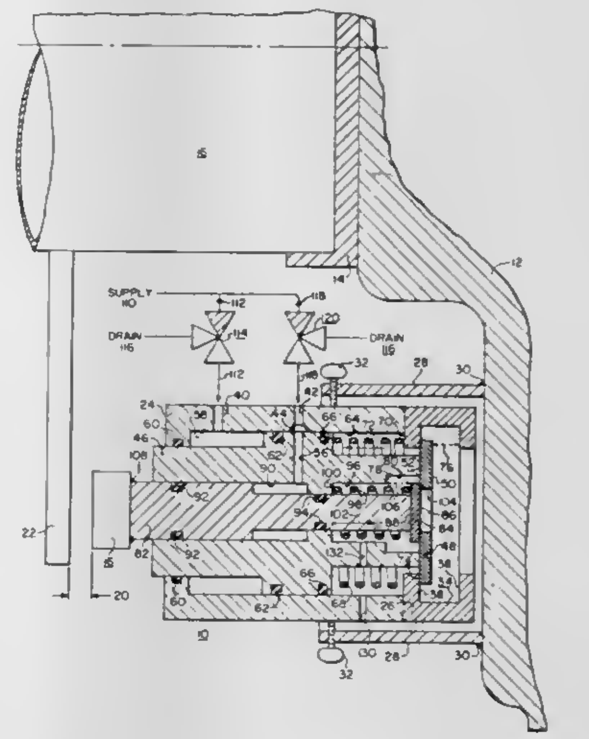
1,249,883	9/1967	Germany	415/13
1,141,462	12/1962	Germany	73/37.5
1,473,798	6/1969	Germany	73/37.5



1. A device for positioning a turbine rotor position sensor, said snesor monitoring the location and detecting axial movement of a rotor member disposed within a turbine apparatus, said device comprising:
- an outer casing member,
- an intermediate member surrounded by said outer casing member, said intermediate member being rectilinearly movable relative to said outer casing member,
- first bias means for biasing said intermediate member toward a first position relative to said outer casing member,
- a solid inner member surrounded by said intermediate member, said inner member being rectilinearly movable relative to said intermediate member, said sensor mounted on said inner member,
- second bias means for biasing said inner member toward a first position relative to said intermediate member, said sensor securely affixed to said inner member, said sensor being disposed a predetermined distance from said rotor member,
- first displacement means for displacing said intermediate member from said first position relative to said outer casing member to a second position relative to said outer casing member, said inner member remaining in said first position relative to said intermediate member during said displacement of said intermediate member relative to said outer casing member, said predetermined distance between said sensor and said rotor member being changed

by said displacement of said intermediate member relative to said outer casing member,

second displacement means for displacing said inner member from a first position relative to said intermediate member to a second position relative to said intermediate member, said intermediate member remaining in said first position relative to said outer casing member during said displacement of said inner member relative to said intermediate member, said predetermined distance between said sensor and said rotor being changed by said displacement of said inner member relative to said intermediate member.

B 490,589
VALVE CONSTRUCTION AND METHOD OF MAKING THE SAME

Arie F. Massey, Jr., Lenoir City, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed July 22, 1974, Ser. No. 490,589

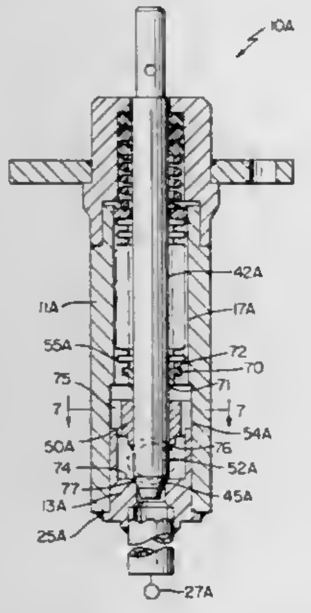
Int. Cl.² F16K *1/00*

U.S. Cl. 251—319 **2 Claims**

References Cited

UNITED STATES PATENTS

333,941	1/1886	Frisbie	137/533.19
1,174,959	3/1916	Bean	251/223
1,774,994	9/1930	Pfoutz	251/284
1,859,834	5/1932	May	251/335 B
2,059,991	11/1936	Goehring	251/318
2,105,754	1/1938	Otis	277/124
2,321,597	6/1943	Hobbs	137/533.31
2,678,846	5/1954	Rogers et al.	251/284
3,027,916	4/1962	Smith	251/335 R
3,027,916	4/1962	Smith	251/335 R
3,193,247	7/1965	Pool et al.	137/543.21
3,206,165	9/1965	Salmon et al.	251/335 R
3,206,165	9/1965	Salmon et al.	251/335 R
3,286,736	11/1966	Guillermic	251/333
3,605,793	9/1971	Kinsel	251/333
3,787,023	1/1974	Shufflebarger et al.	251/335 B



1. A valve construction comprising a housing means having an inlet and an outlet interconnected together by a valve seat of said housing means, and a movable valve member carried by said housing means for opening and closing said valve seat, said valve member having an elongated and integral valve stem extending from one side thereof whereby said valve member and said valve stem are one-piece, said housing means having axially spaced guide means to provide the sole means for guiding axial movement of said valve stem, said valve stem having a guide collar means thereon disposed closely adjacent said valve member and cooperating with one of said guide means of said housing means, said guide collar means extending radially outwardly from said valve stem and being larger than said valve member, said guide collar means and said one guide means of said housing means having limiting means permitting axial movement of said guide collar means relative to said one guide means while preventing rotational movement therebetween, said limiting means of said guide collar means comprising a plurality of slots in said guide collar means, said limiting means of said one guide means comprising a plurality of spline members respectively received in said slots of said guide collar means, said valve seat comprising a separate valve seat member carried by said housing means, said valve seat member carrying said spline members.

B 493,501
PRESSURE FIXING OF TONERS

Russell L. Root, Shaker Heights, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Aug. 1, 1974, Ser. No. 493,501

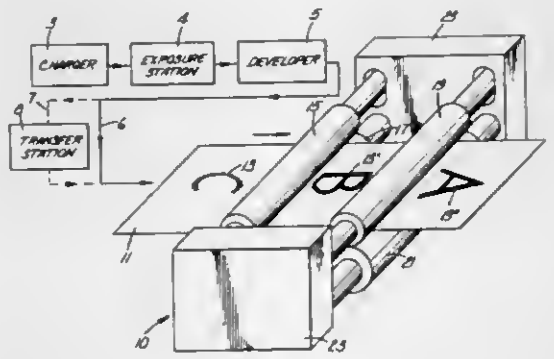
Int. Cl.² G03G *13/00*

U.S. Cl. 355—17 **4 Claims**

References Cited

UNITED STATES PATENTS

3,598,579	8/1971	Robinson	355/3
3,655,282	4/1972	Tuner et al.	355/3 FU
3,846,151	11/1974	Roteman et al.	118/637 X
3,854,975	12/1974	Brenneman	118/637 X
3,874,894	4/1975	Pedersen	355/3 DD



1. The method of providing a permanent image on a substrate, wherein the image is a fixed dry powder image of electroscopic toner powder having a predetermined threshold pressure and wherein fixing is achieved solely by the application of pressure applied to the powder image on the substrate, comprising:

the steps of creating an electrostatic charge pattern in image configuration;

depositing dry electrostatic toner powder upon said substrate to form an image pattern configuration under the electrical control of said charge pattern;

and fixing the toner power image to said substrate, wherein the last mentioned step includes:

a. applying to said imaged substrate a pressure less than said threshold pressure by means of an unheated pressure member; and

b. repeating the procedure of step a) one or more times to ultimately pressure fix said powder image upon said substrate.

B 494,806
CABLE CLAMP AND STRAIN RELIEF DEVICE

John Worrall Berkman, Thousand Oaks, Calif., and Frederic Cyrus Pexton, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 5, 1974, Ser. No. 494,806

Int. Cl.² F16L *3/08*

U.S. Cl. 248—73 **3 Claims**

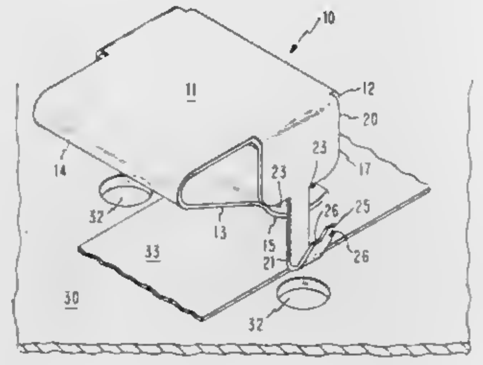
References Cited

UNITED STATES PATENTS

2,127,072	8/1938	Tinnerman	24/259 TF
2,201,335	5/1940	Cotter	24/73 MF
2,819,858	1/1958	Mittendorf	248/54 R
2,855,648	10/1958	Jansson	248/68 R
2,893,671	7/1959	Flora et al.	248/73
3,444,596	5/1969	Soltysik	24/73 SA

FOREIGN PATENTS OR APPLICATIONS

167,302	3/1956	Australia	24/73 SM
1,542,352	9/1968	France	24/73 SA
1,114,461	5/1968	United Kingdom	339/17 F
894,142	4/1962	United Kingdom	248/361
667,545	3/1952	United Kingdom	248/73



1. In combination with a plate member having upper and lower surfaces and a pair of spaced apertures therethrough, a cable clamp and strain relief device comprising

a body portion;

a pair of depending resilient leg members respectively disposed at and connected to opposite transverse margins of said body portion,

said leg members each having a distal end portion turned back on itself to form an acute angle with the depending portion,

said device being adapted for connection to said plate member by insertion of said depending leg member respectively through said pairs of apertures from the top surface causing said distal ends to be compressed toward said depending portion during transit through said aperture and restoring after transit through said aperture to engage the lower surface of said plate member to resist withdrawal;

said leg member turned distal end portions terminating in a rectangular central tab and adjacent shoulder portions which extend perpendicularly from each transverse side of said tab, whereby if said distal end portion is inserted sufficiently the tab underlies the lower surface of the plate member and a shoulder may underlie said lower surface when it is not possible to extend said tab portion wholly beyond said lower surface; and

a spring arm attached to said body portion along the margin thereof at one longitudinal end, formed of the material of said body portion and turned back to underlie said body portion between said leg members and compressively retain a cable disposed between said body portion and said plate member.

B 497,292
METHOD AND APPARATUS FOR TEXTURING YARN

Miguel A. Fernandez, Greenville County, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 14, 1974, Ser. No. 497,292

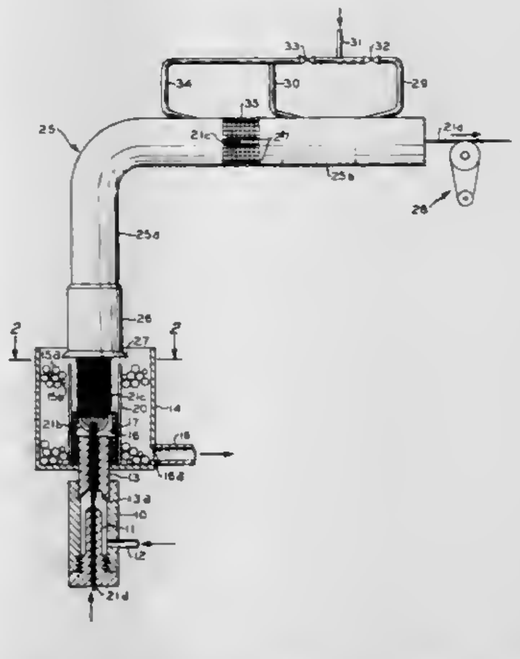
Int. Cl.² D02G *1/12*

U.S. Cl. 28—1.6 **2 Claims**

References Cited

UNITED STATES PATENTS

3,778,872	12/1973	Newton	28/1.6
3,811,263	5/1974	Newton	28/1.6 UX



1. In a process for texturing filaments by subjecting the filaments to external crimping forces at an elevated temperature and thereby establishing an elongated wad of crimped yarn, and wherein yarn is removed from the wad, by passing the yarn wad into the first end of an elongated tube which has an opening therein intermediate the two ends of the tube and a first fluid stream is passed through the tube toward said opening to impinge on the yarn wad at the opening, during normal operation of the filament texturing process; the method of starting up the process which comprises simultaneously passing second and third fluid streams through the tube, the second fluid stream being passed through said tube toward the second end of the tube from an inlet region spaced between the first end of the tube and said opening, and the third fluid stream being passed through said tube toward the second end of the tube from an inlet region spaced between said opening and the second end of the tube, said second and third fluid streams being deactivated during noral filament operation, and said first fluid stream being deactivated during the starting up of the process.

2. In filament texturing apparatus comprising means to subject filaments to mechanical forces to form an elongated wad of crimped yarn, an elongated tube positioned so that the wad enters the first end thereof, said tube being provided with an opening intermediate the first end and a second end thereof, and first conduit means communicating with said tube between said opening and the second end of the tube to convey a first fluid stream selectively into said tube in a direction so that said first fluid stream passes through the tube toward said opening during normal operation of the filament texturing apparatus; apparatus for use in startup comprising second conduit means communicating with said tube between the first end and said opening to convey a second fluid stream selectively into said tube in a direction so that said second fluid stream passes through the tube toward said opening, and third conduit means communicating with said tube between the first end and said opening to convey a second fluid stream selectively into said tube in a direction so that said second fluid stream passes through the tube toward said opening, and third conduit means communicating with said tube between said

opening and the second end of the tube to convey a third fluid selectively into said tube in a direction so that said third fluid stream passes through the tube toward said second end, means to simultaneously activate said second and third conduit means during startup of the filament texturing apparatus and to deactivate said second and third conduit means during normal operation of said filament texturing apparatus, and means to activate said first conduit means during normal operation of said filament texturing apparatus and to deactivate said first conduit during said startup.

B 508,878

METHOD AND APPARATUS FOR FILLING CONTAINERS

Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 24, 1974, Ser. No. 508,878

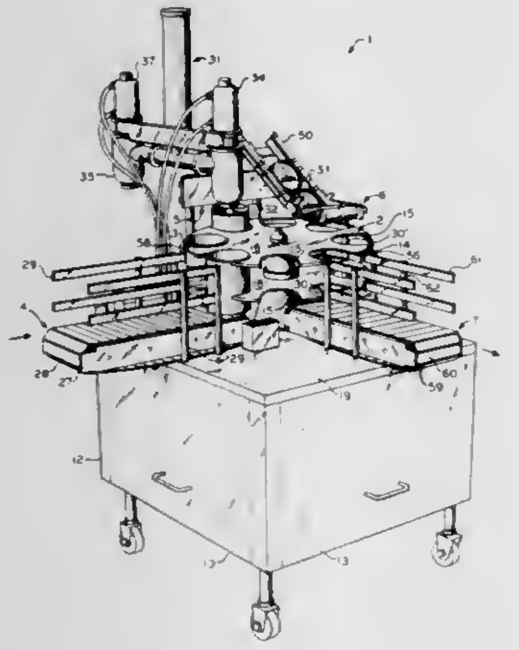
Int. Cl.² B65B *3/36, 3/24, 57/00*

U.S. Cl. 53—77 **11 Claims**

References Cited

UNITED STATES PATENTS

2,387,452	10/1945	Lundal et al.	141/277 X
2,553,250	5/1951	Gross	141/172 X
2,644,310	7/1953	Detrez	53/276 X
2,972,216	2/1961	Schmidt	53/281
3,064,697	11/1962	Maione	53/313 UX
3,124,916	3/1964	Anderson et al.	53/282 X
3,137,982	6/1964	Decker et al.	53/316
3,214,887	11/1965	Weller	53/316



1. An apparatus for filling containers with product such as ice cream or the like, said apparatus including:

a. a support structure;
b. a container transporting means mounted on said support structure for sequentially moving containers;
c. a container feed station adjacent said transporting means for feeding containers to said transporting means;
d. a container fill station having means for dispensing product from a source into containers moved by said transporting means, said dispensing means includes a downwardly directed nozzle with said nozzle having a pneumatically operated valve member cooperating therewith and operable to selectively close same and prevent flow of product therefrom and includes means remote from said nozzle selectively operable for dumping of product instead of filling a container;
e. a container capping station adjacent said transporting means for placing caps on said containers after same have product dispensed therein;
f. conveying means adjacent said transporting means for removing containers with caps thereon therefrom;
g. a movable platform mounted on said support structure adjacent said fill station and below said nozzle and being selectively movable toward and away from said nozzle;
h. power operated moving means mounted on said support structure and cooperating with said platform for selectively moving same; and
i. control means cooperating with said dispensing means and said moving means and operable for controlling timing of the operations thereof relative to one another, said control means is adjustable and includes an air logic circuit with a pneumatic programmer operably connected to said pneumatic valve member and said dumping means and the air logic circuit is operable for changing relative timing of the controlled operations.

B 509,586

X, Y, θ ALIGNMENT MECHANISM

William H. Newell, Mount Vernon, N.Y., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sept. 26, 1974, Ser. No. 509,586

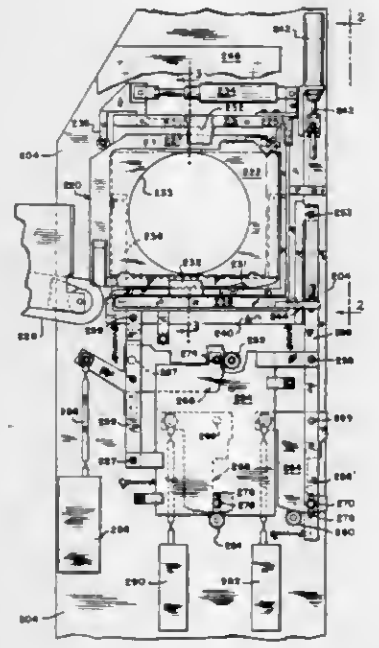
Int. Cl.² G05G *11/00*

U.S. Cl. 74—479 **10 Claims**

References Cited

UNITED STATES PATENTS

3,626,769	12/1971	Hecker et al.	74/479 X
3,691,864	9/1972	Cochran et al.	74/479
3,861,233	1/1975	Miyamoto	74/479



1. Positioning apparatus for positioning an object with respect to a fixed base comprising:

four links (**240, 254, 256, 258; 300, 332, 330, 334**) pivotally interconnected at points (**253, 255, 257, 259; 338,** 340, **337, 336**) located at the corners of a parallelogram, one link (**240, 300**) of said parallelogram supporting an object to be moved;
means to rotate a second link (**254, 332**) that is opposite said one link in said parallelogram and that is coupled to the base (**204, 202**);
means to translate said second link (**254, 332**) of said parallelogram; and
means to rotate a third link (**258, 334**) in said parallelogram, said links being interconnected with said second link (**254, 332**) so that rotation of said second link in said parallelogram rotates said object, so that translation of said second link in said parallelogram translates said object in one direction and so that rotation of said third link in said parallelogram translates said object in a direction substantially normal to said one direction.

B 511,099

RETAINING MEANS FOR EARTHWORKING TIPS

Lloyd K. Heinold, and Eugene L. Helton, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 1, 1974, Ser. No. 511,099

Int. Cl.² E02F *9/28;* **F16B** *21/07, 21/18*

U.S. Cl. 37—142 A **12 Claims**

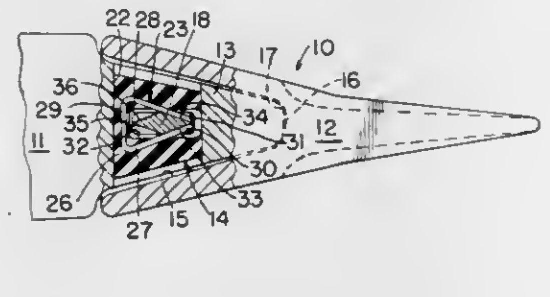
References Cited

UNITED STATES PATENTS

908,429	12/1908	Tobey	85/8.8 X
968,036	8/1910	Erickson	85/8.8
1,114,123	10/1914	Dalton	85/8.8 X
2,385,565	9/1945	Cox	85/8.8 X
2,427,651	9/1947	Baer	37/142 A
2,657,482	11/1953	Laonder et al.	85/8.3 X
2,774,430	12/1956	Blazek	403/318 X
2,948,317	8/1960	Munro	85/8.8 X
2,957,717	10/1960	Bram	277/164 X
3,107,409	10/1963	Arthaud et al.	24/218
3,217,774	11/1965	Pelochino	85/8.8 X
3,410,010	11/1968	Ratkowski	37/142 A
3,445,120	5/1969	Barr	277/164
3,690,728	9/1972	Krekeler	299/92
3,740,876	6/1973	Solokhin et al.	37/142 A
3,801,210	4/1974	Heinold et al.	37/142 A X

FOREIGN PATENTS OR APPLICATIONS

2,015,662	11/1970	Germany	37/142 A
448,621	4/1968	Switzerland	85/8.8
815,428	8/1951	Germany	85/8.8
976,239	3/1951	France	85/8.8
221,075	8/1942	Switzerland	85/8.6
1,100,015	1/1968	United Kingdom	299/92
972,195	1/1951	France	37/142 A UX



1. In an earthworking device comprising a support member, a work tool mounted on a forward end of said support member, a pin having at least one pair of notches formed on opposite sides thereof and disposed in aligned apertures formed through said support member and said work tool and retaining means releasably holding said pin in said apertures, the improvement wherein said retaining means comprises an elastomeric member having said pin extending through an aperture formed therethrough and an expansible triangularly shaped and unitary spring clip comprising a base portion and a pair of leg portions cantilevered on said base portion, the ends of said leg portions remote from said base portion being exposed internally of the aperture formed through said elastomeric member and straddling opposite sides of said pin in locked engagement within the notches thereof and remaining portions of said leg portions and said base portion being totally encapsulated within said elastomeric member.

B 513,789

PUSH-PULL-LOCK DEVICE FOR SLIDE SHAFT

Toshiharu Koen, Yokohama, Japan, assignor to Victor Company of Japan, Limited and Nifco Inc., both of Tokyo, Japan

Filed Oct. 10, 1974, Ser. No. 513,789

Claims priority, application Japan, Oct. 11, 1973, 48-117446

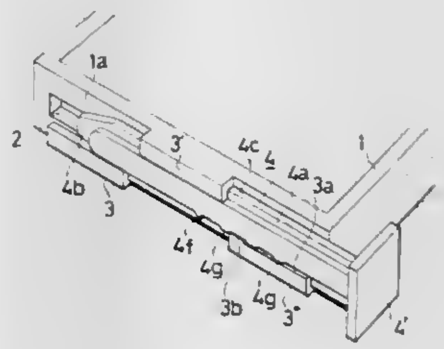
Int. Cl.² F16B *7/10;* **F16D** *1/12*

U.S. Cl. 403—107 **3 Claims**

References Cited

UNITED STATES PATENTS

358,450	3/1887	Hurlbut	220/346
2,210,797	8/1940	Crim	403/107 X
2,434,251	1/1948	Warnke	403/107 X
2,708,026	5/1955	Duell	220/345 X
3,537,422	11/1970	Moe	220/345 X



1. A plastic device having locking means thereon to control the sliding of a plate-shaped shaft element relative to a body on which it is mounted comprising a plate-shaped shaft member, a second body member having a plurality of hook-shaped shaft guide pieces mounted along a surface on which said plate-shaped shaft member is mounted, said body member being made of an appropriate resilient plastic material, said shaft guide pieces being disposed alternately along the margins of said body member in confronting but staggered positions, said hook-shaped shaft guide pieces including upright elements and at their terminal ends in spaced relation to said body member having lips also in confronting position and extending towards each other to form a channel, said plate-shaped shaft element having an entering end and a catch surface on its opposite end, said plate-shaped shaft element adapted to be inserted in and sealed along the surfaces formed by said body member and said hook-shaped elements mounted thereon which form the channel, said plate-shaped shaft element being provided along at least one of its margins with a sawtooth projection so positioned and shaped as to permit the shaft to be slidingly inserted between said shaft guide pieces and said body member with said tooth being temporarily distorted as it passes at least one of said guide shaft pieces and thereafter returning to its normal position to provide a lock to prevent inadvertent removal, and a second set of projections on the margin of said plate-shaped shaft member consisting of a plurality of trapezoidal projections for frictional interference with the hook-shaped guide piece elements to permit positionment of said plate-shaped shaft element in any desired predetermined position.

B 516,825

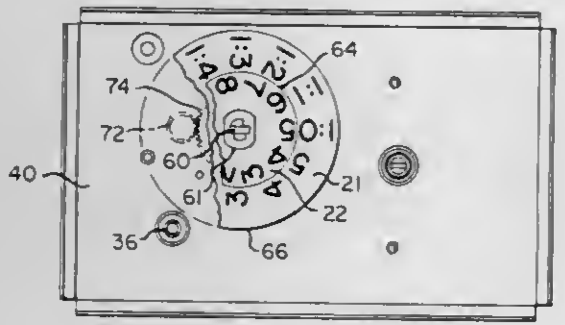
DIGITAL TIMER MEANS AND METHOD OF MAKING THE SAME

Paul T. Flumm, Oakville, and Vernon B. Harris, Waterbury, both of Conn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 21, 1974, Ser. No. 516,825
Int. Cl.² G04F *3/02*
U.S. Cl. 58—21.13 7 Claims

References Cited
UNITED STATES PATENTS

2,593,905	4/1952	Lux	58/22.9
2,721,441	10/1955	Boyles	58/21.15 X
3,566,599	3/1971	Bassett	58/21.13 X



1. A digital timer comprising frame means, timer means carried by said frame means, drive means carried by said frame means for driving said timer means, setting means carried by said frame means to set a selected period of time of said timer means, and means for interconnecting said drive means and said timer means together to cause said drive means to drive said timer means for only said set period of time, said timer means having digital reading means for indicating the set period of time thereof, said reading means comprising two concentrically disposed different sized discs having time indicating indicia on the outer peripheries thereof, the small disc having said time indicating indicia comprising numerals from 0 to 9 to respectively represent unit minutes, the larger disc having time indicating indicia comprising numerals from 0 to 5 and 1:0 to 1:5 to respectively represent tens of minutes coupled respectively with no hours and 1 hour whereby said timer means can be set for a desired period of time between 1 minute and 1 hour and 59 minutes.

B 518,999

DEVICE FOR ROTATING A SPOOL OF A FISHING REEL

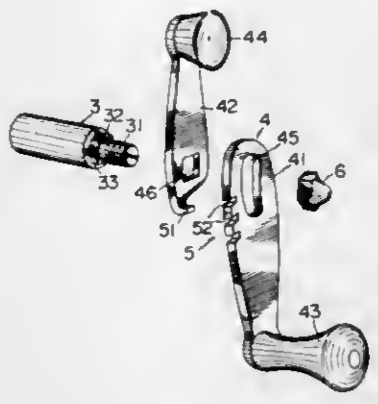
Kiyohide Kamikawa, Sakai, Japan, assignor to Shimano Industrial Company, Ltd., Osaka, Japan

Filed Oct. 29, 1974, Ser. No. 518,999
Claims priority, application Japan, Nov. 7, 1973, 48-129409 [U]
Int. Cl.² G05G *5/06*
U.S. Cl. 74—546 3 Claims

References Cited
UNITED STATES PATENTS

713,371	11/1902	Adams	242/84.1 J
2,107,875	2/1938	Pitney	74/546
3,011,362	12/1961	Cronholm	74/546
3,153,950	10/1964	Andrews	74/546

1. A device for rotating a spool of a fishing reel to wind a fishing line about the spool, comprising:
  a. a handle stud means, connected to the spool, for rotating said spool;
  b. an operating handle, mounted on one end of said handle stud means, including a first elongated handle arm and a second elongated handle arm, said first arm having at one end a handle grip and at the other end an elongated slot extending longitudinally of and through said first arm, said second arm having at one end a balance and at the other end a square hole through said second arm, said elongated slot and said square hole overlapping one another and said handle stud means extending through said slot and hole;
  c. means for integrally engaging said first and second arms in a substantially straight line, said engaging means including an engageable portion formed on one of said first and second arms and a plurality of notched portions formed on the other of said first and second arms, said notched portions being spaced apart in the longitudinal direction of said other of said arms, said engageable portion being receivable in one of said notched portions; and



  d. means, connected to said stud means, for fixing said operating handle to said stud means.

B 521,986

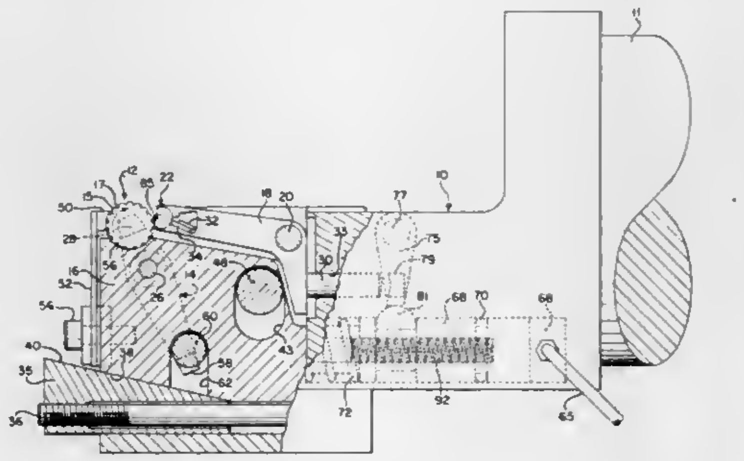
BORING BAR WITH REMOVABLE AND INDEXABLE CUTTING INSERT

Arne R. Jorgensen, Lombard, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 7, 1974, Ser. No. 521,986
Int. Cl.² B23B *29/04*
U.S. Cl. 408—146 4 Claims

References Cited
UNITED STATES PATENTS

1,673,039	6/1928	Brown	29/98
2,630,732	3/1953	Piazze	29/98 X
3,793,708	2/1974	Watanabe et al.	29/568
3,838,500	10/1974	Wirfelt	29/568



1. A device for holding and automatically indexing a removable cutting insert comprising a plurality of cutting sections which are selectively indexable so as to successively contact the surface of a work piece being machined comprising a tool block for receiving said insert, clamp means for exerting holding pressure on said insert to hold said insert in place in said block, force means for selectively applying and removing force on said clamp means, indexing means for indexing said cutting insert comprising engagement means for engaging said cutting insert in order to rotate said cutting insert through a predetermined angle, operating means for selectively operating said force means in order to apply or release said force on said clamp means and control means coupled to said operating means and to said indexing means and synchronized with said operating means which operates said indexing means so that said indexing means automatically acts to rotate said cutting insert only subsequent to the release of said force on said clamp means by said force means.

B 522,038

PROGRESSIVELY OR CONTINUOUSLY CYCLED MOLD FOR FORMING AND DISCHARGING A FINE CRYSTALLINE MATERIAL

John J. Scott, Niagara Falls, Canada, assignor to Norton Company, Worcester, Mass.

Filed Nov. 8, 1974, Ser. No. 522,038
Int. Cl.² B22D *5/04*
U.S. Cl. 164—330 10 Claims

References Cited
UNITED STATES PATENTS

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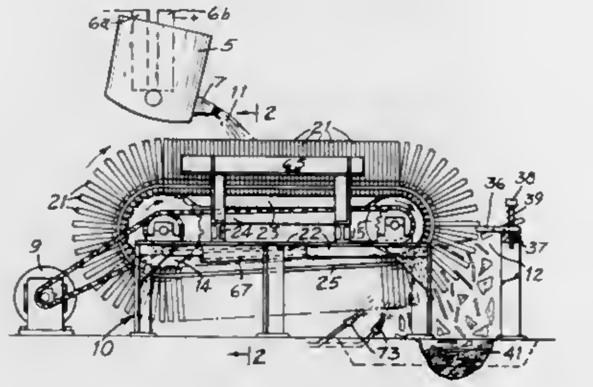
1,469,820	10/1923	Ruby	425/453 X
1,538,425	5/1925	Debay	425/453 X
1,691,899	11/1928	Poley	425/453 X
2,952,054	9/1960	Katzman	164/330
3,436,791	4/1969	Chambon	425/453 X
3,502,136	3/1970	Parmelee et al.	164/331 X
3,645,321	2/1972	Robinson	164/324 X
3,835,917	9/1974	Gyongyos	164/279



1. In an abrasive slab casting device wherein a molten abrasive oxide material is cast between a plurality of generally vertically arranged chilling plates having opposing pairs of surfaces shaped to form a narrow abrasive receiving recess between each pair of plates, said plates being supported so they are normally free to move towards and away from each other, the improvement which comprises
  plate driving means in front of a casting position moveable at a predetermined velocity and operative on a group of plates, while generally vertically arranged, to push them toward, through and beyond the casting position,
  plate restraining means beyond said casting position having a surface which is moving at less than said predetermined velocity and which acts to restrain said group of plates so that adjacent pairs of plates are pressed together through and beyond said casting position to prevent leakage of molten abrasive from the narrow recesses, and
  plate separating means beyond the restraining means operative to separate adjacent plates, and thereby to discharge from the narrow recess the solidified abrasive oxide material formed therebetween.

B 522,309

APPARATUS AND METHOD FOR CONVERTING MECHANICAL WAVE ENERGY TO OPTICAL ENERGY

John F. Dreyer, Cincinnati, Ohio, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 8, 1974, Ser. No. 522,309
Int. Cl.² G01N *9/24*; **G02F** *1/13*
U.S. Cl. 73—67.5 H 15 Claims

References Cited
UNITED STATES PATENTS

3,597,043	8/1971	Dreyer	350/160 LC UX
3,667,039	5/1972	Garfein et al.	350/160 LC X
3,831,434	8/1974	Greguss	73/67.5 H

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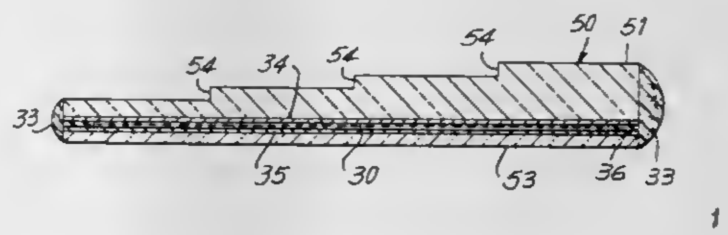
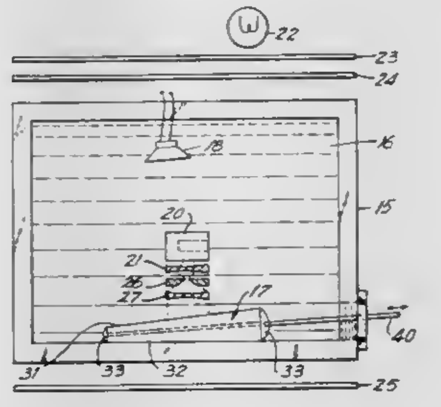
Ludeman et al., *Liquid-Crystal Cell Having Nonuniform Thickness*, IBM Tech. Discl., Vol. 15, No. 4, Sept. 1972.





10. A method for optically detecting a pattern of wave energy comprising, in combination:
  generating mechanical wave energy of particular frequencies;
  directing the generated energy to an object under test and then to an optical cell responsive to mechanical wave energy of particular frequencies to produce an optical pattern, the optical cell having a liquid crystal film and first and second plate means in respective juxtaposition with opposite surfaces of the film;
  varying the frequency response of the optical cell at successive portions thereof by varying the thickness of at least one of the plate means which is positioned between the wave energy generating means and said liquid crystal film and is formed with successive portions being responsive to different applied frequencies; and
  detecting the optical pattern resulting from the application of mechanical wave energy to selected ones of said portions;

B 524,121

BALLISTIC INOCULATION OF ANIMALS AND PROJECTILE THEREFOR

Gerald P. Krogseng, Oakdale, and Fred R. Paul, Jr., Burnsville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 15, 1974, Ser. No. 524,121

Int. Cl.^{2} A61M *5/00, 5/18, 31/00*

U.S. Cl. 128—260 **13 Claims**

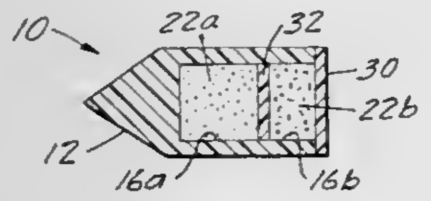
References Cited

UNITED STATES PATENTS

251,355	12/1881	Gibbs	128/271
979,993	12/1910	O'Byrne et al.	102/92
2,584,166	2/1952	Stevenson et al.	128/271 X
2,617,359	11/1952	VanHorn et al.	102/92
2,854,925	10/1958	Crockford et al.	102/92
3,122,475	2/1964	Schaeppi	128/271
3,344,711	10/1967	Mawhinney et al.	102/92.4
3,429,263	2/1967	Snyder et al.	102/92 R
3,520,299	7/1970	Lott et al.	128/217
3,538,214	11/1970	Polli et al.	424/19
3,616,758	11/1971	Komarov	102/92
3,857,932	12/1974	Shepherd	424/19

OTHER PUBLICATIONS

"Final Report, Ballistic Delivery of Biological Reagents", Sept. 15, 1973, Sensory Systems Laboratory, Animal & Plant Health Inspection Service, U.S. Dept. of Agriculture, Contract 12-16-140-213-91, By Howard W. Baldwin et al.



1. A ballistic implant shaped for penetrating the epidermal covering of a living animal body and lodging totally within the tissues of the animal body, said implant consisting essentially of a biologically compatible polymer body and an antigen contained within the polymer body in a manner permitting release of said antigen in response to the fluids and cells of the living animal body.

B 526,388

PICKUP CARTRIDGE

Yoshihisa Mori, Tokyo; Kazuo Shimura, Hatogaya, and Hiroyuki Watanabe, Fujisawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 22, 1974, Ser. No. 526,388

Claims priority, application Japan, Nov. 23, 1973, 48-135377[U]

Int. Cl.^{2} G11B *3/02;* **H04R** *1/16, 11/08*

U.S. Cl. 274—37 **7 Claims**

References Cited

UNITED STATES PATENTS

3,377,439	4/1968	Rouy	274/37 X

FOREIGN PATENTS OR APPLICATIONS

1,112,130	5/1968	United Kingdom	274/37

OTHER PUBLICATIONS

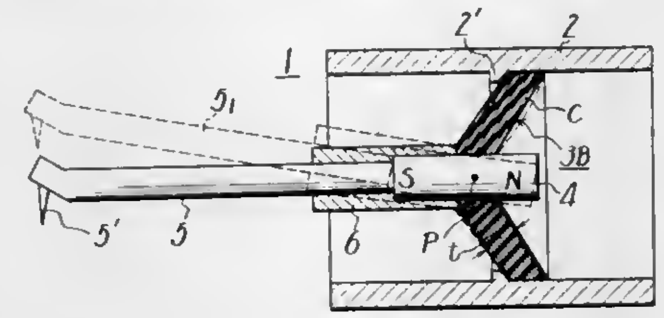
Seymour; Raymond B., Fillers for Molding Compounds, 1968, Modern Plastics Encyclopedia, p. 578.

"On the Damping of Phono Styli," by B. B. Bauer, Journal of the Audio Engineering Society, July 1964, Vol. 12, No. 3, pp. 210-213.

1. A pickup cartridge comprising:

A. vibrating means comprising a cantilever arm;

B. an elastomeric support and damper member in the form of a centrally apertured member formed as a surface of revolution and comprising two major surfaces, one generally convex and the other generally concave, said vibrating means being supported in the aperture of said member, said member extending outwardly from the axis of said arm to the outer perimeter of said member, whereby said vibrating means pivots about axes that pass transversely through said vibrating means at the region thereof grasped by the perimeter of said aperture, said region being offset to one side of a plane passing through said outer perimeter;



C. a holder for supporting said elastomeric member along said outer perimeter; and

D. fibers extending outwardly from the center of said support member along generatrices thereof providing a greater stiffness in the axial direction of the member than in a direction perpendicular thereto.

B 528,401

APPARATUS FOR MEASURING SPECIFIC GRAVITY

David Dale Appleford, Swindon, England, and David Philip King, Akron, Ohio, assignors to Monsanto Limited, London, England

Filed Nov. 29, 1974, Ser. No. 528,401

Claims priority, application United Kingdom, Nov. 28, 1973, 55075/73

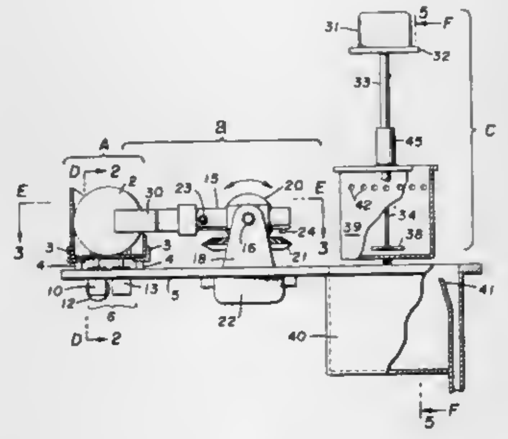
Int. Cl.^{2} G01N *9/08*

U.S. Cl. 73—437 **6 Claims**

References Cited

UNITED STATES PATENTS

2,623,636	12/1952	Pounds	73/432
2,650,494	9/1953	Linhorst	73/437
3,380,597	4/1968	Izetli	214/2
3,730,364	5/1973	Nattamuro et al.	198/19 X
3,747,416	7/1973	Wommack	73/437



1. Apparatus for determining the specific gravity of each of a plurality of disc- or plate-shaped samples of a solid water-insoluble material, the apparatus comprising a rack movable in its longitudinal direction and having a plurality of transverse space members for accommodating samples in mutually spaced relationship wherein the gap between adjacent space members is sized to accept a disc- or plate-shaped sample inserted edgeways, a weight-sensing assembly by means of which the sample can be weighed first in air and then in water comprising a weight-sensing means with a sample receptacle suspended therefrom which sample receptacle includes a slot extending in the direction of the transfer mechanism adapted to receive a disc- or plate-shaped sample inserted edgeways and a reservoir operable between an upper position in which it surrounds the lower end of the sample receptacle and a lower position, and a transfer mechanism for transferring the samples, one at a time, from the rack to the weight-sensing assembly and returning each sample to the rack after the weighings on that sample are completed, comprising an arm having gripping means at one end which arm is pivoted to swing about an axis spaced from said end and pivots in a plane between the rack and the sample receptacle of the weight-sensing assembly, and wherein the transfer mechanism and the weight-sensing assembly retain the same relative positions but the rack and the transfer mechanism are relatively moveable from one to the next of a series of fixed relative positions so that the transfer mechanism can select each sample in turn for transfer to the weight-sensing assembly, and wherein in any fixed relative position of the rack and the transfer mechanism, the gap between two adjacent transverse spacer members of the rack, the arm of the transfer mechanism and the slot of the sample receptacle are substantially in alignment.

B 528,756

HIGH TEMPERATURE GAS CHROMATOGRAPH VALVE

Einar T. Young, Newtown Square, and Robert L. Tinklepaugh, Malvern, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Dec. 2, 1974, Ser. No. 528,756

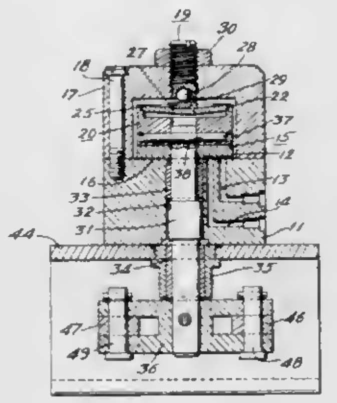
Int. Cl.^{2} G01N *1/00;* **F16K** *11/02*

U.S. Cl. 137—625.46 **4 Claims**

References Cited

UNITED STATES PATENTS

2,198,965	4/1940	Habig et al.	92/37 X
2,363,410	11/1944	Gill	92/37 X
3,216,326	11/1965	Rice et al.	137/625.46 X
3,223,123	12/1965	Young	137/625.46
3,329,167	7/1967	Boettcher et al.	137/625.46
3,386,338	6/1968	King	251/58 X
3,486,731	12/1969	Magnani et al.	251/58



1. A valve for injecting fluid samples into a gas chromatograph and for switching the flow directions of the gas flowing in the chromatograph, said valve designed so that it can withstand the high temperature environment in which the chromatograph is contained and to have improved sealing means to prevent gas leaks, thereby enabling more accurate chromatograph tests to be conducted, and comprising:

a. a valve body having a planar face, and having therein a plurality of fluid passages initiating from the outer circumference of the valve body and terminating on the planar face;

b. a disc member positioned adjacent to the planar face of the valve body and having a plurality of channels in the side adjacent to the valve body planar face, said channels arranged to connect selected terminal ends of the fluid passages in the valve body depending on the position of said disc member with respect to the planar face of the valve body;

c. a drive shaft which passes through the valve body and the disc member and is rotatably secured in the valve body and secured to the disc member so that the disc member can be rotated by rotating the drive shaft;

d. valve cover means, secured to the valve body, for covering the disc member and the planar face of the valve body;

e. a set screw threaded through the top of the valve cover means transversely to the planar face of the valve body, so that greater force is applied to the disc member as said set screw is rotated toward the valve body; and

f. means distributing the point force from the set screw to the outside edge of the disc member so that force is applied evenly to the entire face of the disc in contact with the valve body planar face, thereby minimizing the leakage of fluid from the valve.

B 529,836

METHOD OF RECOVERING OIL USING STEAM

Riley B. Needham, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 5, 1974, Ser. No. 529,836

Int. Cl.^{2} E21B *43/24*

U.S. Cl. 166—303 **10 Claims**

References Cited

UNITED STATES PATENTS

3,207,218	9/1965	Holbrook et al.	166/305 R
3,259,186	7/1966	Dietz	166/263
3,306,354	2/1967	Obrien	166/263 X
3,354,958	11/1967	Parker	166/303
3,357,487	12/1967	Gilchrist et al.	166/245
3,396,792	8/1968	Muggee	166/303
3,412,793	11/1968	Needham	166/303 X
3,434,544	3/1969	Satter et al.	166/303
3,618,666	11/1971	Sayers	166/303
3,648,772	3/1972	Earlougher, Jr.	166/273

1. A process for increasing the efficiency of steam utilization and reducing the shut-in time in the steam stimulation of a hydrocarbon bearing formation comprising,

1. injecting into said formation through a well penetrating said formation steam in a sufficient quantity to heat substantial amounts of the hydrocarbon in said formation,
2. then injecting into said formation through said well a material which will cause the production in the formation of a condensable foam blocking zone, and
3. after the injection of step (2) putting said well into production while there is still active steam in the formation behind the material injected in step (2).

B 530,605
FUEL CONTROL SYSTEM AND CONTROL DEVICE THEREFOR OR THE LIKE

Charles D. Branson, and Roy C. Deml, both of Greensburg, Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Continuation-in-part of Ser. No. 443,783, Feb. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 386,389, July 18, 1973, abandoned. This application Dec. 9, 1974, Ser. No. 530,605

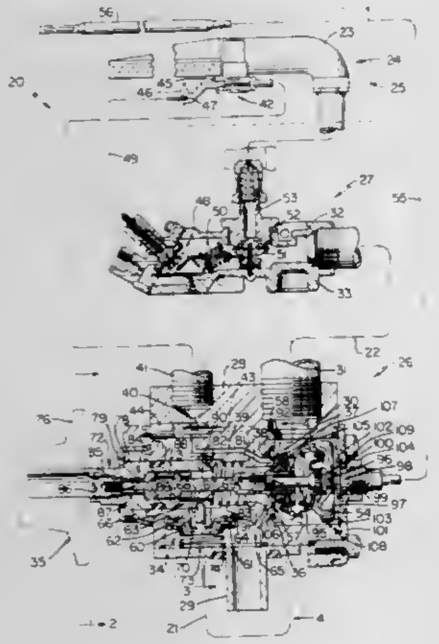
Int. Cl.^{2} F23N *5/06, 1/00*

U.S. Cl. 137—614.11 **6 Claims**

References Cited

UNITED STATES PATENTS

2,741,266	4/1956	Grayson	137/614.11 X
3,405,869	10/1968	Grayson et al.	236/15 A
3,729,131	4/1973	McGowan	236/99



1. In a fuel control system for a fuel burning apparatus or the like having a source of fuel adapted to be interconnected by passage defining means to main burner means of said apparatus and a fuel control device disposed in said passage defining means and having poppet valve means that is directly manually operated for opening and closing said passage defining means so as to control the flow of fuel from said source to said main burner means, said control device having a selector means operatively interconnected to said poppet valve means to operate the same, said control device having throttle valve means downstream from said poppet valve means for throttling fuel flow through said passage defining means to said burner means, said selector means also being operatively interconnected to said throttle valve means to operate the same, the improvement wherein said selector means of said control device is provided with a cam means, said poppet valve means of said control device being operatively associated with said cam means of said selector means to be moved from a closed position thereof to an open position thereof as said selector means is moved between an off position thereof and a certain other position thereof in one direction and to be moved from said open position thereof to said closed position thereof as said selector means is moved between said certain other position and said off position thereof in an opposite direction to said one direction, said selector means being further movable in said one direction from said certain other position to a third position and from said third position back to said certain other position in said opposite direction, said selector means operating only said throttle valve means during its movement between said certain other position and said third position.

B 532,319
FREQUENCY MODULATED FLUIDIC GAUGE

Hansjoerg Stern, Scotia, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Dec. 13, 1974, Ser. No. 532,319

Int. Cl.^{2} G01B *13/02*

U.S. Cl. 73—37.7 **8 Claims**

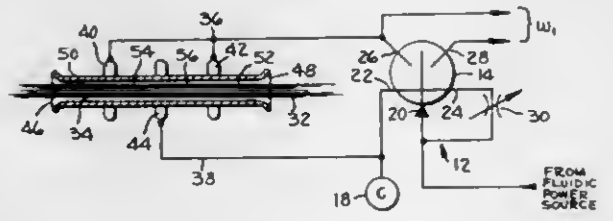
References Cited

UNITED STATES PATENTS

3,271,997	9/1966	Horne et al.	73/37.7
3,282,085	11/1966	Benson et al.	73/37.7
3,728,894	4/1973	Stern	73/37.5
3,768,303	10/1973	Rauch	73/37.7

FOREIGN PATENTS OR APPLICATIONS

1,912,329	3/1969	Germany	73/37.7



1. A fluidic gauge having no moving parts for monitoring a characteristic of a continuously moving strand-like material, comprising:

a. At least a first fluidic amplifier having a power input port for receiving fluidic power, at least one control input port and at least one output port; and

b. a fluidic phase shifting network for fluidically coupling an output fluidic signal from said amplifier output port back to said amplifier control input port at a phase angle that insures oscillation of the output signal from said amplifier output port at a predetermined frequency proportional to the characteristic of the material being monitored, said phase shifting network comprising:

1. a fluidic capacitor;
2. an enclosed gauging channel for receiving the strand-like material passing therethrough;
3. a first passageway means for fluidically coupling the output signal from said amplifier output port to said gauging channel;
4. a second passageway means for fluidically coupling at least a portion of said output signal, flowing into said gauging channel, to said fluidic capacitor and said amplifier control input port, a part of said gauging channel which receives said portion of said output signal passing between the walls of said gauging channel and the continuously moving strand-like material defines a variable fluidic resistor, whereby the combination of said amplifier and said phase shifting network comprises a first fluidic oscillator circuit having an output signal frequency which varies inversely as the product of said variable resistor and said fluidic capacitor.

B 532,476
SEPARABLE FASTENER

Gustave T. Stafstrom, Plymouth, Conn., assignor to Waterbury Buckle Company, Waterbury, Conn.

Filed Dec. 13, 1974, Ser. No. 532,476

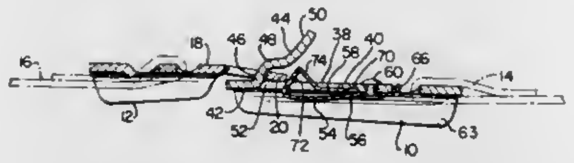
Int. Cl.^{2} A44B *11/25, 13/02*

U.S. Cl. 24—75 **6 Claims**

References Cited

UNITED STATES PATENTS

237,304	2/1881	Mills	24/75
241,010	5/1881	Hayden	24/236
621,676	3/1899	Hubbard	24/265 SH
681,264	8/1901	Robinson	24/236 UX
705,620	7/1902	Specht	24/75 UX
776,229	11/1904	Fritsch	24/75
1,481,165	1/1924	Wells	24/236
1,821,839	9/1931	Kerngood	24/75
3,688,349	9/1972	Benk	24/236 X



4. A separable fastener in the form of a hook and eye type buckle, said fastener comprising: an eye member having a forward portion defining an eye, and a hook member, said hook member having a forward portion including a base of sheet material having front and back surfaces generally parallel to one another, a hook having a forward end fixed to said base and extending upwardly from said front surface and rearwardly from said forward end, said base having an opening passing therethrough and underlying said hook, and a spring detent member fixed to said base and having a portion extending into said opening and arranged to be engageable with said eye when said eye is received on said hook in a fully hooked condition to yieldingly resist displacement of said eye from said hook, said eye of said eye member including a forward transversely extending cross bar having a given dimension longitudinally of said eye member, and said hook of said hook member having a forward end portion which is directly connected to said base and which extends in a generally upward direction away from said base and an intermediate portion immediately following said forward end portion which intermediate portion extends in a generally rearward direction parallel to said base, said intermediate portion of said hook being spaced from said front surface of said base by a distance less than said longitudinal dimension of said forward cross bar of said eye so as to limit rotation of said eye member relative to said hook member when said eye is in said fully hooked condition with said hook.

B 537,722
OPTICAL DIGITAL TO ANALOG CONVERTER

Samuel Chin-Chong Tseng, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1974, Ser. No. 537,722

Int. Cl.^{2} G02B *5/14*

U.S. Cl. 350—96 WG **5 Claims**

References Cited

UNITED STATES PATENTS

3,830,555	8/1974	Warner	350/96 WG

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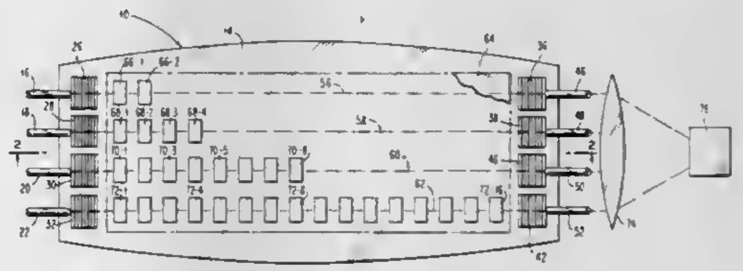
Tien et al., "Switching and Modulation of Light in Magneto–optic Waveguides of Garnet Films," Appl. Phys. Lett., Vol. 21, No. 8, 1972.

Tseng et al., "Mode Conversion in Magneto–Optic Waveguides Subjected to a Periodic Permalloy Structure," Appl. Phys. Lett., Vol. 24, No. 6, 1974.

Lean, "Optical Switch and Modulator in Parallel Waveguides," IBM Tech. Disc. Bulletin, Vol. 17, No. 4, Sept. 1974.



1. A digital to analog converter for producing an analog optical output proportional to the summation of the weighted digital values of an encoded digital signal, comprising:

a plurality of thin-film optical waveguide segments, one for each element of the digital code, operative to convert light entered thereinto from a first to a second mode and to produce as an output therefrom of both said modes, the said segments being fabricated from a magneto-optic material;

magnetic field producing means coacting with each of said segments to produce in the magnetic waveguide material thereof a periodically reversing magnetic field, whereby said periodic field in said magneto-optic material converts a portion of one mode of light to a second mode as a function of the number of field reversals, the number of said means for producing the field reversals in each segment being proportional to the weighted digital value of the codal element associated with the segment;

means responsive to a digital code element input for rendering each said segment effective to convert the light from said first mode to said second mode, and

means for obtaining the summation of the second mode light outputs from all of said segments, whereby the summation manifests the analog of the digital inputs.

B 538,472
THERMAL POWER PLANT

Pierre Henri Pacault, Ville d'Avray, France, assignor to Fives-Cail Babcock, Paris, France

Filed Jan. 3, 1975, Ser. No. 538,472

Int. Cl.^{2} F01K *21/00*

U.S. Cl. 60—645 **14 Claims**

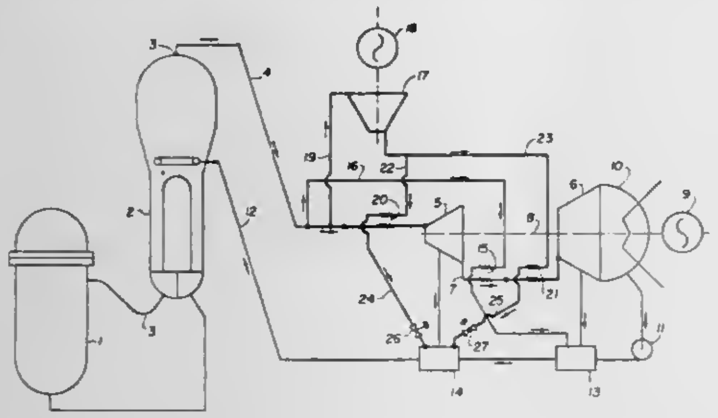
References Cited

UNITED STATES PATENTS

1,066,348	7/1913	Voorhees	60/649
3,842,605	10/1974	Tegtmeyer	60/678

1. In a method of operating a thermal power plant in which steam at a predetermined pressure is generated in a steam generating zone, and generated steam is expanded in an en-

gine to produce mechanical work, the improvement which comprises withdrawing a first portion of the generated steam from said zone, compressing said first portion to a pressure higher than said predetermined pressure in a manner to increase the temperature of the compressed steam, and transferring thermal energy from said compressed first portion to a second portion of said generated steam prior to expanding said second portion in said engine.



B 546,631
METHOD AND APPARATUS FOR NECKING AND FLANGING CONTAINERS

Edward S. Traczyk, Oak Lawn, Ill.; Jack Quinton, and Walter C. Warnell, both of San Jose, Calif., assignors to National Can Corporation, Chicago, Ill.

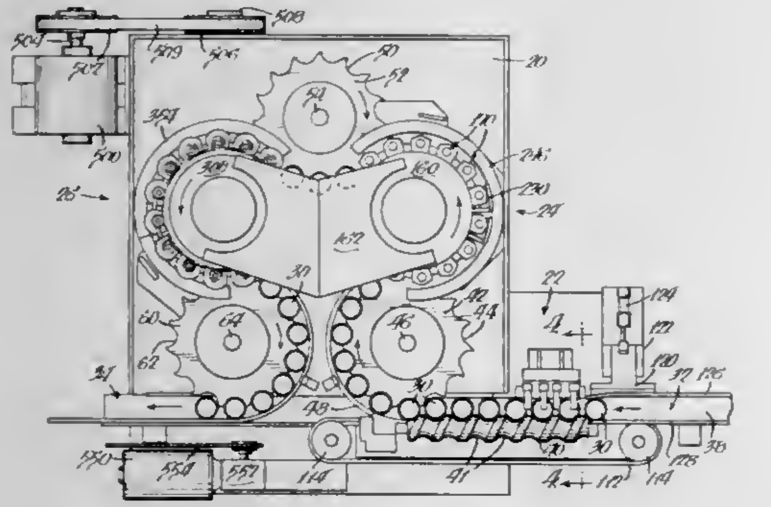
Filed Feb. 3, 1975, Ser. No. 546,631

Int. Cl.^{2} B21D *51/26*

U.S. Cl. 72—43 **50 Claims**

References Cited
UNITED STATES PATENTS

2,642,031	6/1953	Lager et al.	118/232
3,033,264	5/1962	Henrickson	113/115
3,260,089	7/1966	Hazelton et al.	113/115
3,807,209	4/1974	Aschberger	113/115
3,831,416	8/1974	Wolfe	113/1
3,857,265	12/1974	Howeler et al.	113/115



1. Apparatus for producing a reduced neck and a peripheral flange on a free edge portion of a container having a cylindrical body and an integral bottom wall comprising: a fixed frame; inlet conveyor means on said frame for receiving said containers in a vertical position and simultaneously rotating and moving said containers in a generally horizontal direction; lubricant applying means on said frame adjacent said inlet conveyor means for applying lubricant to an outer surface of said free edge portions; first transfer means for receiving the lubricated containers from said inlet conveyor means and transferring said containers to a necking station; a necking turret rotated about a vertical axis on said frame at said necking station, said turret having a plurality of necking assemblies on the periphery thereof, each necking assembly including an upper necking member and a lower support member; means at said necking station for producing relative vertical movement between said upper necking member and said support member to produce a reducing neck on said free edge portion of a container; second transfer means on said frame for receiving containers from said necking station and transferring said containers to a flanging station; a flanging turret rotated about a vertical axis on said frame at said flanging station, said flanging turret having a plurality of flanging assemblies on the periphery thereof, each flanging assembly including a lower member and an upper flanging member; means at said flanging station for simultaneously rotating said flanging member and producing vertical movement between said flanging member and said lower member; common drive means for said first and second transfer means and said turrets for producing synchronized movement of said containers; and outlet conveyor means on said frame for receiving containers from said flanging station.

B 548,028
SEED COATING

Paul A. Lewis, Salinas, Calif., assignor to Union Carbide Corporation, New York, N.Y.

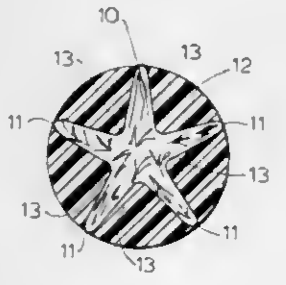
Filed Feb. 7, 1975, Ser. No. 548,028

Int. Cl.^{2} A01C *1/06*

U.S. Cl. 47—57.6 12 Claims

References Cited
UNITED STATES PATENTS

2,502,809	4/1950	Vogelsang	47/57.6 X
2,579,732	12/1951	Funsten et al.	47/57.6
2,656,649	10/1953	Ostier	47/57.6
2,967,376	1/1961	Scott	47/57.6
3,707,807	1/1973	Graves	47/57.6
3,808,740	5/1974	Porter et al.	47/58



7. A method of coating seeds having irregular surfaces to provide a thin coating enabling them to be processed by seed singulators and seed-tape making machines comprising:
spraying on to said seeds while the seeds are being tumbled a mixture of (1) powdered dry starch ester, and (2) polyvinyl pyrrolidone in sufficient mixture to cause the mixture to stick to the seeds and for the coating to stick to itself and (3) sufficient liquids to enable spraying.

B 548,440
RETROREFLECTIVE MATERIAL INCLUDING GEOMETRIC FRESNEL ZONE PLATES

Wolfgang H. Strehlow, Woodbury, Minn., assignor to Minnesota Mining & Manufacturing Co., St. Paul, Minn.

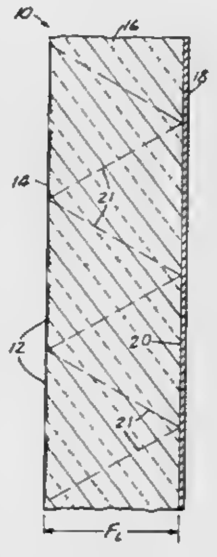
Filed Feb. 10, 1975, Ser. No. 548,440

Int. Cl.^{2} G02B *5/12*

U.S. Cl. 350—320 **2 Claims**

References Cited
UNITED STATES PATENTS

3,565,978	1/1971	Folger et al.	264/1
3,630,593	12/1971	Bartelt	350/3.5
3,746,783	7/1973	Gerritsen et al.	350/3.5



1. A method of making a retroreflective material comprising the steps of
generating an original fresnel zone plate image consisting of alternately opaque and transparent circular annuli whose radii are given by the formula
$r_n = (f\lambda n)^{1/2}$,
wherein n takes on consecutive integer values beginning with 1,
f is the focal length and λ is the wavelength of light;
recording in a photosensitive medium a photoreduced image of said original image;
changing the position of the photosensitive medium with respect to the recording means and repeating the recording step to provide an array of said photoreduced images in the photosensitive medium to define an array of fresnel zone plate images;
developing said photosensitive medium to provide an array of fresnel zone plates;
using the developed photosensitive medium to make a stamper for embossing an array of phase modulated fresnel zone plates corresponding to the array of fresnel zone plates in the developed photosensitive medium and having a given focal length associated therewith;
using said stamper to emboss transparent copy medium having a thickness equal to said given focal length to provide a said array of phase modulated fresnel zone plates at one surface of the copy medium; and
positioning a reflective surface in the back focal plane of said array of phase modulated fresnel zone plates by coating a reflective material on the opposite surface of the copy medium.

B 552,006
CERAMIC VANE ASSEMBLY WITH END CAP INSULATOR COMPOUND LOCKING JUNCTION

Claude R. Booher, Jr., West Chester, Pa., and Thomas J. Rahaim, Claymont, Del., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

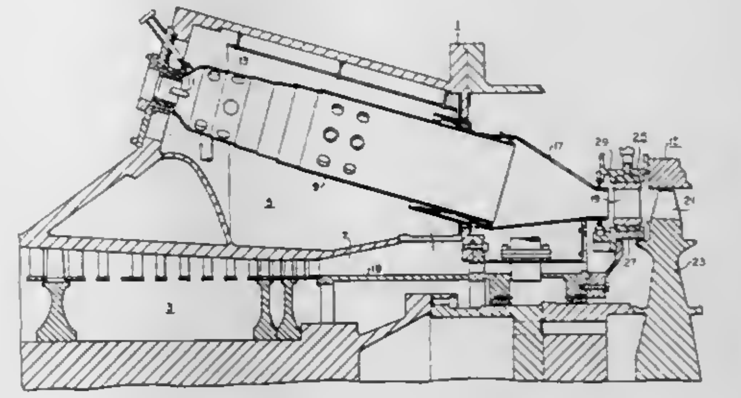
Filed Feb. 24, 1975, Ser. No. 552,006

Int. Cl.^{2} F04D *29/02, 29/44*

U.S. Cl. 415—214 **12 Claims**

References Cited
UNITED STATES PATENTS

890,635	6/1908	Fox	415/217
2,308,233	1/1943	Schutte	415/214
2,497,041	2/1950	Bodger	415/214
2,914,300	11/1959	Sayre	415/214
3,015,524	1/1962	Slayter et al.	415/214
3,042,366	7/1962	Holmquist	415/214
3,635,577	1/1972	Dee	415/214
3,843,279	10/1974	Crossley et al.	415/214
3,857,649	12/1974	Schaller et al.	415/214
3,867,065	2/1975	Schaller	415/214
FOREIGN PATENTS OR APPLICATIONS			
846,342	8/1952	Germany	415/214



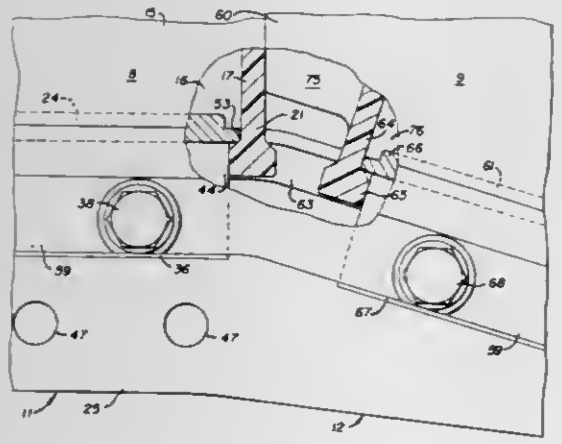
1. A ceramic vane assembly for an axial flow gas turbine, said vane assembly comprising a plurality of ceramic vanes disposed in an annular array;
radially inner and radially outer end caps having recesses disposed therein for receiving and positioning said vanes;
radially inner and radially outer insulator members disposed to engage said end caps;
said insulator members and end caps having mating surfaces which cooperate to generally prevent relative twisting and axial movement therebetween;
means for applying directed retention forces to position said vanes, end caps and insulator members in a predetermined relationship;
said engaged end caps and insulating members having a single predetermined combined thickness; and
at least one adjacent insulator member having a cross-section different from its adjacent insulator members thereby preventing said end caps from sliding circumferentially with respect to said insulator members.

B 552,932
SEMI-PNEUMATIC ENERGY ABSORBING BUMPER SYSTEM FOR MOTOR VEHICLES

Thomas A. Bank, Carmel, Ind.; Jack E. Gieck, and David A. Weitzenhof, both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Continuation-in-part of Ser. No. 426,615, Dec. 12, 1973, Pat. No. 3,902,748. This application Feb. 25, 1975, Ser. No. 552,932
Int. Cl.^{2} B60R *19/10*
U.S. Cl. 293—71 P **5 Claims**

References Cited
UNITED STATES PATENTS

2,731,290	1/1956	Corydon et al.	293/71 P
3,768,850	10/1973	Barton et al.	293/71 P
3,810,668	5/1974	Kornhauser	293/71 P



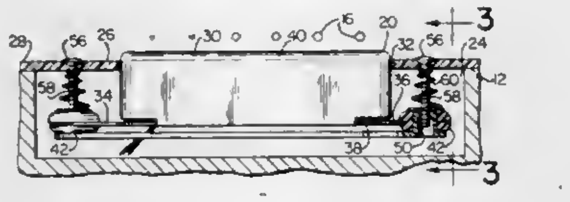
5. A semi-pneumatic energy absorbing and dissipating bumper system for interposition between two objects at least one of which is movable comprising:
elastomeric module means having an impacting face, upper, lower and side walls terminating in a continuous bead;
support means for mounting said module means on at least one of said objects including
a closure plate upon which said module means is mounted and
a backup structure carrying said closure plate;
a plurality of internal reinforcing ribs connecting only said impacting face to said upper and lower walls and terminating in a rear edge the configuration of which is spaced from sealing contact with said closure plate prior to impact of said module means with an object;
means for holding at least a portion of said continuous bead against said closure plate to form a cavity therebetween closed to the atmosphere; and,
means for permitting comunication between said cavity and the atmosphere upon the application of an external force of predetermined magnitude to said module means; said means including
valve means in said closure plate opening to the atmosphere upon an increase within said module means and
a space between between at least one of said walls of said module means and said closure plate formed during impact of said module means by the escape of air from therein.

B 556,897
PICKUP MOUNTING FOR STRINGED INSTRUMENT

James H. Rickard, Harwinton, Conn., assignor to Ovation Instruments, Inc., New Hartford, Conn.
Filed Mar. 10, 1975, Ser. No. 556,897
Int. Cl.^{2} G10H *3/00, 3/08*
U.S. Cl. 84—1.16 **7 Claims**

References Cited
UNITED STATES PATENTS

2,089,171	8/1937	Beauchamp	84/1.15
2,573,254	10/1951	Fender	84/1.16
2,612,541	9/1952	DeArmond	84/1.15 X
2,921,494	1/1960	Leslie	84/1.04
3,535,968	10/1970	Rickard	84/1.15
3,668,295	6/1972	Broussard	84/1.15
3,725,561	4/1973	Paul	84/1.15



1. An electrical pickup mounting system for a stringed musical instrument, said mounting system comprising, in combination, a stringed instrument having a set of strings, a body with a top plate, a cavity below said top plate and a hole through said top plate located below said set of strings and communicating with said cavity, a pickup having a housing partially received in said cavity and extending through said opening towards said set of strings, said pickup also including at least one flange extending laterally outwardly from said housing and located in said cavity, a plurality of mounting elements of resilient material carried by said at least one flange and each having an opening facing said top plate, a plurality of screws each having a head on the outer side of said top plate and each having a threaded shank passing through said top plate and extending into the opening of a respective one of said mounting elements, means received in each of said mounting element openings for making threaded connection with the associated one of said screws, and a plurality of helical compression springs each received on a respective one of said screw shanks and compressed between said top plate and the associated one of said mounting elements.

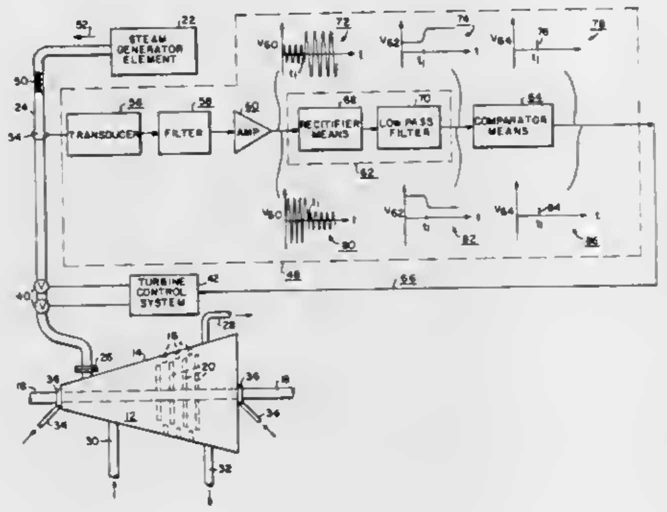
B 557,153
MOISTURE INDICATING APPARATUS

James W. Wonn, Irwin, and Ronald L. Bannister, Glen Mills, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 10, 1975, Ser. No. 557,153
Int. Cl.^{2} G01N *29/02*
U.S. Cl. 73—29 **4 Claims**

References Cited
UNITED STATES PATENTS

3,097,488	7/1963	Eggenberger et al.	60/660
3,580,092	5/1971	Scarpa	73/194 B
3,816,773	6/1974	Baldwin	73/194 B
3,845,660	11/1974	McDonnell	73/194 A
3,882,680	5/1975	Durrant et al.	60/646

1. A steam turbine comprising:
a casing having rotating and stationary blades therein,
conduit means for conducting an elastic fluid vapor into and out of said casing and,
first means for detecting sonic energy produced within the conduit by the moisture, the first means being mounted on said conduit at a first predetermined location,
second means for detecting sonic energy variations produced within the conduit by the moisture, said second means being mounted on said conduit at a predetermined location spaced a predetermined distance from said first predetermined location,
means for converting the sonic energy detected by said first and said second detecting means into a first and a second electrical signal,
means for comparing the magnitude of each of said electrical signals with a predetermined magnitude and for generating a signal indicating that both electrical signals differ in magnitude from said predetermined magnitude,



means for determining the time difference between said first and said second electrical signals, and for comparing said time difference with a predetermined time value, and for generating a signal indicating the time difference between said first and said second electrical signals substantially equal said predetermined time value, and means responsive to said signals generated by said magnitude-comparing means and said time-comparing means for indicating the presence and amount of moisture droplets within said vapor flow.

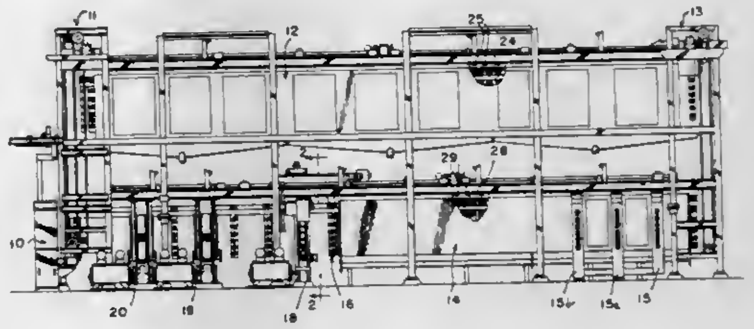
B 557,299
GANG-TYPE PRODUCT KNOCKOUT AND RECEIVING MEANS

Alvin Borsuk, and Charles H. Johnson, both of Madison, Wis., assignors to Oscar Mayer & Co. Inc., Madison, Wis.
Filed Mar. 11, 1975, Ser. No. 557,299
Int. Cl.^{2} A47J *27/12*
U.S. Cl. 99—355 **13 Claims**

References Cited
UNITED STATES PATENTS

3,039,136	6/1962	Toepper	99/351
3,122,243	2/1964	Hawley	99/443
3,132,950	5/1964	Macy	99/427 X
3,167,000	1/1965	Sassen	99/441 X
3,638,554	2/1972	Ackroyd	99/351
3,796,144	3/1974	Foldenauer	99/355

1. In a system for continuously making a loaf food product including a magazine of loaf molds adapted to be filled with a stuffable food material, said magazine of molds including a plurality of interconnected vertically aligned horizontally extending tubular molds, wheels connected to the molds for movably supporting the magazine on rails for movement thereof along a path transverse the longitudinal axis of the molds, each mold having a plug at one end movably positionable within and through the mold and a removable cover over the other end, means for applying heat to the molds in a cooking station for cooking the food material, and means for applying a chilling action to the molds in a chilling station for chilling the food material following cooking thereof, a product knockout and receiving means comprising a plurality of knockout bars one aligned with each mold for engaging and pushing the plug to drive the product from the removable cover end of the molds, means driving the knockout bars in unison, and receiving means aligned with the molds for receiving the loaf food product.



B 557,621
LINE MARKER ON ICE

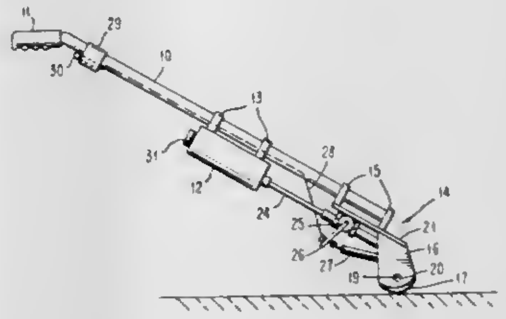
Robert Graff, 23 Lenox Place, Freeport, N.Y. 11520
Filed Mar. 12, 1975, Ser. No. 557,621
Int. Cl. B43m *11/02*
U.S. Cl. 401—219 **7 Claims**

References Cited
UNITED STATES PATENTS

2,988,763	6/1961	Sweet	401/219
3,112,512	12/1963	Arrault	401/219
3,179,298	4/1965	Collins	222/177
3,207,379	9/1965	Waldrum	222/177
3,241,175	3/1966	Johnson	401/208 X
3,453,058	7/1969	Bixel	401/219 X

FOREIGN PATENTS OR APPLICATIONS

675,298	10/1929	France	15/235 B



1. An apparatus for applying a colored liquid line on the surface of ice, which comprises a frame, a coating roller rotatably mounted in said frame, at least one skid-proof wheel rotatably mounted in said frame and having a multiplicity of small protrusions on its peripheral surface capable of digging into said ice when said wheel is rolled thereon, linkage means associated with at least one said wheel and said coating roller to transmit the rotation of the associated wheel to said coating roller while said associated wheel and said coating roller are in rolling contact with said ice, an elongate handle attached to said frame, a liquid tank fastened to said handle, a liquid distributor supported by said frame so that liquid discharging from said distributor will wet said coating roller, and a tube connecting said tank to said distributor.

B 558,813

FUEL CONTROL SYSTEM AND METHOD OF OPERATING THE SAME AND DIVERTER VALVE THEREFOR

Charles D. Branson, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 17, 1975, Ser. No. 558,813

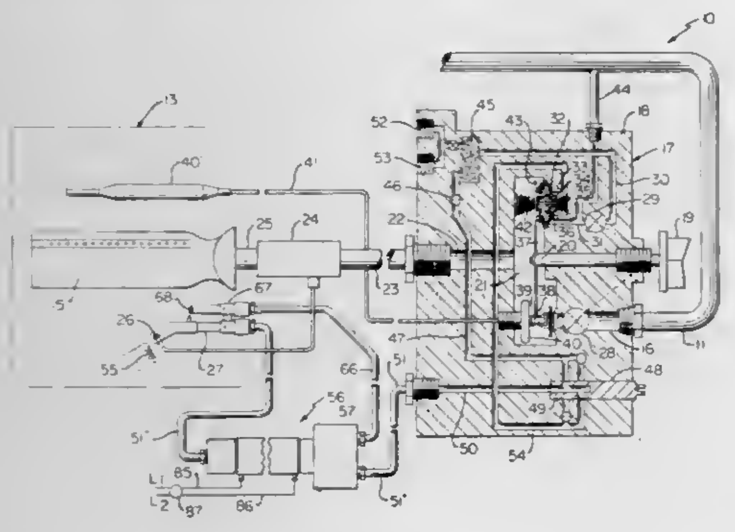
Int. Cl.² F23N *1/00*

U.S. Cl. 236—15 A **20 Claims**

References Cited

UNITED STATES PATENTS

3,780,940	12/1973	Genbauffe	236/15 A



1. In a fuel control system for a main burner having a dual rate pilot burner and a control device for providing a standby flame flow of fuel to said pilot burner when the output temperature effect of said main burner is above the temperature setting of said control device and for providing a large heater flame flow of fuel to said pilot burner when the output temperature effect of said main burner is below the temperature setting of said control device so that only said heater flame will cause a main flow of fuel to said main burner for a heating operation thereof, the improvement wherein means is provided for diverting said heater flame flow of fuel from said dual rate pilot burner to another pilot burner so that said main flow of fuel to said main burner will cease even though the output temperature effect of said main burner is below the temperature setting of said control device.

B 558,819

BELT DRIVE FOR SCRAPER ELEVATOR DEVICE

Raymond P. Dellner, Strongsville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 17, 1975, Ser. No. 558,819

Int. Cl.² B60P *1/36;* **F16N** *7/00*

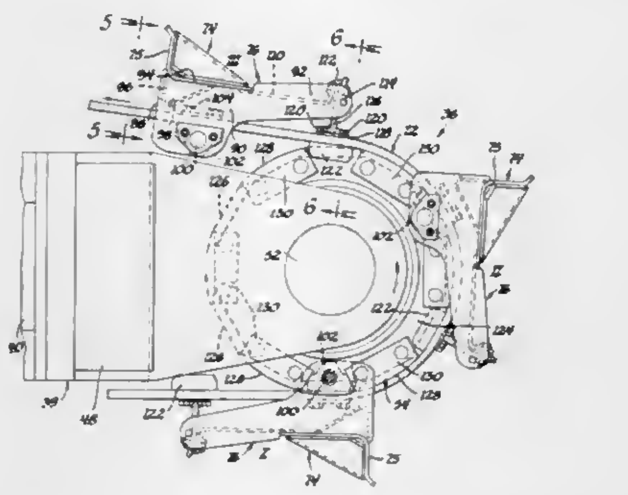
U.S. Cl. 37—8 **3 Claims**

References Cited

UNITED STATES PATENTS

2,322,967	6/1943	Perry	74/231 C
2,803,504	8/1957	Lynch	74/231 C
2,984,120	5/1961	Hurry	74/229
3,161,280	12/1964	Creighton	198/174
3,758,966	9/1973	Miller	37/8
3,831,358	8/1974	Marsh et al.	74/231 J

1. A self-loading scraper having a tractor connected by a pull yoke to a trailing scraper bowl, an elevator device located in the scraper bowl, said elevator device comprising a frame, a drive sprocket wheel rotatably supported at the upper end of said frame, an idler sprocket wheel rotatably supported at the lower end of said frame, an endless flexible belt member having an inner surface and an outer surface, said belt member being entrained about said drive and idler sprocket wheels, a plurality of equally spaced teeth secured to the inner surface of said belt member for cooperation with the idler and sprocket wheels, a plurality of flight members, a mounting assembly connecting each of said flight members to a pair of adjacent teeth on said belt member so as to provide a plurality of equally spaced flight members along the outer surface of the belt member, said mounting assembly comprising support means for rigidly carrying an associated flight member, and a pair of pivotal connections located on opposite sides of said belt member adjacent the outer and inner surfaces thereof for connecting the support means to said pair of adjacent teeth so as to allow the centers of said pair of adjacent teeth to move closer together as the belt member moves around the idler and the drive sprocket wheels.



B 559,954

DISPENSER FOR EXPLOSIVES HAVING ADJUSTABLE TRAP CHAMBER

William R. Van Brussel, Mt. Pleasant; Joseph C. Lestage, and Wayne J. Hartman, both of Burlington, all of Iowa, assignors to United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 19, 1975, Ser. No. 559,954

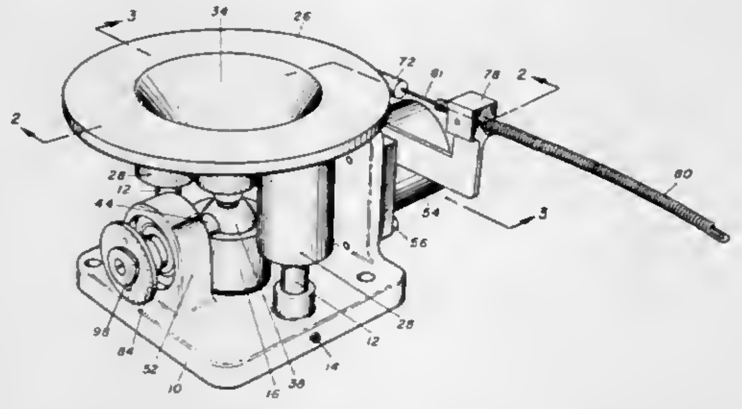
Int. Cl.² G01F *11/00, 11/10*

U.S. Cl. 222—306 **3 Claims**

References Cited

UNITED STATES PATENTS

774,326	11/1904	Kelly	222/306 X
2,820,577	1/1958	Winters	222/306
3,253,496	5/1966	Beach et al.	222/368 X
3,278,090	10/1966	Wahl	222/199
3,353,722	11/1967	Mehta	222/306 X
FOREIGN PATENTS OR APPLICATIONS			
626,548	10/1961	Italy	222/368
571,316	1/1958	Italy	222/363



1. A ball dispenser for initiating explosives which comprises:

a base casting having integral bearing housing sections positioned thereon;

a pair of vertically positioned guide rods fixedly attached to said base casting;

hopper means slidably supported on said guide rods for holding a reserve supply of an explosive powder therein which includes;

a circularly shaped flanged hopper casting having guide bosses vertically positioned thereon, said bosses having bushing bores axially positioned therein and a hyperbolically shaped feeder section having an axially positioned insert counterbore therein;

ball bushings fixedly held in said bushing bores for slidably moving on said guide rods; and

a seal insert fixedly positioned in said insert counterbore, said insert having a spherically shaped end which contacts said transport means and prevents powder leakage therefrom during loading, transport and unloading positions of said dispenser;

variable volume transport means comprising a ball housing rotatably supported in said bearing housing sections for receiving a charge of explosive powder from said hopper means and for unloading said powder therefrom;

means for funneling said powder from said transport means;

actuator means for sequentially rotating said transport means from a loading position to an unloading position; and

means for voiding said initiating explosive powders from said hopper means, said voiding means being remotely actuated.

B 561,732

METHOD OF MAKING A LIGHT ACTIVATED SEMICONDUCTOR CONTROLLED RECTIFIER

John S. Roberts, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 392,698, Aug. 29, 1973, Pat. No. 3,920,495, which is a continuation-in-part of Ser. No. 248,451, Sept. 28, 1972, abandoned. This application Mar. 25, 1975, Ser. No. 561,732

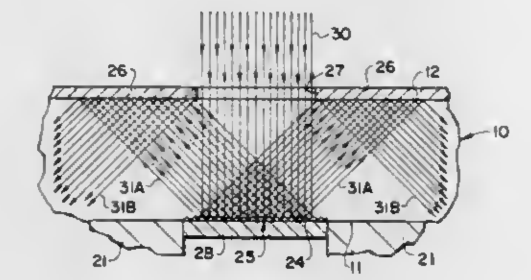
Int. Cl.² B01J *17/00*

U.S. Cl. 29—578 **10 Claims**

References Cited

UNITED STATES PATENTS

2,593,447	4/1952	Hesch	252/79.3
3,088,888	5/1963	Leff	156/17
3,107,188	10/1963	Hancock	156/17
3,389,457	6/1968	Goldman	29/580
3,466,510	9/1969	Mauta	29/580



1. A method of making a light activated semiconductor controlled rectifier comprising the steps of:

A. sequentially providing in a silicon semiconductor body, having first and second opposed major surfaces, impurities to form in the body four regions of alternate type conductivity disposed alternately through the body between the major surfaces with a PN junction between each region, the two regions adjoining the major surfaces being emitter regions and the two intermediate regions being base regions;

B. masking all surfaces except first major surface of the semiconductor body with a material resistant to hydrofluoric acid;

C. preparing an etchant solution by forming a first solution by admixing predetermined amounts of chromium trioxide and water, and adding to said first solution just prior to use predetermined amounts of a given hydrofluoric acid solution;

D. immersing the masked semiconductor body in the etchant solution for a preselected period of time, while agitating the solution relative to the body, to form light radiation reflecting etch pits in at least a portion of the first major surface;

E. forming on the first major surface a first electrode making contact to the emitter region adjoining the first major surface and having an opening therethrough corresponding to a light radiation reflective means for the body on the first major surface;

F. removing from the surfaces of the semiconductor body the material resistant to hydrofluoric acid;

G. forming on the second major surface a second electrode making ohmic contact to the emitter region adjoining the second major surface and having an opening therethrough adapted to permit light radiation of preselected wavelengths to penetrate the body and reflect from the light radiation reflective means.

B 563,780

JET IGNITION ENGINE WITH VALVE-CARRIED IGNITION CHAMBER

Ming-Chih Yew, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 31, 1975, Ser. No. 563,780

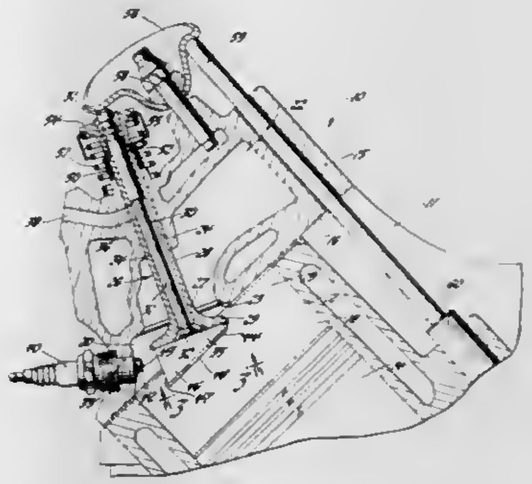
Int. Cl.² F02B *75/02*

U.S. Cl. 123—75 B **8 Claims**

References Cited

UNITED STATES PATENTS

942,587	12/1909	Pearson	123/108 VA
1,232,108	7/1917	Sims	123/188 AF
2,799,257	7/1957	Stampfig et al.	123/32 SP
3,382,850	5/1968	Baudry et al	123/75 B
3,881,459	5/1975	Gaetcke	123/75 B



1. An internal combustion engine comprising

means defining a variable volume main combustion chamber,

a main inlet port to said chamber

a main inlet valve closing said inlet port and operable to permit the entry of fluids to said main combustion chamber through said port,

an auxiliary ignition chamber formed on the end of said main inlet valve and extending into said main combustion chamber, said auxiliary chamber being connected with said main chamber by at least one orifice in a wall thereof, an auxiliary inlet passage extending through said main inlet valve to said auxiliary chamber,

an auxiliary inlet valve in said main inlet valve and operable to permit the entry of fluids to said auxiliary ignition chamber through said auxiliary inlet passage,

means for cyclically opening and closing said inlet valves and

means for igniting fluids in said ignition chamber for combustion therein, with resulting expansion through said orifice to ignite fluids in said main combustion chamber.

B 567,435
CENTERING DEVICE FOR A RAIL BRAKE MAGNET UNIT

Ernst Katzer, Munich, Germany, assignor to Knorr-Bremse GmbH, Munich, Germany

Filed Apr. 11, 1975, Ser. No. 567,435

Claims priority, application Germany, Apr. 18, 1974, 2418636

Int. Cl.² F16D *65/34*; **308** *3 R*

U.S. Cl. 188—165 **6 Claims**

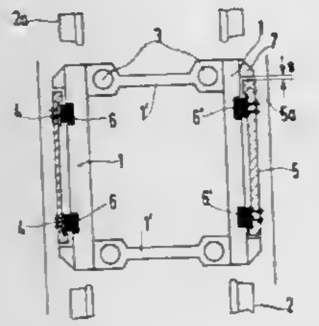
References Cited

UNITED STATES PATENTS

2,150,630	3/1934	Piron	188/165
2,570,034	10/1951	Larsen	188/165
2,617,499	11/1952	Jenkins et al.	188/165
2,966,236	12/1960	Jones	188/165
3,723,795	3/1973	Baermann	188/165

FOREIGN PATENTS OR APPLICATIONS

302,788	10/1954	Switzerland	188/165



1. A device on a vehicle structure for centering a rail brake magnet assembly comprising at least one rail brake magnet having four corners substantially rectangularly arranged on the upper portion thereof and vertically movable between a lowered operative position and a raised inoperative position, comprising means on each of the four corners for defining a slide surface thereon, each of said slide surfaces being inclined from the vertical downwardly toward a side of the magnet assembly such that transversely opposed slide surfaces on different sides of an axis of the magnet assembly are oppositely inclined, and four resilient buffers mounted on the vehicle structure and each having a plane surface engageable by said slide surfaces respectively when the rail brake magnet assembly is in its raised inoperative position to retain the magnet assembly in a fixed and centered position with respect to the said vehicle structure.

B 567,854
SELF-ALIGNING IDLER

Gene Roger Fowler, Geneseo, Ill., assignor to Deere & Company, Moline, Ill.

Filed Apr. 14, 1975, Ser. No. 567,854

Int. Cl.² F16H *7/12*

U.S. Cl. 74—242.1 A **10 Claims**

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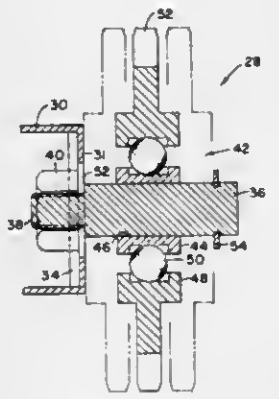
UNITED STATES PATENTS

1,803,186	4/1931	Hendrickson	74/242.1 A X
2,193,936	3/1940	Ostand et al.	74/242.1 A X
2,823,553	2/1958	Harrington	74/243 R
3,666,322	5/1972	Pickron	74/243 R X



1. In a drive system having an endless flexible drive element trained around rotary drive members, the combination therewith of an improved rotary idler engaging said drive element and comprising: a support; an elongated shaft having an axis extending generally parallel to the axis of the rotary drive members and having a noncircular cross section; means mounting the shaft on the support; an annular bearing having an inner race nonrotatably mounted on the shaft and axially shiftable thereon and a rotatable outer race; an outer rotary idler element connected to the outer race for rotation therewith in engagement with the drive element; and stop means operatively associated with the shaft for limiting the axial shifting of the bearing thereon.

B 569,519
SELECTIVE PLUGGING OF FORMATIONS WITH FOAM

Richard L. Clampitt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 18, 1975, Ser. No. 569,519

Int. Cl.² E21B *43/22, 43/24, 33/138*

U.S. Cl. 166—272 **7 Claims**

References Cited

UNITED STATES PATENTS

3,204,694	9/1965	Johnson	166/272 X
3,373,814	3/1968	Eilers et al.	166/288
3,412,793	11/1968	Needham	166/272 X
3,530,940	9/1970	Dauben et al.	166/305 R
3,682,244	8/1972	Bowman et al.	166/272 X
3,727,687	4/1973	Clampitt et al.	166/274
3,785,437	1/1974	Clampitt et al.	166/281

1. A process for improving the production of oil from an oilbearing formation by pressure of steam therein which is channeling undesirably from a steam injection well into a production well owing to channeling in said formation which comprises:

a. injecting into said channels of said formation an aqueous fluid containing a water-thickening amount of at least one crosslinkable polymeric material selected from water-dispersible polyacrylamides, cellulose ethers, and polysaccharides and a surfactant which will foam when contacted with steam, said surfactant being present in sufficient quantities to form a stable, self-collapsing foam when said solution is contacted with steam,

b. injecting steam downwardly through the injection well and outwardly through the formation into contact with said aqueous solution in said channels thereby causing said polymeric material to be broken down by heat which then allows the steam to form a relatively stable foam having steam as the gas phase in said channels and thereby plug same and thus producing a selective blocking which forces the remaining steam to produce oil from less depleted portions of the formation, and

c. continuing to inject steam through the formation to produce oil from the less depleted portions of the formation.

B 570,172
ROTARY ENGINE COMBUSTION ARRANGEMENT

Edward D. Klomp, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 21, 1975, Ser. No. 570,172

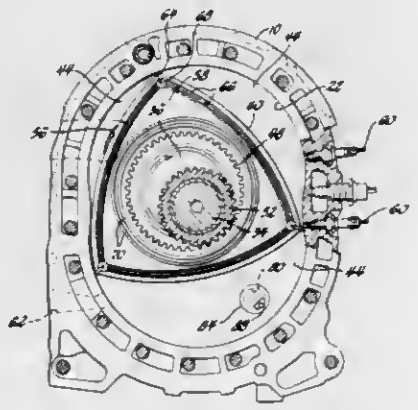
Int. Cl.² F02B *53/00*

U.S. Cl. 123—8.45 **3 Claims**

References Cited

UNITED STATES PATENTS

3,854,456	12/1974	Ishii et al.	123/8.45



1. A rotary combustion engine comprising housing means having an inner peripheral wall and oppositely facing side walls, a rotor rotatably mounted in said housing means between said side walls with apexes that remain adjacent said peripheral wall as said rotor rotates, said rotor and said walls cooperatively providing a plurality of chambers spaced around said rotor that expand and contract while moving with said rotor, said housing means having an intake port openable by said rotor for delivering a combustible gaseous mixture to said chambers as they expand in an intake phase prior to contracting in a compression phase, ignition means for igniting the mixture in said chambers following their compression phase to cause their expansion in an expansion phase, said housing means having an exhaust port openable by said rotor for receiving exhaust gases from said chambers as they contract in an exhaust phase, said housing means further having a plenum, and a nozzle in one of said walls openable by said rotor for providing communication between said plenum and said chambers only as they expand during their expansion phase, said nozzle being located relative to said rotor so that said communication is initiated during the gas expansion process but after rapid combustion is complete when the pressure in said plenum is relatively low whereby on establishing said communication said plenum is charged with relatively high-pressure hot gaseous products of combustion from the connected chamber until plenum and chamber pressure are equal and thereafter on continued rotor rotation and lowering chamber pressure below plenum pressure there is caused a relatively hot gaseous jet to be discharged from said nozzle into a trailing portion of the connected chamber during the remainder of the expansion phase to enhance burning of the gases in the trailing portion during the remainder of the expansion phase and into the exhaust phase.

B 579,116
PRINTING SYSTEM HAVING A HOT ROLL FUSER WITH A SCRAPING BLADE CLEANER

Rex D. Fathergill, Frankfort; Arthur M. Howarth, and Edward L. Soard, both of Lexington, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 19, 1975, Ser. No. 579,116

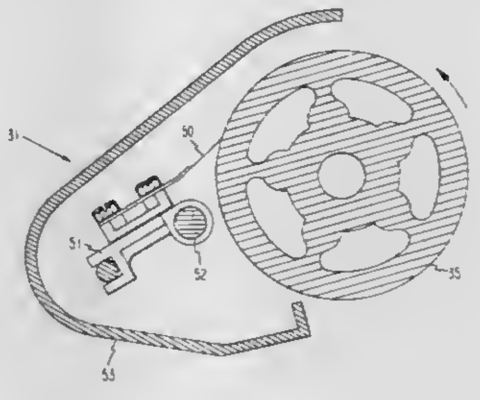
Int. Cl.² G03G *15/00*

U.S. Cl. 15—256.53 **9 Claims**

References Cited

UNITED STATES PATENTS

3,252,416	5/1966	Allen	101/425
3,520,410	7/1970	Hutto, Jr.	210/67
3,577,649	5/1971	Wadsworth et al.	15/256.51 X
3,794,417	2/1974	Machmer	355/3DD



1. A scraping cleaning apparatus for cleaning contaminating material from the surface of a roll, wherein the coefficient of friction of the roll's surface is less than the coefficient of friction of the contaminating material, the apparatus comprising:

a scraping blade having a sharp leading edge positioned to engage the advancing surface of said roll with a given force and at a critical acute angle from the tangent to the roll at the point of engagement, said critical angle being such that the friction-derived force vector lies at a greater angle than said critical angle when said leading edge engages a clean roll surface, and such that the higher friction-derived force vector lies at a lesser angle than said critical angle when said leading edge engages a contaminated roll surface.

B 583,051
SELF-STORING OUTRIGGER FLOAT ASSEMBLY

John T. Hornagold, Arden Hills, Minn., assignor to American Hoist & Derrick Company, St. Paul, Minn.

Filed June 2, 1975, Ser. No. 583,051

Int. Cl.² B60S *9/02*

U.S. Cl. 280—150.5 **13 Claims**

References Cited

UNITED STATES PATENTS

3,007,717	11/1961	Noly	280/150.5
3,396,854	8/1968	Crisp	212/145
3,743,108	7/1973	Visser	280/150.5
3,754,777	8/1973	Riggs	280/150.5
3,843,154	10/1974	Thompson	280/150.5
3,901,532	8/1975	Hornagold	280/150.5

1. An outrigger assembly for stabilization of a vehicle including:

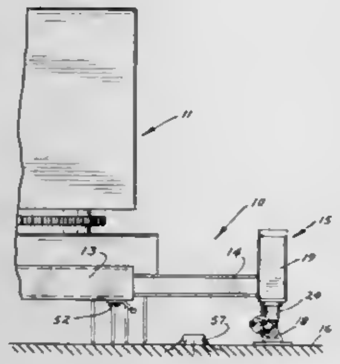
an elongate, substantially horizontal outrigger beam mounted for generally horizontal movement between a first, horizontally retracted position and a second, horizontally extended position relative to said vehicle;

a float assembly mounted on an outer end of said beam;

said float assembly including a float pad support leg, a float pad rotatably assembled at the lower end of the support leg to be movable between a generally horizontal orientation and a generally vertical orientation, and means for vertically moving the support leg between a third retracted position and a fourth extended position;

said float pad being horizontally extendible and retractible with said beam end relative to said vehicle when in the horizontal orientation to clear ground obstacles;

float pad actuator means connected to said float pad and rotatable therewith;



cam means rotatably connected to said support leg, said cam means having a first cam surface and a second cam surface, said second cam surface bearing against the float pad actuator means operative to rotate the float pad from the horizontal to the vertical orientation upon forced rotation of the cam means against the float pad actuator means; and

cam actuator means mounted on the vehicle in position to engage the first cam surface of the cam means as the float pad approaches said horizontally retracted position and said support leg approaches the vertically retracted position, and to bear against the first cam surface to force rotation of the cam means against the float pad actuator means to rotate the float pad to the vertical orientation as the float pad reaches the horizontally retracted position and said support leg reaches the vertically retracted position.

B 586,387

AROMATIC COMPOSITIONS

Edouard P. Demole, Geneva, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

Division of Ser. No. 482,776, June 24, 1974,. This application June 12, 1975, Ser. No. 586,387

Claims priority, application Switzerland, Jan. 19, 1971, 773/71; June 23, 1971, 9156/71; Jan. 11, 1972, 380/72

Int. Cl.² A24B *3/14, 13/00, 15/08*

U.S. Cl. 131—144 **6 Claims**

References Cited

UNITED STATES PATENTS

3,380,456	4/1968	Roberts et al.	131/17 R

FOREIGN PATENTS OR APPLICATIONS

138,612	10/1960	U.S.S.R.	131/144

1. A process for improving, enhancing or modifying the organoleptic properties of a tobacco product, which comprises adding thereto about 1 to about 1000 parts per million based on the weight of tobacco of at least one compound selected from the group consisting essentially of:

a. 2-hydroxy-5-methyl-acetophenone

b. 2-methyl-5-isopropenyl-anisole.

B 586,663

RETROREFLECTIVE SHEET MATERIAL WITH CONTROLLED STRETCH AND METHOD OF MAKING SAME

William P. Rowland, Southington, Conn., assignor to Reflexite Corporation, New Britain, Conn.

Filed June 13, 1975, Ser. No. 586,663

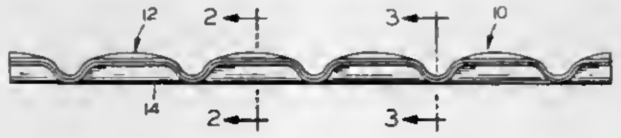
Int. Cl.² G02B *5/124*

U.S. Cl. 350—103 **5 Claims**

References Cited

UNITED STATES PATENTS

2,731,068	9/1950	Richards	308/DIG. 7
3,173,164	3/1965	Congdon	15/300 A
3,357,772	2/1963	Rowland	350/167
3,357,773	12/1964	Rowland	350/167
3,636,147	6/1972	Rowland	264/1
3,741,623	6/1973	Milalik	350/103



1. An elongated composite retroreflective sheet material with controlled stretch comprising a first strip of transparent flexible synthetic resin having a multiplicity of minute cube corner formations on one surface thereof and a second strip of flexible backing material of lesser length than said first strip when in a relaxed condition and bonded to said first strip with said cube corner formations disposed adjacent said second strip, said composite retroreflective sheet material being puckered in the relaxed condition thereof, and stretchable to a smooth surface condition with the elimination of the puckered condition providing a visual measurement of the desired degree of elongation of the composite material to avoid distortion of the cube corner formations said strips being bonded along the longitudinal edges thereof.

B 590,159

APPARATUS AND METHOD FOR FORMING CIRCULAR DYNAMOELECTRIC MACHINE FIELD WINDINGS BY PUSHING

Patrick L. Grawcock, Fort Wayne, Ind., assignor to Essex International, Inc., Fort Wayne, Ind.

Continuation of Ser. No. 473,679, May 28, 1974, abandoned. This application June 25, 1975, Ser. No. 590,159

Int. Cl.² H02K *15/04*

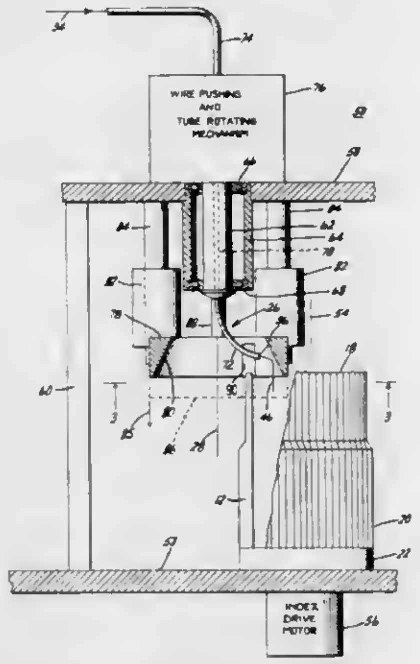
U.S. Cl. 140—92.1 **4 Claims**

References Cited

UNITED STATES PATENTS

3,347,474	10/1967	Frank	242/1.1 R
3,514,837	6/1970	Smith	29/205 D
3,579,791	5/1971	Arnold	29/205 D
3,714,973	2/1973	Kieffer et al.	140/92.1
3,791,419	2/1974	Arick et al.	140/92.1

1. Apparatus for placing magnet wire in slots respectively defined by the blades of coil transfer apparatus which lie on an imaginary cylinder in a cylindrical array to form a circular dynamoelectric machine field winding, said apparatus comprising means for guiding said wire toward said blades, means for pushing wire through said guide means without applying tension thereto, and means for moving said guide means relative to said blades in a circular path which overlaps said cylindrical array of blades and which is aligned with the open ends of two of said slots whereby said wire is pushed in a direction away from the center of said path and is also pushed into said two slots; said blades respectively having distal ends and proximal ends mounted on a support member, said slots having open ends defined by said distal ends, said cylinder having a first axis, said guide means including a gun member having a dispensing end spaced from and extending generally radially with respect to a second axis which is spaced from said cylinder and parallel with said first axis, said dispensing end lying in a plane spaced from said distal ends on the side thereof remote from said support member, said moving means including means for rotating said dispensing end about said second axis whereby said dispensing end pushes said wire in said circular path, the spacing of said dispensing end from said second axis and the ratio of the speeds of said pushing and moving means being proportioned and arranged so that said path overlaps said cylinder and is aligned with said open ends of two of said slots whereby said wire is pushed into said two slots; means concentrically surrounding said dispensing end and radially spaced therefrom for confining said wire in said path; said confining means comprising an annular member having a frusto-conical inner surface facing and spaced radially from said dispensing end, said surface tapering inwardly in the direction away from said distal ends of said blades.



B 843,038

ELECTROCHEMICAL SENSOR FOR REACTIVE GAS MIXTURES

Yehuda L. Sandler, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 18, 1969, Ser. No. 843,038

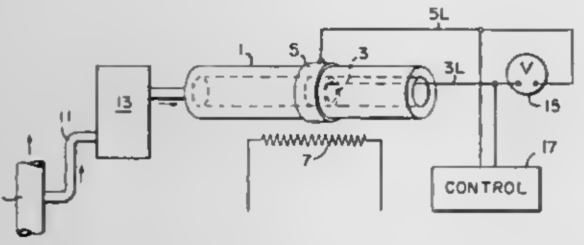
Int. Cl. G01n *27/46*

U.S. Cl. 204—195 S **8 Claims**

References Cited

UNITED STATES PATENTS

3,216,911	11/1965	Kronenberg	204/195
3,347,767	10/1967	Hickam	204/195
3,400,054	9/1968	Ruka et al.	204/195 S
3,481,855	12/1969	Kolodney et al.	204/195
3,514,377	5/1970	Spacil et al.	204/1 T
3,597,345	8/1971	Hickam et al.	204/195 S



1. An electrochemical device for monitoring constituents of an oxygen-fuel mixture comprising, a solid electrolyte electrochemical cell having a first and second electrode disposed on opposite surfaces thereof, said first electrode has a composition exhibiting negligible catalytic action on said mixture, means for supplying a first portion of said mixture to said first electrode and a second portion of said mixture to said second electrode, said first portion of said mixture forming an oxygen reference media and said first electrode serving as an oxygen reference electrode, and catalytic means for equilibrating said second portion of said mixture, said electrochemical device generating an EMF indicative of the difference between the oxygen content of said first portion of said mixture and the equilibrated second portion of said mixture.

B 200,759

METHOD OF INCREASING THE IMAGE EXPOSURE AND DEVELOPING SENSITIVITY OF MAGNETO-ELECTRIC PRINTING SYSTEM

Edward Charles Giaimo, Jr., Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 22, 1971, Ser. No. 200,759

Int. Cl.² G03G *13/14, 13/22*

U.S. Cl. 96—1.4 **10 Claims**

References Cited

UNITED STATES PATENTS

2,756,676	7/1956	Steinhilper	96/1 R X
2,798,959	7/1957	Moncrieff-Yeates	96/1.5 X
2,924,519	2/1960	Bertelsen	96/1.4
2,968,552	1/1961	Gundlach	96/1.4
3,146,100	8/1964	Kaufman	355/17 X
3,392,642	7/1968	Germer	95/1.7

OTHER PUBLICATIONS

Translation of Japanese Patent 37–16098, 1963, 96–1R, OTS, Commerce Dept.

1. In an electrostatic printing method of the type wherein a uniform electrostatic charge is applied to a photoconductive layer, the charged layer is uniformly toned with magnetic toner particles, and the toned layer is subjected simultaneously to both a light image exposure to which the layer is sensitive and to a sub-threshold magnetic field, whereby to selectively remove magnetic toner particles from the light exposed portions of the layer, the improvement of:

- applying simultaneously with both the application of said magnetic field and said image exposure a flood light exposure to the toned layer, whereby to enhance the sensitivity of selective magnetic toner particle removal from said layer by speeding up the image formation on said layer.

B 276,026

CATIONIC DYESTUFFS

Allred Brack, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, 509 Leverkusen-Bayerwerk, Germany

Filed July 28, 1972, Ser. No. 276,026

Claims priority, application Germany, July 29, 1971, 2138029

Int. Cl.² C07D *209/60*

U.S. Cl. 260—326.5 B **10 Claims**

References Cited

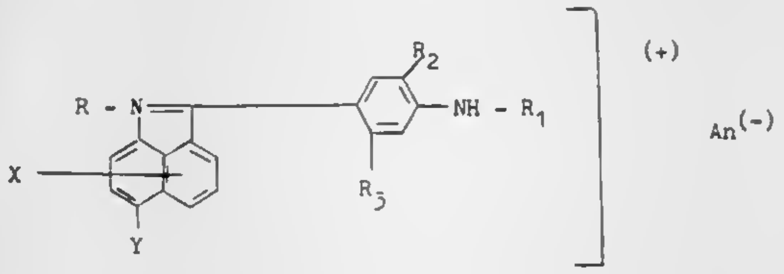
UNITED STATES PATENTS

3,347,865	10/1967	Brack et al.	260/313.1

FOREIGN PATENTS OR APPLICATIONS

1,074,786	7/1967	United Kingdom	260/326.9

1. Cationic dyestuff having the formula



wherein

- R is C_1-C_6-alkyl; cyclohexyl; benzyl; phenylethyl; phenylpropyl; phenyl; methylphenyl; methylbenzyl; allyl; ethyl substituted by nitrile, chloro, C_1-C_4-alkoxy, carboxy or C_1-C_4-alkoxycarbonyl; C_1-C_4-alkoxycarbonylmethyl; or trimethylene bonded to the naphthalene ring in the β-position;
- R_1 is C_1-C_6-alkyl; cyclohexyl; benzyl; methylbenzyl; phenylethyl; allyl; or ethyl substituted by nitrile, hydroxy, C_1-C_4-alkoxy chloro or C_1-C_4-alkoxycarbonyl;
- R_2 is hydroxyl; C_1-C_3-alkyl; C_1-C_4-alkoxy; benzyl; or benzyloxy;
- R_3 is hydrogen; chloro; hydroxyl; methyl; C_1-C_4-alkoxy; methoxycarbonylamino; or dimethylaminocarbonylamino;
- X is hydrogen; chloro; bromo; hydroxyl; ethyl; methoxy; ethoxy; acetylamino; methylamino; dimethylamino; methylsulfonylamino; amidosulfonyl; dimethylaminosulfonyl; nitrile; or methylmercapto;
- Y is hydrogen; chloro; or bromo.

B 302,160

PURIFICATION OF γ-OXO-2-DIBENZOFURANBUTYRIC ACID

Guenther Schilling, Westmount, and Thomas A. Dobson, Dollard-des-Ormeaux, both of Canada, assignors to American Home Products Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,160

Int. Cl.² C07D *307/80*

U.S. Cl. 260—346.2 M **2 Claims**

References Cited

UNITED STATES PATENTS

2,513,273	7/1950	Burtner et al.	260/515
2,569,440	10/1951	Agnew et al.	260/525
2,733,266	1/1956	McKinnis	260/525
2,773,091	12/1956	Burtner	260/515
2,813,120	11/1957	McKinnis	260/525
3,649,651	3/1972	Dobson	260/346.2

OTHER PUBLICATIONS

Keumi et al., Kogyo Kagaku Zasshi, Vol. 73, pp. 536–538, (1970).

Keumi et al., Kogyo Kagaku Zasshi, Vol. 73, pp. 2412–2421, (1970).

Patai, The Chemistry of Carboxylic Acids and Esters, pp. 897–905, (1969).

Gunther et al., J. Pharmacol, Exptl. Therap 99, No. 4, Pt. 1, pp. 465–478, 1950.

Chatterjea, J. N., Jour. Indian Chem. Soc., Vol. 33, No. 7, 1956, p. 453.

1. A process for separating γ-oxo-2-dibenzofuranbutyric acid from a mixture of said acid with γ-oxo-3-dibenzofuranbutyric acid, the γ-oxo-2-dibenzofuranbutyric acid constituting at least 80% by weight of the said mixture, which comprises

1. admixing the acid mixture with a solvent comprising methanol or ethanol;
2. esterifying the solution of the acid mixture in the presence of an acid esterification catalyst;
3. separating the ester mixture from the solution by the addition of water and/or cooling to precipitate the resulting ester mixture;
4. dissolving the ester mixture in toluene;
5. fractionally precipitating the γ-oxo-2-dibenzofuranbutyric acid ester from the toluene solution; and
6. hydrolyzing with a base the ester to provide essentially pure γ-oxo-2-dibenzofuranbutyric acid.

B 306,668

CYCLIC NITRILES AS CROSSLINKING AGENTS AND COMPOSITIONS THEREFROM

Kurt C. Frisch, Grosse Ile; Sidney L. Reegen, Oak Park, and Harry L. Bauer, Detroit, all of Mich., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 139,951, May 3, 1971, abandoned. This application Nov. 15, 1972, Ser. No. 306,668

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 CR **8 Claims**

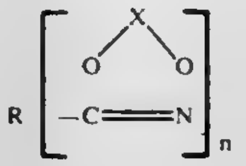
References Cited

UNITED STATES PATENTS

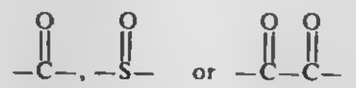
3,028,367	4/1962	O'Brien	260/77.5
3,245,941	4/1966	Mayer et al.	260/77.5
3,264,269	8/1966	Rees	260/77.5
3,480,595	1/1969	Burk et al.	260/77.5
3,531,425	9/1970	Burk et al.	260/77.5
3,652,507	3/1972	Burk et al.	260/77.5

1. A thermally cross-linkable coating composition comprising

- A. an acrylic interpolymer having an hydroxyl number of 40 to 80 and an acid number of 5 to 15 comprised of:
  - 1. an alkyl ester of acrylic or methacrylic acid,
  - 2. acrylic or methacrylic acid,
  - 3. styrene, and
  - 4. hydroxy propyl or hydroxy ethyl methacrylate
- B. a cyclic nitrile having the structure:



wherein R is an organic radical free of nucleophilic groups and having from 2 to about 200,000 carbons atoms, X is:



$$\overset{O}{\overset{\|}{-C-}},\ \overset{O}{\overset{\|}{-S-}}\ \text{or}\ \overset{O}{\overset{\|}{-C}}\overset{O}{\overset{\|}{-C-}}$$

and *n* ranges from 2 to about 100,000,

- C. a catalyst selected from:
  - I. a tertiary amine or
  - II
    - a. a compound of first metal or a mixture of metals selected from the metals of Groups III through V of the Periodic Table, which is soluble in the reaction mixture, and
    - b. a compound of second metal or a mixture of metals selected from the metals of Groups I and II and the iron series of Group VIII of the Periodic Table, which is soluble in the reaction mixture or
  - III. a compound of aluminum, tin, titanium, zinc, bismuth or iron which is soluble in the reaction mixture, provided that the metal is in a valence state other than zero, further provided that when the metal compound is a compound of aluminum, tin, titanium or bismuth that said contacting is in the substantial absence of metals of Groups I, II and the iron series of Group VIII of the Periodic Table, and further provided that when the metal compound is a compound of zinc or iron that said contacting is in the substantial absence of metals of Groups III through V of the Periodic Table.

B 307,698
TERTIARY AMINOACIDS AS ANTI-INFLAMMATORY AGENTS

Richard William James Carney, New Providence, and George de Stevens, Summit, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 808,343, March 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 790,863, Jan. 13, 1969, abandoned, which is a continuation-in-part of Ser. No. 757,136, Sept. 3, 1968, Pat. No. 3,657,230, which is a continuation-in-part of Ser. No. 716,347, March 27, 1968, abandoned. This application Nov. 17, 1972, Ser. No. 307,698

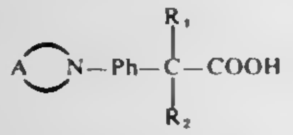
Int. Cl.² A61K *31/445*

U.S. Cl. 424—267 **3 Claims**

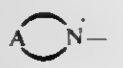
References Cited
UNITED STATES PATENTS

3,558,641	1/1971	Sarett et al.	260/295
3,669,956	6/1972	Borck et al.	260/293.81
3,669,973	6/1972	Borck et al.	260/293.81
3,770,748	11/1973	Borck et al.	260/293.81

1. An antiinflammatory pharmaceutical composition comprising an antiinflammatory effective amount of a compound of the formula



in which R_1 is hydrogen, R_2 is hydrogen, lower alkyl, or 3 to 7 ring-membered cycloalkyl, Ph is 1,3- or 1,4-phenylene, (lower alkyl)-1,3- or 1,4-phenylene, (lower alkoxy)- 1,3- or 1,4-phenylene, [(lower alkylmercapto)-1,3- or 1,4-phenylene,] mono- or di-(halogeno)-1,3- or 1,4-phenylene, (trifluoromethyl)-1,3- or 1,4-phenylene, [(nitro)-1,3- or 1,4-phenylene, (amino)-1,3- or 1,4-phenylene] or (di-lower alkylamino)-1,3- or 1,4-phenylene, the group



is 5 to 8 ring-membered [mono-(hydroxy- or lower alkanoyloxy)] hydroxy-alkyleneimino, wherein the oxygen atom is separated from the nitrogen atom by at least two carbon atoms, or a lower alkyl ester, the amide, an alkali metal or alkaline earth metal salt or a therapeutically useful acid addition salt thereof, together with a pharmaceutical excipient.

B 330,736
FLUORO COMPOUND PREPARATION

George B. Fozzard, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 8, 1973, Ser. No. 330,736

Int. Cl.² C07C *23/06*

U.S. Cl. 260—648 F **3 Claims**

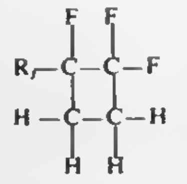
References Cited
UNITED STATES PATENTS

2,957,032	10/1960	Hauptschein et al.	260/648 F
3,662,009	5/1972	Hutchinson	260/648 F
3,767,820	10/1973	Holdsworth et al.	260/648 F
3,789,088	1/1974	Lalande, Jr. et al.	260/648 F

OTHER PUBLICATIONS

Holdsworth et al., Chemical Abstracts, 77 74884c (1972).

1. As a new composition of matter a compound of the formula



and mixtures thereof wherein R_f is a perfluoroalkyl radical having 1–10 carbon atoms per molecule and wherein skeletal branching, if present, is no closer than the 2-position with respect to the carbon atom to which it is attached.

B 344,967
PROCESS FOR THE DYEING OF SYNTHETIC FIBRES WITH WATER-INSOLUBLE DYESTUFFS FROM ORGANIC SOLVENTS ACCORDING TO THE EXHAUSTION METHOD

William McDowell, Kelkheim, Taunus, and Rudolf Weingarten, Schwalbach, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 26, 1973, Ser. No. 344,967

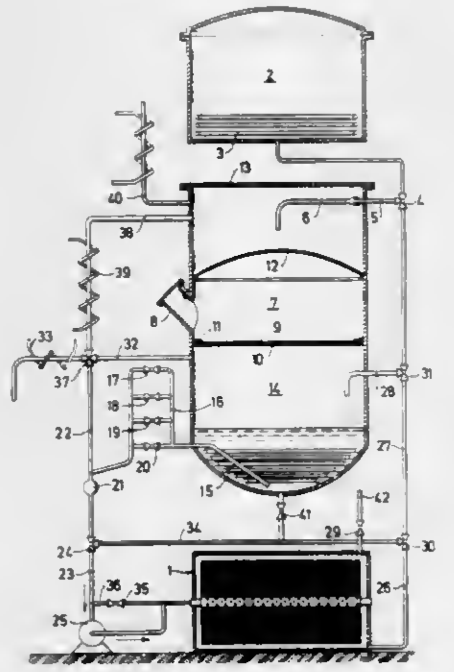
Claims priority, application Germany, Mar. 29, 1972, 2215336

Int. Cl.² D06P *1/90*

U.S. Cl. 8—174 **4 Claims**

References Cited
UNITED STATES PATENTS

1,738,978	12/1929	Whitehead	8/59
2,273,305	2/1942	Whitehead	8/14
3,473,175	10/1969	Sieber	8/158
3,506,990	4/1970	Richardson et al.	8/174
3,758,272	9/1973	Datye et al.	8/174
3,792,971	2/1974	Neeff	8/174



1. A process for the dyeing of synthetic fibres with water-insoluble dyestuffs from organic solvents by the exhaustion method, wherein a circulating dye liquor acts upon the said synthetic fibres at elevated temperature, wherein: said dye liquor is formed by dissolving solid dyestuff from a deposit of same, in an extraction zone maintained at atmospheric pressure, with hot organic solvent; said fibres are contacted in a contact zone with said dye liquor; and the dye liquor, depleted in dyestuff, from said contact zone is recirculated to said extraction zone.

B 348,433
ANTI-INFLAMMATORY AGENTS

John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 157,678, June 28, 1971, Pat. No. 3,767,653. This application Apr. 5, 1973, Ser. No. 348,433

Claims priority, application Canada, May 26, 1972, 143149

Int. Cl.² C07D *498/04*

U.S. Cl. 260—244 R **2 Claims**

References Cited
UNITED STATES PATENTS

3,715,353	2/1973	Krapcho	260/244

1. A compound selected from the group consisting of 2-benzoyl-4-[3-(dimethylamino)propyl]-2H-pyrido[3,2-b][1,4]oxazin-3(4H)-one, 2-benzoyl-4-[3-(dimethylamino)-propyl]-2H-pyrido-[2,3-b][1,4]oxazin-3(4H)-one, 2-benzoyl-4-[3-(dimethylamino)propyl]-2H-pyrido]3,4-b][1,4]oxazin-3(4H)-one, and 2-benzoyl-4-[3-(dimethylamino)propyl]-2H-pyrido]4,3-b][1,4]oxazin-3(4H)-one, and pharmaceutically acceptable acid addition salts thereof.

B 367,621
HYDRAULIC DRIVE FOR CONTROL RODS

Erling Frisch, deceased, **late of Pittsburgh, Pa.,** by Dorthy Randall Frisch, Administratrix, **Pittsburgh, and Harry N. Andrews, Franklin Township, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

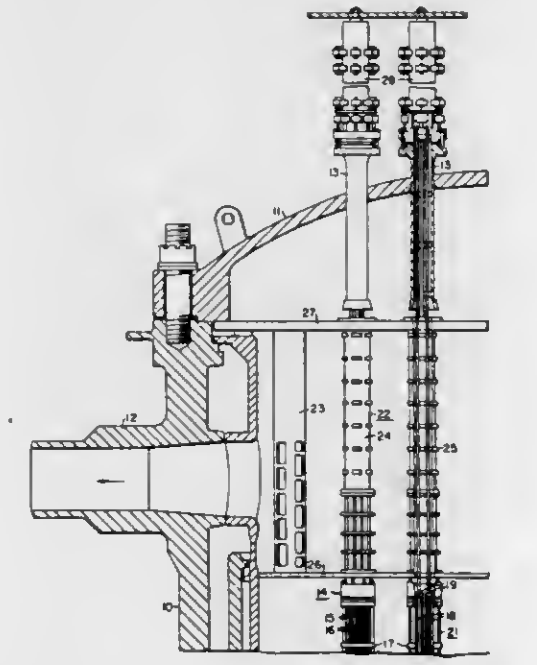
Filed June 6, 1973, Ser. No. 367,621

Int. Cl.² G21C *7/08*

U.S. Cl. 176—36 R **11 Claims**

References Cited
UNITED STATES PATENTS

2,855,899	10/1958	Beaty	176/36 R
3,154,472	10/1964	Shannor	176/36 R
3,607,629	9/1971	Frisch	176/36 R



1. A nuclear reactor comprising,

a sealed, pressurized, reactor vessel having a plurality of openings in a wall thereof, each opening having a tubular member extending therethrough and sealingly attached thereto, the interior of said tubular member being exposed to the interior of said vessel,

a core fixedly positioned within said reactor vessel, said core including a multiplicity of elongated fuel elements in spaced, parallel relationship, and a multiplicity of control rod channels interspersed among said fuel elements,

means associated with said sealed reactor vessel and said core contained therein for converting heat produced by said core into useful energy,

a plurality of control rod assemblies situated for axial movement within said control rod channels, each of said control rod assemblies including at least one control rod containing neutron absorbing material and a drive shaft attached thereto, a plurality of said drive shafts extending through each of said tubular members attached to said reactor vessel,

sealed hollow hydraulic drive means sealingly attached to each of said tubular members for individually moving said drive shafts, and thereby said at least one control rod associated therewith, into and out of said core, said drive means having the interior thereof exposed to the interior of said tubular members, respectively, said drive means including a plurality of cylinders comprising cylindrical channels for respective movement therein of said control rod drive shafts, said plurality of cylinders being located within said drive means, and latching apparatus entirely within said drive means for positively and mechanically holding individual drive shafts of control rods in a withdrawn position, the ends of said drive shafts terminating within said drive means,

said latching apparatus including complementary engaging members one mounted on said drive shaft and movable to engage another engaging member mounted entirely within said drive means, said other engaging member including an elongated arm of magnetic material mounted pivotally against a resilient means and biased toward said one engaging member when the control rod associated with said one engaging member is in a withdrawn position, and actuating means for said latching apparatus positioned adjacent said latching apparatus and located on the exterior of said drive means,

said actuating means including electromagnetic pole means positioned in alignment with the elongated arm of said other engaging member to move said arm pivotally against said resilient means and away from said one engaging member when said electromagnetic pole means is energized.

B 386,257
AMIDES OF 1-AMINOCYCLOPENTANE CARBOXYLIC ACID

Harvey E. Alburn, West Chester, and Norman H. Grant, Wynnewood, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 209,335, Dec. 17, 1971, Pat. No. 3,803,229. This application Aug. 6, 1973, Ser. No. 386,257

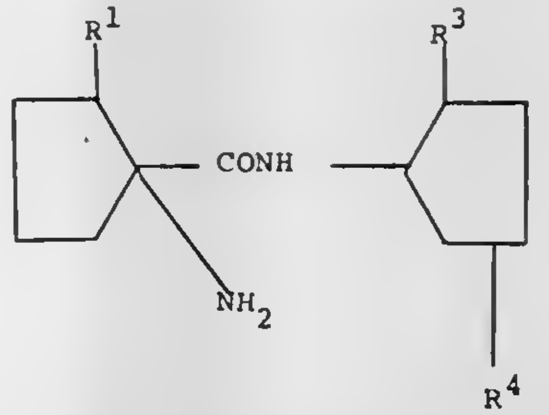
Int. Cl.² C07C *103/737*

U.S. Cl. 260—557 R **1 Claim**

References Cited
UNITED STATES PATENTS

3,803,229	4/1974	Alburn et al.	260/557

1. An amide of 1-aminocyclopentanecarboxylic acid of the compound having the following formula:



wherein R^1 is selected from the group consisting of hydrogen, lower alkoxy, hydroxy, lower alkyl and nitro; R^3 is selected from the group consisting of hydrogen, lower alkyl, halogen and hydroxy and R^4 is either lower alkyl or hydrogen with the proviso that R^3 is either hydroxy or hydrogen when R^4 is lower alkyl; with the further proviso that R^1, R^3 and R^4 are not all hydrogen.

B 386,673
S-(ALKOXYCARBONYL-ALKYL-THIOPHOSPHORIC ACID ESTER AMIDES

Claus Stolzer, Wuppertal; Wolfgang Behrenz, and Ingeborg Hammann, both of Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 8, 1973, Ser. No. 386,673

Claims priority, application Germany, Aug. 16, 1972, 2240033

Int. Cl.² C07F *9/24;* A01N *9/36*

U.S. Cl. 260—942 **8 Claims**

References Cited

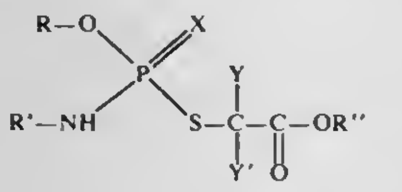
UNITED STATES PATENTS

3,019,250	1/1962	Kayser et al.	260/941 X
3,705,928	12/1972	Stolzer et al.	260/941 X

FOREIGN PATENTS OR APPLICATIONS

1,067,016	10/1959	Germany	260/941

1. An S-(alkoxycarbonyl)-alkyl-thiophosphoric acid ester amide of the formula



(I)

in which

R, R' and R'' each independently is alkyl of 1 to 10 carbon atoms or lower alkenyl,

Y is hydrogen or lower alkyl,

Y' is hydrogen, lower alkyl or $—CH_2—CO—OR''$, and

X is oxygen or sulfur.

B 386,828
4-ETHERS OF 3-AMINO-5-SULFAMOYLBENZOIC ACIDS

Lincoln Harvey Werner, Summit, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 297,530, Oct. 13, 1972. This application Aug. 8, 1973, Ser. No. 386,828

Int. Cl.² C07C *143/80*

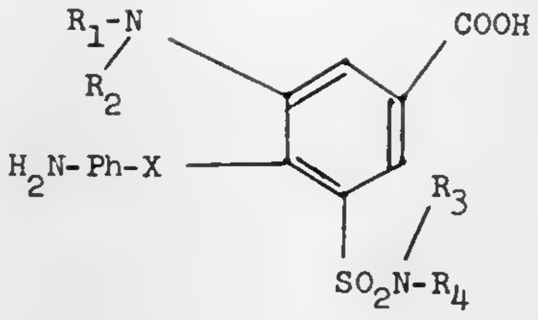
U.S. Cl. 260—516 **7 Claims**

References Cited

UNITED STATES PATENTS

3,567,714	3/1971	Wilson	260/470
3,706,790	12/1972	Sprague et al.	280/470
3,806,534	4/1974	Feit	260/519

1. A 4-phenylether of the 3-amino-5-sulfamoylbenzoic acid corresponding to the formula



in which R_1 is lower alkyl, lower alkenyl, cycloalkyl or cycloalkyl-lower alkyl each of which with 3 to 7 ringcarbon atoms, R_2 is hydrogen, lower alkyl or lower alkenyl R_3 is hydrogen or lower alkyl, X is oxygen or sulfur, Ph is unsubstituted phenylene or phenylene substituted by one member of lower alkyl, and R_4 is hydrogen or lower alkyl, or the lower alkyl esters or therapeutically useful ammonium, alkali or alkaline earth metal or acid addition salts thereof.

B 390,408
QUADRIPOLYMER SILOXANES CONTAINING SI-H BONDS

Gordon Carlton Johnson, Armonk; Richard Bruce Metzler, Ossining, both of N.Y., and Donald Leroy Bailey, Sistersville, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 22, 1973, Ser. No. 390,408

Int. Cl. C07f *7/08*

U.S. Cl. 260—448.2 H **5 Claims**

References Cited

UNITED STATES PATENTS

2,547,678	4/1951	Wilcock et al.	260/448.2 H
3,065,252	11/1962	Brown et al.	260/448.2 H
3,101,361	8/1963	Brown et al.	260/448.2 H
3,280,160	10/1966	Bailey	260/448.2 H
3,334,122	8/1967	Cekada et al.	260/448.2 H
3,697,473	10/1972	Polmanteer et al.	260/448.2 H X
3,772,247	11/1973	Flannigan	260/448.2 H X

1. A quadripolymer siloxane having the average structure

$$R_3SiO(R_2SiO)_a(RHSiO)_b(H_2SiO)_cSiR_3$$

in which the sum of a + b + c is up to 175 and the ratio of b:a is from 0.1:1 to 0.35:1, the ratio of c:a is from 0.1:1 to 0.25:1 and the ratio of b:c is from 0.9:1 to 1.6:1 and R is alkyl of from 1 to 3 carbon atoms.

B 396,164
PRESSURIZED FUEL ELEMENTS FOR NUCLEAR REACTORS

Henry A. Wehrli, II, Monroeville; Edmond E. DeMario, and Thomas R. Hovanec, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 11, 1973, Ser. No. 396,164

Int. Cl.² G21C *3/04*

U.S. Cl. 176—68 **9 Claims**

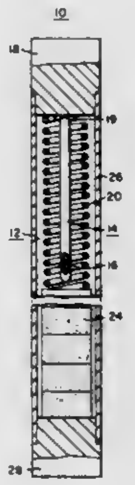
References Cited

UNITED STATES PATENTS

3,291,698	12/1966	Fortessue	176/68
3,627,635	12/1971	Smith et al.	176/68
3,644,174	2/1972	Ferrari	176/68
3,647,622	3/1972	Andrews et al.	176/68
3,647,623	3/1972	Hepps et al.	176/79
3,671,393	6/1972	Williams	176/68
3,759,243	9/1973	Masetti	176/68

FOREIGN PATENTS OR APPLICATIONS

829,139	2/1960	United Kingdom	176/68
1,816,543	7/1970	Germany	176/68



1. A clad nuclear fuel element comprising an elongated hermetically sealed casing member, nuclear fuel occupying a portion of the interior of said casing member and the remainder of said casing member forming a gas filled plenum pressurized during manufacture with a predetermined volume of gas, at least one hermetically sealed elongated capsule having no extraneous internal support within the capsule, occupying at least a portion of the interior of said plenum out of contact with the casing member, said capsule formed with a depression in a wall of the capsule extending substantially less than the longitudinal dimension thereof, the depression controlling collapse of the capsule in a predetermined manner in a buckling mode, proportionally linearly with increases in gas generation that would result in an increase in pressure above a given designed level within said plenum due to fission gas accumulation generated under irradiation if the capsule did not collapse in a buckling mode, to provide additional volume in said plenum resulting from collapse of the capsule to the extent necessary to accommodate the increase in gas volume to maintain the pressure within said plenum substantially constant throughout the operation of the fuel element under irradiation.

B 398,084
CONVERSION OF ALIPHATIC NITRILES TO CARBOXYLIC ACIDS USING CYCLIC ACID ANHYDRIDES

Stanley D. Turk, and Charles A. Drake, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 17, 1973, Ser. No. 398,084

Int. Cl.² C07D *209/48, 209/52*

U.S. Cl. 260—326 R **4 Claims**

References Cited

UNITED STATES PATENTS

3,720,679	3/1973	Feldman et al.	260/281

OTHER PUBLICATIONS

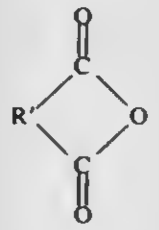
Komori et al., Chem. Abs. 49, 6836a(1953).

M. T. Dangyan et al., Chem. Abs. 40, 3399-1(1946).

1. A process for the simultaneous preparation of an aliphatic carboxylic acid and an imide from the corresponding aliphatic nitrile and carboxylic acid anhydride, respectively, which comprises the step of reacting said nitrile with said anhydride and water in the presence of a catalytic amount of a strong acid wherein said nitrile has the formula

$$R(CN)_n$$

wherein *n* is an integer having a value of 1 or 2, wherein for *n* = 1, R is selected from the group consisting of alkyl, cycloalkyl and alkenyl (said alkenyl possessing one double bond), and for *n* = 2, R is selected from the group consisting of alkylene, cycloalkylene and alkenylene (said alkenylene possessing one double bond) with the proviso that said R group contains up to 13 carbon atoms; and wherein said anhydride has the formula



wherein R' is selected from the group consisting of arylene groups having 6 or 10 carbon atoms, alkarylene groups having from 7 to 12 carbon atoms and cycloalkylene groups having from 6 to 12 carbon atoms, wherein the carbon atoms of the anhydride group are bonded to adjacent carbon atoms of the ring structure; wherein said reaction is conducted at a pressure in the range of autogenous pressure to 5000 pounds above autogenous pressure, at a temperature ranging from about 100° to about 350°C for a time ranging from about 0.5 to about 20 hours.

B 402,929
TREATMENT OF ASBESTOS DIAPHRAGMS AND RESULTING DIAPHRAGM

Robbie T. Foster; William B. Darlington, and Malcolm Korach, all of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 3, 1973, Ser. No. 402,929

Int. Cl.^{2} C25B *13/06;* **D21H** *5/18;* **D04H** *1/58;* **B05D** *3/02*

U.S. Cl. 428—289 **3 Claims**

References Cited

UNITED STATES PATENTS

737,557	8/1903	Friswell	162/153
984,915	2/1911	Heltzen	117/126 AF
1,865,152	6/1932	Stuart	204/295
3,499,812	3/1970	Glar	117/126 AF
3,597,514	8/1971	Jager	162/153
3,847,762	11/1974	Stram	204/295

1. A fibrous chrysotile asbestos mat having a wet tear strength in excess of 4.4 pounds/inch and containing the reaction product formed by contacting a moist asbestos mat with alkali metal hydroxide in an aqueous alkaline solution whereby to provide alkali metal ion within the mat in an amount of from about 10 to about 100 percent of the stoichiometric amount of alkali metal ion for one equivalent of alkali metal ion to react and one equivalent of silicate ion of the asbestos, drying the asbestos to substantial dryness, and heating the dried asbestos mat to above 110°C. and below about 280°C. for more than 2 hours.

B 407,737
4-PIPERIDINOBUTYROPHENONES AS NEUROLEPTICS

Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 18, 1973, Ser. No. 407,737

Int. Cl.^{2} A61K *31/445*

U.S. Cl. 424—267 **3 Claims**

References Cited

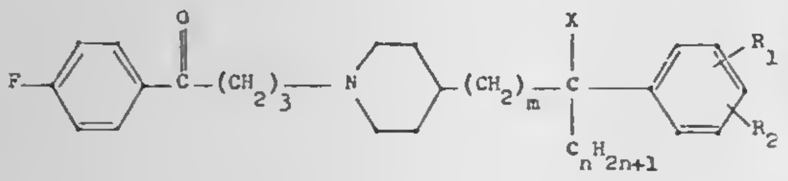
UNITED STATES PATENTS

3,462,444	8/1969	Becket et al.	260/294.7
3,799,932	3/1974	Yamamoto et al.	260/293.6
3,806,526	4/1974	Carr et al.	260/293.64
3,852,455	12/1974	Carr	424/267

OTHER PUBLICATIONS

Chem. Abst., Vol. 70–68126w (1969).

1. A pharmaceutical composition comprising a neuroleptically effective amount of a compound of the formula



wherein X is hydroxy; *m* is 0, *n* is 1 or 2; and each of R$_1$ and R$_2$ is hydrogen, methyl, ethyl, methoxy, ethoxy, fluorine, chlorine, bromine or trifluoromethyl, or a therapeutically acceptable acid addition salt thereof, together with a pharmaceutical excipient.

B 422,063
PROCESS FOR THE PRODUCTION OF COLOURED POLYURETHANE FOAMS

Karlheinz Wolf; Konrad Nonn, both of Leverkusen; Reinhold Hörnle, Cologne; Hans Unterbirker, and Jürgen Koerner, both of Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 5, 1973, Ser. No. 422,063

Claims priority, application Germany, Dec. 5, 1972, 2259435

Int. Cl.^{2} C08G *18/14, 18/30*

U.S. Cl. 260—2.5 AM **8 Claims**

References Cited

UNITED STATES PATENTS

3,137,671	6/1964	Bosshard	260/2.5 AK
3,228,780	1/1966	Grelat	260/2.5 AK
3,278,486	10/1966	Meek	260/2.5 AK

FOREIGN PATENTS OR APPLICATIONS

823,089	11/1959	United Kingdom	260/2.5 AK
867,235	5/1961	United Kingdom	260/2.5 AK

OTHER PUBLICATIONS

"Evaluation of Colorants in One-Shot Urethane Foams", Olin, Bulletin 00–44U–7–65, published 7–65; pp. 1 and 2.

"Pigmentation of Flexible Urethane Foam", ICI Technical Information Bulletin, Urethane PC/U.39, Jan. 17, 1963, 9 pp.

"Daltolite Pigment Pastes for Coloring Flexible Urethane Foam", ICI Technical Inf. Bul., PC/U.53; June 22, 1964, 2 pp.

1. In a process for producing a colored polyurethane foam wherein a polyether or a polyester is reacted with an organic polyisocyanate to produce a polyurethane foam, the improvement which comprises adding to the reactants of the polyurethane foam production before or during the reaction a dispersion of one or more dyes each of which contains at least one free amino or hydroxyl group capable of reaction with isocyanates under the conditions of polyaddition and liquids in which the dyes are soluble to an extent of less than 2% at 20°C.

B 423,867
METHOD OF REMOVING HYDROGEN PEROXIDE FROM DRYCLEANING SOLVENTS

Charles L. Cormany, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 11, 1973, Ser. No. 423,867

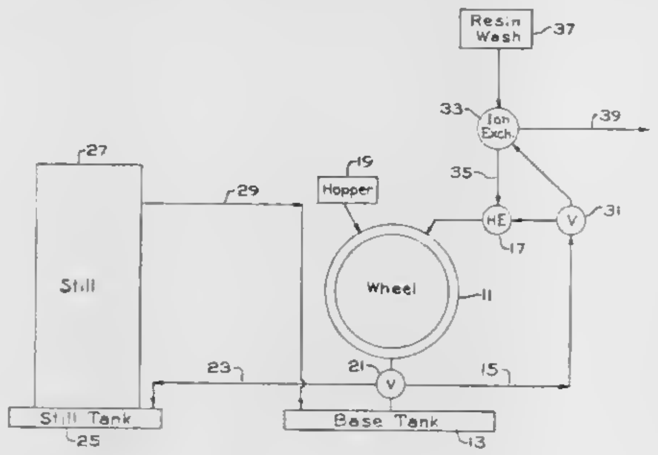
Int. Cl.^{2} C01B *15/02;* **D06L** *1/04, 1/08*

U.S. Cl. 8—142 **22 Claims**

References Cited

UNITED STATES PATENTS

2,801,224	7/1957	Greer	210/37
3,297,404	1/1967	Elliott et al.	210/37
3,679,590	1/1972	Cormany et al.	8/142



1. A method of removing minor concentrations of hydrogen peroxide from liquid chlorinated drycleaning solvents which comprises contacting a synthetic crosslinked ion-exchange resin with said solvent until said solvent has a lower hydrogen peroxide concentration.

B 426,424
METHOD FOR THE DETECTION OF FATTY SUBSTANCES ON SURFACES

Hans-Georg Rey; Walter Rittersdorf, both of Manheim-Waldhof, and Ernst-Werner Busch, Lampertheim, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany

Division of Ser. No. 219,566, Jan. 20, 1972, abandoned. This application Dec. 19, 1973, Ser. No. 426,424

Claims priority, application Germany, Feb. 11, 1971, 2106408

Int. Cl.^{2} A61K *29/00;* **G01N** *13/00, 21/04*

U.S. Cl. 424—9 **9 Claims**

References Cited

UNITED STATES PATENTS

2,519,660	8/1950	James	117/36.7
2,710,263	6/1955	Clark	117/36.7
2,854,350	9/1958	Phillpotts	117/36.7
2,939,802	6/1960	Werle	117/36.7
2,957,791	10/1960	Bechtold	117/36.7
3,431,131	3/1969	Hartman	117/36.7

FOREIGN PATENTS OR APPLICATIONS

849,011	11/1939	France	424/27
1,171,869	11/1969	United Kingdom	424/9

1. Method for detecting fat or fat-like substances on a surface, which consists essentially of contacting the surface with the plastic material coated surface of a diagnostic means, thereby immediately producing a clear image of the distribution of the fat or fat-like substances on said surface, said means comprising a film, foil, or paper having a dark base color and a face coating in a thickness sufficient to mask the color of the base, said face coating comprising a finely dispersed plastic material having microporous interstices and having a white bloom, said plastic material being selected from the group consisting of cellulose butyrate, cellulose oleate, cellulose stearate, cellulose phthalate, cellulose naphthenate, cellulose laurate, cellulose acetobutyrate, cellulose acetomaleate, cellulose acetonitrate, ethyl cellulose, acetyl cellulose, benzyl cellulose, nitrocellulose, ethyl cellulose nitrate, benzyl cellulose acetate, ethyl cellulose acetate, glycol cellulose acetate, polymethacrylate and polystyrene.

B 426,639
S-TRIAZOLO-[3,4-A]ISOQUINOLINES IN TREATING INFLAMMATORY DISORDERS

Fernand G. F. Eloy, Rhode St. Genese, Belgium, and Robert W. Shanahan, Allendale, N.J., assignors to Mallinckrodt Chemical Works, now by change of name Mallinckrodt, Inc., St. Louis, Mo.

Division of Ser. No. 164,880, July 26, 1971, abandoned. This application Dec. 12, 1973, Ser. No. 426,639

Int. Cl.^{2} A61K *31/47, 31/495, 31/535*

U.S. Cl. 424—258 **5 Claims**

References Cited

UNITED STATES PATENTS

2,719,158	9/1955	Druey et al.	260/288 R
3,354,164	11/1967	Francis	260/288
3,663,551	5/1972	Deryckere et al.	260/283 SY

FOREIGN PATENTS OR APPLICATIONS

1,573,135	7/1969	France	260/288

1. A method of treating an inflammatory disorder in a mammal which comprises administering to said mammal an effective amount of a compound selected from the group consisting of 3-(N,N-diethylaminoethylamino)-s-triazolo-[3,4-a]-isoquinoline, 3-trifluoromethyl-6-carbomethoxy-s-triazolo-[3,4-a]-isoquinoline, 3-isobutyl-s-triazolo-[3,4-a]-isoquinoline, 8,9-methylenedioxy-s-triazolo-[3,4-a]-isoquinoline, 3-trifluoromethyl-6-methyl-s-triazolo-[3,4-a]-isoquinoline, 3-trifluoromethyl-8,9-methylenedioxy-s-triazolo-[3,4-a]-isoquinoline, 3-trifluoromethyl-9-methoxy-s-triazolo-[3,4-a]-isoquinoline, 3-methyl-9-methoxy-s-triazolo-[3,4-a]-isoquinoline, 3-methyl-8-methoxy-s-triazolo-[3,4-a]-isoquinoline, 3-trifluoromethyl-9-chloro-s-triazolo-[3,4-a]-isoquinoline, 3-trifluoromethyl-8-methoxy-s-triazolo-[3,4-a]-isoquinoline, 3-trifluoromethyl-6-carboxy-s-triazolo-[3,4-a]-isoquinoline, 3-trifluoromethyl-9-methyl-s-triazolo-[3,4-a]-isoquinoline, 3-methyl-7-cyano-s-triazolo-[3,4-a]-isoquinoline, 3-acetoxymethyl-s-triazolo-[3,4-a]-isoquinoline, 3-n-propyl-7-bromo-s-triazolo-[3,4-a]-isoquinoline, 3-methyl-7-chloro-s-triazolo-[3,4-a]-isoquinoline, 3-trifluoromethyl-5,6-dihydro-9-methoxy-s-triazolo-[3,4-a]-isoquinoline, 5,6-dihydro-8,9-methylenedioxy-s-triazolo-[3,4-a]-isoquinoline and the pharmaceutically acceptable, nontoxic acid addition and alkali metal salt thereof.

B 437,209

ANIONIC SIZES

Wulf von Bonin, Leverkusen; Friedhelm Müller, Odenthal, and Nikolaus Schön, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Jan. 28, 1974, Ser. No. 437,209

Claims priority, application Germany, Jan. 31, 1973, 2304535

Int. Cl.^{2} C08F *222/16, 220/06*

U.S. Cl. 260—78.5 R **3 Claims**

References Cited

UNITED STATES PATENTS

3,547,898	12/1970	Shapiro	260/78.5
3,635,915	1/1972	Gale	260/78.5 R

FOREIGN PATENTS OR APPLICATIONS

674,876	7/1952	United Kingdom	260/78.5 R
1,088,634	10/1967	United Kingdom	260/78.5 R

1. A copolymer, which is suitable for use in anionic sizes, which is an ammonium or alkali metal salt of a copolymer consisting of
   - a. 0.5 to 50% by weight of copolymerized units of at least one half ester of an α,β-olefinically unsaturated C_4 or C_5 dicarboxylic acid and an aliphatic or cycloaliphatic alcohol having 1 to 18 C-atoms,
   - b. 6 to 40% by weight of copolymerized units of at least one acid selected from the group consisting of acrylic acid and methacrylic acid and
   - c. 40 to 85% by weight of copolymerized units of an aromatic compound which contains a single polymerizable double bond.

B 439,778

SWEETENING COMPOSITIONS

Anthony Laurence LaVia, East Brunswick, and John Anthony Hill, New Brunswick, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 22,687, March 25, 1970, abandoned. This application Feb. 5, 1974, Ser. No. 439,778

Int. Cl.^{2} A23L *1/236*

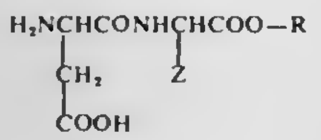
U.S. Cl. 426—548 **2 Claims**

References Cited

UNITED STATES PATENTS

3,642,491	2/1972	Schlatter	426/217 X
3,695,898	10/1972	Hill et al.	426/217
3,780,189	12/1973	Scott	426/217 X

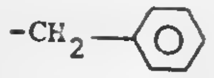
1. A method of masking the aftertaste of saccharin, which comprises adding to the saccharin a dipeptide ester of the formula

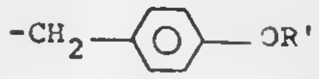


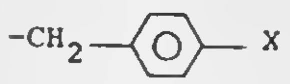
$$\underset{\underset{COOH}{|}}{\underset{CH_2}{|}}\!\!\!H_2NCHCONH\underset{Z}{\underset{|}{C}}HCOO-R$$

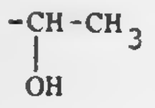
wherein Z is:

$-R$









$$-\underset{OH}{\underset{|}{CH}}-CH_3$$

or

$-(CH_2)_nS(O)_mR$

wherein R is an alkyl radical of up to 6 carbon atoms, or an alkyl-aryl or alicyclic radical of up to 10 carbon atoms, R′ is hydrogen or an alkyl radical of up to 6 carbon atoms, *m* is 0 or 2, *n* is 1 or 2, and X is halogen, the dipeptide ester being present in an amount from at least about that amount effective to mask the aftertaste of saccharin and not above about its threshold level of taste.

B 440,858

BENZODIFURAN COMPOUNDS

Peter Hartmann, Cologne-Stammheim, and Hans Theidel, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Feb. 8, 1974, Ser. No. 440,858

Claims priority, application Germany, Feb. 9, 1973, 2306515

Int. Cl.^{2} C07D *307/84*

U.S. Cl. 260—346.2 M **2 Claims**

References Cited

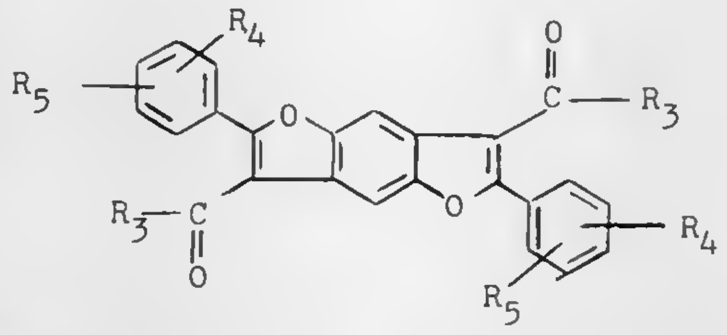
UNITED STATES PATENTS

3,859,350	1/1975	Sahm et al.	260/346.2 R
3,864,333	2/1975	Sahm et al.	260/346.2 M

OTHER PUBLICATIONS

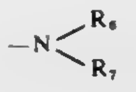
Grinev et al., *Chem. Abstracts*, Vol. 51 (1957).

1. A benzodifuran compound of the formula



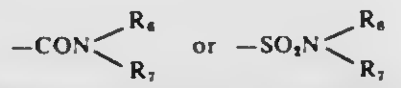
wherein:

R_3 denotes hydroxyl, alkoxy with 1 to 20 carbon atoms, cycloalkoxy with 3 to 7 carbon atoms, benzyloxy or the group



$$-N\begin{matrix}\diagup R_6\\ \diagdown R_7\end{matrix}$$

R_4 and R_5 independently of one another denote hydrogen, cyano, phenyl, alkyl with 1 to 4 carbon atoms, alkoxy with 1 to 4 carbon atoms, phenoxy



$$-CON\begin{matrix}\diagup R_6\\ \diagdown R_7\end{matrix} \quad \text{or} \quad -SO_2N\begin{matrix}\diagup R_6\\ \diagdown R_7\end{matrix}$$

R_6 and R_7 independently of one another denote hydrogen or alkyl with 1 to 4 carbon atoms, with the proviso that R_4 and R_5 do not simultaneously denote hydrogen.

B 441,605

CARBOXYLIC ACID STORAGE STABILIZERS FOR LATENT CATALYST CURED EPOXY RESINS

James D. B. Smith, Turtle Creek, and Robert N. Kauffman, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 11, 1974, Ser. No. 441,605

Int. Cl.^{2} C08G *51/04, 30/12*

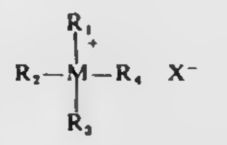
U.S. Cl. 260—37 EP **13 Claims**

References Cited

UNITED STATES PATENTS

2,844,552	7/1958	Glaser	260/2 EC
2,928,809	3/1960	Hicks	260/2 X
3,678,004	7/1972	Meyers	260/47

1. A resinous composition suitable for insulating electrical members comprising by weight:
   - A. **100** parts of an epoxy resin containing more than one 1,2 epoxy group per molecule,
   - B. **55** to **165** parts of an anhydride of a polycarboxylic acid as a curing agent,
   - C. **1** to **20** parts of a mono-carboxylic acid selected from the group consisting of acetic, propionic, butyric, isobutyric, valeric, caproic, heptanoic and hexanoic acids as a stabilizer and,
   - D. an effective amount of a latent catalyst selected from the group consisting of amines, imidazoles and quaternary organic onium salts having the structural formula:



$$R_2-\overset{\overset{R_1}{|\,+}}{\underset{\underset{R_3}{|}}{M}}-R_4 \quad X^-$$

where M is selected from the group consisting of N and P, R_1, R_2, R_3 and R_4 are selected from the group consisting of alkyl and aryl radicals having 1 to 21 carbon atoms and X is selected from the group consisting of halogen, propionate, acetate, butyrate, isobutyrate and dimethyl phosphate radicals.

B 447,000

PERHYDROFLUORENETETROL AND PERHYDRO-PHENANTHRENETETROL DERIVATIVES

Frederic Peter Hauck, Somerville, and Christopher Michael Cimarusti, Somerset, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 265,065, June 21, 1972, abandoned. This application Feb. 28, 1974, Ser. No. 447,000

Int. Cl.^{2} C07D *295/08, 295/10*

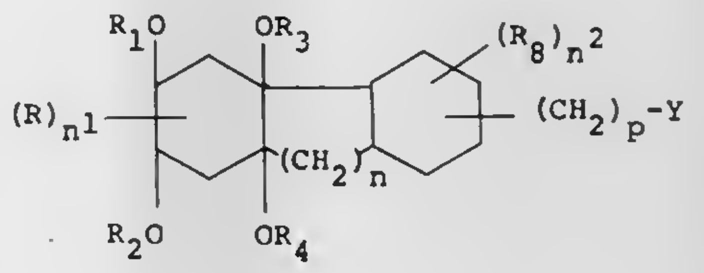
U.S. Cl. 260—293.56 **18 Claims**

References Cited

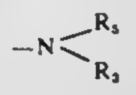
UNITED STATES PATENTS

3,751,420	8/1973	Hauck et al.	260/293.58

1. A compound of the structure

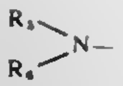


wherein *n* is 1 or 2; n^1 is 0, 1 or 2; n^2 is 0, 1, 2, or 3; *p* is an integer of from 0 to 10; R_1, R_2, R_3 and R_4 are the same or different and are selected from the group consisting of hydrogen, an acyl radical having less than 12 carbon atoms selected from the group consisting of lower alkanoyl, lower alkenoyl, monocyclic aroyl, monocyclic aryl-lower alkanoyl, cycloalkanoyl, cycloalkenoyl, cycloalkyl-lower alkanoyl and cycloalkenyl-lower alkanoyl, lower alkyl, trifluoromethyl, monohalo-lower alkyl, lower alkoxy-carbonyl, amido and (lower alkoxy) alkylene wherein the alkylene group has 2 to 5 carbon atoms; R is selected from the group consisting of lower alkyl, lower alkoxy, and cycloalkyl; R_8 is selected from the group consisting of hydrogen, lower alkyl, cycloalkyl, di-lower alkylamino-lower alkyl, hydroxy and $R_9O(CH_2)_q$— wherein R_9 can be any of the R_1 to R_4 groups set forth above and *q* is an integer of from 1 to 10; and Y is



$$-N\begin{matrix}\diagup R_5\\ \diagdown R_6\end{matrix}$$

wherein R_5 and R_6 may be the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halo-lower alkyl, monocyclic cycloalkyl, monocyclic cycloalkyl-lower alkyl, hydroxy-lower alkyl, monocyclic aryl or monocyclic aryl-lower alkyl; or



can be taken together to form a 5-, 6- or 7-membered nitrogen heterocyclic radical containing not more than one hetero atom in addition to the nitrogen atom, wherein said additional hetero atom may be oxygen, nitrogen, or sulfur; wherein the term cycloalkyl refers to cycloalkyl groups having 3 to 6 carbon atoms and wherein the term aryl refers to phenyl or phenyl substituted with lower alkyl, halogen, nitro, or lower alkoxy; stereoisomers thereof, acid salts thereof, quaternary salts thereof and N-oxides thereof.

B 456,900

METHOD OF PROMOTING THE REACTION OF UNSATURATED NITRILES WITH OLEFINS TO PRODUCE UNSATURATED NITRILES OF INCREASED CARBON NUMBER

Stanley D. Turk, and Charles A. Drake, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 210,228, Dec. 20, 1971, abandoned. This application Apr. 1, 1974, Ser. No. 456,900

Int. Cl.^{2} C07C *120/00*

U.S. Cl. 260—465.9 **10 Claims**

References Cited

UNITED STATES PATENTS

2,641,607	6/1953	Albisetti, Jr. et al.	260/465.9 X
3,225,082	12/1965	McClure	260/465.8 D X
3,361,785	1/1968	McClure	260/465.8 D X
3,484,475	12/1969	Cornforth et al.	260/465.8 D
3,499,024	3/1970	Morita et al.	260/465.8 D X
3,567,760	3/1971	Feldman et al.	260/465.8 D
3,574,702	4/1971	Feldman et al.	260/465.8 D
3,595,901	7/1971	Smith	260/465.9
3,671,569	6/1972	Chabardes et al.	260/465.8 D

1. A method which comprises reacting under suitable reaction conditions at least one olefinic hydrocarbon compound with at least one unsaturated nitrile reactant in the presence of, as the sole reaction promoting material, a promoter consisting essentially of at least one organo derivative of a Group VA element, said reaction conditions being suitable for the reaction of said at least one olefinic hydrocarbon compound with said at least one unsaturated nitrile reactant to produce at least one unsaturated nitrile product having a greater number of carbon atoms than said unsaturated nitrile reactant;

said at least one olefinic hydrocarbon compound having from 3 to 12 carbon atoms and being represented by the formula $R_2C{=}CR{-}CHR_2$, wherein each R is independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, and aryl hydrocarbyl radicals and combinations thereof;

said at least one unsaturated nitrile reactant having from 3 to 18 carbon atoms and being represented by the formula $R'CH{=}CR'{-}CN$ wherein each R' is selected from the group consisting of hydrogen, alkyl, cycloalkyl, and aryl hydrocarbyl radicals and combinations thereof;

said organo derivative of a Group VA element being represented by the formula R''_nZH_{3-n} wherein each R'' is independently selected from the group consisting of aryl, alkaryl, cycloalkylaryl, araryl, aryloxy, alkaryloxy, and arylaryloxy; each R'' group containing from 6 to 12 carbon atoms; Z is selected from the group consisting of

N, P, $\overset{O}{\overset{\|}{P}}$, As, Sb, and Bi;

and n is selected from the integers 2 and 3.

B 458,617

AMINO DERIVATIVES OF [4,3-C]PYRAZOLOPYRIDINE CARBOXYLIC ACIDS AND ESTERS

Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 263,566, June 16, 1972, Pat. No. 3,835,144. This application Apr. 8, 1974, Ser. No. 458,617

Int. Cl.^{2} C07D *471/06*

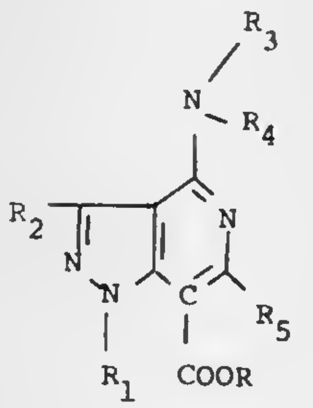
U.S. Cl. 260—295.5 B **7 Claims**

References Cited

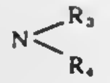
UNITED STATES PATENTS

3,755,340	8/1973	Hoehn et al.	260/293.6

1. A compound of the formula



wherein R is hydrogen or lower alkyl; R_1 is hydrogen, lower alkyl, phenyl or phenyl—(C_1-C_2)lower alkyl; R_2 is hydrogen, lower alkyl, phenyl or phenyl—(C_1-C_2)lower alkyl; the group



forms one of the heterocyclic groups aziridino, pyrrolidino, piperidino, piperazino, 4-lower alkyl)piperazino or 4-(hydroxy-lower alkyl)piperazino; R_5 is hydrogen, lower alkyl or phenyl; and physiologically acceptable acid addition salts thereof.

B 464,587

ORGANO TIN COMPOUND

Gary L. Driscoll, Boothwyn, and Marcus W. Haseltine, Jr., Brookhaven, both of Pa., assignors to Sun Ventures, Inc., St. Davids, Pa.

Division of Ser. No. 381,634, July 23, 1973, and a Continuation-in-part of Ser. No. 135,295, Apr. 19, 1971, Ser. No. 144,165, May 17, 1971, Pat. No. 3,715,313, and Ser. No. 152,203, June 11, 1971, Pat. No. 3,793,203. This application Apr. 26, 1974, Ser. No. 464,587

Int. Cl.^{2} C07F 7/22

U.S. Cl. 260—429.7 **6 Claims**

References Cited

UNITED STATES PATENTS

2,076,201	4/1937	Langedijk et al.	260/683.15 B
2,085,535	6/1937	Langedijk et al.	260/683.15 B
2,403,779	7/1946	Bailey	260/683.15 B
3,190,901	6/1965	Polster	260/429.7
3,607,892	9/1971	Reifenberg	260/429.7

OTHER PUBLICATIONS

Chemical Abstracts, Vol. 50, 15119a (1956).

Chemical Abstracts, Vol. 54, 20326a (1960).

Bauer et al., J. Polymer Science, Part A-1, Vol. 9, pp. 1451-1458 (1971) corresponding ref. 15 on pp. 1458.

Bauer et al., Can. J. Chem. Vol. 48, pp. 1252 (1970).

1. An organo-tin compound, useful as an antiwear additive to a fuel or lubricant, recovered from the reaction product obtained by polymerization of isobutylene in the presence of from 0.1-40 volume percent of a metal halide consisting essentially of stannic chloride in a solvent selected from nitromethane, nitroethane, nitropropane, nitrobenzene, benzene, lower alkyl benzenes and mixtures of two or more said solvents at a temperature in the range of −80 to +100°C.

B 465,955

MORTAR OF INORGANIC BINDER AND FORMALDEHYDE CONDENSATION PRODUCT OF SULFONATED AROMATIC ETHER, IMINE OR SULFONE

Kurt Schaupp, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 1, 1974, Ser. No. 465,955

Claims priority, application Germany, May 5, 1973, 2322707

Int. Cl.^{2} C08L *61/00*

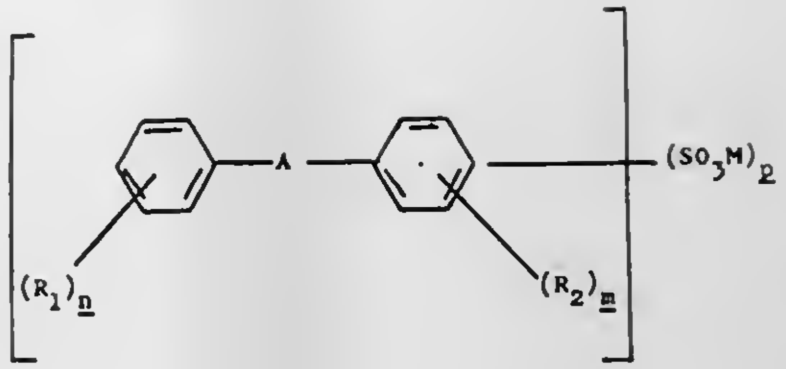
U.S. Cl. 260—37 R **7 Claims**

References Cited

UNITED STATES PATENTS

2,315,951	4/1943	Fox et al.	260/49
3,240,736	3/1966	Beckwith	260/38
3,720,529	3/1973	Jordon	106/90
3,788,868	1/1974	Kitsuda et al.	106/90

1. A mortar comprising an inorganic binder and about 0.05 to 10% of its weight of a condensation product of formaldehyde with a compound of the formula



wherein

R_1 and R_2 each independently is hydrogen, an alkyl radical with 1 to 6 carbon atoms or —NR'R'';

R' and R'' each independently is hydrogen or an alkyl radical with 1 to 6 carbon atoms;

A is —O—, —NR'— or $-SO_2-$;

M is hydrogen, an alkali metal or an equivalent of an alkaline earth or earth metal;

m and *n* each independently is an integer from 1 to 5; and

p is an integer from 0 to 4;

the compound having at least one hydrogen atom capable of condensation with formaldehyde which can either be attached to a carbon atom of an aromatic ring or, where an NR'R''— substituent is present in the molecule, to nitrogen.

B 467,250

VAPORIZATION OF OIL FEED BY ADDITION OF REGENERATED CATALYST

George E. McKenna, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 6, 1974, Ser. No. 467,250

Int. Cl.^{2} C10G *37/02, 11/04*

U.S. Cl. 208—78 **9 Claims**

References Cited

UNITED STATES PATENTS

2,755,231	2/1956	Blanding et al.	208/120
3,042,196	7/1962	Payton et al.	208/113
3,186,805	6/1965	Gomory	23/288
3,380,911	4/1968	Owen	208/74
3,639,228	2/1972	Carr et al.	208/153
3,801,493	4/1974	Youngblood et al.	208/78

1. A hydrocarbon conversion process comprising:

combining a first portion of a regenerated silica-containing cracking catalyst at a temperature within the range of about 900° to 1100°F with an oil feed at a temperature of about 50° to 200°F so as to vaporize said oil feed without substantial cracking and bring said feed to a temperature within the range of about 700°-800°F;

thereafter adding additional regenerated catalyst at a temperature within the range of about 1050 to 1350°F to increase the temperature of said oil to a level within the range of about 950 to 1100°F where cracking occurs;

separating the resulting products from spent catalyst produced thereby;

recycling said spent catalyst to a regeneration zone; and recovering said products.

B 477,481
AMINOALKYLTHIOPYRANOPYRROLES

Grover C. Helsley, Pottersville, N.J., and C. R. Taylor, Jr., Mechanicsville, Va., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed June 7, 1974, Ser. No. 477,481

Int. Cl.² A61K *31/40*

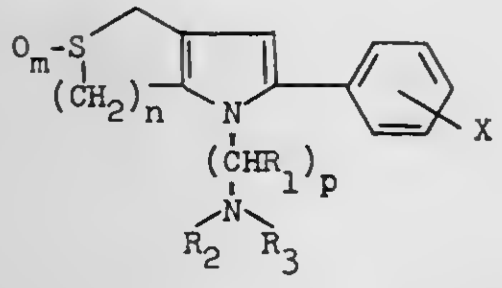
U.S. Cl. 260—326.9 **8 Claims**

References Cited

UNITED STATES PATENTS

3,704,237	11/1972	Suh	260/294.8 B

1. A compound of the formula



wherein X is hydrogen, halogen, hydroxy, lower alkyl, lower alkoxy, nitro, amino, trifluoromethyl or cyano; *m* is an integer from 0 to 2; *n* is 1, 2 or 3; *p* is 2 or 3; R_1 and R_2 are hydrogen or alkyl of 1 to 4 carbon atoms; and R_3 is alkyl of 1 to 4 carbon atoms; and the physiologically tolerable acid addition salts thereof.

B 486,280
ANTHELMINTIC ISOTHIOCYANOBENZOXAZOLES

Venkatachala Lakshmi Narayanan, Hightstown, and Rudiger D. Haugwitz, Titusville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 259,057, June 2, 1972, abandoned. This application July 8, 1974, Ser. No. 486,280

Int. Cl.² C07D *263/56*

U.S. Cl. 260—307 D **10 Claims**

References Cited

UNITED STATES PATENTS

2,075,359	3/1937	Saltzberg et al.	424/250
3,231,596	1/1966	Knusli	260/454
3,341,564	9/1967	Potts et al.	260/454
3,342,846	9/1967	Cometti	424/302
3,558,784	1/1971	Paltauf et al.	424/302
3,586,670	6/1971	Brenneisen et al.	260/340
3,637,734	1/1972	Harnisch	260/307

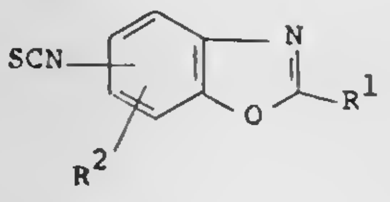
FOREIGN PATENTS OR APPLICATIONS

1,453,247	8/1966	France
515,789	12/1952	Belgium
1,198,941	7/1970	United Kingdom

OTHER PUBLICATIONS

Brenneisen et al. —C. A. 78, 58423s, (1973).

1. A compound of the structure



wherein R^1 is furyl, thienyl, or furyl or thienyl substituted with alkyl, halogen, acetoxyalkyl, or dialkylaminoalkyl, and R^2 is selected from the group consisting of hydrogen, alkyl, halogen, and alkoxy; wherein the terms alkyl and alkoxy refer to groups having up to 7 carbon atoms; and a physiologically acceptable acid-addition salt thereof.

B 490,806
ELECTROSTATIC AIR CLEANER WITH AIR FLOW RESPONSIVE SWITCH

Robert L. Baysinger, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed July 22, 1974, Ser. No. 490,806

Int. Cl.² B03C *3/68*

U.S. Cl. 55—105 **2 Claims**

References Cited

UNITED STATES PATENTS

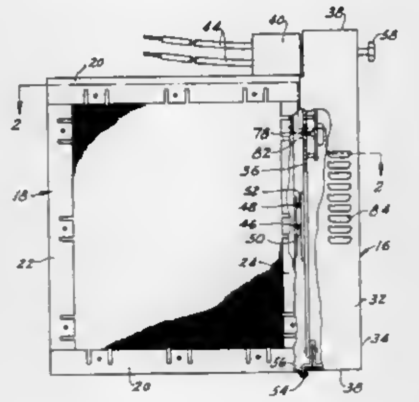
2,625,239	1/1953	Senne	55/217
3,372,328	3/1968	Pinckaers	323/22 SC
3,395,334	7/1968	Stein	323/22 SC
3,469,177	9/1969	Lorenz	323/19
3,473,101	10/1969	Muskovac	318/334
3,475,677	10/1969	Swinehart et al.	307/310 X
3,486,042	12/1969	Watrous	308/1 X
3,504,482	4/1970	Goettl	55/139
3,609,457	9/1971	Squiers	317/13 C
3,668,373	6/1972	Laing	338/25 X
3,697,863	10/1972	Kilner	338/24 X
3,740,926	6/1973	Duval	55/104
3,781,839	12/1973	Bodge	340/239 R
3,785,124	1/1974	Gaylord	98/115 K X
3,788,041	1/1974	Gaylord	55/DIG. 36
3,794,950	2/1974	Kilner	219/505 X

FOREIGN PATENTS OR APPLICATIONS

248,429	10/1963	Australia	55/105

OTHER PUBLICATIONS

"Installation Manual SC-900-C", Electro-Air Division, Emerson Electric Co., Olivia & Sproul Sts., McKees Rocks, Penn. 15136, 10 pp.



1. In an electrostatic air cleaner, an electrical power source, an air duct, an ionizing and collector unit in said air duct, an opening in the wall of said duct for the entry and removal of said unit, a casing detachably connected to said duct including a wall portion covering said opening in said duct wall, voltage step-up means and air flow responsive switching means housed in said casing, cooperating contact aperture on said unit and on said casing wall portion providing electrical connections between said voltage step-up means and said unit, an aperture in said casing wall portion, said air flow responsive switching means comprising a controlled solid state switch operative when gated to connect said voltage step-up means across said power source, gating circuit means for said switch including a temperature variable resistor connected across said switch, said resistor being heated by electrical current in the absence of cooling air flow to a temperature at which its resistance prevents gating of said switch, said resistor being mounted in said aperature in said casing wall portion and said casing having an opening in a wall thereof remote from said duct opening to permit induced air flow through said aperture when there is air flow through said duct, and said resistor being cooled sufficiently by a predetermined induced air flow through said aperture to render it ineffective to prevent gating of said switch.

B 490,995
METHOD OF CONTROLLING OBESITY WITH PURIFIED ACTIVE PRINCIPLE OF FRUIT OF *SYNSEPALUM DULCIFICUM*

Robert I. Henkin, Bethesda, Md., and Eugene L. Giroux, Strasbourg, France, assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Division of Ser. No. 354,098, April 24, 1973. This application July 23, 1974, Ser. No. 490,995

Int. Cl.² A61K *37/00, 35/78*

U.S. Cl. 424—177 **1 Claim**

References Cited

OTHER PUBLICATIONS

Kurihara et al.–Chem. Abst. Vol. 75 (1971) p. 1359j.

1. A method of controlling obesity which comprises orally administering to a human from about 10 to 400 μg. of the tastemodifying active principle of the fruit of the plant Synsepalum dulcificum and maintaining said active principle in the human's mouth for at least about 2 minutes, thereby providing a sweetening effect in the human's mouth lasting for a controlled time period of from about 10 minutes to about 3 hours depending upon the specific dosage administered, said sweetening effect being such that low-caloric value foodstuffs containing acids subsequently ingested by the human during said time period will taste satisfyingly sweet, said active principle having been obtained by the steps of:

a. contacting the fruit of *Synsepalum dulcificum* with a suspension of polyvinyl pyrrolidone in a basic medium;
b. filtering the suspension to obtain a supernatant containing the active principle of the fruit;
c. adding ϵ-amino caproic acid to the supernatant;
d. acidifying the supernatant to reduce the pH to the range of 6.0 – 6.5;
e. filtering the supernatant to obtain a solution of the active principle;
f. adsorbing the active principle on at least one chromatographic column, with at least one column employing a support material selected from the group consisting of cellulose and polyacrylamide-based strongly basic anion exchangers; and
g. eluting the active principle with Na_2HPO_4 to recover the active principle from the column.

B 491,455
PROCESS FOR LOWERING NITROGEN OXIDES IN EFFLUENT GASES

Rene Depommier, La Madeleine, and Edouard Martin, Saint Cloud, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed July 24, 1974, Ser. No. 491,455

Claims priority, application France, July 30, 1973, 73.27774

Int. Cl.² C01B *21/40*

U.S. Cl. 423—393 **6 Claims**

References Cited

UNITED STATES PATENTS

1,348,873	8/1920	Guye	423/394
3,733,393	5/1973	Couillaud et al.	423/235

FOREIGN PATENTS OR APPLICATIONS

316,735	8/1929	United Kingdom	423/393
14,902	8/1963	Japan	423/393
289,412	9/1929	United Kingdom	423/393

1. A process for reducing the level of nitrogen oxide contaminants in an industrial effluent gas, which comprises (a) oxidizing the lower valenced nitrogen oxides of said gas to a mixture of substantially N_2O_3 and NO_2 and (b) treating the nitrogen oxide contaminants with an aqueous solution of hydrogen peroxide maintained at a concentration level that is substantially the stoichiometric quantity required to oxidize the N_2O_3 and NO_2 to HNO_3.

B 491,883
AMINO DERIVATIVES OF PYRIDO(2,3-B)PYRAZINE CARBOXYLIC ACIDS AND ESTERS

Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed July 25, 1974, Ser. No. 491,883

Int. Cl.² C07D *487/04*

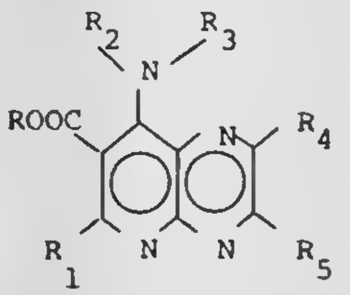
U.S. Cl. 260—250 BC **10 Claims**

References Cited

UNITED STATES PATENTS

3,180,868	4/1965	Osdeng et al.	260/250 BC

1. A compound of the formula



wherein R, R_1, R_4 and R_5 each is hydrogen or lower alkyl; R_2 and R_3 each is hydrogen, lower alkyl, lower alkanoyl, di(lower alkylamino)lower alkyl, phenyl or substituted phenyl; wherein the substituted phenyl bears one or two lower alkyl, lower alkoxy, halogen, trifluoromethyl, amino or carboxy groups; and phsiologically acceptable acid addition salts thereof.

B 494,669
TRISULFOSUCCINIC ACID

Donald R. Nielsen, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 5, 1974, Ser. No. 494,669

Int. Cl.² C07C *143/04*

U.S. Cl. 260—513 R **3 Claims**

References Cited

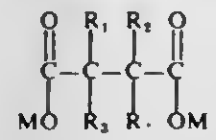
UNITED STATES PATENTS

3,138,632	6/1964	Scotti et al.	260/513 B
3,533,944	10/1970	Yuan	260/513 B
3,798,183	3/1974	Bruson et al.	260/513 B

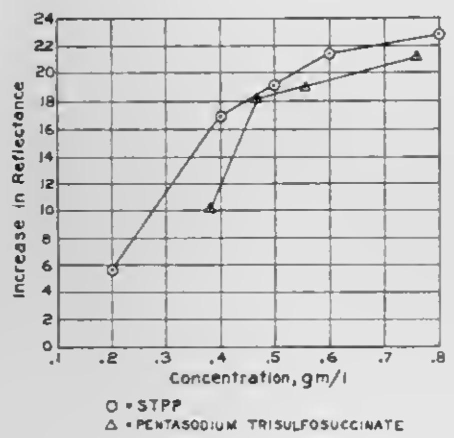
OTHER PUBLICATIONS

Beilsteins, Handbuch Der Organisch Chem. Band 4, Vierte Auflage, p. 13 (1922).

1. Trisulfosuccinic acid or its salt described by the formula:



where one of R_1, R_2, R_3 or R_4 is hydrogen and the remainder are SO_3M; and where M may be the same or different cation selected from hydrogen or an alkali metal.



B 495,408

MIXTURE OF BENZENE-SOLUBLE AND BENZENE-INSOLUBLE CHLOROPRENE POLYMERS WHEREIN THE FORMER POLYMER IS PREPARED IN THE PRESENCE OF A DIALKOXYXANTHOGENDISULPHIDE

Rudolf Mayer-Mader, Cologne, and Jurgen Boldt, Opladen, both of Germany, assignors to Bayer Aktiengesellschaft, Germany

Division of Ser. No. 305,133, Nov. 9, 1972, Pat. No. 3,875,201. This application Aug. 7, 1974, Ser. No. 495,408

Claims priority, application Germany, Nov. 13, 1971, 2156453

Int. Cl.² C08f *2/46;* **C08L** *11/00*

U.S. Cl. 260—890 **4 Claims**

References Cited

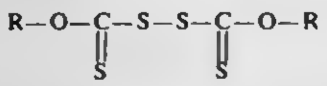
UNITED STATES PATENTS

3,147,318	9/1964	Carrerodt	260/890
3,388,188	6/1968	Strurt	260/890
3,655,827	4/1972	Finaly et al.	260/890

FOREIGN PATENTS OR APPLICATIONS

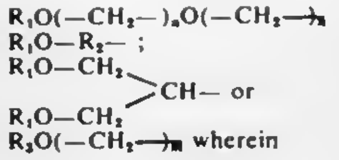
1,158,970	7/1969	United Kingdom	260/890

1. A mixture of a benzene-soluble chloroprene polymer and a benzene-insoluble chloroprene polymer in a weight ratio of 20:1 to 1:1 wherein the benzene-soluble chloroprene polymer is a polymer of chloroprene and up to 40% by weight, based on the monomer weight, of an α-olefin prepared by aqueous emulsion polymerization in the presence of 0.05 to 30% by weight, based on monomer weight, of an alkoxyxanthogendisulphide of the formula



$$R-O-\underset{\underset{S}{\|}}{C}-S-S-\underset{\underset{S}{\|}}{C}-O-R$$

wherein the R's are equal or different and each represents



$$\begin{array}{l} R_1O(-CH_2-)_nO(-CH_2\rightarrow_{n'} \ ; \\ R_1O-R_2- \ ; \\ \left.\begin{array}{l} R_1O-CH_2 \\ R_1O-CH_2 \end{array}\right\rangle CH- \text{ or} \\ R_3O(-CH_2\rightarrow_m \text{ wherein} \end{array}$$

R_1 is alkyl having 1 to 10 carbon atoms;
R_2 is linear or branched alkylene having 3 to 10 carbon atoms;
R_3 is alkyl having 3 to 10 carbon atoms;
n and *n'* are 2, 3 or 4; and
m is 1 or 2.

B 495,489

HYDROCOLLOID CONTAINING LIQUID CARRIER FOR A DIAGNOSTIC OR THERAPEUTIC AGENT

James Ling Chen, East Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 18,294, March 10, 1970, abandoned. This application Aug. 8, 1974, Ser. No. 495,489

Int. Cl.² A61K *47/00*

U.S. Cl. 424—362 **6 Claims**

References Cited

UNITED STATES PATENTS

2,914,443	11/1959	Lynch	424/365 X
3,004,964	10/1961	Wiegert	424/5 X
3,192,118	6/1965	Battista et al.	424/5
3,218,349	11/1965	Chapman et al.	424/5 X
3,360,436	12/1967	Felder et al.	424/5

FOREIGN PATENTS OR APPLICATIONS

606,519	12/1934	Germany	424/4
302,175	7/1968	Sweden	424/4

1. A liquid carrier for a therapeutic or diagnostic agent consisting essentially of from about 5% to about 30% by weight of a water-soluble or water-swellable hydrophilic colloid, from about 0.1% to about 10% by weight of a non-ionic wetting agent, the balance of the composition being mainly a non-aqueous water-immiscible mobile liquid, the liquid being mineral oil or a fatty acid ester of a polyhydric alcohol wherein the fatty acid has from about 12 to about 20 carbon atoms, the hydrophilic colloid being suspended in the mobile liquid.

3. A carrier according to claim 2 wherein the hydrophilic colloid is methyl cellulose and the mobile liquid is mineral oil.

B 495,550

COUMARANEDIONE-3-MONOXIMES

Hermann Oediger, Cologne, and Rudolf Braden, Odenthal-Scheuren, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 310,792, Nov. 30, 1972, Pat. No. 3,880,919. This application Aug. 8, 1974, Ser. No. 495,550

Claims priority, application Germany, Dec. 17, 1972, 2162717

Int. Cl.² C07D *493/00*

U.S. Cl. 260—343.3 R **5 Claims**

References Cited

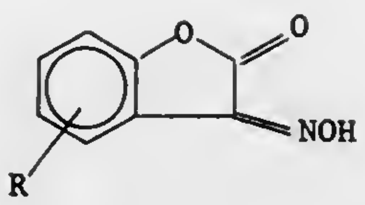
UNITED STATES PATENTS

2,473,484	6/1949	Ullyot	260/343.3

OTHER PUBLICATIONS

Wislicenus et al., Ber. V. 42, (1909), pp. 1930–1940.

1. A compound of the formula:



wherein R is hydrogen, halo or alkyl of 1 to 4 carbon atoms.

B 495,554

3-AMIDOCOUMARANONES

Hermann Oediger, Cologne, and Rudolf Braden, Odenthal-Scheuren, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 310,792, Nov. 30, 1972, Pat. No. 3,880,919. This application Aug. 8, 1974, Ser. No. 495,554

Claims priority, application Germany, Dec. 17, 1971, 2172717

Int. Cl.² C07D *493/00*

U.S. Cl. 260—343.3 R **5 Claims**

References Cited

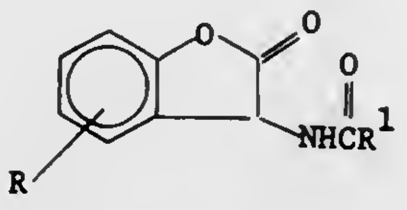
UNITED STATES PATENTS

2,473,484	6/1949	Ullyot	260/343.3

OTHER PUBLICATIONS

Wislicenus et al., Ber. V. 42, (1909), pp. 1930–1940.

1. A compound of the formula:



wherein R is hydrogen, halo or alkyl of 1 to 4 carbon atoms and R^1 is alkyl of 1 to 4 carbon atoms.

B 497,194

QUATERNARY HYDROXYALKYL TERTIARY AMINE BASES AS POLYURETHANE CATALYSTS

Ibrahim S. Bechara, Boothwyn; Felix P. Carroll, Chester; Rocco L. Mascioli, Media, all of Pa., and John R. Panchak, Wilmington, Del., assignors to Air Products and Chemicals, Inc., Wayne, Pa.

Continuation-in-part of Ser. No. 377,447, July 9, 1973, Pat. No. 3,872,687. This application Aug. 14, 1974, Ser. No. 497,194

Int. Cl.² C08G *18/14, 18/18*

U.S. Cl. 260—2.5 AC **11 Claims**

References Cited

UNITED STATES PATENTS

3,010,963	11/1961	Erner	260/2.5 AC
3,168,483	2/1965	Beitchman	260/2.5 AW
3,179,628	4/1965	Beitchman	260/2.5 AC
3,294,753	12/1966	Beitchman	260/77.5 NC
3,576,873	4/1971	Crounse	260/567.6 M
3,620,987	11/1971	McLaughlin	260/2.5 AC
3,624,082	11/1971	Lewis	260/567.6 M
3,636,114	1/1972	Tobler	260/567.6 M
3,654,261	4/1972	Johnson	260/567.6 M
3,726,816	4/1973	Fabris	252/431 C
3,746,709	7/1973	Patton	260/2.5 AC
3,804,782	4/1974	Demou	260/2.5 AW
3,806,475	4/1974	Narayan	260/2.5 AW

1. In the method of preparing cellular polyurethane plastic by the reaction of a precursor comprising a polyol having at least two alkanol groups per molecule, an organic polyisocyanate compound containing at least two isocyanate groups per molecule, a volatilizable blowing agent, and a catalyst, the improvement which comprises carrying out said reaction in the presence of a quaternary hydroxyalkyl tertiary amine base catalyst prepared by reacting substantially stoichiometric amounts of water or a carbinol selected from the group consisting of methanol, ethanol, benzyl alcohol, furfuryl alcohol, allyl alcohol, phenol, octylphenol, nonylphenol, methylphenol, methoxyphenol, ethoxyphenol, 3-diethylamino phenol, naphthol, resorcinol, 1,4-hydroquinone, chlorophenols, chloronathphols and p,p'-dihydroxydiphenyldimethylmethane; an alkylene oxide selected from the group consisting of propylene oxide, ethylene oxide, 1,2-butylene oxide, 1,2-pentene oxide, styrene oxide, butadiene epoxide, diepoxides prepared from p,p'-dihydroxydiphenyldimethylmethane and epichlorohydrin, an olefin oxide having 9–14 carbon atoms and mixtures thereof; and a tertiary amine selected from the group consisting of trimethylamine, triethylamine, tripropylamine, triisobutylamine and mixtures thereof.

2. The method of claim 1 wherein said catalyst also contains a tertiary amine.

B 497,473

PROCESS FOR OBTAINING IRREGULAR SHADOW DYEINGS ON POLYESTER FIBERS AND MIXTURES THEREOF

Hans-Ulrich von der Eltz, Frankfurt am Main, and Hans-Peter Maier, Sulzbach, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 14, 1974, Ser. No. 497,473

Claims priority, application Germany, Aug. 16, 1973, 2341428

Int. Cl.^{2} D06P *3/54, 3/87, 3/86*

U.S. Cl. 8—14 **6 Claims**

References Cited

UNITED STATES PATENTS

713,837	11/1902	Barraclough et al.	8/15
763,196	6/1904	Miegel	8/14
1,615,205	1/1927	Muelberger	8/14
3,189,578	6/1965	Kuemmerer	260/77.5 AP
3,265,461	8/1966	Luetzel et al.	8/39
3,352,624	11/1967	Harding et al.	8/15
3,634,580	1/1972	Watase et al.	8/15
3,787,175	1/1974	Von der Eltz	8/14
3,787,176	1/1974	Von der Eltz	175/18

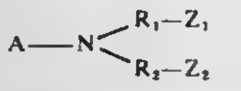
FOREIGN PATENTS OR APPLICATIONS

1,453,148	8/1966	France	8/34

OTHER PUBLICATIONS

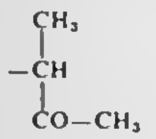
Redbook Magazine, June 1970, pp. 81, 172, 174 and 176 (Vol. 135, No. 2).

1. A process for obtaining irregular tone-in-tone effects, shadow effects or multi-color effects on polyester fibers and blends thereof with cellulose fibers by padding polyester fiber-containing warps with a sizing liquor which contains, in addition to a sizing agent, a disperse dyestuff of the formula



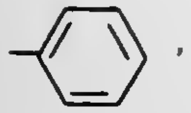
$$A-N\begin{matrix}\diagup R_1-Z_1\\ \diagdown R_2-Z_2\end{matrix}$$

wherein A is a mono or disazo dyestuff radical, R_1 is a direct bond, $-CH_2-$ or $-C_2H_4-$, R_2 is $-CH_2-$ or $-C_2H_4-$, Z_1 is $-H$, $-OH$, $-CN$ or $-OOC-CH_3$, Z_2 is $-H$, $-CN$, $-OOC-CH_3$,



$$\begin{array}{l}\;CH_3\\ \;|\\ -CH\\ \;|\\ \;CO-CH_3\end{array}$$

or



,

with subsequent drying and weaving these warps with weft yarn which is undyed or dyed in a different manner, without prior fixation, which process comprises binding the piece goods so obtained to a rope, loosely tying them and spraying them with an aqueous solution of an alkaline agent which is free from oxidizing or reducing agents, irregularly and unevenly from the outside, and thermosoling them after opening the rope to fix the dyestuff.

B 506,148

PROCESS FOR PRODUCING CAPROLACTAM FROM 6-MINOCAPROIC ACID

Frantisek Mares, Whippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,148

Int. Cl.^{2} C07D *201/08*

U.S. Cl. 260—239.3 A **3 Claims**

References Cited

FOREIGN PATENTS OR APPLICATIONS

30-6112	8/1955	Japan	260/239.3 A

1. In a process of converting 6-aminocaproic acid, dissolved in methanol or ethanol, to epsilon caprolactam the improvement comprising dissolving said acid in solvent containing at least 60 percent by volume of ethanol, methanol or a mixture thereof, under conditions such that no substantial reaction occurs prior to complete dissolution; and thereafter maintaining the resulting solution at temperature in the range of 170°–200°C.

B 506,648

AZINE DERIVATIVES OF PIPERIDINE

Brian Holt, Royton, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 181,568, Sept. 17, 1971, Pat. No. 3,853,890. This application Sept. 16, 1974, Ser. No. 506,648

Claims priority, application United Kingdom, Sept. 19, 1970, 44759/70

Int. Cl.^{2} C08K *5/34*

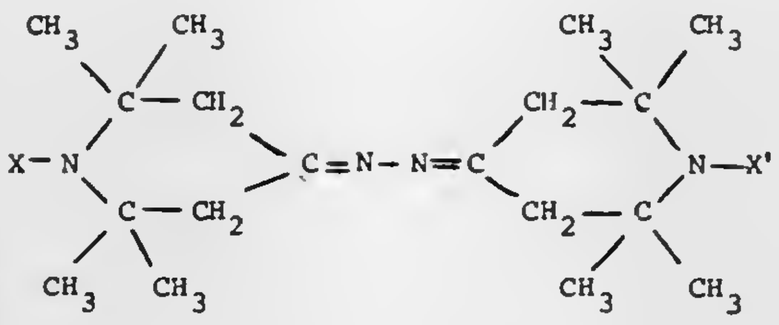
U.S. Cl. 260—45.8 N **5 Claims**

References Cited

UNITED STATES PATENTS

2,181,121	11/1939	Downing et al.	260/45.9
2,684,965	7/1954	Weston et al.	260/293.87
3,407,174	10/1968	Kuriyama et al.	260/45.9
3,431,232	3/1969	Murayama et al.	260/45.8
3,474,068	10/1969	Murayama et al.	260/45.8
3,684,765	8/1972	Matsui et al.	260/45.8
3,705,126	12/1972	Matsui et al.	260/45.8
3,734,883	5/1973	Holt	260/45.8
3,853,890	12/1974	Holt	260/293.63

1. A composition comprising an oragnic material selected from the group consisting of polyolefins and polymers of acrylonitrile, butadiene and styrene, and a minor portion of a compound of the formula



wherein X and X′ are the same or different and represent NO, formyl acetyl or propionyl.

B 510,850

METHOD OF USING FLUORENE-2-ACETIC ACID DERIVATIVES

Eric T. Stiller, Sarasota, Fla.; Seymour D. Levine, North Brunswick, N.J.; Pacifico A. Principe, South River, N.J., and Patrick A. Diassi, Westfield, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 298,102, Oct. 16, 1972, Pat. No. 3,856,977, which is a continuation-in-part of Ser. No. 70,913, Sept. 9, 1970, Pat. No. 3,859,340. This application Sept. 30, 1974, Ser. No. 510,850

Int. Cl.^{2} A61K *27/00*

U.S. Cl. 424—317 **4 Claims**

References Cited

UNITED STATES PATENTS

3,709,994	1/1973	Bencze	424/317
3,819,693	6/1974	Levine et al.	260/520
3,859,340	1/1975	Stiller et al.	260/515 R
3,903,145	9/1975	Levine et al.	260/515 R

1. A method for treating inflammatory conditions in a mammalian host responsive to treatment with anti-inflammatory agents, which comprises administering to a mammalian host an effective amount of a compound selected from the group consisting of 7-halo-fluorene-2-acetic acid, 7-amino-fluorene-2-acetic acid, and 7-nitrofluorene-2-acetic acid.

B 516,296

ACYLTHIOMETHYL ESTERS OF CEPHALOSPORINS

Hermann Breuer, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 277,700, Aug. 3, 1972, Pat. No. 3,860,591. This application Oct. 21, 1974, Ser. No. 516,296

Int. Cl.^{2} C07D *501/20*

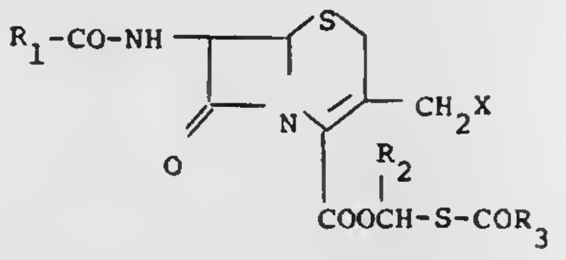
U.S. Cl. 260—243 C **6 Claims**

References Cited

UNITED STATES PATENTS

3,847,913	11/1974	Gudtfredsen et al.	260/243 C
3,852,282	12/1974	Dolfini	260/243 C
3,855,213	12/1974	Dunn et al.	260/243 C
3,867,380	2/1975	Dunn et al.	260/243 C

1. A compound of the formula



wherein R_1 is α-aminobenzyl; R_2 is hydrogen or lower alkyl; R_2 is lower alkyl; and X is tetrazolylthio or (lower alkyl)-tetrazolylthio.

B 526,096

7-SUBSTITUTED CEPHALOSPORANIC ACID AND DERIVATIVES THEREOF

Joseph Edward Dolfini, Princeton, and Ekkehard Bohme, Hightstown, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 260,635, June 7, 1972, Pat. No. 3,867,379, which is a continuation-in-part of Ser. No. 119,034, Feb. 25, 1971, abandoned. This application Nov. 22, 1974, Ser. No. 526,096

Int. Cl.^{2} C07D *501/20*

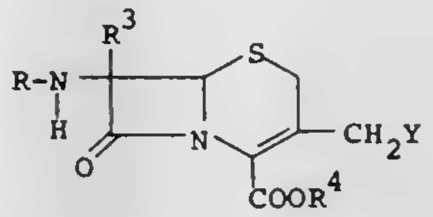
U.S. Cl. 260—243 C **11 Claims**

References Cited

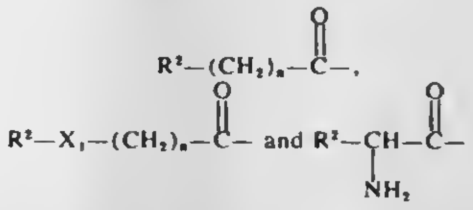
UNITED STATES PATENTS

3,843,641	10/1974	Christensen et al.	260/243 C

1. A compound of the formula:



wherein R^3 is lower alkyl; R^4 is selected from the group consisting of hydrogen, lower alkyl, trichloroethyl, benzyl, methoxybenzyl, and benzhydryl; Y is selected from the group consisting of hydrogen, acetoxy, pyridinium, and hydroxy; and R is selected from the group consisting of



$$R^2-(CH_2)_n-\overset{\overset{O}{\|}}{C}-,\quad R^2-X_1-(CH_2)_n-\overset{\overset{O}{\|}}{C}-\text{ and }R^2-\underset{\underset{NH_2}{|}}{CH}-\overset{\overset{O}{\|}}{C}-$$

wherein n is zero or one, X_1 is O or S, and R^2 is selected from the group consisting of thienyl, phenyl, isoxazolyl, and mono and disubstituted phenyl, thienyl, and isoxazolyl wherein said substituents are selected from the group consisting of chloro, bromo, nitro, lower alkyl, and lower alkoxy; and pharmaceutically acceptable salts thereof.

B 527,999

CORROSION INHIBITING COMPOSITIONS AND PROCESS FOR INHIBITING CORROSION OF METALS

Benjamin F. Ward, and William G. Vardell, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 341,588, March 15, 1973, abandoned. This application Nov. 29, 1974, Ser. No. 527,999

Int. Cl.^{2} C23F *9/02, 11/00, 11/10*

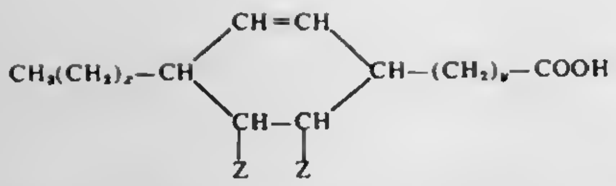
U.S. Cl. 21—2.7 R **2 Claims**

References Cited

UNITED STATES PATENTS

2,632,695	3/1953	Landis et al.	44/66
3,763,053	10/1973	Bills	252/357

1. A process for rust inhibition of metallic surfaces contacted by petroleum hydrocarbons and aqueous media which comprises, contacting said metallic substances with from 1 to 200 parts per million of an additive of the group consisting of a dicarboxylic acid having the following structure:



wherein *x* and *y* are integers from 3 to 9, *x* and *y* together equal 12, and Z is a member of the group consisting of hydrogen and COOH with one Z of each moiety, the hydrogenated dicarboxylic acid of said structure, the bisalkanolamide derivatives of said dicarboxylic acid, the mono-alkanolamide derivatives of said dicarboxylic acid, and the mono-alkanolamide derivatives of a soap of said dicarboxylic acid.

B 555,437
METHOD OF PLUGGING ARMATURE SLOTS

John D. Santi, West Allis, and Edward A. Boyd, Sussex, both of Wis., assignors to Briggs & Stratton Corporation, Milwaukee, Wis.

Continuation of Ser. No. 387,174, Aug. 9, 1973, abandoned. This application Mar. 5, 1975, Ser. No. 555,437

Int. Cl.^{2} H02K *15/06, 15/12;* **B29D** *3/00;* **B29F** *5/00*

U.S. Cl. 264—161 **6 Claims**

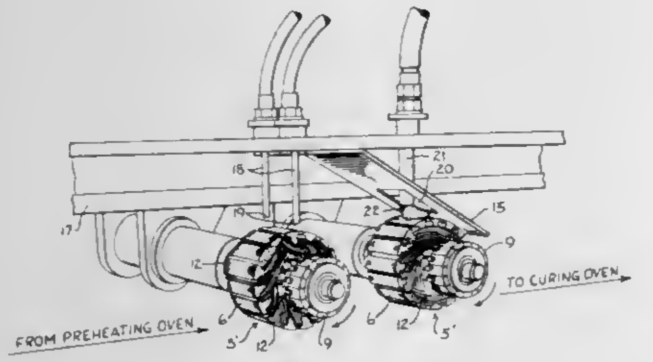
References Cited

UNITED STATES PATENTS

1,182,982	5/1916	Crump	118/409
1,416,987	5/1922	Sharpe	425/218
1,524,915	2/1925	DeBay	425/219
1,751,430	3/1930	Thomson	264/162
1,902,551	3/1933	Fredrickson	29/205 E
2,368,085	1/1945	Barbieri	264/162
3,071,496	1/1963	Fromm et al.	264/272
3,129,349	4/1964	Ervin	29/597
3,182,219	5/1965	Quinn	29/597
3,689,280	9/1972	Werner	425/220

OTHER PUBLICATIONS

Randolph et al, Plastics Engineering Handbook, Reinhold, (1960) pp. 217-222.



1. The method of plugging the mouths of axially extending, radially outwardly opening winding slots in a substantially cylindrical dynamoelectric machine rotor core to confine in said slots lengths of conductors which comprise the rotor windings of the machine and which are all disposed radially inwardly of opposite ledges that project towards one another across each slot to define a narrow mouth for it, said method being characterized by:

A. supporting the core for rotation about a fixed axis with its circumferential surface bearing against a substantially flat surface of a paddle at least along a zone of the core that is intermediate its ends;

B. depositing between said surface and the rotor core in said zone a quantity of a plastic insulating material that can be cured to substantial hardness and which material is sufficiently viscous to resist flow under the force of gravity;

C. effecting rotation of the rotor core about its axis relative to said paddle to wipingly force said material into the axially medial portions of the winding slots and under the ledges thereof so that the material thus forced beneath the ledges can form a mechanical interlock with the core; and

D. curing said material.

B 562,813
HOT STAMPING DIE CHASE

Harold W. King, 320 West 100th Terrace, Kansas City, Mo. 64114

Filed Mar. 28, 1975, Ser. No. 562,813

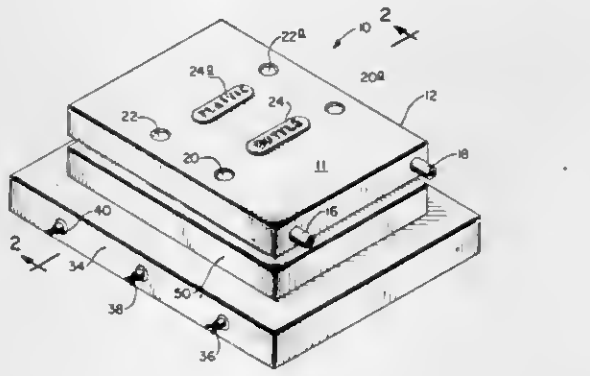
Int. Cl.^{2} B29C *17/00*

U.S. Cl. 425—384 **10 Claims**

References Cited

UNITED STATES PATENTS

2,496,014	1/1950	Myers	425/384 X
2,849,752	9/1958	Leary	425/384 X
3,072,964	1/1963	Tilden	425/388
3,553,784	1/1971	Shuman	425/384 X
3,593,376	7/1971	Kisker et al.	425/384 X



1. A hot stamping die chase and die used for decorating hollow, plastic articles which comprises:

a. a heat transfer base;

b. a die carrying means and a die, said die carrying means carrying said die and being joined to said base; and

c. article support means having a face for supporting the surface of said article as it is brought into contact with said die, said article support means having at least one opening therethrough through which said die protrudes above said face.

B 566,464
N,N-DIMETHYL-O-(1-METHYL-3-N-METHYLCARBAMINYL-METHYL-PYRAZOL(5)YL)-CARBAMIC ACID ESTER

Hellmut Hoffmann, Wuppertal, and Ingeborg Hammann, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 9, 1975, Ser. No. 566,464

Claims priority, application Germany, Apr. 26, 1974, 2420360

Int. Cl.^{2} A01N *9/22;* **C07D** *231/20*

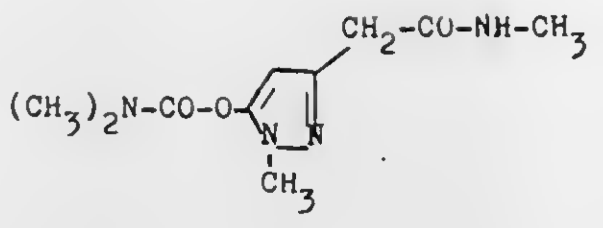
U.S. Cl. 424—273 **3 Claims**

References Cited

UNITED STATES PATENTS

2,681,915	6/1954	Gysin et al.	260/310 R
3,449,502	6/1969	Gubler	424/273
3,452,043	6/1969	Grauer et al.	424/273
3,810,911	5/1974	Hoffman et al.	424/273

1. N,N-Dimethyl-O-[1-methyl-3-N-methylcarbaminylmethyl-pyrazol(5)yl]-carbamic acid ester of the formula



B 576,903
INSECTICIDAL AND MITICIDAL METHOD CONTAINING PHOSPHORUS COMPOUNDS

Arnold G. Gutman, Berkley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 353,868, April 23, 1973, abandoned, which is a division of Ser. No. 123,410, March 11, 1971, Pat. No. 3,780,143. This application May 12, 1975, Ser. No. 576,903

Int. Cl.^{2} A01N *9/36*

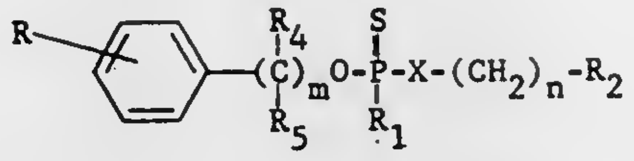
U.S. Cl. 424—203 **6 Claims**

References Cited

UNITED STATES PATENTS

3,060,087	10/1962	Kingsbury et al.	424/203
3,094,406	6/1963	Price et al.	424/203

1. The method of controlling insects and mites comprising applying to the habitat infested with mites and insects an effective insecticidal and miticidal amount of a compound corresponding to the formula



wherein R is methylenedioxy; R_1 is ethyl; X is sulfur; *n* and *m* are one; R_2 is selected from hydrogen, methylthio, cyano, benzylthio, and ethynyl; and, R_4 and R_5 are hydrogen.

B 585,731
COMPOSITION FOR VO_2 INCANDESCENT LAMP CURRENT INRUSH LIMITERS

Philip J. Nalepa, Greensburg; Peter R. Emtage, and Robert C. Miller, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 10, 1975, Ser. No. 585,731

Int. Cl.^{2} H01B *1/08*

U.S. Cl. 252—518 **2 Claims**

References Cited

UNITED STATES PATENTS

3,402,131	9/1968	Futaki et al.	252/518 X
3,557,026	1/1971	Teeg et al.	252/518

OTHER PUBLICATIONS

Japanese Journal of Applied Physics, Vol. 8, No. 8, Aug. 1969.

1. An improved composition of vanadium oxide current inrush limiting ceramic for incandescent lamps, said ceramic being of the type electrically connected in series with an incandescible lamp filament and comprising vanadium oxide having a composite formula V_2O_x, where *x* is less than 4.5 and greater than 3.5; wherein said improvement comprises doping said ceramic with 0.003–0.06 weight percent of MoO_3.

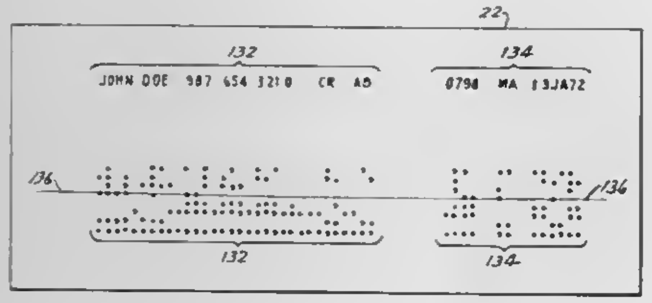
ELECTRICAL APPLICATIONS

B 283,941
DATA ACCUMULATION SYSTEM

Richard E. Fayling, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn. Division of Ser. No. 284,071, Aug. 28, 1972. This application Aug. 28, 1972, Ser. No. 283,941
Int. Cl.² G11B *5/86*
U.S. Cl. 360—15 **6 Claims**

References Cited
UNITED STATES PATENTS

3,037,090	5/1962	Bouzemburg	179/100.2 E
3,341,854	9/1967	Supernowicz	179/100.2 E
3,401,394	9/1968	Leonard et al.	346/74
3,496,304	2/1970	Nelson	179/100.2 E
3,571,527	3/1971	Becker et al.	179/100.2 E
3,617,648	11/1971	Irving	179/100.2 E



1. A method of accumulating data for processing in electronic data processing equipment, wherein a master source document is magnetized in a discrete pattern to provide external magnetic fields representative of data related to said document, a recording medium susceptible to said external magnetic fields is momentarily positioned adjacent the master source document to magnetically record said pattern onto the recording medium and said pattern is subsequently sensed from the recording medium to produce an electrical signal representative of said data for electronic data processing, characterized by the steps of

providing as said master source document a homogeneous sheet of particulate permanet magnet material in a flexible binder for enabling said magnetization in a discrete pattern throughout the sheet, said sheet having a coercive force of not less than 1000 oersteds and a maximum energy product of not less than 5 × 10⁵ gauss-oersteds for enabling said document to provide external magnetic fields which can be sufficiently intense to allow the magnetic recording of said patterns onto the recording medium even though the master source document and the recording medium are not in intimate contact,

providing a magnetic recording tape as the recording medium,

supporting the tape in a transport path,

sequentially advancing successive lengths of the tape along the path, and

positioning a said length of the tape adjacent a said master source document when the tape is stationary within said path.

B 339,194
METAL PLATED BODY COMPOSED OF GRAPHITE FIBRE EPOXY COMPOSITE

Gerald Joy-Pak Lo, Montreal; Francis Leo Papworth, Dollard des Ormeaux; Nicolas Elmars Tenne-Sens, Lachine; Michael Valentine O'Donovan, Dorval, and Gerald Dziub, St. Laurent, all of Canada, assignors to RCA Corporation, New York, N.Y.
Filed Mar. 8, 1973, Ser. No. 339,194
Int. Cl.² H01P *1/20, 3/12, 11/00*
U.S. Cl. 333—73 W **1 Claim**

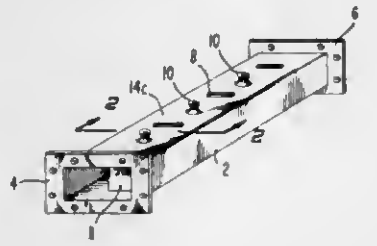
References Cited
UNITED STATES PATENTS

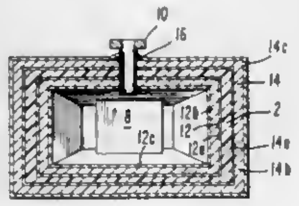
3,607,350	9/1971	Rathsack	204/30 X
3,716,869	2/1973	Gould, Jr. et al.	333/95 X
3,808,028	4/1974	Lando	117/213 X

OTHER PUBLICATIONS

Harvey–"Microwave Engineering" Academic Press, London and New York 1963; pp. 219–220 & 717.

"Microwave Transmission Design Data" Sperry Gyroscope Co. Brooklyn N.Y. pp. 88–89.





1. A hollow microwave waveguide filter having good inner surface electrical conductivity comprising

a tubular shaped body composed of graphite fibre epoxy composite,

said body having its inner surface slightly roughened,

a thin flash coating of hardened nickel on said inner surface,

a thicker coating of copper on said nickel coating,

a coating of silver over said copper coating,

a thin flash outer coating of hardened nickel on the outer surface of said body,

a thicker outer coating of copper on said outer nickel coating

solder areas on said outer copper coating, said solder having a melting point of up to about 150°C., and

a coating of silver over said solder areas and outer copper coating.

B 358,427
METHOD AND APPARATUS FOR SPEECH IDENTIFICATION

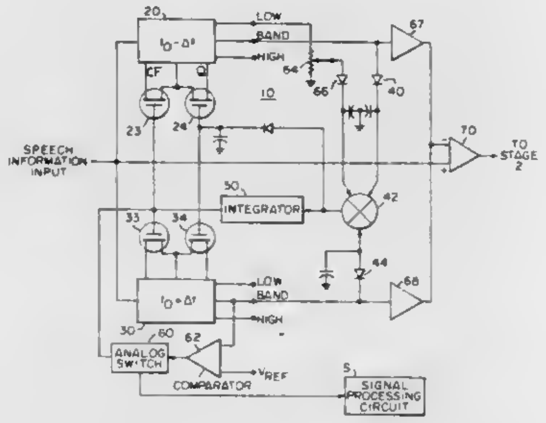
Heribert J. P. Reitboeck, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 8, 1973, Ser. No. 358,427
Int. Cl.² G10L *1/00*
U.S. Cl. 179—1 SB **12 Claims**

References Cited
UNITED STATES PATENTS

2,575,910	11/1951	Mathes	179/1 SB
2,819,341	1/1958	Barney	179/1 SA
2,857,465	10/1958	Schroeder	179/1 SA
3,423,530	1/1969	Coulter	179/1 SA
3,437,757	4/1969	Coker	179/1 SA
3,509,280	4/1970	Jones	179/1 SB
3,700,815	10/1972	Doddington	179/1 SA
3,787,774	1/1974	Tietze	328/167

FOREIGN PATENTS OR APPLICATIONS

2,019,280	11/1970	Germany	179/1 SA



1. Apparatus for tracking a spectral peak within the frequency spectrum of a spoken word wherein a spectral peak is a frequency which corresponds to a peak amplitude in the spoken word, comprising:

first and second electronically tunable filter means connected to receive spoken words and produce an output signal having an adjustable center frequency and an adjustable Q characteristic, said first tunable filter means responding to the frequency content of spoken words occurring in a frequency range in a first direction from said center frequency and a second tunable filter means responding to the frequency content of spoken words occurring in the frequency range in an opposite direction, said first and second tunable filter means including control inputs to receive control input signals to adjust said center frequencies and said Q characteristics, and

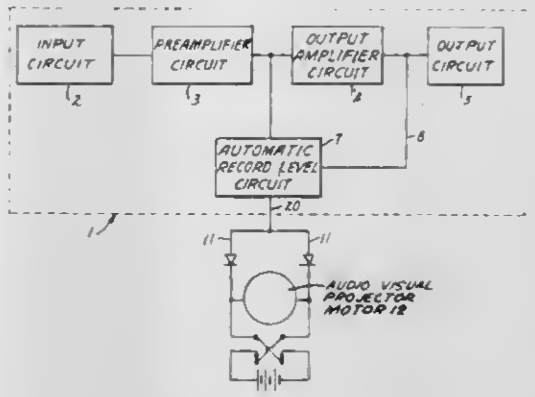
feedback control means connected to the outputs of said first and second tunable filter means to determine the deviation of said center frequencies from a spectral peak in said spoken word and develop a control input signal to adjust said center frequencies to establish a predetermined relationship between said center frequencies and spectral peak.

B 403,477
AUDIO CIRCUIT WITH NOISE MUTING FEATURE

Charles William Miller, Village of Inver Grove Heights, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Oct. 4, 1973, Ser. No. 403,477
Int. Cl.² G03B *31/00*
U.S. Cl. 360—80 **5 Claims**

References Cited
UNITED STATES PATENTS

2,633,055	3/1953	Badmaieff	360/3
3,334,194	4/1967	Chang	360/69
3,591,730	6/1971	Chang	360/61
3,673,345	6/1972	Ban	360/74
3,705,272	12/1972	Tsuji et al.	360/62
3,712,961	1/1973	Nye et al.	179/100.1 DR
3,721,774	3/1973	Yonemoto et al.	360/61



1. An audio circuit for use with a device having an electrically actuated noise generating source that produces electrical noise during intervals when no desired audio signal is being processed, which audio circuit contains a transistor stage connected between an amplifier portion of the audio circuit and an electrical ground, wherein the improvement comprises:

muting circuitry for connecting the transistor stage to the electrical power actuating said noise generating source so that when said noise source is electrically actuated an electrical signal is also provided to said transistor stage during and only during the application of electrical power to said noise generating source, which electrical signal is provided only during the generation of noise by said noise source to switch the transistor stage and shunt the amplifier to ground through said transistor stage, thereby muting said electrical noise in the audio circuit.

B 442,970
OPTICAL IMAGING SYSTEM UTILIZING A LIGHT VALVE ARRAY AND A COUPLED PHOTOEMISSIVE TARGET

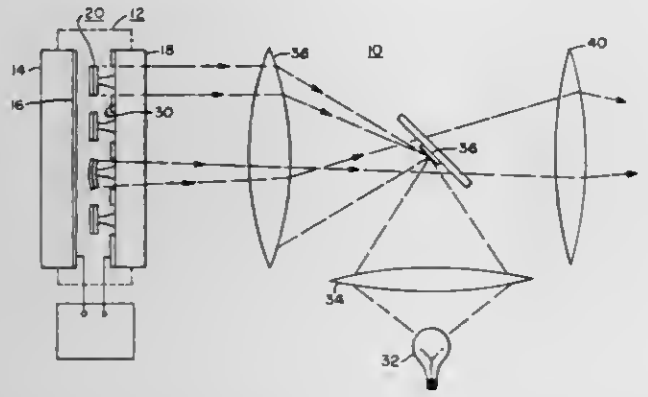
Harvey C. Nathanson, Pittsburgh, Pa.; Jens Guldberg, Hamburg, Germany, and Daniel R. Muss, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 14, 1974, Ser. No. 442,970
Int. Cl.² H04N *3/16*
U.S. Cl. 178—7.3 D **7 Claims**

References Cited
UNITED STATES PATENTS

2,740,830	4/1956	Gretener	358/62
3,592,529	7/1971	Juhlin et al.	358/62
3,746,911	7/1973	Nathanson et al.	178/7.5 D

1. An optical imaging system comprising an evacuated hermetically sealed system comprising:

an input-radiation-transmissive substrate;
a imaging-radiation-transmissive substrate spaced from the input-radiation-transmissive substrate;
an array of electrostatically deflectable, reflective light valves supported upon the imaging substrate, which light valves each comprise a support post extending from the imaging substrate with a generally planar deflectable and reflective portion disposed at the extending end of the central support post;
an electrode grid disposed upon the imaging substrate between the spaced apart light valves;



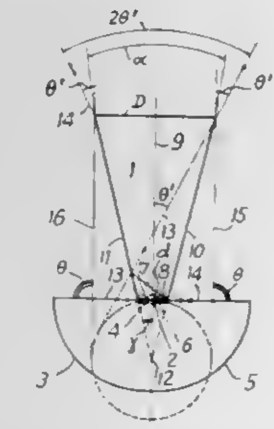
a photoemissive means coupled between the input radiation transmissive substrate and the light valve array, with the input radiation being incident upon the photoemissive means to generate photoelectrons which produce a charge pattern upon the deflectable portions of the light valves, which charge pattern corresponds to the input radiation causing deflection of the light valve; and
output radiation imaging means for directing output radiation onto the light valve array through the imaging substrate, with the output radiation being reflected from the deflected light valves and passed through the imaging radiation transmissive substrate as a function of the input radiation.

B 454,283
OPTICAL PROJECTORS

Pierre Malifaud, Paris, France, assignor to Ste de Recherche et de Promotion d'Activities Nouvelles ACNO, Paris, France
Filed Mar. 25, 1974, Ser. No. 454,283
Claims priority, application France, Mar. 4, 1973, 73.11871; Mar. 4, 1973, 73.11872
Int. Cl.^{2} F21V *7/00*
U.S. Cl. 240—41.35 R **7 Claims**

References Cited
UNITED STATES PATENTS

3,318,184	5/1967	Jackson	352/198 X
3,676,667	7/1972	Malifaud	240/41.35 R
3,711,701	1/1973	Squyres	240/41.35 R



1. An optical projector for supplying a beam of radiation, the total angular field 2θ' of which is determined in at least one reference plane, the angular field containing all the radiant flux, comprising:
a. a source of radiation;
b. an optical collector system for receiving and reflecting radiation from said source; and
c. a conoid mirror having a minor base and a major base in which said minor base in conjunction with said optical collector system entirely contain optically said source of radiation, said mirror having at least said reference plane as a plane of symmetry, and wherein said mirror has dimensional relationships which apply to a cross-section through the plane of symmetry in conformity with the equation

$$\frac{D}{d} \cong \frac{\sin(\theta-\gamma)}{\sin(\theta'-\gamma)}$$

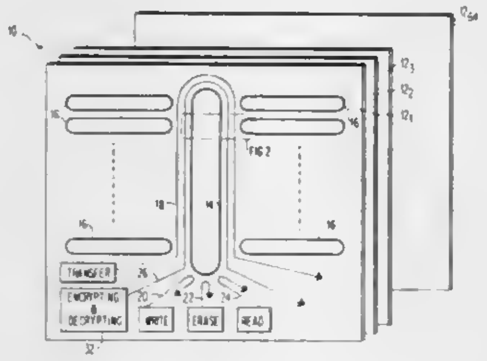
where *D* and *d* are, respectively, the cross-sectional lengths of said major and minor bases of said mirror in said cross-sectional plane, γ is half the mean apex angle of said mirror in said cross-sectional plane, and θ is half a maximum predetermined angle of the angular extension of radiant beams received at said minor base of said mirror.

B 455,425
CRYPTOGRAPHIC MAGNETIC BUBBLE DOMAIN MEMORY

Yeong S. Lin, Stanwood Road, Mount Kisco, N.Y. 10549; Chao N. Liu, French Hill Road, and Donald T. Tang, 2491 Ridge St., both of Yorktown Heights, N.Y. 10598
Filed Mar. 27, 1974, Ser. No. 455,425
Int. Cl.^{2} G11C *11/14, 19/08*
U.S. Cl. 340—174 TF **14 Claims**

References Cited
UNITED STATES PATENTS

3,508,225	4/1970	Smith	340/174 TF
3,613,058	10/1971	Bonyhard et al.	340/174 TF
3,618,054	11/1971	Bonyhard et al.	340/174 TF
3,701,125	10/1972	Chang	340/174 AC
3,701,132	10/1972	Bonyhard et al.	340/174 TF
3,737,882	6/1973	Furuoya	340/174 TF



1. In a magnetic bubble domain memory including a plurality of data storage levels, means for entering plural bit data words into the memory in bit synchronism, with each word bit being represented by the presence or absence of a magnetic bubble domain, and means for moving the magnetic bubble domains within the data storage levels in cyclic steps along predetermined propagation paths, the improvement comprising means for encrypting the entered data words, comprising:
means for inhibiting the shifting of the magnetic bubble domains in a nondestructive manner and in cyclic steps in selected storage levels for a predetermined number of cyclic steps, such that the bits in each word are skewed or permuted to thereby destroy the bit synchronism in each word yet maintaining the bit synchronism in each storage level.

B 461,336
PREFIXING IN A MULTIPROCESSING SYSTEM

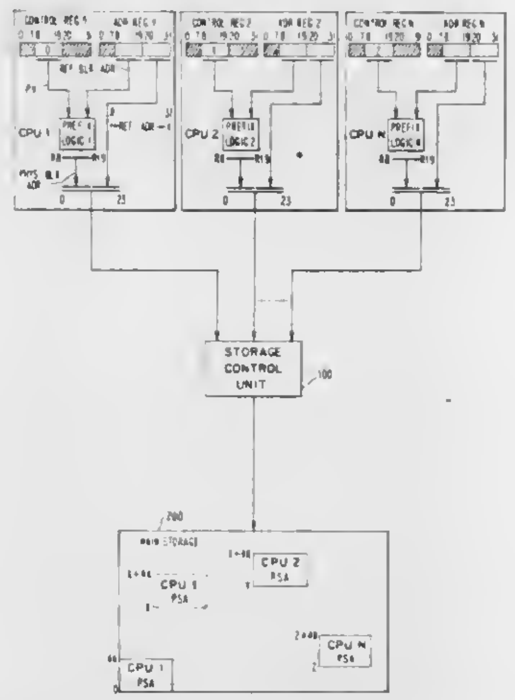
William A. Bernstein, Kingston, and Robert H. Doggett, Ulster Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 239,894, March 31, 1972. This application Apr. 16, 1974, Ser. No. 461,336
Int. Cl.^{2} G06F *1/00*
U.S. Cl. 340—172.5 **4 Claims**

References Cited
UNITED STATES PATENTS

3,505,647	4/1970	Torfeh et al.	340/172.5
3,510,847	5/1970	Carlson et al.	445/1
3,551,892	12/1970	Driscoll, Jr.	445/1

OTHER PUBLICATIONS

An application-oriented multiprocessing system—IBM 9020 System, Blakeney et al.; IBM Systems Journal, Vol. 6, No. 2, 1967, pp. 80–94, Armonk, N.Y.



1. In a shared storage multiprocessing system that includes a plurality of processors and an addressable storage arranged into blocks of storage for storing blocks of data, a method by which each of said processors may access all of said blocks of data comprising the steps of:
providing a prefix number for one of said processors having a zero value which is equal to the block address of a prefixed storage area consisting of a block of storage assigned to said one processor,
providing reference block addresses for said one processor,
detecting the zero value of said prefix number and the values of said reference block addresses provided for said one processor,
providing storage block addresses for said one processor for accessing all of said blocks of data in accordance with the detected values including:
a storage block address having a value which is equal to the zero value of the prefix number provided for said one processor for accessing the block of data in the prefixed storage area assigned to said one processor when the reference block address having a value which is equal to zero is detected, and
other storage block addresses having values which are equal to the reference block addresses provided for said one processor for accessing blocks of data other than the block of data contained in the prefixed storage area assigned to said one processor when reference block addresses having values which are greater than zero are detected,
providing prefix numbers for the remaining processors having different predetermined values which are greater than zero and equal to the block addresses of different prefixed storage areas consisting of blocks of storage assigned to said remaining processors,
providing reference block addresses for each of said remaining processors,
detecting the predetermined value of the prefix number and the values of the reference block addresses provided for each of said remaining processors, and
providing storage block addresses for each of said remaining processors for accessing all of said blocks of data in accordance with the detected values including:
a first storage block address having a value which is equal to the predetermined value of the prefix number provided for said remaining processor for accessing the block of data in the prefixed storage area assigned to said remaining processor when the reference block address having a value which is equal to zero is detected,
a second storage block address having a value which is equal to zero for accessing the block of data in the prefixed storage area assigned to said one processor when the reference block address having a value which is equal to the predetermined value of the prefix number provided for said remaining processor is detected, and
other storage block addresses having values which are equal to the reference block addresses provided for said remaining processor for accessing blocks of data other than the blocks of data in the prefixed storage areas assigned to said one processor and said remaining processor when reference block addresses having values which are greater than zero and not equal to the predetermined value of the prefix number provided for said remaining processor are detected.

B 475,236
FEEDBACK FIELD CONTROL FOR AN ELECTRIC VEHICLE

Francis T. Thompson, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 31, 1974, Ser. No. 475,236
Int. Cl.^{2} H02P *5/06*
U.S. Cl. 318—139 **15 Claims**

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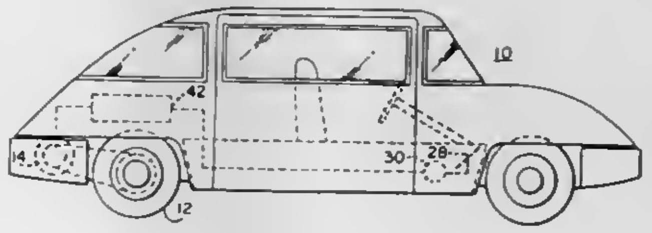
UNITED STATES PATENTS

3,546,548	4/1968	Wouk	318/139
3,569,809	3/1971	Comer	318/338
3,599,064	8/1971	Friedman	318/338
3,735,220	5/1973	Renner et al.	318/493 X
3,745,434	7/1973	Lambert	318/139
3,845,368	10/1974	Elco	318/139
3,855,511	12/1974	Smith	318/317



1. An electric vehicle comprising:
a direct current drive motor;
a separately excited field winding disposed within said direct current drive motor;
throttle means for controlling the speed of said direct current drive motor;

armature current feedback means connected to said direct current drive motor to provide a feedback signal proportional to the armature current flowing through said direct current drive motor;

armature current reference means connected to said throttle providing an armature demand reference signal dependent on the position of said throttle;

error amplifier means connected to said armature current feedback means and said armature current reference means for comparing the armature feedback signal and the armature demand reference signal and providing a field demand signal depend on the difference between the feedback signal and the reference signal;

field current output amplifier means connected to said error amplifier and said separately excited field winding providing current flow through said separately excited field winding in response to the error signal received from said error amplifier means;

armature demand reference signal reducing means connected to said armature current to said armature current reference means for providing a modified armature demand reference signal when activated;

speed detector means connected to detect the speed of said direct current drive motor and to provide a signal proportional to the direct current drive motor speed; and,

said speed detector means being connected to said armature demand reference signal reducing means for reducing the armature demand reference signal when the speed of said direct current drive motor exceeds a predetermined value.

B 489,526

TRIMMING POTENTIOMETER WITH COARSE AND FINE ADJUSTMENT MEANS

Derek Taylor, Whitstable, England, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed July 18, 1974, Ser. No. 489,526

Claims priority, application United Kingdom, Aug. 1, 1973, 36624/73

Int. Cl.² H01C *10/32*

U.S. Cl. 338—166 **7 Claims**

References Cited

UNITED STATES PATENTS

1,450,566	4/1923	Smith	317/255 X
1,501,454	7/1924	Hunt	74/10.54 X
1,575,153	3/1926	Dobbins	317/255 X
1,805,154	5/1931	Webster	74/10.54
3,187,287	6/1965	Weidenman	338/163
3,235,827	2/1966	Baker	338/162
3,360,757	12/1967	Wahlberg	338/162
3,576,512	4/1971	Michik	338/174

1. A potentiometer drive having a body housing a resistive member and a rotatable member attached to a wiper in contact with said resistive member for varying the position of said wiper thereon, wherein said rotatable member has a peripherally toothed portion and said body is formed with a plurality of pivot points for a rotatable adjusting tool, each of said pivot points being spaced from said peripherally toothed portion of said rotatable member by less than the radius of said rotatable member, whereby a toothed adjusting tool can be engaged with any one of said pivot points and with the toothed portion of said rotatable member for adjustment of said rotatable member by rotation of the tool, said pivot points being pegs formed on said body for rotatably fitting within a bore in the nose of an adjusting tool, and being positioned to define different adjustment directions for the tool.

B 494,383

AUTOMATIC TIMER

Richard H. Weber, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Aug. 5, 1974, Ser. No. 494,383

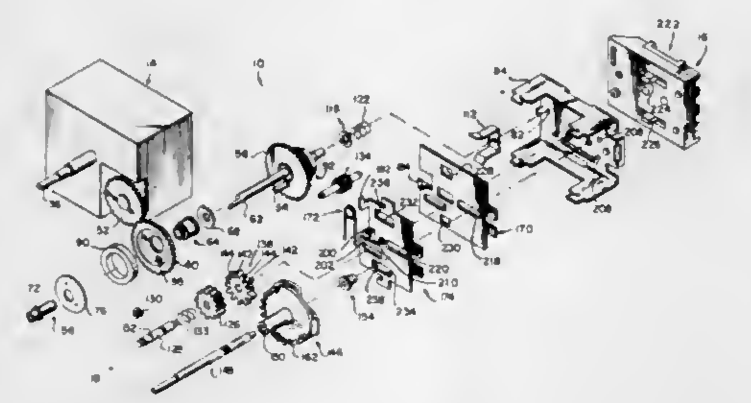
Int. Cl.² H01H *7/08, 43/10*

U.S. Cl. 200—38 FA **3 Claims**

References Cited

UNITED STATES PATENTS

3,694,591	9/1972	Bassett et al.	200/38 FA



1. An automatic timer comprising:

a. a housing;

b. a stop-time means, rotatably carried in said housing, for determining and indicating when a timing function is to be terminated, said stop-time means including a timing gear and a stop-time set shaft; and

c. a duration timing means, rotatably carried in said housing, for determining and indicating the duration of a timing function, including;

  i. a clutch gear, rotatably carried in said housing and coupled for rotation with said timing gear of said stop-timing means,

  ii. a geneva driver gear, rotatably carried in said housing and engaging said clutch gear, having an even number of gear teeth, the face width of every other tooth being less than the face width of the remaining teeth, and

  iii. a driver member pivotally journalled in said housing and engaging with said geneva driver gear.

B 495,759

WIDE RANGE PULSE GENERATOR

Anthony G. Chaprnka, Cockeysville, and Patrick J. McKenzie, Baltimore, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 8, 1974, Ser. No. 495,759

Int. Cl.² H02M *5/00*

U.S. Cl. 321—61 **10 Claims**

Refereoces Cited

UNITED STATES PATENTS

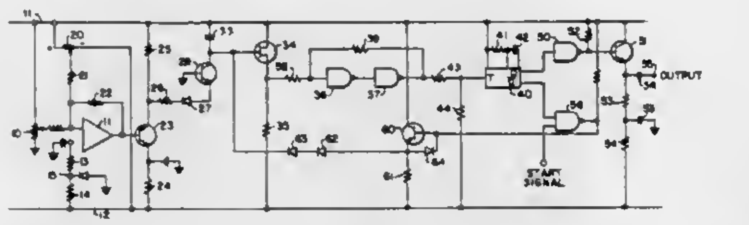
3,290,581	12/1966	Hooper	321/45 R
3,316,476	4/1967	Olson et al.	321/45 R
3,319,147	5/1967	Mapham	321/45 R X
3,465,231	9/1969	Hyde	321/45 R X
3,543,130	11/1970	Rennders	321/18 X
3,788,228	1/1974	Wilson	320/1 X

1. A pulse generator comprising:

an exponential voltage to current converter means adapted to respond to a DC input voltage level by producing an output current which is an exponential function of said DC input voltage level;

a first circuit means operatively connected to said exponential voltage to current converter means and responding to said output current by changing the charge state of a capacitor in a first direction;

second circuit means operatively connected to said first circuit means for generating an output pulse in response to a predetermined level of charge of said capacitor, and



third circuit means for changing the charge state of said capacitor in a second direction in response to said pulse.

B 496,500

METHOD OF INFORMATION TRANSMISSION WITH PRIORITY SCHEME IN A TIME-DIVISION MULTIPLEX COMMUNICATION SYSTEM COMPRISING A LOOP LINE

Ivor Jones, Winchester, England; Hans R. Mueller, Langnau, Switzerland; Daniel Wild, Kilchberg, Switzerland, and Pitro A. Zafiropulo, Horgen, Switzerland, assignors to International Business Machines Corporation, Yorktown Heights, N.Y.

Continuation-in-part of Ser. No. 279,595, Aug. 10, 1972, abandoned. This application Aug. 12, 1974, Ser. No. 496,500

Claims priority, application Switzerland, Aug. 13, 1971, 11976/71

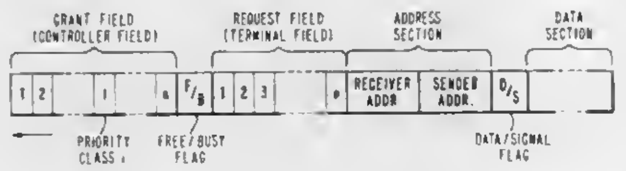
Int. Cl.² H04J *3/08*

U.S. Cl. 179—15 AL **6 Claims**

References Cited

UNITED STATES PATENTS

3,408,632	10/1968	Hauck	340/172.5
3,597,549	8/1971	Farmer et al.	179/15 AL
3,639,904	2/1972	Arulpragasam	179/15 AL
3,680,056	7/1972	Kropfl	179/15 AL
3,706,974	12/1972	Patrick et al.	340/172.5
3,732,543	5/1973	Rocher	179/15 AL
3,755,786	8/1973	Dixon et al.	179/15 AL
3,764,981	10/1973	Takasugi	179/15 AL



1. A method of information transmission with a priority scheme in a time-division multiplex communication system comprising a loop to which a plurality of terminals of different priority classes and at least one supervisory unit are attached, said method comprising the steps of:

transferring information on said loop by cyclically consecutive frames, each frame including a group of control characters;

said control characters comprising at least two fields for priority assignment, one of the fields serving as request field for the insertion of channel requests by attached terminals, discernable by priority class, and one other field serving as a grant field for characterizing which priority class may occupy the transmission channel represented by the corresponding frame;

formulating the contents of the grant field at said supervisory unit from the contents of a request field previously transmitted over the loop; and

determining at each terminal, if that terminal has requested channel allocation during the preceding cycle and if the grant field of the frame in the current cycle does not contain an identification of a class with higher priority than that of the respective terminal, or if the grant field of the frame in the current cycle does not contain any priority class identification and if so, seizing the frame of the current cycle for information transmission.

B 500,176

VIDEO RECORDING AND/OR REPRODUCING APPARATUS, AND RECORD ASSEMBLY FOR USE THEREIN

Nobutoshi Kihara, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 23, 1974, Ser. No. 500,176

Claims priority, application Japao, Sept. 8, 1973, 48-101790

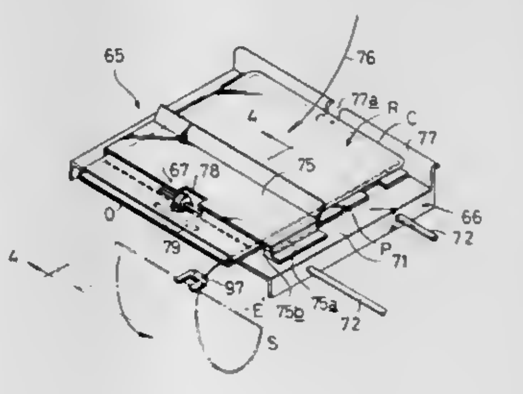
Int. Cl.² G11B *5/52, 5/80, 25/04*

U.S. Cl. 360—81 **58 Claims**

References Cited

UNITED STATES PATENTS

2,915,596	12/1959	Lyon et al.	360/84
3,534,182	10/1970	Prochrow	360/84
3,668,310	6/1972	Yano et al.	360/84
3,836,731	9/1974	Wilisch et al.	360/86



1. An apparatus for recording and/or reproducing at least video signal information comprising: a record assembly including cover means and at least one flexible sheet adapted to have at least video signal information recorded thereon and being movable in respect to said cover means between a stored position, in which said sheet is substantially enveloped and protected by said cover means, and an operative position in which a major portion of said sheet is withdrawn from said cover means and a minor portion of said sheet remains within said cover means; sheet driving means operative selectively for moving each said sheet relative to said cover means from said position to said operative position and for returning said sheet to said stored position from said operative position; rotary signal transducer means movable in at least one circular path about an axis substantially at right angles to the direction of movement of said sheet between said stored and operative positions; sheet guide means receiving each said sheet during the movement of the latter to said operative position and guiding said major portion of the sheet in an arcuate path substantially coinciding with at least a portion of said circular path of travel of said rotary signal transducer means; and translating means for moving said record assembly and said rotary signal transducer means relative to each other in directions parallel to said axis of rotation of the rotary signal transducer means to that the latter scan successive parallel record tracks on said major portion of said sheet in said arcuate path.

B 501,253

OVERLOAD PROTECTION CIRCUIT FOR TAPE RECORDING AND/OR REPRODUCING APPARATUS

Masao Tomioka, Kawaguchi, and Yasunori Orihara, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 28, 1974, Ser. No. 501,253

Claims priority, application Japan, Aug. 30, 1973, 48-101819[U]

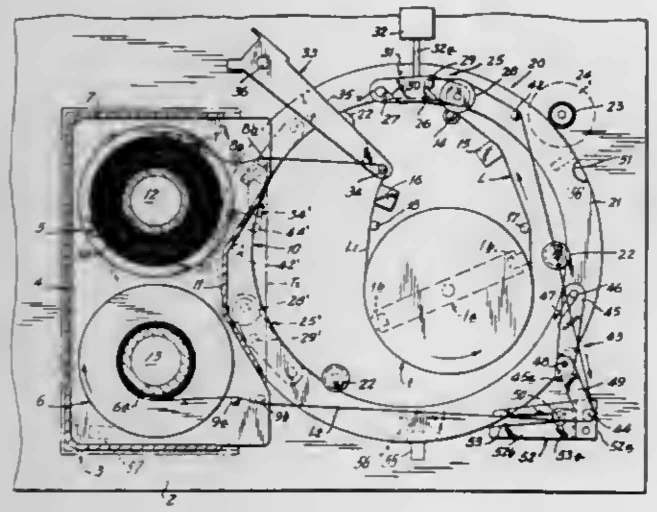
Int. Cl.² G11B *15/24, 15/66, 23/04*

U.S. Cl. 360—85 **12 Claims**

References Cited

UNITED STATES PATENTS

3,692,940	9/1972	Konno et al.	179/6 R
3,702,383	11/1972	Iraga et al.	360/85
3,711,649	1/1973	Ando	179/6 R
3,769,470	10/1973	Curtis	360/95
3,783,200	1/1974	Jantzen et al.	360/85



1. Tape recording and/or reproducing apparatus comprising:

a rotary head drum assembly comprising a rotary magnetic head and a tape guide drum;

means to support a supply of tape adjacent said assembly;

tape guide means movable in one direction from an initial position to a final position for withdrawing a loop of said tape from said supply and wrapping said loop on the periphery of said drum, and in the opposite direction from said final position to said initial position for unwrapping said loop and returning it to said supply;

electrically energized drive means selectively operable to move said tape guide means in said one direction and in said opposite direction;

timing means to measure predetermined intervals of time slightly longer than the normal lengths of time required to move said tape guide means

in said one direction from said initial position to said final position and in the opposite direction from said final position to said initial position, respectively; and

means responsive to said timing means to halt the electrical energizing of said drive means during operation of the latter for moving said tape guide means in said one direction and in said opposite direction at the ends of said respective predetermined intervals of time.

B 506,916

2,4,6 TRISUBSTITUTED PYRIDINE DYE LASERS

Channabasappa S. Angadiyavar, 6 Customs Quarters, College Road, Bombay, India, and Rangaswamy Srinivasan, Cedar lane, Ossining, N.Y. 10562

Filed Sept. 17, 1974, Ser. No. 506,916

Int. Cl.² H01S *3/00*

U.S. Cl. 331—94.5 L **19 Claims**

References Cited

UNITED STATES PATENTS

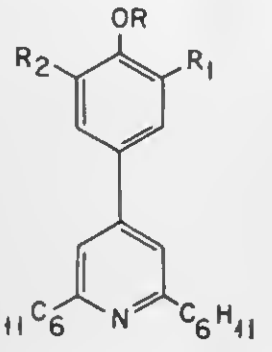
3,864,644	2/1975	Lincoln et al.	260/296 P

OTHER PUBLICATIONS

Snavely, Electro–Optical Systems Design, pp. 30–36 (Apr. 1973).

Barrio et al., J. Am. Chem. Soc. Vol. 95, pp. 4891–4895 (July 25, 1973).

1. A dye laser comprising an acidic laser dye solution and a pumping energy source operably coupled therewith and capable of producing stimulated emission of the dye solution, said dye solution comprising a lasing concentration in a non-interfering solvent, of a dye having the general structure as follows:



wherein R can be any alkyl group having from 1 to 6 C atoms; R_1 can be H, CH_3, C_2H_5, F, and OCH_3; R_2 can be H, CH_3, C_2H_5, F, or OCH_3; and R_1 can equal R_2.

B 508,817

LINE SELECTION CIRCUIT FOR A TELEVISION RECEIVER

Harry T. Freestone, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Sept. 24, 1974, Ser. No. 508,817

Int. Cl.² H04N *5/44*, *9/62*

U.S. Cl. 178—7.5 R **6 Claims**

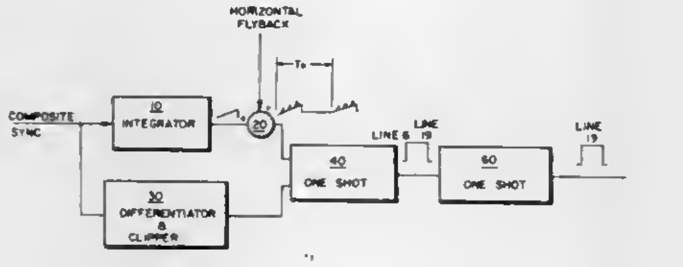
References Cited

UNITED STATES PATENTS

2,615,979	10/1952	Abbenhouse	178/7.5 S
3,423,525	1/1969	Baun	178/7.3 R
3,502,804	3/1970	Barr	178/7.5 R X
3,780,218	12/1973	Rennick	358/28

OTHER PUBLICATIONS

Type 529 Waveform Monitor Instruction Manual, Tektronix, Inc. 1965.



1. A line selection circuit for a television receiver for identifying a predetermined line in the even and odd fields of a frame of a received television signal comprising:

means for extracting a vertical sync pulse from both fields of the television signal,

means for deriving line rate pulses,

means for combining said line rate pulses with the vertical sync pulses to derive a first signal of repetitive alternating even and odd field trigger pulses,

controllable timing means,

means coupling said first signal to said controllable timing means,

said controllable timing means being responsive to said first signal for initiating a timing period at the same line during both fields, the timing period of said controllable timing means being designed to terminate within said predetermined line, and

means for applying line rate pulses to said controllable timing means to effect a precise termination of the timing period corresponding to the beginning of said predetermined line and providing an output signal indicative of the beginning of said predetermined line.

B 508,961

BETA COMPENSATED INTEGRATED CURRENT MIRROR

Kenneth J. Krolik, San Jose, Calif., assignor to Motorola, Inc., Chicago, Ill.

Filed Sept. 25, 1974, Ser. No. 508,961

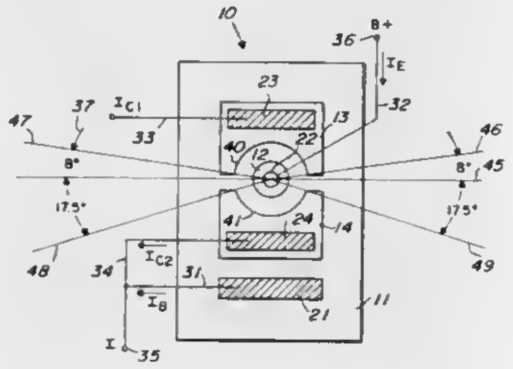
Int. Cl.² H01L *29/06*, *29/72*

U.S. Cl. 357—36 **1 Claim**

References Cited

UNITED STATES PATENTS

3,579,059	5/1971	Widlar	357/35
3,633,052	1/1972	Hanna	357/35
3,694,762	9/1972	Mulder	307/299 B
3,700,921	10/1972	Gay	307/299 B
3,761,787	9/1973	Davis et al.	357/35
3,809,929	5/1974	Vittoz	357/36
3,820,007	6/1974	Schilling et al.	357/35
3,822,387	7/1974	Mulder	357/36
3,879,745	4/1975	Tharmaratnam	357/35



1. A lateral PNP type transistor having a beta of approximately 15 forming a beta compensated integrated current mirror comprising:

a. a base composed of semiconductor material;

b. an emitter formed on said base and in connection therewith;

c. first and second collector portions formed on said base in spaced relation from said emitter and each other and in partially encircling relationship to said emitter, said first and second collector portions each defining an inner edge adjacent said emitter with the inner edge of said first collector portion encircling approximately 163° of the emitter and the inner edge of said second collector portion encircling approximately 145° of the emitter, the amount of current from said emitter flowing in each of said collector portions being dependent upon the amount of said emitter encircled by the inner edges of each of said collector portions;

d. said base and said second collector portion being electrically connected so that the current flowing in said base and in said second collector portion forms a single current; and

e. the amount of said emitter encircled by each of the inner edges of said first and second collector portions being formed so that the current flowing in said first collector portion is approximately equal to the single current.

B 509,185

FORCE COMMUTATION STATIC FREQUENCY CHANGER APPARATUS USING DIRECT CAPACITOR COMMUTATION

Eric J. Stacey, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1974, Ser. No. 509,185

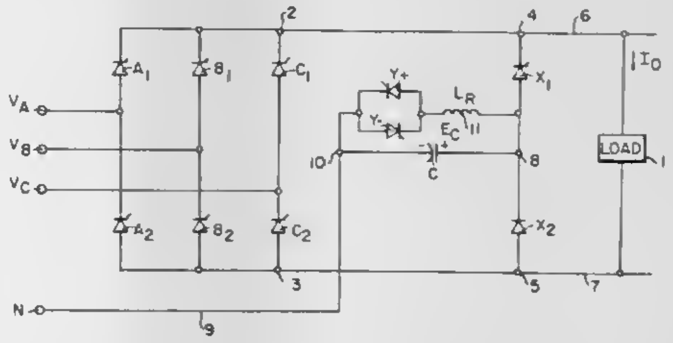
Int. Cl.² H02M *5/45*

U.S. Cl. 321—7 **23 Claims**

References Cited

UNITED STATES PATENTS

3,337,788	8/1967	Pelly	321/65
3,431,483	3/1969	Lafuze	321/7
3,470,447	9/1969	Gyugyi et al.	321/7
3,493,838	2/1970	Gyugyi et al.	321/7
3,742,336	6/1973	Bedford	321/7
3,763,418	10/1973	Beck et al.	321/45 C
3,842,341	10/1974	Goldberg	321/45 C



2. A force commutation static frequency changer for supplying with alternating current a load from a polyphase alternating current source via cyclically and temporarily conductive main controllable rectifiers associated in pairs with the respective phases of the alternating current source comprising:

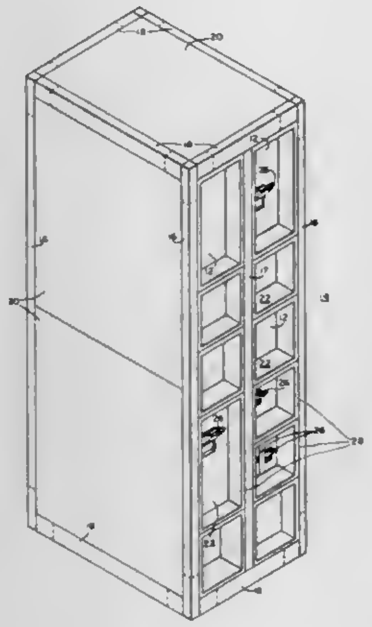
capacitor means in series combination with auxiliary controllable rectifier means for applying a predetermined voltage in the reverse direction with respect to any of said main controllable rectifiers and for establishing a temporary path for said load current in derivation with respect to a conductive one of said main controllable rectifiers, said predetermined voltage being larger than the line to neutral voltage applied to said conductive main controllable rectifier thereby to turn it OFF after said temporary path has been established at the magnitude of said load current, said series combination being connected in parallel with said main controllable rectifiers and in series with said load and said alternating current source.

B 509,606
METAL ENCLOSED SWITCHGEAR HAVING WELL-SHAPED FRONT COVERS

James R. Farley, Pittsburgh; John G. Salvati, and Louis N. Ricci, both of Beaver Falls, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 346,551, March 30, 1973. This application Sept. 26, 1974, Ser. No. 509,606
Int. Cl.^{2} H02B *1/10*
U.S. Cl. 317—120 **21 Claims**

References Cited
UNITED STATES PATENTS

2,786,162	3/1957	Ballou	317/119
2,978,613	4/1961	Hein	317/119
3,321,672	5/1967	Kuhn et al.	317/120
3,348,103	10/1967	Berry	317/120
3,743,892	7/1973	Fritz et al.	317/120
3,780,355	12/1973	Salvati et al.	317/120



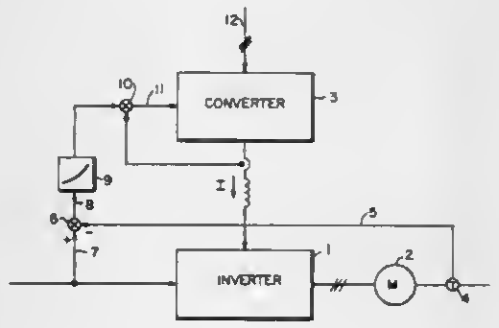
1. A three phase alternating current metal enclosed switchgear unit comprising:
a generally rectangular section structure;
three horizontally extending main through bus bar conductors, one for each phase, disposed horizontally in a spaced apart relationship in said rectangular section;
three vertical riser conductors disposed in said rectangular section in front of said main horizontal through bus conductors;
connector means electrically connecting each phase of said horizontal main through bus to its associated vertical riser;
a plurality of circuit interrupters connected to said vertical risers and recessed from the front of said section structure having operating handles facing and recessed from the front of said section structure and each of said circuit interrupters being disposed vertically upright;
a plurality of circuit-interrupter enclosure means formed at the front of said section structure and each of said circuit interrupter enclosure means having at least one of said circuit interrupters disposed therein and being positioned vertically;
a plurality of front cover means for closing the front of each of said enclosure means so as to provide a dead front construction for said switchgear unit;
each of said front cover means comprising an outer portion aligned with the front of said section structure and which extends around the periphery of said front cover means, and a recessed surface flush with the front of the associated circuit interrupter and having an opening therein through which only the operating handle of the associated circuit interrupter extends; and,
said outer portions of said front cover means include a void formed therein for receiving some mounting hardware associated with said switchgear unit.

B 511,886
METHOD AND CIRCUITS FOR THE DERIVATION OF AN ANALOG SLIP FREQUENCY SIGNAL OF AN INDUCTION MOTOR IN A TACHOMETERLESS MOTOR DRIVE

Michael B. Brennen, and Alberto Abbondanti, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 3, 1974, Ser. No. 511,886
Int. Cl.^{2} H02P *7/42*
U.S. Cl. 318—231 **5 Claims**

References Cited
UNITED STATES PATENTS

3,500,158	3/1970	Landau et al.	318/227
3,512,067	5/1970	Landau	318/227
3,593,083	7/1971	Blaschke	318/227
3,718,847	2/1973	Graf et al.	318/227
3,775,652	11/1973	Bowler et al.	318/227
3,824,437	7/1974	Blaschke	318/227



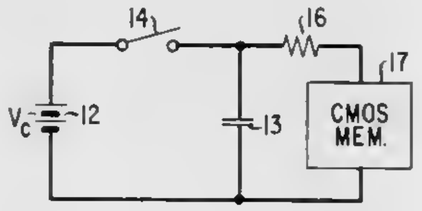
1. The method of determining the slip frequency ω_2 of an induction motor supplied with current at a frequency ω_1 and imparting a torque T to a load, comprising the steps of:
sensing the value of the input current and the input voltage of the stator of the motor;
determining from said sensed current and voltage values the direct and quadrature input currents I_d, I_q; and voltages V_d, V_q;
determining E_d and E_q, the direct and quadrature air gap voltages in accordance with the relationship $E_d = V_d - I_d (R_1 + j\omega_1 L_1)$ and $E_q = V_q - I_q (R_1 + j\omega_1 L_1)$, where R_1 and L_1 are the resistance and inductance of the stator of the motor;
computing at least one of the products $E_d \cdot I_d$ and $E_q \cdot I_q$ to derive a signal N which is substantially proportional to $T\omega_1$;
integrating at least one of said determined direct and quadrature air gap voltages, E_d and E_q;
multiplying said integrated one of said air gap voltages by the other of said determined air gap voltages to derive a signal D which is substantially proportional to the square of the corresponding non-integrated determined air gap voltages and inversely proportional to ω_1; and
dividing said signal N by said signal D to derive a signal representative of the slip frequency ω_2.

B 512,849
VOLTAGE MAINTENANCE APPARATUS

John Alexander Copeland, III, Watchung, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 7, 1974, Ser. No. 512,849
Int. Cl.^{2} H03K *1/02*
U.S. Cl. 307—296 **4 Claims**

References Cited
UNITED STATES PATENTS

3,322,974	5/1967	Ahrons et al.	307/221 C
3,597,629	8/1971	Bartlett	307/238
3,636,530	1/1972	Mark et al.	307/238 X
3,870,905	3/1975	Chikazawa	307/296 X



1. In combination:
a semiconductor memory having a resistance-voltage characteristic which is similar to MOS memories;
said memory being adapted to be connected in parallel with a d-c power supply for applying to the memory a voltage V_i;
said memory being capable of storing electrical data provided the applied voltage is a minimum value V_f;
means for temporarily maintaining an applied voltage between V_f and V_i in the event of accidental disconnection of the power supply comprising a capacitor in parallel with the memory and the power supply;
and means for increasing the time during which the applied voltage can be temporarily maintained above V_f comprising a resistor which is other than any internal resistance of the capacitor, connected between the capacitor and the memory, the resistor having a resistance R substantially defined by the Equation $R = 0.4 (V_{ci} - V_f)/I_f$ where I_f is the capacitor discharge current at voltage V_f and V_{ci} is the initial voltage across the capacitor.

B 513,368
HIGH SPEED-LOW COST, CLOCK CONTROLLED CMOS LOGIC IMPLEMENTATION

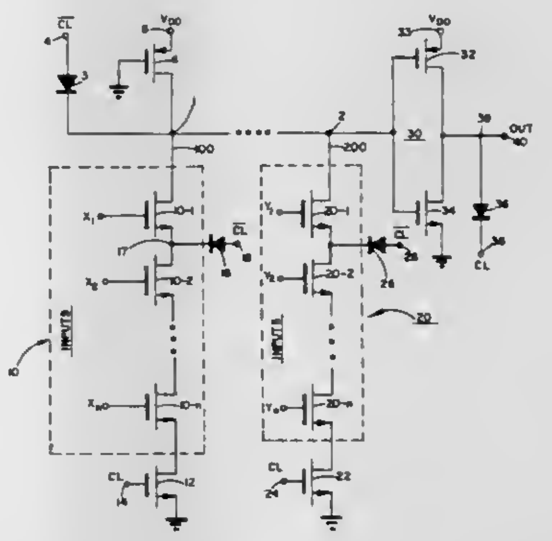
James A. Luisi, Anaheim; Clarence W. Padgett, Fountain Valley, and Dana C. Street, Placentia, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Oct. 9, 1974, Ser. No. 513,368
Int. Cl.^{2} H03K *19/08*, *19/36*
U.S. Cl. 307—205 **10 Claims**

References Cited
UNITED STATES PATENTS

3,479,523	11/1969	Pleshko	307/205
3,521,081	7/1970	Vasseur et al.	307/205
3,676,705	7/1972	Meyer	307/251
3,683,201	8/1972	Haraszti	307/205
3,740,576	6/1973	Haraszti	307/205
3,774,055	11/1973	Bapat	307/251 X
3,825,888	7/1974	Kawagoe	307/215 X

OTHER PUBLICATIONS

Boleky et al., "High–Performance Low–Power CMOS Memories Using SOS Technology"; Reprinted from IEEE J. Solid–State Circuits, Vol. SC-7, pp. 135–145, 4/1972: *Semiconductor Memories*, IEEE Press, 1972.
Surgent, "Insulated Gate Field–Effect Transistor Sense Amplifier Latch"; IBM Tech. Discl. Bull.; Vol. 13, No. 9, pp. 2670–2671; 2/1971.
Cole et al., "Logic Gate", IBM Tech. Discl. Bull.; Vol. 16, No. 2, p. 566; 7/1973.
Cole et al., "Dynamic Logic Gate"; IBM Tech. Discl. Bull.; Vol. 16, No. 2, p. 567; 7/1973.



1. A synchronous circuit for implementing functions of logic having an operating cycle comprising an active and a recovery segment and including,
source means for supplying a plurality of reference potentials,
a data node adapted to be charged to a first of said reference potentials or to be discharged to a second of said reference potentials,
a data output terminal to receive a signal thereat representative of the reference potential of said data node,
at least one semiconductor device connected between said data node and said reference potential source means,
current source means connected to said data node to charge said data node to said first reference potential, and
timing signal means connected to said at least one semiconductor device to enable said data node to be discharged through a conduction path of said at least one semiconductor device and to said second reference potential during the active segment of the circuit operating cycle,
said current source means including a source of constant current and a source of periodic current to charge said data node to said first reference potential,

said source of constant current connected to said reference potential source means to charge said data node to said first reference potential during the recovery segment of the circuit operating cycle to thereby compensate for residual leakage current from said at least one semiconductor device, and

said source of periodic current connected to said timing signal means to periodically charge said data node to said first reference potential during the recovery segment of the circuit operating cycle.

B 513,756
AMPLIFYING CIRCUIT FOR USE WITH A HIGH IMPEDANCE SOURCE TRANSDUCER

Osamu Kono, Tokyo; Takeshi Matsudaira, Kanagawa, and Makoto Ishikawa, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 336,819, Feb. 28, 1973, Pat. No. 3,862,367. This application Oct. 10, 1974, Ser. No. 513,756

Claims priority, application Japan, Mar. 2, 1972, 47-21876; Aug. 15, 1972, 47-81569

Int. Cl.^{2} H04R *3/00*

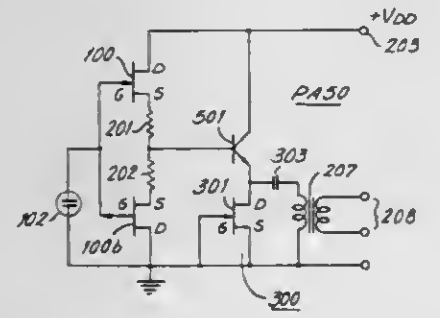
U.S. Cl. 179—1 A **8 Claims**

References Cited
UNITED STATES PATENTS

3,300,585	1/1967	Reedyk et al.	330/35
3,378,783	4/1968	Gibson	330/35

OTHER PUBLICATIONS

Gosling, "Field Effect Transistors", Wiley 1965.
N. S. (National Semiconductor), "N.S. Application Note AN 48-1", 1971.
Freiman, "Eliminate Dead Zone . . . ", Electronic Design, Sept. 26, 1968, p. 70.
Sevin, "FET," McGraw Hill, 1965, pp. 64–69.



1. An amplifying circuit for use with a signal source comprising first and second field-effect transistors which are of different conductive types, and each of which has gate, drain and source electrodes, the gate electrodes of the first and second field-effect transistors being connected to each other, a pair of resistors in series connecting the source electrodes of the first and second field-effect transistors to each other in a source follower configuration so as to present a low output impedance, means connecting the signal source between the interconnected gate electrodes of the first and second field-effect transistors and the drain electrode of the second field-effect transistor, said first and second field effect being selected to have small values of drain-source current in the absence of any gate-source bias, a third transistor which has control, output and common electrodes, means connecting said control electrode to said resistors at a connection point between the latter, a constant current source connected to said output electrode, means for supplying power to said drain electrode of said first field-effect transistor and to said common electrode of the third transistor, an output circuit connected between said output electrode of the third transistor and said drain electrode of the second field-effect transistor, said third transistor and said constant current source cooperating to provide a high load impedance for said first and second field effect transistors, and said third transistor being selected to have a relatively high common to output electrode current in the absence of any control to output electrode bias.

B 518,859
GATEABLE ELECTRON IMAGE INTENSIFIER

Vincent J. Santilli, Corning, N.Y., and James Vine, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 29, 1974, Ser. No. 518,859

Int. Cl.^{2} H01J *39/04, 39/02*

U.S. Cl. 313—99 **7 Claims**

References Cited
UNITED STATES PATENTS

2,994,798	8/1961	Krieger et al.	313/102
3,082,342	3/1963	Pietri	313/94 X
3,280,356	10/1966	Stoudenheimer et al.	313/94 X
3,475,076	10/1969	Nelson	313/94 X
3,801,849	4/1974	Edgecumbe	313/102

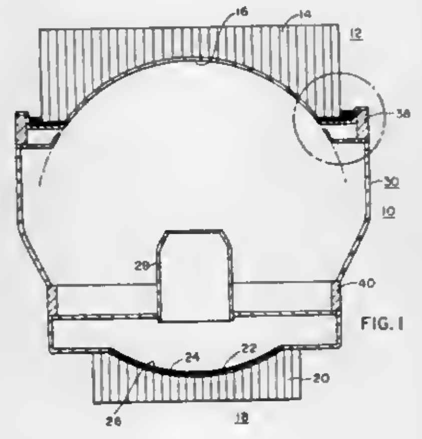


FIG. 1

1. An electronic imaging tube comprising:

a hermetically sealed envelope;

an input image means including a curved photocathode surface;

output image means spaced from the input image means;

an annular accelerating anode positioned within said envelope between the input and output means for accelerating electrons to produce image intensification;

an annular gateable electrode disposed within said envelope between the input means and the anode, which gateable electrode includes an inwardly disposed end portion proximate to but spaced from the perimeter of the photocathode surface, which end portion extends along the radius of curvature of the photocathode surface.

B 519,932
ELECTRICAL ANGLE DELAY CIRCUIT

Curtis D. Munden, and Robert E. Campbell, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 1, 1974, Ser. No. 519,932

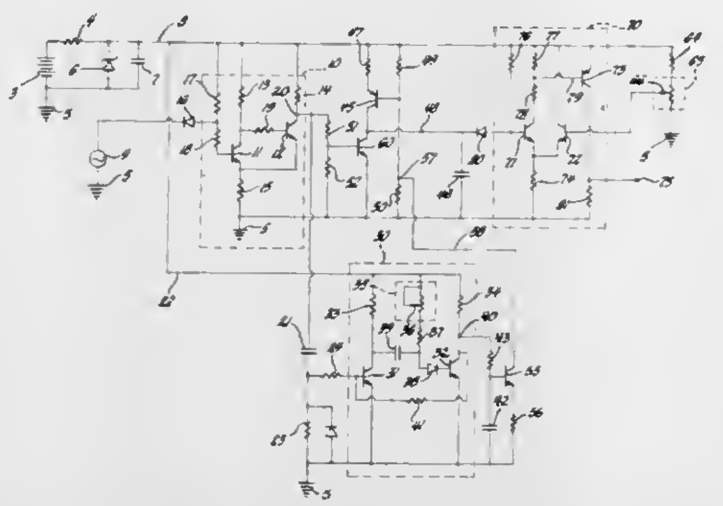
Int. Cl.^{2} H03K *5/13, 5/159*

U.S. Cl. 307—293 **5 Claims**

References Cited
UNITED STATES PATENTS

3,333,110	7/1967	Schanne	307/230 X
3,403,268	9/1968	Beckner et al.	307/293
3,486,043	12/1969	Johannessen	307/265
3,486,067	12/1969	Griffith et al.	307/265 X
3,571,626	3/1971	Reif	307/265
3,581,214	5/1971	Seegmiller	307/293
3,753,012	8/1973	Frederiksen et al.	307/293

1. An electrical angle delay circuit for producing an output signal which is delayed the same selectable number of electrical degrees from the positive to negative polarity zero crossover point of each cycle of all frequencies of a variable frequency alternating current input signal comprising: circuit means responsive to said alternating current input signal for producing a direct current potential synchronizing signal having leading and trailing edges corresponding to the negative to positive polarity zero crossover point and to the positive to negative polarity zero crossover point, respectively, of each cycle of said alternating current input signal; circuit means responsive to said leading edge of said synchronizing signals for producing a range signal of a direct potential level directly proportional to the frequency of said alternating current input signal; timing circuit means arranged to be electrically influenced by said range signal for producing a direct current potential ramp timing signal which is initiated at the positive to negative polarity zero crossover point of each cycle of said alternating current input signal and increases linearly in potential level at a rate determined by the potential level of said range signal; means for producing a delay signal of a selectable direct current potential level; and circuit means responsive to said timing signal and said delay signal for producing an output signal when the potential level of said timing signal increases to that of said delay signal.



B 519,979
TELEVISION SIGNAL AMPLIFIER APPARATUS FOR COUNTERACTING EFFECTS OF UNWANTED SIGNAL COMPONENTS

Eric R. Woods, and Russell G. Thompson, both of San Diego, Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Filed Nov. 1, 1974, Ser. No. 519,979

Int. Cl.^{2} H04N *3/16*

U.S. Cl. 178—7.1 **10 Claims**

References Cited
UNITED STATES PATENTS

2,829,247	4/1958	Thomas	178/DIG. 12
3,735,035	5/1973	Kowalski et al.	178/DIG. 12
3,812,289	5/1974	Avins	178/7.3 R

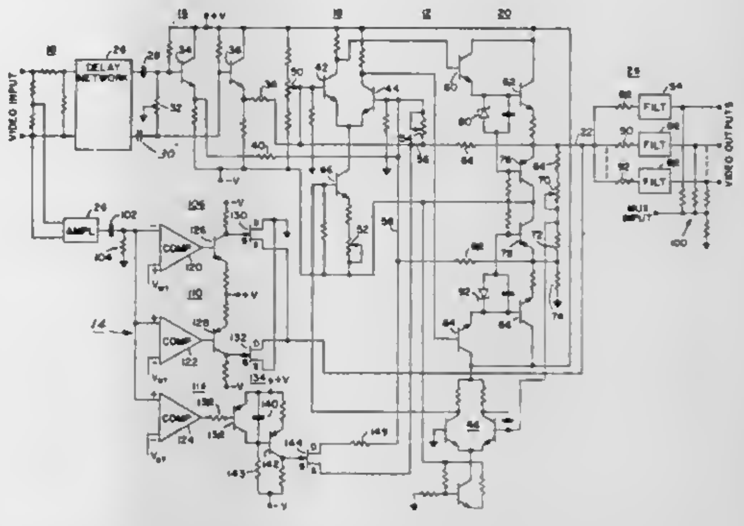
1. Television signal amplifier apparatus for counteracting the effects of unwanted signal components which can be introduced in the course of routing and processing of television signals having portions representing black and white picture regions and synchronizing signals, said apparatus comprising

a. video signal amplifier means for amplifying said television signals, said amplifier means having an input and an output,

b. first means responsive to said television signals at said input for detecting when said television signals represent the white region and are greater in absolute value than the value corresponding to a certain signal level in said white region,

c. second means responsive to said television signals at said input for detecting when said television signals represent the black region and are greater in absolute value than the value corresponding to a certain signal level in said black region,

d. third means responsive to said television signals at said input for detecting the occurrence of said synchronizing signals thereof,



e. switching means connected at said output operated by said first and second means for preventing the transmission of signals at said output when said signal levels are greater either than said certain signal level in said white region or said certain signal level in said black region, and

f. means operated by said third means for reducing the gain of said amplifier means such that said gain does not exceed unity gain during the absence of said synchronizing signals.

B 527,693
TEMPERATURE COMPENSATED VARIABLE FREQUENCY CRYSTAL OSCILLATOR

Toshihiko Waku, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 27, 1974, Ser. No. 527,693

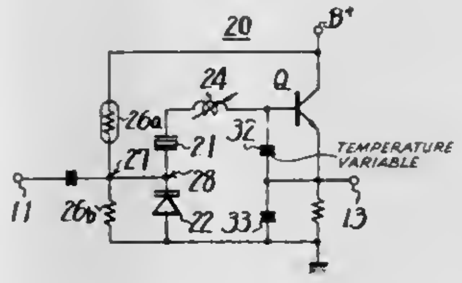
Claims priority, application Japan, Dec. 5, 1973, 48-138442

Int. Cl.^{2} H03B *5/04, 5/36;* **H03C** *3/22*

U.S. Cl. 331—116 R **5 Claims**

References Cited
UNITED STATES PATENTS

3,373,379	3/1968	Black	331/176 X
3,569,865	3/1971	Healey	331/177 V X



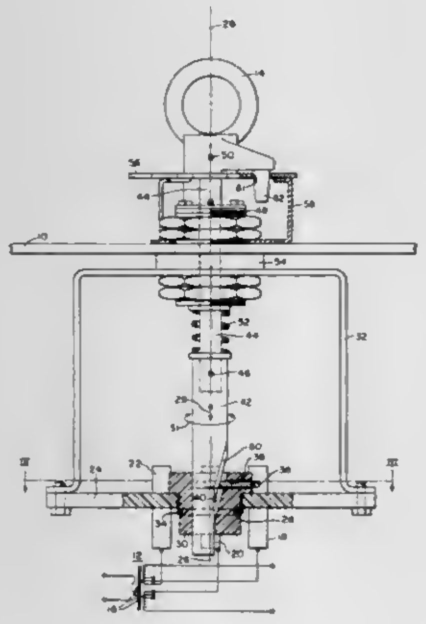
1. A variable frequency oscillator comprising a first series circuit including a resonator made of lithium tantalate, variable inductance means and first variable capacitance means whose capacitance varies linearly with temperature variations; a second series circuit connected in parallel to said first series circuit and including second capacitance means whose capacitance varies with said temperature variations in accordance with a second order relationship which is graphically represented by a second degree curve opening upward; and a tran-

sistor having its base electrode connected to said parallel connected first and second series circuits.

B 531,425
NON-LOAD TAP-CHANGER SWITCH
Edgar R. Eley, Jefferson City, Mo., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 10, 1974, Ser. No. 531,425
Int. Cl.^{2} H01H *21/18*
U.S. Cl. 200—11 TC **9 Claims**

References Cited
UNITED STATES PATENTS

1,678,129	7/1928	Tuttle	200/11 TC UX
1,752,213	3/1930	Treanor	200/11 TC UX
2,675,435	4/1954	Framhein	200/153 LA X
2,903,530	9/1959	Wilson, Jr.	200/11 TC
3,005,882	10/1961	White	200/11 EA
3,170,048	2/1965	Glatz et al.	200/8 R UX
3,177,305	4/1965	Lehman	200/11 B X
3,539,736	11/1970	Naimer	200/153 LA X
3,636,489	1/1972	Colangelo et al.	200/11 TC X

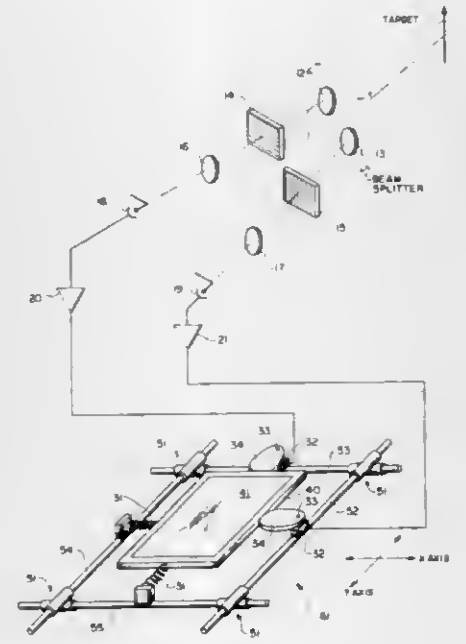


1. A non-load tap-changer for tapped electrical windings, comprising:
- a plurality of terminals;
- means for supporting said terminals in an arc around a first axis;
- a contact carrier located between said terminals and being rotatable around said first axis, said contact carrier having first and second openings therein which conjointly communicate with each other;
- means for preventing movement of the contact carrier in a longitudinal direction along said axis;
- a movable contact positioned in the first opening of the contact carrier and being dimensioned to contact two adjacent terminals;
- a shaft extending into the second opening in the contact carrier, said shaft having an inclined surface thereon which is engageable with the movable contact;
- means for permitting manual longitudinal movement of the shaft along said axis and manual rotational movement around said axis; and
- resilient means for forcing the shaft and the inclined surface thereon in a longitudinal direction, with the inclined surface being in contact with and exerting an outward radial force on the movable contact when the movable contact is engaged with the two adjacent terminals.

B 533,580
IMAGE STABILIZATION SYSTEM
Carl Orlando, New Shrewsbury, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 17, 1974, Ser. No. 533,580
Int. Cl.^{2} G03B *39/00*
U.S. Cl. 354—70 **5 Claims**

References Cited
UNITED STATES PATENTS

2,774,961	12/1956	Orlando	250/210 X
3,293,439	12/1966	Marantette et al.	250/203 R
3,296,444	1/1967	Wilson	250/203 R



1. An image stabilization system for maintaining a fixed relationship between a target to be photographed and an image of the target to be recorded on a photographic film comprising: p1 a. a primary lens system for receiving light rays from said target and for splitting said light rays into first and second light beams;
- b. first and second optical density wedges each having a scale of continuous linear density gradations, said wedges being positioned with their respective scales at angles to each other and in position for said first wedge to transmit said first light beam and said second wedge to transmit said second light beam;
- c. first and second photo-electric means responsive to said first and second transmitted light beams, respectively, for producing variable first and second output voltages; and
- d. means responsive to said first and second output voltages for moving said photographic film in all directions on a given plane in consonance with the variations in said first and second output voltages.

B 534,016
DIGITAL AUTOMATIC GAIN CONTROL CIRCUIT
Gardner D. Jones, Jr., Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 18, 1974, Ser. No. 534,016
Int. Cl.^{2} G06F *5/00*
U.S. Cl. 235—154 **12 Claims**

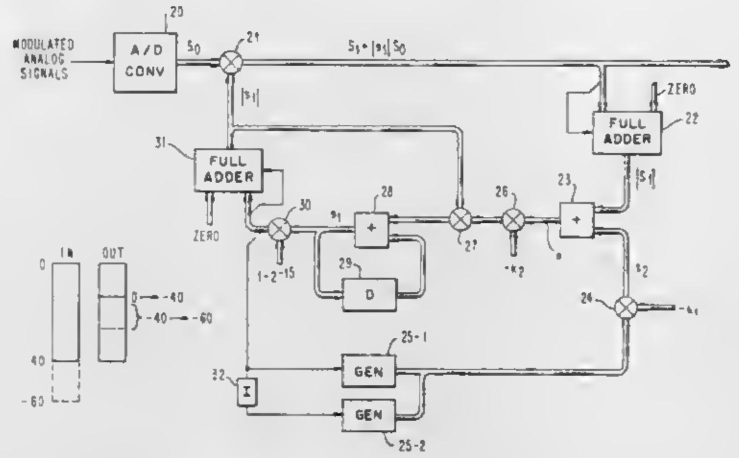
References Cited
UNITED STATES PATENTS

3,562,504	2/1971	Harris	235/154

1. A digital gain control circuit suitable for use in a digital signal processor such as a digital demodulator comprising:

- a multiplier for forming the product of an uncontrolled digital input signal and a digital gain control signal;
- a feedback loop responsive to the magnitude of the output of the said multiplier and a digital reference for generating the said digital gain control signal;

said feedback loop including;
- means for forming an error signal corresponding in magnitude and sign to the difference between the magnitude of the multiplier output and the said reference;



- accumulator means responsive to said error signal for generating said gain control signal; and
- a feedback control loop responsive to the sign of the accumulator output for modifying the sign of the reference to cause said error signal to assume alternate negative and positive fixed values when the multiplier output falls to zero for a predetermined period of time.

B 534,767
APPARATUS FOR TESTING MULTICONDUCTOR CABLES FOR CONTINUITY, CORRECT CONNECTIONS, AND THE ABSENCE OF SHORT CIRCUITS BETWEEN CONDUCTORS
Henry Edge Vaiden, Winston-Salem, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 20, 1974, Ser. No. 534,767
Int. Cl.^{2} G01R *31/02*
U.S. Cl. 324—51 **9 Claims**

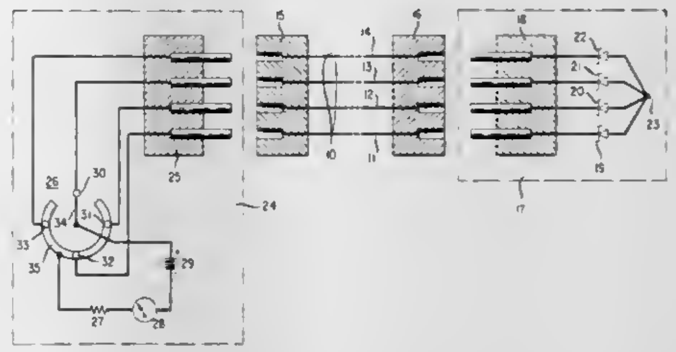
References Cited
UNITED STATES PATENTS

2,635,135	4/1953	Lamont	324/73
2,666,898	1/1954	Meldal	324/66
2,814,774	11/1957	Wong	324/51
2,822,519	2/1958	Murphy	324/66
2,964,701	12/1960	Argabright	324/51
3,217,244	11/1965	Glover	324/51
3,594,635	7/1971	Minamii et al.	324/51
3,600,673	8/1971	Kohke	324/51
3,728,616	4/1973	Cheek et al.	324/51
3,746,973	7/1973	McMahon	324/51
3,818,329	6/1967	Reaves	324/51

FOREIGN PATENTS OR APPLICATIONS

189,684	4/1957	Austria	324/66
924,432	4/1963	United Kingdom	324/66
130,580	11/1959	U.S.S.R.	324/66

5. Apparatus for testing the electrical continuity between terminals on a first device and terminals on a second device where said first device terminals should be connected in a preassigned order to a plurality of conductors and said second device terminals should likewise be connected in a preassigned order to said conductors, said apparatus comprising:
- a plurality of first means, each having first and second terminals, each responsive to a first current flowing in a first direction between said terminals to produce a first voltage drop which is unique to said first voltage drops of all other of said first means and each responsive to a second current flowing in a second direction between said terminals to produce a second voltage drop where all of said second voltage drops of said first means are substantially equal,

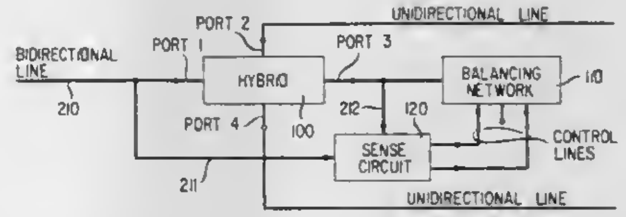


- said first means having their first terminals all electrically connected together and their second terminals arranged for connection to said first device terminals, respectively,
- second means for applying a DC potential between any one of said second device terminals and at least one of its remaining terminals, and
- third means for indicating the current flowing from said source.

B 541,415
AUTOMATIC CABLE BALANCING NETWORK
Richard Larry Ukeiley, Englishtown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 16, 1975, Ser. No. 541,415
Int. Cl.^{2} H04B *1/52*
U.S. Cl. 179—170 D **10 Claims**

References Cited
UNITED STATES PATENTS

2,302,374	11/1942	Mitchell	179/170 D
2,303,419	12/1942	Affel	179/170 D
3,178,521	4/1965	Brown	179/170 D
3,824,501	7/1974	Harris	333/18
3,875,350	4/1975	Fischer	179/170 D



1. Apparatus for automatically balancing a four signal port hybrid network having bidirectional signals at a fixed preselected one of said signal ports, comprising:
- a balancing impedance network connected to a second preselected one of said signal ports of said hybrid network, and exhibiting a prechosen impedance having a preselected number greater than one of variable impedance parameters; and
- a sense circuit responsive to signals present on said first and second preselected signal ports of said hybrid network for developing impedance control signals equal in number to said preselected number to control said impedance parameters, respectively.

B 553,460
POWER AMPLIFIER HAVING PROTECTIVE CIRCUITS

William B. Crockett, and Otward Mueller, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed Feb. 27, 1975, Ser. No. 553,460

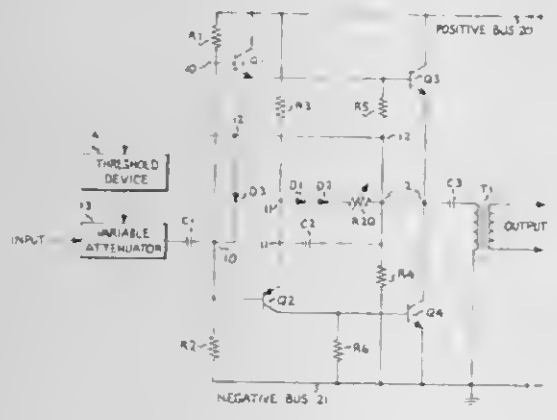
Int. Cl.² H03F ***3/18***

U.S. Cl. 330—207 P **9 Claims**

References Cited

UNITED STATES PATENTS

3,596,199	7/1971	Hafler	330/207 P



1. In a transistorized power amplifier comprising:

a. an input for said amplifier;

b. a pair of complementary input transistors connected to said input to supply oppositely phased signals in response to an input signal applied to said amplifier input;

c. a pair of output transistors having input circuits respectively connected to said complementary input transistors, said output transistors being responsive respectively to said oppositely phased signals to provide output signals for said amplifier;

d. normally conductive switching means connected between one of said output transistors and one of said complementary input transistors;

e. normally nonconductive switching means connected between said one output transistor and said amplifier input;

f. said normally conductive switching means becoming nonconductive in response to an overload or an overdrive applied to said amplifier, and said normally nonconductive switching means becoming conductive in response to said normally conductive switching means becoming nonconductive; an improved restoral circuit comprising:

g. a threshold device having an input connected to said one output transistor and having an output that produces a threshold signal in response to a predetermined voltage at its input;

h. and an attenuator connected to said amplifier input, said attenuator having a control input connected to said threshold output for reducing the magnitude of input signals applied to said amplifier input in response to said threshold signal.

B 560,765
WAND FOR READING OPTICALLY ENCODED GRAPHIC SYMBOLS

Robert L. Cowardin, Cary, and George J. Laurer, Raleigh, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 11, 1975, Ser. No. 560,765

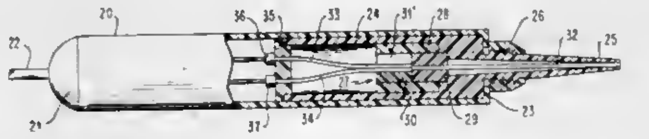
Int. Cl.² G02B ***5/14***

U.S. Cl. 250—227 **11 Claims**

References Cited

UNITED STATES PATENTS

3,497,701	2/1970	Dalton	250/227
3,826,900	7/1974	Moellering	250/568
3,834,391	9/1974	Block	350/96 C
3,871,744	3/1975	Bridger et al.	350/96 WG



1. A wand suitable for scanning graphically encoded indicia and providing electric signals which are an analog of the graphically encoded indicia comprising:

first, second and third substantially cylindrical optically conductive fibers;

a first retainer including means for locating said first and second fibers with respect to a reference dimension of said first retainer such that the said first and second fibers are in contact along a line which includes common tangent points on the substantially cylindrical surfaces of the fibers and the line of contact is coincident with the said reference dimension;

a second retainer including means for locating said third fiber with respect to a reference dimension substantially identical to the first retainer such that the axis of the cylindrical third fiber is coincident with the said reference dimension;

a support for supporting said first and second retainers in juxtaposition such that the said respective reference dimensions are in alignment whereby the point of tangency of the said first and second fiber coincides with the axis of the said third fiber;

a housing for retaining said support, positioning said third fiber in a substantially elongated position, supporting a light source and a photodetector; and

means for connecting the free end of the first and second fibers to the light source and the photodetector, respectively.

B 579,806
RESILIENT TAPE GUIDE ASSEMBLY FOR ROTARY HEAD TAPE RECORDING AND/OR REPRODUCING APPARATUS

Akio Serizawa, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 444,362, Feb. 20, 1974, abandoned. This application May 22, 1975, Ser. No. 579,806

Claims priority, application Japan, June 13, 1973, 48-67583

Int. Cl.² G11B ***15/60***

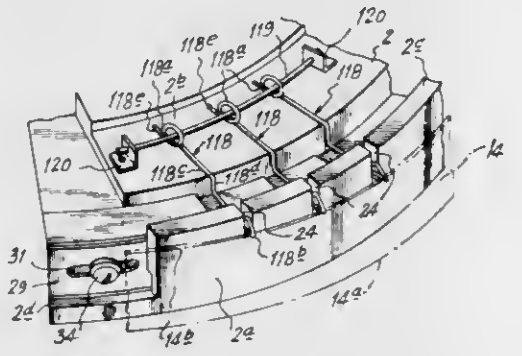
U.S. Cl. 360—130 **19 Claims**

References Cited

UNITED STATES PATENTS

3,643,849	2/1972	Roberts	226/199
3,800,318	3/1974	Jantzen	360/84

16. In a tape recording and/or reproducing apparatus having a tape guide drum including upper and lower drum portions which are spaced apart along the periphery of the guide drum for defining a circumferential gap, and at least one rotary transducer projecting through said gap for recording and/or reproducing signals on a tape running against said periphery of the guide drum in a path which extends about at least a portion of said periphery; a guide assembly for the tape on said drum comprising rigid guide means extending along said portion of the drum periphery and engageable by one longitudinal edge of the tape in said path for establishing the direction and location of said path, and a plurality of elongated resilient guide elements spaced apart along at least part of said portion of the periphery of said tape guide drum, said upper drum portion having a plurality of spaced apart slots for said resilient guide elements, respectively, each of said slots being directed outwardly in the upper surface of said upper drum portion and opening at said upper surface and at said periphery of the tape guide drum, and each of said resilient guide elements including an inner end portion secured to said upper surface of the upper drum portion at a respective location spaced inwardly from said periphery, an intermediate portion extending outwardly in respect to said guide drum from said inner end portion through the respective one of said slots and being resiliently movable independently of the other resilient guide elements in a plane substantially at right angles to said path, and a contact end portion at the outer end of said intermediate portion projecting from the respective slot beyond said periphery and acting yieldably against the other longitudinal edge of the tape in said path for holding the tape in contact with said rigid guide means while accommodating variations and changes in the width of said tape.



B 585,247
ELECTRICAL SWITCH CONSTRUCTION

John W. Stearley, Grove City, and Roger L. Warner, Union Township, both of Ohio, assignors to Robertshaw Controls Company, Richmond, Va.

Continuation of Ser. No. 298,020, Oct. 16, 1972, abandoned. This application June 9, 1975, Ser. No. 585,247

Int. Cl.² H01H ***13/36***

U.S. Cl. 200—67 D **8 Claims**

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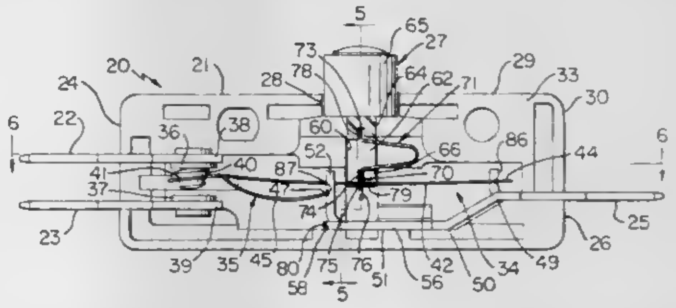
UNITED STATES PATENTS

2,556,981	6/1951	Raney	200/67 D
3,094,594	6/1963	Watson	200/67 D
3,382,332	5/1968	Cherry et al.	200/67 B
3,400,234	9/1968	Long et al.	200/67 B
3,485,975	12/1969	Long	200/153 V
3,487,184	12/1969	Arthur	200/67 D



1. An electrical switch construction comprising a housing means, a movable switch blade means carried by said housing means, and a movable actuator means carried by said housing means for causing movement of said switch blade means between operating positions thereof upon movement of said actuator means between operating positions thereof, said actuator means having spring means for engaging against said blade means and moving said blade means in unison therewith as said actuator means moves in unison therewith in one direction to a predetermined position relative to said housing means and for thereafter preventing further movement of said blade means in said one direction even though said actuator means is further moved in said one direction beyond said predetermined position, said spring means comprising a reversely bent single leaf spring member having an elbow and opposed ends, said actuator means having a chamber therein that intersects with a side slot thereof and an end slot thereof, said spring member being disposed in said chamber and having said elbow thereof extending out of said side slot and one opposed end thereof extending out of said end slot to engage said blade means.

DEFENSIVE PUBLICATIONS

PUBLISHED FEBRUARY 3, 1976

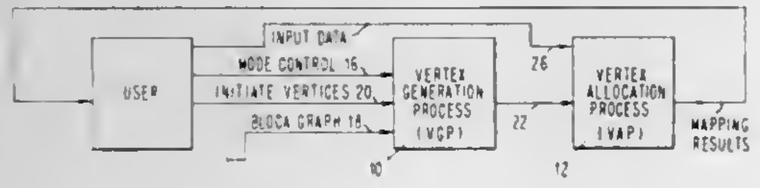
Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T943,001
DYNAMIC REDUNDANCY METHOD FOR AN AUTOMATED LOGIC MAPPING SYSTEM

Angelo Mennone, Croton-on-Hudson, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 13, 1974, Ser. No. 479,074
Int. Cl. G06f *15/56*
U.S. Cl. 444—1
8 Sheets Drawings. 36 Pages of Specification



An automated circuit design system and process are provided including a technique for introducing redundancy of circuit element groups during the allocation of the circuit element groups to modules. The redundancy technique, which is embodied as a computer algorithm, functions when the allocation of redoundable element such as a circuit element group is made to a container module such as a circuit chip, during a discrete step allocation procedure which is designed to produce a mapping of a set of connected circuit elements. A minimum condition for obtaining a successful mapping is that each element can be allocated to at least one module. The operation of the process is made redundant to reduce the number of elements by one, namely the allocated element. The consequence of the operation is that the connected elements said to be fed by the redundant element (referred to as sink elements) are each combined by union with the redundant element. Other concomitant results of the operation are that the connections previously required between the redundant element and its sink elements will not be needed should any of the sink elements be allocated to different modules, and each sink element has acquired the attributes of the redundant element.

T943,002
PROCESS FOR THE OXIDATION OF OLEFINICALLY UNSATURATED COMPOUNDS TO CARBONYL COMPOUNDS

Hugh J. Hagemeyer, Jr., and Frank C. Canter, both of P.O. Box 2068, Longview, Tex. 75603, and Ronald A. De Jean, % Alpart, Spun Tree, Jamaica, British West Indies

Continuation of abandoned application Ser. No. 858,186, Sept. 15, 1969. This application June 26, 1974, Ser. No. 483,473

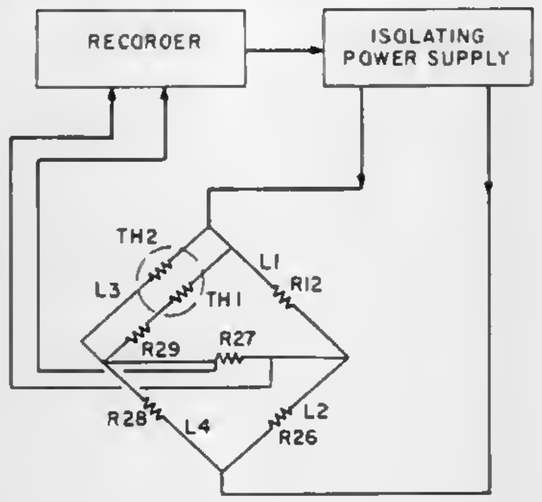
Int. Cl. C07c *47/06*
U.S. Cl. 260—604 AC
No Drawing. 21 Pages of Specification

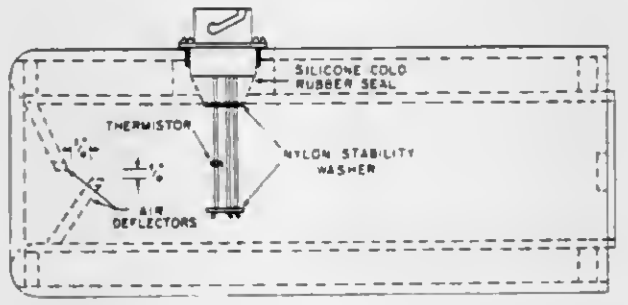
A process for the oxidation of olefinically unsaturated compounds to carbonyl compounds comprising contacting the olefinically unsaturated compounds with an aqueous oxidizing agent in the presence of a catalyst comprising an aqueous solution which includes a catalytically active palladium compound, cupric chloride, and sufficient insoluble cuprous chloride to provide a heterogeneous aqueous catalyst solution having an absolute emf value of about 260 to about 400 mv.

T943,003
ATMOSPHERIC AMBIENT AIR TEMPERATURE MONITORING SYSTEM AND PROBE THEREFOR

Victor J. Schorn, Rte. 5, Box 323-B, Florence Ala. 35630, and Billie E. Brackeen, Rte. 4, Box 47, Tuscumbia, Ala. 35674

Filed July 25, 1974, Ser. No. 491,791
Int. Cl. G01k *1/08, 7/24, 13/02*
U.S. Cl. 73—362 AR
7 Sheets Drawings. 10 Pages of Specification



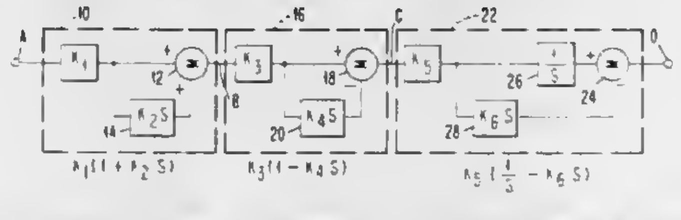


An aircraft-mounted air temperature measuring system (FIG. 1) having an effective linear temperature/resistance response of about ±0.15° C. over its full span of about −30° F. to about 120° F., comprising a probe housing for a dual element thermistor, said thermistor being a part of one of four legs of an electrical bridge in combination with readout means, power supply means, and a load resistor connected against two junctions of said bridge to provide voltage reading for said readout means. The bridge circuit is provided with switching for 8 ranges and is easily calibrated. Improved readout accurracy and resolution is obtained by using a readout device having a full-scale range that is only a portion of the total range of the thermistor-bridge combination. The use of multiple resistor in two legs of the bridge permits a switch, inserted between one end of the load resistor and a junction of two legs of said bridge, to change the location of the effective junction between said two legs. Variable resistors in these said two legs permit vernier adjustment of this location. Design of the probe housing (FIG. 6) minimizes interference from radiant heat energy, thereby enabling the thermistor sensor to respond only to the heat energy contained in the air flowing thereover.

T943,004
READ SIGNAL EQUALIZATION OR COMPENSATION NETWORK

Richard C. Schneider, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 30, 1974, Ser. No. 493,189
Int. Cl. G11b *5/45*
U.S. Cl. 360—65
1 Sheet Drawing. 15 Pages of Specification



Read signal from a magnetic recording head is equalized or compensated by the circuit shown herein to substantially reproduce the signal recorded on magnetic tape. The equalization circuit must compensate for the derivative function inherent in the head and must also compensate for high frequency roll-off and phase distortion. The derivative function performed by the magnetic read head is compensated by an integration function **22**. The high frequency roll-off and phase distortion is compensated by a series of circuits **10** and **16** having in LaPlace transforms a transfer function of the form

$$(1+AS)(1-BS)$$

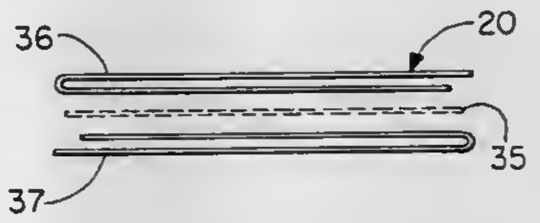
where A and B are constants, and S is the frequency variable $j\omega$. Phase distortion in the read signal appears in the form of asymmetrical pulses. Constants A and B in the above transfer function may be varied by varying circuit components in the equalization network to eliminate the asymmetry in the read signal. In particular, the function $(1+AS)$ may be used to shape the trailing edge of the read signal pulse, while the function $(1-BS)$ may be used to shape the leading edge of the read signal pulse.

T943,005
METHOD OF BUILDING A RADIAL TIRE

John D. Smithkey, Jr., 1271 Overland Ave. NE., North Canton, Ohio 44720

Filed Aug. 14, 1974, Ser. No. 497,544
Int. Cl. B29h *17/14*
U.S. Cl. 156—123
1 Sheet Drawing. 5 Pages of Specification

A method of building a radial tire by the flat band method normally employed in the construction of bias and bias-belted tires. The radial tire is provided with a belt structure having at least one belt ply reinforced with cords which (I) have a high modulus of elasticity of at least 220 grams per denier, and (II) are disposed at angles in the range of from 16 to 32 degrees measured in relation to a plane containing the mid-circumferential centerline of the tread of the tire when molded, vulcanized and uninflated. The belt plies with high modulus cords of, for example, steel, glass, or aramid, are represented in dotted line in the drawing. The belt plies, other than those with high modulus cords, are reinforced with cords having a lower modulus of elasticity not exceeding 200 grams per denier. The belt plies with the lower modulus cords of, for example, rayon, nylon, or polyester, are represented in full, solid line in the drawings.

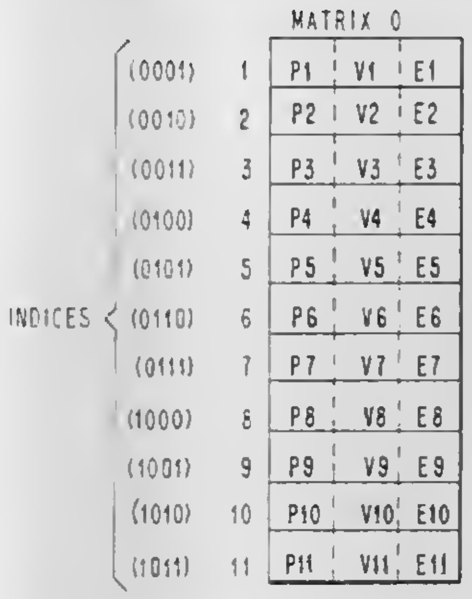


T943,006
DYNAMIC PRIORITY QUEUEING MECHANISM METHOD AND MEANS

Leonard F. Giaccone and Luther J. Woodrum, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of abandoned application Ser. No. 363,680, May 24, 1973. This application Aug. 16, 1974, Ser. No. 497,975

Int. Cl. G06f *7/06*
U.S. Cl. 444—1
8 Sheets Drawing. 64 Pages of Specification



Electronically inserting a queue element with any queue service value into a queue having a unique binary tree structure, and/or removing from the queue its element currently having the lowest (highest) service value in the queue. The queue elements are inserted as vertices of a binary tree structure in which the queue is ordered by the service values of its elements. Each queue element has fields which contain its queue service value V, a path order bit P, and either the item being queued by the queue element or a pointer to the item.

T943,007
RIGID UNSATURATED POLYESTER CELLULAR MATERIAL

Don R. Leonard, Rte. 15, 421 Old Castle Road, Kingsport, Tenn. 37660, and Lee H. Davis, 8143 NW. Twin Oaks Drive, Kansas City, Mo. 64151

Filed Aug. 27, 1974, Ser. No. 500,998
Int. Cl. C08f *283/00*
U.S. Cl. 260—2.5 N
No Drawing. 8 Pages of Specification

A composition for producing rigid, cellular plastics from unsaturated polyesters is disclosed. According to the disclosure, an unsaturated polyester produced from a glycol, an unsaturated acid or anhydride, and optionally a saturated acid, is mixed with a polymerizable vinyl monomer, a silicone surfactant, a curing catalyst, and a polymercaptan. The mixture is capable of being mechanically frothed, and subsequently cured to produce a rigid, cellular, low density product having a desirable cell structure and good physical properties.

T943,008
METHOD FOR MANUFACTURING TOOL ALLOYS BY POWDER METALLURGY

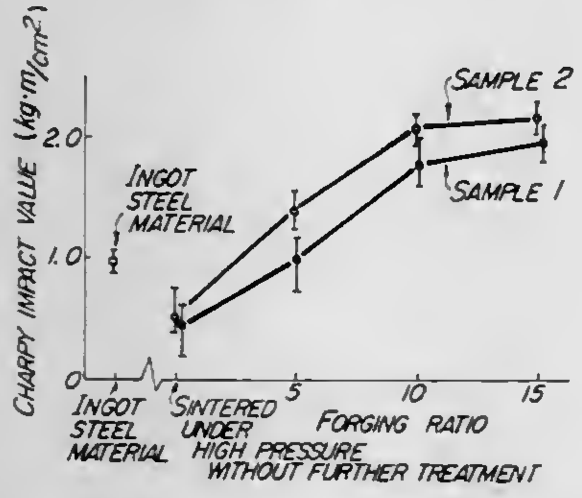
Hisao Hara, Kumagaya, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

Filed Sept. 9, 1974, Ser. No. 504,255

Claims priority, application Japan Sept. 12 1972 48/102,124

Int. Cl. B22f *7/06*
U.S. Cl. 148—11.5

1 Sheet Drawing. 9 Pages Specification



A method for manufacturing tool alloys by powder metallurgy, wherein alloys in powder form are filled in containers or sintered, and the containers containing the powder alloys therein or the coherent solid bodies thus sintered are subjected to hot plastic working until the reduction of area exceeds 80%. The method is effective to produce tool alloys having high performance including high wear resistance, high heat resistance and high toughness which exhibit efficient performance.

T943,009
STABILIZED SPANDEX POLYMERS

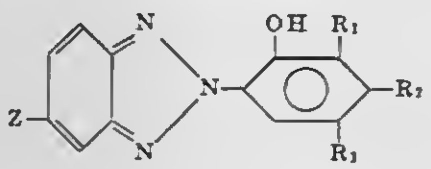
Andrew I. Smith, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Continuation of abandoned application Ser. No. 424,249, Dec. 12, 1973. This application Sept. 13, 1974, Ser. No. 505,446

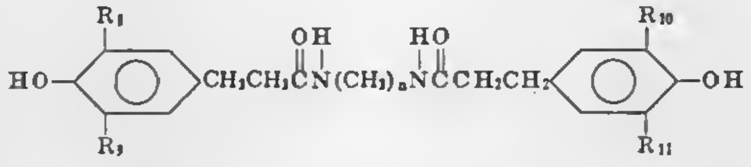
Int. Cl. C08k *6/00*
U.S. Cl. 260—45.8 NT

No Drawing. 10 Sheets Specification

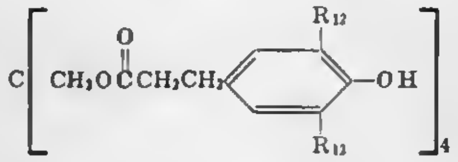
Spandex polymer is stabilized by incorporating therein synergistic amounts of a hindered phenol and a benzotriazole having the following formula:



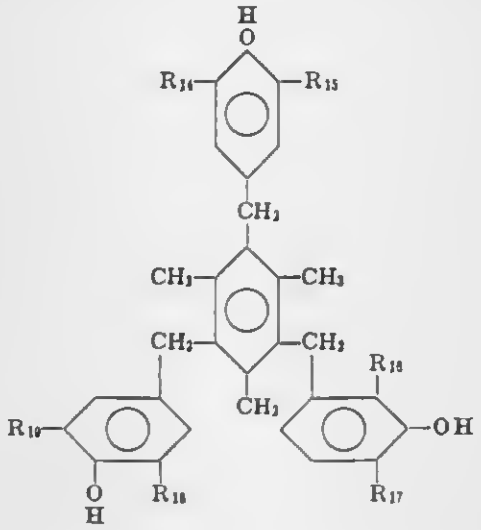
wherein Z is hydrogen or halogen, R_1 is hydrogen or C1–C8 alkyl, and R_2 is hydrogen or hydroxyl, and R_3 is hydrogen or C1–C8 alkyl. Exemplary hindered phenols are:



wherein at least R_8 and R_{10} are C1–C8 alkyl groups, and *n* is an integer greater than 0 and less than 15,



wherein at least R_{12} is a C1–C8 alkyl group, and



wherein at least R_{14}, R_{16} and R_{18} are C1–C8 alkyl groups. R_9, R_{11}, R_{13}, R_{15}, R_{17} and R_{19} are preferably also C1–C8 alkyl groups, but may be hydrogen. In all cases, t-butyl is the preferred alkyl group.

T943,010
FOAMABLE CHLORHEXIDINE-CONTAINING SYSTEM

Nicholas Rocko Pettoruto, Wilmington, Del., assignor to ICC United States Inc., Wilmington, Del.

Filed Sept. 18, 1974, Ser. No. 507,196

Int. Cl. A61k *31/205*
U.S. Cl. 424—316

No Drawing. 9 Pages Specification

An aqueous, foamable chlorhexidine-nonionic/cationic surfactant system is presented which can be used to form germicidal foams over long periods of time. Aqueous systems containing chlorhexidine [1,6-di-(4-chlorophenylidiguanido)hexane] salts are combined with nonionic or cationic surfactants having an HLB of at least 10 and preferably in the range of 12–18. Preferred surfactants are selected from combinations of polyoxyethylene ethers or partial hexitan esters of fatty acids having 12–24 carbon atoms, fatty alcohols, and polyoxyethylene derivatives of fatty alcohols having 10–18 carbon atoms, polyhydric materials such as sorbitol and carboxyl-vinyl polymers are included.

REISSUES

February 3, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,703
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

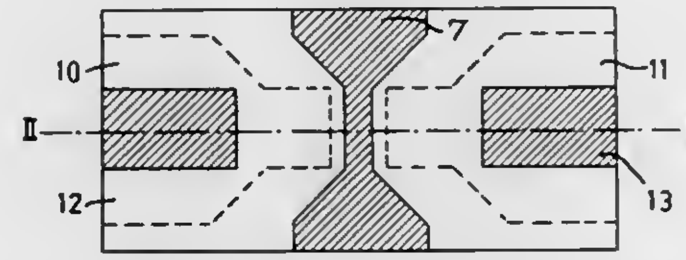
Ties Siebolt te Velde, and Hein Koelmans, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Original No. 3,481,030, dated Dec. 2, 1969, Ser. No. 630,026, Apr. 11, 1967. Application for reissue May 4, 1970, Ser. No. 34,484

Claims priority, application Netherlands, Apr. 14, 1966, 6604963; Dec. 2, 1969, 3481030

Int. Cl.² B01J *17/00*

U.S. Cl. 29—571 **12 Claims**



1. A method of manufacturing a semiconductor device comprising at least one field-effect transistor having source, drain and gate electrodes coupled to a semiconductor layer, [comprising providing on a surface of a semiconductor layer] comprising providing on a surface of a semiconductor layer at least part of a gate electrode in a thickness capable of blocking impinging ions or electrons leaving exposed semiconductor surface portions on opposite sides of the gate, subjecting the said gate and the said exposed surfaces of the semiconductor layer on opposite sides of the provided gate electrode to ion or electron bombardment to modify the conductivity of the exposed semiconductor surface portions while the said gate blocks the underlying surface portions from receiving said bombardment, and providing on the said surfaces of modified conductivity and spaced from the gate electrode ohmic contacts to form source and drain contacts, the surfaces of modified conductivity forming source and drain electrodes spaced apart by the width of the gate electrode in the completed device.

Re. 28,704
SEMICONDUCTOR DEVICES

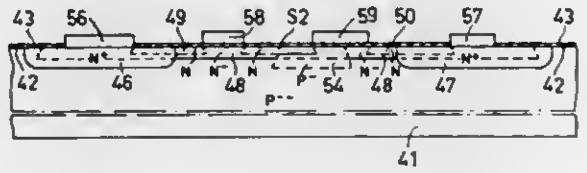
David Phythian Robinson, Meopham; Julian Robert Anthony Beale, Reigate; John Martin Shannon, Whyteleafe; John Anthony Kerr, East Grinstead, all of England, and Mukunda Behari Das, University Park, Pa., assignors to U.S. Philips Corporation, New York, N.Y.

Original No. 3,653,978, dated Apr. 4, 1972, Ser. No. 805,275, Mar. 7, 1969. Application for reissue Mar. 22, 1974, Ser. No. 453,876

Claims priority, application United Kingdom, Mar. 11, 1968, 11845/68

Int. Cl.² H01L *7/54*

U.S. Cl. 148—1.5 **21 Claims**



1. A method of manufacturing at least one insulated gate field effect transistor, comprising forming in a semiconductor body portion of one conductivity type adjacent a surface thereof by introducing opposite-type forming impurities therein spaced first and second low resistivity regions of the opposite conductivity type to constitute at least part of source and drain electrodes of the transistor, implanting ions of an impurity element in a third surface-*adjacent* region of the body portion extending between the first and second regions [to determine the conductivity thereof] to form at least a portion of a [current-carrying] channel *region located in the third region and whose conductivity is determined by the implanted ions and which functions to carry current* between the source and drain electrodes *when appropriate potentials are applied to the transistor*, providing a gate electrode on an insulating layer on said surface and extending over at least said portion of the channel *region*, and making electrical connections to the low resistivity source and drain electrodes, and to the gate electrode.

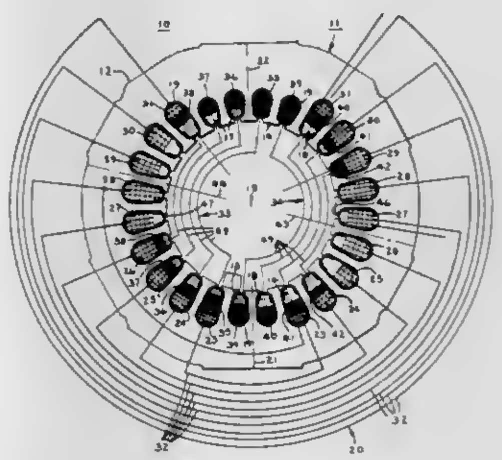
Re. 28,705
STATOR SLOT AND WINDING ARRANGEMENTS

William R. Hoffmeyer, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Original No. 3,633,056, dated Jan. 4, 1972, Ser. No. 56,926, July 21, 1970. Continuation-in-part of Ser. No. 805,625, March 10, 1969, abandoned. Application for reissue Dec. 27, 1973, Ser. No. 428,829

Int. Cl. H02k *17/28*

U.S. Cl. 310—180 **19 Claims**



1. For use in an alternating current motor; a stator including:

[a] a core of magnetic material having a plurality of substantially angularly spaced apart, coil-accommodating slots;

[b.] a distributed *primary* winding arranged in a plurality of said slots and including at least [two] *one first* coil [groups] *for* defining [at least two] *a* predetermined magnetic [poles] *pole of a first instantaneous polarity, and at least one second coil for defining a predetermined magnetic pole of a second instantaneous polarity*;

[c.] each of [said at least two] *the* predetermined magnetic poles having a radial polar axis, with [said] *the* radial polar axes being substantially angularly spaced apart around said core; and

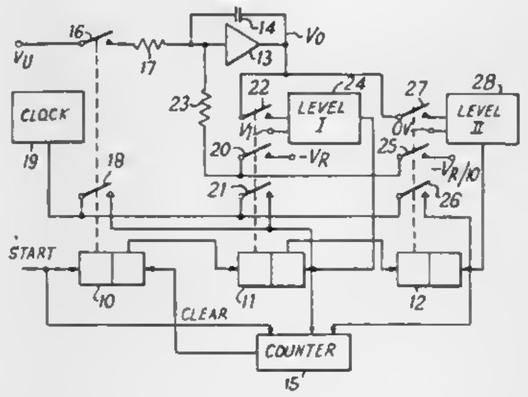
[d. said at least two coil groups] *the at least one first and second coils* being arranged generally concentrically about one of [said] *the* radial polar axes [about an] *and having portions thereof spanning an arcuate extent in excess of 180 electrical degrees and arranged* to leave a preselected polar region of said core in the vicinity of the other of [said] *the* radial polar axes free of [said at least two coil groups] *the at least one first and second coils.*

Re. 28,706

TRIPLE-SLOPE ANALOG-TO-DIGITAL CONVERTERS

Howard Anthony Dorey, Godalming, England, assignor to The Solartron Electronic Group Limited, Farnborough, England
Original No. 3,737,892, dated June 5, 1973, Ser. No. 232,883, Mar. 8, 1972. Division of Ser. No. 764,790, Oct. 2, 1968.
Application for reissue May 23, 1975, Ser. No. 580,401
Claims priority, application United Kingdom, Oct. 27, 1967, 48988/67
Int. Cl.² H03K *13/02, 13/20*
U.S. Cl. 340—347 NT **4 Claims**

1. An analog-to-digital converter comprising an integrating means having an input and an output, means for applying an analog input signal to be converted to the input of the integrating means to drive the integrating means output from a datum level to a level dependent upon the magnitude of the input signal, a source of a reference signal, means for applying the reference signal to the input of the integrating means to drive the integrating means output to the datum level and thereby generate a ramp function, a counter, means for generating clock pulses, means for causing clock pulses to be counted by the counter during an interval commencing with the application of the reference signal, means for applying a first increment to the ramp function before the ramp reaches the datum level a first time, means for detecting when the ramp reaches the datum level, means for applying to the ramp function a second increment equal in magnitude but opposite in polarity to said first increment, and means for scaling down the reference signal and the numerical weighting with which the clock pulses are counted by a common factor, the means for applying the second increment and the means for scaling down the reference signal and the numerical weighting of the clock pulses being responsive to operation of said detecting means when the ramp reaches the datum level said first time, and said detecting means being operative to determine the count in the counter when the ramp reaches the datum level a second time, whereby the count in the counter when the ramp reaches the datum level said second time provides a digital representation of the analog signal magnitude.



PLANT PATENTS

GRANTED FEBRUARY 3, 1976

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,828

CANADA BLUEGRASS PLANT

Arden Wayne Jacklin, Spokane, Wash., assignor to The Vaughan-Jacklin Corporation, Spokane, Wash.
Filed Oct. 17, 1974, Ser. No. 515,597
Int. Cl. A01h *5/12*
U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct variety of Canada bluegrass plant, substantially as herein shown and described, and characterized by and distinguished from common Canada bluegrass particularly by its greater seed yielding capability, earlier anthesis and disseminule maturity, reduced growth habit, stiff yellow-green stem and rust colored inflorescence at its maturity, while common Canada bluegrass is still immature, and an inflorescence which is a pyramidal open panicle with main axis moderately erect.

3,829

ROSE PLANT

William A. **Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.**
Filed Oct. 11, 1974, Ser. No. 514,313
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—25 **1 Claim**

1. A new and distinct cultivar of rose plant of the floribunda class, substantially as herein shown and described. characterized particularly as to novelty by the unique combination of an abundantly branched habit of growth, vigorous growth, abundantly doubled flowers of Shrimp Red which are approximately 2½ inches to 3 inches in size when fully opened, having very little fragrance.

PATENTS

GRANTED FEBRUARY 3, 1976

ERRATA

For CLASS	See PATENT NO.
128–002.05 C	3,935,984
416–095	3,936,222
416–220	3,936,234
425–038	3,936,251
426–066	3,936,364
424–283	3,936,563
219–068	3,936,653
219–073	3,936,654
219–073	3,936,655
219–076	3,936,656
219–136	3,936,657
219–216	3,936,658
219–413	3,936,659
219–459	3,936,660
219–528	3,936,661
231–061.12 N	3,936,662
235–150.51	3,936,663
235–151	3,936,664
235–151.3	3,936,665
235–151.3	3,936,666
235–185	3,936,667
240–004.2	3,936,668
240–004.2	3,936,669
240–041.3	3,936,670
240–046.59	3,936,671
240–047	3,936,672
330–017	3,936,731
340–001 R	3,936,791

PATENTS

GRANTED FEBRUARY 3, 1976

NOTE—A cross reference listing of applications published under Trial Voluntary Protest Program on January 28, 1975 is located in the back of this Issue. These entries will be in numerical order by document publication number.

GENERAL AND MECHANICAL

3,935,596

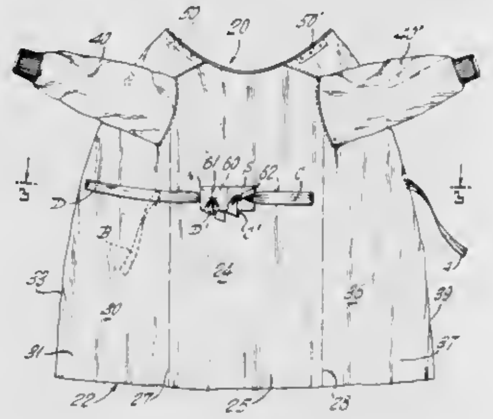
SURGICAL GOWN WITH TRANSFER DEVICE

Douglas Allen, Jr., Somerset; Richard F. Caffrey, Gladstone, and J. Philip Scanlon, Lawrenceville, all of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Nov. 6, 1974, Ser. No. 521,431

Int. Cl.^{2} A41D *13/00*; **A41B** *9/00*

U.S. Cl. 2—114 **19 Claims**



1. A surgical gown comprising a main sheet having sleeves attached thereto, said main sheet comprising a central panel and two side panels, said gown having outer belt means comprising two tie strings and a disposable belt engaging means, one end of one of said two tie strings being attached to the outer surface of said gown near the point where a first of said two side panels meets the central panel and one end of the other of said two tie strings being attached to the outer edge of the second of said two side panels, said belt engaging means being adapted to releasably grasp, and sequentially release, the free ends of said tie strings.

3,935,597

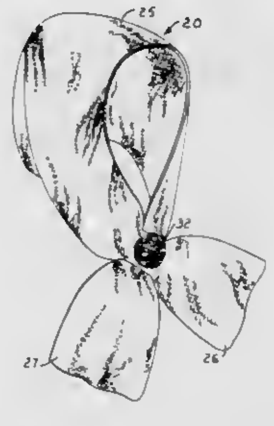
WEARING APPAREL HOOD

Edmee G. Frechmann, and Theresa G. Depret, both of 9804 E. 25th St. Terrace, Independence, Mo. 64052

Filed Apr. 14, 1975, Ser. No. 567,743

Int. Cl.^{2} A42B *5/00*

U.S. Cl. 2—207 **5 Claims**



1. An article of wearing apparel comprising:

a. an elongated fabric member having an intermediate portion and opposite end portions, said fabric member having opposed side edges;

b. first and second facing fabric layers, a pair of fabric layers extending between a respective one of the opposite end portions and the intermediate portion of said fabric and connected at spaced points to define a passage, said pair of fabric layers each having opposed side edges having a spacing therebetween less than a spacing between the opposite side edges of said fabric member whereby when the other of the end portions of said fabric member have been moved through the passage adjacent the said end portion for use, said fabric portions provide resistance to pulling of said other end portion through said passage; and

c. a fabric panel having an end edge and a side edge, said fabric panel side edge being joined to said fabric member at one of said side edges thereof in a manner such that said fabric panel and the intermediate portion of said fabric member define a hood.

3,935,598

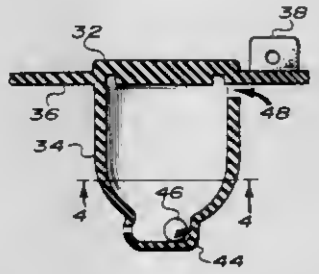
FLAPPER FLUSH VALVE

Albert Leo Schmidt, 1000 W. Eva Lane, Mount Prospect, Ill. 60070

Filed July 8, 1974, Ser. No. 486,364

Int. Cl.^{2} E03D *1/34*

U.S. Cl. 4—57 P **11 Claims**



1. A flapper valve for use in a tank having a valve operating mechanism and a flapper valve sealable outlet fitting for the liquid in the tank, said flapper valve comprising

- an attachment portion means for connecting the flapper valve to the tank structure in a position that the valve will function,
- a buoyant closure portion means for selectively closing said tank outlet, said closure portion means comprising
  - a capped sealing area for engaging said tank outlet fitting,
  - a vented buoyant hollow float bulb having a liquid inlet opening, said float bulb means depending downwardly from said closure portion and interior of said sealing area, and
  - a valve actuating tab for connecting said valve to said valve operating mechanism,
- an intermediate hinge portion means comprising flexible hinge arm means connected between said attachment portion means and said closure portion means, and
- ball check valve means connected to said float bulb means having an operator selectable ball position from outside said tank through use of said valve operating mechanism connected to said valve actuating tab whereby the venting of air from said float bulb is selectively controlled.

3,935,599

MOVABLE SWIMMING POOL BULKHEAD

Robert Stark, 735 NE. 198th, Seattle, Wash. 98155

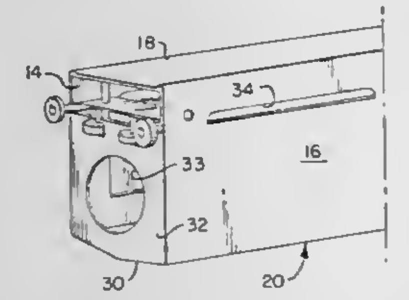
Division of Ser. No. 366,627, June 4, 1973, Pat. No. 3,842,484. This application July 31, 1974, Ser. No. 493,471

Int. Cl.^{2} E04H *3/18*

U.S. Cl. 4—172 **4 Claims**

1. A movable, submersible bulkhead for a swimming pool, comprising:

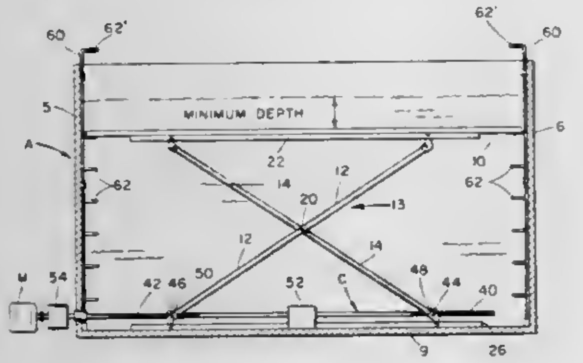
an elongated hollow body having top, bottom, end and side walls formed of fiberglass and resin, and a platform between the top and bottom walls and joining the side walls, openings in said end walls for providing ingress of water into the body, slots in the side walls at the water level for dampening wave action of the water, said side walls of said body including cores of balsa wood for rigidifying the body and providing partial flotation, and means for supporting and aligning the body within the pool including a pair of transversely spaced rollers on each end of the body for engaging the pool for carrying the weight of the body and preventing rotation of said body when the same is moved laterally along the pool.



3,935,600
SWIMMING POOL

William N. Scribner, 1237 Linworth Ave., Baltimore, Md. 21212

Filed Apr. 1, 1974, Ser. No. 456,613
Int. Cl.^{2} E04H *3/16, 3/18*
U.S. Cl. 4—172.13 **1 Claim**



1. A swimming pool having a liquid tight permanent bottom and side walls and a horizontal auxiliary vertically adjustable bottom positioned above the permanent bottom, having means for raising and lowering the said auxiliary bottom relative to the permanent bottom, comprising;

a. the auxiliary bottom being of a size slightly less in dimension than the permanent bottom to enable the auxiliary bottom to be moved vertically within and adjacent the inner surface of the side walls of the pool;

b. the means for raising and lowering the auxiliary bottom comprising a pair of elongated vertically arranged hinge supports positioned at two opposite sides of the pool, one pair of supports positioned one at each side of the pool and between the auxiliary bottom and the permanent bottom;

c. each pair of supports being hinged at a point adjacent their centers;

d. roller means fixed to the lower and upper ends of each of the hinged supports;

e. a pair of tracks positioned over and along the under surface of the auxiliary bottom and over the upper surface of the permanent bottom extending in a plane with the hinged supports for receiving the said rollers, the length of the tracks being substantially the length of the under surface of the auxiliary bottom;

f. means for moving the rollers along the tracks comprising a pair of threaded blocks connected to the lower ends of each of the hinged supports, including a shaft extending substantially the full length of the pool in a plane parallel with the hinged supports, having right and left hand threads on its opposite ends for threadedly engaging one of the said blocks at each end of the shaft.

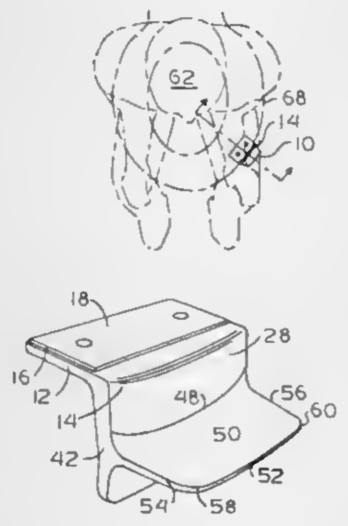
g. means positioned outside the pool for rotating the shaft in either direction;

h. perpendicular stationary locking means spaced over the edge of the pool for fixing the selected positions of the auxiliary bottom, said stationary locking means having projections extending horizontally therefrom for engaging the underside of the auxiliary bottom, side stationary locking means being rotatable in a horizontal plane to an angle of at least 45° for moving the horizontal projections in and out of engaging position with the auxiliary bottom for locking the same in position when in one position and out of locking position when in another position.

3,935,601
SANITARY TOILET SEAT RING LIFT

Milton A. S. Hermann, 1355 N. Sandburg Terrace, Apt. 9020, Chicago, Ill. 60610

Filed Dec. 23, 1974, Ser. No. 535,275
Int. Cl.^{2} A47K *13/10*
U.S. Cl. 4—251 **20 Claims**



1. A lift for a toilet seat ring pivoted to a toilet bowl and having an under surface spaced above the top of the bowl, comprising:

a base to be secured to the under surface of the toilet ring with an outer edge adjacent the outer edge of the ring;

a shield depending from the outer edge of the base to span the gap between the under surface of the ring and the top of the bowl; and

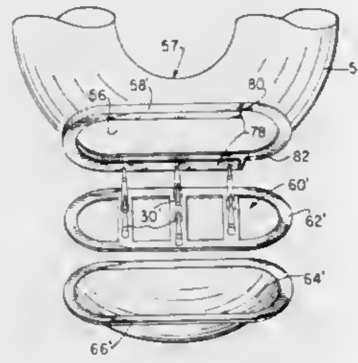
a handle extending outwardly from the shield with a manually engageable under surface for lifting the toilet seat.

3,935,602
TRAPS FOR SINKS, LAUNDRY TUBS AND THE LIKE

Howard D. Kale, 4621 Gulf of Mexico Drive, Longboat Key, Fla. 33548

Filed Aug. 19, 1974, Ser. No. 498,291
Int. Cl.^{2} E03C *1/26, 1/264*
U.S. Cl. 4—292 **7 Claims**

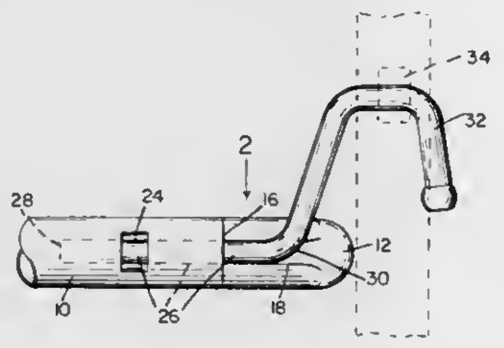
1. In a trap unit for use in connection with sinks, laundry tubs and the like, said trap unit comprising a conduit having a dip portion with an opening faced adjacent thereto, and a bottom closure member for closing said opening, a blocking member comprising a horizontal rim and transversely extending horizontal cross-members and a plurality of vertically spaced fingers on said horizontal cross-members, said blocking member positioned so that the rim thereof rests horizontally on said closure member and is positioned between the closure member and the dip portion of the conduit with said vertically spaced fingers extending into the dip portion of the conduit, and means for detachably securing said bottom closure member to said dip portion of said conduit.



3,935,603
ADJUSTABLE HANGER HANDLE FOR A CRIB FRAME

Robert G. Bryant, Gardner, Mass., assignor to GEM Industries, Inc., Gardner, Mass.

Filed Mar. 31, 1975, Ser. No. 563,851
Int. Cl.^{2} A47C *31/00*
U.S. Cl. 5—11 **1 Claim**



1. Supporting means for a spring frame of tubing in rectangular shape, said means comprising

a hanger having an elongated shank at one end and a hook at the opposite end,

and indented means in a portion of said tubing receiving said elongated shank slidably adjustable therein whereby the hanger is slidably adjustable laterally with respect to the spring frame,

said indented means comprises a portion of the tubing which is indented oppositely to the general circumference of the tubing and forms a semicylindrical supporting member opposite to an unindented portion of the tubing adjacent thereto,

a second indented means spaced from the first indented means along the length of the tubing, said two indented means together forming a two-point sliding support for the elongated shank of the hanger.

3,935,604
SUPPORT DEVICE FOR LIFTING AND SUPPORTING PATIENTS

Robert A. Collins, 10632 Baton Rouge Place, Northridge, Calif. 91324

Filed June 10, 1974, Ser. No. 477,767
Int. Cl.^{2} A61G *7/02*
U.S. Cl. 5—90 **14 Claims**

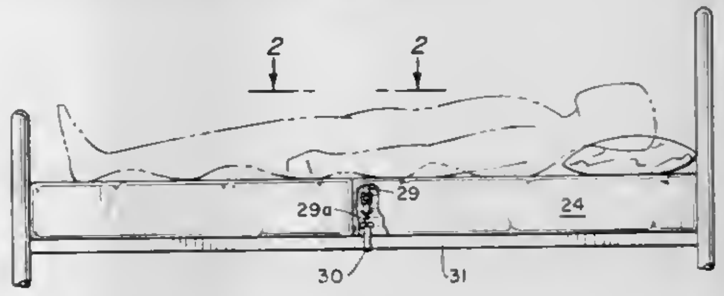
1. A support device located on the bed of a patient for elevating patient for use of a bedpan comprising:

a flat flexible non-elastic base sheet resting on the bed;

tie means extending from opposite sides of said base sheet and connected with said bed for securing said base sheet;

at least a pair of cushions extending longitudinally of said base sheet, lengthwise of said bed;

means for securing each cushion to said base sheet at a longitudinal edge of each cushion;



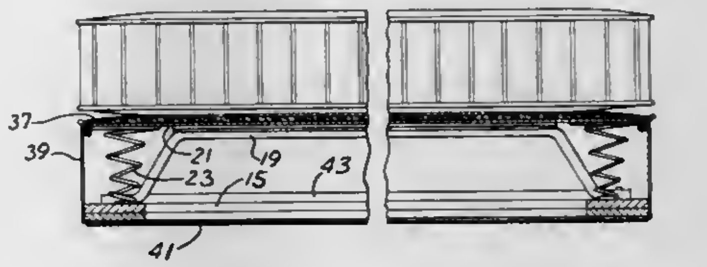
the spacing between adjacent inside longitudinal edges of said two cushions when inflated being great enough to receive a bedpan therebetween; and

means for individually inflating and deflating said pair of cushions.

3,935,605
MATTRESS FOUNDATION

Ronald G. Hutchinson, Naperville, Ill., assignor to Simmons Company, Atlanta, Ga.

Filed Dec. 16, 1974, Ser. No. 532,879
Int. Cl.^{2} A47C *23/04*
U.S. Cl. 5—351 **12 Claims**



1. A foundation in the nature of a bed spring for use beneath a mattress to support the same, comprising

a base providing at least a rigid lower periphery for supporting the foundation and

structure rising from said base to provide an elevated supporting platform substantially coextensive with the mattress to be supported,

said platform having a stable central area which is substantially rigid and unyielding under normal loads imposed upon a bed spring,

the area of said platform between said central area and at least the side edges of the foundation being resiliently deflectable under concentrated vertical load, and having an extent laterally of the foundation sufficient to cushion the concentrated load of a person seated on the side edge of a mattress supported by the foundation.

3,935,606
RETRACTABLE SUSPENSION SYSTEM

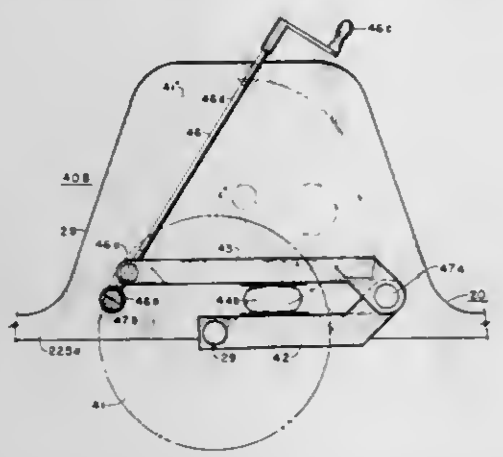
Olaf Soot, 9 Tomahawk Lane, Greenwich, Conn. 06830
Continuation-in-part of Ser. No. 379,234, July 16, 1973, abandoned. This application Apr. 5, 1974, Ser. No. 458,209
Int. Cl.^{2} B63C *13/00*
U.S. Cl. 9—1 T **6 Claims**

1. A retractable suspension system comprising:

a first nonrotatable horizontal suspension beam axle member,

a movable horizontal axle member which is parallel to said first suspension beam axle member, a first suspension arm member, the first end thereof being fixedly attached to one end of said horizontal axle member and the second end thereof being rotatably attached to said first suspension beam axle member, said horizontal axle member being attached only at said one end and being perpendicular to said first suspension arm member,

a second suspension arm member, the first end thereof also being rotatably attached to said first suspension beam axle member, said first and second suspension arm members defining and being located within a vertical plane,



spring means interconnecting said first and second suspension arm members, said spring means being located directly above said first suspension arm member and directly below said second suspension arm member, and

means attached to said second suspension arm member for adjusting the rotational orientation thereof relative to said first suspension beam axle member,

whereby actuation of said adjusting means causes said horizontal axle member to be selectively raised or lowered relative to said first suspension beam axle member.

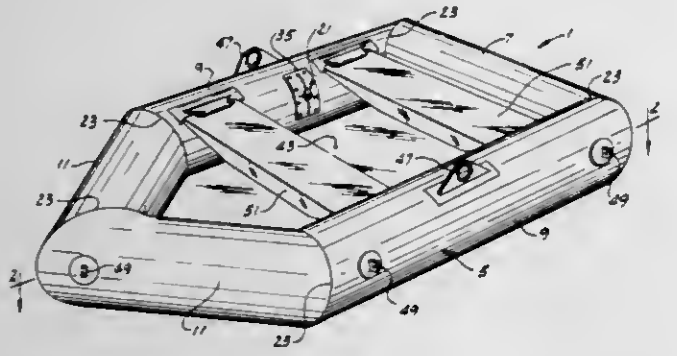
3,935,607
INFLATABLE BOAT

Robert Roger Cantwell, New Haven, and Harold J. Pohl, Washington, both of Mo., assignors to Kellwood Company, St. Louis, Mo.

Filed Aug. 26, 1974, Ser. No. 500,320

Int. Cl.² B63B *7/08*

U.S. Cl. 9—2 A **4 Claims**



1. An inflatable boat comprising an outer tube having a stern section, side sections extending forward from opposite ends of the stern section at opposite sides of the boat, and bow sections angled toward one another from the forward ends of the side sections and meeting generally in the fore-to-aft central plane of the boat, and a plurality of inner inflatable tubes arranged end-to-end in said outer tube, each inner tube comprising a straight length of air-impervious flexible sheet material formed into a tube with its longitudinal margins brought together and sealed to form a longitudinal seam, and its ends sealed together to form end seams, each inner tube extending through a plurality of said sections, each inner tube having an inflation valve and said outer tube having openings for said inflation valves, and each inner tube being removable, when deflated, from the outer tube through the respective opening, the stern section, each side section and each half of the bow section of the outer tube each comprising a separate tubular section of said outer tube material, said separate tubular sections being stitched together at respective abutting ends thereof.

3,935,608
ARTICLE OF CLOTHING

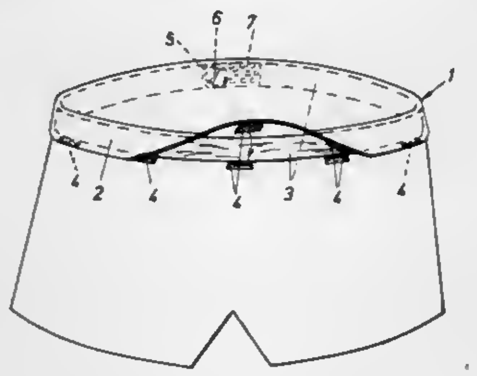
Raymonde Freedman, 76 Southover, Woodside Park, London, N.12, and Alfred William Teale, 69 Foundling Court, Brunswick Centre, London, W.C.1, both of England

Filed Jan. 2, 1974, Ser. No. 430,039

Claims priority, application United Kingdom, Apr. 3, 1973, 15941/73

Int. Cl.² B63C *9/08*

U.S. Cl. 9—319 **7 Claims**



1. An article for wear as an inflatable safety device comprising, means for defining a pocket member wearable as an article of wear, an inflatable envelope contained uninflated within the pocket member, a compressed fluid container wholly within the inflatable envelope, means on said container for actuation to release the fluid therefrom thereby inflating the envelope and causing the inflated envelope to be forced out of the pocket member and to separate completely therefrom, releasable means on said pocket member for allowing the inflated envelope to separate from said pocket member upon inflation thereof, and wherein in use said envelope encircles the body of a wearer, whereby on release it travels up under the arms of the wearer.

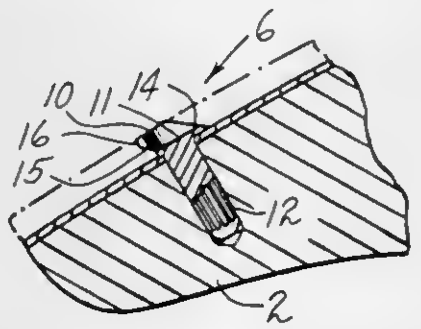
3,935,609
SHOE LAST WITH INSOLE HOLDING DEVICES

Walter J. Brotchie, Beverly, Mass., assignor to USM Corporation, Boston, Mass.

Filed Sept. 20, 1974, Ser. No. 507,999

Int. Cl.² A43D *3/00*

U.S. Cl. 12—128 D **5 Claims**



1. A shoe last having an insole securing member comprising at least one elongated blade projecting substantially normally from the bottom of the last and adapted to cut into and be embedded in an insole forceably applied to the last bottom, said blade having at least one end undercut to form a projection which resists dislodging of the insole.

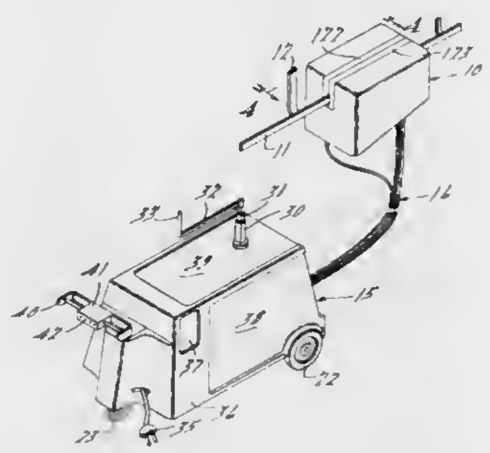
3,935,610
CLEANING APPARATUS FOR OVERHEAD RAILS

Norman H. Vogt, 457 Fisher Court, Clawson, Mich. 48017

Filed July 1, 1974, Ser. No. 484,939

Int. Cl.² E01H *8/00*

U.S. Cl. 15—21 R **7 Claims**



1. Rail scrubbing apparatus for cleaning a rail having a hanger side and a clear side, comprising,

a traveler,

a frame in said traveler having spaced bearings,

an axle in each said bearing having an end projecting therefrom,

a trolley wheel on each said projecting end of each said axle cantilevered relative to said bearings allowing said trolley wheels to be mounted on and taken off a rail from the one clear side of the rail and to travel along a rail without obstruction from hangers on the opposite side of a rail;

a travel motor mounted on said frame connected to one said axle and trolley wheel to rotate said trolley wheel to move said frame along a rail,

a first brush,

first means rotationally mounting said first brush on said frame for scrubbing the clear side of a rail including a first brush motor connected to said first brush to rotate said first brush relative to the clear side of a rail,

a swing case pivoted on said frame on the hanger side of a rail,

a second brush,

second means rotatably mounting said second brush on said swing case including a second brush motor connected to said second brush for rotating said second brush relative to the hanger side of a rail, and

hanger contact-walk-over means on said swing case to intercept hangers on the hanger side of a rail and to swing said case and second brush sidewise outwardly from a rail at hangers to permit said second brush to by-pass hangers;

pivot mounting means swingably mounting said first brush, said first brush mounting means, and said first brush motor to move them sidewise outwardly from the clear side of a rail,

a first bell-crank arm on said pivot means,

a second bell-crank arm on said swing case, and

actuator means on said frame for moving said bell-cranks to pivot said pivot mounting means and said swing case to move their respective brushes sidewise outwardly of a rail to eliminate interference by said brushes in mounting and dismounting said traveler on a rail.

3,935,611
BRUSH FOR THE CARE AND CLEANING OF THINGS AND THE BODY

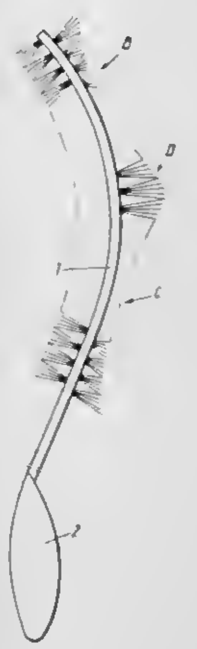
Lorenz Locher, Kirchplatz 6, 7932 Munderkingen, Danube, Germany

Filed Mar. 1, 1974, Ser. No. 447,319

Claims priority, application Germany, Mar. 13, 1973, 2312318; Oct. 3, 1973, 2349580

Int. Cl.² A46D *9/02*

U.S. Cl. 15—160 **7 Claims**



2. A body-cleaning and massage brush comprising:

an elongated arcuate body of flattened cross-section having a pair of parallel oppositely turned faces;

first and second brush means of different textures on said faces covering same and projecting outwardly therefrom, at least one of said brush means having at least one concave contour and at least one convex contour;

a curved handle for manipulating said body; and

means for mounting said handle on one end of said body in a position in which said brush has a generally S-shaped configuration.

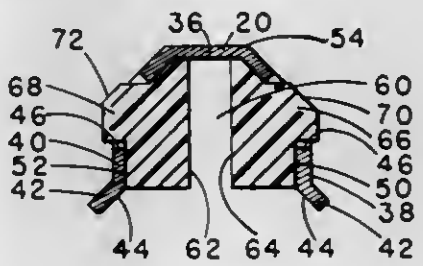
3,935,612
WINDSHIELD WIPER BLADE

Robert O. Wittwer, Portage, Ind., assignor to The Anderson Company, Gary, Ind.

Filed Oct. 17, 1974, Ser. No. 515,637

Int. Cl.² B60S *1/04*

U.S. Cl. 15—250.42 **6 Claims**



4. A wiper assembly having a wiper blade, a pressure-distributing superstructure operatively connected with said wiper blade, said superstructure having at least two parts pivotally connected together, the first of said parts having end portions with spaced apart side walls, a pair of aligned openings in the side walls of said end portions, the second part having a mid-portion with a vertical open space extending from top to bottom between a pair of side walls thereof, a pair of outwardly projecting lugs formed on the said side walls of said

midportion, said lugs pivotally seating in said openings in the first part.

3,935,613
DETACHABLE LUGGAGE CASTER ROLLER UNIT

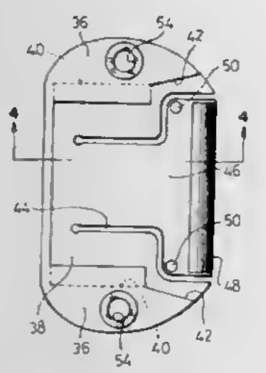
Katsuyoshi Kaneko, Tokyo, Japan, assignor to Maruwa Echo Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1974, Ser. No. 535,666

Claims priority, application Japan, Oct. 26, 1974, 49-129805

Int. Cl.^{2} B60B *33/00*

U.S. Cl. 16—30 **3 Claims**



1. A detachable luggage caster roller unit comprising in combination: a seat member adapted to be secured to an end surface of a piece of luggage, said seat member including a bottom wall, upstanding side walls and a rear wall connected between said side walls, said side walls and said bottom wall being formed to define a pair of opposed forwardly extending lateral grooves closed at a location adjacent said rear wall and open at their forward ends, a pair of symmetrical slits being formed in said bottom wall extending from the region of said rear wall forwardly thereof to thereby define a resilient tongue, the free forward edge of said tongue being provided with a raised portion extending parallel to said rear wall, said bottom wall, rear wall, side walls and raised portion of said tongue defining a flat-bottomed substantially rectangular cavity therewithin, said tongue being pivotable about the fixed end portion thereof so as to facilitate reception of the base plate of a caster roller assembly within said cavity upon depression of the free edge of said tongue and lock said base plate within said cavity upon the release of said free edge of the tongue; and a caster roller assembly including a susstantially rectangular base plate dimensioned to be positioned within said cavity with a pair of opposed side edges thereof retained within said lateral grooves, a roller support bracket carried rotatably by said base plate, and a roller mounted rotatably in said roller support bracket whereby said roller is enabled to freely swivel about said bracket.

3,935,614
ELECTROMECHANICAL DOOR HOLDER-CLOSER

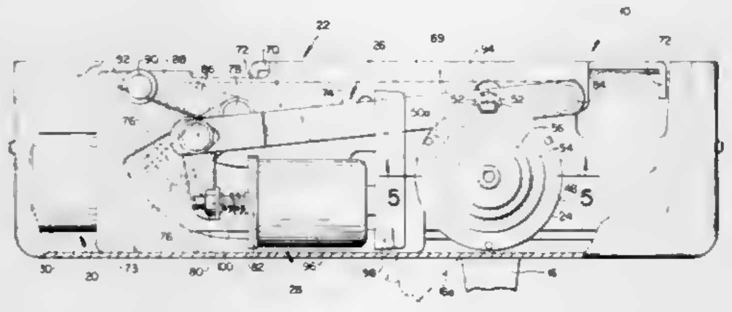
Robert John Pannone, Bristol, and Walter Edward Surko, Jr., Southington, both of Conn., assignors to Emhart Corporation, Farmington, Conn.

Continuation-in-part of Ser. No. 293,079, Sept. 28, 1972, abandoned. This application Aug. 23, 1974, Ser. No. 499,908

Int. Cl.^{2} E05F *15/20*

U.S. Cl. 16—48.5 **50 Claims**

1. A holder-closer for a door member mounted for pivotal movement between open and closed positions relative to a frame member and comprising a casing for mounting in fixed position relative to one of the members, a spindle journalled in said casing for axial rotation in one and an opposite direction relative thereto and projecting therefrom, resilient means yieldably resisting rotation of said spindle in said one direction, dampening means contained in said casing for yieldably resisting rotation of said spindle in said opposite direction in response to reactive torque applied to said spindle by said resilient means to control the closing speed of the door, arm means connected to said spindle externally of said casing for connection to the other of the members to rotate said spindle in said one direction when the door is opened, a clutch, means for coupling one part of said clutch to said spindle externally of said casing for rotation with said spindle in said one and said opposite direction, latching means supported for movement relative to said casing between latching and releasing position and engaging another part of said clutch in said latching position to retain said other part against rotation relative to said casing, said one part being rotatable in said one direction with said spindle and arm means and relative to said other part when said latching means is in its latching position and the door is opened to a hold-open position, said other part cooperating with said one part to restrain said one part against rotation in said opposite direction in response to said reactive torque while said door is in its hold-open position and said latching means is in its latching position, and electrically operated holding means for releasably retaining said latching means in its latching position.



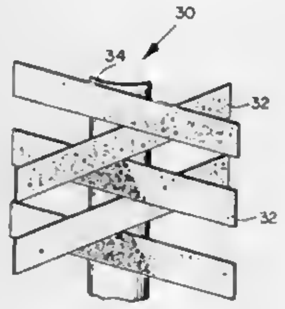
3,935,615
JOINT FORMING TAPE FOR A COLLAPSIBLE CYLINDRICAL CONTAINER

Alfred W. Wakeman, Madison Rd., Durham, Conn. 06422

Filed July 19, 1973, Ser. No. 380,589

Int. Cl.^{2} E05D *7/00;* **B65D** *5/36*

U.S. Cl. 16—150 **7 Claims**



1. An elongated joint-forming structure for interconnecting contiguous panel members having mating edges, said structure comprising a series of connector members each running crosswise of the joint to be formed and disposed in spaced relation therealong, at least some of said cross members intersecting and crossing other of said members in alternation along the joint to form an X-like configuration, and carrier means comprising at least one longitudinal member from which each of said cross members is supported in said X-like configuration with the ends of said cross members extending marginally outwardly of said carrier means, and means on either said cross members or carrier means securing them together to form said structure.

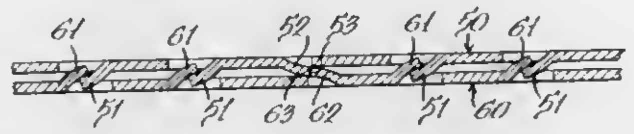
3,935,616
SEALLESS STRAP CONNECTION MEANS

Larry J. Simmons, Northbrook, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Jan. 24, 1975, Ser. No. 543,999

Int. Cl.^{2} B65D *63/02*

U.S. Cl. 24—20 EE **8 Claims**



1. A sealless strap connection between overlapped lengths of strap which comprises an array of longitudinally spaced joints and an integral abutment means positioned between a pair of said joints, each joint comprising lengthwise opposed shoulders displaced from the respective planes of said overlapped lengths of strap and shaped to interlock with each other, and said abutment means comprising juxtaposed protuberances shaped to irreversibly override each other while said opposed shoulders are moved into an interlocking position and presenting opposed stops when said shoulders interlock with each other.

3,935,617
FASTENING DEVICES

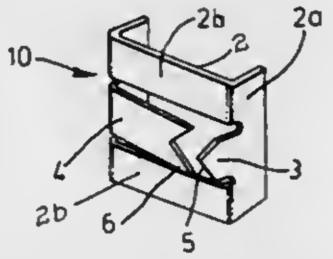
Leslie Gordon Hudson, Little Copped Hall, Epping, Essex, England

Filed Aug. 13, 1974, Ser. No. 496,986

Claims priority, application United Kingdom, Aug. 15, 1973, 38584/73

Int. Cl.^{2} A44B *21/00;* **E04B** *5/52*

U.S. Cl. 24—81 B **3 Claims**



1. A releasable fastening device for supporting a member, such as a display panel, comprising body means which has seating means defined by first and second arm means each of which protrudes from the body means, said arm means being directed away from said body means towards one another and terminating spaced from one another thereby defining therebetween a gap in which said display panel can be received, said first arm means defining a lateral stop for said display panel and said second arm means being resiliently mounted on said body means whereby said second arm means can move towards and away from said body means so that when a display panel enters said gap said second arm means can engage said display panel and whereby said display panel can be released by resiliently urging said second arm means towards said body means so that the said second arm means is disengaged from said panel, said body means being of a generally channel-shaped cross section and including a pair of end portions and a center portion which extends between and integrally connects said end portions, said center portion being defined by a pair of substantially parallel striplike bridging portions which extend between the end portions and are disposed adjacent the opposite edges of said body means, said center portion having a space located between said bridging portions said first arm means being integrally connected to one of said end portions and projecting outwardly from said bridging portions said second arm means being integrally connected to the other of said end portions and projecting outwardly from said bridging portions, said first and second arm means projecting generally toward one another and being substantially aligned with the space between said bridging portions.

3,935,618
CLOSURE FOR SAFETY BELTS

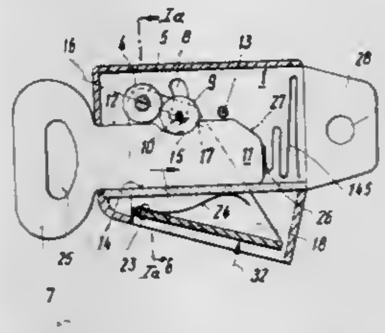
Artur Föhl, Schelmenwasenstr. 68, 7061 Haubersbronn, Germany

Filed June 17, 1974, Ser. No. 480,029

Claims priority, application Germany, June 20, 1973, 7322931[U]

Int. Cl.^{2} A44B *11/26*

U.S. Cl. 24—230 AL **8 Claims**



1. A releasable latch, especially for passenger seat belts, comprising in combination; a housing having a slot, a member having a tongue insertable into the slot in the housing, notch means in the tongue substantially perpendicular thereto, roller bodies in the housing engageable with said notch means when the tongue is inserted into said slot to latch the said housing and the said member together, said roller bodies extending laterally to the length of the tongue and disposed for rolling engagement of the roller bodies with the tongue upon insertion of the tongue into the slot, said roller bodies rollingly engaging and lying in the path of said notch means, resilient means biasing said roller bodies in notch means engaging direction, and means for moving at least one of the said roller bodies for release thereof under rolling friction movement during initial opening against the bias of said resilient means in the direction of disengagement from said notch means and in direction transversely thereof.

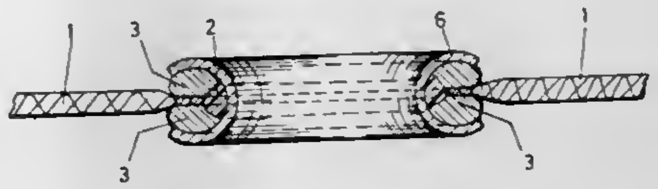
3,935,619
GRUMMENT FOR SAIL CLOTH

Douwe Gaastra, Heeg, Netherlands, assignor to Gaastra B.V., Sneek, Netherlands

Division of Ser. No. 351,481, April 16, 1973, Pat. No. 3,890,695. This application Mar. 31, 1975, Ser. No. 563,312

Int. Cl.^{2} A43C *5/00;* **B63H** *9/08*

U.S. Cl. 24—141 **3 Claims**



1. A grummet assembly for use in a material, such as sail cloth or the like, comprising

there being an opening in said material, the edge of said opening being ravelled and having a thermosetting adhesive smeared thereon;

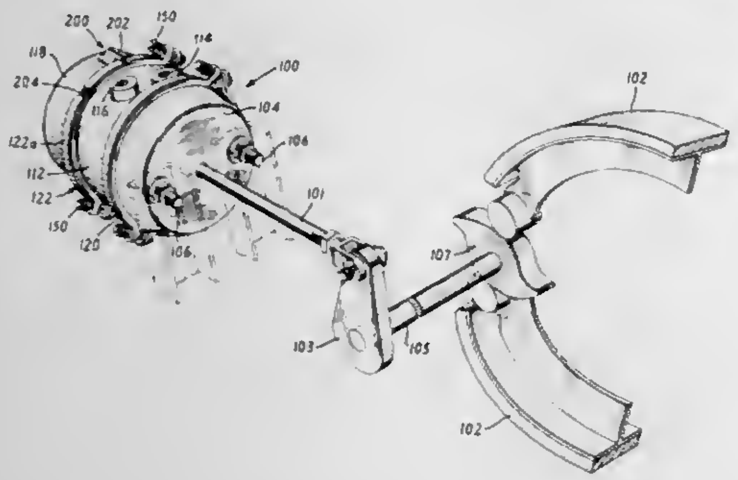
a first ring having an inner diameter substantially the same as said opening in contact with one side of said material at the edge of said opening;

a second ring having an inner diameter substantially the same as said opening in contact with the other side of said material at the edge of said opening;

a torus-shaped collar enclosing said rings and the edge of said opening so as to tightly clamp said edge between said rings.

3,935,620
CLAMP BAND RETENTION APPARATUS FOR A PARKING BRAKE CHAMBER

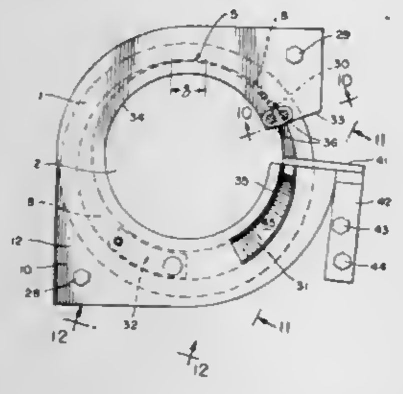
Michael L. Carton, Chesterfield, Mo., assignor to Wagner Electric Corporation, Parsippany, N.J.
Filed Apr. 3, 1975, Ser. No. 564,889
Int. Cl.² F01B *7/00;* **B60T** *13/00;* **B65D** *63/06*
U.S. Cl. 24—279 **9 Claims**



1. Apparatus for preventing accidental explosive separation of a first heavy spring loaded section of a spring set safety brake chamber from a second adjacent section of the chamber comprising:
- a. a clamp band circumferentially extending about an interface between the adjacent sections, the band radially outwardly extendable from the interface; and
- b. means fixedly attached to the brake chamber adjacent the interface for restrictively engaging the clamp band to limit radial outward extension of the band.

3,935,621
STUFFER CRIMPING APPARATUS

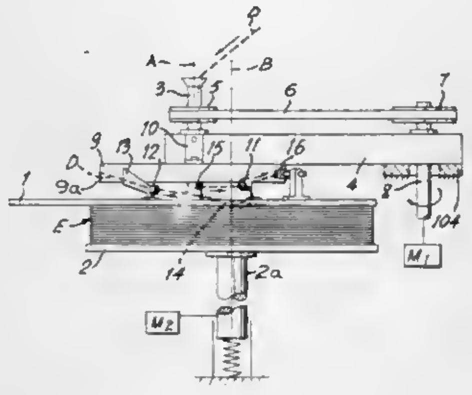
Bernd Weber, Obernau, Germany, assignor to Akzona Incorporated, Asheville, N.C.
Filed Jan. 14, 1974, Ser. No. 432,838
Claims priority, application Germany, Jan. 18, 1975, 2302363
Int. Cl.² D02G *1/12, 1/14*
U.S. Cl. 28—1.6 **10 Claims**



1. A stuffer crimping apparatus for crimping a synthetic thermoplastic yarn, said apparatus comprising:
an outer rotatable hollow wheel having an inner circular rolling surface;
an inner rotatable wheel having an outer rolling surface of smaller diameter than the inner diameter of the circular rolling surface of said outer wheel, the axis of rotation of said inner wheel being eccentric to the axis of rotation of said outer wheel, means to press the rolling surfaces of the two wheels toward each other to form a nip zone for rolling engagement with said yarn fed therebetween;
means to rotate each wheel in the same direction and at the same peripheral speed of said rolling surfaces;
flange means on one side of said outer hollow wheel forming a yarn feed chamber between the two rolling surfaces at the entry to said nip zone and also forming a yarn crimping chamber between the two rolling surfaces at the exit from said nip zone;
means to introduce the yarn into said feed chamber;
means to withdraw the yarn from said crimping chamber;
gate means to oppose the movement of yarn through said crimping chamber;
means enclosng said nip zone and crimping chamher; and means to heat the yarn for stuffer crimping.

3,935,622
APPARATUS FOR PRODUCING A COILED THREAD PACKAGE

Renato Crotti, 71, Corso Canalgrande, Modena, Italy (41100)
Filed Jan. 28, 1974, Ser. No. 436,981
Int. Cl.² B65H *51/02*
U.S. Cl. 28—21 **10 Claims**

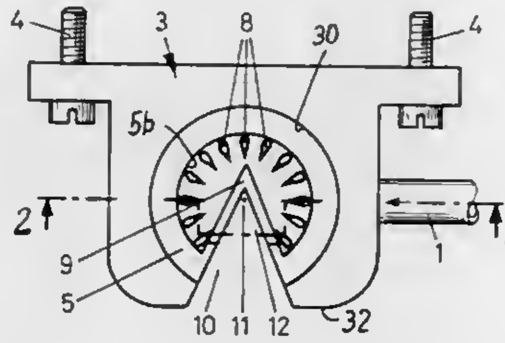


1. An apparatus for producing a coiled thread package constructed of a substantially continuous length of thread disposed in substantially annular layers forming a coil, each layer being constructed of a series of loops which progress along the annular layer of the coil, said apparatus comprising:
- a. a receiving plate having a substantially vertical axis;
- b. a frame structure, a thread depositing disc rotatably mounted on said frame structure, said disc being arranged so as to face said receiving plate and having a substantially vertical axis, said axis of said depositing disc being arranged eccentrically with respect to the axis of the receiving plate, said receiving plate and said depositing disc being capable of relative movement toward and away from each other in vertical direction;
- c. means for yieldingly urging the said receiving plate and the said depositing disc into relative movement towards each other;
- d. means for rotating the said depositing disc around its axis;
- e. further means for causing a relative movement between the axis of the depositing disc and the receiving plate;
- f. a through bore on the said depositing disc providing a passage for the thread to be deposited on the receiving plate;
- g. a feeding device for the thread to be deposited on the receiving plate, said feeding device comprising:
  1. inlet thread guiding means arranged co-axially with respect to the vertical axis of the said depositing disc;
  2. draw-off thread guiding means integral in rotation with the depositing disc;
  3. a thread take-up member fixedly secured to the frame structure which supports the depositing disc and arranged on the side of the said depositing disc which is opposite to the side which faces the receiving plate, said take-up member being stationary with respect to the rotational movement of the depositing disc and presenting an annular outer friction surface which is coaxial to the vertical axis of the depositing plate,

whereby the thread coming from a suitable supply is guided by the said inlet thread guiding means to the said draw-off thread guiding means so as to be laid, on at least an arc of a circumference, onto said annular friction surface in a direction which is contrary to the direction of rotation of the depositing disc, passing from the said friction surface, to the said bore in the depositing disc, so as to be deposited on the said receiving plate upon rotation of the depositing disc, and relative movement between the axis of the depositing disc and the receiving plate.

3,935,623
YARN SINGEING BURNER CONSTRUCTION

Hermann Mettler, Arth, Switzerland, assignor to Aktiengesellschaft Fr. Mettler's Söhne Maschinenfabrik, Switzerland
Filed Dec. 30, 1974, Ser. No. 537,326
Claims priority, application Switzerland, Jan. 17, 1974, 646/74; Aug. 20, 1974, 11355/74
Int. Cl.² D02J *13/00, 3/16*
U.S. Cl. 28—63 **9 Claims**



1. A yarn singeing burner, comprising a housing having a yarn passage therethrough and a wall having an entrance opening into said yarn passage, an insert member disposed in said yarn passage and having a portion spaced inwardly from said housing and defining a burner fuel and air chamber between said insert member and said housing, said insert member having a plurality of apertures for the passage of singeing flame jets therethrough, means for supplying fuel and air to said burner fuel and air chamber for ignition therein to generate singeing flame jets, and a yarn guiding channel extending through said yarn passage between the flame jets and the yarn and having an open side opening to the entrance for the passage of the yarn therethrough.

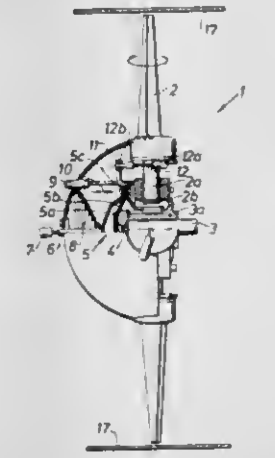
3,935,624
CUTTER TOOL FOR USE IN A BORING HEAD

Siegfried Weinreich, Bierden, Germany, assignor to Firma Gebruder Heller, Bierden, Germany
Division of Ser. No. 463,805, April 24, 1974, Pat. No. 3,861,010. This application Oct. 29, 1974, Ser. No. 518,526
Claims priority, application Germany, Apr. 25, 1973, 2320876. The portion of the term of this patent subsequent to Jan. 21, 1992, has been disclaimed.
Int. Cl.² B26D *1/00*
U.S. Cl. 29—95 R **1 Claim**

1. A cutter tool for use in a boring head, said cutter tool being developed as a plate having two faces and six end surfaces, one face of said plate having the form of an irregular hexagon the six sides of which form sections of the three sides of a first equilateral triangle and sections of the three sides of a second equilateral triangle, said triangles being superposed on each other and angularly offset with respect to each other around an acute angle, said sections of said first triangle being developed as primary edges and said sections of said second triangle being developed as secondary edges, said end surfaces bordered by said primary edges being rake and planar, and said end surfaces bordered by said secondary edges being rounded chamfers.

3,935,625
METHOD OF MANUFACTURING AXIAL FANS OF DIFFERENT SIZES

Edgar Saterdal, Rottne, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden
Continuation of Ser. No. 238,559, March 27, 1972, now Pat. No. 3,844,680. This application July 18, 1974, Ser. No. 489,734
Claims priority, application Sweden, Mar. 30, 1971, 4133/71
Int. Cl.² B23P *15/00*
U.S. Cl. 29—156.8 R **3 Claims**



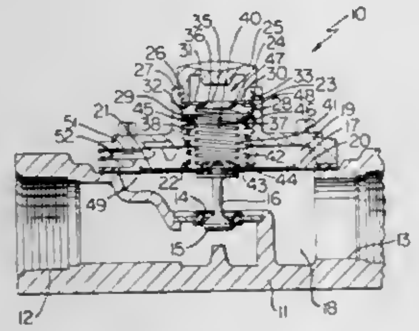
1. A method for manufacturing an axial-flow fan having a size selected from a series of a limited number of standard sizes, said fan having a given number of blades which are adjustable as to pitch, the method comprising the steps of supplying a single hub structure having a dog member mounted thereon for axial displacement relative thereto, and means for mounting blades at a given number of connection points around the periphery of the hub; supplying a like number of identical blades adapted to be mounted at said connection points for rotation about a radial axis; supplying means for connecting each of said blades to said dog member to effect rotation of said blades on their axes upon axial displacement of said dog member on the hub axis, providing a limited number of different standard size axles, grouping said axles in one set of axles for each one of said limited number of standard sizes, each set including a number of equal length axles corresponding to said given number of blades, and manufacturing said fan in said selected size by selecting the set of axles corresponding to the desired size and using said set of axles to mount the blades on said hub, by mounting the inner end of each of said axles at one of said connection points and rotatably mounting a blade on the outer end of each of said axles with a single axial-thrust rolling bearing, and positioning said bearing to receive the outward thrust caused by the rotation of the hub structure and centering the bearing by means of a chamfered support ring.

3,935,626
PLURAL RANGE PRESSURE REGULATOR CONSTRUCTION OR THE LIKE AND THE METHOD OF MAKING THE SAME OR THE LIKE

Francis S. Genbauff, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Division of Ser. No. 320,520, Jan. 2, 1973, Pat. No. 3,825,029. This application May 16, 1974, Ser. No. 470,434
Int. Cl.² B23P *15/00;* **F16K** *31/12*
U.S. Cl. 29—157.1 R **5 Claims**

1. A method for making a plural range biasing construction comprising the steps of providing a housing means having a movable part, disposing biasing means in said housing means for acting on one side of said part to tend to move said part in one direction relative to said housing means, said biasing means comprising a plurality of separate spring means, causing each spring means to act on said part to provide one biasing range for said construction, storing one of said spring means completely in a storage space of said housing means so

that the same will not act on said part whereby the remaining spring means acting on said part will provide another biasing range for said construction, forming said one spring means and said remaining spring means from coiled compression springs, causing said springs to be concentrically disposed and each having one end thereof operatively engaging said part when acting on said part to provide said one biasing range for said construction, and forming said storage space for said one spring means to be located in aligned relation with said remaining spring means and adjacent the other end thereof so as to be completely spaced from said part a distance at least equal to the length of said remaining spring means whereby said one spring means is out of operative engagement with said part and completely spaced therefrom a distance at least equal to the length of said remaining spring means when said other biasing range is being provided.



3,935,627

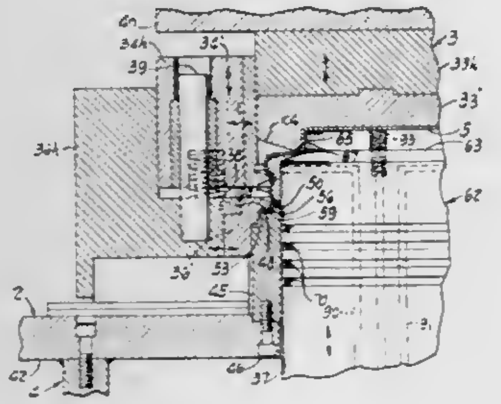
METHOD OF MAKING SHEET METAL PULLEY

Fred A. Wolbert, Northfield, Ohio, assignor to Arrowhead Engineering Corporation, Knox, Ind.

Division of Ser. No. 224,778, Feb. 9, 1972, Pat. No. 3,837,200. This application July 19, 1974, Ser. No. 489,992

Int. Cl.² B21K *1/42*

U.S. Cl. 29—159 R **16 Claims**



1. A process for making a sheet metal pulley having plural grooves therein in a continuous single work cycle from a hollow generally cup-shaped sheet metal blank having an inner hub portion, an outer axially extending flange portion and at least one axially extending wall portion and at least one angular, transversely extending wall portion therebetween comprising the steps of:

a. supporting said blank in a metal deforming apparatus;

b. introducing a forming fluid into the interior of said blank to exert pressure against said wall portions;

c. exerting an axial force on said blank at said hub portion by actuating a ram member disposed thereat to outwardly deform said wall portions by the coaction of said axial force and said forming fluid;

d. confining and shaping said outwardly deformed wall portions between plural movable forming die members disposed exteriorly of said blank and cooperatively actuating said ram member and said plural forming die members to partially form grooves;

e. adjusting the pressure and volume of said forming fluid while simultaneously crimping at least one lateral wall of said grooves to complete the formation thereof; and

f. withdrawing said plural movable forming die member.

3,935,628

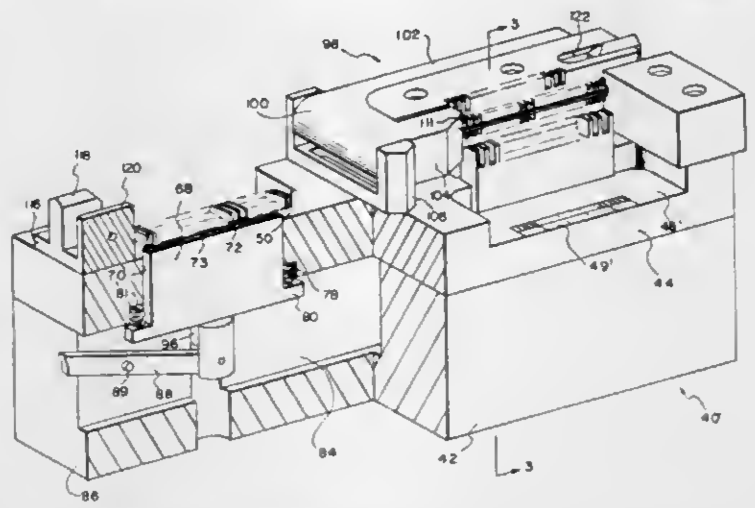
APPARATUS FOR INSERTING WIRES INTO TERMINALS IN AN ELECTRICAL CONNECTOR

John James Tucci, Winston-Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 29, 1974, Ser. No. 528,524

Int. Cl.² H01R *43/04*

U.S. Cl. 29—203 DT **3 Claims**



1. Apparatus for inserting wires into the wire-receiving portions of electrical contact terminals which are contained in an electrical connector, said connector being of the type comprising an insulating housing, said wire-receiving portions of said terminals being arranged in first and second rows, said rows extending in parallel spaced-apart relationship to each other, said apparatus comprising:

supporting means having first and second spaced-apart wire jig means thereon, said first wire jig means having means for holding a first predetermined plurality of wires in side-by-side spaced-apart parallel relationship with the distance between adjacent wires being the same as the distance between said adjacent terminals in said first rows, said second wire jig means having means for holding a second plurality of wires in side-by-side spaced-apart relationship with the distance between adjacent wires being the same as the distance between said adjacent terminals in said second row,

first and second wire inserting means on said supporting means adjacent to said first and second wire jig means respectively, each of said wire inserting means comprising a plurality of spaced-apart wire insertion punches extending normally with respect to said supporting means, each of said punches being in alignment with a wire disposed in said wire jig means,

a connector jig member for holding said connector, said connector jig member being pivotally mounted on an axis which extends mid-way between said first and second wire jig means and parallel to wires disposed in said wire jig means, said connector jig member having means for holding and locating said connector in a position in which said wire-receiving portions of said terminals are brought into alignment with wires in said first and second wire jig means when said connector jig member is moved along arcuate paths against said first and second wire jig means, and actuating means for moving each of said first and second wire inserting means relatively towards said connector jig member along a rectilinear path when said connector jig member is against said first and second wire inserting means respectively whereby,

upon locating wires in each of said first and second wire jig means, locating a connector in said connector jig member, moving said connector jig member against said first wire jig means, and then moving said first wire inserting means relatively along said rectilinear path, the wires in said first wire jig means are inserted into said terminals in said first row, and upon moving said connector jig member against said second wire jig means and similarly moving said second wire inserting means relatively along said rectilinear path, the wires in said second wire jig means are inserted into said terminals in said second row.

3,935,629

PIN INSERTION MACHINE FOR NEEDLE SELECTING CYLINDERS OF CIRCULAR KNITTING MACHINES

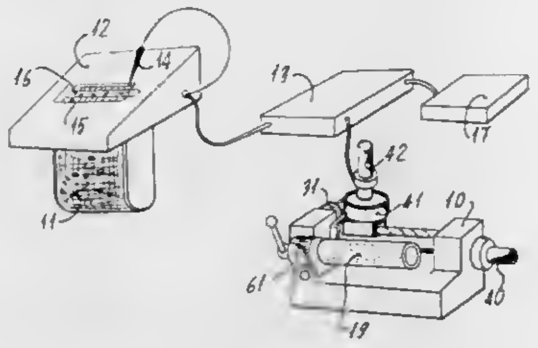
Mario Piro, Genoa-Pegli, Italy, assignor to Nuova San Giorgio S.p.A., Italy

Filed July 30, 1974, Ser. No. 493,143

Claims priority, application Italy, Aug. 9, 1973, 27713/73

Int. Cl.² B23P *19/04*

U.S. Cl. 29—208 C **9 Claims**



1. Apparatus for inserting pins in the holes of a needle selecting cylinder for a circular knitting machine which includes an electronic device having means for reading a pattern to be reproduced, said apparatus comprising a cylinder spindle having a spindle axis which is supported in a substantially horizontal position for horizontally supporting a needle selecting cylinder, means for rotating said cylinder spindle about said spindle axis, means for turning said spindle about a horizontal axis which is disposed perpendicular to said spindle axis, a support mechanism, means for moving said support mechanism in a direction substantially parallel to said spindle axis when said spindle axis is supported in a substantially horizontal position, a pin insertion mechanism carried by said support mechanism comprising a reciprocating pusher member and spring means for biasing said pusher member in a first direction, a control lever, a first portion of said control lever being connected to said pusher member, a second portion of said control lever including a cam follower, a control cam having a cam surface for engaging said cam follower, said control cam having a splined connection to a rotatably driven shaft and being connected to said support mechanism for movement therewith, said cam surface being operative on said cam follower and said control lever for allowing said pusher member to be driven in said first direction under the influence of said spring means and for thereafter driving said pusher member in a second direction against the bias of said spring means, means for feeding a pin into the path of said pusher as it is being driven in said first direction comprising means for supporting a plurality of pins in substantially parallel relationship and for permitting a pin to fall from said supporting means under the influence of gravity and into the path of said pusher, means for blocking movement of said pusher member in said second direction for disabling said pin insertion means, electromagnetic means for actuating said blocking means, a pin support extending beneath said needle selecting cylinder when said needle selecting cylinder is in a horizontal position for preventing inserted pins from falling from said needle selecting cylinder, said means for rotating said spindle, said means for moving said support mechanism and the means for controlling the movement of said pusher and said blocking means being controlled by signals from said electronic pattern reading device.

3,935,630

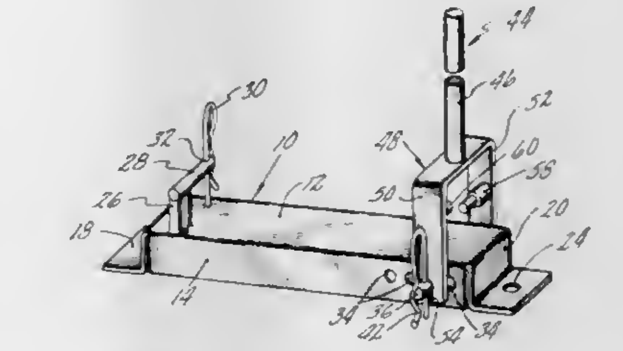
SHOCK ABSORBER SPRING CHANGING TOOL

Richard M. Roy, 31 Old Common Road, Wethersfield, Conn. 06109

Filed Apr. 28, 1975, Ser. No. 572,506

Int. Cl.² B23P *19/04*

U.S. Cl. 29—227 **16 Claims**



1. A tool for changing the helical coil spring of a shock absorber, said shock absorber having a removable keeper at one end and a nonremovable keeper at the other end retaining the coil spring, the tool comprising a base of generally rectangular plan form, means adjacent one end of the base for anchoring the nonremovable keeper end of the shock absorber when placed on said base, means adjacent the other end of and in the base for positioning shaft means proximate to said removable keeper, lever means adapted to be positioned over said shaft means and to be pivotable thereabout, and means integral with said lever means for compressing said coil spring as said lever means is rotated about said shaft so as to permit removal of said removable keeper and removal of said spring from said shock absorber.

3,935,631

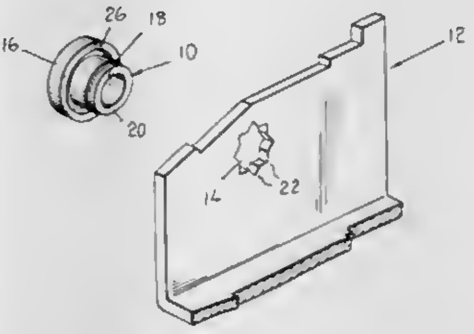
METHOD OF SEATING A BEARING

Frank Doerner, 138 Aberdeen Road, Kitchener, Ontario, Canada

Filed Mar. 19, 1975, Ser. No. 559,912

Int. Cl.² B23P *11/00*

U.S. Cl. 29—432.1 **3 Claims**



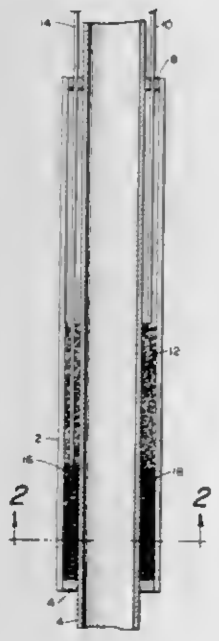
1. A method of seating a bearing in a support, said support containing therein a star-shaped hole, said bearing carrying on its periphery at least three rings of diminishing diameter, the diameter of the largest ring being greater than the diameter of said hole, the diameter of the second ring being marginally larger than the diameter of said hole, the diameter of the subsequent rings being smaller than the diameter of the hole, the largest ring being undercut marginally at the point of juncture with the bearing and the adjacent ring, comprising:

inserting the bearing into the hole commencing with its smallest ring until the diameter of the bearing containing the next ring to be inserted is the portion of the bearing carrying the ring having a marginally larger diameter than the diameter of the hole,

forcing said portion of the bearing having a marginally larger diameter than said hole through said hole whereby said ring having a marginally larger diameter than the diameter of the hole is cut by said star-shaped hole in a corresponding star-shaped pattern and the shavings are collected in said undercut portion of said largest ring, whereby said bearing is seated securely in said hole.

3,935,632
METHOD OF PREPARING AN INSULATED NEGATIVE BUOYANCY FLOW LINE

Orwin G. Maxson, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed July 2, 1973, Ser. No. 375,574
Int. Cl.² B29D *27/04*
U.S. Cl. 29—455 R **5 Claims**

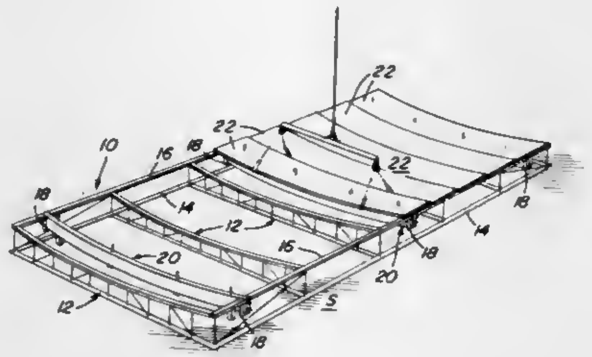


1. A method of preparing an insulated negative buoyancy flow line comprising:
a. positioning a section of jacket concentrically about a section of flow line to provide an annulus therebetween, the section of flow line extending beyond each end of the section of jacket;
b. positioning a first solid spacer element in the annulus at one end thereof to close one end of the annulus;
c. positioning a second solid spacer element in the other end of the annulus to close the other end of the annulus, said second solid spacer element being adapted for insertion of a pair of hollow probes therethrough into said annulus;
d. inserting a pair of hollow probes through said second solid spacer element with the outlets thereof positioned near the closed one end of the annulus;
e. filling the annulus with porous filler particles by injecting the particles through one of said hollow probes into said annulus and withdrawing said probe as the annulus is filled;
f. injecting a settable resin-forming composition through the other of said hollow probes into the annulus around the porous filler particles and withdrawing said other probe as the resin-forming composition is injected; and
g. allowing the resin forming composition to set.

3,935,633
TANK FABRICATION PROCESS

Jack E. Bunker, 108 E. Ash, Winfield, Iowa 52659
Filed Apr. 16, 1974, Ser. No. 461,456
Int. Cl.² B23Q *7/00*
U.S. Cl. 29—559 **2 Claims**

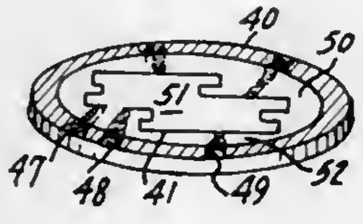
1. A method for constructing a container comprising a skin formed of plates connected to each other in overlapping relation and having reinforcing beams, comprising the steps of:
a. placing a plurality of sheet strips in overlapping fashion on a jig having a semi-cylindrical concavity;
b. permitting the weight of the sheet strips to curve and conform the strips to the concavity and form an arcuate sheet;



c. attaching beams to the arcuate sheet for reinforcing the arcuate sheet; and
d. connecting together of a plurality of reinforced arcuate sheets to form a generally cylindrical container.

3,935,634
METHODS OF FABRICATING INTEGRATED TRANSDUCER ASSEMBLIES

Anthony D. Kurtz, Englewood, and Joseph R. Mallon, Wood Ridge, both of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.
Division of Ser. No. 393,804, Sept. 4, 1973, Pat. No. 3,873,956. This application Sept. 11, 1974, Ser. No. 504,859
Int. Cl.² B01J *17/00*
U.S. Cl. 29—577 **9 Claims**

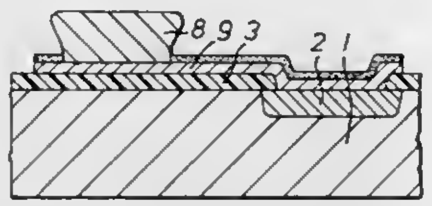


1. A method of fabricating a transducer comprising the steps of:
a. growing a relatively thin layer of silicon dioxide on a wafer of silicon,
b. masking said silicon dioxide to provide a contact pattern,
c. depositing impurities according to said pattern to form ohmic contacts.
d. growing a thick layer of silicon dioxide over said pattern,
e. forming at least one piezoresistor on said wafer to cooperate with said contact pattern,
f. forming metal terminals coupled to said contact pattern,
g. metalizing a peripheral portion of said thick layer of silicon dioxide to form a surface to which any electrostatic glass bond can be made.

3,935,635
METHOD OF PRODUCING A SEMICONDUCTOR ARRANGEMENT

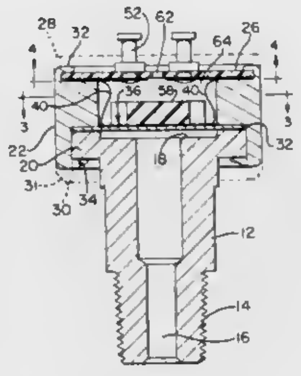
Leonhard Botzenhardt, Heilbronn, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany
Filed Mar. 22, 1974, Ser. No. 453,881
Claims priority, application Germany, Mar. 29, 1973, 2315710
Int. Cl.² B01J *17/00*
U.S. Cl. 29—578 **10 Claims**

1. A method for producing a semiconductor arrangement from a semiconductor body covered with an insulating layer provided with windows at desired points of connection to regions in the semiconductor body, said arrangement having conducting paths running on the insulating layer and contacting the regions in the semiconductor body and the conducting paths at certain points being so reinforced by electrolytically deposited metal that the thickened contact parts resulting in this case are suitable for the wire-less contacting of the semiconductor arrangement, comprising: firstly applying a metal layer over said insulating layer provided with windows to cover said insulating layer and said windows; covering the portions of said metal layer corresponding to the desired positions of said conducting paths with a first masking layer, which moveover leaves uncovered the portions of said metal layer to be provided with said thickened contact parts; thereafter covering the entire semiconductor surface, with the exception of the portions to be provided with said reinforced contact parts, with a second masking layer; electrolytically depositing said thickened contact parts on said metal layer at said portions left uncovered by the two masking layers; thereafter removing said second masking layer; subsequently removing said metal layer at the positions not covered by said first masking layer to produce said conducting paths.



3,935,636
METHOD OF MAKING A PRESSURE TRANSDUCER

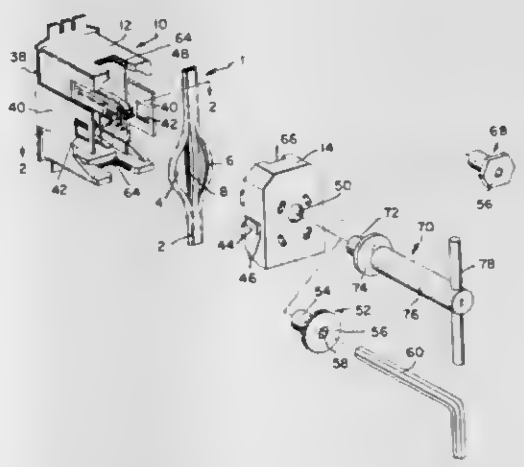
Seymour Mermelstein, Newton, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.
Division of Ser. No. 456,122, March 29, 1974, Pat. No. 3,899,766. This application Mar. 25, 1975, Ser. No. 561,683
Int. Cl.² H01C *17/28*
U.S. Cl. 29—619 **4 Claims**



1. The method of making a pressure transducer comprising the steps of:
providing a hollow case which is open at its ends and has an internal flange disposed intermediate said ends,
inserting a diaphragm into one end of said case so that said diaphragm engages said flange,
mechanically deforming the wall of said case at said one end so that a portion of said wall is bent over the edge of said diaphragm and clamps said edge to said flange,
providing a strain gage comprising a main portion which includes a resistance bridge and oppositely disposed tab portions which include leads for said bridge disposed in a predetermined geometric pattern,
inserting said strain gage into the other end of said case so that said main portion engages said diaphragm, and providing an adhesive between said main portion and said diaphragm,
adhesively securing at least a part of said main portion to said diaphragm,
providing a termination board having a plurality of conductive segments disposed in a geometric pattern similar to that of said gage leads,
positioning said termination board in the other end of said case so that said gage tab portions are sandwiched between said board and said flange and so that each of said segments is aligned and in electrical contact with the corresponding one of the leads of said strain gage, and
mechanically deforming the wall of said case at said other end so that a portion of said wall is bent over the edge of said board and clamps said board to said flange.

3,935,637
REMOVABLE WIRING DEVICE ASSEMBLY

Edward Dennman Bunnell, Palm Harbor, Fla., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Nov. 26, 1974, Ser. No. 527,451
Int. Cl.² H01R *43/00*
U.S. Cl. 29—628 **7 Claims**



1. The method of assembling a wiring device on a multiconductor cable,
slitting portions of the cable to separate medial portions of the conductors therein,
spreading laterally apart from one another the medial portions of the conductors,
aligning the medial portions of the conductors with corresponding electrical terminals contained in a base portion of a wiring device overlying said medial portions with a cover portion of said wiring device,
displacing said cover and said base toward each other with a tool whereby said conductors are forced into electrical engagement with said terminals and whereby said cover and said base are locked together, and engaging said tool directly against at least one of said wires and forcing said wire into engagement with a corresponding terminal while displacing said cover and said base toward each other.

3,935,638
SHARPENER FOR ELECTRIC SHAVERS

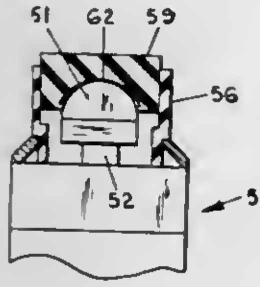
James E. Rookus, 505 Cherry, S.E., Grand Rapids, Mich. 49503
Continuation-in-part of Ser. No. 436,174, Jan. 24, 1974, abandoned. This application June 12, 1974, Ser. No. 478,645
Int. Cl.² B26B *19/38*
U.S. Cl. 30—37 **6 Claims**

1. Means for sharpening a cutter blade of an electric shaver having means resiliently mounting the cutter blade, said sharpening means comprising: a hollow case open at the bottom and shaped to seat over at least that portion of the shaver body having the cutter blade, cap means closing the top of said case; the inner face of said cap means being shaped to seat closely against the surface of a cutter blade; a thin sheet having an abrasive forming the inner surface of said cap; said cap having means for engaging the edges of said sheet for holding said sheet in compression and forcing it against the inner face of said cap; said cap when seated over said portion of said shaver

body pressing said abrasive material firmly against the resiliently mounted cutter blade.

4. Means for sharpening a cutter blade of an electric shaver, having means resiliently mounting the cutter blade, said sharpening means comprising: a hollow case open at the bottom to seat over at least that portion of the shaver body having the cutter blade, cap means closing the top of said case; said cap having a pair of downwardly opening elongated channels, said channels being spaced apart, parallel and arcuate in cross section and said abrasive material covering the entire walls of said channel; a downwardly opening slot in said cap parallel to and between said channels; said case having a bar extending across and dividing the open top of said case, said bar fitting closely in said slot for guiding said cap as it is moved toward and away from the cutter blade.

5. Means for sharpening a cutter blade of an electric shaver having means resiliently mounting the cutter blade, said sharpening means comprising: a hollow case open at the bottom to seat over at least that portion of the shaver body having the cutter blade, cap means closing the top of said case; said cap being slidably mounted on said case for movement toward and away from the cutter blade; the inner face of said cap means being shaped to seat closely against the surface of the cutter blade; an abrasive material forming the inner surface of said cap, said cap when seated on said case pressing said abrasive material firmly against the cutter blade; said case being circular; said cap being circular and having guide means interfitting with said case to center said cap with respect to said case and to hold said inner face of said cap parallel with the top face of the cutter blade; said interfitting guide means being an upstanding annular wall on said case and a cooperating downwardly opening circular channel on said cap.



6. In combination, an electric shaver and blade sharpening means therefor, said electric shaver having at least one driven cutting blade, a removable screen; spring means resiliently urging said blade against said screen; said blade sharpening means having a hollow rigid body defining an internal cavity open at the bottom to seat over and be substituted for said screen with said blade received in said cavity; the top of said cavity being closed by a rigid blade engaging wall; said wall being a stationary part of said rigid body and having an inner rigid, non-compressible face for seating against said blade and displacing it against said spring means; the said inner face having an abrasive surface rigidly affixed thereto of a type adapted for sharpening said blade when said blade is moved over said surface.

3,935,639
SAFETY RAZOR

John C. Terry; Steven V. Barnett, both of Tilehurst, and John Lloyd, Wigston, all of England, assignors to The Gillette Company, Boston, Mass.

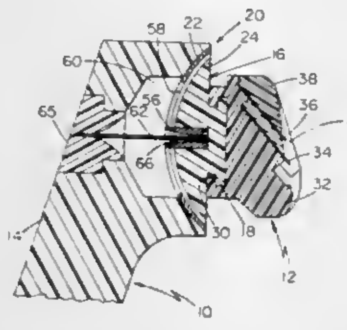
Filed Feb. 25, 1974, Ser. No. 445,431

Claims priority, application United Kingdom, Mar. 13, 1973, 10065/73

Int. Cl.² B26B *21/22*

U.S. Cl. 30—47 **14 Claims**

1. A safety razor comprising a handle, a transversely extending support portion at one end of said handle, said support portion having an outwardly facing surface on which a shaving element is adapted to be carried in shaving position, structure connecting said handle and support portion for angular rotation of said support portion relative to said handle in either direction from a medial position about an axis extending transversely of said supporting portion parallel to and immediately adjacent to a blade edge position as defined by said support portion, said connecting structure being located on the side of said support portion remote from said outwardly facing surface and including interengaged flange and groove elements, the ends of said flange elements cooperating with the bases of said groove elements in thrust bearing relation, said connecting structure permitting pivotal movement of said support portion relative to said handle during the course of a shaving stroke, and restoring structure arranged to generate a force when said support portion is offset from said medial position relative to said handle tending to move said support portion towards said medial position.



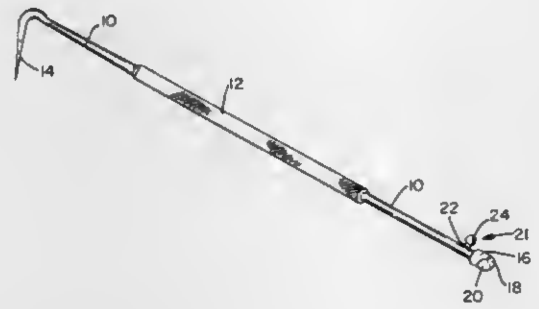
3,935,640
DENTAL INSTRUMENT

Richard Philip Cohan, No. 7 Hawkins Way, Larkspur, Calif. 94939

Filed Apr. 5, 1973, Ser. No. 348,386

Int. Cl.² A61C *3/00*

U.S. Cl. 32—40 R **10 Claims**



1. A dental instrument comprising a metal shaft having an extension at one end thereof including a resilient, deformable surface thereon adapted to be pressed against a tooth to test the mobility of said tooth, and a periodontal probe at the other end of the metal shaft which includes a color-coded depth gauge.

3,935,641
ADJUSTABLE DRAWING SWEEP

Thomas P. Douglas, 2877 E. Fairmount, Phoenix, Ariz. 85016

Filed Oct. 29, 1974, Ser. No. 518,600

Int. Cl.² B43L *13/22*

U.S. Cl. 33—177 **2 Claims**

1. Adjustable drawing sweep apparatus, comprising, in combination:

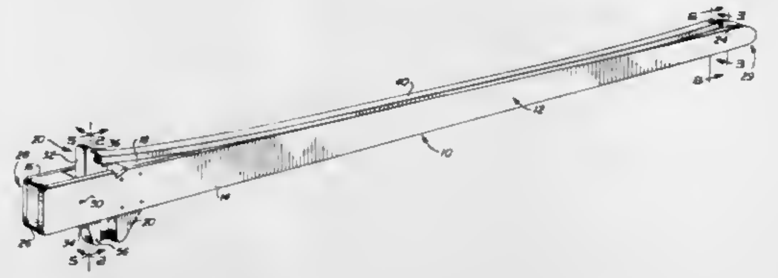
a base member;

a flexible sweep member including a free end and a pinned end pivotally secured to one end of the base member;

a lever pivotally secured to the base member adjacent another end of the base member;

a plurality of notches on the lever for receiving the free end of the sweep member, each notch of which is offset from an adjacent notch to provide a plurality of radii of curvature for the sweep member; and

means for adjusting the lever with respect to the base member to vary the radius of curvature of the sweep member.



3,935,642
DIRECTIONAL DRILLING OF BORE HOLES

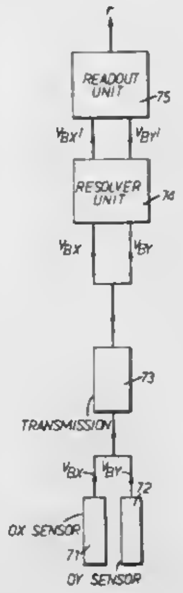
Anthony William Russell, 3, Culross Close, Cheltenham, England

Continuation of Ser. No. 197,416, Nov. 10, 1971, abandoned. This application Sept. 12, 1973, Ser. No. 396,634

Claims priority, application United Kingdom, Nov. 11, 1970, 53552/70

Int. Cl.² E21B *47/022*

U.S. Cl. 33—302 **7 Claims**



1. A method for determining the roll angle of a drill head in a borehole where the azimuth and inclination of the borehole and the magnetic dip at the borehole location are known, including the steps of: sensing with a tool the vector components of the earth's magnetic field along a set of tool fixed axes; providing signals indicative of such sensed vector components from the tool location to a remote location; modifying such signals indicative of sensed vector components by vectorially rotating such vector indicative signals through an angle that is a function of the known azimuth, inclination, and magnetic dip for providing the roll angle of the drill head.

3,935,643
METHODS OF AND MEANS FOR MEASURING ANGLES

Michael King Russell, 3, Culross Close, and Anthony William Russell, 265, Old Bath Road, both of, Cheltenham, England

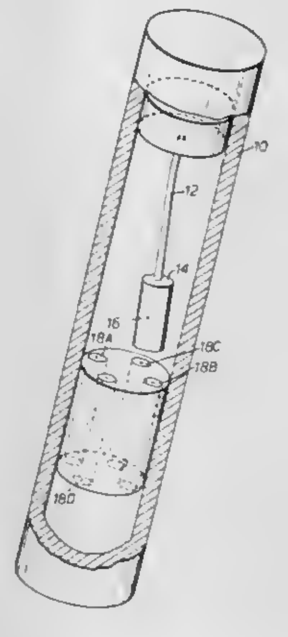
Filed Nov. 29, 1974, Ser. No. 528,391

Claims priority, application United Kingdom, Dec. 12, 1973, 57645/73

Int. Cl.² G01C *9/04, 9/14;* **G01S** *3/30*

U.S. Cl. 33—312 **8 Claims**

1. Apparatus for measuring both the angle between the gravity vector and a particular axis of a body and the angle between the direction of projection of the gravity vector on to a plane at right angles to said particular axis and an axis fixed with respect to said body and lying in said plane, comprising a transducer having a pendulum beam bar magnet mounted on the free end of said pendulum beam, four solenoids forming two differential fluxgate pairs confronting said magnet and disposed symmetrically with respect to the neutral position of the pendulum beam and means interconnecting said differential fluxgate pairs whereby, in use, the magnetic flux in each respective fluxgate pair is equal to zero.



3,935,644
GYROCOMPASS

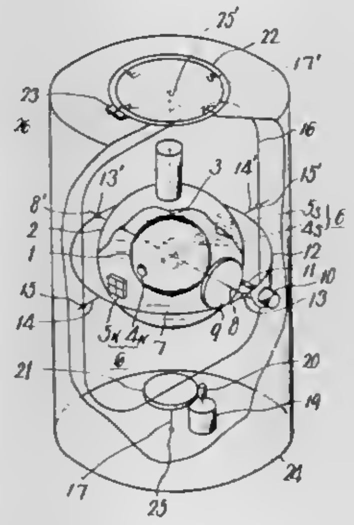
Shin-ichi Kawada, and Takeshi Hojo, both of Yokohama, Japan, assignors to Kabushiki Kaisha Tokyo Keikio, Tokyo, Japan

Filed Feb. 9, 1973, Ser. No. 331,257

Claims priority, application Japan, Feb. 12, 1972, 47-15134

Int. Cl.² G01C *19/38*

U.S. Cl. 33—324 **9 Claims**



1. In a gyrocompass having a gyro rotor with a substantially horizontal spin axis, a gyro case for said gyro rotor, a support means for suspending the gyro case along a substantially vertical axis for north-seeking action, the improvement comprising means for applying a torque to said gyro rotor about said substantially vertical axis in proportion to the inclination angle of said spin axis from a horizontal plane to attenuate oscillatory action of said gyro rotor, means for detecting said inclination angle, circuit means intermediate of said detection means and the torque applying means for causing said torque to be applied to said gyro rotor at a repetition rate substantially equal to the north-seeking oscillatory rate of the gyro rotor, and means for causing said torque to approach zero as said north-seeking oscillatory action approaches a damped steady inclination angle.

3,935,645

APPARATUS FOR INDICATING RELATIVE AZIMUTH

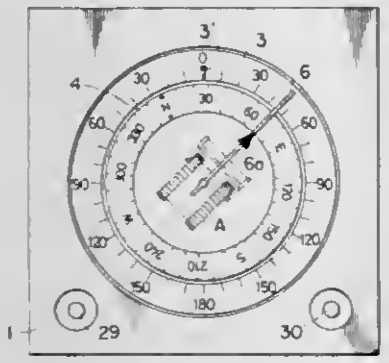
Michio Okamoto, Fujisawa; Shigeru Izawa, Musashino, and Michio Hara, Tokyo, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Japan

Continuation-in-part of Ser. No. 171,133, Aug. 12, 1971, abandoned. This application Aug. 13, 1974, Ser. No. 497,045

Claims priority, application Japan, Aug. 13, 1970, 45-70393

Int. Cl.² G01C *17/26;* **G08C** *19/00*

U.S. Cl. 33—363 R 3 Claims



1. An arrangement for indicating a relative azimuth between two objects remote from each other, such as a control station having therein a first detector for detecting a true azimuth thereof and a mobile unit remotely controlled by the control station which has therein a second detector for detecting a true azimuth thereof, comprising:

a first synchronous transmitter mounted on the control station for generating and transmitting a signal corresponding to the true azimuth of the control station detected by said first azimuth detector; a second synchronous transmitter mounted on the mobile unit for generating and transmitting a signal corresponding to the true azimuth of the mobile unit detected by said second true azimuth detector;

a frame installed in the control station for protecting and supporting other elements constituting said device;

a transparent window fitted in front of said frame;

an outer stationary dial equally graduated and fixedly secured to the frame inside the window and having a mark thereon aligned with the direction of heading of the control station;

an inner rotatable dial equally graduated and disposed concentrically with said outer stationary dial and including a hollow rotary shaft;

a rotatable indicator extending to and over said outer stationary dial and having at the intermediate part thereof an arrow shaped member for indicating the graduations of the inner inner dial and having a rotary shaft fixedly secured thereto and inserted concentrically within said hollow rotary shaft of said inner rotatable dial;

a first synchronous receiver having therein a rotary shaft and means for providing the rotary shaft with rotation by receving the signal transmitted from said first synchronous transmitter mounted on the control station;

a second synchronous receiver having therein a rotary shaft and means for providing the rotary shaft with rotation by receiving the signal transmitted from said second synchronous transmitter mounted on the mobile unit; and

means for transmitting said rotations of said first and second synchronous receivers to said inner rotatable dial and the rotatable indicator such that the true azimuth of the control station is represented on the graduation of said inner rotatable dial indicated by said mark provided on said outer stationary dial, and that of the mobile unit is represented on the graduation of said inner rotatable dial indicated by said arrow shaped member provided in the intermediate part of said rotatable indicator, and moreover the relative azimuth between the control station and the mobile unit is represented on the graduation of said outer stationary dial indicated by the leading and of said rotatable indicator.

3,935,646

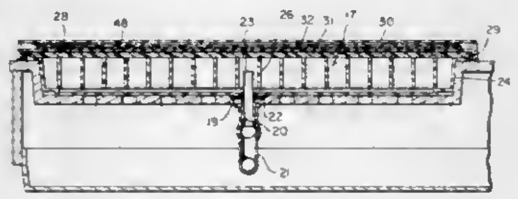
GEL ELECTROPHORESIS SLIDE DRYING

Joseph D. Grandine, Acton, and James E. Snyder, Brighton, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Nov. 15, 1974, Ser. No. 524,364

Int. Cl.² F26B *19/00*

U.S. Cl. 34—92 6 Claims



3. Apparatus for drying a gel electrophoresis slide comprising,

a housing having a generally rectangular recessed portion, said housing having a vacuum connection in said housing recess,

a subassembly, said subassembly including a generally rectangular tray having one open side therein,

a ribbed support member in said tray supporting a planar porous surface in spaced apart parallel relation to the side of said tray opposite said open side and coextensive with said open side, for mounting the electrophoresis slide to be dried, and

a cover member for said tray, said cover member including a resilient surface pad forming a substantially vacuum tight seal with said tray, said tray having a connection therein for coupling to said vacuum connection within said housing.

3,935,647

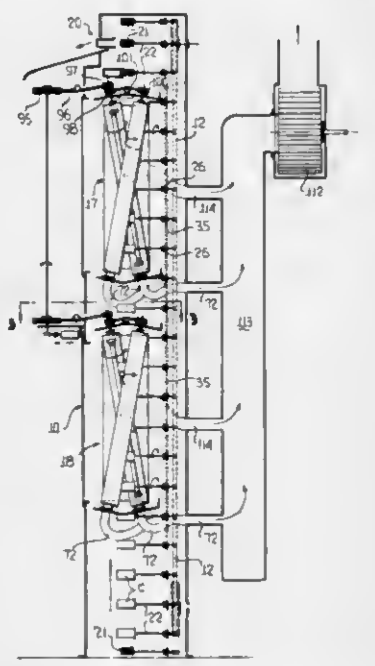
ULTRAVIOLET CURING OVEN

Anton A. Aschberger, Youngstown, Ohio, assignor to Continental Can Company, Inc., New York, N.Y.

Filed July 16, 1974, Ser. No. 489,055

Int. Cl.² F26B *25/00*

U.S. Cl. 34—105 20 Claims



1. Apparatus for drying articles comprising a housing, conveying means for conveying articles along a path of travel in said housing, means for drying articles during the movement thereof in said housing by said conveying means, said drying means being at least a pair of heat sources disposed to normally direct heat toward the path of travel of said conveying means, said pair of heat sources being disposed in opposing relationship to each other on opposite sides of said path of travel, said pair of heat sources having longitudinal axes disposed along but askewed to the path of travel of said conveying means, the skewing of said pair of heat sources being in directions opposite each other, means for redirecting the normal direction of heat application away from said path of travel to prevent heat damage to the articles carried by said conveying means, and said redirecting means including means for rotating said heat sources away from the path of travel of said conveying means about axes generally parallel to said longitudinal axes.

3,935,648

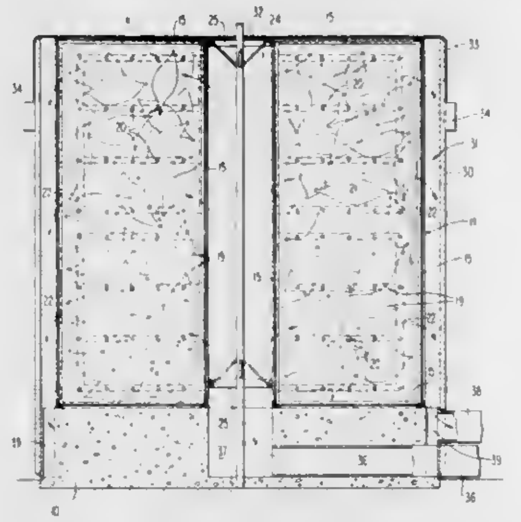
TOBACCO CURING APPARATUS AND METHOD

Jack R. Cox, P.O. Box 1104, Myrtle Beach, S.C. 29577

Filed Nov. 7, 1974, Ser. No. 521,778

Int. Cl.² D06F *58/00;* **F26B** *11/02*

U.S. Cl. 34—131 13 Claims



1. An apparatus for curing tobacco leaves comprising means defining an annular curing air confining enclosure, a plurality of foraminous baskets for leaves adapted to be arranged in a circular array within the enclosure wherein said baskets form a central verical passage in the center of said circular array and an exterior annular return passage defined by the inner wall of the enclosure and the outer wall of said baskets, and means on the baskets adapted to engage masses of tobacco leaves therein and to hold said leaves relatively fixed against appreciable movement during curing with the leaves held approximately edgewise to the direction of curing air flowing therethrough radially between said passages.

3,935,649

MULTI-PURPOSE MATHEMATICAL AID

James Richard Harte, 10 W. Concord, Kansas City, Mo. 64112

Filed Mar. 1, 1974, Ser. No. 447,084

Claims priority, application United Kingdom, Nov. 9, 1973, 52214/73

Int. Cl.² G09B *19/02*

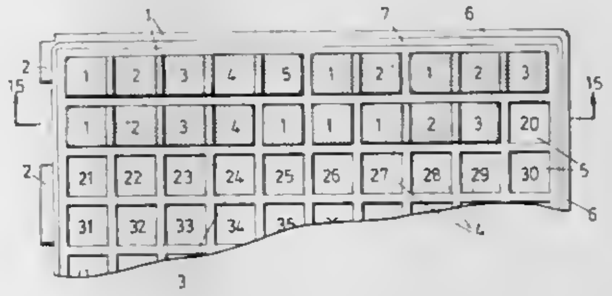
U.S. Cl. 35—31 D 6 Claims

1. A mathematical aid comprising:

a counting member having an upper face provided with a pattern of ridges having sloping sides and dividing the face into an arrangement of n × n recessed areas representing an orderly series of numbers; and

a plurality of solid, relatively thin, multiple segment counting bars which may be positioned on said member to portray mathematical relationships, each bar comprising a plurality of joined segments defining units that collectively represent a number, each of said bars presenting opposed, upper and lower major surfaces, said lower surface having channel-like recesses therein provided with sloping sides for complementally receiving said ridges on the member to nest each unit of the bar in any one of the areas of said member, whereby to retain the units in place and provide selfcentering and self-alignment of the units of each bar with respect to the corresponding selected areas of said member,

said upper surface of each bar having ridges thereon provided with sloping sides complementally receivable in the channel-like recesses in the other of said bars upon stacking thereof to center and align the units of the stacked bars.



3,935,650

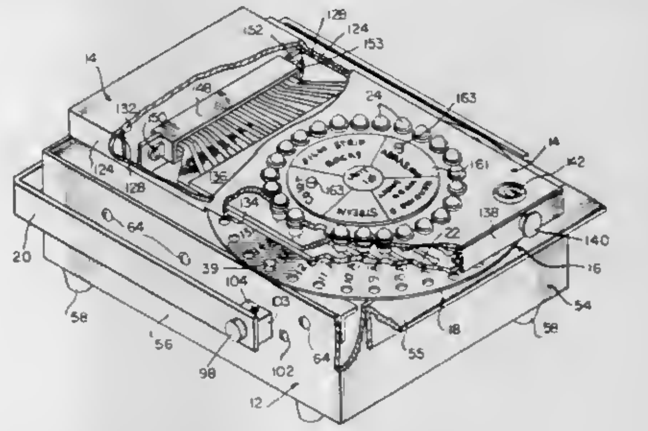
SCHOLASTIC TEST AND GRADING APPARATUS

Donald R. Hully, 1404 E. Stop 11 Road, Indianapolis, Ind. 46227

Filed July 31, 1974, Ser. No. 493,318

Int. Cl.² G09B *5/00*

U.S. Cl. 35—48 B 26 Claims



1. Test and grading apparatus, comprising:

an answer sheet having answer indicia thereon defining a circular series of angularly-spaced row of radially-spaced answer spaces representing different answers to questions of a series corresponding to the series of rows, said sheet being adapted to have answers indicated thereon by markings or the like at said answer spaces,

said sheet also having orientation indicia thereon to define a plurality of orientations in which the sheet may be applied to sensing means for scoring correct answer markings thereon,

sensing means having a circular series of sensing elements angularly spaced for alignment with said rows of answer spaces and radially spaced for alignment with selected ones of the answer spaces of the rows, to sense correct answers in such spaces,

orientation means for selectively orienting answer sheets with respect to the sensing means in accordance with designated orientation indicia on the answer sheets,

means for bringing such answer sheets into sensing relation with the sensing means in the designated orientations for sensing correct answers thereon,

and indicating means to indicate for observation the results of such sensing.

3,935,651
VOCABULARY PLAYING CARDS

Robert T. Mankoff, and Marcy Mankoff, both of 73-11 Bell Blvd., Bayside, N.Y. 11364

Filed June 10, 1975, Ser. No. 585,482

Int. Cl.^{2} A63H *33/04*

U.S. Cl. 35—71 **6 Claims**

1. Vocabulary building playing cards comprising a deck having a multiplicity of cards, each card displaying symbolic indicia defining a suit designation, there being 4 suits in said deck, each suit having a prescribed number of different value denominaions, the value denominations of each suit being the same as each other suit, at least some of said cards being vocabulary cards having a vocabulary word thereon, each of said vocabulary cards displaying indicia comprising a correct definition and a plurality of incorrect definitions of the respective vocabulary word, indicia defining a different value denomination on each vocabulary card adjacent each correct and each incorrect definition, the value denomination of each vocabulary card being that corresponding to the correct definition of the vocabulary word.

3,935,652
CIRCULAR MAGAZINE FOR A SLIDE PROJECTOR

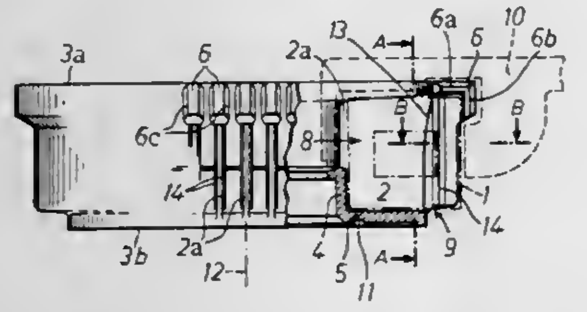
Hans Mulch, Wetzlar, Germany, assignor to Ernst Leitz G.m.b.H., Wetzlar, Germany

Filed June 26, 1974, Ser. No. 483,397

Claims priority, application Germany, July 7, 1973, 2334578

Int. Cl.^{2} B42F *17/00*

U.S. Cl. 40—78 **7 Claims**



1. A circular magazine for rectangular slides comprising an annular bottom wall (5) with a hub (4) defining a boundary wall rising from the inside diameter of said bottom wall, a plurality of compartment walls distributed uniformly and radially around said hub extending from said bottom wall and said hub, said compartment walls (2*a*) having lengths parallel and vertical to said bottom wall and corresponding substantially to the lengths of a rectangular slide, the compartment walls having securing means (6) diagonally opposite the intersection of said bottom wall and said hub, said securing means comprising bulges for precluding accidental ejection of the slides and defining slits (7) between each neighbored compartment wall, said slits being narrower than the thickness of a slide being used, said hub being of low height compared to the vertical length of the compartment walls, said hub, said bottom wall and said securing means matingly receiving rectangular slides lying with one edge on said bottom wall and between said compartment walls, said securing means and said bottom wall having a combined length less than said parallel length of the compartment walls and being disposed to each other without overlapping.

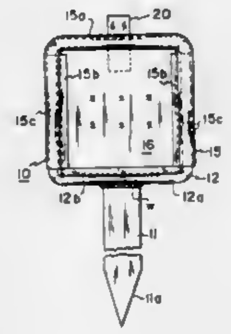
3,935,653
BEACH BLANKET STAKING DEVICE

William H. Klein, 400 Kings Point Drive, Apartment 1131, Miami, Fla. 33160

Filed Feb. 1, 1973, Ser. No. 328,736

Int. Cl.^{2} G09F *7/18*

U.S. Cl. 40—125 H **3 Claims**



1. In an advertising staking device of the character shown and described for ground mounting to securely position side edge portions of a beach blanket and the like in an upright wall-like enclosing position along and with respect to a central body portion thereof that is resting on the ground, an elongated drive stem having a tapered lower drive end, a vertically upright drive head and advertising plaque-receiving frame, said frame being centrally secured on an upper end portion of said stem and having a pair of U-shaped parts adapted to adjustably telescope with respect to each other to define a window portion of variable size, said parts in their telescopic relation having upper and lower spaced-apart cross members and vertical members connected to said cross members, means carried by said frame for receiving and retaining an advertising plaque within said window portion, blanket clipping means having a pair of pivotally connected jaws and spring means for urging said jaws towards a closed relation with respect to each other, one of said jaws being substantially centrally secured to the upper cross member of said upper frame part to mount said jaws to extend in a plane substantially parallel to said frame and in a vertical downwardly opening blanket edge-receiving position, and said clipping means being adapted to receive and retain an adjacent side edge portion of the blanket in an upright wall-like enclosing position along the device.

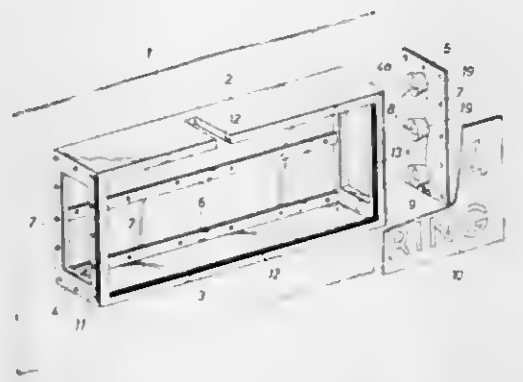
3,935,654
ILLUMINATED VEHICULAR DISPLAY SIGN

Irene E. Rubin, Houston, Tex., assignor to Irene E. Rubin, Houston, Tex.

Continuation of Ser. No. 290,434, Sept. 20, 1972, abandoned. This application Sept. 19, 1974, Ser. No. 507,341

Int. Cl.^{2} G09F *7/00*

U.S. Cl. 40—129 C **7 Claims**



1. An illuminated display sign peculiarly adapted for mounting on a side panel of a road vehicle, comprising

a frame assembly of generally rectangular parallelepiped configuration having an elongated dimension to be disposed parallel to the longitudinal axis of a road vehicle, said frame assembly being composed of

a pair of vertical side members disposed at opposed ends of the assembly, each side member having a slot-like groove therein adapted to receive the thickness of a sheet of glass or other display panel, said grooves being disposed to face one another and one of them extending all of the way through the side member to serve as an aperture for mounting and dismounting said display panel,

a pair of generally horizontal top and bottom members interconnecting said side members, each top and bottom member having a slot-like groove therein adapted to receive the thickness of said display panel, said grooves also being disposed to face one another and to cooperatively register with said grooves in the side members to retain said panel, and

rib means which may be integral with said top and bottom members extending horizontally between and interconnecting said pair of side members, said rib means having a multiplicity of horizontally spaced openings therethrough which serve to receive connecting members to secure the sign to the side of a vehicle, said rib means being of relative short vertical dimension to leave the back face of the assembly relatively open, whcreby the side of the vehicle is utilized to close the back of the assembly and serves as a light reflecting surface,

a translucent rectangular display panel having a message-bearing surface thereon and slidably insertable through said aperture groove into said pairs of grooves in the side members and top and bottom members to close the front face of said frame assembly, and

a plurality of light sources mounted within said frame assembly to provide indirect lighting for said display panel.

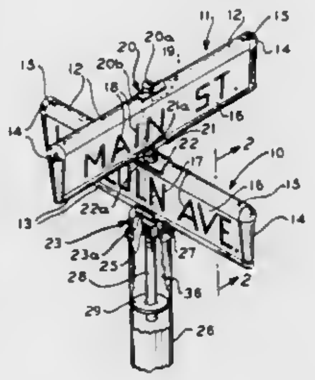
3,935,655
VANDAL-PROOF STREET NAME SIGN

George H. Fritzinger, 217 W. Grant Ave., Edison, N.J. 08817

Filed Aug. 12, 1974, Ser. No. 496,706

Int. Cl.^{2} G09F *07/18*

U.S. Cl. 40—145 R **8 Claims**



1. In a street name sign: the combination of a sign head structure comprising one or more hollow sign heads each having name panels at the opposite sides thereof, a center staff passing vertically through said head structure, a top cap in interlocking engagement with the upper end of said sign head structure and secured to the upper end of said center staff, a post cap receiving the lower end of said center staff and adapted to fit over the upper end portion of a cylindrical post for supporting said sign at a suitable elevation above the ground, pointed set screws threaded through the side wall of said post cap for locking engagement with the wall of said post, securing means on said center staff tightened against said post cap to clamp said sign head structure between said top cap and said post cap via said center staff, an arm of solid rod stock secured to the lower end of said center staff in substantial extension beyond said post cap and a collar secured to the lower end of said arm for engaging the inside wall of a post supporting said sign with a clearance fit at a substantial distance below said post cap to retain said post cap in upright position on said post and to relieve the post cap from strain tending to break it upon an excessive tilting force being exerted on said sign head structure.

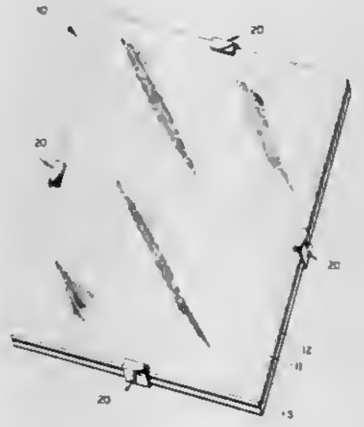
3,935,656
PICTURE FRAME SYSTEM

William Stratton Pritchard, 201 Avery Drive NE., Atlanta, Ga. 30309

Filed May 17, 1974, Ser. No. 470,824

Int. Cl.^{2} G09F *1/12*

U.S. Cl. 40—155 **1 Claim**



1. A frame system for mounting a sheet-like article such as a photograph or the like comprising a front transparent sheet through which the sheet-like article is viewed; a backing layer superposed on and substantially coextensive with said transparent sheet, said photograph being between said transparent sheet and said backing layer; a first pair of resilient rods, each rod of said first pair of rods lying against said backing sheet adjacent to an edge of said backing sheet, the two rods of said first pair of rods being adjacent to opposed edges of said backing sheet; a first pair of clips, each clip of said first pair of clips being fixed to one of said first pair of rods, said each clip being so constructed and arranged that said transparent sheet and said backing layer are received within said clip while said resilient rod is lying against said backing sheet, each of said resilient rods tending to bow away from said backing layer generally at the mid portion of said resilient rods; a second pair of resilient rods, each rod of said second pair of rods lying adjacent to an edge of said backing layer substantially perpendicular to said first pair of rods, each rod of said second pair of rods including an end section to overlie one rod of said first pair of rods; a second pair of clips, one clip of said second pair of clips being fixed to each rod of said second pair of rods and adapted to receive said transparent sheet and said backing layer therein; and a brace rod, said brace rod extending diagonally across said backing layer, each end of said brace rod being received within one of said end sections of said second pair of rods.

3,935,657
RIFLE REST

Virdell H. Wade, Rte. 2, Box 116 B, Chandler, Ariz. 85224

Filed July 3, 1974, Ser. No. 485,512

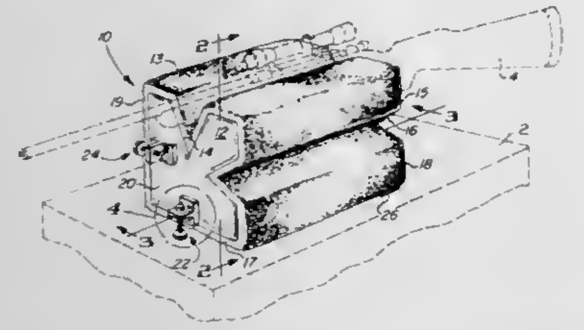
Int. Cl.^{2} F41C *29/00*

U.S. Cl. 42—94 **6 Claims**

1. Rifle rest apparatus, comprising, in combination:

block means;

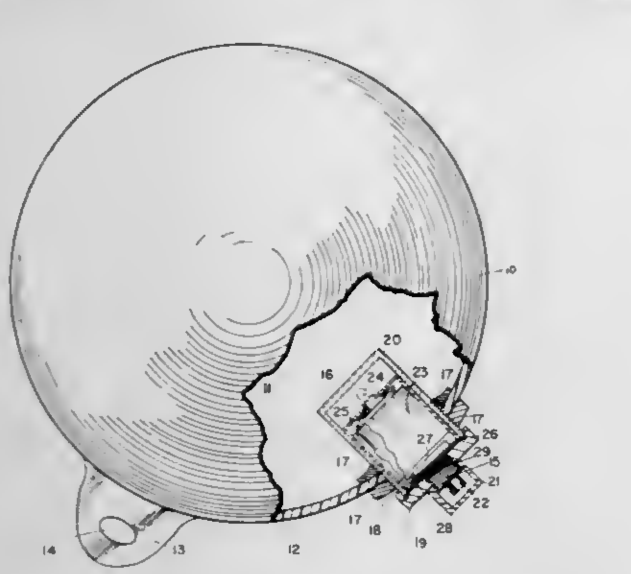
groove means extending into the block means along the length of the block means for receiving a portion of a rifle and for supporting the rifle; and means for adjusting the elevation of a portion of the block means, including a bracket secured to an end of the block



means and adjustable screw means extending through said bracket.

3,935,658
ILLUMINATED BLADDER BUOY

Kenneth Simpson, Cordova, Alaska, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Continuation of Ser. No. 302,028, Oct. 30, 1972, abandoned. This application Jan. 15, 1974, Ser. No. 433,598
Int. Cl.² A01K *93/00;* B63B *21/00*
U.S. Cl. 43—17.5 2 Claims



1. A bladder buoy suitable for the supporting of fish nets, trap lines and other fishing gear, the outer membrane of which is illuminated by means of a battery-powered flashlight located inside the buoy, cosisting of

an inflated translucent or semi-opaque membrane in the shape of a sphere with positive flotation characteristics, inside of which, in a transparent housing, is mounted a battery and flashlight bulb,

said housing enclosing the flashlight and battery being sealed from the interior inflated recess of the buoy,

with the housing supporting the flashlight bulb and battery mounted inside the buoy and extending externally of the buoy surface, with means mounted in the external part of said housing for removing and replacing the bulb and the battery, said means providing a waterproof seal of the flashlight housing unit when the housing is closed, with the housing unit serving to seal the interior of the balloon when the housing is closed, or open for replacement of a bulb or battery.

3,935,659
PHOSPHORESCENT FISHING LURE

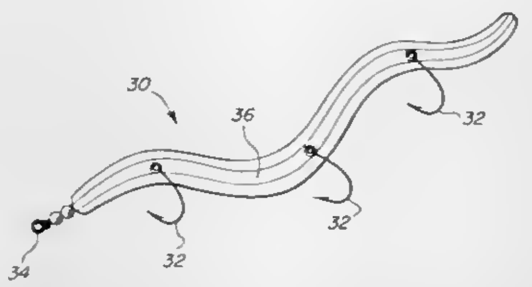
James B. McCallum, Wendham St., R.F.D. No. 3, Plymouth, Mass. 02360
Filed Oct. 29, 1974, Ser. No. 518,562
Int. Cl.² A01K *85/00*
U.S. Cl. 43—17.6 1 Claim

1. An improved fishing lure especially adapted to glow and thereby attract fish and comprising:

a. a translucent fishing lure body being adapted to attract fish for feeding purposes;

b. a leader running along the inside of said fishing lure body to couple hooks to the fishing lure body;

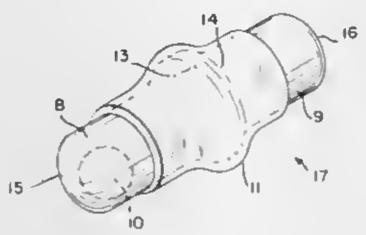
c. at least one hook coupled to said leader to hook a fish attempting to eat the lure body; and



d. said leader being formed of a phosphorescent material which, after being subjected to irradiation will itself radiate light, whereby the fishing lure will be more conspicuous, especially in darkened waters, and will attract more fish.

3,935,660
NOISEMAKING DEVICE FOR USE WITH FISHING LURE OR BAIT AND METHOD OF MAKING SAME

Franklin T. Plew, P.O. Box 1418, Bloomington, Ind. 47401
Filed Mar. 17, 1975, Ser. No. 559,221
Int. Cl.² A01K *85/00*
U.S. Cl. 43—42.31 14 Claims



1. A noisemaking device for use with a fishing lure or bait comprising:

first and second metal cups each having a closed end and an open, flanged end, assembled with their flanged ends in abutting relation to form a closed container;

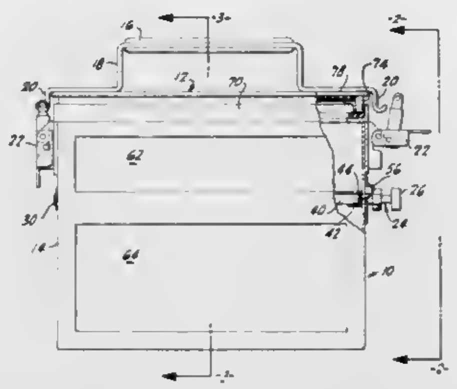
one or more metal balls loosely received in said container;

and a shrinkable sleeve surrounding the abutting flanged ends of said cups and shrunk about the same to secure the cups in assembled relation.

3,935,661
PORTABLE RODENT EXTERMINATOR

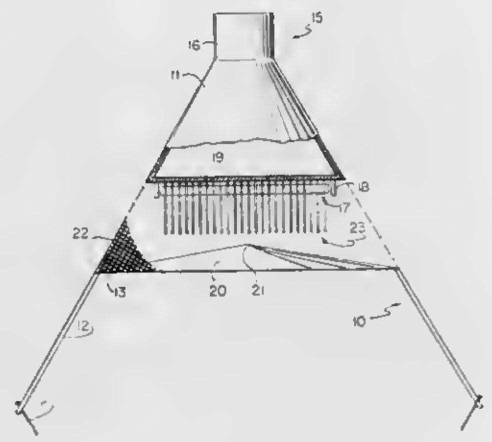
Daniel B. Meyers, 164 Rome St., San Francisco, Calif. 94112, and Gary C. Yerby, 78 Lausanne St., No. 2, Daly City, Calif. 94104
Filed Nov. 20, 1974, Ser. No. 525,658
Int. Cl.² A01M *23/02*
U.S. Cl. 43—60 6 Claims

1. A portable rodent exterminator comprising: a container having an enclosable inside chamber and an open top, a top cover, coupling means on said open top of said container for mounting said top cover on said container, said coupling means being further adapted to couple an open end of a rodent trap container to said container, said coupling means having further sealing means on said open top of said container for hermetically sealing said top cover and said container, said sealing means being adapted to provide a substantially sealed coupling seating when said container is coupled to the open end of a rodent trap container, cooperating means on said top cover and said container for releasably attaching said top cover to said container, a divider plate positionable within said container, and, means for reversibly displacing said divider plate across said inside chamber selectively forming an enclosed inside chamber and an open inside chamber.



3,935,662
ELECTRONIC INSECT TRAP

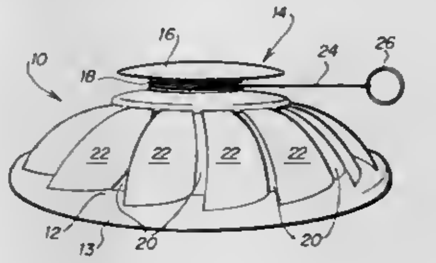
Michael Hamid; Emil Krush, both of Winnipeg, and Roger Boulanger, Calgary, all of Canada, assignors to Alladin Enterprises Ltd., Winnipeg, Canada
Filed Oct. 25, 1974, Ser. No. 517,938
Int. Cl.² A01M *1/22*
U.S. Cl. 43—112 6 Claims



1. An insect trap connectable to a source of electrical power and comprising in combination a supporting framework, insect attractant means supported by said framework, electronic means supported within said framework and a killing grid operatively connected to said electronic means and also supported within said framework in the vicinity of said insect attractant means, said grid including opposing members having an air gap therebetween, said electronic means supplying electrical power to said grid whereby an arc is struck across said opposing members when an insect reduces the air gap therebetween by a predetermined amount, said insect attractant means including a source of ultra-violet light in said framework, an upper reflector in said framework above said source of ultra-violet light and a lower reflector below said source of ultra-violet light, said killing grid being situated between said reflectors and between said source of ultra-violet light and the exterior of said framework, said upper reflector including a substantially planar disc spanning said framework, said lower reflector including a substantially conical disc also spanning said framework in spaced relationship to said upper disc and with the apex of said conical disc extending towards said upper disc adjacent the center thereof whereby the ultra-violet light from said source thereof is reflected down from said upper reflector onto said lower reflector and radiated outwardly from said lower reflector.

3,935,663
FLYING TOY

Martin N. Leibowitz, 1620 Oak Meadows Drive, Irving, Tex.
Filed July 22, 1974, Ser. No. 490,368
Int. Cl.² A63H *27/12*
U.S. Cl. 46—60 6 Claims



1. A free flight flying toy for being tossed through the air with a spinning motion comprising:

a circular disc having a convex outer surface comprising the upper surface when in operation and configured to produce lifting effects when tossed with a spinning motion,

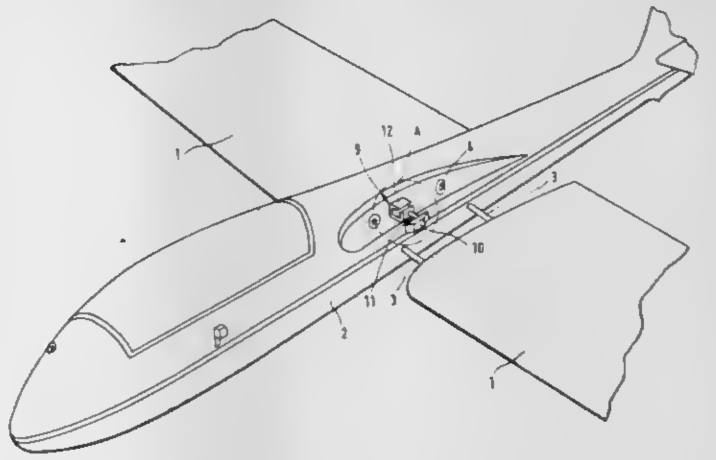
a circular reel attached to the center of said convex outer surface and extending above said disc when in operation, said reel including an outer hub portion and a stem of less diameter than said hub portion,

a flexible line having a free end for being wound around said stem of said reel and for being grasped at the other end in order to impart additional spin to said disc by unwinding after said disc is tossed, said free end of said line disengaging from said reel when said line is fully unwound to provide free flight to said disc, and

vent openings being formed at equally spaced points about said disc in order to create additional lift to said disc.

3,935,664
CONNECTOR ARRANGEMENT FOR DETACHABLE FASTENING OF AIRPLANE WINGS TO THE FUSELAGE OF MODEL AIRPLANE

Hermann Neuhierl, Waldstrasse 36, 8510 Furth, Bayern, Germany
Filed May 2, 1975, Ser. No. 573,995
Claims priority, application Germany, May 3, 1974, 2421418
Int. Cl.² A63H *27/02;* B64C *1/26*
U.S. Cl. 46—76 R 2 Claims



1. In a connector arrangement for the detachable fastening of airplane wings to the fuselages of model airplanes, including sleeves in said fuselages, and pins in said airplane wings adapted to be located in said sleeves for attaching said wings to said fuselages, the improvement comprising tongue and groove connector elements for pressing said wings against said fuselage; a rubber band imparting a tensile force to said connector elements, each said connector element being adapted to be pulled out and rotated into a second position in which

said connector element is insertable into a complementary-shaped cut-out formed in the end surface of the airplane wing proximate thereto, and rotatable into a first position in which said airplane wing is maintained in engagement with said fuselage.

3,935,665
SUBMERSIBLE TOY

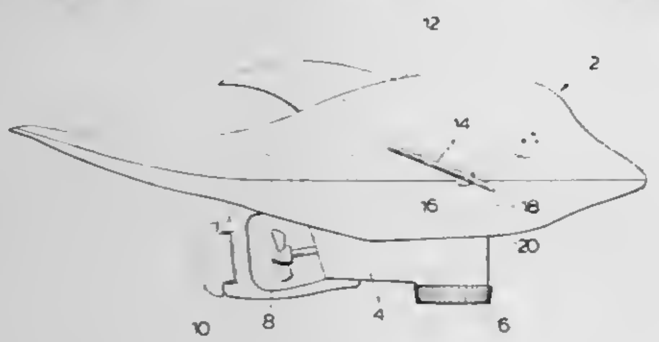
Duncan Tong, Hong Kong, assignor to Playarl Ltd., Hong Kong

Filed Feb. 12, 1975, Ser. No. 549,410

Claims priority, application United Kingdom, Feb. 21, 1974, 08051/74

Int. Cl.^{2} A63H *23/04*

U.S. Cl. 46—91 **9 Claims**



1. A submersible toy or model, comprising:

a body member;

a motor and propellor attached to said body member to propel it in a forward direction;

at least one elevator flap attached to said body member at a selectively fixed downward inclination to the forward direction of movement of the body, whereby downward pressure acting on said elevator flap causes said body to submerge as it is propelled in said forward direction by said motor and propellor; and

a watertight buoyancy compartment attached to said body member, said compartment being sized so that the bouyancy thereof eventually overcomes said downward water pressure and causes said body member to resurface,

whereby the toy or model continually submerges and resurfaces when placed in the water with said elevator flap in said selectively fixed downward inclination and said motor on.

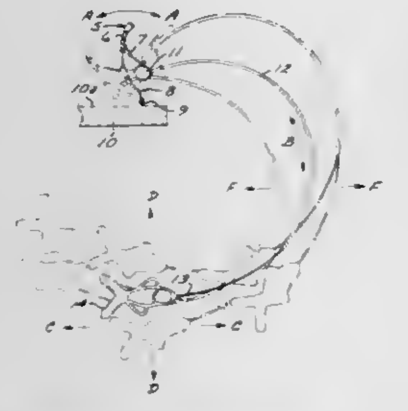
3,935,666
FULCRUM TOY ASSEMBLY

Eugene L. Absher, Anaheim, Calif., assignor to Alpha Nova Development Company, Santa Ana, Calif.

Filed Nov. 7, 1974, Ser. No. 521,639

Int. Cl.^{2} A63H *13/12*

U.S. Cl. 46—131 **9 Claims**



1. A fulcrum toy assembly comprising:

a primary body element provided with plurality of point contact means for engaging a support base thereby providing a fulcrum means which permits said primary body element to reciprocate in a vertical plane, said point contact means being a pair of spatially situated pointed elements positioned so as to be in a plane normal to the direction of reciprocation of the primary body element;

a plurality of resilient wire means extending forwardly and downwardly of said primary body element, said wire means being of different resiliences; and

a second body element secured to said wire means, said second body element having its center of gravity below the fulcrum means formed by the point contact means of said primary body means in conjunction with said support base.

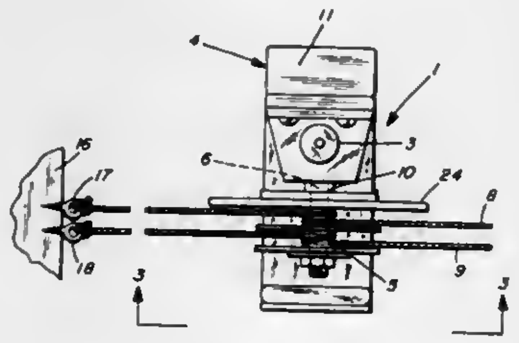
3,935,667
AMUSEMENT DEVICE

Louis O. Vitt, 1235 S. Green Road, South Euclid, Ohio 44121

Filed Feb. 25, 1974, Ser. No. 445,683

Int. Cl. A63h *18/06*

U.S. Cl. 46—202 **10 Claims**



1. An amusement device comprising,

a housing,

a rotatable member mounted for rotation on said housing,

track means including at least one elongated, flexible track element,

said track element being wrapped around said rotatable member for frictional engagement therewith for moving said housing along said track element,

power means connected to said rotatable member for rotating said rotatable member in one direction,

said track element having its opposite ends extending tangentially and in generally opposite directions from generally one side of said rotatable member whereby upon the application of tension to said track element a frictional force will result between said track element and said rotatable member to cause said housing to move along said track element at a speed related to the frictional force between said track element and said rotatable member,

said track means includes a pair of track elements wrapped about said rotatable member,

one of said track elements is wrapped around said rotatable member having its opposite ends extending generally tangentially from generally one side of said rotatable member, and

the other of said track elements is wrapped around said rotatable member having its opposite ends projecting tangentially from a generally diametrically opposite side of said rotatable member from said one side whereby said housing can move in one direction when the frictional force between said one track element and said rotatable member exceeds the frictional force between said other track element and said rotatable member and can move in the opposite direction when the frictional force between said other track element and said rotatable member exceeds the frictional force between said one track element and said rotatable member.

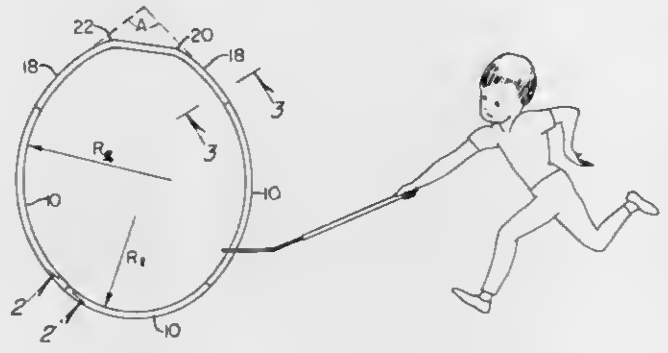
3,935,668
NON CIRCULAR HOOP

James T. Phillips, Jr., 4336 W. 59th Place, Los Angeles, Calif. 90043

Filed Nov. 29, 1974, Ser. No. 528,352

Int. Cl.^{2} A63H *33/02*

U.S. Cl. 46—220 **10 Claims**



1. In a hoop of the type adapted to be rolled along a surface with a propelling trundle comprising;

a. a plurality of first segments and at least one second segment adapted to be interchangeably assembled in various combinations to form hoops of various sizes and various shapes,

b. the first segments being formed of flexible material of uniform cross section, such as plastic tubing,

c. the second segment being formed of like material of like cross section and having a knuckle thereon formed at the juncture of angularly related portions having centers of curvature which are considerably spaced apart, said knuckle adapted to disturb the rolling action of the hoop as it rolls across same from one of the adjacent portions to the other adjacent portion,

d. means for detachably connecting an end of any segment with an end of any other segment,

e. the first segments being sufficiently flexible to bend to various radii of curvature,

f. the construction and arrangement being such that:

g. when at least two of the first segments are secured together they form a substantially circular hoop, and

h. when at least one of the first segments and at least one of the second segments are secured together they form a hoop having said knuckle thereon.

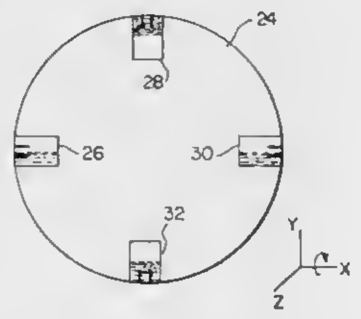
3,935,669
ELECTRICAL SIGNAL MECHANISM ACTUATED IN RESPONSE TO ROTATION ABOUT ANY OF THREE AXES

Stanley G. Potrzuski, 452 Elrino St., and Walter John Potrzuski, 9 N. Montford Ave., both of Baltimore, Md. 21224

Filed June 3, 1974, Ser. No. 476,038

Int. Cl.^{2} A63H *33/26*

U.S. Cl. 46—228 **8 Claims**



1. An object which generates a signal only when in rotation and when in rotation generates a continuous signal comprising:

a support structure,

circuitry mounted to said support structure comprising a power source,

switch means including a first switch which can assume its ON position in response to centrifugal force,

said switch means further including a second switch which assumes its ON position in response to centrifugal force,

means for generating a signal,

means connecting electrically in series said power source, said first switch, said second switch and said means for generating a signal,

said first switch being mounted to said support structure in a position such that it is in its ON position as a result of centrifugal force generated when said support structure is in rotation about a given axis,

said second switch being mounted to said support structure in a position such that it is in its ON position as a result of centrifugal force generated when said support structure is in rotation about said axis and so that it is in its OFF position when said support structure is not in rotation and when said first switch is in its ON position due to gravity rather than to rotation,

whereby said means for generating a signal is actuated only when said support structure is in rotation and whereby when said support structure is in rotation said means for generating a signal is actuated continuously,

said switch means further including a third switch and a fourth switch which can assume their ON positions in response to centrifugal rotation, means connecting said third and fourth switches in series with a power source and a signal generating means, said switches being mounted in positions in said support structure whereby rotation of said object about its X-axis causes said first and second switches to assume their ON positions, rotation of said object about its Y-axis causes said third and fourth switches to assume their ON positions and rotation of said object about its Z-axis causes said first, second, third and fourth switches to assume their ON positions.

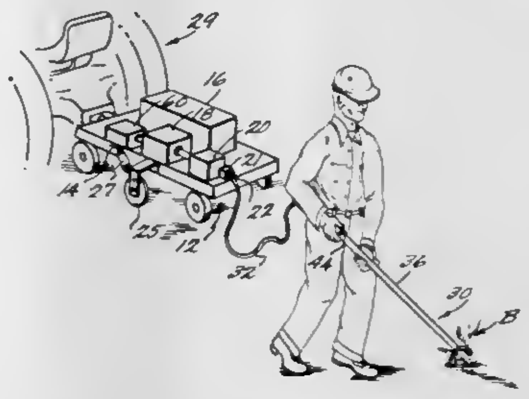
3,935,670
APPARATUS FOR SELECTIVELY APPLYING ELECTRICAL CURRENT TO PLANTS

Ricks H. Pluenneke, Greenwood, and Willis G. Dykes, Vicksburg, both of Miss., assignors to Lasco Corporation, Greenwood, Miss.

Filed Nov. 1, 1974, Ser. No. 520,229

Int. Cl.^{2} A01M *21/00*

U.S. Cl. 47—1.3 **2 Claims**



1. Apparatus for selectively destroying plants by the application of electrical current thereto, comprising

a. a source of high-voltage electrical current,

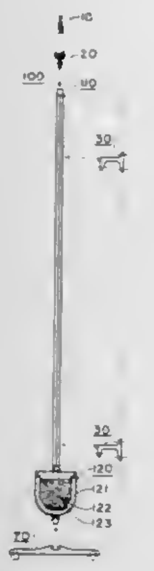
b. movable means for mounting said source of electrical current for movement,

c. safety grounding means for providing continuous grounding of said source of electrical current during movement thereof, said grounding means comprising a sharpened electrically conductive wheel attached to said movable means, and means being provided for selectively moving said wheel into and out of ground engagement,

d. means for transferring electrical current from said source to selective plants to be destroyed, said means including (i) a non-conductive staff member adapted to be grasped by an operator, (ii) a single semi-circularly shaped dull-edged conductive member operatively attached to said staff member and adapted to be brought into engagement with plants to be destroyed, (iii) a high-voltage circuit adapted to connect said conductive member to said source of electrical current, (iv) a normally spring-biased open first electrical switch interposed in said high-voltage circuit, (v) means for selectively closing said first electrical switch against said spring bias, said means including a low-voltage control circuit and a spring-biased open sound electrical switch disposed in said low voltage control circuit, said second electric switch having an actuator mounted on said non-conductive staff member.

3,935,671
MODULAR PLANTER PANEL SYSTEM

Olaf Soot, 9 Tomahawk Lane, Greenwich, Conn. 06830
Filed Feb. 11, 1974, Ser. No. 440,949
Int. Cl.² A01G *9/02, 9/12;* **A47G** *7/02;* **F06B** *9/00*
U.S. Cl. 47—34 R **20 Claims**



1. A movable module for use as a decorative room divider, partition, or the like, for use with a climbing plant, said movable module comprising:

a stiff self-supporting planar frame, said frame including at least one top horizontal member, at least one bottom horizontal member, and at least two vertical members removably connected to said top and bottom members, said top, bottom, and vertical members defining the plane of said frame, said top, bottom, and vertical members each including means from which said module can be selectively supported from any one or more than one of said frame members whereby said module can be supported by several different modes of external support;

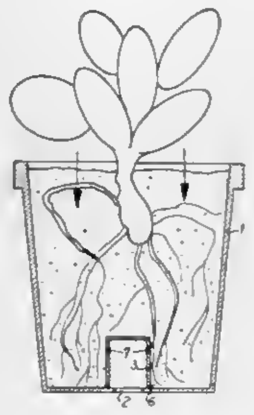
a horizontal planter box for a plant comprising an inner container with drainage holes and an outer container;

planter box attaching means located within said frame plane centrally attaching said planter box within said frame members; and

relatively flexible plant supporting means connected to and supported by said frame members, within said frame members and above said planter box for supporting growing portions of a plant.

3,935,672
DEVICE FOR THE RETENTION OF WATER IN FLOWER CONTAINERS

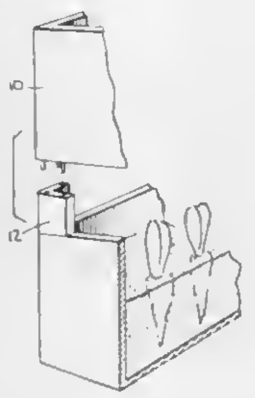
Louis-Robert Chatelain, Case Postale 217, 1211 Geneva 26, Switzerland
Filed Aug. 5, 1974, Ser. No. 494,860
Int. Cl.² A01G *9/02*
U.S. Cl. 47—34 A **2 Claims**



1. In combination with a container for receiving earth and plants, a water-retention device comprising a hollow cylindrical body having opposite ends and a continuous side wall, one said end surrounding an opening in the bottom of the container in watertight sealed relationship with the marginal edges of said opening, the other end being closed, and having at least one opening through said side wall of said hollow body adjacent said closed end and substantially closer to said other end than to said one end, said device being imperforate between said at least one opening and the bottom of the container whereby water can be stored in the container up to the level of said at least one opening.

3,935,673
PRODUCTION OF BELGIUM ENDIVE

Sy Raymond Robins, 180 E. End Ave., New York, N.Y. 10028
Filed Sept. 21, 1973, Ser. No. 399,540
Int. Cl.² A01G *9/20, 31/00*
U.S. Cl. 47—58 **9 Claims**



1. The technique for forcing Belgium endive, comprising the steps of:

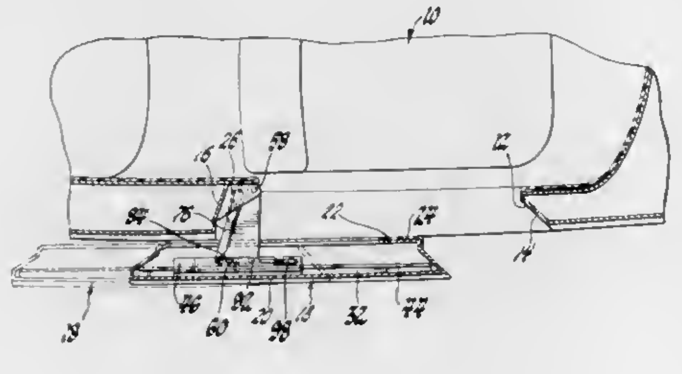
A. planting endive roots in a growing medium contained in pallet boxes, said medium being constituted by sterilizable, reusable materials, said roots being planted in said growing medium so that they are flush with the surface thereof, said roots having been grown in the field, being dug up, and their tops removed prior to planting in said boxes;

B. stacking said boxes one above the other in a dark chamber with sufficient headroom between boxes to afford space for air circulation and headroom for the growth of shoots; and

C. regulating the environment of said chamber to maintain the relative humidity thereof in the range of about 70 percent to 85 percent throughout the course of the forcing cycle and to hold the temperature at the start of the forcing cycle in the range of about 70° to 80° F to stimulate the initial growth of shoots, the temperature for the balance of the cycle being reduced and then held in the range of about 50° to 56° F.

3,935,674
SLIDING VEHICLE DOOR

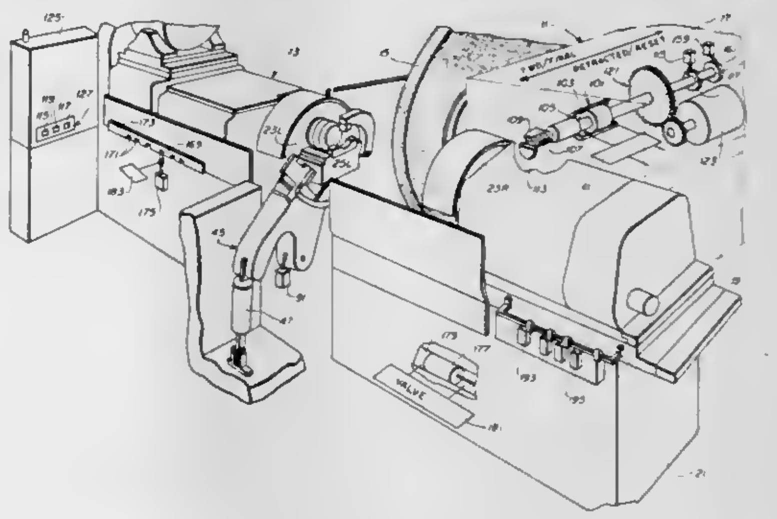
Alverson B. Williams, Warren; Bolek J. Dolinski, St. Clair Shores, and Sam S. Pupillo, Roseville, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed July 15, 1974, Ser. No. 488,546
Int. Cl.² E05D *15/10*
U.S. Cl. 49—212 **1 Claim**



1. In a vehicle body having a door opening defined by longitudinally spaced body pillars and a door for selectively opening and closing the door opening, means for mounting the door comprising: a guard beam mounted in the door and effective to reinforce the door and transmit force applied against the door to the body pillars, the guard beam having a pair of integral longitudinally extending vertically spaced flanges at the upper and lower edges thereof, a pair of extruded carriage members, each extruded carriage member having flanges for slidably capturing the flanges of the guard beam to support the door and permit longitudinal fore and aft sliding movement of the door on the extruded carriage members between a normal position on the carriage member coorresponding to door closed position and an open position, a pair of hinge arms each being associated with one of the extruded carriage members and each having one end pivoted to one of the body pillars and the other end pivoted to the associated extruded carriage member to permit movement of the extruded carriage member and the door between a closed position closing the door opening and an open position in which the extruded carriage members are moved laterally outboard of the door opening, a first latch means acting between one of the hinge arms and the guard beam and including hook means carried on the hinge arm and slot means in the guard beam, the hook means normally extending into the slot means to lock the door from sliding movement and being withdrawn from the slot means to permit sliding movement when the hinge arm and carriage member reach their relative pivotal positions in which the carriage member and door are moved fully laterally outboard of the door opening, and second latch means acting to prevent lateral inboard movement of the door until the door has been moved on the carriage member to its normal position thereon, said latch means including a spring biased latch lever which is normally engageable in aligned apertures of one of the carriage members and its associated hinge arm to thereby prevent pivoting movement of the carriage member on the hinge arm, and an abutment mounted on the door and engageable with the spring biased latch lever to move the spring biased latch lever to its unlatched position whenever the sliding movement position of the door corresponds to the door closed position on the carriage members.

3,935,675
MACHINE TOOL FAULT INDICATOR

Ralph E. Price, Waynesboro, Pa., assignor to Landis Tool Company, Waynesboro, Pa.
Continuation of Ser. No. 382,695, July 26, 1973, Pat. No. 3,839,829. This application Aug. 16, 1974, Ser. No. 497,956. The portion of the term of this patent subsequent to Oct. 8, 1991, has been disclaimed.
Int. Cl.² B24B *5/34*
U.S. Cl. 51—105 SP **14 Claims**



1. A cylindrical grinder comprising

a plurality of selectively displaceable machine mechanisms,

means for sequentially operating said plurality of selectively displaceable machine mechanisms including

  a corresponding plurality of means for individually displacing each of said plurality of machine mechanisms from a predetermined first position as said plurality of machine mechanisms are sequentially operated, and

  means including signal generating means for selectively individually energizing said plurality of displacing means,

a corresponding plurality of means for individually signaling the completion of the selective displacement of said plurality of machine mechanisms, and

fault indicating means for identifying each and every one of said plurality of machine mechanisms which are not located at said predetermined first positions prior to the operation of said sequentially operating means comprising

a corresponding plurality of fault signal generating means,

means for sensing the presence of signals generated by each of said plurality of completion signaling means and for energizing the corresponding fault signal generating means when a signal is selectively either present or absent at each of said plurality of completion signaling means,

and means for enabling said sequentially operating means if none of said plurality of fault signal generating means are energized by said sensing and energizing means.

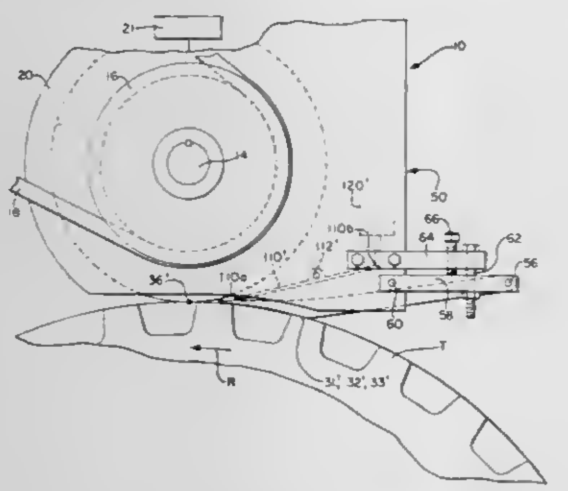
3,935,676
TIRE TREAD GRINDING

Crandall R. Kline, Jr., and Leonard A. Vandale, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 24, 1975, Ser. No. 561,138
Int. Cl.² B24B *5/00, 49/08*
U.S. Cl. 51—106 R **6 Claims**

1. In apparatus for grinding arc portions of a part of the width of the tread of an inflated tire wherein the apparatus includes means mounting the tire for rotation about a first axis, a grinding wheel operable to grind off material from the tread, a first mechanism for moving the grinding wheel toward and away from the tread, and a second mechanism for tilting the grinding wheel with respect to the plane of rotation of the tire to position the grinding surface of the wheel relative to the slope of said part in a plane defined by the tire axis and the grinding wheel axis,

the improvement comprising a mechanism combining a plurality of paddles each having an arcuate surface engageable with an arcuate portion of the tread from and outwardly of a line parallel and close to said plane and spanning at least one traction groove for smooth sliding engagement with said tread during rotation of the tire,

a pivot shaft having an axis parallel to the axis of the grinding wheel and carrying said plurality of paddles for arcuate displacement about the pivot shaft axis,



a shaft mounting for adjustably fixing the location of the pivot shaft relative to the axis of the grinding wheel and to the tread, and

displacement responsive mechanism responsive to displacement of at least one of said paddles about said pivot shaft for communicating to said first mechanism a control signal effective to control said moving of the grinding wheel toward and away from the tire.

3,935,677

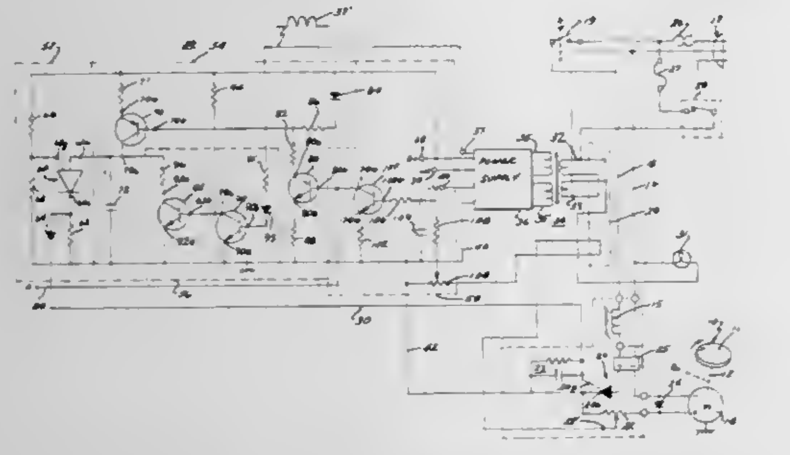
METALLOGRAPHIC POLISHER WITH SPEED CONTROL

Gerald G. Swiatlowski, Baroda, Mich., assignor to Leco Corporation, St. Joseph, Mich.

Filed June 27, 1974, Ser. No. 483,791

Int. Cl.² B24B *55/00*

U.S. Cl. 51—134.5 R **9 Claims**



1. In apparatus for abrading metallographic specimens, a drive system for a movable abrasive element comprising:

electrical drive means coupled to said abrasive element for actuating of said element;

means for developing signals representative of the speed of operation of the abrasive element;

a speed control circuit coupled to said developing means for providing selectable speed control signals;

a drive control circuit coupled to said speed control circuit and to said drive means and responsive to signals from said speed control circuit to actuate and maintain said drive means at a selectable speed; and

a speed limit control circuit coupled to said developing means and to said drive control circuit to deactuate said drive means only in the event the speed of said abrasive element exceeds a preselected speed by more than a predetermined amount.

3,935,678

VACUUM ATTACHMENT FOR ABRADING MACHINE

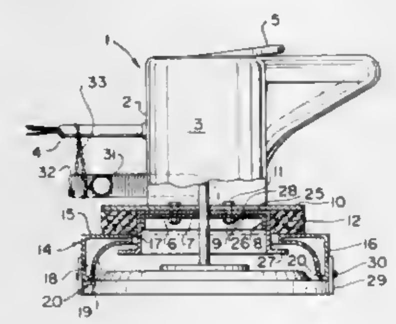
Miksa Marton, 3620 Rankin St., Winssor, Ontario, Canada

Continuation of Ser. No. 304,412, Nov. 7, 1972, abandoned. This application Nov. 18, 1974, Ser. No. 524,799

Claims priority, application Canada, Aug. 2, 1972, 148535

Int. Cl.² B24B *23/02, 55/06*

U.S. Cl. 51—170 T **19 Claims**



1. For a dry abrading machine that includes a work head mounted on a tool body which includes motor means for driving the work head in engagement with a work piece so as to remove particles from the work piece and to propel the removed particles outwardly of the work head, generally parallel to the surface of the work piece which is being addressed,

a vacuum attachment, comprising:

a ring member incorporating an annular hollow chamber having a vacuum inlet conduit extending therefrom;

means defining a perimetrically extending series of individual apertures through the ring member, communicating the hollow chamber with the inner side of the exterior of the ring member, above the lowermost extent of the ring member;

an outer peripheral skirt of downwardly projecting scrubbing elements secured to the ring member so as to extend at least as low as the lowermost extent of the ring member, radially outside the communication of the apertures with the inner side of the exterior of the ring member, and disposed for scrubbing contact with the workpiece, to free particles which have been abraded from the work piece by the work head and to confine such particles so as to substantially prevent their escape until they are sucked up by said attachment;

retaining plate means including: a first portion having means thereon for securement thereof to the tool body; a second portion for extending generally axially from the first portion toward the work head, when the first portion is secured to the tool body; and a third, generally laterally extending portion;

said ring member including a generally radially extending portion;

a ring of resilient material generally coaxially received between the tool body and said generally radially extending portion of the ring member, the ring member radially extending portion being generally coaxially received between the ring of resilient material and said third, generally laterally extending portion of the retaining plate means;

the ring member generally radially extending portion lying radially adjacent the second portion of the retaining plate means, with radial spacing therebetween,

whereby, when the attachment is mounted on the tool body, the ring member is disposed for limited axial and rocking movement to maintain the apertures spatially oriented to suck in said particles which have been abraded for the work piece and propelled outwardly of the work head or freed by the scrubbing contact of said scrubbing elements with the work piece.

3,935,679

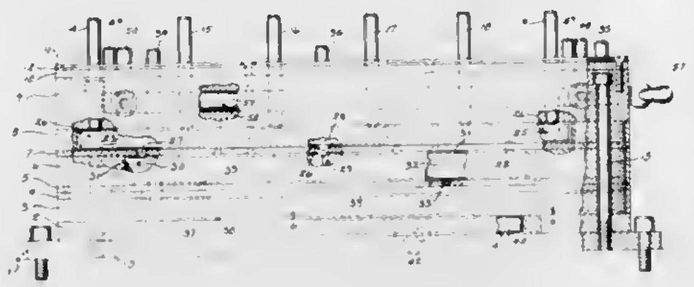
GRINDING FIXTURE

Bruno E. Peter, Milwaukee, Wis., and Reinhardt R. Deetken, Holly, Mich., assignors to Grede Foundries, Inc., Milwaukee, Wis.

Filed July 22, 1974, Ser. No. 490,344

Int. Cl.² B24B *41/06*

U.S. Cl. 51—239 **15 Claims**



1. A fixture for supporting a workpiece during a working operation, said workpiece having a plurality of internal cavities with each cavity including a bottom surface and said bottom surfaces lying substantially along a common reference line, said fixture comprising a body, first leveling means for leveling the workpiece in a first direction, said first leveling means including a series of first axially movable pins extending upwardly beyond the body and disposed to be received within the respective cavities in the workpiece and engage the bottom surfaces, said first leveling means also includes a first balancing member fulcrumed with respect to the body, a pair of said first pins being engaged with the ends of said first balancing member on either side of the fulcrum, whereby axial movement of said first pins when the first pins engage said bottom surfaces can cause tilting of said first balancing member about said fulcrum, second leveling means for leveling the workpiece in a second direction generally normal to said first direction, said second leveling means including a series of second axially movable pins extending upwardly beyond said body and disposed to engage the lower surface of said workpiece, and locking means for locking the workpiece against movement with respect to the fixture after said first and second leveling means have leveled the workpiece in said first and second directions, respectively.

3,935,680

METHOD FOR VIBRATORY FINISHING WORKPIECES UNDER HEAVILY COMPRESSED CONDITION

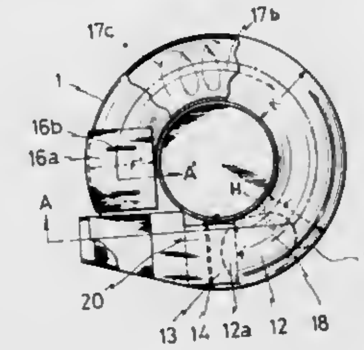
Hisamine Kobayashi, Nagoya, Japan, assignor to Shikishima Tipton Mfg. Co., Ltd., Nagaoya, Japan

Division of Ser. No. 351,966, April 17, 1973. This application May 14, 1974, Ser. No. 469,888

Claims priority, application Japan, Apr. 17, 1972, 47-38474

Int. Cl.² B24B *1/00, 31/06*

U.S. Cl. 51—313 **5 Claims**



1. A method for vibratory finishing of workpieces under heavy compression during vibration, comprising vibrating a mass including workpieces and abrasive media for causing the mass to flow in a helical motion along an annular path the cross-section of which is closed throughout the annular length thereof while gradually expanding the cross-sectional area of the path from the start of the path toward the central portion of the annular length thereof and gradually decreasing the cross-sectional area toward the end of the path so that workpieces and abrasive media are caused to move in an increasing closingly spaced relation during their vibration toward the end of the path rather than be free during every vibrating cycle.

3,935,681

FIRE SCREEN FOR A STRUCTURAL PANEL

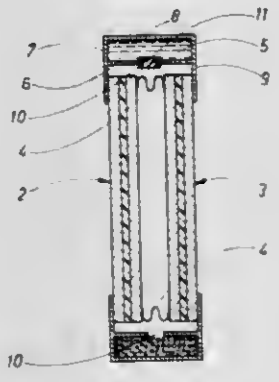
Jean-Pierre Voiturier, Gerpinnes, and Francis Jacquemin, Monceau-Sur-Sambre, both of Belgium, assignors to Glaverbel S.A., Watermael-Boitsfort, Belgium

Division of Ser. No. 263,762, June 19, 1972, Pat. No. 3,837,126. This application Aug. 7, 1974, Ser. No. 495,513

Claims priority, application Luxemburg, June 18, 1971, 63370

Int. Cl. E04b *1/92*

U.S. Cl. 52—1 **20 Claims**



1. A fire screen for a light transmitting structural panel comprising means for providing at least one body of material capable of screening a structural panel against fire, means for retaining said fire screening means in an inoperative position in the vicinity of the periphery of the structural panel, and means responsive to a rise to a predetermined temperature for releasing said fire screeing means from its inoperative position into an operative position in which at least one fire screening body of material covers substantially the area of the panel, said fire screening means comprising a plurality of substances disposed apart from each other in the inoperative position.

3,935,682

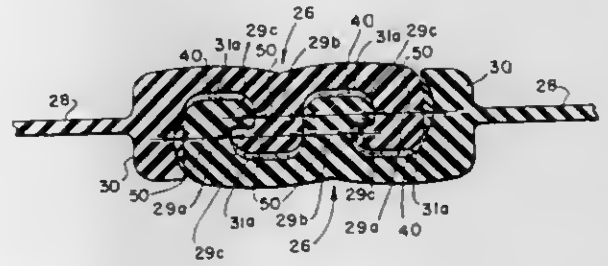
CLEANING FASTENERS

Harold Graves Simpson, Oklahoma City, Okla., assignor to Star Manufacturing Company, Oklahoma City, Okla.

Filed Feb. 25, 1974, Ser. No. 445,498

Int. Cl.² E04D *3/363*

U.S. Cl. 52—105 **10 Claims**



1. A construction system comprising:

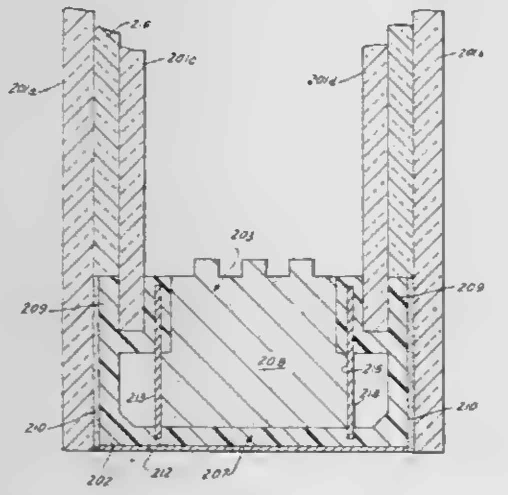
at least first and second panels each having at least first and second edges and being of a geometric shape adapted for assembly in a contiguous, aligned relationship with a first edge of one panel in abutting relationship with the second edge of the adjacent panel;

each of said panels being provided with a sheet of membrane material adhering to one surface of the panel; and

coacting fasteners carried on each sheet along adjacent edges of said panels, said fasteners adapted to engage to provide a substantially continuous exterior seal between adjacent panels, each of said coacting fastener apparatus including a fastener body having coupling means arranged to include a dirt cavity when two such fastener apparatus are coupled together, so that when said apparatus are engaged and coupled together each coupling means wipes along the other coupling means to push dirt thereon into said dirt cavity and each of said fasteners further including an indicator means for providing a distinctive visual indication adjacent fasteners are not at least substantially fully engaged.

3,935,683
MULTIPANE WINDOW STRUCTURE

Paul Derner, Gelsenkirchen, and Paul Weigt, Oberhausen, both of Germany, assignors to Flachglas Aktiengesellschaft Delog-Detag, Gelsenkirchen, Germany
Filed Nov. 7, 1973, Ser. No. 413,525
Claims priority, application Germany, Nov. 7, 1972, 2254426; Dec. 19, 1972, 2262040
Int. Cl.² E06B *7/12*
U.S. Cl. 52—172 **4 Claims**

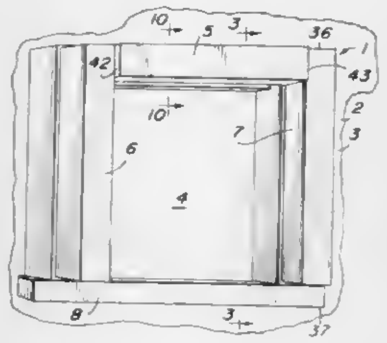


1. A multipane window structure comprising a pair of coextensive spaced-apart transparent outer panes;
   an inner transparent pane spaced from and parallel to each outer pane and closer to the respective outer pane than to the other inner pane;
   a layer of transparent sound-damping material disposed between each inner pane and the respective outer pane and filling the gap between each respective inner and outer pane;
   spacer means sealingly retaining said panes relative to one another and closing the edges of said structure, said spacer means comprising a generally U-section body having a pair of shanks and a bight bridging the space between said outer panes, said shanks being bounded along their outer surfaces to inner faces of said outer panes and being formed, remote from said bight, with inwardly lying channels open away from the bight and respectively receiving edge portions of the respective inner panes, said channels and said shanks together defining an h-profile; and
   a moisture-absorption member received between said shanks.

3,935,684
LOADING DOCK SHELTERS

Cyril P. Frommelt, and Sylvan J. Frommelt, both of Dubuque, Iowa, assignors to Dubugue Awning & Tent Company, Dubuque, Iowa
Filed Dec. 12, 1974, Ser. No. 531,914
Int. Cl.² E06B *1/56, 7/22*
U.S. Cl. 52—173 DS **10 Claims**

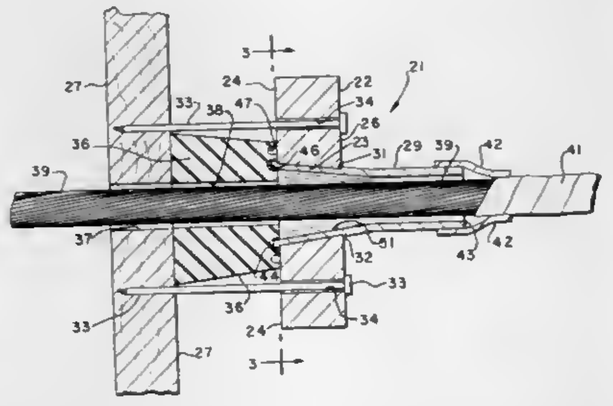
1. A loading dock shelter comprising
   a. a head pad for extending along the top of a doorway in a warehouse wall,
   b. two side pads for extending along the sides of such a doorway,
   c. means for supporting said side pads on such a wall,
   d. said means comprising bracket means
      1. for projecting outwardly from said wall, and
      2. having outer edge portions on the side thereof remote from said wall, when said bracket means is disposed in operative position on said wall,



   e. said outer edge portions having recesses therein opening outwardly away from said wall when said bracket means is disposed in said operative position, and
   f. cover means for covering said bracket means and having
      1. inner edge portions adapted to be disposed adjacent to said wall, and
      2. other edge portions, remote from said inner edge portions and adapted to be mounted in said recesses for securing said cover means to said bracket means.

3,935,685
ANCHOR MEMBER AND METHOD OF FORMING SAME

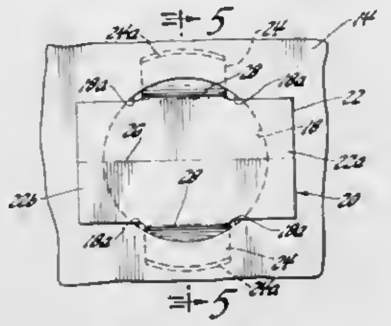
George H. Howlett, Oakland, Calif., assignor to Howlett Machine Works, Berkeley, Calif.
Filed June 7, 1974, Ser. No. 477,371
Int. Cl.² E04C *3/10, 3/26;* **B21D** *39/00*
U.S. Cl. 52—223 L **10 Claims**



9. In an anchor member for use in forming a prestressed concrete anchorage including plate means formed with a convergently tapered bore extending from a front side of said plate means having the large diameter end of said bore formed therein to a rear side of said plate means the improvement comprising:
   said plate means being provided by a plurality of independent abutting plates each having an opening, the openings in said plates being axially aligned and gradually decreasing in size from said front side of said plate means to said rear side of said plate means to provide said bore, and
   a convergently tapered tubular conduit mounted in said bore in mating relation therewith, said conduit being mounted in said bore in interference fit with said plates to secure said plates in a unitized assembly.

3,935,686
VEHICLE DRAIN HOLE PLUG

James H. Dozois, Harper Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 8, 1974, Ser. No. 458,511
Int. Cl.² E04F *19/08;* **B60J** *9/00*
U.S. Cl. 52—302 **2 Claims**

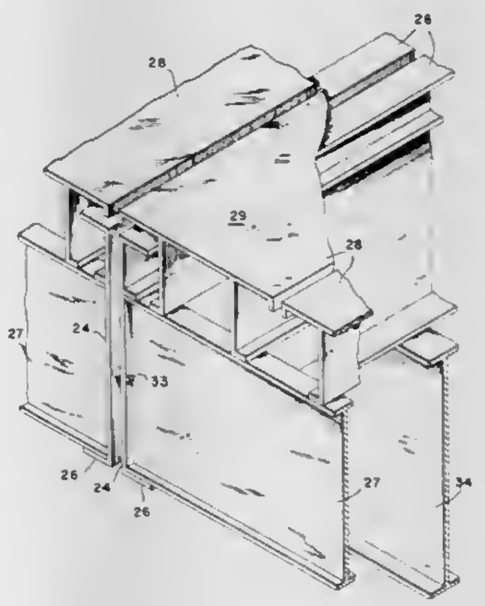


1. A drain plug for partially closing a drain hole opening in a vehicle body panel, said drain plug in the form of a cross of relatively thin material includes a first arm and a second arm at right angle to each other, the drain plug in its pre-installed form being partly folded along a central longitudinal fold line extending across said first arm to divide said first arm into an integral first arm portion and a second arm portion folded toward each other, the opposite ends of said second arm being bent adjacent to said first arm toward each other with their free end portions in a return bend in a direction opposite to each other, the extent between said free ends of said second arm in the pre-installed free form being approximately equal to the diameter of the drain hole opening whereby said second arm can be inserted through the drain hole opening, said first arm portion and said second arm portion of said first arm being movable about said fold line toward an unfolded position whereby the extent between said free ends of said second arm is increased to a length substantially greater than the diameter of the drain hole opening whereby said first arm engages one side of the body panel and the free ends of said second arm engage the opposite side of the body panel, the end surface of each of said free end portions being of a shape to provide substantially point contact between these end surfaces and the body panel.

3,935,687
PLATFORM TENNIS COURT

George A. Vaughn, and Richard D. Hargrave, both of Princeton, N.J., assignors to Maark Corporation, Plainsboro, N.J.
Continuation of Ser. No. 352,266, April 18, 1973, abandoned, which is a division of Ser. No. 211,028, Dec. 21, 1971, Pat. No. 3,745,729. This application Sept. 13, 1974, Ser. No. 505,796
Int. Cl.² E04B *5/43*
U.S. Cl. 52—483 **6 Claims**

1. Support apparatus for residing on apparatus support members, comprising:
   a pair of oppositely disposed metal channel members spaced a predetermined distance apart in the horizontal direction and extending a predetermined distance in the horizontal direction, each of said channel members being of generally E-shaped crosssectional configuration and including a plurality of integrally formed and horizontally disposed flanges aligned vertically and spaced apart vertically predetermined distances, said flanges providing said channel members with resistance to bending in the horizontal direction, the flanges formed on each channel member extending towards the flanges formed on the other channel member, the lower two flanges on each channel member for receiving the ends of metal joists therebetween, and the upper and lower flanges on each channel member defining the top and bottom of said channel members;
   a plurality of vertically disposed metal joists spaced apart predetermined distances in the horizontal direction and extending between said channel members and perpendicular thereto, the ends of said joists being received between said lower two flanges formed on said oppositely disposed channel members, whereby said joists are supported upwardly of the bottoms of said channel members and whereby said bottoms of said channel members define the bottom of said support apparatus and whereby upon said support apparatus residing on said apparatus support members only said bottoms of said channel members engage said apparatus support members and said joists are elevated above said apparatus support members, and said joists being fixedly secured to said channel members;



   a plurality of metal deck members spaced apart a predetermined distance in the horizontal direction and said deck members extending a predetermined distance in the horizontal direction and parallel with said channel members, said deck members residing on said joists, each of said deck members being of generally -shaped cross-sectional configuration and including a horizontal member for receiving a load applied vertically downwardly to said support apparatus and said horizontal member having a plurality of integrally formed and vertically disposed and downwardly extending legs for providing said deck member with resistance to bending in the vertical direction but allowing some deflection downwardly of said deck members upon said load being applied thereto directly over said legs, and the bottoms of said legs of said deck members being fixedly secured to the tops of said joists, the outer portion of the horizontal members of said outer deck members extending over said tops of said channel members whereby said load can be applied directly only to said deck members and upon said load being applied to said deck members directly over the tops of said channel members, said outer portions of said deck members providing at least some deflection downwardly;
   said pair of channel members for providing said support apparatus with resistance to bending in the vertical direction; and
   said joists for providing said support apparatus with resistance to bending in the vertical direction and upon said load being applied to said deck members directly over the points at which said legs of said deck members engage said joists said joists providing at least some downward deflection due to said elevation of said joists above said apparatus support members by said bottom flanges of said joists.

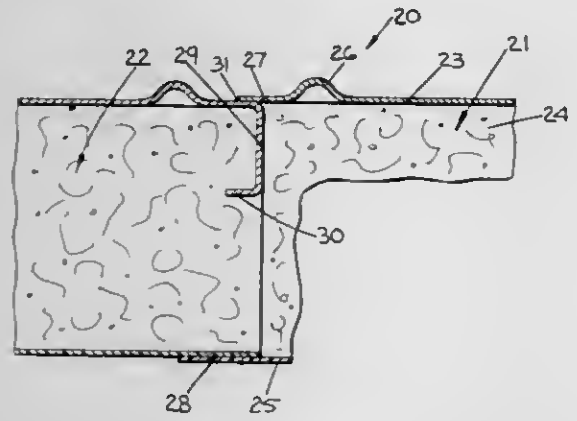
3,935,688
IMPERVIOUS WALL STRUCTURE

Charles Joseph Trojahn, Middle Village, and Nikolaus Friedrich, Maspeth, both of N.Y., assignors to Charles J. Trojahn, Middle Village; Friedrich Metal Products Co., Woodside and Frank Brunckhorst Co., Brooklyn, all of, N.Y.

Filed Dec. 3, 1973, Ser. No. 420,775

Int. Cl.² E04C *2/00;* E04B *1/00;* B23K *1/20*

U.S. Cl. 52—622 **6 Claims**



1. An impervious wall structure formed of a plurality of panels for use in covering an enlarged area such as the interior wall surface of a room and to form a vapor and insulation barrier without undue distortion across the entire surface, the surface having a smooth face to alleviate the accumulation of contamination material thereto and to facilitate cleaning of the surface; said plurality of panels each being of thin cross section, each panel having a smooth impervious exposed metal surface layer, and being positioned in side by side relation with an adjacent panel forming a joint between panels;

- each panel further comprising a layer of substantially solid insulating material bonded to the said surface layer, and a backing layer, affixed to the insulating layer distal from the surface layer;
- the layers of each panel forming a male and female vertical side edge;
- seating means comprising the female vertical side edge by having the surface and backing layers extending beyond the layer of insulating material thereby forming a panel receptacle for receiving the male vertical side edge;
- the male side edge having the backing, insulating and surface layers in substantial vertical alignment, the male side edge being inserted into the receptacle of the female side edge bringing the surface and backing layers of adjacent panels in overlapping relationship, and the overlapping layer of metal surfacing material welded to the surface layer of the adjacent panel.

3,935,689
TRANSMISSION LINE STRUCTURE

Thomas A. Bladholm, Mound, and William T. McCalla, Brooklyn Park, both of Minn., assignors to Contran Corporation, Osseo, Minn.

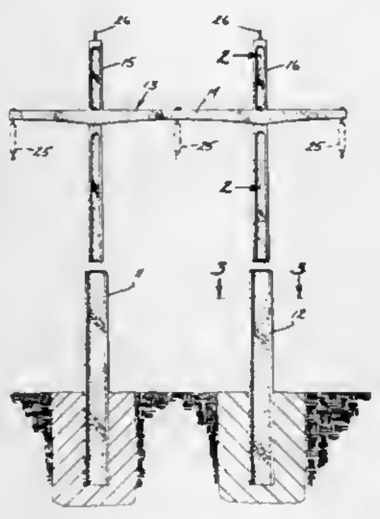
Filed Apr. 1, 1974, Ser. No. 456,982

Int. Cl.² E04C *3/30*

U.S. Cl. 52—722 **3 Claims**

1. A transmission line structure comprising, in combination:

- a plurality of poles of prestressed concrete, each having a bottom end for securement to the ground and a flat top end;
- a superstructure including at least one cross arm unit of prestressed concrete having a pair of spaced flat under surfaces supported from below on the flat top ends of said poles, and comprising a cross arm and at least one conductor-supporting pole extension unitary therewith and projecting upwardly therefrom;
- and axially extending means rigidly securing said superstructure to the tops of said poles, including studs embedded in and extending axially from said poles, apertures in said superstructure, at the locations of said flat under surfaces, spaced for traversal by said studs, and nuts mating with the portions of said studs which extend upward through said superstructure, and engaging said superstructure.



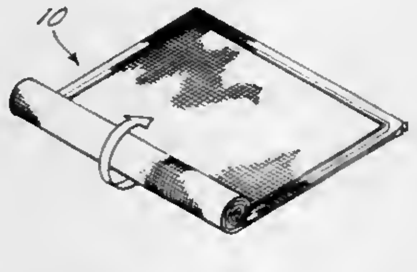
3,935,690
METHOD OF PACKAGING AND UNPACKAGING A SELF-INFLATING AIR MATTRESS

James M. Lea, 1207 NW. Culbertson Drive, Seattle, Wash. 98177, and John D. Burroughs, 10468 Forest Ave. South, Seattle, Wash. 98178

Filed Dec. 10, 1974, Ser. No. 531,299

Int. Cl.² B65B *63/02*

U.S. Cl. 53—24 **10 Claims**



1. A method of packaging a self-inflating air mattress having an open cell foam core, an air impervious envelope, and an inflating valve, said method comprising:

- a. rolling the air mattress in an evacuated condition into a compact rolled-up configuration,
- b. placing said rolled-up mattress in a tubular container, while maintaining its evacuated condition, and
- c. releasing the interior of the mattress to atmospheric pressure to cause the mattress to expand moderately to fit snugly in the container.

3,935,691
MACHINE FOR PACKAGING BOX-SHAPED ARTICLES IN BAGS

Jan Broch, Rodovre, Denmark, assignor to Schulstad Brod A/S, Glostrup, Denmark

Filed Nov. 8, 1974, Ser. No. 522,283

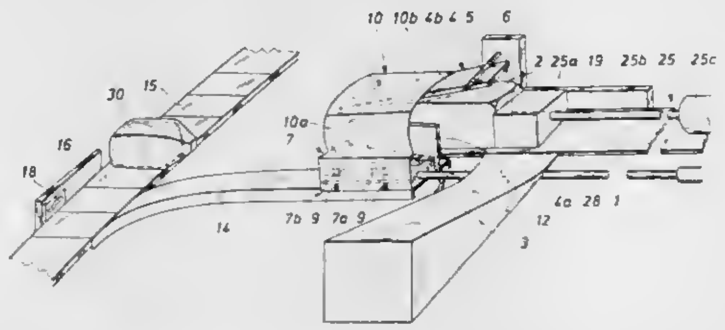
Claims priority, application Denmark, Nov. 8, 1973, 6039/73

Int. Cl.² B65B *57/10, 43/36*

U.S. Cl. 53—59 R **8 Claims**

1. A machine for packaging box-shaped articles such as loaves of bread in bags, said machine including a bag magazine containing a stack of bags, article feed means including pusher means mounted for reciprocation between a retracted position and an extended position for feeding the articles toward the bag magazine, spaced guide finger means for guiding the articles and bags relative to each other during insertion

of an article into the bag, a discharge conveyor for removing the bagged articles, means for reciprocating said bag magazine between a first position spaced from the guide finger means and a second position adjacent the guide finger means in which the guide finger means partially overlie the magazine, means for inflating the topmost bag in said magazine when said magazine is in said first position so that movement of said magazine to said second position causes the uppermost inflated bag of said magazine to receive the ends of said guide finger means on its interior, said feed means including power means for operating said pusher for feeding one article at a time into the uppermost inflated bag by moving the article through the space between said spaced guide finger means into the uppermost bag when the bag magazine is in its second position following arrival of the next previously bagged article at said discharge conveyor and wherein said power means for operating said pusher means operates the pusher at a speed to move the article at a sufficient speed to cause forceful engagement of the article with the bottom of the bag to move the bag from the top of the bag magazine to the discharge conveyor.



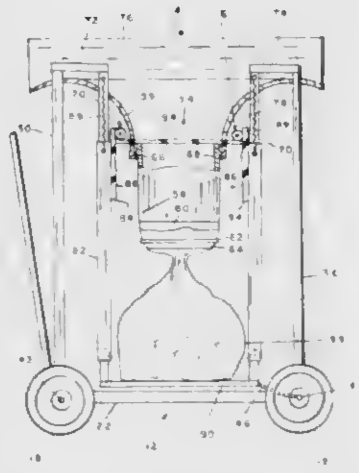
3,935,692
REFUSE COLLECTOR AND BAGGING DEVICE

Jack E. Miller, 6216 Imperial Key, Tampa, Fla. 33615

Continuation-in-part of Ser. No. 444,642, Feb. 21, 1974, abandoned. This application Jan. 13, 1975, Ser. No. 540,566

Int. Cl.² B65B *1/22*

U.S. Cl. 53—126 **19 Claims**



1. A refuse collector for collecting refuse, said refuse collector comprising frame means, at least one hopper means attached to said frame means, said hopper means including an upper portion having an entrance formed therein to receive the refuse and a lower portion having an exit formed therein to direct the refuse from said hopper means, retainer means formed on said lower portion to retain a refuse receptacle thereon to receive refuse directed through said hopper means, closure means disposed in operative relationship relative to said hopper means, said closure means including closure actuator means movable between a first and second position and closure element operatively interconnected to said closure actuator means to move between an open and closed position, said closure actuator means including bias means to bias said closure actuator means in said first position, said closure actuator means further including platform means to engage the refuse receptacle to move said closure actuator means from said first to said second position as a predetermined amount of refuse is placed in the refuse receptacle, said closure element coupled to said closure actuator means to move from said open to said closed position when said closure actuator means is in said second position, said closure element disposed relative to said hopper means to isolate said hopper means from the refuse to control the amount of refuse deposited in the refuse receptacle.

3,935,693
DEVICE FOR SMOOTH PRESSING SHRINK FOIL WRAPPINGS

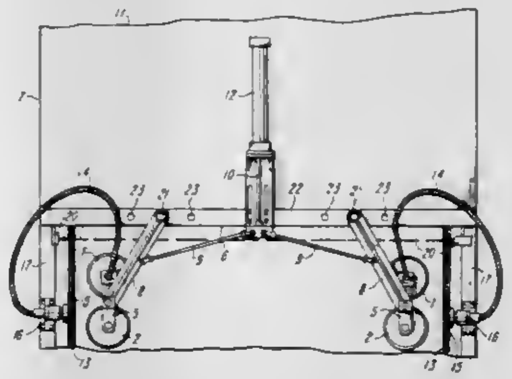
Robert Lehle, Ehningen, Germany, assignor to Karl Leibfried GmbH, Herrenberg, Germany

Filed Aug. 6, 1974, Ser. No. 495,117

Claims priority, application Germany, Aug. 9, 1973, 2340339

Int. Cl.² B65B *53/02*

U.S. Cl. 53—184 R **8 Claims**



1. In a device in which articles are enclosed in shrink foil wrapping, the device including a tunnel and conveyor chain means moveable along the tunnel for conveying articles through the tunnel from the entrance end thereof to the exit end, the improvement comprising: pressing roller means at the exit end of the tunnel for engaging the sides of wrapped articles emerging from the tunnel, said roller means being rotatable on axes perpendicular to the plane of movement of the articles, support means supporting said roller means for movement parallel to said plane, drive means connected to at least one roller of said roller means and imparting a peripheral velocity thereto on the side facing said articles substantially conforming to the velocity imparted to said articles by said conveyor chains, said drive means including a sprocket having a pitch diameter equal to the diameter of said driven roller and meshing with said chain, and a flexible drive shaft connecting the sprocket to the driven roller.

3,935,694
MACHINE FOR FORMING WRAP-AROUND SHIPPER PACKAGES

Marinus J. M. Langen, Rexdale, Canada, assignor to H. J. Langen & Sons Ltd., Rexdale, Canada

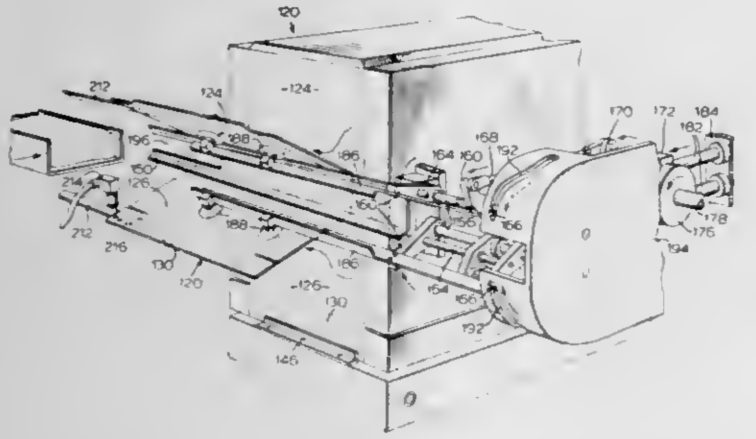
Division of Ser. No. 434,043, Jan. 17, 1974, Pat. No. 3,879,920. This application Jan. 22, 1975, Ser. No. 542,927

Int. Cl.² B65B *41/06*

U.S. Cl. 53—389 **2 Claims**

1. In a packaging machine having a wrapping station through which a plurality of shipper package forming members pass in a wrapping path, and a carton blank storage station for storing a plurality of carton blanks each having a back panel, a front panel, a side panel connected to one side edge of said front panel and said back panels, a front side flap connected at the other side edge of said front panel and a back side flap connected at the other edge of said back panel, the improvement of

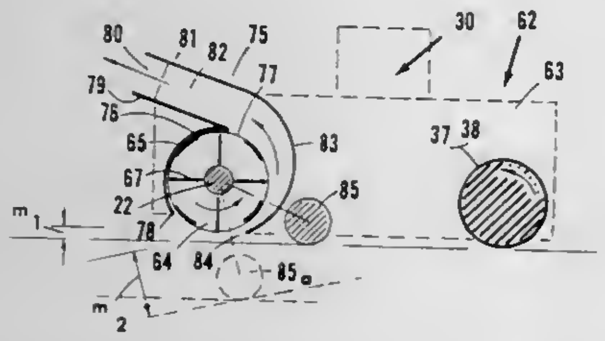
- a. carton blank storage means in said carton blank storage station spaced laterally from said wrapping path and having a discharge end through which knock-down carton blanks may be removed disposed in a plane extending normal to said wrapping path,
- b. initial bending former means disposed outwardly from and adjacent said discharge end of said carton storage means and aligned with and having a width substantially equal to the width of said side wall panel of a blank,
- c. suction cup means for engaging said front panel and said back panel of a blank,



- d. means for moving said suction cup means towards and away from said discharge end of said blank storage means to engage a blank when in a first position and thereafter remove the blank from said storage means and bend the blank over said initial bending former in moving to a second position,
- e. means for moving said suction cup means laterally of said discharge end of said storage means into said wrapping path while said suction cups remain in said second position holding a blank in said initially folded configuration.

3,935,695
NON-MARKING LAWN MOWER

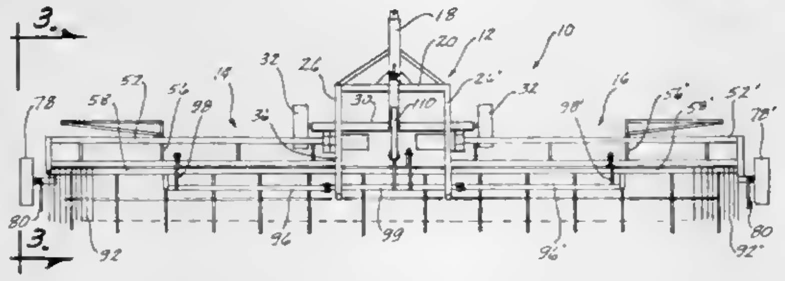
Richard C. Merry, Box 153, Oakville, Ontario, Canada
Filed May 2, 1974, Ser. No. 466,162
Int. Cl.^{2} A01D *35/24*
U.S. Cl. 56—13.4 **5 Claims**



1. A lawn grass mower comprising: a rigid housing, a cutter cylinder having flying cutters thereon, said cylinder being of a predetermined length, said cylinder being rotatably supported in said housing; a mower supporting roller structure for said housing; means in said housing including shafts and bearings rotatably mounting said cylinder and said roller structure in parallel spaced apart relationship; a drive motor supported by said housing and including a drive connection for rotating said cutter cylinder at a cutter speed greater than 6,000 feet per minute in a direction moving the cutters of said reel cylinder forwardly in a grass cutting action; at least one forward adjusting roller in said mower housing adjustable to support said cylinder and the cutters thereof a selected predetermined distance above a ground surface; said cutting cylinder and flying cutters being in the form of a plurality of cutter discs of predetermined diameter; each of said discs having opposed laterally extending blades on each of the side surfaces thereof; blower members on each of the side surfaces thereof; a driving collar separating each of said discs from the next in parallel spaced apart relationship along the shaft mounting said cylinder defined by said cutter discs; and a centrifugal blower housing structure extending about said cutter cylinder to define a blower inlet opening forwardly of said adjusting roller over the ground surface and defining thereabove a blower body and discharge pipe having an opening for the discharge of grass cuttings.

3,935,696
AGRICULTURAL TOOL BAR

Raymond Pavel, Scotland, S. Dak. 57039
Filed May 16, 1974, Ser. No. 470,390
Int. Cl.^{2} A01D *76/00*
U.S. Cl. 56—385 **11 Claims**

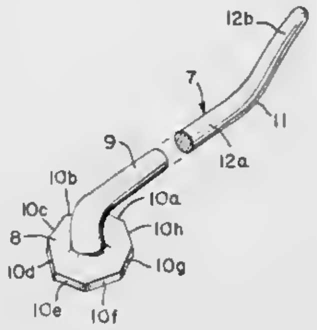


1. An agricultural tool bar comprising,
- a wheeled center frame having rearward and forward ends and opposite sides,
- first and second wing frames each having rearward, forward, inner and outer ends,
- said first wing frame being selectively pivotally secured at its inner end, about a vertical axis, to one side of said center frame,
- said second wing frame being selectively pivotally secured at its inner end, about a vertical axis, to the other said of said center frame,
- said first and second wing frames being selectively pivotally movable between working and transport positions relative to the direction of travel of the tool bar,
- locking means for selectively locking said wing frames in their said working position,
- a rotatable wheel pivotally mounted on each of said wing frames and being pivotally movable between working and transport positions,
- a tool support bar movably mounted on each of said center frame, said first wing frame and said second wing frame,
- and means for moving said tool support bars relative to said center frame, said first wing frame and said second wing frame.

3,935,697
MULTIPOSITION DETACHABLE COMBINE TOOTH DEVICE

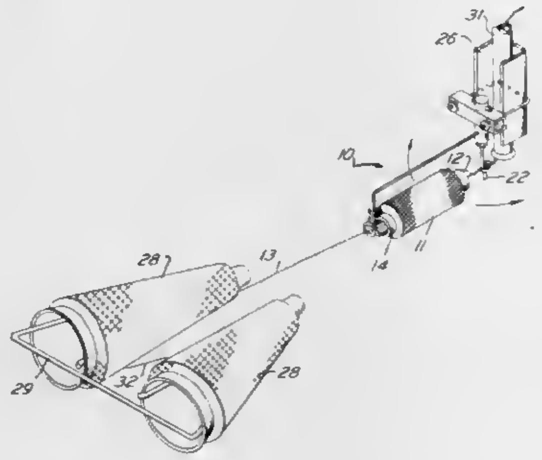
Walter David Hofer, 939 11th St. South, Lethbridge, Alberta, Canada
Continuation of Ser. No. 417,970, Nov. 21, 1973. This application Nov. 25, 1974, Ser. No. 526,974
Int. Cl.^{2} A01D *77/00*
U.S. Cl. 56—400 **10 Claims**

1. A combine detachable tooth device comprising in combination: a combine tooth having a central shaft and having a base flange extending transversely laterally to and unitarily continuous with the central shaft, the central shaft extending axially and being shaped to include a bend at a point intermediate of the shaft's axial length at a location in juxtaposition to and spaced a predetermined distance from and above the base-flange dividing the central shaft into a proximal portion of predetermined short length and a distal portion of predetermined long length, such that the distal portion of the shaft extends substantially laterally angularly from the proximal portion of the shaft; a semi-flexible base-strip element having upper and lower substantially flat faces extending in substantially parallel planes to one-another defining a through-space hole therethrough of a size and shape receivable of said proximal portion and further defining continuous with the through-space hole a narrowed open-ended slot of a width of predetermined width distance less than a narrowest diameter of the proximal portion such that the shaft may be pressed laterally through the narrowed open-ended slot to snap into the through-space hole, the base-strip element including attaching means for mounting thereof on a combine belt's upper face such that the base-flange is insertable beneath said lower face between the lower face and the combine belt's upper face when the base-strip element is mounted on the combine belt's upper face.



3,935,698
YARN COMBINING METHOD AND DEVICE

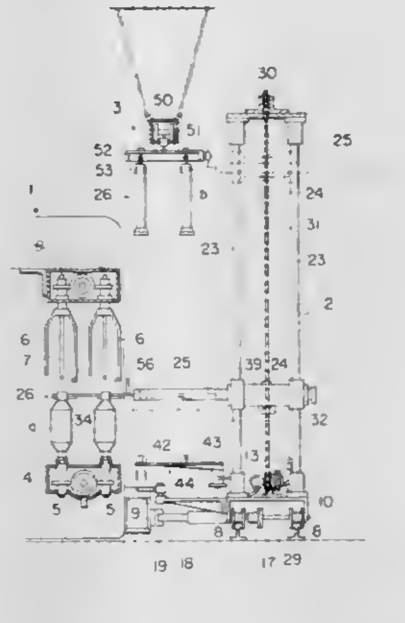
Jack Vender Lesnik, Levittown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.
Filed Jan. 2, 1975, Ser. No. 537,982
Int. Cl.^{2} D02G *3/36;* **B65H** *81/08*
U.S. Cl. 57—18 **10 Claims**



1. In a device for combining a first yarn and a second yarn, the combination of:
- a yarn holder adapted to hold first yarn wound thereon, said yarn holder having an axial passage for travel therethrough of a second yarn delivered from a yarn package spaced apart from said yarn holder;
- guide means at the exit end of said yarn holder for guiding said first yarn to engagement with said second yarn whereby said first yarn is wrapped about and carried by said second yarn as said first yarn unwinds from said yarn holder; and
- support means supporting said yarn holder, said support means being adapted to pivot with said yarn holder about said guide means whereby said yarn holder aligns itself with the angle of delivery of said second yarn to said yarn holder.

3,935,699
DOFFING APPARATUS FOR SPINNING FRAME

Makoto Iida, Chigasaki, and Akira Kuroda, Osaka, both of Japan, assignors to Toshiba Seiki Kabushiki Kaisha and Kanebo Kabushiki Kaisha, Tokyo, both of, Japan
Filed Dec. 12, 1974, Ser. No. 532,292
Claims priority, application Japan, Dec. 13, 1973, 48-139935
Int. Cl.^{2} D01H *9/08*
U.S. Cl. 57—52 **10 Claims**



1. An apparatus for doffing bobbins for a spinning frame having a plurality of bobbin spindles arranged, at a predetermined equal pitch, along the longitudinal length of said spinning frame, comprising:
- a movable frame movable on rails laid on a floor surface along the longitudinal length of a spinning frame,
- pillars extending from said movable frame,
- bobbin-chucking means vertically slidably carried on said pillars and having a horizontally movable arm and having at least one bobbin chuck at the forward end of this movable arm,
- bobbin-deflecting means movably arranged on said movable frame for moving between a first position located just below said at least one bobbin-chuck and a second position located away from said first position when viewed from thereabove, and
- bobbin-conveying means movable on a fixed rail provided above said bobbin-chucking means along the longitudinal length of the spinning frame, and having a plurality of bobbin holders suspended in row from supporting means provided thereon,
- said bobbin-chucking means being displaceable horizontally between a first horizontal position corresponding to the position of one of said bobbin holders and a second horizontal position located at a bobbin carried on the spinning frame, and at the same time being displaceable vertically between a third vertical position corresponding to the upper end portion of the bobbin carried on the spinning frame and a fourth vertical position corresponding to the upper end portion of the bobbin suspended from said one of the bobbin holders, to assume such a position at a time as is defined by any one horizontal position plus any one vertical position selected from the above four positions;
- said apparatus being arranged to perform the following eight sequential interlocked actions as one cycle of the doffing operation:
- a first action of removing empty bobbins from said bobbin holders of said bobbin-conveying means when said at least one bobbin chuck assumes its first horizontal position and its fourth vertical position,
- a second action of transferring these empty bobbins onto said bobbin-deflecting means when said at least one bobbin chuck assumes its first horizontal position and its third

vertical position and when said deflecting means assumes its first position,

a third action of deflecting the position of said bobbin-deflecting means into its second position,

a fourth action of catching the full bobbins from the spinning frame when said at least one bobbin chuck assumes its second horizontal position and its third vertical position,

a fifth action of transferring these full bobbins onto the bobbin holders of the bobbin-conveying means when said at least one bobbin chuck assumes its first horizontal position and its fourth vertical position,

a sixth action of bringing said bobbin-deflecting means back to its first position,

a seventh action of removing empty bobbins from said bobbin-deflecting means carrying these empty bobbins thereon when said at least one bobbin chuck assumes its first horizontal position and its third vertical position, and

an eighth action of transferring these empty bobbins onto the spinning frame when said at least one bobbin chuck assumes its second horizontal position and its third vertical position.

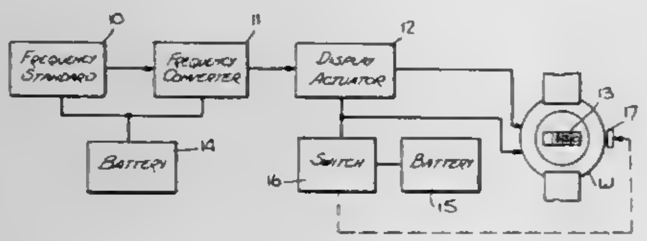
3,935,700
SWITCHING MECHANISM FOR ELECTRONIC WATCH ELECTRO-OPTIC DISPLAY

Egbert Van Haaften, Closter, N.J., assignor to Bulova Watch Company, Inc., New York, N.Y.

Filed Nov. 6, 1973, Ser. No. 413,370

Int. Cl.² G04B *19/24, 27/00*

U.S. Cl. 58—4 A **6 Claims**



1. A battery-operated electronic watch formed by a self-contained cased module having three exposed terminals and having an electro-optic digital time display, the first terminal being connected through said battery to said case which represents ground, said time display having a first time-of-day display state which is presented when the second terminal is grounded, a second state presenting seconds when the second and third terminals are grounded, and a third calendar date state when the third terminal is grounded, and a switching mechanism for selectively enabling any one of the three states, said switch mechanism comprising:

A. a crown and stem assembly which is supported for axial movement, said stem having a narrow annular groove and a broad annular groove axially spaced from the narrow groove and disposed adjacent the free end of the stem,

B. a resilient strap connected at one end to ground, the other end of said strap having a notch therein which accommodates said narrow groove whereby said strap maintains said stem in a neutral position and connects said stem permanently to ground,

C. a flat spring contact extending into the broad groove and spaced from the rear and front shoulders formed on either side of the broad groove when the stem is in its neutral position, the flat spring contact being connected to the third terminal, and

D. a flat resilient element connected to the second terminal, the end portion thereof being spaced from the free end of the stem in the neutral position whereby when the stem is pushed in part way, its free end engages the end portion of the element to effect a connection only to said second terminal thereby grounding only said second terminal, when it is pushed in fully, the rear shoulder of said broad groove also engages the falt spring contact to effect a simultaneous engagement with the third terminal thereby simultaneously grounding said third terminal, and when it is pulled out, the front shoulder of said broad groove engages the flat spring contact to effect a connection only with the third terminal thereby grounding only said third terminal.

3,935,701
WRISTWATCH WITH A TIME DISPLAY CONTROL SWITCH MEANS

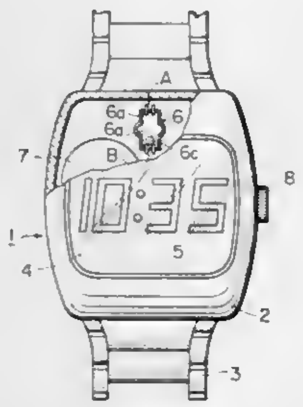
Masamichi Yamauchi, Ichikawa; Makoto Yoshida, Tokorozawa, and Yasuaki Nakayama, Higashi-kurume, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1974, Ser. No. 454,481

Claims priority, application Japan, Mar. 26, 1973, 48-34375; June 13, 1973, 48-66485; July 9, 1973, 48-77315; July 6, 1973, 48-79763[U]

Int. Cl.² G04B *19/34*

U.S. Cl. 58—50 R **1 Claim**



1. An electronic watch comprising an illuminatable time display unit, control means for controlling the energization of said display unit including a switching unit, said switching unit comprising a hollow housing of non-electrically conductive material having a main large chamber and two opposed secondary smaller chambers, electrical switch means disposed in each of said secondary smaller chambers, each of said switch means being comprised of two spaced apart electrically conductive elements and a free-floating electrically conductive ball having a diameter sufficient to contact both of said electrically conductive elements in a chamber when said ball is disposed in said chamber and having dimensions slightly less than the dimensions of the secondary small chambers whereby a controlled movement of the watch wearer's wrist is required for sequentially moving the ball from contact with the conductive elements in one of the secondary smaller chambers to the conductive elements in the other of said secondary smaller chambers in a predetermined time.

3,935,702
INVERTIBLE TIMER

Koji Tamada, 705 Yamate Mansion, 81 Nakaodai, Naka, Yokohama, Kanagawa, Japan

Filed Dec. 5, 1973, Ser. No. 421,914

Claims priority, application Japan, Dec. 8, 1972, 47-140382; Feb. 5, 1973, 48-14795; Nov. 2, 1973, 48-127397

Int. Cl.² G04F *1/06*

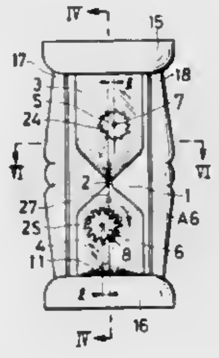
U.S. Cl. 58—144 **3 Claims**

1. An invertible timer comprising a closed vessel having upper and lower chambers divided by a throttle portion, each chamber enclosing a substantial amount of granular material, said invertible timer being characterized by:

A. said closed vessel being filled with liquid;

B. an opaque plate overlying the rear side of said closed vessel;

C. a turn wheel rotatable in each of the upper and lower chambers of said closed vessel; and



D. resilient sealing members at the ends of said closed vessel.

3,935,703
FUEL CONTROL SYSTEM FOR GAS TURBINE ENGINE

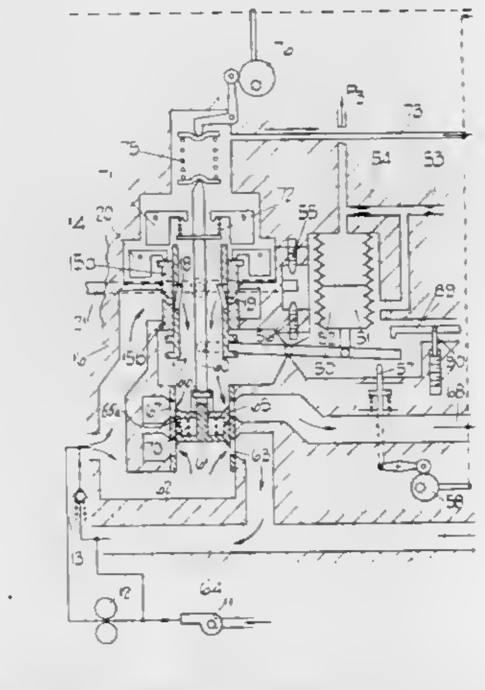
Trevor Stanley Smith, Sutton Coldfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 18, 1974, Ser. No. 489,754

Claims priority, application United Kingdom, July 18, 1973, 34134/73; July 18, 1973, 34137/73

Int. Cl.² F02C *9/10*

U.S. Cl. 60—39.28 R **12 Claims**



1. A fuel control system for a gas turbine engine, comprising a pump, a variable metering device downstream of said pump, first and second passages through which the downstream side of said device can communicate respectively with pilot and main burners of the engine, a throttle valve between said device and said second passage, said throttle valve being urged open by the pressure downstream of said metering device and urged shut by the pressure in said second passage, biasing means urging said throttle valve against said downstream pressure, means, responsive to an increase in engine speed, for reducing the bias applied to said throttle valve and means, operable during engine starting, for reducing said bias.

3,935,704
FAN PROPULSOR OIL ESCAPEMENT MEANS

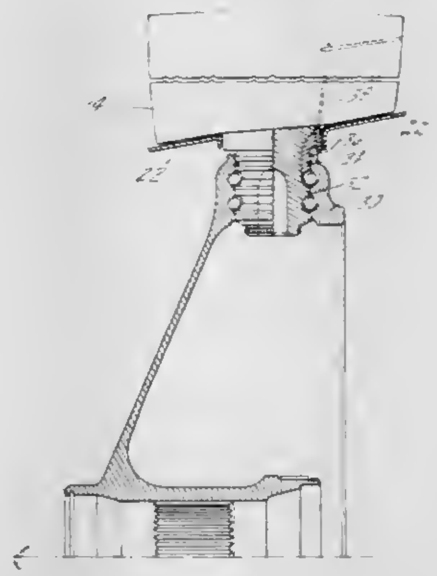
Philip E. Barnes, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sept. 12, 1974, Ser. No. 505,402

Int. Cl.² F02C *3/06;* F02K *3/06*

U.S. Cl. 60—226 R **6 Claims**

2. In a ducted fan propulsor having a plurality of fan blades disposed upstream of a gas turbine engine, each of said fan blades having an inner portion including a shank in proximity to the inlet of said gas turbine engine and an outer portion in proximity to an engine bypass duct, said shank being mounted in a recess in a hub, an improvement for capturing oil escaping from said hub recess which comprises an enlarged diameter portion on said shank spaced longitudinally outwardly from said hub recess and having an annular recess therein overlying said hub recess and passage means extending from said annular recess to said blade outer portion for venting oil collected in said annular recess to said bypass duct.



3,935,705
EXHAUST MANIFOLD FOR AN INTERNAL COMBUSTION ENGINE

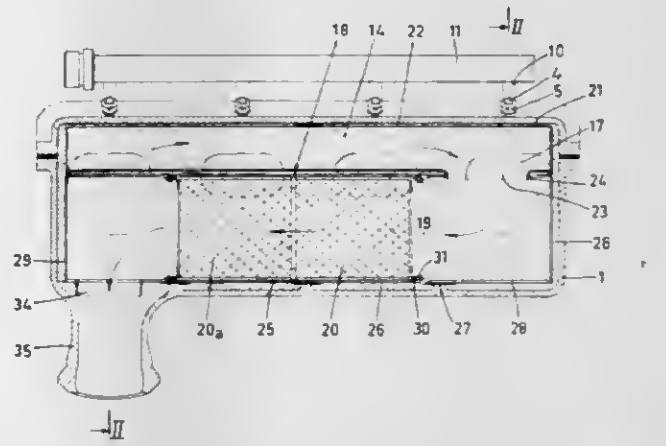
Jean René Hergoualch, Bougival, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Sept. 21, 1973, Ser. No. 399,417

Claims priority, application France, Mar. 10, 1972, 7235012

Int. Cl.² F01N *3/14*

U.S. Cl. 60—302 **11 Claims**



1. An exhaust manifold for an internal combustion engine comprising a housing enclosing an elongated space, a tubular member disposed in the housing containing catalytic components and having a heat insulating wall which divides the space into first and second parallel chambers extending longitudinally in the space, the second chamber being the bore of the tube and the first chamber being enclosed by a casing covered with a heat insulating material and having a substantially rectangular parallelepiped shaped cross-section, inlet means for flow of exhaust gas from the engine into the first chamber, means for adding air to the said exhaust gas upstream of the inlet means, an opening in said wall for flow of exhaust gas from the first chamber into one end of the second chamber, and means for flow of exhaust gas from the opposite end of the second chamber to an exhaust system of a vehicle.

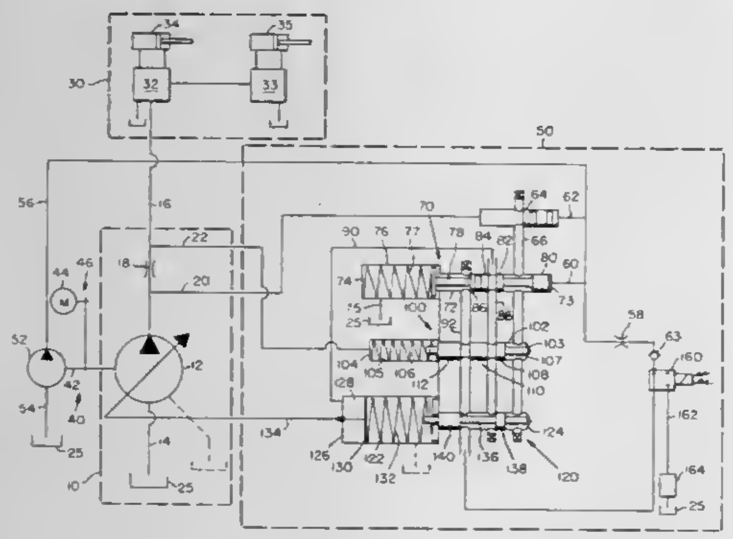
3,935,706
HYDRAULIC CONTROL SYSTEM

Clyde Bennett Stevens, Kalamazoo, Mich., assignor to General Signal Corporation, Rochester, N.Y.

Filed July 22, 1974, Ser. No. 490,455

Int. Cl.^{2} F16D *31/02;* F04B *49/00*

U.S. Cl. 60—444 16 Claims



1. In a hydraulic control system including a variable displacement pump for providing hydraulic fluid to a work function, driving means including a rotating shaft for operating said variable displacement pump, the improvement comprising:

a control circuit means connected to both said variable displacement pump and said driving means for permitting the delivery of fluid to said work function when said driving means is operating up to a predetermined speed and for stopping delivery of said hydraulic fluid to said work function when said driving means is running above said predetermined speed, said control circuit means further includes cutoff means for stopping delivery of power to said work function when said driving means is running up to said predetermined speed, wherein said control circuit means includes a speed control pump operated by said rotating shaft and connected to one end of a control line, said control line including a high speed restrictor means for restricting the flow of hydraulic fluid from said speed control pump, said control line being connected to both a limiting line located between said high speed restrictor means and said speed control pump and a shuttle valve line located upstream from said limiting line.

3,935,707
HYDRAULIC CONTROL SYSTEM

Eugene Scott Murphy, Portage, and Clyde Bennett Stevens, Kalamazoo, both of Mich., assignors to General Signal Corporation, Rochester, N.Y.

Filed July 22, 1974, Ser. No. 490,629

Int. Cl.^{2} F16D *31/02;* F04B *49/00*

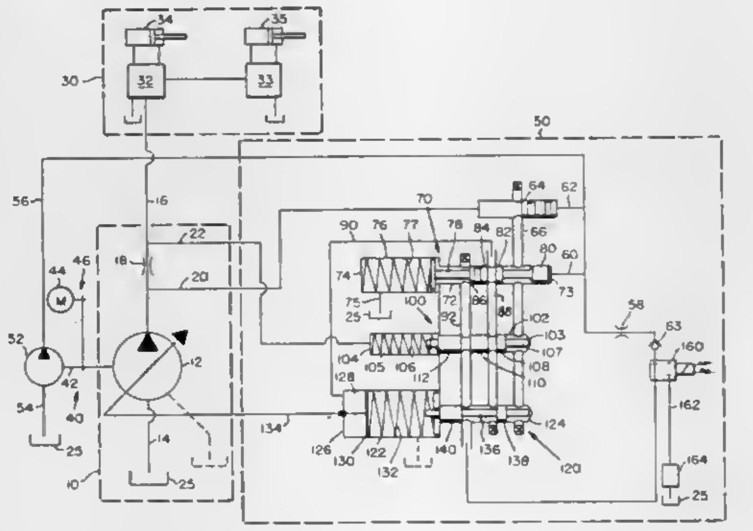
U.S. Cl. 60—444 36 Claims

1. A hydraulic control system including:

a generating means for providing power to a work function, including a variable displacement pump for discharging hydraulic fluid into a power line connecting said variable displacement pump to said work function;

a driving means for operating said generating means, including a rotating shaft for operating said variable displacement pump;

a control circuit means connected to both said generating means and said driving means for permitting the delivery of power to said work function when said driving means is operating up to a predetermined speed and for stopping delivery of power to said work function when said driving means is running above said predetermined speed, wherein said control circuit means includes a speed control pump operated by said rotating shaft and connected to one end of a control line, said control line including a high speed restrictor means for restricting the flow of



hydraulic fluid from said speed control pump; said control line being connected to both a limiting line located between said high speed restrictor means and said speed control pump and a shuttle valve line located upstream from said limiting line.

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¹3,935,708
DEVICE FOR CONVERTING CALORIFIC ENERGY INTO MECHANICAL ENERGY

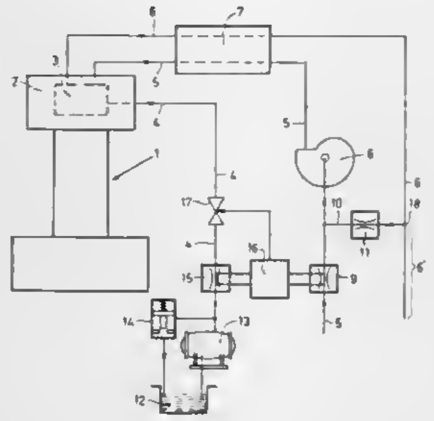
Arend Harrewijne; Albertus Peter Johannes Michels, and Franciscus Wilhelmus Engelbert Gasseling, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 3, 1974, Ser. No. 475,831

Claims priority, application Netherlands, June 13, 1973, 7308176

Int. Cl.^{2} F02G *1/04;* F23N *1/04*

U.S. Cl. 60—517 5 Claims



1. A device for converting calorific energy into mechanical energy, comprising at least one combustion chamber having connected thereto at least one inlet duct for fuel, at least one inlet duct for combustion air in which a first restriction is incorporated, and at least one outlet duct for flue gases, a flue gas return duct being provided having an inlet and an outlet, the inlet being connected to the flue gas outlet duct and the outlet to the part of the combustion air inlet duct which is situated between the combustion chamber and the first restriction, the flue gas return duct incorporating a second restriction which is constructed such that the mass flow of flue gas which passes through in each operating condition of the device is at least substantially proportional to the root of the pressure difference prevailing across the second restriction, characterized in that the first restriction is constructed such that the mass flow of air passing through in each operating condition of the device is proportional to the power M of the

pressure difference prevailing across the first restriction, where $1 < M \leq 3/2$.

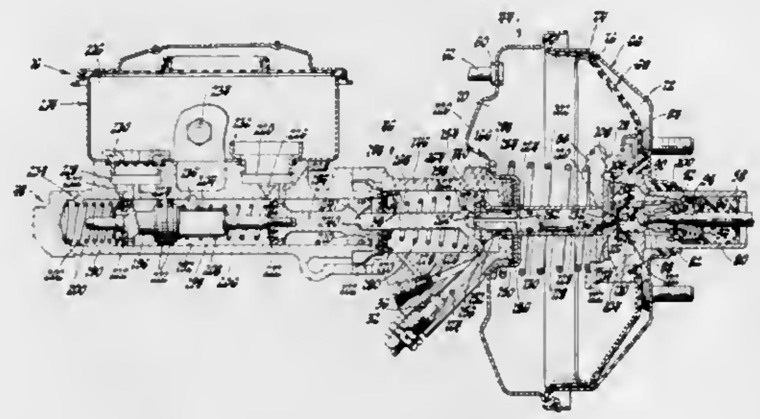
3,935,709
DUAL POWER BRAKE BOOSTER

Thomas P. Mathues, Miamisburg, and Donald L. Parker, Middletown, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 441,239, Feb. 11, 1974. This application Feb. 18, 1975, Ser. No. 550,872

Int. Cl.^{2} B60T *13/00*

U.S. Cl. 60—547 4 Claims



1. A brake booster and master cylinder assembly comprising:

a differential air pressure operated first booster section having first and second output members movable as a unit under power and relatively movable under manual operation;

a hydraulic pressure operated second booster section in alignment with said first booster section and having a power piston and open center valve control means including a first valve element on said piston and a second valve element cooperable with said first valve element to restrict hydraulic flow therebetween upon movement of said second valve element toward said piston and said first valve element to actuate said second booster section;

said first booster section first output member operatively engaging said second booster section power piston in force transmitting relation to move said power piston and therefore said first valve element commensurately therewith, said first booster section second output member being operatively connected with said second valve element in force transmitting relation to move said second valve element commensurately therewith;

and master cylinder brake actuating pressure generating means actuated by movement of said power piston;

said first and second valve elements moving as a unit so long as said first booster section first and second output members move as a unit so that said second booster section is not power actuated, said second valve element moving toward said first valve element when said first booster section second output member moves relative to said first booster section first output member to power actuate said second booster section, said second valve element operatively engaging said second booster section power piston upon sufficient movement relative to said first valve element to provide a mechanical force transmitting path through said second booster section for manual operation of said master cylinder brake actuating pressure generating means;

said assembly being operable to generate brake actuating pressure by sequential first booster section power operation and second booster section power operation and manual operation, and by any of said operations.

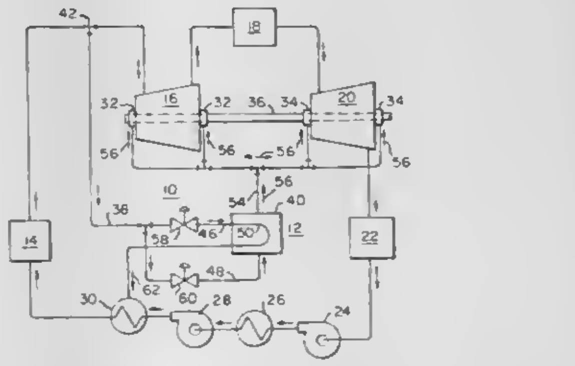
3,935,710
GLAND STEAM REHEATER FOR TURBINE APPARATUS GLAND SEALS

John D. Dickinson, Swarthmore, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 18, 1974, Ser. No. 489,637

Int. Cl.^{2} F01B *31/10*

U.S. Cl. 60—657 7 Claims



1. A gland seal system for a steam turbine power plant comprising:

a gland seal,

single steam supply means for providing steam to said gland seal, said supply means providing steam to said gland seal at a pressure and a temperature within a predetermined range of pressures and temperatures, said single steam supply means comprising

a steam source producing a predetermined volume of steam at a predetermined pressure and temperature,

a shell and tube heater element connected to said steam source,

first control means for diverting steam from said source into said tube members of said heater element, said control means regulating the pressure and the heat exchange capacity of said steam within said tube elements,

second control means diverting a portion of said steam from said source into said gland seal, said steam introduced into said gland seal passing through said shell of said heater element, the pressure of said steam entering said gland seal being regulated by said second control means, the temperature of said steam entering said gland seal being regulated by and dependent upon the temperature and pressure of the steam within said tubes of said heater element.

3,935,711
FLAP GATE

Yukio Sawai; Yoshifumi Sakurai, and Hiroshi Terata, all of Yokohama, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 10, 1974, Ser. No. 478,070

Claims priority, application Japan, June 15, 1973, 48-67895

Int. Cl.^{2} E02B *7/40*

U.S. Cl. 61—25 1 Claim

1. For closing the partially submerged entrance opening of a dock or the like, having opposite sidewalls, a bottom and a bank wall extending down from the bottom, a flap gate structure, comprising:

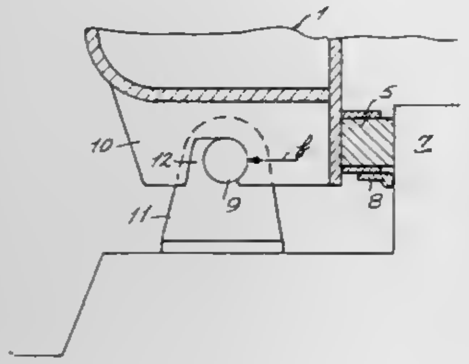
a water gate door body of closed shell structure, having when closed, a substantially rectangular vertical transverse cross-section;

a pair of fixed, horizontally extending support pins about which the door is to pivot when moving from being erected to being laid out and vice versa;

a pair of support pieces mounted on the water gate door body, each support piece having surface means defining a downwardly opening recess for receiving a respective one of said support pins;

means defining a contact surface along the bottom edge of the water gate door body, arranged for contact with the bank wall when the door is erected;

the thickness of the water gate door body being no greater than one-sixteenth times the distance between where the two support pieces receive the two support pins;



said surface means defining the recesses being so spatially arranged relative to said contact surface and the bank wall that, when the water gate door body is erected the surface means presses laterally against the respective pins on their side which is toward the bank wall, to prevent the contact surface from separating from the bank wall.

3,935,712

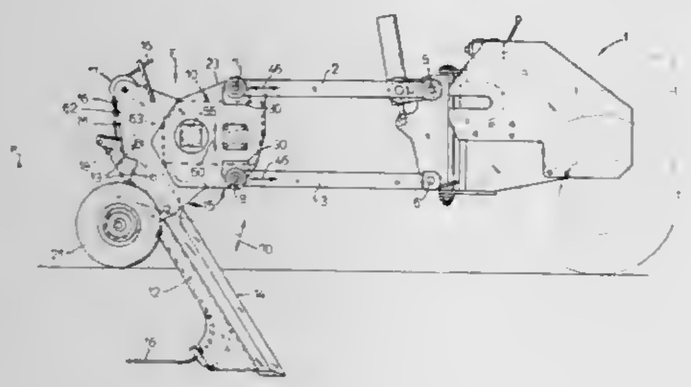
CABLE LAYING VIBRATORY PLOW ASSEMBLY

Robert W. Erickson, and John F. Lindell, both of Newton, Iowa, assignors to Koehring Company, Milwaukee, Wis.

Filed Jan. 16, 1975, Ser. No. 541,527

Int. Cl.^{2} A01B ***11/00;*** **F16L** ***1/00***

U.S. Cl. 61—72.6 **7 Claims**



1. A vibratory plow assembly including a plow frame, a plow blade extending downwardly and forwardly from said frame and in respect to the direction of travel of said plow assembly and for forming a slit in the ground, ground engaging means for supporting said assembly, a pair of power driven counter rotating eccentric weights on said plow frame, said weights being rotatable about transverse horizontal axes which are spaced apart in the direction of travel of said plow to thereby position one weight rearwardly of the other, and a weight mass on the rear end of said plow frame; beam means for connecting said assembly to a tractive vehicle, first means for pivotably connecting said plow frame to said beam means, and second means for pivotably connecting said beam means to said tractive vehicle, said first means including elastomeric isolation mounts, whereby a pivot point for said plow frame is established rearwardly of said assembly and about which point the plow blade swingably vibrates in an upward and forward stroke.

3,935,713

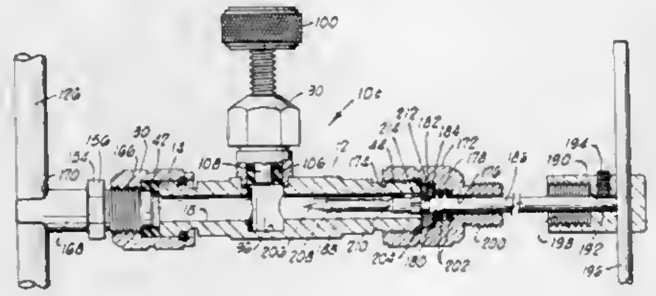
METHOD AND APPARATUS FOR MAINTAINING AND SERVICING A PRESSURIZED REFRIGERATION SYSTEM OR THE LIKE

John W. Olson, Oklahoma City, Okla., assignor to C & D Valve Manufacturing Company, Oklahoma City, Okla.

Division of Ser. No. 378,920, July 13, 1973, Pat. No. 3,840,967, and a continuation-in-part of Ser. No. 484,298, June 28, 1974, Pat. No. 3,875,756, and a continuation-in-part of Ser. No. 343,512, March 21, 1973, abandoned. This application Feb. 26, 1975, Ser. No. 553,446

Int. Cl.^{2} F25B ***45/00***

U.S. Cl. 62—77 **18 Claims**



1. A tool for use in maintaining and servicing a conventional sealed refrigeration system equipped with an internally and externally threaded access fitting adapted to receive a removable threaded closure member therein and secured in communication with and in substantially normal alignment with a penetrable wall of the sealed refrigeration system, comprising:

a body member having a first end, a second end and having a longitudinal passageway extending therethrough communicating at the opposite ends thereof with the first and second ends of the body member;

coupling means carried on the first end of said body member for removably connecting the first end of said body member to said access fitting with one end of said longitudinal passageway in sealing communication with the access fitting;

first removable cap means securable to the second end of said body member for sealing closure of the opposite end of said longitudinal passageway and, alternately, for removal from said body member, and including an aperture formed therein substantially coaxial with the longitudinal passageway;

an externally threaded surface formed on said first removable cap means remote from the second end of said body member and coaxial with the aperture formed therein;

a first operating shaft having a first end and a second end and extending through said aperture in said first removable cap means, with the first end thereof disposed within said longitudinal passageway and with the second end thereof disposed outside said longitudinal passageway;

means carried by said first removable cap means for providing sliding and rotatingly sealing engagement between said aperture in said first cap means and said first operating shaft so that said first operating shaft may be moved axially and rotatably within said longitudinal passageway;

a substantially conical point formed on the first end of said first operating shaft for penetrating the penetrable wall of said sealed refrigeration system to open the interior of said sealed refrigeration system to the interior of said access fitting;

control means operatively engaging the second end of said first operating shaft for threadedly engaging the external threads of said first removable cap means and for rotating and axially displacing said substantially conical point within said longitudinal passageway and the interior of said access fitting in response to stimulus external thereto;

second removable cap means securable to the second end of said body member in alteration with said first removable cap means for sealing closure of the opposite end of said longitudinal passageway and, alternately, for removal

from said body member, and including an aperture formed therein substantially coaxial with the longitudinal passageway;

a second operating shaft having a first end and a second end and extending through said aperture in said second removable cap means, with the first end thereof disposed within said longitudinal passageway and with the second end thereof disposed outside said longitudinal passageway;

means carried by said second removable cap means for providing slidingly and rotatingly sealing engagement between said aperture in said second cap means and said second operating shaft so that said second operating shaft may be moved axially and rotably within said longitudinal passageway;

engaging means secured to the first end of said second operating shaft for releasably engaging and retaining said threaded closure member therein for installation and removal of said threaded closure member in and from said access fitting;

control means operatively engaging the second end of said second operating shaft for rotating and axially displacing said engaging means within said longitudinal passageway in response to stimulus external thereto;

valve means carried by said body member intermediate the first and second ends thereof for alternately opening and closing said longitudinal passageway, said valve means being adapted to close said longitudinal passageway when said operating shafts are displaced toward the second end of said body member; and

actuating means operatively engaging said valve means for moving said valve means between a position opening and closing said longitudinal passageway in response to stimulus external thereto.

3,935,714

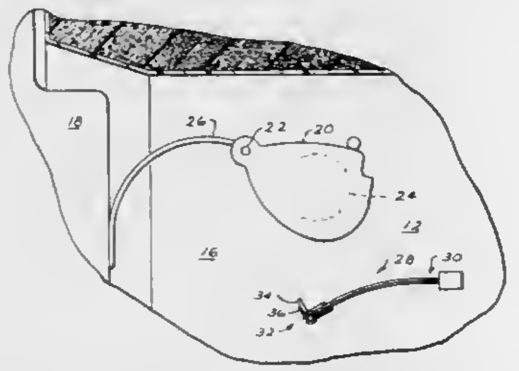
TEMPERATURE CONTROL SYSTEM OF A REFRIGERATOR-FREEZER

Samuel J. Woolley, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 29, 1975, Ser. No. 545,010

Int. Cl.^{2} F25D ***17/04***

U.S. Cl. 62—187 **5 Claims**



1. In a household refrigerator-freezer having a fresh food compartment, a fresh food compartment access door, a freezer compartment, and a partition separating the fresh food compartment from the freezer compartment, the improvement comprising:

an air passageway having an inlet and an outlet, said passageway extending through the partition for the passage of air from the freezer compartment into the fresh food compartment;

a cover plate pivotally connected to the partition and being movable between a closed position at which the cover plate is covering the air passageway and an open position at which the cover plate is spaced from at least a portion of the air passageway outlet, said cover plate being biased to the open position in response to opening the door;

means biasing the cover plate toward the closed position in response to closing the door; and

a temperature responsive element having an end movable in response to the temperature of the fresh food compartment, said end being movable between a first position at which the end is spaced from the pathway of the cover plate in response to the temperature of the fresh food compartment being less than a preselected value and a second position at which the end is in the pathway of the cover plate in response to the temperature of the fresh food compartment being greater than the preselected value for contacting and controllably maintaining the cover plate at the open position.

3,935,715

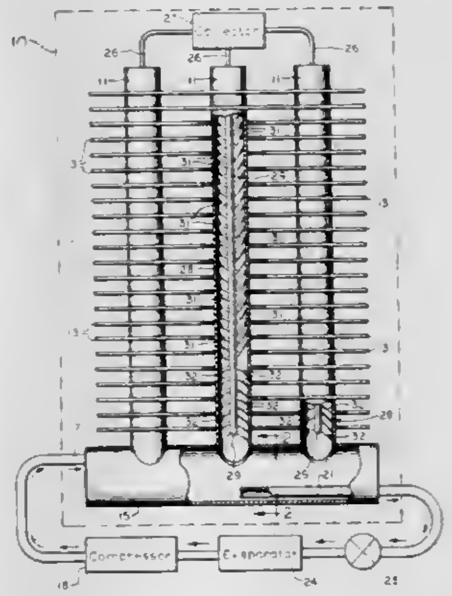
VAPOR CONDENSER FOR A REFRIGERATION SYSTEM

Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 26, 1974, Ser. No. 483,194

Int. Cl.^{2} F25B ***43/04, 39/04***

U.S. Cl. 62—475 **1 Claim**



1. In a refrigeration system where refrigerant flows through a vapor compression refrigeration cycle having, in closed series flow relationship and in the order named, an evaporator, a compressor, a vapor condenser and an expansion device, the refrigerant flowing in its vapor state from the evaporator and through the compressor to the condenser wherein it is condensed to refrigerant condensate for delivery to the expansion device, the vapor condenser comprising:

a cylindrically-shaped horizontal header;

a plurality of air-cooled, cylindrically-shaped, generally vertical condensing tubes extending upwardly from and communicating with said header;

an inlet for said header for receiving the refrigerant vapor from the compressor and for supplying it to the lower ends of said condensing tubes, the refrigerant vapor flowing upwardly through said condensing tubes and forming, on the tubes' internal surfaces, the refrigerant condensate which then flows downwardly into said header;

a cylindrically-shaped outlet extending into the lowest portion of said header and open along its bottom for deriving the refrigerant condensate from said header and for supplying the refrigerant condensate to the expansion device;

and purging means, including a common collector and a plurality of capillary type tubes each of which vents the upper end of a respective one of said condensing tubes to said common collector, for removing any non-condensible components from the refrigerant vapor, and non-condensible components being released into the atmosphere from said common collector.

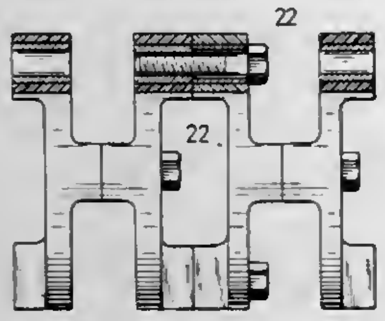
3,935,716
SHAFT COUPLING

Heinz-Georg Symann, Dortmund-Brackel, Germany, assignor to Kupplungstechnik GmbH, Rheine, Germany

Division of Ser. No. 252,226, May 11, 1972, abandoned. This application June 28, 1974, Ser. No. 484,337

Int. Cl.² F16D *3/78*

U.S. Cl. 64—13 **5 Claims**



1. Means for coupling a drive shaft to a driven shaft comprising a plurality of resilient, circular members and means forming said circular members one to the other and to said shafts, said means comprising each of said circular members being provided on each radially extending side thereof with a pair of radially, oppositely disposed projections extending parallel to the axis of said circular member, said pairs of projections being offset circumferentially one pair with respect to the other, and means for receiving a fastening means disposed within said projections whereby a plurality of said circular members can be mounted in spaced relationship by fastening means extending through aligned projections of said circular members.

3,935,717
UNIVERSAL JOINT

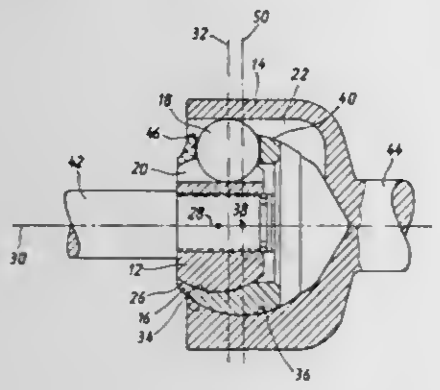
Hans-Heinrich Welschol, Obertshausen, Germany, assignor to Lohr & Bromkamp GmbH, Germany

Filed Mar. 25, 1974, Ser. No. 454,172

Claims priority, application Germany, Mar. 26, 1973, 2314904

Int. Cl.² F16D *3/30*

U.S. Cl. 64—21 **12 Claims**



1. A universal joint having a minimum radial thickness dimension and a maximum torque transmitting capacity comprising spherically nested inner coupling, cage, and outer coupling members, said inner and outer coupling members having ball grooves therein, said cage having windows between the ball grooves, balls carried in a common plane by the windows of said cage and connecting said inner and outer coupling members in torque transmitting free tilting relation, the tilting centers of the inner and outer coupling members lying on opposite sides of the plane of the balls in said cage, said cage tapering from a thick end to a thin end to fill the radial space between the inner and outer coupling members, and radial lugs projecting from the thin end of the cage at the centers of the windows to increase the guide surfaces of the balls at the thin end of the cage and to strengthen the cage.

3,935,718
METHOD FOR MANUFACTURING STOCKINGS, SOCKS AND THE LIKE

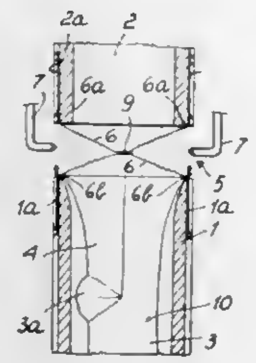
Amos Carminati, Via Crevatini, 16/A, Muggia (Trieste), and Alberto Bienati, Via Matteotti, 23, Trieste, both of Italy

Continuation-in-part of Ser. No. 141,902, May 10, 1971, abandoned. This application Nov. 21, 1973, Ser. No. 418,167

Claims priority, application Italy, May 14, 1970, 24642/70

Int. Cl.² D04B *9/10, 9/56*

U.S. Cl. 66—9 R **1 Claim**



1. A method for manufacturing stockings, socks and like fabrics and closing the toe thereof on a circular knitting machine including an upper and a lower needle cylinder, wherein the fabric is taken up through the lower needle cylinder, the method comprising the steps of knitting the leg and foot portion of the fabric on the needles in both needle cylinders by selecting the needles in a manner such that the areas of said portions having right stitches on the outside of the finished fabric are knitted on the needles in the upper needle cylinder as reverse stitches and the areas of said portions having reverse stitches on the outside of the finished fabric are knitted on the needles in the lower needle cylinder as right stitches, the heel being knitted on the needles in the lower needle cylinder; effecting a 1 : 1 selection of the needles for manufacturing the toe, thereby dividing the needles in first and second needles, and bringing the first needles in the lower needle cylinder and the second needles in the upper needle cylinder with the loops thereon; lowering the first needles in said lower needle cylinder in an inoperative position, where they retain relative loops of the fabric already knitted and continuing to knit with said needles in the upper needle cylinder forming an initial part of a pocket-shaped fabric portion, knitting an intermediate part and final part of said pocket shaped fabric portion; stopping the knitting with said second needles when said pocket-shaped fabric portion has a length of substantially twice the radius of said needle cylinders, the bottom of said pocket shaped fabric being directed towards the axis of said needle cylinders; continuing to revolve the needle cylinders, thereby effecting a binding around said bottom by means of the yarn fed to the knitting point winding itself around said bottom; and bringing the second needles into the lower needle cylinder in operative position and knitting with all the needles in the lower needle cylinder, whereby the final part of said pocket-shaped fabric portion is interknitted with the initial part thereof and with said foot portion of the fabric.

3,935,719
RECIRCULATING

Raymond G. Henderson, Mount Prospect, Ill., assignor to A-T-O Inc., Willoughby, Ohio

Filed Aug. 6, 1973, Ser. No. 386,014

Int. Cl.² D06F *39/02*

U.S. Cl. 68—58 **9 Claims**

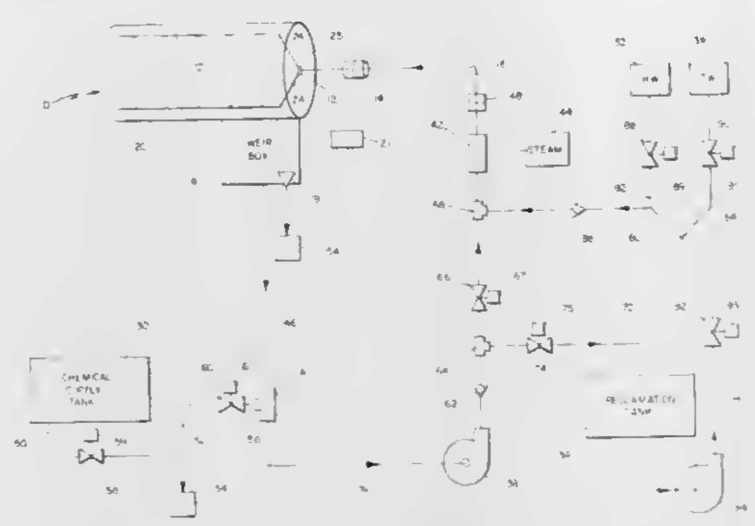
1. In combination with a washing machine of the type including a cylindrical drum having a central axis, mounted for rotation about said axis, and having a washing fluid inlet and a washing fluid outlet:

a recirculating pump having an inlet and an outlet;

a recirculating suction line extending from the washing machine outlet to the pump inlet;

a main inlet line extending from the pump outlet to the washing machine inlet;

a chemical supply tank having an outlet connected to said suction line such that flow to the pump inlet from the washing machine outlet will cause chemicals from said supply tank to be drawn into said pump and be thoroughly mixed with flow from said pump passing to said main inlet line;



a steam heater connected to said main inlet line intermediate said pump outlet and said washing machine inlet, adapted for connection to a steam source, and arranged for heating fluid in said main inlet line during flow of said fluid from said pump to said washing machine; and,

a water supply line connected to said main inlet line intermediate said pump outlet and said steam heater and adapted for connection to a water source.

3,935,720
ROTATABLE CYLINDER LOCK

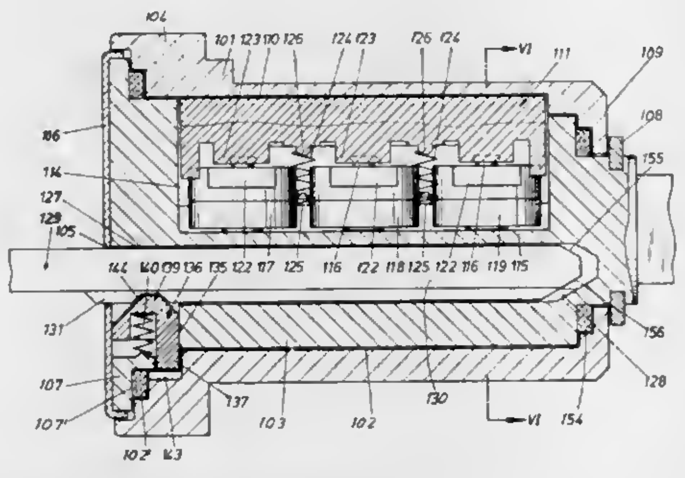
Egon Böving, Wulfrather Str. 2a, 56.6 Tonisheide, Rhineland, Germany

Filed Oct. 24, 1974, Ser. No. 517,843

Claims priority, application Germany, Oct. 25, 1973, 2353407; Feb. 6, 1974, 2405580; Mar. 21, 1974, 2413555

Int. Cl.² E05B *47/00*

U.S. Cl. 70—276 **11 Claims**



1. A lock assembly comprising:

a cylindrical housing provided with an axially extending groove on its inner peripheral wall;

a rotatable plug in said housing provided with an axially extending cavity open toward the periphery thereof, said cavity registering with said groove in a normal rotary position of said plug;

locking means in said cavity provided with biasing means urging same radially outwardly for engagement with said groove in said normal position, said groove and said locking means having complementary profiles provided with sloping flanks for camming said locking means generally radially inwardly upon incipient rotation of said plug from said normal position;

a plurality of axially spaced tumblers in said cavity independently rotatable about generally radial axes, said plug being provided with an axially extending key slot adjacent said cavity;

a key having a shank insertable into said key slot;

control means on said shank effective upon full insertion thereof to place each of said tumblers in a predetermined angular position, said locking means and said tumblers being provided with complementary formations matingly confronting one another in said angular positions but preventing inward camming of said locking means in any other position of said tumblers, said control means comprising a set of first magnets on said shank, said tumblers being provided with second magnets offset from the axes thereof attractable by said first magnets, said plug forming a thin, magnetically pervious partition between said key slot and said cavity;

a plurality of pins rising from said partition and forming bearing axles for said tumblers, said locking means comprising a bar paralleling said partition, said biasing means comprising a plurality of axially spaced compression springs interposed between said partition and said bar, said complementary formations comprising projections on said bar and recesses on said tumblers, said tumblers being disk-shaped and said recesses being located at the disk peripheries thereof, the axes of said tumblers lying in an axial plane of said plug perpendicular to said partition, said projections being offset from said axial plane, said groove and said bar having generally trapezoidal cross-sections with radially outwardly converging sides, the width of said cavity slightly exceeding the major base of the trapezoid of the bar whereby said bar is limitedly tiltable in said cavity, said bar being provided with lateral teeth extending from said major base on at least one side of said axial plane and bracketing said projections, said teeth being longer than said projections and being brought into contact with an adjoining cavity wall by a tilting of said bar upon an incipient rotation of said plug blocked by nonalignment of at least one projection with a recess on a confronting tumbler.

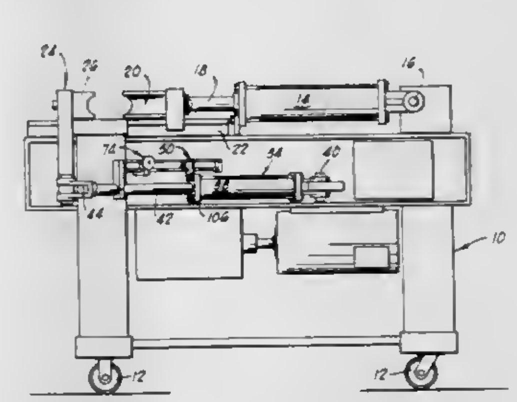
3,935,721
TUBING BENDING MACHINE

Kenneth M. Boteler; Cecil E. Mayfield, and Vivian C. Harris, all of Oklahoma City, Okla., assignors to B & W Manufacturing Company, Inc., Oklahoma City, Okla.

Filed Feb. 28, 1975, Ser. No. 553,877

Int. Cl.² B21D *7/24*

U.S. Cl. 72—22 **9 Claims**



1. A tubing bending machine comprising:

a die;

means for advancing the die;

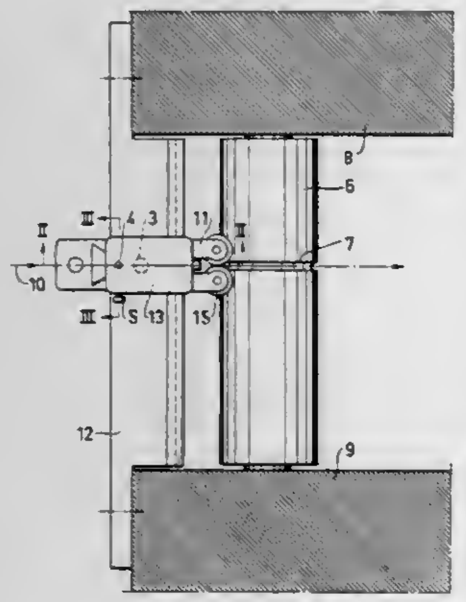
shoe means positioned in the path of advance of the die and cooperating with the die to bend a length of tubing;

a hydraulic piston and cylinder assembly coupled with the shoe means for restricting the movement of the shoe means during bending of the tubing, and for returning the

shoe means to a pre-bending position, said assembly including a cylinder and including a piston rod retractable and extensible as said shoe means undergoes movement during and after bending of the pipe;
a linear scale connected to said piston rod and movable therewith relative to the cylinder of the piston and cylinder assembly;
depth of bend indicator means adjustably positionable along the linear scale to indicate a selected desired depth of bend reading thereon; and
switch means mounted on the machine in the path of movement of said depth of bend indicator means as it moves with said linear scale and piston rod.

3,935,722
ROLLER GUIDE

Nils-Erik Ragnar Bock, Smedjebacken, Sweden, assignor to Morgardshammar Aktiebolag, Smedjebacken, Sweden
Filed Dec. 19, 1974, Ser. No. 534,582
Claims priority, application Sweden, Dec. 20, 1973, 7317220
Int. Cl.² B21B ***39/16***
U.S. Cl. 72—250 **9 Claims**

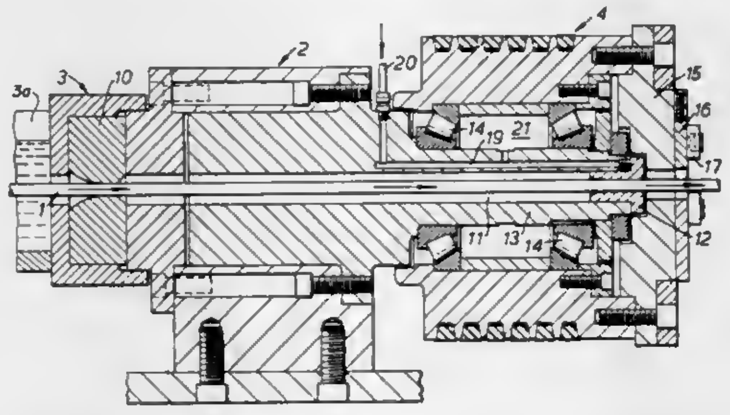


8. A roller guide for guiding rod or wire stock between a pair of rolling members, comprising a guide housing, means for rotatably supporting a pair or guide rollers on said guide housing for rotation about parallel axes, means for pivotally supporting said guide housing about an axis which is substantially parallel to the axis of said guide rollers and which axis extends transverse to the direction of stock movement, and means for rotating said guide housing about said axis for adjusting the position of said guide rollers relative to the rolling members.

3,935,723
WIRE PROCESSING MACHINE

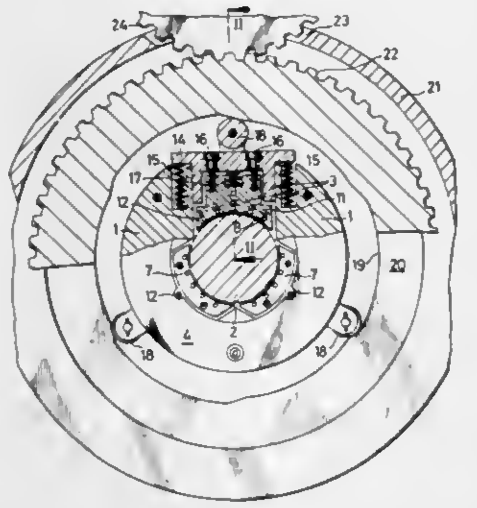
Alan Fieldsend, and Ronald Jubb, both of Sheffield, England, assignors to British Steel Corporation, London, England
Filed Dec. 27, 1973, Ser. No. 428,669
Claims priority, application United Kingdom, Dec. 29, 1972, 59983/72
Int. Cl.² B21C ***1/04, 1/16***
U.S. Cl. 72—275 **3 Claims**

1. A machine for continuously processing wire drawn therethrough by a wire coiler, comprising:
a fixed mounting having a protruding boss at one end and defining a through bore and housing as one unit,
a stationary wire drawing die fixed in said housing at one end of the bore and, fixed in said housing at the other end of the bore,
a wire guide bush,
the bore of said die and the bore of said bush being in axial alignment and in alignment with the axis of said bore,
a wire turning head rotatably mounted on said housing adjacent said wire guide bush in roller bearings carried by said protruding boss, said roller bearings being spaced apart defining a cavity therebetween,
means on said wire turning head for turning it,
a bored passage in said mounting and in said boss communicating with said cavity for conducting an atomized oil mist to said bearings, and
a lubricating soap box fixedly mounted on said housing upstream of the die for lubricating wire drawn therethrough,
a further wire guide bush and a further lubricating soap box being mounted downstream of the turning head and in axial alignment with the bore of said die and said turning head, the wire being processed by being drawn through the die and then through the turning head whereby the wire is initially die drawn and then surface turned.



3,935,724
APPARATUS FOR STRIPPING HOLLOW ARTICLES OFF A PRESS RAM

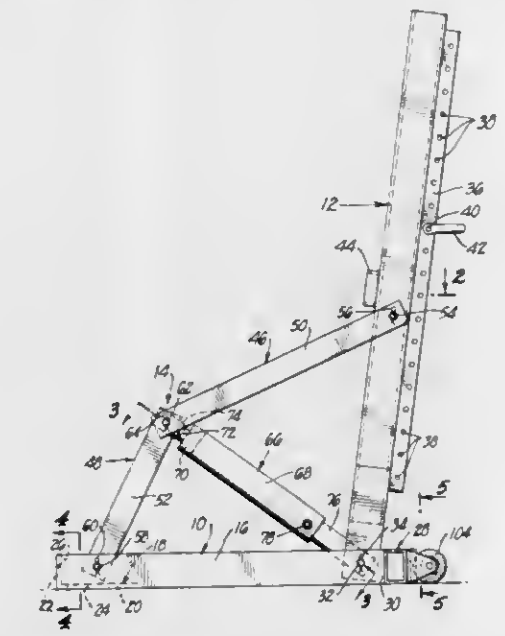
Kurt Finsterwalder, Goeppingen-Bartenbach; Karl-Heinz Philipp, Goeppingen; Martin Veil, Faurndau; Karl Widmann, Weissenstein, and Karl Zwerina, Goeppingen, all of Germany, assignors to L. Schuler GmbH, Germany
Filed July 10, 1974, Ser. No. 487,057
Claims priority, application Germany, July 28, 1973, 2338490
Int. Cl.² B21D ***45/00***
U.S. Cl. 72—345 **38 Claims**



1. Apparatus for stripping articles from a press ram comprising:
at least one stripper having a part thereof engageable with an article on a press ram to forcibly strip the article from the press ram,
stripper support means for supporting and guiding each of said at least one strippers for movement substantially parallel to a press ram axis of said press ram and for movement transverse to said press ram axis,
and fluid pressure medium stripper control means for applying a fluid pressure medium to each of said press ram axis to force said stripper against the article to strip the same from the press ram.

3,935,725
AUTOMOBILE FRAME AND BODY REPAIRING APPARATUS

Norbert M. Reischl, 13759 Mar Vista St., Whittier, Calif. 90607
Filed June 13, 1974, Ser. No. 478,981
Int. Cl.² B21D ***1/12***
U.S. Cl. 72—451 **9 Claims**

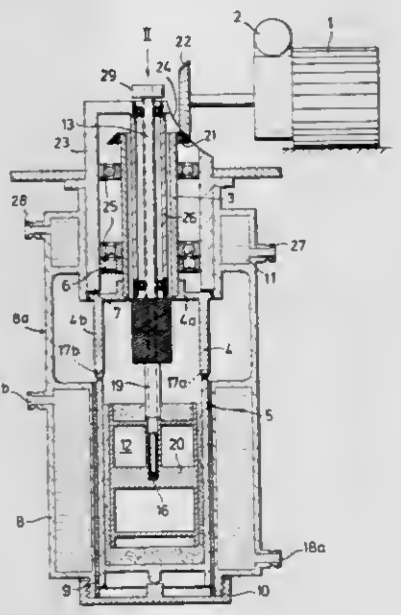


1. An automobile frame and body repairing apparatus, comprising:
a horizontal T-shaped frame including a longitudinally extending stem and a cross piece at one end of said stem;
an upstanding power lever pivoted at its lower end adjacent a forward end of said frame, said lever having a bar secured to the forward side thereof, the bar having a plurality of longitudinally spaced openings therein;
means at the end of the stem opposite the cross piece for securing the frame against longitudinal movement;
means for actuating said power level, said means comprising a toggle joint having members with ends joined to form a knee, the opposite ends of said members being pivotally connected to the frame stem adjacent the rear end and to the upstanding lever intermediate its ends respectively; and
and power means connected to said frame at the lower end of said power lever and to the knee of the toggle joint for actuating said toggle joint to cause pivotal movement of the upstanding power lever.

3,935,726
APPARATUS FOR MEASURING VISCOSITY OF LIQUIDS

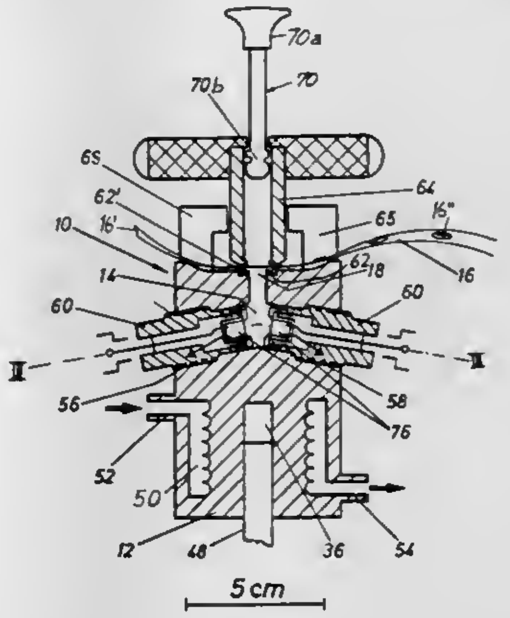
Werner Heinz, Dabringhauserstr. 72, Cologne-Dellbruck, Germany
Filed June 17, 1974, Ser. No. 480,313
Claims priority, application Germany, June 18, 1973, 2330964
Int. Cl.² G01N ***11/00***
U.S. Cl. 73—60 **15 Claims**

1. Apparatus for measuring the viscosity of a liquid comprising a rotatable container means; means for rotating said container means at a desired speed; a freely rotatable member within said container means, said container means and said member defining a volume therebetween for receiving liquid to be measured; a fluid bath container surrounding said container means having a fluid bath for maintaining said container means at a desired constant temperature; means for measuring torque of said member when said volume is charged with liquid to be measured and said container means is rotated by said rotating means, and a bearing made from a material having a high thermal conductivity and located between and contacting said container means and said fluid bath container to facilitate relative rotation therebetween.



3,935,727
PRESSURE JUMP RELAXATION MEASUREMENT APPARATUS

Wilhelm Knoche, Gottingen, and Gottfried Wiese, Sieboldshausen, both of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Germany
Filed June 21, 1974, Ser. No. 481,817
Claims priority, application Germany, July 17, 1973, 2336377
Int. Cl.² G01N ***33/00;*** **B01J** ***3/04***
U.S. Cl. 73—37 **13 Claims**



11. Pressure jump relaxation measuring apparatus comprising
an autoclave body (12) forming a pressure chamber (14) having a closable opening (18);
a rupturable membrane (16) closing the opening;
two electrical measuring cells (60) facing the pressure chamber (14) and means connecting said cells to an electrical output;
wherein the measuring cells are located in the body (12) facing said chamber at a relative alignment with respect to the membrane to form an angle between 90° and 135°

with respect to a plane transverse to the membrane closing said opening.

3,935,728

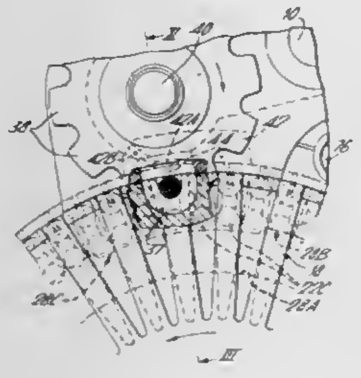
TESTING OF CIGARETTES

Eryk Stefan Doerman, London, England, assignor to Molins Limited, Great Britain

Filed May 7, 1974, Ser. No. 467,777

Int. Cl.^{2} G01M *3/26*

U.S. Cl. 73—41 **16 Claims**



1. A cigarette testing device comprising a conveyor drum which is arranged to carry cigarettes sideways through a testing station, and which includes a portion formed with circumferentially spaced flutes, each terminated at opposite ends by sprocket-like teeth, the cigarettes being carried in the recesses between the teeth, said recesses having semi-circular bottom portions for closely fitting half-way around a cigarette circumference and having a depth at least equal to a cigarette diameter whereby each cigarette during testing lies entirely within the cooperating recesses; stationery means mounted closely adjacent to the said portion of the conveyor drum and defining with the flutes a suction or pressure chamber, so that at least part of each cigarette is surrounded by pre-determined suction or pressure during testing; a rotary member adjacent to the drum and formed with axially spaced sets of sprocket teeth which are axially slightly off-set from and over lap with the sprocket-like teeth on the drum so that the cooperating teeth together form two axially spaced seals around each cigarette restricting communication between the chamber and atmosphere; and a device for sensing the air-flow through the wrapper of each cigarette produced by the suction or pressure in the chamber.

3,935,729

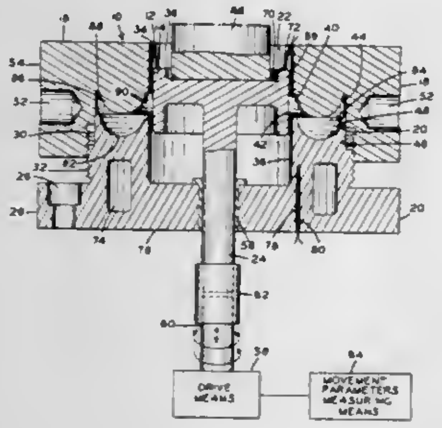
GAP FILLER FOR RHEOMETER

Robert V. McCarthy, Columbia, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Jan. 27, 1975, Ser. No. 544,654

Int. Cl.^{2} G01N *11/10*

U.S. Cl. 73—60 **11 Claims**



1. In a rheometer having a cylindrical stator with a cavity therein and a rotatable cylindrical rotor concentrically positioned within said cavity and with a space therebetween, heating means supplying heat to said stator, the improvement comprising said stator being formed of two parts having

a. a cylindrical bottom part having a concave, annular reservoir in the surface thereof which abuts with the second part of said stator, and
b. a cylindrical top part having an annular embossment on the surface thereof which abuts with said aforesaid reservoir containing surface of said bottom stator part, said embossment shaped and positioned to fit into said reservoir, means for axially moving said top and bottom parts into abutting relationship at the aforesaid surfaces with said embossment and reservoir moved together, and passageway means connecting said reservoir and said space between said stator and rotor such that molten material extrudes from said reservoir into the space between the stator and rotor when said embossment and reservoir are moved together.

3,935,730

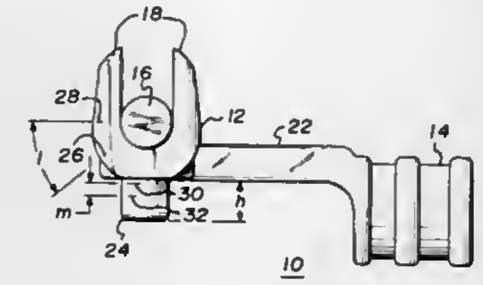
METHOD AND GAUGE FOR NONDESTRUCTIVELY TESTING AND CERTIFYING THE WORKABLE QUALITIES OF A CASTING

Albert Michael Luongo, Edison; Frank J. Reynolds, North Brunswick, and Rudolph R. Ruetsch, Union, all of N.J., assignors to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Oct. 2, 1974, Ser. No. 511,170

Int. Cl.^{2} G01N *3/20*

U.S. Cl. 73—100 **7 Claims**



1. The method of nondestructive testing and certifying the workable qualities of a cast metallic part comprising: the steps of forming a tab on said cast metallic part in a nonfunctional location, when considered in light of the intended use of said cast metallic part subjecting said tab to a strain greater than the strain to which the cast metallic part will be subjected to when employed; inspecting said tab after said tab has been subjected to said strain, and discarding any cast metallic part whose strained tab shows signs of cracking.

3,935,731

METHOD AND MEANS FOR IMPROVING FLAW ENTRAPMENT EFFICIENCY IN WATER-WASHABLE INSPECTION PENETRANTS

James R. Alburger, 5007 Hillard Ave., La Canada, Calif. 91011

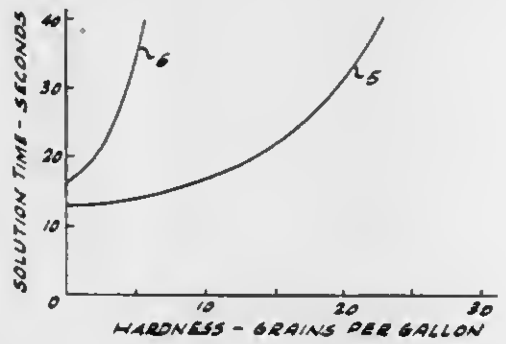
Continuation-in-part of Ser. No. 163,643, July 19, 1971, abandoned, which is a continuation of Ser. No. 875,552, Nov. 10, 1969, abandoned, which is a continuation-in-part of Ser. No. 590,353, Oct. 28, 1966, abandoned. This application Feb. 28, 1975, Ser. No. 554,084

Int. Cl.^{2} G01N *29/04*, *13/02*

U.S. Cl. 73—104 **2 Claims**

1. In a process of penetrant inspection of test parts for surface discontinuities, comprising the steps of applying a solvency-sensitive water-washable dyed penetrant to a test surface, treating said test surface by washing with a water-wash remover to effect removal of excess surface penetrant, and inspecting said test surface for the presence of penetrant entrapment indications, the improvement that avoids solution-removal of penetrant entrapments in crack defects which

comprises; raising the temperature of said water-wash remover to above the point of solvency transition of said dyed penetrant, said temperature of solvency transition being within the range of about 90° F. up to the boiling point of water, and applying said water-wash remover with sufficient relative movement between the remover and the penetrant-treated test surface to remove the excess penetrant from said surface.



3,935,732

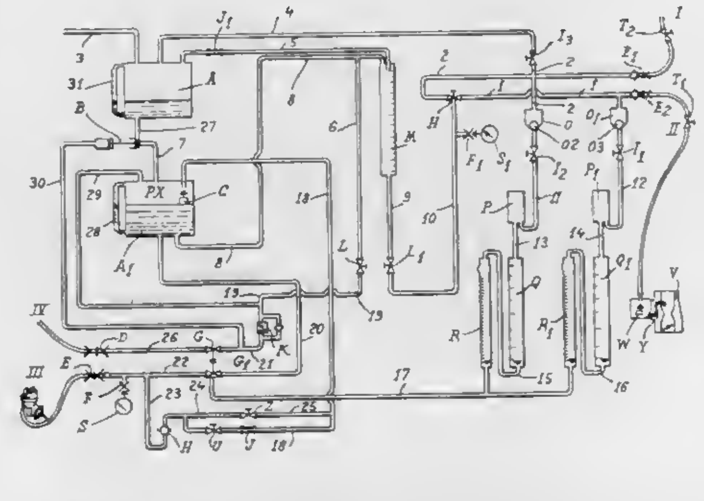
PROCESS AND APPARATUS FOR THE MEASUREMENT OF VOLUME, FLOW RATE AND CONSUMPTION, AT A PREDETERMINABLE PRESSURE, OF COMBUSTIBLE LIQUID BY AN APPARATUS IN PLACE AND FUNCTIONING

Francois Monnet, Nice, France, assignor to S.A.R.L. Sud est Electro Mecanique S.E.E.M., Nice, France

Filed July 19, 1974, Ser. No. 490,126

Int. Cl.^{2} G01M *15/00*

U.S. Cl. 73—118 **6 Claims**



1. Apparatus for monitoring and regulating carburetors and other gasoline consumption devices, comprising a first conduit, means for feeding test liquid under pressure from a source of liquid to said first conduit, a flowmeter, an auxiliary reservoir for said liquid, a first valve in said first conduit, conduit means connecting said first valve to said auxiliary reservoir and to said flowmeter, said first valve selectively directing flow of said liquid through said conduit means either directly from said source of liquid to said flowmeter or from said auxiliary reservoir to said flowmeter, a float valve in said auxiliary reservoir for arresting the flow of liquid from said first conduit to said auxiliary reservoir when said auxiliary reservoir is full of said liquid, a check valve in said conduit means for preventing the flow of said liquid from said auxiliary reservoir back to said first conduit, a second conduit for air under pressure, a pressure regulator in said second conduit, a second valve in said second conduit coupled to said first valve and so arranged that said second valve is open when said first valve is in the position in which the flowmeter is fed from the auxiliary reservoir and is closed when said first valve is in a position that the flowmeter is fed directly from said source of fluid under pressure, said second conduit supplying air under pressure to said auxiliary reservoir, a vertical graduated gauge whose lower part is in fluid communication with a carburetor to be tested and whose upper part is connected to the lower part of the auxiliary reservoir and to said pressure regulator, a third valve between the upper end of the gauge and the pressure regulator whereby when the third valve is open, air under pressure forces liquid in the gauge toward the bottom of the gauge and when the tird valve is closed, liquid under pressure can flow into the gauge, and a calibrated overflow conduit for said gauge for maintaining said gauge under pressure.

3,935,733

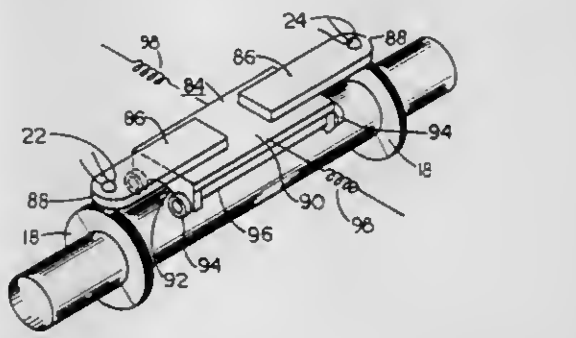
ELECTRONIC TRANSMISSION DYNAMOMETER

Earle R. Schindler, New Orleans, La., assignor to Resco, Inc., New Orleans, La.

Filed Nov. 14, 1974, Ser. No. 523,772

Int. Cl.^{2} G01L *3/10*

U.S. Cl. 73—136 A **2 Claims**



1. An electronic transmission dynamometer, for determining torque, revolutions per minute, and horsepower of a rotating loaded shaft, comprising:

a. audio signal generator means for generating periodic signals having a range of audio frequencies;
b. separate recording mediums spaced axially apart and peripherally and non-magnetically applied on said shaft for rotation therewith;
c. two record-playback heads fixed in spaced relationship to each other over said shaft and respectively adjacent said axially spaced apart recording mediums;
d. a cradle adapted to ride on said rotating shaft and held from rotating therewith by flexible means transversely and oppositely connected to said cradle and respective fixed points for fixing said record-playback heads in said spaced relationship and respectively over said recording mediums;
e. electronic means for sequentially amplifying, differentiating and converting said picked-up and playback signals into pulses having variable widths proportional to shaft torque, and fixed widths proportional to revolutions per minute of the shaft, and for converting said variable and fixed width pulses into voltages proportional to said shaft torque and revolutions per minute, and for multiplying said proportional voltages to obtain a voltage proportional to shaft horsepower; and
f. voltmeter means, calibratible for direct readout in terms of horsepower, torque and revolutions per minute, for receiving and displaying reception results of said proportional voltages.

3,935,734

PIPETTES

William P. Keegan, 155 Beach 133rd St., Belle Harbor, N.Y. 11694

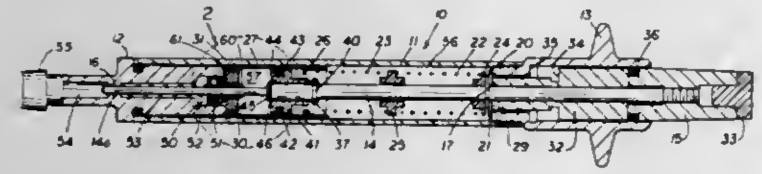
Filed Feb. 26, 1975, Ser. No. 552,971

Int. Cl.^{2} B01L *3/02*

U.S. Cl. 73—425.6 **7 Claims**

1. A pipette comprising, means forming a first air chamber and a second air chamber, measuring piston means movable a predetermined distance in said first air chamber between a

first limiting position and a second limiting position, second piston means movable in said second air chamber, said second piston means having a cross sectional area substantially greater than that of said measuring piston menas, valve means separating said air chambers so that said measuring piston means displaces air from said first air chamber while said second piston means compresses air in said second air chamber, actuating means for moving said measuring piston means and said second piston means, first fixed stop means for arresting said measuring piston means in its first limiting position, second fixed stop means for arresting said measuring piston means in its second limiting position, and means for actuating said valve means when said measuring piston means is immediately adjacent its first limiting position, whereby air compressed by said second piston means in said second air chamber is admitted to said first air chamber.



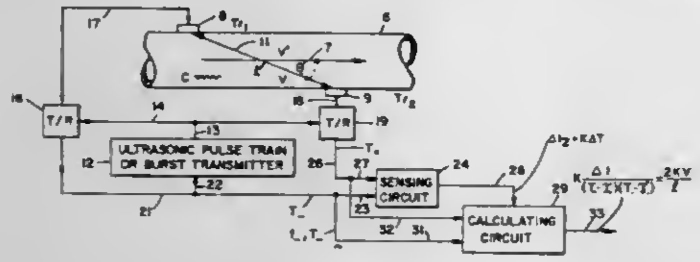
3,935,735
ULTRASONIC FLOW METER

Bock W. Lee, El Cerrito, Calif., assignor to Badger Meter, Inc., Richmond, Calif.

Filed Sept. 3, 1974, Ser. No. 502,518

Int. Cl.² G01F *1/66*

U.S. Cl. 73—194 A **22 Claims**



1. An ultrasonic flow meter for measuring the velocity of fluid flow axially in a pipe comprising:

a pair of transducers adapted to be disposed on said pipe to provide between them an energy path having a component axially of said pipe and a component transversely of said pipe,

means for simultaneously sending a pair of similar signals from said transducers in opposite directions along said path,

means for receiving said signals at said transducers,

means for providing a signal corresponding to the transit time t, of one of said signals along said path,

means for determining the difference in transit times, Δt, between said oppositely directed signals,

means for providing a signal corresponding to the square of said transit time t^2,

means for providing a quotient signal proportional to Δt, divided by t^2, said quotient signal being substantially proportional to the velocity, V, of fluid flow such that $\Delta t/t^2 \propto v/l$, where l is the length of said path.

3,935,736
METER SETTER

William E. Enright, 11307 Summit St., Kansas City, Mo. 64114

Filed Aug. 19, 1974, Ser. No. 498,741

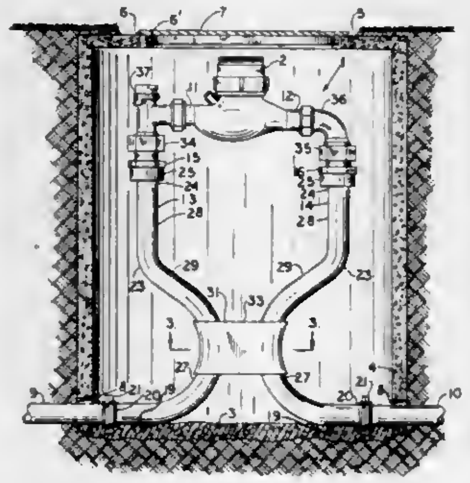
Int. Cl.² G01F *15/18*

U.S. Cl. 73—201 **6 Claims**

1. Meter setter apparatus for supporting a utility meter in a meter box and connecting said meter in a service system comprising:

a. inlet and outlet pipe members with each having first straight portions in substantially axial alignment and with remote ends having fittings for connection to supply and sevice lines, adjacent portions of each of said first straight portions of the pipe members being curved upwardly in a generally reverse bend and terminating in a further bend and second straight portion extending away from and substantially normal to said first straight portion, said first and second straight portions of the pipe members being in a single plane;

b. said second straight portions of the pipe members having free ends that are spaced apart with meter connecting fittings on said free ends for connection with meter fittings to position a meter above and between said free ends;



c. said reverse curved portions of the pipe members having intermediate adjacent portions;

d. a spacer member between and engaged with said intermediate portions;

e. a sleeve member extending around the intermediate portions of the pipe members and spacer member and tensioned to securely clamp same together in a rigid unitary assembly holding said pipe members in coplanar relation whereby said first straight portions act as feet with said assembly serving as the sole support of a meter connected to the fittings on the free ends of the second straight portions.

3,935,737
FLOW INDICATOR

Arvid A. Molitor, 1101 Florimond Drive, Elgin, Ill. 60120

Filed Mar. 6, 1975, Ser. No. 555,894

Int. Cl.² G01F *1/28*

U.S. Cl. 73—228 **11 Claims**

1. A device for measuring fluid flow comprising:

a housing defining a chamber,

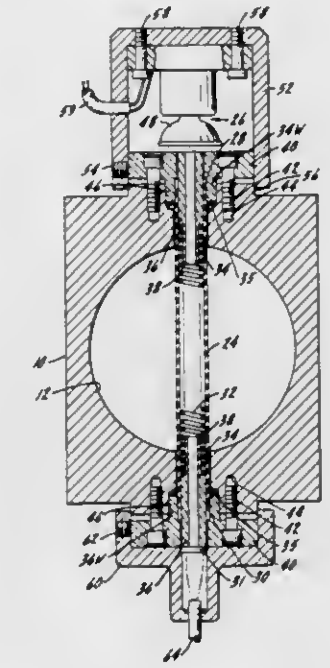
said housing having an inlet and an outlet communicating with said chamber,

a flexible tube extending across the chamber intermediate said inlet and outlet and generally normal to the direction of flow through said chamber,

a light source directing a beam of light axially into one end of said flexible tube,

means adjacent the other end of the tube for detecting the intensity of said beam at said other end,

said flexible tube being deflected in response to fluid flow through the chamber, thereby modulating the intensity of light received at said other as a function of the rate of flow through said chamber.



3,935,738
LIQUID LEVEL DETECTING DEVICES

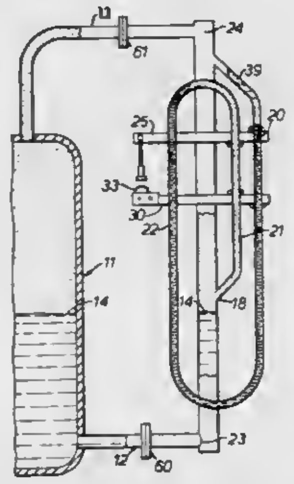
Hugh Michael Benham, London, England, assignor to ABTEC Limited, London, England

Filed Jan. 14, 1974, Ser. No. 433,408

Claims priority, application United Kingdom, Jan. 19, 1973, 2903/73

Int. Cl.² G01F *23/22*

U.S. Cl. 73—295 **13 Claims**



1. A liquid level detecting device adapted for use with a vapour generator comprising a stack tube having a lower liquid inlet, an upper vapour inlet, lower connector means for attaching the lower liquid inlet to the vapour generator at a level below the operating liquid level thereof, upper connector means for attaching the upper vapour inlet to the vapour generator at a level above the operating liquid level thereof, and at least one cooling tube with one end communicating with the stack tube at an upper cooling tube inlet and the other end communicating with the stack tube at a lower cooling tube outlet at a level above the stack tube liquid inlet, each cooling tube changing direction at least twice between its inlet and outlet so as to provide at least a first portion extending down from the upper cooling tube inlet to a region below the lower cooling tube outlet, a third portion extending up from the lower cooling tube outlet to a region adjacent the upper cooling tube inlet, and a second portion interconnecting said first and third portions, the first, second and third portions of the cooling tube being disposed relative to the stack tube so that when the stack tube is in use, the first, second and third portions are disposed so that the lower ends of said first and second portions together afford a generally U-shaped collecting region in which any liquid formed by condensation of vapour in said first and second portions will collect in said collecting region, and at least one sensing device located in sensing relationship to at least one of said first, second and third portions and arranged to sense the change in temperature of said portion and to produce a signal in response to sensing a change of temperature of a predetermined magnitude.

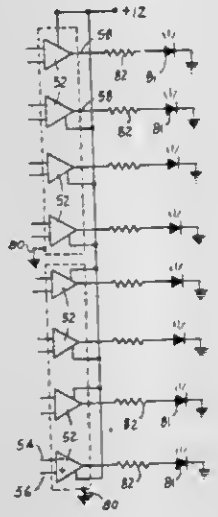
3,935,739
LIQUID LEVEL GAUGING APPARATUS

Edward G. Ells, Norwich, N.Y., assignor to Liquidometer Corporation, Norwich, N.Y.

Filed Apr. 10, 1974, Ser. No. 459,591

Int. Cl.² G01F *23/26*

U.S. Cl. 73—304 C **6 Claims**



1. In a liquid storage installation, a liquid-level indicator means comprising, in combination:

a. a storage tank having a large body of liquid stored therein,

b. an upright, electrically conducting probe device immersed in said body of liquid and adapted for contact at a multiplicity of levels therewith,

c. a second probe device cooperable with said first-mentioned probe device, said second prove device comprising an upright row of electrodes insulated from each other and adapted for immersion in said body of liquid in proximity to said first-mentioned probe device so as to form a plurality of capacitors therewith,

d. an electrical guard comprising a conducting cylinder encircling said probe devices,

e. means connected with said guard for maintaining it at a predetermined level of potential,

f. means for generating an a.c. signal having a substantially constant frequency and for applying it to the first probe device, portions of said signal being capacitively coupled to said electrodes,

g. a plurality of rectifier and filter circuits having output terminals, and having input terminals connected with said electrodes, respectively, so as to receive energy therefrom,

h. a plurality of comparators having first input terminals connected respectively with the output terminals of said rectifier and filter circuits, having second input terminals connected to means having a constant D.C. potential, and having output terminals,

i. a plurality of summing resistors connected respectively to the output terminals of said comparators, and

j. a meter,

k. said summing resistors having a common lead connected to said meter such that contributions of each comparator are algebraically summed by the meter.

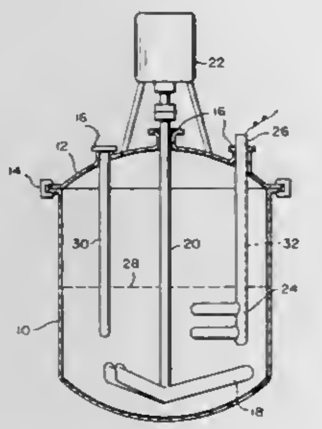
3,935,740
LIQUID LEVEL PROBE

John Butler Whitney, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed June 20, 1974, Ser. No. 481,127

Int. Cl.² G01F ***23/26***

U.S. Cl. 73—304 C **3 Claims**



1. A liquid level capacitor probe for a reactor tank having an elongated member having a glass coating and projecting vertically from the top of said tank into said tank and extending a substantial portion of the height of said tank, said liquid level capacitor probe comprising:

insulating means including said glass coating on said member for electrically insulating and protecting at least a portion of the surface of said member; and

a strip electrode extending in the elongated dimension of said member and attached to said glass coating and surrounded by another glass coating, said strip electrode thereby forming a capacitor with said reactor tank, the magnitude of which is dependent upon the dielectric constant media between said electrode and said reactor tank.

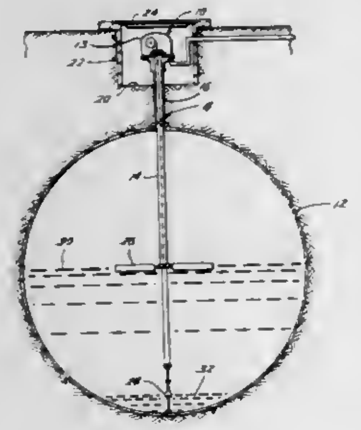
3,935,741
LEVEL SENSOR

Herbert G. Zinsmeyer; Rodney L. Johnson, both of Austin, and Ralph H. Genz, Leander, all of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 388,593, Aug. 15, 1973, abandoned. This application Mar. 7, 1974, Ser. No. 448,978

Int. Cl.² G01F ***23/12***

U.S. Cl. 73—313 **21 Claims**



1. A storage tank liquid level sensor comprising an elongated tubular member adapted to be inserted into a storage tank,

first means on said tubular member for sensing the level of a first liquid in said tank,

second means on said tubular member for sensing the level of a second liquid in said tank having an interface with the first liquid comprising, respectively,

first and second floats having different densities, whereby one of said floats will float on one liquid and the other will float at the interface between the liquids, each float including

an annular affixed thereto and slidably engaging the exterior of said tubular member,

means inside each tubular member operable in response to the magnetic field of each of said annular magnets to constantly create separate signals indicative of the level of each liquid, and

means functioning in response to said sensing means for providing a substantially continuous indication of the level of each of said liquids.

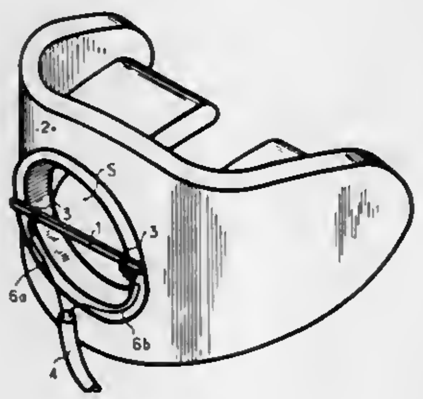
3,935,742
LOW-INERTIA HYGROMETER

Boris Rybak, Universite de Caen Faculte des Sciences - Zoophysiologie, Caen, France

Continuation-in-part of Ser. No. 369,457, June 13, 1973, abandoned. This application Oct. 9, 1974, Ser. No. 513,180

Int. Cl.² G01N ***27/04***

U.S. Cl. 73—336.5 **20 Claims**



1. Device for determining the rate and amplitude of breathing of an individual and comprising an element adapted for application to the face of an individual and being formed with an opening in the buccal or oro-nasal region of the face when said element is applied thereto, a unitary, integral elongate dielectric rod member of square cross-section and having end portions fixed to said element with its intermediate portion, between said end portions, disposed across said opening, said dielectric member having at least one smooth surface to accelerate evaporation of moisture from said member produced by the flux of water vapour present during a breathing exhalation cycle, said dielectric member being of a substance lacking electrical conductivity excepting when subjected to moisture during a breathing cycle during which its electrical conductivity varies in proportion to the amount of moisture exhaled during said cycle, a single pair of conductors connected to said dielectric member at said end portions thereof, electrical energy supplying means coupled to said single pair of conductors, and indicating means having two input terminals respectively coupled to said conductors for indicating the rate and amplitude of the electrical signal generated by said electrical energy supplying means through said dielectric member during the exhalation part of each breathing cycle.

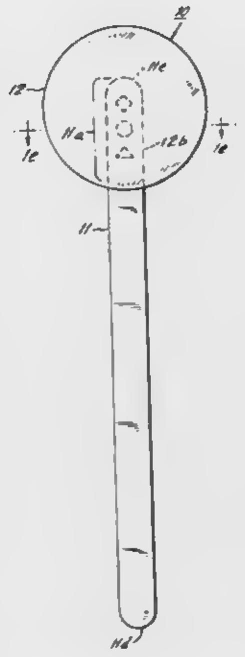
3,935,743
TEMPERATURE INDICATORS

Donald E. Brodie, 706 Briarwood Court; Matthew Camarota, 904 Gainsway Road, both of Yardley, and Charles R. Jankowski, 109 Lions Drive, Morrisville, all of Pa. 19067

Filed July 15, 1974, Ser. No. 488,513

Int. Cl.² G01K ***11/08***

U.S. Cl. 73—343 R **8 Claims**



1. A temperature sensitive device especially adaptable for use in taking a child's temperature comprising:

a confectionery body having a cavity extending to at least one end thereof;

an elongated flexible resilient stem having a first end thereof inserted into said cavity;

said first end having at least one opening provided completely therethrough which is substantially completely enclosed by said confectionery member when the first end of the stem is positioned in the confectionery head; said opening being in the shape which would be formed by a plane geometrical figure passing through said stem;

a temperature sensitive element at least partially filling said opening in said stem;

said confectionery head having at least a portion thereof which is substantially transparent so as to facilitate observation of the temperature sensitive element in said opening from either direction transverse to the plane of said opening;

said temperature sensitive element being of a contrasting color relative to the substantially transparent portion of the confectionery member through which it is viewed;

said element adapted to be substantially completely melted at a predetermined temperature level so as to substantially completely flow out of said opening and thereby effectively disappear from said stem to provide a positive indication of the predetermined temperature level.

3,935,744
CLINICAL THERMOMETER

Paul Beckman, Huntington Valley, Pa., assignor to United States Surgical Corporation, Baltimore, Md.

Continuation-in-part of Ser. No. 324,015, Jan. 16, 1973, abandoned. This application Sept. 18, 1973, Ser. No. 398,327

Int. Cl.² G01K ***7/12, 1/18***

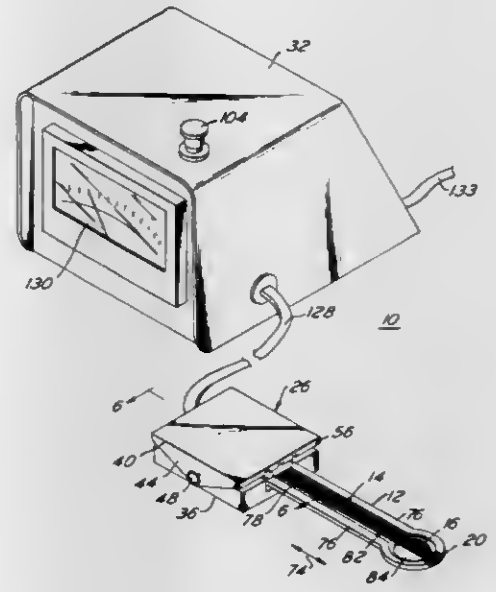
U.S. Cl. 73—361 **49 Claims**

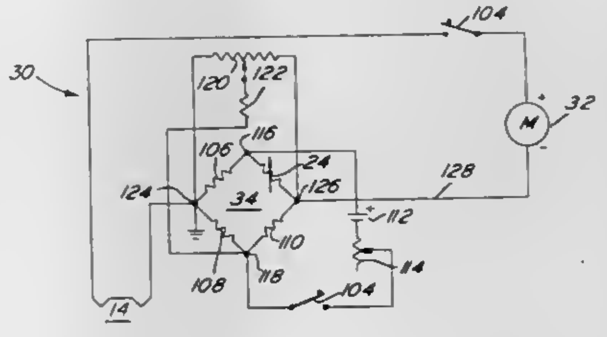
1. An oral or rectal probe for a clinical thermometer, comprising:

an elongated, electrical nonconductive member having a first end of suitable size and shape for insertion into the mouth or rectum of a patient, said first end having a recess formed therein;

thermopile means having a plurality of thermocouples connected in series mounted on said member and defining at least three hot junctions near said first end of said member and at least three cold junctions near a second end of said member, said hot junctions being positioned along a line which is transverse to said member and in the area of said recess so that said hot junctions are separated from one another and from said member by air gaps; and

a pair of electrical contacts mounted on said member near said second end and electrically connected to said thermopile means, said second end of said member being detachably mountable in a housing comprising at least part of a system for using the emf developed by said thermopile in determining the oral or rectal temperature of said patient.





3,935,745
PORE WATER PRESSURE MEASURING DEVICE

Per Olof Jonell, Engelbrektsgatan 24, S-441 37 Goteborg, and Kjell Ingvar Elmgren, Kometgatan 2 F, S-441 00 Alingsas, both of Sweden

Filed Aug. 19, 1974, Ser. No. 498,379

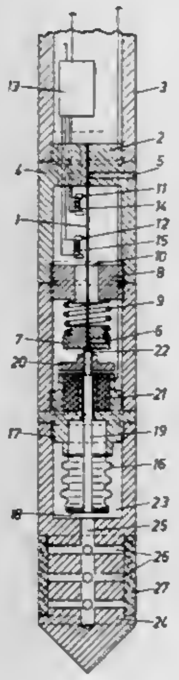
Claims priority, application Sweden, Sept. 4, 1973, 7312007

Int. Cl.² G01L ***9/00***

U.S. Cl. 73—398 R **6 Claims**

1. An improved pore water pressure meter attached to a probe rod for insertion into the ground, the meter comprising a pressure responsive device responsive to the pore water pressure to be measured, and a force meter arranged to be actuated by the pressure responsive device, the improvement comprising a power member operatively connected to said pressure responsive device and selectively actuatable for applying a force on said pressure responsive device of such magnitude as to override the pore water pressure force exerted by said pressure responsive device so as to prevent said pressure responsive device from affecting said force meter

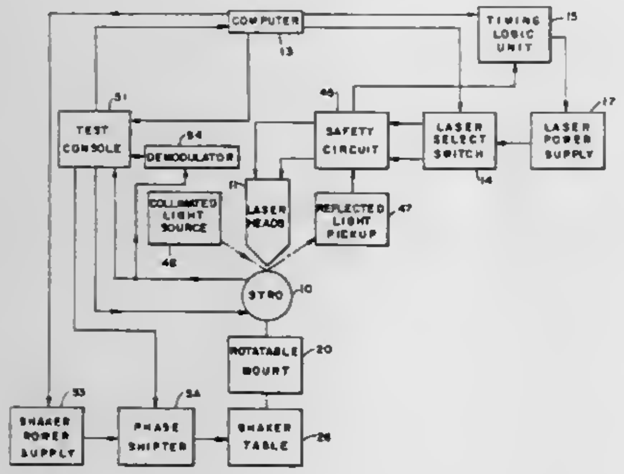
when said power member is actuated, and to thereafter relieve the force exerted by said power member on said force meter



and allow said pressure responsive device to again transmit its force to said force meter.

3,935,746
BALANCING SYSTEM FOR A ROTATING MASS

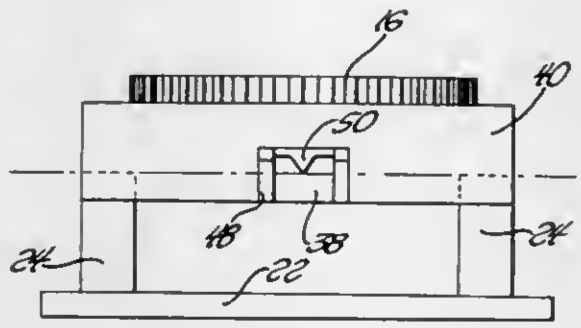
Dean H. Moll, Wayne, and Alan Greiner, Cedar Grove, both of N.J., assignors to The Singer Company, Little Falls, N.J.
Division of Ser. No. 169,661, Aug. 6, 1971, Pat. No. 3,795,784. This application June 26, 1974, Ser. No. 483,149
Int. Cl.² G01M *1/22*
U.S. Cl. 73—462 **4 Claims**



1. A method of determining mass unbalance of a pivotally mounted flywheel in a free rotor gyroscope having pick-offs for sensing tilting of said flywheel along first and second orthogonal axes lying in a plane perpendicular to the spin axis of the flywheel, comprising the steps of aiming the spin axis at Polaris, orienting the first reference axis as close to vertical as possible, recording the tilt of said flywheel with respect to said first and second axes, rotating said reference plane 90° about the spin axis with the spin axis still aimed at Polaris so that said second axis is oriented as close to vertical as possible, recording the tilt of said flywheel with respect to said first and second axes and computing mass unbalance from the flywheel tilt with respect to said first and second positions.

3,935,747
DEVICE FOR LOCATING MASS CENTERS AND OTHER PURPOSES

C. Franklin Boehret, 834 S. Union Street, Grass Lake, Mich. 49240
Filed July 30, 1973, Ser. No. 384,110
Int. Cl.² G01M *1/14*
U.S. Cl. 73—483 **7 Claims**

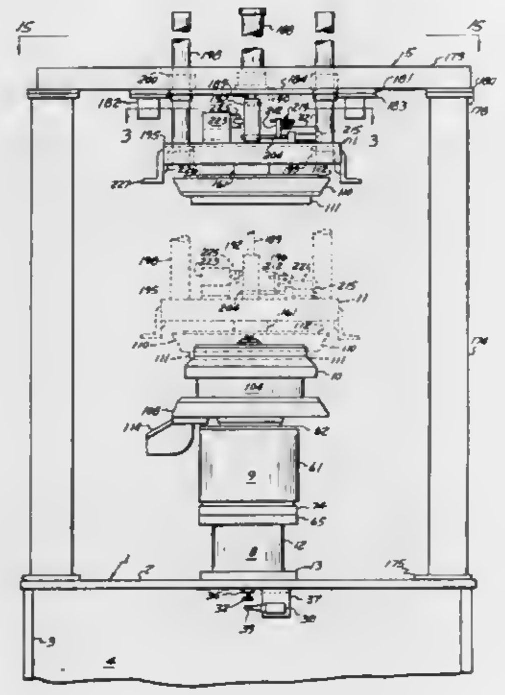


1. A device for locating mass centers and the like, comprising; a first and second set of knife edge supports with knife edges of each set in precise alignment and relatively spaced apart and with the respective sets of knife edge supports disposed transversely with respect to each other for providing distinctly separate axial coordinates for balance computations, a base member for establishing a reference plane and having the first of said knife edge support sets provided thereon, a first member supported upon said first knife edge support set, a second member formed to receive and essentially enclose said first member therewithin for supported engagement upon said second knife edge support set, said second knife edge support set being provided on one of said first and second members whereby said second member is relatively supported and balanced upon said first member and is receptive of a work part thereon for evaluation, said first member having a first channel groove provided on the underside thereof and first means at relatively opposite ends thereof received upon said first knife edge support set, a second channel groove provided across said first member on the other side thereof and second means at relatively opposite ends thereof providing balancing support for said second channel groove being formed precisely to the depth of said first channel groove for intersection therewith and for disposing the bottom walls of each of said channel grooves in a common plane of reference relatively within and between the opposite side faces of said first member.

3,935,748
UNIVERSALLY TILTABLE BALANCING MACHINE FOR INFLATED PNEUMATIC TIRES

Robert J. Lannen, Wixom, Mich., assignor to Micropoise Engineering Company, Wixom, Mich.
Filed Feb. 4, 1974, Ser. No. 439,526
Int. Cl.² G01M *1/04, 1/12*
U.S. Cl. 73—484 **79 Claims**

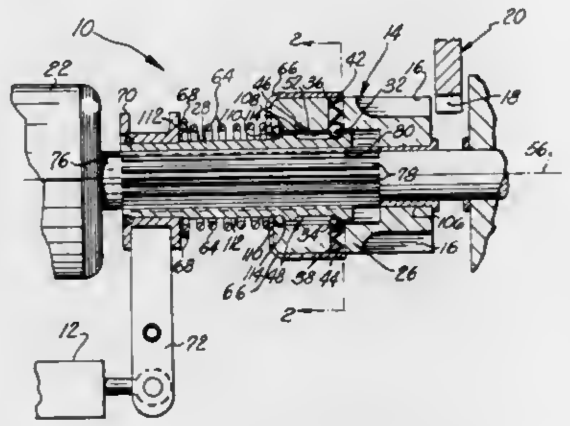
1. A balance testing machine for pneumatic tires including,
a base,
a seating member mounted on said base and adapted to pivotally receive,
a carrier seated upon the seating member, and adapted for universal tilting travel thereon relative to a substantially vertical axis, said carrier including,
tire retention to removably receive a tire for air sealed retention on the carrier,
air conducting means to inflate and deflate a tire retained by said retention means,
a first air passage in said-seating member having optional continuity with,
a second air passage in said carrier,
means to' interrupt said continuity, to afford said tilting travel, after inflation of a tire and to restore said continuity for deflation of such tire, and



means to resist escape of air from a tire when said continuity is interrupted.

3,935,749
STARTING APPARATUS

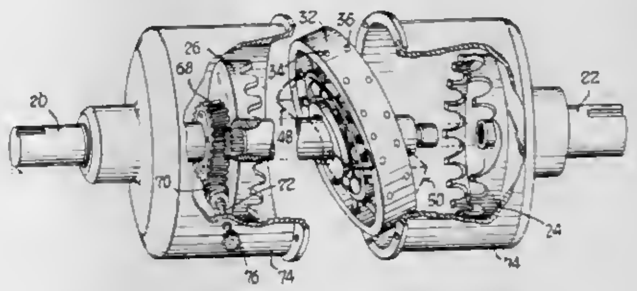
Karl Groves, Brecksville, Ohio, assignor to VLN Corporation, Cleveland, Ohio
Filed Sept. 5, 1974, Ser. No. 503,373
Int. Cl.² F02N *11/00;* F16D *41/00, 43/04*
U.S. Cl. 74—6 **13 Claims**



1. An apparatus for use in an engine starting system having a starting motor for effecting rotation of an engine gear, said apparatus comprising a drive gear movable between a disengaged condition and an engaged condition in meshing engagement with the engine gear, means for effecting movement of the drive gear from the disengaged condition to the engaged condition, a ball, first surface means for cooperating with said ball to effect rotational movement of said drive gear relative to the engine gear upon movement of said drive gear from the disengaged condition toward the engaged condition with teeth on said drive and engine gears in a misaligned relationship, and second surface means for cooperating with said ball to effect rotational movement of said drive and engine gears under the influence of said starting motor when said drive gear is in the engaged condition.

3,935,750
COUNTERBALANCED MECHANICAL SPEED-CHANGE MECHANISM

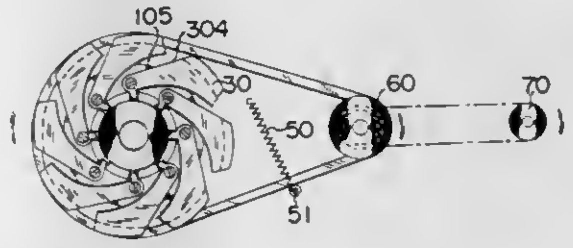
Arthur M. Maroth, Marath Engineering Co., Gruman Hill Road, Wilton, Conn. 06897
Filed Oct. 23, 1973, Ser. No. 408,931
Int. Cl.² F16H *33/00*
U.S. Cl. 74—61 **20 Claims**



1. A speed change mechanism comprising, in combination:
a. a shaft,
b. a nutator member carried by the shaft at a location intermediate free portions of the latter and defining a plane which is oblique with respect to said shaft,
c. bearings supporting the shaft at locations beyond said free portions, enabling the shaft to have turning movements,
d. means for causing said member to nutate in response to turning of the shaft, said means tending to cause a longitudinal flexing of said free portions of the shaft,
e. a rotary member adjoining said mutator member, said rotary member being carried by the shaft between a free portion thereof and one of said bearings,
f. said members having coengaging portions to effect a drive therebetween as the nutator member nutates, and
g. weight means carried by the shaft on the free portions thereof, acting on the shaft as it rotates, to oppose the longitudinal shaft-flexing tendency of said nutating means.

3,935,751
CENTRIFUGAL STEPLESS SPEED CHANGING DEVICE

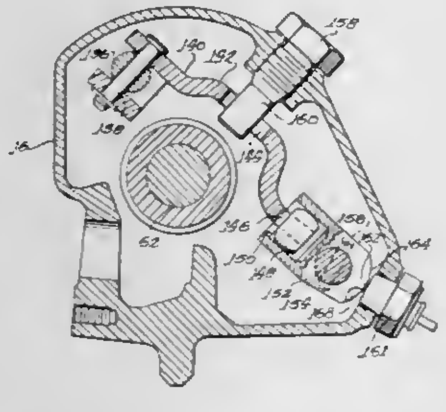
Kuang-Cbang Lee, 19, Lane 33, Ta Tung West Road, Tao Yuan, China /Taiwan
Filed Jan. 6, 1975, Ser. No. 539,026
Int. Cl.² F16H *55/54*
U.S. Cl. 74—230.18 **5 Claims**



1. A centrifugal stepless speed changing device comprising a rotary disk having a top surface and a shallow annular groove at its central portion and a plurality of holes arranged around said shallow groove; a positioning body having a bottom portion with a plurality of grooves, each of which grooves has a bottom surface the bottom portion of said positioning body is mounted on said shallow annular groove of said rotary disk; and a claw blocks set having a plurality of claw blocks are arranged in sequence, each of said claw blocks having a flange at one end and a V-shaped groove at the other end for receiving a belt, a hole is provided adjacent to said flange end, said flanges of said claw-blocks are placed on said grooves of the positioning body respectively and assembled together by means of a plurality of bolts through said holes of the claw blocks and the holes of said rotary disk.

3,935,752
TRANSMISSION

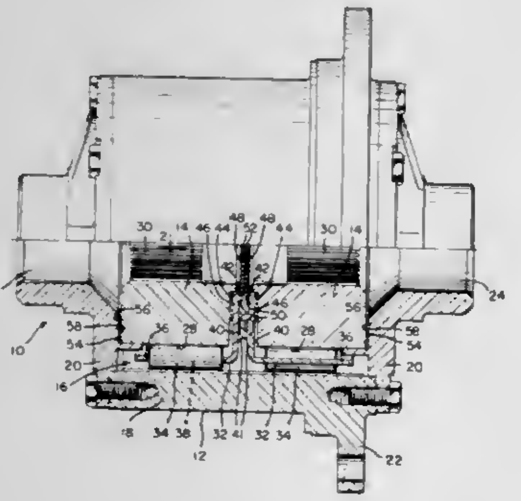
Donald W. Kelbel, and John W. Holdeman, both of Muncie, Ind., assignors to Borg-Warner Corporation, Chicago, Ill.
Division of Ser. No. 441,679, Feb. 11, 1974. This application Dec. 9, 1974, Ser. No. 531,015
Int. Cl.² G05G *9/12*
U.S. Cl. 74—473 R **7 Claims**



1. In a transmission, a housing, input and output shafts respectively journalled in said housing, said input shaft defining an input gear, at least one ratio output gear rotatably supported on said output shaft, a cluster gear assembly journalled in said housing and defining a drive gear meshing wiht said input gear and at least one ratio input gear in meshing relationship with said ratio output gear, means supported by said output shaft and axially movable for clutching said ratio output gear to said output shaft, first and second shift rails supported in said housing for rotational and axial movement, said clutching means being engageable by said second shift rail upon rotational movement thereof and being axially movable thereby upon axial movement thereof for said clutching, linkage means connecting said shaft rails for effecting movement of said second shift rail in response to movement of said first shift rail.

3,935,753
POSITIVE DRIVE DIFFERENTIAL

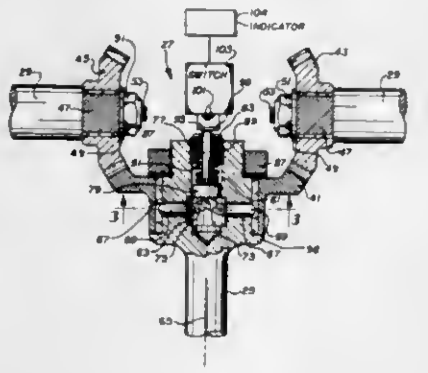
Richard D. Williams, Vancouver, Wash., assignor to Warn Industries, Inc., Kent, Wash.
Filed Feb. 18, 1975, Ser. No. 550,180
Int. Cl.² F16H *35/04*
U.S. Cl. 74—650 **11 Claims**



1. A differential drive mechanism comprising:
a. a rotatable drive casing having radially inwardly facing clutch surfaces,
b. a pair of driven hub members carried mounted on a longitudinal axis in end to end relationship in the drive casing for independent rotation,
c. a pair of sets of clutch elements freely mounted between the drive casing and each of said hub members for circumferential movement between a released position and a driven position between the clutch surfaces of the drive casing and the hubs,
d. a pair of annular interengaged cages holding the clutch elements and permitting limited relative rotation of the sets of clutch elements with respect to one another,
e. each of said cages having at its axially inner end a radially inwardly extending flange, with the two flanges of the two cages being located proximate one another between the inner axial ends of the two hubs, and
f. first and second spring members positioned between said cage flanges, said spring members arranged to engage one another and to press axially outwardly each against a related cage flange so as to cause frictional engagement of each of said cage flanges with their related hub members, said spring members having sufficiently low frictional engagement between one another to permit limited relative rotation of said cage members by virtue of the frictional force between the cage members and their related hub members.

3,935,754
FAILURE DETECTOR AND INDICATOR FOR AIRCRAFT FLAP ACTUATION SYSTEM

Virgilio Comollo, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash. and Aeritalia S.p.A., Napoli, Italy
Filed June 14, 1974, Ser. No. 479,293
Int. Cl.² F16H *37/06, 5/52, 35/00;* **B64C** *9/00*
U.S. Cl. 74—665 F **29 Claims**

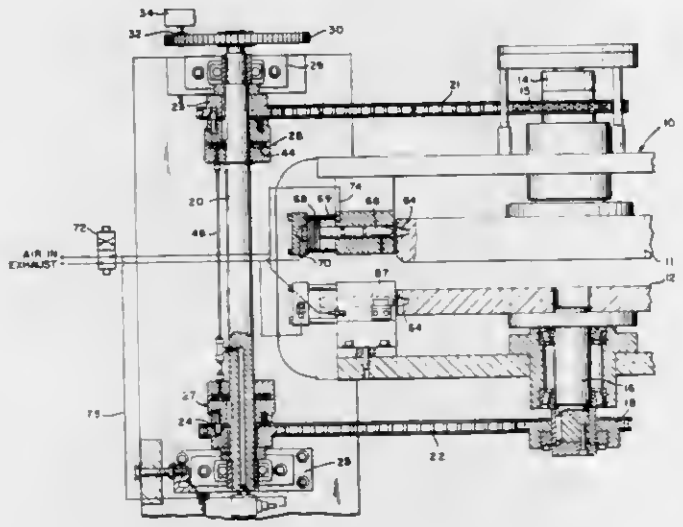


1. A method of detecting and indicating the failure of the primary drive train of an actuator system that includes a primary and a secondary drive train, said secondary drive train adapted to shift from a non-driving state to a driving state upon failure of the primary drive train, said method comprising the steps of:
forming a free motion zone in said secondary drive train;
sensing when the free motion zone is crossed; and,
providing an indication that the free motion zone has been crossed.

5. Apparatus for detecting and indicating the failure of the primary drive train of an actuator system that includes a primary and secondary drive train, said secondary drive train including a coupling system for coupling power between a driven torque tube, and at least one secondary torque tube, said apparatus comprising:
at least one free motion zone formed in said coupling system;
at least one detecting means for detecting the crossing of said at least one free motion zone; and,
an indicating means coupled to said at least one detecting means for providing an indication of the crossing of said at least one free motion zone.

3,935,755
TURRET ALIGNMENT APPARATUS

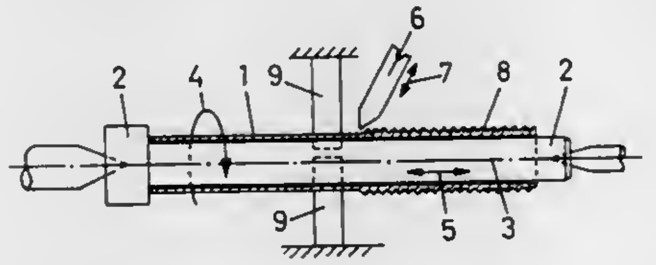
Dennis Daniels, Bellevue, Wash., assignor to U.S. Amada, Ltd., City of Industry, Calif.
Filed July 10, 1974, Ser. No. 487,219
Int. Cl.² B23B *29/32*
U.S. Cl. 74—815 **11 Claims**



1. In a machine tool apparatus having rotatable turret means, a power source, a drive shaft rotatably coupled to said power source, a drive train coupling said drive shaft to said turret means, and shot pin means engageable with the turret means for aligning the turret means in an exact rotational position, the improvement comprising:
releasable coupling means for providing limited relative rotational movement between said drive shaft and said turret means, and
control means for decoupling said releasable coupling means prior to said shot pin means engaging said turret means for freeing the turret means from the drive shaft during turret means exact alignment and for coupling the releasable coupling means immediately upon disengagement of said shot pin means from said turret means.

3,935,756
METHOD FOR MANUFACTURING A FILE FROM A THIN-WALLED TUBE

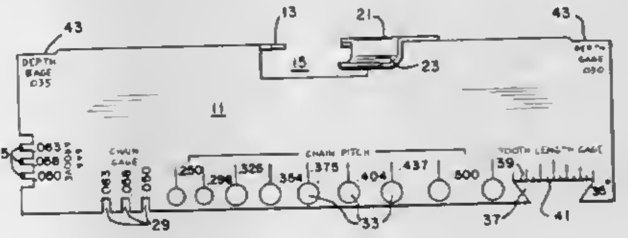
Ernst Udo Ebert, Wexford, Ireland, assignor to Firma August Ruggeberg, Marienheide, Germany
Filed Jan. 15, 1975, Ser. No. 541,101
Claims priority, application Germany, Jan. 15, 1974, 2401671
Int. Cl.² B24B *73/06*
U.S. Cl. 76—24 R **6 Claims**



1. A method for manufacturing a file with filing or rasping teeth from a hollow thin-walled tube composed of tool steel, said file having a noncircular cross-sectional profile, comprising:
forming multiple, helical file teeth on the surface of the unshaped thin-walled tube; and
shaping the toothed tube into a noncircular cross-sectioned profile by applying shaping forces exclusively on the inside wall of the tube.

3,935,757
CHAIN SAW TOOL

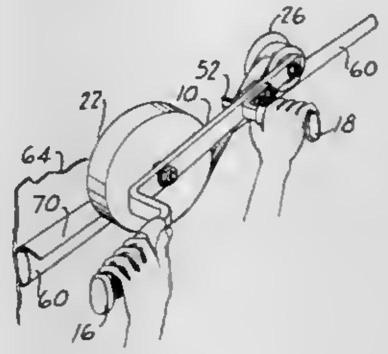
Elof Granberg, 200 S. Gerrard, Richmond, Calif. 94801
Filed Jan. 13, 1975, Ser. No. 540,429
Int. Cl.² B23D *63/16;* **G01B** *5/02*
U.S. Cl. 76—74 **2 Claims**



2. A chain saw gauge comprising
a plate having a file guide disposed at the top thereof for guiding a chain saw sharpening file at a 35° angle across the cutting edge of a cutter link of a saw chain held against said plate,
a precise set of graduated projections formed along the edge of said plate for measuring the width of the cutter bar groove,
a precise set of graduated openings formed in said plate for measuring the chain gage,
a set of precisely aligned circular holes disposed in said plate at graduated predetermined distances for measuring the chain pitch,
a trapezoidal opening formed in said plate with precise graduations disposed along one edge of said recess for measuring the cutting tooth top plate length, and
means formed on said plate for measuring the height of the depth gauge of a chain saw cutter tooth.

3,935,758
TOOL FOR APPLYING MASKING TAPE TO MOLDINGS

Dean A. Polzin, 2033 E. Birch Run Road, Burt, Mich. 48417; Arthur J. Trickey, and Arthur M. Trickey, both of 12108 N. Saginaw Road, Clio, Mich. 48420
Filed Mar. 5, 1975, Ser. No. 555,579
Int. Cl.² B65H *75/40*
U.S. Cl. 81—3 R **10 Claims**



1. A tool for applying masking tape to the exposed surfaces of moldings attached to supporting surfaces so that at least one longitudinal edge of the molding is supported adjacent to but unattached to the supporting surface, comprising: an elongated frame member; a tape support reel rotatably supported adjacent one end of the frame member so that the reel axis extends normally to the frame member; an applying roller rotatably supported adjacent the opposite end of the frame with its rotational axis parallel to and on the same side of the frame as the rotational axis of the tape reel; a roller having a resilient surfce and a flange member having its edge extending radially outward beyond the resilient surface; and handle means connected to the frame for supporting the tool, whereby the flange may be inserted between the longitudinal edge of a molding and the supporting surface so that the resilient section of the roller presses against the edge of the molding to allow the length of tape to be attached to the

molding edge and pressed against the edge by the resilient section of the roller.

3,935,759
DEVICE FOR BARING INSULATED ELECTRICAL CONDUCTOR WIRE AND STRANDED WIRE

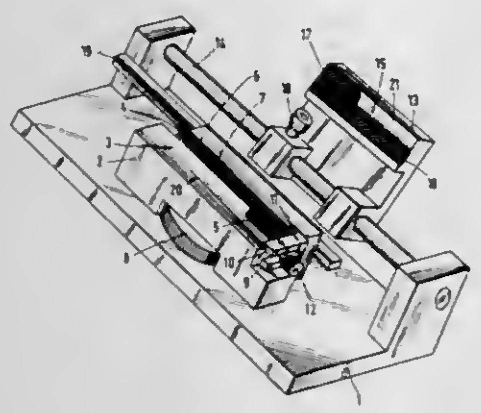
Paul Roth, Route de Giez, 1411 Les Tuileries-de-Grandson, Switzerland

Filed Nov. 20, 1974, Ser. No. 525,681

Claims priority, application Switzerland, Nov. 20, 1973, 16328/73

Int. Cl.² H02G *1/12*

U.S. Cl. 81—9.51 **14 Claims**



1. A device for baring electrical conductor wires and stranded wires, comprising a first surface and a second surface movable over and relative to said first surface, an equalsized gripping section (**16;32**) on said second surface is movable over a longer lamellar gripping section (**4**; **30**) on said first surface and an equal-sized gripping section (**17**; **53**) on said second surface is movable over a shorter lamellar gripping section (**5**; **31**) on the first surface positioned and running near an end portion of the longer gripping section (**4**; **30**) of said first surface in the longitudinal direction of these surface sections (**4**, **5**, **16**, **17**; **30**, **31**, **32**, **33**), a knife (**7**; **34**) positioned between the longer and the shorter gripping section (**4** and **5**; **30** and **31**) of the first and/or second surface and projecting an adjustable amount above said surface, said knife having a cutter portion which extends at least in the area of the shorter gripping surface section (**5**; **31**) whereby an end piece of an insulated wire or a stranded wire projecting laterally over the knife (**7**; **34**) on the side of the longer gripping surface section (**4**; **30**) can first be rolled over the knife (**7**; **34**) through the movement of the second surface between the longer and shorter gripping surface sections (**4**, **5** and **16**, **17**; **30**, **31** and **32**, **33**), after which the piece of sheathing thereby circumcised from the remaining insulating sheathing can be rolled on between the longer gripping surface sections (**4** and **16**; **30** and **32**), thereby turned relative to the wire or the stranded wire, the latter snaked and lastly the end of wire or stranded wire drawn out of the cut piece of insulating sheathing.

3,935,760
TOOL FOR REMOVING SHOCK ABSORBERS AND THE LIKE

Bobby W. Taylor, Rte. 1, Cache, Okla. 73527

Filed Jan. 31, 1974, Ser. No. 438,224

Int. Cl.² B25B *13/06*

U.S. Cl. 81—55 **7 Claims**

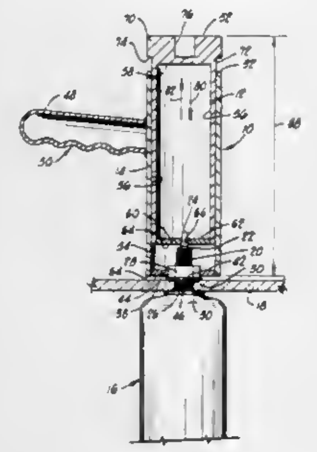
1. A tool for removing a threaded member from a nut fastener or the like, comprising:

a base member, having an upper end, a lower end and an opening extending a distance therethrough intersecting the upper end and the lower end thereof;

a plate connected to the lower end portion of the base member substantially encompassing the base member opening generally near the lower end of the base member, a nut opening being formed through the plate and intersecting the base member opening for removably and retainingly receiving the nut fastener or the like;

a handle connected to the base member and spaced a distance from the lower end of the base member; and

an insert member, having an upper end, a lower end and an outer peripheral surface, the nut opening in the base member being smaller than the diameter formed via the outer peripheral surface of the insert member and the insert member being slidably insertable within the base member opening only via the intersection of the base member opening with the upper end of the base member, an opening formed through the lower end of the insert member for removably and retainingly receiving a portion of the threaded member, the nut opening being shaped and sized independent of the shape and size of the opening in the lower end of the insert member and independent of the size and shape of the insert member, and the insert member being rotatable within the base member opening for rotating the portion of the threaded member disposed through the opening in the insert member lower end, the rotation of the insert member unthreadingly removing the threaded member from the nut fastener or the like while substantially maintaining the base member and the nut fastener or the like retainingly received thereby in a relatively stationary position.



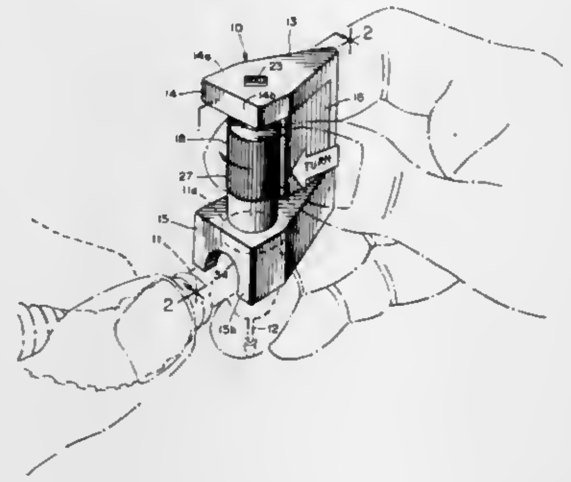
3,935,761
DENTAL HANDPIECE WRENCH

Wolfgang O. Junkel, Mount Prospect, Ill., and Jeffrey M. Kneipper, Kenosha, Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 19, 1975, Ser. No. 551,006

Int. Cl.² B25B *1/00*

U.S. Cl. 81—55 **25 Claims**



1. A wrench for contra-angle handpieces comprising a C-shaped body having horizontally-projecting upper and lower arms and a vertical connecting strut therebetween; said lower arm having a socket in its undersurface for receiving the upper portion of a contra-angle handpiece head and having a vertical bore extending through said lower arm and communicating with said socket; a burtube-chuck adjusting assembly disposed between said arms and projecting into said socket through said bore; said assembly including a vertically-elongated shaft member having a lower end portion of non-circular cross sectional configuration normally disposed within said socket and adapted to be received in an opening at the upper end of a handpiece chuck to lock said shaft member and chuck against independent relative rotation about the axis of the shaft member; at least one depending burtube-engaging lug member normally projecting downwardly into said socket and adapted to be received within an opening at the upper end of a handpiece burtube to lock said lug member and burtube against independent relative rotation about the axis of said shaft member; a generally cylindrical handle wheel rotatably mounted between said arms and operatively connected to one of said lug and shaft members for rotating said one member about said axis; and locking means affixed to said upper arm and connected to the other of said members for preventing rotation of said other of said members about the axis of said shaft member; said generally cylindrical handle wheel having a diameter within the range of about 5 to 25 millimeters; said vertical connecting strut having a thickness, measured normal to a plane parallel with the axis of said shaft member, substantially less than the diameter of said handle wheel.

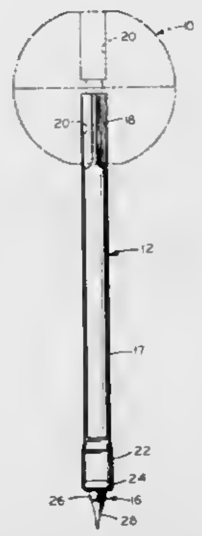
3,935,762
TOOL ASSEMBLY FOR MOUNTING BITS

Vincent J. Tudisco, Emerson, N.J., assignor to Creative Tools, Inc., Bennington, Vt.

Filed Nov. 12, 1974, Ser. No. 523,168

Int. Cl.² B25B *15/00*

U.S. Cl. 81—177 G **7 Claims**



1. A tool assembly for releasably retaining interchangeable tool bits comprising a handle member having a cavity of polygonal cross section, a tubular shank having a cavity extending therethrough with one end portion having a polygonal cross section complementary with said cross section of said handle member cavity and snugly seated therewithin, the other end portion of said shank of greater width than the adjacent body portion to provide an enlarged end portion defining an internal peripheral shoulder at the juncture thereof generally facing the open end of said enlarged end portion; a tool bit receiving socket having a body portion seated in the cavity of said other end portion of said shank and having an external collar at its outer end seated against said open end of said shank, said socket having its inner end abutting said internal shoulder of said shank, said socket having a tool bit receiving cavity opening at its outer end and releasable tool bit retaining means and an outwardly facing shoulder in said cavity both spaced inwardly from the open end thereof; and a tool bit having a body portion seated in said socket cavity and a work engaging portion outwardly thereof, said body portion abutting said socket shoulder to limit movement inwardly of said socket cavity, said releasable retaining means releasably engaging said body portion of said tool bit to retain it within said cavity.

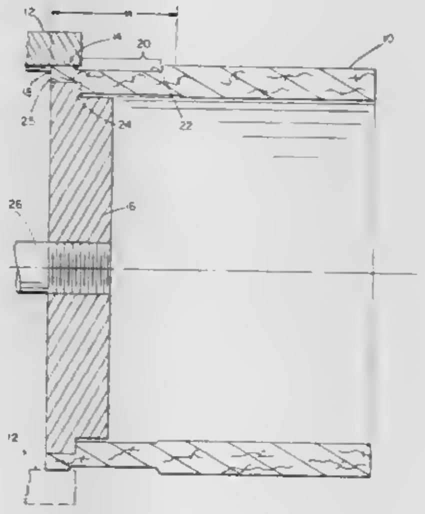
3,935,763
MACHINING VULCANIZED FIBRE

Robert B. Glenn, Rochester, N.H., assignor to Spaulding Fibre Company, Inc., Tonawanda, N.Y.

Filed Apr. 23, 1975, Ser. No. 570,824

Int. Cl.² B23B *3/00*

U.S. Cl. 82—1 C **4 Claims**



1. In the method of manufacturing a ring-shaped part of predetermined axial length by machining a segment of vulcanized fibre tubing having a predetermined wall thickness, said segment having a waste material portion adjacent one end thereof, the improvement comprising the preliminary steps of

reducing said wall thickness in an axially extended region of said waste material portion that is axially spaced from said one segment end,

providing a chucking lip intermediate said region and said one segment end, said lip projecting above the adjacent surface of said region, and

providing an annular stop surface spaced from said one segment end in the surface of said segment wall opposed to the segment surface that incorporates said chucking lip.

3,935,764
GUIDING MEANS FOR BORING BAR

Kasimir Janiszewski, 11908 W. Loomis Road, Franklin, Wis. 53132

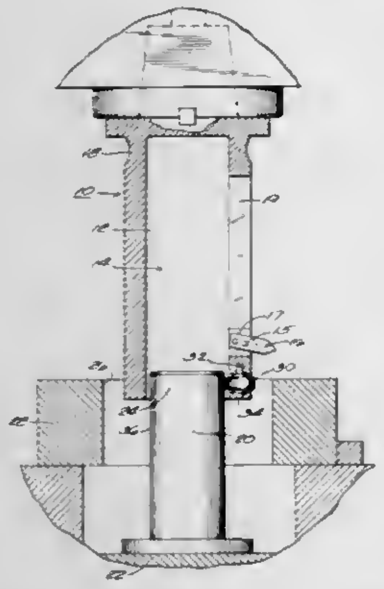
Filed Mar. 5, 1975, Ser. No. 555,461

Int. Cl.² B23B *41/06*

U.S. Cl. 82—1.2 **4 Claims**

1. In apparatus for boring holes including a rotatable and longitudinally movable boring bar having a free end and a generally radially projecting work tool for engaging and removing material from a bore in a work piece, the improvement comprising wall means defining an axial opening in said

boring bar and a guide element separate from said boring bar and telescopically receivable in said opening, and guide means on said boring bar projecting inwardly into said axial opening and engageable with said guide element.



3,935,765
AUTOMATIC CAMSHAFT LATHE

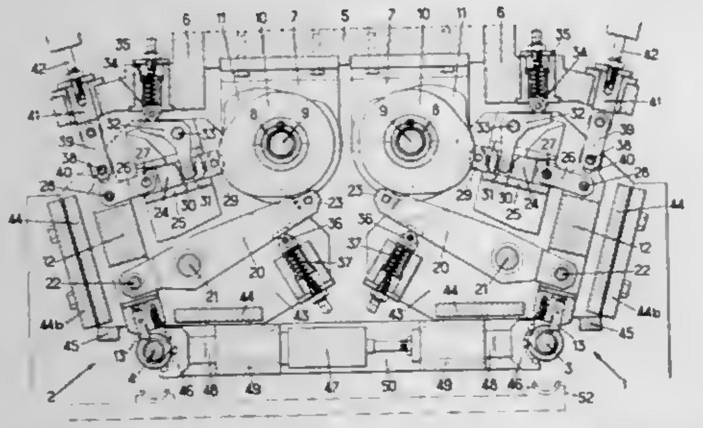
Henri Peltier, Chatillon; Michel Catrain, Bures-sur-Yvette, and André Monnin, Rueil-Malmaison, all of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed May 31, 1973, Ser. No. 365,817

Claims priority, application France, June 9, 1972, 72.20958

Int. Cl.^{2} B23B *3/28*

U.S. Cl. 82—19 13 Claims



1. An automatic lathe assembly for supplying elongated workpieces at machining stations in a lathe, simultaneously machining separate surfaces at a plurality of spaced work stations along the length of said elongated workpieces supported at machining stations in said lathe, and removing said machined workpieces from said machining stations, said automatic lathe comprising at each work station a tool slide having a machining tool thereon and mounted for movement by mechanical transmission means operably connected thereto, driven tool feed and tool orienting cams for actuating said mechanical transmission means to feed and orient said tool slides and the machining tools mounted thereon, and workpiece supporting means including opposed members for mounting therebetween the elongated workpieces for rotation about their longitudinal axes at a first machining station in said lathe, said lathe further comprising longitudinally extending support beam means extending above a workpiece at said first machining station, bearing bracket means rigidly mounted on and projecting downwardly from said beam means, a first shaft supported in spaced relation below said beam means by said bearing bracket means for rotation about its longitudinal axis extending parallel to and spaced above the axis of a workpiece mounted at said first machining station, one each of said feed and said orienting cams being coaxially mounted on said first shaft for rotation therewith in side-by-side relation to one another at each said work station along the workpiece at said first machining station and substantially above said workpiece, said mechanical transmission being located substantially above said workpiece with only said tool slide and the machining tool thereon extending down to said workpiece thereby leaving below said workpiece an unobstructed space; drive means for simultaneously rotating said shaft and said workpiece about their longitudinal axes and; means for moving said workpiece supporting means longitudinally during machining of said workpieces so that axial feeding is accomplished by movement of the workpieces; and automatic cross transfer means for automatically supplying and removing workpieces positioned into said unobstructed space, said transfer means including means for positioning and removing directly said workpieces between said supporting means.

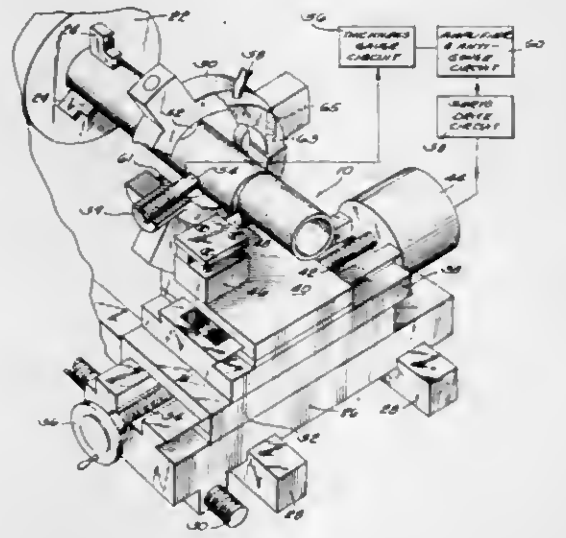
3,935,766
METHOD AND APPARATUS FOR MACHINING CYLINDRICAL TUBES

Christopher F. Masters, 2525 South Shore Drive, Milwaukee, Wis. 53207

Filed Oct. 9, 1973, Ser. No. 404,542

Int. Cl.^{2} B23B *21/00, 3/28;* B23C *1/16*

U.S. Cl. 82—21 A 13 Claims



1. Apparatus for machining an elongated cylindrical tube having eccentric inner and outer cylindrical surfaces to reduce the eccentricity thereof, said apparatus comprising means for rotating the tube about the axis of its outer cylindrical surface, ultrasonic measuring means for measuring the wall thickness in a radial direction from the tube center of a relatively small spot on said tube prior to machining while it is rotating and said means producing an output signal whose magnitude is proportional to said tube wall thickness, said measuring means including a sensor, means for mounting said sensor adjacent to said tube, and externally of said tube at a fixed distance from the axis of rotation of said tube to measure the wall thickness of the tube as it rotates, machining means for removing material from said tube wall at a spot adjacent to said sensor, and subsequent to measuring the thickness of the wall at the spot, means for simultaneously moving said sensor and said machining means longitudinally along the length of said rotating tube to measure and machine the wall thereof along a helical path, and drive means coupled between the output of said measuring means and said machining means to move the machining means toward and away from the tube in a direction transverse to movement of the sensor to cause a depth of cut on the tube if required equal to the measured wall thickness minus a pre-selected final machined wall thickness thereby reducing the eccentricity of the inner and outer surfaces to the tube.

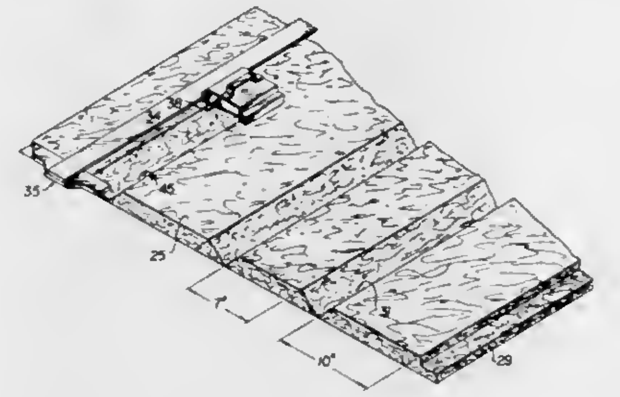
3,935,767
MULTIPLE GAUGING DEVICE

Alexander W. McClay, Jr., 29 W. Bank St., Petersburg, Va. 23803

Division of Ser. No. 53,951, July 10, 1970, Pat. No. 3,824,695. This application July 8, 1974, Ser. No. 486,653

Int. Cl.^{2} 144 *136 R;* B26D *3/06*

U.S. Cl. 83—5 2 Claims



1. A method for making ducts by positioning a guide-edge across an insulating structural board, having a metal foil vapor barrier on one side thereof, in a series of spaced apart positions along which selected tools may be guided to vertically cut, or to remove material to form a groove in order that sides between lapped corner joints may be formed for the fabrication of ducts or like structures of multiple sides, in which said positioning is effected by a reelable linear measurer with its housing demountably carried by said guide-edge and having its zero end connected to a distance gauge comprising diagramatically indexed alignment means spaced therealong, being used in a series of similar dimensioning sequences beginning with an immediately prior edge, or cut, and subsequently indicating the position of the guide-edge for the next cut, directly in terms of the required inside dimension of that side of the structure after fabrication, comprising the steps of:

placing the insulating board on a cutting table, or other support, with its metal foil side down,

determining the specified inside dimensions of the required duct;

selecting the one of the plurality of alignment means which offsets the zero end of the linear measurers from the right hand edge of the board a predetermined distance equal to the width of a stapling flap;

setting the position of the guide-edge at the zero end of the so-located linear measurer and parallel to the right hand edge of the board,

making a vertical cut along the guide-edge, through the insulating material but not cutting the metal foil;

separating the material, to the right of the cut, from the metal foil to form a stapling flap;

mounting the linear measurer on the staight-edge and placing a second alignment means in alignment with the edge thus exposed, said second alignment means offsetting the zero end of the linear measurer a distance equal to the sum of the widths of material to be removed from the first side of the structure being fabricated plus one half of the width of the grooving tool;

moving the guide-edge to the left, and parallel to the prior cut, until the specified inside dimension, of the side of the structure being layed off, as indicated by the unreeling linear measurer, intersects the guide-edge, and with the guide-edge held in this position, placing the gauge and linear measurer to the left of the guide-edge, and

moving the grooving tool along said edge to cut a first groove;

replacing the linear measurer with its housing atop the guide-edge and placing said second alignment means in alignment with said last-mentioned groove;

again moving the guide-edge to the left, and parallel to the prior cut, to the point where the required inside dimension of this side of, as indicated by the unreeling linear measurer, intersects the guide-edge,

placing the gauge and measurer to the left of the guide-edge,

holding said edge in this position and moving the grooving tool therealong to cut a second groove;

again mounting the linear measurer, together with its housing, atop the guide-edge,

placing said second alignment means in alignment with the second groove,

while holding the alignment means in this position, moving the guide-edge to the left, and parallel to the prior cut, until said linear measurer, unreeling from its housing, indicates at its intersection with the guide-edge, the required inside dimension of the side of the structure being layed-off,

holding the guide-edge in this position and moving the grooving tool therealong to cut a third groove;

and finally, again mounting the linear measurer, in its housing, atop the guide-edge,

placing a third alignment means in alignment with said third groove,

and while holding the alignment means in this position, moving the guide-edge to the left and parallel to the prior cut until said linear measurer, unreeling from its housing, indicates, at its intersection with the guide-edge, the required inside dimension of the fourth and final side of the structure,

holding the guide-edge in this last mentioned position,

making a cut therealong,

moving a rabbeting tool along the edge formed by the first cut of the sequence, to form a rabbet to receive said butt edge when the material is structured into a closed configuration,

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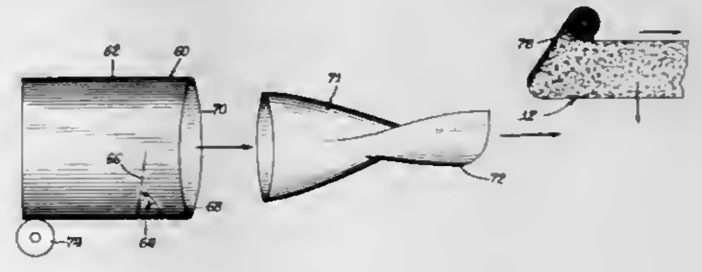
3,935,768
METHOD OF MAKING A DISPOSABLE DIAPER

Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 296,982, Oct. 12, 1972, Pat. No. 3,837,955, which is a division of Ser. No. 111,188, Feb. 1, 1971, Pat. No. 3,731,689. This application June 6, 1974, Ser. No. 476,952

Int. Cl.^{2} B26D *3/00*

U.S. Cl. 83—39 4 Claims



1. A method of making the pouch for a disposable diaper having a fluid absorbent body and pouch integrate therewith, said fluid absorbent body having a front side and a back side, said back side having a fluid impervious surface and said pouch having a wall portion thereof common with said impervious surface in at least one waist region of the diaper and in at least a portion of the remaining region of the diaper, the remainder of the pouch wall comprising a supple, fluid impervious sheet attached to said body whereby said impervious surface and said sheet form opposing wall portions of said pouch, said method comprising slitting a flattened tube of fluid impervious sheet material

a. through two opposing wall portions thereof along a line transverse to the longitudinal axis of the tube from a longitudinal edge of the flattened tube partially across the width of said flattened tube and

b. along a line extending longitudinally from one end of the flattened tube to said transverse slit, with the longitudinal slit heing closer said longitudinal edge than an inner portion of the transverse slit.

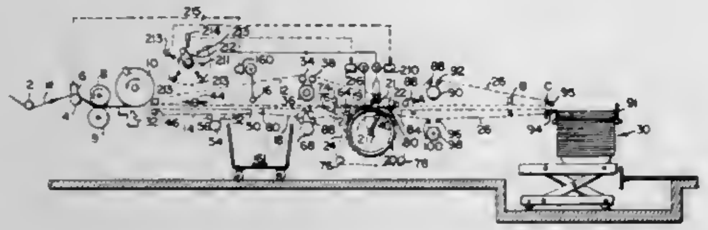
3,935,769
TANDEM COLLECT SINGLE WEB SHEET CUTTER AND STACKER

David Noel Obenshain, Swanton, Md., assignor to Westvaco Corporation, New York, N.Y.

Filed June 28, 1974, Ser. No. 484,248

Int. Cl.² B65H *35/08*

U.S. Cl. 83—79 **8 Claims**



1. A high speed sheet cutting, delivering and stacking mechanism comprising in combination, means for advancing sheet material in web form to a sheet cutting device where the web is cut into sheets, a sheet conveying means for conveying the cut sheets to a foraminous sheet collecting drum where the individual cut sheets are collected, air shower means for guiding individual sheets onto said foraminous collecting drum in registered packets and for removing the packets of sheets from said foraminous collecting drum, a common drive means for the sheet cutting device, sheet conveying means and foraminous collecting drum, and a slow-down-speed-up sheet packet transfer conveying means for accepting packets of sheets from said foraminous collecting drum and delivering said sheet packets to a sheet stacking means, the improvement comprising:

a. a transmission means having a 2:1 drive ratio connected between said sheet cutting device and said foraminous collecting drum; and,

b. an air shower control means driven by said sheet cutting device for actuating said air shower means to collect packets of cut sheets that are shorter in length than one half the circumference of said foraminous collecting drum in tandem on said foraminous collecting drum.

3,935,770
PUNCHING PRESS WITH TOOL EXCHANGING MEANS

Alfred Bareis, Uhingen; Karl Dangelmaier, Goppingen-Holzheim, and Joachim Von Wlassaty, Albershausen, all of Germany, assignors to L. Schuler GmbH, Germany

Filed Mar. 15, 1974, Ser. No. 451,674

Claims priority, application Germany, Mar. 15, 1973, 2312898

Int. Cl.² B26D *7/06*

U.S. Cl. 83—95 **24 Claims**

1. Punching press apparatus comprising:

an exchangeable tool set having first and second punching tools,

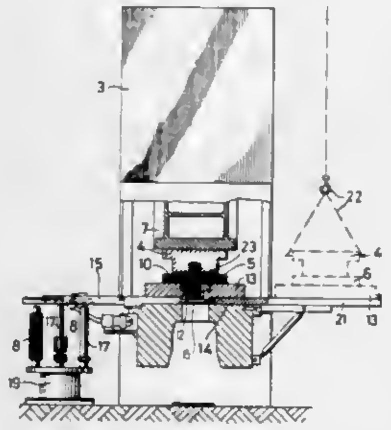
pressing ram means for pressing said first and second tools toward one another to punch parts from sheet material interposed between said first and second tools,

a press table supporting said second tool,

at least one stacking duct for stackingly accommodating a plurality of said parts punched out by said tools,

and tool exchanging means including movement accommodating means for accommodating movement of said second tool relative to said press table in a direction transverse to the stacking direction in which said at least one stacking duct extends,

wherein each of said at least one stacking ducts extends through said second tool from respective positions where said parts are punched out and terminates on the side of the second tool which faces said press table at a spacing from said press table such that said second tool can be moved with respect to said press table in said transverse direction without emptying said at least one stacking duct and without separation of said at least one stacking duct from said second tool, each of said at least one stacking ducts being carried in their entirety with and movable with said second tool in said transverse direction.



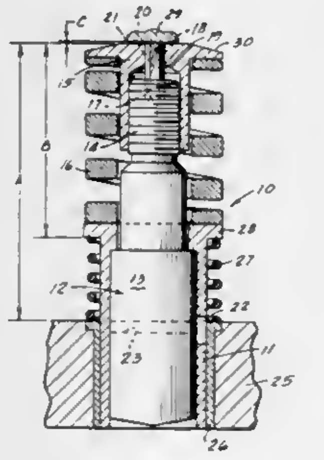
3,935,771
PUNCH AND STRIPPING GUIDE ASSEMBLY

Percy L. Cady, Jr., Darien Center, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Feb. 10, 1975, Ser. No. 548,823

Int. Cl.² B26D *7/26*

U.S. Cl. 83—140 **9 Claims**



1. Tooling for use in a punching device, said tooling comprising:

a. a punch-guide and stripper sleeve;

b. a punch having a body slidably disposed in said sleeve and having a threaded upper end portion, said threaded end portion having an axial opening of non-circular cross-section;

c. a punch head threaded onto said end portion and having an axial opening therethrough of non-circular crosssection;

d. a stripping spring acting between said sleeve and said punch head to urge the lower end of said punch into said sleeve; and

e. a locking rod of non-circular cross-section extending into both of said openings for preventing rotation of said punch head.

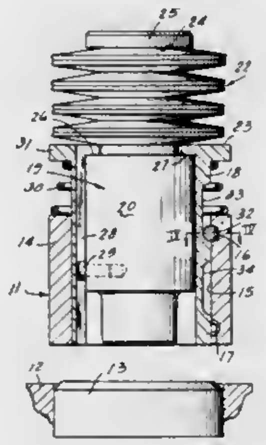
3,935,772
PUNCHING DEVICE HAVING SELECTABLE PINCH POINT CLEARANCE

Duane J. Demus, Elba, and Vitmar G. Von Langendorff, Tonawanda, both of N.Y., assignors to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Mar. 21, 1975, Ser. No. 560,605

Int. Cl.² B26D *7/06*

U.S. Cl. 83—140 **5 Claims**



1. A punching device comprising:

a. a frame having a lower arm on which a die is supported, and an upper arm having a vertical bore aligned therewith;

b. a punch-guide and stripper sleeve slidably disposed in the bore in said upper arm;

c. a punch having a body slidably disposed in said sleeve;

d. a stripping spring acting between said sleeve and said punch to urge the lower end of said punch into said sleeve;

e. a lifting spring acting between said sleeve and said upper arm and urging said sleeve away from said die; and

f. a horizontal retainer pin in said frame, and chordally intersecting said bore through a selected one of a plurality of vertically spaced holes, there being a corresponding plurality of laterally facing slots in the outer wall of said sleeve which are vertically spaced from each other by an amount differing from the vertical spacing of said holes and through which said pin passes chordally.

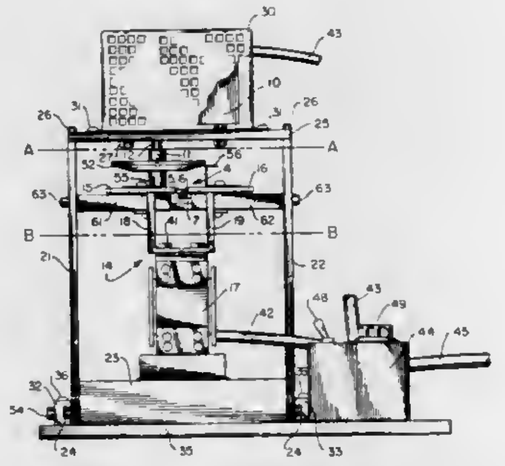
3,935,773
APPARATUS FOR CONDITIONING COMPONENT LEADS

Donald H. Daebler, Albuquerque, N. Mex., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 17, 1975, Ser. No. 559,109

Int. Cl.² B23D *25/12*; B26D *7/06*

U.S. Cl. 83—331 **22 Claims**



1. Apparatus for conditioning leads of a component that has a body with at least one lead extending from a surface thereof, comprising:

a first gear having an axis and having teeth on the circumference thereof,

a second gear having an axis and having teeth on the circumference thereof,

first supporting means supporting said gears relative to a common plane therethrough that is perpendicular to the axes of said gears with the teeth thereof meshing,

the ends of the teeth on at least said first gear being truncated such that at the mesh point of said gears the end of a truncated tooth on said first gear is spaced a distance from the valley between teeth on said second gear by an amount that is substantially equal to the thickness of a component lead,

drive means coupled to at least one of said gears for providing rotating motion of said gears,

second supporting means for supporting components over a path that extends past the mesh point of said gears along a line that is generally parallel to the tangent to said gears with the component surface spaced from the common plane and component leads extending from this surface in the direction of the common plane, and

means for moving the components along the path with a length of component lead adjacent the component surface passing through the mesh point of said gears for thereby conditioning the leads.

3,935,774
MOUNTING DEVICES FOR A BLADE OF A ROTARY CUTTING MACHINE

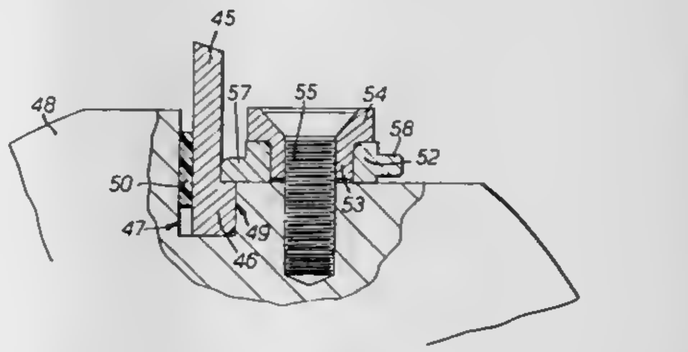
Richard Adrian Craddy, Bristol, England, assignor to Masson Scott Thrissell Engineering Limited, Bristol, England

Filed June 21, 1974, Ser. No. 481,865

Claims priority, application United Kingdom, June 22, 1973, 29660/73

Int. Cl.² B26D *1/36*, *4/72*

U.S. Cl. 83—355 **8 Claims**



1. A mounting device for mounting a blade on a rotary drum of a rotary cutting machine, the blade lying generally radial to the axis of the drum and extending lengthwise of the drum, the sides of the blade defining generally radial flanks, the device comprising an eccentric pivotally mounted on the drum on a generally radial axis, and arranged to bear against a said radial flank of the blade, to locate the blade in a radial direction and also to vary the position of the blade in a tangential direction with respect to the drum, and means for fixing the eccentric in the desired position of adjustment.

3,935,775
IRON PIECE SHEARING MACHINE

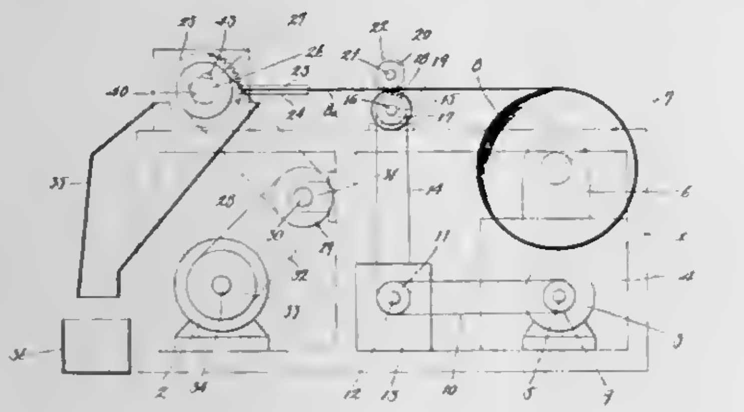
Masami Sato, Yokohama, Japan, assignor to Sango Company, Limited, Japan

Filed Aug. 16, 1974, Ser. No. 498,849

Claims priority, application Japan, Aug. 28, 1973, 48-100867[U]

Int. Cl.² B26D *5/20, 7/06, 1/20*

U.S. Cl. 83—355 **6 Claims**



1. A shearing machine for producing a plurality of metal elements comprising, in combination:

a metal strip supply source from which a plurality of adjacent, continuous lengths of metal strip are payed out in increment;

a pair of upper and lower feed rollers positioned along a passage of said lengths of metal strip and extending from said strip supply source and defining a nip therebetween;

a pair of upper and lower stationary blades positioned along said strip passage, downstream of said feed rollers and defining a strip guide clearance therebetween and into which said adjacent continuous lengths of metal strip simultaneously pass;

and a high speed, rotary cutter assembly positioned adjacent the distal ends of said stationary blades, said cutter assembly having a plurality of shearing teeth in the outer periphery thereof for cooperating at the clearance with said stationary blades for shearing small pieces of the metal strips stimultaneously and into rectangular cross-sectional elements as the strip elements are fed in increment by said feed rollers, said rotary cutter assembly comprising a plurality of juxtaposed rotary cutters mounted on a support shaft, said rotary cutters corresponding to the number of adjacent, continuous lengths of metal strip, each rotary cutter having a similar number of cutter teeth and identical outer peripheries, the cutter elements being transversely apertured and having inner periphery including a radial key way, the key way of adjacent rotary cutters being angularly off set with respect to each other so that shearing strokes of adjacent cutter teeth are effected in sequence for relieving and equalizing torque imposed on the support shaft.

3,935,776
PAPER CUTTING MACHINE

James C. Dingus, 175 Kentucky Drive, Newport, Ky. 41071

Filed Aug. 22, 1974, Ser. No. 499,549

Int. Cl.² B26D *7/06, 1/02*

U.S. Cl. 83—425.4 **28 Claims**

1. For use in trimming copy reproduced on a paper, said copy consisting of printed material arranged in elongated columns, the combination comprising:

a frame having spaced side support means;

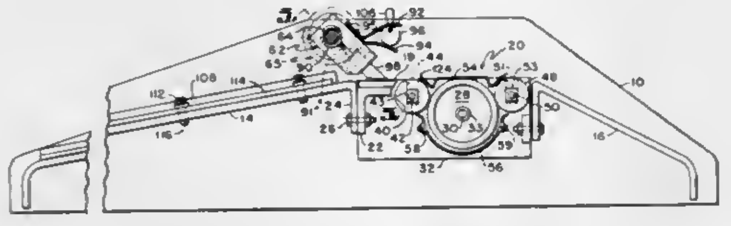
a forward paper support table mounted between said side support means;

paper driving means mounted aft of said forward table;

a paper cutting block between said forward table and said paper driving means;

first and second knives, each having a sharpened straight cutting edge terminating at a point, said straight edges being biased against said cutting block at a slight angle thereto, the straight cutting edges of said knives being parallel to the direction of travel of said film;

adjusting means for independently adjusting the lateral positions of each of said knives to align said knives with the edges of said columns; and



said paper driving means comprising a drive roller, a forward idler roller and a rear idler roller, all of said rollers being supported between said side supporting means with their axes parallel, said idler rollers resting on said drive roller, the plane of said cutting block being substantially tangent to all of said rollers, whereby said paper is wrapped around said idler rollers and at least 180° of said drive roller.

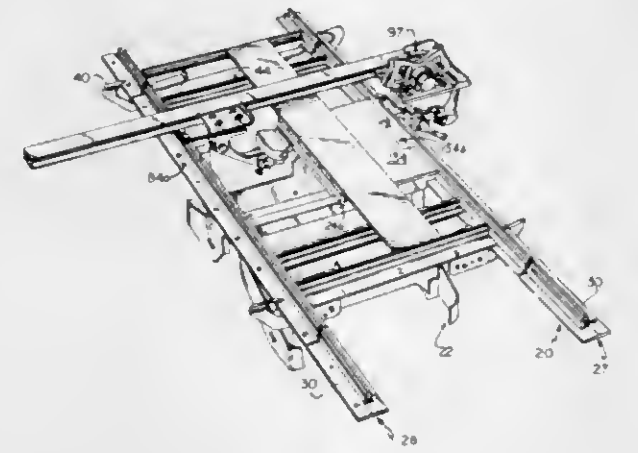
3,935,777
PORTABLE CUTTING DEVICE

Alvin Lee Bassett, 3414 Renick St., St. Joseph, Mo. 64507

Filed June 13, 1974, Ser. No. 478,934

Int. Cl.² B27B *9/04*

U.S. Cl. 83—471.3 **32 Claims**



1. A portable cutting device comprising:

a table having

a. first and second frame sections maintained in parallel spaced apart relationship by a plurality of attaching members extending between said first frame section and said second frame section;

b. each of said first and said second frame sections having a longitudinally extending assembly mounted along an upper edge thereof;

c. said longitudinal assemblies having a plurality of spaced apart transverse assemblies slidably mounted thereon and extending substantially perpendicularly therebetween, a pair of longitudinal assemblies cooperate with a pair of transverse assemblies to define the perimeter of a quadrilateral which quadrilateral forms the perimeter of a working surface of said table;

guide means having a length sufficient to traverse a diagonal of said table and having sufficient rigidity to resist bending under stress; and

cutting means coacting with said guide to permit said cutting means to traverse a substantial portion of the length of said guide.

3,935,778
APPARATUS FOR ACTUATING A PLURALITY OF PISTON AND CYLINDER ASSEMBLIES

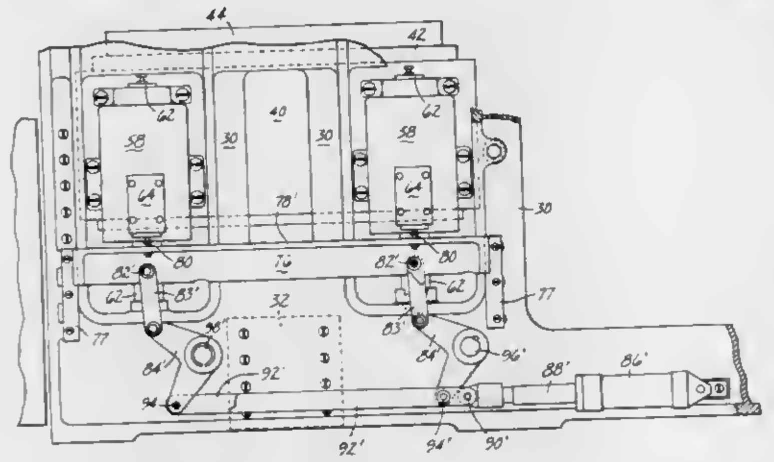
Frederick A. Pretty, Alveston, England, assignor to USM Corporation, Boston, Mass.

Filed July 5, 1974, Ser. No. 485,886

Claims priority, application United Kingdom, July 10, 1973, 32804/73

Int. Cl.² B26D *5/12;* **B30B** *1/08*

U.S. Cl. 83—639 **3 Claims**



1. A fluid pressure operated system for driving the movable platen of a press against the cooperating platen comprising:

A. Two pairs of piston and cylinder means operatively connected to the movable platen on either side thereof to drive said platen into engagement with the cooperating platen;

B. A source of fluid under pressure, connected to each piston and cylinder means;

C. Valve means associated with each piston and cylinder to control the flow of pressurized fluid to said piston and cylinder, said valves being mechanically actuatable;

D. An actuating bar assembly mounted on the press for movement into and out of engagement with the mechanical actuating mechanism of the valve means; said assembly having a pair of elongated bars each being operatively engageable with the mechanical actuating mechanism of the valves which are, in turn, operatively associated with the paired piston and cylinders; and

E. Drive means operatively associated with the pair of actuating bars to simultaneously move said actuating bars in tandem into engagement with the valve actuating mechanisms to cause the plurality of piston and cylinders to cooperatively drive the movable platen against the cooperating platen.

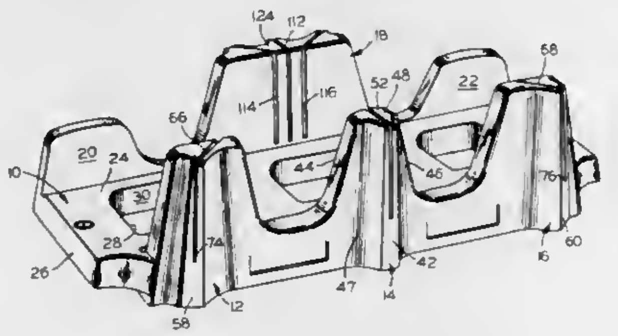
3,935,779
MITRE BOX

William J. Hildebrandt, West Simsbury, and Richard H. Russell, Farmington, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Nov. 27, 1974, Ser. No. 527,541

Int. Cl.² B27G *5/02*

U.S. Cl. 83—762 **12 Claims**



1. A mitre box comprising an integrally molded structure of synthetic resin having an elongated base portion, a plurality of rigid post members spaced apart along one side thereof, and a rigid elongated vertically extending guide member on the opposite side thereof aligned with one of said post members, said guide member and said one post member having aligned vertical channels therein extending perpendicularly to the longitudinal axis of said structure, said guide member having at least one additional vertical channel therein spaced along the length thereof from said first mentioned channel therein and extending at an angle to the longitudinal axis of said structure, another of said guide posts having a vertical channel therein aligned with the angular channel of said guide member, said channels opening at the top surface of said posts and guide member, said post members and guide member each having a peripheral wall extending upwardly from said base portion and a cavity therewithin.

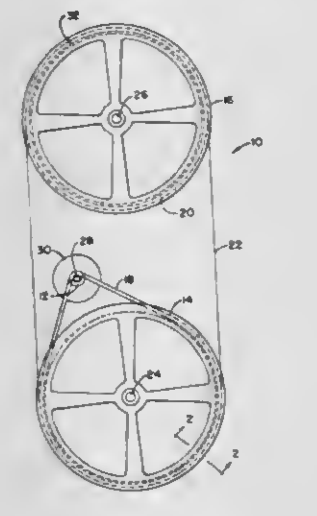
3,935,780
BAND SAW DRIVE ARRANGEMENT

John A. Hoffmann, Lake Lynwood, Lynn Center, Ill. 61262

Filed Feb. 24, 1975, Ser. No. 552,449

Int. Cl.² B26D *1/46, 1/54*

U.S. Cl. 83—820 **7 Claims**



1. In a band saw, the combination comprising: an idler pulley mounted for rotation about a first axis; a driven pulley mounted coplanar to the idler pulley for rotation about an axis spaced from and parallel to the first axis; a drive pulley having a diameter less than the diameter of each of the idler and driven pulleys mounted between and coplanar with the idler and driven pulleys for rotation about a third axis parallel to the first and second axes; means for driving the drive pulley; an endless flexible belt trained about and extending directly between the drive and driven pulleys; and an endless flexible saw band trained about and extending directly between the driven and idler pulleys with the inner surface of the portion of the endless saw band extending about the driven pulley in frictional drive engagement with the outer surface of the endless flexible belt.

3,935,781
VOICE PRESETTING SYSTEM IN ELECTRONIC MUSICAL INSTRUMENTS

Hirokazu Katoh, and Akinori Endo, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed July 30, 1974, Ser. No. 493,650

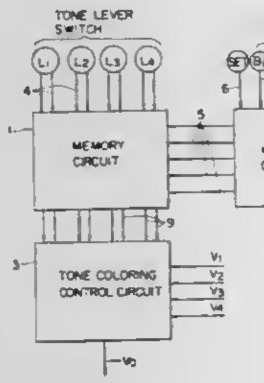
Claims priority, application Japan, Aug. 3, 1973, 48-86777

Int. Cl.² G10H *1/02*

U.S. Cl. 84—1.11 **5 Claims**

1. A voice presetting system for an electronic musical instrument comprising, a tone-coloring circuit means having means for receiving a plurality of musical voice signals representative of musical voices as inputs and to be delivered therefrom as outputs with tone coloring thereof varied, a memory circuit means for storing binary-coded information signals read out and applied to the tone-coloring circuit means for

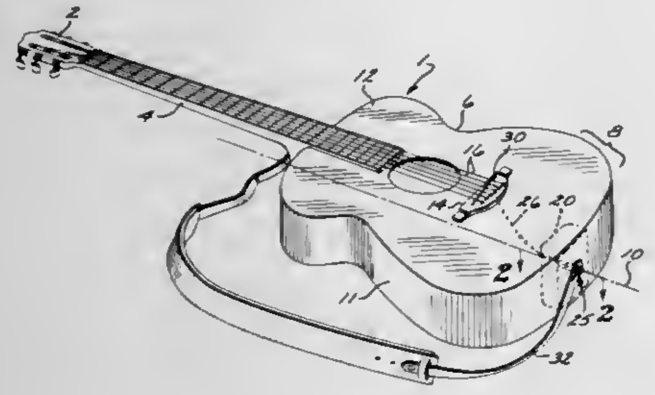
control of the tone-coloring circuit means for control of the tone color variations of the musical voice signals, means on said memory circuit means including binary coders for introducing manually thereinto said binary-coded information signals, a write and read control circuit means for controlling writing of binary-coded information signals and alternatively controlling read out of the binary-coded information signals applied to the tone-coloring circuit means from said memory circuit means for controlling the tone color of the musical voice signal output thereof.



3,935,782

END PLUG ADAPTER

Paul J. O'Brien, Long Beach, Calif., assignor to Barcus-Berry, Inc., Long Beach, Calif.
Filed Dec. 9, 1974, Ser. No. 531,153
Int. Cl.² G10H *3/00;* **G10D** *1/08*
U.S. Cl. 84—1.16 **7 Claims**



1. In a stringed musical instrument adaptable for having an electronic pickup transducer connected thereto, said instrument having a rib member and a body section with a foot portion having an end block therein, the improvement comprising:

an elongated tubular body extending through said rib member and into said end block, said body being oriented substantially parallel to the longitudinal axis of the instrument,

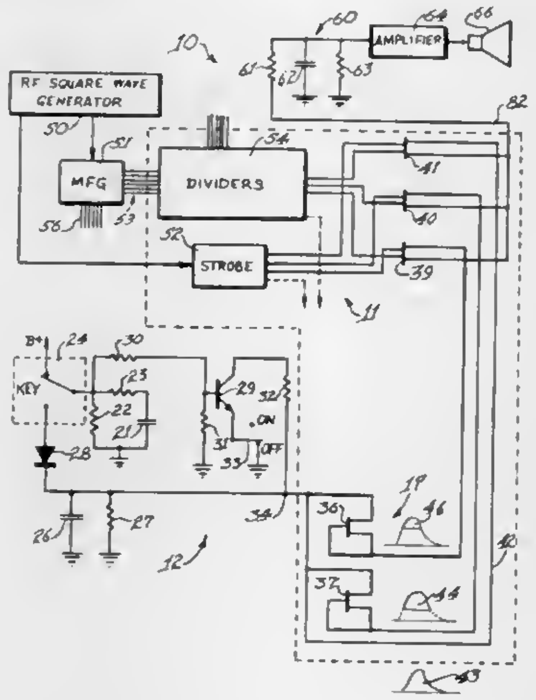
electrical connector means disposed within said body for connection to said pickup, and

said tubular body including end plug means for securing an instrument support strap, said end plug means projecting outwardly of said rib and substantially parallel to said longitudinal axis of said instrument.

3,935,783

ELECTRONIC PIANO CIRCUIT

William V. Machanian, Lewiston, N.Y., and Robert R. Williams, St. Joseph, Mich., assignors to The Wurlitzer Company, Chicago, Ill.
Filed July 8, 1974, Ser. No. 486,503
Int. Cl.² G10H *1/06, 5/10*
U.S. Cl. 84—1.21 **18 Claims**

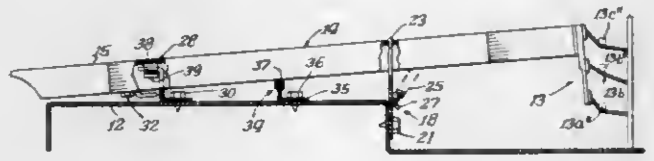


1. An electronic musical instrument of the keyboard type comprising: electronic means for audibly producing a square wave fundamental frequency and at least one square wave harmonic frequency thereof in response to the actuation of a key on a keyboard, said electronic means including gate circuit means for providing amplitude control of said square wave fundamental and harmonic frequencies, and means responsive to said amplitude control of said electronic means for adding together said fundamental and harmonic frequencies at predetermined points in time along the zero, attack, peak, and decay of a characteristic piano voice curve.

3,935,784

DOUBLE TOUCH KEY FOR MUSICAL INSTRUMENTS

Donald Bernard Koepke, Franklin Park, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.
Filed Apr. 25, 1975, Ser. No. 571,532
Int. Cl.² G10C *3/12*
U.S. Cl. 84—435 **19 Claims**



1. Key structure for use with musical instruments and the like comprising:

a lever defining a key having opposite first and second ends and an intermediate portion;

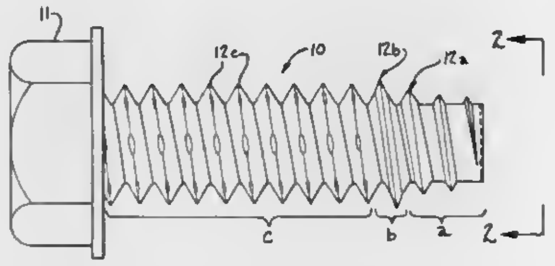
first pivot means pivotally supporting said key at a first operating portion of said intermediate portion; and

second pivot means pivotally supporting said key at a second portion of said intermediate portion, said key being pivotally supported by said first pivot means when said first end is depressed from a rest position to a first preselected depressed position and being pivotally supported by said second pivot means when said first end is depressed beyond said first preselected position.

3,935,785

THREAD SWAGING SCREW

Paul R. Lathom, Rockford, Ill., assignor to Rockford Headed Products, Inc., Rockford, Ill.
Filed Jan. 3, 1974, Ser. No. 430,476
Int. Cl.² F16B *25/00*
U.S. Cl. 85—46 **7 Claims**



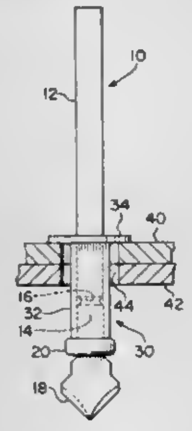
1. The thread forming screw for swaging internal threads in an opening in a workpiece comprising, a shank having a tapered work entering end portion and a sizing portion and an elongated straight shank portion arranged in that order beginning at the free end of the shank and a driving head at the other end of the shank, the shank having a continuous external rolled thread thereon including a number of shank turns on the shank portion; at least one and less than two sizing turns on the sizing portion; and at least one work entering turns on the work entering end portion, the sizing turns being contiguous at one end thereof to the shank turns on the shank portion and at their other end with the work entering turns on the work entering portion, said shank having a polygonal cross-section and the turns of said helical thread each having an odd number of circumferentially spaced lobes and intermediate sides with the root, pitch and crest radii vectores of the turns varying circumferentially of the shank from a maximum root, pitch and crest radii vectores at the lobes to a minimum root, pitch and crest radii vectores at the sides, the shank and sizing turns having a constant pitch along the shank portion and uniform maximum root and pitch radii vectores at the lobes and uniform minimum root and pitch radii vectores at the sides and the same preselected included angle between the flanks of the turns inwardly of the pitch radii vectores, the shank turns outwardly of the pitch radii vectores having a uniform maximum crest radii vectores at the lobes and an included angle between the flanks of the threads the same as said preselected included angle between the flanks of the shank turns inwardly of the pitch radii vectors, the sizing turns in an region outwardly of the pitch radii vectores having an included angle between the thread flanks slightly less than said preselected included angle between the flanks inwardly of the pitch radii vectores and maximum crest radii vectores at the lobes slightly greater than the maximum crest radii vectores of the shank turns and sufficient to at least substantially compensate for the radial and axial contraction of the dedendum portion of the internal thread turns swaged in the workpiece when the sizing turn passes, the work entering turns merging with the sizing turn and having maximum crest radii vectores at the lobes that progressively decrease in a direction from the sizing turn to the free end of the shank.

3,935,786

SELF-DRILLING RIVET

Pierre Charles Murray, DeKalb, and Richard Maclay Chattin, Schaumburg, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.
Filed Nov. 1, 1974, Ser. No. 519,958
Int. Cl.² F16B *13/04*
U.S. Cl. 85—68 **10 Claims**

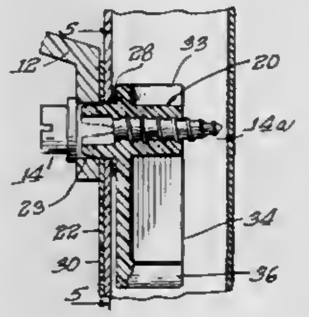
1. A self-driling and setting rivet assembly including a sleeve member surrounding a mandrel member, the sleeve including an enlarged head portion at one end thereof adapted to abut the upper surface of a workpiece, the mandrel member having a shank portion with a drill point at one extremity thereof and shoulder means adjacent the drill point, the shoulder means having a transverse dimension greater than the inner diameter of the sleeve member to radially enlarge the sleeve as the mandrel is retracted upwardly relative to the sleeve, the drill point including a transverse dimension at least as great as the outer diameter of the sleeve to allow the sleeve to enter the aperture formed in a workpiece by the drill point, the shank having a weakened section of reduced cross-sectional area spaced upwardly from the shoulder means to allow the lower portion of the shank to be disassociated from the upper portion upon application of a predetermined tensile force to the shank, the sleeve positioned on the mandrel so as to surround the weakened shank section as well as portions of the shank above and below the weakened section, the shank also including torque transmitting surface means located both above and below the weakened section, the inner peripherey of the sleeve including torque transmitting surface means adapted to cooperate with the torque transmitting surface means on the shank, the cooperating torque transmitting surface means and the sleeve portion intermediate the torque transmitting means above and below the weakened section of the shank forming means to bridge the weakened section and thereby increasing the torque accepting radius of the assembly in the region of the weakened section thereby enabling torque to be transmitted from the upper section of the shank to the drill point without subjecting the weakened section to appreciable torque forces.



3,935,787

DOOR HANDLE ANCHOR

Julian Vernon Fisher, Carpentersville, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed June 19, 1974, Ser. No. 480,724
Int. Cl.² A47B *95/02*
U.S. Cl. 85—80 **7 Claims**



1. A door handle anchor for receiving a threaded fastener having predetermined pitch and major diameters to mount a handle thereto, comprising in combination; a body having a bore formed therein to receive a threaded fastener, said bore having a diameter equal to or less than said pitch diameter whereby rotative introduction of said fastener results in threads being formed in said body, a flange formed on said body transverse to the axis of said bore to overlie the periphery of an aperture formed in a door panel of relatively thin material, said aperture being located a predetermined dis-

tance from a turned edge of said door panel, prong means formed integrally with said body and extending therefrom parallel to the axis of said bore and adapted for insertion into said aperture partially to extend through said panel, said prong means being sufficiently spaced apart so as to define an opening therebetween to freely receive the major diameter of the threaded end of said threaded fastener when in its initial condition and having a diameter an interconnecting section between said opening and said bore greater than said bore diameter, and an elongated arm portion formed integrally with said body and extending from said opening a distance greater than said predetermined distance, whereby said anchor will have the elongated arm portion thereof engaging said turned edge during tightening of said threaded fastener for holding the same in place while mounting the handle to the door panel.

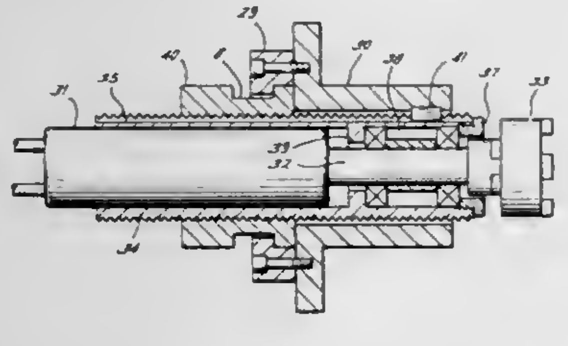
3,935,788
PORTABLE MILLING TOOL

Guy T. Gilmore, Houston, Tex., assignor to Multi Fab. Inc., Houston, Tex.

Filed Sept. 23, 1974, Ser. No. 508,693

Int. Cl.² B23C *1/20*

U.S. Cl. 90—12 R **2 Claims**



1. In a portable milling tool, a rectangular framework, tracks formed in the longitudinal member of the framework and carriages mounted to move longitudinally in said tracks, transverse tracks mounted on said carriages and a cutter carriage mounted on said transverse tracks, a cutter adjustably mounted on said cutter carriage and means for moving said cutter carriage transversely or longitudinally as said cutter is actuated, said cutter comprising a motor having a drive shaft extending from one end and a cutter head mounted on said drive shaft, a tubular housing receiving said motor having a bearing chamber and a bearing supporting said drive shaft, and said housing being externally threaded to receive an adjusting nut, and an internally threaded collar mounted on said housing and movable by said nut, said housing having a keyway formed longitudinally therein and a key anchored to said collar and mounted in said keyway maintaining said housing against rotation as the nut is rotated.

3,935,789
REVERSING VALVE

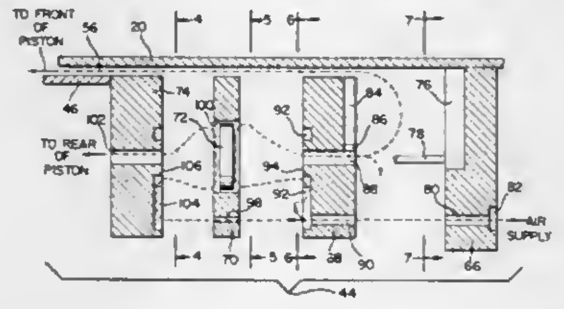
Alva Nelson Dorsey, Sykesville, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed July 19, 1974, Ser. No. 489,994

Int. Cl.² F01L *25/04, 21/02*

U.S. Cl. 91—317 **17 Claims**

1. An air tool including a housing, an air motor in said housing including a cylinder having a piston reciprocable therein, an air inlet in said housing connectable to an air supply a working implement supported by said housing, an air control valve interposed between said air inlet and said cylinder to alternately provide pressurized air to opposite ends of said piston to cause said piston to reciprocate and to deliver blows to said working implement; said valve comprising a tandem arrangement of a base member, a middle member, a valve guiding member, and a cover member; a valve member reciprocable in an opening in said valve guide member, means to flow air from said air inlet to the opposite sides of said valve member, said flow means including port means in said middle member and said valve guide member communicating with first and second passage means, respectively, at opposite sides of said valve member, the cross-sectional area of said first and second passage means being greater than the cross-sectional area of said middle member port means and said valve guide member port means, respectively, whereby the flow of air from each said port means to its respective passage means is substantially unrestricted, the cross-sectional area of said valve guiding port means being in the range of from about 30% to about 75% of the cross-sectional area of said valve guide member port means, whereby to throttle the air as it passes through said valve guide member port means, whereby the air pressure at said second passage means is lower than the air pressure at said first passage means, first delivery means extending through said cover member to deliver the air from said second passage means under the control of said valve member to one end of said piston to power said piston through its working stroke, and second delivery means extending through portions of at least said middle member and said base member to deliver air from said first passage means under the control of said valve member to the opposite end of said piston to return said piston.



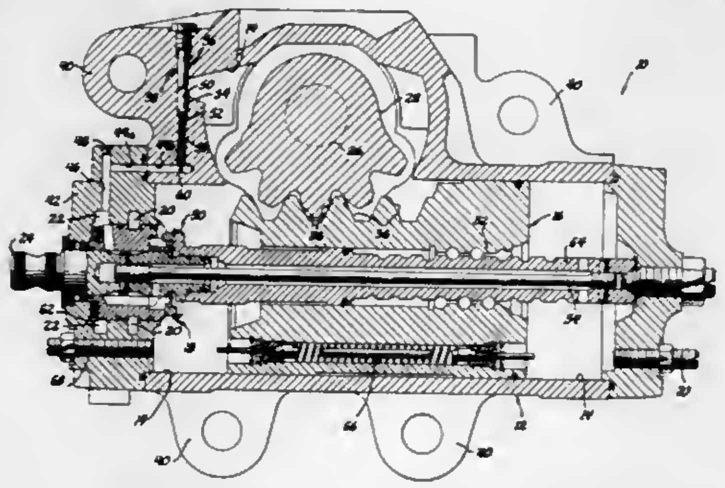
3,935,790
INTEGRAL POWER STEERING ASSEMBLY

Raymon L. Goff, Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed Feb. 11, 1974, Ser. No. 441,033

Int. Cl.² F15B *9/10, 21/04*

U.S. Cl. 91—375 A **14 Claims**



1. An integral power steering assembly comprising; housing means defining a power cavity, piston means movably supported in said cavity, control valve means supported by said housing means for controlling pressurized fluid flow to said cavity and return fluid flow from said cavity to move said piston means in alternative and opposite directions, input shaft means for operating said control valve means, output means operatively connected to said piston means for movement thereby, mechanical means interconnecting said input shaft means and said piston means for moving said piston neans in response to rotation of said input shaft means in the event of lack of fluid pressure to move said piston means, and bleed valve means for automatically bleeding air from said cavity, said bleed valve means including bleed passage means extending from and in direct communication with said cavity, a valve portion for controlling flow through said bleed passage means and movable between open and closed positions and normally open at any position of said piston means, biasing means for urging said valve portion toward said open position and away from said closed position in which said valve portion prevents flow through said bleed passage means; means in said bleed passage through said bleed passage means, a flow restriction in said bleed passage means normally open for allowing the free flow of air therepast and for creating a pressure differential between said bleed passage means upstream of said restriction and said bleed passage means downstream of said restriction in response to fluid flow therepast for moving said valve portion against said biasing means to said closed position to prevent flow of pressurized fluid past said valve portion in said closed position.

3,935,791
HYDRAULIC DRIVE FOR THE DIE CLOSING UNIT OF AN INJECTION MOLDING MACHINE

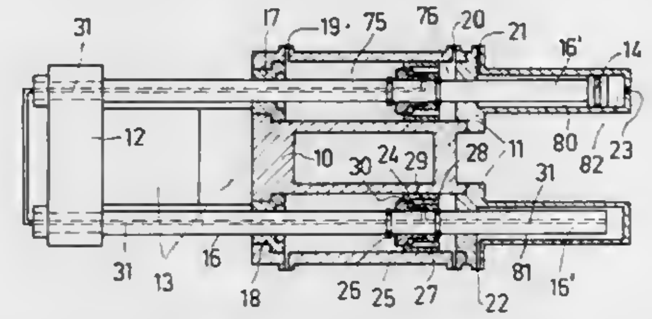
Karl Hehl, Arthur-Hehl-Strasse 32, 7291 Lossburg, Germany

Filed Jan. 31, 1975, Ser. No. 546,036

Claims priority, application Germany, Mar. 27, 1974, 2414668; Apr. 27, 1974, 2419314

Int. Cl.² F15B *11/02*

U.S. Cl. 91—411 R **29 Claims**



1. In a hydraulic linear actuator of the cylinder and piston type, whose motion is switchable from a travel mode in which a movable assembly is advanced or retracted at accelerated speed and with comparatively little force to a power mode in which the assembly is subjected to a greatly increased pressure, when the piston is at or near one end of its travel stroke, which actuator is advantageously applicable as a drive for the die closing unit of an injection molding machine, the combination comprising:

a closed power cylinder with hydraulic connections at both extremities for double-acting operation;

a power piston fixedly seated on a piston rod and arranged for longitudinal travel inside said cylinder over the length of a piston stroke; the piston rod having a forward rod portion extending from the forward end of the power cylinder, which rod portion is connected to a movable assembly arranged for travel between an open position on one end of the piston stroke and a closed position on the other end of the stroke, and a rear rod portion extending from the opposite end of the power cylinder; and the power piston further dividing the space of the power cylinder into a high pressure space on that side of the piston which needs to be pressurized to urge the movable assembly into its closed position and a low pressure space on the opposite side of the piston;

a plurality of bypass channels extending generally axially across the body of the power piston from the high pressure side thereof to the low pressure side;

an annular valve seat on the power piston, on its high pressure side, arranged so as to surround the openings of the bypass channels;

a hollow valve plunger sealingly surrounding a cylindrical guide surface on the piston rod on the high pressure side of the power piston, said plunger being guided for axial motion toward and away from the power piston, between a closed position in which a shoulder of the valve plunger sealingly abuts against the valve seat and an open position located a distance away from said seat, and the valve plunger has at least one axial end face exposed to the fluid in the high pressure space;

means for moving the valve plunger between its open and closed positions in response to fluid pressure; and

an auxiliary cylinder cooperating with the rear piston rod portion so as to define a coaxial auxiliary linear actuator capable of driving the same movable assembly via the piston rod; and wherein:

the auxiliary cylinder has a much smaller hydraulically effective cross section than the power cylinder, so that, when the auxiliary cylinder is supplied with pressurized fluid while the valve plunger is in its open position, the piston rod and the movable assembly travel at a comparatively high rate of speed, while the power piston moves through the fluid contained inside the power cylinder, as the latter passes through its bypass channels from side to side of the power piston.

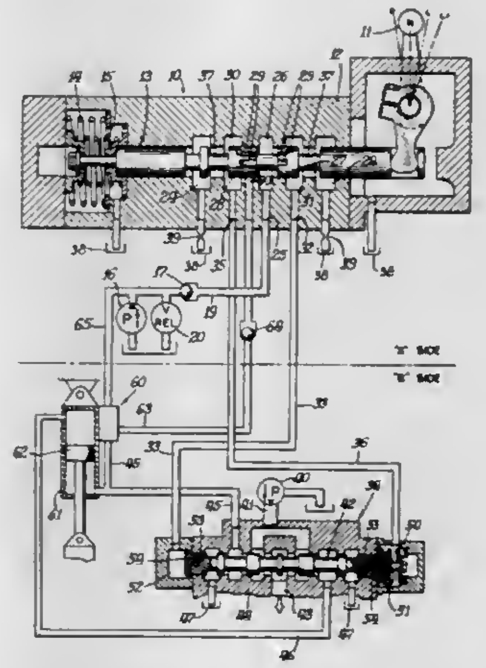
3,935,792
PILOT PUMP BLEED CONTROL FOR EARTHMOVING SCRAPERS

Joseph E. Dezelan, Joliet, and Henry J. Jessen, Wilmington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 335,910, Feb. 26, 1973, Pat. No. 3,862,643. This application June 26, 1974, Ser. No. 483,132

Int. Cl.² F15B *11/08, 13/042*

U.S. Cl. 91—438 **3 Claims**



1. In a pilot system including a hydraulic actuator controlled by an adjacent control valve, having a source of fluid pressure connected thereto, the latter valve being operated through a pilot control valve having its own pilot pump providing a source of fluid pressure for operating the control valve, a safety control system employing fluid pressure from said hydraulic actuator under load for emergency operations of the control valve comprising:

a safety valve body having a stepped axial bore therein;

a stepped spool means reciprocally mounted in said bore forming at least three separate chambers therein, including a first chamber having the largest spool reaction surface, a second chamber having a smaller spool reaction surface and a third chamber having the smallest spool reaction surface;

a pilot pump port in said valve body communicating with said first chamber with conduit means connecting said pilot pump port with the fluid pressure from said pilot pump;

an inlet port in said valve body communicating with said third chamber with conduit means connecting it with a side of said actuator under load;

a spool closable cylinder port in said valve body with conduit means connecting it to the opposite side of said actuator under load, said cylinder intermediate port having fluid communication with said second chamber when said spool moves into said first chamber;

a spool closable valve port in said valve body with conduit means connecting it to the fluid supply port of the pilot valve, said valve port having fluid communication with said third chamber when said spool moves into said first chamber; and

a spool closable orifice means in said spool means having fluid communication with said third chamber and also with said second chamber when said spool moves into said first chamber, thereby providing restricted communication between said second and third chambers when pilot pump fluid pressure is lost, allowing said spool to move into said first chamber, whereby fluid pressure will be provided to the fluid supply port of said pilot valve for operating the control valve when pilot pump pressure is lost and the actuator under pressure will slowly bleed down due to the transfer of hydraulic fluid through the restricted orifice from the loaded side of the actuator to the unloaded side of the actuator.

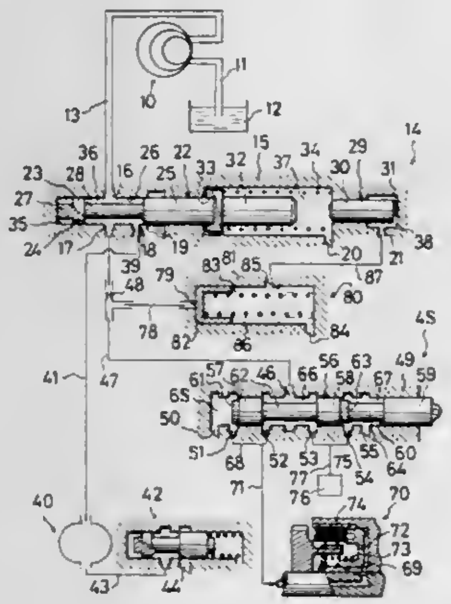
3,935,793
HYDRAULIC PRESSURE REGULATING SYSTEM

Noboru Murakami, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 280,217, Aug. 14, 1972. This application Apr. 10, 1974, Ser. No. 459,583

Int. Cl.^{2} F15B *11/08, 13/042*

U.S. Cl. 91—446 **2 Claims**



1. A hydraulic pressure regulating system for a vehicle, comprising:

a source of fluid pressure;

a fluid actuated means;

a first fluid passage means between said fluid pressure source and said fluid actuated means;

a regulator valve assembly connected in said first fluid passage means, for regulating the fluid pressure, being discharged from said fluid pressure source through said fluid passage means to said fluid actuated means, to a first value, said regulator valve assembly including first and second pressure responsive piston faces;

a shift valve unit connected into said first fluid passage means between said regulator valve assembly and said fluid actuated means for activating and deactivating said fluid actuating means;

a restriction orifice disposed within said first fluid passage means for receiving said regulated pressure and for retarding the increase of fluid pressure in said fluid actuated means;

a second fluid passage means including first and second portions thereof for connecting said first fluid passage means between said orifice and said fluid actuated means to the second pressure responsive piston face of said regulator valve assembly, thereby to urge said regulator valve assembly in one direction in which the fluid pressure being regulated increases; and an accumulator connected in said second fluid passage means between said first and second portions and comprising a spring-biased slidable piston which normally closes said second fluid passage means, said piston always being continuously responsive to and pressurized by the fluid pressure retarded by said orifice via said first portion to thereby gradually increase the retarding fluid pressure in response to slidable movement of said piston, said second portion communicating with said second pressure responsive piston face at one end thereof and normally communicating with drain at the other end thereof and said piston opening communication between said first and second portions of said second fluid passage means when said retarding and gradually increasing fluid pressure exceeds a predetermined value by overriding said second portion and closing communication of said second portion with said drain, the fluid pressure conducted through said second fluid passage means acting on said second pressure responsive piston face and serving to move said regulator valve assembly in said one direction whereby the flluid pressure being regulated by said regulator valve assembly is increased to a second value from said first value.

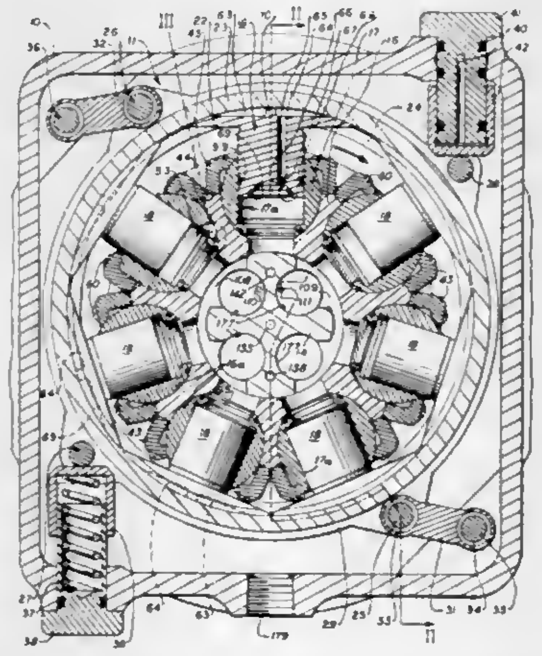
3,935,794
RADIAL PISTON PUMP/MOTORS

Rollin Douglas Rumsey, 148 Summer St., Buffalo, N.Y. 14222

Filed Jan. 20, 1971, Ser. No. 108,089

Int. Cl.^{2} F01B *13/06*

U.S. Cl. 91—488 **13 Claims**



1. In a radial piston pump/motor structure including a housing providing a chamber with a shaft extending therefrom in relative rotary relation:

valve means carried by the housing within said chamber;

a rotor journaled within said chamber and operationally attached to the shaft;

arcuately surfaced pockets in the outer perimeter of said rotor;

cylinder members in said pockets having bearing surfaces complementary to and riding in angularly slideable relation on the pocket surfaces;

means secured to the rotor maintaining the cylinder members in the pockets;

each of said cylinder members having a radially outwardly opening cylinder bore within which is radially reciprocably mounted a piston projecting radially outwardly and having on its radially outer end a shoe riding a surface within said enclosure facing toward said rotor;

means for effecting fluid communication between radially inner ends of said cylinder bores and said valve means and thereby with the radially inner ends of said pistons, and including respective ports at the radially inner ends of said cylinder members concentrically aligned with said cylinder bores and extending to and aligned with respective ports in said rotor and which rotor ports are of substantially smaller diameter than said cylinder bores and communicate with said valve means;

each of said cylinder members having an annular constriction providing the respective port at its radially inner end, said constriction providing seal retaining means; and

annular sealing means retained by said seal retaining means in assembly with said cylinder members in surrounding relation to said cylinder member ports and:

said sealing means being in fluid sealing engagement with the surface areas of said pockets surrounding said rotor ports;

said sealing means being of substantially the same diameter as the diameter of said cylinder bores and maintaining a balanced sealing relationship between the cylinder members and said surface areas in all relative angular positions of the cylinder members and said surface areas.

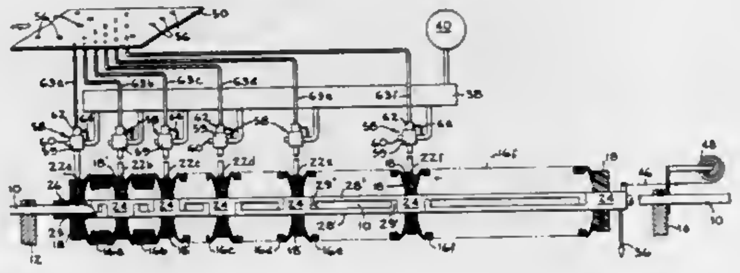
3,935,795
ACTUATING MECHANISM

Jack S. Hawley, Albany, Calif., assignor to Pneumeric Corporation, Castro Valley, Calif.

Filed Feb. 22, 1972, Ser. No. 227,943

Int. Cl.^{2} F01B *25/26, 31/12*

U.S. Cl. 92—5 R **3 Claims**



1. A precision actuating mechanism comprising a stationary shaft, slidably mounted upon said shaft a sequence of interconnected actuating components of predeterminably variable length axially of said shaft having limit stop means for limiting positively their condition of maximum axial length and their condition of minimum axial length, means selectively operable to adjust the axial length of said components individually to either their maximum axial length or their minimum axial length, means holding one end of said sequence of components against movement relative to said shaft, and means supported at the free opposite end of said sequence of components for indicating any changes of the sum total of the axial lengths of said components.

2. A precision actuating mechanism comprising a stationary shaft, a sequence of mechanically interconnected bellows slidably mounted upon said shaft in end to end relation having limit stop means for positively limiting the axial length of said bellows in their condition of maximum contraction and their condition of maximum expansion, means selectively operable to (adjust) set the axial length of said bellows individually to either their condition of maximum contraction or their condition of maximum expansion, means holding one end of said sequence of bellows positively against movement relative to said shaft, and means supported from the free opposite end of said sequence of bellows for indicating any changes in the sum total of the axial lengths of said bellows.

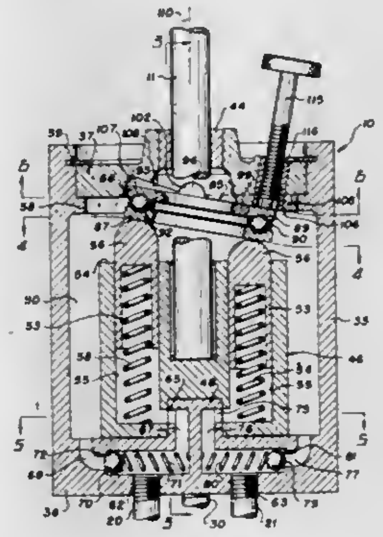
3,935,796
VARIABLE HYDRAULIC PUMPING APPARATUS

Robert A. R. Wood, West Vancouver, Canada, assignor to Teleflex Incorporated, North Wales, Pa.

Filed Apr. 16, 1974, Ser. No. 461,355

Int. Cl.^{2} F01B *3/00*

U.S. Cl. 92—12.2 **10 Claims**



1. A hydraulic apparatus comprising: housing means, rotor means rotatably supported in said housing means for rotation about an axis, piston means movably supported by said rotor means and extending from said rotor means axially thereof, swash plate means movably supported by said housing means and engaging said piston means for controlling the length of stroke of said piston means per revolution of said rotor means, said swash plate means including a bearing assembly disposed about said axis and including parallel upper and lower plates with ball bearings disposed, therebetween, said plates being annular to define a central opening, a ring member disposed in engagement with said bearing assembly and having a body portion disposed in said opening therein, said ring member having arcuate trunnions integral with said body portion and extending laterally from said body portion in opposite directions transversely to said axis and across said upper plate, said housing means including grooves for receiving and rotatably supporting said trunnions to change the angle of inclination of said bearing assembly for controlling said length of stroke.

3,935,797
WEAR AND SEIZURE RESISTANT ALUMINUM ALLOY PISTON

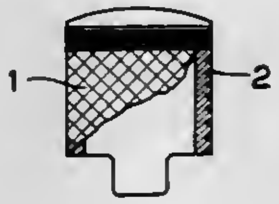
Itaru Niimi, Nagoya; Yasuhisa Kaneko, Toyota; Yoshiro Komiyama, Okazaki; Masaaki Tokui, Toyota; Katsumi Kondo, Toyota, and Akio Kouno, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 8, 1973, Ser. No. 413,821

Claims priority, application Japan, Jan. 9, 1973, 48-5457

Int. Cl.^{2} F02B *23/00*

U.S. Cl. 92—223 **9 Claims**



1. Aluminum alloy piston which is resistant to wear and seizing, at least the skirt of said piston being coated to a thickness of 0.4–0.7mm with a mixture consisting essentially of both iron and discrete particles of carbon, but containing at most 0.3% by weight of said carbon particles.

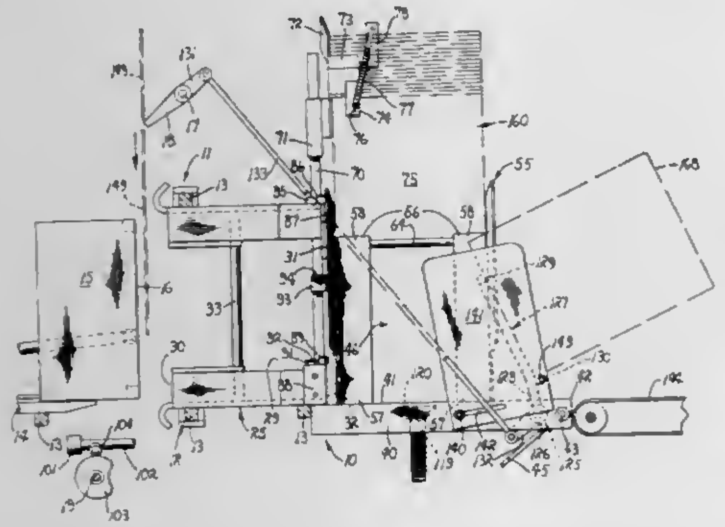
3,935,798
CONTAINER ASSEMBLING MACHINE

Gerald C. Paxton, Sanger, Calif., assignor to SWF Machinery, Inc., Sanger, Calif.

Filed Feb. 4, 1974, Ser. No. 439,145

Int. Cl.^{2} B31B *17/74, 17/02*

U.S. Cl. 93—39 R **22 Claims**



11. In a container assembling machine having a die assembly, a container assembly position and being adapted successively to form first components in said die assembly and subsequently to thrust said components through the die assembly along a predefined path of travel into the assembly position and having a source of second components disposed in feeding relation to the assembly position, said second components having endwardly interconnected walls with extended flaps having slots between the flaps and the components folded into a substantially flat configuration to position selected walls in leading and trailing relation and in substantial facing engagement with predetermined slots in offset relation, an improvement comprising guide members pivotally mounted intermediate the die assembly and the assembly position for movement between positions substantially transverse to said path of travel and positions substantially parallel to the path of travel; finger means borne by the machine in the assembly position adjacent to the source and in juxtaposition to a predetermined slot of the adjacent second component; and means, including a grasping member mounted on the machine for movement between an extended, wall engaging position and a retracted component erecting position, for grasping a selected leading wall of said second component and drawing said wall into the assembly position and the predetermined slot about the finger means for engagement of said finger means with the flap of the trailing wall to unfold said second component into first component receiving relation in the assembly position.

3,935,799
APPARATUS FOR MAKING ENVELOPES WITH BROAD OR POINTED CLOSURES FROM A PAPER WEB

Kurt Stemmler, and Günter Ehlscheid, both of Neuwied, Germany, assignors to Winkler & Dunnebier, Neuwied, Germany

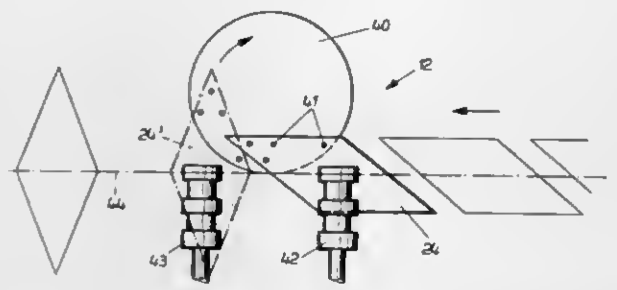
Filed Feb. 28, 1974, Ser. No. 447,009

Claims priority, application Germany, Mar. 5, 1973, 2310944

Int. Cl.^{2} B31B *19/02*

U.S. Cl. 93—61 R **3 Claims**

1. In a machine for optionally manufacturing card and banker envelopes for use with a processing device, an apparatus for turning the blanks parted from a continuously fed paper web, which lie with their diagonals at an inclination to the longitudnal axis of the machine and are conveyed one after the other in the longitudinal axis of the machine, said apparatus comprising a turntable which is disposed in the conveying plane of the blanks, rotates in dependance on the machine speed and is disposed with its axis of rotation outside the axis of symmetry of the machine, means having a plurity of suction air bores adapted to engage the blanks, a segmental roller disposed upstream of the turntable to feed the blanks, and a segmental roller disposed downstream of the turntable to receive the turned blanks.



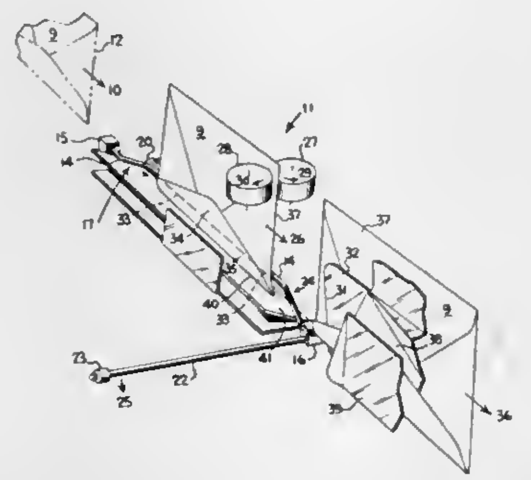
3,935,800
FLAP SEPARATING MECHANISM

Paul R. Sette, Hamden, Conn., and Anthony Storace, Tarrytown, NY, assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Apr. 8, 1974, Ser. No. 459,037

Int. Cl.^{2} B31B *1/36, 49/04*

U.S. Cl. 93—61 R **8 Claims**



1. A flap separating mechanism for distending a flap from a body portion of an unsealed envelope moving along a feed path of a mail handling system with a substantially vertical orientation, said flap separating mechanism including means to separate the flap from the envelope body portion and then guide the flap and said body portion of the envelope about a guide member, said flap separating mechanism comprising:

- means defining an envelope feed path wherein the envelope is transported with a substantially vertical orientation;
- transporting means associated with said feed path for transporting envelopes along said feed path with said substantially vertical orientation;
- a substantially flat envelope guide member vertically disposed within said feed path for receiving and engaging with an unsealed envelope moving along said feed path, said guide member receiving and maintaining the unsealed envelope with the flap distended from the body portion of said envelope such that said flap will be guided about one side of the guide member and the body portion of the envelope will be guided on an opposite side of said guide member; and
- force exerting means disposed along feed path ahead of said envelope guide means for receiving an envelope moving along said feed path, said force exerting engaging with, and exerting a force substantially along the entire body portion of an envelope adjacent said flap such that said body portion will be made to flex, the flap of said envelope being caused to distend from said body portion as said body portion is made to flex.

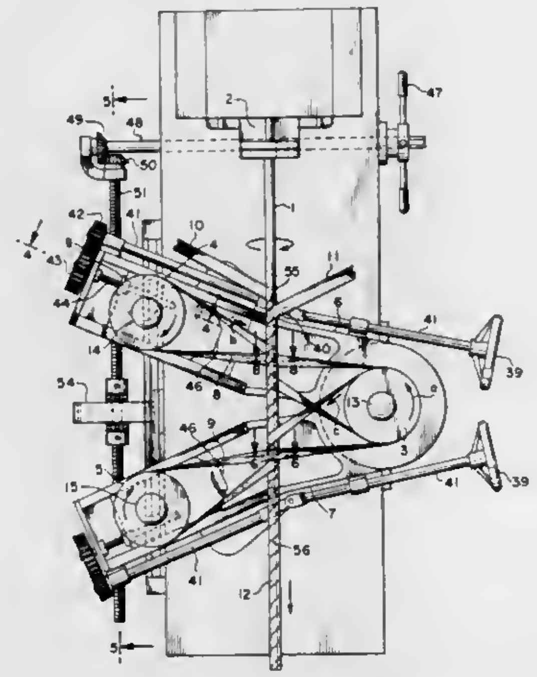
3,935,801
APPARATUS FOR MANUFACTURING SPIRAL TUBES

Kakumichi Okazaki, 4-15, Zuiko-dori, Higashiyodogawa, Osaka, Japan

Filed Nov. 8, 1973, Ser. No. 414,059

Int. Cl.^{2} B31C *3/00*

U.S. Cl. 93—80 **1 Claim**



1. The apparatus for manufacturing continuous lengths of spiral tubes wound with at least two tape-like materials. the apparatus comprising in combination:

- a mandrel;
- two belts supported for running along two separate paths crossing at angles and spaced from each other;
- means for driving said belts, including a common driving pulley, and separate take-up pulleys for said belts;
- means for covering the processed spiral tube with said material, and for pressing the latter and said mandrel into tight engagement at two spaced-apart portions of said mandrel; said belt paths having respective forward and return runs between said common pulley and the respective take-up pulleys, one run of each belt constituting an active run in said pressing means; said mandrel portions having trained therearound, respectively from below and from above, one convolution of the active forward run of one belt and another convolution of the active return run of the other belt, thereby imparting to said mandrel pressing forces in the same circumferential direction at both said mandrel portions although pulling forces result in the oppositely moving active runs of said belts;
- means for adjusting the angles of said belts relative to the axial direction of said mandrel and the spiral tube being formed thereon; said adjusting means including a threaded rod having two sections with oppositely directed threads thereon;
- control arms movable along said sections, which arms respectively support said take-up pulleys; and
- means for rotating said threaded rod, thereby to adjust said relative angles of the belts.

3,935,802
CONSTRUCTION AND METHOD OF DISPENSING CRIMPED PAPER TOWELING

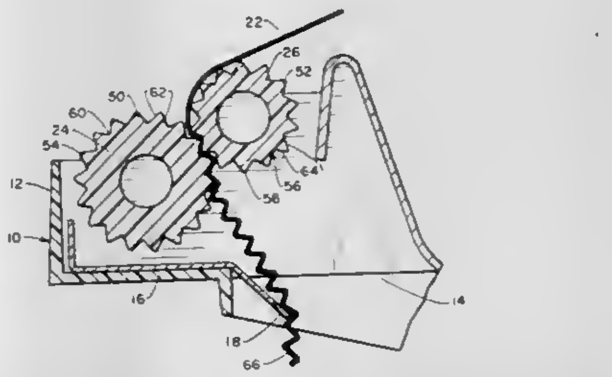
Jack Louis Perrin, Los Angeles, and Stanley Theodore Christensen, San Gabriel, both of Calif., assignors to Towlsaver, Inc., Los Angeles, Calif.

Filed July 30, 1974, Ser. No. 493,349

Int. Cl.^{2} B31D *5/04;* **B65H** *45/16*

U.S. Cl. 93—84 R **6 Claims**

1. In a dispenser of the type having a paper toweling supply directing a web of paper toweling between a radially abutting, selectively rotatably driven set of dispensing rolls and from the dispenser for dispensing the paper toweling web; the improvements comprising: mounting means mounting at least one of said dispensing rolls radially movable relative to the other of said dispensing rolls; resilient means operably connected constantly resiliently urging said dispensing rolls radially into said roll abutment; each of said dispensing rolls having a plurality of generally axially extending teeth uniformly about a circumference thereof, said teeth of each dispensing roll in radial cross-section being generally triangular with sides converging to crests and diverging to valleys forming voids therebetween; said teeth of each dispensing roll at said roll abutment and during said roll rotation fully matching and fully interengaging said teeth of the other dispensing roll against said paper web therebetween as urged by said resilient means, each of said teeth crests of each of said dispensing rolls engaging fully and forcing said paper web fully into and against said teeth valleys of each of said dispensing rolls; surface means on said teeth having portions thereof at all times compressively abutting said paper web regardless of the rotatable positioning of said rolls and without regard to said roll rotation as urged by said resilient means resisting movement of said paper web through said dispensing rolls without roll rotation; said interengaged teeth of said dispensing rolls at said roll abutment as resiliently urged and during said roll rotation cooperating to compressively abut and relatively sharply permanently foldably deform said paper web over said teeth crests and fully inwardly against said teeth valleys to permanently foldably crimp said paper web; said dispensing rolls during said roll rotation dispensing said relatively sharply folded crimped paper web from said dispenser.



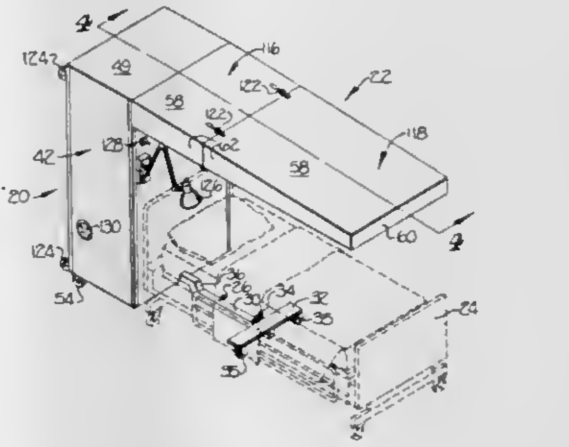
3,935,803
AIR FILTRATION APPARATUS

Louis Bush, Beaufort, S.C., assignor to Flanders Filters, Inc., Washington, N.C.

Filed Oct. 12, 1972, Ser. No. 296,846

Int. Cl.^{2} F24F *13/00*

U.S. Cl. 98—36 **13 Claims**



1. An apparatus for directing a filtered stream of air downwardly onto a predetermined area such as a hospital bed or the like, and with the periphery of the stream of air moving at a

higher velocity than the central portion thereof to thereby form a peripheral air curtain to prevent the incursion of unfiltered air into the predetermined area and thus effectively isolate such area from the external environment while maintaining free access thereto, said apparatus comprising

a horizontally disposed plenum chamber comprising a closed front end, an open rear end, opposite sides, perforated bottom wall means comprising an openwork screen and fibrous air permeable means resting upon and substantially covering said openwork screen for permitting air to be passed uniformly therethrough while reducing its velocity, and means defining a downwardly directed, continuous, open slot extending along each side and the front end and peripherally of said bottom wall means,

means for supporting said plenum chamber above the predetermined area and in cantilever fashion from said open rear end such that the plenum chamber is unsupported along said sides and front end,

a vertical panel extending downwardly from said rear end of said plenum chamber, and

means for directing filtered air under pressure into said open rear end of said plenum chamber whereby a portion of the air is directed downwardly through said perforated bottom wall means at a relatively low velocity and the remaining portion of the air is directed downwardly through said slot at a relatively high velocity to define an air curtain and wherein the predetermined area is bounded by said air curtain and said vertical panel.

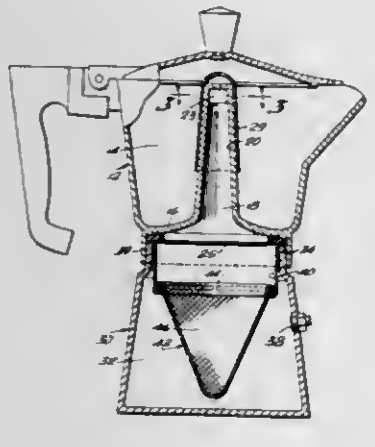
3,935,804
COFFEE BREWER

Thomas Perez, 3310 NW. 9th Court, Miami, Fla. 33127

Filed Jan. 28, 1975, Ser. No. 544,842

Int. Cl.^{2} A47J *31/057*

U.S. Cl. 99—293 **3 Claims**



1. A coffee brewer comprising:

an upper receptacle defining an upper chamber with a floor having an opening and an opened top tower extending vertically in the upper chamber about the opening and filter means included on said tower, said tower extending substantially above the floor and toward the upper portion of said upper receptacle chamber,

a lower receptacle defining a lower chamber with an open top and a side vent,

means to connect the upper chamber floor over the lower chamber top, whereby the passageway through the opening and tower comprise the only means of fluid communication between the chamber of the upper end and the chamber of the lower receptacle,

a coffee and sugar holder captivated between the upper and lower receptacle, and completely spanning the opening, said holder comprising an annular member sized to nest in the open top and means captivating the holder in the open top of said upper receptacle, and a bag suspended from said annular member and extending into the lower chamber to hold a lower charge of sugar and an upper charge of coffee, said bag having an open upper end in said opening and a closed lower end,

expandible ring means carried by the open upper end of the bag and releasably engaged in said annular member to suspend said bag in said lower chamber,

whereby when a charge of sugar and an upper charge of coffee is placed in the bag, and the bag is suspended on said holder, and the receptacles are united together captivating the bag and heat is applied to boil water in the lower chamber, the same will pass as a vapor through the wall of the bag and sugar and coffee forming coffee which rises through the opening, through the tower, and upon cooling descends into the upper chamber to provide a well brewed cup of coffee.

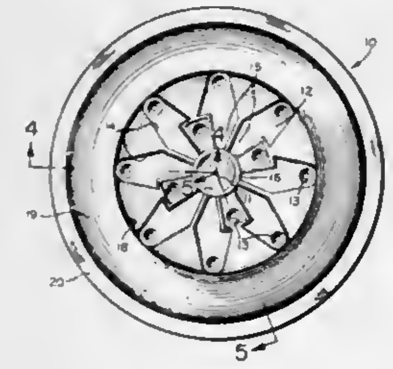
3,935,805
SPREADER CLOSURE

Russell E. Ihlenfeld, Allenton, Wis., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Oct. 3, 1973, Ser. No. 403,206

Int. Cl.^{2} A47J *31/44*

U.S. Cl. 99—300 **3 Claims**



1. A spreader closure for receiving and distributing hot water in a coffee maker apparatus or the like comprising:

a central water receiving portion;

a downwardly inclined surface having upper and lower portions, said surface extending outwardly from said central water receiving portion to an upstanding peripheral wall;

at least two sets of individual orifices located on said downwardly inclined surface to pass water through said spreader closure including a first set of said orifices positioned radially outwardly from a second set of orifices with respect to said central water receiving portion and each orifice of said first set of orifices being angularly displaced from each orifice of said second set of orifices such that the hot water is substantially evenly distributed;

divider means extending upwardly from the upper portion of said downwardly inclined surface and radially outwardly from said central water receiving portion wherein each of said divider means is about equally angularly spaced apart about the periphery of said water receiving portion to define separate water flow channels for each of said orifices and each channel communicating and directing water flow to only a single orifice.

3,935,806
SMOKELESS BARBECUE UNIT

Timothy J. Connolly, Vallejo, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 21, 1974, Ser. No. 453,267

Int. Cl.^{2} A47J *37/07*

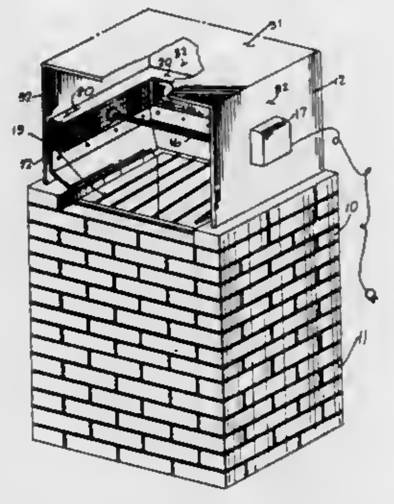
U.S. Cl. 99—340 **2 Claims**

1. A barbecue unit for broiling food comprising

a hollow chimney base section, with a first grill mounted over the top of the recess of the chimney base,

a housing mounted on the top of the sides of the base section, above the said first grill, formed of three sides and a top section,

a firebox mounted on the interior of each of the three sides of the housing, the firebox being open on its top face and fitted with a screen mesh bottom, together with an inclined tray member mounted to each inner side wall of the housing below the firebox, said tray member extending from a side wall to terminate over the recess of the hollow recess of the chimney base section, so as to carry ashes from the firebox into the chimney recess, together with



a food-supporting second grill which is of an inverted V-shape, formed of two flat grill segments that are each inclined to the plane of the other, and join at the apex of the said second grill so that a strip of food may hang from the apex of the said second grill and rest on each of the said second grill segments.

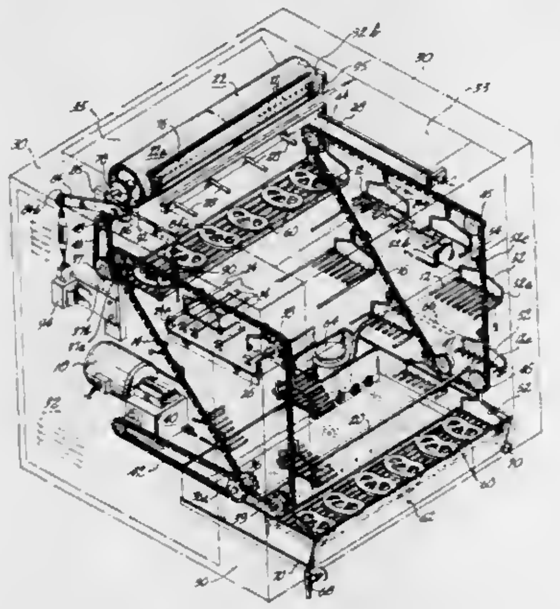
3,935,807
AUTOMATIC BAKING APPARATUS

Bertyl L. Main, Spokane, and Richard G. Garmire, Kirkland, both of Wash., assignors to G & M Enterprises, Kirkland, Wash.

Filed July 10, 1974, Ser. No. 487,312

Int. Cl.^{2} A21B *5/06*

U.S. Cl. 99—352 **14 Claims**



1. An apparatus for baking a pretzel-like bakery product, comprising:

a housing having an oven-like chamber therein;

a pair of endless power-driven drive belts mounted in the chamber so as to rotate therein in spaced parallel vertical planes around closed paths of travel each comprising a first substantially horizontal segment disposed near the top of the chamber, a second substantially horizontal segment disposed near the bottom of the chamber, said second horizontal segment being substantially shorter than said first horizontal segment, each of said first and second horizontal segments having first and second ends, said closed paths of travel further including a substantially vertical segment and an oblique segment, said vertical segment being disposed adjacent the front of the chamber and connecting the respective first ends of said first and second horizontal segments, said oblique segment being disposed towards the rear of the chamber and connecting the respective second ends of said first and second horizontal segments;

a plurality of carrier racks interposed between the drive belts and swingably supported at spaced points therealong so that a baking surface of each rack maintains a substantially horizontal disposition as the racks are rotated in conjunction with the drive belts, said baking surface of the racks being adapted to support a bakery product;

means positioned in said housing for spraying a solution on the bakery product when each rack is disposed at a point near the bottom of the vertical segments of the closed paths of travel of the drive belts;

means positioned in said housing for salting the upper surface of the bakery product at a point in the course of travel thereof after each rack has passed said spray point; and

dual baking means disposed above and below the course of travel of said racks at a point after said salting point for baking the bakery products.

3,935,808
APPARATUS FOR MILLING GRAIN WHILE SIMULTANEOUSLY COOKING THE GRAIN

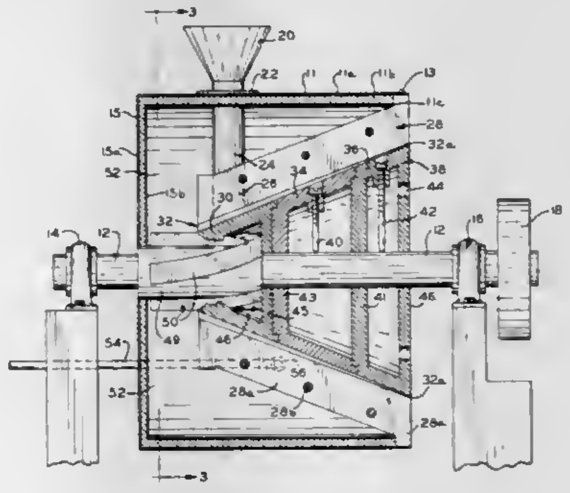
Fausto Celorio Mendoza, Cumbres de Acultzingo No. 185, Lomas de Chapultepec, Mexico City, Mexico

Filed Sept. 5, 1974, Ser. No. 503,488

Claims priority, application Mexico, Sept. 21, 1973, 146302

Int. Cl.^{2} A23L *1/34*, *1/36;* B02B *5/02*

U.S. Cl. 99—353 **7 Claims**



1. An apparatus for milling grain while simultaneously cooking the grain which comprises; an outer nonrotatable frustoconical grinding member; an inner rotatable frustoconical grinding member coaxial with and substantially axially coextensive with said outer member, said grinding members defining an annular grinding space therebetween, an insulated enclosure surrounding said outer grinding member and defining a closed space therewith, means for supplying grain to be ground to said grinding space near one end of said members for movement axially along said space to a point of discharge at the other end of said members, means for supplying hot gas to said closed space thereby to heat said outer grinding member, and means for moving hot gas from said closed space

axially through said inner grinding member to heat said inner grinding member.

3,935,809
GRILLING APPARATUS USABLE AS A SPACE HEATING MEANS

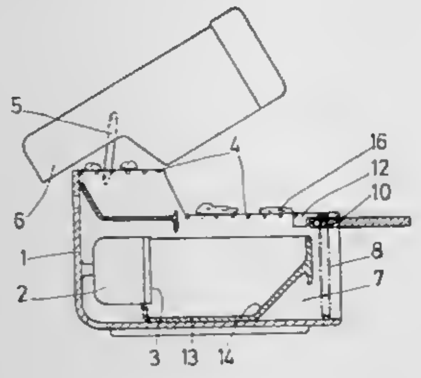
Hans Bauer, Dettingen, Germany, assignor to Dietz-Druckguss KG, Unterensingen, Germany

Filed July 22, 1974, Ser. No. 490,481

Claims priority, application Germany, Aug. 1, 1973, 7328066[U]

Int. Cl.^{2} A47J *27/66*

U.S. Cl. 99—447 **3 Claims**



1. A grilling apparatus comprising, in combination, a grilling tub having an upper grilling portion and a selectably openable front wall, a hood coupled to the tub and adjustable from a closed position to a desired open position above the grilling portion, heating means disposed in the tub and having a vertically arranged heating plane for radiating heat forwardly toward the first wall of the tub, and means removably insertable into the tub through the front wall for deflecting the forwardly radiated heat upwardly toward the grilling portion.

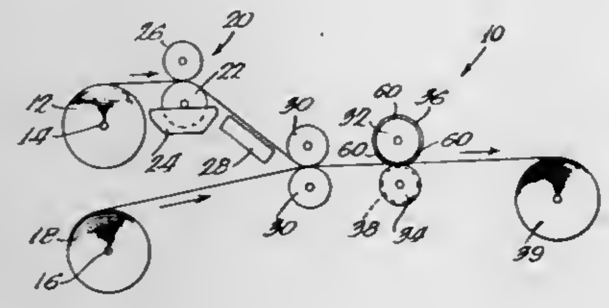
3,935,810
POUCHES

Gerard M. Milano, Glen Ellyn, Ill., assignor to Arvey Corporation, Chicago, Ill.

Division of Ser. No. 221,982, Jan. 31, 1972, which is a continuation-in-part of Ser. No. 69,670, Sept. 4, 1970, abandoned. This application Nov. 30, 1973, Ser. No. 420,617

Int. Cl.^{2} B65D *79/00, 85/67, 85/72;* **B32B** *7/14*

U.S. Cl. 99—467 **4 Claims**



1. A cooking and sterilizing bag and bag roll comprising a pair of films secured together at least at two opposite edges, one film being a plastic film capable of resisting cooking temperatures, the other film being a metallic foil, and an adhesive securing the opposite edges together which adhesive is capable of withstanding cooking temperatures without separation of the films.

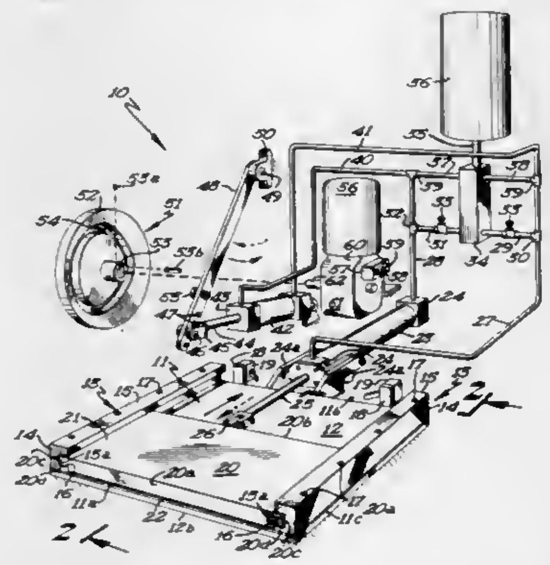
3,935,811
BOLSTER TABLE DEVICE FOR PUNCH PRESS

John O. Lenz, Coon Rapids, and Ingo E. Wolfe, Minneapolis, both of Minn., assignors to Kurt Manufacturing Company, Inc., Minneapolis, Minn.

Filed Sept. 16, 1974, Ser. No. 506,412

Int. Cl.^{2} B30B *15/06, 15/30*

U.S. Cl. 100—53 **10 Claims**



1. A bolster table device for a punch press apparatus of the type having a power operated press, vertically shiftable through a working cycle into and out of engaging relation with a workpiece on the bolster table device, said bolster table device comprising:

a stationary support plate,
spaced apart, substantially parallel elongate guideways,
a bolster table engaging said guideway for reciprocating movement between an outer extended position and an inner retracted position disposed below the press to permit a workpiece to be engaged by the latter,
means for reciprocating said bolster table through a cycle between said outer extended position, to the inner retracted position, and for return to the outer extended position, said reciprocating means including a closed circuit fluid pressure system, a driven cam mechanism operatively connected with said pressure system for operating the latter and
means for driving said driven cam mechanism.

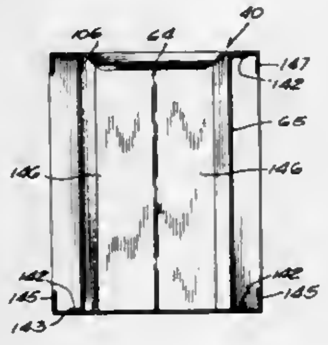
3,935,812
COMPACTOR

Robert F. Karls, Hales Corners, and James H. Enright, Racine, both of Wis., assignors to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 177,385, Sept. 2, 1971, Pat. No. 3,772,984. This application Apr. 23, 1973, Ser. No. 353,921

Int. Cl.^{2} B30B *1/00*

U.S. Cl. 100—214 **3 Claims**



1. A trash compactor having a housing with unitary frame and body, said housing having panel surfaces with side margins turned at a right angle to form edge flanges, and transverse panel walls having margins in face contact with said flanges and fastened thereto, edge portions of said transverse panel walls being bent at a right angle to form flanges parallel to the first-named panel surfaces to form box section corner posts for the housing.

3,935,813
PRINT HAMMER DEVICE

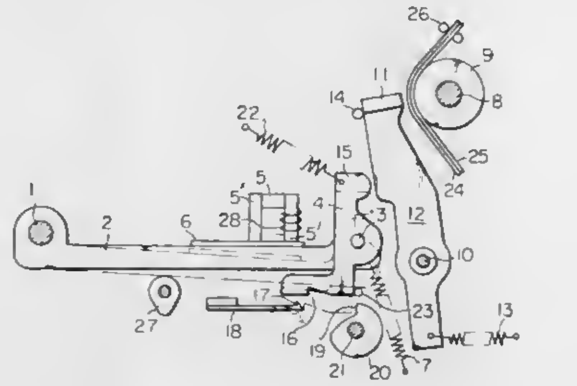
Toru Matsubara, Chofu, Japan, assignor to Tokyo Juki Kogyo Kabushiki Kaisha, Chofu, Japan

Filed Oct. 3, 1974, Ser. No. 511,728

Claims priority, application Japan, Oct. 11, 1973, 48-114100

Int. Cl.^{2} B41J *9/36*

U.S. Cl. 101—93.31 **1 Claim**



1. A printing device comprising in combination

a. a driven rotatable print drum having a plurality of raised type faces arranged circumferentially at spaced intervals thereon;
b. printing hammer means rotatably mounted for rotation around an axis parallel with the axis of rotation of said print drum, to abut against and move away from the respective type faces on said drum;
c. rocking means one end of which is rotatably mounted for rotation around an axis parallel with the axis of rotation of said drum and having a portion opposed to said printing hammer;
d. bias means resiliently biasing said rocking member in a direction toward said printing hammer;
e. magnetic means adjacent said rocking means for attractively holding said rocking member against the bias of said bias means in a normal position and releasing said rocking member to the control of said bias means when said magnetic means is demagnetized;
f. actuator means rotatably mounted on said portion of said rocking means for rotation about an axis parallel with the axis of rotation of said print drum, said actuator means having therein an abutment spaced from said printing hammer means when said rocking means is attractively held by said magnetic means, and having an engaging member thereon which can be engaged for preventing rotational movement of said actuator means;
g. intermittently rotatable cam means disposed adjacent said rocking means for engaging said rocking means and moving said rocking means toward said magnetic means;
h. a ratchet wheel rotatably mounted for rotation around an axis parallel with the axis of rotation of said print drum and having an abutment thereon engageable with said actuator means when said rocking means is moved away from said magnetic means, said ratchet wheel pivoting said actuator means against said printing hammer means for causing said printing hammer means to strike the type on said print drum when said actuator means is operatively engaged by the abutment on said ratchet wheel; and
k. detent means adjacent said engaging member on said actuator means for engaging said engaging member at the end of the pivoting movement of said actuator means for holding said actuator means out of the rotational orbit of said abutment on said ratchet wheel, and for releasing said engaging member upon the movement of said rocking means by said cam means toward said magnetic means.

3,935,814
SHEET DELIVERY APPARATUS

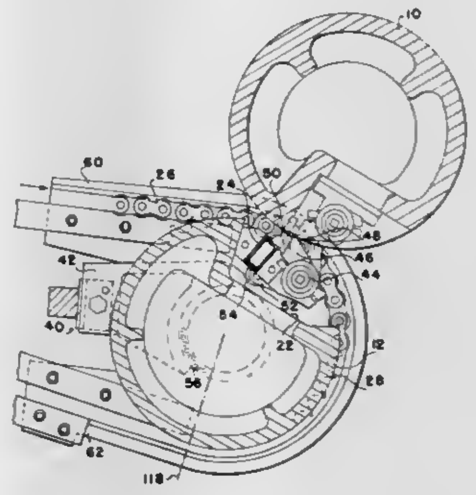
Willi Weisgerber, Johannisberg-Rheingau, Germany, assignor to Miller Printing Machinery Co., Pittsburgh, Pa.

Filed Feb. 19, 1974, Ser. No. 443,430

Claims priority, application Germany, Feb. 19, 1973, 2308025

Int. Cl.^{2} B41F *21/08*

U.S. Cl. 101—232 **4 Claims**



1. Sheet delivery apparatus for a sheet fed printing press comprising,

a cylindrical sheet supporting member positioned parallel to an impression and blanket cylinder of a printing press,
said cylindrical sheet supporting member having a shaft journaled in a press frame,
a drive gear rotatably mounted on said shaft, said drive gear having a bore therethrough,
means to rotate said drive gear,
an eccentric member having a first shaft positioned in said bore and a second shaft axially displaced from said first shaft and nonrotatably connected thereto,
clamp means rotatably connecting said eccentric member second shaft to said cylindrical sheet supporting member shaft,
a pair of drive sprockets secured to said shaft on opposite sides of said cylindrical sheet supporting member,
endless delivery chains reeved about said delivery drive sprockets and having a plurality of transversely extending gripper bars secured therebetween in preselected spaced relation to each other,
said gripper bars each having a plurality of gripper fingers and gripper pads arranged to engage the front edge of a sheet therebetween,
said cylindrical sheet supporting member having a recessed portion to receive said gripper bars as said gripper bars revolve about the axis of said shaft,
an arm member connected to said eccentric member first shaft and having a cam roller mounted thereon,
a cam member fixedly secured to said press frame, and
said cam member arranged to oscillate said arm member upon rotation of said drive gear to thereby oscillate said eccentric member to rotate said sheet supporting member and vary the angular velocity of said shaft and maintain the speed of said gripper pads on said gripper bars equal to the peripheral velocity of said impression and blanket cylinders until the trailing edge of the sheet passes through the nip of said impression and blanket cylinder.

3,935,815
INKING APPARATUS FOR PRINTING PRESS

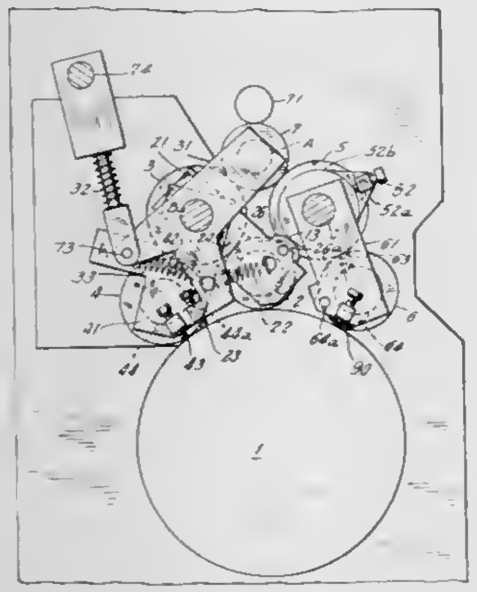
Karl Olov Keijser, Vasteras, Sweden, assignor to AB Printing Equipment, Sollentuna, Sweden

Continuation-in-part of Ser. No. 453,865, March 22, 1974, abandoned, which is a continuation of Ser. No. 297,238, Oct. 13, 1972, abandoned. This application Mar. 12, 1975, Ser. No. 557,833

Claims priority, application Sweden, Oct. 21, 1971, 13371/71

Int. Cl.² B41F *31/30*

U.S. Cl. 101—349 5 Claims



1. An inking apparatus for uniformly inking a rotatable cylinder, comprising:

a support frame;

first, second and third rotatable form rolls, aligned with each other and spaced apart from but near to each other and arrayed around said cylinder and all rollingly engaging said cylinder; a respective first, second and third pivot on which said first, second and third rolls are rotatably mounted, and the locations of these said pivots being adjustable;

fourth and fifth rotatable distribution rolls, aligned with each other and also with said form rolls; said distribution rolls being spaced from each other; a fourth pivot on which said fourth roll is rotatably mounted; the location of said fourth pivot being adjustable; a fifth pivot on which said fifth roll is rotatably mounted; said fifth pivot being fixedly located with respect to and attached to said frame;

said fourth distribution roll being continuously in engagement with both said first and said second form rolls for rolling therewith; said fifth distribution roll being continuously in engagement with both of said second and said third form rolls for rolling therewith; whereby there are four continuously engaged contact points between said form rolls and said distribution rolls for effective ink distribution;

a sixth rotatable transfer roll for receiving ink from a source, a sixth pivot on which said sixth roll is rotatably mounted; said sixth roll being spring biased against said fourth and fifth distribution rolls and the location of said sixth roll being self adjustable against said fourth and fifth rolls and in continuous engagement with both said fourth and fifth rolls for their rolling together;

a seventh pivot generally aligned with said sixth pivot and being fixedly located with respect to and attached to said frame;

a first arm journaled for swinging motion about said seventh fixed pivot and extending toward said fourth pivot; said fourth pivot being located on said first arm, and said fourth roll being carried on said first arm and being rotatable with respect thereto;

a second arm journaled for swinging motion about said fourth pivot and extending toward said first pivot; said first pivot being located on said second arm and said first roll being carried on said second arm and being rotatable with respect thereto;

a third arm journaled for swinging motion about said fourth pivot and extending toward said second pivot; said second pivot being located on said third arm and said second roll being carried on said third arm and being rotatable with respect thereto;

a fourth arm journaled for swinging motion about said fifth pivot and extending toward said third pivot; said third pivot being located on said fourth arm and said third roll being carried on said fourth arm and being rotatable with respect thereto;

a plurality of biasing means for biasing said form rolls into engagement with said cylinder, for biasing said fourth distribution roll into engagement with said first and second form rolls and for biasing said second roll into engagement with said fifth roll;

respective first, second and third form roll position readjustment means connected with the respective one of said form rolls for moving the position of the respective said form rolls;

respective first, second and third stop means connected with the respective one of said form rolls for holding the position of that said form roll and its respective said arm stationary as any other said form roll and its said arm shifts in position.

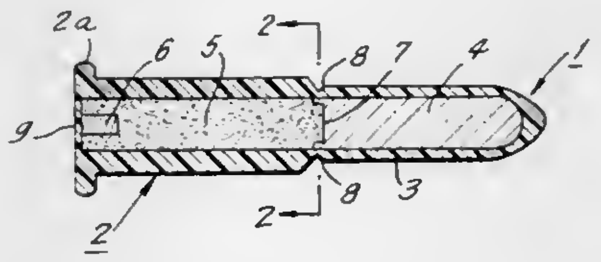
3,935,816
CONSTRUCTION FOR CARTRIDGE

Lawrence E. Boquette, Jr., Long Beach, Calif., assignor to Howard S. Klotz, New York, N.Y.

Filed Jan. 9, 1974, Ser. No. 431,949

Int. Cl.² F42B *5/22*

U.S. Cl. 102—41 6 Claims



1. A live ammunition cartridge comprising, in combination: a cylindrical powder charge body having a constant diameter, a primer disposed in one end of said powder charge body, an elongated cylindrical and continuous sheath of plastic material having an axial bore of said constant diameter; a first portion of said elongated plastic sheath bore closely receiving said powder charge body with said primer being juxtaposed with one end of said elongated plastic sheath; a second portion of said sheath having an elongated projectile-shaped section which is closed at its end and which extends axially away from said powder charge body; a projectile mass disposed within and completely filling said constant diameter bore in said projectile-shaped sheath section; said first plastic sheath portion having a wall thickness sufficiently strong to withstand the forces due to expanding gas created when said powder charge is ignited by said primer; said second plastic sheath portion having a substantially constant wall thickness, said second portion wall thickness being less than said first portion wall thickness; said first plastic sheath portion being ejected with said projectile mass when said powder charge body is ignited.

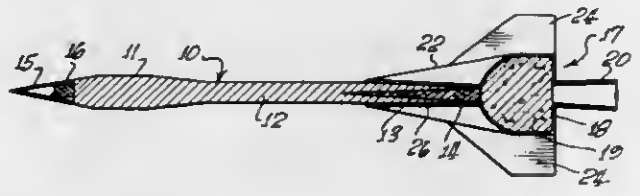
3,935,817
PENETRATING SPEAR

Carlo Riparbelli, Pomona, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Continuation-in-part of Ser. No. 172,335, July 28, 1971, abandoned. This application Jan. 22, 1973, Ser. No. 325,716

Int. Cl.² F42B *11/14*

U.S. Cl. 102—52 4 Claims



1. A penetrating spear comprising:

an elongated solid rod, of a hard metal, having a length many times its diameter, said rod additionally having an integral blunt bulb-shaped front end with a diameter between 5 to 10% larger than the diameter of the remainder of said rod;

propulsion means secured adjacent the rear portion of said rod to accelerate the spear to an optimum velocity before impact with a target; and

a plurality of aerodynamic surfaces disposed around said rod to control and stabilize the spear during flight, said plurality of aerodynamic surfaces including a frontal conical fairing disposed at the front of said rod, a plurality of aerodynamic fairing surfaces extending from said rod to said propulsion means, and a plurality of stabilizer tail surfaces extending outward from said propulsion means.

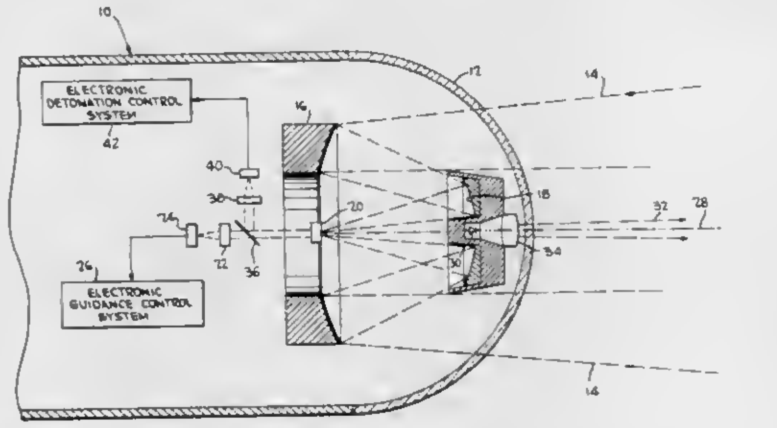
3,935,818
COMBINED FUZE AND GUIDANCE SYSTEM FOR A MISSILE

Peter B. Johnson, Washington, D.C., and Edward A. Brown, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 26, 1974, Ser. No. 500,840

Int. Cl.² F42C *13/02;* **F42B** *15/02*

U.S. Cl. 102—70.2 P 4 Claims


10
ELECTRONIC DETONATION CONTROL SYSTEM
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24
ELECTRONIC GUIDANCE CONTROL SYSTEM
36
32
28
34
14

1. In an optical guidance system target sensing head for a missile incorporating an assembly of optical elements for receiving radiant energy from a target, and wherein the optical axis of the receiving assembly is automatically rotated by guidance control means in response to received guidance radiation to track the target, the improvement comprising; an active optical fuze means for detonating a missile warhead at a prescribed range, said fuze means including a radiant energy transmitting device coupled to the receiving assembly and disposed coaxially therewith for emitting radiation outwardly along the optical axis of the receiving assembly, whereby the fuze radiation is automatically emitted in the target direction when the receiving assembly is rotated to track the target; and a discriminator means coupled to the receiving assembly for separating received fuze transmitter radiation scattered by the target from received guidance radiation.

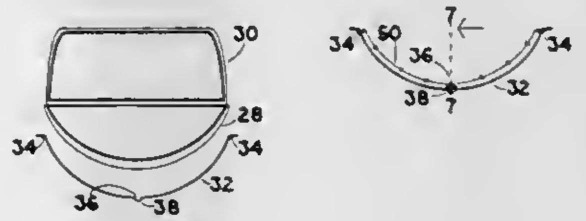
3,935,819
MASS TRANSPORTATION

Bradley R. Klein, 855 Piccadilly Circle, Sacramento, Calif. 95825

Filed May 7, 1974, Ser. No. 463,068

Int. Cl.² B61D *15/00*

U.S. Cl. 104—23 FS 4 Claims



1. A high speed mass transportation system comprising:

track means;

means mounted on said track means to cover said track means with a film of liquid;

a vehicle;

means for propelling said vehicle along said track means;

said vehicle including means for supporting said vehicle over said track means;

said means for supporting said vehicle over said track means conforming substantially with the shape of said track means at all points where said vehicle comes in or near contact with said track means;

and said means for supporting said vehicle over said track means and said track means are substantially smooth at all points where said means for supporting said vehicle and said track means meet.

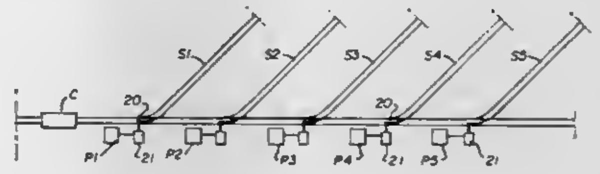
3,935,820
APPARATUS FOR THE IDENTIFICATION OF MOVING UNITS

Dean Lancaster, Lakewood, Colo., assignor to Control Electronics Corporation, Golden, Colo.

Filed Aug. 5, 1974, Ser. No. 494,459

Int. Cl.² B61J *3/00*

U.S. Cl. 104—88 9 Claims



1. An apparatus to identify car units moving along a fixed course for subsequent switching or like purposes, comprising:

a. a signal indicator means on the moving car unit which is tuned to resonate at a frequency which is permitted to vary only by a small percentage from a selected base frequency,

b. a signal pickup means adjacent to the fixed course including an oscillator means producing a radiation field which extends to and is within the influence of the signal indicator means whenever the car unit moves past the signal pickup means,

c. a sweep control means controlling the frequency of the signal pickup means and cyclically varying the frequency of the radiation field produced by the signal pickup means from the aforesaid selected base frequency through a range of frequencies, above and below the selected base frequency, which is slightly greater than the permitted variation of the resonant frequency of the aforesaid signal indicator from the said base frequency, whereby the signal pickup means will operate at the resonant frequency of the signal indicator means twice during each sweep cycle and thereby whenever the signal indicator means is within the influence of the radiation it causes a repeated distortion of said radiation field and a distortion of the voltage pattern within the signal pickup means,

d. a circuit means associated with the signal pickup means to provide a signal and which is responsive only to a repeated distortion of the voltage pattern in the signal pickup means, and

e. a control means adapted to be actuated responsive to the aforesaio signal by the circuit means.

3,935,821
METHOD OF AND APPARATUS FOR CREELING BOBBINS ON A RING SPINNING MACHINE

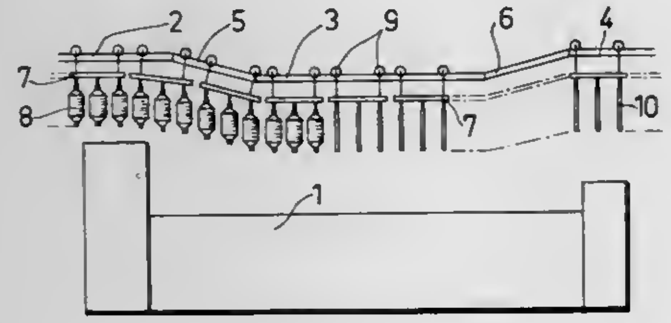
Helmut Maier; Alois Mayer, and Friedrich Kugelmann, all of Augsburg, Germany, assignors to Augsburger Kammgarn-Spinnerei AG, Augsburg, Germany

Filed June 25, 1973, Ser. No. 373,452

Claims priority, application Switzerland, June 28, 1972, 9673/72

Int. Cl.^{2} B61B *3/00*

U.S. Cl. 104—89 **25 Claims**



1. An apparatus for creeling bobbins into a working position at a ring spinning machine, comprising rail means arranged above the ring spinning machine, said rail means extending substantially parallel to the longitudinal axis of the ring spinning machine and comprising input rails, creel rails and exit rails, wherein said creel rails are arranged at a lower height than the input rails and exit rails, each of said creel rails having operatively associated therewith one of said input rails and one of said exit rails, each of said creel rails including a pivotable input section and a pivotable exit section, each of the creel rails being connected via its pivotable input section with its associated input rail and via its pivotable exit section with its associated exit rail, trolleys movable on said rail means for carrying bobbins placed thereon, means for selectively pivoting each input section from a first position into a second position connecting the associated input rail with its creel rail for transferring trolleys carrying full bobbins from such input rail to such creel rail into a bobbin working position, means for selectively pivoting each exit section from a first position into a second position for transferring trolleys with empty bobbins from the associated creel rail to the associated exit rail, each input section and its associated exit section when assuming their respective first positions disconnecting the associated creel rail from the associated input rail and exit rail to prevent transfer of trolleys from the associated input rail to the associated creel rail and from the latter to the associated exit rail in order to maintain the trolleys on the associated creel rail in said bobbin working position, a rail arrangement operatively associated with the ring spinning machine and connecting means for operatively connecting the rail means with the rail arrangement.

15. A method of creeling bobbins into a working position at a ring spinning machine by means of a transporting rail arrangement forming a closed loop for transporting trolleys carrying full bobbins from spinning preparatory machines and trolleys carrying empty bobbins back again to the spinning preparatory machines, comprising the steps of transporting trolleys onto a rail arrangement provided above the ring spinning machine, moving the trolleys carrying full bobbins via a sloped input section of the rail arrangement above the ring spinning machine as they move onto the rail arrangement above the spinning machine and owing to the overweight of the full bobbin trolleys, the trolleys carrying the empty tubes are pushed-off the rail arrangement above the ring spinning machine onto the transporting rail arrangement, thus bringing the full bobbins into their working positions at the ring spinning machine at such rail arrangement.

3,935,822
MONORAIL TROLLEY

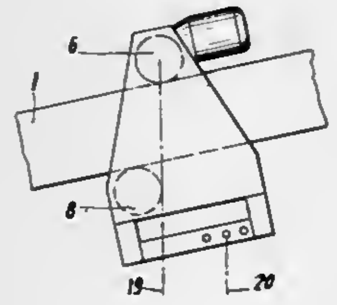
Karl Ernst Kaufmann, Wetter, Germany, assignor to Demag Aktiengesellschaft, Germany

Filed Aug. 26, 1974, Ser. No. 500,353

Claims priority, application Germany, Aug. 29, 1974, 2343502

Int. Cl.^{2} B61B *3/02*

U.S. Cl. 104—93 **9 Claims**



1. An improved trolley structure adapted to travel on a rail having predetermined spaced upper and lower beam surfaces, comprising

a. a truck means mounting a traction wheel and a counterwheel for engaging said upper and lower rail surfaces, respectively,

b. said traction wheel and said counterwheel being spaced apart by a distance greater than the predetermined direct vertical distance between said upper and lower beam surfaces,

c. the center of gravity of said trolley being laterally displaced with respect to the point of contact between the rail and said traction wheel on the rail, whereby said counterwheel is urged against said rail by said trolley in both loaded and unloaded states,

d. motor means mounted on said truck means for driving said traction wheel,

e. said motor means being located on one side of the trolley to establish the center-of-gravity of said trolley at one side,

f. said truck means including a common frame supporting axle means for said traction wheel and said counterwheel,

g. said common frame including a central plate adapted to be disposed at one side of said rail and provided with upper journal box means for supporting bearings for said traction wheel and lower journal box means for supporting bearings for said counterwheel, and

h. said lower journal box means extends longitudinally to said rail from the axis of said counterwheel and intersects the vertical axis of said traction wheel.

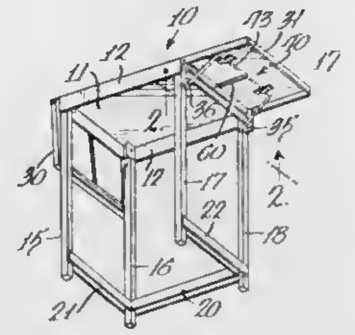
3,935,823
DROP LEAF TABLE

William G. England, Elmhurst, Ill., assignor to Bretford Manufacturing, Inc., Schiller Park, Ill.

Filed Aug. 29, 1974, Ser. No. 502,110

Int. Cl.^{2} A47B *1/04*

U.S. Cl. 108—80 **10 Claims**



1. A drop leaf table having a table top and at least one pivotally hinged drop leaf along an edge of said table top and movable from a lowered position to a raised operative position forming an extension of said table top, a brace member pivotally mounted relative to the table top with a part thereof for bearing upwardly against the bottom surface of the drop leaf as the drop leaf moves between lowered and raised positions and engageable with a latch member on said bottom surface to hold the drop leaf in said raised position, means for urging said brace member part against said bottom surface of the drop leaf from lowered to raised positions and into engagement with said latch member, said latch member including a first inclined tab and a second tab, said first tab having a cam surface for camming said brace member part over said first tab and placing said brace member part and said first tab in locking relation when said drop leaf is in raised position, and said second tab spaced apart from said first tab for engagement with said brace member part to limit raising of the drop leaf and elevation of the brace member.

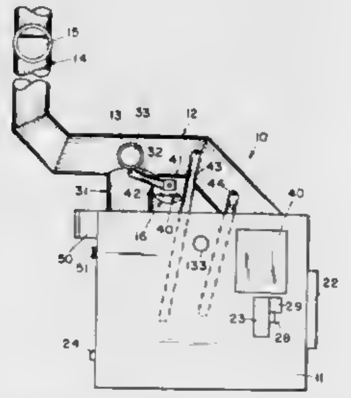
3,935,824
METHOD AND MEANS OF COMBUSTION

Robert E. Gibeault, Manor Drive, Glens Falls, N.Y. 12801

Filed Oct. 16, 1974, Ser. No. 515,232

Int. Cl.^{2} F23G *5/12*

U.S. Cl. 110—8 C **30 Claims**



1. In a device for high temperature oxidation of hydrocarbons having a primary combustion chamber, a pair of spaced ports opening through the upper portion of said primary combustion chamber, a gas expansion chamber, one of said ports discharging gases from said combustion chamber into said expansion chamber, a tubular recycling chamber extending from said expansion chamber to said second port and a fan in said recycling chamber for inducing gases to return to said combustion chamber through said recycling chamber; a gas discharge stack communicating with said recycling chamber and said expansion chamber and extending from said expansion chamber oppositely from said recycling chamber, said device characterized in that a secondary combustion air intake port is provided at the juncture between said stack, recycling chamber and expansion chamber to provide a secondary combustion zone separating the gases entering said recycling chamber and those entering said stack.

14. In a method of burning hydrocarbons while suppressisng emission of particulate materials, the steps which comprise placing a quantity of hydrocarbon material in a combustion chamber, heating said hydrocarbons and the gaseous contents of the combustion chamber to a temperature substantially above the autogenous ignition temperature thereof while discharging the heated gases from said chamber into a classification and separation chamber and therein by mechanical means inducing the particulate laden gases to separate from the lighter particulate free gases, returning the particulate laden gases to the combustion chamber and permitting the remaining gases to discharge to atmosphere through a barometric damper regulated stack, restricting the entry of atmospheric air to the combustion chamber to that which will flow into said chamber as a result of a negative pressure differential in the combustion chamber produced by the combustion process and the discharge of particulate free gases through said stack.

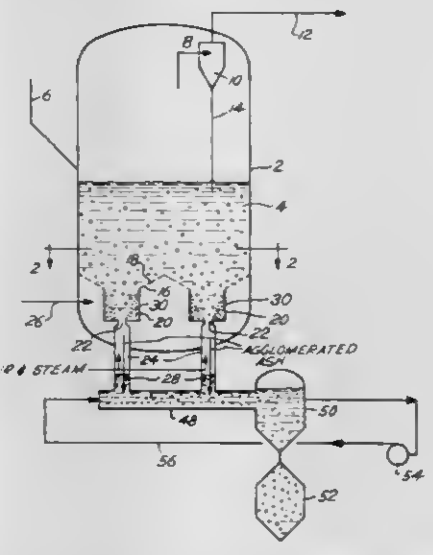
3,935,825
COAL ASH AGGLOMERATION DEVICE

Charles W. Matthews, Pittsburgh, Pa., and Jitendra G. Patel, Bolingbrook, Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Feb. 24, 1975, Ser. No. 552,157

Int. Cl.^{2} F23J *1/00*

U.S. Cl. 110—165 R **11 Claims**



1. In an apparatus for contacting a mass of fluidized solids with a gaseous medium and withdrawing agglomerated solids from the mass of fluidized solids wherein the apparatus includes a fluidizing chamber, a grate positioned near the bottom of the fluidizing chamber to support said fluid bed and means for passing a gaseous medium through said grate to assist in maintaining the solids in a fluidized state, the improved apparatus for withdrawing agglomerated solids from said mass of fluidized solids which comprises at least one withdrawal chamber having a width less than the width of the fluidizing chamber, positioned below said fluid bed and open at the top to communicate with the fluidizing chamber and, means for introducing a high velocity fluidizing gaseous medium to the bottom portion of said withdrawal chamber, said withdrawal chamber having dimensions sufficient to contain a semi-fixed bed within said chamber, said high velocity gaseous means positioned in said withdrawal chamber to provide a high velocity inverted conical shaped gaseous flow pattern through the semi-fixed bed, the walls of said pattern provided by said semi-fixed bed.

9. A process for withdrawing agglomerated solids from the bottom of a fluidized bed of finely divided solids which comprises:

introducing a first high velocity gas stream upwardly into a vessel containing a bed of fluidizable solids through at least one withdrawal chamber, said withdrawal chamber comprising a chamber open at the top and having positioned in the bottom portion thereof an opening to receive said high velocity gas stream said chamber having dimensions sufficient to contain a semi-fixed bed within said chamber;

permitting finely divided solids to flow from the fluid bed into said chamber around the perimeter thereof;

maintaining the finely divided solids as a semi-fixed bed in said chamber, and;

adjusting the velocity of the high velocity gas stream to form an inverted cone within said chamber, the walls of said cone being the walls of the semi-fixed bed, said velocity being adjusted to permit the selective removal of agglomerated solids from said bed without removal of finely divided solids therefrom.

3,935,826

METHOD OF AND APPARATUS FOR FEEDING A WORKPIECE ALONG A SURFACE OF A SEWING MACHINE

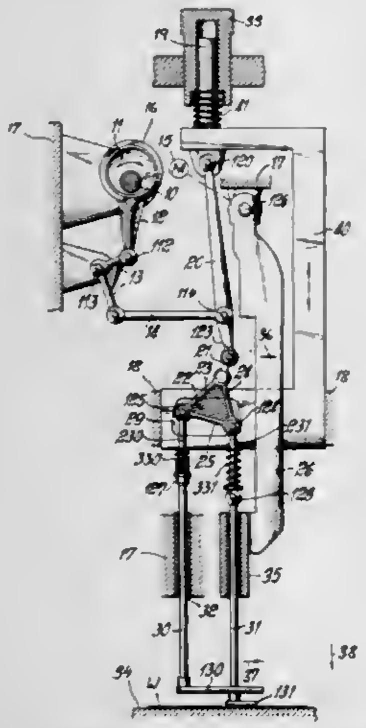
Karl Nicolay, Bielefeld, and Ernst V. D. Osten-Sacken, Brackwede, both of Germany, assignors to Durkoppwerke GmbH, Bielefeld, Germany

Filed July 2, 1974, Ser. No. 485,293

Claims priority, application Germany, July 26, 1973, 2337966

Int. Cl.^{2} D05B *27/04*

U.S. Cl. 112—212 11 Claims



1. A method of operating a sewing-machine feed having a reciprocal holddown foot and a reciprocable feed foot, said method comprising the steps of:

a. pressing a workpiece web against a support surface with said holddown foot;

b. thereafter displacing said feed foot toward said workpiece at a speed first increasing to a maximum and then decreasing uniformly and continuously from said maximum until said feed foot comes to a stop against said workpiece pressing same against said surface, the uniform and continuous speed decrease bringing said feed foot to zero speed upon the pressing of said workpiece thereby;

c. thereafter displacing said holdown foot away from said workpiece;

d. thereafter sliding said feed foot and said workpiece along said surface;

e. thereafter displacing said holddown foot toward said workpiece at a speed first increasing to a maximum and then decreasing uniformly and continuously from its maximum until said holddown foot comes to a stop against said workpiece in a position pressing same against said surface, the uniform and continuous speed decrease bringing said holddown foot to zero speed upon the pressing of said workpiece thereby;

f. repeating steps (b) to (e) sequentially to incrementally advance said workpiece across said surface.

3,935,827

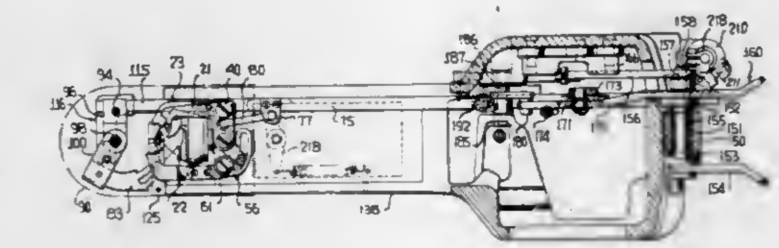
THREAD CUTTER MECHANISM FOR SEWING MACHINES

Frank F. Winter, Chicago, Ill., assignor to Union Special Corporation, Chicago, Ill.

Filed July 22, 1974, Ser. No. 490,783

Int. Cl.^{2} D05B *65/00*

U.S. Cl. 112—252 15 Claims



1. A thread cutter mechanism for a sewing machine of the type having means for producing a needle thread loop and for supplying a bobbin thread, said thread cutter mechanism comprising a loop spreader, means mounting said loop spreader for movement into a needle thread loop having two adjacent thread portions for expanding the needle thread loop and transversely separating the thread portions thereof while at the same time positioning the bobbin thread immediately adjacent one needle thread portion, cutter knives, means mounting said cutter knives for cooperating movement, and means for actuating said cutter knives in timed relation to the movement of said loop spreader and in cooperation with one another to sever both the bobbin thread and the one needle thread portion.

3,935,828

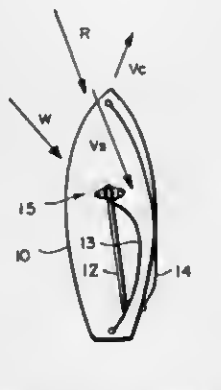
METHOD AND APPARATUS FOR OBTAINING MAXIMUM SAIL BOAT VELOCITY

Charles E. Pfund, 16 Balcarres Road, West Newton, Mass. 02165

Continuation-in-part of Ser. No. 243,214, April 12, 1972, Pat. No. 3,802,372. This application Apr. 8, 1974, Ser. No. 458,643

Int. Cl.^{2} 114 *39;* B63H *9/04;* G01C *21/12*

U.S. Cl. 114—102 1 Claim



1. In a sailboat the method of adjusting a set of sails forming a slot comprising the steps of:

sensing the relative wind speed outside said slot;

sensing the wind speed in said slot;

differentially comparing the two sensed values of wind speed;

indicating the magnitude of the difference between said values approximately independent of incremental changes in relative wind velocity;

relatively adjusting the sails of said set for varying said slot to maximize said magnitude as an indication of maximum difference between said two sensed values of wind speed corresponding to maximum slot wind speed;

repeating the relative adjustment of said sails for successive settings of one of said sails;

indicating a quantity substantially instantaneously related to boat thrust; and

selecting the setting of said one sail which makes said quantity related to boat thrust a maximum in conjunction with said indication of maximum difference between said two sensed values of wind speed.

3,935,829

ANCHORING SYSTEM FOR A FLOATING OFFSHORE DRILLING VESSEL

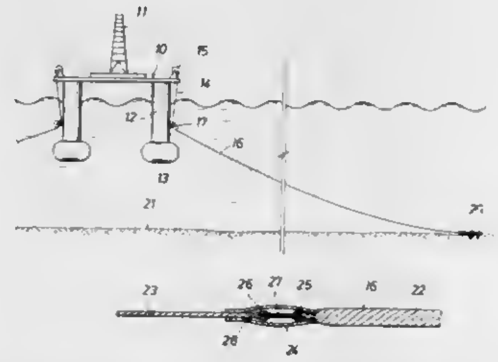
Claude C. Lantz, Noisy-le-Roi, France, assignor to Forex Neptune S.A., Paris, France

Filed Nov. 19, 1973, Ser. No. 417,180

Claims priority, application France, Nov. 24, 1972, 41780

Int. Cl.^{2} B63B *21/50*

U.S. Cl. 114—206 R 7 Claims



1. An anchoring system for use in mooring a floating vessel of the type having an anchor line storage winch located above the surface of the water, comprising: an anchor line having a portion of its length including one end thereof wound on said storage winch, said anchor line passing from said winch toward the water bottom where the other end thereof is adapted to be secured to an anchor; a tag line wound on said winch ahead of said portion of said anchor line and having an inner end and an outer end; and coupling means for connecting said outer end of said tag line directly to said one end of said anchor line; said tag line being constructed of a material having a specific gravity less than one so as to tend to float in a body of water, and having a length greater than the depth of water in which the vessel is to be anchored so as to reach from the water bottom to the surface, so that when said portion of said anchor line and the said entire length of said tag line are wound off of said winch said anchor line can sink to the water bottom with said tag line extending from said one end to the water surface; said winch including a drum divided into two compartments along its axis of rotation by a partition substantially perpendicular to the said axis, one of said compartments receiving only said tag line and the other of said compartments receiving only said portion of said anchor line.

3,935,830

BOW PULPIT MOUNTED PIVOTING FLUKE TYPE ANCHOR HOLDER

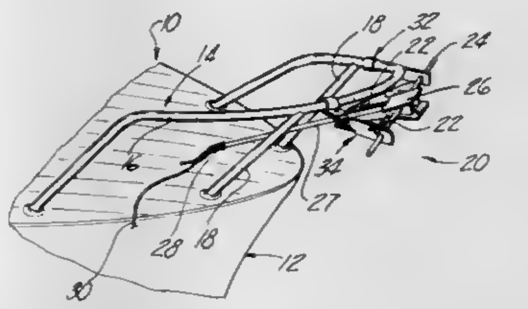
Richard D. Cox, 47163 Ayers, Belleville, Mich. 48111

Filed Sept. 30, 1974, Ser. No. 510,358

Int. Cl.^{2} B63B *21/22*

U.S. Cl. 114—210 21 Claims

1. In a boat having a railing mounted thereon, apparatus for mounting a pivoting fluke type anchor where the anchor includes a pair of flukes connected to a rod with each end of the rod extending beyond the flukes and including an elongated shank and means pivotally connecting the shank to the rod and flukes, said apparatus comprising: first holding means for removably supporting the anchor at one end of the rod and flukes, second holding means for removably supporting the anchor at the opposite end of the rod and flukes, and securing means for securing said first and second holding means to the rail, said securing means including first and second securing means for independently securing said first and second holding means to the rail at movably selected positions relative to each other.



3,935,831

MEANS OF CONNECTING A PUSHER BOAT AND A BARGE

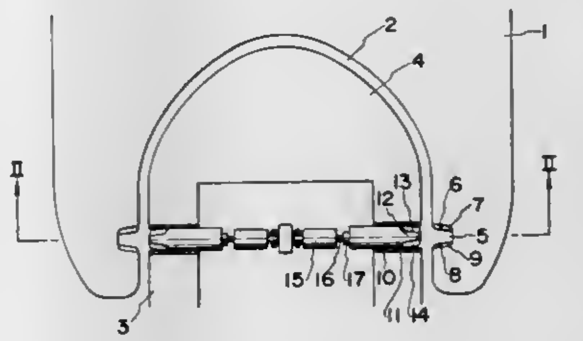
Takuma Yamaguchi, No. 7-5203, 2 chome, Sodegaura, Narashino, Chiba, Japan

Filed Mar. 27, 1975, Ser. No. 562,588

Claims priority, application Japan, Apr. 15, 1974, 49-42638

Int. Cl.^{2} B63B *21/56*

U.S. Cl. 114—235 A 6 Claims



1. A means of connecting a pusher boat and a barge comprising:

a. a notch open rearwards, formed in the stern portion of said barge and sized and shaped to receive the bow portion of said pusher boat;

b. two vertically elongated channels formed within the wall of said notch, open toward said notch and facing each other transversely of the centerline of said barge;

c. concavities stepwise arranged from top to bottom on two side walls, opposite to each other and adjacent to said wall of said notch, of each of said channel in such a manner that any of said concavities on one of said side walls may have a corresponding concavity located at the same height on the other side wall, and horizontally elongated from the entrance to the bottom of said notch;

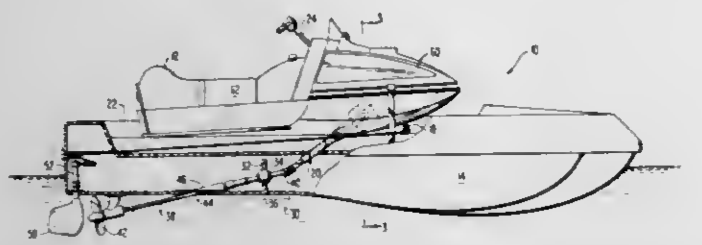
d. two transversely elongated connecting pins mounted on said bow portion of said pusher boat and having two convexities, shaped to correspond to and engage said concavities, on the foward and after sides of the outer end portion of each of said connecting pins;

e. pressure-fluid-operated actuating means for moving said connecting pins in respective, opposite directions between retracted positions outside said channels and inserted positions in said channels respectively while said bow portion is received in said notch.

3,935,832
SELF-PROPELLED BOAT VEHICLE

Ralph D. Bawden, Billings, Mont., and Robert Olson, a/k/a John R. Olson, Price, Utah, assignors to Recreational Plastics, Inc., Billings, Mont.

Filed July 22, 1974, Ser. No. 490,714
Int. Cl.^{2} B60F *3/00*
U.S. Cl. 115—.5 A **5 Claims**

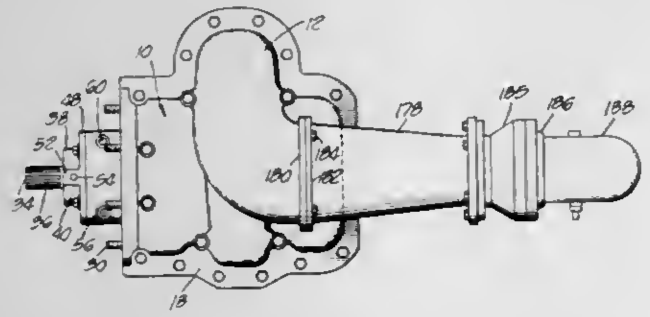


1. An improvement in a water craft of the self-propelled type comprising in combination
- a water-tight hull having a support surface formed in the upper surface thereof and having an opening formed in said hull,
- a snowmobile having a power unit received by said support surface,
- securing mechanisms for firmly securing said snowmobile to said hull,
- said power unit having a power output shaft,
- a propeller drive shaft extending through said opening and having a first interior end and an exterior end carrying a propeller,
- sealing means disposed between said opening and said shaft, and
- connecting means joining said first end of said propeller shaft to said power output shaft, said connecting means including an clongated member having a plurality of universal joints intermediate its ends.

3,935,833
JET BOAT PUMP

Hasan F. Onal, Denver, Colo., assignor to Sundstrand Corporation, Rockford, Ill.

Continuation-in-part of Ser. No. 382,374, July 25, 1973. This application Aug. 1, 1974, Ser. No. 493,715
Int. Cl.^{2} B63H *11/00*
U.S. Cl. 115—12 R **6 Claims**

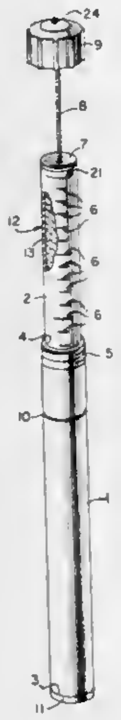


1. A pump for propelling a boat comprising
- a pump housing having two inlet channels for receiving water and outlet passage means for discharging water;
- a pump shaft rotatably mounted in said pump housing; and
- a double suction impeller mounted concentrically on said pump shaft, said double suction impeller being in communication with said two inlet channels and said outlet passage means;
- said two inlet channels extending from inlets below said housing to either side of said double suction impeller, the inlet to the first of said channels being defined by a first leading edge adapted to extend no lower than the bottom of the boat hull and a first trailing edge positioned behind and below said first leading edge, the inlet to the second of said channels being defined by said first trailing edge and a second trailing edge behind said first trailing edge and at a level higher than said first leading edge.

3,935,834
FROST LINE INDICATOR

Gilbert W. Buhrmann, Jr., Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 4, 1975, Ser. No. 546,952
Int. Cl.^{2} G01D *1/00*
U.S. Cl. 116—114 V **14 Claims**

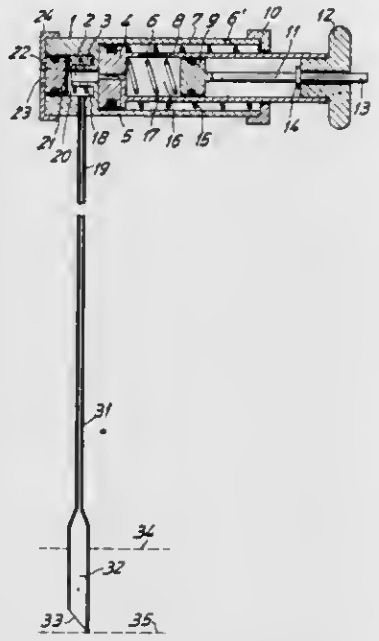


1. A frost line depth indicator for measuring the frost line depth of a material comprising:
- a first hollow tube being closed at one end by an end cap inserted into said tube and open at its other end;
- a second hollow tube closed at one end by a first end cap having a hole through the center thereof, closed at its other end by a second end cap, and filled with a material that exhibits one color at temperatures at and below a certain temperature and a second color at temperatures above said certain temperatures, said second hollow tube being shorter than said first hollow tube and being of such size that said second hollow tube fits inside said first hollow tube;
- a rope having one of its ends threaded through said hole in said first end cap of said second hollow tube and secured to said first end cap of said second hollow tube;
- means to secure said first end cap inside said one end of said second hollow tube;
- means to secure said second end cap of said second hollow tube inside said other end of said second hollow tube;
- a cap having a hole through the center thereof and being adapted to fit over and be secured to said open end of said first hollow tube, said rope having the other of its said ends threaded through said hole in said cap and being secured to said cap; and
- a distance measuring scale formed on the surface of said second hollow tube along the length of said second hollow tube.

3,935,835
APPARATUS FOR CHECKING THE LEVEL OF LIQUID IN CONTAINERS

Hans-Joachim Rinck, Sylvaner Weg 4, 7900 Ulm (Danube), Germany

Filed Aug. 26, 1974, Ser. No. 500,404
Claims priority, application Germany, Sept. 3, 1973, 2344364
Int. Cl.^{2} G01F *23/16*
U.S. Cl. 116—118 R **22 Claims**

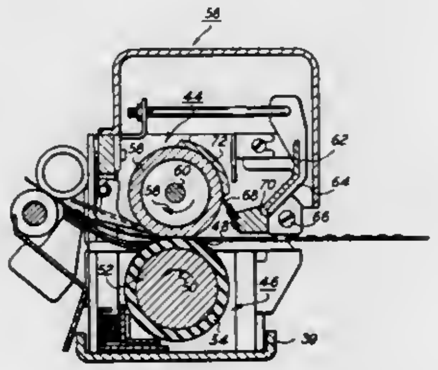


1. Apparatus for checking the presence of liquid at a predetermined level in a cntainer, the apparatus comprising, in combination:
- valve means disposed externally of said container;
- manually operable suction means to generate vacuum pressure and connected to said valve means;
- elongate duct means having constriction means between a first end portion extending into said container to define an opening in said duct means at said predetermined level and a second end portion connected to said valve means, said valve means being actuable by said suction means to close said duct means only on liquid being present at said level; and
- indicator means responsive to the closure of said duct means by said valve means to indicate the presence of liquid at said level.

3,935,836
METERING BLADE FOR A FUSER ROLL

Ari Bar-on, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 13, 1975, Ser. No. 540,732
Int. Cl.^{2} B05C *11/04*
U.S. Cl. 118—60 **10 Claims**

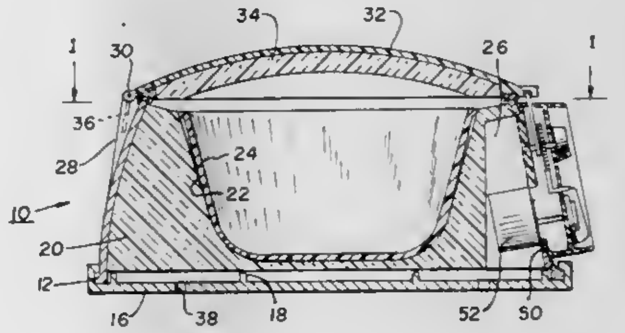


1. An apparatus for regulating the quantity of release material metered to a heated fuser member operatively associated with a backup member wherein a sheet of support material having particles thereon passes therebetween with the particles contacting the fuser member, including:
- means for applying the release material to the surface of the fuser member;
- a support member;
- a flexible blade member having one end portion thereof contacting the fuser member for adjusting the thickness of release material applied thereto;
- biasing means for resiliently urging said blade member to contact the fuser member so as to remove excessive release material from the surface thereof; and
- a clamping plate secured to said support member with the other end portion of said blade member being interposed between said support member and said plate to secure said plate in cantilever fashion to said support member.

3,935,837
PET FEEDER

Philip J. Mulhern, 67 Sanford Pl., Fairlawn, N.J. 07470

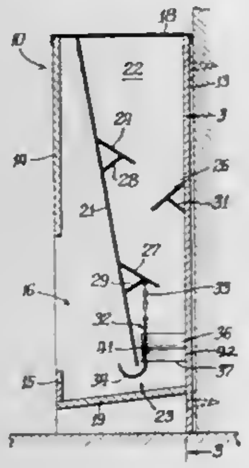
Filed Jan. 8, 1975, Ser. No. 539,518
Int. Cl.^{2} A01K *5/00*
U.S. Cl. 119—51.12 **11 Claims**



1. A pet feeder having at least one food container of selected size and having a cover which is movable from a normally open condition to a latched closed condition until released by a timing means, said feeding including: (a) a base; (b) means for removably securing said base to a floor, wall and the like; (c) a cover hingedly connected to said base; (d) biasing means for urging said hinged cover to a selected open condition above said base; (e) sealing means interposed between the cover and base so as to provide substantially a hermetic seal of the feeder when the cover is in closed condition; (f) a feeding dish carried by said base and when in seated condition in the base and said cover is in latched condition the dish contents are in sealed condition; (g) a hook pin carried by the cover and a hook member carried by the base member and at a position substantially opposite the hinge portion thereof, said hook member having one end formed with a hook and the other end pivotally carried on a pin secured to a ratchet wheel rotatably mounted on an axle carried by the base, this pin radially displaced from the axle so as to act as a crank pin as the ratchet wheel is rotated, said ratchet wheel restrained from moving in a direction to lift the hook member by the engagement of a ratchet engaging tooth carried by a pawl arm; (h) means for selectively establishing and retaining said hook member in pin retaining condition; (i) a timer and a cam means operatively associated with said timer, this cam means at the conclusion of the timer cycle moving the pawl member to disengage the hook member from the pin to release the cover which is then opened by the bias means, and (j) means for releasing the latched cover for inspection of the contents of the dish at a period in time which is prior to the original time set on the timer.

3,935,838
LIVESTOCK MINERAL DISPENSER

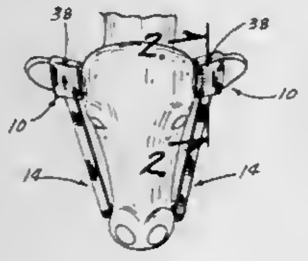
Eldon E. Johnson, R.R. No. 1, Box 247, Nokomis, Ill. 62075
Filed Dec. 10, 1973, Ser. No. 423,391
Int. Cl.^{2} A01K *5/00*
U.S. Cl. 119—54 **2 Claims**



1. A livestock mineral dispenser comprising: a downwardly and rearwardly sloping partition for bounding a hopper for mineral storage; plural spatially separated and overlapping baffle plates secured to said partition to extend downwardly and inwardly in said hopper; an additional baffle plate secured to the interior of said hopper to extend downwardly and inwardly therewithin and intermediate said baffle plates secured to said partition; mineral agitator means and a chain spaced rearwardly from said partition for suspending said agitator means from the lowest of said baffle plates, said agitator means having an actuating member thereof located within said trough for movement by livestock feeding therefrom, said baffle plates being operable to enable free operational movement of said agitator means by limiting the mineral quantity in contact therewith; and side baffle means within, and laterally and downwardly converging toward the center of said hopper for limiting mineral flow into said trough; whereby mineral flow from said hopper into said trough is determined in accordance with movement of said agitator means.

3,935,839
FACE FLY DEVICE

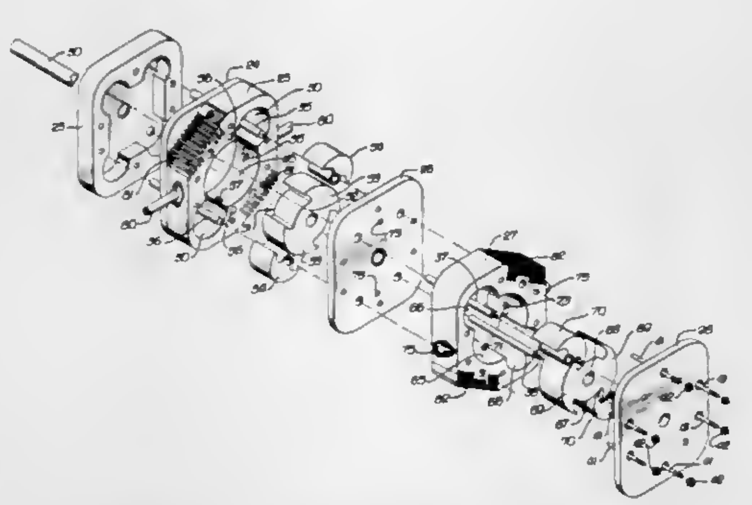
Roy Goodwin, Rte. 2, Lancaster, Mo. 63548
Filed May 23, 1974, Ser. No. 472,619
Int. Cl.^{2} A01K *29/00*
U.S. Cl. 119—156 **9 Claims**



1. A face fly device comprising,
a flexible container means having upper and lower ends,
said container means having a compartment area provided therein for receiving a face fly repellant liquid therein,
means on the upper end of said container means for securing said container means to the ear of an animal,
and a wick means having upper and lower ends, said upper end of said wick means being in communication with the liquid in said compartment area, said wick means extending downwardly from said container means so that said wick means will be positioned adjacent the animal's face.

3,935,840
ROTARY ENGINE

John H. Fisher, 1422 Waterman Ave., San Bernardino, Calif. 40921
Filed Aug. 7, 1974, Ser. No. 495,410
Int. Cl.^{2} F02B *53/08*
U.S. Cl. 123—8.23 **3 Claims**

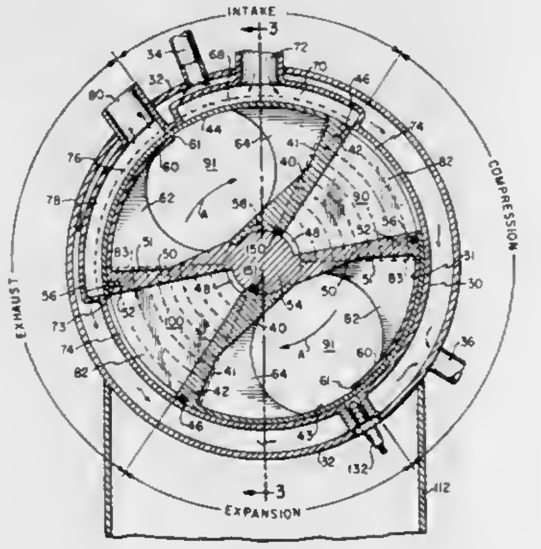


1. A rotary internal combustion engine comprising:
a power block;
a fuel-suction-compression block;
an intermediate plate covering juxtaposed faces of said blocks;
a front end plate covering the front face of said power block;
a rear end plate covering the rear face of said compression block;
a power shaft normal to and extending centrally through said plates and blocks;
four valve shafts parallel with and equally spaced from said power shaft and including two power valve shafts lying in a common plane with said power shaft and two compression valve shafts lying in a different common plane with said power shaft, said common planes being symmetric with a vertical plane containing the axis of said power shaft;
bearing means provided in said plates in which said shafts journal,
there being a power cylinder chamber formed in said power block and a compression cylinder chamber formed in said compression block, both chambers being co-axial with said power shaft,
there being exhaust ports at diametrically opposite points in the wall of said power cylinder chamber;
there being fuel inlet ports at diametrically opposite points in the wall of said compression cylinder chamber,
there being formed in said power block two cylindrical valve chambers concentric respectively with said power valve shafts and intercepting and communicating with said power cylinder chamber,
there being formed in said compression block two cylindrical valve chambers concentric with said compression valve shafts and intercepting and communicating with said compression cylinder chamber;
carburetor means for supplying fuel to said intake ports;
a power rotor fixed on said power shaft and having a cylindrical hub from which two arcuate pistons extend diametrically into rotational sealing relation with the wall of said power cylinder chamber;
a compression rotor fixed on said power shaft and having a cylindrical hub from which two arcuate pistons extend diametrically into rotational sealing relation with the wall of said compression cylinder chamber;
four segmental valves one of which is fixed on each of said valve shafts to make a peripheral sliding sealing contact with said cylindrical valve chambers and with the hubs of said power rotor and compressor rotor respectively;

a gear train mounted on said shafts whereby said power shaft drives said valve shafts at a 2 to 1 ratio, with said valves cooperating with said pistons to form duplicate fuel suction and compression zones in said compression chamber on opposite sides of said compression rotor and duplicate expansion and exhaust zones in said power chamber on opposite sides of said power rotor;
there being two fuel charge firing bores provided in said power block close to and communicating with diametrically opposed points in said power cylinder chamber which are close to where said power cylinder chamber is intercepted by said valve cylinder chamber;
there being passage means formed in said intermediate plate and in said compressor block leading from each of said fuel compression zones on opposite sides of said compressor rotor to one of said two fuel firing bores to simultaneously deliver charges of compressed fuel to said bores; and
an ignition system driven by said shaft for the timely ignition of said charges of fuel in said bores to produce duplicate simultaneous power strokes by the emission of combustion gases from said bores into said duplicate expansion and exhaust zones as the generation of said zones is being initiated by the rotation of said shafts.

3,935,841
ROTARY INTERNAL COMBUSTION ENGINE

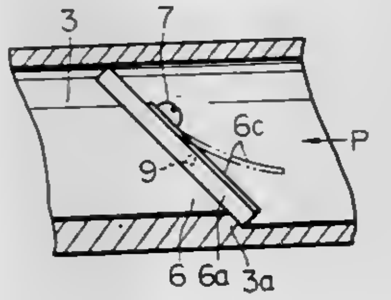
Antoon B. Longeval, August Nobelsstraat, 3, 2700 Sint-Niklaas, Belgium
Filed Nov. 27, 1973, Ser. No. 419,247
Int. Cl.^{2} F02B *55/14*
U.S. Cl. 123—8.47 **15 Claims**



6. A rotary internal combustion engine having an operating cycle including the four phases of intake, compression, expansion and exhaust comprising
- a. a stator member having:
  - 1. a hollow cylindrical cavity;
  - 2. a fuel intake passage communicating with the cavity;
  - 3. an exhaust port communicating with the cavity and spaced apart from the intake passage by a predetermined angular distance; and
  - 4. an ignition means for delivering a spark into the cavity of the stator member at a predetermined point between the intake passage and the exhaust port;
- b. two pairs of blades each of said pairs being in a plane extending diametrically across said cylindrical cavity;
- c. each of said blade pairs being supported by a rotating shaft with the plane of one of said pairs intersecting the plane of the other of said pairs whereby the space within said cavity is divided into four spaces with two diametrically opposite spaces of said four spaces being combustion chambers in part defined by said blades; one of said shafts being the power output shaft of said engine;
- d. a universal joint unit, including a second pair of shafts;
- e. means, including the angle between the axis of the shafts of said second pair of shafts being other than 180°, for interrelating the angular velocity of said two pairs of blades such that the angular velocity of one of said pairs of blades remains substantially constant throughout rotation while the angular velocity of the other of said pairs of blades alternately increases and decreases throughout rotation whereby during operation the volume of said combustion chambers increases and decreases in size to provide for each of said combustion chambers the four sequential phases of intake, compression, expansion and exhaust, said ignition means being disposed at a point of said stator such that the spark thereof communicates with said combustion chambers in sequence at substantially a point at which the first pair of blades reach their closest proximity to the second pair of blades.

3,935,842
SUCTION SYSTEM OF INTERNAL COMBUSTION ENGINE

Toshitugu Ishizawa, Higashi-murayama; Motokazu Akahori, and Hideki Sato, both of Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Apr. 22, 1974, Ser. No. 463,182
Claims priority, application Japan, Apr. 23, 1973, 48-45992
Int. Cl.^{2} F02B *77/00*
U.S. Cl. 123—52 MF **6 Claims**



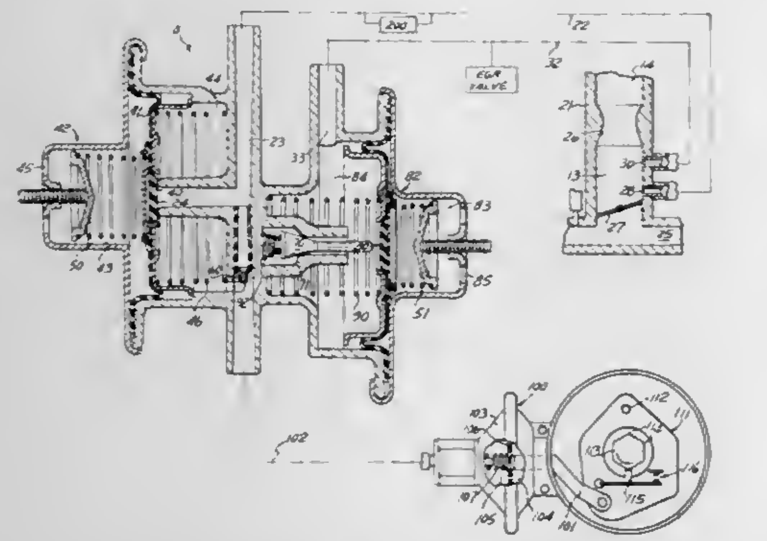
1. A suction system of an internal combustion engine, comprising a suction pipe for suction air flow to the engine; a throttle valve provided in the suction pipe; a suction port downstream the throttle valve and adjacent the engine; a reed valve provided in said suction pipe in the vicinity of said suction port for preventing exhaust gas backflow from the engine to the suction pipe, said reed valve having a valve seat with a valve opening therein, a support pin pivotally supporting said valve, and a reed fixed on said valve seat to open the valve opening of said valve seat in dependence on vacuum downstream of the valve and to close the valve opening in dependence on pressure downstream of the valve, and control means for opening communication through said suction pipe by rotating said valve to a position of reduced resistance to flow therethrough when the engine load exceeds a predetermined value.

3,935,843
NONLINEAR VACUUM SPARK ADVANCE SYSTEM

George Ludwig, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.
Filed Feb. 2, 1973, Ser. No. 329,289
Int. Cl.^{2} F02P *5/04*
U.S. Cl. 123—117 A **5 Claims**

1. A vacuum control valve assembly for regulating the vacuum servo mechanism of an internal combustion engine distributor comprising:
a housing having a first annular cavity with one open end and an opposite closed end, said housing further having a second annular cavity with an open end and an opposite closed end adjacent said first cavity opposite closed end,

said first and second cavities having at least one port for fluid communication into or out of said cavities;
- a central passage interposed between the closed end of said first cavity and the closed end of said second cavity, said central passage having an inlet adapted to receive a first vacuum source signal and an outlet adapted to provide an outlet signal to said vacuum servo of the distributor;
- a first cover member mounted to the open end of said first cavity,
- a first annular cup shaped member mounted within said first cavity of the housing, between said first cover member and said opposite closed end of the first cavity;
- a first annular diaphragm having an outside diameter portion interposed between said first cover member and said open end of said first cavity and an inside diameter portion adapted to engage said first annular member, said first annular diaphragm sealingly defining a first and second chamber within the first cavity of the housing;
- a first conduit disposed within said first cavity, said conduit having one end portion extending into said first cavity through said opposite closed end of the cavity, said conduit further having an opposite end portion integral with said opposite closed end of the first cavity, and a first passage providing communication between said central passage and said first chamber of the first cavity, said one end portion of said first conduit having a valve seat;
- a check valve disposed within said central passage between said first passage of the first conduit and said central passage outlet, said check valve adapted to permit fluid communication through said central passage only when said first vacuum source signal is below a predetermined level;
- first means for biasing said first diaphragm, said first biasing means including:
  - first means for providing and regulating communication between said second chamber of the first cavity and the atmosphere; and
  - means for limiting fluid communication from said central passage to said first chamber of the first cavity when said first vacuum source signal is above a predetermined level;
- a second cover member mounted to the open end of said second cavity;
- a second annular cup shaped member mounted within the second cavity of said housing, between said second cover member and said opposite closed end of said second cavity;
- a second annular diaphragm having an outside diameter portion interposed between said second cover member and said open end of said second cavity and an inside diameter portion adapted to engage said second annular member, said second annular diaphragm sealingly defining a first and second chamber within said second cavity of the housing;
- means for sealing said first cover member to said open end of the first cavity and said second cover member to said open end of the second cavity of the housing;
- a second conduit disposed within said second cavity, said conduit having one end portion extending into said first cavity through said opposite closed end of the second cavity, said second conduit further having an opposite end portion integral with the opposite closed end of said second cavity, a second passage providing fluid communication from said first chamber of the second cavity to said central passage outlet and means for terminating the fluid communication from said first chamber of the second cavity of said central passage outlet;
- a third conduit having one end portion extending out of said second cavity and an opposite end portion integral with said second cavity, said conduit having a third passage for providing communication from a second signal source to said first chamber of the second cavity of the housing;
- second means for biasing said second diaphragm, said second biasing means including:
  - second means for providing and regulating communication between said second chamber of said second cavity and the atmosphere; and
  - means for controlling fluid communication from said first chamber of the second cavity to said central passage outlet when the signal source of said second vacuum source signal in the first chamber of the second cavity is above said predetermined level;
- an outlet port integral with the opposite closed end of said first cavity of the housing, said outlet port having a passage adapted to provide fluid communication from the first chamber of said first cavity to said central passage outlet.



3,935,844
IGNITION TIMING CONTROL SYSTEM

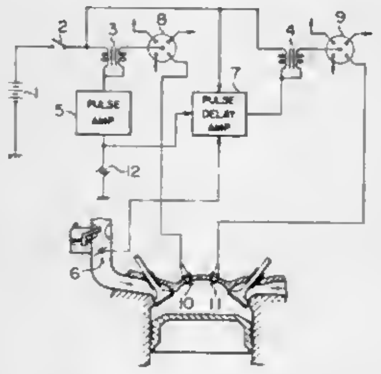
Torazo Nishimiya, Mito, and Yasunori Mori, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Sept. 11, 1973, Ser. No. 396,311

Claims priority, application Japan, Sept. 13, 1972, 47-91225

Int. Cl.² F02P *1/00*

U.S. Cl. 123—117 R **8 Claims**



1. An ignition timing control system for a reciprocating internal combustion engine having a first spark plug and a second spark plug in each combustion chamber comprising:
- a throttle valve for controlling the amount of air-fuel mixture supplied to the engine;
- a breaker for generating a trigger signal;
- a pulse amplifier generating a first pulse signal for actuating the first spark plug in response to the trigger signal from said breaker; and
- a pulse delay amplifier having
  - a. a first pulse generator for generating a second pulse signal in response to the trigger signal from said breaker, said second pulse signal having a pulse width which is continuously variable substantially in inverse proportion to the amount of opening of the throttle valve, and

  - b. a second pulse generator generating a third pulse signal for actuating the second spark plug in response to the trailing end of the second pulse signal, the initiation of the third pulse signal being delayed from the first pulse signal by the time interval corresponding to the width of the second pulse signal, so that the interval of time between operations of said first and second spark plugs is varied with the variation of the amount of opening of the throttle valve.

3,935,845
IGNITION TIMING CONTROL DEVICE FOR AUTOMOTIVE IGNITION SYSTEM

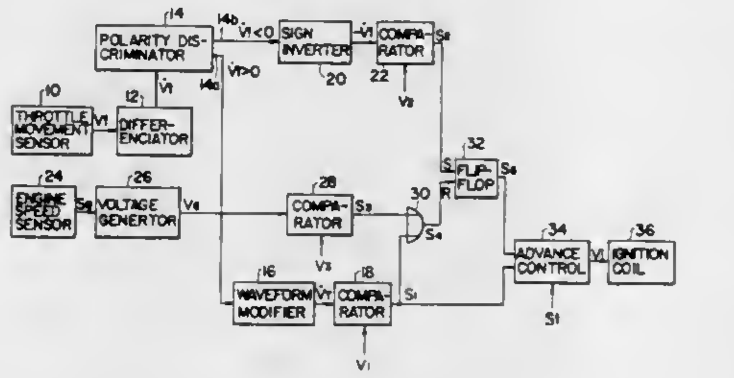
Shigeo Aono, Sekimachi, and Norio Mizuguchi, Yokosuka, both of Japan, assignors to Nissan Motor Company Limited, Yokohama and Hicachi, Ltd., Tokyo, both of, Japan

Filed June 28, 1974, Ser. No. 484,240

Claims priority, application Japan, June 30, 1973, 48-73336

Int. Cl.² F02P *5/04*

U.S. Cl. 123—117 R **9 Claims**



1. A spark timing control device for an internal combustion engine system having a throttle valve movable in its intake port, which comprise:
- a throttle velocity signal generating means generating a throttle velocity signal representative of the velocity of the throttle movement;
- first means producing a first signal in response to said velocity signal when said velocity signal exceeds a positive predetermined level;
- second means producing a second signal in response to said velocity signal when said velocity signal lowers below a negative predetermined level;
- third means producing a third signal when the engine speed lowers below a predetermined value; and
- fourth means performing ignition timing advance control when it receives said second signal and when it receives said first signal in the absence of said third signal.

3,935,846
INSTALLATION FOR THE DIGITAL-ELECTRONIC CONTROL OF INLET, EXHAUSTION AND INJECTION VALVES AS WELL AS OF THE INJECTION IN INTERNAL COMBUSTION ENGINES

Hermann Zelenka, Bernhausen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

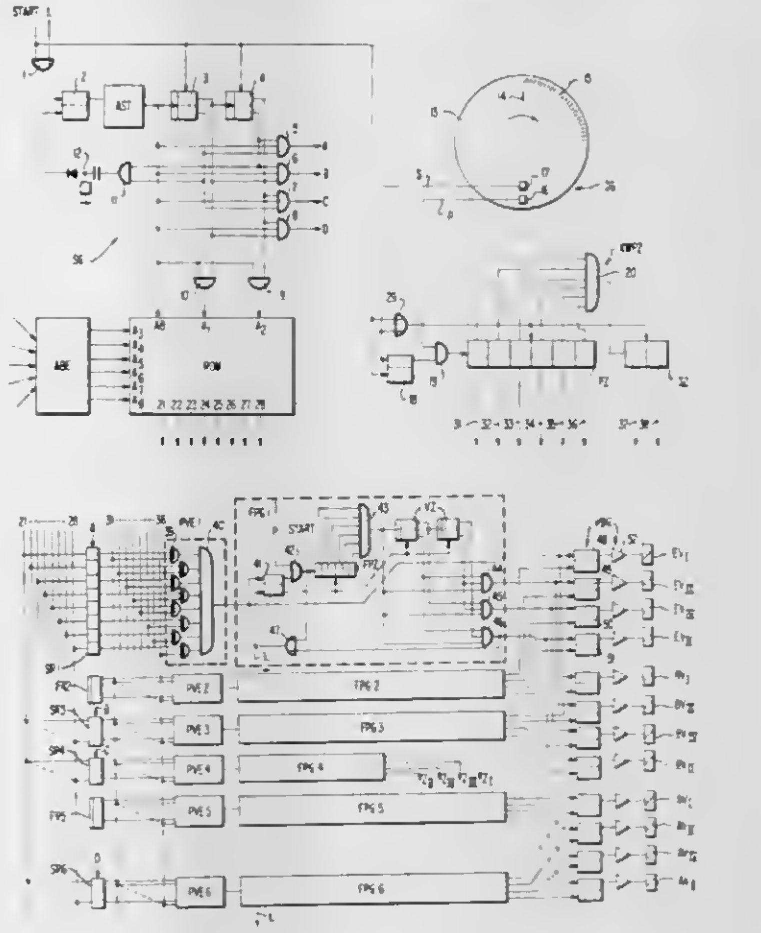
Filed Sept. 3, 1974, Ser. No. 502,905

Claims priority, application Germany, Aug. 31, 1973, 2343905

Int. Cl.² F02P *3/02*

U.S. Cl. 123—117 R **32 Claims**

1. A control installation for the digital-electronic control of at least one of valve means and ignition means in internal combustion engines, in which the valve means are electromagnetically actuated and the respective crankshaft position is adapted to be determined digitally, characterized in that it comprises control circuit means including a fixed value storage means in which at least for one cylinder of the engine, at least one of opening and closing points of time of the valve means, on the one hand, and ignition points of time, on the other, are operable to be at least partially stored and selected as digital values coordinated to the respective operating conditions and corresponding to a predetermined crankshaft position in the form of data sets, storage register means for each stored value of a data set operatively connected to the fixed value storage means; the stored value being transferable to the storage register means, pulse comparison means for each value of a data set operatively connected to the storage register means, in which a value is adapted to be compared with the respective crankshaft position and which is operable to produce a commencing pulse in case of agreement of the two values, and a follower pulse generator means at least for each value of a data set operatively connected with the respective comparison means in which, beginning and together with the commencing pulse, a number of pulses corresponding to the number of cylinders is produced, uniformly distributed over a predetermined number of degrees of the crankshaft, and means for feeding the last-mentioned pulses to at least one of valve actuating means and ignition means of the associated cylinder in a sequence corresponding to the ignition sequence.



3,935,847
COMBINED SUPERCHARGER AND CARBURETION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Joseph A. Gamell, Kalamazoo, Mich., assignor to Joseph Gamell Industries, Incorporated, Kalamazoo, Mich.

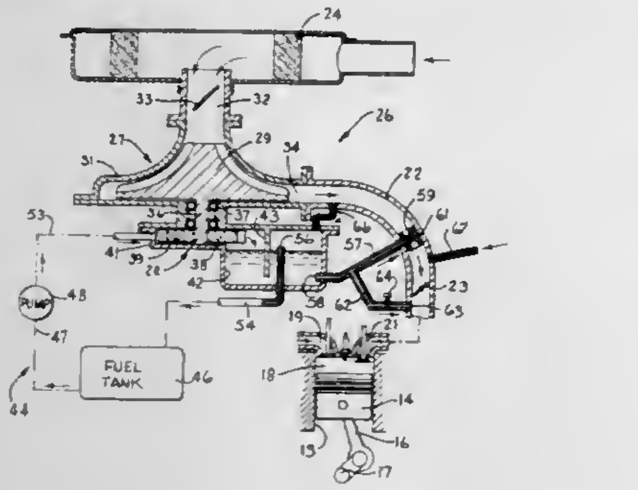
Filed Mar. 22, 1974, Ser. No. 453,680

Int. Cl.² F16D *31/00*

U.S. Cl. 123—119 CF **10 Claims**

1. In a supercharger system for an internal combustion engine, comprising:
- rotatable centrifugal compressor means having an inlet port for receiving a compressible gas and an outlet port for discharge of said gas;
- rotatable turbine means connected to said compressor means for rotatably driving same, said turbine means including a rotatable turbine wheel;
- tank means for containing therein a supply of a substantially incompressible combustible fuel;
- conduit means defining therein a passage providing communication between said tank means and said turbine means, said passage having nozzle means associated with the discharge end thereof for directly said fuel against said turbine wheel to rotatably drive same;

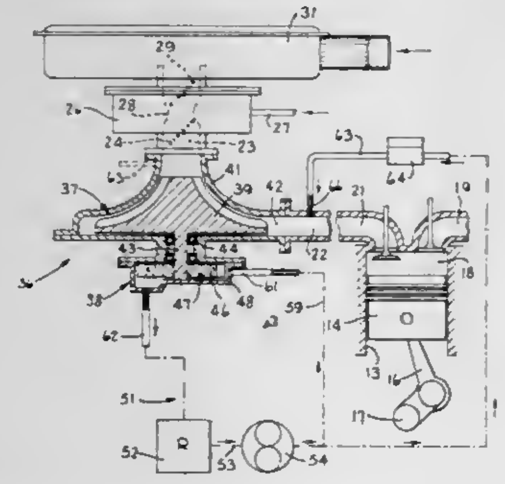
means for pressurizing the fuel and for supplying same to said nozzle means; and



drain means associated with said turbine means for collecting the fuel supplied to said turbine wheel.

3,935,848
SUPERCHARGER SYSTEM FOR INTERNAL COMBUSTION ENGINE

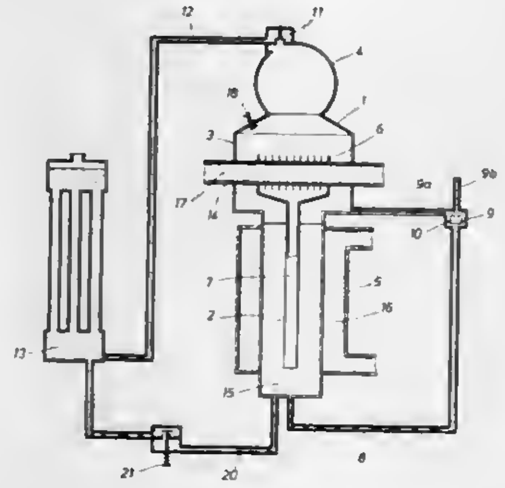
Joseph A. Gamell, Kalamazoo, Mich., assignor to Joseph Gamell Industries, Incorporated, Kalamazoo, Mich.
Filed May 10, 1974, Ser. No. 468,810
Int. Cl.^{2} F02D *23/00*
U.S. Cl. 123—119 CF **10 Claims**



1. In combination with an internal combustion engine, a supercharger system comprising:
rotatable centrifugal compressor means having an inlet port for receiving a compressible gas and an outlet port for discharge of compressible gas to the engine, said compressor means including a rotatable compressor wheel;
rotatable turbine means connected to said compressor means for rotatably driving same, said turbine means including a rotatable turbine wheel;
a fluid system for driving said turbine wheel, said fluid system containing therein an incompressible working fluid which is continuously maintained in a liquid state, said fluid system also including,
tank means containing therein a supply of said working fluid,
conduit means defining a passage providing communication between said tank means and said turbine means, said passage having nozzle means associated with the discharge end thereof for directing said working fluid while in a liquid state against said turbine wheel to rotatably drive same,
pump means driven by said engine for pressurizing the working fluid and for supplying same to said nozzle means, and
drain means associated with said turbine means for collecting the liquid working fluid supplied to said turbine wheel;
said fluid system being independent of the exhaust gases discharged from said engine whereby said turbine is driven solely by said liquid working fluid.

3,935,849
FUEL VAPORIZING DEVICE FOR AN INTERNAL COMBUSTION ENGINE OR GAS TURBINE

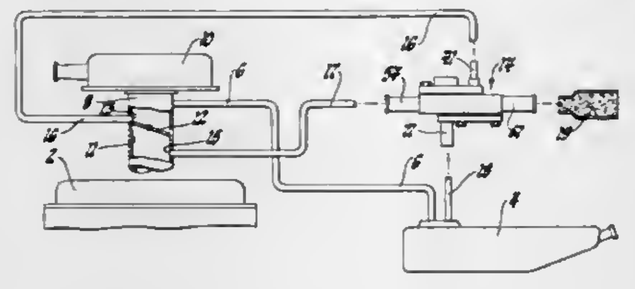
Walter D. Mills, Mold, Wales, assignor to Shell Oil Company, Houston, Tex.
Filed Sept. 3, 1974, Ser. No. 502,263
Claims priority, application United Kingdom, Sept. 11, 1973, 42636/73
Int. Cl.^{2} F02M *31/00*
U.S. Cl. 123—122 AA **10 Claims**



1. In combination: (1) a combustion chamber-containing apparatus selected from the group consisting of an internal combustion engine and a gas turbine, (2) a device for vaporizing liquid fuel prior to its introduction into the combustion chamber of said apparatus, which device comprises a heat pipe vessel containing a heat transfer fluid, said heat pipe having a heat recovering zone and a heat discharging zone, said heat recovering zone which contains said fluid in liquid phase is operationally engaged with the exhaust system of said apparatus, to collect heat from said exhaust system;.said heat discharging zone which contains said fluid in a vapor phase is in communication with said heat receiving zone is operationally engaged with the fuel inlet system of said apparatus to condense the vapor phase of the fluid to transfer heat to the fuel to be evaporated; (3) vapor removal means operationally engaged with said heat discharge zone to remove excess of the vapor phase from said heat pipe; and (4) fluid supply means communicating with a reservoir of said heat transfer fluid operationally engaged with said heat receiving zone to supply make-up heat transfer fluid in the liquid phase to said heat receiving zone.

3,935,850
VAPOR REGULATING VALVE

Jack B. King, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 12, 1974, Ser. No. 478,460
Int. Cl.^{2} F02M *59/00;* **F16K** *15/00*
U.S. Cl. 123—136 **2 Claims**



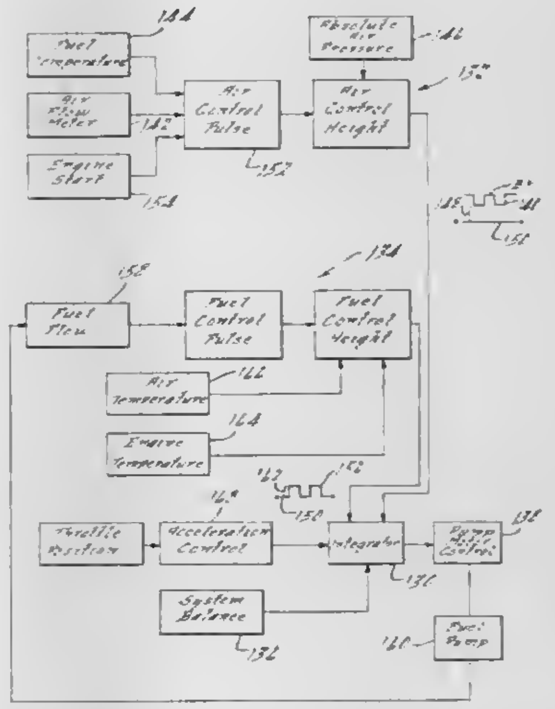
1. A valve assembly for regulating the flow of fuel vapor and air in a fuel vapor recovery system for a combustion engine including an intake manifold and a fuel reservoir, the valve assembly comprising, in combination:

a valve housing having a fuel vapor inlet with two branches open to the fuel reservoir for admitting fuel vapor therefrom, an air inlet open to the atmosphere for admitting air therefrom, an outlet open to the intake manifold for delivering a controlled mixture of fuel vapor and air thereto, a vacuum port with two branches open through an orifice to the intake manifold for communicating intake vacuum therefrom;
a first diaphragm in the housing, the first diaphragm defining a first chamber open only to one branch of the vacuum port, the first diaphragm being exposed outside the first chamber to the atmosphere and being movable between a first position in which it blocks the outlet and one branch of the fuel vapor inlet and a second position in which it opens the outlet and one branch of the fuel vapor inlet, whereby air from the air inlet and fuel from the fuel vapor inlet are allowed to flow to the outlet;
a second diaphragm in the housing, the second diaphragm defining a second chamber open only to the other branch of the fuel vapor inlet, the second diaphragm being movable between a first position in which it blocks the other branch of the vacuum port and a second position in which it opens the other branch of the vacuum port;
first spring means in the housing, the first spring means being effective to hold the first diaphragm in its first position when engine vacuum is not being communicated through the one branch of the vacuum port;
second spring means in the housing, the second spring means normally being effective to hold the second diaphragm in its second position, whereby atmospheric air is admitted to the vacuum port to prevent the communication of engine vacuum therethrough and the first diaphragm is thereby biased to its first position, the second diaphragm being movable to its first position against the second spring means by a critical fuel vapor gauge pressure, whereupon the position of the first diaphragm is made responsive to the communication of engine vacuum through the vacuum port.

3,935,851
FUEL METERING SYSTEM FOR SPARK IGNITION ENGINES

William Paul Wright; Leroy Shafer; John Ondocsin, all of Huntsville, Ala., and Ivor W. Carter, Grosse Pointe Woods, Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Dec. 26, 1973, Ser. No. 428,261
Int. Cl.^{2} F02M *39/00;* **G05D** *11/00;* **F02C** *9/04*
U.S. Cl. 123—139 E **15 Claims**

1. A fuel metering system for maintaining a predetermined fuel-air mass ratio for an engine comprising:
a. means for generating an air signal having a magnitude representative of the mass flow of air into the engine at a set of given values for a set of ambient parameters;
b. fuel pumping means for pumping fuel in accordance with a control signal applied thereto;
c. mixing means for mixing fuel pumped by said fuel pumping means with the air entering the engine;
d. a fuel flow transducer circuit means comprising a fluid flow transducer means disposed in fluid circuit between said fuel pumping means and said mixing means to measure fuel pumped by said fuel pumping means to said mixing means and an output circuit means operatively associated with said fluid flow transducer means to provide a fuel signal having a magnitude representative of the mass flow of fuel pumped by said fuel pumping means to said mixing means at said set of given values for said set of ambient parameters;
e. and control circuit means for providing said control signal, said control circuit means including means for providing a reference fuel-air ratio signal representative of said predetermined fuel-air mass ratio, means for relatively ratioing said fuel signal and said air signal with respect to each other to provide an actual fuel-air mass ratio signal, and means for establishing said control signal in accordance with said actual and said reference fuel-air mass ratio signals such that said fuel pumping means delivers the correct mass fuel flow to said mixing means for securing substantial correspondence between said actual and said reference fuel-air mass ratio signals;
f. wherein both said air signal and said fuel signal are pulse waveforms composed of repetitive pulses each having given pulse dimensions representing a given mass of the corresponding fluid and further including one correction circuit means for correcting one of said pulse waveforms in response to change in one of said ambient parameters of said set of ambient parameters from its given valve and another correction circuit means for correcting the other pulse waveform in response to change in another ambient parameter of said set of ambient parameters from its given value; and
g. wherein said one correction circuit means is responsive to a change in an ambient parameter which changes the mass flow of the fluid whose mass flow is represented by said other waveform and said another correction circuit means is responsive to a change in an ambient parameter which changes the mass flow of the fluid whose mass flow is represented by said one waveform.

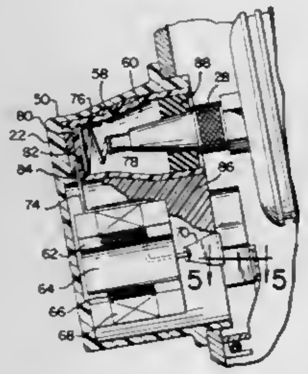


3,935,852
SPARK PLUG CONNECTOR AND IGNITION COIL MODULE FOR ENGINE IGNITION SYSTEM

John J. Donovan, West Springfield, and Daniel R. Isham, Hampden, both of Mass., assignors to R. E. Phelon Company, Inc., East Longmeadow, Mass.
Filed May 20, 1974, Ser. No. 471,806
Int. Cl.^{2} F02P *11/00*
U.S. Cl. 123—148 A **11 Claims**

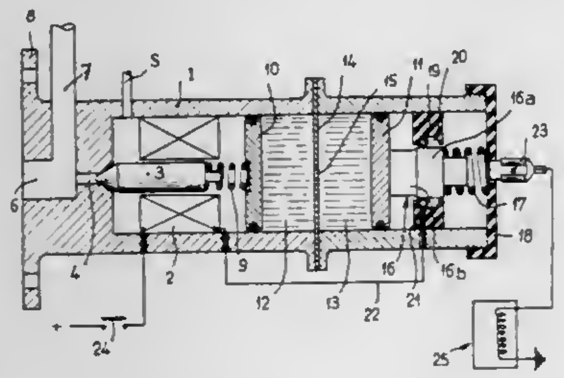
1. In a device having a self-contained internal combustion engine, the combination comprising: an internal combustion engine having a spark plug an outer end portion of which extends outwardly from the remainder of said engine, a stationary structure other than said engine or spark plug spaced outwardly from said engine in the vicinity of said spark plug, a unitary ignition module, said module having a socket receiving said outer end portion of said plug and said module also including an ignition coil, with a primary winding and a secondary winding, for supplying high-tension voltage to said spark plug, and means removably fixing said module to said stationary structure whereby said module is structurally unsupported by said plug, said socket at all points along the

length of said outer end portion of said plug having a transverse cross section substantially larger than that of said plug whereby said plug fits loosely into said socket without contacting the walls of said socket.



3,935,853
INTERNAL COMBUSTION ENGINE COLD-START FUEL INJECTOR

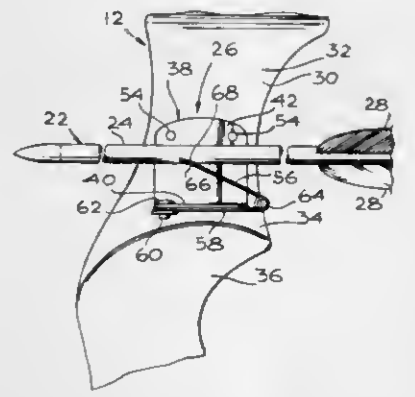
Jean-Pierre Rivere, Boulogne-Billancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt and Automobiles Peugeot, Paris, both of, France
Filed July 23, 1974, Ser. No. 491,000
Claims priority, application France, Sept. 11, 1973, 73.32663
Int. Cl.² F22b *7/14*
U.S. Cl. 123—179 G 6 Claims



1. In combination with an internal combustion engine having a fuel flow passage and an electrical control circuit for a starter motor, said circuit being connected to an associated source of electrical power and including a manual control switch, a cold-start fuel injector comprising: a housing; a normally closed needle valve associated with the fuel flow passage for controlling the delivery of fuel to said engine; a solenoid on said housing for actuating said needle valve in an opening direction inserted in electrical series with the manual control switch in said control circuit; a fluid-type damping means having a pair of movable end walls defining a chamber and having a fluid in said chamber and a partition located in said chamber and fixed to said housing, said partition having therein a throttling orifice; a spring interposed between one of said pair of movable end walls and said needle valve to bias said needle valve in a closing position; normally closed contact means associated with the other of said movable end walls and inserted in electrical series with said solenoid in said control circuit, said normally closed contact means including a movable member for opening and closing said contact means, said movable member being mounted on the other one of said movable end walls for movement therewith, said normally closed contact means being biased in an opening direction via said fluid-type damping means when said needle valve is actuated in said opening direction.

3,935,854
ARCHERY BOW AND ARROW SUPPORT

Fernando Troncosco, Jr., 1851 S. Orange Ave., Monterey Park, Calif. 91754
Filed Dec. 4, 1974, Ser. No. 529,444
Int. Cl.² F41B *5/00*
U.S. Cl. 124—24 R 11 Claims



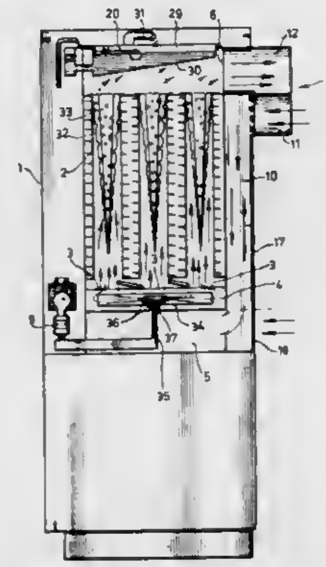
1. Improved Archery Equipment comprising, in combination:
- a. an archery bow having a bow handle including a sidewall and a bottom shelf defining an arrow-receiving space; and,
- b. an improved reversible arrow rest attached to said bow handle in said arrow-receiving space, said rest comprising, in combination:
  - i. a base support in said space attached to said bow handle; and,
  - ii. at least one resilient, vertically depressible, elongated, free-standing, upwardly projecting arm rising above said base support in said arrow-receiving space, spaced laterally from and above said bow handle to provide free arrow shaft and vane clearance therefrom and secured adjacent the lower end thereof to said base support, said at least one projecting arm extending generally along the forward-rearward axis of said bow, a portion of said at least one projecting arm providing a fork adjacent the upper end thereof for a shaft of an arrow, said form being dimensioned and positioned with respect to the bow so as to permit all vanes of an arrow, during shooting of an arrow from said bow, to freely clear without striking any part of said at least one projecting arm, including said fork.

3,935,855
AIR HEATER, ESPECIALLY FOR CONNECTION TO A CENTRAL HEATING SYSTEM

Cors van Vliet, Zwolle, Netherlands, assignor to N.V. Werktuigenfabriek Mulder, Netherlands
Continuation-in-part of Ser. No. 256,077, May 23, 1972, Pat. No. 3,820,526. This application Apr. 24, 1974, Ser. No. 463,588
Claims priority, application Netherlands, May 24, 1971, 7107090
Int. Cl.² F24H *3/02*
U.S. Cl. 126—110 R 1 Claim

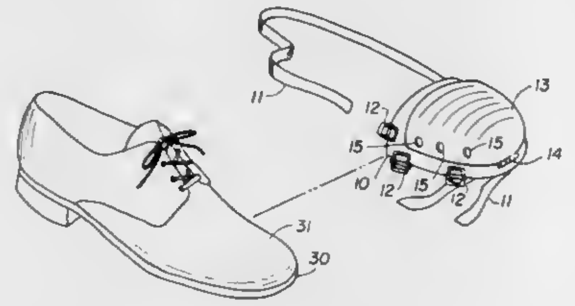
1. Air heater comprising a heat exchanger compartment, in which are arranged a series of parallel rows of vertical heat exchange tubes, the lower ends of which are connected to a joint burner compartment and the upper ends of which are connnected to a joint flue compartment whereas two opposite lateral sides of the heat exchanger compartment are connected to air supply and discharge compartments respectively for feeding the air to be heated transversely through said heat exchanger compartment, said rows of heat exchange tubes fixed by a first, a second and a third burner respectively, each burner comprising a casing having a series of outlet apertures in its upper wall, said outlet apertures being partially closed by a series of suspended corrugated strips in conical configuration alternating with straight strips defining the conical configuration, all of the outlet apertures of a burner being mutually

connected by a narrow slot partially closed in the same way as the outlet apertures themselves, said burner casings enclosing an open ended horizontal tube in which are centrally mounted two oppositely directed gas nozzles, and multistage thermostat means controlling the individual burners by successive stages set at staggered temperatures.



3,935,856
SHOE AND FOOT WARMER

Wayne M. Loftin, Pasadena, Tex., assignor to The Raymond Lee Organization, Inc., New York, N.Y.; a part interest.
Filed Jan. 14, 1975, Ser. No. 540,991
Int. Cl.² A61F *7/06*
U.S. Cl. 126—208 3 Claims

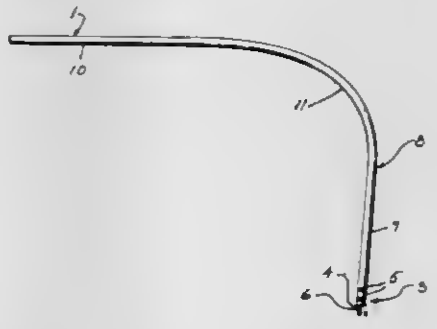


1. A device for warming a shoe to which it is externally mounted comprising
- a base unit of a size to fit about the toe cap of a shoe with means to attach the base unit to a shoe,
- a cover hinged to the top section of the base cap, enclosing a heater section fitted in the base unit below the hinged cover.

3,935,857
CARDIAC CATHETER

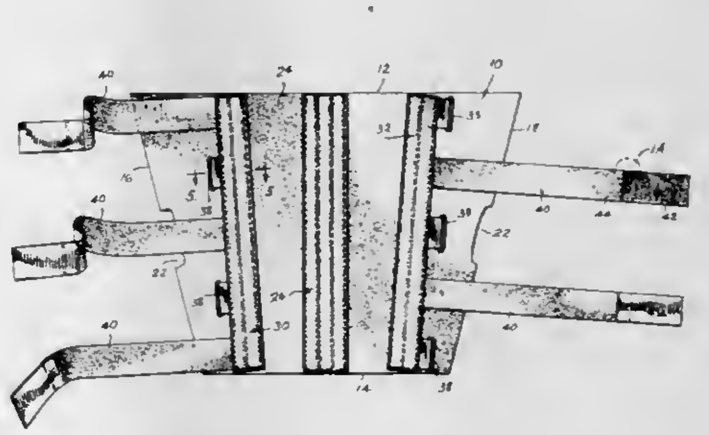
Eddy D. Co, 3032 W. Iona Terrace, Milwaukee, Wis. 53221
Filed July 31, 1974, Ser. No. 493,389
Int. Cl.² A61M *25/00*
U.S. Cl. 128—2.05 5 Claims

1. A catheter for insertion through the aorta and into tip engagement with a coronary artery ostium of a human heart, said catheter comprising:
- a. a preformed tubular body of relatively high torque flexible plastic and of substantially constant thickness throughout,
- b. said body having straight inner and outer legs joined by a continuously curved central portion and with said outer leg forming the tip of the catheter,
- c. said continuously curved central portion being of substantially infinite radius at its points of merger with said legs and gradually decreasing in radius inwardly from said points toward its central point,
- d. said legs being disposed at an angle of substantially 85° to each other,
- e. the straight line distance from said curved portion's midpoint to the intersection of the imaginary inward extensions of said legs (FIG. 7, line D-E) being about ¼ the chordal straight line distance between the points of merger of said legs with said curved portion (FIG. 7, line A-B),
- f. the construction being such that said catheter is usable for tip engagement with either the left or right artery ostium and without falling therefrom during photographic heart studies.



3,935,858
KNEE IMMOBILIZER

Marlin R. Harroff, Bourbon, Ind., assignor to Orthopedic Equipment Company, Inc., Bourbon, Ind.
Filed Jan. 13, 1975, Ser. No. 540,505
Int. Cl.² A61F *3/00*
U.S. Cl. 128—80 C 5 Claims

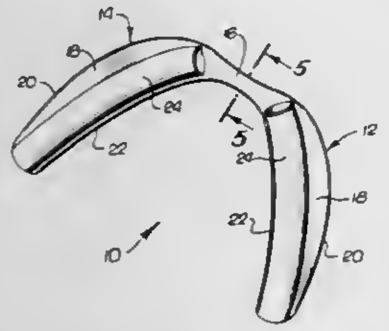


1. An immobilizer for the knee of a patient comprising a flexible cover means having in planar orientation upper and lower edges and opposite side edges, a first rigidifying means connected to said cover means between said side edges and extending from adjacent the upper edge to adjacent the lower edge of the cover means, said first rigidifying means for positioning behind the knee when said cover means is applied to the patient, second and third rigidifying means, each second and third rigidifying means including means for detachable and adjustable securement to said cover means, and means for securing said cover means about said knee, said second rigidifying means being adjustably secured to said cover means between said first rigidifying means and one cover means side edge for positioning at the inside of said knee when said cover means is applied to the patient, said third rigidifying means being adjustably secured to said cover means between said first rigidifying means and the other cover means side edge for positioning at the outside of said knee when the cover means is applied to the patient, said securing means for the cover means being carried by said second and third rigidifying means.

3,935,859

SURGICAL NASAL SPLINT

Donald E. Doyle, 8147 Amor Road, Los Angeles, Calif. 90046
Filed Sept. 16, 1974, Ser. No. 506,401
Int. Cl.² A61F *5/04*
U.S. Cl. 128—89 R 7 Claims

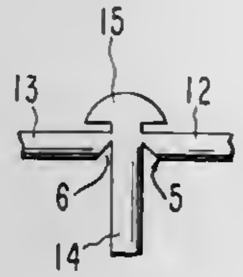


1. A surgical nasal septum splint made of one piece of flexible material, and characterized by two splint limbs having anterior ends joined together by an isthmus adapted to underlie the columella of the patient to provide an anchor to preclude accidental aspiration, and having free posterior ends for conjoint nasal insertion, each of the limbs having a flat inside surface to fit against the nasal septum.

3,935,860

INTRAUTERINE DEVICE WITH RESTRICTOR FOR MAINTAINING DEVICE IN UTERINE CAVITY

Seymour Hoff, San Jose, Calif., assignor to Alza Corporation, Palo Alto, Calif.
Filed Aug. 21, 1974, Ser. No. 499,185
Int. Cl.² A61F *5/46*
U.S. Cl. 128—130 7 Claims



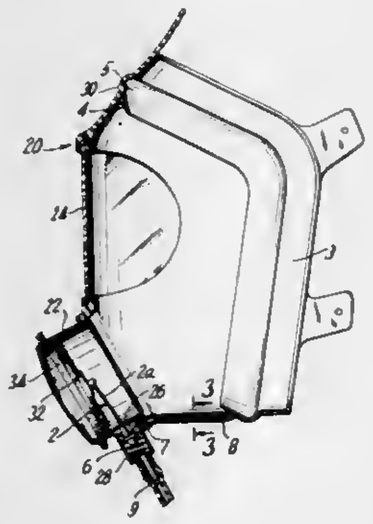
1. An improved intrauterine device adapted, sized and shaped for easy insertion and use in a uterine cavity, said device having a configuration consisting of a dependent member having a lead end and a trailing end and united at the lead end to a transverse member, a sole transverse member outwardly projected from the dependent member, a left and right arm formed by the transverse member where it unites with the dependent member, the arms having an upper surface the lead end and a lower surface facing the trailing end and terminated in distant rounded ends, the improvement consisting of a restraining member at the lead end with the member raised above the surface of the transverse member to form a space between the restraining member and the transverse member, said restraining member extended towards the ends of the transverse member for preventing the arms from folding up and away from the dependent member, thereby substantially maintaining the shaped configuration of the device for a prolonged period of time when the device is placed in a viable uterine cavity.

7. An improved intrauterine device adapted, sized and shaped for easy insertion, and use in an intrauterine cavity, said device having a configuration consisting of a dependent member having a lead end and a trailing end and united at its lead end to a transverse member, a single transverse member outwardly projected from the dependent member and consisting of left and right arms having an upper surface facing the lead end and a lower surface facing the trailing end with the arms formed where the transverse member is united to the dependent member, the improvement consisting of unidirectional means on the lower surface of the left and right arms where said arms extend from the dependent member for unidirectional downward folding of the arms to substantially prevent the arms from folding up from the independent member while simultaneously letting the arms fold downward to increase ease of insertion into the uterine cavity.

3,935,861

PROTECTIVE BREATHING MASK WITH COMPRESSED AIR SUPPLY FOR BREATHING

Ernst Warncke, Lubeck, Germany, assignor to Drägerwerk Aktiengesellschaft, Germany
Filed July 1, 1974, Ser. No. 484,880
Claims priority, application Germany, July 14, 1973, 2336047
Int. Cl.² A62B *7/00*
U.S. Cl. 128—142 R 5 Claims



1. A protective breathing mask comprising a face encircling mask body, a compressed gas line connected into the interior of said mask body, said mask body having an encircling rim portion defining an air seal cavity, a tubular conduit defined in a wall of said mask and forming a partial flow gas passage extending from said gas line to said cavity, and throttle means in said partial gas passage for permitting a flow of compressed gas into the cavity in a quantity which will permit some escape of gas from the cavity.

3,935,862

INHIBITION OF CONDITIONS ARISING FROM MICROBIAL PRODUCTION OF AMMONIA

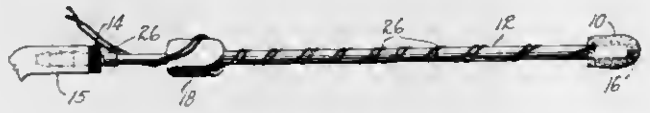
Kenneth S. Kraskin, Milltown, N.J., assignor to Personal Products Company, Milltown, N.J.
Filed June 12, 1974, Ser. No. 478,663
Int. Cl.² A61F *13/16*
U.S. Cl. 128—287 1 Claim

1. A disposable diaper comprising a thin, waterproof backing sheet and a thin, moisture permeable facing sheet and an absorbent core disposed between said facing and said backing sheets, said diaper containing on at least the upper portions, including the surface area of the absorbent core or moisture permeable facing sheet first to intercept urine in use, a means for inhibiting ammonia formation therein including an aminopolycarboxylic acid compound in an amount of at least 0.001 gm. per square inch.

3,935,863

SURGICAL SPONGE

Herbert L. Kliger, 29 Harvard St., P.O. Box 541, Brookline Village, Mass. 02147
Filed July 19, 1974, Ser. No. 489,991
Int. Cl.² B32B *31/20;* **A61F** *13/00;* **A61B** *10/00*
U.S. Cl. 128—296 4 Claims

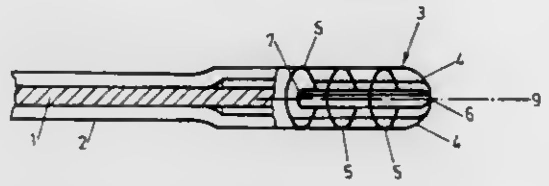


1. A surgical sponge for use in a body cavity comprising a porous sponge material pre-formed to provide a cup-shaped member having an internal opening and having a mouth to the internal opening dimensioned to freely receive the end of a suction tube, means for releasably securing the sponge to the end of said suction tube comprising an attaching cord having an adjustable tightening means on one end secured to the sponge adjacent the mouth thereof for attaching and securing said sponge to the suction tube said cord having a length such that the other end remote from the sponge can be disposed above a portion of the suction tube and sponge that remains outside the body cavity.

3,935,864

ENDOCARDIAL ELECTRODE

Hans Lagergren, Ostermalmsgatan 89, S11459, Stockholm, Sweden
Filed June 18, 1974, Ser. No. 480,536
Claims priority, application Germany, July 4, 1973, 2334049
Int. Cl.² A61N *1/04*
U.S. Cl. 128—418 20 Claims



1. Endocardial electrode for the intracardial stimulation of a heart, comprising an elongate electrical conductor; and electrical insulation encasing said conductor; and an electrode head being connected to said conductor at the end thereof proximate the heart for transmission of stimulative pulse to the heart upon insertion of said electrode, said electrode head having a plurality of electrically conductive contact portions connected to said conductor and defining spaces extending interiorly of said electrode head, said contact portions being shaped and positioned so as to form the external periphery-defining edges of at least one hollow body in said electrode head.

3,935,865

BRASSIERE

Julie Newmar, 12 Beekman Place, New York, N.Y. 10022
Filed Nov. 22, 1974, Ser. No. 526,319
Int. Cl.² A41C *3/00*
U.S. Cl. 128—488 9 Claims

1. A brassiere comprising:

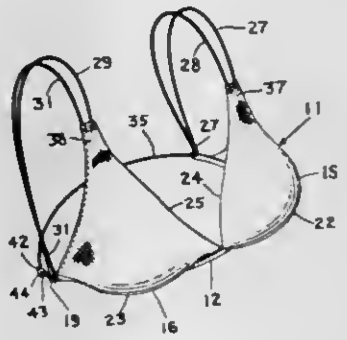
a body engaging band extendable across a wearer's chest under her breasts and terminating in a left end under the left arm of the wearer and a right end under the right arm of the wearer,

a left and a right cup both connected to the band and adapted for receiving the wearer's left and right breasts respectively,

the left cup terminating in a left upper end which connects with at least two left shoulder cords spaceable from each other and extendable over the left shoulder of the wearer to connect with the left end of the body engaging band,

the right cup terminating in a right upper end which connects with at least two right shoulder cords separable from each other and extendable over the right shoulder of the wearer to connect with the right end of the body engaging band,

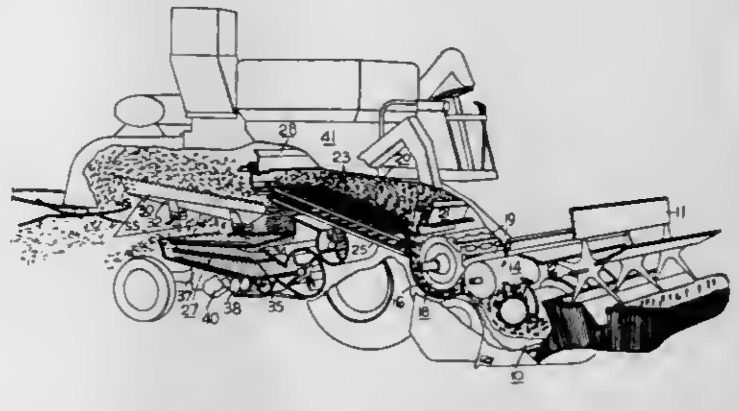
at least one closure cord connecting the left and the right ends of the band to each other.



3,935,866

GRAIN LOSS MONITOR

Edwin M. Northup, Milwaukee; David L. Moore, Brookfield, both of Wis., and J. Lyle Shaver, Blue Springs, Mo., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Dec. 23, 1974, Ser. No. 536,030
Int. Cl.² A01F *12/00*
U.S. Cl. 130—24 25 Claims



1. A grain loss per unit area monitor for a variable speed combine adapted to harvest a crop and recover grain therefrom comprising, in combination,

means including an electrical transducer adapted to be positioned in the flow path of grain in said combine for generating a grain flow rate signal which is a function of the number of grains of said crop impinging on said transducer,

means for deriving a ground speed signal which is a function of the ground speed of said combine, and

means for deriving a signal which is the analog of said grain flow rate signal divided by said ground speed signal, whereby said analog signal is indicative of grain loss per unit area and is independent of time.

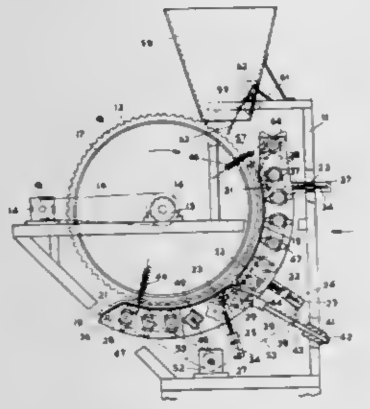
3,935,867

STRIPPING OF BRUSSELS SPROUTS FROM THEIR STEMS

George Wilfred Richardson, Barrow-on-Humber, England, assignor to Produits Findus S.A., Vevey, Switzerland
Filed June 17, 1974, Ser. No. 479,759
Int. Cl.² A01F *11/00*
U.S. Cl. 130—30 R 20 Claims

1. A method of stripping Brussels sprouts from their stems comprising the steps of; feeding the plants laterally in succes-

sion to the nip between a soft resilient surface of a movable member and a series of laterally spaced pressure members each having a soft resilient surface yieldably urged towards the surface of the movable member, moving said movable member relative the pressure members to cause rotation of each plant substantially about the axis of its stem as it passes into and through the nip, and passing each rotating plant into contact with a series of successions of resilient rotating stripping members as the plants pass along the nip to remove the sprouts from their stems, the members of each succession being spaced apart in the direction of movement of the plants and exerting resilient stripping pressure on the sprouts, the series of stripping members and pressure members alternating in the lateral direction of the nip.



2. Apparatus for stripping Brussels sprouts from their stems comprising a movable member having a soft resilient surface, a series of pressure members extending in the direction of movement of said movable member and each having a soft resilient surface arranged in spaced opposed relationship with the surface of said movable member, said pressure members being spaced apart in a direction transverse to that of movement of said movable member, means for yieldably urging said pressure members towards the surface of said movable member to provide a resilient nip, and a series of resilient stripping members spaced apart in the direction of movement of said movable member in each of the spaces between adjacent pressure members.

3,935,868
HAIR SETTING PROCESS

Eugene Zeffren, Wyoming, and Jerry Turner, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 294,053, Oct. 2, 1972, Pat. No. 3,805,809. This application Feb. 1, 1974, Ser. No. 438,816

Int. Cl.^{2} A45D *7/00*

U.S. Cl. 132—7 **4 Claims**

1. A hair deforming composition in kit form comprising: (1) a separately packaged, water-based shampoo; and, (2) a separately packaged portion of an oxidant of the formula $MHSO_5$, wherein M is an alkali metal cation, said portion being sufficient to provide a concentration of oxidant in the shampoo of at least about 1% by weight.

3,935,869
APPLICATOR DRIVE UNIT

Arnold O. Winfried Reinsch, 13170 Carousel Lane, Del Mar, Calif. 92014

Continuation-in-part of Ser. No. 330,694, Feb. 6, 1973, abandoned. This application June 5, 1974, Ser. No. 476,717

Int. Cl.^{2} A45D *24/16*

U.S. Cl. 132—9 **6 Claims**

1. An applicator drive unit for treating a surface comprising:

a casing;

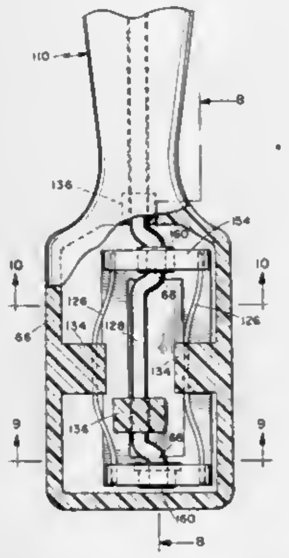
a pair of generally parallel rods mounted in said casing, each of said rods having a pair of eccentric portions;

a mounting bracket mounted to the eccentric portions of said rods;

an applicator element attached to said mounting bracket;

a motor operatively mounted in said casing;

power transmission means operatively connecting said motor and mounting bracket for driving said mounting bracket circularly on the eccentric portions of said rods such that all portions of the applicator element have substantially translational circular motion whereby the orientation of the applicator element with respect to the casing is maintained substantially constant and the applicator has a lapping action in use to produce substantially one effective direction of motion relative to the surface treated.



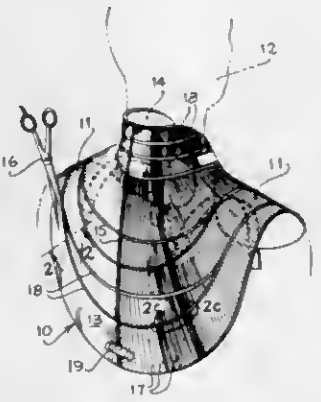
3,935,870
GUIDE MEANS FOR CUTTING HAIR

Albert Wall, 515 S. Crescent Ave., Lodi, Calif. 95240

Filed Aug. 7, 1974, Ser. No. 495,422

Int. Cl.^{2} A45D *24/36*

U.S. Cl. 132—45 R **6 Claims**



1. A device for use in cutting long hair to an even length on opposite sides of a substantially vertical centerline defined to extend downwardly between the shoulders of a person, said device comprising a template of semi-rigid material formed to provide a broad surface including shoulder portions adapted to be draped over the shoulders and a back panel portion adapted to extend across the back of a person, said template including a collar portion open at one side to be yieldingly spread apart and disposed about the neck of the person for holding the template in place, said shoulder portions and said back panel portion merging with said collar portion all as a substantially continuous surface, a sufficient number of fine grooves formed to extend downwardly and laterally away from the neck portion on both sides of said centerline to inhibit lateral movement of strands of the hair in the contiguous layer of hair laid thereon, the depth of said grooves being sufficient to engage said strands to be restrained from lateral movement across said surface, and a predetermined pattern of hair length defined on the surface of said back panel for guiding scissors of the barber in cutting the hair to conform to said pattern.

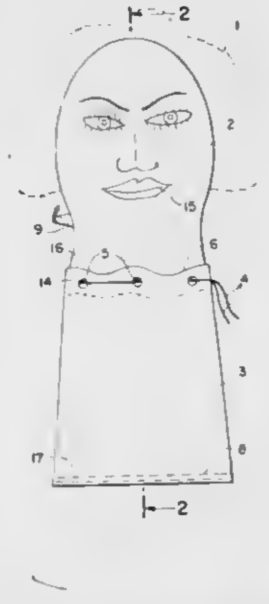
3,935,871
COLLAPSIBLE WIG STAND

Cecil Kern, North Miami, Fla., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed June 13, 1975, Ser. No. 586,596

Int. Cl.^{2} A41G *5/00*

U.S. Cl. 132—54 **2 Claims**



1. A collapsible wig stand comprising in combination an inflatable wig form attached to a collapsible purse-like bag having a drawstring for closing and carrying.

3,935,872
PACKAGING OF ARTIFICIAL EYELASHES

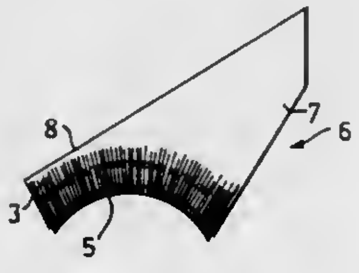
Eric V. Aylott, Cwmbran, England, assignor to Eylure Limited, England

Filed Mar. 1, 1974, Ser. No. 447,436

Claims priority, application United Kingdom, Aug. 3, 1973, 36971/73; Sept. 26, 1973, 45100/73

Int. Cl.^{2} A45D *40/26*

U.S. Cl. 132—88.7 **3 Claims**



1. An artificial eyelash set and applicator assembly wherein the eyelash set is convex in side elevation having a base strand and a plurality of lashes attached to the base strand and an applicator having a handle by means of which the applicator may be manipulated and a support upon which the eyelash set is mounted said eyelash set being removably secured along a tangent of the set with the convex side of the eyelash set in contact with and secured upon the support of the applicator so that the base strand is free of the applicator.

3,935,873
COIN-DISPENSING DEVICE

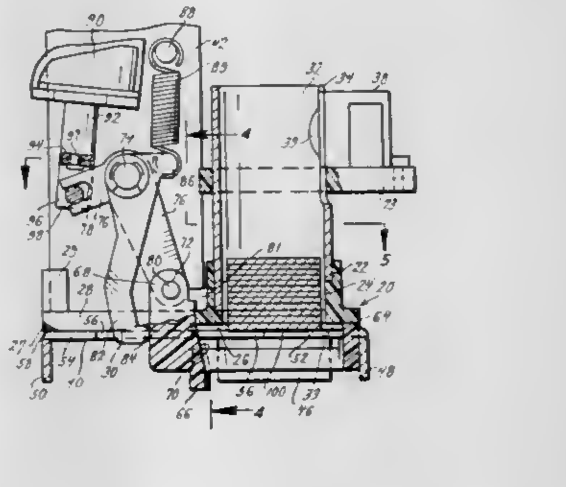
Raymond Arthur Johnson, Hot Springs, Ark., assignor to U.M.C. Industries, Inc., New York, N.Y.

Filed July 19, 1974, Ser. No. 490,133

Int. Cl.^{2} G07D *1/00*

U.S. Cl. 133—5 R **10 Claims**

4. A coin-dispensing device which comprises a coin-holding tube, a holding surface adjacent one end of said coin-holding tube which can help hold a coin adjacent said one end of said coin-holding tube, a guiding member adjacent said one end of said coin-holding tube which can help guide a coin which is moved transversely away from said one end of said coin-holding tube, a coin-moving member movably mounted adjacent said one end of said coin-holding tube and adjacent said guiding member, means to move said coin-moving member transversely of said one end of said coin-holding tube, said coin-moving member having a ring-like portion with an inner diameter which is substantially larger than the inner diameter of said coin-holding tube, said ring-like portion of said coin-moving member and said one end of said coin-holding tube being oppositely disposed of said holding surface, said ring-like portion having a projection thereon which extends toward said one end of said coin-holding tube and which has a coin-engaging surface thereon which can engage said coin and which can respond to movement of said coin-moving member in one direction transversely of said one end of said coin-holding tube to move said coin transversely away from said one end of said coin-holding tube, a rigid and unyielding camming surface on said guiding member which is in the path of said coin and which will cam said coin away from said guiding member and toward said ring-like portion of said coin-moving member, whereby said coin will be cammed away from said guiding member for movement to and through said ring-like portion of said coin-moving member, and said camming surface being out of the path of said coin-moving member, whereby said coin-moving member can move relative to, but not strike or be deflected by, said camming surface.



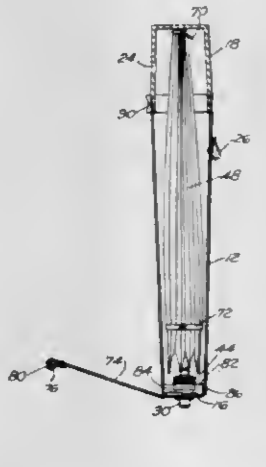
3,935,874
UMBRELLA ASSEMBLY

Helen Cohen, 251 Valentine St., Fall River, Mass. 02720

Filed Dec. 18, 1974, Ser. No. 533,815

Int. Cl.^{2} A45B *11/00, 17/00, 25/24*

U.S. Cl. 135—16 **9 Claims**



1. An umbrella assembly comprising an elongated generally cylindrical housing having a bottom end wall but open at its top end, a removable cover attachable to said top end for closing same, a collapsible umbrella mounted within said housing, said umbrella having a handle comprising a plurality

of interconnected extensible sections, means swivelly securing the bottom one of said sections to said housing bottom wall, said sections being dimensioned whereby when they are retracted and the umbrella collapsed, the entire umbrella fits within said housing, and when said sections are extended and the umbrella opened, said handle extends outwardly from said top end of said housing for a substantial distance, said swivel means permitting the extended handle to pivot within said housing until the handle engages the top edge of the latter.

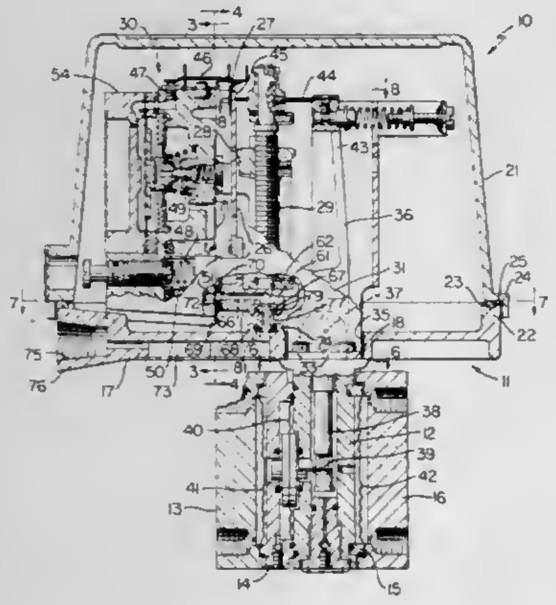
3,935,875
PNEUMATICALLY OPERATED FORCE BALANCE TRANSMITTER AND METHOD OF MAKING THE SAME

George T. Hardin, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation of Ser. No. 331,337, Feb. 9, 1973, abandnned. This application Sept. 25, 1974, Ser. No. 509,010

Int. Cl.^{2} G05D *16/00*

U.S. Cl. 137—84 **6 Claims**



2. In a force balance transmitter having a base structure provided with passage means and a secondary assembly attached thereto that includes a pneumatically operated relay module detachably secured to said secondary assembly and having passage means, the improvement comprising a fluid transfer member disposed between said module and said base structure and interconnecting said passage means of said base structure to said passage means of said module, said fluid transfer member being carried by said secondary assembly and being spaced from said base structure, said fluid transfer member having means floatingly interconnecting with said passage means of said base structure to tend to isolate motion of at least part of said base structure from said module, said fluid transfer member having passage means therein that interconnect said passage means of said base structure with said passage means of said module, said floating means of said fluid transfer member comprising tubular means slidingly disposed for axial and non-rotational movement in said passage means of said fluid transfer member and said passage means of said base structure whereby axial sliding movement can take place between said tubular means and said passage means of said fluid transfer member and said base member in the assembled relation of said force balance transmitter, said secondary assembly incuding a bracket means and said base structure including a base and a main body, said bracket means and said base being mounted to said body, said base having said passage means of said base structure therein, said module and said fluid transfer members being detachably secured to said bracket means.

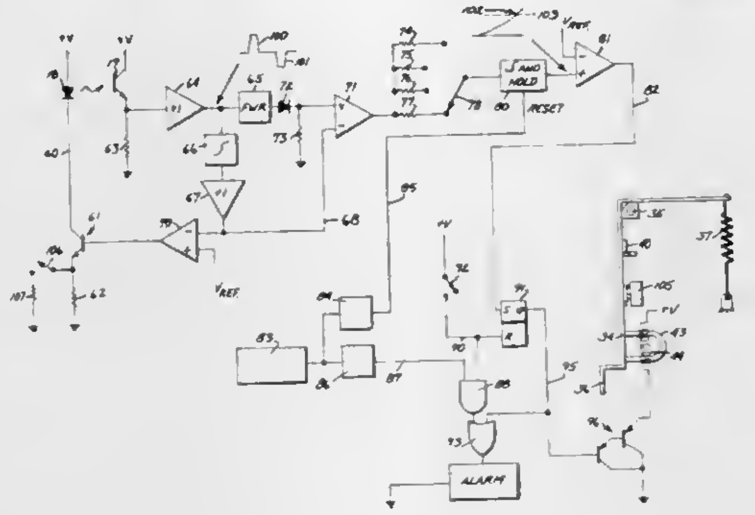
3,935,876
AIR LEAK DETECTOR

Harold Lee Massie, Minnetonka, and Louis C. Cosentino, Wayzata, both of Minn., assignors to Renal Systems, Inc., Minneapolis, Minn.

Filed Nov. 15, 1974, Ser. No. 524,329

Int. Cl.^{2} A61M *5/14;* G08B *21/00*

U.S. Cl. 137—177 **14 Claims**



1. Apparatus for detecting presence of air in a fluid carrying tube, comprising:

a. optical sensing means for producing a signal in response to an air bubble in the fluid carrying tube;
b. integrating means connected to receive signals from said optical sensing means and operable to integrate said signals; and
c. switching means connected to said integrating means, said switching means operable to change states when the integrated signal reaches a predetermined value, thereby providing an indication of excessive air in the fluid.

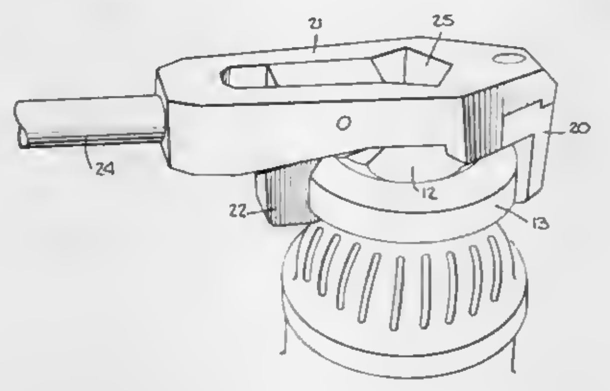
3,935,877
TAMPER-PROOF LOCKING SYSTEM FOR FIRE HYDRANTS

Peter A. Franceschi, 552 Van Ness Ave., Bronx, N.Y. 10460

Filed July 23, 1974, Ser. No. 491,470

Int. Cl.^{2} F16K *35/06*

U.S. Cl. 137—296 **8 Claims**



1. A tamper-proof lock system for protecting the stem of a fire hydrant or similar apparatus against unauthorized turning thereof, said system comprising:

A. a cap assembly mountable on said stem and including a cap housing whose head has a circular array of sloped faces formed thereon, the housing having a central inner cavity dimensioned to receive and socket said stem whereby rotation of said housing causes rotation of said stem and a Saturn ring encircling said housing and linked thereto for relative rotation, and
B. a wrench cooperating with said cap assembly, said wrench having at least two sloped faces adapted to complement and engage corresponding faces in said array thereof on said cap housing, and a fixed claw cooperating with an adjustable claw to grip said Saturn ring to provide purchase.

3,935,878
ARRANGEMENT IN HEAT INPUT TO A GULLY FOR DRAINING WATER IN ORDER TO AVOID ACCUMULATION OF SNOW AND ICE

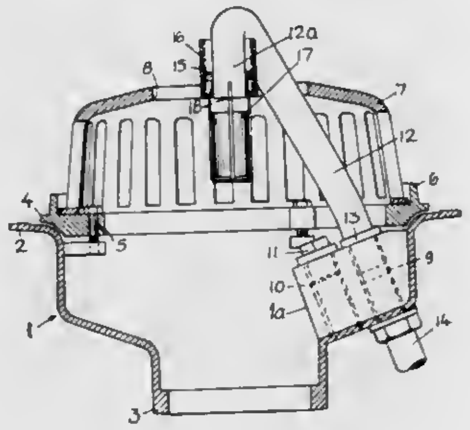
Petter P. Østevik, Storgaten 17, 6400 Molde, Norway

Filed May 14, 1974, Ser. No. 469,650

Claims priority, application Norway, May 30, 1973, 1753/73

Int. Cl.^{2} F16K *49/00*

U.S. Cl. 137—334 **7 Claims**



1. Arrangement in a gully for draining water in order to avoid accumulation of snow and ice therein, comprising a mainly cup-shaped gully member, having lower outlet socket for connection to a waste pipe and an upper circumferential support flange, a clamping ring secured on the upper end of said member, a circular vertical flange on said clamping ring to receive and guide an upper crown-shaped grate resting on said clamping ring and having an upper central opening, a bore through the wall of said cup-shaped member, a pipe for supply of heated air mounted in said bore with the mouth of its free end opening into said gully, means provided on said pipe for adjustable dispersion of the airstream from said pipe mouth below said grate and a float valve controlling said mouth.

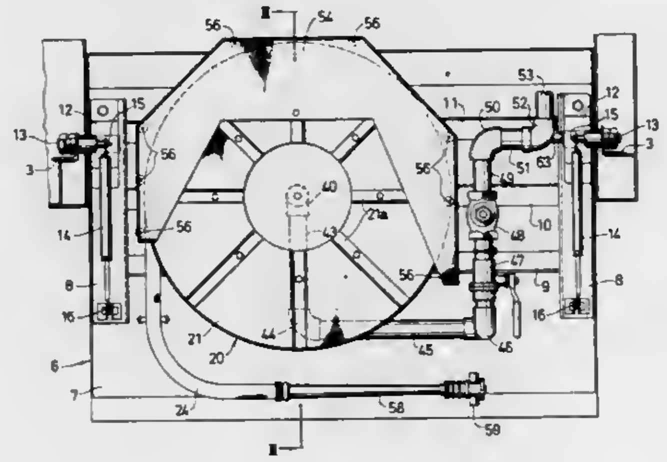
3,935,879
HOSE REEL DEVICE FOR FIRE EXTINGUISHING APPLIANCE

Tashirou Miyazaki, Machida, Japan, assignor to Nomi Bosaikogyo Kabushiki Kaisha, Japan

Filed Mar. 11, 1975, Ser. No. 557,290

Int. Cl.^{2} B65H *75/34*

U.S. Cl. 137—355.16 **6 Claims**



1. A hose reel device for fire extinguishing appliance of the type having a cabinet and a door, said device comprising hinge means to swingably connect the door to the cabinet for opening and closing the cabinet, said hinge means being mounted on the cabinet to provide for the door a swinging axis horizontal and parallel to the front side of the cabinet, a reel mounted on inside of the door and rotatable around an axis normal to the door, a hose wound onto the reel and fluidly connected to the water supply source and valve means controlling the water supply.

3,935,880
DEVICE FOR REDUCTION OF DISTURBING NOISE IN A FLOW CONTROL DEVICE

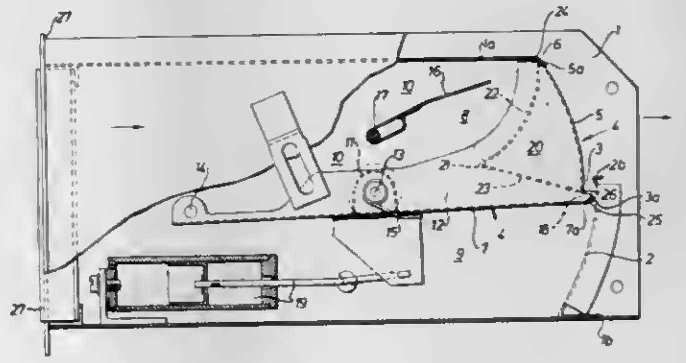
Lars-Erik E. Lindestrom, Kristinehamn, and Arne S. Wibring, Jonkoping, both of Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Stockholm, Sweden

Filed Aug. 23, 1974, Ser. No. 499,994

Claims priority, application Sweden, Aug. 24, 1973, 7311572

Int. Cl.^{2} F24F *11/04*

U.S. Cl. 137—499 **7 Claims**



1. In a casing having walls defining an air passage a flow control assembly of the type including a baffle or threshold projecting into the air passage from one wall of said casing toward an opposed wall of said casing, said threshold having an arcuate concave surface facing upstream, a plate or pressure plane disposed upstream of said threshold and mounted for rotation about an axis transverse to the axis of the casing such that its downstream end moves parallel to said arcuate face of said threshold, an arcuate valve blade carried at the downstream end of said pressure plane for forming an adjustable throttling gap between said threshold and said opposed wall of said casing, there being a fixed gap between said valve blade and said pressure plane, the improvement comprising air guiding means disposed upstream of said arcuate valve blade forming separate first and second channels leading to said adjustable throttling gap and to said fixed gap, respectively, said channels having cross sectional areas which decrease in the direction of air flow whereby air turbulence and associated noise in said gaps are reduced.

3,935,881
APPARATUS FOR STEADY-STATE VOLUME RATE FLOW CONTROL

Mandel L. Desnick, St. Louis Park, and Leonard J. Boler, Minneapolis, both of Minn., assignors to Cherne Industrial, Inc., Edina, Minn.

Filed Dec. 3, 1973, Ser. No. 420,790

Int. Cl.^{2} G01F *11/00*

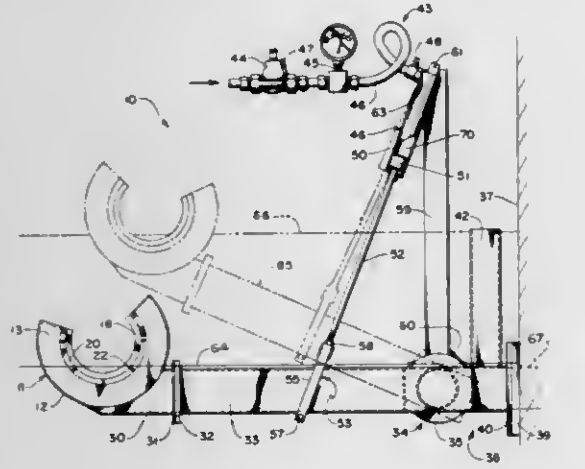
U.S. Cl. 137—578 **5 Claims**

1. An apparatus for steady-state volume rate flow control from a variable depth liquid which comprises:

a floating weir having an inlet crest over which such liquid may flow when said weir is floated at a predetermined level therein and a discharge opening through which such liquid may flow from said weir; and

pressure responsive control means operatively connected to said floating weir for opposing the buoyancy of said weir to position said inlet crest of said weir at a selected distance below the surface of said variable depth liquid, thereby establishing a desired steady-state volume rate of liquid flow from said weir through said discharge opening.

said pressure responsive control means including an air cylinder member, a piston member relatively movable therein along an axis having a substantial vertical component and defining a pressure chamber therein, one of said piston and cylinder members operatively connected to said weir and the other of said piston and cylinder members having means for connection to a support, and



means for applying pressure to said pressure chamber from an external pressure source,

said means for applying pressure to said pressure chamber from an external source including a pressure port communicating with said pressure chamber, a pressure regulator communicating with said pressure port for controlling the pressure applied to said pressure chamber, and a pressure control bleed for controlling the pressure in said pressure chamber independent of relative movement of said piston member in said cylinder member.

3,935,882

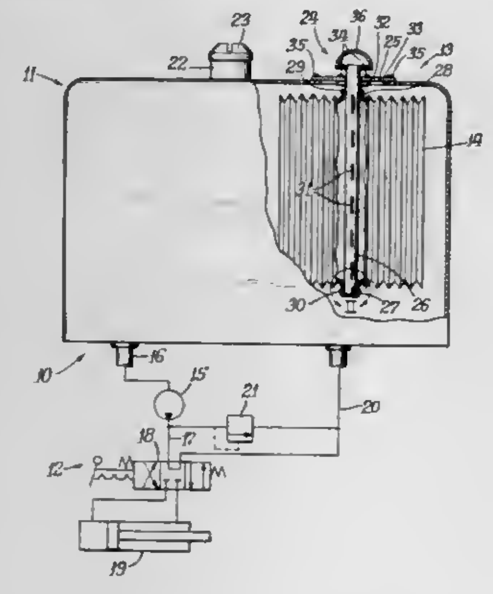
HYDRAULIC TANK RESERVOIR PRESSURE AND VACUUM STABILIZER SYSTEM

Ralph W. Matthews, New Berlin, Wis., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 19, 1974, Ser. No. 443,303

Int. Cl.^{2} F16L *55/04*

U.S. Cl. 138—30 **2 Claims**



1. In an hydraulic system comprising a sealed reservoir tank, and a displacement-type hydraulic element in communication with said tank for receiving hydraulic fluid from and returning hydraulic fluid to said sealed reservoir tank; a stabilizer means for changing the volume of the sealed reservoir tank in response to fluid requirements of the displacement type hydraulic element, the stabilizer means comprising an accordion type air bag having walls defining a variable volume chamber, at least one of said walls being movable and having its outer surface in communication with the interior of said sealed reservoir tank, said air bag being formed with sufficient resiliency to resist complete collapsing by the pressure generated from the weight of hydraulic fluid in the sealed reservoir when said sealed reservoir is filled, vent means for providing ingress and egress of ambient atmospheric air into and out of the variable volume chamber allowing substantially atmospheric pressure to be maintained in the sealed tank; the stabilizer means further comprising an elongated tube extending from the vent means, said tube being rigid and having one or more passages establishing communication between the inside of the tube and the inside of the variable volume chamber, said elongated tube having a portion thereof extending outwardly of said tank, roof means supported over said portion, said roof means being formed to direct air entering therein upwardly and then downwardly into said tube whereby movement of solid particles into the stabilizer means is minimized.

3,935,883

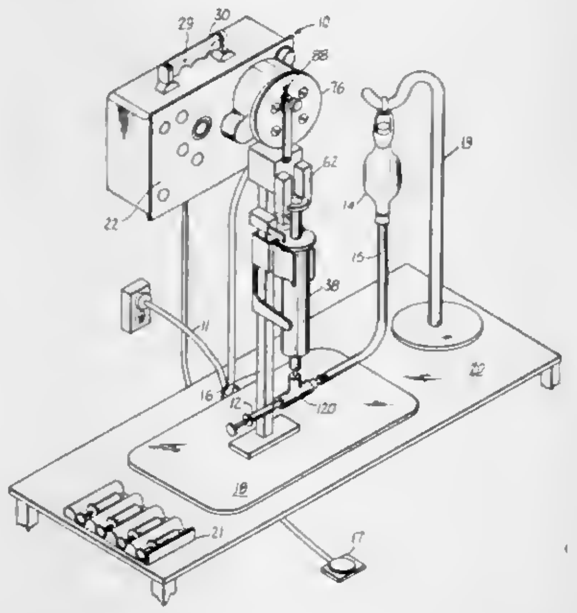
SYRINGE FILLING APPARATUS WITH DISPOSABLE FLUID CONDUCTING ELEMENTS

Paul E. Stach, 4743 Glendon Road, Columbus, Ohio 43229, and Thomas P. Sherrin, 1663 Dolliver Drive, Worthington, Ohio 43085

Filed Aug. 19, 1974, Ser. No. 498,456

Int. Cl.^{2} B65B *3/04*

U.S. Cl. 141—27 **10 Claims**



1. An apparatus for filling injection syringes with medical fluid from a source container and including a support frame for positioning said apparatus in a suitable work area and a motor drive means mounted to said frame, the apparatus comprising:

a. a first pumping syringe;

b. a clamping means mounted to said frame releasably retaining the outer cylinder member of said pumping syringe against all movement relative to said frame;

c. gripper means for removable attachment to the piston member of said pumping syringe, said gripper means being mounted to said frame for linear reciprocation along the axis of said pumping syringe;

d. crank means drivingly connected to said motor drive means and an associated connecting rod linking said crank means to said gripper means for reciprocally driving said piston member; and

e. a dual check valve tee connector connected to a mating connector on said pumping syringe for permitting fluid to be drawn into and expelled from said pumping syringe, said tee connector having an input port for connection to said source container to permit the withdrawal of fluid from said container into said pumping syringe and also having an exhaust port formed into a female Luer connector for receipt of an injection syringe and permitting fluid flow from said pumping syringe to said injection syringe.

3,935,884

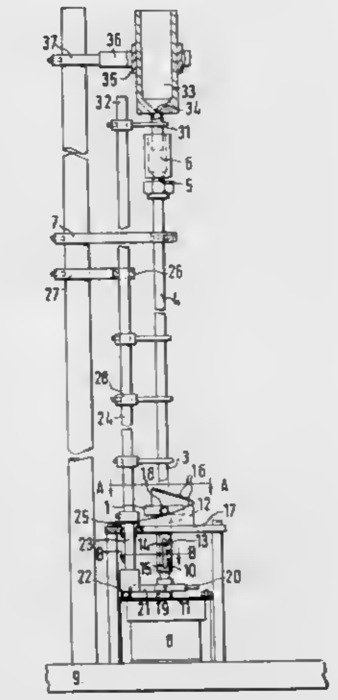
COLUMN PACKING DEVICE

Heath Robin Hazelton, Orpington, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed May 23, 1974, Ser. No. 472,667

Int. Cl.^{2} B65B *1/22*

U.S. Cl. 141—80 **14 Claims**



13. In a chromatographic column packing machine which includes means for supporting a chromatographic column for rotating and vertical motion, the improvement of a chromatographic column drive plate, drive means for vertically moving and rotating said drive plate in order to rotate and vertically move the chromatographic column, and tapper means comprising a tapper shaft mounted for rotation and supporting a tapper member for impacting against said column, and means for intermittently rotating said tapper shaft in a first direction less than a complete revolution and thereafter releasing said tapper shaft to permit it to rotate in a direction opposite to said first direction.

3,935,885

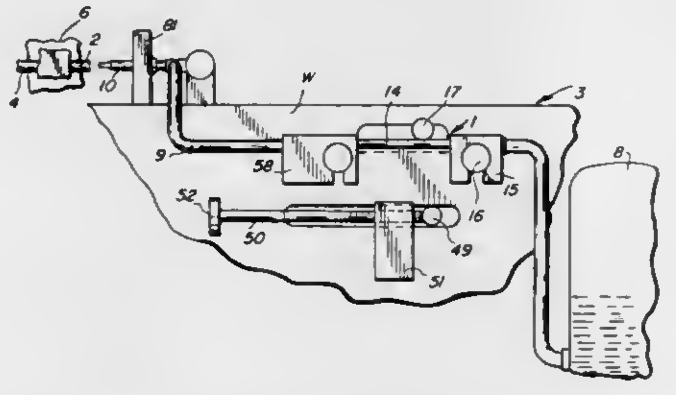
CAPSULE-FILLING MACHINES

Richard R. Alter, 608 McDowell St., Delavan, Wis. 53115

Filed Feb. 1, 1974, Ser. No. 438,751

Int. Cl.^{2} B67C *3/26, 3/34*

U.S. Cl. 141—279 **3 Claims**



1. In a capsule-filling machine embodying means for holding a capsule body portion in position to receive fluid therein,

a. a reservoir for holding a supply of such fluid.

b. a nozzle for feeding said fluid into a capsule body portion,

c. a flexible, resilient tubular member operatively connected between said reservoir and said nozzle for feeding such fluid there-between,

d. a drive shaft,

e. means for rotating said drive shaft,

f. means, including a cam mounted on said drive shaft, for pumping fluid through the tubular member from said reservoir to said nozzle,

g. means for moving said nozzle between
    1. One position wherein it is disposed in operative position in said body portion, and
    2. another position wherein it is disposed in outwardly spaced relation to said body portion,

h. said means for moving said nozzle comprising
    1. a second cam mounted on said drive shaft and rotatable with said first mentioned cam, and
    2. a cam follower connected to said nozzle and engaged with said second cam,

i. an abutment member
    1. disposed between said pumping means and said nozzle, and
    2. movable into and out of clamping engagement with said tubular member for closing and opening the latter, respectively,

j. means for moving said abutment member in timed relation to said pumping means, whereby
    1. said abutment member is disposed out of said clamping engagement with said tubular member during pumping operation of said pumping means, and
    2. said abutment member is disposed in said clamping engagement with said tubular member when said pumping means is not operating to pump fluid from said reservoir to said nozzle,

k. said means for moving said abutment member comprising a third cam mounted on said drive shaft and rotatable with said first mentioned cam and said second cam,

l. means for sensing whether a capsule body portion is disposed in said position to receive fluid therein, and

m. a solenoid operatively connected to said means for sensing, and controlled thereby, for rendering said abutment member inoperative to move out of said clamping engagement when a capsule body portion is not disposed in said position to receive fluid therein.

3,935,886

FILLER TUBE

Alexander R. Duncan, Scarborough, Canada, assignor to The Molsons Companies Limited, Rexdale, Canada

Filed Feb. 5, 1974, Ser. No. 439,966

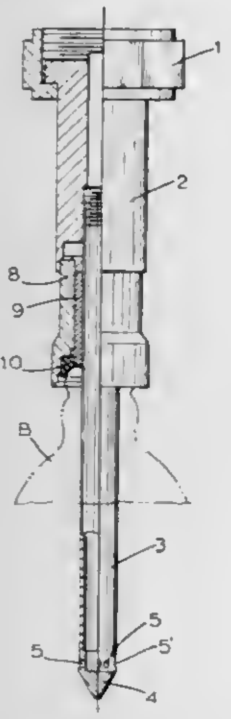
Claims priority, application Canada, July 31, 1973, 177748

Int. Cl.^{2} B65B *3/04*

U.S. Cl. 141—392 **1 Claim**

1. A bottle filler tube assembly including a valve adaptor serving as the mounting for the upper end of an axially bored liquid filling tube of elongated tubular configuration, a downwardly and outwardly flared bottle centering housing directly and fixedly secured to the lower end of said adaptor and through which said tube passes, a gasket within said housing adapted to contact the upper end of a bottle to be filled, the tip of said tube being closed and tapered at 30° to the longitu-

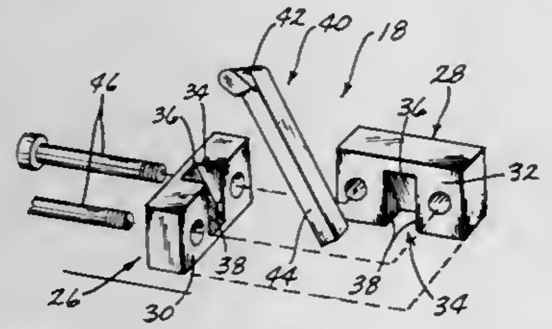
dinal axis of said tube, the lower end of said tube having a reduced diameter peripheral groove portion through which



extend a plurality of circumferentially unobstructed spaced filler holes.

3,935,887
CUTTER DISC

William R. Van Zante, 922-1/2 Main St., and Alonzo Ver Ploeg, Rte. 2, both of Pella, Iowa 50219
Filed June 14, 1974, Ser. No. 479,365
Int. Cl.^{2} B27G *13/04;* **B27C** *1/00, 9/00*
U.S. Cl. 144—235 **10 Claims**

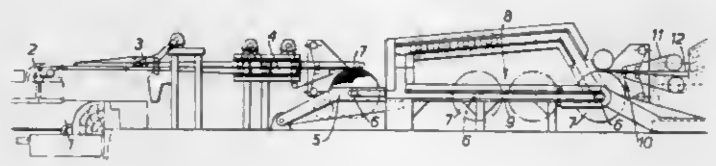


1. A cutter disc, comprising,
- a rotatable cutter disc having a center axis of rotation,
- a plurality of cutter tools mounted on said disc radially outwardly of said center axis of rotation,
- said cutter tools each including a holder and a bit, said bit having a cutting head and shank, said holder having a pair of half sections having mating faces parallel to said disc, said half sections having a slot formed in their mating faces and extending diagonally thereto with said bit shank positioned in said slot, and locking means interconnecting said half sections to hold said bit and secure said cutter tool to said disc with said bit extending at an acute angle to said disc.

3,935,888
MANUFACTURE OF VENEER SHEETS

Peter K. Hörnig, Berlin, Germany, assignor to C.L.P. Fleck Sohne GmbH, Berlin, Germany
Filed Nov. 6, 1973, Ser. No. 413,375
Int. Cl.^{2} B27H *1/00;* **B65H** *39/16*
U.S. Cl. 144—327 **1 Claim**

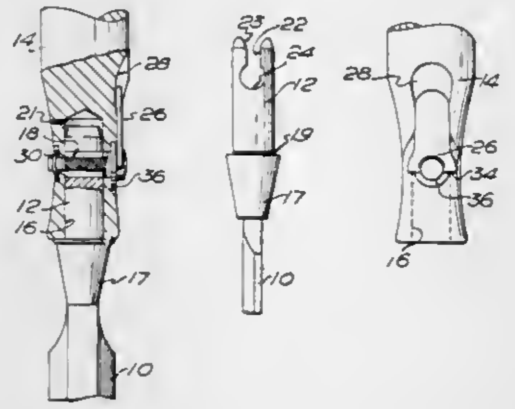
1. A method of manufacturing veneer sheets comprising the steps of cutting a plurality of individual veneer sheets, arranging the cut sheets into an adjacent, aligned, relationship, winding the said cut sheets into a roll, conveying said roll of cut sheets to a storage device, and thereafter unwinding the sheets from said roll of cut sheets in said storage device, and feeding



the sheets to a drier at a rate dependent on the output of the drier.

3,935,889
HAND TOOLS

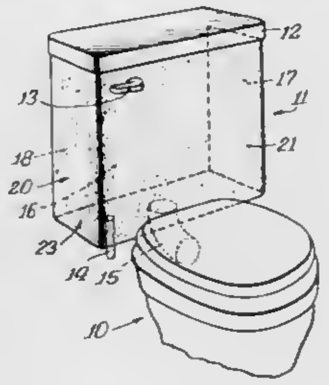
George Cecil Derbyshire, Sheffield, England, assignor to The Jacobs Manufacturing Co., Ltd., Sheffield, England
Filed Nov. 21, 1974, Ser. No. 526,042
Claims priority, application United Kingdom, Nov. 28, 1973, 55259/73
Int. Cl.^{2} B25D *3/00*
U.S. Cl. 145—24 **1 Claim**



1. In a hand tool including a tool part provided with a tang having an axially extending slot in its free end opening into a cross hole, the diameter of the cross hole being greater than the width of the slot, and including a handle part having an aperture extending axially into one end for receiving the tang; locking means for locking the handle part to the tang comprising a locking pin extending diametrically through the handle intermediately of the ends of the aperture and adapted to be rotated relative to the handle, the pin having a first narrow diametrical dimension allowing sliding reception of the pin down the slot into the cross hole and having perpendicular to the first dimension a second diametral dimension greater than the width of the slot allowing locking of the pin against escape from the slot when the pin is rotated to a locking position in which its greater diametral dimension extends crosswise to the slot, a lever for rotating the pin pivotally connected to an external end of the pin, a spring retainer clip fitted on an opposite external end of the pin urging the lever connected end of the pin inwardly of the handle, the lever being pivotable from an inoperative angular position in a side recess of the handle to an operative position in axial extension of the pin, the lever being formed with lugs at an inner end thereof having cooperation with a side area of the handle when the lever is pivoted to its operative position to draw the lever connected end of the pin slightly outwardly of the handle against the opposed urging of the spring, said lugs being adapted to allow return of the pin by the spring inwardly of the handle upon pivoting the lever back to its inoperative position, and the said urging of the spring serving to retain the lever in its inoperative position.

3,935,890
COVER FOR TOILET TANKS

Seymour S. Dolnick, Milwaukee, Wis., assignor to Glen Mfg. Inc., Milwaukee, Wis.
Filed Apr. 28, 1975, Ser. No. 572,611
Int. Cl.^{2} A47K *13/00*
U.S. Cl. 150—52 R **1 Claim**

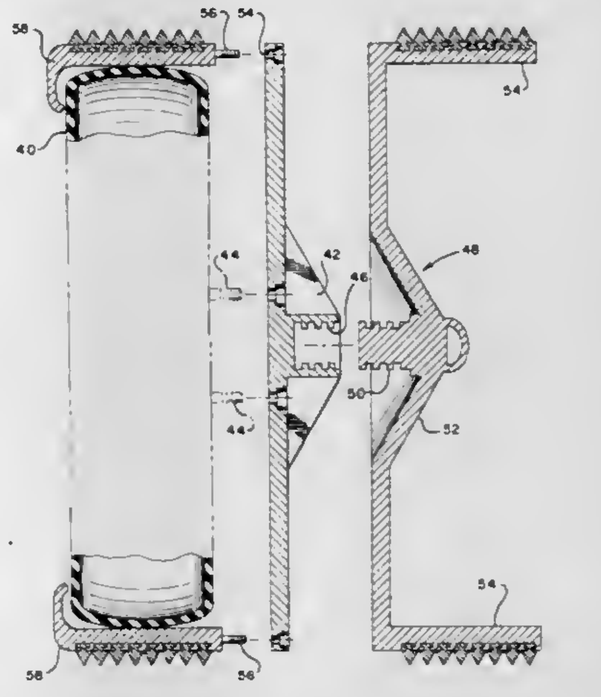


1. A cover for a toilet flush tank comprising a generally rectangular jacket of textile material, said jacket having a front portion to cover the front of the tank and side portions to cover the sides of the tank, said front portion having a width sufficient to cover the entire front of the flush tank and a height to extend from the bottom edge of the tank to above the normal level of water in the tank so that at least a major portion of the front wall of the tank is covered thereby, each of said side panels having a height equal to the front portion but having a narrower width to cover substantially the entire side of the tank, a substantially continuous sheet of vapor barrier material of the same size and shape as the jacket, said sheet having one side adhesively secured over substantially its entire area to the entire area of the back of said jacket and the other side of said sheet being provided with an adhesive coating over the entire surface thereof, and a layer of material covering the entire other side of said sheet and peelable therefrom to expose said adhesive coating whereby said material may be peeled from said other side of the sheet and said other side may be applied to the flush tank to cover substantially the entire front and side walls thereof in intimate contact throughout the entire covered area thereof.

3,935,891
TIRE TRACTION DEVICE

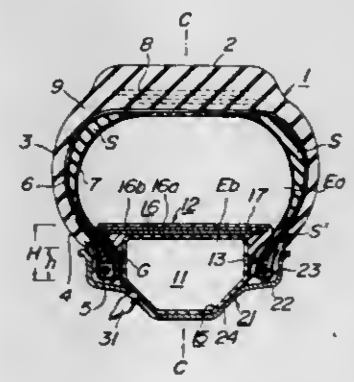
Marvin H. McCloud, Tucson, Ariz., and Delores J. McCloud, Stevensville, Mont., assignors to Marvin H. McCloud, Sr., Tucson, Ariz.
Filed Dec. 18, 1974, Ser. No. 533,850
Int. Cl.^{2} B60C *27/07*
U.S. Cl. 152—225 R **1 Claim**

1. An improved tire traction device defining an auxiliary structure for use with wheeled vehicles with tires to provide for increased traction for the vehicle when it is moving over unstable ground, the improved device comprising, in combination:
- a mounting plate adapted to be (removably) secured to the wheel of a vehicle, wherein the mounting plate is integrally defined with the wheel and adapted to removably receive a support assembly;
- a support assembly adapted to be removably secured to the mounting plate and having means thereon to receive auxiliary gripping devices, the support assembly having a portion thereof extending radially from the mounting plate to substantially the outer periphery of the vehicle tire; and
- gripping means adapted to be removably secured to the support assembly and defining spaced apart auxiliary traction means to define increased gripping action for the vehicle when moving over unstable ground wherein the gripping means are threadably received within the means provided on the support assembly and wherein the gripping means are secured to the support assembly such that they extend over the outer periphery of the tires of the vehicle in spaced apart relation about the periphery to define an increased traction means for the vehicle and extention, gripping means adapted to be mounted on the support assembly such that they extend laterally outwardly of the outer periphery of the tire to define increased traction area for the device thereby spreading the driving force over a larger area.



3,935,892
PNEUMATIC TIRED WHEEL

Iwao Arimura, Kodaira; Yasuo Suzuki, Akigawa; Akira Matsuda, and Akio Sato, both of Higashi-Murayama, all of Japan, assignors to Bridgestone Tire Company, Ltd., Tokyo, Japan
Filed June 19, 1974, Ser. No. 480,766
Claims priority, application Japan, June 21, 1973, 48-69144
Int. Cl.^{2} B60C *5/06, 17/00*
U.S. Cl. 152—330 RF **19 Claims**



1. In a pneumatic tired wheel including a tubeless tire having a relatively thick tread portion, a pair of side portions extending from said tread portion, a pair of bead portions extending from said side portions, a carcass embedded in said side portions across said bead portions, said bead portions being stiffened with at least one additional reinforcing layer disposed therein, an elastic bead stopper having an independent and air-tight chamber inscribed within said bead portions, a rim having a pair of flanges; the improvements comprising a pair of elastic reinforcements having a Shore A hardness of at least 47 and extending along said side portions and formed integral therewith, the thickness of said elastic reinforcements gradually decreasing toward their associated bead portions and toward the center of said tread portion, with the maximum thickness adjacent said side portions being

from 3 to 15 percent of the maximum width of the tire when it is inflated, and each end portion of said elastic reinforcements overlapping said additional reinforcing layer in said bead portion and the thickened tread portion, thereby to supplement the thickness of said side portions and to enhance the inherent rigidity thereof so as to support a load even under a punctured condition, said bead stopper having a crown portion which is substantially flat in cross section and comprises at least one inextensible cord layer forming an angle of cords of not more than 20° with respect to the circumferential direction, a pair of relatively thin and extensible side portions associated with the end portions of said crown portion comprised substantially of rubber material only and a pair of space members comprising a given volume of rubber having a Shore A hardness of at least 55 and arranged between each end of said cord layer in end portions of said crown portion and its associated side portion of the bead stopper, the outer diameter of said crown portion being larger than the outer diameter of said rim flanges but small enough to keep said crown portion within a defined space between said bead portions of the tire, thereby each of said bead portions is locked tightly in place between each side portion of said bead stopper and each of said rim flanges.

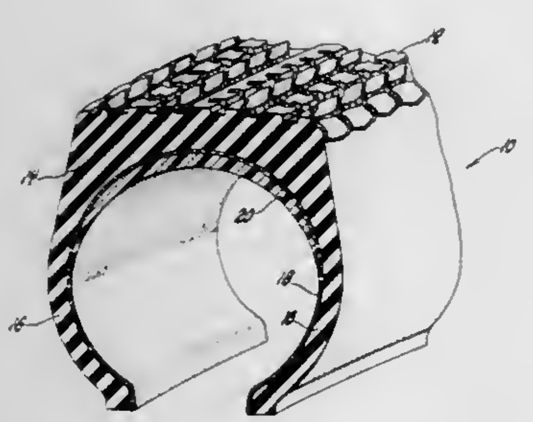
3,935,893
SELF-SEALING VEHICLE TIRE AND SEALANT COMPOSITION

Peter L. Stang, Bellevue, and Joel V. Van Ornum, Kirkland, both of Wash., assignors to General Motors Corporation, Detroit, Mich.

Filed July 15, 1974, Ser. No. 488,563

Int. Cl.² B60C *5/14, 17/00*

U.S. Cl. 152—347 **4 Claims**



1. A sealant composition for use in a vehicle tire to seal punctures therein up to about one-quarter inch in diameter formed in the operation of said tire, said composition consisting essentially of, by weight,

10 to 15 parts of a butyl rubber having an average molecular weight in the range of about 100,000 to 300,000,

6 to 10 parts of a butyl rubber having an average molecular weight in the range of about 10,000 to 30,000,

60 to 65 parts of a liquid polybutylene having an average molecular weight of about 500 to 5,000,

5 parts of a partially hydrogenated thermoplastic elastomeric block copolymer having the general molecular configuration $A\text{-}(B\text{-}A)_{1-5}$ wherein, prior to hydrogenation, each A is a monovinyl arene polymer block and each B is a conjugated diene polymer block, and only said diene block(s) are hydrogenated,

5 to 17 parts carbon black,

and small but suitable amounts of crosslinking agents suitable for curing butyl rubbers.

3,935,894
TIRE HAVING ENDS OF CARCASS CORDS EXTENDING CIRCUMFERENTIALLY IN BEAD AREA

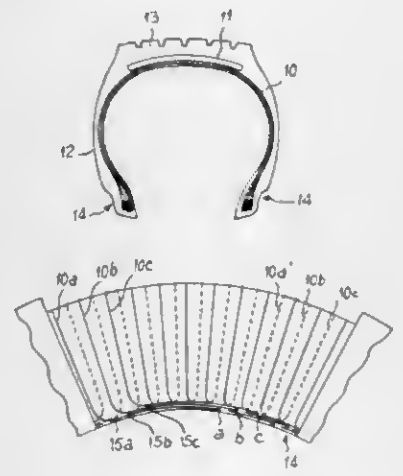
Jacques Pouilloux, Gratien, France, assignor to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes, France

Filed Mar. 27, 1975, Ser. No. 562,397

Claims priority, application France, Mar. 29, 1974, 74.11084

Int. Cl.² B60C *9/08, 15/04*

U.S. Cl. 152—356 **10 Claims**



1. A tire of the pneumatic type having a tread, sidewalls, a radial carcass within said sidewalls and extending under said tread, and beads at the rim engaging edges of said sidewalls, said carcass being formed of individual meridian arcs of reinforcing cords or cables with the ends of the individual cords or cables being bent in an area of each bead to provide cable portions that extend circumferentially in each bead, the circumferentially extending portions of one cord or cable being juxtaposed with respect to circumferentially extending portions of the adjoining cords or cables to form longitudinal bundles of cords or cables which make up a reinforcing structure of the beads.

3,935,895
CONTINUOUS STEEL CASTING METHOD

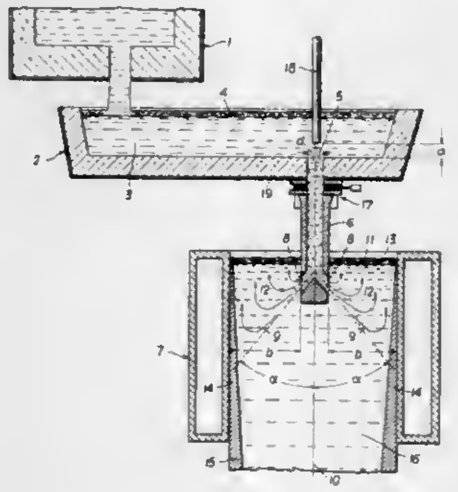
Thorwald Fastner; Alois Niedermayr; Ernst Bachner, and Herbert Bumberger, all of Linz, Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria

Filed June 3, 1974, Ser. No. 476,066

Claims priority, application Austria, June 14, 1973, 5222/73

Int. Cl.² B22D *27/18, 11/10*

U.S. Cl. 164—56 **12 Claims**



1. In a continuous steel casting method for a casting capacity of more than 1.5 metric tons of steel per minute, wherein at least one stream of molten steel is formed and cast into a vertically arranged, substantially rectangular mold, having a larger transverse axis and a smaller transverse axis, through a casting tube having a certain clear cross section and extending to below the level of molten steel in the mold, said casting tube having lateral, downwardly directed outlet openings whose axes lie in a vertical plane running through the larger transverse axis of the mold, the outlet openings having a certain perpendicular distance from a narrow side of the mold, and wherein said at least one stream of molten steel contains inert gas, the improvement comprising:

casting the at least one stream of molten steel, having a certain cross section, through a casting tube, in which the axes of the lateral outlet openings run at an angle dependent upon the perpendicular distance of said axes from the narrow side of the mold, this angle amounting maximally to 20° when the perpendicular distance is 40 cm and the maximum angle increasing linearly with respect to an increase in distance up to 50° at a distance of 120 cm; and

supplying the said inert gas to the said at least one stream of molten steel in an amount in the range of 1 to 15 Ncm^3/kg steel over the entire cross section of the stream of molten steel at the place of origin of said at least one stream of molten steel above the mold.

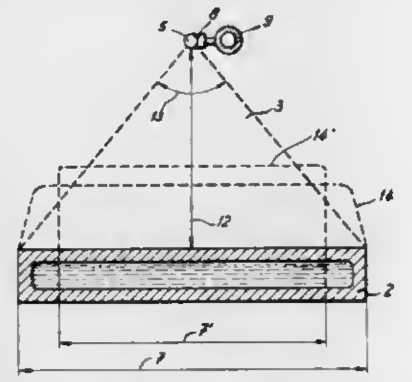
3,935,896
METHOD FOR COOLING A CONTINUOUSLY CAST STRAND

Richard J. Tegtmeier, Newtown, Pa.; Jimmy L. Helms, Ridgewood, and Karl L. Backhaus, West New York, both of N.J., assignors to Concast Incorporated, New York, N.Y.

Division of Ser. No. 324,541, Jan. 16, 1973, Pat. No. 3,877,510. This application Feb. 28, 1974, Ser. No. 447,006

Int. Cl.² B29D *11/124*

U.S. Cl. 164—89 **22 Claims**



9. A method of cooling a continuously cast strand in a secondary cooling zone of a continuous casting plant, comprising the steps of arranging a spray nozzle at the region of at least two consecutive spaced guiding means for guiding the cast strand along a predetermined path of travel, moving a cast strand along said predetermined path of travel defined by said spaced guiding means, feeding liquid coolant into the spray nozzle, forming from said liquid coolant a spray pattern which emanates from the spray nozzle and impinges the cast strand along an impingement area extending substantially transversely across the surface of the cast strand, and producing a distribution of liquid coolant over the impingement area of the strand which is substantially uniform at least over the major portion of the transverse width of the strand, in order to substantially uniformly cool the strand across its transverse width dimension, said major portion of the transverse width dimension amounting to at least about 60 percent of said transverse width dimension of the strand.

3,935,897
METHOD OF SOLAR HEATING AND COOLING

Donald W. Pulver, One Oliver Plaza, Pittsburgh, Pa. 15222

Filed Mar. 21, 1974, Ser. No. 453,239

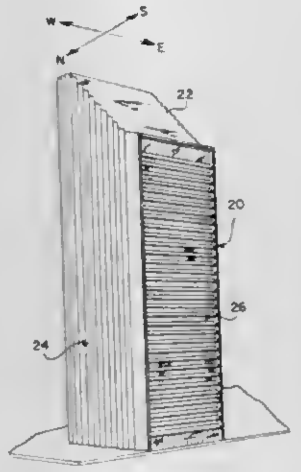
Int. Cl.² F28F *21/00*

U.S. Cl. 165—1 **15 Claims**

1. Method of solar heating and cooling in a building of the type having approximate north, east, west and south facades including insulated opaque areas and vision areas comprising:

A. orienting said vision areas, as follows:
  i. north facade-north
  ii. east facade-northeasterly
  iii. west facade-northwesterly
  iv. south facade-southerly;

B. shading said south facade vision area during summer months,



C. orienting heat collectors on said opaque areas as follows: east-southeasterly, west-southwesterly, south-southerly;

D. circulating heating and cooling fluid, so as to absorb heat of solar radiation from said collectors for purposes of winter heating and summer cooling, while

E. sequentially blocking circulating of said fluid in areas not exposed to the sun.

3,935,898
DEVICE FOR AIR-CONDITIONING A NUMBER OF ROOMS THE HEAT REQUIREMENTS OF WHICH ARE DIFFERENT AND VARY PREFERABLY WITH RESPECT TO TIME

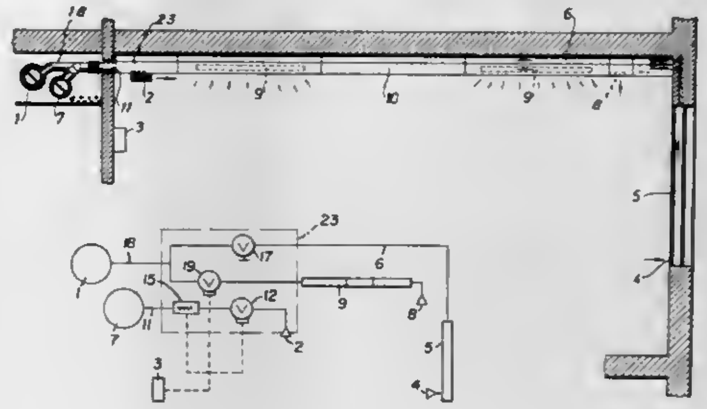
Folke Westergren, Skarholmen, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed Sept. 25, 1974, Ser. No. 509,126

Claims priority, application Sweden, Oct. 2, 1973, 7313422

Int. Cl.² F24F *3/00*

U.S. Cl. 165—22 **7 Claims**

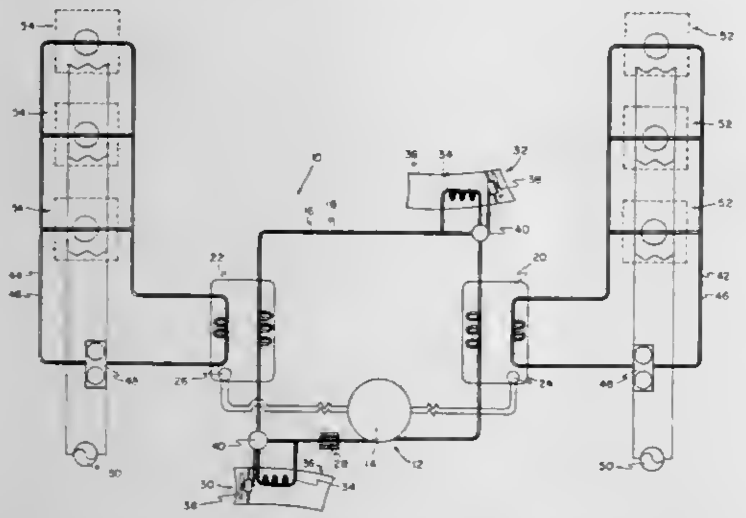


2. An individual room control device in a system for air-conditioning a number of rooms comprising means to introduce a flow of central air into said individual room at a temperature below the desired room temperature, a light fixture to supply additional heat to said room, means to discharge a first constant flow of discharge air from said room, means to discharge a second flow of discharge air from said room into heat exchange relation with said fixture to reduce the heat supplied to said room by said fixture, a thermostat fan sensing the temperature of said room, a discharge control device controlled in response to said thermostat for varying said

second flow between a minimum and a maximum, and an inlet control device controlled in response to thermostat to introduce central air in an amount corresponding to the sum of said first and second discharge flows.

3,935,899
INTEGRATED THERMAL ENERGY CONTROL SYSTEM USING A HEAT PUMP

Steven E. Jolly, P.O. Box 834, Ely, Nev. 89301
Filed June 28, 1974, Ser. No. 484,090
Int. Cl.² F25B *29/00*
U.S. Cl. 165—29 **12 Claims**

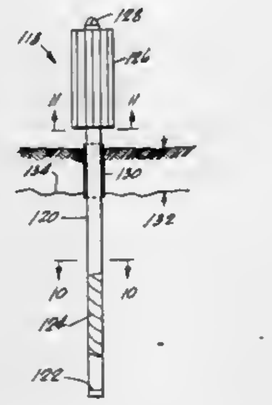


1. An integrated thermal energy control system for thermally heating and cooling a plurality of independent cool and hot working units operatively connected within the system, said integrated thermal energy control system comprising:

a. a heat pump means for cooling and heating a working fluid;
b. said heat pump means having associated therewith a primary fluid circuit means having said working fluid contained therein;
c. a first relatively cool heat exchange means operatively associated with said primary circuit means;
d. a first temperature control means operatively interconnected between said heat pump means and first heat exchanger means for maintaining a relatively cool temperature within said first heat exchanger means;
e. a second relatively hot heat exchanger means operatively associated with said primary circuit means;
f. second temperature control means operatively interconnected between said heat pump means and said second heat exchanger means for maintaining a relatively hot temperature within said first heat exchanger means;
g. a first secondary cool fluid circuit means operatively associated with said first heat exchanger means independently of said primary fluid circuit for effectively transferring heat from said secondary cool circuit means to said first heat exchanger means such that the fluid within said secondary cool circuit means is cooled during the heat transfer process;
h. a plurality of independent cool working unit means operatively connected to said first secondary cool fuid circuit means for transferring heat thereto and being cooled in the process;
i. a second secondary hot fluid circuit means operatively associated with second heat exchanger means independently of said primary fluid circuit for receiving heat therefrom and consequently tending to cool said second heat exchanger means in the process;
j. a plurality of independent hot working unit means, completely independent of said cool working unit means, operatively connected to said secondary hot fluid circuit means for receiving heat therefrom;
k. control means associated with both said first and second secondary circuit means for enabling both said first and second secondary circuit means to function simultaneously and to simultaneously cffectuate heat transfer between the two secondary circuits and respective independent cool and hot working unit means of the system, and control means including first secondary pump means and first control means operatively interconnected between at least one of said independent cool working unit means and said first secondary pump means for maintaining the working temperature of each respective cool working unit means at a desired level, said control means further including second secondary pump means and second control means operatively interconnected between at least one of said hot working unit means and said second secondary pump means for maintaining the working temperature of each respective hot working unit means at a desired level.

3,935,900
PERMAFROST STRUCTURAL SUPPORT WITH INTEGRAL HEAT PIPE MEANS

Elmer Dale Waters, Richland, Wash., assignor to McDonnell Douglas Corporation, Long Beach, Calif.
Division of Ser. No. 174,687, Aug. 25, 1971, Pat. No. 3,788,389. This application Dec. 21, 1973, Ser. No. 427,255
Int. Cl.² F28D *15/00*
U.S. Cl. 165—45 **2 Claims**



1. For use in ground areas subject to an annual freeze-thaw cycle, a lightweight and stabilized structural support installation in a permafrost environment, comprising:

a unitary support member for installation in said permafrost environment which includes an annually active freeze-thaw upper ground region thickness of generally frozen soil, said support member including integral heat pipe means comprising

a cylindrical tubular container having a lower and an upper portion and constructed only heavy and sturdy enough to serve as said support member for supporting associated structure, said lower container portion being installed directly in said permafrost environment and having a nominal diameter sufficiently large to provide adequate radial freezing of adjacent soil to produce a full jacket of frozen soil around said lower container portion and firm anchoring thereof in said permafrost environment to support said associated structure, a passive radiator form of heat exchanger coupled to said upper container portion, a charge of working fluid in said container, said fluid normally existing as a small quantity of liquid in said container with saturated vapor filling the remainder thereof, and flow means of a helical configuration provided over the length of the interior longitudinal wall of said lower container portion for generally directing and spreading condensate return flow thereover;

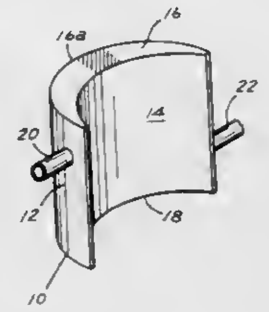
a layer of thermal insulation of sufficient thickness applied about the exterior longitudinal wall of said lower container portion over the length in said annually active freeze-thaw upper ground region thickness of generally frozen soil to minimize any heat transfer between said container and said annually active freeze-thaw upper ground region, the entire cylindrical outer surface of said lower container portion below said annually active freeze-thaw upper ground region functioning as a direct heat transfer surface between said permafrost environment and said container; and

means for attaching the upper end of said container to said associated structure to be supported,

whereby heat picked up from said permafrost environment is transferred into said lower container portion and transported by said working fluid in vaporized form to said upper container portion coupled to said heat exchanger for transfer to a heat output environment accompanied with condensation of said vaporized working fluid for return to said lower container portion to repeat the cycle such that said soil adjacent thereto is stabilized in its frozen condition normally throughout the year by said integral heat pipe means of said support member.

3,935,901
DIESEL FUEL LINE HEATER

Eldon E. Virgil, 2150 S. Galapago St., Denver, Colo. 80223
Filed June 3, 1974, Ser. No. 475,819
Int. Cl.² F02N *31/08*
U.S. Cl. 165—52 **3 Claims**



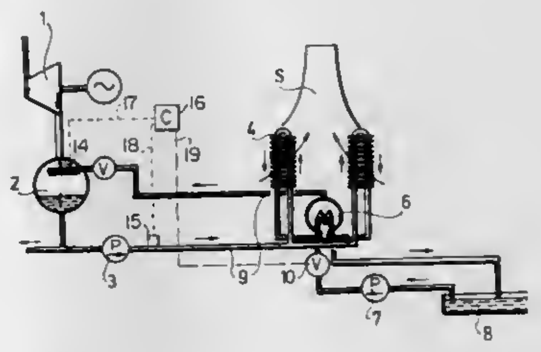
1. A heater to be mounted against a cylindrical side of a filter of a diesel fuel line comprising:

a. a metal arcuate backing member porportioned to extend around less than one-half of the circumference of the filter for a diesel fuel line and including quarter moon-shaped end closure members secured to the top and bottom ends of said arcuate backing member and forming therewith an inner, arcuate open side which is proportioned to lie against the cylindrical side of the filter.
b. a high heat transfer, arcuate metal sheet covering said inner open side, sealed to said end closure members and to the edges of said backing member forming a plenum chamber therewith, and having its inner surfacc approximately the same arcuate configuration as the filter so that said chamber fits closely to about one-half of the filter circumference and said backing member having a lesser radius of curvature to provide said plenum chamber with a thicker portion in the middle than at the ends;
c. an exhaust inlet means mounted in said backing member adjacent one edge and one end thereof, and an exhaust outlet mounted in said backing member adjacent the opposed edge and the opposite end thereof; and
d. means for securing said chamber to a filter member in a diesel fuel line.

3,935,902
CONDENSATION APPARATUS FOR STEAM TURBINE POWER PLANTS

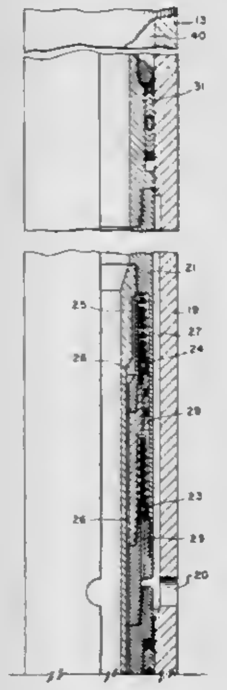
Lászlo Heller; Lászlo Forgó; János Bódás, all of Budapest, Hungary; G. Sz. Agejev, and I. A. Alekszejev, both of Moscow, U.S.S.R., assignors to Tyeploelektroprojekt, Moscow, U.S.S.R. and Transelektro Magyar Villamossagi Kulkereskedelmi Vallalat, Budapest, Hungary
Filed Oct. 20, 1972, Ser. No. 299,501
Claims priority, application U.S.S.R., Oct. 25, 1971, 1710
Int. Cl. F28b *3/04*
U.S. Cl. 165—110 **8 Claims**

1. A condensation apparatus for steam turbine power plants comprising, in combination, a mixing condenser; a cooling system for cooling condensate withdrawn from said mixing condenser; first conduit means connecting said mixing condenser and said cooling system for flow of condensate from said condenser to said cooling system; second conduit means connecting said cooling system to said mixing condenser for flow of cooled condensate from said system to said condenser; first circulating pump means in one of said first and second conduits; said cooling system including an air-operated cooler incorporating a heat exchanger, an air supply means having an inlet passage, a liquid-operated cooler incorporating a heat exchanger, third conduit means connected for transferring condensate from said first conduit means through said air-operated cooler and said liquid-operated cooler to said second conduit means, and second circulating pump means for circulating coolant liquid from an outside source through said liquid-operated cooler; sensors for determining the condensate temperature and the pressure in said mixing condenser; an adjustable valve positioned for adjusting the flow of coolant liquid to said liquid-operated cooler; and control means for receiving information from said sensors and adjusting said valve for optimum flow of coolant liquid in accordance with the information received.



3,935,903
WELL TUBING PROTECTIVE FLUID INJECTION SYSTEM

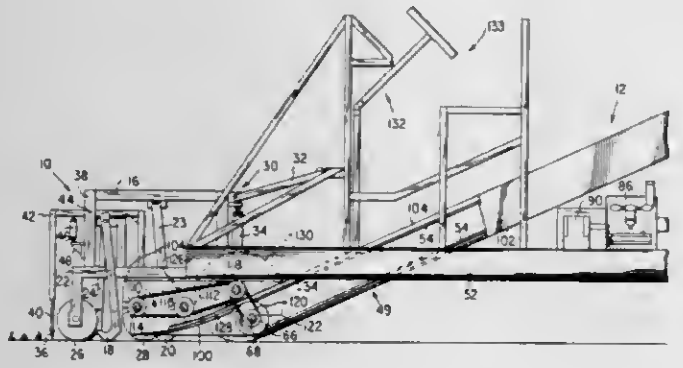
Henry P. Arendt, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Apr. 2, 1975, Ser. No. 564,276
Int. Cl.² E21B *33/12*
U.S. Cl. 166—184 **9 Claims**



1. A well tubing protective fluid injection system adapted for use in a well that is equipped with casing, tubing, and a

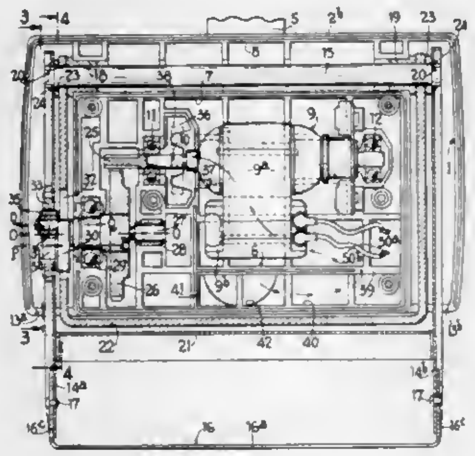
packer assembly—a casing annulus being formed between the casing and the tubing; said system including: a nipple assembly intermediate said tubing and said packer assembly; said nipple assembly including an opening between the casing annulus and the interior of said nipple assembly; a valve assembly inside said nipple assembly forming an annular opening between the exterior of said valve assembly and the interior of said nipple assembly; said valve assembly comprising check valve means, open at one end to the interior of said valve assembly, and at the other end, to said annular opening; sleeve means inside said valve assembly, and spaced from said valve assembly to form a first passage therebetween; said first passage being connected to said one end of said check valve means, the interior of said sleeve means connecting in open fluid communication with the tubing bore; and an injection nose assembly supported within said packer assembly and dimensioned to form a second passage, a passage between the injection nose assembly and said packer assembly, connected in fluid communication with said first passage; and said injection nose assembly including bore means therein extending from the injection nose assembly bottom end to the interior of said sleeve means.

3,935,904
METHOD AND APPARATUS FOR AUTOMATICALLY HARVESTING AND STACKING SOD
Martin Beck, P.O. Box 752, Auburn, Ala. 36830
Filed Apr. 19, 1974, Ser. No. 462,468
Int. Cl.² A01B *45/04;* B65G *57/00*
U.S. Cl. 172—20 16 Claims



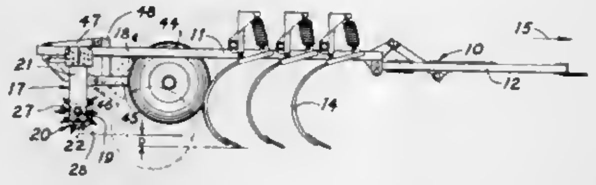
1. A stacking apparatus for automatically and continuously harvesting and stacking blocks of sod, comprising:
- cutter means for undercutting a continuous strip of sod for cutting said strip into blocks of sod;
- conveyor means for sequentially picking up and transporting blocks of sod;
- support means for receiving said blocks of sod from said conveyor, said support means including a normally closed, hinged door means adapted to pivot downwardly to an open position;
- positioner means adjacent said support means for automatically positioning blocks of sod received from said conveyor on said hinged door means;
- means for holding said door means in said closed position;
- tripper means responsive to the presence of a block of sod on said door means for releasing said door, allowing said door means to open to drop said block of sod;
- sod receiving means located beneath said support means, said receiving means including a platform vertically movable with respect to said door means to receive the block of sod released by the opening of said door means; and
- reset means for returning said door means to its normally closed position after the block of sod has been dropped on said platform to prepare said door means to receive the next block of sod in sequence from said conveyor, whereby said blocks are sequentially dropped on said platform to form a stack.

3,935,905
EARTH WORKING GARDENING TOOL
Francois Chery, Colombes, France, assignor to Aciers et Outillage Peugeot, Audincourt, France
Filed Oct. 4, 1974, Ser. No. 512,145
Claims priority, application France, Oct. 5, 1973, 73.35626
Int. Cl.² A01B *35/00, 35/32*
U.S. Cl. 172—40 11 Claims



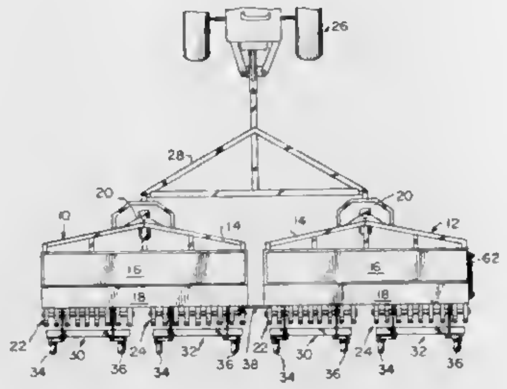
1. A gardening tool comprising a housing, a substantially rectangular frame, a substantially flat blade defining two major parallel surfaces and said blade being mounted on the frame and constituting a first side of the frame for working the ground while said flat surfaces of said blade are substantially parallel with the ground surface, a shaft defining an axis and forming a second side of said frame opposite to the said first side thereof, bearing means provided in said housing for rotatably receiving said shaft thereby allowing pivotable movement of said frame about said axis, drive means disposed within the housing, transmission means also disposed within the housing and drivingly connecting the drive means to the frame to impart to the frame a continuous pivotal vibratory movement, and handling means connected to the housing for handling the tool.

3,935,906
ADJUSTABLE HEIGHT SOIL CONDITIONER WITH FRAME EXTENDING REARWARDLY FROM CULTIVATING IMPLEMENT
Archie E. Neal, and Paul Moore, both of Garfield, Wash., assignors to J. E. Love Company, Garfield, Wash.
Filed Sept. 20, 1974, Ser. No. 507,749
Int. Cl.² A01B *49/02, 63/22, 63/26, 65/06*
U.S. Cl. 172—177 3 Claims



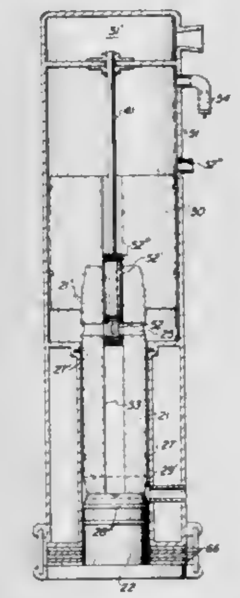
1. In combination with a tractor-driven cultivating implement, a soil conditioner for following the implement along a selected path of travel to condition the soil by breaking clods and prepare a seed bed within the soil behind the implement, said soil conditioner comprising:
- a conditioner support frame extending rearwardly from said cultivating implement;
- a transverse support bar extending transversly of said rearwardly extending support frame and supported thereby rearwardly of said cultivating implement;
- an upright adjustable hanger member fixed to the transverse support bar and adjustably connected to the conditioner support frame for providing adjustable height support of said support bar relative to said support frame;
- end hangers depending from the support bar;
- a reel rotatably mounted on the end hangers and spaced from said support bar for free rotation about an axis transverse to said path;
- adjusting means providing the adjustable connection between the upright adjustable hanger member and conditioner support frame comprising: a plurality of vertically spaced apertures formed through the hanger member with corresponding apertures formed through the conditioner support frame;
- mounting nut and bolt assemblies extending through appropriate ones of said spaced apertures in the hanger member and aligned ones of said corresponding apertures in the support frame; and
- upright adjusting bolt means operatively engaging the conditioner support frame and abutting the transverse support bar for raising and lowering the frame relative to the suport bar to bring selected ones of said spaced apertures of the hanger member into alignment with complementary one of said corresponding apertures in the conditioner support frame;
- a first set of blade members mounted on said reel, having elongated axial soil-engaging edges parallel to said axis and spaced therefrom by a first radius;
- a second set of blade members mounted on said reel having elongated axial soil-engaging edges parallel to said axis and spaced therefrom by a second radius that is less than the first radius;
- wherein the blade members of the first and second sets are arranged equiangularly about the axis in alternating sequence with each blade member of the first set being centered angularly between a pair of adjacent ones of said blade members of the second set; and
- planar side surfaces on each blade of both sets extending radially inwardly from said edge toward said axis.

3,935,907
COUPLING ASSEMBLY FOR MULTIPLE IMPLEMENTS
John C. Riet, Burlington, Canada, assignor to International Harvester Company, Chicago, Ill.
Filed June 29, 1972, Ser. No. 267,298
Int. Cl.² A01B *49/00*
U.S. Cl. 172—314 6 Claims



3. A coupling assembly for connecting adjacent implements in end-to-end relation for towing in an endwise direction for transport and a direction lateral to the endwise direction for operation, said coupling assembly comprising:
- an elongated bar coupled at one end to a first implement and extending in an endwise direction across the space between the first implement and a second implement, said bar including an elongated slot defined therethrough in an end thereof disposed adjacent to said second implement;
- a bolt secured to said second implement and projecting in the lateral direction through said slot thereby permitting endwise movement between said implements during towing in the lateral direction;
- a latch member pivotally mounted on said bolt, said latch member having a laterally extending lip portion on an end thereof, said latch member being movable to a position wherein said lip portion engages said end of said bar adjacent to said second implement to lock said bar against movement relative to said second implement whereby said implements are retained in fixed spaced relation for endwise towing.

3,935,908
PILE HAMMERS
Charles R. Pepe, Old Quarry Road, Alpine, N.J. 07620
Continuation-in-part of Ser. No. 251,785, May 9, 1972, Pat. No. 3,838,741. This application Aug. 7, 1974, Ser. No. 495,381
Int. Cl.² E02D *7/10*
U.S. Cl. 173—127 6 Claims



1. A power hammer comprising:
- a normally upright cylinder having a top, an upper portion and a lower portion;
- an anvil at the lower end of the cylinder, the anvil having an upper face;
- a ram in said cylinder operating in cooperative relation with the anvil, said ram being movable longitudinally between a lower position, wherein the ram is against the anvil, and an upper position, wherein the ram is away from the anvil and adjacent the upper end of the cylinder;
- the ram having an upper end and a lower end, an upper lateral surface adjacent the upper end and a lower lateral surface located intermediate the upper end and a lower lateral surface located intermediate the upper end and lower end of the ram;
- a longitudinal passage in the ram passing through the upper end thereof and a lateral opening connecting the passage with the exterior of the ram below the lower lateral surface thereof;
- a tube carrying a piston valve element positioned within the passage to register with the opening in the down position of the ram and enable communication between the interior of the tube and the lower portion of the cylinder at the lower lateral surface of the ram in the down position; and
- sealing means on said tube for sealing said opening from said passage until the ram is adjacent the upper position thereof, wherein the opening communicates with the upper portion of the cylinder at the upper surface of the ram, through said passage while, at the same time, connecting the passage with the exterior of the ram below the lower lateral surface thereof;
- said upper surface of the ram having a larger area than the lower surface of the ram.

3,935,909
ELECTRIC HAND TOOL

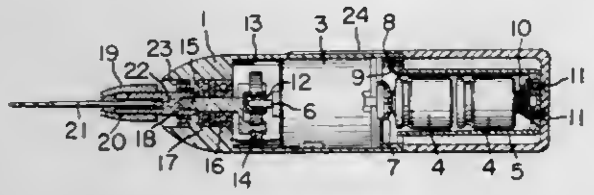
Kenichi Mabuchi, Tokyo, and Yoshihisa Tsuchimochi, Ichikawa, both of Japan, assignors to Mabuchi Motor Co. Ltd., Tokyo, Japan

Filed Aug. 20, 1974, Ser. No. 498,981

Claims priority, application Japan, Aug. 28, 1973, 48-100918

Int. Cl.² H02K *7/14*

U.S. Cl. 173—163 **2 Claims**



1. An electric hand tool comprising a body case, a cell case coupled to said body case for relative rotation with respect thereto, a motor contained within said body case and including an output shaft, nickel-cadmium battery means contained within said cell case and adapted to energize said motor, contact means electrically coupled to said battery means, said contact means being movable between a circuit open position and a circuit closed position upon rotation of said cell case, a planetary gearing system having an input end coupled to the output shaft of said motor and an output end journalled in said body case, a tool holding chuck drivingly coupled to the output end of said planetary gearing system and means for selectively preventing rotation of the output end of said planetary gearing system when the tool holding chuck is to be opened for the removal of the tool.

3,935,910
METHOD AND APPARATUS FOR MOULDING PROTECTIVE TUBING SIMULTANEOUSLY WITH BORE HOLE DRILLING

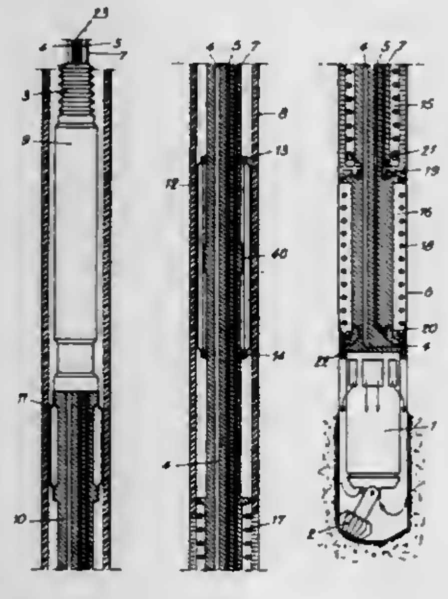
Claude Francois Gaudy, Bry-sur-Marne; Adrien Giraud, Neuilly; Claude J. Tassin, Courbevoie, and Christian H. Pech, Chatou, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed June 25, 1974, Ser. No. 482,703

Claims priority, application France, June 25, 1973, 73.23084

Int. Cl.² E21B *7/00*

U.S. Cl. 175—17 **20 Claims**



1. A machine for exploratory drilling comprising a drilling tool; a motor for rotating the tool; a supporting body, an inflatable sleeve former on said body for forming a sleeve, said sleeve former having heating elements and an injection zone at its lower end; an inflatable tubing former on said body disposed above said sleeve former, for forming a tubing, said tubing former having heating elements and an injection zone at its lower end; and feed circuits for feeding sleeve moulding material to the injection zone of the sleeve former and for feeding tubing moulding material to the injection zone of the tubing former, wherein said motor is mounted below said body.

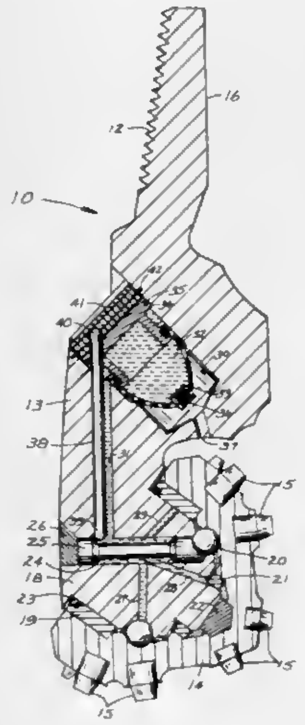
3,935,911
EARTH BORING BIT WITH MEANS FOR CONDUCTING HEAT FROM THE BIT'S BEARINGS

Robert William McQueen, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 28, 1974, Ser. No. 484,049

Int. Cl.² E21B *7/00*

U.S. Cl. 175—17 **6 Claims**



1. An earth boring bit for drilling under conditions that include heat being encountered in the bit during the drilling operation, comprising:

a bit body;

a cutter rotatably mounted on said bit body;

bearing means between said cutter and said bit body; and

heat pipe means extending from proximate said bearing means to a location on said bit body spaced from said bearing means for conducting heat from said bearing means, said heat pipe means comprising a gas tight container, a capillary wick within said container and a vaporizable fluid within said container.

3,935,912
ANCHORING DEVICE AND METHOD FOR SETTLING THE DEVICE IN THE GROUND

Mituo Shibata, No. 15-3, Oshima, 2-chome, Kawasaki, Kawasaki, Kanagawa, Japan

Continuation of Ser. No. 350,841, April 13, 1973, abandoned. This application Dec. 30, 1974, Ser. No. 537,159

Int. Cl.² E02D *5/76*

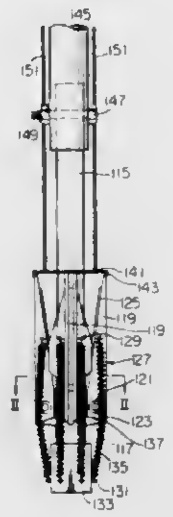
U.S. Cl. 175—264 **10 Claims**

1. An anchoring device to be settled in a shaft in the ground for use in supporting a standing object on the ground, comprising:

a hollow vertical tubular rod open at its opposite ends along a central passageway therethrough;

a plurality of cutting arms, each comprising a support arm and a rigid fluke blade mounted thereon, the lowermost end of each support arm being pivotally connected with a first lower part of the tubular rod so that said support arm is turnable about the connected end in a vertical plane including an axis of said tubular rod;

spring means having an end stationarily secured respective said tubular rod and operable to urge said cutting arms to outwardly turn about said connected ends of said support arms from a folded state in which said cutting arms are brought together about said tubular rod with the outer ends of said fluke blades above the connected ends of said support arms;



means for stationarily securing one end of said urging means on an external part of said tubular rod;

holding means for releasably restraining said cutting arms in the folded state, said holding means having a line means to release the restraint of said cutting arms above the ground surface; and

means for limiting the turn of said cutting arms to a selected acute angle from said folded state.

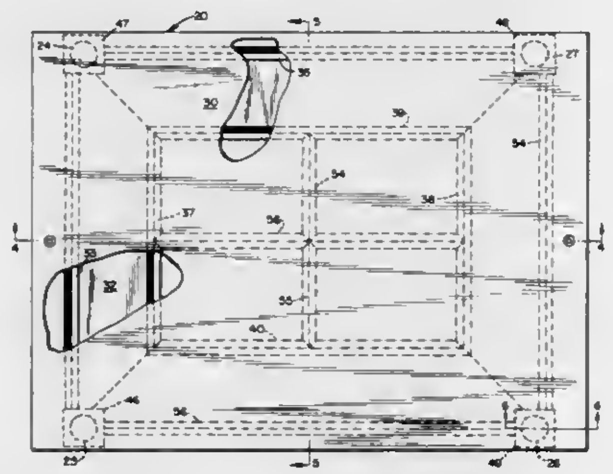
3,935,913
PLATFORM WEIGHING SCALE

Herbert A. Wagner, and Robert B. Katkov, both of Corona Del Mar, Calif., assignors to Howe Richardson Scale Company, Clifton, N.J.

Filed Oct. 18, 1974, Ser. No. 515,855

Int. Cl.² G01G *19/02, 21/22*

U.S. Cl. 177—134 **17 Claims**



1. A platform weighing scale comprising a multiplicity of load cells and a reinforced platform structure supported at spaced apart regions on said load cells, said platform structure including a load-receiving deck and deck reinforcing means fixed to the underside of said deck and cooperating with said deck to define a torsion box frame which resists deflection of said platform structure between said spaced apart regions, said torsion box frame having a perimeter which is defined by a multiplicity of leg portions, and each leg portion having two pairs of walls in which the walls of each pair are spaced apart from each other to define a quadrangular configuration in vertical cross section.

3,935,914
VEHICLE PLATFORM SCALE

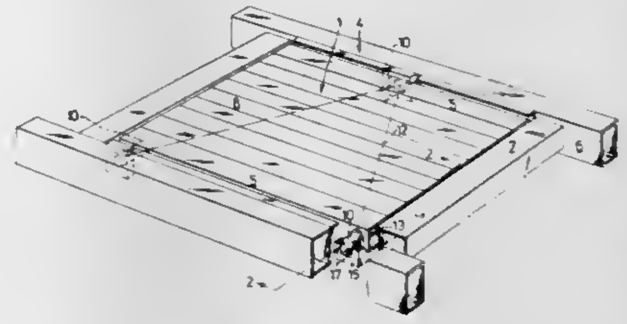
Kjell Helge Nordstrom, and Nils Göran Ahl, both of Vasteras, Sweden, assignors to Aktiebolaget Smaefa, Stockholm, Sweden

Filed Nov. 13, 1974, Ser. No. 523,352

Claims priority, application Sweden, Nov. 21, 1973, 7315757

Int. Cl.² G01G *19/02, 3/14*

U.S. Cl. 177—134 **4 Claims**



1. Vehicle scale having a weighbridge supported on a bed, characterized in that three load cells for sensing both upward and downward forces relative to the weighbridge are at their opposite ends secured between the weighbridge and the bed in such a manner that straight lines drawn from each load cell to each of the two remaining, define a triangular surface whereby the weighbridge is able, together with the load cells, to respond not only to weight but also to the overturning moments which arise when the weight resultant of a vehicle standing on the weighbridge in order to be weighed lies outside the triangular surface.

3,935,915
WEIGHING DEVICE

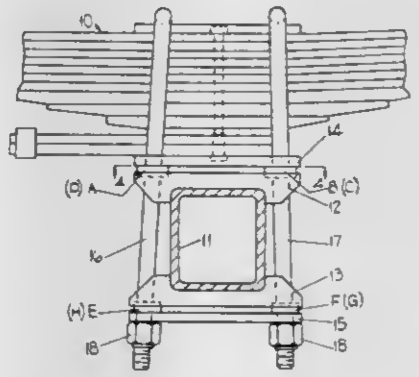
Alec Harry Seilly, North Wembley; Kenneth Clive Scott, London, both of England, assignors to Simms Group Research & Development Limited, London, England

Filed Feb. 28, 1974, Ser. No. 446,679

Claims priority, application United Kingdom, Mar. 13, 1973, 12048/73

Int. Cl.² G01G *19/12*

U.S. Cl. 177—136 **15 Claims**

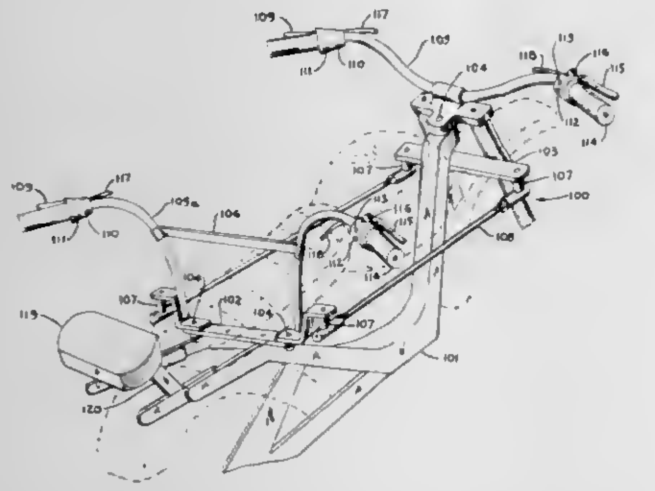


1. A wheeled vehicle of the kind including a wheel carrying axle, the load carrying portion of the vehicle being carried by supports which are clamped to the axle and there being interposed between the supports and the axle, annular force sensing elements operable to provide an electrical signal indicative of the load transmitted to the axle by the supports including the clamping force clamping the support to the axle, the vehicle including in association with each support a further annular force sensing element which is positioned so as to be subjected only to the clamping force clamping the support to the axle, the first mentioned element and the further element

being electrically connected so that the resultant signal is independent of the clamping force and is dependent only upon the force transmitted to the axle by the support with the clamping force having been cancelled out electrically.

3,935,916
DUAL CONTROL SYSTEM FOR MOTORCYCLE INSTRUCTION

Thomas A. Ferraro, 6 Nassau Place, Cos Cob, Conn. 06807
Continuation-in-part of Ser. No. 382,493, July 25, 1973, abandoned. This application June 10, 1974, Ser. No. 477,926
Int. Cl. B62l *3/04*; B62k *7/00*
U.S. Cl. 180—33 R **7 Claims**

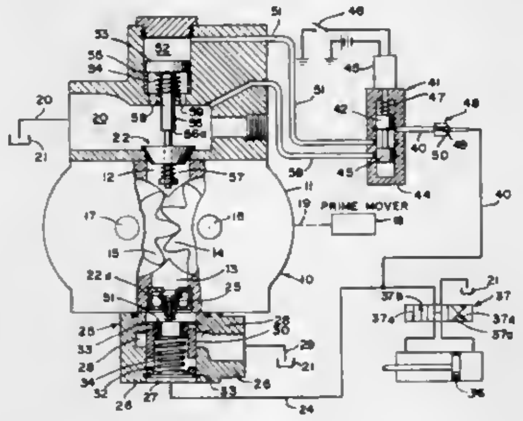


1. In a braking system and a motor control for a motorcycle having a main pedal operated brake assembly including a main brake cable or rod operatively connected to a rear wheel braking device; the invention comprising a combination auxiliary safety brake and a motor control device, said auxiliary safety brake including an auxiliary brake pedal mounted rearward of the main brake pedal and adapted to be operated by a rider sitting behind the motorcycle operator, an auxiliary brake cable having normally more slack than said main brake cable and being responsive to the movement of said auxiliary brake pedal and additionally operatively connected to said rear wheel braking device but being arranged to be inoperative when said main brake pedal is actuated and being operative when the rider presses down on the auxiliary brake pedal to pull the auxiliary brake cable thereby braking the motorcycle independently of the operation of the main brake pedal, means for adjusting the looseness of said auxiliary brake cable, and a resettable ignition switch for the motorcycle engine being mounted in the path of movement of said auxiliary brake pedal and capable of being reset only manually, said auxiliary brake pedal being so mounted and constructed to operate the switch and render said engine inoperative after the auxiliary brake pedal is pressed down a predetermined distance thereby stopping the operation of the engine.

3,935,917
HYDRAULIC PUMP CONTROL SYSTEM

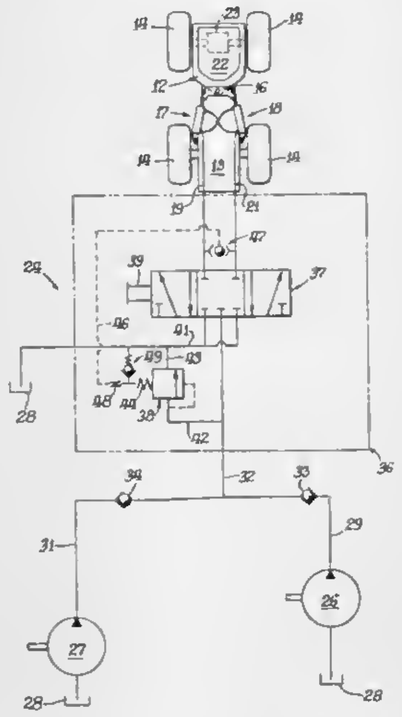
James M. Eley, and Arthur B. Joyce, both of Corinth, Miss., assignors to Tyrone Hydraulics, Inc., Corinth, Miss.
Filed Oct. 18, 1974, Ser. No. 515,990
Int. Cl.^{2} B62D *5/08*
U.S. Cl. 180—53 R **10 Claims**

1. In equipment having a variable speed motive power means for operation of a first mechanism throughout a range of speeds and a second mechanism which is fluid operated; a pump driven by said motive power means at all times when said power means is in operation, said pump having supply and discharge passages for delivering operating fluid from a fluid reservoir to said second mechanism; a control system for said pump comprising first valve means in the supply passage for said pump for interrupting the flow of operating fluid to said pump, second valve means in the discharge passage of said pump and operable to prevent the return of fluid to the pump and a control means for selectively operating said first valve means.



3,935,918
DUAL SOURCE HYDRAULIC STEERING SYSTEM

Leon E. Hicks; Wayne A. Peterson, and Lawrence F. Schexnayder, all of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 9, 1974, Ser. No. 504,055
Int. Cl.^{2} B62D *5/08*
U.S. Cl. 180—79.2 R **9 Claims**

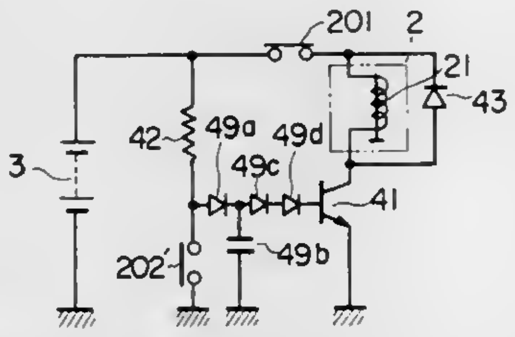


1. A steering system for a vehicle having a prime mover and wheels, one or more of the wheels being coupled with the prime mover through a suitable drive train, comprising

a hydraulic motor means for effecting vehicle steering,
a first hydraulic pump coupled for operation by the prime mover,
a second hydraulic pump effectively coupled for operation by rotation of one of the wheels,
a steering control valve having inlet means in communication with the two pumps and outlet means in communication with the steering motor means, the control valve being operable to selectively communicate both of the first and second pumps with the steering motor means, and
a fluid responsive inlet relief valve means communicating the inlet means of the control valve with a drain, the relief valve means being in communication with the outlet means of the control valve by a signal conduit, the relief valve means including means responsive to fluid pressure from the signal conduit for causing the relief valve means to selectively limit fluid communication from the inlet means to the drain.

3,935,919
AUTOMATIC SEAT BELT LOCKING SYSTEM FOR VEHICLE

Takahide Kawamura, Toyota; Muneki Yoshino, Toyokawa, and Koichi Taniguchi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan
Filed Mar. 26, 1974, Ser. No. 454,915
Claims priority, application Japan, Mar. 27, 1973, 48-35291; May 8, 1973, 48-51318
Int. Cl.^{2} B60R *21/10*
U.S. Cl. 180—82 C **7 Claims**



1. An automatic seat belt locking system for a vehicle comprising:

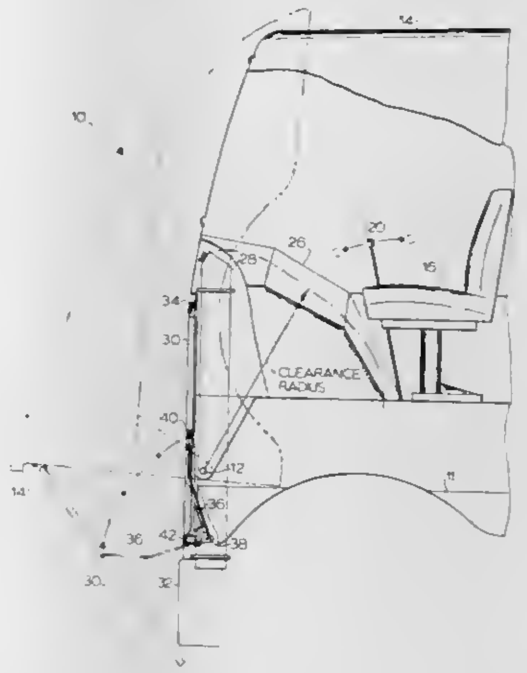
first and second detectors for detecting an acceleration or deceleration of a vehicle whereby a first detection signal is generated by said first detector when said acceleration or deceleration is greater than a first predetermined value, and a second detection signal is generated by said second detector when said acceleration or deceleration is greater than a second predetermined value which is greater than said first predetermined value;
a switching circuit connected to said first and second detectors and being turned off when at least one of said first and second detector signals is received; and
a locking mechanism connected to said switching circuit for locking and preventing the movement of a seat belt securing a vehicle occupant when said switching circuit is turned off wherein said first detector includes absorbing means wherein a transient, intermittent, disturbance acceleration or deceleration greater than said first predetermined value is absorbed and said first detector is rendered insensitive to said disturbance acceleration or deceleration in accordance with said first predetermined value to thereby prevent the generation of said first detection signal.

3,935,920
GRILLE SYSTEM FOR TILT CAB TRUCK

Douglas W. Schiel, Pleasanton, Calif., assignor to Paccar Inc., Bellevue, Wash.
Filed July 17, 1974, Ser. No. 489,177
Int. Cl.^{2} B60R *19/00*
U.S. Cl. 180—89 A **7 Claims**

1. A grille system for a tilt cab-over-engine truck of the kind in which the cab is pivotally connected to the truck chassis for forward tilting about a cab pivot axis from a cab driving dposition to a cab tilted position to provide access to the engine and radiator area by raising a cab tunnel which normally covers the top of the engine and radiator area in said cab driving position, said grille system comprising,

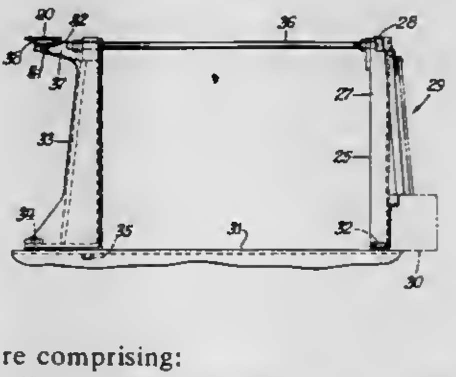
a one-piece grille connected to the cab so as to be positioned upright in front of the radiator with the lower end of the grille extending downward below the cab pivot axis in the cab driving position,
and mounting means for automatically swinging the grille forward in a controlled path away from the cab and radiator as the cab is tilted to the cab tilted position,



said mounting means including a hinge connection between the grille and the cab at the upper edge of the grille and rigid guide rod means having one end connected to the grille and an opposite end connected to the truck chassis for controlling the path of travel of the grille in said swinging movcment of the grille.

3,935,921
ENGINE ENCLOSURE HAVING A COUNTERWEIGHT MOUNTING DEVICE SECURED THEREON

Thomas P. Muller, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Division of Ser. No. 326,996, Jan. 26, 1973, Pat. No. 3,869,018. This application Sept. 12, 1974, Ser. No. 505,587
Int. Cl. B62d *33/06*
U.S. Cl. 180—89 R **3 Claims**



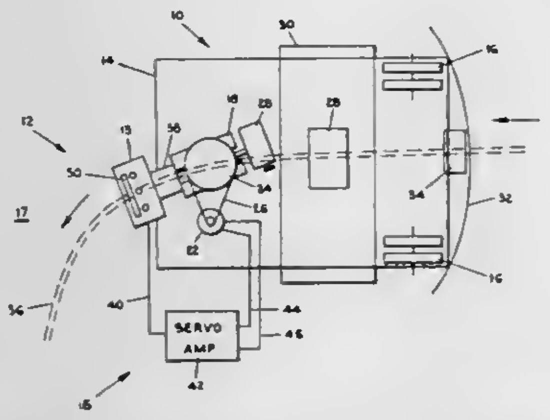
1. An enclosure comprising:

a horizontally disposed and longitudinally extending main frame,
at least one pair of upright rear posts secured at their lower ends on a rearward end of said frame,
at least one pair of upright center posts secured at their lower ends on said frame and spaced longitudinally forwardly from said rear posts intermediate forward and rearward ends thereof to extend upwardly therefrom,
force transmitting means interconnecting upper ends of each pair of said rear and center posts for transmitting loading forces imposed on said rear posts to said center posts and frame directly, and

a counterweight mounting device secured on the outside of said rear posts to form an integral part thereof for selectively mounting a counterweight thereon.

3,935,922
VEHICLE GUIDANCE MECHANISM

Jack A. Cooper, and Carl Debruine, both of Grand Rapids, Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.
Filed July 16, 1974, Ser. No. 489,043
Int. Cl.^{2} B62D *1/24*
U.S. Cl. 180—98 **24 Claims**



1. Vehicle guidance means for guiding a vehicle along a surface, said guidance means comprising a guide line which is substantially invisible under ordinary ambient lighting conditions and which contains material that emits radiation in a first frequency range in response to stimulation by radiation in a second frequency range, said guidance means further comprising:

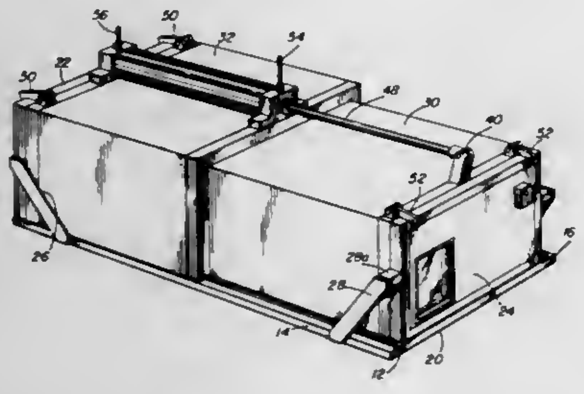
radiation means in the vehicle adapted to direct radiation in said second frequency range on the guide line so as to cause the guide line to emit said first frequency radiation;

sensor means mounted in the vehicle and adapted to sense the first frequency radiation emitted by the guide line and in response thereto to generate an error output signal representative of the variation of the vehicle position from a predetermined lateral position with respect to the guide line; and

control means in the vehicle adapted to steer the vehicle in response to the error signal generated by the sensor means so as to maintain the vehicle in said predetermined lateral position with respect to the guide line as the vehicle moves along the guide line.

3,935,923
TELESCOPIC ENCLOSURE

Richard T. Wheeler, 20 Hemlock Drive, Vernon, Conn. 06086
Filed Sept. 26, 1974, Ser. No. 509,544
Int. Cl.^{2} E04B *1/82*
U.S. Cl. 181—33 K **7 Claims**



1. An enclosure for reducing the noise pollution caused by a machine tool or the like, said enclosure comprising:

a. an outer housing of inverted U-shape configuration having a top wall and generally vertically extending side walls,

b. an inner housing also of inverted U-shaped configuration and also having a top wall and vertically extending side walls,

c. longitudinally extending inner and outer sets of tracks for slidably receiving said inner and outer housings such that said housings are movable with respect to one another between telescoped and extended positions,

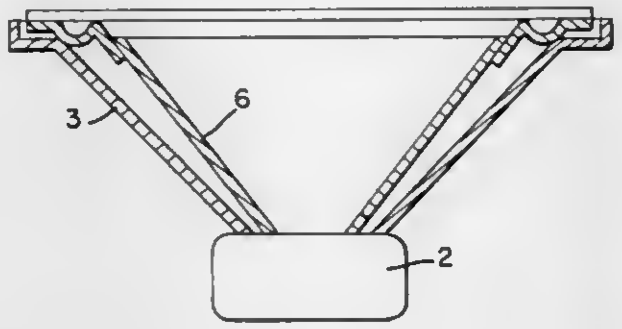
d. end walls carried by said tracks for closing opposite ends of said inner and outer housings when each is in its extended position with respect to the other, whereby an enclosure is defined for the machine tool,

e. means for moving said housings with respect to one another and comprising a first part carried by said outer housing and a second part movable with respect to the first and carried by said inner housing, and

f. latching means for releasably securing said outer housing to one of said end walls and said inner housing to the other of said end walls.

3,935,924
VIBRATORY MATERIAL OF PAPER PULP AND CARBON FIBERS

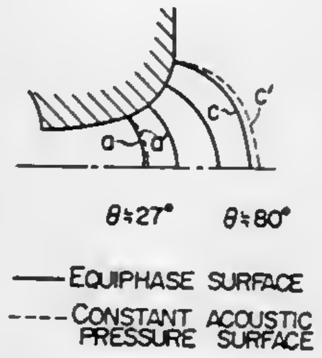
Shozo Nagao; Naoyuki Mitani; Michinobu Ikuta, and Kenji Fujisawa, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Dec. 20, 1973, Ser. No. 426,574
Int. Cl.^{2} G10K *13/00;* H04R *7/00*
U.S. Cl. 181—169 **14 Claims**



1. A vibratory plate comprising a substantially uniform mixture of paper pulp having a maximum beating degree of about 300 cc. of Canadian standard freeness and carbon fibers having a Young's modulus of at least about 8000 kg/mm^2.

3,935,925
HORN UNIT FOR A SPEAKER

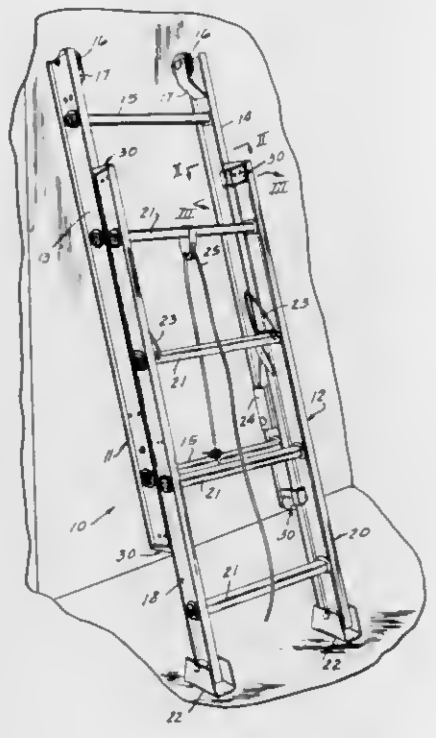
Kenji Koiwa, and Makoto Kohashi, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan
Claims priority, application Japan, Nov. 6, 1972, 47-110331
Int. Cl.^{2} G10K *11/00*
U.S. Cl. 181—192 **7 Claims**



1. A horn unit for use in a speaker comprising a horn including a mouth, a throat, and a horn wall section connecting said throat and mouth, said horn wall section defining a linear longitudinal axis of the horn, said horn wall section having a continuous configuration which is formed in such a way that at least two curves having different flaring constants are connected with each other with the differential coefficients of the respective curves caused to substantially coincide with each other at the connecting point, and the curve near the mouth being so shaped that the flaring constant of the curve is greater than that of the curve near the throat, said curve at the mouth having a large flaring angle at least greater than 60°.

3,935,926
EXTENSION LADDER

Jerry Allan Butler, Waterloo, Iowa, assignor to Chamberlain Manufacturing Corporation, Elmhurst, Ill.
Filed Oct. 9, 1974, Ser. No. 513,310
Int. Cl.^{2} E06C *1/12*
U.S. Cl. 182—208 **16 Claims**

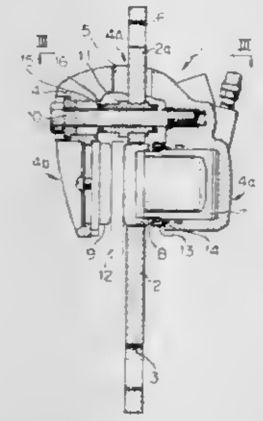


1. An extension ladder assembly including a pair of ladder sections including a base section and a fly section, each of said base and fly sections including a pair of side rails and a plurality of rungs interconnecting the side rails of each of the sections respectively, the side rails of said fly section and said base section being disposed adjacent each other, each of said side rails including a central web portion and a pair of flanges formed at opposite longitudinal edges of said web portion, a first pair of guide means fixedly attached at the upper end of the side rails of said base section and a second pair of guide means fixedly attached at the lower end of the side rails of said fly section, said guide means also including means for receiving therein the flange of the adjacent side rail, wherein the improvement comprises,

a guide means which includes a base portion for attaching to the web portion of a side rail and a pad means formed thereon so that in the extension ladder assembly said pad means will extend through a flange of a side rail to which it is attached and will slidingly engage the flange of an adjacent side rail to which said guide means is not fixedly attached.

3,935,927
DISC BRAKE FOR USE IN TWO-WHEELED VEHICLE

Tetsuo Haraikawa, Funabashi, Japan, assignor to Tokico Ltd., Kawasaki, Japan
Filed July 22, 1974, Ser. No. 490,707
Claims priority, application Japan, Aug. 7, 1973, 48-88645
Int. Cl.^{2} F16D *55/224*
U.S. Cl. 188—73.3 **1 Claim**



1. A disc brake particularly adapted for use in a two-wheeled vehicle, comprising:

a pair of friction pads;

a C-shaped caliper body having a hole therethrough in a top portion thereof, and having a cylinder in one leg portion thereof into which hydraulic pressure can be supplied, the other leg portion thereof having one of said friction pads thereon opposite said cylinder;

a piston having one end slidably inserted into said cylinder and to the other end of which is fixed the other friction pad;

a caliper axle fixed to said caliper and extending parallel with the axis of said cylinder;

a collar slidably mounted on said caliper axle; and

a supporting bracket comprising a flat plate extending through the central space of said caliper body with one end of said bracket extending through the hole in the top portion of said C-shaped caliper body and having a hole in said one end for pivotally mounting said bracket on the axis of a wheel coaxially therewith and having a hole in the other end for pivotally mounting said bracket to one end of a link member, a further hole between said two first-mentioned holes in which said collar is fixed, and a still further hole in which is slidably mounted the other friction pad;

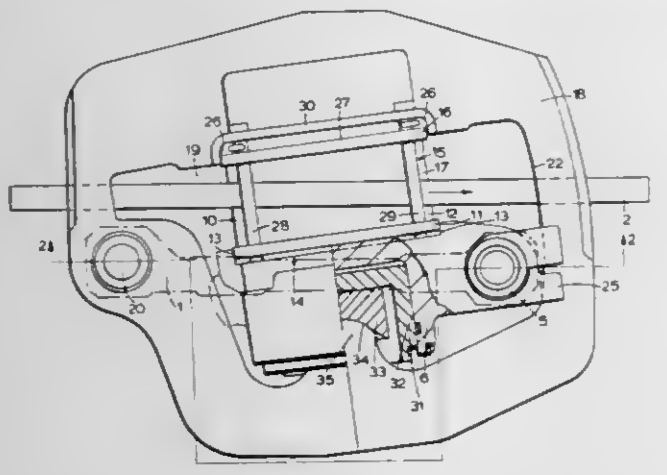
whereby said bracket can be positioned with the one end pivoted on the axle of the wheel of the motor vehicle coaxially with a brake disc and with the other end pivotally connected to the link which is in turn pivoted to the vehicle frame, so that when the wheel is adjusted relative to the frame the relative position of the friction pads and the brake disc remain unchanged.

3,935,928
PIVOTABLE CLOSED LOOP TYPE DISC BRAKE

Hugh Grenville Margetts, Leamington Spa, England, assignor to Girling Limited, Birmingham, England
Filed June 27, 1974, Ser. No. 483,811
Claims priority, application United Kingdom, June 27, 1973, 30570/73
Int. Cl.^{2} F16D *65/20*
U.S. Cl. 188—73.4 **3 Claims**

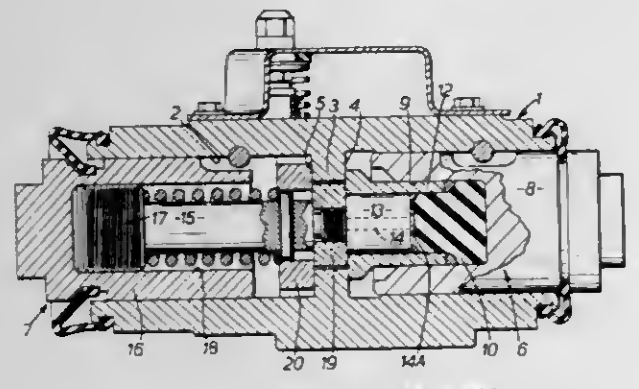
3. A brake for a vehicle comprising a rotatable braking member, opposite faces of said braking member defining opposed braking surfaces, first and second friction members for engagement with said braking surfaces, support members carrying said friction members, separate pivots lying adjacent to one of said braking surfaces and about which said support members are independently mounted for angular movement, said pivots being spaced circumferentially relative to the axis

of said braking member and being so constructed and arranged that the drag on said friction members produces a self-energising effect to increase the force with which said friction members are applied to said braking member, wherein said support member carrying said first friction member for engagement with said one braking surface comprises an arm, said support member carrying said second friction member comprises a yoke which extends over said rotatable braking member, and an hydraulic actuator acts between said arm and said yoke to apply said friction members to said rotatable braking member, said hydraulic actuator comprising an hydraulic piston working in a cylinder bore in said arm and a thrust block through which said piston acts on said yoke, said thrust block having a flat face for sliding engagement with said piston and an opposed concave face, said yoke including a part having rocking engagement with said concave face of said thrust block.



3,935,929
VEHICLE WHEEL BRAKES

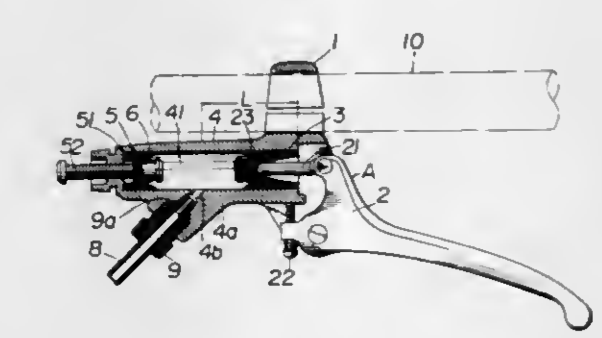
Andrew Charles Walden Wright, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed Aug. 28, 1974, Ser. No. 501,294
Claims priority, application United Kingdom, Aug. 29, 1973, 40701/73
Int. Cl.² F16D *51/48*
U.S. Cl. 188—331 **4 Claims**



1. An abutment assembly for an internal shoe drum brake, comprising a pair of tappet assemblies having opposed first and second abutment members for engagement with the ends of respective brake shoes, means defining a recess in said first abutment member, and force-transmitting means for transmitting forces between the abutment members, said force transmitting means including a sleeve member slideably received in said recess, a piston member slideably received in said sleeve member, one of said piston and sleeve members being in force transmitting relation with the second abutment member, and deformable means of elastomeric material contained within said recess in said first abutment member and engaging on one side the first abutment member, a part of the other side of the deformable means extending into said sleeve member and into engagement with said piston member therein, and the other part of said other side being in engagement with said sleeve member, the areas of engagement of the respective parts with said sleeve member and with said piston member being different from the area of the first side of the deformable means in engagement with said first abutment member, a fixed member engageable by one of said piston and sleeve members to retain said one of said piston and sleeve members stationary when a force is applied to said first abutment member to move it and the other of said piston and sleeve members relative to the one of said members and transmit to said second abutment member through said deformable means only a part of the thrust applied to said first abutment member.

3,935,930
FLUID PRESSURE BRAKING SYSTEM FOR A BICYCLE

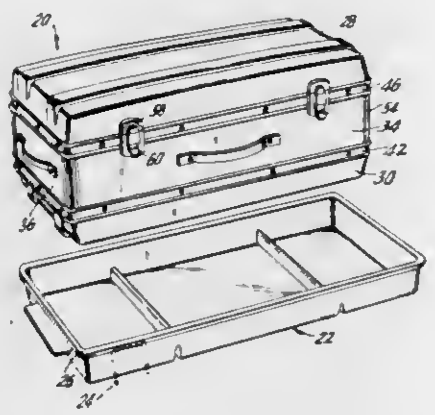
Masayoshi Kine, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan
Filed Apr. 29, 1974, Ser. No. 465,134
Claims priority, application Japan, May 4, 1973, 48-52941
Int. Cl.² B60T *11/22*
U.S. Cl. 188—344 **3 Claims**



1. A pressure fluid brake system for a bicycle or a motorcycle, comprising;
- a. an operating lever for a handlebar of said bicycle or motorcycle,
- b. a master cylinder having a piston mounted for movement with and by said operating lever from one end thereof, said master cylinder being longitudinally extended at the other end thereof to a length greater than the pressure stroke of said piston so as to form a reserve chamber in said cylinder, said reserve chamber being at the other end portion of the cylinder,
- c. an adjusting member in said reserve chamber for changing the volume of said reserve chamber, said adjusting member having a portion thereof projected outwardly of said extended portion so as to be operable from the outside of said reserve chamber,
- d. a braking mechanism mounted on a wheel of the bicycle or motorcycle, said braking mechanism having a body with a slave cylinder having a piston mounted for movement co-operable with motion of the piston of said master cylinder,
- e. a pressure fluid supply conduit connecting said master cylinder with said slave piston of the braking mechanism, said conduit opening into said master cylinder at a position intermediate the ends thereof, said conduit and said cylinders being filled with fluid such as oil,
- f. said adjusting member which changes the volume of said reserve chamber being the only means compensating for leakage of fluid and wear of the braking mechanism, and
- g. the piston in the master cylinder and the adjusting member being coaxial with the longitudinal axis of the master cylinder.

3,935,931
KNOCKED-DOWN TRUNK

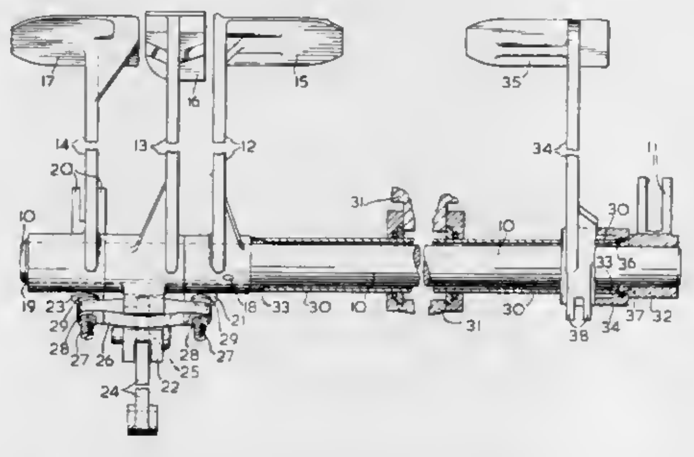
Arnold Kaplan, 1319 Auerback Ave., Hewlett Harbor, N.Y. 13654
Filed Aug. 15, 1974, Ser. No. 497,552
Int. Cl.² A45C *5/00*
U.S. Cl. 190—19 **19 Claims**



1. A trunk adapted to be erected from a knocked-down condition said trunk comprising:
- a. a first, lower shell;
- b. a second, uppershell that is at least partially nestable within said first, lower shell in the knocked-down condition of said trunk;
- c. a pair of side walls and a pair of end walls that are loose in the knocked-down condition and which are constructed so that they are adapted to be positioned within one of said shells in the knocked-down condition of said trunk;
- d. first removable clamping means for securing said side and said end walls to said first, lower shell, said first clamping means comprising inner and outer, ringshaped members to each other after said side and said end walls are positioned therebetween;
- e. second removable clamping means for joining said side and said end walls to each other; and
- f. hinge means for coupling said second, upper shell to one of said side walls.

3,935,932
BRAKE OPERATING SYSTEMS

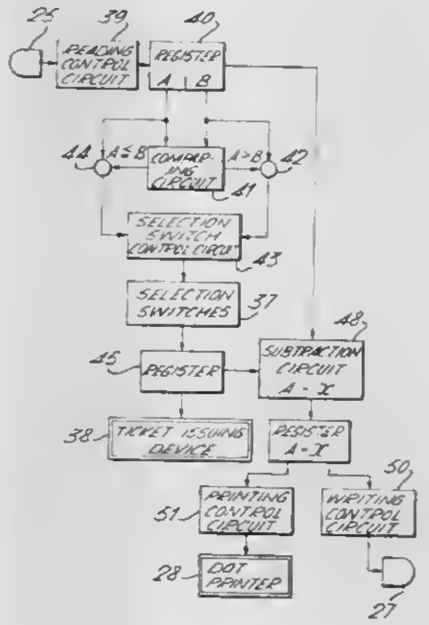
Stephen Moorhouse, Huddersfield, England, assignor to David Brown Tractors Limited, Meltham, Huddersfield, England
Filed June 17, 1974, Ser. No. 480,250
Int. Cl.² F16D *67/02;* **G05G** *9/00*
U.S. Cl. 192—13 R **12 Claims**



1. A clutch and steering brake operating system for an agricultural tractor comprising four levers pivotable about a common axis and each carrying a foot pedal, three of said levers being brake levers disposed side-by-side and the remaining lever being a clutch-operating lever, one of the two outer brake levers being arranged to operate the brake on one side of the tractor, the other of the two outer brake levers being arranged to operate the brake on the other side of the tractor, and the middle brake lever constituting a master brake lever, a pivotally mounted cross-bar on said master brake lever arranged to operate both of said outer levers with an equalising action when the master brake lever is operated, a shaft mounted to rock about said axis and upon which one of said outer levers is rigidly secured and the two other brake levers are pivotally mounted, a sleeve mounted on the tractor and co-axially surrounding said shaft which extends relatively rotatably therethrough, and means pivotally mounting a clutch-operating lever on said sleeve.

3,935,933
AUTOMATIC ARTICLE VENDING MACHINE

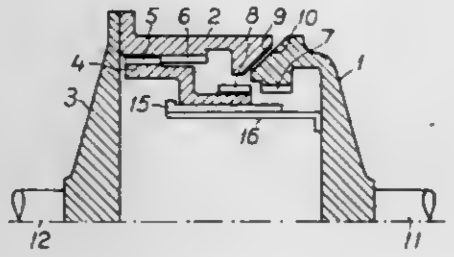
Toshio Tanaka, Kyoto; Mamoru Hirayama, Takatsuki, and Noriaki Minami, Osaka, all of Japan, assignors to Omron Tateisi Electronics Co., Ltd., Kyoto, Japan
Filed July 1, 1974, Ser. No. 484,597
Claims priority, application Japan, July 5, 1973, 48-76732
Int. Cl.² G07F *1/06, 7/02*
U.S. Cl. 194—4 R **12 Claims**



1. An automatic article vending apparatus, comprising:
means for receiving a stored value card having recorded thereon a first monetary value corresponding to the remaining stored value of said card, said card also having recorded thereon a second monetary value which is less than said remaining stored value and corresponds to a predetermined monetary limit for a single purchase of articles from the apparatus by the customer;
means for reading said first and second monetary values;
means for entering into the apparatus a third monetary value corresponding to the value of an article selected by a customer;
means for comparing said first and second monetary values and for providing a comparator output signal indicative of the lower value therebetween;
means dispensing said selected article to the customer;
control means responsive to said comparator output signal and operative to control said dispensing means such that it dispenses said selected article to the customer only when said third monetary value is no greater than the lower of said first and second monetary values;
means for updating said first monetary value to substract said third monetary value; and,
means returning said card to the customer.

3,935,934
RELEASABLE AXIAL CLUTCH

Lars Norberg, Finspong, Sweden, assignor to Stal-Laval Turbin AB, Norrkoping, Sweden
Filed July 1, 1974, Ser. No. 484,595
Claims priority, application Sweden, July 5, 1973, 7394591
Int. Cl.^{2} F16D *41/00, 11/00, 23/02*
U.S. Cl. 192—46 **4 Claims**



1. A releasable, self-locking axial clutch for firmly coupling together two shafts comprising:

two clutch portions each of which is secured to one shaft end and axially movable in relation to each other for pressing tightly together,

an axially displaceable clutch piece means provided between the two clutch portions for transmitting a torque therebetween,

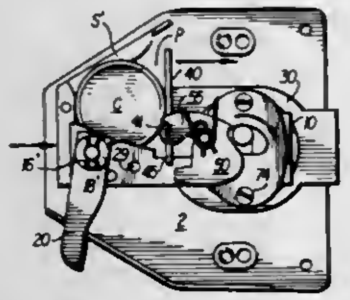
the clutch piece means being in constant rotational engagement with one of the clutch portions and axially slidable in relation thereto,

the clutch piece means and the other of the clutch portions being provided with helical teeth means for selflocking engagement in dependence on the torque between the clutch portions resulting in drawing the portions together, and

the clutch portions being provided with complementary outwardly and inwardly conical surfaces, respectively, for mutual centering of the clutch portions when they are drawn tightly together.

3,935,935
COIN OPERATED LOCKING DEVICE

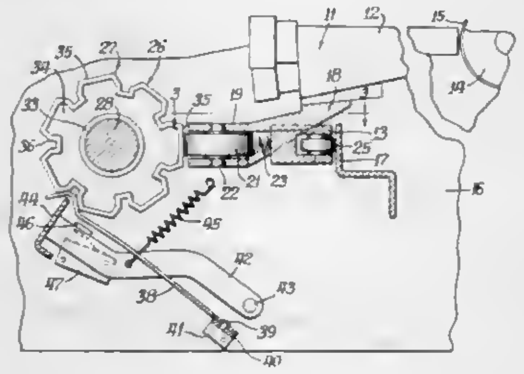
Robert D. W. Berg, 9200 Upton Ave. South, Bloomington, Minn. 55431
Filed May 5, 1975, Ser. No. 574,525
Int. Cl.^{2} G07F *17/14*
U.S. Cl. 194—78 **12 Claims**



1. A coin operated lock device comprising a lock case and a bolt slideably mounted in said case between a sliding plate and a cover, said bolt being horizontally reciprocable to a forward locked direction and to a rear retracted direction responsive to the rotary movements of a lock plug of a lock plug assembly supported on said cover, said plug having a tenon and said tenon extending through slot means in said sliding plate, whereby the rotary movements of the tenon are transmitted to substantially horizontal movements of said plate, a spring-biased pawl being pivoted to said lock plug assembly and a coin carriage assembly being mounted on said sliding plate, a stop plate connected to said bolt and having a horizontal foot that is slideably received in an elongated slot of said sliding plate for limited movement therein, a coin receiving pocket being formed in said carriage assembly with said stop plate at the forward side of the pocket, said pawl having a ratchet that is biased to normally engage the foot of said stop plane and prevent horizontal movement of the stop plate together with the sliding plate and carriage assembly, the foot of said stop plate being positioned to allow said ratchet to ride over the foot when the edge of a coin in said pocket bears on said stop plate and urges same in the forward direction, the diameter of the rim of said coin comprising link means between said carriage and said stop plate, said link means being movable together with the stop plate carriage assembly and lock bolt to the latter's extended locked position in the forward direction by said tenon during rotation of said plug.

3,935,936
MEDIA THICKNESS COMPENSATION FOR PRINT HEAD

Robert Hugh Wilczewski, Riverton, Wyo., assignor to Victor Comptometer Corporation, Chicago, Ill.
Filed Mar. 1, 1974, Ser. No. 447,142
Int. Cl.^{2} B41J *3/50*
U.S. Cl. 197—1 R **7 Claims**



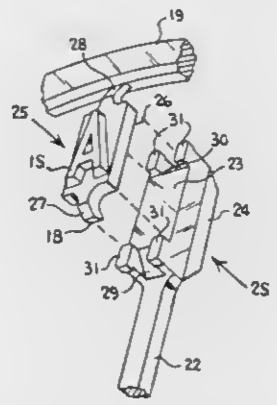
1. In a high-speed serial-type wire printer having a frame, a platen mounted on said frame for backing impresseion-receiving media, a carriage movable transversely of said platen, a print head carried by said carriage with printing wires reciprocable in a plane substantially at right angles to the surface of said platen to effect impressions against said media during transverse movement of the print head by said carriage along a print line on said platen; media thickness compensation means for maintaining said print head a predetermined distance from said media regardless of the thickness of the latter to accommodate media of different thicknesses disposed along said print line, comprising means for mounting said print head on said carriage for movement relative thereto perpendicular to said print line, biasing means for resiliently urging said print head away from said platen, and adjustable stop means engageable by said print head in response to said biasing means, wherein said adjustable stop means comprises a shaft mounted on said frame axially parallel to said platen, and a plurality of individual stop members rotatable on said shaft in a series extending for the length of said platen, and wherein each said stop member comprises a polyhedron presenting a plurality of peripheral faces each differently spaced from said shaft.

3,935,937
PLASTIC AND METAL ARTICLE OF MANUFACTURE

Herbert Tramposch, Riverside, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Division of Ser. No. 413,782, Nov. 8, 1973, Pat. No. 3,859,712.
This application Sept. 12, 1974, Ser. No. 505,366
Int. Cl.^{2} B41J *1/32*
U.S. Cl. 197—53 **1 Claim**

1. A plastic and metal printing disc assembly constructed of a composite of structural members, said printing disc assembly comprising:

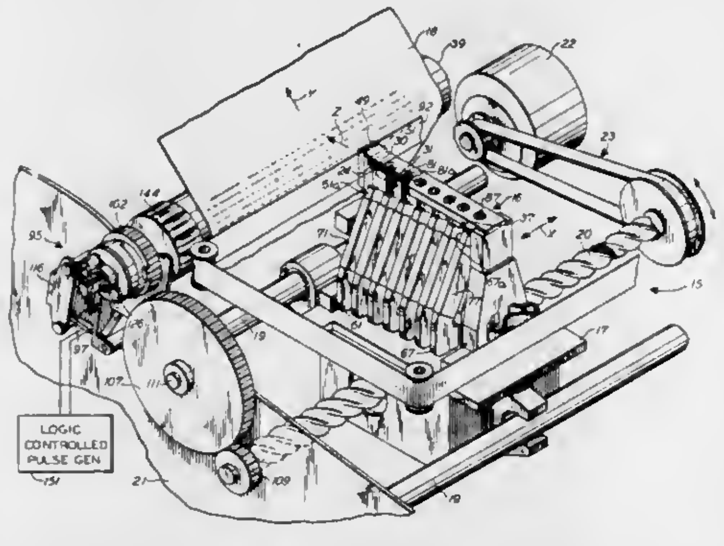
a plastic disc shaped member having a hub portion which supports a plurality of flexible arms radially extending outwardly from said hub portion, an outer end of each of said arms having an end portion for receiving a type character member upon a flat face of each of said end portions, said end portions each having four corners, each of which contains a toe, each said face having two sloping recesses, each recess being disposed between two toes; and



a plurality of metal type character members annularly arranged with respect to each other, and each having two oppositely extending tabs, each tab nesting within a sloping recess of a corresponding end portion, said toes of each end portion being formed over said tabs to provide composite individual type and arm structures, said metal type character members each having a coating to provide a wear resistant surface thereon.

3,935,938
LINE FEED MECHANISM FOR PRINTER

Ingard B. Hodne, Northbrook, Ill., assignor to Teletype Corporation, Skokie, Ill.
Continuation of Ser. No. 468,048, May 8, 1974, abandoned.
This application Apr. 7, 1975, Ser. No. 565,928
Int. Cl.^{2} B41J *19/92*
U.S. Cl. 197—114 R **17 Claims**



10. A compact, mechanically driven line feed printer mechanism for use in selectively rotating a platen to advance a print medium drawn thereover one or more line spaces at a time, said mechanism comprising:

coupling means including a platen gear adapted for coupling to an associated shaft of a platen, said platen gear being mounted for eccentric displacement relative to the axis of the platen shaft while remaining continuously coupled thereto;

drive means including a rotatably driven drive gear;

first controllably displaceable means for rotatably supporting said platen gear coaxially of said platen shaft;

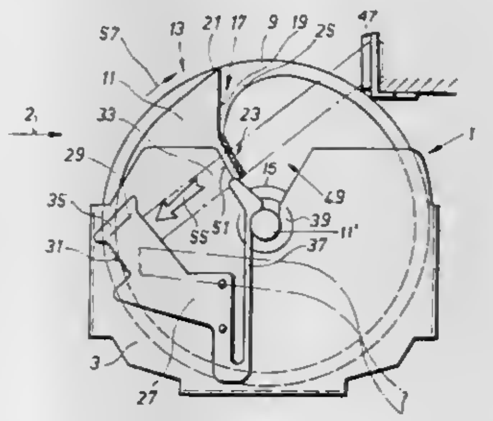
ratchet means adapted for mounting on and rotation with the associated platen shaft;

second controllably displaceable means mounted so as to selectively engage said ratchet means; and

selectively energizable line feed actuator means responsively coupled to both said first and second displaceable means, said actuator means when energized in a correlated manner with said driven drive gear, causing said first means to be displaced from a first position whereat said platen gear is out of engagement with said drive gear to a second position whereat said gears are in coupling engagement, thereby imparting rotational movement to the associated platen then coupled thereto, and said actuator means when energized further causing at least in part said second means to be displaced from a first position in resiliently holding engagement with said ratchet means to a second position out of engagement with said ratchet means so as to release the associated platen for rotation.

3,935,939
AUTOMATIC THREADING OF A TYPING RIBBON

Uwe Schmidt, and Kurt Chvatlinsky, both of Wilhelmshaven, Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany
Filed Feb. 25, 1974, Ser. No. 445,146
Claims priority, application Germany, Feb. 23, 1973, 2309017
Int. Cl.^{2} B41J *33/14;* **B65H** *75/28*
U.S. Cl. 197—175 **7 Claims**



1. In a system for the automatic fastening of the free end of a ribbon to the core of a takeup reel in an office machine in which such reel is driven by a friction coupling, the reel including two flange parts enclosing the core, and the system including a guide member from which the ribbon is guided transversely across the edge of one of the two flange parts of the takeup reel in order to thread the ribbon, the one flange part being provided with a threading slit which increases in width in the direction from the reel core to the outer edge of the one flange part, with one side of said slit being defined by a catching edge inclined obliquely to the direction of rotation of the reel, rotation of the reel causing the ribbon to be gripped through the slit, carried along by the reel and wound around the reel core, the improvement wherein said one flange part is formed such that the end of said threading slit which is adjacent said reel core is tapered in the shape of a wedge which narrows toward said reel core and is provided with serrations for gripping a ribbon inserted in said tapered end, and said system further comprises: a case for holding said reel and having two side parts each disposed to be adjacent a respective reel flange part; and a holding device composed of a resilient sheet metal part presenting a contact surface which presses against the outer surface of that side part of said case which is adjacent the one flange part for resiliently holding the free end of the ribbon, in a clamping manner, under tension between said sheet metal part and said outer surface of that side part adjacent the one flange part, in a position such that the ribbon extends approximately diametrically across said

one flange part provided with the threading slit, whereby upon rotation of the takeup reel the ribbon is engaged by the catching edge and pulled out of said holding device into said threading slit.

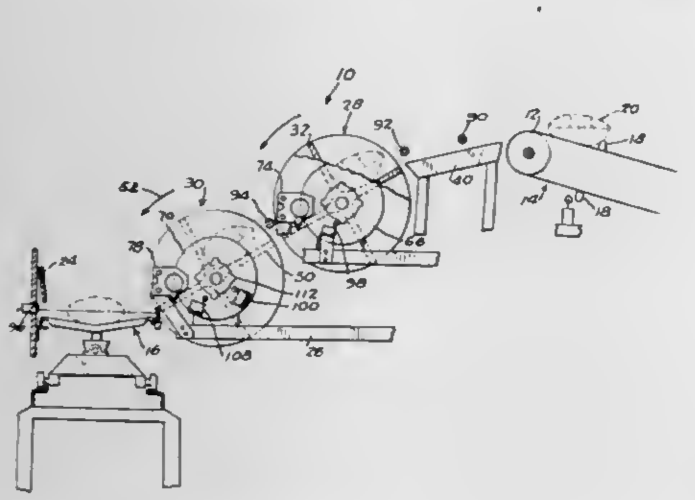
3,935,940
SORTER SYSTEM INDUCTION MEANS

Edward A. Wentz, Gaithersburg, and David M. Shinnick, Frederick, both of Md., assignors to American Chain & Cable Company, Inc., Bridgeport, Conn.

Continuation-in-part of Ser. No. 331,205, Feb. 9, 1973, Pat. No. 3,871,511. This application Jan. 29, 1975, Ser. No. 545,199

Int. Cl.^{2} B65G *47/57*

U.S. Cl. 198—25 **8 Claims**



1. The combination comprising
an input conveyor,
a sorter conveyor having means along the path thereof for discharging articles from the conveyor to predetermined zones along the path of the conveyor,
and means for transferring articles from the input conveyor to the sorter conveyor comprising
first rotor means having a plurality of vanes defining article receiving pockets,
means for rotatably mounting said first rotor means between said input conveyor and said sorter conveyor about a generally horizontal axis parallel to a portion of the path of the sorter conveyor,
drive means operatively connected to said rotor means for intermittently rotating said first rotor means between successive indexed positions,
said successive indexed positions including a first position and a successive second position,
said first position being such that a vane of one pocket forms an inclined entrance ramp,
said second position being such that the adjacent vane of the same pocket defines an exit ramp,
second rotor means having a plurality of vanes defining article receiving pockets,
means for rotatably mounting said second rotor means between said first rotor means and said sorter conveyor about a generally horizontal axis parallel to a portion of said sorter conveyor and parallel to the axis of said motor means,
drive means operatively conneted to said second rotor means for intermittently rotating said second rotor means in the same direction as said first rotor means between successive indexed positions,
said second rotor means having vanes which successively cooperate with said receiving ramp to define a receiving pocket for an article transferred from said first rotor means,
said first position being such that a vane on one pocket is aligned with the exit ramp formed by the vane of said first pocket,
said second position of said second rotor means being such that the adjacent vane of the same pocket defines an exit ramp,
said drive means driving each said rotor means at a rate such that said vane forming an entrance ramp lifts an article being transferred from said first position to said second position and augments the gravitational movement of the article to said second position such that the article moves off of the vane that is acting as an exit ramp.

3,935,941
ADJUSTABLE BELT CONVEYOR

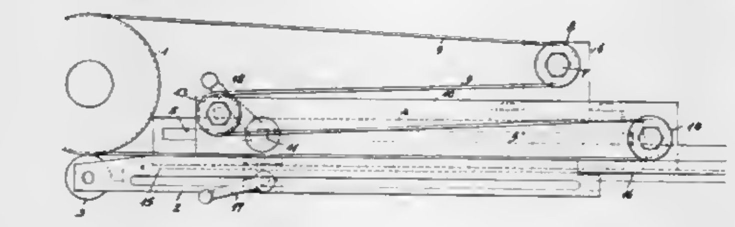
Jürgen Keck, Niefern-Oschelbronn, Germany, assignor to Gebrüder Bellmer KG, Niefern, Germany

Filed Sept. 4, 1973, Ser. No. 394,345

Claims priority, application Germany, Sept. 1, 1972, 2242993

Int. Cl.^{2} B65G *15/16*

U.S. Cl. 198—139 **8 Claims**



1. An adjustable belt conveyor assembly which is adapted for feeding flat workpieces to a forwardly and rearwardly adjustable position in a work station and especially for feeding box panels to the folding station of a box folding machine, the conveyor assembly comprising in combination:
an elongated stationary support structure which includes a guide profile defining a substantially horizontal conveying surface extending from a rearward point to a forward point on the assembly;
a first stationary belt roller arranged near the rear of the assembly;
a second stationary belt roller arranged near the front of the assembly;
a first intermediate loop roller arranged forward of said first stationary belt roller and having a smaller diameter than the latter;
a second intermediate loop roller arranged forward of the first intermediate loop roller, at a level below the second stationary belt roller;
an endless belt engaging said four rollers so as to form four consecutive belt strands as follows: an advancing bottom belt strand extending between the first belt roller and the second loop roller, at the lower side thereof and in parallel cooperative relationship with at least a portion of said conveying surface; a returning lower intermediate belt strand extending between the two loop rollers; an advancing upper intermediate belt strand extending between the first loop roller and the second stationary belt roller; and a returning top belt strand extending between the two stationary belt rollers; whereby said upper intermediate belt strand and said bottom belt strand are substantially parallel to one another;
means for driving the endless belt; and
means for simultaneously longitudinally adjusting the two intermediate loop rollers by equal increments, thereby lengthening or shortening said upper intermediate belt strand and correspondingly shortening or lengthening said bottom belt strand, the latter cooperating with the conveying surface of the stationary support to advance a workpiece therebetween to the adjusted position of the first intermediate loop roller; and wherein
the support structure further includes a rail profile having a longitudinal slot therein; and
the loop roller adjusting means includes an elongated support arm on which both intermediate loop rollers are mounted at a fixed horizontal spacing, and support arm attaching means extending through said slot for clamping said support arm to said rail profile in any one of the plurality of longitudinal adjustment positions.

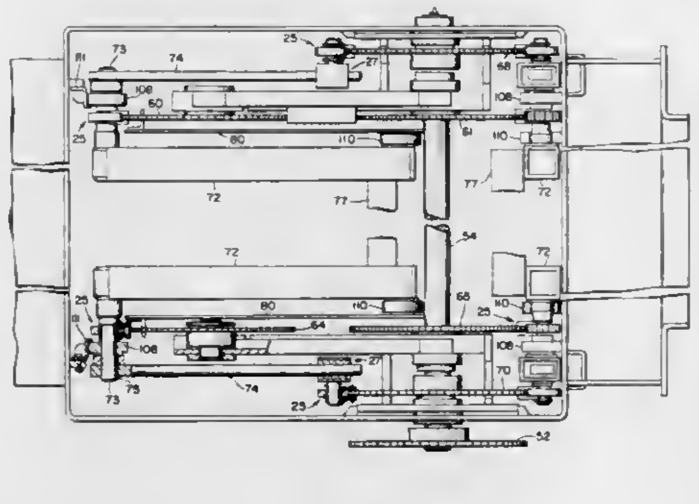
3,935,942
PACKAGE CONVEYOR METHOD AND APPARATUS

John W. Scott, Loma Linda, Calif., and Alan P. Hosie, Mississauga, Canada, assignors to The Garrett Corporation, Los Angeles, Calif.

Continuation of Ser. No. 448,178, March 4, 1974, abandoned. This application May 22, 1975, Ser. No. 583,823

Int. Cl.^{2} B65G *17/00*

U.S. Cl. 198—157 **9 Claims**



1. A package conveyor comprising:
a casing;
a package carring, non-articulated, rigid tray;
a pair of spaced endless control chains mounted adjacent opposite walls of said casing;
a pair of spaced endless load chains mounted within said casing intermediate said endless control chains;
drive means, including chain sprocket members, interconnecting said control and load chains for rotating said chains in synchronism; and
means connecting said tray to points on said chains for maintaining said tray in substantially horizontal and vertical positions with respect to said chains during portions of tray travel while compensating for changes in spacing between the points during movement from one position to the other, one of said tray connecting means including means securing said tray to said chains for relative pivotal movement and the other of said tray connecting means including means securing said tray to said chains for relative pivotal and sliding movement.

3,935,943
SEALED CARTON FORMED FROM A PAIR OF COOPERATING MEMBERS

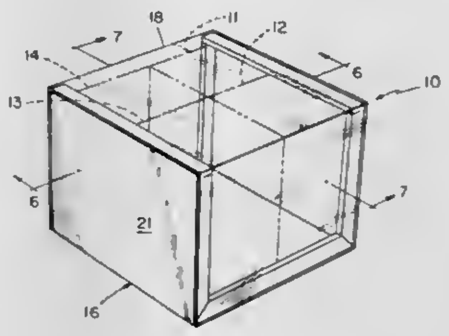
Melvin H. Meyer, Maywood, Ill.; James L. Vickers, Harbert, Mich.; Edmund A. Waycie, River Forest, and Gerald Weitzel, Oak Lawn, both of Ill., assignors to Stone Container Corporation, Chicago, Ill.

Filed May 3, 1974, Ser. No. 466,731

Int. Cl.^{2} B65D *25/00, 7/00*

U.S. Cl. 206—45.34 **8 Claims**

8. A sealed carton containing lading and formed from a pair of cooperatively engaged members comprising, a pre-cut body blank member of foldable, structurally stable, load accommodating paperboard material and a cover sheet member formed of a flexible, very thin lightweight material capable of principally accommodating only tension stress in the plane thereof, said body blank having a pair of spaced apart lines of fold transverse to the longitudinal axis of the blank to provide a center panel and a pair of side panels hingedly connected along a pair of opposite side edges of the center panel, said body blank being folded into an upwardly opening generally U-shaped formation, each of said panels having hinged flanges along the opposite side edges thereof which are formed from the longitudinal edges of said body blank, the center panel flanges comprising end flanges, and said side panels additionally having outer transverse end edges with hinged flanges therealong, each flange being folded inwardly to a position normal to the plane of the respective panel to which it is hinged with the center panel flange ends abutting the contiguous side panel flange ends in cooperative supporting engagement, said lading being disposed on said center panel and having a configuration substantially filling said carton and supporting the side panels from the interior thereof, said cover sheet being folded into a downwardly opening U-shaped formation complementary to the first mentioned formation and matingly engaged tightly thereover, said cover sheet having its margin along opposite longitudinal edges coextensive with and adhesively secured in face-to-face overlying relation to those of said flanges which are connected to said side panels of said body blank to tie the side panels together in tension at their sides and across their transverse end edges, and the cover sheet also having its margin along its opposite end edges coextensive with and adhesively secured in face-to-face overlying relation to said end flanges of the center panel to dispose said flanges in supporting position between said side panels at the bottom ends thereof and to seal the lading in the thusly formed carton and retain the load accommodating body blank in the U-shaped formation.



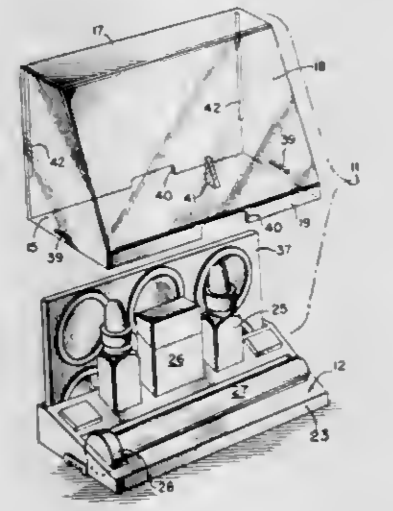
3,935,944
DIAGNOSTIC DISPLAY PACKAGE

John C. Wilson, Anaheim, and Robert Schiff, Mission Viejo, both of Calif., assignors to Baxter Laboratories, Inc., Deerfield, Ill.

Filed June 10, 1974, Ser. No. 477,563

Int. Cl.^{2} B65D *1/36, 69/00, 85/00*

U.S. Cl. 206—223 **7 Claims**



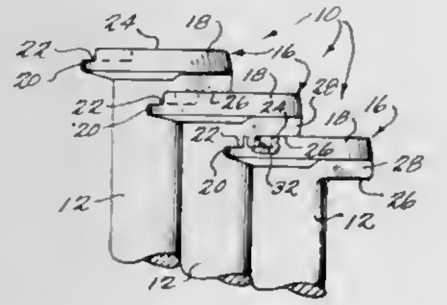
1. A display package comprising a rack, said rack having a front wall, two end walls, and a top wall, said top wall sloping downwardly from rear to front, said top wall having a plurality of wells, each of said wells adapted and constructed to carry at least a portion of a receptacle, one of said wells being an

elongated trough means positioned downwardly and forwardly of the other said wells, said end wells of said rack extending rearwardly and each having therein a slot in oppositely disposed relationship adapted and constructed to carry a plate upright therebetween, a cover, said cover having a top wall, back wall and end walls, said cover having a front wall sloping downwardly from rear to front terminating in a skirt means overlying the front wall of said rack, the dimensions of said cover being such as to essentially surround said rack.

3,935,945

OPEN SIDED PARTIALLY CIRCULAR HEADED NAIL WITH RECESS ALONG THE OPEN-SIDED EDGE THEREOF AND STICK PACKAGE FORMED THEREFROM

George M. Smith, Pawcatuck, Conn., and Joseph Silva, Cranston, R.I., assignors to Textron, Inc., Providence, R.I.
Filed Apr. 9, 1975, Ser. No. 566,432
Int. Cl.^{2} B65D *73/02*
U.S. Cl. 206—343 **5 Claims**



1. A nail including a shank provided by a length of metal strand material severed at one end from an end portion of a supply of such material and formed thereon with a workpiece entering configuration,

said shank having an integral enlargement on the opposite end portion thereof formed by surrounding the end portion with die means and impacting a mating plunger means longitudinally on the end surface thereof to cause the impacted material to cold flow in the die means, said enlargement defining a head configured to facilitate collation of said nail with similar nails in a row formation in which the shanks of adjacent nails are in abutting parallel relation and the heads of adjacent nails are in overlapping abutting relation,

said head extending radially outwardly from said shank substantially throughout the entire periphery thereof and terminating in a partially circular peripheral edge of greater than 180° generally arcuate about the axis of said shank interconnected by an open-sided peripheral edge disposed in aligned relation at its central portion with an adjacent side of said shank,

the upper portion of said head having a recess therein which extends inwardly along at least the central portion of said open-sided edge in overlying relation to the portion of the shank defining said adjacent side thereof,

the lower portion of said head bounded by said partially circular peripheral edge and extending radially outwardly from said shank defining a downwardly facing abutment surface extending outwardly from the adjacent periphery of said shank toward said partially circular peripheral edge,

the upper portion of said head having a top surface including a mating upwardly facing abutment surface area extending inwardly of said recess,

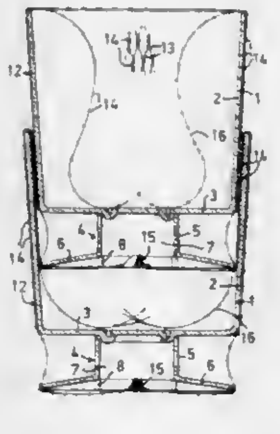
the radially outward extent of said downwardly facing abutment surface being greater than the radially inward extent of said recess.

5. A nail as defined in claim 1 in combination with a plurality of similarly constructed nails disposed in an angularly extending row formation with adjacent nails of the row having their shanks in abutting parallel relation and the mating surface areas of the heads thereof in abutting relation, and means for securing said nails in said row formation.

3,935,946

MESH COVERED NESTED DISPLAY CONTAINERS

Willis Ray Bengert, 2983 Crescent Road, Pebble Beach, Calif. 93953
Filed May 18, 1972, Ser. No. 254,544
Int. Cl.^{2} B65D *21/00, 33/02, 25/24*
U.S. Cl. 206—516 **3 Claims**



1. In a display container, the combination comprising:

a. an upright container, nestable with another of corresponding shape and size, having upwardly and outwardly tapered, transparent, lateral side walls, with free terminal upper edges defining the outline of an open upper end and a horizontal bottom wall closing the lower end of said container;

b. an elongated, tubular envelope of open work, flexible, resilient, thread-like mesh material open at one end and closed at its other end resiliently expandable radially thereof from a normally radially contracted untensioned, wrinkle-free condition substantially less than the diameter of said container, to an expanded, raidally tensioned, wrinkle-free condition at least equal to the maximum outside diameter of said container;

c. said envelope enclosing said container with its closed end extending horizontally below said bottom wall and the remaining portions thereof, in succession from said closed end of said envelope, extending in said radially evenly expanded, tensioned, condition over and yieldably against the outer surface of said lateral side walls and said upper free edges, and then downwardly into said container in a progressively contracted, but yieldably radially expandable, condition with said open end of said envelope terminating adjacent the bottom of said container, whereby said portion extending downwardly into said container will he radially expandable under the influence of another container of corresponding shape and size being nested within a container enclosed by said envelope.

3,935,947

MAGNETIC REFUSE SEPARATOR

William T. Barrett, Waukesha, Wis., assignor to Wehr Corporation, Milwaukee, Wis.
Filed Feb. 20, 1974, Ser. No. 443,953
Int. Cl.^{2} B07C *5/344*
U.S. Cl. 209—111.8 **14 Claims**

1. A magnetic separator comprising, in combination,

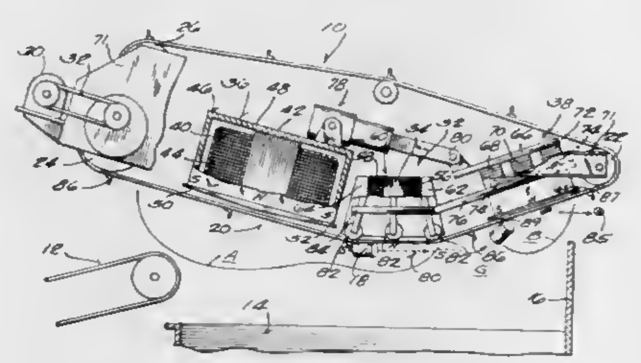
a belt,

means supporting said belt for movement around a closed path in continuous fashion, said path having upper and lower horizontal extensions,

a magnetic assembly supported adjacent said belt along a portion of the lower horizontal extension of said closed path to generate a magnetic field through which said belt moves,

means for moving said belt along said path,

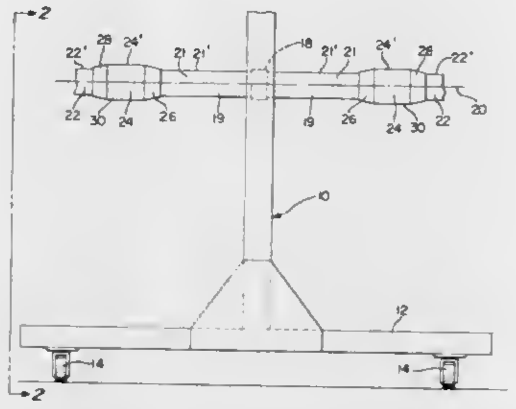
and said magnetic assembly including a first magnetic field generating portion and a second magnetic field generating portion spaced a predetermined distance from said first field generating portion of the direction of the path of travel of said belt to provide a gap in the magnetic field generated by said magnetic assembly between said first and second field generating portions so that magnetic articles attracted to said belt in the area of said first field generating portion are released in said gap and fall away from said belt, the length of such gap being such that, together with the momentum imparted to said magnetic articles by the movement of said belt, said magnetic articles fall along a trajectory such that they are directed into the magnetic field generated by said second field generating portion and again attracted to said belt in the area of said second field generating portion and non-magnetics carried by said magnetic articles to said belt in the area of said first magnetic portion are dislodged in said gap and are thereby separated from said belt.



3,935,948

STORAGE RACK FOR UNVULCANIZED PNEUMATIC TIRES

James W. Podojil, Ravenna, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 29, 1974, Ser. No. 518,437
Int. Cl.^{2} A47F *7/04*
U.S. Cl. 211—23 **8 Claims**

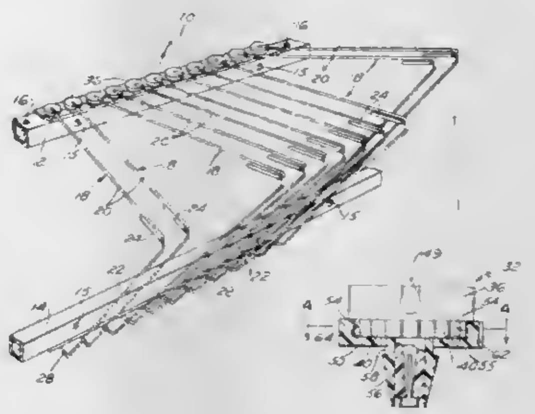


1. A rack for supporting an unvulcanized pneumatic tire said rack comprising a frame, a horizontally extending prong having a long axis and supported at one end on said frame, said prong having a first upper surface which is generally elliptical in cross-sectional configuration, a pair of second upper surfaces each with a generally elliptical cross-sectional configuration disposed on opposite sides of said first upper surface and at a lower elevation with respect to said first upper surface, and a tapered surface on axially opposite sides of said first upper surface forming smooth transitions between said first upper surface and said second upper surfaces, all of said upper surfaces being arranged in axial alignment with respect to said prongs.

3,935,949

POSITION LOCATING DEVICE FOR DISPLAY HANGER

Maurice Cohen, 3580 NW. 52nd St., Miami, Fla. 33142
Filed June 21, 1974, Ser. No. 481,898
Int. Cl.^{2} A47F *5/12*
U.S. Cl. 211—168 **8 Claims**



1. A device for positively locating a pivotal display hanger in a selected position of use on a support, comprising a base member fixed to said support, a locating member mounted on an end of said hanger and rotatable therewith upon pivotal movement of said hanger, means formed on said locating member cooperating with means formed on said base member to provide for step-by-step pivotal movement of said hanger, wherein said hanger is positively locatable in the selected position of use, the means as formed on one of said members including a generally circular recess, on a wall of which at least one projection is formed, the means as formed on the other member including an annular portion that is receivable in said recess for rotation therein, a plurality of teeth formed on said annular portion that engage the projection in said recess to provide for the step-by-step movement of said hanger, said base member being formed with the generally circular recess therein, and said locating member being formed with the annular portion thereon, said base member having a central opening formed therein, said locating member having a central opening formed therein that is aligned with the opening in the base member when said members are interfitted, the end of said hanger being defined by a vertical rod portion that is received in the aligned openings of said members, and a slot formed in said locating member for receiving a horizontal portion of said hanger for positively locating said locating member on said hanger and providing for rotating movement of said locating member upon pivotal movement of said hanger, said base member including a plate-like portion in which said recess is formed, and a plurality of resilient fingers joined to said plate-like portion on the underside thereof and extending into an opening formed in said support for locating said base member on said support.

3,935,950

INDUSTRIAL ROBOT

Arthur Robert Burch, Plainwell, Mich., assignor to Quality Steel Fabricators, Inc., Hopkins, Mich.
Filed Sept. 4, 1973, Ser. No. 393,790
Int. Cl.^{2} B25J *9/00*
U.S. Cl. 214—1 BB **17 Claims**

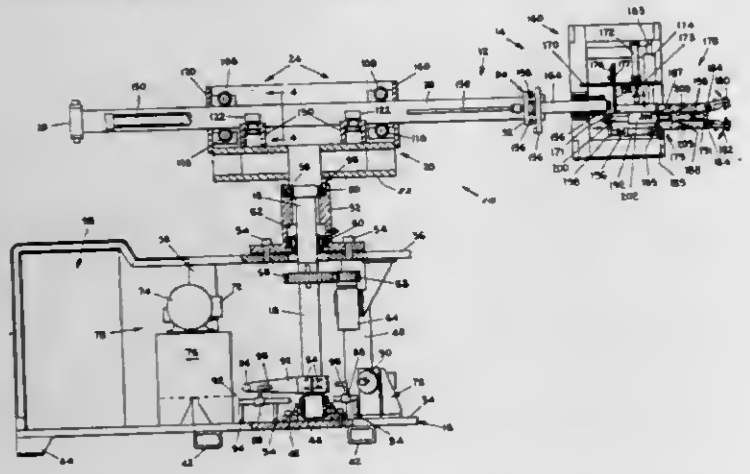
1. In an industrial robot for manipulating a work piece, wherein a tooling assembly means for handling the work piece is mounted on a moveable manipulator, an improvement wherein the manipulator comprises:

a base;

a main support shaft pivotably mounted on the base for rotation about a substantially vertical axis;

a non-circular main extend shaft having front and rear ends, with the front end comprising tool mounting means thereon for holding the tooling assembly means;

support means including a support frame mounted on the support shaft and a bearing assembly means mounted on the support frame, said bearing assembly means being adapted to engage, support, and guide the main extend shaft for extension or retraction with respect to the support means in a generally horizontal, longitudinal direction, said bearing assembly means being further adapted to restrain the main extend shaft from vertical, lateral, or rotational movement with respect to the support frame, said bearing assembly means comprising a plurality of individual bearing means individually mounted in the support means and engaging the outer surface of the main extend shaft at a plurality of positions about the periphery of the main extend shaft, each said bearing means comprising a wheel rotatably mounted on an axle, with the axle being mounted in the support means such that the wheel engages the outer surface of the main extend shaft and rotates about an axis perpendicular to the longitudinal direction of movement of the main extend shaft, each said axle being eccentrically mounted in the support means with respect to the axis of rotation of the wheel and being selectively rotatable with respect to the support means, said selective rotation of the axle with respect to the support means serving to effect a position adjustment of the wheel with respect to the main extend shaft so as to adjust for wear and misalignment of the main extend shaft and bearing means;



selectively operable drive means adapted to rotate the support shaft and extend and retract the main extend shaft; and

control means adapted to selectively operate the drive means.

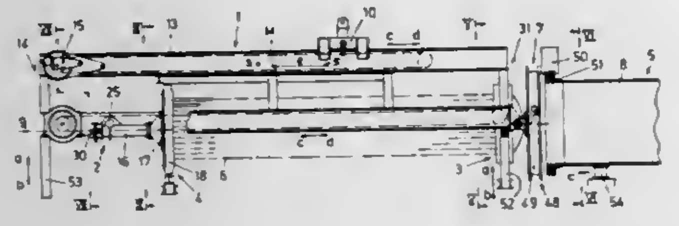
3,935,951
APPARATUS FOR PULLING AND REPLACING HEAT EXCHANGE TUBING

Ulrich Claus, Kolner Str. 128, 5908 Neunkirchen, and Dieler Dischmann, Erlenstrasse, 5908 Neunkirchen-Struthutten, both of Germany

Filed July 26, 1974, Ser. No. 492,977

Int. Cl.² B66F *1/00*

U.S. Cl. 214—1 P **3 Claims**



1. Apparatus for the placement and removal of a tube bundle of a heat exchanger, comprising a first frame, means carried by said first frame for pulling or inserting a tube bundle from or into the shell of said heat exchanger in a horizontal direction, means carried by the first frame for supporting opposite ends of a said tube bundle, a second frame pivotally secured to said first frame, means for releasably securing said pivotable frame to one end of the shell of a said heat exchanger, means to suspend said first frame from a lifting device, and means mounting said suspending means for movement relative to the first frame over most of the length of said first frame in said horizontal direction for continuously adjusting said means to suspend said first frame according to the change of center of gravity of the overall apparatus and the part of said tube bundle supported thereby when said tube bundle is being removed from, or inserted into, said shell of a heat exchanger.

3,935,952
FEED DEVICE FOR BULK MATERIAL

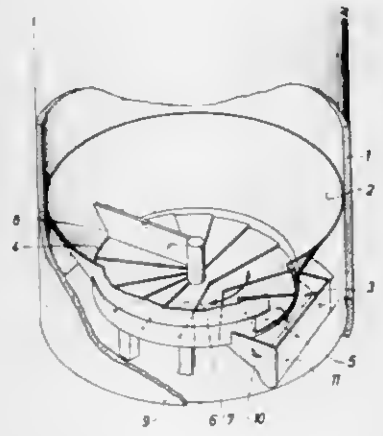
Kurt Albert Banner, Fargaregatan 6 A, Goteborg, Sverige, Sweden

Filed Aug. 2, 1974, Ser. No. 496,731

Claims priority, application Sweden, Aug. 31, 1973, 7311868

Int. Cl.² B65G *65/44*

U.S. Cl. 214—17 D **5 Claims**



1. Feed device for the bottom of a silo or other relatively large receptacles for bulk material, for example wooden chips, said feed device comprising driven means movable in a reciprocal substantially horizontal motion and having a number of steps, carrier elements in the form of risers of said steps and at least two feeding-out openings, said steps being defined by a circular line, in which the center of curvature substantially corresponds to the center of motion, and said steps leading downwards in opposite directions from at least one point at a highest level to at least two points at a lowest level, located at said feeding-out openings.

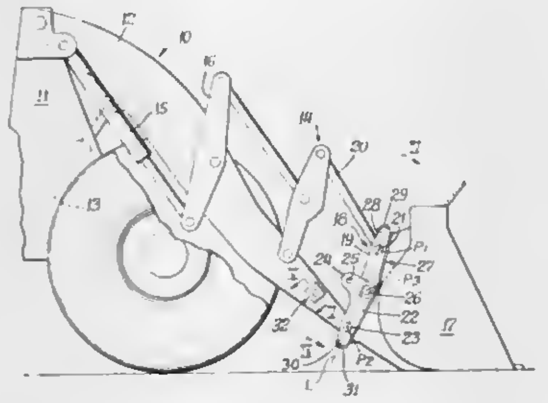
3,935,953
IMPLEMENT MOUNTING MEANS FOR EARTHWORKING VEHICLES

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 24, 1974, Ser. No. 482,503

Int. Cl.² E02F *3/81*

U.S. Cl. 214—145 A **12 Claims**



1. A vehicle adapted to have a work implement releasably attached thereon comprising

a frame,

implement support means, including lift arm means and tilt linkage means, mounted on said frame, and

mounting means, including at least one over-center toggle mechanism, mounted on said support means and interconnected between the lift arm means and tilt linkage means thereof for releasably attaching a work implement on said support means, said toggle mechanism comprising a pair of first and second links pivotally connected together at inner ends thereof at a common pivot means, an outer end of said first link being pivotally connected to said tilt linkage means and an outer end of said second link being pivotally mounted on said lift arm means.

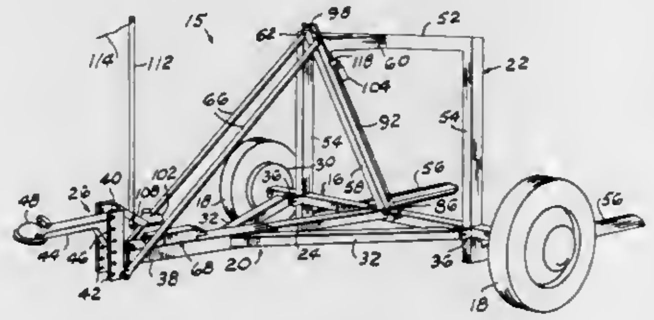
3,935,954
COMPACTED HAY TRANSPORT

Donald L. Woods; Kenneth G. Woods, and Ray A. Woods, all of 202 N. Main, Fairview, Okla. 73737

Filed July 8, 1974, Ser. No. 486,733

Int. Cl.² B60P *1/04*

U.S. Cl. 214—352 **7 Claims**



1. A self-loading bale transport, comprising:

a trailer having an axle portion journalling wheels;

tongue guide means pivotally connected with said axle portion,

said tongue guide means comprising a housing having an opening therethrough with the axis of the opening substantially normal to the longitudinal axis of said axle portion, and,

a pair of tongue braces projecting forwardly from said axle portion and connected with said housing,

said trailer having a sliding tongue slidably supported by said tongue guide means for movement toward and away from said axle portion;

hitch means connected with the forward end portion of said sliding tongue for connection with a prime mover;

a forklift frame mounted on said axle portion,

said frame including a normally upright inverted U-shaped portion having a bight portion and having a pair of normally horizontal tangs extending rearwardly in spaced relation;

forwardly projecting arm-brace means connected with said bight portion;

a latch plate secured to the forwardly projecting end portion of said arm-brace means;

at least one link extending between and connected at its respective ends with said arm-brace means and the forward end portion of said sliding tongue for vertical pivoting movement of said frame about the axis of said axle portion from a bale loading position to a bale transporting position in respone to sliding movement of said sliding tongue relative to said tongue guide means;

latch means connecting said frame with said sliding tongue and said tongue guide means; and,

remotely operated control means operatively connected with said wheels and said latch means for preventing rotation of said wheels during pivoting movement of said frame and releasing said latch means.

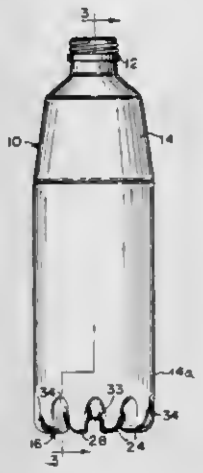
3,935,955
CONTAINER BOTTOM STRUCTURE

Salil K. Das, Hickory Hills, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 13, 1975, Ser. No. 549,623

Int. Cl.² B65D *1/02*

U.S. Cl. 215—1 C **15 Claims**



1. In a container having a side wall, at least an end portion of the side wall being generally symmetrical about a central axis of the container, and a bottom structure closing the container at the side wall end portion, the outer surface of the bottom structure comprising a central concave dome portion, a convex annular rim portion circumscribing the dome portion and merging therewith and with the side wall end portion, and a plurality of radially oriented foot portions extending axially outwardly of the rim portion, each foot portion having lateral margins merging with the rim portion to form a rib portion between each pair of adjacent foot portions, the radial profile of each foot portion comprising a curve tangent to the radial profile of the dome portion and to the profile of the side wall end portion, the improvement comprising the feature that the foot portion curve comprises a plurality of tangential arcs in series, the radii of curvature of adjacent ones of the lastmentioned arcs being unequal.

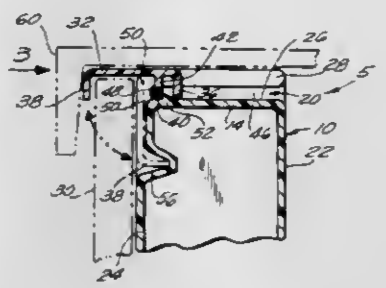
3,935,956
CONTAINER AND HANGER CLIP THEREFOR

Edward Sansanelli, Hasbrouck Heights, N.J., assignor to Airwick Industries, Inc., Teterboro, N.J.

Filed Oct. 2, 1974, Ser. No. 511,185

Int. Cl.² B65D *25/22*

U.S. Cl. 215—100 R **13 Claims**



1. An article of manufacture comprising, in combination, a hollow container having a support wall and a side wall extending angularly therefrom, a generally U-shaped clip having a bight portion and a pair of spaced legs; and means for pivotally mounting said clip on said support wall for movement between a storage position wherein the bight portion of the clip is adjacent and parallel to said side wall and a support position wherein the bight portion of the clip extends parallel to said support wall and at least part of said bight portion extends beyond the container for supportive engagement with a support member from which the container can be suspended; said

pivotal mounting means being operatively connected to the bight portion of said clip between the legs thereof whereby, in said support position of the clip, one of said legs is located in spaced relation to the container and the free end of the other of said legs is engaged with said support wall, thereby to provide a stop limiting pivotal movement of the clip.

3,935,957
INSULATION FOR DOUBLE WALLED CRYOGENIC STORAGE TANK

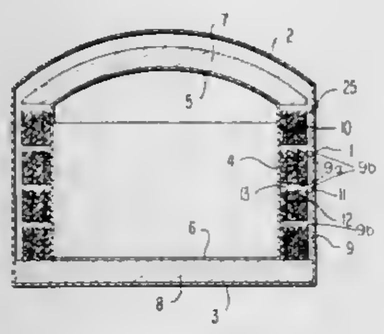
Tsutomu Hasegawa, Noda, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Apr. 9, 1974, Ser. No. 459,443

Claims priority, application Japan, Apr. 10, 1973, 48-40012; Apr. 24, 1973, 48-45721; Aug. 28, 1973, 48-95703

Int. Cl.² B65D *87/24, 25/18*

U.S. Cl. 220—9 LG **7 Claims**



1. In a cryogenic storage tank or the like comprising spaced, sealed inner and outer tank sidewalls with insulation between respective sidewalls, the improvement wherein: said sidewall insulation comprises thermal insulation material on the outer surface of the inner tank sidewall and a gaseous space between said outer tank sidewall and said insulating material, and means forming a blackish surface on said insulating material facing the spaced outer tank sidewall.

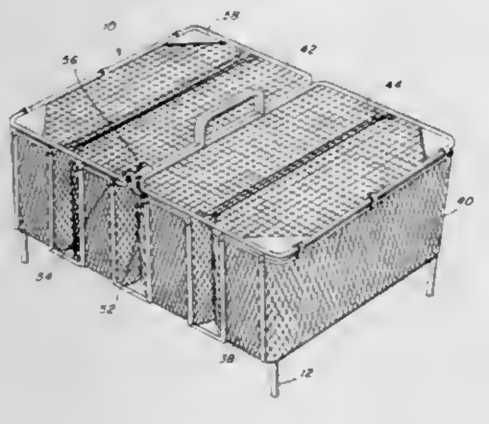
3,935,958
UTENSIL BASKET FOR INSTITUTIONAL DISHWASHING MACHINES

John W. Frangos, Beverly, Mass. 01915

Filed Dec. 17, 1973, Ser. No. 425,237

Int. Cl.² B65D *7/20*

U.S. Cl. 220—19 **6 Claims**



1. Apparatus for use in washing eating utensils and the like, comprising:

a. a foraminous basket formed with a plurality of adjacent compartments open to one side of said basket for receiving utensils selectively placed therein,

b. foraminous cover means connected to said basket for movement from a closed position across said compartments to an open position, and,

c. locking means for securing said cover means to said basket,

d. said basket being formed with a back wall and at least one side wall substantially perpendicular to one another whereby said basket may be placed on said back wall in a horizontal position for loading and unloading said compartments and in an upright position on said one side wall for washing,

e. said cover means including a pair of panels hinged to opposite sides of said basket, one of said panels being free to reciprocate over a limited distance, said one panel being formed with a lug and a lip at the free edge thereof,

f. a loop formed in said basket in position to be in adjacent registration with said lug when said one panel is closed, said lug being engageable with said loop by reciprocation of said one panel, said lip extending in front of said other panel to lock said other panel in closed position.

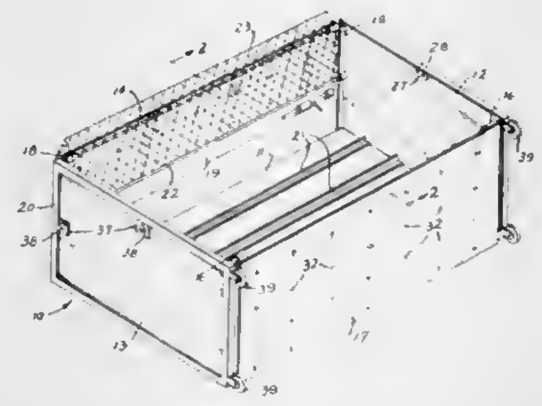
3,935,959
CONTAINER FOR BULK TOBACCO

William R. Long, Tarboro, N.C., assignor to Long Mfg. N. C., Inc., Tarboro, N.C.

Filed Jan. 31, 1975, Ser. No. 546,167

Int. Cl.² A24B *1/06*

U.S. Cl. 220—22 **15 Claims**



1. Container apparatus for receiving and supporting sheet-like articles comprising an elongated side wall, an end wall connected to each end of said side wall, first and second side panels swingably supported by said end walls in spaced relationship with said side wall, said side wall being selectively locatable in a first generally horizontal position and a second generally vertical position, said side panels being selectively located in a first position for closing the top and bottom of the container apparatus and a second position for closing the side of said container apparatus opposite said side wall, said articles being introduced in a randomly oriented manner generally parallel with said side wall when said side wall is in said first generally horizontal position, means for holding said articles in substantially fixed position when said panels are in side closing position, whereby said articles are introduced into said container apparatus in said first generally horizontal position and are retained in the same relative position when said container apparatus is moved to said second generally vertical position.

3,935,960
TAMPER INDICATOR TAPE

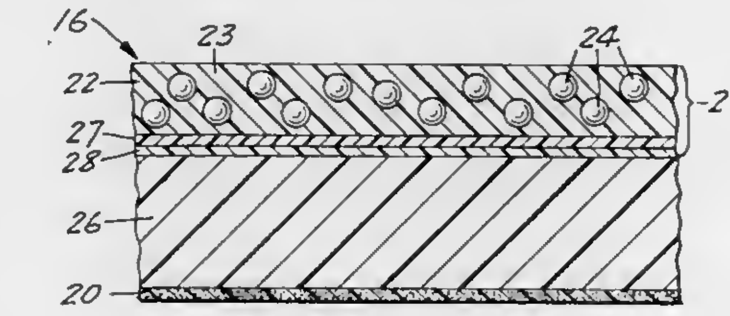
Lew W. Cornell, Mound, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 397,797, Sept. 17, 1973, Pat. No. 3,896,965. This application Jan. 30, 1975, Ser. No. 545,374

Int. Cl.² B65D *41/02, 41/00*

U.S. Cl. 220—260 **3 Claims**

1. An adhesive tape having particular utility in preparing a sealed container comprising in combination a sheet backing material to one face of which is firmly adherently bonded a smooth, uniform coating of normally tacky and pressure-sensitive adhesive and to the other face of which is firmly adhesively bonded an indicator layer comprising a strong flexible binder matrix having a Young's modulus at 2% elongation of at least about 125,000 pounds per square inch, said binder containing dispersed throughout, a solid, color-forming substance and capsules containing a liquid dye precursor reactable with said color-forming substance.



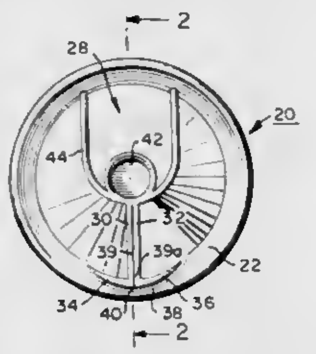
3,935,961
UNITARY BEVERAGE CONTAINER

Robert A. Bennett, 170 Sturbridge Ruad, Easton, Conn. 06484

Filed Sept. 30, 1974, Ser. No. 510,152

Int. Cl.² B65D *41/32*

U.S. Cl. 220—266 **15 Claims**



1. A unitary lid for a container having an open end, circular in cross-section, comprising:

A. a peripheral sidewall terminating with and extending downwardly and inwardly from the open end of said container;

B. a dome-shaped central portion, depressable from a first closed position to a second open position, terminating at its periphery with the peripheral sidewall, said portion incorporating:

1. at least one radially extending score line terminating at one end with said peripheral sidewall; and
2. at least one arcuate score line extending along a portion of the periphery of the central portion and substantially bisected by at least one radially extending score line;

whereby the lid closes the container when the dome-shaped portion is in the closed position and opens the container when said portion is depressed into said open position, thereby tearing the central portion along said score lines and thereby generating a pie-shaped orifice in the region of each radially extending score line.

3,935,962
CONTAINER

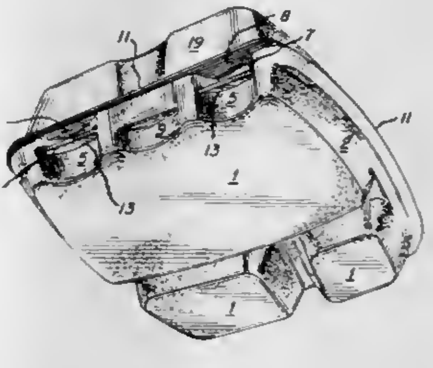
John C. Schubert; Steven Cyr, both of Chippewa Falls, and Charles B. Case, Eau Claire, all of Wis., assignors to Standard Oil Company, Chicago, Ill.

Filed Nov. 20, 1974, Ser. No. 525,390

Int. Cl. B65d *43/02*

U.S. Cl. 220—306 **15 Claims**

1. A deformable container comprising first and second members; wherein said first member has a protruding edge or lip; wherein said second member has a generally flat base and a sidewall which is outwardly inclined; and wherein said second member has at least one inwardly protuding surface, located on the outwardly inclined sidewall, having a void space within which passes therethrough and is adapted to receive the protruding edge of the first member to effect a snap closure.



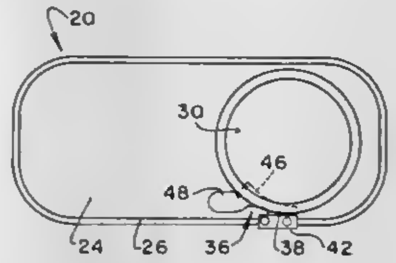
3,935,963
CAP LOCKING MEMBER

Elmer J. Knize, Chicago, Ill., assignor to Lippy Can Co., Ltd., Chicago, Ill.

Filed Feb. 24, 1975, Ser. No. 552,314

Int. Cl.² B65D *45/00; 222 153*

U.S. Cl. 220—315 **9 Claims**



1. A cap locking member for locking a cap or closure in a closed position relative to the neck or spout of the container, which neck or spout extends upwardly of the top wall of the container and with a rim extending around and upwardly of the top wall of the container and around the neck or spout, said cap locking member formed of a spring metal and having a portion engaging a portion of the rim and extending inwardly thereof in the direction of the neck or spout, said inwardly extending portion extending upwardly of the plane of the top wall of the container, said upwardly extending portion having a cap engaging edge, said cap engaging edge positioned contiguous to the bottom edge of the cap and engaging the underside of the bottom edge so that said cap engaging edge locks said cap against counterrotation, said cap locking member having a manually engageable portion adapted to be manually engaged by one hand and when sufficient downward pressure is applied thereagainst the cap engaging edge is depressed and disengaged from the underside of the cap to permit rotation of the cap in a counterdirection by the other hand, said spring metal returning said cap engaging edge to its predepressed position when the manual engaging portion is manually released.

3,935,964
TRASH CAN PROTECTOR

Van Rensselaer P. Saxe, 116 W. University Parkway, Baltimore, Md. 21210

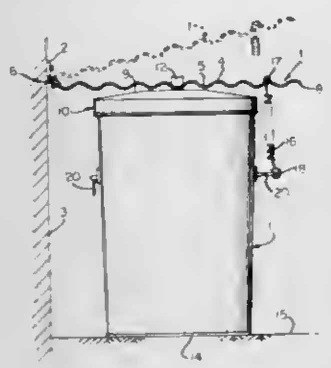
Filed Apr. 30, 1974, Ser. No. 465,680

Int. Cl.² B65D *45/00*

U.S. Cl. 220—318 **7 Claims**

1. A protector device for a can having a peripheral handle, including, a cover member pivotally secured to a relatively stationary support and movable to a substantially horizontal

plane engaging said can in an overlying manner, a can lid removably attached to the top of said can, said pivotally secured cover member provided with anchor means engaging said can lid only when said cover member is pivotally lowered to a horizontal plane overlying said can lid disposed upon said can to preclude horizontal displacement of said can lid, and flexible clamping means carried by said cover member engageable with said can peripheral handle to prevent relative vertical displacement between said can, can lid and pivotally secured cover member and to retain said can and overlying can lid as an assembled unit in fixed proximity to said stationary support by means of said pivotal cover member.



3,935,965

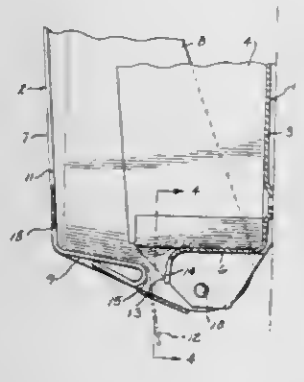
TOILET TISSUE DISPENSER

Robert B. Stevens, Greenwich, N.Y., assignor to Stevens & Thompson Paper Company, Greenwich, N.Y.

Filed Apr. 26, 1974, Ser. No. 464,629

Int. Cl.^{2} B65H *1/00*

U.S. Cl. 221—48 **3 Claims**



1. A dispenser for interfolded toilet tissue, a housing to contain the tissue and having a front surface, a bottom surface connected to the lower end of the front surface along a generally horizontal edge, and a pair of side surfaces connected to the side edges of the front surface and the bottom surface, said bottom surface having a slot extending in direction between said side surfaces and spaced rearwardly from said horizontal edge, said housing having a recess communicating with said slot and extending forwardly along the bottom surface to said horizontal edge and extending upwardly in said front surface, the portion of the recess in the bottom surface adjacent said horizontal edge having a substantially greater width than the width of said slot, the portion of the bottom surface disposed forwardly of the slot being located below the level of the portion of the bottom surface disposed to the rear of the slot, whereby the tissues supported on the bottom surface slop downwardly and forwardly, the edge of the bottom surface bordering the rear of the slot having a downwardly extending flange, and the edge of the bottom surface bordering the front of the slot being rounded and extending downwardly beneath the level of said flange, said interfolded tissue being dispensed by drawing the tissue downwardly from the slot and forwardly over the rounded edge of the bottom surface.

3,935,966

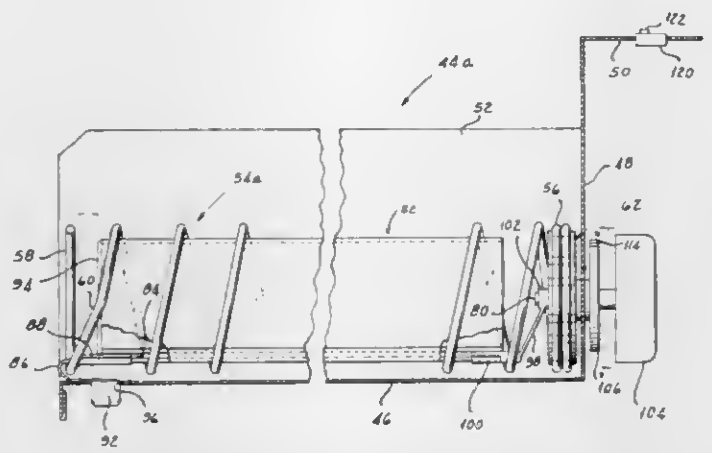
GUN AND MINT DELIVERY UNIT FOR HELICAL FEED MERCHANDISING MACHINE

Irving Pitel, Edison; Richard S. Silverman, Springfield, and Richard J. Mueller, Mountain Lakes, all of N.J., assignors to Rowe International, Inc., Whippany, N.J.

Filed Mar. 22, 1974, Ser. No. 453,886

Int. Cl.^{2} G07F *11/36*

U.S. Cl. 221—75 **8 Claims**



1. A delivery unit for feeding articles to the delivery area of a merchandising machine including in combination, a generally horizontally disposed shelf having a front edge, spaced side walls carried by said shelf, a helical delivery member formed with a plurality of turns, means rotatably mounting said delivery member between said side walls with said member extending from front to back of said shelf, an elongated article separator extending axially of said delivery member, said delivery member having a front terminus and a zero pitch portion for a predetermined angular extent from said terminus and a greater pitch portion disposed between said zero pitch portion and the remainder of said helical delivery member, said greater pitch portion forming a cam for delivering the leading article over the front edge of the shelf, and means for rotating said helical delivery member to deliver the leading article over the front edge of said shelf.

3,935,967

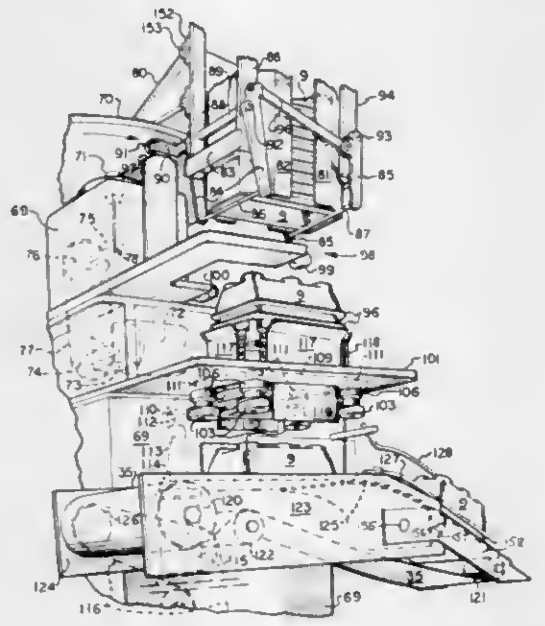
APPARATUS FOR FEEDING SHELL-LIKE ARTICLES

Eugene F. Doucette, Burlington, Mass., assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 416,733, Nov. 19, 1973, Pat. No. 3,867,807. This application Aug. 28, 1974, Ser. No. 501,143

Int. Cl.^{2} B65H *3/28*

U.S. Cl. 221—222 **3 Claims**



1. Apparatus for feeding a stack of shell-like carrier articles having a peripheral out-turned flange means thereon comprising

- a vertical chute defined by plural vertical walls, the interior perimeter of said chute being slightly larger than the perimeter of the articles permitting vertical flow of the articles therein,
- plural rotary feed means rotatably connected to the bottom end of said vertical chute depending below said wall structure thereof, said feed means being rotatable about vertical axes and having a helical means on each of said rotary feed means,
- a conveyor spaced vertically below the chute for receiving the articles fed from the chute comprising
- an endless traveling conveyor surface adapted to travel along an upper horizontal conveying span for receiving the articles, thence along a downwardly inclined span, around an end turn and along an underside return span, and
- a stationary assembly gate means mounted adjacent the end turn, said gate means adapted to receive carrier articles and arrest their movement on the traveling surface for dispensing them singly upon demand from the gate by a positive force applied to the carrier separate from the conveyor,
- the gate means comprising a downwardly inclined dead plate section terminating in a forward edge,
- an overhead hold down guide,
- means for yieldably pivotally mounting said guide in vertically spaced relation to said dead plate section,
- said yieldable means normally positioning the guide for engaging carriers moving onto said dead plate and holding them thereon whereby the front of the carrier extends beyond said forward edge, and
- said guide including an inclined segment extending longitudinally over at least a portion of said dead plate section and beyond its said forward edge, and an adjacent, normally horizontal terminal segment extending longitudinally and forwardly beyond said forward edge of the dead plate,
- drive means,
- means connecting the drive means to said plural rotary feed means for rotating the latter in unison in one direction of rotation for feeding articles one at a time from the stack in the chute, the helical means thereon positively guiding the articles from the lower end of the chute, and
- means connecting the drive means to said conveyor for moving the latter past the lower end of said chute and toward said gate means,
- the drive means operating the feed means and conveyor at a synchronous speed, whereby the carrier articles are fed vertically onto said conveyor in a line and moved by the conveyor onto said inclined dead plate of the gate means.

3,935,968

PACKING CONTAINER

Ruben A. Rausing, Rome, Italy, assignor to Tetra Pak Developpement SA, Lausanne, Switzerland

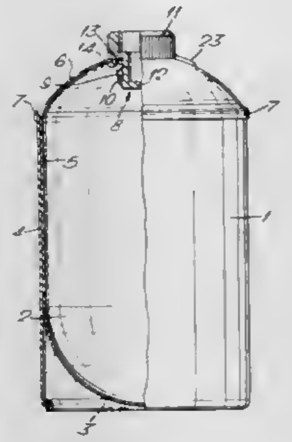
Filed June 14, 1974, Ser. No. 479,569

Claims priority, application Switzerland, June 20, 1973, 8960/73

Int. Cl.^{2} B67D *3/00;* B65D *39/08*

U.S. Cl. 222—479 **2 Claims**

1. A packing container for liquids comprising a container composed of plastic material and provided with a convex upper portion forming a dome and an inwardly turned flange element surrounding a pouring opening in the top of the convex upper portion, and a cap member releasably secured in the pouring opening for closing said container, said cap member having an outwardly and radially extending offset portion for sealingly engaging the rim of the pouring opening at the top of the convex upper portion when said cap member is secured in the pouring opening, the improvement wherein said inwardly turned flange element is provided with a plurality of spaced passages arranged circumferentially around and extending through the upper portion of the inwardly turned flange element from the upper portion of the pouring opening radially inwardly of the rim thereof and downwardly and radially outwardly into the top portion of the container adjacent the top of the dome formed by the convex upper portion whereby when the cap member is removed and the container is tilted for pouring the liquid contents therefrom, the uppermost passages permit the entrance of air into the container to permit even flow of the liquid from the container and the lowermost passages permit flow of liquid from the container into the liquid passing through the pouring opening and so that residual liquid which would normally be trapped in the convex upper portion when the container is almost empty will drain outwardly therethrough.



3,935,969

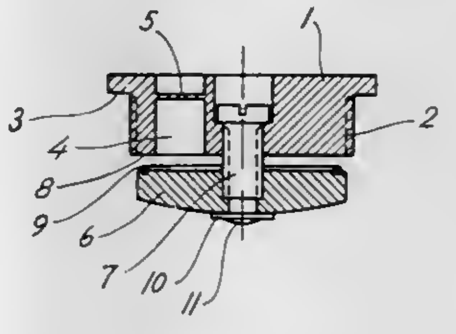
BUNG WITH SELECTABLE FLOW OPENINGS

Odd Thorbjörn Birkeland, Nedreveien 30, 4014 Vaulen, and Finn Graaner, Harriet Backers vei 5, 4000 Stavanger, both of Norway

Filed Sept. 13, 1972, Ser. No. 288,537

Int. Cl.^{2} B65D *47/10*

U.S. Cl. 222—541 **4 Claims**

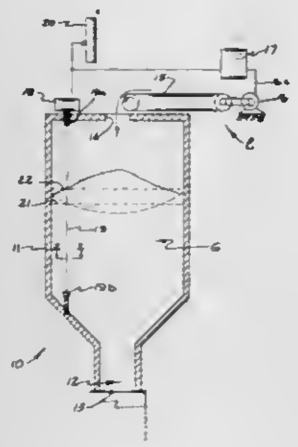


1. A bung for containers comprising an externally screw-threaded body having a plurality of flow openings therethrough arranged in a series about the axis of the bung, a valve for simultaneously opening and closing all of the flow openings, a thin penetrable closure closing each flow opening and being so disposed that the closure of any opening can be penetrated without penetrating the closure of any other opening, and a valve operator lying on the axis of said body and movable relative to said body to move said valve to open and close said flow openings, said flow openings surrounding said valve operator.

3,935,970

AUTOMATIC LEVEL MEASURING AND CONTROL SYSTEM FOR DISPENSING BIN

Robert L. Spaw, 858 E. Little York Road, Houston, Tex. 77022
Division of Ser. No. 158,883, July 1, 1971, Pat. No. 3,807,231. This application Feb. 4, 1974, Ser. No. 439,056
Int. Cl.² B67D *5/08*
U.S. Cl. 222—56 **15 Claims**



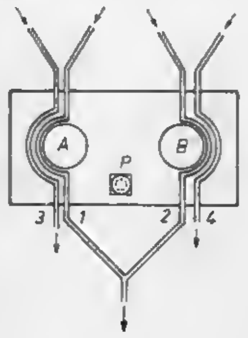
1. A measuring system for automatically measuring a variable quality or quantity of matter present within a sensing area and for providing a representation of the value of said quality or quantity, comprising:

a. sensing means including an elongate body of metallic material having first and second end means with said body extending between spaced points in said sensing area;
b. energizing means connected with said sensing means for electrically energizing said body;
c. electrical processing means connected with said sensing means and responsive to a change in one or more electrical characteristics of said body which vary in value as a function of the quality or quantity of the matter adjacent said body between said spaced points and for forming an output electrical signal dependent upon the value of said one or more electrical characteristics;
d. output means connected with said processing means and said output electrical signal for forming an output representative of the quality or quantity of the matter adjacent said body between said spaced points;
e. an enclosing structure extending about said sensing area for forming a container means, said container means including a filling opening and a dispensing opening for respectively inserting material into said container and dispensing material from said container;
f. securing means connected to said elongate body for mounting said body vertically within said enclosing structure, said securing means including first and second vertically spaced mounting members positioned substantially at the upper and lower ends of said container means with said elongate body connected to and extending linearly between said mounting members in touching engagement with matter contained within said container;
g. control means connected with and operated by said output means for automatically inserting material into said container to maintain a predetermined quantity of material said container; and
h. digitizing means included in said processing means for converting said difference signal into a square wave digitized signal having pulses of constant amplitude and width and a frequency which is a function of said difference signal frequency.

3,935,971

DOUBLE PUMP DEVICE FOR MIXING TWO OR MORE LIQUIDS WITH VARIABLE RELATIVE RATIOS AND CONCENTRATIONS

Paolo Papoff; Dante Guidarini, both of Bari, and Carlo Fragale, Cosenza, all of Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy
Filed May 23, 1974, Ser. No. 472,848
Claims priority, application Italy, May 30, 1973, 73/50345
Int. Cl.² B67D *5/60*
U.S. Cl. 222—134 **6 Claims**

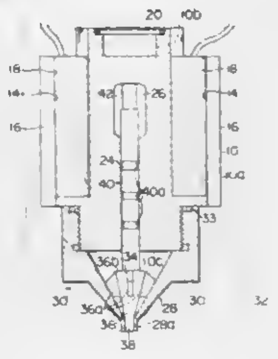


1. A double pump device for mixing with variable ratios and concentrations two or more liquids, comprising in combination: a first peristaltic pump, and a second peristaltic pump, each of said pumps acting on a plurality of collapsible tubes, some of said tubes having a crosssectional area different from others of said tubes, said pumps being operated by two electric motors, driven by an electronic circuit comprising as main elements a differential amplifier and circuitry means for adjusting the input voltage of the differential amplifier and for amplifying the output signals from the differential amplifier before their application to the two driving motors so that the speeds of the motors vary inversely to each other.

3,935,972

PRESSURE ACTUATED NOZZLE VALVE FOR INJECTION MOLDING UNITS

Shiro Tsunemoto, Edosaki; Eiichi Hirayama, and Teruki Mizuguchi, both of Azuma, all of Japan, assignors to Fuji Plastic Co., Ltd., Japan
Filed Dec. 27, 1974, Ser. No. 536,863
Claims priority, application Japan, Dec. 28, 1973, 49-852
Int. Cl.² B29F *1/03*
U.S. Cl. 222—146 HE **8 Claims**

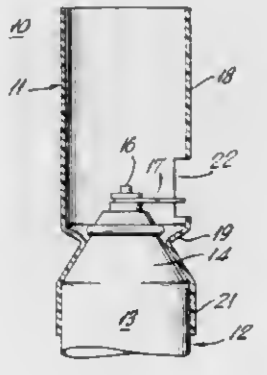


1. An injection unit for a hot runner molding comprising a heating cylinder having plastic passageways formed therethrough in the longitudinal direction, a torpedo member having a central blind hole formed therethrough in a manner spaced from and parallel with said plastic passageways of the cylinder and disposed fixed within the cylinder, nozzle means attached to one end of said cylinder at the opening side of the central blind hole of the torpedo member, and provided with an injection nozzle communicating with the plastic passageways of the cylinder, said heating cylinder having elastically wide operable blind heater holding holes bored at the other cylinder end in a manner substantially equiangularly spaced from one another, valve means having a slidable pin member disposed within the central hole of the torpedo and a valve member connected to the pin member and disposed within the nozzle means, and resilient biasing means so disposed within the central hole of the torpedo as to bias the pin member thereby causing the injection nozzle of the nozzle means to be closed by the valve member.

3,935,973

AEROSOL SPRAY CONFINING DEVICE

Hendrik Frans Weyn, Le Chesnay, France, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Nov. 18, 1974, Ser. No. 524,511
Claims priority, application France, Dec. 19, 1973, 73.45479
Int. Cl.² B67D *5/06;* **B05B** *1/28, 15/04*
U.S. Cl. 222—182 **7 Claims**



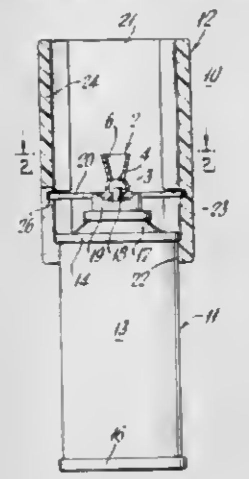
1. In combination, an aerosol container having a peripheral wall and an axially directed discharge nozzle and a valve actuating element comprising a lever extending radially from said valve at a common end of said container, said nozzle communicating with the bottom interior of said container through a normally closed valve and tube and a tubular shield supported by and extending coaxially from said container and separably coupled thereto and communicating at its proximate end with said nozzle, and having a discharge opening at its distal end of diameter approximately equal to or slightly greater than that of said container peripheral wall, said valve actuating element being accessible for finger operation by means of an opening formed in the lower part of said shield.

3,935,974

AEROSOL DISPENSING DEVICE WITH VENTURI

Hendrik Frans Weyn, Le Chesnay, France, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Nov. 18, 1974, Ser. No. 524,517
Claims priority, application France, Dec. 19, 1973, 73.45488
Int. Cl.² B65D *83/00, 83/06, 83/14;* **B05B** *1/28*
U.S. Cl. 222—402.13 **7 Claims**

1. A spray device comprising an aerosol container including a normally closed valve and an axially directed discharge tube and an actuator coupled to said valve and movable between a valve open and a valve closed position, a tubular sleeve axially slideably engaging said container and projecting above the top thereof and terminating at its distal end in an opening a spray expanding nozzle having a venturi shaped bore coaxial and communicating with said discharge tube, means coupling said sleeve to said actuator whereby depression of said sleeve operates said actuator to open said valve, said sleeve being axially movable between a raised extended position projecting above said container and a lowered contracted position telescoped by said container and including an actuator member transversely outwardly directed from said valve actuator, said coupling means comprising an actuator depressor section located on and movable with said sleeve between a raised position with the extended position of said sleeve to release said actuator member to its valve open position and a depressed position urging said actuator member to a valve open position with the depression of said sleeve below its extended position.



3,935,975

CONTAINERS

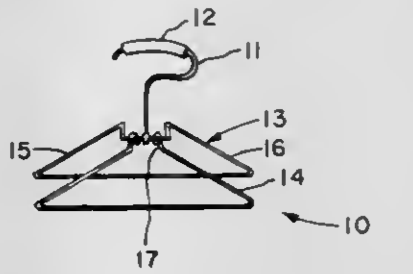
John Harry Gauntlett, Mayfield 7 Kingsdene, Tadworth, United Kingdom
Continuation of Ser. No. 107,286, Jan. 18, 1971, abandoned. This application July 26, 1973, Ser. No. 382,735
Claims priority, application United Kingdom, Jan. 9, 1970 2403/70; May 13, 1970 2304/70; June 11, 1970 28330/70.
Int. Cl.² B65D *37/00*
U.S. Cl. 222—490 **10 Claims**

1. A closure for a sealed fluid container comprising:
an elastically resilient container wall;
an opening in said container wall;
an elastically resilient flap member having a sealing surface and resiliency for acting to cause said surface to normally lie in intimate overlapping sealing contact with said container wall so as to close said opening; and
a portion of said container wall immediately around said opening being capable of distortion to cause said sealing surface of said flap member to move away from said container wall to allow fluid to pass through said opening.

3,935,976

MULTIPLE GARMENT HANGER

Murray Mizrach, 860 United Nations Plaza, New York, N.Y. 10017
Filed May 29, 1973, Ser. No. 364,498
Int. Cl.² A47J *51/084*
U.S. Cl. 223—88 **7 Claims**



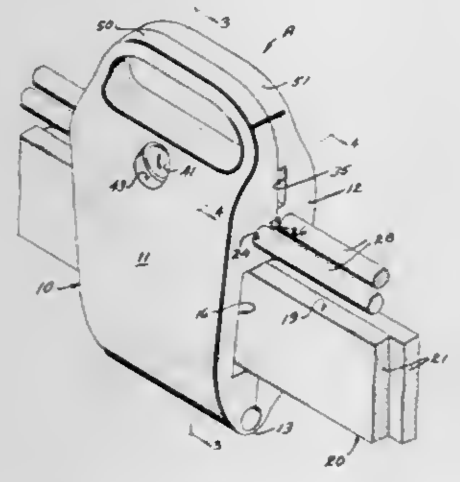
1. A garment support device comprising generally similar first and second generally triangular-shaped hangers which are each formed of a strand of wire and which, when the device is upright, define generally parallel and vertical planes, each hanger having one side as a generally horizontal bottom edge and opposite this edge a top neck where the remaining two sides of the triangle coverge, coupling means extending laterally between and separating said necks a predetermined distance and permanently joining said necks in a pivotal relationship about a pivot axis generally parallel to said bottom edges, and a handle having a top part formed as a hook and a bottom part that is engaged to said coupling means and is pivotal

about said pivot axis, said necks and said couling means establishing, when said device is upright, a predetermined elevation with said handle being substantially totally above said elevation.

3,935,977
SKI EQUIPMENT CARRIER

Robert B. Bonnett, 8618 Robinwood Circle, Utica, Mich. 48087

Filed Nov. 13, 1974, Ser. No. 523,648
Int. Cl.² B65D *45/04*
U.S. Cl. 224—45 S 11 Claims



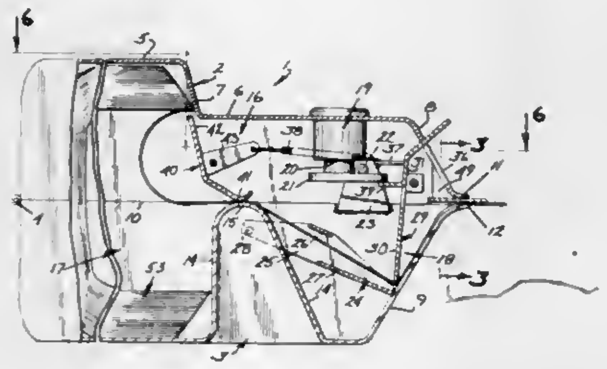
1. A ski equipment securing and carrying device including a body portion having a pair of polygonal cover segments, each of said cover segments having a ski receiving portion and a pole receiving portion, each said ski receiving portion being shaped to receive a ski therewithin and each said pole receiving portion being shaped to receive a ski pole therewithin, each said ski receiving portion and said pole receiving portion including yieldable members for respectively engaging a ski and a ski pole, hinge means hingedly interconnecting said cover segments for juxtaposed closure thereof with said ski receiving portion and pole receiving portion of one of said cover segments confronting the ski receiving portion and pole receiving portion of the other of said cover segments in cooperative relationship for respective clamped engagement by said yieldable members of a ski and a ski pole in relatively fixed position within each said ski receiving portion and said pole receiving portion thereof, and latch means for securing said eover segments in a juxtaposed closed relationship, said latch means comprising tab means positioned interiorly within one of said cover segments and tab means receiving aperture means opening interiorly of the other of said cover segments.

3,935,978
TICKET DISPENSING APPARATUS

Ewald A. Arp; Robert A. Arp, both of Hopkins, and Gene S. Moody, Minneapolis, all of Minn., assignors to Arnuld W. G. Larson, Minneapolis, Minn., a part interest

Filed Feb. 3, 1975, Ser. No. 546,504
Int. Cl.² B26F *3/02*
U.S. Cl. 225—15 12 Claims

1. Ticket dispensing apparatus comprising:
a. a housing defining a supply chamber for a folded elongated row of tickets connected together in edge-to-edge relationship, and a dispensing chamber communicating with said supply chamber and defining a discharge opening;
b. a ticket feeding element mounted in said dispensing chamber for movement in one direction to feed tickets toward said discharge opening and alternately in an opposite retracting direction out of operative engagement with said tickets;
c. an actuator mounted in the housing for movement in one direction toward a feeding position to engage said feeding element and impart ticket feeding movement thereto, and in the opposite direction to a ticket holding position in engagement with said row of tickets to hold the same against feeding movement when said feeding element is retracted;

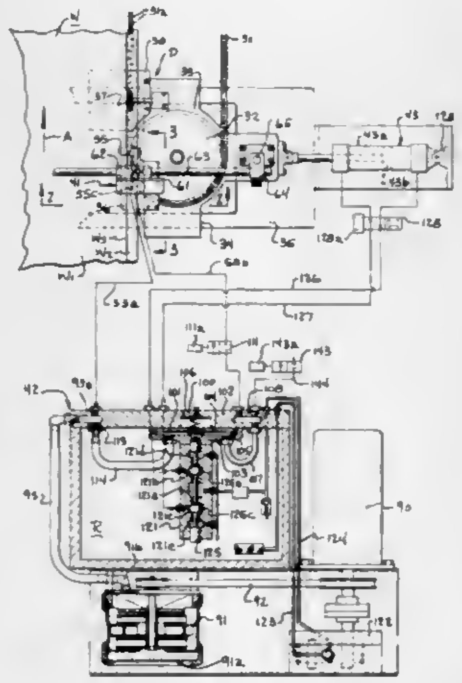


d. retarding means engaging said row of tickets to frictionally hold said tickets against free feeding movement;
e. and yielding means urging said actuator toward holding engagement with said tickets.

3,935,979
WEB ALIGNMENT APPARATUS FOR MULTI-LEVEL WEB MATERIAL

Thomas L. Hickey, Downingtown, Pa., assignor to Rockford Servo Corporation, Rockford, Ill.

Filed Oct. 21, 1974, Ser. No. 516,757
Int. Cl.² B65H *25/26*
U.S. Cl. 226—19 16 Claims

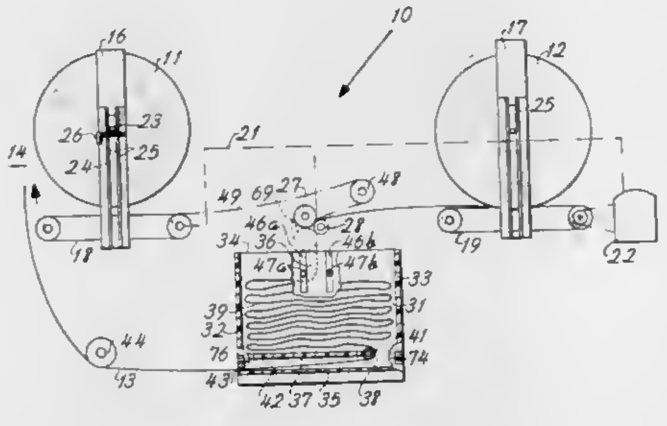


1. A web alignment apparatus for use with tufted webs and the like having a backing and a pile on the backing inwardly of the edge of the latter to maintain the pile edge in a preselected lateral position relative to a device which operates on the web, said web alignment apparatus including a gap-type pneumatic sensor having a sensing orifice at one side of the gap and a transmitting orifice at the other side of the gap for transmitting a stream of air toward the sensing orifice, vane means extending into the gap to variably interrupt the stream of air and thereby vary the pneumatic signal at the sensing orifice, a web engaging member adapted to engage the pile edge, means mounting said web engaging member for movement in a first path crosswise of the course of travel of the pile edge and generally parallel to the plane of the web to sense lateral deviations of the course of travel of the pile edge from said preselected lateral position and in a second path transverse to the plane of the web at the sensing location to sense if the web engaging member rides onto the pile, means operatively connecting said web engaging member to said vane means for moving the latter in the gap to variably interrupt the stream of air from the transmitting orifice in response to movement of the web engaging member along either said first or said second path, and power means responsive to variations in pressure at said sensing orifice produced by movement of said vane means crosswise of said stream of air for effecting relative shifting of said web and the device which operates on the web to maintain the pile edge in the preselected lateral position relative to the device which operates on the web.

3,935,980
CONTINUOUS TAPE PAYING APPARATUS

James E. Groat; Stanley C. Hobson, both of Orange, Calif., and Lawrence B. Woolman, Marion, Ind., assignors to The Anaconda Company

Filed Mar. 4, 1974, Ser. No. 448,087
Int. Cl.² B65H *17/42*
U.S. Cl. 226—43 9 Claims



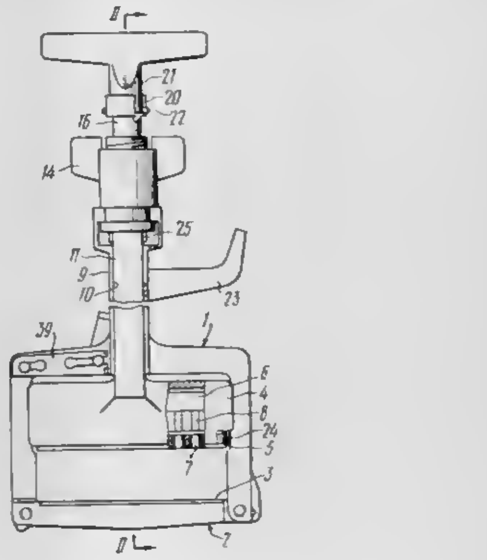
1. An accumulator, for use in the continuous paying out of tape, comprising:
A. an upright rectangular chamber comprising two parallel side walls defining a width to said chamber slightly exceeding the width of said tape, forward and rearward end walls joining said side walls, and a horizontal partition defining a bottom passageway for said tape, said partition being spaced from said rearward end wall,
B. drive means continuously introducing said tape into the top of said chamber approximately midway between said end walls and movable for producing folds in the tape such that the tape is storable in said chamber in an accordion fashion,
C. arcuate guide means for said tape, said guide means being mounted between said rearward end wall and said partition, and
D. an opening in said forward end wall communicating with said passageway for continuously paying out said tape.

3,935,981
SURGICAL APPARATUS FOR SUTURING ORGANS AND TISSUES WITH METAL STAPLES

Ernest Mikhailovich Akopov, Dubninskaya ulitsa, 61, kv. 88; Nikolai Nikolaevich Kapitanov, 8 ulitsa Oktyabrskogo polya, 5, kv. 9; Alexei Alexeevich Strekopytov, ulitsa Vsevoloda Vishnevskogo, 10, kv. 67; Evgenia Sergeevna Ogoltsova, Rogozhsky val, 13, korpus 3, kv. 14, and Alexandr Ilich Paches, Ulitsa Medvedeva, 12/6, Kv. 5, all of Moscow, U.S.S.R.

Filed June 5, 1974, Ser. No. 476,559
Claims priority, application U.S.S.R., July 31, 1973, 1955101
Int. Cl.² B25C *5/02*
U.S. Cl. 227—19 6 Claims

1. A surgical apparatus for suturing organs and tissues with metal staples, comprising, in combination:
a. a frame having an opening and including a pair of parts;
b. a clamp member mounted on one of the parts of said frame and releasably connected to the other part of the frame for permitting a free insertion of the organ being sutured into said opening of the frame after the clamp member has been displaced relative to the other part of the frame;
c. said clamp member including a flat portion having recess means for bending legs of staples;
d. a staple head mounted on the frame and including means for guiding the staple head in a path of perpendicular travel relative to said flat portion of the clamp member;

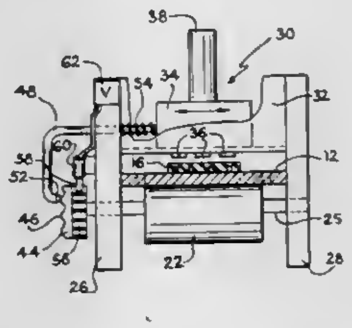


e. a drive connected to said staple head for causing its travel;
f. a holder on said frame spaced from said clamp member for metal staples inserted into the staple head, whereby tissues being sutured can be arranged between the clamp member and the holder;
g. a pusher for staples mounted on said frame for perpendicular travel relative to said clamp member for pushing staples from the holder, through the tissues and into engagement with the recess means of the flat portion of the clamp member; and
h. a drive on the frame connected to said pusher for operating the pusher in relation to the clamping member.

3,935,982
WIRE INSERTING APPARATUS FOR TIRE TREADS

James K. Neuschel, 5 Park St., Richfield Springs, N.Y. 13439

Filed Feb. 21, 1975, Ser. No. 551,777
Int. Cl.² B27F *7/14*
U.S. Cl. 227—101 8 Claims



5. An apparatus for inserting wire elements in tread rubber having a tread design, a bench for supporting the tread rubber, drive rollers for advancing the tread rubber longitudinally along the bench, means spaced above the bench for driving the wire elements into the tread rubber as it advances, said last-named means including a carriage movable in guideways disposed at right angles to the direction of travel of the tread rubber, means to move the carriage in a predetermined pattern in the guideways whereby the insertion of the wire ele-

ments can be coordinated with the tread design, and means cooperable with one of the drive rollers for controlling the spacing of the elements.

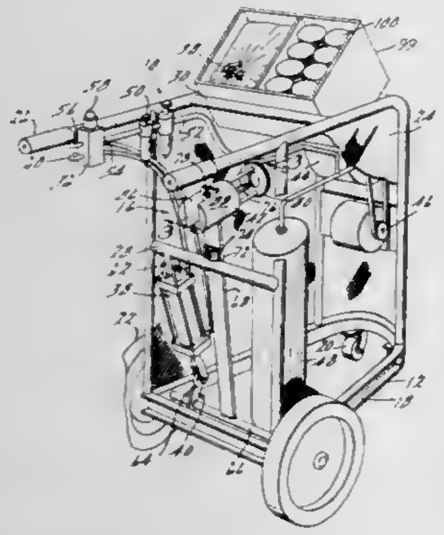
3,935,983
ROOF NAILING MACHINE

Albert T. Buttriss, Fairview Park, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 22, 1974, Ser. No. 516,921

Int. Cl.^{2} B27F *7/02*

U.S. Cl. 227—110 **14 Claims**



1. A nailing machine comprising:
- a wheeled carriage adapted for movement on a surface to be nailed,
- a frame mounted on said carriage,
- force transmitting means including a stroking member,
- means mounting said force transmitting means on said frame for movement of said stroking member through a nailing stroke,
- a nail driver, and
- means interconnecting said stroking member and said nail driver and including lost motion means operative to allow inertial movement of said nail driver from a rest position adjacent said stroking member to a working position remote from said stroking member in response to movement of said stroking member through its nailing stroke.

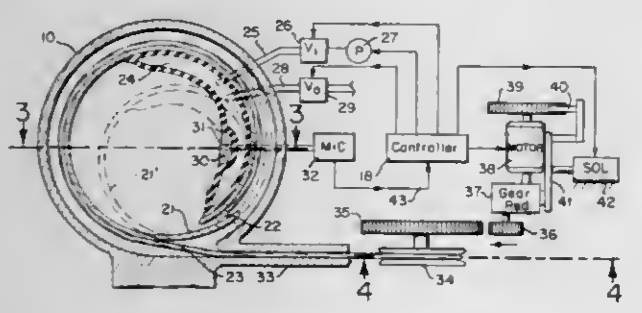
3,935,984
AUTOMATIC CUFF MECHANISM FOR BLOOD PRESSURE MEASURING SYSTEM

Abraham Lichowsky, Los Angeles, and Jack I. Bauman, Santa Monica, both of Calif., assignors to Ambitex Company and Medical Monitors, Inc., both of Los Angeles, Calif., part interest to each

Filed Sept. 9, 1974, Ser. No. 504,131

Int. Cl.^{2} A61B *5/02*

U.S. Cl. 128—2.05 C **5 Claims**



1. An automatic cuff mechanism for use with a blood pressure measuring system, comprising, in combination:
- a. an enclosing member defining an opening for receiving a portion of a person's body in which blood circulation is to be temporarily cut off;
- b. mechanical contracting means including a flexible band having one end secured to an inner wall portion of said opening in said enclosing member, said band passing circumferentially about the interior of said opening; and pulling means secured to said band and passing tangentially therefrom out said enclosing member such that a pulling force on said pulling means circumferentially contracts said band in a manner of a tightening spiral to close about said portion;
- c. means responsive to a given resistance force exerted by said portion resisting further contraction of said contracting means to terminate operation thereof so that said contracting means engages about said portion in a snug manner; and
- d. a flexible fluid chamber lying along a portion of the interior surface of said band, in a position between said flexible band and said portion of a person's body such that further pressure can be exerted on said portion by filling said flexible fluid chamber with fluid.

3,935,985
SUPPORT FOR WELDING HEAD CARRIAGE

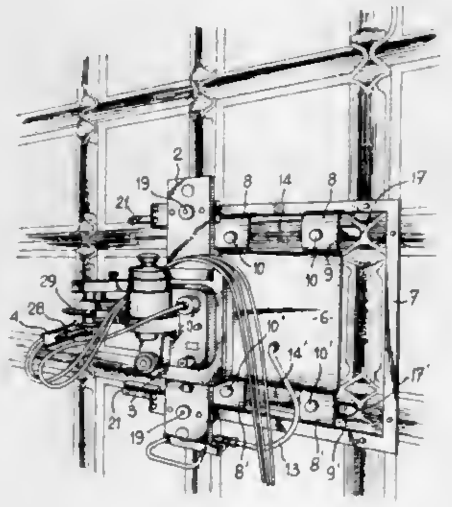
Alain Prudhomme, Meudon, and Michel Kotcharian, Paris, both of France, assignors to BSL Bignier Schmid Laurent, Ivry-sur-Seine, France

Filed Jan. 30, 1975, Ser. No. 545,536

Claims priority, application France, Jan. 31, 1974, 74.03203

Int. Cl.^{2} B23K *37/02*

U.S. Cl. 228—45 **16 Claims**



1. A support for the carriage of a welding head for the automatic welding of metal plates comprising
- corrugated elements disposed in two perpendicular directions so as to intersect each other,
- abutment surfaces at the ends of said corrugated elements at their intersections,
- planar members surrounded by said corrugated elements and disposed between the intersections thereof,
- a base adapted to be removably fixed to one of the planar members,
- means for centering the base with respect to the corrugations surrounding the planar members by contact with a plurality of said abutment surfaces,
- means defining the distance from the base to the planar member by contact with a plurality of said corrugations,
- means for mounting a guide bar on said base parallel to at least one of said corrugations whereby the guide bar may receive the carriage in a translational manner, and
- suction means for removably fixing the base to one of the planar members.

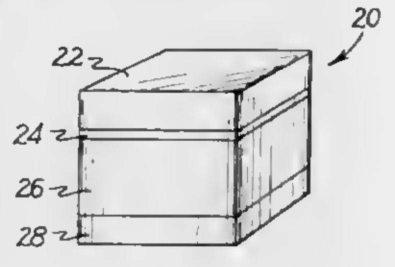
3,935,986
SOLID STATE BONDING PROCESS EMPLOYING THE ISOTHERMAL SOLIDIFICATION OF A LIQUID INTERFACE

Pasquale R. Lattari, Attleboro, and Carl Redfield, North Attleboro, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 3, 1975, Ser. No. 554,383

Int. Cl.^{2} B23K *28/02*

U.S. Cl. 228—115 **6 Claims**



1. An improved system for bonding selected metals comprising:
- arranging an interliner metal layer between a first and a second layer, said interliner layer having a lower initial melting temperature than either the first or second layers and being heat diffusible with at least one of said layers to form a ductile alloy having a relatively higher melting temperature,
- solid state pressure bonding said interliner and said layers to form a composite material, and
- post bond heating of said metal layers at a temperature above said initial melting temperature of said interliner layer and below said relatively higher melting temperature of said alloy for sufficient time to melt said interliner and initiate diffusion of said intermediate layer meterial with at least said one of the two layers to form a layer of said new alloy of higher melting point and to solidify said new alloy layer for securely bonding said first and second layers of metal together.

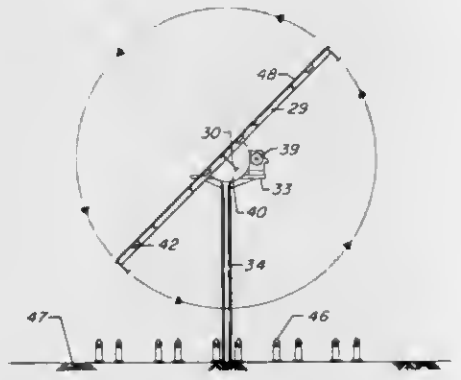
3,935,987
METHOD FOR ROTATION OF PLATES TO FACILITATE WELDMENT

Christopher J. Foster, Sr., and Christopher J. Foster, Jr., both of 14 Vanderventer Ave., Port Washington, N.Y. 11050

Division of Ser. No. 324,445, Jan. 17, 1973, Pat. No. 3,827,682. This application Oct. 5, 1973, Ser. No. 404,130

Int. Cl.^{2} B23K *37/04, 31/02*

U.S. Cl. 228—213 **8 Claims**



1. A method of facilitating the weldment of adjoining plates comprising:
- locating a supporting frame structure intermediate an in line production conveying system for weldment and handling of plates in shipbuilding procedures;
- providing conveying means positioned with respect to the supporting frame and extending upwardly therefrom so as to engage with the plates and in coordination and alignment with the in-line conveying system and to facilitate positioning and removal of the plates with respect to the frame during material handling activities;
- conveying the plates onto the supporting frame structure in an inoperative position;
- securing the plates on the supporting frame structure;
- partially welding the plates together;
- shifting the frame and secured plates to an operative position free of the conveying means;
- rotating the frame and secured plates to a second welding position by controlled rotation of the frame and secured plates between a substantially horizontal normal first welding position and a second welding position sufficiently removed from the first welding position to facilitate access to both sides of the adjoining plates;
- completing the welding of the plates;
- shifting the frame and secured plates to the inoperative position and bringing the secured plates into engagement with the conveying means; and
- conveying the plates in the second welding position from the frame by means of the conveying means in alignment and in coordination with the in-line conveying system.

3,935,988
PROCESS OF PRODUCING SOLDERABLE COMPOSITES CONTAINING AGCDO

Ulf O. Harmsen, Pforzheim, and Wolfgang S. Pottken, Keltern-Dietlingen, both of Germany, assignors to Eugen Durrwachter Doduco, Pforzheim, Germany

Filed June 24, 1974, Ser. No. 482,071

Claims priority, application Germany, July 5, 1973, 2334160. The portion of the term of this patent subsequent to Apr. 9, 1991, has been disclaimed.

Int. Cl.^{2} C22F *1/14*; B23K *1/04*

U.S. Cl. 228—252 **1 Claim**

1. A process of manufacturing a solderable composite body containing silver cadmium oxide comprising the steps of forming an assembly having an intermediate layer of a silver copper alloy located between and in contact with a layer of a silver cadmium alloy and a layer of silver or silver alloy, welding the layers together, and subsequently internally oxidizing the cadmium, wherein the welding step comprises heating the assembly until the occurrence of a pasty $S + \alpha$ phase of the silver-copper alloy.

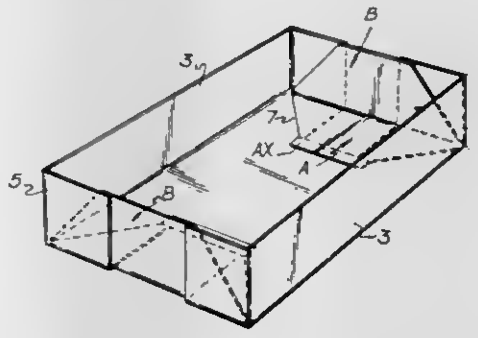
3,935,989
FOLDABLE CARTON TRAY

Kenneth Naylor, Bradford, England, assignor to Alf Cooke Limited, England

Filed Dec. 28, 1973, Ser. No. 429,081

Int. Cl. B65d *5/24*

U.S. Cl. 229—31 R **2 Claims**



1. A carton tray blank of cardboard or like sheet material which is formed with longitudinal and lateral fold lines parallel to the boundaries of the blank to delineate respectively side and end panels connected by corner panels and all surrounding a center panel, each end panel having diagonal fold lines extending from the adjacent intersections of said longitudinal and lateral fold lines towards but stopping short of the edge of said panel to delineate a first trapezoidal flap with a tongue extension formed by cuts extending from said diagonal fold lines to said edge, the center panel having three cut lines near each end to delineate at each end a

second trapezoidal flap having a common base with said first flap and being complementary to the latter, the blank. being erectable by folding the side panels up at 90° to the center panel, then at each end downwardly folding said first flap at 90° to the center panel so that the adjacent corner panels swing around to the carton's end, swinging said second flaps up into the vertical position to abut the corner panels whereby the end walls are formed, and folding said first flaps further to cause them to occupy the spaces vacated by the second flaps, with the tongue extension overlapping the center panel and locking the first flaps in positions providing a complete bottom for the carton.

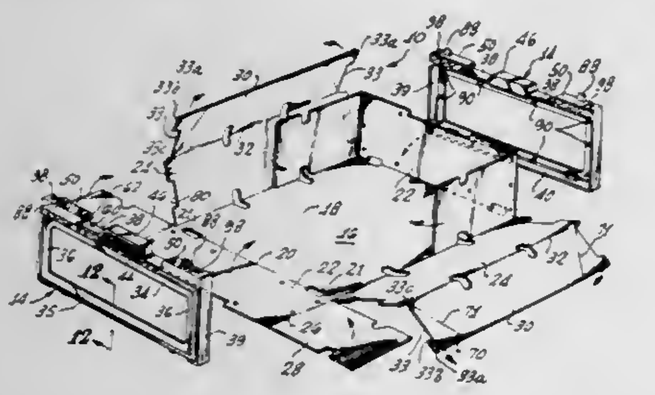
3,935,990
PLASTIC REINFORCED PRODUCE CONTAINER

Walton B. Crane, Sherman Oaks, Calif., assignor to A & E Plastik Pak Co., Inc., City of Industry, Calif.

Division of Ser. No. 307,962, Nov. 20, 1972, Pat. No. 3,878,980, which is a continuation-in-part of Ser. No. 193,874, Oct. 29, 1971, abandoned, Ser. No. 227,798, Feb. 22, 1972, abandoned, and Ser. No. 238,320, March 27, 1972, abandoned. This application Mar. 17, 1975, Ser. No. 559,064

Int. Cl.^{2} B65D *61/00*

U.S. Cl. 229—34 R 3 Claims



1. In a generally rectangular container with rigid rectangular, reinforcing end frames at opposite ends thereof, the container having rectangular bottom, opposed side and end walls, and lids which are respectively hinged along longitudinal edges thereof to the upper edges of said opposed side walls, said lids having opposite longitudinal swinging edges, said rectangular end frames comprising integral, coplanar, upper, lower and side flanges parallel with the end walls of the container and lying thereadjacent, and rectangular integral upper, lower and side flanges, integral with and projecting perpendicularly from said coplanar flanges from the outer margins thereof, whereby to provide reinforcing caps receiving therein the corresponding end walls of the container and end portions of said bottom walls, with the perpendicular side flanges thereof lying closely adjacent said side walls of said container:

horizontal upwardly facing and downwardly facing surface areas formed on the exterior sides of said upper and lower perpendicular flanges,

the upwardly facing surface areas on said upper perpendicular flanges being at substantially the level of the underside of the hinged lids when said lids are closed,

said lids having transverse end edges, and substantially coplanar tabs projecting laterally therefrom from positions generally proximate to said longitudinal swinging edges of the lids, so as to be movable to positions overlying said upwardly facing surface area on said upper perpendicular flanges,

two catch means mounted on the upper perpendicular flange of each end frame, said tabs being cooperable with said catch means, one with each, to releasably catch said lids in said overlying positions,

said hinged lids having corner portions, including said tabs, scored across with crease lines which are on the undersides thereof when the hinged lids are folded out and downward, and the side walls of the container having slots located for reception of said tabs when the lids are bent outwardly and down alongside the side walls of the container,

said score lines enabling inward bending of said corner portions thereon and entry of said tabs into said slots.

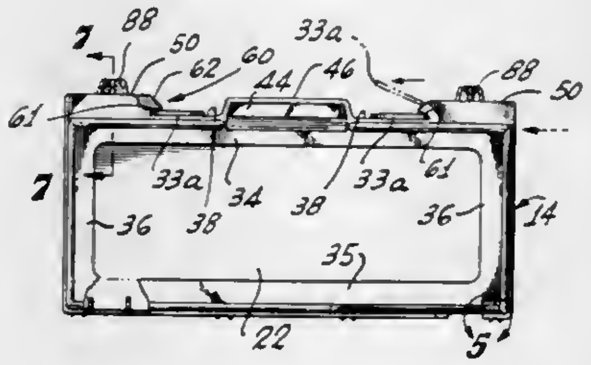
3,935,991
PLASTIC REINFORCED PRODUCE CONTAINER

Walton B. Crane, Sherman Oaks, Calif., assignor to A & E Plastik Pak Co., Inc., City of Industry, Calif.

Division of Ser. No. 307,962, Nov. 20, 1972, Pat. No. 3,878,980, which is a continuation-in-part of Ser. Nos. 193,874, Oct. 29, 1971, abandoned, Ser. No. 227,798, Feb. 22, 1972, abandoned, and Ser. No. 238,320, March 27, 1972, abandoned. This application Mar. 17, 1975, Ser. No. 559,088

Int. Cl.^{2} B65D *61/00*

U.S. Cl. 229—34 R 3 Claims



1. In a generally rectangular container with rigid rectangular, reinforcing end frames at opposite ends thereof, the container having rectangular bottom, opposed side and end walls, and lids which are respectively hinged to the upper edges of said opposed side walls, said rectangular end frames comprising integral, coplanar, upper, lower and side flanges parallel with the end walls of the container and lying thereadjacent, and rectangular integral upper, lower and side flanges, integral with and projecting perpendicularly from said coplanar flanges from the outer margins thereof, whereby to provide reinforcing caps receiving therein the corresponding end walls of the container and end portions of said bottom walls, with the perpendicular side flanges thereof lying closely adjacent said side walls of said container:

horizontal upwardly facing and downwardly facing surface areas formed on the exterior sides of said upper and lower perpendicular flanges,

the upwardly facing surface areas on said upper perpendicular flanges being at substantially the level of the underside of the hinged lids when said lids are closed, and

said lids having substantially coplanar tabs which project laterally and overlie said upwardly facing surface area on said upper perpendicular flanges,

two hooks mounted on the upper perpendicular flange of each end frame, said hooks facing toward one another, and

said laterally projecting tabs having edge shoulders facing generally in the direction of the hinge line of the corresponding lid and being adapted for engagement in the throats of said hooks, and said edge shoulders, when unengaged with said hooks, normally falling short of the forward extremities of said hooks, and thereafter recede into said throats by resilient return flexure of said side wall when said manual stress is relieved.

3,935,992
BOX THAT FUNCTIONS BOTH AS ENCLOSED CONTAINER AND OPEN RECEPTACLE

Kohei Uriu, No. 107, Minamiushiroya, Yashiomachi, Minami Saitama, Saitama, Japan

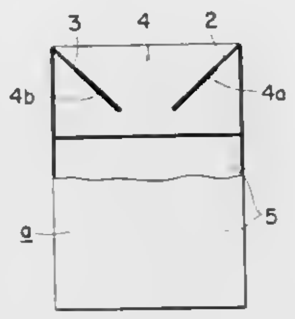
Filed Nov. 27, 1974, Ser. No. 527,892

Claims priority, application Japan, Feb. 26, 1974, 49-22238[U]

Int. Cl.^{2} B65D *5/10*

U.S. Cl. 229—38 5 Claims

1. A box that functions both as an enclosed container and an open receptacle, comprising a bottom member, side wall members extending upwardly from said bottom member, lid members extending from said side wall members and being of the same uniform width as said side wall members from which they extend and being of sufficient length such that when all of said lid members are folded at the junctures of said lid members and said side wall members there is formed to top that effectively covers the box permitting same to function as an enclosed container, at least two of said lid members each being provided with two slotted openings spaced inwardly from the free edges thereof such that as said at least two of said lid members are folded inwardly and downwardly along their corresponding side wall members said slotted openings are thereby positioned to slope downwardly and inwardly from positions near the corners of the tops of their corresponding side wall members such that as at least two of the remaining of said lid members are folded inwardly and downwardly the edges thereof are positioned within said slotted openings to thus form an open receptacle.



3,935,993
FREE-STANDING CONTAINER

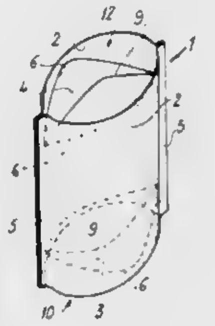
Leon Doyen, and Louis Doyen, both of 79, rue de Bourgogne, Lyon 9 (Rhone), France

Filed Jan. 21, 1974, Ser. No. 435,095

Claims priority, application France, Jan. 26, 1973, 73.03616

Int. Cl.^{2} B65D *11/02, 11/10, 11/22*

U.S. Cl. 229—53 10 Claims



1. A free-standing container comprising:

a pair of like coextensive, rectangular and outwardly convex side wall panels having rectilinear opposite parallel longitudinal edges seamed together by heat seals all along said edges;

a pair of like end wall panels each having a periphery and each formed with a fold extending between the seamed lateral edges and subdividing the periphery into a pair of like sections, all of said panels being formed of a thermoplastic synthetic resin; and

respective nonstraight seams of heat seals joining each of said sections to a respective side panel and extending between its lateral edges, one of said end wall panels constituting the bottom of said container and the other end wall panel constituting the cover thereof.

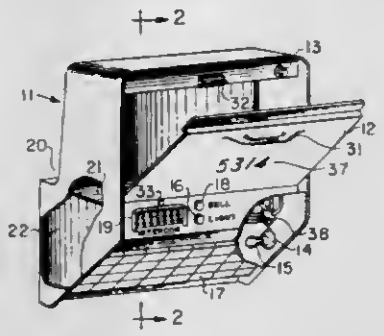
3,935,994
SECURITY MAILBOX

Arthur Darvishian, 5314 Sheridan Dr., Williamsville, N.Y. 14221

Filed Sept. 25, 1973, Ser. No. 400,535

Int. Cl.^{2} B65D *91/00*

U.S. Cl. 232—36 6 Claims



1. A security mailbox attachable to a wall of a dwelling, comprising a mail receptacle, door means mounted thereon for the deposit of mail into the receptacle and withdrawal therefrom, an activating switch mounted behind said door means, responsive to the opening of said door means, for activating an alarm, a light transmitting shelf in the mail receptacle on which the deposited mail rests, a downwardly and inwardly angled light transmitting panel at a front bottom portion of the mailbox, illuminating means located within the box and below the shelf so that when activated it lights the box interior and the area about the mailbox at night, mounted on the front of the box, an intercommunication transmitter-speaker unit, a manually operable switch for turning on the illuminating means and a manually operable switch for activating a bell, and mounted within the box, switch means for turning on the illuminating means in response to the opening of the door, and wiring means for transmitting electric power to the alarm switch, to the intercommunication transmitter-speaker unit, to the illuminating means and to the bell switch, which wiring means are communicable through an opening in a back wall of the mailbox with the interior of the dwelling to which the security mailbox is attachable.

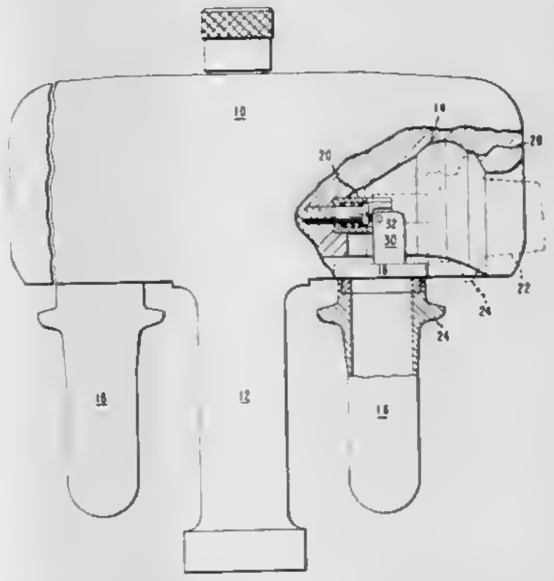
3,935,995
SWINGING BUCKET CENTRIFUGE ROTOR

John Francis Williams, New Canaan, and Mark William Hayden, Bridgeport, both of Conn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 7, 1975, Ser. No. 575,404

Int. Cl.^{2} B04B *9/12*

U.S. Cl. 233—26 9 Claims



1. In a swinging bucket centrifuge having a rotor which defines a plurality of peripheral cavities therein and is adapted to turn about its axis and hanger means in each said cavity for pivotally supporting a bucket nominally in a vertical orienta-

tion and yet permitting said bucket to swing under the influence of a centrifugal force to a horizontal orientation during operation, each said hanger means being capable of movement radially of said axis during operation to facilitate seating its said bucket in its said cavity, the improvement comprising:
- a receptacle defined by said rotor radially contiguous each said cavity adapted to slideably receive along a radius of said rotor at least a portion of said hanger means, and
- means in each said receptacle for preventing the rotation of a hanger means about its path of movement.

3,935,996
COUNTER MECHANISM FOR CONTINUOUS MEASUREMENTS, PARTICULARLY DISTANCE MEASUREMENTS

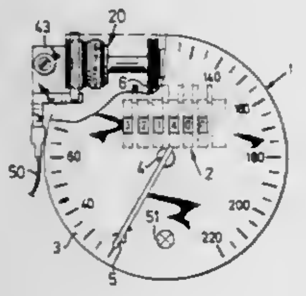
Helmut Kleinböhl, Goddelau, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 20, 1975, Ser. No. 551,253

Claims priority, application Germany, Mar. 9, 1974, 2411305

Int. Cl.² G01C *22/00;* **G01P** *3/02;* **G01D** *13/08;* **G06M** *1/24*

U.S. Cl. 235—95 R **7 Claims**



1. A counting mechanism for the digital measurement of increments of a selected physical quantity, such as distance travelled by a motor vehicle, said counting mechanism comprising:
- a first and a second odometer-type counting assembly, each having a plurality of counting wheels arranged side-by-side on a common shaft, each counting wheel bearing the numbers 0 – 9 on its periphery, said wheels being interconnected one with another so that the advancement of a wheel of one value by an amount corresponding to 10 digits produces an advancement of the adjacent wheel of the next highest value by an amount corresponding to one digit;
- an input drive means to the mechanism, coupled to the common shaft of said first counting assembly;
- a subsidiary drive means mechanically coupled between a predetermined one of said counting wheels in said first counting assembly and the common shaft of the second counting assembly so that the common shaft of the second counting assembly rotates in synchronism with said predetermined counting wheel;
- and resetting means on said second counter assembly for resetting the counting wheels therein back to an indicated number value of zero;
- whereby the number value indicated by the counting wheels of the second counting assembly is a direct visual indication to an observer of the mechanism of an attainment of a predetermined number of said increments of the selected physical quantity during a first period of time, and thereafter said counting assembly can be reset to zero to indicate said attainment during a second and subsequent periods of time.

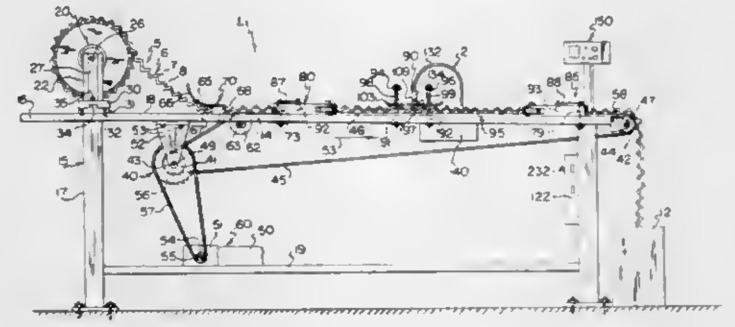
3,935,997
PLEAT COUNTER APPARATUS

Michael R. Loje, 959 Rose Blvd., Highland Heights, Ohio 44143

Filed Oct. 29, 1973, Ser. No. 410,887

Int. Cl.² G06M *7/00;* **G06G** *7/00*

U.S. Cl. 235—98 C **17 Claims**



1. An apparatus for counting corrugations of any configuration in a sheet material, comprising
- support means for supporting said sheet material thereon,
- a corrugation detection assembly mounted on said support means in confronting relation to the peak of each corrugation and including,
  - light producing means including a light source on said support means for delivering light toward said sheet material for reflection therefrom,
  - light sensing means including a light sensitive element for sensing light of a predetermined level of intensity reflected from each corrugation and for producing a first output signal when light of said predetermined level of intensity is reflected from said material, and
  - commonly supported and directed light projecting and receiving means for projecting light from said light source and for receiving reflected light from said sheet material,
- said light projecting and receiving means including transmitting means for directing light in one direction toward said sheet material and for receiving reflected light from said sheet material in a direction substantially opposite from and generally parallel to said one direction and generally perpendicular to said sheet material so that said reflected light from the corrugation being counted will not be obstructed by an adjacent corrugation to assure exposure of said receiving means to reflected light of said predetermined level of intensity from the corrugations being counted and to enable counting of corrugations of any generally similar configuration,
- feed means mounted on said support means for moving said sheet material relative to said support means, and
- pulse counting means for counting said first output signal to indicate the number of corrugations of any generally similar configuration moving relative to said corrugation detection assembly.

3,935,998
VALVE CONSTRUCTION AND SYSTEM UTILIZING THE SAME

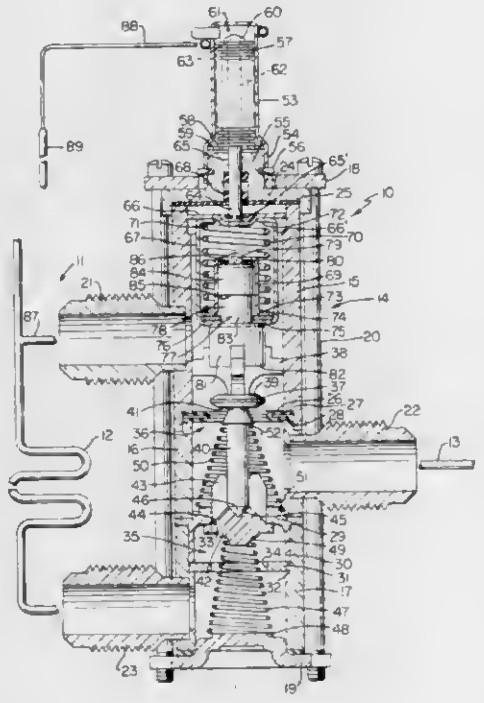
Edward N. Caldwell, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 290,558, Sept. 20, 1972, Pat. No. 3,818,981. This application Apr. 17, 1974, Ser. No. 461,531

Int. Cl.² G05D *23/02*

U.S. Cl. 236—1 C **12 Claims**

1. A valve construction comprising a housing means having an inlet and a pair of outlets, a pair of valve seat means carried by said housing means for respectively controlling fluid flow from said inlet to said outlets, a pair of valve member means for respectively controlling said valve seat means, said valve member means being operatively associated together to move substantially in unison, and means operatively associated with said valve member means to position the same to act respectively on one side of said pair of valve seat means or on the other side of said pair of valve seat means, said pair of valve member means being arranged relative to said valve seat means such that increasing the fluid flow to either of said outlets will decrease the fluid flow to the other of said outlets regardless of which side of said pair of valve seat means said pair of valve member means are acting, said means for positioning said valve member means to act respectively on said sides of said valve seat means comprising a temperature responsive device.



3,935,999
SPRAY CONFINING AEROSOL DEVICE

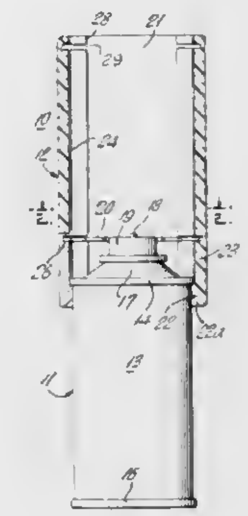
Hendrik Frans Weyn, Le Chesnay, France, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,510

Claims priority, application France, Dec. 19, 1973, 73.45487

Int. Cl.² B05B *1/28, 15/04*

U.S. Cl. 239—288.5 **7 Claims**



1. An aerosol spray device comprising a pressurized aerosol container including an axially directed spray nozzle and a transverse, outwardly directed, depressible valve actuator; a shield defining sleeve coaxial with and slidably engaging said container and movable between a raised extended position projecting above said container and a lower, contracted position telescoped onto said container; and actuator depressor means located on and movable with said sleeve and adapted to engage said valve actuator whereby to urge said actuator to a depressed, valve open position upon the depression of said sleeve below its extended position, said valve actuator including an arm projecting radially beyond the periphery of said container, and said actuator means includes an inwardly directed shoulder member positioned on the lower inner border of said sleeve and projecting to a point between the outer periphery of said container and the outer end of said actuator arm, said shoulder member extending for less than the full periphery of said sleeve.

3,936,000
DEPRESSIBLE AEROSOL SPRAY ACTUATING CONFINING DEVICE

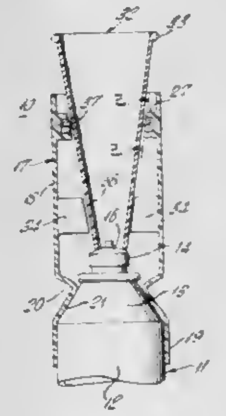
Hendrik Frans Weyn, Le Chesnay, France, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,516

Claims priority, application France, Dec. 19, 1973, 73.45491

Int. Cl.² B05B *1/28, 15/04*

U.S. Cl. 239—288.5 **6 Claims**



1. An aerosol spray confining device for use with a pressurized aerosol container provided on the top wall thereof with an axially directed spray nozzle, a valve, and a valve actuator which upon depression opens said valve, comprising a longitudinally extending tubular shield member and means for mounting said shield member on said container, in communication with said nozzle, for longitudinal movement between an advanced position engaging and depressing said valve actuator to open said valve and a retracted position releasing said actuator to a valve closed condition, said mounting means comprising a sleeve member having a lower end releasably engaging the upper end of said container and supporting said shield member coaxially with said container for movement between said advanced and retracted positions, said shield member projecting above said sleeve, said valve actuator including a depressible circular member coaxial with said nozzle and said shield member being of frustoconical configuration and coaxial with said sleeve with its reduced lower end registering with said valve actuator.

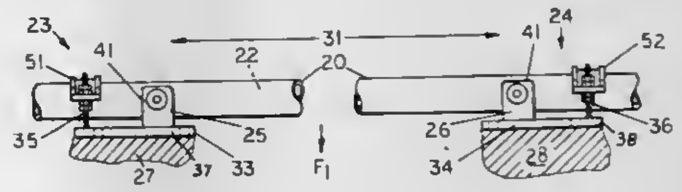
3,936,001
ANTI-SAG DEVICE FOR PAPER MILL SHOWERS

William Richard Clendaniel, Andover, Mass., assignor to Bolton-Emerson, Inc., Lawrence, Mass.

Filed Dec. 9, 1974, Ser. No. 530,737

Int. Cl.² B05B *1/20, 13/02;* **D21F** *1/32;* **F16L** *3/10*

U.S. Cl. 239—289 **4 Claims**



1. Anti-sag apparatus for elongated shower pipes of the type

extending across a paper stock treatment machine said apparatus comprising:

an elongated pipe of predetermined length and diameter having opposite ends;

a pair of brackets, each fixed under one of said ends and each having a support means thereon, fixed at a predetermined distance inboard of said end for supporting said pipe against downward movement and

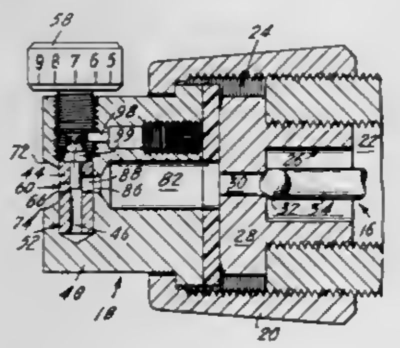
each said bracket having downward deflection means, located at a predetermined distance outboard of one of said support means for holding down the adjacent end of said pipe

whereby the portion of said pipe, between said brackets, may be free of braces, tie rods and reinforcing structures, supported against sag and of a diameter and thickness required for hydraulic capacity rather than for structural stiffness.

3,936,002
ADJUSTABLE SPRAY TIP

John D. Geherth, Jr., Rifle Camp Road, West Paterson, N.J. 07424

Filed Nov. 29, 1974, Ser. No. 528,558
Int. Cl.^{2} B05B *1/32*
U.S. Cl. 239—455 **14 Claims**



1. An adjustable spray nozzle for use with a spray gun, said spray gun being adapted for hydraulically atomizing and spraying liquids and including conduit means communicating with a source of liquid under pressure, said adjustable spray nozzle comprising:

a. a spray tip housing including means for securing said housing to said spray gun;

b. a fluid bore in said housing communicating with said conduit means and terminating in a spray opening in said housing having substantially sharp edges to thereby permit the transference of pressurized liquid from said source to said spray opening; and

c. valve means included in said spray tip housing for varying the size of said spray opening from a closed position to a fully open position including all intermediate positions therebetween to thereby adjust the spray of liquid issuing from said spray opening.

3,936,003
MULTIPORT HIGH DENSITY BURNER

William H. Hapgood, Brookline, and Donald G. Protopapas, Wilmington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 420,825, Dec. 3, 1973, abandoned, which is a continuation of Ser. No. 372,363, June 21, 1973, abandoned, which is a continuation of Ser. No. 215,656, Jan. 5, 1972, abandoned, which is a continuation of Ser. No. 2,584, Jan. 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 787,915, Dec. 30, 1968, abandoned. This application Oct. 11, 1974, Ser. No. 513,962
Int. Cl.^{2} B05B *1/14*
U.S. Cl. 239—559 **6 Claims**

1. In combination:

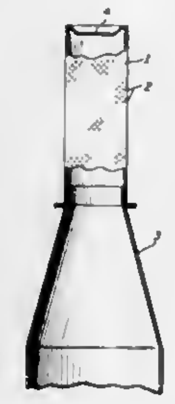
a multiport burner wall member substantially surrounding a plenum;

said wall member having a plurality of circular ports having a diameter in the range of 0.02 in. to 0.04 in. distributed in a uniform pattern having a plurality of rows about the circumference of said wall and throughout a substantial portion of the height of said wall member;

said portion having a curved surface area;

each of said ports being adjacent to a plurality of other ports;

the total area of said ports being between 15% and 30% of said wall portion;



the angular divergence between the center lines of adjacent ports in said curved surface area being less than 14 degrees;

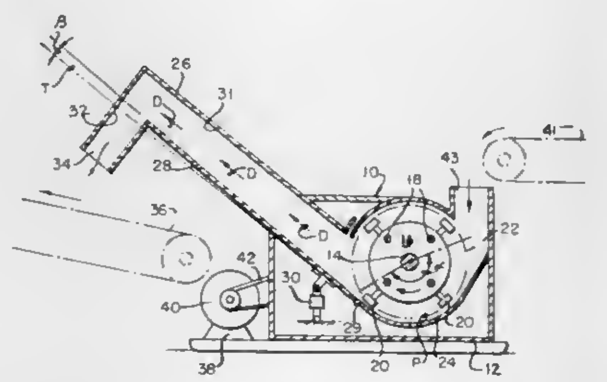
means for producing a flame front outside said plenum extending across the regions between adjacent jets and spaced from said wall member comprising a blower for supplying a fuel-air mixture to said plenum at a pressure producing jets of said fuel-air mixture through said ports having velocities substantially greater than the combustion wave velocity of said mixture; and

ignition of said fuel-air mixture within said plenum being prevented by said wall member.

3,936,004
MATERIAL REDUCER

Carl R. Graf, Whitehall; Harry E. Janes, Chester, and Anthony W. Slikas, Norristown, all of Pa., assignors to Pennsylvania Crusher Corporation, Broomall, Pa.

Continuation-in-part of Ser. No. 361,002, May 16, 1973. This application May 13, 1974, Ser. No. 469,563
Int. Cl.^{2} B02C *23/38*
U.S. Cl. 241—5 **25 Claims**



1. A method of crushing massive, high density materials such as rock and coal, comprising the steps of:

introducing mineral feed into a housing through an inlet open to the atmosphere;

allowing the mineral feed to drop from said inlet into the impactor circle of a rotor rotating within said housing, said rotor having impact members defining said impactor circle;

impacting said feed material with said rotating impact members as said feed material drops into said impactor circle to crush said materials;

causing said reduced material to move into contact with an imperforate impact surface in a rotor-feed material-impact surface inter-reaction zone subtending an arc including and extending upwardly from either side of the lowest point of said impactor circle, to further crush said material;

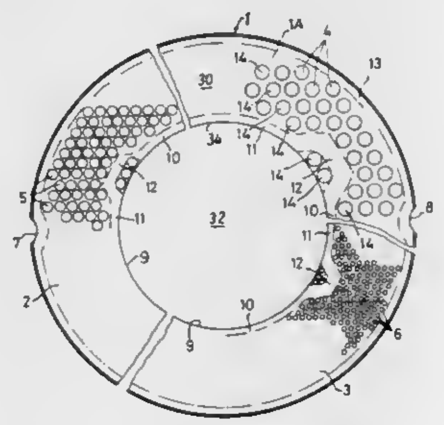
throwing substantially all material crushed by said rotor and said imperforate impact surface upwardly and outwardly from said rotor at the downstream end of said impact surface on the side of said lowest point opposite to the side on which said energy imparted thereto by said rotor; and

impinging a portion of said material against the lower surface of an at least partially confined channel extending from said downstream end, said lower surface extending into the trajectory imparted to said material at said downstream end at an angle above a line tangent to said downstream end of said impact surface, said angle being sufficient to cause scouring of said lower surface by said material and to reduce clogging of said channel by said material.

3,936,005
PERFORATED PLATE FOR CRUSHING MACHINES

Karl Schnell, Muhlstr. 28, Winterbach, Germany (7065)

Filed June 26, 1974, Ser. No. 483,422
Claims priority, application Germany, June 30, 1973, 2333399
Int. Cl.^{2} A47J *43/07*
U.S. Cl. 241—83 **7 Claims**



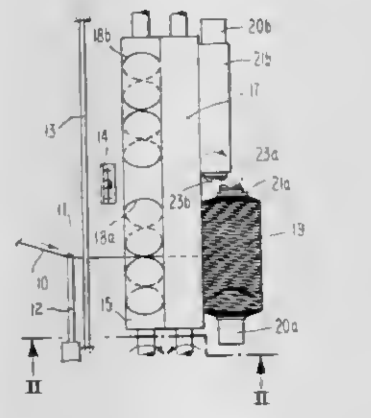
1. A plate for crushing machine, comprising a circular perforated ring-shaped plate having a central hole and an annular area surrounding the hole, said annular area having a narrow strip adjacent the hole which is not perforated and which is spaced outwardly from the center of the perforated plate by unequal amounts around its circumference, said non-perforated strip having at least one annular sector and at least one loop area and wherein at least one perforation is located with the loop area.

3,936,006
STRAND WINDING

Ralph W. List, East Lansdowne, and Robert K. Stanley, Media, both of Pa., assignors to Textured Yarn Co., Inc., Kennett Square, Pa.

Filed May 6, 1974, Ser. No. 467,018
Int. Cl.^{2} B65H *67/04*
U.S. Cl. 242—18 A **6 Claims**

1. In apparatus for uninterrupted package winding of textile strands including transfer from winding onto a first package to winding onto a second package axially aligned therewith, the respective packages being carried upon respective spindles individually movable into contact with rotative drive means with their adjacent ends closely spaced and out of mutual contact, improved mechanism for so transferring such a strand, comprising a strand guide locatable on an extended lateral bisector of either package, a bistable inertial device located between the respective extended lateral bisectors and bridging a parallel extension of the space between and including the respective adjacent spindle ends and being adapted in a stable strand-receiving position to be contacted by and to retain the laterally transferring strand while in that position when the strand guide is transferred from one extended lateral bisector to the other and further adapted to be switched by lateral force of the strand to an alternative stable strand-

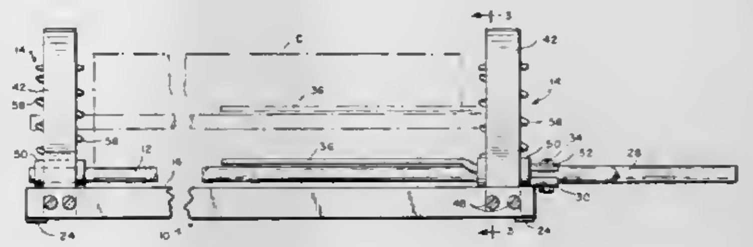


releasing position and to release the strand upon assuming that position and thereby to delay the lateral transfer of the strand, wherein the bistable inertial device comprises generally Y-shaped flip-flop means pivotably mounted at its base leg for limited tilting to either side and adapted to be tilted to the opposite side by contact of laterally transferring strand moving from the side to which already tilted, into contact with the raised arm of the device, thereby tilting the means to the opposite side, whereupon the engaged arm becomes lower and the strand is released therefrom after momentary delay involved in so tilting it.

3,936,007
PAPER LOG ROLLER

David E. Butz, Boston, Mass., assignor to Belmont Industries, Incorporated, Reading, Mass.

Filed Oct. 3, 1974, Ser. No. 511,775
Int. Cl.^{2} B65H *17/02*
U.S. Cl. 242—67.1 R **12 Claims**

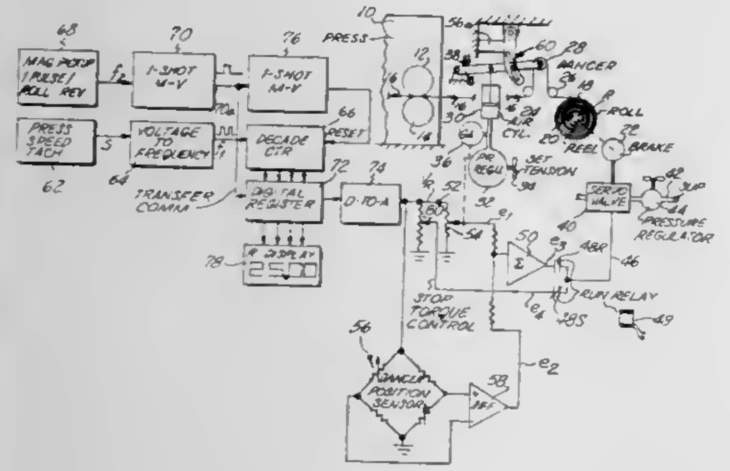


1. A device for coiling sheet material to form a combustible log, comprising a base having a top side, posts mounted to the top side of the base at opposite ends, bearing members mounted on the posts for vertical sliding movement thereon perpendicular to the base said bearing members containing bearing openings, a spindle rotatably mounted in said openings with its axis parallel to the base for rotation about an axis parallel to the base and for movement perpendicular to the base, spring means yieldably resisting movement of the bearing members perpendicular to the base, means on the spindle for connecting an end of the sheet to be coiled thereon to the spindle, and a crank at one end of the spindle for effecting rotation thereof.

3,936,008
REEL STAND TENSION CONTROL SYSTEM

James N. Crum, Stonington, Conn., assignor to Harris Corporation, Cleveland, Ohio

Filed July 1, 1974, Ser. No. 484,997
Int. Cl.^{2} B65H *23/08, 25/22*
U.S. Cl. 242—75.44 **15 Claims**



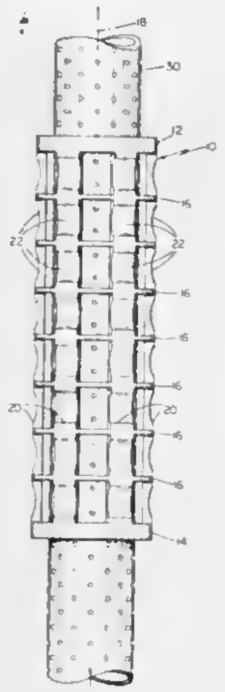
1. In a web tension control system for a reel stand used with a web-fed printing press in which web material is pulled toward the press by a pulling means and unwound from a roll on a reel in which a dancer engages the web material between the roll and the pulling means for applying a transverse force to the web material that is substantially constant for all transverse positions within a range of positions and having means to apply torque to the reel in response to a control signal to control the length of said web material between the roll and the pulling means and thereby controlling the dancer's position, radius signal means for producing a radius signal which varies in accordance with the radius of the roll of web material, sensing means for sensing the position of said dancer, first circuit means coupled to said radius signal means and to said sensing means for providing a second signal which is in proportion to said radius signal and which varies in response to deviation of the position of said dancer from a predetermined position, signal combining means for producing said control signal, means coupling a first signal from said radius signal means to said signal combining means, means coupling said second signal to said signal combining means, and means coupling said control signal to control said means to apply torque to maintain said dancer in a predetermined intermediate position in said range to maintain web tension substantially constant.

3,936,009
COLLAPSIBLE DYE TUBE

Stanley Livingstone, Wilkinson Blvd., P.O. Box 8282, Charlotte, N.C. 28208

Filed Aug. 26, 1974, Ser. No. 500,474
Int. Cl.^{2} B65H *75/20*
U.S. Cl. 242—118.11 **8 Claims**

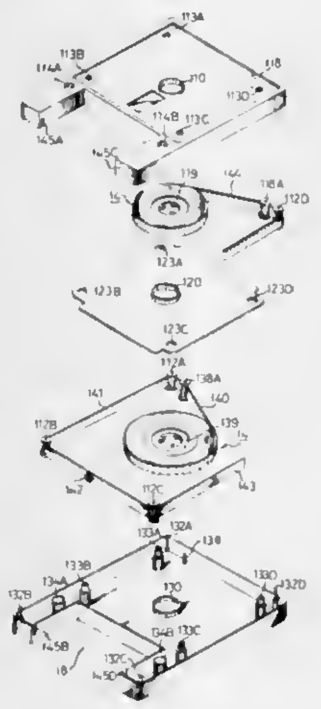
1. In a system consisting of a perforated dyeing spindle and a plurality of dye tubes useful with yarn wound therearound, in stacked, end-to-end relationship on said spindle, that improvement consisting of an improved dye tube comprising,
- a multiplicity of continuous yarn-supporting rings spaced along an axis, and
- a multiplicity of connectors spaced circumferentially about said tube and extending between adjacent said rings,
- each said connector having its opposite ends respectively joined to said adjacent rings and having an inherently preferentially radially inwardly movable buckling portion between said ends, whereby upon the application of axial force to said tube said adjacent rings will approach each other while said connectors buckle toward said axis.



3,936,010
CASSETTE FOR FILM AND DRIVING MEANS THEREOF

Shui-Ting Lu, No. 28-3, Sin Sen South Road, Sec. 3, Taipei, China /Taiwan

Filed June 28, 1974, Ser. No. 483,958
Int. Cl.^{2} G03B *1/04;* **G11B** *15/32*
U.S. Cl. 242—194 **4 Claims**

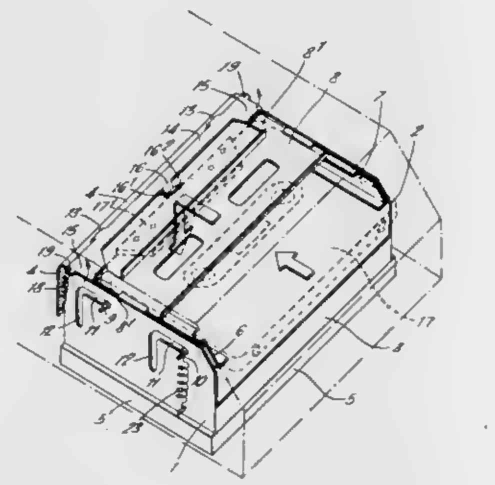


1. A cassette for film comprising a rectangular case including an upper and a lower compartment forming halves of said case, a partition plate disposed between the halves of the case, a supply reel and a take-up reel rotatably and coaxially mounted within each half of the case respectively on opposed sides of said partition plate, a plurality of tapered, rotatable guide rollers located substantially adjacent the corners of said case for successively receiving the film from one of said reels, for directing the film from the plane of said one reel toward a plane intermediate the planes of said reels, then in a plane parallel to and intermediate the planes of said reels, then in a direction toward the plane of the second of said reels and finally directing the film into the plane of said second of said reels, and a rotatable cylindrical correcting guide roller disposed between each of the first and last tapered guide rollers and the associated reel and adjacent said first and last tapered guide rollers respectively, whereby the film is always passed around the same circumferential distance of said first and last tapered guide rollers to provide a constant and uniform path for said film between said rotatable correcting guide rollers.

3,936,011
TAPE CASSETTE TRANSPORT

Theophiel Clement Jozef Lodewijk Staar, Kraainem, Belgium, assignor to Staar, S.A., Brussels, Belgium

Filed Mar. 13, 1974, Ser. No. 450,721
Claims priority, application Belgium, Mar. 16, 1973, 796866
Int. Cl.^{2} G03B *1/04;* **G11B** *15/32, 23/04*
U.S. Cl. 242—198 **11 Claims**

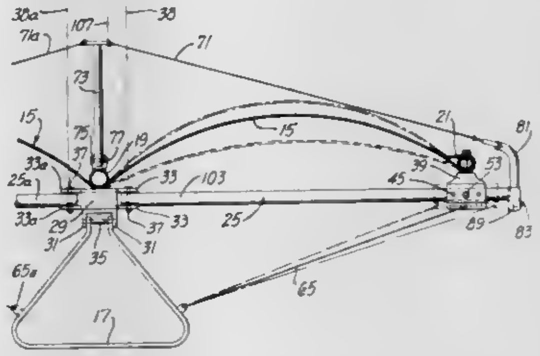


1. In apparatus for the recording and/or playback of information contained on a storage medium extending between feed and take-up reels in a cartridge, the cartridge having openings in at least one of its surfaces for receiving drive means for the reels, the improvement comprising:
- a housing including a pair of opposed channel defining members, said channel defining members being spaced to slideably receive a storage medium containing cartridge within said housing, said housing and cartridge being movable bodily serially in two directions substantially perpendicular to each other to transport the received cartridge;
- means for supporting said housing on the recording and/or playback apparatus; and
- means for guiding the movements of said housing in said two directions, said movements in a cartridge loading operation consisting of initial movement of said housing and cartridge bodily in a direction to bring the cartridge drive means receiving openings into alignment with drive means on the recording and/or playback apparatus, and subsequent movement of said housing and cartridge bodily in a second direction to cause the cartridge to be engaged with the drive means;
- and said movements of said housing and cartridge bodily in a cartridge releasing operation being the reverse of said movements in a cartridge loading operation to disengage the cartridge from the drive means and to eject the cartridge.

3,936,012
HANG GLIDER

Stephen C. Murray, 33871 El Encanto, Dana Point, Calif. 92629

Filed May 3, 1974, Ser. No. 466,682
Int. Cl.^{2} B64C *31/02*
U.S. Cl. 244—16 **14 Claims**

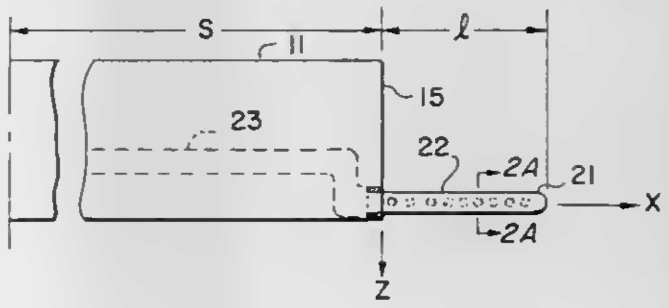


14. A device capable of flight comprising:
- a frame including first and second leading edge members, a keel, and means for interconnecting said leading edge members to said keel so as to allow the leading edge members to be pivoted relative to said keel;
- said frame including first and second cross members, means for attaching said first and second cross members to said keel to allow said cross members to pivot relative to said keel, and means for attaching the first leading edge member to said first cross member;
- a connector mounted on said second cross member for coupling the second leading edge member to the second cross member;
- said connector being mounted for movement along said second cross member from an extended position toward the keel to facilitate at least partial collapse of said frame;
- means for retaining said connector in said extended position;
- a mast attached to said keel;
- a flexible element having first and second spaced regions, said first region being attached to said mast;
- means other than said second leading edge member for attaching said second region to the second cross member outboard of said connector; and
- flexible material coupled to said leading edge members and forming a relatively broad surface to at least assist in supporting the device when the device is airborne.

3,936,013
VORTEX CONTROL

Shao Wen Yuan, 2021 Highboro Way, Falls Church, Va. 22043

Filed Dec. 17, 1973, Ser. No. 425,143
Int. Cl.^{2} B64C *23/06*
U.S. Cl. 244—40 A **19 Claims**



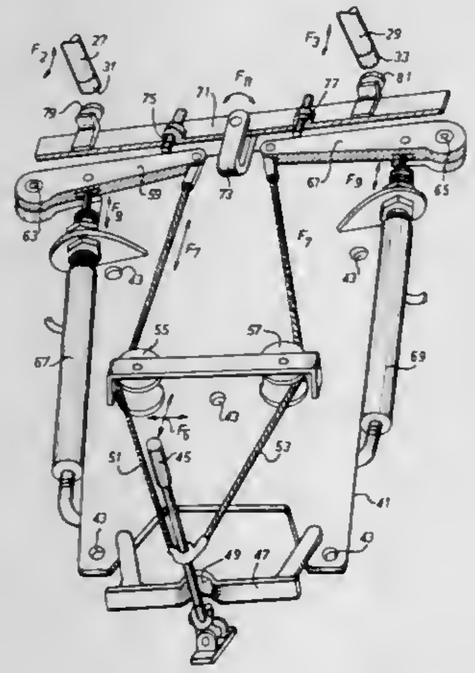
1. Apparatus for abating wing-tip vortices formed at the tips of a wing when it is in a fluid stream flowing relative to said wing, said vortices being formed as a result of a difference in fluid pressure on one side of the wing relative to the fluid

pressure on the opposite side of the wing which causes a rush flow of fluid from the side of higher pressure to the side of lower pressure, said apparatus comprising a wing having at least a pair of wing tips, a source of pressurized fluid, a plurality of jetting means, and means connecting said jetting means to said source of pressurized fluid, each of said plurility of jetting means of being located outwardly of a respective one of said tips for simultaneously emmiting pressurized fluid from said jetting means in the direction toward said side of higher pressure and in a plane substantially perpendicular to the direction of flow of said fluid stream, said wing including a leading edge and a trailing edge, said fluid stream which flows relative to said wing passing from the leading edge toward said trailing edge, and said jetting means are located downstream of the position of the mid-chord of said tips which lies halfway between said leading and trailing edges.

17. A method for abating wing-tip vortices formed at the tips of a wing when it is located in a fluid stream flowing relative to said wing, said vortices being formed as the wing which causes a rush flow of fluid from the side of higher pressure to the side of lower pressure, said method comprising the steps of providing a wing having at least a pair of wing tips, providing a supply of pressurized fluid, and simultaneously emitting a jet of said pressurized fluid from a region located adjacent to and outwardly of each of said wing tips in a direction toward said side of higher pressure and in a plane substantially perpendicular to the direction of flow of said fluid stream, said wing including a leading edge and a trailing edge and said fluid stream passes from the leading edge to the trailing edge, and said step of emitting a jet of pressurized fluid comprises emitting said jet at a location downstream of the position of the mid-chord of said tips which lies halfway between said leading and trailing edges.

3,936,014
HAND CONTROL APPARATUS FOR AN AIRCRAFT USABLE BY A PERSON LACKING USE OF HIS LEGS

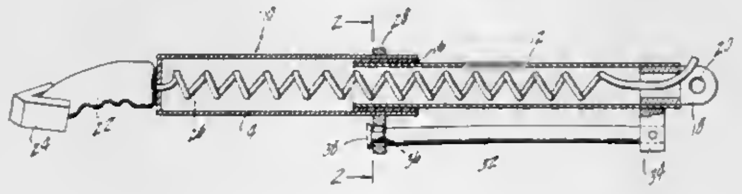
Bernard Morin, 1, rue Corneille, 78130 Les Mureaux, France
Filed July 29, 1974, Ser. No. 492,915
Claims priority, application France, July 30, 1973, 73.27873
Int. Cl.^{2} B64C *13/04*
U.S. Cl. 244—83 R **9 Claims**



1. Hand control apparatus for the piloting of an aircraft by an-operator lacking use of his legs, the aircraft having means for controlling its course, means for controlling a throttle, means for heating a carburetor, a conventional joy-stick, and left and right brakes, said apparatus comprising a handle, means supporting said handle for three independent movements and means individually responsive to a respective movement of the handle for controlling the course control means, the throttle control means, and the carburetor heating means, hand-operated switch means carried by said handle for control of further elements of the aircraft, a second joy-stick, means coupled to said second joy stick for respectively operating the right and left brakes in accordance with the positioning of the second joy stick and a common support element on which said handle, said brake operating means and the means controlling the course control means are so assembled in operative position relative to one another and mutually coupled together for interrelated operation to allow complete manual control by the operator of the handle, and joy-sticks during respective flight and ground operations.

3,936,015
RETRACTABLE COLLECTIVE PITCH STICK

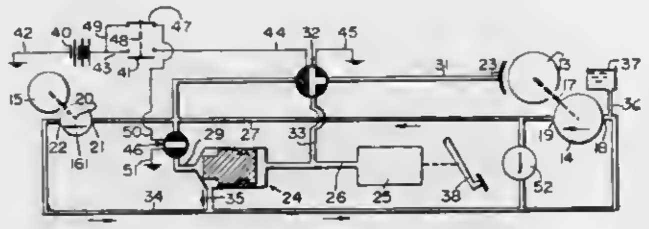
James Clement Dean, Stratford, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed June 28, 1974, Ser. No. 484,182
Int. Cl.^{2} B64C *13/04*
U.S. Cl. 244—83 F **1 Claim**



1. A collective pitch stick for a helicopter including:
a first tube having a first end connected for rotational movement of the tube in one plane about said connection and a second end remote from said first end;
a second tube having an internal diameter slightly larger than the external diameter of said first tube so as to be axially slideable thereon;
said second tube having a first end normally surrounding the second end of said first tube;
locking cam means attached to said first end of said second tube; and
index pin means connected at one end to said first end of said first tube;
said index pin means having means adjacent its other end engaging with said locking cam means to maintain said tubes in a maximum length relationship;
said index pin means having a necked-down portion engaging said locking cam means;
said locking cam means having a slot through which said index pin extends;
said slot having three interconnected areas including;
a first area having a width slightly larger than the diameter of said index pin;
a second area having a width slightly larger than the diameter of the necked-down portion of said index pin; and
a third area being a detent having a width larger than the diameter of the necked-down portion but smaller than the diameter of said index pin;
said index pin being preloaded so as to urge it into the detent of said slot third area.

3,936,016
AIRPLANE'S ANTI-WHEEL-LOCK AND SPIN-UP SYSTEM

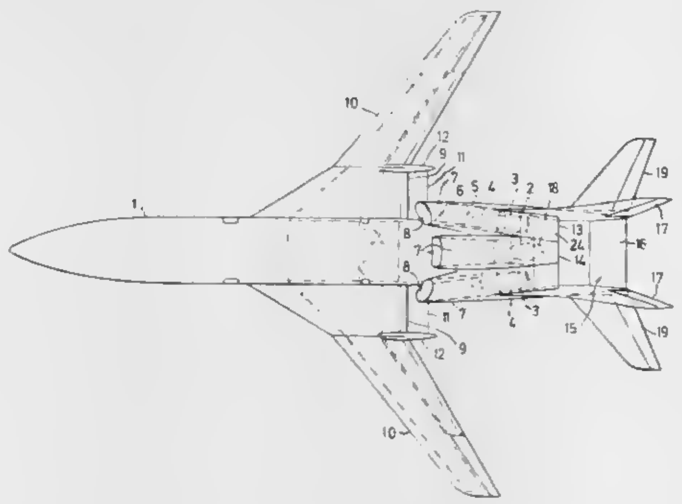
Samuel Shiber, P.O. Box 302, Des Plaines, Ill.
Continuation-in-part of Ser. No. 440,860, Feb. 8, 1974, Pat. No. 3,881,783. This application Apr. 29, 1975, Ser. No. 572,844
Int. Cl.^{2} B64C *25/32*
U.S. Cl. 244—103 S **6 Claims**



1. In an airplane's landing gear, a hydraulic anti-lock braking and a nose wheel spin-up system comprising in combinatidn;
- a main wheel pump coupled to a main wheel and having a suction port and a discharge port,
- a nose wheel pump-motor coupled to a nose wheel and having an inlet port and an outlet port,
- conduit means connecting said discharge port to said inlet port, for hydraulically coupling said nose wheel to said main wheel so that said main wheel will spin up said nose wheel during the initial period of landing during which said main wheel is in contact with the ground and is rotating on it and said nose wheel is still air-borne.

3,936,017
COMBINED NOISE SHIELD AND THRUST REVERSER

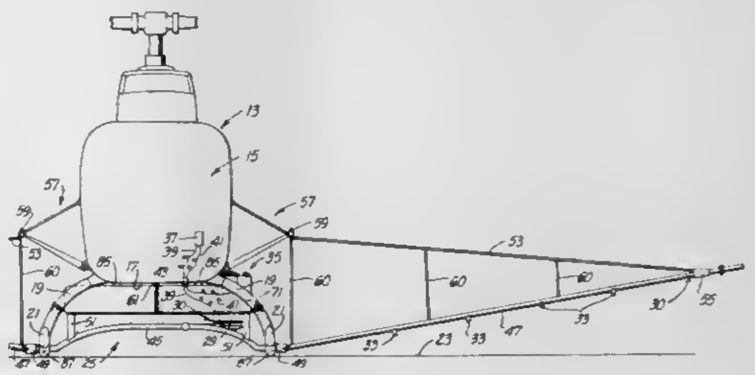
Alan Avery Blythe, St. Albans, England, and Robert Ian Milligan, Belfast, Northern Ireland, assignors to Hawker Siddeley Aviation Limited, England
Filed July 29, 1974, Ser. No. 492,741
Claims priority, application United Kingdom, July 30, 1973, 36270/73
Int. Cl.^{2} B64D *33/06*
U.S. Cl. 244—110 B **6 Claims**



1. In an aircraft having a fuselage, wings, a tailplane and two laterally spaced fins above the tailplane, the provision of a plurality of jet propulsion engines mounted on said fuselage substantially above the level of said wings and generally aft thereof, an engine housing structure containing said engines, air intakes for said engines located forward of said engine housing structure at a level above said wings and not significantly aft of the trailing edges thereof such that the fuselage and wings provide a downward and partial sideways shield against noise emanating from said air intakes, and exhaust nozzles for said engines located to discharge into a common noise shielding duct defined at the sides by said fins and at the bottom by a fixed-incidence section of said tailplane between said fins, and wherein an upstream portion of said fixed-incidence tailplane section is deflectable in conjunction with a deflectable aft end portion of said engine housing structure to form a thrust reverser common to all engines, said deflectable portion of said fixed-incidence tailplane section being mounted to swing about a first transverse pivot axis intermediate the forward and aft ends of said tailplane section portion so that said forward end goes down and said aft end rises, and the deflectable aft end portion of the engine housing structure being mounted to rock up and back about a second transverse pivot axis until the aft end of said engine housing end portion substantially engages the up-tilted aft end region of the deflectable portion of said fixed-incidence tailplane section.

3,936,018
JETTISONABLE AGRICULTURAL SPRAYER

Conrad R. Barlow, Redondo Beach, Calif., assignor to Transland, Inc., Harbor City, Calif.
Filed Aug. 8, 1974, Ser. No. 495,588
Int. Cl.^{2} B64D *1/18*
U.S. Cl. 244—136 **10 Claims**



1. A spraying apparatus for spraying a fluid, said spraying apparatus being adapted for connection to an aircraft having a fuselage and a landing gear, said spraying apparatus comprising:
- a tank for containing the fluid to be sprayed;
- first means for releasably coupling the tank to the aircraft with at least a portion of the tank being generally between the landing gear;
- a spray boom having at least one opening through which the fluid can be discharged;
- means for interconnecting the spray boom and the tank with the spray boom projecting laterally outwardly of the tank and with the spray boom being in fluid communication with the tank so that the spray boom can dispense the fluid;
- pump means for pumping the fluid from the tank to the spray boom and through the opening whereby the fluid can be distributed;
- at least one boom support coupled to the spray boom;
- coupling means for releasably attaching the boom support to the aircraft so that the boom support can support the spray boom against forces tending to pivot the boom downwardly; and
- at least said tank and said spray boom being releasable from the aircraft upon the release of said coupling means and said first means.

3,936,019

EJECTOR RELEASE UNIT FOR USE IN AIRCRAFT

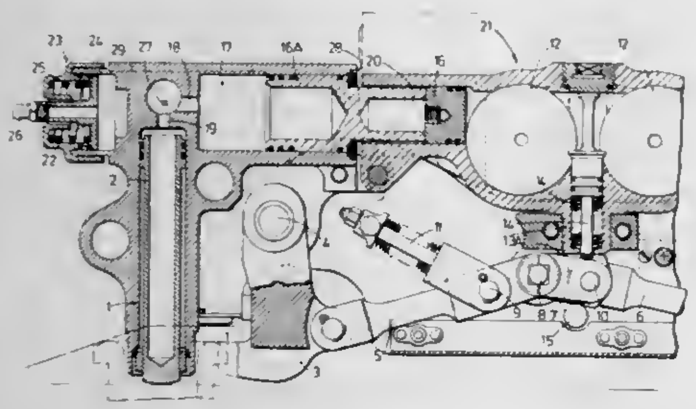
Samuel W. Craigie, Maidenhead, England, assignor to M. L. Aviation Company Limited, England

Filed Feb. 19, 1974, Ser. No. 443,250

Claims priority, application United Kingdom, Feb. 19, 1973, 8060/73

Int. Cl.^{2} B64D *1/02*

U.S. Cl. 244—137 R **6 Claims**



1. In an ejector release unit for releasing and projecting a store from an aircraft,

a latching mechanism for projecting and releasing said store;

a pair of ejection guns for projecting said store from said aircraft;

a breech and firing contact for at least one cartridge, ignition of said at least one cartridge producing pressure gas;

the improvement comprising a cylinder and a piston mounted for reciprocatory movement within said cylinder, said cylinder being connected to said breech; and a chamber having fluid connections to each said ejection gun, a body of hydraulic fluid being contained within said chamber; and means capable of operation by said piston when said gas acts thereon to transmit the resultant force to said body of fluid whereby said fluid is caused to flow through said connections to operate said ejection guns.

3,936,020

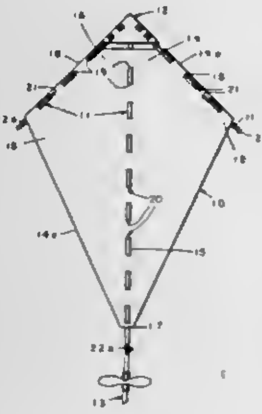
KITE CONSTRUCTION

Andrew W. Jackson, 214½ E. Main, Walla Walla, Wash. 99362

Filed Aug. 3, 1973, Ser. No. 385,286

Int. Cl.^{2} B64C *31/06*

U.S. Cl. 244—153 R **3 Claims**



1. A statically indeterminable kite, comprising in combination:

a thin surface element of flexible material of general lozenge-like shape having an axis of symmetry through the diagonal with at least a plurality of spaced parallel slits extending perpendicularly to and on both sides of the axis of symmetry and a plurality of spaced parallel slits lineally aligned substantially perpendicular to and immediately inwardly adjacent two adjacent sides that communicate with the diagonal coincident with the axis of symmetry, which cooperate to form the nose-piece of the kite;

elongated rigid support elements carried in each lineal array of slits by weaving therethrough with face material between the slits alternately on one side and then the other of each support element, each of said support elements being somewhat longer than the slit array to project slightly therebeyond at least at the nose-piece end; and

a three dimensional semi-rigid nose-piece having a plurality of positioned orifices therein to slideably receive and frictionally maintain the nose-piece ends of the support elements.

3,936,021

PIPE SUPPORTS

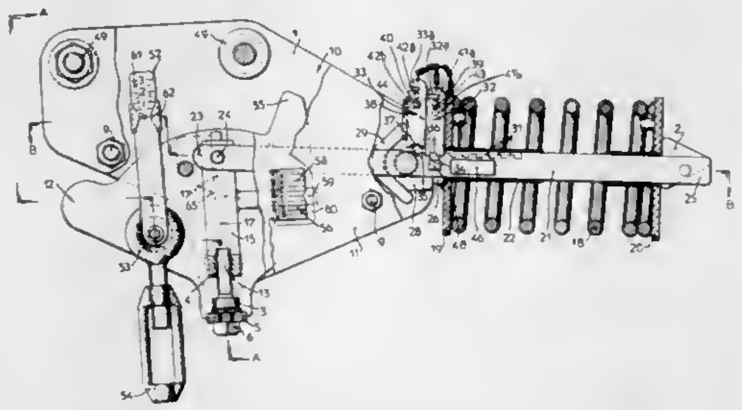
Anthony John Salter, Woodsetton, England, assignor to Pipe Supports Limited, Warley, England

Filed Mar. 15, 1974, Ser. No. 451,348

Claims priority, application United Kingdom, Mar. 17, 1973, 12942/73

Int. Cl.^{2} F16L *3/00*

U.S. Cl. 248—54 CS **2 Claims**



1. A support comprising a frame, a lever pivoted to said frame, a first abutment pivoted to said frame, a draw bar slidably mounted in said first abutment and having one end connected to said lever, a second abutment connected to the other end of said draw bar, elongated resilient means acting between said first and second abutments, load attachment means for attaching a load to said lever, said load attachment means being connected to said lever in such a manner that when a load is supported the lever is urged in opposite directions about said lever pivot by said load and resilient means so that the load is supported by said resilient means, a series of teeth spaced along the said draw bar and two toothed keys slidably mounted on said first abutment in side by side relationship in the direction of the length of said draw bar, said keys being alternatively movable into and out of engagement with said teeth along said draw bar whereby said draw bar may be held in a selected one of a number of positions relative to said first abutment, said possible number of positions being increased compared with a support where only one toothed key is employed.

3,936,022

LANTERN AND SUPPORT STRUCTURE THEREFOR

Thomas H. Nicholl, 1204 W. 27th, Kansas City, Mo. 64108

Filed Dec. 2, 1974, Ser. No. 528,874

Int. Cl.^{2} A47F *5/12*

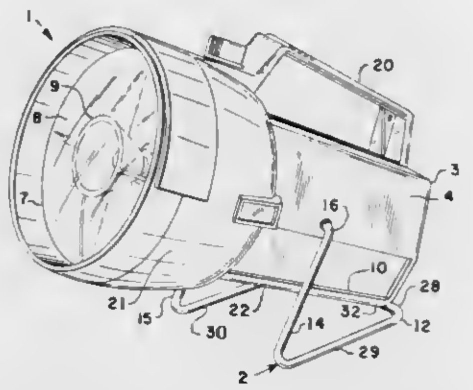
U.S. Cl. 248—137 **7 Claims**

2. In combination:

a. a housing having laterally spaced side walls and opposite ends;

b. an elongated outstanding portion on each of said side walls in opposed relation and each having a crest extending longitudinally of said housing;

c. a support structure for said housing and having a base portion and laterally spaced arms extending from said base portion, said arms each having a gudgeon thereon pivotally supported on a respective one of said side walls of said housing, said arms being resiliently retained in frictional engagement with said crests whereby said housing may be moved to a selected position relative to said arms and frictionally retained in the selected position;



d. said arms of said support structure are biased toward said respective side wall of said housing; and

e. said outstanding portions each have an end portion adjacent one of said opposite ends of said housing terminating in shoulders inclined toward said respective side wall, said shoulders being engaged by said arms when said base portion of said support structure is moved to a position in facing relation with said one end of said housing.

3,936,023

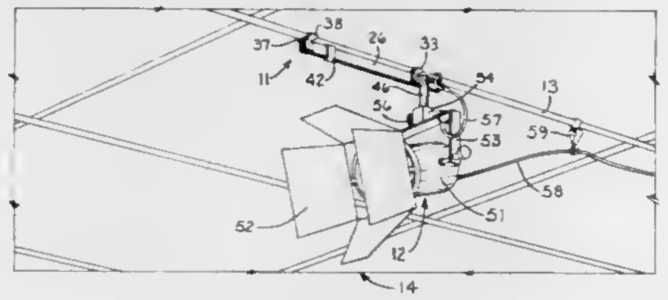
LIGHT HOLDER

Arthur E. Clifton, Three Rivers, Mich., assignor to Armstrong Machine Works, Three Rivers, Mich.

Filed July 23, 1974, Ser. No. 490,980

Int. Cl.^{2} F16B *1/00;* **E04G** *17/18;* **F16B** *12/00*

U.S. Cl. 248—228 **11 Claims**



1. A light holder adapted to be suspended from an elongated rail having oppositely extending lateral flanges, comprising:

a support portion having a first pair of oppositely-facing clips mounted thereon adapted for supporting engagement with said flanges, and light mounting means secured to said support portion for mounting a light thereon;

a pair of elongated members connected to said support portion and extending away therefrom in adjacent and substantially parallel relationship so that said elongated members are adapted to extend lengthwise of said rail, said members being relatively movable laterally toward and away from each other, a second pair of oppositely facing clips respectively mounted on said elongated members at locations spaced from said first pair of clips and adapted for supporting engagement with said flanges, said elongated members permitting relative lateral movement between the clips of said second pair so that at least one of the clips of said second pair can be moved laterally relative to said support portion into and out of supporting engagement with its associated flange of said rail.

3,936,024

SUPPORTING-FRAME STRUCTURES

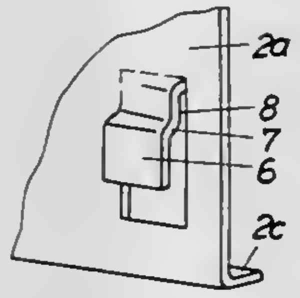
Otto Jung, Obergoesgen, Switzerland, assignor to H. Heer & Co., Olten, Switzerland

Filed June 19, 1974, Ser. No. 480,858

Claims priority, application Switzerland, June 20, 1973, 8939/73; Jan. 28, 1974, 1098/74

Int. Cl.^{2} A47F *5/10*

U.S. Cl. 248—243 **8 Claims**



1. Carrying device for supporting cable ducts and the like comprising: a vertical bearer member and horizontal bearer arms suspensible from the vertical bearer member at selectible height, said bearer member having at least one vertical row of spaced holes, each of said holes having a vertical side, characterized in that each bearer arm has two spaced hooks one above the other adjacent to one horizontal extremity of said arm, said hooks projecting from the bearer arm and adapted to pass through mating spaced holes in said vertical bearer member so that each of said hooks engages the vertical bearer member in the area of the hole, each of said hooks having two lateral edges of different length, the side of the longer edge having a first shoulder pressed out slantingly from the bearer arm in the form of a support surface adapted to abut against the vertical side of the hole, which first shoulder is followed by a second shoulder consisting of a hooking portion projecting farther from the bearer arm for engagement behind the vertical bearer member with said support surfaces positioned on opposite sides of said hooks, whereby the moment forces acting on the bearer arm are transmittable in a horizontal direction.

3,936,025

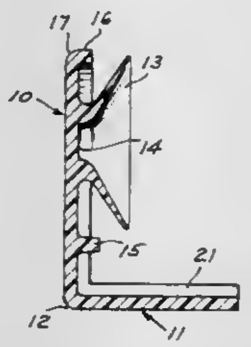
EDGE PROTECTOR DEVICE

David L. Cass, 573 Isham St., New York, N.Y. 10034

Filed May 23, 1974, Ser. No. 473,079

Int. Cl.^{2} A47B *95/00*

U.S. Cl. 248—345.1 **6 Claims**



1. A unitary device universally adaptable as a protector against injury from corners, straight edges and other sharp borders of a piece of furniture, said device being formed of soft moldable resilient material and composed of two walls joined together at their inner edges to form an elongated joint adapted to lie across a corner or overlay a straight edge or other sharp border of a piece of furniture, said walls being disposed at approximately 90°, but capable of flexture relative to each other about said elongated joint, a first means provided on one of said walls for detachably securing such wall of the device to a surface of a piece of furniture with said

elongated joint adapted to overlay a corner, straight edge or other sharp border of the furniture piece and the other of said walls adapted to overlay a part of the furniture piece disposed at an angle to such furniture surface, second means on said one wall between said securing means and said elongated joint adapted to engage said furniture surface when the device is attached thereto and to coact with said first securing means to exert a cushioning action against blows delivered to said one wall of the attached device, and third means on said other wall adapted to engage a part of the furniture piece and restrain displacement of said elongated joint relative to a furniture piece corner overlaid thereby under blows delivered to the device.

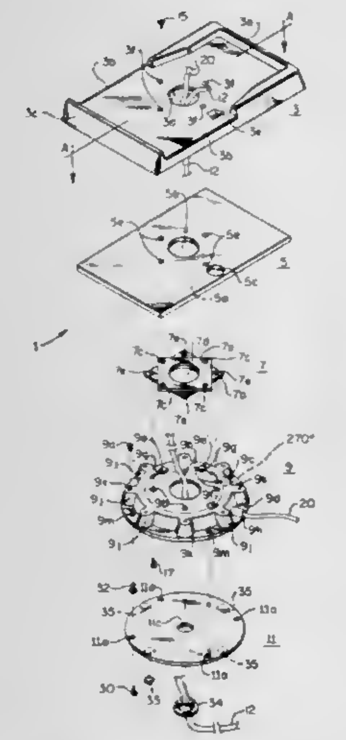
3,936,026
SWIVEL BASE ASSEMBLY

Herbert J. Hampel, Philadelphia, Pa., and William A. Hoffman, Collingswood, N.J., assignors to Ultronic Systems Corporation, Moorestown, N.J.

Filed Mar. 24, 1975, Ser. No. 561,639

Int. Cl.² H02G *11/00*

U.S. Cl. 248—349 **6 Claims**



1. A swivel base assembly comprising:

tray means having a top surface on which a device is adapted to be positioned, a bottom surface, and including stop means;

a base arrangement;

swivel means interposed between the tray means and the base arrangement and having a first section attached to the tray means and a second section attached to the base arrangement, said first section and the tray means attached thereto being capable of rotational movement with respect to the second section and the base arrangement to which the second section is attached;

said base arrangment including:

a. stop means cooperative with the stop means of the tray means to establish a predetermined angular range through which the tray means, a device on the tray means, and the first section of the swivel means to which the tray means is attached may rotate;

b. glide means adjacent to the periphery of the swivel means and bearing against the bottom surface of the tray means providing a bearing surface along which the tray means glides when a rotational motion is imparted to the tray means with respect to the second section of the swivel means; and

c. a cable-receiving portion defining a chamber and having a cable receiving opening into said chamber, said chamber being arranged to receive a cable means via the cable receiving opening to be used by a device on the tray means and having a capacity to permit said cable means to be wound therein in a generally circular pattern;

said tray means, swivel means and base arrangement each further having an opening therein by which one end of a cable means wound within the chamber of the base arrangement may be fed through the opening in the base arrangement, the opening in the swivel means and the opening in the tray means to a device on the tray means.

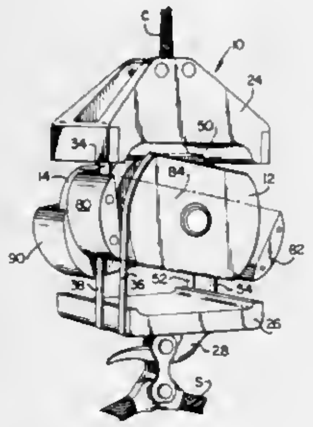
3,936,027
VIBRATION ISOLATOR

Michael A. Bowes, Windsor, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed July 22, 1974, Ser. No. 490,383

Int. Cl.² F16F *15/04*

U.S. Cl. 248—358 AA **11 Claims**



1. An improved vibration isolator for reducing the transmission of vibrations at a given frequency between a first and a second body joined together by the isolator comprising:

a first inertial member having a given mass and at least two cylindrical surfaces having two different radii of curvature respectively and positioned coaxially about an axis of the first member;

a second inertial member having a given mass and at least two cylindrical surfaces having two different radii of curvature respectively and positioned coaxially about an axis of the second member, the second member being coaxially positioned relative to the first member with said axes of the members collinear;

resilient means interconnecting the coaxially positioned first and second members and permitting the members to rotate in opposite directions about the collinear axes relative to one another with resilient restraint;

first cable means connected at one end to the first inertial member and extending from the member tangentially of the one of the cylindrical surfaces having the larger radius of curvature for connection with the first body;

second cable means connected at one end to the first member and extending from the member tangentially of the other of the cylindrical surfaces having the smaller radius of curvature for connection with the second body;

third cable means connected at one end to the second inertial member and extending from the member tangentially of the one of the cylindrical surfaces having the larger radius of curvature for connection with the first body; and

fourth cable means connected at one end to the second member and extending from the member tangentially of the other of the cylindrical surfaces having the smaller radius of curvature for connection with the second body;

said cable means being arranged relative to each other and to the inertial members to produce simultaneous translations of the members in the same direction along the cable means and rotations of the members in opposite directions about the collinear axes.

3,936,028
FLUSH VALVE

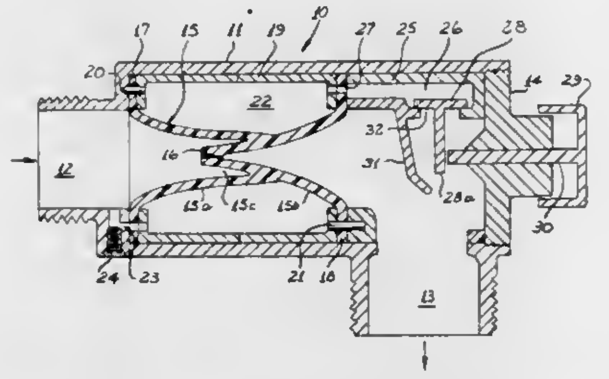
Ian Fredric Norton, Toronto, Canada, and James O'Grady, London, England, assignors to Crane Canada Limited, Montreal, Canada

Filed July 13, 1973, Ser. No. 378,835

Claims priority, application Canada, Aug. 2, 1972, 148588

Int. Cl.² F16K *31/385*

U.S. Cl. 251—5 **6 Claims**



1. A flush valve comprising a valve body having a fluid inlet and a fluid outlet, a flexible valve sleeve provided in said body between said inlet and outlet, said flexible valve sleeve being integrally formed and comprising funnel-shaped inlet and outlet portions merging longitudinally inwardly toward the center of the sleeve, and a central valve portion which constitutes a longitudinal continuation of said outlet portion and is re-entrant in the inlet portion, said central valve portion being provided with a normally closed slit, an annular chamber formed in said body around said sleeve, a duct communicating said annular chamber with said inlet whereby fluid pressure in said chamber may normally compress said sleeve to prevent fluid flow therethrough to said outlet, a secondary chamber provided in said body downstream from said sleeve and communicating with said annular chamber, said secondary chamber having a pilot valve port communicating with said fluid outlet, a normally closed pilot valve member cooperating with said pilot valve port, and actuating means operable from the exterior of said body to open said pilot valve member, whereby fluid pressure in said secondary chamber and said annular chamber may be reduced and said flexible valve sleeve may be expanded by fluid pressure from said inlet to facilitate fluid flow through the valve.

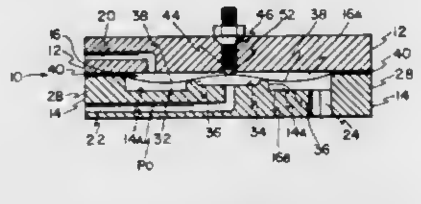
3,936,029
PNEUMATIC AMPLIFIER HAVING A GAIN ADJUSTMENT MECHANISM INCORPORATED THEREIN

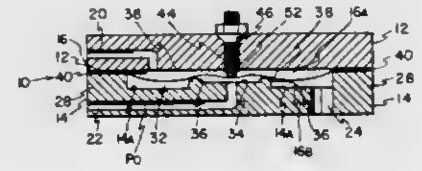
Robert O. Brandt, 600-E Forest Ridge Road, Garner, N.C. 27529

Filed Apr. 25, 1974, Ser. No. 464,126

Int. Cl.² F16K *31/145*

U.S. Cl. 251—61.1 **5 Claims**





1. A fluid amplifier valve having a gain adjustment mechanism incorporated therein for adjusting the gain of various input pressure signals received by the valve, said amplifier valve comprising:

a. a valve body structure having a main internal chamber formed therein;

b. a pressure signal opening means formed within said valve structure for enabling fluid pressure signals to be transmitted into said main internal chamber;

c. a fluid supply inlet opening means formed within said valve body for enabling fluid from a supply to be transmitted into said main internal valve chamber;

d. a fluid supply exit opening means formed within said valve body structure for enabling the fluid supply transmitted into said main internal chamber to exit therefrom;

e. a thin imperviable member extending across said main internal chamber and supported about the outer portions thereof by said valve body structure so as to separate the fluid of said pressure signal from the fluid supply passing through said main internal chamber;

f. mounting means movably mounted in said valve structure; and

g. contact means operatively connected to said movable mounting means for engaging said imperviable member extending across said main internal chamber and varying the gain of said amplifier valve, whereby the gain of said amplifier valve may be selectively adjusted by moving said contact means relative to said valve structure such that the shape of the imperviable member within said main internal chamber is influenced thereby enabling the gain of said fluid valve to be selectively varied and adjusted by moving said contact means in order that the shape or contour of said imperviable member may change relative to said valve structure and give rise to a change in gain.

3,936,030
ELECTROMAGNETIC VALVE

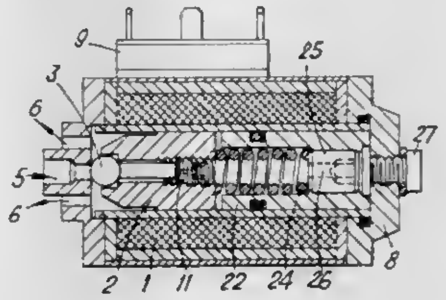
Ernst Putschky, Reichenbach, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Division of Ser. No. 358,278, May 8, 1973, Pat. No. 3,876,177. This application Oct. 9, 1974, Ser. No. 513,345

Claims priority, application Germany, May 8, 1972, 2222448

Int. Cl.² F16K *31/06*

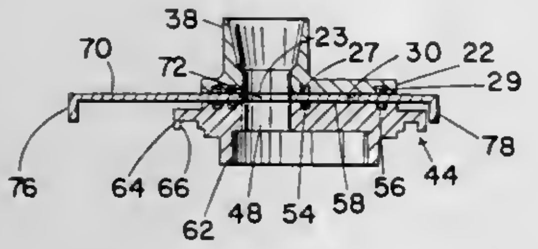
U.S. Cl. 251—129 **4 Claims**



1. A valve assembly comprising: first means defining a chamber; a ferromagnetic armature guided for movement in said chamber; a member in said chamber mounted on said armature, said member being adjustable in first and second directions to move said member in third and fourth directions, respectively, relative to said armature; a body mounted on said first means providing a valve seat having an inlet opening therethrough; a solenoid-like winding fixed relative to and around said first means in a position to cause, when energized, movement of said armature from a first position thereof to a second position thereof; and second means movable with said member to abut said valve seat and to close said inlet opening, abutment of said second means with said valve seat taking place when said member is in a predetermined position, the position of said armature relative to said valve seat when said abutment takes place being changeable by adjustment of said member, said first means defining a chamber which is cylindri-

cal, said armature being cylindrical at least in part to slide in said cylindrical chamber, said member being one portion of a valve, said second means being integral with said member and being the remainder of said valve over said one portion thereof, said armature having at least a partially screw-threaded passageway, said passageway extending completely therethrough, said member including a set screw threaded into and rotatably in said passageway, said valve being located on said set screw at one end thereof near one end of said armature, the other end of said set screw having a construction for engagement with a first device to rotate the said set screw, said armature having a cylindrical axis, and third means pivoting said valve relative to and on said set screw about an axis approximately normal to said armature axis.

3,936,031
SELF-CONTAINED VACUUM ASPIRATOR
Richard M. Berman, Dresher, Pa., and Bernard Schwartz, Springfield, N.J., assignors to Alphamedics Mfg. Corporation, Levittown, Pa.
Filed Sept. 21, 1973, Ser. No. 399,535
Int. Cl.² F16K *51/00, 3/00;* **A61M** *1/00;* **A61B** *17/22*
U.S. Cl. 251—284 6 Claims



1. A valve assembly for selectively allowing the passage of fluid therethrough; said valve assembly comprising

a first member having an aperture therethrough, said first member having a first surface on which is positioned first sealing means surrounding said aperture and second sealing means surrounding said first sealing means;

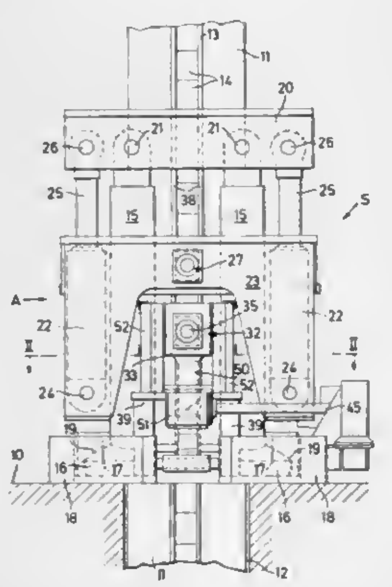
a second member secured to said first member, said second member having an opening therethrough and a first surface on which is positioned third sealing means surrounding said opening and fourth sealing means surrounding said third sealing means; and

a slide member having a passageway therethrough, said slide member being movably mounted between said first surfaces of said first and second members and sealingly engaged on opposite sides thereof by said first, second, third and fourth sealing means, said slide member being movable between a first position which interrupts communication between said aperture and said opening and a second position in which said passageway establishes communication between said aperture and said opening to permit flow through said valve assembly; and

wherein said first and second sealing means comprise first and second sealing members received in channels provided in said first surface of said first member, and said third and fourth sealing means comprises third and fourth sealing members received in channels provided in said first surface of said second member; and

wherein a portion of said second sealing member is spaced from a corresponding portion of said first sealing member by a distance greater than the diameter of said passageway through said slide member, and a portion of said fourth sealing member is spaced from a corresponding portion of said third sealing member by a distance greater than the diameter of said passageway, said passageway through said slide member being sealingly located between said respective portions of said first, second, third and fourth sealing members when said slide member is located in its said first position.

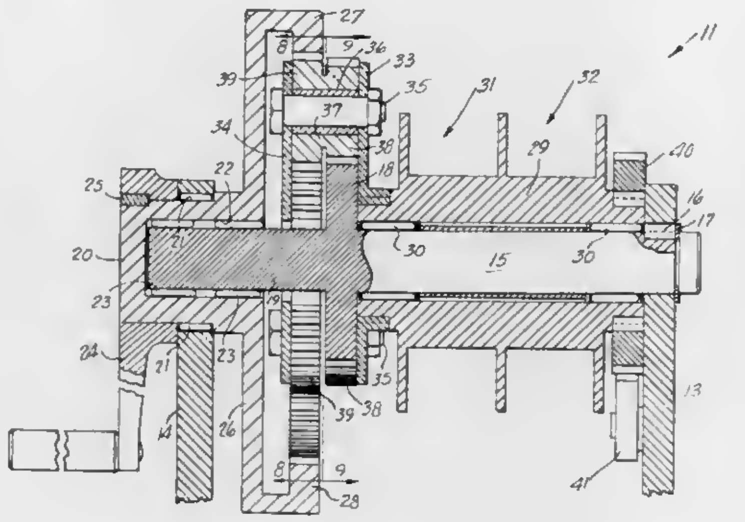
3,936,032
APPARATUS WITH A WORKING PLATFORM AND ADJUSTABLE LEGS THEREFOR
Walter Waschulzik, Dulmen, and Maximilian Dyczek, Dortmund-Brechten, both of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westphalia, Germany
Filed Apr. 15, 1974, Ser. No. 461,217
Claims priority, application Germany, Apr. 19, 1973, 2319931
Int. Cl.² B66F *7/16*
U.S. .Cl. 254—108 14 Claims



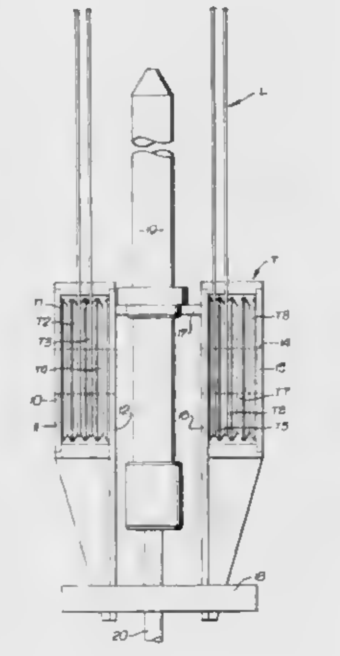
1. An apparatus comprising a platform, a plurality of legs for supporting the platform, each leg having a series of vertically-spaced reception recesses, a device for each leg for effecting relative movement between the leg and the platform, each device comprising support members generally upstanding relative to the platform, means for selectively locking the support members to the leg, each support member locking means including a carrier and a plunger slidably mounted within the carrier, the plunger being selectively enngageable in the recess of the leg, the support members having bracket guideways for supporting the carrier, the carrier being movable substantially vertically to a limited extent with relation to the bracket guideways, a carriage, means for selectively locking the carriage to the leg, each carriage locking means including a plunger slidably mounted within the carriage, the plunger being selectively engageable in the recesses of the legs, ram means for effecting relative movement between the carriage and the support members in the direction of the longitudinal axes of the latter, and means for connecting the support members to the platform for accommodating limited universal angular movement of the support members and hence of the device as a whole in relation to the platform.

3,936,033
HAND WINCH
Robert C. McElroy, Lisbon, Ohio, assignor to Cable Climber Safety Devices Incorporated, Lisbon, Ohio
Filed Aug. 19, 1974, Ser. No. 498,519
Int. Cl.² B66D *1/04*
U.S. Cl. 254—186 HC 1 Claim

1. A hand winch comprising a base plate, a pair of spaced apart parallel upright frame members secured to said base plate, a generally horizontal shaft fixedly secured to one of said frame members and extending through a bore in the other of said frame members, a second shaft axial to said first shaft and journalled in the bore in the other of said frame members and journalled on said fixed shaft, a hand crank fixedly secured to said second shaft for rotating said second shaft, a pair of cable drums mounted for rotation on said fixed shaft, a planet gear means coupling said second shaft and said cable drums to rotate said cable drums upon rotation of said second shaft at a speed substantially less than the speed of rotation of said second shaft, and means on said cable drums cooperating with means on said one of said frame members for locking said cable drums against rotation in a pre-selected direction.

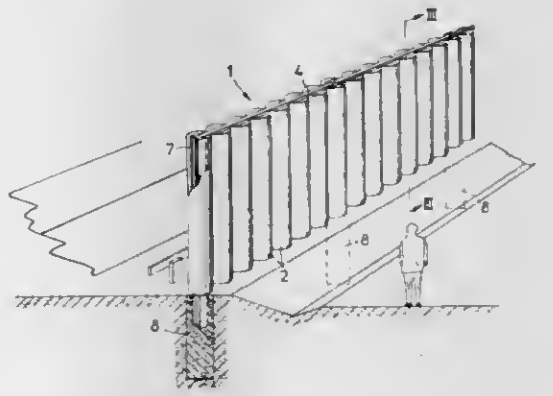


3,936,034
BALANCED HOIST APPARATUS
Edward Larralde, Santa Barbara, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.
Filed Apr. 8, 1974, Ser. No. 458,657
Int. Cl.² B66D *3/04*
U.S. Cl. 254—188 15 Claims



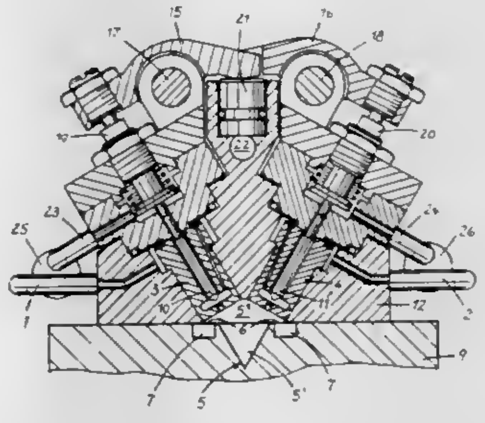
13. A traveling block for balanced hoist apparatus comprising a supporting frame structure, a set of a plurality of sheaves rotatably supported by said frame structure at one side of said supporting frame structure, a set of a plurality of sheaves by said frame structure at the being substantially spaced from the other of said plurality of sheaves and also being rotatably supported by said frame structure at the other side of said supporting frame structure, and load supporting means disposed between said sets of sheaves and carried by said frame structure in off-set relation to the center of said frame structure towards one of said sets of sheaves.

3,936,035
SOUND DAMPING CURTAIN WALL
Ake John Hugo Conrad Weimar, Larsbergsvagen 51, S-181 38 Lindigo, and Hans Hjalmar Gustafson, Tradgardsgatan 22, S-172 38 Sundbyberg, both of Sweden
Filed Apr. 3, 1974, Ser. No. 457,607
Claims priority, application Sweden, Apr. 6, 1973, 04851/73
Int. Cl.² F01N *1/10;* **E01F** *15/00*
U.S. Cl. 256—13.1 4 Claims



1. A sound damping curtain wall comprising a plurality of separate substantially empty tubular parallel damping elements arranged side by side being operable to acoustically damp sound, each damping element having flexible walls and two end portions with recesses, means for resiliently pressing the damping elements laterally against each other including a pair of spaced-apart generally vertical posts, connecting means extending along and operably received by the recesses of the damping elements and attached to the generally vertical posts.

3,936,036
MIXING DEVICE
Bernd Fries, Nuremberg, Germany, assignor to Demag Kunststofftechnik GmbH, Nuremberg, Germany
Filed Sept. 4, 1974, Ser. No. 503,117
Claims priority, application Germany, Sept. 14, 1973, 2346347
Int. Cl.² B01F *5/02*
U.S. Cl. 259—4 R 9 Claims



1. A mixing device for mixing a plurality of components to provide a synthetic material, prior to a shape-imparting process, said device comprising a mixing chamber having chamber walls, a plurality of nozzles for feeding the components into the mixing chamber, said mixing chamber comprising a portion remote from and tapering away from said nozzles and the chamber walls of said portion intersecting at the lowest point of the mixing chamber, the nozzles being arranged so that their axes intersect at an angle, the point of intersection of said axes lying within the mixing chamber whereby jets ejected from said nozzles impinge upon one another immediately above said lowest point of the mixing chamber, and an

outlet from said mixing chamber to conduct away the resulting synthetic material.

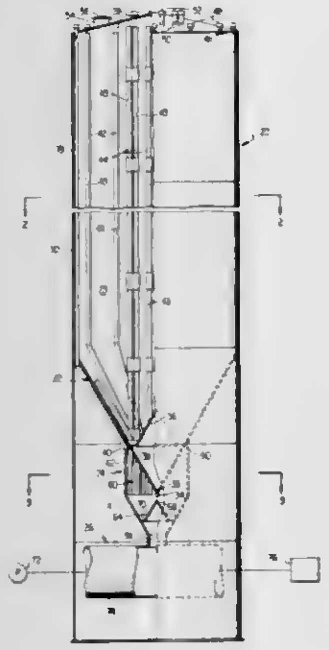
3,936,037
VENTED GRAVITY BLENDER

James H. Leonard, Jr., Houston, Tex., assignor to Allied Industries, Inc., Houston, Tex.

Filed May 22, 1974, Ser. No. 472,510

Int. Cl.^{2} B01F *5/00*

U.S. Cl. 259—180 **2 Claims**



1. A gravity blender for particulate materials comprising:
a container for the particulate materials, said container having a container wall and a closed top;
a plurality of conduits disposed substantially within said container and operable to convey particulate materials downward under the influence of gravity, each of said conduits having one end projecting downwardly through said container wall and each of said conduits being provided with at least one lateral opening operable to receive particulate materials from said container;
a blending chamber operable to receive particulate material from said projecting one ends of said plurality of particulate material conveying conduits, with
said projecting one ends of said plurality of particulate material conveying conduits projecting into a blending zone contained within the interior of said blending chamber and having material outlets operable to discharge particulate material thereinto, and
said blending zone being pressurized;
a pressurized discharge opening disposed below, and in fluid communicating relation with, said blending zone;
pressurized conveying means connected to said discharge opening for receiving particulate material therefrom; said pressurized blending zone, pressurized discharge opening, and pressurized conveying means being in mutual, fluid communicating relation;
said pressurized conveying means being operable to convey particulate material away from said pressurized discharge opening and transmit pressurized, particulate material conveying fluid therethrough operable to pressurize said pressurized discharge opening and said pressurized blending zone; and
pressure equalization means for relieving pressure differences between said blending zone and said container which oppose gravity movement of particulate materials through said plurality of particulate material conveying conduits;
said pressure equalization means being separate from and operationally independent of said plurality of particulate material conveying conduits and including
first opening means, separate from and independent of said plurality of particulate material conveying conduits, and communicating with a cavity located adjacent said closed top of said container and above a body of particulate material contained within said container, with downward movement of said body of particulate material, through said plurality of particulate material conveying conduits being operable, but for the operation of said pressure equalization means, to reduce the pressure of fluid in said cavity,
second opening means, separate from and independent of said plurality of particulate material conveying conduits, and communicating with said blending zone above said outlets of said first ends of said plurality of particulate material conveying conduits, and
pressure equalizing conduit means, separate from and independent of said plurality of particulate material conveying conduits, and providing continuous pressure equalizing communication between said first and second opening means with said continuous pressure equalizing communication being operable to release pressure differences between said blending zone and said cavity located above said body of particulate material.

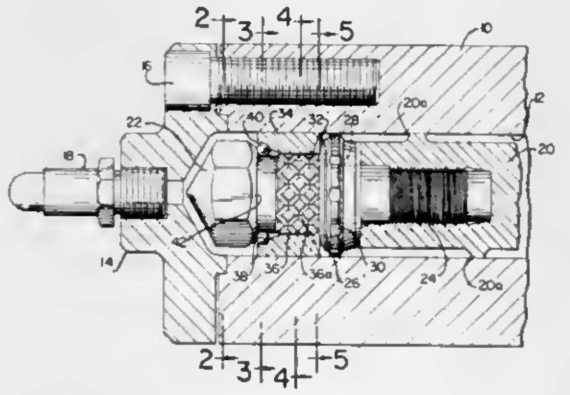
3,936,038
MIXER FOR PLASTIC INJECTION MOLDING MACHINE

Bernie A. Olmsted, East Longmeadow, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.

Filed Aug. 14, 1974, Ser. No. 497,336

Int. Cl.^{2} B29F *1/04*

U.S. Cl. 259—191 **11 Claims**



1. A device for mixing the plasticized ingredients in a plastic injection molding machine, said device comprising a barrel with an elongated bore, a head for the forward end of said barrel and adapted to receive a nozzle, a screw conveyor slidably and rotatably mounted in said bore, a torpedo body carried at the forward end of said screw conveyor and having a first axial portion defining a collar which has a forwardly facing annular surface, a second axial portion of said torpedo body adjacent said first axial portion and located forwardly thereof, said second axial portion having a cylindrical external surface, an annular valve element slidably received in said bore and having a generally rearwardly facing annular valve surface, engageable with said annular forwardly facing surface to define a valve closed position, said internal cylindrical surface of said valve element providing a sliding fit with said cylindrical external surface of said second axial portion at least one of said cylindrical surfaces defining two series of criss-crossing generally helically configured grooves opposite in hand and providing a pattern of intersecting passageways in cooperation with the adjacent other cylindrical surface for dividing and recombining the flow of plasticized ingredients through said second axial portion, and means carried by said torpedo body for defining a stop for said valve element to define a valve open position.

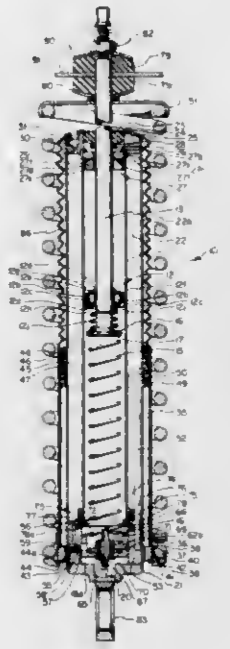
3,936,039
LOAD-LEVELLING SHOCK ABSORBER

Paul G. McKinnon, Brigham City, Utah, assignor to Tropic Industries, Inc., Salt Lake City, Utah

Filed June 21, 1974, Ser. No. 481,887

Int. Cl.^{2} B60G *11/56*

U.S. Cl. 267—34 **15 Claims**



1. A load leveller for use with vehicles and the like comprising
a ride control cylinder;
an oil reservoir;
a lift cylinder having a seal member fixed relative to the oil reservoir and a movable seal member;
displacement means adapted to reciprocate into and out of said ride control cylinder;
a main spring having one end carried by the movable member of the lift cylinder and another end fixed to the displacement means exteriorly of the ride control cylinder; and
control valve means adapted to interconnect the oil reservoir with the lift cylinder between the fixed and movable seal members and with the ride control cylinder, said control valve means including a fixed body member and a movable spool valve member, means resiliently connecting the spool valve member to the displacement means, said spool valve member having a restriction therethrough whereby oil moves through said restriction as said spool valve member is moved in response to movement of the displacement means, said oil flow through said restriction regulating the speed of movement of the spool valve member and preventing corresponding travel of the displacement means and spool valve member.

3,936,040
RESILIENT BUMPER

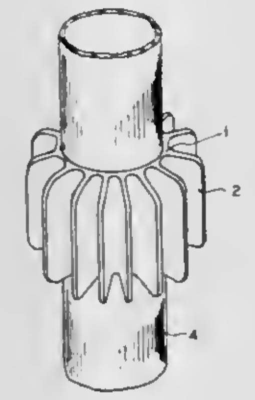
Richard Allen Wilson, and William E. Foster, both of Pittsburgh, Pa., assignors to Magee Plastics Company and Mitchell Plastics, Inc., both of Pittsburgh, Pa., part interest to each

Filed Feb. 14, 1974, Ser. No. 442,756

Int. Cl. F16f *7/12*

U.S. Cl. 267—140 **11 Claims**

1. A bumper for attachment to a surface to be protected against collision, comprising a base portion having two integral parts of substantially equal length extending at right angles to each other for attachment to a corner of an object to be protected and a plurality of integral upstanding fins which are parallel and which extend at an angle of less than 90° from said base portion, also which fins are so closely spaced apart that an object colliding therewith will cause the fins to flex and to contact each other progressively so as to offer progressively greater resistance to collision, said base portion and fins being of resilient material.



3,936,041
AUTOMATIC ORIGINAL SUPPLY DEVICE FOR ELECTRONIC COPYING APPARATUS

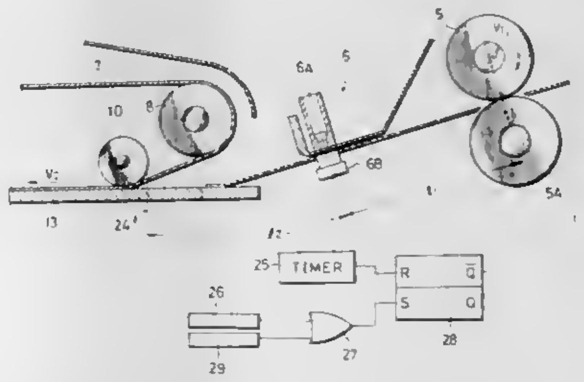
Toshio Shiina, Yokohama; Masao Yaejima, Sendai; Tadayuki Sekiya, and Toshiro Bando, both of Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1974, Ser. No. 536,295

Claims priority, application Japan, Dec. 26, 1973, 48-143935

Int. Cl.^{2} B65H *7/14*

U.S. Cl. 271—4 **2 Claims**



1. An automatic original supply device for electronic copying apparatus of the type comprising:
an original standby section including an original support tray and separation and supply means with a driven supply roller for supplying one original document after another from a pile of originals on said original support tray;
an original conveying and holding section including a belt for conveying to a predetermined illumination position an original supplied by the original separation and supply means and holding the same in said position; and
an original ejection section including original delivery means for removing the original processed through the illumination step;
wherein the improvement comprises:
original detection means interposed between the separation and supply means and said belt for detecting the passage of the trailing end of a first original;
timer means actuated in response to the detection of the trailing end of said first original for stopping said belt after a predetermined lapse of time such that said first original is in said predetermined illumination position and for interrupting the operation of said original separation and supply means to cause said next original to stand by;
overrunning clutch means for permitting said supply roller to rotate at a velocity higher than its driven velocity; and
wherein the following relations hold:

$$\frac{l_1}{V_1} > \frac{l_1 + l_2}{V_2}$$

where V_1 is the velocity at which each original is supplied by said supply roller, V_2 is the velocity at which each original is conveyed by said belt, l_1 is the distance between said supply roller and the original detection means, and l_2 is the distance between the original detection means and the trailing end of an original disposed in the predetermined illumination position.

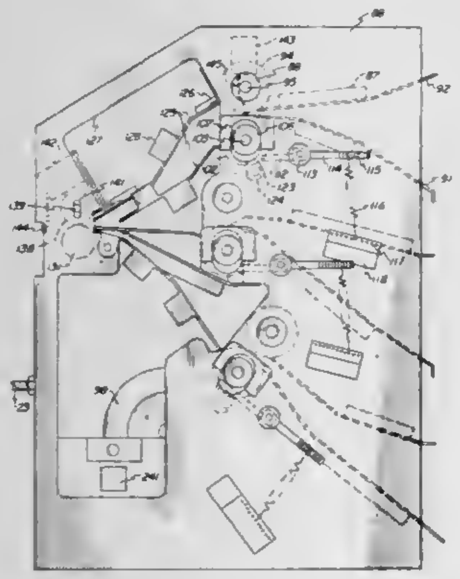
3,936,042
SHEET FEEDING DEVICES

Vernon J. Smith, Tewkesbury, England; Howard M. Smith, Venray, Netherlands; Bernard F. Page, Coleford, and Laurence G. Miller, Drybrook, both of England, assignors to Rank Xerox Ltd., London, England

Filed Nov. 19, 1973, Ser. No. 417,016

Int. Cl.² B65H *1/28, 3/52*

U.S. Cl. 271—9 **2 Claims**



1. A sheet feeding device comprising:

a plurality of support surfaces each for supporting a stack of sheets;

a sheet separating device for each support surface, the sheet separating device comprising a shaft, a plurality of first rollers mounted on the shaft symmetrically about the center of the shaft, a plurality of second rollers mounted opposite the first rollers for rotation about an axis substantially parallel to the shaft, means for supporting the shaft for movement towards and away from the axis, means acting on the center of the shaft for biasing the shaft toward the axis, and means for driving one of the plurality of rollers to forward a sheet between the nip of the roller;

means for each support surface for feeding the top sheet of the stack to the corresponding sheet separating device;

a single sheet conveyor;

guide means for guiding sheets from all the sheet separating devices to the single sheet conveyor; and,

sheet sensing means located downstream of the single sheet conveyor for stopping operation of the sheet separating device and the sheet forwarding device of one of the support surfaces during passage of a sheet past the sheet sensing means.

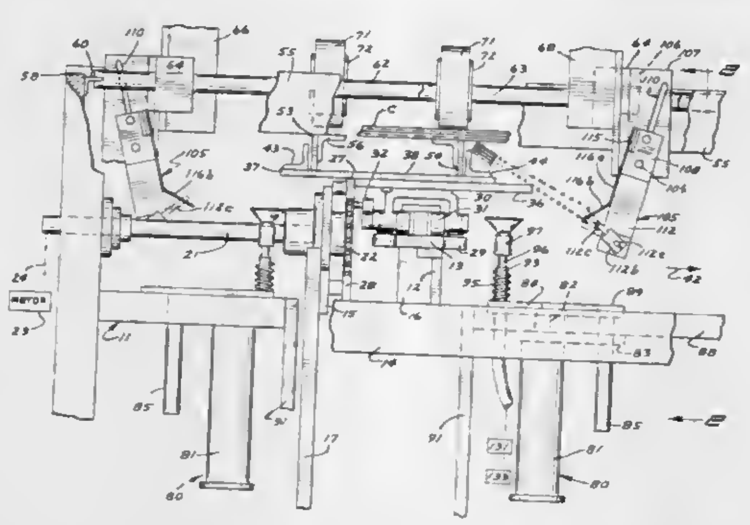
3,936,043
FLAP PULL DOWN CASE STRIPPING APPARATUS

Gaylerd Lieder, Minneapolis, and Philip G. Rawlins, St. Paul, both of Minn., assignors to Bemis Company, Inc., Minneapolis, Minn.

Filed July 26, 1974, Ser. No. 492,223

Int. Cl.² B65H *3/26*

U.S. Cl. 271—14 **18 Claims**



1. For removing a case having a body and flaps extending transversely outwardly from opposite sides of the body and joined thereto along fold lines from a vertical stack of cases in horizontal, flat folded conditions, a frame, longitudinally elongated slide means on the frame for supporting the stack of cases at the bodies thereof, means mounted on the frame for retaining the cases in the stack in generally vertical alignment while permitting the lowermost case of the stack to be slid longitudinally forwardly along the slide means from beneath the stack, means mounted on the frame for bending the lower transversely opposite flaps of the lowermost case in the stack downwardly at a preselected angle on each side of the body relative the body and retaining the bent down flaps in the bent condition while permitting the lowermost case to be slide from beneath the stack along the slide means, the bending and retaining means including operable gripper means on each transverse side of the slide means for grippingly engaging the adjacent flap, thence bending the adjacent flap to a preselected angle relative the body, and then release the adjacent flap, means mounted on the frame for retaining the adjacent flaps that have been bent to the preselected angles by the gripper means at the preselected angles while permitting the bent flaps to move longitudinally forwardly relative thereto, stripper means movably mounted on the frame for moving the lowermost case along the slide means from beneath the stack after the lowermost flaps have been bent downwardly, said stripper means including means for abuttingly engaging the lowermost case and moving the lowermost case forwardly along the slide means, and means for operating the gripper means to grip the adjacent flaps, bend the flaps and thence release the bent flaps after the flaps have been bent to the preselected angles, and moving the stripper means to move the abutting means into abutting engagement with the lowermost case in the stack to move it forwardly after the gripper means has released the bent flaps.

3,936,044
ADJUSTABLE SHEET GUIDE

William E. Kramer, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 18, 1974, Ser. No. 515,935

Int. Cl.² B65H *3/06, 1/04*

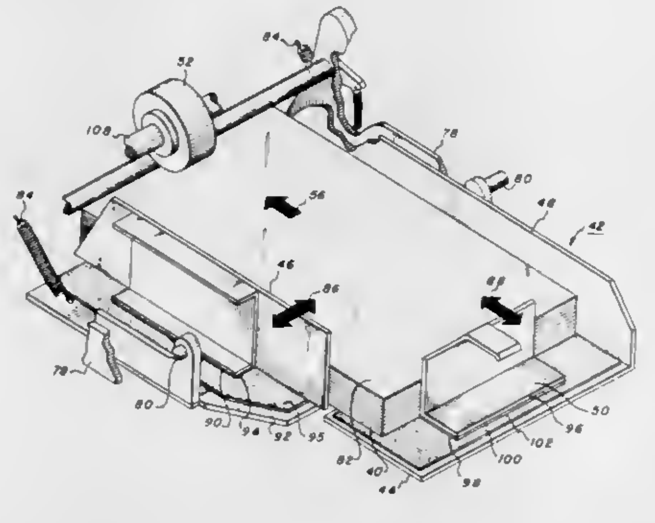
U.S. Cl. 271—122 **9 Claims**

1. An apparatus for aligning a stack of sheets, including:

means for supporting the stack of sheets;

guide means mounted movably on said supporting means and having at least one generally planar, substantially vertical surface opposed from the edge of the stack of sheets;

a first pad secured to said supporting means, said first pad having a plurality of bristles extending in an outwardly direction defining an acute angle relative to the surface thereof; and



a second pad secured to said guide means, said second pad having a plurality of bristles extending in an outwardly direction defining an acute angle relative to the surface thereof in a direction substantially parallel to the bristles of said first pad so that the bristles of said first pad interleaf with the bristles of said second pad retarding frictionally the relative movement between said guide means and said supporting means.

3,936,045
SHEET STRIPPING DEVICE FOR COPYING APPARATUS

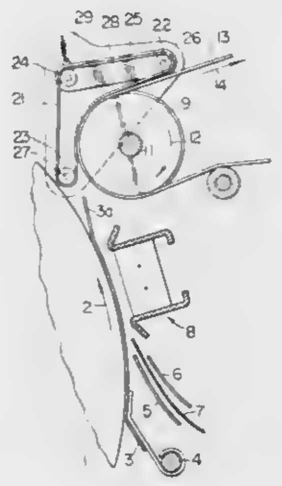
Kenzo Ariyama, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1974, Ser. No. 443,081

Claims priority, application Japan, Feb. 26, 1973, 48-24365[U]; May 31, 1973, 48-64720[U]

Int. Cl.² B65H *29/54*

U.S. Cl. 271—174 **6 Claims**



1. A sheet stripping device for copying apparatus provided with a drum adapted to rotate continuously in one direction, and a sheet feed device for feeding one copy sheet after another to a specific zone of the peripheral surface of the rotating drum, said sheet stripping device comprising the combination of:

a. a sheet pick-off member arranged near one marginal portion of the specific zone of the peripheral surface of the drum and including:
  i. a base portion maintained in pressing engagement with said one marginal portion of said zone and with which one marginal portion of each copy sheet fed by said sheet feed device to the drum is brought into pressing engagement; and
  ii. a forward end portion whose surface is increasingly spaced from the peripheral surface of the drum beyond said zone in the direction of drum rotation to pick off said marginal portions of said copy sheets from engagement with the drum surface beyond said zone;

b. sheet strip-off means disposed adjacent to and spaced from the surfaces of said drum and said sheet pickoff member for catching one marginal portion of the leading end portion of each copy sheet picked off the peripheral surface of the drum by said sheet pick-off member and for pulling the sheet away from the drum, said sheet strip-off means comprising:
  i. a shaft disposed parallel to the center axis of said drum and adapted to rotate in a direction opposite to the direction of rotation of said drum;
  ii. a guide roller supported on said shaft for rotation therewith; and
  iii. an endless belt having one portion maintained in pressing engagement with a portion of the peripheral surface of the guide roller, said guide roller and said endless belt cooperating with each other to hold therebetween one marginal portion of the copy sheet; and

c. one-way rotation clutch means interposed between said guide roller of said sheet strip-off means and the shaft supporting said guide roller, for permitting said guide roller to rotate relative to said shaft in a direction in which each sheet moved by said guide roller is conveyed.

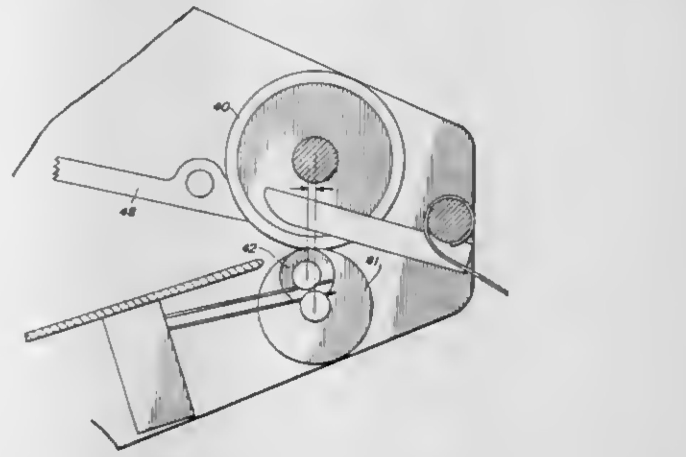
3,936,046
FRONT AND SIDE SHEET REGISTERING APPARATUS

Klaus K. Stange, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1974, Ser. No. 527,117

Int. Cl.² B65H *9/04*

U.S. Cl. 271—250 **4 Claims**



1. An apparatus for feeding and separating individual sheets from a stack of sheets including:

separating means disposed adjacent the forward edge of the stack;

a side register edge adjacent the side of the stack extending forwardly thereof, said separating means being adapted to separate sheets seriatim from the stack and drive each separated sheet in a forward and sideward direction against said register edge to side register each sheet thereagainst; and

a plurality of take-away roll pairs disposed downstream of said separating means, each of said take-away roll pairs comprising a driven roll and an idler roll, all of said driven rolls of said roll pairs being mounted on a common drive shaft, said drive shaft being disposed perpendicular to the direction of sheet travel, the axis of the idler roll adjacent said side register edge being positioned in advance of the axes of the remaining idler rolls, said roll pairs being adapted for contacting the lead edge of each sheet for forwarding each sheet away from said separating means, positioning of the axis of the idler roll adjacent said side register edge in advance of the axes of the remaining idler rolls causing the roll pair adjacent said register edge to contact the lead edge of each sheet slightly in advance of the remainder of said take-away roll pairs, thereby positively forcing the trailing edge of the sheet against said side register edge to prevent inducement of skew by said take-away roll pairs.

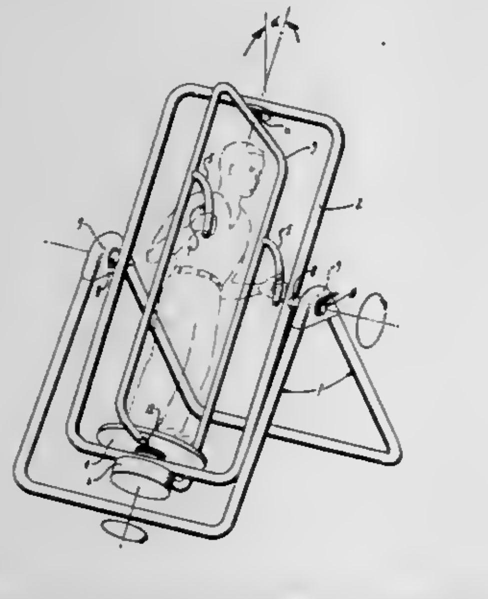
3,936,047
BODY PHYSICAL CONDITIONING MACHINE

William E. Brandt, 12567 Saratoga Creek, Saratoga, Calif. 95070, and Allen L. Clark, 1654 Sundown Lane, San Jose, Calif. 95127

Division of Ser. No. 818,173, March 24, 1969, now Pat. No. 3,581,739. This application Mar. 10, 1971, Ser. No. 122,754

Int. Cl.² A63B *21/22*; G09B *9/08*

U.S. Cl. 272—57 A **6 Claims**



1. A body physical conditioning machine comprising:
an outer hollow frame pivotally mounted on a horizontal axis;
an inner hollow frame rotatably mounted within said outer frame so as to permit rotation about a vertial axis of said inner frame;
a platform mounted on said inner frame;
said platform being adapted to receive a person in a standing position over its vertical centroidal axis;
means independent of the body of said person for rotating said inner frame about its vertical centroidal axis.

3,936,048
LUNG EXERCISE DEVICE

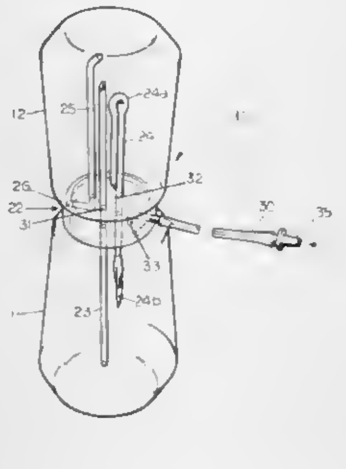
Glenn H. Dunlap, Maumee, and James B. Foote, Sylvania, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 8, 1975, Ser. No. 539,292

Int. Cl.² A63B *23/00*

U.S. Cl. 272—57 F **5 Claims**

1. In a device for forced expiration exercise wherein liquid is blown between interconnecting compartments to achieve respiratory stimulation, the improvement comprising:
a chamber partitioned by a septum into an upper compartment and a lower compartment said upper compartment being vented to the ambient and said lower compartment being interconnected to an external blow tube, said compartments communicating with each other by means of a liquid transfer tube passing through said septum for transferring blown liquid from said lower compartment to said upper compartment, said transfer tube extending to near the bottom of lower compartment and to near the top of said upper compartment; and
a siphon tube for siphoning liquid form said upper compartment to said lower compartment, passing through said septum, said siphon tube having an inverted U-bend therein which is positioned in said upper compartment and extends into said upper compartment a lesser distance than said liquid transfer tube, said siphon tube having a check valve therein to restrict fluid flow from the lower chamber to the upper chamber.



3,936,049
TABLE TENNIS NET HOLDER

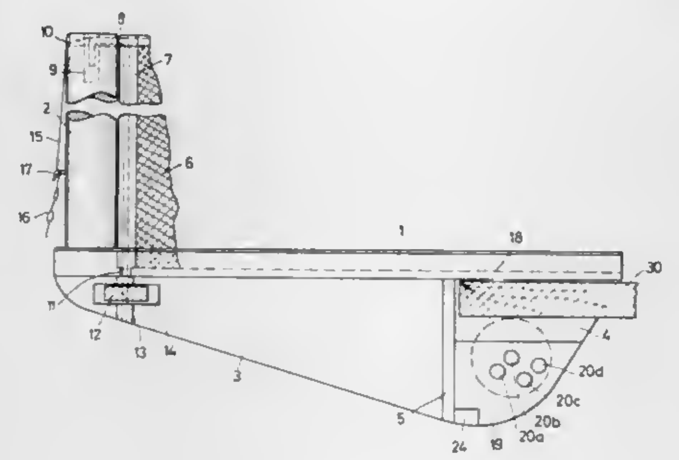
Rudolf Neumann, Breglink, Nubel, Germany, assignor to Heinz Kettler Metallwarenfabrik, Ense-Parsit, Germany

Filed June 13, 1974, Ser. No. 478,959

Claims priority, application Germany, June 13, 1973, 2330003

Int. Cl.² A63B *39/00*

U.S. Cl. 273—30 **8 Claims**



1. A table tennis net holder for insertion into a transverse gap of a tennis table, which includes a longitudinally shaped holding plate having a top side and a bottom side and also having an outer section with an outer end face forming the outer end of said holding plate, a post extending upwardly from said top side near said outer end face for receiving and holding one end of the tennis net, said holding plate also having an inner section for extending across a portion of the width of a tennis table, abutment means arranged between said outer section and said inner section for abutment with one side of a tennis table to thereby limit the overlapping of a tennis table by said inner section, first and second web means respectively arranged below said outer and inner sections of said holding plate and extending at least approximately in a plane perpendicular thereto, supporting means extending through said second web means, and clamping means comprising at least one eccentrically operable member supported by said supporting means for pressing with camming action against an adjacent tennis table section when said holding plate occupies a desired effective position fastened on a tennis table.

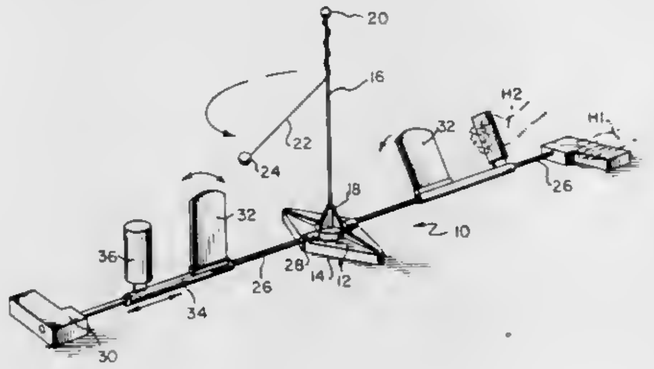
3,936,050
TETHER BALL APPARATUS WITH ATTACHED STRIKING MEMBERS

James R. Hornsby, Jr., 6239 Edgewater Drive, Orlando, Fla. 32810

Filed Aug. 21, 1974, Ser. No. 499,280

Int. Cl.² A63B *71/02*

U.S. Cl. 273—95 A **7 Claims**



1. A tether ball game comprising
a vertically upstanding pole;
a ball;
a string connected between said ball and the upper end of said pole;
a plurality of contact members each having at least one flat side surface;
mounting means for said contact members,
said mounting means being horizontally axially slidable toward and away from said pole to move said contact members to a position where the flat side surface thereof can contact against said ball,
said mounting means also being rotatable about said horizontal axes to swing said contact members until the flat side surfaces thereon contact said ball and propel the same in a rotary motion about said pole to cause said string to wrap around said pole,
said mounting means also being manually operable and includes a handle member which can be manually gripped to accomplish said axial sliding and said rotational movement about said horizontal axes,
rod means extending horizontally outward from said pole, said rod means serving as the said mounting means for said contact members; and
a planar board having cross bars at opposite ends thereof, said rod means projecting through apertures in said cross bars;
wherein that portion of said rod means projecting beyond said cross bars forms said handle member which can be manually gripped to accomplish said axial sliding and said rotational movement about said horizontal axes, and
wherein said planar board has groove means formed therein beneath said rod means and the inner end of each of said rod means carries a depending guide member slidable within said groove means.

3,936,051
TETHERED-BALL GAME HAVING SUSPENDED RECEIVING MEANS

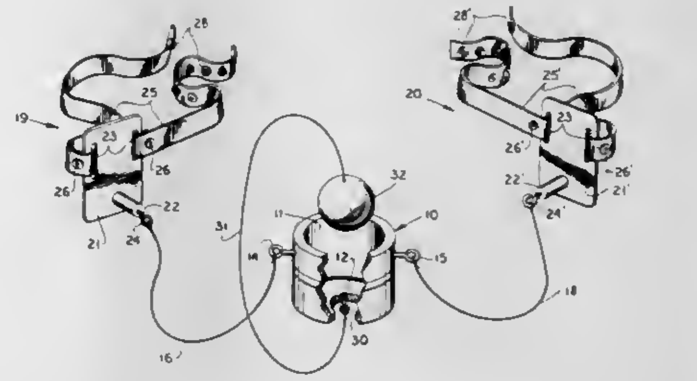
Wilmer David Walker, Jr., 1316 Sharon St. NW., Atlanta, Ga. 30314

Filed Oct. 18, 1974, Ser. No. 515,985

Int. Cl.² A63B *71/02*

U.S. Cl. 273—95 A **1 Claim**

1. A tethered-ball game apparatus wherein two players are required to cooperate to achieve the object of the game, said apparatus including a receiving member comprising a cup having side walls and a bottom, a tossing member comprising a ball of such size as to be receivable within said receiving means, suspension means for suspending said receiving member between said two players, said suspension means comprising a first flexible suspension line having one of its ends fixed to one side of said receiving member above the center of gravity of said receiving member and the other of its ends releasibly fixed to one of said players, and a second flexible suspension line having one of its ends fixed to the opposite side of said receiving member above the center of gravity of said receiving member and the other of its ends releasibly fixed to the other of said players, and a flexible tether, one end of said flexible tether being fixed to said bottom of said receiving member, said tossing member being carried at the opposite end of said flexible tether, said flexible tether and said tossing member being so constructed and arranged that said tossing member will assume a pendulum-like motion upon swinging of said receiving member on said first suspension line and said second suspension line.



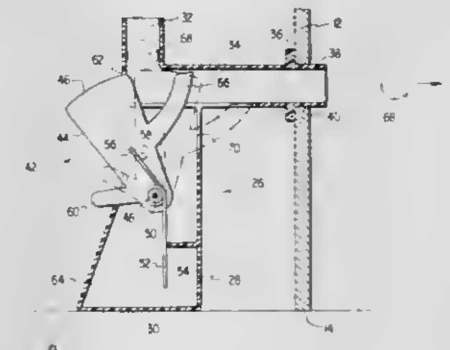
3,936,052
PROJECTOR AND DISPENSER ACTIVATED WHEN ALL TARGETS ARE HIT

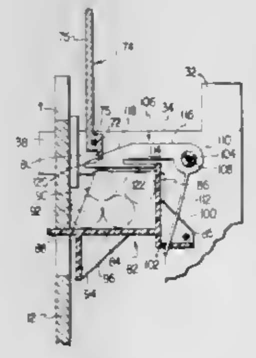
James R. Hornsby, Jr., 6239 Edgewater Drive, Orlando, Fla. 32810

Filed Nov. 18, 1974, Ser. No. 524,737

Int. Cl.² F41J *7/00*; A63B *71/00*

U.S. Cl. 273—101 **21 Claims**





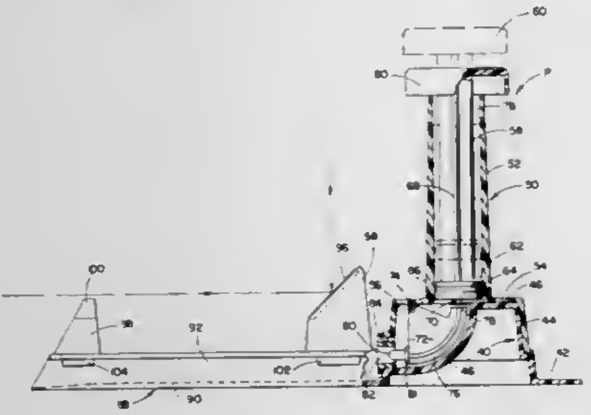
1. An amusement device comprising:
an upstanding member having an aperture formed therein;
container means movably mounted behind said upstanding member and being adapted to contain objects,
said container means being movable from a closed position where objects are retained therein to an open position where objects are released through said aperture in said upstanding member;
target means movably mounted adjacent to said upstanding member for movement from an upright position where said target means projects above said upstanding member

to a collapsed position where said target means is no longer upright;
projectile firing means for launching projectiles at an opponent's target means to knock said target means from said upright position to said collapsed position; and
control means engageable with said target means and said container means;
said control means serving to retain said container means in said closed position while said target means is in said upright position;
said control means releasing said container means when said target means is moved to said collapsed position whereupon said container means moves to said open position and releases the objects therein through said aperture in said upstanding member, said target means including a plurality of targets and wherein said control means retains said container means in said closed position until all of said targets are moved to said collapsed position.

3,936,053
TOY VEHICLE TARGET GAME

Adolph E. Goldfarb, Tarzana; Erwin Benkoe, Encino; Delmar K. Everitt, Woodland Hills; Ronald F. Chesley, La Crescenta, and Richard D. Frierdich, Canoga Park, all of Calif., assignors to Adolph E. Goldfarb and Erwin Benkoe, both of Northridge, Calif.

Filed Feb. 10, 1975, Ser. No. 548,695
Int. Cl.^{2} A63H *17/00*
U.S. Cl. 273—108 **14 Claims**

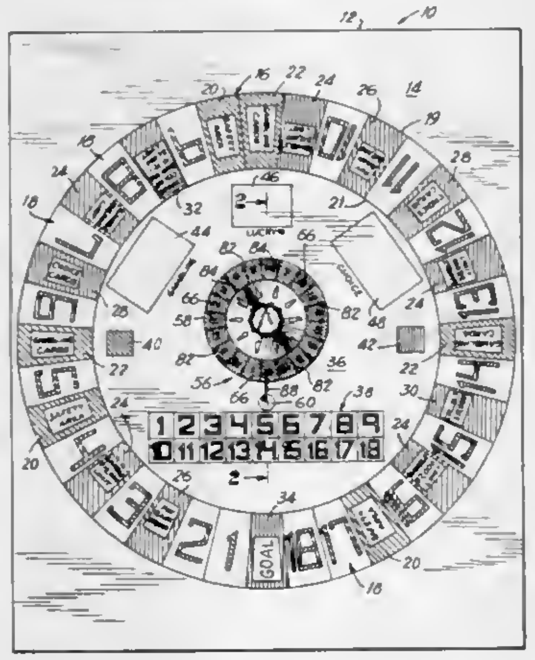


1. A toy vehicle set comprising:
a. a toy vehicle comprised of:
  1. frame means
  2. a plurality of wheels operatively mounted on said frame means,
  3. a plug operatively located with respect to said vehicle and being formed of a somewhat resilient material,
b. a propelling apparatus comprised of:
  1. a fluid chamber,
  2. piston means movable with respect to said chamber to compress a fluid in said chamber, and where said piston means moves from a first position where said fluid is uncompressed to a second position where said fluid is compressed,
  3. a nozzle operatively communicating with said chamber and being sized to removably accept said plug in fluid-tight engagement,
  4. shiftable actuating means operatively mounted in said chamber and being shiftable when said piston means shifts to the second position,
  5. said actuating means being located to be shifted to engage said plug when said piston means reaches said second position and thereby break the seal between said plug and said nozzle to permit the compressed fluid to propel said vehicle.

8. A toy vehicle target game comprising:
a. a propelling apparatus comprised of:
  1. a guideway
  2. a pneumatically operable drive means located in relation to said guideway for driving a vehicle under pneumatic pressure,
  3. sighting means disposed in operative relationship to said guideway to guide a vehicle toward a target,
  4. mechanical release means for initially releasing said vehicle to enable said drive means to propel the aforesaid vehicle,
b. a movable vehicle disposable in said guideway and capable of being driven therefrom by the pneumatic pressure,
c. and a target remote from said vehicle toward which said vehicle is aimed.

3,936,054
BOARD GAME APPARATUS

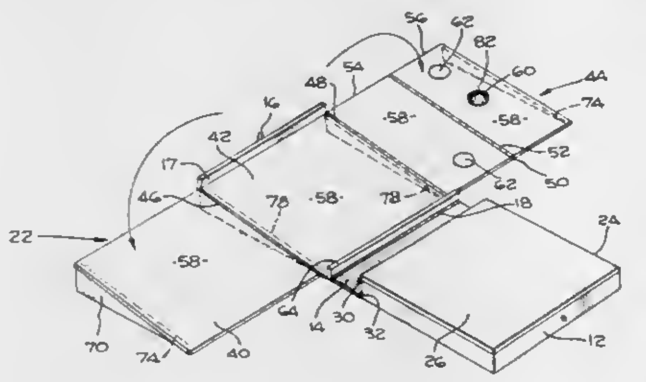
Luis Garcia, 2032 S. Second Ave., Maywood, Ill. 60153
Filed Nov. 29, 1974, Ser. No. 528,334
Int. Cl.^{2} A63F *3/00*
U.S. Cl. 273—134 AD **12 Claims**



1. A board game apparatus for a plurality of players comprising in combination
a playing board having a continuous main course, said main course being divided into a plurality of adjacent playing areas, a portion of said plurality of main course playing areas having penalties, rewards, and instructions associated therewith to which said players must respond, the remaining portion of said plurality of main course playing areas being provided with numerical indicia thereon, said playing areas being randomly arranged to form said main course, said board further including differently colored playing areas disposed without said main course, a plurality of secondary playing areas having consecutive numerical indicia thereon disposed without said main course, each said secondary playing area corresponding to one of said main course playing areas having numerical indicia thereon, said playing board additionally including a generally centrally disposed dial indicator rotatably affixed thereon,
said rotatable dial indicator having a plurality of areas, selected ones of which have numerical indicia thereon corresponding to the numerical indicia provided on said main course playing areas, said areas having colors corresponding to said differently colored playing areas,
said rotatable dial indicator being capable of rotating and indicating a chance selected one of a plurality of numerical quantities when coming to rest,
a plurality of distinctive tokens constituting playing pieces, one of said tokens being utilized by each of said players in playing said game,
monetary tokens for payment of rewards and penalties by players whose distinctive token lands on a main playing area having such instructions thereon,
wagering tokens for placement on said secondary playing areas and said colored areas to indicate the areas selected and the amount wagered,
a plurality of cards, each said card having a numerical indicia thereon corresponding to one of said main path numerical indicia, said cards being acquired by said players under prescribed conditions, ownership of said numerical cards providing rewards of said monetary tokens under specific conditions, and
two decks of cards, the cards of one of said decks of cards having indicia thereon indicating wagering instructions, the cards of the other of said decks of cards having indicia thereon indicating penalty or reward instructions, and a player being directed to select a card from one of said decks of cards by instructions provided on selected ones of said main course playing areas.

3,936,055
GOLF PRACTICE DEVICE

Rocco A. Scott, Burbank, Calif., assignor to Joseph B. Michaelson, North Hollywood, Calif.
Filed Dec. 11, 1974, Ser. No. 531,755
Int. Cl.^{2} A63B *69/36, 67/02*
U.S. Cl. 273—176 H **9 Claims**

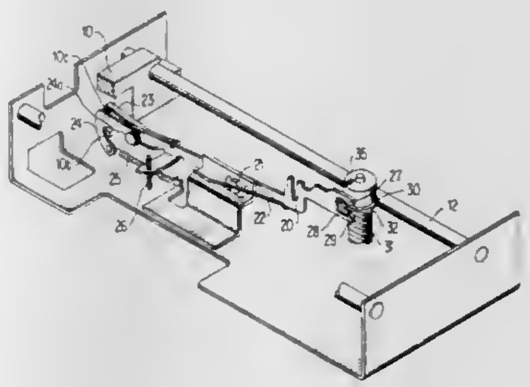


1. A portable, storable golf shot practice stage comprising a generally rectangular frame, a first side panel having a grass simulative playing surface, a second side panel having a grass simulative playing surface, a third side panel perimetrically fixed to one side of said frame and opposite said first and second panels, said first panel being attached to said frame in out-folding relation to upwardly expose its playing surface in the playing configuration of the stage; said second and third side panels cooperating to define with the frame a box-like cavity circumscribed by the frame, and enclosed by said second and third panels, and panel support means comprising plural thin, elongated, wedge-shaped members; said first side panel carrying retaining slots sized to frictionally retain said support members to thereby define the angular relation of said first panel to the frame horizontal plane.

3,936,056
SPINDLE DEPRESS/BRAKE MECHANISM

Forrest Wesley Breyfogle, III, Austin, and James Dudley Bruer, Leander, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 17, 1975, Ser. No. 559,351
Int. Cl.^{2} G11B *25/04, 3/62*
U.S. Cl. 274—9 B **3 Claims**

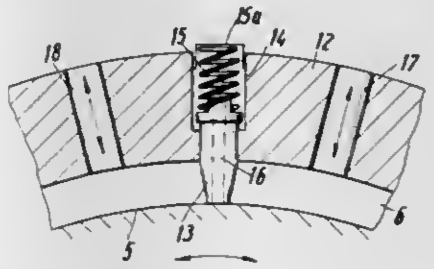
1. In a disc dictation machine having a loader carrier for effecting a disc change cycle by ejecting a first disc from a record/playback station into an unload station and transferring a second disc from a load station into the record/playback station, apparatus for disengaging a disc in the record/playback station during the disc change cycle comprising:
a spindle;
a pivotally mounted bellcrank having one end thereof shaped for operatively engaging said spindle for depression thereof;
cam means integral with the second end of said bellcrank;
a first surface integral with said loader carrier for engaging said cam means and rotating said bellcrank to depress said spindle;
latch means connected to the second end of said bellcrank lever;



spring means connected to said latch means for actuation thereof to latch said bellcrank in the spindle position;
a second surface integral with said loader carrier for engaging said latch means for unlocking thereof to release said spindle;
spring means connected to said bellcrank lever for biasing said bellcrank lever out of contact with said spindle; and
adjustable stop means attached to said second end of said bellcrank lever for inhibiting the motion of said bellcrank lever at a preselected non-spindle depression position.

3,936,057
SHAFT SEALS

Gerhard W. H. Walter, and Günter W. E. Pietsch, both of Hamburg, Germany, assignors to Howaldtswerke - Deutsche Werft Aktiengesellschaft Hamburg und Kiel, Germany
Filed Aug. 10, 1973, Ser. No. 387,243
Claims priority, application Germany, Aug. 11, 1972, 2239570
Int. Cl.^{2} F16J *15/16*
U.S. Cl. 277—59 **21 Claims**



1. A device for improving circulation of a liquid lubricant comprising:
a. a rotatable member;
b. two axially spaced sealing rings mounted on said rotatable member, said rotatable member and said sealing rings forming a chamber in which the lubricant flows;
c. a stationary deflector element having one end resting on the periphery of said rotatable member, said one end being positioned between and spaced apart from said sealing rings to provide a flow path for lubricant between said deflector element and said sealing rings; and
d. means, surrounding said rotatable member, for carrying said sealing rings and for supporting said deflector element between said sealing rings.

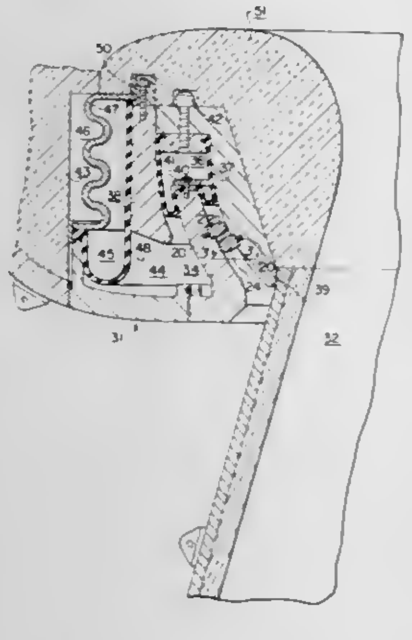
3,936,058
TRANSVERSE STIFFNESS AUGMENTATION BEARING

Thomas S. Clark, Monte Sereno, and Hugh M. Reynolds, San Jose, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 12, 1974, Ser. No. 505,430

Int. Cl.^{2} F02K *1/24*

U.S. Cl. 277—88 8 Claims



1. In a universal joint having 2 spaced-apart members to be connected together for relative axial and angular movement, an annular plug affixed to one of said members, an annular fluid-filled flexible membrane in the space between said plug and the other member, means attaching the central wall portion of said membrane to said plug, whereby relative movement of said plug effects movement of said membrane to provide a fluid bearing rolling seal between said plug and the surface of said other member, the surfaces of said membrane defining convolute rolling surfaces, and spaced tabs affixed to said plug and acting as transverse stiffness augmentation bearings for maintaining a minimum distance between said annular plug and said other member.

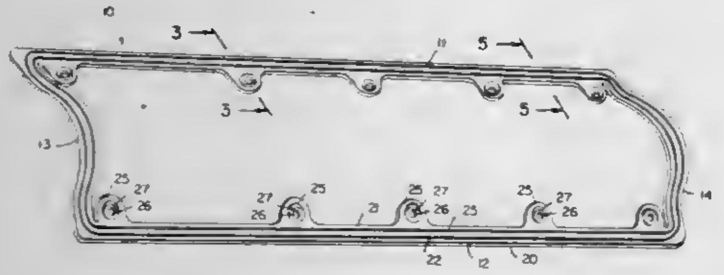
3,936,059
SEALING BOUNDARY GASKET FOR COMPRESSION BETWEEN FLANGED PORTIONS OF TWO MATING METAL MEMBERS

Alexander L. Gordon, Worcester, Mass., assignor to Federal-Mogul Corporation, Southfield, Mich.

Continuation of Ser. No. 402,994, Oct. 3, 1973. This application Mar. 21, 1975, Ser. No. 560,571

Int. Cl.^{2} B65D *53/06;* F16J *15/02*

U.S. Cl. 277—166 5 Claims



1. A sealing boundary gasket for compression between flanged portions of two mating metal members each having two longitudinal side portions that are flat but lie in different planes and end portions that join said side portions, comprising

a one-piece integrally molded elastomeric configuration of homogeneous composition throughout having two lengthwise strip portions that are generally planar and two end strip portions,

said two longitudinal strip portions including, as integral portions thereof and of the same homogeneous composition, series of inwardly projecting flexible portions for fully encircling bolts and for lying in a different plane from their adjacent strip portion and gasketing around them, each said flexible portion having a bolt-encircling rib for each bolt completely surrounding a bolt opening and being wedge-shaped so that each bolt-encircling rib has a highest portion leading smoothly to a diametrically opposite lowest portion, so that the load is substantially uniform around each bolt-encircling rib.

3,936,060
MEANS FOR DETECTING OPENING DEGREE OF CLAWS OF AN ELECTRICALLY DRIVEN MACHINE TOOL CHUCK

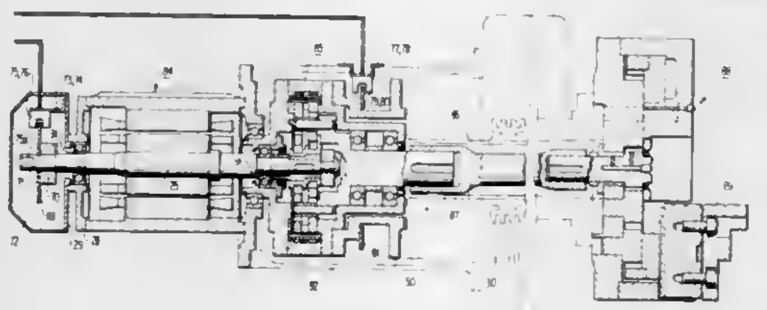
Kenichi Hirao, Kawasaki, Japan, assignor to Fuji Electric Company, Ltd., Kawasaki, Japan

Filed Aug. 7, 1974, Ser. No. 495,468

Claims priority, application Japan, Aug. 8, 1973, 48-93331[U]

Int. Cl.^{2} B23B *31/02*

U.S. Cl. 279—1 H 5 Claims



1. In a machine tool having a chuck with radially adjustable jaws, a main shaft connected to said chuck to rotate same, a torque shaft connected to said chuck so as to adjust the radial position of said jaws, a motor having an output shaft and operatively connected to said torque shaft to cause same to rotate with respect to said chuck to cause the movement of said jaws so as to adjust the clamping diameter of the jaws, the improved means for detecting the degree of opening of said jaws comprising:

a. a first detecting means operated by said motor output shaft for detecting the number of revolutions and direction of rotation of said motor output shaft;

b. a second detecting means operated by said main shaft for detecting the number of revolutions and direction of rotation of said main shaft;

c. counting means connected to said first and second detecting means to compare the difference between the number of revolutions of said motor output shaft and said main shaft, with a preset value and generate an output signal when said difference is not equal to said preset value; and

d. means connecting said counting means output signal to said motor such that said motor adjusts said chuck jaws whenever said counting means generates an output signal.

3,936,061
ROLLER SKATE

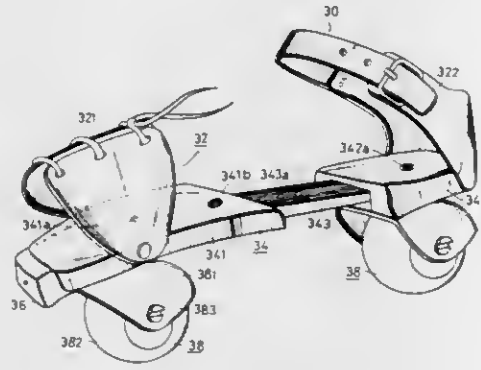
Nobuhito Wada, Tokyo, Japan, assignor to Mahmut Starkow, Tokyo, Japan

Filed Apr. 5, 1974, Ser. No. 458,397

Int. Cl.^{2} A63C *17/06*

U.S. Cl. 280—11.23 3 Claims

1. A roller skate, comprising a support, two rotary elements each having a substantially spherical configuration, means for rotatably mounting each of said elements on said support along the longitudinal axis of said support, said mounting means comprising a bolt-nut assembly and each of said rotary elements having a central through bore, the bolt of said bolt-nut assembly extending through said bore to rotatably mount each of said elements, each of said rotary elements comprising a substantially spherical body formed with said central bore and bearing means inserted in said bore, said body comprising a synthetic material and said bearing means being comprised of an oilless graphite-containing alloy, said body being laminated and having an inner layer comprised of ABS resin and an outer layer comprised of rubber means.



3,936,062
SKI BINDING

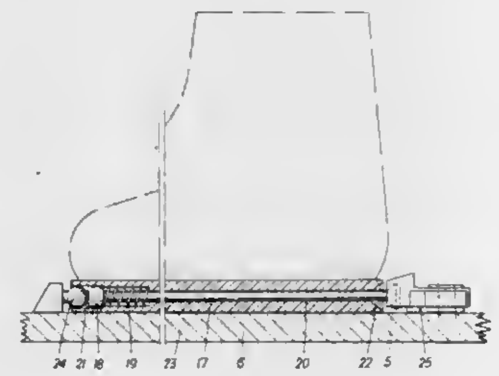
Gottfried Schweizer, Wien, Switzerland, assignor to Gertsch AG, Zug, Switzerland

Filed June 12, 1974, Ser. No. 478,585

Claims priority, application Austria, June 29, 1973, 5785/73

Int. Cl.^{2} A63C *9/08*

U.S. Cl. 280—11.35 D 4 Claims



1. In a ski binding arrangement having at least one fitting on a ski boot sole and one binding part having spring-loaded holding parts mounted on a ski and adapted to engage said fitting, the improvement comprising a push rod reciprocally mounted in said ski boot sole, said fitting being mounted on said push rod, resilient means for resiliently biasing said fitting into a retracted non-use position in said ski boot sole when said ski boot sole is free of engagement with said ski so that said fitting will not be extended from said ski boot sole during a use of the ski boot away from said ski, and attachment means mounted on said ski and spaced from said binding part for pushing said push rod against the urging of said resilient means to push said fitting out from said ski boot sole to a position of use when said ski boot sole engages said ski between said attachment means and said binding part.

3,936,063
RETAINING MECHANISM FOR SKI BINDINGS

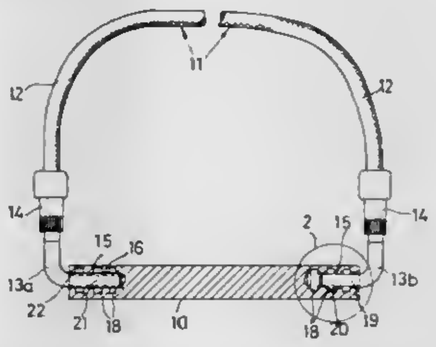
Brigitte Sittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch and Co. GmbH, Germany

Filed July 10, 1974, Ser. No. 487,131

Claims priority, application Germany, July 12, 1973, 2335473

Int. Cl.^{2} A63C *9/00*

U.S. Cl. 280—11.35 P 8 Claims



1. A retaining mechanism for ski bindings with a retaining means serving for retaining a ski boot, said retaining means being adapted to be inserted by means of inwardly directed pin portions into lateral cross bores provided on a relatively fixed part, the cross bores being provided with a thread for the accommodation of pin portions provided with corresponding counter threads and with bayonet-like grooves for the accommodation of pin portions provided with corresponding elements to be coupled bayonet-like with said grooves, whereby retaining means with pin portions having either bayonet-like or threaded ends may alternatively be utilized with the same cross bores.

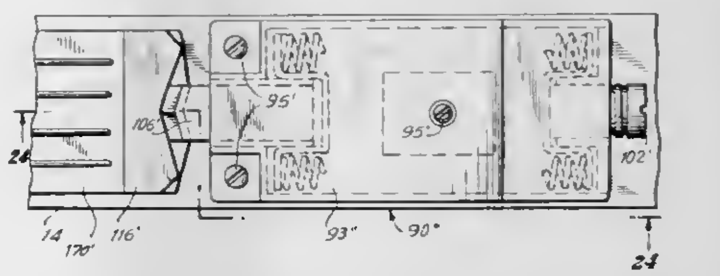
3,936,064
SAFETY SKI BINDING

Frank P. D'Alessio, Franklin Lakes, N.J., and Erl A. Koenig, Troy, N.Y., assignors to GPI, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 121,422, March 5, 1971, Pat. No. 3,838,866. This application Nov. 13, 1973, Ser. No. 415,466

Int. Cl.^{2} A63C *9/08*

U.S. Cl. 280—11.35 K 4 Claims



1. A safety binding for releasably securing a boot having a sole formed with a lower surface to a ski, comprising a sole plate having an upper surface substantially defining a plane supporting said boot lower surface; means for releasably securing said boot to said sole plate; and first and second sets of means for releasably affixing said sole plate to said ski positioned respectively forwardly and rearwardly of a line intermediate to the ends of and normal to the long axis of said sole plate, said sets of means being shaped to permit both relative lateral and relative normal displacement of said ski and sole plate at both sets thereof, both of said sets of means including cooperative interengaging surfaces defining a pocket and a projection into said pocket, one of each of which surfaces is positioned on said ski and the other of each of which surfaces is positioned on said plate and the surfaces of each of which sets of means contact each other along an interface shaped to cause said plate to be impelled toward said ski and to laterally position said plate relative to said ski in the region of both of said sets of means as said cooperating interengaging surfaces

of each such set are concurrently impelled toward each other; and means for impelling said surfaces in each of said sets toward each other concurrently, which impelling means is sufficiently yielding to permit said cooperating interengaging surfaces of either of said sets of means to become disengaged from each other through relative displacement by motion having an axial component and either a lateral component, a normal component, or a combination of lateral and normal components due to the application of force moments counter-directional to the force moments imparted to said cooperating interengaging surfaces by said impelling means, said impelling means including at least one plunger means displaceable substantially axially relative to said ski and bearing at one end thereof one of said interengaging surfaces of the rearwardly of said sets of means, at least the portion of said plunger means bearing said one interengaging surface and the other interengaging surface of said rearwardly set of means being positioned below the plane defined by said upper surface of said sole plate, the forwardly of said set of means being positioned beneath said sole plate.

3,936,065
SAFETY SKI BINDING

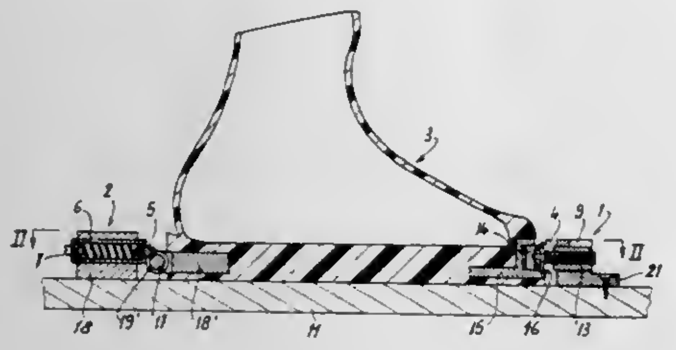
René Ramillon, 3, rue Emile Zola 38029, Grenoble & Cedex, France

Filed Oct. 29, 1974, Ser. No. 519,002

Claims priority, application France, Oct. 31, 1973, 73.39464; Apr. 30, 1974, 74.15818

Int. Cl.² A63C *9/08*

U.S. Cl. 280—11.35 T **10 Claims**



1. A safety ski binding for securing a ski boot to a ski having a median plane extending along the center of the ski and perpendicular to the ski, said binding comprising:

a toe boot element on the toe of said ski boot;

a heel boot element on the heel of said ski boot;

a toe ski element secured to said ski at said median plane and lockingly engageable with said toe boot element, one of said toe elements comprising a pair of generally cylindrical and parallel pins flanking said median plane and the other of said toe elements being a profiled button lying in said plane and engageable between said pins;

means coacting between said toe elements for resisting vertical release of the boot from the ski;

a heel ski element secured to said ski at said median plane, and lockingly engageable with said heel boot element, one of said heel elements being a generally cylindrical body having an axis lying substantially perpendicular to said plane and being formed at said plane with a circumferential groove and the other heel element being a profiled button lying in said plane and engaging in said groove in force-transmitting relationship in said plane along said ski; and

means for urging one of said ski elements along said plane toward the other ski element whereby a biasing force is applied through said boot elements to said other ski element.

3,936,066
SAFETY SKI BINDING

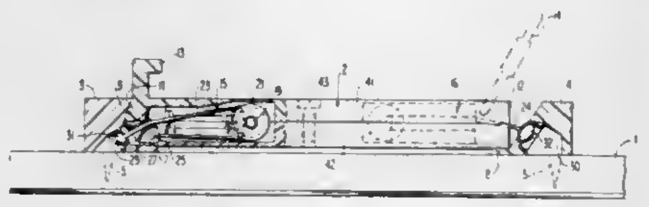
Gerhard Witting, Clemensstrasse 121, D8 Munich 40, Germany

Filed Sept. 26, 1974, Ser. No. 509,494

Claims priority, application Germany, Sept. 28, 1973, 2348905

Int. Cl.² A63C *9/08*

U.S. Cl. 280—11.35 N **6 Claims**



1. A safety ski binding comprising a rigid base plate arranged for detachable fastening to a ski boot, said base plate including two spaced release devices for establishing automatically releasable connections between the base plate and the ski, the automatic release being effected upon occurrence of an excessive force tending to separate said base plate and ski at the location of a release device, said release devices each including at least one guide roller mounted for movement along said base plate transversely of the roller axis, cable means fixed at one end to said base plate and passing over said guide roller and outwardly of said base plate for attachment to the ski, and spring means biasing said guide roller along its path of movement for applying tension to said cable means and permitting it to be drawn a distance from said base plate greater than said guide roller moves in response thereto.

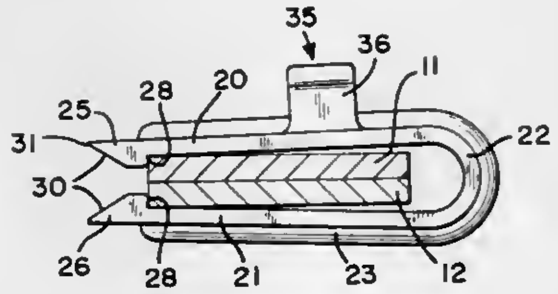
3,936,067
SKI CLAMP

Reinhold G. Link, Dayton, Ohio, assignor to Linkspiel, Inc., Dayton, Ohio

Filed June 11, 1975, Ser. No. 585,978

Int. Cl.² A63C *11/02*

U.S. Cl. 280—11.37 A **4 Claims**



1. A clamp for use in holding a pair of skis, said clamp comprising

an integral body having outwardly extending arms joined by a generally U-shaped neck portion,

said arms and neck portion being sufficiently resilient to accommodate flexing of said arms in a parting direction whereby said arms will exert clamping force against a pair of skis fitted between said arms,

tip parts on each of said arms,

at least one of said tip parts including a shoulder facing inwardly of said clamp toward said neck portion so as to engage around an edge of a ski, at least one of said tip parts having a ramp portion extending divergently toward its end from the other tip part so as to cause said arms to spread when the clamp is pushed along the length of said arms against an edge of the skis,

and a retainer section formed as part of said body and including opposed resilient ribs forming a pole receptacle the axis of which is generally parallel to the outwardly extending direction of said arms of the clamp.

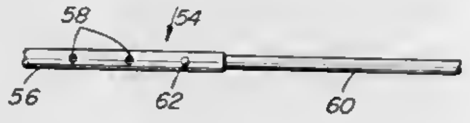
3,936,068
REFUSE CARRIER

Ira S. Dorman, 146 Page Drive, Oakland, N.J. 07436

Filed Dec. 10, 1973, Ser. No. 423,522

Int. Cl.² B62B *1/04*

U.S. Cl. 280—34 B **14 Claims**



1. A refuse carrier comprised of a chassis and at least one wheel on which said chassis is mounted, said chassis having opposed sidewall portions, rearwardly-disposed handle means for manipulating said carrier, and readily and substantially nonobstructively disengageable means for temporarily maintaining lateral spacing between said sidewall portions and permitting, upon disengagement of said spacing means, movement of said sidewall portions laterally with respect to one another, said spacing means at least in part defining a front wall portion of said chassis which extends, in the normal transport position of said carrier, generally upwardly from adjacent said wheel and terminates in a relatively thin forward edge, and said sidewall and front wall portions cooperatively defining a normally upwardly opening cavity within said chassis, said chassis being pivotable in a vertical plane about the axis of said wheel from a normal transport position of said carrier to a forwardly-tipped position in which said chassis rests upon said forward edge and said wheel, and the opening of the cavity thereof is generally forwardly disposed, said chassis and said wheel being so dimensioned and disposed, relative to one another, that the center of gravity of said chassis is located rearwardly of said forward edge in the forwardly-tipped position of said carrier, to afford stable resting on said edge.

3,936,069
COLLAPSIBLE BABY STROLLER

Pietro Giordani, Via Rupe, 19, Sasso Marconi, Italy

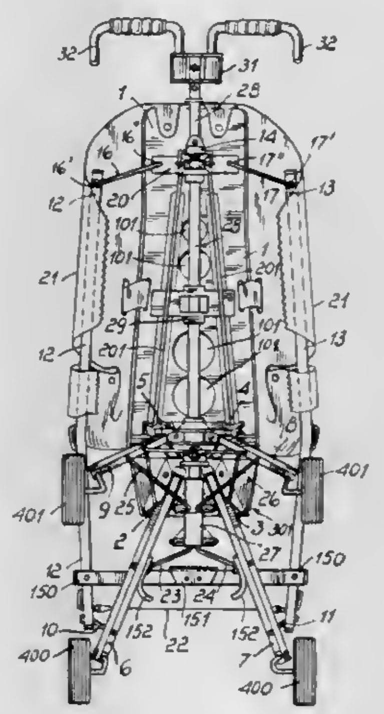
Filed Jan. 20, 1975, Ser. No. 542,735

Claims priority, application Italy, Jan. 24, 1974, 12442/74

Int. Cl.² B62B *11/00*

U.S. Cl. 280—36 B **9 Claims**

1. A collapsible baby stroller having at least one seat member, wheels for moving the stroller on the ground, at least one handle member for carrying and pushing the stroller and an articulated lever system cooperating in supporting said seat member and said wheels, the configuration of said lever system being transformable from a collapsed configuration into an unfolded configuration and vice versa, characterized in that the stroller further comprises a control rod for said lever system, a rigid supporting body structure slidingly supporting said control rod shiftable with respect to said supporting body structure from at least one position thereof into at least another position thereof, said articulated lever system which cooperates in supporting said seat member and said wheels having a first group of articulated component members linked to said rigid supporting body structure and a second group of articulated component members linked to said control rod, said control rod causing said articulated lever system and said seat member and wheels carried by it to assume a collapsed configuration when the control rod is shifted into said one position thereof and causing said articulated lever system and said seat member and wheels carried by it to assume an unfolded configuration when the control rod is shifted into said other position thereof.



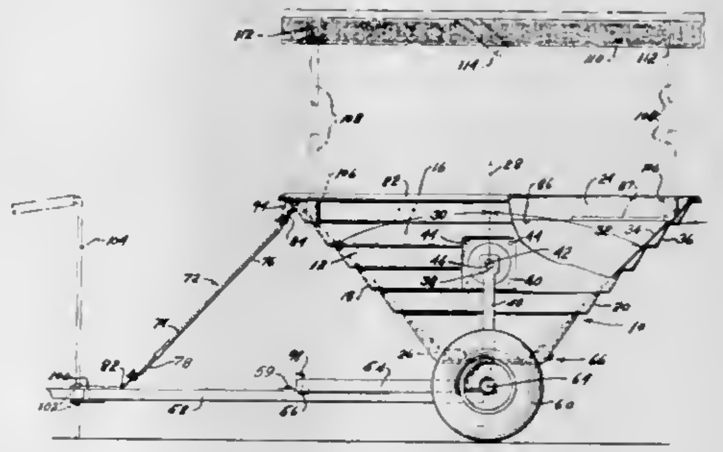
3,936,070
CARTS

Kenneth B. Owings, 620 Pugh Road, Strafford, Pa. 19087

Continuation of Ser. No. 154,504, June 18, 1971, abandoned. This application Feb. 1, 1974, Ser. No. 438,907

Int. Cl.² B62B *1/12*

U.S. Cl. 280—47.18 **12 Claims**



5. A cart comprising an elongated, concave body portion forming a carrying compartment normally disposed in a first position with its concavity facing upwardly, a pair of wheels, and means associating said body portion and wheels, and including framing having means defining a first axis about which said wheels may rotate, and means defining a second axis parallel to and disposed generally vertically above said first axis, said latter means being coupled to said body portion in a region intermediate both its length and its height and providing for pivotation of said body portion, about said second axis, between a pair of opposed positions in each of which said concavity faces longitudinally, said body having two sloping end walls similar in length and in slope with relation to an upright plane containing said two axes when the concavity faces directly upwardly, and the angle between said two walls being such that in one of said opposed positions one such wall will be in a position close to the horizontal and in the other of said opposed positions, the extreme edge of the other such wall will be in close proximity to a surface on which said wheels ride.

3,936,071

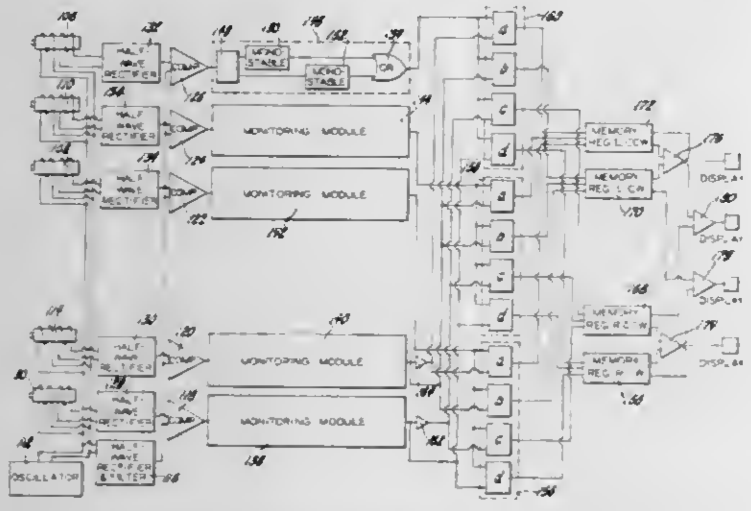
STEERING SYSTEM MONITORING APPARATUS AND PROCEDURE

James B. Ricketts, Jr., Warren; William A. Hehs, Birmingham; John T. Auman, Washington, and Timothy R. Schlax, Rochester, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 10, 1975, Ser. No. 548,196

Int. Cl. B62d *7/20*

U.S. Cl. 280—95 R **5 Claims**



1. A procedure for monitoring lash in the steering system of a vehicle, said steering system including a wheel spindle supported on the vehicle for pivotal movement in two opposite directions about a steering axis of said vehicle, a steering handwheel rotatably supported on said vehicle for manual manipulation, and gear and linkage means disposed between said spindle and said handwheel for effecting pivotal movement of said spindle in response to rotation of said handwheel, comprising the steps of continuously monitoring the angular position of said handwheel with an angular position transducer operative to generate an electrical signal corresponding to the instantaneous angular position of said handwheel, detecting the passage of said spindle through a preselected reference position in one of said two opposite directions of movement, electrically gating the output of said angular position transducer at the instant said spindle passes through said reference position to a comparator operative to determine the difference between two electrical input signals and to generate an output signal proportional to the difference between the two input signals, detecting the next sequential passage of said spindle through said reference position in the other said two opposite directions, electrically gating the output of said angular position transducer at the instant said spindle next sequentially passes through said reference position in said other direction to said comparator, said comparator generating an output signal proportional to the difference between said two sequentially gated signals from said angular position transducer, and conducting said comparator output signal to a display means for warning of improper lash condition when said comparator output signal achieves a preselected magnitude.

3,936,072

AXLE LIFT MECHANISM

Darwin Mandel, R.R. 1, Huron, S. Dak. 57550

Filed Oct. 23, 1974, Ser. No. 517,188

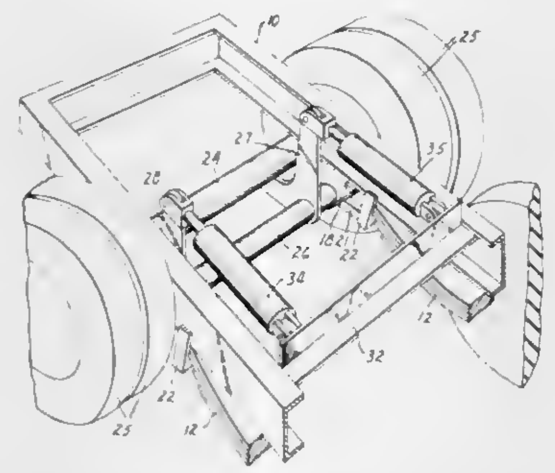
Int. Cl.^{2} B60G *5/06*

U.S. Cl. 280—104.5 R **2 Claims**

1. A truck axle lift structure for a trailing axle of a tandem axle structure which trailing axle is supported pivotally on fixed brackets beneath the truck frame supporting a cross shaft, said structure comprising

support means for mounting on a truck frame to afford a pivot axis, said support means including a hollow shaft adapted to receive said cross shaft,

a pair of bell-cranks carried by said support means in transversely spaced relationship, each said bell-crank comprising a cam surface spaced from said support means on one arm of said bell-cranks and adapted to slidably engage the undersurface of an axle.



bracket means for attachment to a truck frame, and

a pair of power cylinders each connected to a different one of said bell-cranks and to said bracket means for moving said bell-cranks and support means to afford lifting movement of the axle.

3,936,073

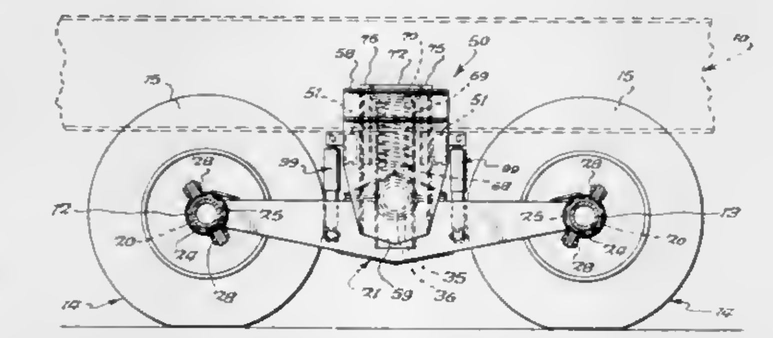
TANDEM AXLE VEHICLE SPRING SUSPENSION

Albert F. Hickman, Eden, N.Y., and Robert G. Moore, Elkhart, Ind., assignors to Hickman Developments, Inc., Eden, N.Y.

Filed Apr. 7, 1975, Ser. No. 565,422

Int. Cl.^{2} B60G *11/52*

U.S. Cl. 280—104.5 A **10 Claims**



1. A tandem axle spring suspension adapted to be interposed between a vehicle frame and a pair of tandem axles having rubber tired wheels journalled at the ends thereof, having a walking beam arranged at each of said frame and extending lengthwise thereof close to the inner vertical faces of the corresponding pair of tires, a horizontal cross rod extending transversely of said frame toward the space between said tires at each side of said vehicle and with its ends arranged adjacent the central parts of said walking beams, a pair of bearings journalling said cross rod near the ends thereof on said central parts of said walking beams, and means movably connecting each end of each walking beam with a corresponding axle end wherein the improvement comprises means resiliently supporting opposite sides of said frame on the ends of said cross rod, comprising a pedestal mounted on each cross rod end adjacent the outboard part of the corresponding one of said bearings, a metal helical compression spring mounted on each pedestal, means supported on top of each metal helical compression spring and supporting the corresponding side of said frame, and means providing high and widely spaced spring pivot points for said frame on the opposite ends of said cross rod and also providing a large proportion of the resilient support for said frame on said cross rod in addition to said metal helical compression springs, comprising at least one upright first plate secured to each cross rod end outboard from the corresponding metal helical compression spring, a resilient rubber body fixed to one face of said upright plate, a second upright plate fixed to the opposite side of said flexible rubber body in generally parallel relation to said first plate, and means securing said second plate to said frame.

3,936,074

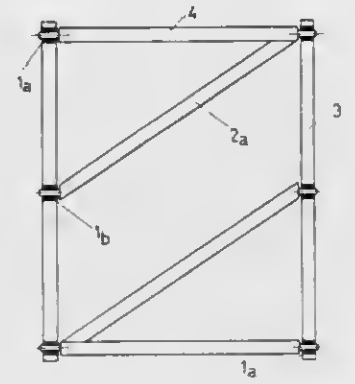
VEHICLE CHASSIS

Ernesto Prinoth, Corso 33, Ortisei (BZ), Italy

Continuation-in-part of Ser. No. 322,604, Dec. 16, 1971, abandoned. This application Apr. 9, 1974, Ser. No. 459,239

Int. Cl.^{2} B62D *21/00*

U.S. Cl. 280—106 R **6 Claims**



1. A vehicle chassis for a vehicle comprising:

a frame composed of four rigid frame members, said frame members being one pair of side members and one pair of end members in a rectangular arrangement, and elastic torsional coupling means connecting the adjoining ends of at least two of said frame members for limited swinging movements between them in all directions.

3,936,075

MATERNITY PROTECTION DEVICE

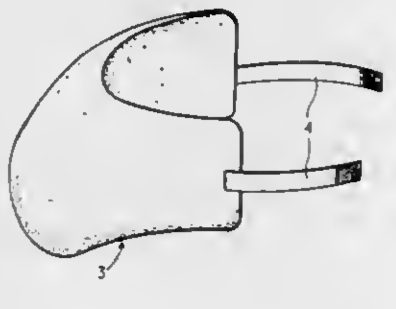
Robin Stewart Jelliffe, 38 Gordon St., Coffs Harbour, N. S. W. 2450, Australia

Filed Mar. 4, 1974, Ser. No. 447,622

Claims priority, application Australia, Mar. 13, 1973, PB 2565/73

Int. Cl.^{2} B60R *21/02*

U.S. Cl. 280—150 B **1 Claim**



1. A device for protecting the protuberant abdomen of a pregnant woman, the device comprising a substantially rigid dome, and lugs located on and secured to an outside surface of the dome, said dome being shaped to correspond substantially with the shape of the protuberant abdomen of the pregnant woman in a sitting posture in a vehicle and being sized to fit over and cover the protuberant abdomen, said dome being capable of being fitted between a conventional vehicle safety belt and the protuberant abdomen such that in use the safety belt lies across the dome and thereby holds the device in position, and the lugs being adapted to permit the vehicle safety belt to be held therein, thereby preventing the safety belt from slipping off the dome.

3,936,076

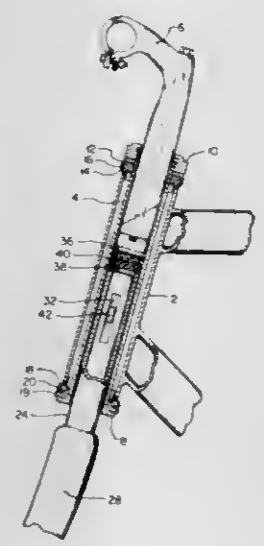
CYCLE SHOCK ABSORBER

Kendall D. Probst, 935 20th St., Ogden, Utah 84401

Filed Aug. 23, 1974, Ser. No. 500,050

Int. Cl.^{2} B62K *21/18*

U.S. Cl. 280—276 **5 Claims**



1. A shock absorber comprising

a first elongated tube having a first pair of slots on opposite sides of the tube near one end thereof,

a second elongated tube, one end of which slidably fits in said one end of the first tube, said second tube having a second pair of slots on opposite sides and extending lengthwise of the second tube and generally aligned with the first pair of slots, the second pair of slots being longer than the first pair,

a first plug secured in said first tube between the first pair of slots and the other end of the tube,

a second plug secured in said second tube at said one end,

at least one resilient wire mesh pad disposed in said first tube between said first and second plugs and partly compressed therebetween, and

a tab secured in and extending between the first pair of slots through the second pair of slots such that the tab slides in the second pair of slots as the first and second tubes move relative to each other.

3,936,077

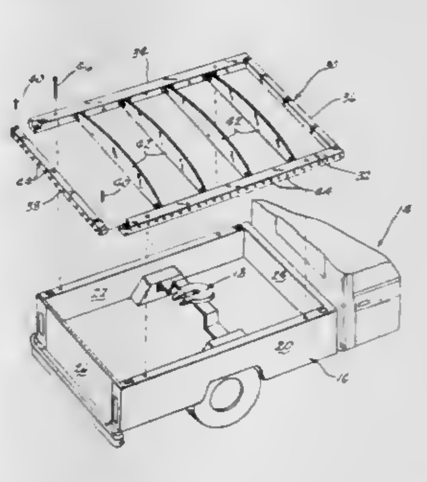
TONNEAU COVER FOR FIFTH WHEEL CAMPER TRUCKS

Arie Bliek, 903 Grand, Emmetsburg, Iowa 50536

Filed Mar. 4, 1974, Ser. No. 447,790

Int. Cl.^{2} B62D *53/00;* B60J *7/10*

U.S. Cl. 280—423 R **10 Claims**



1. In combination with a truck having a box defined by upstanding walls and a fifth wheel means positioned in said box, comprising,

a flexible tonneau cover,

and fastening means operatively securing the periphery of said cover to said walls so that said cover extends thereover,

said cover having an opening formed therein above said fifth wheel means so that the king pin of a trailer means may extend downwardly through said cover and downwardly into said box to said fifth wheel means,

said opening being positioned at the longitudinal center line of said box when said cover is mounted on said walls.

3,936,078

DAMPING DEVICE FOR COUPLING TOGETHER PIPING ELEMENTS

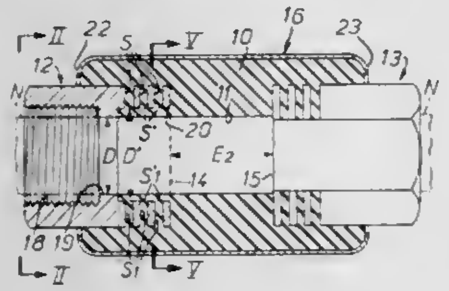
René Wallyn, 77 Claye-Souilly, France

Filed May 17, 1974, Ser. No. 470,830

Claims priority, application France, Apr. 17, 1974, 74.13388

Int. Cl.² F16L *11/12*

U.S. Cl. 285—49 **3 Claims**



1. A damping device for coupling together two lengths of pipe to permit the conveyance of fluid under pressure from one length to the other, comprising two tubular end members, polygonal in transverse section, spaced apart from each other, said end members including a plurality of transverse grooves extending through from the peripheries to the bores of said members, said members each having in addition, a continuous peripheral groove spaced closer to the extremities of said device than said first mentioned grooves, said peripheral groove extending partially into the body of said members, an elastic sleeve over-molded on said end members and including components extending into said grooves, a tubular covering jacket surrounding said sleeve, said jacket being provided at its extremities with transverse inturned edges directed substantially radially in the direction of the axis of said members, said edges partially covering the corresponding extremities of said sleeve, said edges being disposed in alignment with said continuous grooves in said members, and fixation means rigidly connected to said jacket for mounting said device to a support.

3,936,079

COUPLING OR JOINTING UNIT

Bror Thure Fridolf Ekman, Slalomvagen 12, S-541 00 Skovde, Sweden

Filed July 5, 1974, Ser. No. 485,950

Int. Cl.² F16L *17/02, 17/06*

U.S. Cl. 285—98 **7 Claims**

1. A coupling for joining conduit elements subject to relative swiveling movements comprising:

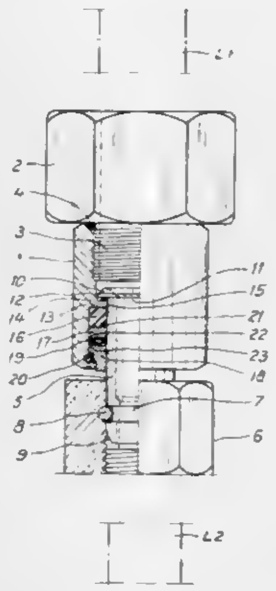
an outer conduit member including an end portion adapted to engage one conduit element and a radially inwardly extending flange displaced from said end portion for providing a first annular surface,

an inner conduit member including an end portion adapted to extend through said outer conduit member and an opposite end portion with a radially outwardly extending flange providing a second annular surface facing said first annular surface and capable of limiting the movement of said inner conduit member relative to said outer conduit member,

a first sealing ring of low friction material between said annular surfaces for sealing said conduit members against fluid leakage when said surfaces are urged toward each other by a predetermined pressure acting on the radially outwardly extending flange of the inner conduit member and resulting from the fluid pressure and external forces on the conduit members,

an annular sealing compartment being defined between the inner surface of said outer conduit member and the outer surface of said inner conduit member in the leakage path between said conduit members downstream of said first sealing ring, and

sealing means in said compartment including a second sealing ring backed up by axially resilient spring means, said second sealing ring normally sealing said passage against leakage at fluid pressures less than said predetermined pressure and said spring means acting to absorb energy upon imposition to the second sealing ring of fluid pressure exceeding said predetermined pressure to allow the second sealing ring to seal said passage without causing binding of said conduit members together when the facing surfaces of said members are displaced from sealing position due to external forces exerted on the conduit members.



3,936,080

PIPELINE EXPANSION JOINT HAVING A SMOOTH BORE

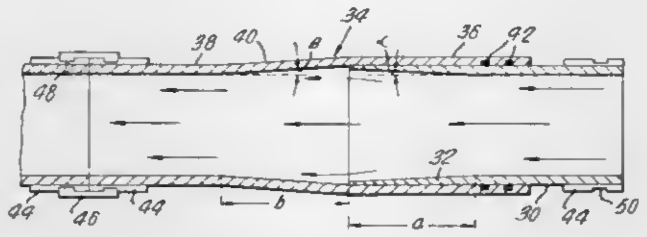
David W. Bennett, Willowdale, Canada, assignor to Grandview Industries Limited, Rexdale, Canada

Filed May 30, 1974, Ser. No. 474,768

Claims priority, application Canada, June 8, 1973, 173572

Int. Cl.² F16L *55/00*

U.S. Cl. 285—175 **7 Claims**



1. A pipeline expansion joint having a smooth bore for use with pipelines into which flow slurries containing solids in suspension comprising:

a. a first sleeve open at both ends and having a tapered portion formed in the inner wall of one of its ends extending at a small angle with the axis of the first sleeve and over a substantial portion of its length from its inside diameter to substantially its outside diameter; and

b. a second sleeve also open at both ends and having a first portion of substantially the same inner diameter as the outer diameter of said first sleeve and telescopically mounted on said one end of the first sleeve, a second portion of substantially the same inside diameter as that of said first sleeve, and an intermediate portion expanded at a small angle with the axis of the second sleeve over a substantial portion of its length from said second portion to said first portion of the second sleeve, thereby providing a smooth bore throughout the expansion joint with no area of abrupt changes in order to prevent turbulence and the resulting wear of the expansion joint by the solids in suspension in the slurries; and

wherein the small angle of taper in said first sleeve is substantially the same as the small angle of expansion in said second sleeve.

3,936,081

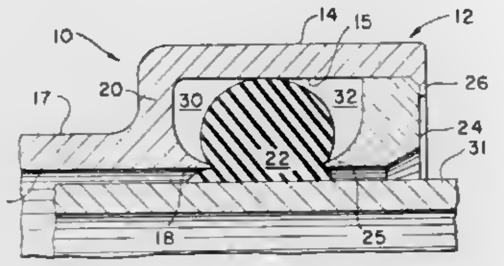
PIPE JOINT AND METHOD OF MAKING SAME

James J. Blumenkranz, Hollywood, Calif., assignor to R & G Sloane Manufacturing Co., Inc., Woodland Hills, Calif.

Filed Feb. 27, 1974, Ser. No. 446,518

Int. Cl.² F16L *21/02*

U.S. Cl. 285—231 **8 Claims**



1. A pipe joint including an annular wall having an inwardly extending shoulder spaced axially from an open end thereof; said annular wall and said shoulder defining a socket, a first lip extending from said shoulder toward said open end and spaced radially from said annular wall; an annular retaining ring wholly within said socket adjacent to said open end and spaced axially from said first lip, a second lip spaced from said first lip extending from said retaining ring toward said first lip; an annular seal ring between and in contact with said first and second lips, the seal ring cross-sectional dimension at the mean diameter of said seal ring being larger than the spacing between said first and second lips and residing radially between said annular wall and said first and second lips; said seal ring, said annular wall, said shoulder and said first lip defining a first clearance and said seal ring, said annular wall, said retaining ring and said second lip defining a second clearance, said first and second clearances permitting said seal ring to be deformed when compressed radially by insertion of a pipe into said socket and in contact with said seal ring, and means within said socket for locking said retaining ring within said annular wall.

3,936,082

CATCH WITH ANTI-RELEASE LATCH

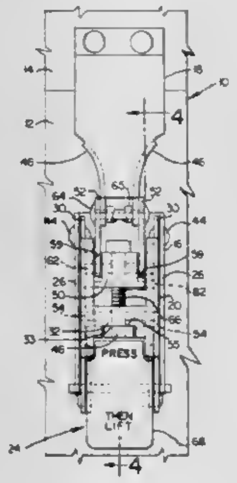
Gunnar E. Swanson, Middletown, Conn., assignor to The Nielsen Hardware Corporation, Hartford, Conn.

Filed Oct. 11, 1974, Ser. No. 514,200

Int. Cl.² E05C *5/00*

U.S. Cl. 292—113 **38 Claims**

1. In a catch for releasably securing one part to another part carrying a strike, the catch having a base member adapted to be attached in fixed position to the one part, an operating lever, means connecting said operating lever to said base member for pivotal movement relative thereto between open and closed position, a drawbar, means connecting said drawbar to said operating lever for movement therewith into and out of connected engagement with the strike, said operating lever being operable upon movement to its closed position to move said drawbar into and retain it in connected engagement with the strike, a control assembly including a control member and a latch element, and means supporting said control assembly on said operating lever for movement relative thereto and to said base member between latching and releasing positions and for movement with said operating lever between its open and closed positions, said control member being supported for movement with said operating lever and relative thereto, said latch element being supported for movement with said control member and relative thereto and cooperating with said base member in said latching position to releasably retain said operating lever in its closed position, the improvement comprising first means for moving said latch element relative to said control member, relative to said operating lever and relative to said base member during one portion of the travel of said control assembly from its latching toward its releasing position, and second means for moving said latch element and control member in unison and relative to said operating lever and said base member during another portion of the travel of said control assembly from its latching toward its releasing position to move said latching means out of latching engagement with said base member in response to movement of said control assembly from its latching toward its releasing position.



3,936,083

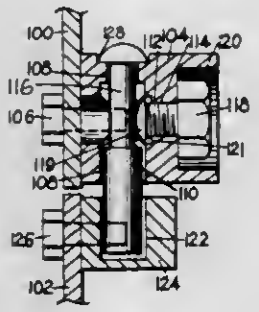
SAFETY LOCK FOR ENCLOSURES

William L. Bright, 0605 SW. Curry St., Portland, Oreg. 97201

Division of Ser. No. 230,223, Feb. 29, 1972, Pat. No. 3,791,683. This application Dec. 3, 1973, Ser. No. 421,445

Int. Cl.² E05C *1/04*

U.S. Cl. 292—149 **1 Claim**



1. A safety lock for enclosures of the type having a wall with a door therein, comprising:

a. a first lock portion arranged to be secured to one of said door and wall means,

b. said first lock portion having a bore therethrough,

c. a bolt threadedly mounted in said first lock portion for axial adjustment and having an end portion capable of being moved laterally into said bore upon selected adjustment of said bolt,

d. said bolt having a head of non-conventional shape whereby to be capable of rotation only by a special tool and thus non-removable by unauthorized persons,

e. said first lock portion including a protective wall portion peripherally surrounding said bolt head and open at its outer end,

f. said wall portion defining a socket which is at least as deep as the thickness of the bolt head to prevent side engagement of the bolt head by unauthorized persons and which is of greater diameter than said bolt head to permit removal of the bolt by a special tool inserted through the open end of the protective wall portion.

g. a lock pin slidably disposed in said bore and being engageable by the end portion of said bolt in a locking function,

h. said lock pin having a length sufficient to project at one end beyond said lock portion and having a head at the end opposite from its projecting end,

i. said lock portion having a recess receiving said lock pin head,

j. said recess being approximately the same diameter as said head and preventing unauthorized prying engagement on the underside of said head,

k. means defining a peripheral notch in said lock pin having association with said bolt whereby the latter upon being retracted allows a sliding unlocking function of said lock pin and upon being inwardly turned locks said lock pin in a set position,

l. said bore in the area of the notch having a narrowed portion of lesser diameter than the unnotched portion to confine the lock pin slidably therein,

m. and a second lock portion arranged to be secured to the other of said door and wall means,

n. said second lock portion including socket means aligned with the bore in said first lock portion and closed at its bottom end for receiving the projecting end of said lock pin and providing protection for said projecting end.

3,936,084

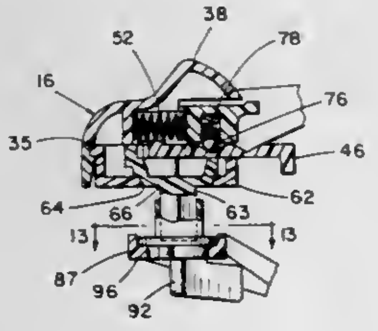
PRIVACY LOCK

John L. Orr, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed July 5, 1974, Ser. No. 485,992

Int. Cl.² E05C *1/10, 1/16*

U.S. Cl. 292—169.15 **8 Claims**



1. An improved privacy lock construction comprising, in combination;

a housing for attachment to a panel, said housing including a bolt opening at one side;

a bolt projecting from said housing through said opening for cooperation with a strike, said bolt including a manual engagement portion external the housing on another side of said housing, said bolt also including bifurcated, separated arms extending within the housing opposite the direction of projected bolt travel, toward the strike, each of said arms including engagement means;

biasing means in said housing engaging said bolt and biasing said bolt toward the projected position;

rotatable shifter means rotatable substantially about an axis normal to the direction of bolt travel, said shifter means extending from within said housing intermediate said bolt arms, said shifter means including a post extending along the axis of rotation for connection with shifter drive means on the opposite side of said panel from said housing, said shifter means including radial projecting means for engaging said engagement means of said bolt and for driving said bolt against the biasing means upon rotation of said shifter means in either direction; and

a fixed, outside handle for attachment to the panel on the opposite side from said housing, said handle including an opening therethrough including an overlying flange for retaining shifter drive means against the panel.

8. An improved privacy lock comprising, in combination: a housing having a biased bolt projecting therefrom for engagement with a strike, a shifter mounted in said housing for rotation about an axis substantially normal to the direction of bolt movement, said shifter cooperatively engaging said bolt upon rotation of said shifter to cause movement of said bolt against the biasing force thereon, said shifter cooperable with manually operated drive means, and a locking catch having a locked and an unlocked position and cooperable with said shifter to prevent rotation thereof whenever said locking catch is in the locked position, said shifter including a slot, said slot extending in a plane substantially perpendicular to the axis of rotation of said shifter, said locking catch including a member for engagement with said slot whenever said locking catch is positioned in the locked position to thereby prevent rotation of said shifter and actuation of said bolt by the shifter drive means; and said bolt further including an external projection for manual operation of said bolt, said locking catch including a forward projection for cooperation with said bolt whenever said bolt is in the extended position and said catch is in the locked position, whereby manual operation of said bolt against the biasing force thereon disengages said locking catch from said shifter.

3,936,085

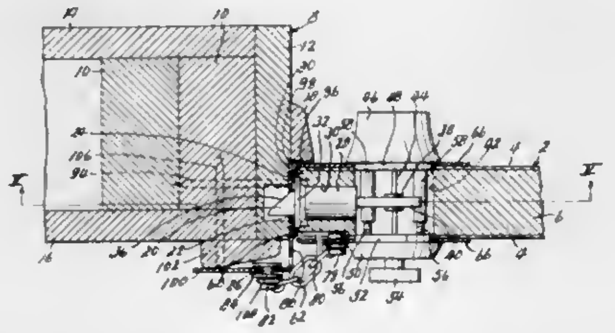
DOOR LOCK PROTECTOR

Donald L. Long, 6621 W. 94th Terrace, Overland Park, Kans. 66212

Filed Feb. 24, 1975, Ser. No. 552,695

Int. Cl.² E05C *17/36*

U.S. Cl. 292—264 **3 Claims**



1. In combination with a wooden door having opposite vertical faces and opposite vertical edge surfaces, a door frame to which one vertical edge of said door is hinged, and a lock mechanism including a bolt carried in said door and extendable from the free edge of said door, and a striker plate carried by said door frame and engageable by said bolt, a lock protector comprising:

a. a chain plate of right-angled form, a first leg of which overlies the face of said door frame confronting the free edge surface of said door, and the second leg of which overlies the face of said door frame toward which said door opens,

b. means affixing both legs of said chain plate rigidly to said door frame,

c. a safety chain, and

d. means attaching the respective ends of said safety chain to said door adjacent the free vertical edge thereof, and to said chain plate, one of said attaching means being readily detachable, said means attaching one end of said chain to said door comprising a strong, U-shaped metal door plate adapted to enclose the free edge portion of said door with its parallel legs overlying the faces of said door and the connecting portion thereof bridging the free edge surface of said door, one end of said chain being attached to said door plate, and means rigidly affixing said door plate to said door.

3,936,086

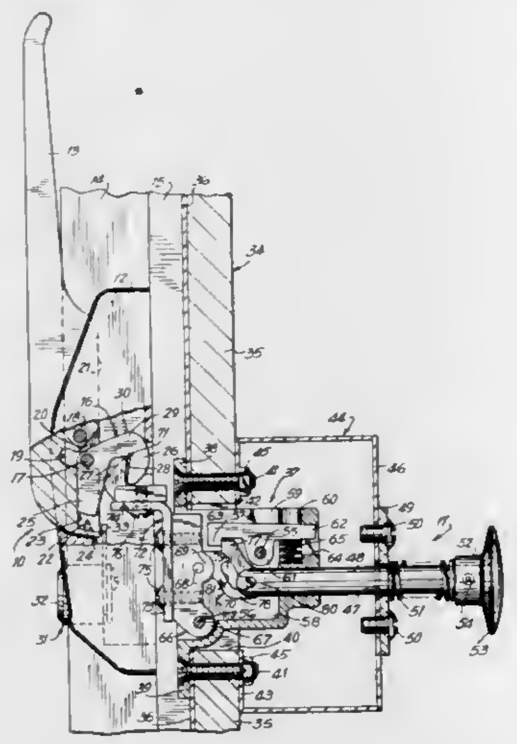
INSIDE SAFETY RELEASE LATCH DEVICE

Irving L. Berkowitz, Binghamton, N.Y., assignor to Kason Hardware Corporation, Binghamton, N.Y.

Continuation-in-part of Ser. No. 477,259, June 7, 1974. This application July 22, 1974, Ser. No. 490,310

Int. Cl.² E05B *15/02*

U.S. Cl. 292—341.17 **16 Claims**



1. A safety striker mechanism for use with enclosure door latches or the like of the type having a movable keeper latch member adapted to releasably engage and be captively held by a stationary striker member when in a locked condition, said safety striker mechanism comprising, in combination, a striker member having surfaces disposed in the path of and capable of holding a latch member associated with a door latch in a locked condition, and safety release means actuated independently of said door latch and accessible from within an enclosure locked by said door latch for urging said striker member out of the path of said latch member thereby unlocking said door and permitting ingress to and egress from said enclosure without substantially moving said latch member, said safety release means comprising a bar member supporting said striker member and itself supported for pivotal movement about a first axis, a link member supported by said bar member for pivotal movement about a second axis, a lever member cooperative with said link member and supported for pivotal movement about a third axis, and actuating means cooperative with said link member for first causing pivotal movement thereof about said second axis and only thereafter causing pivotal movement of the combination of said link member, said bar member and said striker member about said first axis, said lever member preventing said pivotal movement of said striker member during normal times when said actuating means is in a locked position, said lever member engaging and preventing pivotal movement of said link member about said first axis during said normal times.

3,936,087

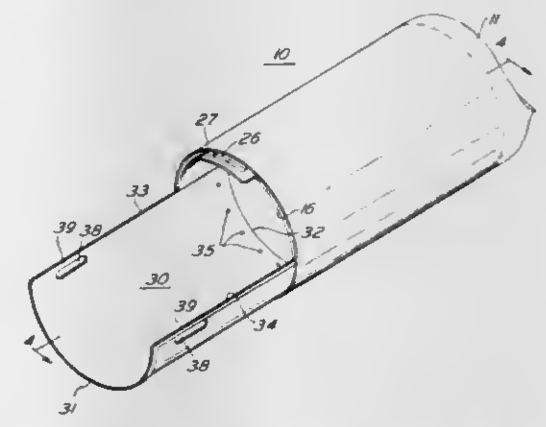
COLLECTION RECEPTACLE

William R. Alexander, 223 Rambling Way, Springfield, Pa. 19064

Filed Oct. 15, 1974, Ser. No. 514,588

Int. Cl.² A47F *13/06;* A47L *13/52*

U.S. Cl. 294—1 R **6 Claims**



1. A collection receptacle for use with a plastic bag which comprises

a semi-rigid self-supporting base open at its ends formed of a sheet of flexible material rolled and detachably secured together along its length to form a cylinder,

a scraper tray carried by said base and extending from one end thereof,

hand hold means on said receptacle, and

bag holding means comprising overlapped portions of said hand hold means and said scraper tray with said base for reception of an end portion of said bag in assembled relation of said bag with respect to said base.

3,936,088

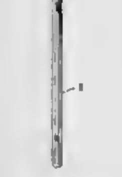
FLEXIBLE TARPAULIN HANDLING DEVICE

Charles Samuel Williams, 4013 - 49th St., Lubbock, Tex. 79413

Filed July 1, 1974, Ser. No. 484,893

Int. Cl.² A47F *13/06*

U.S. Cl. 294—19 R **4 Claims**



1. A flexible tarpaulin handling device for maneuvering tarpaulins equipped with grommets or eyelets, said device comprising the combination of:

a. An elongated handle member, said handle having a grasping portion at one end thereof, said portion having a polygonal cross section to assist in positively gripping the device, said handle member also defining a shank portion on the opposite end of said handle, said shank portion being adapted to receive a bifurcated tang portion of a tarp hook,

h. A tarp hook having a bifurcated tang portion adapted to cooperate with said handle portion in securing said hook to said handle and

c. A double ended integrally formed tarp hook member mounted on said bifurcated tang portion, said member having a first upwardly extending downwardly curving hook portion, a laterally opposed downwardly extending upwardly curving hook portion and a central interconnecting portion, said first upwardly extending hook portion defining a hook which first extends upwardly from said interconnecting portion and then curves downwardly through at least 90 degrees of arc to end in a downwardly extending terminal portion, said upwardly extending hook being adapted to engage an eyelet or other opening defined by said flexible tarpaulin to thereby hook said tarpaulin for pulling in a downward direction; said laterally opposed downwardly extending portion extending downwardly from said interconnecting portion and then curving upwardly through at least 90 degrees of arc to end in an upwardly extending terminal portion, each of said hook portions defining substantially the same radius of curvature, said interconnecting portion being fixably attached to said bifurcated tang portion.

3,936,089

GRIPPING DEVICE FOR A LIFTING MECHANISM, ESPECIALLY IN A CORE REACTOR FOR DEPOSITING AND PICKING UP FUEL ELEMENTS AND CONTROL RODS

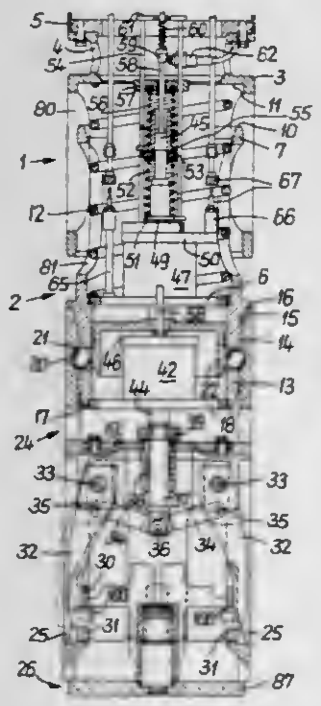
Bernhard Hoffmeister, Wilhelmshaven, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed July 2, 1974, Ser. No. 485,265

Claims priority, application Germany, Sept. 1, 1973, 2344264

Int. Cl. B66c *1/66;* G21c *19/10*

U.S. Cl. 294—86 A **5 Claims**



1. In a gripping device adapted for cooperation with gripping tools constructed for releasable engagement with longitudinally extending bodies; said device comprising a body adapted for suspension from a lifting and transporting mechanism, said body including an upper part and a lower part in telescopic reciprocable engagement, upper and lower power operable devices in said lower part, gripping means carried by said lower part for coupling the lower part to a gripping tool and connected to said upper power operable device, said lower power operable device adapted for actuating the gripping tool connected to said lower part for coupling the gripping tool to a body to be lifted thereby, respective spring means biasing said power operable devices in coupling direction, a sleeve connected to each power operable device and extending upwardly therefrom, said sleeves being in slidable telescopic engagement, said springs surrounding said sleeves and at one end bearing on a support stationary with said second part and at the other end bearing on a plate connected to the respective sleeve.

3,936,090

VEHICLE DOOR

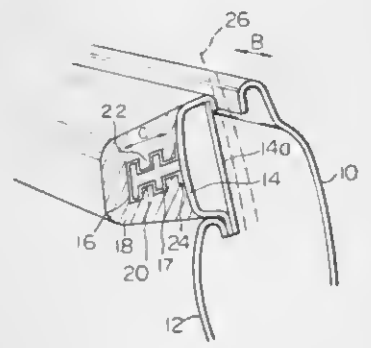
Norimoto Aya, Yokosuka; Kunihoiro Takahashi, Fujisawa; Kenji Osaka, Chigasaki, and Naohito Kusunose, Fujisawa, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 27, 1974, Ser. No. 446,267

Claims priority, application Japan, Feb. 28, 1973, 48-23289; Mar. 12, 1973, 48-29749[U]

Int. Cl.² B60J *5/00*

U.S. Cl. 296—146 **1 Claim**



1. Reinforcing and shock absorbing members in combination for a vehicle door having a door inner panel, comprising:

an outer member including an elongated first member having generally a C-shaped cross section, and an elongated second member of a flat sheet, said first and second member being made of metals and being united at the edges thereof to constitute a box construction, said outer member being securely connected to said inner panel in such a manner that said first member forms a desired profile of the upper edge portion of said door inner panel;

an elongated inner member made of a metal and having generally a U-shaped cross section with a pair of leg portions terminating at an open end thereof, said pair of leg portions being firmly mounted, at the open end of said inner member, on the back portion of the first member so that the elongated inner member is arranged in parallel with said outer member and the open end of said inner member is closed by said elongated first member of said outer member, and each of said leg portions having a pair of outwardly extending channel portions which are arranged in parallel with said outer member; and

an elastomeric member wrapping said elongated inner member and being firmly mounted on the said elongated first member.

3,936,091

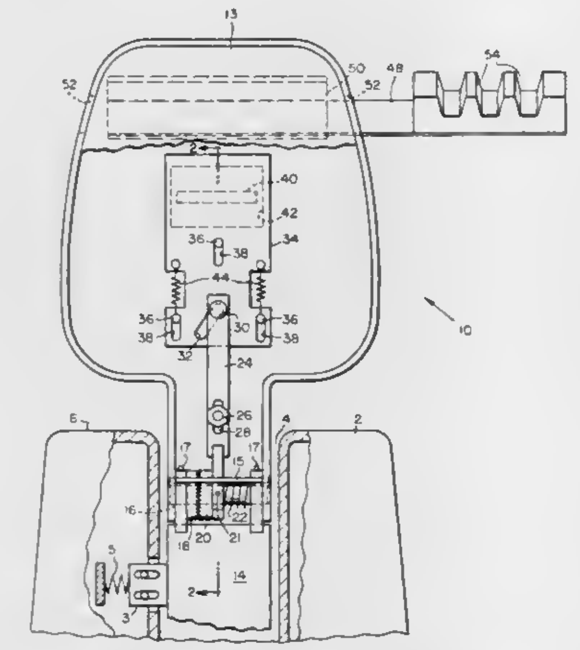
HEADREST FOR DENTAL CHAIR

Azriel Jay Rabinowitz, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,733

Int. Cl.² A47C *7/62*

U.S. Cl. 297—188 **11 Claims**



1. A headrest for dental chairs and the like comprising:

a. a tang adapted for attachment to a dental chair;

b. a headrest journaled to said tang, said headrest including a rear panel having an opening therethrough;

c. an actuating member slidably mounted in said headrest to said rear panel, said member having a manually engageable portion extending through said opening;

d. a lever arm pivoted intermediate its ends within said headrest to said rear panel;

e. a pair of axially aligned clutch members within said headrest frame, one of said clutch members being fixed to said tang at said journal and a second of said clutch members being attached to said lever arm;

f. bias means, normally urging said clutch members into engagement to lock said headrest in position; and

g. cam means on said actuating member and lever arm member cooperating to pivot said lever arm responsive to the manual movement of said actuating member for moving said second clutch member against said bias and out of engagement with said first member to unlock said headrest.

3,936,092

SAFETY HARNESS

Gunter Dietz, Donherg, Germany, assignor to Gebr. Happich, GmbH, Germany

Continuation-in-part of Ser. No. 416,079, Nov. 15, 1973, abandoned. This application Sept. 26, 1974, Ser. No. 509,323

Claims priority, application Germany, Nov. 18, 1972, 2256650

Int. Cl.² A62B *35/00*

U.S. Cl. 297—385 **15 Claims**

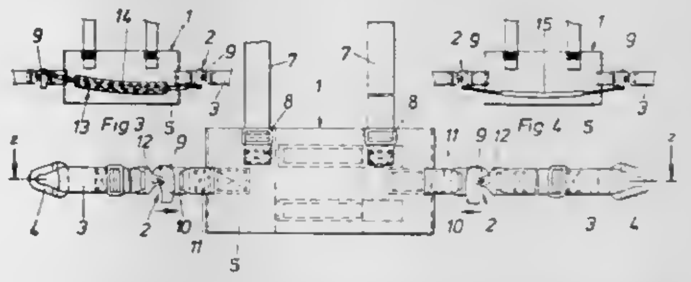
1. A safety harness arrangement for restraining a person, comprising:

a waistband to be secured to the person to be restrained; said waistband having a forward portion in front of the person and having sides at the sides of said forward portion;

at least one belt connected to one said waistband sides for joining said waistband to a support, said belt has a top edge and a bottom edge when said belt is attached to said waistband;

coupling means in said belt, said coupling means being separable to separate said waistband from said belt; said coupling means comprising a first coupling element connected to said waistband and a second coupling element connected to the separable part of said belt; one of said first and second coupling elements comprising a latching means and the other of said first and second coupling elements comprising a latch element that is to be latched onto by said latching means and that is to be released from latching by said latching means;

said latching means including a mechanism for engaging said latch element; a handle connected to said latching means mechanism; said handle being swivelingly connected to a swivel on the one of said belt and said waistband to which said handle is connected;



said latching means mechanism, said latch element and said handle being so shaped and located that upon swiveling of said handle in the direction toward said waistband, said latching means is uncoupled from said latch element, said handle and its said swivel being oriented and adapted to enable said handle to swivel in a plane generally parallel to the plane joining said belt top and bottom edges at the position of said swivel along said belt; said handle projecting beyond one of said edges of said belt, such that contact with said handle beyond that said one edge of said belt by motion in the direction toward said waistband swivels said handle to open said latching means.

3,936,093

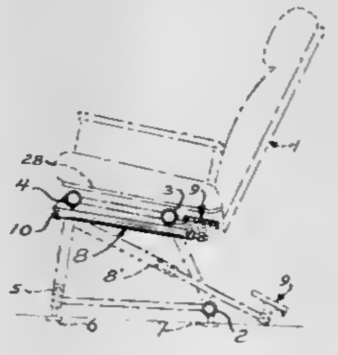
STOWABLE, PULL-DOWN FOOTREST FOR A VEHICLE SEAT

Gerard T. Hogan, Southington, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 26, 1974, Ser. No. 527,480

Int. Cl.² A47C *7/50*

U.S. Cl. 297—425 **3 Claims**



1. A stowable, pull-down footrest assembly that is adapted to be connected to and stowed under the seat framing of a vehicle seating unit, which comprises in combination:

a. a pair of telescoping-tube footrest support members that are spaced apart laterally each of said members having their forward end portions pivotally connected to the upper front part of the framing below the seating level of said seating unit,

b. a footrest plate member connecting across the rear portions of said telescoping tube support members, such that after said footrest plate member is lowered from a stowed position along with the tube support member there can be the extension of said telescoping tube members along and above the vehicle floor to reach a desired pulled-out, footrest location for the accommodation of a passenger seated in a next rearward seating unit,

- c. a movable latching member attached to the seat framing and a latch engagement member provided as a part of the rearward end portion of the footrest assembly that are in a connective association with one another such that said footrest assembly may be retained in a stowed location and alternatively released for use responsive to the movement of said latching member, and
- d. means remote from said latching member to move said latching member, said means being connected to the rear of said vehicle seating unit.

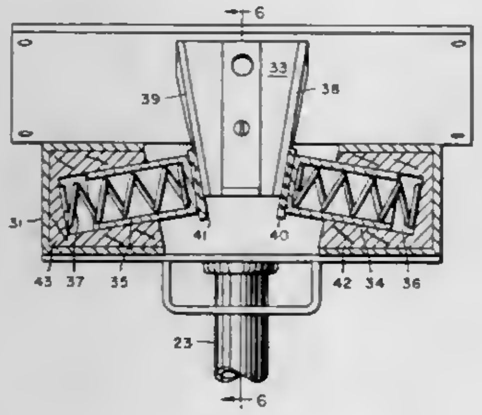
3,936,094
LOCKABLE TILTING CHAIR WITH FRICTIONAL TILT RESISTANCE

William Arthur Conrad, 1451 Edgewood SE., Grand Rapids, Mich. 49506

Filed Oct. 15, 1974, Ser. No. 514,482

Int. Cl.² A47C *1/027*

U.S. Cl. 297—328 **5 Claims**



1. A tiltable support for a chair seat, said support including a base structure, fulcrum means secured to said base structure and adapted to be secured to said seat to establish a pivot axis, and brake means having one portion fixed with respect to said base structure, and another portion normally secured to said seat, said brake means being operable to establish resistance to tilting movement of said seat with respect to said base structure, wherein the improvement comprises:

- a member having opposite surfaces, included in one of said brake means portions and extending transversely with respect to said pivot axis; and
- friction-generating means mounted on the other of said brake means portions for movement along paths generally perpendicular toward and away from said opposite surfaces, respectively, and adapted to bear resiliently on said opposite surfaces, said opposite surfaces converging in a direction to induce maximum displacement of said friction-generating means in the erect position of said seat.

3,936,095
FAIL SAFE INDICATOR FOR SKID CONTROL SYSTEM

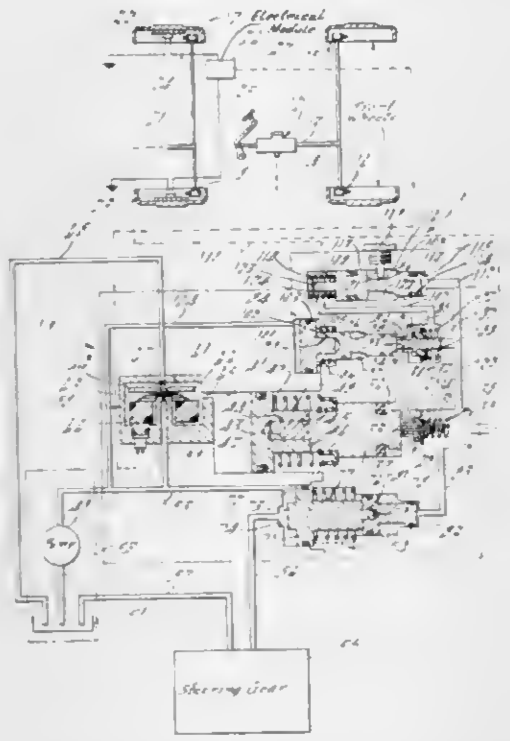
Peter Every, Livonia, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Aug. 24, 1973, Ser. No. 391,488

Int. Cl.² B60T *8/06*

U.S. Cl. 303—21 AF **7 Claims**

1. A vehicular skid control system comprising an operator controlled source of actuating fluid, a brake actuating circuit for delivering fluid pressure from said source to at least one wheel brake for selectively actuating said wheel brake, modulator means having a fluid input in communication with the operator controlled source of actuating fluid and a fluid output in communication with the one wheel brake, said modulator means being interposed in said actuating circuit for altering the fluid pressure transmitted from said source to said one wheel brake in response to a predetermined signal for preventing a skid condition, means responsive to the instantaneous pressure differential in said actuating circuit between said fluid input and said fluid output of said modulator means for providing a signal when the pressure differential exceeds a predetermined value, and bypass valve means for providing a path of actuating fluid from said source to the one wheel brake in response to the failure of said modulator means.



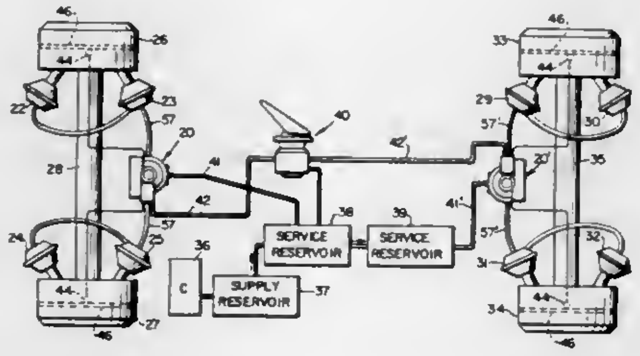
3,936,096
AXLE ASSEMBLY

James C. Cumming, Oakland County, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 214,784, Jan. 3, 1972, abandoned. This application Feb. 15, 1975, Ser. No. 550,096

Int. Cl.² B60T *8/08, 11/26*

U.S. Cl. 303—21 EB **2 Claims**



1. An anti-wheel lock vehicle axle assembly comprising an axle; a wheel hub rotatably mounted on each end of said axle and adapted to have a ground engaging wheel mounted thereon; a fluid powered brake mechanism mounted to said axle at each end thereof; each said brake mechanism being adjacent one of said wheel hubs and operative when actuated to restrain rotation of said wheel hub and any wheel mounted thereon; a sensor mounted on said axle adjacent each said wheel hub and adapted to generate electrical signals indicative of the angular velocity of said wheel hub and any wheel mounted thereon, a brake control valve assembly mounted on said axle and including a valve for selectively modulating the flow of brake actuating fluid from a source to each of said fluid powered only, a mechanisms only,a solenoid in said valve assembly for controlling the operation of said valve, and a computer in said valve assembly electrically connected to said sensors for processing the electrical signals from said sensors and connected to said solenoid, said computer having means for delivering an output signal to successively energize and deenergize said solenoid during each of a series of discrete time intervals to respectively disconnect and connect each of said brake mechanisms to said source of brake actuating fluid upon detection of an actual or incipient skid condition, and said computer also having means for varying the ratio of solenoid ON time to solenoid OFF time during each of said time intervals.

3,936,097
RELAY VALVE COMBINED WITH A LOAD-SENSING PROPORTION VALVE

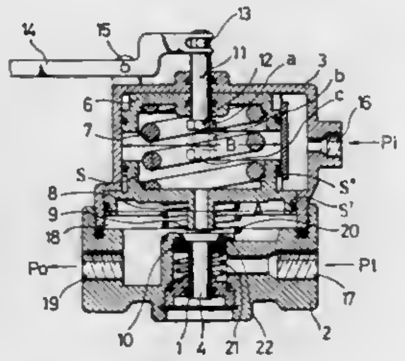
Itiro Yanagawa, and Isao Suzuki, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Japan

Filed May 10, 1974, Ser. No. 469,008

Claims priority, application Japan, May 30, 1973, 48-60555; May 30, 1973, 48-60556

Int. Cl.² B60T *8/18*

U.S. Cl. 303—22 R **7 Claims**



1. A pressure control-type relay valve comprising:

- a valve body having an inlet port and outlet port for compressed fluid and an internal chamber, said body including a closeable passageway extending from said inlet port and through said chamber to said outlet port;
- a valve disk being interposed in said passageway and cooperating with a valve seat formed on said body for opening and closing said passageway, said valve disk having an exhaust hole in its axial direction and being normally biased to close said passageway;
- a valve bonnet connected to said valve body said bonnet including a control inlet port; and.
- a control piston unit provided within said bonnet and responsive to pressure applied through said control inlet port, said control piston unit including a first pressure-sensing piston for governing the valve-open actuation of said valve disk, a second pressure-sensing piston coaxially connected and resiliently coupled with said first pressure-sensing piston and stroke adjusting means for controlling the axial movement of said second pressure-sensing piston corresponding to the load of a vehicle, said first pressure-sensing piston being formed as a stepped piston having a large diameter portion and a small diameter portion.

3,936,098
DRIVE AND BEARING ASSEMBLY FOR A CONVERTER CONSTRUCTION

Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Jan. 2, 1975, Ser. No. 538,139

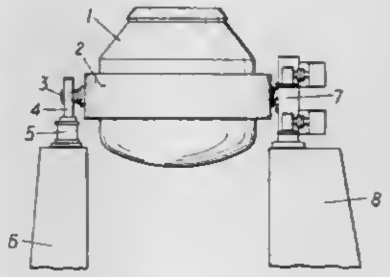
Claims priority, application Australia, Jan. 10, 1974, 168/74

Int. Cl.² F16C *29/02*

U.S. Cl. 308—6 R **7 Claims**

1. In a drive and bearing assembly for a converter construction with a fixed bearing having a carrying trunnion supported therein and an expansion bearing, the improvement comprising:

- a bushing forming the expansion bearing with recesses of semi-circular cross-section therein;
- an axially movable trunnion supported in said bushing and having recesses of semi-circular cross-section therein, the recesses in the bushing and the recesses in the trunnion complementing one another to form circular spaces;
- torque transmitting crowned rollers being located in the circular spaces formed by the recesses; and
- a driving toothed wheel being connected to said axially movable trunnion.



3,936,099
CONSTRUCTION OF BEARING BOXES

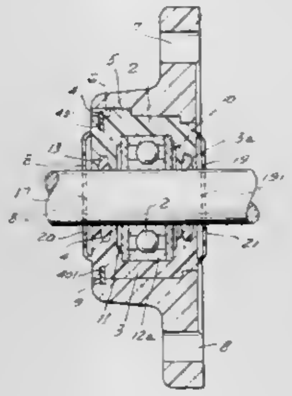
Hans Braun, Herbede, and Gerhard Mohn, Bergneustadt, both of Germany, assignors to Paul Kuhbier & Co., Wipperfurth, Germany

Filed Apr. 11, 1974, Ser. No. 460,066

Claims priority, application Germany, Apr. 14, 1973, 2318951

Int. Cl.² F16C *13/00*

U.S. Cl. 308—15 **16 Claims**



1. A bearing box comprising a plurality of shell sections substantially consisting of synthetic plastic material and jointly defining a recess for fitting bearing race means therein, and additional recesses coaxial with said recess for said bearing race means; and seal ring means in said additional recesses.

3,936,100
BEARING MOUNTING SYSTEM

Robert Gordon Moores, Jr., Cockeysville, and Richard Eugene Walton, II, Baltimore, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

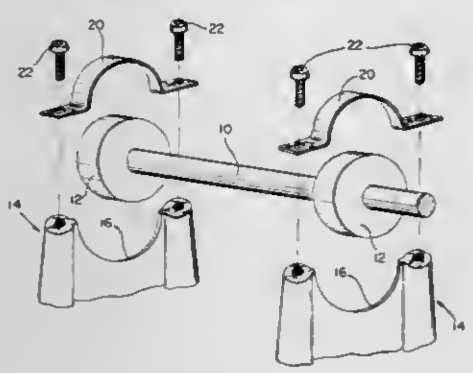
Filed July 2, 1974, Ser. No. 485,110

Int. Cl.² F16C *13/00*

U.S. Cl. 308—15 **23 Claims**

1. A system for mounting a pair of bearings which are on a common shaft, each of said bearings having an outer cylindrical surface, the combination comprising a bearing seat for each of said bearings, each of said bearing seats comprising means to form a substantially line contact with said bearing

outer cylindrical surface, and resilient hold down means cooperable with said bearing seats to resiliently secure each of said bearings between its respective seat and said hold down means.



3,936,101

COMPOSITE BEARING

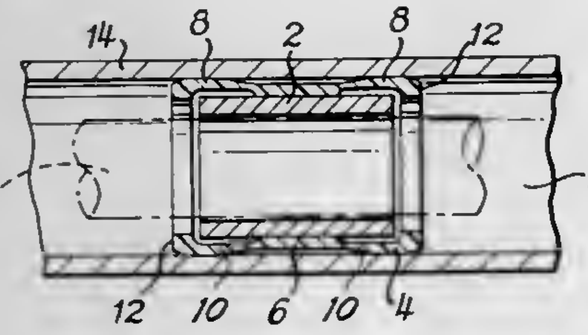
Alexander Duncan McDonald, Portishead, England, assignor to Cam Gears Limited, Hitchin, England

Filed Aug. 19, 1974, Ser. No. 498,327

Claims priority, application United Kingdom, Aug. 30, 1973, 40788/73

Int. Cl.² F16C *27/00*

U.S. Cl. 308—26 **7 Claims**



1. A composite bearing assembly comprising a hollow elongated outer member, a hollow elongated inner member located within said outer member generally in axial alignment with said outer member, said inner member having its outer wall spaced from the inner wall of said outer member, and resilient means located between and in contact with said inner and outer walls, said resilient means having a first part bearing on one of said walls, and second and third parts bearing on the other said wall, said second and third parts being located one on each side of said first part along the axis of the bearing assembly.

3,936,102

BEARING ASSEMBLY FOR ACCOMMODATING ANGULAR DISPLACEMENTS IN TORQUE-TRANSMITTING TRUNNIONS

Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Jan. 2, 1975, Ser. No. 538,141

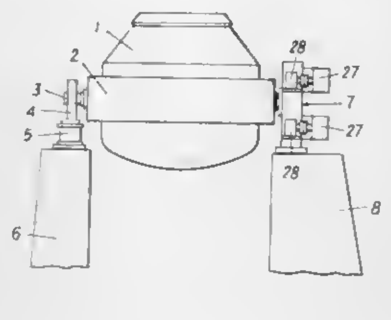
Claims priority, application Austria, Jan. 10, 1974, 169/74

Int. Cl.² F16C *23/00*

U.S. Cl. 308—72 6 Claims

1. A bearing assembly for accommodating angular displacements in a torque-transmitting trunnion, such as a converter-carrying trunnion, comprising

- a hub with a spherical face provided on the trunnion and having an external toothing following the spherical face,
- a trunnion-receiving bushing having a straight counter toothing meshing with the outer toothing of the hub, and
- a bearing container inner rings and outer rings provided between the bushing and the trunnion and having spherical faces acting as mutual running faces, which running faces have a common center.



3,936,103

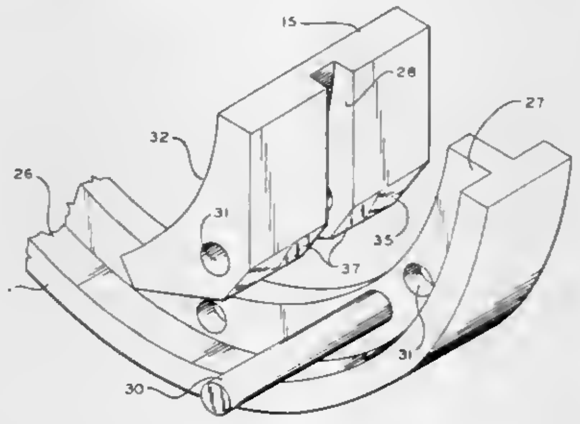
ROTARY SHAFT TILTING SHOE BEARING

Edson H. Byrns, Fayetteville, and James W. Endress, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 2, 1974, Ser. No. 511,146

Int. Cl.² F16C *17/03, 23/04, 41/02, 43/02*

U.S. Cl. 308—73 4 Claims



1. A tilt shoe bearing assembly for establishing a hydrodynamic wedge between the shoes and a shaft, for rotatably supporting the shaft, including

a housing having an annular opening through which the shaft passes,

a stationary backing ring mounted within the housing opening encompassing the shaft, the inner surface of said ring forming a circular seat uniformly disposed about the shaft and having a centrally located annular rib radially extended toward the shaft,

a plurality of tilt shoe members circumferentially spaced within the ring, each shoe having a circumferential slot formed in the body thereof for loosely receiving said rib,

a pair of rocker pads formed upon the outer periphery of each shoe member positioned on either side of said slot and being arranged to ride in contact with the ring seat, the axial width of each pad being substantially less than the axial width of the shoe surface confronting the shaft with each pad being contoured to permit the shoe to move upon the seat in any direction,

a torque pin axially aligned with the shaft supported within the body of each tilt shoe and being arranged to pass through an opening formed in the annular rib whereby the shoe is prevented from moving with the shaft in the direction of shaft rotation, and

the rib and the circumferential slot formed in the shoe, and the pin and the opening formed in the rib, having a clearance therebewteen that is at least greater than the width of the hydrodynamic wedge whereby each shoe is free to adjust its relative position in regard to the shaft to accommodate the shaft as it deflects under load.

3,936,104

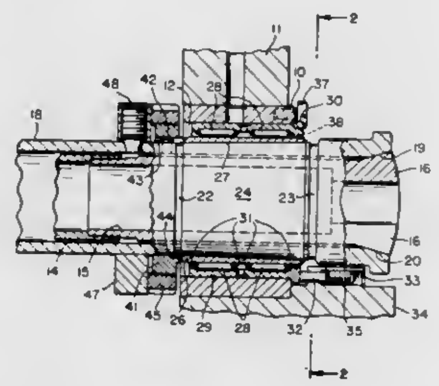
BEARING ASSEMBLY FOR SCREW MACHINE SPINDLE

Earl W. Brinkman, Rochester, N.Y., assignor to Davenport Machine Tool Division of Dover Corporation

Filed Jan. 28, 1975, Ser. No. 544,848

Int. Cl.² F16C *23/00, 35/08*

U.S. Cl. 308—151 **7 Claims**



1. An adjustable bearing assembly for rotatably journaling a spindle in a support, comprising

a first sleeve surrounding said spindle,

a second sleeve surrounding said first sleeve and secured in a bore in said support,

a plurality of bearing elements mounted for rolling movement between the confronting peripheral surfaces of said sleeves,

the inner peripheral surface of said first sleeve being truncated conical in configuration and being engaged with a complimentary truncated conical surface formed on the outer periphery of said spindle, and

means on said spindle operable to shift said first sleeve axially on said spindle in a direction to cause said cooperating truncated surfaces to effect a slight radial expansion of said first sleeve.

3,936,105

BEARING WITH ONE OR MORE FLANGE-SHAPED RINGS

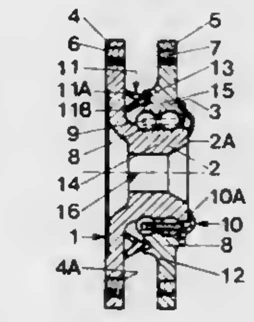
Sture Lennart Asberg, Goteborg, Sweden, assignor to SKF Industrial Trading and Development Company, B.V., Jutphaas, Netherlands

Filed Jan. 24, 1974, Ser. No. 436,318

Claims priority, application Netherlands, Feb. 9, 1973, 7301926

Int. Cl.² F16C *33/78*

U.S. Cl. 308—187.1 **15 Claims**



1. A bearing comprising an inner ring and an outer ring, at least said inner ring formed as part of a flange member, a plurality of rolling elements, said inner and outer rings being proportioned to have a maximum displacement with respect to each other for insertion of said rolling elements therebetween during assembly of said bearing, a bearing cage for caging said rolling elements between said inner and outer rings, and first and second sealing means for sealing first and second sides of said rolling elements for retaining lubricant between said rings and inhibiting penetration of foreign particles, said first sealing means being in place during insertion of said roller elements and including a relatively rigid portion and a relatively resilient portion, said rigid portion radially extending between said inner and outer rings over a distance not exceeding said maximum displacement, said resilient portion completing said first sealing means between said inner and outer ring.

3,936,106

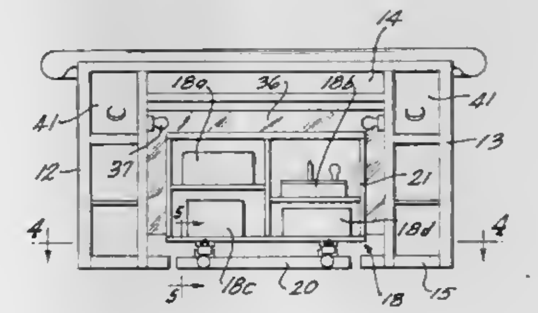
COMBINATION STEREO-BAR

Ernest T. Harper, 4377 N. 90th St., Milwaukee, Wis. 53222

Filed Aug. 13, 1974, Ser. No. 496,960

Int. Cl.² A47B *77/04, 81/06, 87/00, 88/14*

U.S. Cl. 312—107 **3 Claims**



1. In a bar having a first support base, substantially vertical front and side walls and an open back, the improvement comprising:

second support base means adapted to fit substantially within said walls and within an opening in said first support base whereby said second support base means is isolated relative to said first support base and vibrations of said first support base will not be transmitted to said second support means,

sliding means mounted on said second support means for slidably supporting a sound system within said bar, said means being adapted to permit movement of said sound system between a first position within said walls and a second position outside of said bar,

said bar having a transparent window in at least one wall for viewing said sound system, and

illuminating means mounted on said bar for accentuating said sound system.

3,936,107

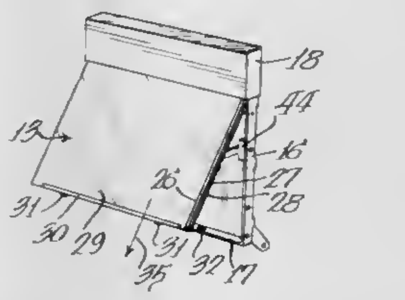
DOOR CONSTRUCTION

William F. Gourdeau, and Ronald E. Hahn, both of St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 16, 1974, Ser. No. 506,183

Int. Cl.² A47B *47/00*

U.S. Cl. 312—138 R **18 Claims**



1. In a door construction for an electrically operable appliance, having a peripheral frame defining an opening, and electrical control means carried by said frame including wiring extending at the rear of said opening, the improvement comprising: a console enclosure carried at the top of said frame for enclosing the control means and defining a downwardly opening recess extending substantially fully across said opening; a

fire wall panel extending fully across said opening to close said opening forwardly of said control means and wiring; a plurality of decorative panels removably installed as an assembly in said frame across said opening spaced forwardly of said fire wall panel, said decorative panel assembly defining an upper edge portion received in said recess and a lower edge portion; cooperating male and female securing means on said frame and decorative panel assembly for securing said lower edge portion of the decorative panel assembly removably to said frame against movement forwardly from said space in an engaged disposition thereof; and biasing means for yieldably retaining said decorative panels in facial abutment in said assembly while permitting limited movement of said decorative panel assembly vertically from said engaged disposition to permit said lower edge portion to be moved forwardly from said space and thereby permit said upper edge portion to be moved downwardly from said recess to remove said decorative panel assembly from said door construction, and permit installation of said decorative panel assembly by a reverse procedure, said biasing means being spaced substantially from said lower edge to maintain facial abutment while being disposed to urge said decorative panel assembly from said frame upon movement of said lower edge portion from said engaged disposition.

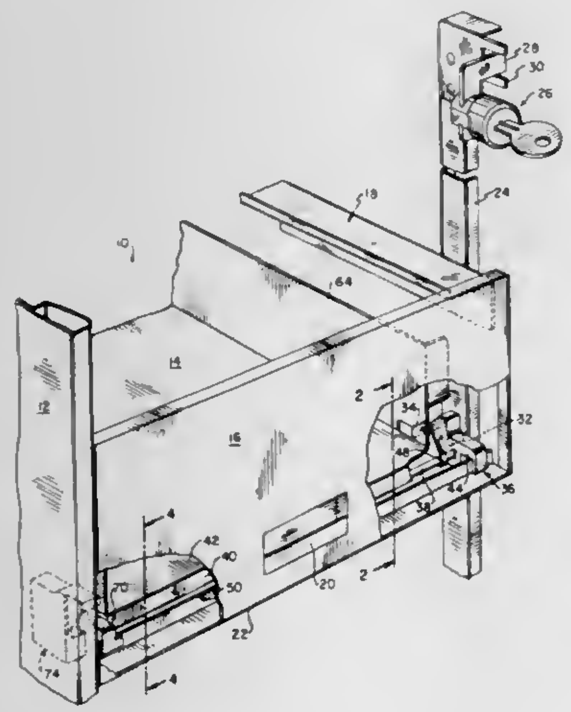
3,936,108
FILE CABINET DRAWER LOCKING MECHANISM

John Alvin Chitester, Long Beach, N.Y., assignor to Oxford Pendaflex Corporation, Garden City, N.Y.

Filed Feb. 24, 1975, Ser. No. 552,104

Int. Cl.^{2} E05B *65/46*

U.S. Cl. 312—217 **9 Claims**



1. A locking mechanism for a file cabinet having a plurality of horizontally extensible drawers positioned one atop the other within a casing, each of said drawers having front and rear ends, a bottom wall, opposing first and second side walls, and a receding front wall being part of said casing, comprising:

an elongated rod positioned adjacent said drawer first side wall, means for moving said rod vertically upwardly to a locked position and vertically downwardly to an unlocked position, a projection extending inwardly from said rod towards said drawer first side wall;

a shaft supported beneath the front end of the drawer bottom wall and extending beyond said drawer first and second walls; means for rotatably supporting said shaft,

a first locking member rigidly mounted on said rotatable shaft and positioned between said first side wall and said rod, said first locking member including means for engaging and locking said drawer receding front wall adjacent said drawer first side wall and means cooperating with said projection for actuating said first locking member into locking engagement with said drawer receding front wall;

a retainer element attached to said casing adjacent said drawer second side wall and extending inwardly towards said drawer second side wall;

a second locking member positioned between said drawer second side wall and said casing, said second locking member including means for engaging and locking said casing receding front wall adjacent said drawer second side wall and means for engaging said retainer element;

means attached to said first locking member for actuating said second locking member into locking engagement with said casing receding front wall.

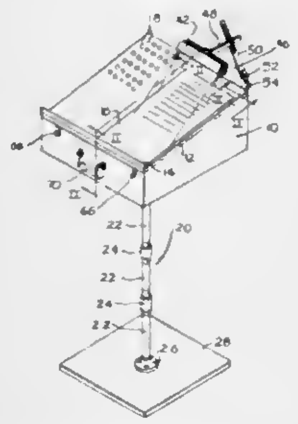
3,936,109
PORTABLE PODIUM

Josephine M. Richardson, R.R. No. 5, Decatur, Ind. 46733

Filed Sept. 19, 1974, Ser. No. 507,393

Int. Cl.^{2} A47B *27/00, 13/00*

U.S. Cl. 312—223 **5 Claims**



1. A podium structure comprising; a box-like upper part having bottom and side walls and also having a top wall which is inclined in the fore and aft direction, hinge means supporting one edge of the top wall on the side wall adjacent thereto for tilting of the wall to expose the inside of the said upper part, said top wall having an apertured region adjacent one side wall for transmission of sound to a recorder inside said upper part, a recorder support shelf pivotally connected to the back wall, said support shelf having a foldable stop flange connected thereto and adapted to engage the back wall for positioning the support shelf in position to receive the recorder, said support shelf and foldable stop flange adapted to be retracted to a closed position against the back wall of said upper part when not in use, and pedestal means for supporting said upper part adapted at the upper end for detachable connection to said bottom wall, said pedestal including a detachable base member at the lower end, said pedestal furthermore comprising axially adjustable means for varying the distance between said upper part of the podium and said base member.

3,936,110
COMBINATION CABINET FOLD-OUT BAR

Daniel H. Meggs, 4313 Vista Largo, and Janos Beny, 4445 Pacific Coast Highway, both of Torrance, Calif. 90505

Filed May 13, 1974, Ser. No. 469,130

Int. Cl.^{2} A47B *85/00*

U.S. Cl. 312—241 **4 Claims**

1. A combination cabinet and fold-out bar comprising:

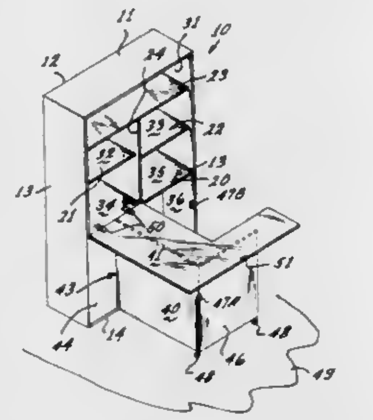
an upright cabinet having a generally rectangular front;

upper and lower doors hingedly mounted on said cabinet to lie flush with said front, when closed;

said upper door being of inverted L-shaped haviing a vertical leg, when closed extending upwardly along and closing one side of said cabinet and a horizontal leg, extending across and closing the upper part of said cabinet, the lower edge of said vertical leg being hinged to said cabinet on a first and horizontal axis spaced upwardly from the bottom of said cabinet;

said lower door being hinged to said cabinet on a second and vertical axis intermediate the ends of said first axis and having a horizontal upper edge at substantially the elevation of said first axis; and

an extension panel hinged to an edge of said lower door on a third and vertical axis parallel to and spaced from said second axis hy a distance less than the length of said vertical leg and having an upper horizontal edge at the same elevation as that of said lower door whereby said lower door may be opened to extend perpendicular to said cabinet front, said extension may be swung to extend parallel to and spaced from said cabinet front and said upper door may be swung downwardly to a position wherein its vertical and horizontal legs rest on the upper edges of said lower door and extension, respectively, to define an L-shaped bar providing standing room between said horizontal leg and cabinet and easy access to the interior of said cabinet.



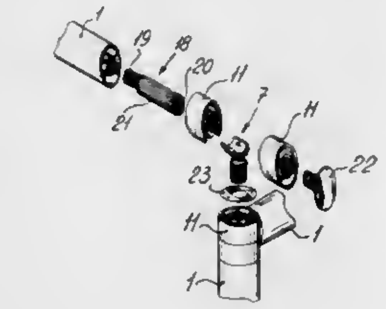
3,936,111
FURNITURE CONSTRUCTING KIT

Vittorio Mazzucconi, 22 Via Macchiavelli, Milan, Italy

Filed May 6, 1974, Ser. No. 466,868

Int. Cl.^{2} A47B *43/00;* **A47F** *5/00*

U.S. Cl. 312—257 R **8 Claims**



1. A furniture construction kit comprising
1. at least two like elongated annular frame elements, each of the elements having an end and comprised of
   a. an outer cylindrical tube and an inner cylindrical tube coaxial therewith,
   b. the inner cylindrical tube having an internal thread at the end, and
   c. axially continuous, diametrically opposed radial ribs interconnecting the cylindrical tubes, adjacent ones of the radial ribs defining axially extending spaces between the two cylindrical tubes and
2. a joint associable with the threads at the ends of the frame elements, the joint comprising
   a. a ring means fitting between the ends of two of the frame elements, the ring means being comprised of an outer cylindrical tube and an inner cylindrical tube coaxial therewith, the inner tube of the ring means defining a central bore, axially continuous, diametrically opposed radial ribs interconnecting the cylindrical tubes of the ring means, adjacent ones of the radial ribs defining axially extending spaces,
   b. a connecting pin having an externally threaded end for threaded connection with the internal thread at the end of one of the frame elements, the connecting pin fitting into the central bore of the ring means and being coaxially associable with the one frame element, and
   c. a connecting member having an externally threaded shank for threaded connection with the internal thread at the end of the other one of the frame elements, the threaded shank being coaxially associable with the other frame element, the connecting member having a sector-shaped hook head extending eccentrically from the shank in a plane perpendicular to the shank axis for engagement in a selected one of the axially extending spaces in the ring means, the selected space having an aperture for receiving the hook head.

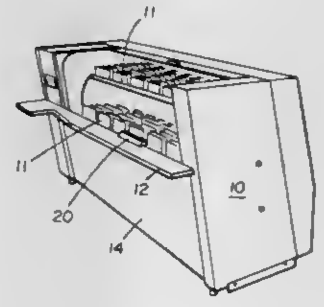
3,936,112
CRADLE SELECTOR CONTROLS FOR MOTORIZED ROTARY FILES

Richard P. Scholfield, Peekskill, N.Y., assignor to Presto Lock Company, Division of Walter Kidde & Company, Inc., Clifton, N.J.

Filed Oct. 10, 1974, Ser. No. 513,545

Int. Cl.^{2} A47B *49/00;* **D06H** *3/02*

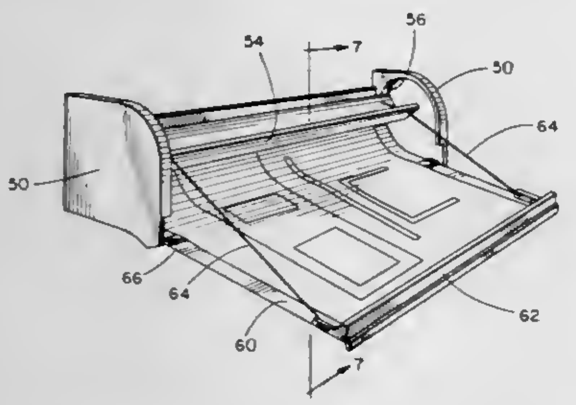
U.S. Cl. 312—267 **3 Claims**



1. In a power driven file of the rotary type having a plurality of elongated record cradles, electric power means for moving the cradles one by one into position along the rear of an elongated operator shelf disposed across the the front of the file for access to records in the cradles, and electric selector control means controlling the power means for moving selected ones of the cradles into said position, a portion of the selector control means being exposed for operation by the operator, the improvement wherein said portion of the selector control means comprises an elongated pushbutton switch housing, means securing the housing along the rear edge of the operator's shelf for movement by and at the option of the operator along a fixed track between the ends of the shelf independently of the position of any of the cradles in the file, the housing carrying a plurality of pushbutton switches of the momentary contact-type with their pushbuttons exposed for operation by the operator, a pair of the switches being effective respectively to cause deactivation and reactivation of the power means independently of the remainder of the switches, the remainder of the switches constituting a group of switches each of which is electrically associated with one of the cradles, all of the switches being connected to a stationary portion of the file by an electrical cable movable with the housing.

3,936,113
OVERSIZE DOCUMENT STORAGE CABINET

Paul R. Anderson, P.O. Box 3584, Sarasota, Fla. 33578
Continuation-in-part of Ser. No. 434,122, Jan. 17, 1974. This application May 19, 1975, Ser. No. 578,427
Int. Cl.² E06B *9/14*; **A47B** *51/00*
U.S. Cl. 312—297 **12 Claims**

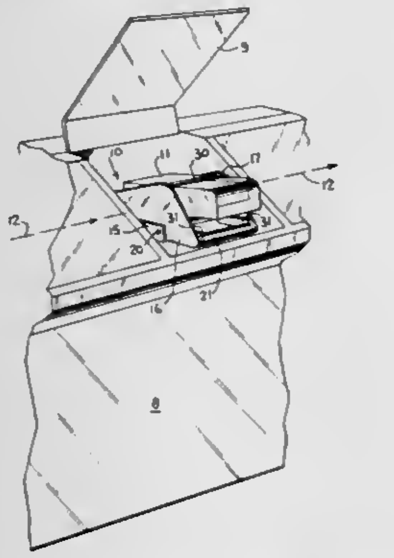


1. A cabinet for storing oversize documents without folding, comprising:

a cabinet frame including a back mounting and a pair of cabinet ends having guide channels formed therein;
a flexible drawer mounted on said frame movable in said channels between a curled position storing said documents in a loosely curled state and an open position extending outwardly from the cabinet supporting said documents thereon in a flat state for easy viewing and selection;
inner document retaining means on said drawer for maintaining said documents in said loosely curled state in said closed position; and
outer document retaining means for retaining said documents on said drawer in said open position.

3,936,114
POSTAGE METER MOUNTING FIXTURE

Anthony Storace, Tarrytown, N.Y., and James Morabito, Bethel, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Mar. 12, 1975, Ser. No. 557,489
Int. Cl.² G01G *13/02*
U.S. Cl. 312—311 **5 Claims**

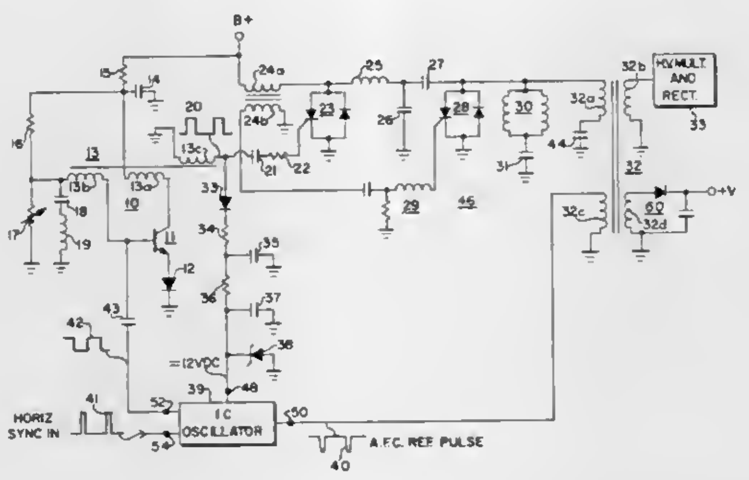


1. A postage meter mounting fixture for mounting a postage meter to a mail-handling machine, said postage meter mounting fixture, comprising:

a housing for supporting a postage meter in a first postage printing position such that envelopes moving with a substantially vertical orientation through said mail-handling machine will be marked with postage by said postage meter said housing supporting said postage meter with a vertical orientation in said first position, and including pivot means operatively connected to the housing for pivoting the housing with respect to said mail-handling machine such that said postage meter will assume a second, disengaged position, means defining at least one elongated track extending along a length portion of said housing, and means connected to said postage meter for slidably moving said postage meter along said track when the meter is in said second disengaged position, said postage meter being slidably movable along said track from a first, generally inaccessible position to a second, accessible position.

3,936,115
START-UP CIRCUIT FOR A DEFLECTION SYSTEM

Wolfgang Friedrich Wilhelm Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.
Filed Nov. 6, 1974, Ser. No. 521,422
Claims priority, application United Kingdom, Aug. 19, 1974, 36330/74
Int. Cl.² H01J *29/70, 29/76*
U.S. Cl. 315—399 **5 Claims**



1. In a deflection system a start-up circuit comprising:

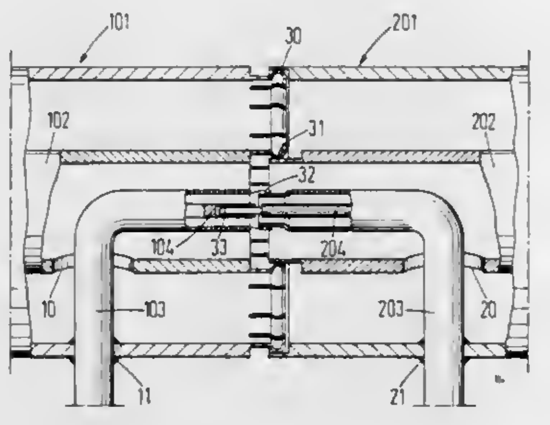
a deflection generator including a first oscillator which produces a first signal for producing a deflection signal in a deflection winding in response to said first signal;
second oscillator means coupled to said first oscillator for controlling the frequency and phase of said first oscillator; and
rectifying means coupled to said deflection means and to said second oscillator for providing a direct current operating potential to said second oscillator when said deflection signal is being produced.

3,936,116
COAXIAL HF MULTIPLE ROTARY CONNECTION

Georg Spinner, Erzgie Bereistr, 33, 8 Munich 2, Germany
Filed June 12, 1974, Ser. No. 478,527
Claims priority, application Germany, June 15, 1973, 2330585
Int. Cl.² H01R *39/00*
U.S. Cl. 339—8 R **5 Claims**

1. A rotary assembly of HF coaxial cables, with a portion of one of the cables being inside the other of the cables, comprising;

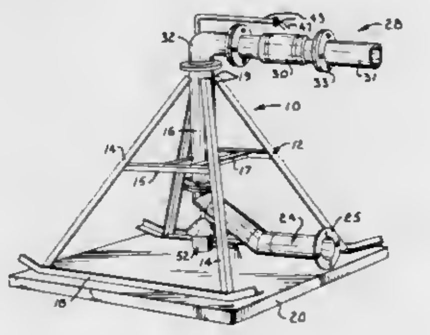
an internal coaxial cable having a first internal conductor and a first external conductor outside said first internal conductor; said internal cable having a first portion of a first length and said first portion being inside an external coaxial cable;
an external coaxial cable having a hollow second internal conductor; said second internal conductor having a second portion of at least said first length and said second portion having a cross section greater than the cross section of said first external conductor; said external cable having a second external conductor outside said second internal conductor;
said internal cable first portion being located inside said second internal conductor second portion; beyond both ends of its said first portion, said internal cable passing from within said second internal conductor through both said second internal and external conductors to without said external cable, whereby said internal cable serves as a reactance in said external cable; said first external conductor being electrically connected to said second external conductor at both locations along said internal cable where said internal cable passes through said second external conductor;



said internal cable first portion being separated into two sections, first rotary coupling means separably joining both of said internal cable first and second conductors in said internal cable first portion;
said external cable second portion being separated into two sections, second rotary coupling means separably joining both of said external cable second internal and external conductors in said external cable second portion.

3,936,117
IRRIGATION PIVOT STAND CONSTRUCTION

Richard F. Reinke, Reinke Manufacturing Company, P.O. Box 480, Deshler, Nebr. 68340
Filed Sept. 10, 1974, Ser. No. 504,808
Int. Cl.² H01R *39/00*
U.S. Cl. 339—8 R **6 Claims**

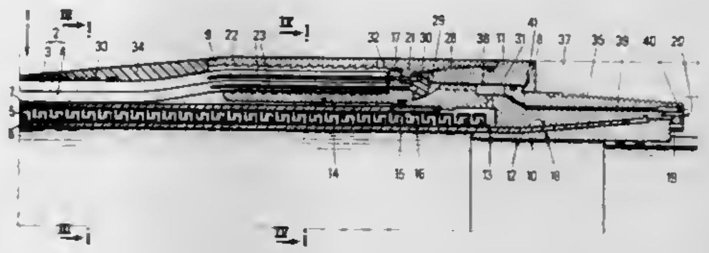


1. A pivot stand for circular irrigation systems comprising:

a frame adapted to be disposed on a supporting surface;
a stationary water supply pipe having a pipe end portion directed vertically upwardly with respect to said surface and mounted on said frame in spaced relationship to said supporting surface;
a rotatable water delivery pipe extending radially outwardly from said end portion and having a downwardly directed segment rotatably coupled with said end portion;
a rotatable conduit containing a plurality of electrical control conductors, said conduit being coupled with said delivery pipe for rotation therewith and having a vertical portion passing in through said end portion and out through said segment;
a slip ring assembly enclosing a plurality of slip rings mounted beneath said end portion;
a plurality of wiping contacts disposed for electrical contact with said slip rings within said housing, one of said contacts and said slip rings coupled with said electrical control conductors and the other of said contacts and said slip rings coupled with an external power supply whereby to supply electrical current to the electrical control conductors.

3,936,118
COUPLING FOR FLEXIBLE PIPE PROVIDED WITH REINFORCING ARMOURINGS

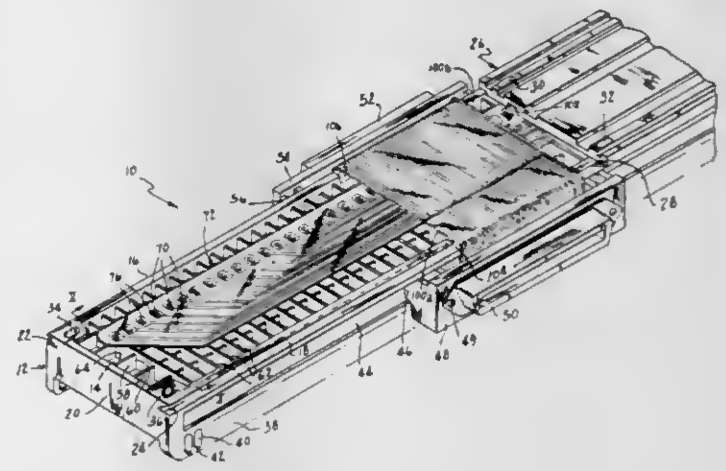
Jean Thiery, Le Pecq, and André Chevalier, Pantin, both of France, assignors to Institut Francais du Petrole, France
Filed May 3, 1974, Ser. No. 466,851
Claims priority, application France, May 14, 1973, 73.17436
Int. Cl.² H01R *3/04*; **F16L** *39/02*
U.S. Cl. 339—16 R **32 Claims**



1. A coupling for a flexible pipe provided with at least one armouring withstanding tractive and/or torsional stresses applied to the pipe, the armouring comprising at least one layer of helically wound reinforcing elongated elements, said coupling comprising in combination a tubular body member, an anchoring ring surrounding said body member on at least one portion thereof, said body member and said anchoring ring delimiting an annular space of limited length in which the end of said armouring is positioned, and a plurality of elongated anchoring elements, each of said anchoring elements being integral with at least one of said body member and said anchoring ring and positioned with a clearance, over at least a portion of the length of said annular space, between two adjacent reinforcing elements constituting said armouring, said annular space being filled with a solidified material which adheres to each of said elongated elements constituting said armouring and to said anchoring elements and to the internal surface of said annular space thereby making said armouring and coupling integral with each other.

3,936,119
TERMINAL BLOCK HAVING FLAT FLEXIBLE INTERCONNECTING CIRCUITS

George Edward Ayer, Endicott, N.Y., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Jan. 16, 1974, Ser. No. 433,630
Int. Cl.² H01R *13/46*
U.S. Cl. 339—17 F **6 Claims**



1. A terminal block comprising:

a housing including a flat portion having a plurality of slots therethrough, a pair of spaced outside walls extending above said flat portion, a pair of elongate grooves in respective ones of said outside walls, a first recess in one of said outside walls, a second recess in said one outside wall adjacent said first recess, and a cover including a pair of spaced projections slidably received in respective ones of said elongate grooves;

a plurality of terminals carried by said housing, said terminals extending through said slots and each terminal including an insulation-piercing portion disposed outside of said housing for connection to a conductor and a second portion within said housing below the extent of said outside walls;

a flat circuit member mounted within said housing, said flat circuit member including a first longitudinal section of one dimension and a second longitudinal section of smaller dimension and a plurality of circuits extending between said first section and said second section and connected to selected second portions of said terminals at said first section with said second section extending through said first recess, said circuit member including a connection portion extending from a circuit in said second section;

a connector retainer including a portion for engagement within said second recess; and

an electrical connector connected to said retainer, said connector including contacts connected to said connection portion of said flat circuit member extending through the adjacent first recess.

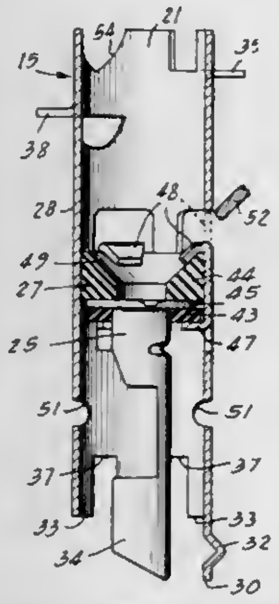
3,936,120
ANTENNA CONNECTOR

Ronald L. Schultz, Northfield, Ill., assignor to Chromalloy-Alcon, Inc., Chicago, Ill.

Filed July 26, 1974, Ser. No. 492,242

Int. Cl.² H05K *1/00;* **H02B** *1/02;* **H01R** *9/08*

U.S. Cl. 339—17 M **19 Claims**



1. An electrical connector especially suitable for coupling an antenna leadin with a printed circuit board and a receiver chassis, comprising:

a tubular sheet metal body formed from an originally flat blank and having confronting edges along a longitudinal joint;

means at opposite ends of the body for mounting it in functioning position;

said body providing a plug-receiving socket opening through one of said ends;

a dielectric support located within said body spaced from said one end and carrying an electrical contact insulated from said body; and

means connecting the support and the body together including a mechanical interlock retaining the body against spreading open at said joint in the vicinity of said support.

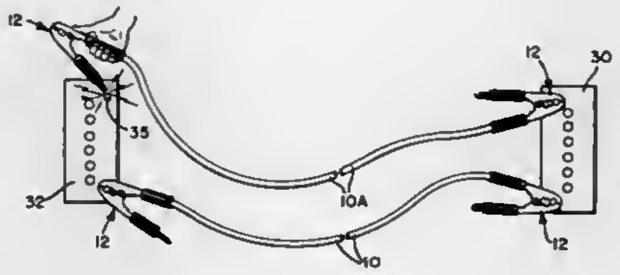
3,936,121
JUMPER CABLES FOR SPARKLING POLARITY INDICATOR

Gerhard Karl Leinberger, 505 E. Schantz Ave., Dayton, Ohio 45409

Filed Aug. 19, 1974, Ser. No. 498,391

Int. Cl.² H01R *11/22*

U.S. Cl. 339—29 B **4 Claims**



1. In jumper cables for connection between a pair of storage batteries for applying temporary power from a host battery to a receiving battery, the improvement in polarity detection comprising a gripper jaw having a pair of handle portions and in which one of the connecting cables is attached to one of said portions, a length of coiled resistance wire attached to the other of said handles, said length of wire being essentially self-supporting and extending outwardly of said handle and terminating in an exposed end and having a resistance with the handle in the other of 0.5 ohm to 4 ohms, the end of said wire providing a testing point which sparkles when touched to a battery terminal in which the jumper cables have been incorrectly connected to provide a visual indication of such incorrect connection.

3,936,122
SAFETY DEVICE IN ELECTRICAL CONNECTION DEVICES

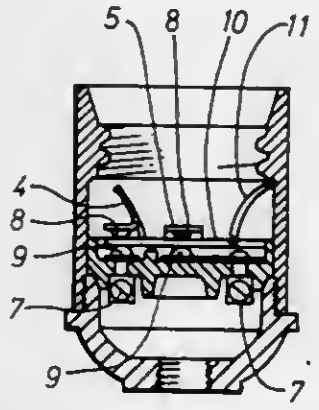
Anders Torvald Sverker Hagelberg, Molnlycke, Sweden, assignor to Bengt Petersson New Products Investment AB, Sweden

Filed Aug. 29, 1974, Ser. No. 501,820

Claims priority, application Sweden, Aug. 30, 1973, 73117764

Int. Cl.² H01R *13/44*

U.S. Cl. 339—41 **7 Claims**



1. Safety device in electrical connection devices, especially lamp sockets, comprising a plurality of contact parts having portions provided to rest against an object arranged to be connected to the connection device, a plurality of contact elements, equal in number to said contact parts, one of said contact parts cooperating with one of said contact elements to form a connection, said contact elements being connected to the electrical leads of a cable, each of said contact parts comprising biasing means for urging said contact parts away from said contact elements, and at least one insulating member mounted between said contact parts and said contact elements for separating all of said contact parts from all of said contact elements when there is no object in said connection device, said insulating member comprising means for moving said insulating member so as to allow said contact parts and elements to contact each other in response to the insertion of an object into said connection device.

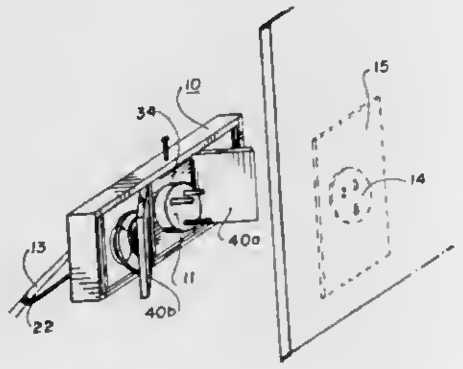
3,936,123
ELECTRICAL PLUG EJECTING APPARATUS

Willie P. Gossett, 13621 Far Hills, Dallas, Tex. 75240, and Robert F. White, Box 479, Mount Vernon, Tex. 75457

Filed Oct. 23, 1974, Ser. No. 517,219

Int. Cl.² H01R *13/62*

U.S. Cl. 339—45 M **5 Claims**



1. An electrical plug ejecting mechanism, comprising:

a. an ejector housing defined by front and rear longitudinally extending wall portions, a centrally defined opening in said housing extending transverse to said longitudinal direction and through said front and rear wall portions,

b. means for retaining an electrical plug within said opening in a manner that allows the conductive prongs of said plug to forwardly extend from said front wall portion,

c. a pair of compartments within said housing longitudinally spaced from one another on opposite sides of said centrally defined opening,

d. a pair of ejector springs respectively disposed within said compartments,

e. a pair of doors forming a part of said front wall portion so mounted to said housing to respectively close off said compartments and maintain said ejector springs under compression when in such closed position,

f. latch means latching said doors in said closed position, and

g. trip release means including a trip lever for releasing said latch means from said latching position, thereby to allow said doors to open and release said ejector springs from compression, said trip release means being actuated in response to a force exerted on said trip lever in said longitudinal direction.

3,936,124
WATERPROOF CONNECTOR

John D. Tuttle, 198 Rivo Alto Canal, Long Beach, Calif. 90803, and Delbert J. Wagner, 7333 Jackson St., Paramount, Calif. 90723

Filed Nov. 1, 1974, Ser. No. 520,158

Int. Cl.² H01R *11/02*

U.S. Cl. 339—60 M **3 Claims**

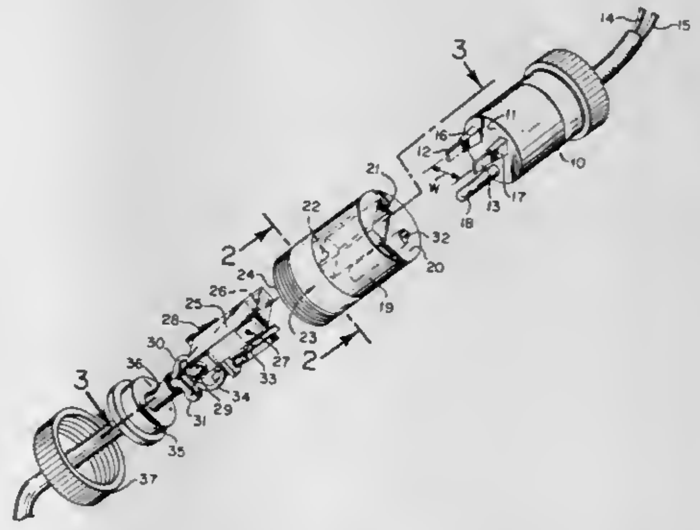
1. A waterproof connector for electrical wires comprising, in combination;

a. an insulative plug body having first and second conductive blades extending from a front face thereof and separated by a given distance, each of said blades having an insulated skirt portion about its base at the point it exits from said front face, said skirt tapering towards a smaller size as it extends from the surface to terminate approximately at a mid-point of the blade, the inner ends of the blades within the plug body connecting to electrical wires passing from an opposite end of said plug body;

b. an insulative socket body of resilient material having a channel of rectangular cross section opening out at a front face and extending into said socket body a given length to terminate within said body, the remaining portion of said body defining an interior hollow chamber opening out at an opposite end of the body of greater cross sectional dimensions than said channel;

c. an electrical contact supporting member of resilient material having a rectangular cross section corresponding to that of said channel and a length greater than the length of the channel so that it can be force-fitted in said channel with the front end of said supporting member coplanar with the front face of said insulative socket body and a rear portion of said member protruding into said hollow chamber; and

d. electrical contact surfaces embedded in opposite forward sides of said member and internally connecting to terminals in opposite rear sides of said member for receiving electrical leads passing into said opposite end of said body, the width of the channel corresponding to said given distance between the conductive blades of said plug and the forward opposite inner walls of said channel being tapered inwardly slightly, whereby said blades can be urged into said channel to straddle opposite sides of said member, the resilient material of the insulative socket body and member together with the tapering inwardly of the channel walls exerting a squeezing action on the blades to wipe them clean of water and moisture, said skirts on the blades plugging the channel entrance sides to effect a waterproof connection.



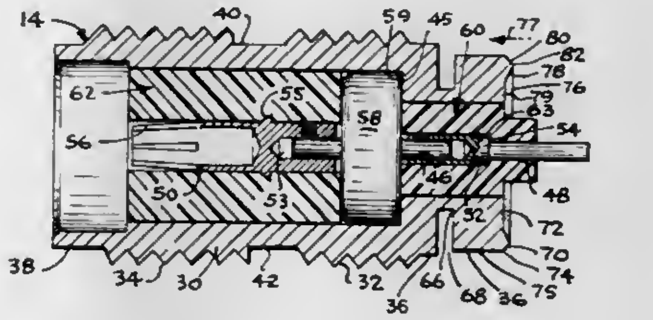
3,936,125
ELECTRICAL CONNECTOR WITH METAL TO METAL SEAL

Harold Gregory Hutter, Brookfield, Conn., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jan. 28, 1974, Ser. No. 437,277

Int. Cl.² H01R *7/02*

U.S. Cl. 339—94 C **17 Claims**



1. An electrical connector comprising:

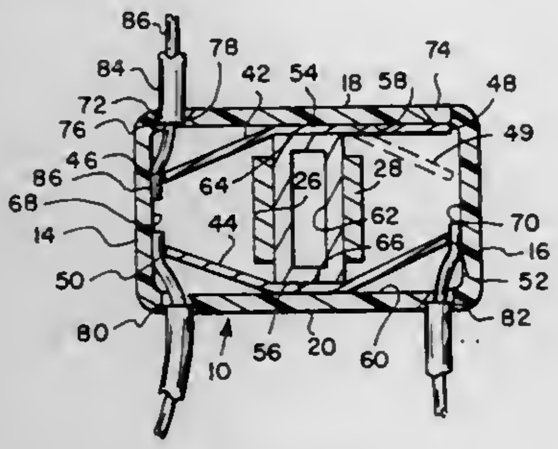
first and second connecting members;

the first member including a housing with an aperture, a mating section of metallic construction having a first radial face peripherally extending about the aperture, and a shroud member axially extending from said first face towards the second member and generally parallel to the aperture to define an enlarged opening, the second member including a sleeve having an interior and a mating portion, and contact means carried by said sleeve and arranged to extend into said aperture in response to the receipt of said mating portion in said enlarged opening, and

means for coupling said first and second members in conjunction with the movment of said mating portion axially within said shroud member, said mating portion including a front section of reduced outer diameter and a radial flange having an inner end rigidly fixed on the front section and at least one deflectable integral beam section extending outwardly therefrom for engagement with said first radial face, said one beam section having a portion of metallic construction facing said first radial face with radially inner and outer frontwardly converging surfaces and an axially extending cutting edge formed thereby with a hardness greater than that of said metallic section for sealing penetration of said first radial face in response to the coupling of said first and second members, said cutting edge being disposed outwardly beyond said inner end and peripherally about said aperture.

3,936,126
ELECTRICAL CONNECTOR

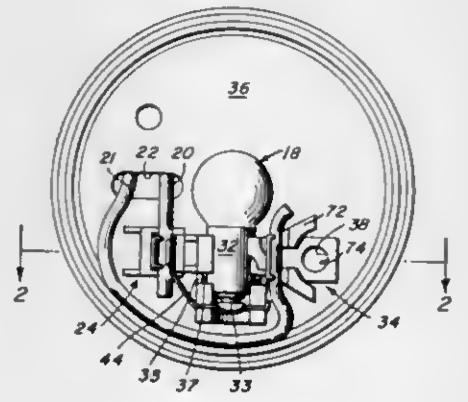
Gregory H. Miller, West Bend, Wis., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Dec. 7, 1973, Ser. No. 422,617
Int. Cl.² H01R *9/12*
U.S. Cl. 339—95 D **14 Claims**



1. An electrical connector comprising:
a housing and a contact member;
said housing made of plastic material having formable and deflectable character;
said housing having a box like body and a cover;
a hinge structure integral with and interconnecting said body and said cover;
said box like body having an open side and a closed side;
said cover adapted hingedly to be positioned to enclose said open side of said body;
said box like body having wall portions integral with said closed sides;
said wall portions having edges disposed at said open side;
said edges adapted to be contiguous with said cover portion;
said contact member being made of flat resilient sheet metal and having a middle portion provided with generally flat opposite sides and a plurality of generally flat contact portions having opposite sides and being integral with said middle portion, said contact member positioned in said body by a pair of first projections extending from said closed side of said box like body;
said pair of first projections holding said middle portion of said contact member in fixed position adjacent said closed side of said body and thereby preventing substantial movement of said contact member in directions longitudinally of said contact portions;
second projections integral with said cover and disposed between said pair of first projections extending from the closed side of said body;
said second projections holding said middle portion of said contact member adjacent to said closed side of said body;
said contact portions having said opposite sides disposed generally at right angles to said opposite sides of said middle portion;
said body having wall portions substantially parallel with said opposite sides of said flat contact portion;
said contact portions each having a conductor contacting and wedging edge;
a conductor engaging wall portion of said body closely adjacent each wedging edge of each of said contact portions;
said body having a conductor receiving opening in some of said wall portions adjacent each of said wedging edges of said contact portions;
whereby electrical conductors may be inserted through conductor receiving openings and forced between respective wall portions and said wedging edge portions of said conductor portions and whereby resilient character of said contact portions allows said wedging edge portions to be forced into an angular wedging relation to the respective conductors thereby causing wedging entrapment thereof in said body.

3,936,127
LAMP MOUNTING ASSEMBLY

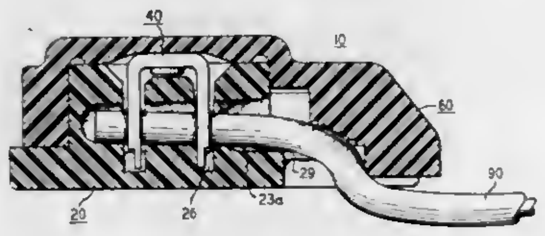
Charles R. Morrison, Frewsburg, N.Y., assignor to Truck-Lite Company, Inc., Jamestown, N.Y.
Filed Jan. 11, 1974, Ser. No. 432,639
Int. Cl.² H01R *13/38*
U.S. Cl. 339—97 L **6 Claims**



1. In combination with a lamp reflector having a receptacle formation partially surrounding and frictionally retaining a lamp bulb adapted to be electrically connected to an insulation covered conductor, retainer means projecting from the reflector in spaced relation to said receptacle formation, connector means seated in said retainer means for piercing insulation of a conductor inserted therein to electrically connect the same to the bulb, and a contact arm extending from the connector means and positioned by the receptacle formation for operative engagement with the bulb, said connector means including a pair of insulation piercing elements, a web portion interconnecting said elements in spaced relation and in abutment with the receptacle formation, and a bulb base embracing strap extending from the web portion into the receptacle formation.

3,936,128
SOLDERLESS ELECTRICAL CONNECTOR FOR CONNECTING A PLURALITY OF INSULATED WIRES

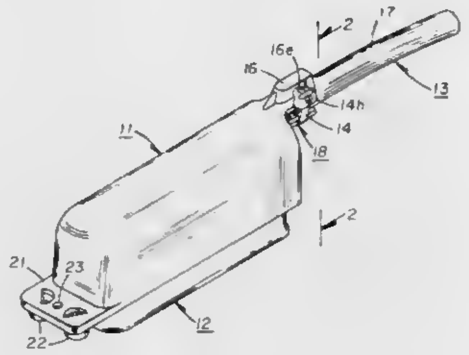
Anthony Thomas D'Annessa, Marietta, Ga.; Paul Rudolph Gustin, Baltimore, Md.; Donald Tolman Smith, Norcross, and Janis John Zalmans, Atlanta, both of Ga., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J. and Western Electric Company, New York, N.Y.
Filed Jan. 31, 1975, Ser. No. 545,816
Int. Cl.² H01R *13/38*
U.S. Cl. 339—98 **12 Claims**



12. A connector comprising:
a cap and a body;
said body including at least two wire entrances formed between at least three protruding parallel fins adjacently joined by slotted webs, a wire lead-in ramp from each said entrance ending in a circular opening to an interior encapsulant-filled void, a depressed nub beyond each said opening midway across said void, further wire support means at the void far side, a wire when first placed across said support means being in noncontacting relation with the end of said nub and therefore being fully surrounded with said encapsulant;
said cap including slotted beam wire-bridging members, means for snap-mounting to said body, and means for snubbing inserted wires down between said fins and into said webs for strain relief.

3,936,129
MOLDED PLASTIC HOOD ASSEMBLY FOR A CABLE CONNECTOR PLUG

Rodney J. Guy, Boulder, Colo., assignor to Western Electric Company, Inc., New York, N.Y.
Filed Sept. 16, 1974, Ser. No. 506,646
Int. Cl.² H01R *13/58*
U.S. Cl. 339—103 R **9 Claims**

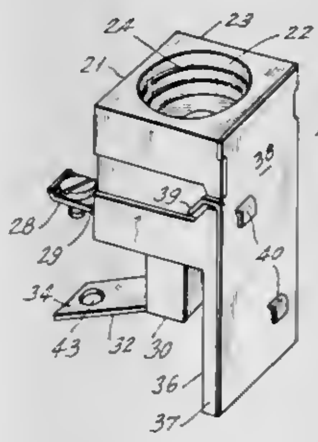


1. A molded plastic hood and connector plug assembly, which comprises:
a hood body having an extension adjacent one end thereof;
a flexible tongue integrally connected to said extension on said body and projecting laterally therefrom;
a pressure pad integrally connected to said flexible tongue element in spaced relationship to said extension on said body;
molded rigid retainer means adjacent an opposite end of said body engaged with a portion of the connector plug to preclude relative movement between the hood and the plug in a first direction; and
molded resilient retainer means adjacent the opposite end of said body engaged with a portion of the connector plug to preclude relative movement between the hood and the plug in a second direction perpendicular to the first direction.

5. A protective assembly including a cable connector plug, which comprises:
a molded plastic hood having portions of the connector plug and of a cable connected to the plug received therein, said hood including an extension adjacent one end thereof engaging surface portions on one side of the cable;
a pressure pad engaging surface portions on an opposite side of the cable;
a securing strap encircling the cable and gripping the cable between said pressure pad and said extension of said hood;
rigid retainer means adjacent an opposite end of said molded plastic hood engaged with a portion of the connector plug to preclude relative movement between said hood and the plug in a first direction; and
resilient retainer means adjacent the opposite end of said plastic hood engaged with a portion of the connector plug to preclude relative movement between said hood and the plug in a second direction perpendicular to the first direction.

3,936,130
PLUG-IN FUSE RECEPTACLE INTERCHANGEABLE WITH CIRCUIT BREAKER

Albert Graham, Toronto, and Norman Henry McCullough, Weston, both of Canada, assignors to I-T-E Circuit Breaker (Canada) Limited, Canada
Filed July 1, 1974, Ser. No. 484,682
Int. Cl.² H02B *1/02*
U.S. Cl. 339—125 R **9 Claims**



1. A fuse receptacle including an insulating generally rectangular parallelopiped body having a recess formed into an upper surface of the body and having at least one pair of opposed plane-surfaced sides, a screw-type socket disposed completely within said recess and constituting a first fuse engaging terminal, a second fuse engaging terminal disposed within said recess at the bottom thereof, first means external of said body for mechanically securing said receptacle to a circuit breaker mounting rib in a panelboard constructed to receive circuit breakers with one of said plane-surfaced body sides adjacently parallel to an exterior surface of said mounting rib, line and load terminals disposed externally of the remaining one of said pair of plane-surfaced sides and a bottom of said body, and second means conductively connecting said line and load terminals to the respective first and second fuse engaging terminals.

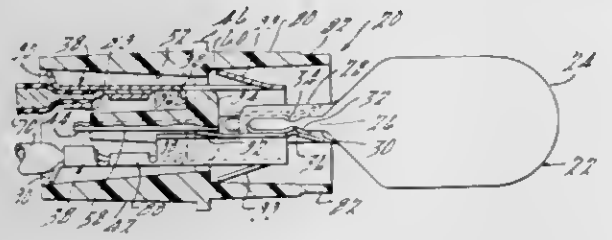
3,936,131
SNAP-IN ASSEMBLY AND CONTACT TERMINAL FOR WEDGE BASE LAMPS

Remie P. Durand, Detroit, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Continuation-in-part of Ser. No. 343,339, March 21, 1973, abandoned. This application Nov. 25, 1974, Ser. No. 526,770

Int. Cl.^{2} H02B *1/02;* **H01R** *13/42*

U.S. Cl. 339—128 10 Claims



1. A snap-in socket assembly for receiving, locating and positioning within an aperture in a mounting panel a wedge bulb having a pair of filament extension wires positioned externally on opposite sides of the wedge base and overlying a pair of in-line troughs extending transversely to the wedge base, said socket comprising:

an elongated tubular electrically non-conductive housing,

a rib within said housing and longitudinally extending from substantially near one end to the other end of said housing and dividing said housing into two sections,

a radially extending rim girding said housing at said other end,

at least two opposed resilient jaw members cantileverly supported from said other end of said housing and extending from said rim, said jaw members having a C-shaped cross section centered on either side of the plane defined by said rib,

a pair of elongated electrically conductive contact members each located in a different one of the said housing sections and extending between said opposed resilient jaws which compressively engage said contact members upon the insertion of the bulb therebetween and cause the contact members to compressively engage the filament wires on the wedge base of the bulb, and

a protuberance on the outside surface of each of said resilient jaw members and longitudinally spaced from said rim a predetermined distance substantially equal to the depth of the aperture in the panel,

each of said contact members having a wire contact end and a bulb contact end in the shape of a channel having a wing outwardly extending from each of the side walls of said channel substantially parallel to the bottom web of said channel and longitudinally extending beyond the end of said channel, said wings adapted to be located in both of said C-shaped jaws and having a detent protuberance thereon adapted for engaging the trough on the bulb, said wings of each of said contact members positioned within said jaws opposing the wings of the opposite contact member.

3,936,132
COAXIAL ELECTRICAL CONNECTOR

Harold Gregory Hutter, Brookfield, Conn., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 327,868, Jan. 29, 1973, abandoned. This application Sept. 6, 1974, Ser. No. 503,948

Int. Cl.^{2} H01R *17/18;* **H02B** *1/02*

U.S. Cl. 339—130 C 11 Claims

1. A coaxial electrical panel connector adapted to be mounted in a panel having opposite surfaces with an opening communicating said opposite surfaces for supporting another coaxial connector from said panel and for enabling the extension of an electrical connection from the inner conductor and outer conductor of said other coaxial connector through said panel without electrical engagement with said panel, the improvement comprising:

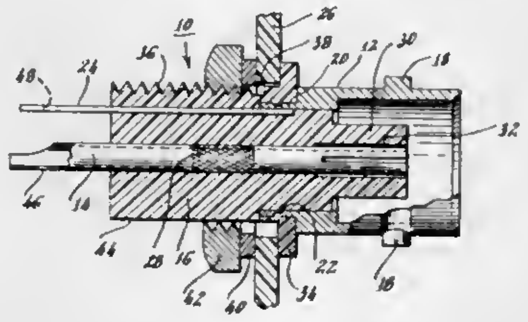
an outer annular contact having a terminating annular rear end and a forward portion for engagement with the outer conductor of said other coaxial connector;

a conductive lead of substantially smaller cross section than said outer contact connected to said terminating rear end and extending rearwardly therefrom for passage through said opening;

an inner contact extending axially of said outer annular contact in radially spaced relationship to said outer contact and conductive lead with one end of said inner contact arranged for engagement with the inner conductor of said other coaxial connector and the other end of said inner contact arranged for passage through said opening;

a one piece body of insulating material passing through said opening and molded in encircling fixed relationship about both said inner contact and said conductive lead with said body having an integral outer forward portion in molded engagement with the outer periphery of said terminating rear end and an integral inner forward portion in molded engagement with the inner periphery of said terminating annular rear end to secure and support said outer contact from said panel with a dielectric mating face on said body extending into said outer contact and the forward portion of the outer contact extending forwardly of both the outer forward portion and the inner forward portion of said body, a continuous annular radial shoulder intermediate the ends of said body integrally interconnecting said outer annular forward portion and said inner annular forward portion,

and a flange integrally formed on said body extending radially outwardly of said outer conductor for abutment with one surface of said panel to prevent engagement between said panel and outer contact.



3,936,133
CONNECTOR BLOCK FOR TELEPHONE EQUIPMENT

Frank G. Splitt, Arlington Heights, and William P. Frantz, Chicago, both of Ill., assignors to Cook Electric Company, Morton Grove, Ill.

Filed Jan. 17, 1974, Ser. No. 434,129

Int. Cl.^{2} H01R *9/00*

U.S. Cl. 339—198 R 4 Claims

1. A connector to be mounted on a bracket frame structure for mounting a plurality of plug-in type protector assemblies used in protecting pairs of telephone lines and telephone equipment, each of which protector assemblies having line terminals and a ground terminal, said connector comprising:

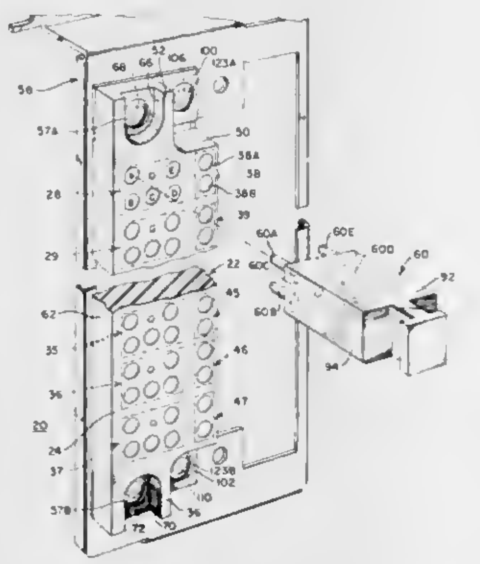
an elongated mounting panel having first and second elongated sided edges, a first mounting end portion at one end of the panel and a second mounting end portion at an opposite end of the panel, and first and second opposed mounting faces,

a plurality of socket groups arranged in a single column along said mounting panel adjacent said first elongated side edge, each of said socket groups have an array of sockets conforming to said array of line terminals and ground terminal so as to mount one of said protector assemblies in each of said socket groups,

a plurality of terminal hole groups arranged in a single column along said mounting panel adjacent said column of socket groups and adjacent said second elongated side edge, each of said terminal hole groups being adjacent and associated with one of said socket groups,

a ground terminal contact means insertable into one of said sockets in each of said socket groups, each of said ground terminal contact means having a receptacle portion in said mounting panel to receive said ground terminal of said protector assembly, and a holding portion extending from said second face of said mounting panel,

a first ground plate mounted along said second face of said mounting panel at said first end portion, said first ground plate having a first bracket means extending from said second face of said mounting panel and in alignment with said holding portions of each of said ground terminal contact means,



a second ground plate mounted along said second panel face at said second end portion and having a second bracket means in alignment with said first bracket means and said holding portions,

ground bus bar means extending along said second face and connected to each of said holding portions of said ground terminl contact means and said first and second bracket means of said first and second ground plates,

a mounting hole in each of said first and second mounting end portions,

a fastener insertable through each of said mounting holes to connect said mounting panel to said bracket frame structure,

and a ground hole in each of said first and second ground plates in coaxial alignment with each of said mounting holes.

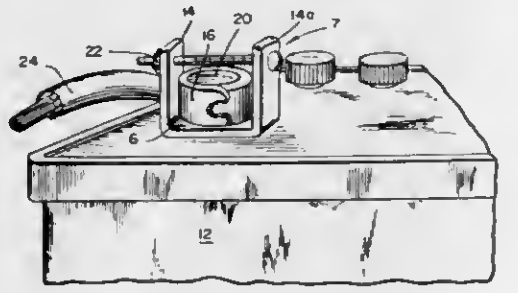
3,936,134
BATTERY CLAMP

Anthony G. Piscionere, Sr., 902 Kimball Ave., Bronxville, N.Y. 10708

Filed Oct. 4, 1973, Ser. No. 403,637

Int. Cl. H01r *11/26*

U.S. Cl. 339—235 2 Claims



1. A battery clamp comprising, in combination, a cylindrical-shaped laterally constrictable clamping member of springy material for clamping about a battery smooth post extending therethrough, a battery cable secured to an outer wall of said clamping member, a U-shaped member formed with a perforated base for receiving said battery post in engagement with said base, a pair of spaced constrictable arms extending upwardly of said base, said arms being spaced to clear said battery post and said clamping member, said clamping member being positioned between said arms, with the clamping member in alignment with the perforation in said base for receiving said battery post, and means for constricting said arms about said clamping member.

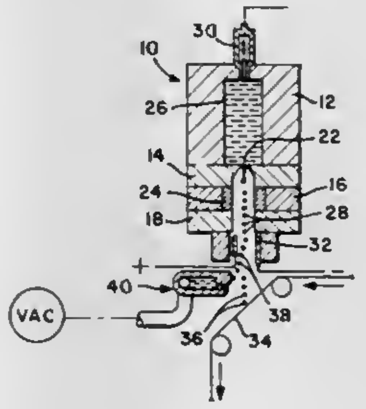
3,936,135
CATCHING APPARATUS AND METHOD FOR JET DROP RECORDING

Peter L. Duffield, Kettering, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 277,999, Aug. 4, 1972, abandoned. This application June 5, 1974, Ser. No. 476,384

Int. Cl.^{2} G01D *15/18*

U.S. Cl. 346—1 9 Claims



1. In a jet drop recording system an improved method of catching selected drops from a parallel row of drop streams comprising the steps of:

1. directing said drops toward a vertically oriented drop catching face provided with a capillary slot extending substantially the full length thereof,
2. establishing a continuous meniscus of recording liquid across the entrance to said slot, and
3. drawing away recording liquid which runs downwardly toward said slot by applying across the mouth of said slot a pressure differential great enough for removal of said liquid but less thana an amount equal to twice the liquid surface tension divided by the slot width.

3,936,136
MULTILAYER ANTI-REFLECTION FILM FOR ULTRAVIOLET RAYS

Hideo Ikeda, Kamakura, and Hideki Akasaka, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation-in-part of Ser. No. 211,175, Dec. 23, 1971, abandoned. This application Nov. 19, 1973, Ser. No. 416,826

Claims priority, application Japan, Dec. 29, 1970, 45-120942

Int. Cl.^{2} G02B *5/28*

U.S. Cl. 350—1 7 Claims

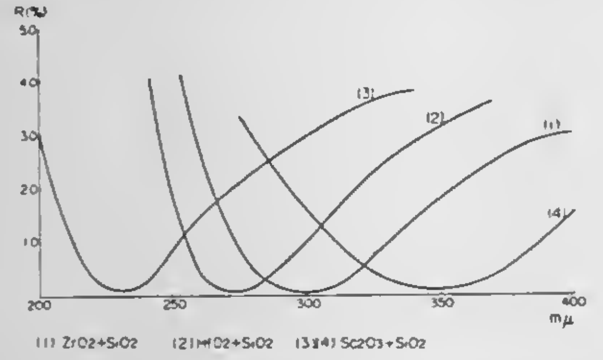
1. An anti-reflection film for ultraviolet rays comprising:

a substrate having a refractive index in the range of 1.6–1.4 and being transparent to the ultraviolet range; and a three-layer film consisting of

a. a first-layer having a refractive index n_1 in the range of 1.3–1.5 and an optical thickness n_1d_3 and being adjacent to air, where d_3 is a physical thickness of the first layer,

b. a second layer adjacent to said first layer and having a refractive index n_2 in the range of 1.6–1.7 and an optical thickness n_2d_2, where d_2 is a physical thickness of the second layer, and

c. a third layer disposed between said substrate and said second layer and having a refractive index $(n_1 + \Delta n)$



and an optical thickness $(n_1 + \Delta n)d_1$, wherein Δn has the relation:

$$|\Delta n/n_1| < 0.1$$

$n_1 d_3 = (n_1 + \Delta n)d_1$, and
$\Delta n > 0$, and

d_1 is a physical thickness of the third layer, said optical thickness of said three layers satisfying the following relation:

$$\frac{n_1 d_3}{\lambda s} + \frac{(n_1 + \Delta n)d_1}{\lambda s} = \frac{n_2 d_2}{\lambda s} = \frac{m}{2} = 2\alpha$$

where λs is the center wavelength within the ultraviolet range and m is integer (1, 2, 3. . . . .), and the following relation:

$$|\cos G| = \sqrt{n_1/(n_1 + n_2)}$$

where $G = 2\pi\alpha \cdot \frac{\lambda s}{\lambda}$, and

λ is a specific wavelength in the far peripheral range of $450m\mu$–$500m\mu$ or $150m\mu$–$180m\mu$, wherein an equivalent refractive index N of said three-layer film is in the range of 1.35–1.3 for the central ultraviolet range ($225m\mu$–$350m\mu$), less than 1.3 for the peripheral range ($200m\mu$–$225m\mu$ and $350m\mu$–$400m\mu$) and nearly zero at the specific wavelength λ.

3,936,137

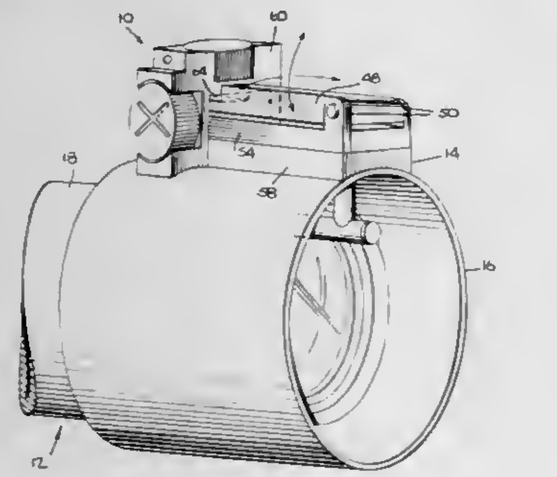
ILLUMINATED RETICLE PROJECTION SYSTEM

Alan Litman, Pittsburgh, Pa., assignor to Smith & Wesson Chemical Company, Inc., Rock Creek, Ohio

Filed July 3, 1974, Ser. No. 485,559

Int. Cl.² G02B *27/32*

U.S. Cl. 350—10 **6 Claims**



1. An illuminated reticle projection system for night vision equipment having an objective lens assembly comprising:

a frame having means for securement to the night vision equipment and carrying a reticle projector including a light source, a reticle mask and a projection lens, said light source being disposed to illuminate said reticle mask to project a reticle image, said projection lens having optical properties to project the reticle image at a substantially infinite conjugate into the entrance pupil of the objective lens assembly, an azimuth platform carried by said frame, means for pivotally mounting said azimuth platform for movement about a vertical axis, an elevation platform carried by said frame, means for pivotally mounting said elevation platform for movement about a horizontal axis, means coupling said reticle projector to one of said azimuth platform and said elevation platform for pivotal movement with said one platform about its axis, the mounting means for said one platform pivotally mounting said one platform to the other of said platforms, the mounting means for the other of said platforms pivotally mounting said other platform to said frame whereby said projector is mounted for pivotal movement with each of said azimuth platform and said elevation platform, and means for adjusting the angular position of each of said elevation platform and said azimuth platform to effect angular displacement of said projector about the respective axes.

3,936,138

METHOD OF RECONSTRUCTING HOLOGRAMS USING A REFLECTED UNDIFFRACTED BEAM AS A RECONSTRUCTION BEAM

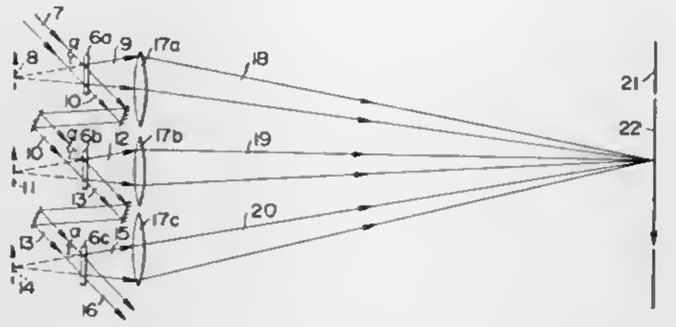
Masaru Noguchi, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed July 16, 1974, Ser. No. 488,945

Claims priority, application Japan, July 18, 1973, 48-81549

Int. Cl.² G03H *1/24, 1/30*

U.S. Cl. 350—3.5 **5 Claims**



1. A method of reconstructing a holographic image on an image-focusing plane by focusing first-order diffracted beams from holograms comprising the steps of:

preparing a plurality of substantially identical holograms of an object;

arranging said plurality of substantially identical holograms located in a plane with spaces therebetween which spaces are large enough to unobstructedly pass a first-order diffracted beam from each said hologram to an image-focusing plane;

impinging a reconstructing beam onto a first one of said holograms; impinging the undiffracted beam passing through said first one onto a second one of said holograms;

focusing a first-order diffracted beam from said first one onto the image-focusing plane;

repeating the steps of impinging the undiffracted beam from a prior one of said holograms onto the next succeeding one of said holograms and focusing the first-order diffracted beam from said prior one onto a focusing plane until the undiffracted beam impinges on the last one of said holograms, said first-order diffracted beams from holograms being focused in the same region of the focusing plane so that the images reconstructed by the diffracted beams from different holograms are substantially

registered with each other, whereby a single image of increased brightness is reconstructed.

3,936,139

HOLOGRAPHIC MEMORY PROVIDING BOTH ANGULAR AND TRANSLATIONAL REFERENCE BEAM DEFLECTIONS

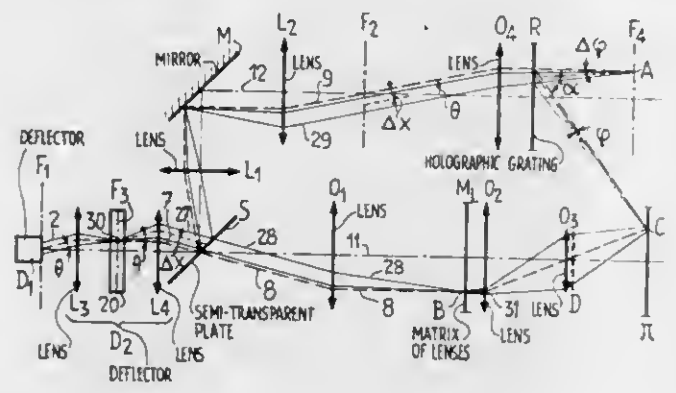
Jean Pierre Huignard, and Erich Spitz, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sept. 7, 1973, Ser. No. 395,080

Claims priority, application France, Sept. 12, 1972, 72.32257

Int. Cl.² G03H *1/26*

U.S. Cl. 350—3.5 **4 Claims**



1. A holographic data storage system for storing onto a predetermined area of a storage medium, and for retrieving from said area at least one group of data carried by a modulating object, said system comprising: a source of coherent radiation delivering a parallel beam; deflector means arranged for deflecting said parallel beam at an angle θ; beam translation means, arranged for receiving said deflected beam from said deflector means and for selectively laterally translating the angularly deflected beam to one of a plurality of laterally displaced positions while preserving the direction of propagation of the translated beam along the θ direction beam splitting means arranged for splitting said translated beam into an object beam and at least one reference beam; first stigmatic transmission means having an optical axis, arranged for focusing said object beam onto an illumination plane and at a lateral distance from said optical axis proportional to said angle θ; stigmatic convergent means positioned for projecting onto said storage medium an image of said illumination plane; second stigmatic transmission means having a further optical axis, arranged for focusing said reference beam onto a further illumination plane with an angle of incidence which is dependent upon said laterally displaced position, and at a further lateral distance from said further object axis proportional to said angle θ, and holographic means arranged for projecting within said predetermined area the reference beam emerging from said second stigmatic transmission means; said modulating object being disposed in the beam transmitted by said stigmatic convergent means, and the modulated radiation emerging from said modulating object falling onto said predetermined area for forming with said projected reference beam a recordable fringe pattern representative of said group of data.

3,936,140

ARRANGEMENT FOR SEQUENTIAL DATA STORAGE

Hartwig Ruell, Otterfing, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed July 31, 1974, Ser. No. 493,265

Claims priority, application Germany, Aug. 14, 1973, 2341140

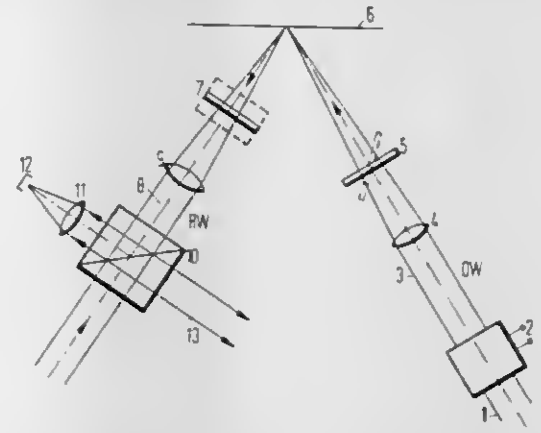
Int. Cl.² G03H *1/26*

U.S. Cl. 350—3.5 **3 Claims**

1. In an apparatus for sequential data storage having a coherent light source from which a source symmetrical object wave and reference wave each are directed through one of two spherical lenses and through one of two corresponding plane-parallel, transparent plates onto a storage medium moving along a path, the improvement comprising:

a beam divider in the path of the reference wave between said spherical lens and said source;

each plane-parallel plate being selectively positionable in a first position normal to its respective wave for non-holographic recording and readout of data and in a second position which is inclined in relation to the wave for holographic recording and read-out of data; and



each plane-parallel plate being swivelable between its said first and second positions about an axis normal to its respective wave and substantially through a center portion of said wave.

3,936,141

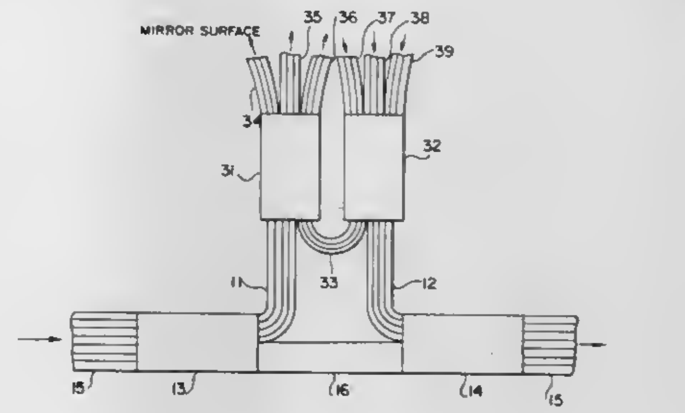
MULTIPLE OPTICAL CONNECTOR

A. Fenner Milton, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 29, 1974, Ser. No. 528,536

Int. Cl.² G02B *5/16*

U.S. Cl. 350—96 C **1 Claim**



1. In combination, an optical radiation coupler-connector, which comprises:

a main input optical multimode fiber optic bundle transmission bundle,

a main output optical multimode fiber optic bundle transmission bundle,

a main connector formed of an optical radiation transparent dielectric material optically connecting said main input bundle with said main output bundle,

said main connector including a first solid rod with an input end and an output end said input end optically connected to said main input bundle for conducting all of any input radiation to its output end, a second solid rod with an output and input end said output end optically connected with said main output bundle for conducting input radiation to all of said output bundle, a third solid rod having input and output ends, said input end receiving radiation from a portion of the output end of said first solid rod and conducting said received radiation to a portion of the input end of said second rod,

first and second auxiliary optical radiation connectors each having an input and an output end,

optical fiber bundle means optically connected to receive a portion of the output radiation from said first solid rod and transmitting said radiation to said input end of said first auxiliary connector,

optical fiber bundle means optically connected between said input end of said second solid rod and said output end of said second auxiliary connector,

an optical fiber bundle connected between the input end of said first auxiliary bundle and the output end of said second auxiliary bundle,

a plurality of separate optical fiber bundles optically secured to the output end of said first auxiliary optical radiation connector, and

a plurality of separate optical fiber bundles optically secured to the input end of said second auxiliary bundle.

3,936,142

COUPLING ARRANGEMENTS BETWEEN LIGHT CONDUCTIVE FIBERS AND BETWEEN LIGHT CONDUCTIVE FIBERS AND TERMINAL EQUIPMENT

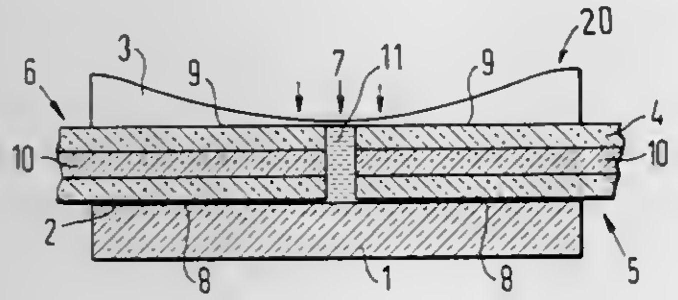
Ralf Kersten, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 7, 1974, Ser. No. 495,419

Claims priority, application Germany, Aug. 7, 1973, 2340019

Int. Cl.^{2} G02B *5/14*

U.S. Cl. 350—96 C **23 Claims**



1. A coupling assembly between sheathed light conductive fibers which includes:

at least one pair of light conductive fibers each comprising an internal and external terminal face and a sheath region at each terminal free having a straight base annular cross sectional area,

a core region disposed within said sheath region having a cross sectional area;

a plug sleeve comprising a solid parallelopiped, polished, flat surfaced base and an elastic upper portion archedly arranged above said base and attached thereto and having a longitudinal flare decaying in a direction away from each end face of said plug sleeve, wherein said upper portion exerts an inward compressive force directed toward said base; and

a longitudinal opening centrally extending between the base and the upper portion of said plug sleeve to accommodate the incident light conductive fiber, wherein said opening is externally flared at a periphery of said upper portion and adapted at a center of the plug sleeve to facilitate its interfacing with the cross sectional areas of the light conductive fibers.

3,936,143

OPTICAL FIBRE END CONNECTOR

Setsuo Sato, Yokohama, Japan, assignor to Aoi Sansho Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1974, Ser. No. 497,107

Claims priority, application Japan, Apr. 15, 1974, 49-042564

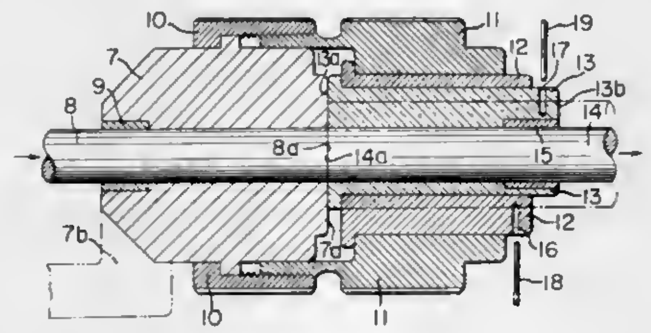
Int. Cl.^{2} G02B *5/14*

U.S. Cl. 350—96 C **4 Claims**

1. An optical fibre end connector comprising:

a. A first connector portion receiving a first optical fibre end to which another optical fibre end is to be connected, the first optical fibre end being in said portion so that its end surface lies in a plane of a surface wall of said first connector portion;

b. A second connector portion having an inner collar, means defining a hole extending longitudinally through said collar and being eccentrically displaced with respect to the longitudinal axis of said inner collar, an outer collar, means defining a hole extending longitudinally through said outer collar and being displaced eccentrically with respect to the longitudinal axis thereof, said inner collar being rotatably received within the hole in said outer collar, the distance between the center line of the hole in said outer collar and the center line of the hole in said inner collar being equal to the distance between the longitudinal axis of said outer collar and the longitudinal axis of said inner collar, means for rotating said inner and outer collars with respect to each other, the another fibre end being fixedly positioned within the hole in said inner collar and with the end surface of the another optical fibre end lying in a plane of a surface wall of said inner collar;



c. Support means rotatably receiving said outer collar and being adjustably positioned on said first connector portion, said support means being adjustable to move said surface wall of said inner collar into flush and abutting relationship with said surface wall of said first connector portion, whereby said inner and outer collars can be rotated with respect to each other to align another optical fibre end with the first optical fibre end.

3,936,144

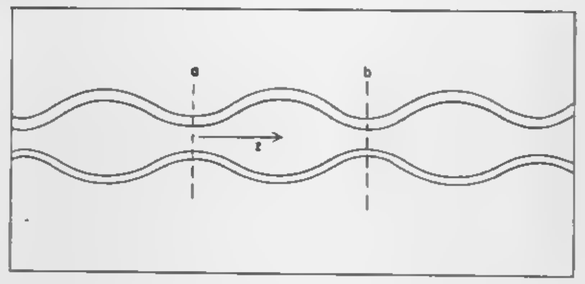
FREQUENCY SELECTIVE OPTICAL COUPLER

William M. Caton, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 12, 1974, Ser. No. 532,261

Int. Cl.^{2} G02B *5/14*

U.S. Cl. 350—96 C **4 Claims**



1. A frequency selective optical coupler comprising:

first and second optical waveguides disposed with substantially uniform periodic variations in spatial separation relative to a common directional axis between respective input and output terminals, including repetitive sections of close proximity to permit optical coupling between said optical waveguides;

said first optical waveguide having a different optical length than said second optical waveguide between contiguous sections of close proximity included within said substantially uniform periodic variations in spatial separation,

whereby light energy of a determinable frequency propagated along said first optical waveguide is substantially all coupled into said second optical waveguide over a determinable number of said repetitive sections between said input and output terminals, and light energy of all other frequencies is inhibited from being coupled into said second optical waveguide over said determinable number of said repetitive sections between said input and output terminals.

3,936,145

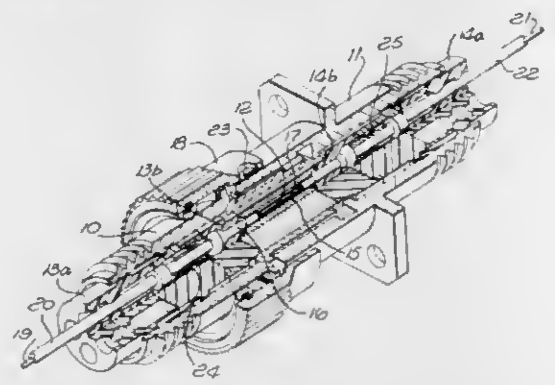
FIBER OPTIC ALIGNMENT SLEEVE

Ronald L. McCartney, Orange, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 7, 1974, Ser. No. 521,627

Int. Cl.^{2} G02B *5/14*

U.S. Cl. 350—96 C **16 Claims**



1. In a fiber optic connector for providing a removable light signal connection between the terminal ends of at least one pair of fiber optic cables, said pair including first and second cables each having a plurality of optical fibers and each including a termination pin of predetermined cross-sectional ends thereof, said connector further including first and second mating connector members adapted to contain at least said pair of cables and corresponding termination pins, the combination comprising:

retaining means within said first and second connector members, respectively, for retaining said termination pins and therefore said terminal ends of said corresponding first and second fiber optic cables in substantial axial light-transferring abutment when said first and second connector members are mated; and

means including an alignment sleeve of resilient material within said first and second connector members for effecting lateral alignment of said terminal ends of said termination pins and corresponding fiber optic cables, said sleeve including at least one axially extending slot through the wall of said sleeve over an axial dimension overlapping the point of said abutment, said sleeve being of an initial diameter over said axial dimension such that insertion of said termination pins produces resilient lateral expansion of said sleeve to produce inwardly directed radial forces tending to hold said terminal ends in lateral alignment.

3,936,146

IRREGULAR FERROELECTRIC ELEMENT FOR CONTROLLABLE SINGLE DOMAIN

Akio Kumada, Kodaira; Hiroshi Takano; Yoshizumi Eto, both of Hachioji, and Masao Hibi, Kodaira, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 3, 1970, Ser. No. 16,199

Claims priority, application Japan, Mar. 15, 1969, 44-19912

Int. Cl.^{2} G02F *1/05*

U.S. Cl. 350—149 **19 Claims**

1. An irregular ferroelectric element having a controllable single-domain comprising:

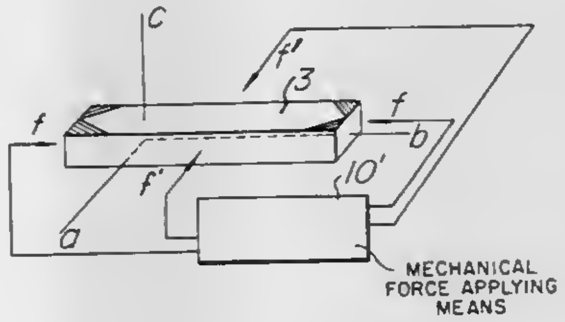
1. a substrate of an irregular ferroelectric crystal, having an opposite pair of major surfaces parallel to the Z-plane, said substrate comprising

   a. a first single-domain with a part of the periphery thereof extending in the <110> direction and having a first stationary polarity,

   b. a second single-domain with a part of the periphery thereof extending in the <110> direction and having a second stationary polarity which is opposite to said first stationary polarity, and

   c. a controllable single-domain with a part of the periphery thereof joining with said first single-domain in the <110> direction at the periphery of said first single domain, while the opposite part of the periphery of said controllable single-domain joins with said second single-domain in the <110> direction at the periphery of said second single domain, and having a domain - wall which extends in the <110> direction and which is reversibly movable in the <110> direction from one of the joining peripheries to the other, and

2. polarization reversal means disposed on the opposite Z-plane surfaces of said substrate, and covering at least said controllable single-domain, for controlling the polarity of said controllable single domain.



3,936,147

VARIABLE CHARACTERISTIC LIGHT FILTER

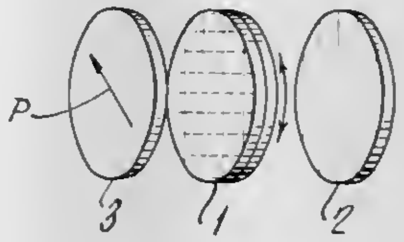
Sanjiro Murakami, Hyogo, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 15, 1973, Ser. No. 406,756

Claims priority, application Japan, Nov. 22, 1972, 47-134967

Int. Cl.^{2} G02B *1/24*

U.S. Cl. 350—158 **3 Claims**



1. A variable light filter system comprising a filter having a chromatic polarizing filter section including superimposed first and second chromatic polarizing filter components of different color transmission characteristics and whose polarizing axes are substantially perpendicular to each other and an achromatic polarizing filter section, said chromatic and achromatic polarizing filter sections being rotatable relative to each other, and a quarter wave retardation plate disposed in front of said filter and having its optical axis at an angle of substantially 45° to the vertical.

3,936,148

HEAD-UP DISPLAY UNITS AND OPTICAL DEVICES

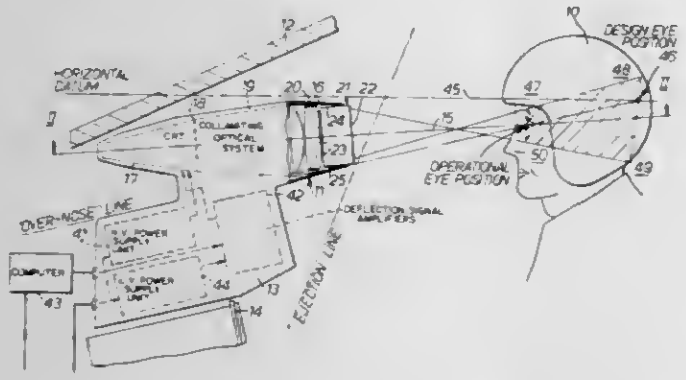
Stafford Malcolm Ellis, Ribblesdale, Ashford Road, Bearsted Maidstone, Kent, England

Filed May 31, 1974, Ser. No. 475,107

Claims priority, application United Kingdom, May 31, 1973, 25902/73; July 7, 1973, 32478/73; Nov. 3, 1973, 51134/73; Nov. 28, 1973, 55163/73

Int. Cl.^{2} G02B *5/04, 27/10*

U.S. Cl. 350—173 **39 Claims**



27. A head-up display unit which comprises a luminous data source, and between that source and an observer's observation position a beam-splitting periscopic device which is effective to deflect rays from that part of a scene ahead of the luminous data source which in the absence of the periscopic device would be obscured by the luminous data source, in such manner that the said part of the scene ahead is reconstituted at a position between the data source and the observation position, so that an observer at the observation position would have a substantially uninterrupted and undistorted angular field of view of the scene ahead superimposed upon the luminous data transmitted by the periscopic device.

32. An optical device

comprising two similar periscope-like elements each comprising means defining parallel-disposed, spaced, planar, light reflective, 'light input' and 'light output' optical faces,

the two elements being arranged in reverse relationship relative to one another on either side of a central plane of symmetry, with the respective light input faces spaced transversely apart on either side of the said plane, and with the respective light output faces adjoining one another at a common linear edge which lies in the said plane, and

supporting means for the said optical face defining means, the supporting means being arranged so that each eye of an observer looking at the light output faces whereby to observe through the device a distant scene lying ahead of the device in the direction of the said plane can see, and scan from side to side without interruption, both light output faces.

3,936,149

NON-HOMOGENEOUS OBJECTIVE LENS HAVING AN APERTURE DIAPHRAGM

Toshihiro Imai, Fuchu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1974, Ser. No. 511,464

Claims priority, application Japan, Oct. 4, 1973, 48-110960

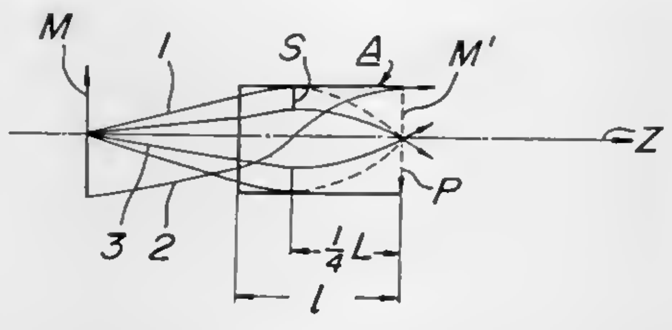
Int. Cl.^{2} G02B *3/00*

U.S. Cl. 350—175 GN **5 Claims**

1. A non-homogeneous objective lens comprising a small rod-shaped non-homogeneous light focussing and conducting body whose refractive index N(x) at a position radially spaced apart from an optical axis by a radius x is given by

$$N(x) = No(1 - ax^2)$$

where No is a refractive index at the optical axis and a is a proportional constant, and a diaphragm for giving illumination which is sufficient to satisfy a rear relay lens system and arranged near a position which is spaced apart from a projected image end surface of the objective lens by



$$(\tfrac{1}{4} + n)L$$

where n is a positive integer inclusive of O and

$$L = \frac{2\pi}{\sqrt{2a}}$$

3,936,150

LENS SELECTION DEVICE

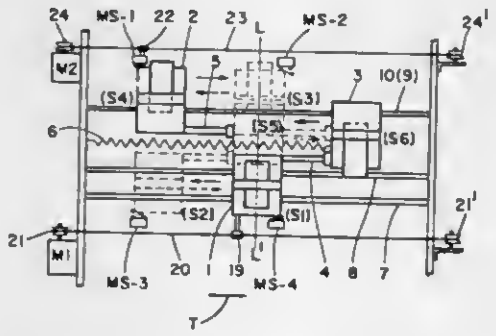
Hiroshi Ikeda, Aichi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1974, Ser. No. 533,920

Claims priority, application Japan, Dec. 22, 1973, 49-2168[U]

Int. Cl.^{2} G02B *15/04;* **G03B** *27/40*

U.S. Cl. 350—183 **10 Claims**



1. A lens selection device including three magnification lenses each movably disposed in a direction perpendicular to a single reference axis and adapted to be shifted to a respective operative position on the reference axis, characterized in that:

two of the lenses are each adapted to be shifted by separate drive means while the third of the three lenses is provided with means to follow the movements of the aforesaid two lenses, said third lens being movable in response to particular movements of the aforesaid two lenses, whereby a desired one of the three lenses can assume an operative position on the reference axis.

3,936,151

CORRECTION LENSES UTILIZED TO FORM FLUORESCENT SCREENS OF COLOUR PICTURE TUBES

Eiichi Yamazaki, Ichihara; Toshio Ueda; Koichi Maruyama, both of Mobara, and Iwao Ogura, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

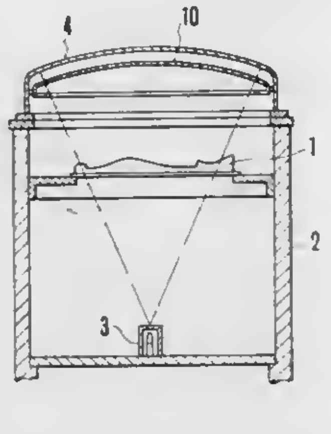
Filed Dec. 4, 1973, Ser. No. 421,740

Claims priority, application Japan, Dec. 4, 1972, 47-120649

Int. Cl.^{2} G02B *3/04;* **G03B** *27/00*

U.S. Cl. 350—189 **7 Claims**

1. A correction lens for photographically forming phosphor elements on the inner surface of a panel of a color picture tube to cause the light path to approximate the impingement point on said inner surface for electron beams emanated from electron guns disposed in the neck portion of the colour picture tube, said correction lens being comprised of a plurality of lens blocks formed at least on one side with an effective surface thereon, said blocks each having a particular refractive characteristic determined in accordance with a portion of a fluorescent screen to be made up of said elements said correction lens having at least some step-shaped border lines formed in different configurations and sizes between said blocks, any such step-shaped border line not being closed upon itself and without terminating in a point common to all said step-shaped border lines, at least some of said effective surfaces lying between said step-shaped border lines hut not completely bounded thereby whereby the number of blocks comprising said correction lens is reduced.



3,936,152

BINOCULAR VIEWING DEVICE

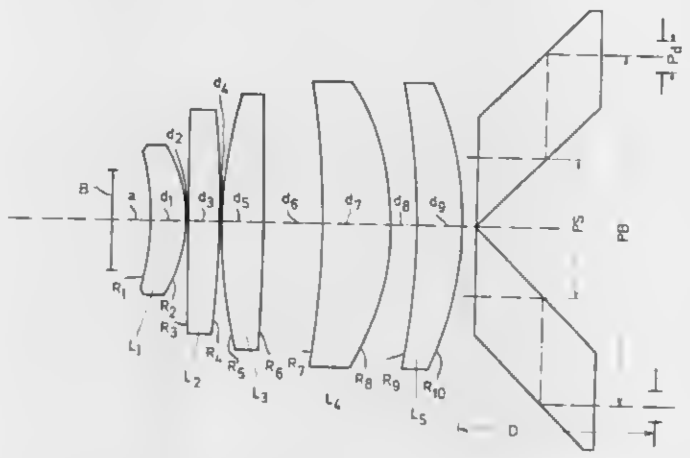
Friedrich Aurin, Heidenheim-Schnaitheim; Paul Kantor, Aalen; Helmut Knutti, Oberkochen, and Hans-Richard Weinheimer, Konigsbronn, all of Germany, assignors to Carl Zeiss Stiftung, Oberkochen, Germany

Filed Apr. 23, 1974, Ser. No. 463,380

Claims priority, application Germany, Apr. 28, 1973, 2321716

Int. Cl.^{2} G02B *25/00, 21/20*

U.S. Cl. 350—202 **3 Claims**



1. A light weight hand-held device for magnified binocular viewing of fluorescent screens and the like, comprising only a single optical magnification system producing the entire desired magnification for binocular viewing, said optical magnification system including at least four individual lens elements with at least one aspherical surface, each of said individual lens elements being made of optical material having relatively low specific gravity and relatively high index of refraction, the magnification system being corrected, for an interpupillary distance (PS) of the optical system which corresponds approximately to the equivalent focal length (f) of the system, for spherical aberration, sine condition, and for a viewing angle of more than 12° for coma and astigmatism and distortion, said device having two rhombic prisms located behind the last surface of said single optical system, said prisms being so placed as to effect a pupillary division and to increase the interpupillary distance (PS) at said last surface to the interpupillary distance (PB) of an observer using the device, the lens elements and prisms being constructed and arranged with proportions substantially in accordance with the following structural data:

Lens	Radii mm.	Thicknesses and Spacings, mm.	Glass	
			N	V
	$R_1 = -40.4$			
L_1		$d_1 =$ 6.8	1.80518	23.43
	$R_2 = -26.8$			
		$d_2 =$ 0.1		
	$R_3 = +494.0$			
L_2		$d_3 =$ 6.2	1.713	53.83
	$R_4 = -191.1$			
		$d_4 =$ 0.1		
	$R_5 = +93.7$			
L_3		$d_5 =$ 7.9	"	"
	$R_6 = -755.3$			
		$d_6 =$ 10.7		
	$R_7 = -154.0$			
L_4		$d_7 =$ 12.4	"	"
	$R_8 = -47.6$			
		$d_8 =$ 4.8		
	$R_9 = -137.2$			
L_5		$d_9 =$ 8.1	"	"
	$R_{10} = -52.3$			

Focal length	= f =	32. mm
Distance from image being viewed to first vertex	= a =	7.0 mm
Interpupillary distance of system	= PS =	25. mm
Interpupillary distance of observer	= PB =	58–72 mm
Distance of exit pupil from last vertex along stretched optical path, reduced to air	= D =	40 mm
Diameter of pupil	= P_d =	6.0 mm
Diameter of image to be observed	= B =	18.0 mm

Aspherical surfaces data:

	Surface R_3	Surface R_8	Surface R_{10}
$\overline{c_1}$	$2.0350869 . 10^{-6}$	$1.5410828 . 10^{-7}$	$-5.6828165 . 10^{-10}$
$\overline{c_2}$	$-1.3712518 . 10^{-8}$	$-7.7980634 . 10^{-10}$	$1.6465498 . 10^{-9}$
$\overline{c_3}$	$2.2478209 . 10^{-11}$	$-8.2352009 . 10^{-13}$	$-9.6092972 . 10^{-13}$
$\overline{c_4}$	$-1.1904954 . 10^{-14}$	$6.8468427 . 10^{-16}$	$9.2018506 . 10^{-16}$

wherein the individual lens elements numbered consecutively from front to rear are indicated by the respective subscript numerals used with the letter L, the radii of curvature of the surfaces of such lens elements are respectively indicated by the letter R with a numerical subscript corresponding to consecutive numbering of the surfaces from front to rear, the axial thicknesses of the respective lens elements and of the air space between the elements are respectively indicated by the letter d with a numerical subscript corresponding to consecutive numbering of such thicknesses in a single series applying to both the element thicknesses and the air space thicknesses, the index of refraction of the material of which each lens element is made is indicated in the column headed N, the index of dispersion of such material is indicated in the column headed V, both indices being with reference to the yellow helium line having a wavelength of 5875.6 Angstrom units, and the values respectively indicated by the letters C with numerical subscripts are the values of the coefficients used in defining the aspherical shape of the respectively indicated lens surfaces, according to the aspherical equation

$$p = h^2/2r + c_1h^4 + c_2h^6 + c_3h^8 + c_4h^{10}$$

wherein p = the height of arc or camber, h = the corresponding meridional coordinate, and r = the radius of the zenith or vertex.

3,936,153

RETROFOCUS TYPE OBJECTIVE LENS SYSTEM

Toshinobu Ogura, Tondabayashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 11, 1974, Ser. No. 450,249

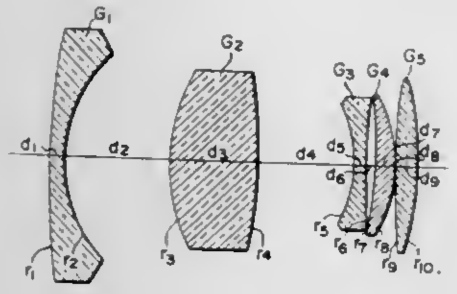
Claims priority, application Japan, Mar. 12, 1973, 48-27978

Int. Cl.^{2} G02B *9/60*

U.S. Cl. 350—216 **3 Claims**

1. A retrofocus objective lens system comprising a negative meniscus front first lens having a concave rear face, a biconvex second lens, a biconcave third lens, a positive meniscus fourth lens with a convex rear face, and a positive fifth lens, said lens system satisfying the following conditions:

$$1.6\ (d_5 + d_6 + d_7 + d_8 + d_9) >$$
$$d_4 > d_5 + d_6 + d_7 + d_8 + d_9\ 0.7d_4 < d_3 < 1.3d_4$$

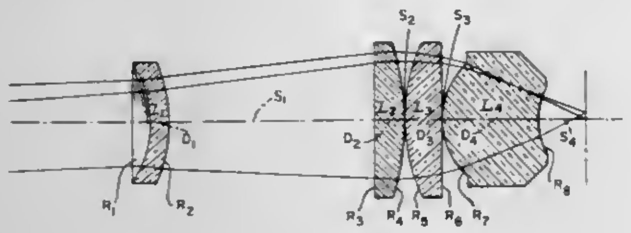


$$-0.5 < \frac{r3}{r4} < -0.1$$

wherein r_j is the radius of curvature of the jth lens face successively designated from the front lens face, and d_j is the axial distance between the jth and the $j+1$ lens faces of the lens system.

3,936,154
SHORT FOCAL LENGTH LARGE APERTURE OPTICAL SYSTEM

Andor A. Fleischmann, Northbrook, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Nov. 11, 1974, Ser. No. 522,654
Int. Cl.² G02B *9/12, 9/34, 13/18*
U.S. Cl. 350—220 **2 Claims**



1. An optical system of relatively short focal length and large aperture having substantially the following specification:

EFL = 7.58mm
½ Angle of Field = 2.58°

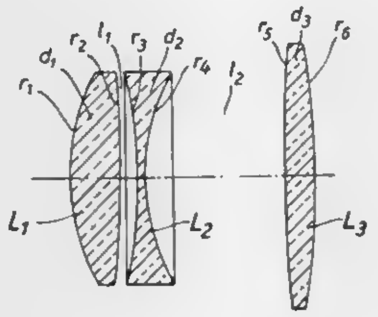
LENS	RADII (IN.)	THICKNESS (IN.)	SPACING (IN.)
L_1	R_1 =− .3000		
		D_1 = .0500	
	R_2 = .4561		
			S_1 = .6391
L_2	*R_3 =−18.01123		
		D_2 = .0993	
	[R_3 = A(1)] R_4 = .7530		
			S_2 = .0500
L_3	R_5 = .6069		
		D_3 = .1073	
	R_6 = 6.5060		
			S_3 = .0070
L_4	*R_7 = .23131		
		D_4 = .2923	
	[R_7 = A(2)] [R_8 =− 6121] R_8 =− .2161		
			S_4 = .1450 BFL

ALL ELEMENTS: V=57 4, N_D=1 4917

wherein the first column lists the lens elements numerically starting at the ray entrance side of the system which elements each have the same dispersive index and refractive index; the second column lists the respective base radii and the vertex radii of the aspheric surfaces *R_3 and *R_7; the negative (−) values of the radii indicate surfaces which are concave; the third column lists the thickness D_1 to D_4 of the respective elements; and the fourth column lists the axial spacings S_1 to S_4 between the respective elements, and the image plane.

3,936,155
THREE-ELEMENT PROJECTION LENSES

Kurt Kirchhoff, Hamburg-Lurup, Germany, assignor to Heinrich Reichmann, Hamburg-Lurup, Germany
Filed Jan. 9, 1974, Ser. No. 431,680
Claims priority, application Germany, Jan. 10, 1973, 2300985
Int. Cl.² G02B *9/04*
U.S. Cl. 350—226 **2 Claims**



1. A triplet-type three-element projection lens particularly suitable for overhead projectors projecting non-monochromatic light, comprising, in combination, a convergent front lens element, a divergent center lens element and a convergent rear lens element in aligned relationship defining a light path, said lens elements being formed of substantially the same optical glass having a refractive index of less than 1.535, said lens having the following design parameters, related to a focal length of $f' = 100$:

Image intercept length s' = 92.69
Image angle 26 = 43°
Petzval ΣP = 0.524

Lens	element/Radii	Thicknesses	Refractive Index n_d	Dispersion ν_d	Diameter
	$r_1 = +28.132$				
L_1		$d_1 = 2.49$	1.52249	59.48	19.4
	r_2 = plane				
		$p_1 = 4.52$			
	$r_3 = -35.827$				
L_2		$d_2 = 0.87$	1.52249	59.48	15.3
	$r_4 = +35.827$				
		$p_2 = 4.52$			
	r_5 = plane				
L_3		$d_3 = 2.49$	1.52249	59.48	19.4
	$r_6 = -28.132$.				

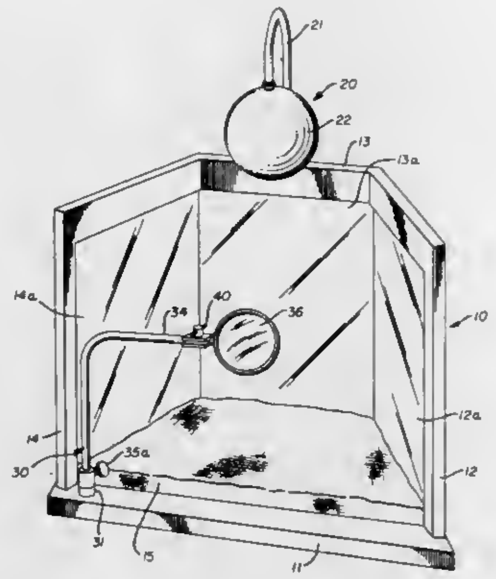
3,936,156
JEWELRY DISPLAY AND VIEWING DEVICE

Jerry Shaw, 50 W. Fairlawn Blvd., and Samuel G. Solitt, 2121 Brookshire Road, both of Akron, Ohio 44313
Filed Aug. 14, 1974, Ser. No. 497,265
Int. Cl.² G02B *5/08, 27/02*
U.S. Cl. 350—235 **5 Claims**

1. A jewelry display and viewing device, comprising:

A. a plurality of interconnected upstanding frames;
B. a mirror mounted on the inner surface of each of said frames:
C. a base member having upper and lower planar faces;
D. a cushion member mounted on said upper planar face of said base member;
E. said frames being secured to the periphery of said base member and projecting upwardly therefrom;
F. an adjustable magnifying device disposed in overlying relationship with said base member; and

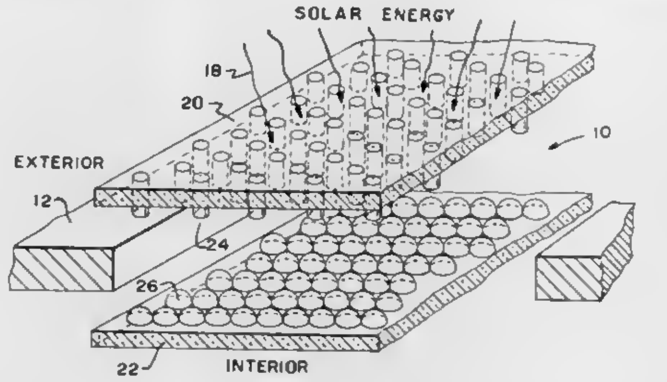
G. a light source



1. carried by one of said frames
2. in overlying relationship with said base member
3. and in substantially overlying relationship with said magnifying device.

3,936,157
HIGH EFFICIENCY LIGHT TRANSMITTING WINDOW PANEL

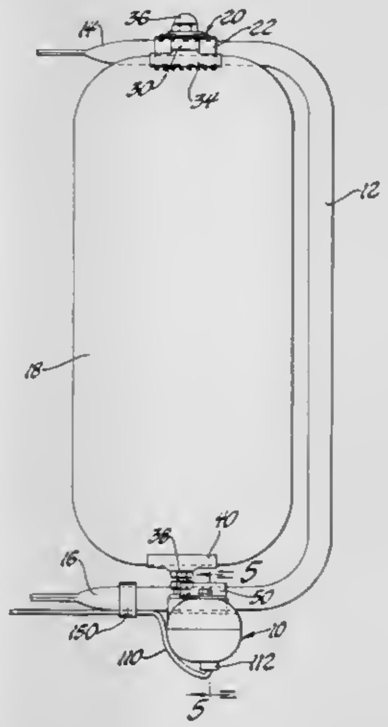
Narinder S. Kapany, Woodside, Calif., assignor to Kaptron, Inc., Palo Alto, Calif.
Filed Apr. 22, 1974, Ser. No. 462,856
Int. Cl.² G02B *17/00*
U.S. Cl. 350—258 **10 Claims**



1. A window panel comprising a pair of spaced apart transparent sheets, perpendicular supports for keeping the sheets spaced apart and for segmenting the air space between the sheets to prevent heat loss due to convective air currents, the supports being made of light transmitting material arranged to transmit incident light striking the window within a predetermined angle of acceptance through the window panel by means of multiple total internal reflections.

3,936,158
REMOTE CONTROL REAR VIEW MIRROR OPERATING MECHANISM

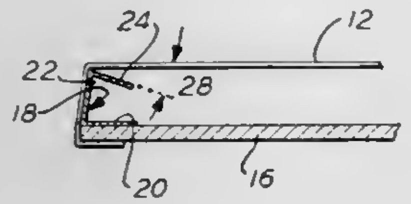
Joseph Cianciolo, and Robert E. McGargal, both of Grand Rapids, Mich., assignors to Rem Die Casting, Inc., Grand Rapids, Mich.
Continuation of Ser. No. 418,473, Nov. 23, 1973, abandoned. This application Dec. 30, 1974, Ser. No. 537,534
Int. Cl.² G02B *5/08*
U.S. Cl. 350—289 **1 Claim**



1. An electrical drive and switching arrangement for reversible electric motors operative of rear view mirrors for vehicles and providing for remote control actuation thereof, said arrangement including a housing structure for a small reversible electric motor, a threaded shaft driven by the motor and having a travel nut thereon, a mirror member and a mirror drive connection with follower operatively engaged with the travel nut, all of which provides an operating mechanism for a remote control rear view mirror, said housing structure comprising a complimentary housing member parts of relatively thin walled construction and like contour in cross-section for receiving said motor and shaft longitudinally therebetween and having them closely fitted therewithin, said housing member parts having their opposite and respective ends curved and contoured to also more closely encase the ends of said motor shaft and to provide structural strength in combination and to the exclusion of non-functional internal walls and ribs, a motor mounting wall member respective within and between said housing parts and having the reversible electric motor pre-assembled thereto and extended on one side thereof and with the threaded shaft driven by the motor extended therethrough and on the other side thereof, receptive means formed within said housing member parts and grooved to receive and retain said mounting wall member in precise location therebetween and in cross-sectional strengthening relation transversely across said housing member parts as received and entrapped therewithin, parallel spaced guide walls provided longitudinally within one of said housing member parts from said mounting wall receptive means towards the end of said one housing part for retaining the threaded shaft and its travel nut therebetween and providing added structural strength to said housing part, bearing receptive means provided between the ends of said guide walls and bearing means receptive in said means and of the end of said threaded shaft for supporting said threaded shaft and its travel nut relatively spaced from the bottom wall of said one housing part, means received through the other of said housing member parts and including said mirror drive connection and said follower for travel nut engagement, and means sealing housing member parts together and retaining said operating mechanism in assembly as described therebetween, electrical means received and retained between said guide walls lengthwise under the threaded shaft for operative control of said motor and for contact engagement with said travel nut to effectuate reverse drive of said motor at end travel positions upon actuation of reversible switch means, said travel nut being relieved transversely thereacross an opposite sides thereof to afford relative bending freedom longitudinally for eliminating thread play and having a downwardly tappering slot receptive of the end of said follower or like shape therewithin, and said follower supporting the weight of said mirror member and mirror drive connection to provide the close fitting of said travel nut on said threaded shaft and the contact engagement required.

3,936,159
HEAT SHRUNK PLASTIC FILM MIRROR

Stanford Pavenick, South Orange, N.J., assignor to New Age Mirror & Tile Industries, Newark, N.J.
Filed Mar. 15, 1974, Ser. No. 451,652
Int. Cl.² G02B *5/08*
U.S. Cl. 350—310 20 Claims

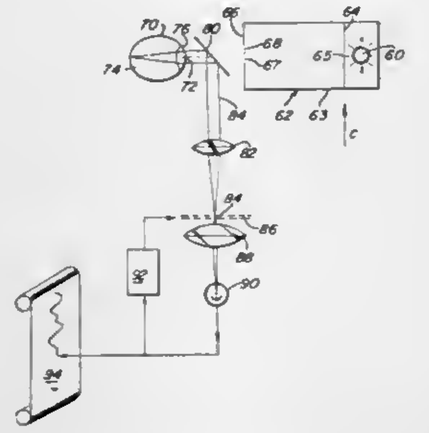


1. A plastic film mirror having a definable periphery and an interior comprising:
- a frame having a rigid base section and a resilient upstanding upper section connected thereto capable of bending inwardly from an equilibrium position toward the interior of said mirror;
- securing means attached to at least a portion of said frame; and,
- a metalized, metalized, plastic film securely attached to said frame by said securing means, said film covering at least a portion of the area bounded by the periphery of said upstanding upper resilient section and being held in constant, uniform tension by the resilience of said resilient upstanding upper section of said frame, said film forming a primary reflective surface of said mirror which is generally rectangular in shape,
- said resilient upstanding upper section including a plurality of substantially straight frame members each having a foot, a sidewall section substantially perpendicular to and connected at one edge thereof to said foot; and an inwardly directed rim connected to said sidewall section at the edge farthest removed from the edge connected to said foot, said rim being inclined downwardly from the edge of said sidewall toward said base section, said frame further including a plurality of corners formed where the ends of said frame members are in closest proximity to each other, said corners being formed in such a manner that there is a sufficient gap between the sidewalls of adjacent frame members so that said sidewall section and said rim of said frame members can bend inwardly under the tension of said film without hindering each other.

3,936,160
INTERFEROMETER FOR THE MEASUREMENT OF WAVEFRONT SECTIONS OF GENERAL IMAGING SYSTEMS INCLUDING THE HUMAN EYE

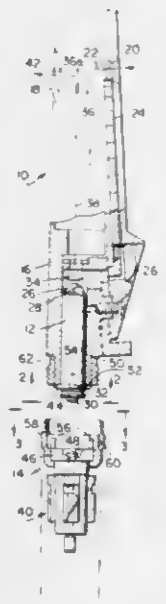
Karlheinz Von Bieren, Tudor Hill Laboratory, F.P.O., N.Y. 09560
Filed Oct. 15, 1973, Ser. No. 406,596
Int. Cl.² A61B *3/10*
U.S. Cl. 351—6 10 Claims

1. An interferometer for measuring aberrations in a lens system comprising movable means for generating a Fourier transform pattern in an eye, means for reflecting said pattern in said eye onto a mask, said mask defining slotted aperature means therein to allow a portion of said reflected pattern to pass therethrough onto a recording means, an imaging lens positioned in the path of said reflected pattern between said reflecting means and said mask and a relay lens positioned in the path of said reflected pattern between said mask and said recording means, said recording means comprising high speed film which records the aberrations of the eye.



3,936,161
OPHTHALMOSCOPE ILLUMINATION ARRANGEMENT

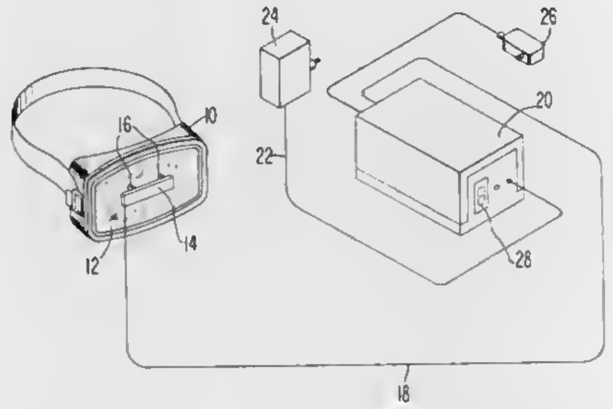
Helmut A. Heine, Herrsching, Upper Bavaria, Germany, assignor to Propper Manufacturing Company, Inc., Long Island City, N.Y. and Optotechnik Heine KG, Herrsching, Upper Bavaria, Germany
Filed Aug. 14, 1974, Ser. No. 497,187
Int. Cl.² A61B *3/12*
U.S. Cl. 351—6 3 Claims



1. An ophthalmoscope comprising an ophthalmoscope chassis defining a bulb-receiving sleeve therein, a bulb carrier shaped to be received within said sleeve, said carrier including stop means with the distance between the filament of said bulb and said stop means being predetermined to establish the longitudinal position of said filament in said chassis, rotational guide means associated with said sleeve and corresponding rotational guide means associated with said carrier, alignment of said guide means establishing the rotational position of said carrier with said sleeve, said guide means being fixed with respect to said filament so that alignment of said guide means establishes the rotational position of said filament within said chassis to provide most effective illumination, and closure means positioned over said sleeve for securing said carrier within said sleeve, said closure means including rotational guide means engaging the rotational guide means of said sleeve and said carrier, said closure means rotating over said sleeve on attachment thereof to sequentially engage the guide means of said carrier and the guide means of said sleeve to automatically rotate said carrier into proper position as said closure means is attached.

3,936,162
NIGHT VISION TESTING METHOD AND APPARATUS

Carl Erik Torsten Krakau, Bengt Lidforss v.1, Lund, Sweden (S-22365), and Rolf Gunnar Ohman, Odarslov 88, Lund, Sweden (S-22590)
Filed May 20, 1974, Ser. No. 471,669
Claims priority, application Sweden, May 23, 1973, 7307223
Int. Cl.² A61B *3/06*
U.S. Cl. 351—17 10 Claims



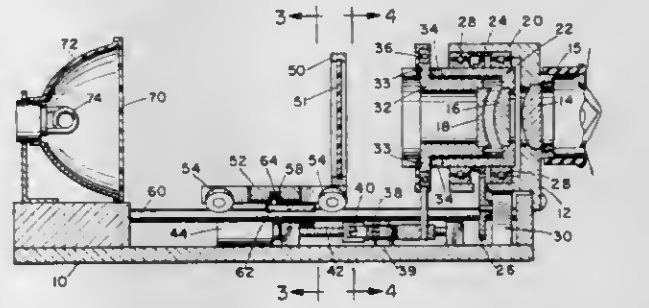
1. Night vision testing apparatus for determining a time based dark adaptation characteristic of a subject comprising means for presenting a light display to the subject at variable intensities, means for automatically and incrementally varying the intensity of the light display in a fixed, time ordered sequence, means for displaying a numerical quantification of the intensity of the light display at each increment and means operable by the test subject for selectively stopping and resetting the sequence of varying light intensities to an initial light intensity when the subject first perceives the displayed light, to give a plurality of independent measurements of the subject's light sensitivity at different points in time during a single dark adaptation process.

9. A method of testing the time based night vision characteristics of a subject during a single course of dark adaptation comprising the steps of presenting a light display to the subject, automatically, incrementally varying the intensity of the light display in a fixed, time ordered sequence, displaying a numerical quantification of the intensity of the light display at each incremental step and having the test subject selectively stop, reset and recycle the sequence of varying light intensities from an initial light intensity when he first perceives the light display.

3,936,163
VISION EXAMINATION LENS SYSTEM

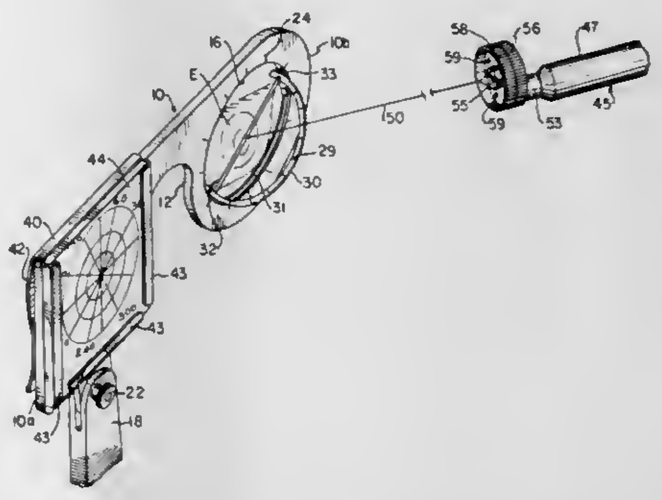
John E. Toth, San Diego, Calif., assignor to Gilber B. Razran, San Diego, Calif.
Filed Sept. 10, 1973, Ser. No. 395,658
Int. Cl.² A61B *3/02*
U.S. Cl. 351—17 6 Claims

1. An optical system for use in testing human vision as an aid in the prescription of corrective lenses and other vision examination, wherein the improvement comprises:
- a frame,
- lens means mounted on said frame for producing a spherical power of a nominal fixed focal length and a variable cylindrical power,
- said lens means comprising a first spherical lens fixedly mounted on said frame defining an optical axis, and first and second cylindrical lenses having substantial cylindrical power of substantially equal and opposite magnitude,
- said first and second cylindrical lenses being mounted on said frame for translation relative to one another along said optical axis and being rotatable about said optical axis,
- the cylindrical axes of said first and second cylindrical lenses being maintained parallel,
- a target,
- said target and said lens means being mounted on said frame for relative movement along said optical axis between points substantially less and substantially more than the nominal focal length of said lens means,
- and an eye piece mounted on said frame in position for viewing said target through said lens means.



3,936,164
INSTRUMENTS FOR MEASURING VISUAL FIELDS

Samuel W. Cohen, Brooklyn, and Anton Banko, Bronx, both of N.Y., assignors to Surgical Design Corporation, Long Island City, N.Y.
Continuation of Ser. No. 273,150, July 19, 1972, abandoned. This application Feb. 3, 1975, Ser. No. 546,404
Int. Cl.² A61B *3/02;* G02B *5/16*
U.S. Cl. 351—23 27 Claims



1. A perimeter instrument for making measurements of the visual field of an eye of a human comprising in combination a frame, said frame formed with an opening therein to accommodate viewing therethrough by the eye whose visual field is to be measured, protractor means, means attached to said frame for holding said protractor means in said opening, said protractor means including a base line portion extending across said opening and a measuring portion for indicating an angular relationship with respect to a point on said base line, a movable object to be viewed by the eye when in said opening, and elongated means connected between said object and said instrument, said elongated means intersecting said point on said base line portion and having a portion thereof lying adjacent said measuring portion of said protractor means, said portion of said elongated means adjacent said measuring portion of said protractor means indicating the angle of said object with respect to the base line portion.

An instrument for use in the measurement of the visual field of an eye of a human comprising a frame in the general shape of a pair of eyeglasses, said frame formed with an opening at a position normally occupied by one of the eyeglass lenses, protractor means in said opening for measuring the visual field of an eye looking through said opening, a record medium having indicia thereon corresponding to the visual field and means for mounting said record medium at the position normally occupied by the other of the eyeglass lenses.

3,936,165
EYEGLASSES

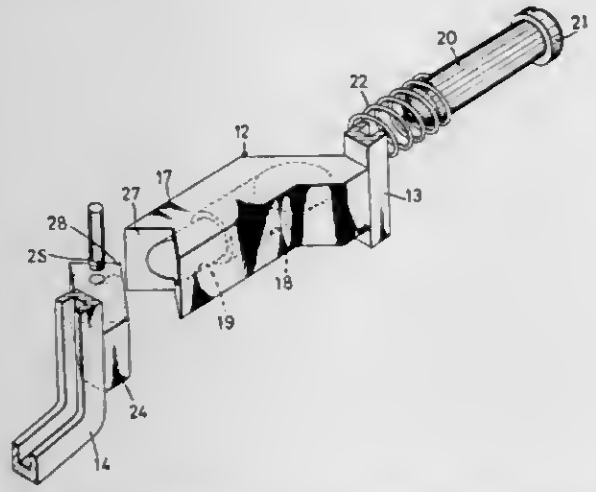
Ihachi Nosaka, No. 17-16, Kita Yotsui-cho, Fukui, Fukui, Japan

Filed July 29, 1974, Ser. No. 492,453

Claims priority, application Japan, Nov. 15, 1973, 48-128661

Int. Cl.² G02C *5/04*

U.S. Cl. 351—128 **1 Claim**



1. In a pair of eyeglasses, a pair of glass rims, and between the glass rims, in combination:

a. a cylindrical nose bridge having a longitudinal recess at one end, said recess having an inner space and a diametrically enlarged chamber at the inside of said recess with an inner wall;

b. a shaft with a flange, said shaft extending therethrough from said one end with a connecting aperture at said shaft other end;

c. a spring wound around said shaft sandwiched in a compressed state in said chamber between said flange at the one end of said shaft and said inner wall, partitioning said chamber from said inner space so that said spring may bias said shaft in the direction of the flange; and,

d. a projecting connecting portion on one of said glass rims and a penetrating holding pin passing through said shaft connecting aperture, said pin penetrating through said connecting portion and said shaft at said other end, connecting said one glass rim to said other end,

whereby said one rim at said projecting connecting portion detachably engages said bridge under the pulling effect of said spring, said rim being able to turn around or turned back by pulling out said rim from said bridge, the other rim being coupled to the bridge said one end.

3,936,166
MULTIPURPOSE AUDIO-VISUAL CASSETTE METHOD

Donald T. Scholz, Watertown, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 374,578, June 28, 1973, Pat. No. 3,848,977. This application Aug. 5, 1974, Ser. No. 494,837

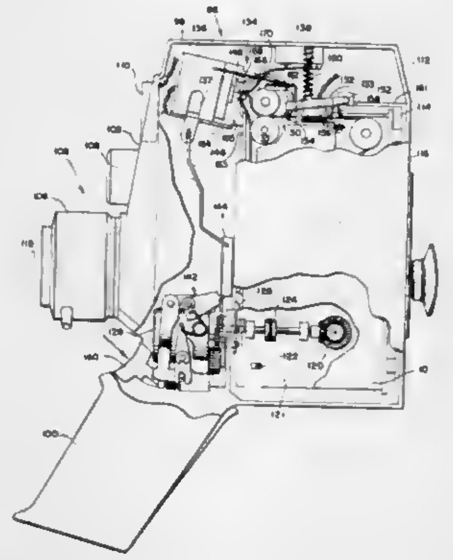
Int. Cl.² G03B *31/00*

U.S. Cl. 352—38 **3 Claims**

1. A method of operating a compact film handling cassette in both photographic and audio operational modes, said cassette including a housing, a strip of photographic film material retained within said cassette housing, opening defining means in said cassette housing for providing a pair of spaced apart stations, one of said stations being configured for operation of a photographic program with said film strip and the other of said stations being configured for operation of an audio program with said film strip, means within said housing for guiding said film strip along a given path within said housing between said stations, said guiding means including means for storing an excess of film between said stations in a free loop extending exteriorly of said cassette housing through a portion of said opening defining means located between said stations, said method comprising the steps of:

advancing said film strip in a given direction so that any given portion of said film strip initially proceeds through a first of said stations and then through a second of said stations, said advancing step including advancing said film strip in said given direction intermittently through said one station so as to progressively present incremental sections of such film strip at said one station and simultaneously advancing said film strip in said given direction substantially continuously through said other station;

initially varying the relative rate of advancement of said film strip through said stations to advance said film strip through said first of said stations at an average rate of advancement greater than the average rate of advancement through said second of said stations so as to provide an excess length of film between said stations and form a free film loop of predetermined size extending through said opening defining means, said loop being configured for isolating said intermittent and continuous advancements of said film strip;



then maintaining substantially equal average rates of advancement through said stations so as to maintain said predetermined size of said film loop;

performing a photographic program with said incremental sections presented at said one station by said intermittent advancement;

performing an audio program with portions of said film strip presented at said other station as said portions are advanced therethrough; and

finally varying the relative rate of advancement through said stations to advance said film strip through said first of said stations at an average rate of advancement less than the average rate of advancement through said second of said stations so as to substantially eliminate said excess length of said film strip and draw said loop of film back into said cassette housing at the termination of said programs.

3,936,167
DEVICE FOR AUTOMATICALLY CONTROLLING A PROTECTIVE FILTER IN A FILM PROJECTOR

Shigeo Wakahara, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 20, 1974, Ser. No. 499,079

Claims priority, application Japan, Aug. 24, 1973, 48-94275

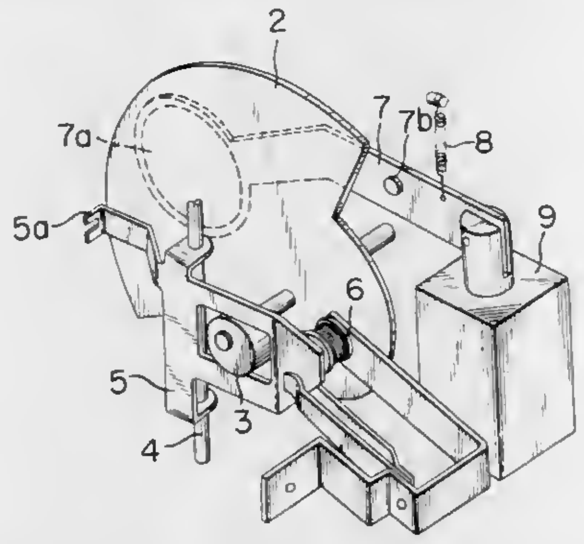
Int. Cl.² G03B *21/16*

U.S. Cl. 352—148 **6 Claims**

1. A filter control device for a film projector of the type in which film is advanced in response to film advance signals, comprising:

means for detecting the time intervals between successive film advance signals; and

control means responsive to said detecting means for causing insertion of a filter into the light path between a projection lamp of said projector and said film when a detected time interval exceeds a predetermined time limit.



3,936,168
FILM CAMERA

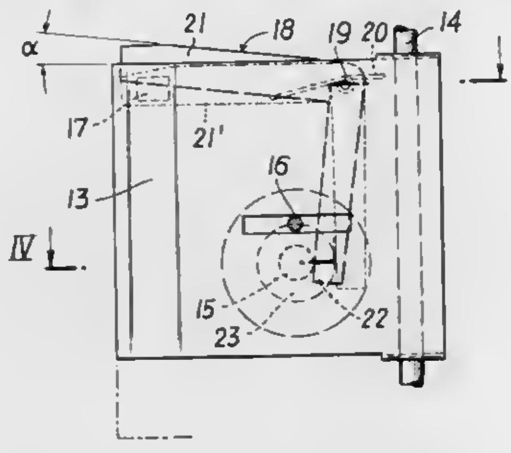
Josel Schild, Vienna, Austria, assignor to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Nov. 12, 1973, Ser. No. 415,128

Claims priority, application Austria, Nov. 13, 1972, 9623/72

Int. Cl.² G03B *9/10*

U.S. Cl. 352—209 **4 Claims**



1. A camera having a film position, an objective lens, a shutter, guiding means defining a linear path of reciprocation for said shutter, a motor connected to drive said shutter back and forth along said path, a supplementary diaphragm mounted to reciprocate in unison with said shutter and movable with respect thereto from a first position in which the light incident at the film position is partially restricted by said diaphragm and a second position at which the light is not restricted by said diaphragm, and control means driven rotationally by the motor and creating an inertial force operatively effective to displace the diaphragm progressively from its first position to its second position during acceleration of the motor to its operating speed.

3,936,169
DEVICE FOR MOVING SLIDES VERTICALLY IN PROJECTORS

Karlheinz Barowski, Okriftel; Kurt Schubel, and Hans Weinhofer, both of Munich, all of Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main and Enna-Werk Optische Anstalt, Munich, both of, Germany

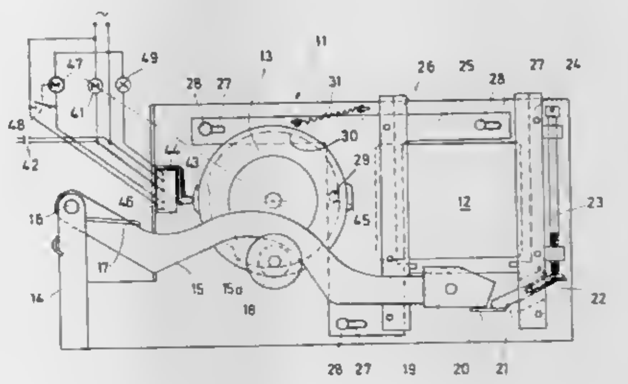
Filed Sept. 6, 1974, Ser. No. 503,567

Claims priority, application Germany, Sept. 7, 1973, 2345333

Int. Cl.² G03B *23/04*

U.S. Cl. 353—115 **5 Claims**

1. A device for moving slides vertically in slide projectors so that slides may be lowered from a circular magazine into a projection postion and then raised from the projection position back into the magazine, the device being of the type including an arm pivotally mounted at one end, a spring connected to the arm, a shoe on the end of the arm for carrying a slide, a multi-cam disc, an electric motor connected to drive the cam disc, a slide guide arrangement having a pair of spaced prismatic rails to guide and hold the slide in the projection position, a stationary mount for one of the rails and a movable mount for the rail in the plane of a slide in-projection position, a spring urging the movable mount against the multi-cam disc, and a stop positioned to limit the downward movement of the end of the arm carrying the shoe with improvement comprising: means connecting the spring connected to the arm to urge the end of the arm carrying the shoe downwardly, an upwardly curved center portion of the arm, a roller carried by the multi-cam disc and describing a circular path positioned under the upwardly curved center portion of the arm, the configuration and relative position of the roller and upwardly curved center portion of the arm allowing the shoe at the end of the arm to dwell in its uppermost position to allow indexing of the magazine.



3,936,170
ELASTIC ELECTROCONDUCTIVE PRODUCT

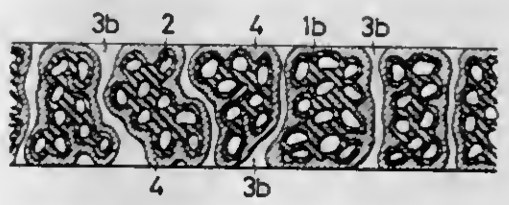
Hiroshi Shibano, and Iizaka Isao, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed July 19, 1973, Ser. No. 380,923

Claims priority, application Japan, Aug. 1, 1972, 47-77455

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 R **5 Claims**



1. An electroconductive elastic member having an electrical resistivity in the range of 10^{12} to 10^{2} ohm/cm comprising:

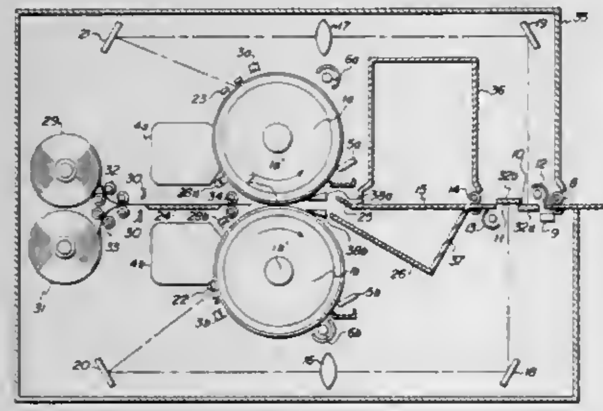
an elastic base made of an open-cellular spongy material;

and having impregnated therein a mixture including polyvinyl alcohol, an electroconductive fine powder, an insolubilizing agent for insolubilizing said polyvinyl alcohol, and a softener having many hydroxyl groups, said softener comprising up to 20 percent by weight of said mixture and being selected from the group consisting of glycerin, ethylene glycol, propylene glycol, butylene glycol, polyethylene glycol and polyhydric alcohols, and wherein said mixture is fixedly formed on said base by irradiation with light, heating or like insolubilizing treatment.

3,936,171

ELECTROSTATOGRAPHIC METHODS AND APPARATUS

Edric Raymond Brooke, Welwyn Garden City, England, assignor to Xerox Corporation, Stamford, Conn.
Filed Mar. 11, 1974, Ser. No. 450,268
Claims priority, application United Kingdom, June 25, 1973, 30009/73
Int. Cl.² G03B *27/00*
U.S. Cl. 355—3 R **10 Claims**



1. Apparatus for forming electrostatographic reproductions onto back-to-back support surfaces, said machine including a first movable photoconductive imaging surface, a second movable photoconductive imaging surface disposed opposite said first photoconductive imaging surface to form a transfer station therebetween, a first imaging station for forming an electrostatic latent image on said first photoconductive imaging surface, a second imaging station displaced relative to said first imaging station for forming an electrostatic latent image on said second photoconductive surface, said images being formed sequentially on said first and second imaging surfaces, the image on said second imaging surface being formed at a location thereon displaced relative to the image formation location on said first imaging surface corresponding to the displacement of said first and second imaging stations, means associated with each photoconductive surface for developing said first and second electrostatic latent images respectively, and means for moving said support surfaces into contact with the photoconductive surface at the transfer station to simultaneously transfer the developed images from the photoconductive surface onto said support surfaces respectively.

3,936,172

LIQUID CRYSTALLINE PLATEN FOR AN ELECTROPHOTOGRAPHIC PRINTING MACHINE

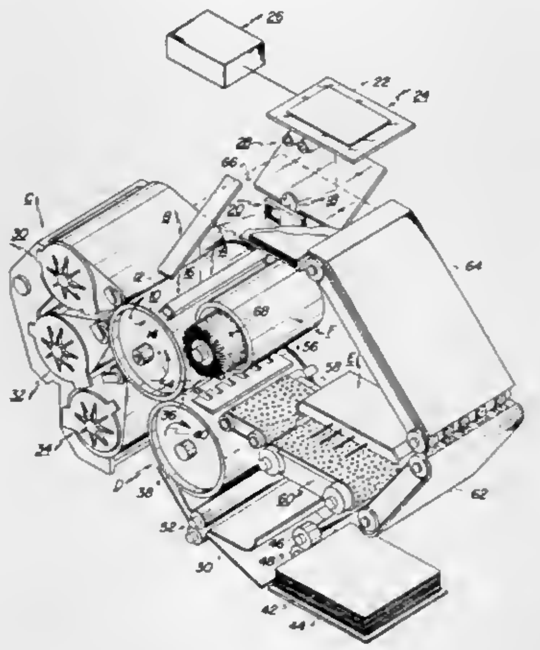
James H. McVeigh, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Mar. 29, 1974, Ser. No. 456,089
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 R **7 Claims**

1. An electrophotographic printing machine of the type having a corona generating device for charging a photoconductive member to a substantially uniform potential, and an exposure mechanism for creating a light image to irradiate the charged photoconductive member recording an electrostatic latent image thereon, wherein the improvement comprises:

an original document;

a support member mounted in the printing machine and arranged to hold said original document thereon, said support member being in a light receiving relationship with the exposure mechanism, said support including a liquid crystalline imaging cell having a pair of opposed, spaced substantially transparent plates, a grid of transparent electrodes interposed between said pair of plates, and a layer of crystalline material interposed between said pair of plates contacting said grid, said support member further including a substantially rigid frame member having an aperture therein, and resilient means secured to the frame member on the periphery of the aperture therein with the liquid crystalline imaging cell being mounted on the resilient means in the aperture of the frame member permitting light rays to be transmitted through the transparent portions thereof; and

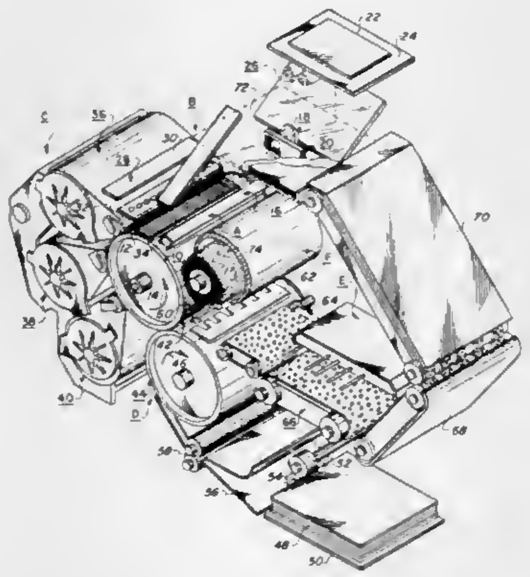
means for electrically exciting said liquid crystalline imaging cell forming opaque portions to mask selected portions of the original document and creating indicia thereon so that said exposure means projects a light image of a masked original document or indicia singly or in combination with one another.



3,936,173

OPTICAL SYSTEM

Wayne L. Kidd, Fairport; George N. Tsilibes, and Stephen C. Urciuoli, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Oct. 4, 1974, Ser. No. 511,976
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 R **5 Claims**



1. An electrophotographic printing machine, including:

a photoconductive member;

means for charging said photoconductive member to a substantially uniform level;

exposure means for forming and projecting a light image of an original document onto the charged portion of said photoconductive member recording thereon an electrostatic latent image;

an electroluminescent panel extending substantially across the width of said photoconductive member;

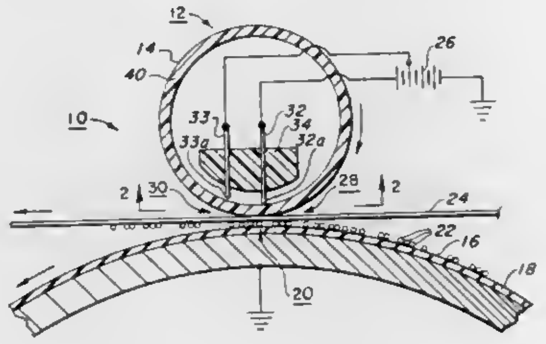
strip means having lens portions thereon transmitting substantially parallel light rays therethrough from said electroluminescent panel; and

a screen member positioned closely adjacent to said photoconductive member in a light receiving relationship with the light rays transmitted through said strip means to illuminate said photoconductive member with a screened light image, the screened light image being superimposed over the electrostatic latent image recording a modulated electrostatic latent image of the original document on said photoconductive member.

3,936,174

TRANSFER ROLLER WITH STATIONARY INTERNAL ELECTRODE

Charles E. Carpenter, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 27, 1975, Ser. No. 544,156
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 R **7 Claims**



1. In an electrostatographic copying system wherein an image is transferable from a first image support surface to a second image support surface utilizing an electrically biased rotatable transfer roller forming a transfer nip, and adjacent pre and post-nip areas, with said first image support surface for passage of said second image support surface through said transfer nip against said first image support surface for said image transfer, as well as through said pre-nip and post-nip areas, the improvement wherein said transfer roller comprises:

an outer, thin-walled, substantially non-conductive, rotatable, tubular member forming said transfer nip,

at least one conductive transfer electrode non-rotatably mounted inside said tubular member,

said transfer electrode being electrically biased and providing transfer fields between said transfer electrode and said first image support surface through said tubular member,

said transfer electrode having a thin elongated blade-like edge extending in length axially along inside said tubular member, said blade-like edge extending towards said wall of said tubular member and towards said first image support surface to provide concentrated transfer fields between said blade-like edge and said first image support surface.

3,936,175

INTERNALLY SHIELDED TRANSFER ROLLER

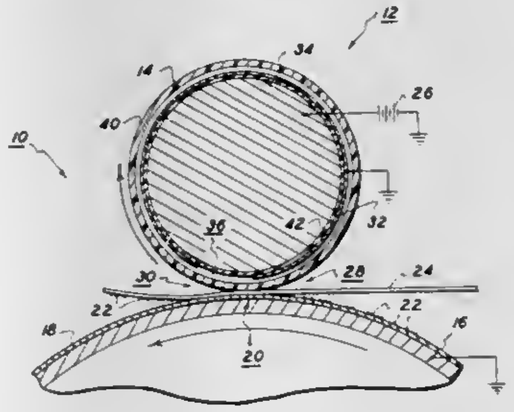
Robert N. Jones, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 29, 1975, Ser. No. 545,079
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 TR **14 Claims**

1. In an electrostatographic copying system wherein an image is transferrable from a first support surface to a second image support surface utilizing an electrically biased rotatable transfer roller forming a transfer nip, and adjacent pre and post-nip areas, with said first image support surface for passage of said second image support surface through said transfer nip against said first image support surface for said image transfer, as well as through said pre-nip and post-nip areas, the improvement wherein said transfer roller comprises;

an outer, thin-walled, substantially non-conductive, rotatable tubular member forming said transfer nip,

an electrically biased conductive transfer member inside said tubular member providing transfer fields between said conductive transfer member and said first image support surface through said tubular member,

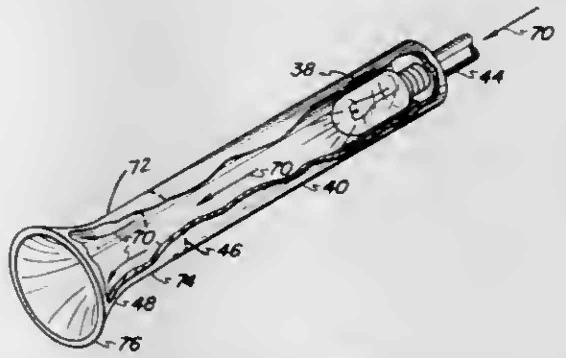
and a non-rotatable conductive shield inside said tubular member positioned between said conductive transfer member and said tubular member and between said conductive transfer member and said first image support surface, to block said transfer fields, said conductive shield being apertured at said transfer nip to pass said transfer fields therethrough.



3,936,176

DEVICE FOR MAINTAINING A DEVELOPABILITY REGULATING APPARATUS CONTAMINANT FREE

Charles A. Whited, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed July 19, 1973, Ser. No. 380,927
Int. Cl.² G03G *15/01*; F21V *29/00*
U.S. Cl. 355—4 **2 Claims**



1. A multicolor electrophotographic printing machine of the type having a photoconductive drum for recording successive single color electrostatic latent images which are rendered viewable by a development apparatus adapted to deposit toner particles complementary in color thereon, and a developability regulating apparatus comprising a light source arranged to illuminate an electrode mounted on the photoconductive drum and electrically biased to a voltage level sufficient to attract toner particles thereto during the development of the latent image and a photosensor for detecting the intensity of the light rays reflected from the electrode to indicate the density of the toner particles deposited thereon, wherein the improvement includes:

a first tubular shell arranged to support the light source therein, said first tubular shell having inlet and outlet apertures therein with the light source positioned in the region of the inlet aperture to produce light rays directed outwardly from the light source through the outlet aperture of said first tubular shell to the electrode;

first means, in communication with said first tubular shells, for creating a fluid flow in said first tubular shell, directed from the inlet aperture to the outlet aperture thereof;

a second tubular shell having one end portion thereof integral with said first tubular shell in the region of the outlet aperture and the other end portion thereof flared in an outwardly direction to maintain substantially laminar fluid flow in said first tubular shell to prevent the accumulation of contaminating deposits on the light source;

a housing arranged to support the photosensor therein, said housing having inlet and outlet apertures therein with the photosensor positioned in the region of the inlet aperture thereof to detect the intensity of light rays transmitted inwardly to the photosensor from the electrode;

means in communication with said housing for creating a fluid flow in said housing directed from the inlet aperture to the outlet aperture thereof and

means, associated with said housing for maintaining the fluid flow in said housing substantially laminar to prevent the accumulation of contaminating deposits on the photosensor.

3,936,177
ELECTROSTATIC COPYING MACHINE

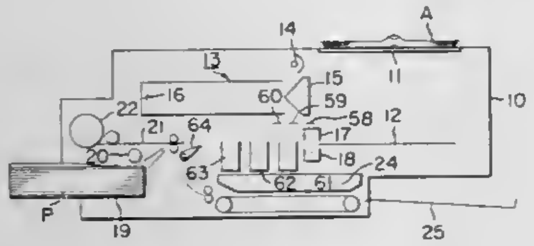
Inao Moriyama, Ebina; Yujiro Ando, Yokohama; Katsunobu Ohara, and Keiji Tanaka, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 11, 1974, Ser. No. 487,740

Claims priority, application Japan, July 17, 1973, 48-81335

Int. Cl.^{2} G03G *15/01, 15/18;* B65H *29/30;* G65H *17/28*

U.S. Cl. 355—4 **22 Claims**



1. An electrostatic copying machine comprising:

a photosensitive screen having a number of fine openings therein;

means for exposing a surface of said screen to an original image at an image exposure position for forming on said screen a primary electrostatic latent image corresponding to an original image;

electrostatic attracting means for electrostatically attracting a recording material and conveying said material to a recording position adjacent said exposed surface of said photosensitive screen at said exposure position, after said formation of said primary electrostatic latent image;

means for supplying the recording material to said electrostatic attracting means; and

means for forming a secondary electrostatic latent image on said recording material at said recording position.

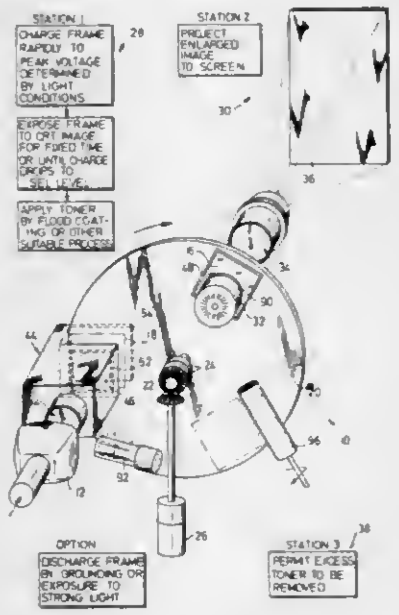
3,936,178
APPARATUS FOR LARGE SCALE SCREEN DISPLAY OF IMAGES

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Information Systems, Inc., Bedford, Mass.

Filed Nov. 30, 1973, Ser. No. 420,668

Int. Cl.^{2} G03G *15/00*

U.S. Cl. 355—5 **37 Claims**


STATION 1
CHARGE FRAME RAPIDLY TO PEAK VOLTAGE DETERMINED BY LIGHT CONDITIONS
EXPOSE FRAME TO CRT IMAGE FOR FIXED TIME OR UNTIL CHARGE DROPS TO SET LEVEL
APPLY TONER BY FLOOD COATING OR OTHER SUITABLE PROCESS
28
STATION 2
PROJECT ENLARGED IMAGE TO SCREEN
30
36
34
90
32
54
18
52
24
22
44
46
40
96
92
12
26
OPTION
DISCHARGE FRAME BY GROUNDING OR EXPOSURE TO STRONG LIGHT
STATION 3
PERMIT EXCESS TONER TO BE REMOVED
38

1. A system for effecting an enlarged image display on a viewing screen and utilizing a transparent electrophotographic film member of the type having a photoconductive coating, said system comprising: translatable carrier means mounting at least one electrophotographic film member, means operable on the carrier means stepwise to position said electrophotographic film member successively at each of plural stations located along the path of movement of said carrier means, said plurality of stations comprising: a recording station including means for projecting a scene upon the film member and stationary means for successively charging, exposing and toning the film member forming a projectable transparency of said scene at said recording station, the film member and said stationary means being immobilized one relative to the other throughout the operation of the charging, exposing and toning means, a projection station for applying an enlarged image of said scene from said transparency upon a viewing screen and an erase station having means for removing all toner from said film member, a lighttight housing accommodating said means for charging, exposing and toning, said housing including a wall having window means formed therein for transmitting the projected light pattern representative of said scene to the film member when the same is aligned therewith, and said means for charging, exposing and toning includes a charging device proximate said window means for charging the coating of said film member sufficiently to raise the surface potential thereof to a selected potential value, means intermediate said optical train and said charging device for exposing said film member to said pattern only when said potential value is reached, means proximate to said window for applying toner to the film member subsequent to exposure, and means for controlling the applied charge on the film in relation to the incident light intensity.

3,936,179
SUPPORT STRUCTURE FOR A DUPLICATOR OPTICAL SYSTEM

Shinichi Murakami, Ebina, Japan, assignor to Rank Xerox Ltd., London, England

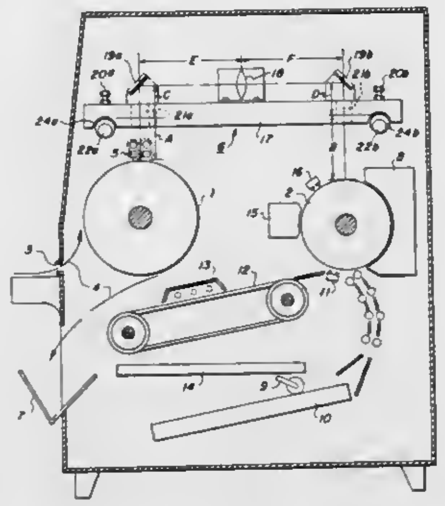
Filed Dec. 11, 1974, Ser. No. 531,590

Claims priority, application Japan, Dec. 24, 1973, 48-146925

Int. Cl.^{2} G03G *15/00*

U.S. Cl. 355—11 **7 Claims**

1. In a duplicator machine having a document drum and a photoconductor drum, an optical system comprising a table on which are fixedly mounted two spaced apart mirrors, said mirrors arranged to jointly reflect light from said document drum approximately 180° to said photoconductor drum, a pair of eccentric cams supported with their longitudinal axes substantially parallel to the plane of said table, means for supporting said cams for rotation about their longitudinal axes, adjusting screws carried for rotation in said table and having ends bearing on said cams, whereby said table may be adjusted relative to said drums by the combined movement of said adjusting screws and cams.



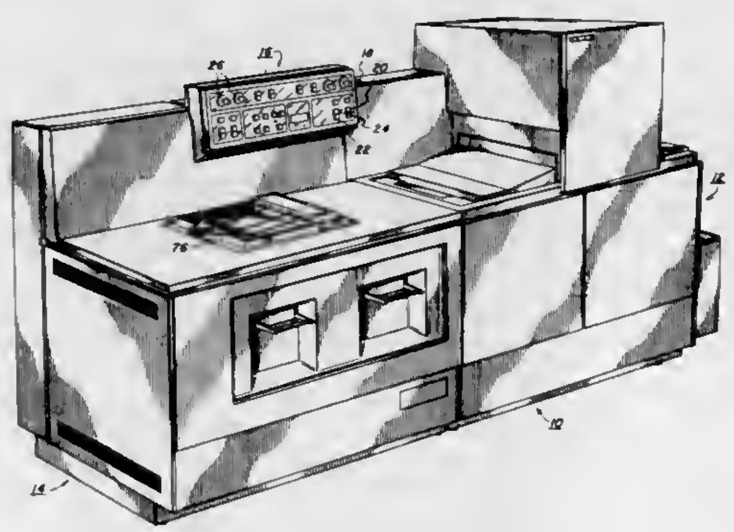
3,936,180
XEROGRAPHIC APPARATUS WITH SAMPLE PRINT CAPABILITIES

Charles F. Willard, Palos Verdes Estates, Calif.; Brian D. Marsden, Rochester; John G. Richardson, Fairport, and James L. Gastonguay, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 4, 1973, Ser. No. 321,115

Int. Cl.^{2} G03G *15/00*

U.S. Cl. 355—14 **1 Claim**



1. A printing system including:

xerographic apparatus adapted to create images in response to variable data signals supplied thereto and to transfer such images to sheet material fed through the xerographic apparatus,

primary sheet receiving means adapted to receive the sheet material processed by said xerographic apparatus,

secondary sheet receiving means remote from said primary sheet receiving means and adapted to receive sheet material processed by said xerographic apparatus,

sheet supply means adapted to support sheet material to be forwarded through said xerographic apparatus so that graphic information may be transferred to the sheet material in relation to said data signals,

primary conveying means to direct sheet material from said sheet support means, through said xerographic apparatus, to said primary sheet receiving means,

secondary conveying means between said primary sheet receiving station and said xerographic apparatus to direct sheet material to said secondary sheet receiving means from said primary conveying means,

first operator controlled means which, when energized, applies power to the system and permits its operation,

second operator controlled means which, when energized, continues the operation of the system for the creation of images after the correction of a malfunction of the system,

third operator controlled means for creating a sample print on forwarded sheet material and duplicating said sample print,

fourth operator controlled means for creating an image on forwarded sheet material representative of preselected system status indications, and

circuit means coupling the four above-mentioned operator controlled means with said secondary conveying means so that activation of any of said operator controlled means causes the activation of said secondary conveying means.

3,936,181
COPYING MACHINES

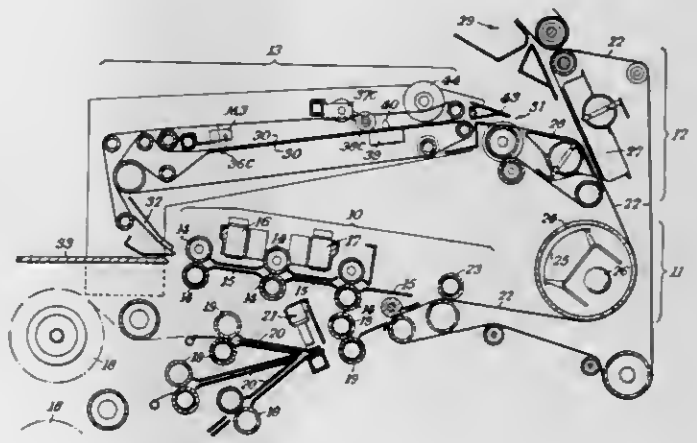
Frank Arthur Hill, New Radnor, Wales, assignor to Ozalid Group Holdings Limited, Loughton, England

Filed Oct. 10, 1973, Ser. No. 405,081

Claims priority, application United Kingdom, Sept. 26, 1972, 44337/72

Int. Cl.^{2} G03G *15/00*

U.S. Cl. 355—14 **3 Claims**



1. In a photocopying machine having a sheet feeding mechanism for circulating an original through the machine to enable a plurality of copies to be made in succession upon individual copy sheets from said original, wherein the improvement comprises:

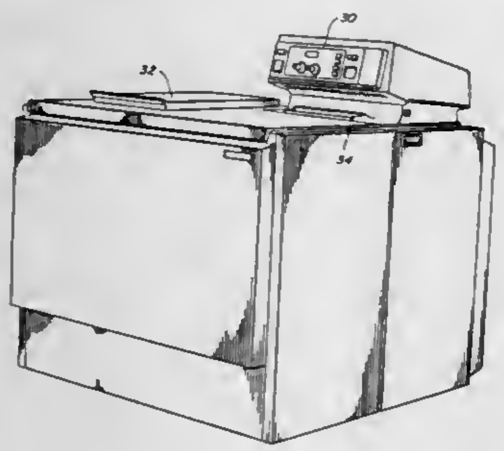
a. a plurality of microswitches aligned in a row extending transversely to the direction of feed of the original by said sheet feeding mechanism and arranged for contact with the leading edge of the original;

b. a plurality of correspondingly aligned normally inoperative solenoid operated brakes respectively disposed behind the individual microswitches in the direction of travel of the original; and

c. an electrical control circuit operative in response to contact of the leading edge of the original with any one microswitch prior to contact of said leading edge with any other microswitch to cause the solenoid of the brake disposed behind the contacted microswitch to apply said brake to the original, and in response to subsequent contact of said leading edge with another microswitch, to cause said solenoid to disengage said brake from the original, thereby aligning the leading edge of said original with said microswitches.

3,936,182
CONTROL ARRANGEMENT FOR AN ELECTROSTATOGRAPHIC REPRODUCTION APPARATUS

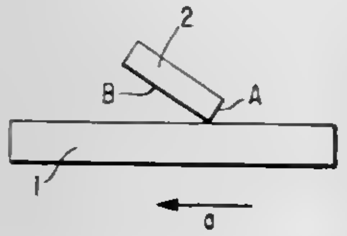
Sikander Sheikh, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 12, 1974, Ser. No. 496,666
Int. Cl.^{2} G03G *15/00*
U.S. Cl. 355—14 10 Claims



1. An electrostatographic copying apparatus comprising:
means for forming a latent electrostatic image, for developing the image and for transferring the image to a record medium;
said means including a plurality of operating members adapted for actuation at predetermined times during a copy reduction cycle; and
a plurality of members for providing electrical representations of machine conditions or selected modes of operation during a copying cycle;
apparatus control means coupled to said operative and machine condition members for sensing said electrical representations and for causing a predetermined actuation of said operative members in accordance with the representation of said condition member;
said control means having a digital processor adapted for storing and executing a stored apparatus control program, said processor including a non-destructive memory means for storing an apparatus control program and which is adapted for altering the program by replacement with a substitute memory means.

3,936,183
ELECTROPHOTOGRAPHIC COPYING MACHINE WITH IMPROVED CLEANING BLADE

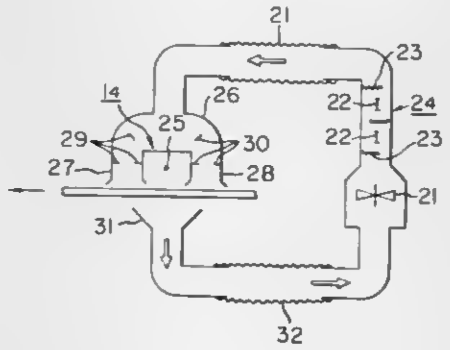
Shigeru Sadamatsu, Tokyo, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Mar. 4, 1974, Ser. No. 447,524
Claims priority, application Japan, Mar. 9, 1973, 48-27165
Int. Cl.^{2} G03G *21/00*
U.S. Cl. 355—15 4 Claims



1. An electrophotographic copying machine comprising
a movable photosensitive layer upon which latent images are repeatedly toner developed and transferred to a receiving member, the material of said photosensitive layer being selected from the group consisting of selenium, selenium/arsenic alloy, and selenium/tellurium alloy; and cleaning blade in contact with said layer for cleaning therefrom toner not transferred to said receiving member, said blade including a cleaning layer containing materials selected from the group consisting of molybdenum disulfide, graphite, fluorographite, boron nitride, tungsten disulfide, molybdenum diselenide, tungsten diselenide, cadmium sulfide, lead monooxide and lead sulfide, polytetrafluoroethylene, polyvinylidene fluoride and polychlorofluoroethylene, polyreinforced-trifluoroethylene, polytrifluoroethylene and polychloropropylene and a substrate having a tensile elasticity of 0.01 to 10 Kg/mm^2, the material of said substrate being selected from the group consisting of natural rubber, neoprene rubber, sytrene-butadiene rubber and polyurethane rubber, said substrate being disposed at an angle with respect to said movable photosensitive layer, said substrate having a first side facing the direction in which said photosensitive layer moves so that said photosensitive layer moves toward said first side and a second side facing away from the direction in which said photosensitive layer moves so that said photosensitive layer moves away from said second side, said photosensitive layer being contacted substantially only by a corner of said cleaning blade comprising the intersection of said first and second sides thereof, only said first side of said substrate being covered with said cleaning layer which has a friction coefficient less than 0.8 with respect to the surface of said photosensitive layer.

3,936,184
ELECTROPHOTOGRAPHIC COPYING MACHINE

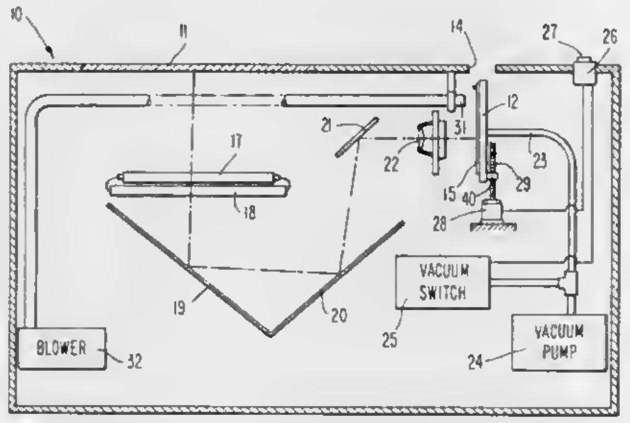
Keiji Tanaka, Kawasaki; Yujiro Ando, Yokohama, and Katsunobu Ohara, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 21, 1974, Ser. No. 471,916
Claims priority, application Japan, July 9, 1973, 48-77272; Nov. 9, 1973, 48-126039; May 25, 1973, 48-58903
Int. Cl.^{2} G03G *21/00;* G03B *27/52;* H05F *3/00;* H01T *19/04*
U.S. Cl. 355—15 10 Claims



1. An electrophotographic apparatus wherein an electrostatic latent image is formed with the utilization of at least means for applying voltage by corona discharge and illuminating means, comprising:
a photosensitive member;
means for charging said photosensitive member;
wall means for supplying a gas adjacent and between said charging means and said photosensitive member, said wall means being disposed along and adjacent said charging means; and
dust removing means connected to said wall means.

3,936,185
APPARATUS AND METHOD FOR HOLDING A FILM ON A CARRIER AND DETECTING CORRECT PLACEMENT

Frank C. Gross, Wilbraham, Mass., assignor to Scott Paper Company, Philadelphia, Pa.
Continuation-in-part of Ser. No. 349,452, April 9, 1973. This application Apr. 8, 1974, Ser. No. 459,196
Int. Cl.^{2} G03B *27/60*
U.S. Cl. 355—73 9 Claims

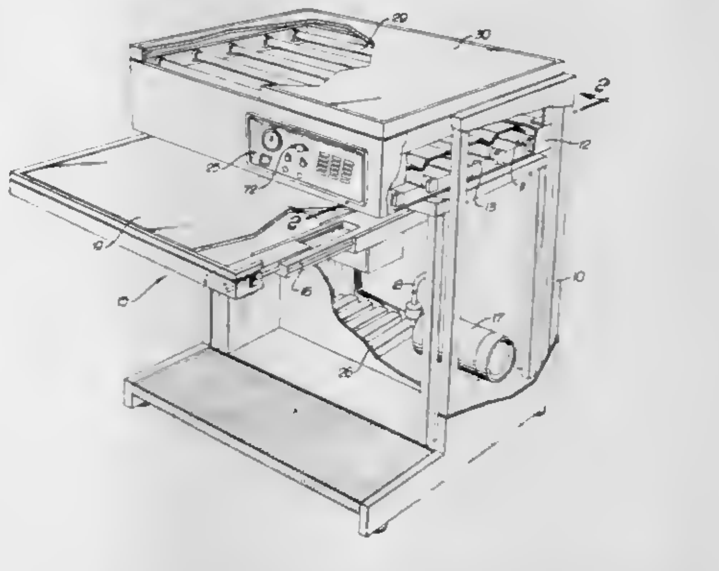


1. In a photographic reproduction apparatus for directing a light image along an imaging axis to a photosensitive film positioned on a film carrier within the apparatus, combination means for holding the film on the carrier and detecting correct placement of the film on the carrier, the combination means comprising:
an alignment surface on the carrier against which the film is firmly held when imaged;
vacuum means operably connected to the alignment surface for holding the film securely to the alignment surface;
air-passageway means in the alignment surface and operably connected to the vacuum means for forming a closed vacuum system, and permitting a high vacuum level, only when the film is held securely against the alignment surface and in the correct position with respect to the imaging axis; and
vacuum level detecting means operably connected to the vacuum means for detecting the level of the vacuum, and therefore, correct placement of the film on the carrier.

3,936,186
APPARATUS FOR EXPOSING DIAZO PRINTING PLATES AND THE LIKE

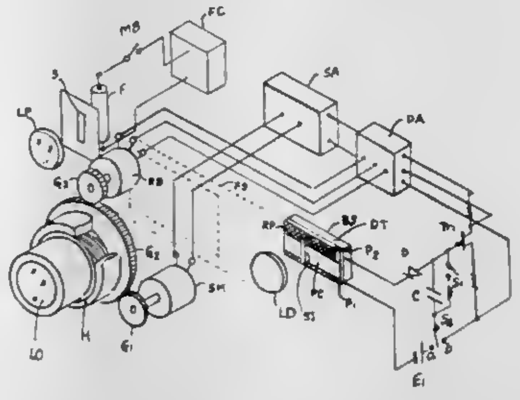
Steven H. Boland, Arcadia, and Stephen Olah, Sierra Madre, both of Calif., assignors to Ultra-Violet Products, Inc., San Gabriel, Calif.
Filed July 25, 1974, Ser. No. 491,688
Int. Cl.^{2} G03B *27/78*
U.S. Cl. 355—83 13 Claims

13. Apparatus for exposing diazo printing plates and the like, including in combination:
a frame;
a plurality of tubular lamps mounted in said frame in spaced parallel relation, said lamps having a narrow band spectral output at the 365 nanometer wave length region for imagewise exposing a radiation sensitive sheet;
a bed mounted in said frame for supporting sensitive sheet parallel to the plane of said lamp;
a plurality of radiation sensors, with a sensor mounted adjacent each lamp; and
a plurality of control circuits, with a circuit for each lamp, each of said control circuits including means for energizing the associated lamp in response to a start signal and deenergizing the lamp when the lamp has provided a predetermined quantity of radiation as measured by the corresponding sensor.



3,936,187
DISTANCE MEASURING DEVICE

Haruhiko Momose, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Hino, Japan
Continuation-in-part of Ser. No. 273,220, July 19, 1972, abandoned. This application Feb. 19, 1974, Ser. No. 443,359
Int. Cl.^{2} G01C *3/00;* G03B *7/08*
U.S. Cl. 356—1 7 Claims



1. An automatic focusing device comprising in combination:
a. flashing means (F), a slit (S) and a projection lens (LP) disposed to direct flashing light on an object;
b. detector means (DT) and a detecting lens (LD) disposed to receive flashed light reflected from said object; said detector (DT) acting as a light slide rheostat and including two electrodes (P_1, P_2), a resistor (RP) and a photoconductive material (PC) interposed between one of said electrodes and said resistor, the other electrode being at one end of said resistor so that the electrical output between said two electrodes (P_1, P_2) varies with the position where a light beam strikes said photo conductive material (PC);
c. a servo-circuit responsive to said detector means (DT) including a differential amplifier (Tr_2, Tr_3) with a field effect transister (Tr_1) coupled to said differential amplifier and said detector means, a potentiometer (RB) and a servo-amplifier (SA) coupled to said differential amplifier; and,
d. a condenser (C) connected to said detector means (DT) and, a two pole switch (S_2) to connect said detector means first, to said servo-circuit, whereby light is first flashed from said flashing means onto an object and reflected onto said detector means to charge said condenser (C) and then switched over to said servo-circuit

where, if the charge on said condenser is different from the output from said field effect transistor, the servomotor will rotate to make up this difference moving the potentiometer at the same time so as to bring the objective lens (LO) into focus.

3,936,188
COLOR SORTING OF IRRADIATED MATERIALS AND A CALIBRATED COLOR COMPARISON ARRAY

Baldwin Sawyer, Gates Mills, Ohio, assignor to Sawyer Research Products, Inc., Eastlake, Ohio
Continuation-in-part of Ser. No. 303,857, Nov. 6, 1972, Pat. No. 3,837,826. This application Feb. 25, 1974, Ser. No. 445,475
Int. Cl. G01n *1/00;* G01j *1/02*
U.S. Cl. 356—36 12 Claims

1. A rapid and non-destructive method for determining the approximate aluminum content of colorless and smoky quartz, quartzite, glass or silicate materials containing from 0 to about 1000 ppm of alluminum which comprises the steps of:

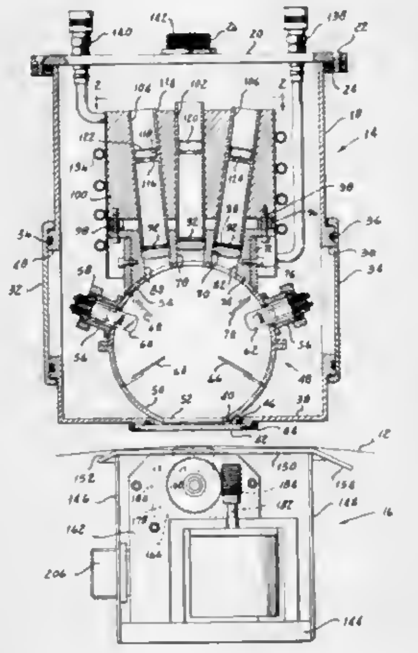
a. irradiating particles of said material with ionizing radiation of a measured period of time and at a known intensity sufficient to cause the distinctive colorations that occur in such material containing aluminum,
b. measuring the amount of overall residual color in each particle of irradiated material,
c. measuring the proportion of yellow color in each particle of irradiated material, and
d. comparing the amount of color and the proportion of yellow determined in each particle in steps (b) and (c) to color standards of measured aluminum content irradiated at the same dosage, whereby the aluminum content of the particle is determined from its measured color properties.

11. A calibrated color comparison array of irradiated samples of colorless or smoky quartz, quartzite, glass or silicate material containing from about 0 to about 1000 ppm of aluminum wherein a plurality of such samples irradiated at a given intensity for a given period of time are classified as to percent overall residual color and percent yellow color and arranged in two dimensions wherein one coordinate represents percent overall color on a scale from 0 to 100 percent and the other coordinate represents percent yellow color on a scale of from 0 to 100 yellow.

3,936,189
ON-LINE SYSTEM FOR MONITORING THE COLOR, OPACITY AND BRIGHTNESS OF A MOVING WEB

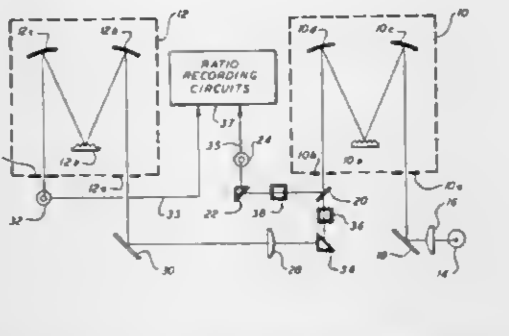
Joseph De Remigis, New Market, Canada, assignor to Sentrol Systems Ltd., Downsview, Canada
Filed Mar. 13, 1974, Ser. No. 450,894
Int. Cl.^{2} G01J *3/50;* G01N *21/30*
U.S. Cl. 356—73 2 Claims

1. In an on-line system for continuously and simultaneously monotoring the color and opacity and brightness of a moving web including in combination, a sensing head disposed over said web, means on said head for illuminating a portion of said web below said head, an optical shoe disposed below the illuminated portion of said web, said shoe providing spaced black and white background within said illuminated portion of the web, a brightness detector unit, an opacity detector unit, a plurality of color detector units, each of said detector units having an optical axis, means mounting said brightness detector unit and the respective color detector units on said head with their optical axes directed toward said illuminated portion over said white background and means mounting said opacity detector unit on said head with its axis directed toward said illuminated web portion over said black background to permit simultaneous measurements of color and opacity and brightness to be obtained, said optical shoe comprising block having a plurality of sides, means on a first side of said block providing said black and white backgrounds, a white standard carried by a second side of said block, a black standard carried by a third side of said block, and means mounting said block for movement selectively to position one of said sides in cooperative relationship with said sensing head.



3,936,190
FLUORESCENCE SPECTROPHOTOMETER FOR ABSORPTION SPECTRUM ANALYSIS

Yasushi Ohnishi, and Shunichi Matsuura, both of Katsuta, Japan, assignors to The Perkin-Elmer Corporation, Norwalk, Conn. and Hitachi, Ltd., Tokyo, Japan
Filed Apr. 16, 1974, Ser. No. 461,338
Claims priority, application Japan, Apr. 16, 1973, 48-42151
Int. Cl.^{2} G01J *3/42*
U.S. Cl. 356—96 4 Claims

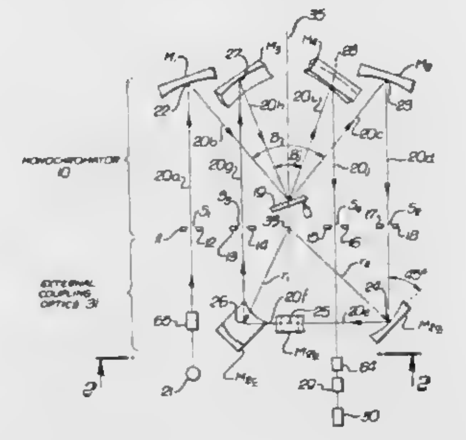


1. A fluorescence spectrophotometer adapted for analysis of absorption spectra, comprising:

a. first and second monochromators having respective entrance and exit slits;
b. a source of excitation radiation and means for directing radiation from said source into the entrance slit of said first monochromator;
c. a pair of light quantum meters;
d. a photoelectric detector disposed to receive a radiation output from one of said light quantum meters;
e. a beam splitter disposed in the path of radiation emanating from the exit slit of said first monochromator and directing a portion of such radiation to each of said light quantum meters;
f. respective absorption cells disposed in the paths of radiation from said beam splitter to said light quantum meters;
g. means for directing radiation output from the other of said light quantum meters through the entrance slit of the second monochromator; and
h. a second photoelectric detector disposed to receive radiation from the exit slit of said second monochromator.

3,936,191
OPTICAL ARRANGEMENT FOR DOUBLE-PASSING EBERT MONOCHROMATOR AND FOR COUPLING DOUBLE MONOCHROMATOR SYSTEMS

Vernon L. Chupp, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Mar. 22, 1974, Ser. No. 453,826
Int. Cl.^{2} G01J *3/18*
U.S. Cl. 356—101 9 Claims

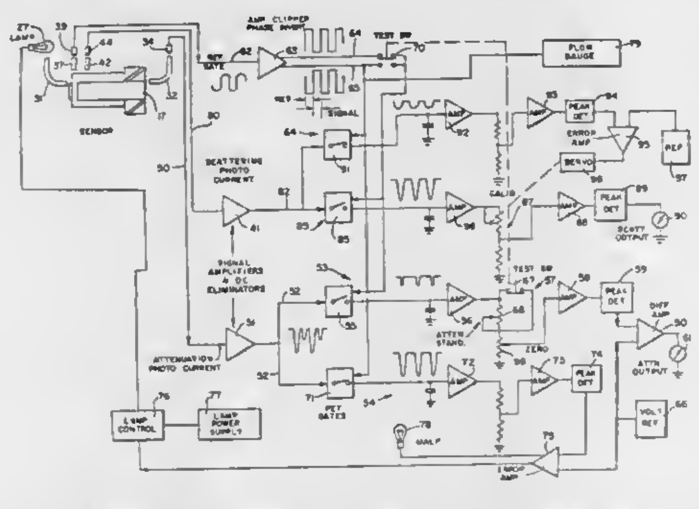


1. In combination with an additive dispersion, double-pass monochromator, and comprising

a. means forming an entrance slit S_1, intermediate slits S_2 and S_3, and an exit slit S_4, said slits having curvature defining a circle,
b. dispersing means in the beam path between the slits S_1 and S_2, and also in the beam path between the slits S_3 and S_4, and defining an aperture stop, and
c. mirror means to reflect the beam for passage between slits S_1 and S_2 via the dispersing means and to reflect the beam for passage between slits S_3 and S_4 via the dispersing means,
d. the improvement comprising coupling optical means located in the beam path between slits S_2 and S_3 for imaging S_2 onto S_3 and for reimaging the aperture stop back on itself.

3,936,192
OPTICAL FLUID CONTAMINATION AND CHANGE MONITOR

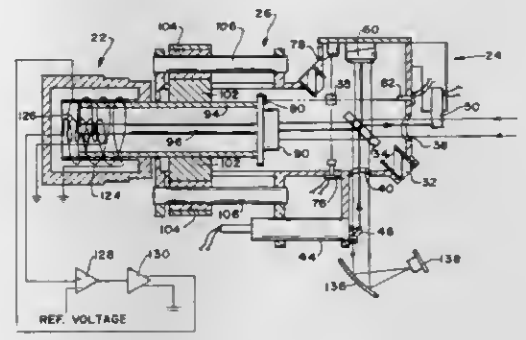
George F. Skala, Scotia, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.
Continuation of Ser. No. 847,675, Aug. 5, 1969. This application Apr. 19, 1973, Ser. No. 352,614
Int. Cl. G01n *21/00*
U.S. Cl. 356—104 28 Claims



1. Apparatus for testing a sample of fluid material to determine at least one characteristic correlated to the effect the material has on light comprising a sealed chamber for containing therein a fluid sample to be tested and having inlet and outlet openings thereto for the fluid sample to be tested; a light source mounted exteriorly of said chamber, means responsive to light for producing a signal mounted exteriorly of said chamber; first optical fiber means extending from within said chamber to said light source; second optical fiber means extending from within said chamber to said light responsive means, a rotor mounted for rotation about an axis within said chamber; said rotor having at least two through passages, each extending between the chamber ends of said optical fiber means in spaced-apart positions of said rotor; a reference material in one or more of said passages, and means in other of said passages for holding a sample material; second light responsive means; third optical fiber means extending from within said chamber to said second light responsive means and having an off-axis orientation with respect to said first and second optical passages in said rotor providing respective light paths for each of said through passages with said third optical fiber means.

3,936,193
MULTIPLEX INTERFEROMETER

Gerald L. Auth, Laguna Beach, Calif., assignor to Eocom Corporation, Irvine, Calif.
Filed Feb. 13, 1974, Ser. No. 442,254
Int. Cl.^{2} G01B *9/02;* G02B *7/02*
U.S. Cl. 356—106 S 12 Claims

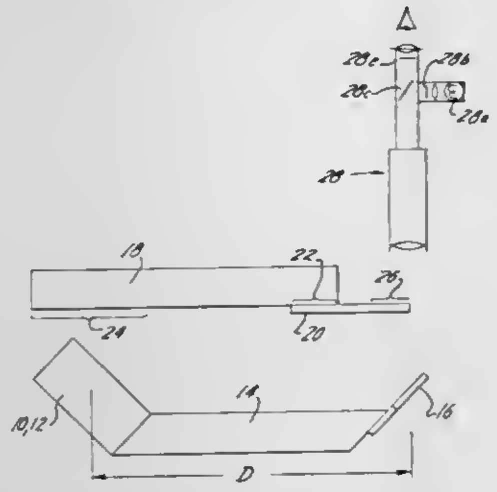


1. An interferometer for measuring the spectra of incident electromagnetic radiation, comprising:

a. a rigid frame for supporting the interferometer;
b. a fixed mirror assembly having a reflecting surface thereon adjustably mounted to said rigid frame;
c. a mirror assembly movably mounted on said rigid frame and having a reflecting surface thereon orthogonally disposed to said fixed mirror;
d. a beam splitter mounted on said rigid frame for separating the incident radiation into two parts and for subsequently recombining the two parts after reflection from the fixed mirror and the movably mounted mirror;
e. means for movably supporting said movably mounted mirror assembly on said frame;
f. means for providing a center of support for the movable mirror assembly continuously coincident with the center of gravity of said mirror assembly throughout the range of movement; and
g. means mounted on said frame for transporting the movable mirror assembly with respect to the fixed mirror assembly and the beam splitter by providing a force exerted through the coincident center of support and center of gravity.

3,936,194
METHOD AND DEVICE FOR ASSEMBLING HOLLOW RETROREFLECTORS

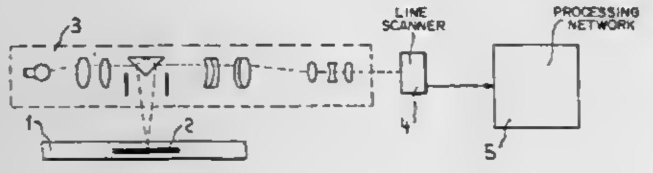
Morton S. Lipkins, 3 Nemeth St., Malverne, N.Y. 11565
Filed May 31, 1974, Ser. No. 475,133
Int. Cl.² G01B *11/26*
U.S. Cl. 356—153 **8 Claims**



1. The method of testing large retroreflectors ideally having three reflectors in mutually perpendicular planes such as lateral transfer retroreflectors, including the steps of directing the beam of an error detector toward one reflector of the retroreflector as an incoming beam so that a portion thereof reaches the one reflector without obstruction and so as to produce an outgoing beam separated by a substantial lateral transfer distance from the incoming beam, fixing first and second optically flat test reflectors relative to each other so that they face precisely opposite directions and are off-set from each other by approximately said lateral transfer distance, disposing said first test reflector in position to intercept and reflect only a part of the beam of the error detector and to direct that part of the reflected beam into the error detector, and disposing the second test reflector in position to reflect the outgoing beam of the retroreflector back into the retroreflector, and in the error detector comparing the outgoing light of the error detector as reflected by the first test reflector with the outgoing light of the error detector as it returns from the retroreflector after entry into the retroreflector, departure from the retroreflector, reflection into the retroreflector by said second test reflector, and departure from the retroreflector via said one reflector thereof.

3,936,195
DEVICE FOR DETERMINING THE POSITION OF A STRUCTURAL ELEMENT

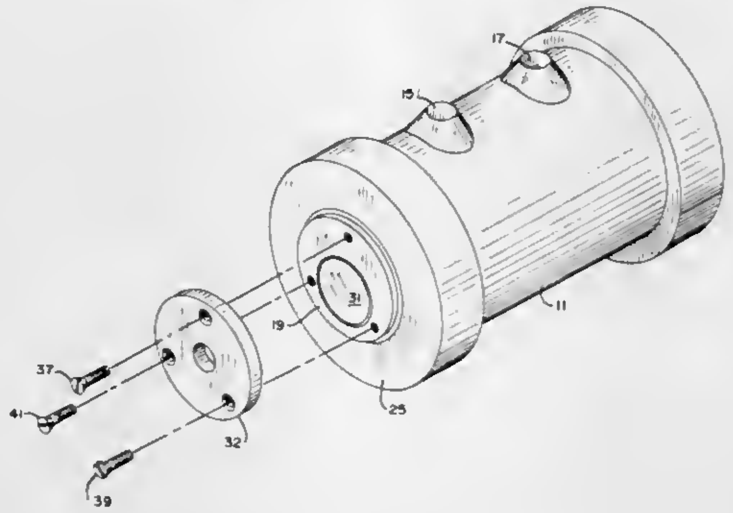
Eduard Roesch, La Chaux-de-Fonds, Switzerland, assignor to Dixi S.A., Le Locle, Switzerland
Filed July 31, 1974, Ser. No. 493,601
Claims priority, application Switzerland, Aug. 15, 1973, 11732/73
Int. Cl.² G01B *11/00*
U.S. Cl. 356—170 **3 Claims**



1. A device for determining the position of a structural element having at least a part provided with regularly spaced markings, said device comprising a plurality of photosensors in a linear array, said photosensors being regularly spaced from each other, means optically projecting at least two of said markings onto said photosensor array, the distance between adjacent photosensors being a subdivision of the distance between said two projected markings, means coupled to said array for scanning the photosensors, an envelope detector circuit coupled to receive output signals emitted by the photosensors, and output means responsive to said envelope detector for providing a pulse train having a length representative of the position of the structural element.

3,936,196
FLUID CHAMBER HAVING MANIPULATABLE WINDOW ELEMENTS

Kenneth A. Wickersheim, Palo Alto, Calif., assignor to Spectrotherm Corporation, Santa Clara, Calif.
Filed Oct. 21, 1974, Ser. No. 516,183
Int. Cl.² G01N *1/10*
U.S. Cl. 356—246 **2 Claims**

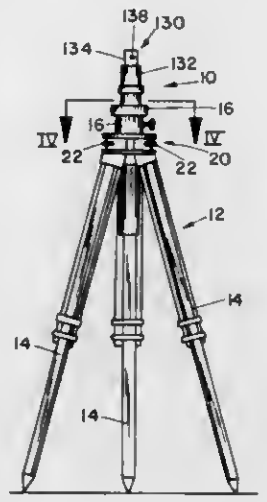


1. A fluid containing cell, comprising:
an opaque fluid enclosure having an opening therein for introduction and removal of fluid therefrom and additionally having at least two small apertures therethrough on opposite walls thereof,
a circular transparent window element provided for each of said apertures, each of said window elements having an area at least several times that of its associated aperture, and
means associated with each of said apertures for selectively holding its associated circular window element in a fluid tight relationship thereagainst with a center of the circular window element being removed from coincidence with its associated aperture, whereby the holding means may be released to permit rotation of the circular window element when it becomes fogged in an area covering its associated aperture and thereby to permit a clean window area to be positioned over said aperture and resealed thereto without having to clean the window.

3,936,197
SELF-LEVELING LASER ASSEMBLY

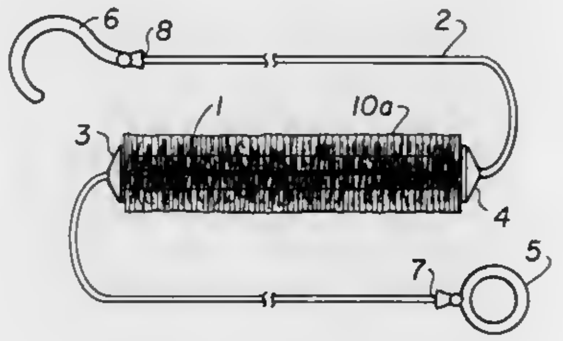
Larry D. Aldrink, Jenison; Edward G. Nielsen, and Willard G. Vogelaar, both of Grand Rapids, all of Mich., assignors to Laser Alignment, Inc., Grand Rapids, Mich.
Filed May 6, 1974, Ser. No. 467,372
Int. Cl.² G01C *9/12*
U.S. Cl. 356—250 **20 Claims**

12. Self-leveling light beam projector apparatus comprising:
a housing having a light beam generator mounted therein, said housing being adapted for generally vertical mounting and having an upper end thereof adapted to allow the emergence of a beam of light from said generator;
first and second lens means in said housing adapted to direct said beam of light from said source through said upper end; and
pendulous mounting means mounting said first lens for movement with respect to said source, said pendulous mounting means including an elongated frame member supporting said first lens adjacent said source, said frame member including means adjacent said upper end mounting said frame member for movement about mutually perpendicular axes with respect to said housing; means fixing said second lens with respect to said housing at a position intermediate said first lens and said upper end; said mounting means being adapted to assume a predetermined position with respect to the vertical wherein said beam directed to said first lens is directed through said second lens and is emitted at said upper end in a vertical path with deviations of said housing from the vertical.



3,936,198
BACK RUBBING DEVICE

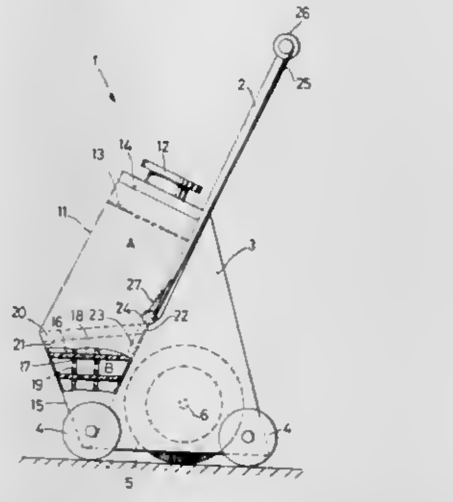
William F. Martin, Ridgewood, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Aug. 12, 1974, Ser. No. 496,462
Int. Cl.² A45D *33/02;* A47K *7/03;* A61H *7/00*
U.S. Cl. 401—8 **3 Claims**



1. A back rubbing device, comprising
a substantially cylindrical member;
a cord extending through the member;
a pair of rubber washer stop devices frictionally mounted on the cord and movably positionable on the cord for holding the member in a desired position on the cord;
handle means affixed to the ends of the cord said handle means including a hook member affixed to one end of the cord for hanging the device on a shower curtain rod; and
sleeve-type cover rubbing means on the member for application to the back of a user, said
cover rubbing means comprising sponge-type material for washing the back of the user.

3,936,199
METHOD OF AND APPARATUS FOR THE CLEANING OF TEXTILES

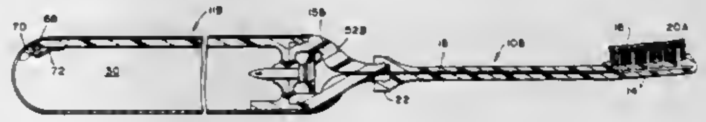
Erich Zimmermann, Friedrichshafen, Germany, assignor to Leifheit International Günter Leifheit KG, Nassau, Lahr, Germany
Continuation-in-part of Ser. No. 318,615, Dec. 26, 1972, abandoned. This application Mar. 22, 1974, Ser. No. 453,833
Claims priority, application Germany, Dec. 28, 1971, 2165008
Int. Cl.² A46B *11/00*
U.S. Cl. 401—40 **12 Claims**



1. An apparatus for producing foam for cleaning of textiles, especially of rugs and carpets, comprising applying means for applying foam to a surface to be cleaned; wall means defining two chambers each of which is adapted to accommodate one of two chemical components which react upon contact with one another and spontaneously produce foam for cleaning purposes; first and second passage means connecting said chambers with one another and with said applying means; and control means for selectively varying the effective cross-section of said first passage means so as to permit contacting of controlled amounts of one of said components with the other component via said first passage means, to result in spontaneous production of foam which is supplied to said applying means.

3,936,200
TOOTHBRUSH WITH DENTIFRICE ATTACHMENT

James L. O'Rourke, 6351 Memorial, Detroit, Mich. 48228
Filed Sept. 16, 1974, Ser. No. 506,009
Int. Cl.² A46B *11/04*
U.S. Cl. 401—184 **3 Claims**



1. A toothbrush comprising a brushing unit, a cartridge unit having a chamber adapted to contain a dentifrice, said chamber being defined at least in part by a squeezable wall, said brushing unit including a shank portion having a head at one end provided with bristles, a coupler at the other end of said shank portion releasably connected to one end of said cartridge unit, passage means from said chamber including passages through said one end of said cartridge unit, said coupler, said shank portion and said head to convey dentifrice to said bristles when forced from said chamber by the squeezing of said wall, said one end of said cartridge unit having a frangible seal across the passage therethrough initially closing said passage means and said coupler having a piercing element adapted to pierce said seal when said coupler and cartridge unit are connected together as aforesaid to open said passage

means, valve means normally closing said passage means and adapted to open when said wall is squeezed, and a check valve for said chamber adapted to close when said wall is squeezed and to open and admit air to said chamber when said wall is released after squeezing.

3,936,201

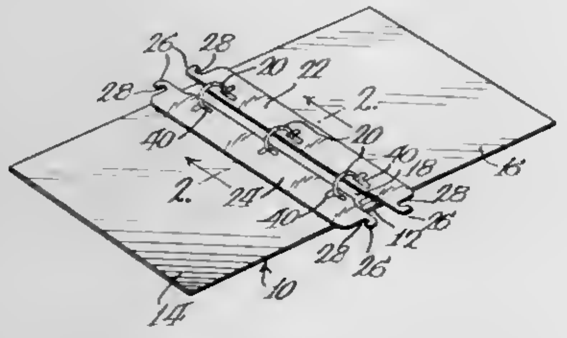
HANGER AND SHEET LIFTER FOR RING BINDER

William J. Kenney, Villa Park, and Lester K. Fleischmann, Highland Park, both of Ill., assignors to Standard Manifold Company, Chicago, Ill.

Filed July 18, 1974, Ser. No. 489,464

Int. Cl.² B42F *13/00*

U.S. Cl. 402—4 **3 Claims**



1. A hanger and sheet lifter in combination with a ring binder having an elongated spine, a plurality of openable rings on the spine and covers attached to the spine, comprising:

an elongated sheet lifter having a length greater than the length of said spine and a width greater than the ring size and less than the cover width,

a pair of hooks, one on each end of the lifter, opening in a direction away from the spine for receiving respective ones of spaced hanging rails for hanging support of the binder upon such rails;

means forming a plurality of elongated, uniform width closed end slots in the sheet lifter adjacent one edge thereof and extending in the direction of elongation of the lifter, each slot being located to receive one of said openable rings loosely threaded through the slot;

each slot having a length to allow the lifter to be shifted lengthwise of the binder spine in one direction to house one hook within the cover of the ring binder permitting standing the binder on end without interference between the housed hook and a supporting surface and to allow shifting of the lifter in opposite direction to expose both hooks outwardly of the binder for said hanging of the binder by the lifter upon rails, each lifter having means forming said slots with a closed leg extending in direction away from said adjacent one edge across the width of the lifter in alignment with the openable rings when both hooks are exposed outwardly of the binder permitting hanging of the binder by engagement of the spine on the lifters.

3,936,202

RING BINDER

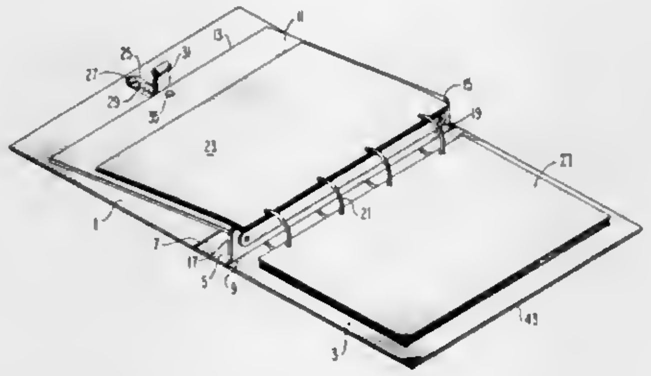
Peter Brajituli, Arguelles, 21, Oviedo, Spain

Filed Feb. 24, 1975, Ser. No. 552,124

Int. Cl.² B42F *13/00*

U.S. Cl. 402—24 **4 Claims**

1. A ring binder comprising a pair of covers, a plurality of rings carried by the binder for retaining punched pages thereon between the covers, an outer spine disposed between and swingably connected to both of said covers, an inner spine overlying said outer spine when said binder is opened flat, said inner spine being pivotably connected to said binder at one edge, a support on at least one a substantially rigid sheet swingably connected at one of its edges to the other edge of said inner spine and free at its opposite edge, said rings being mounted on said inner spine, and means to adjust the elevation of the inner edge of said support relative to the rings whereby when the covers of the binder are open, the inner edges of pages resting on the first-mentioned inner edge will be at about the same level as the upper portions of the rings,



said adjusting means comprising a series of teeth on the inner side of one said cover, said series extending in a direction perpendicular to said edges, and a detent on said free edge of said sheet and selectively edngageable between any adjacent pair of said teeth.

3,936,203

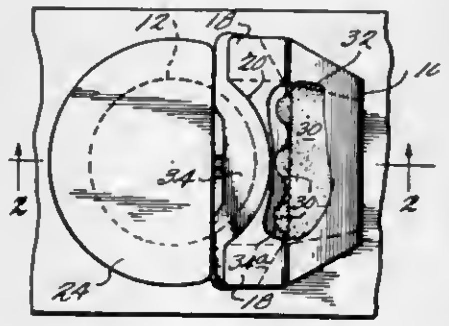
PIN RETENTION DEVICE

James E. Lowder, and Gary D. Perry, both of Lubbock, Tex., assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Aug. 6, 1974, Ser. No. 495,215

Int. Cl.² F16B *21/00*

U.S. Cl. 403—154 **3 Claims**



1. In a pinned joint: at least one pin having a shank and an enlarged head at one end, said pin being disposed in an aperture in a support element; a pin retention assembly including a flange-like retention member fixed to said support element adjacent the hole therein, said retention member having a flange portion spaced axially and laterally from one end of said hole so as to permit said pin to be inserted into said hole to a position in which a space is defined between said one end of said pin and the surface of the flange portion facing said support element, said head preventing further inserting movement of said pin, and a locking element releasably inserted into said space for engagement with said surface of said flange portion and with said one end of said pin so as to releasably lock said pin against withdrawal of said pin from said hole, said locking element residing in a notch in said pin, said notch having a first wall formed by said head and a second wall formed by the corresponding end of said shank, and means for applying transverse biasing forces to said locking element to frictionally engage the latter with said pin and with said retention member in order to hold said locking element in said space, said means including a plug of resilient material disposed in a pocket in said retention member and in engagement with said locking member.

3,936,204

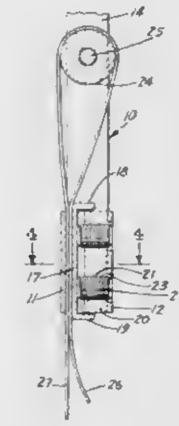
TAPE CLAMP

Carleton E. Jennrich, St. Paul, Minn., assignor to Central Research Laboratories, Inc., Red Wing, Minn.

Filed Oct. 2, 1974, Ser. No. 511,244

Int. Cl.² F16G *11/00*; A44B *21/00*

U.S. Cl. 403—209 **12 Claims**



1. A clamp for securing a loop in a flat tape, said clamp comprising:

A. an elongated frame of rectangular cross-section having first through fourth side walls,

B. a pair of parallel spaced apart second and fourth side wall members interconnecting the opposite ends of the frame and two longitudinally spaced apart pairs of first and third side wall members interconnecting the opposite ends of the second and fourth side wall members and defining a pair of openings in the opposite first and third side walls of said frame intermediate of the ends thereof,

C. tape clamping means disposed within one end of said frame adapted for face-to-face abutment with the inside surface of the first frame side wall, said clamping means comprising:

1. a flat rectangular clamp strap plate member having a pair of inwardly directed flanges at its opposite ends and disposed within one end of said frame adapted for face-to-face abutment with the inside surface of the first frame side wall,
2. a tape clamp nut adapted for face-to-face abutment with the inside surface of the third frame side wall, said clamp nut having at least one internally threaded passage extending through said nut,
3. at least one opening in said third side wall in substantial registry with the passage in said clamp nut, and
4. a screw extending through said passage in said clamp nut and said last named opening in said frame side wall, the inner end of said screw engaging said clamp strap,

D. an arcuate tape loop anchoring member supported in the openings in the frame first and third side walls between the second and fourth side walls on an axis perpendicular thereto, and

E. means at the opposite end of said frame for connecting the clamp to another element.

3,936,205

CROWNED HEAD RIVETED JOINT

Eugene R. Speakman, Fullerton, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation-in-part of Ser. No. 291,669, Sept. 25, 1972. This application June 3, 1974, Ser. No. 475,792

Int. Cl.² B25G *3/28*; F16B *7/04*

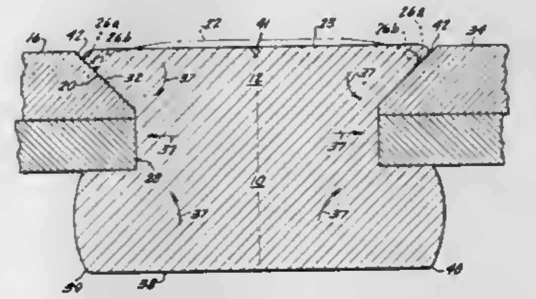
U.S. Cl. 403—279 **5 Claims**

1. A riveted joint for joining a plurality of members including:

a first member having a uniformly flared countersunk opening having maximum and minimum diameters defined therein and a cylindrical opening in axial alignment with said countersunk opening defined therein;

a second member having a cylindrical opening defined therein, said cylindrical opening in said second member being adjacent to and in registration with said cylindrical opening of said first member; and

a rivet inserted through said registered openings, said rivet having a shank and a head of shapes complementary to said openings which axially compressively engage said structural member openings and radially expand said



openings, the head of said rivet before driving having an upper surface shaped generally similar to the minor portion of a filled torus to form a crown having a generally planar raised central portion, the largest diameter periphery of said rivet head being positioned below the plane of the maximum diameter periphery of said countersunk opening and the crown being positioned above the plane of maximum diameter periphery of said countersunk opening.

3,936,206

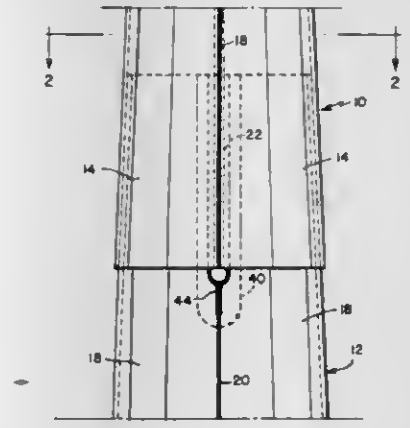
TUBULAR POLE SLIP JOINT CONSTRUCTION

Raymond F. Meisberger, West Chester, Pa., assignor to Bruce-Lake Company, Coatesville, Pa.

Filed Feb. 18, 1975, Ser. No. 550,373

Int. Cl.² E04N *12/08*

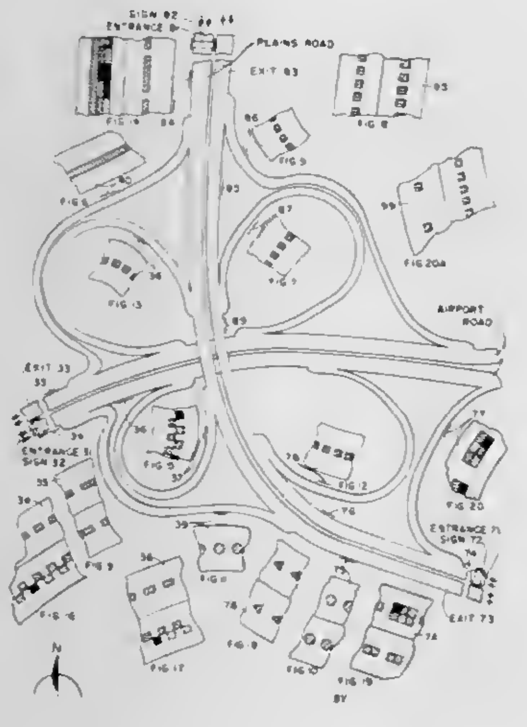
U.S. Cl. 403—334 **10 Claims**



1. In a slip joint construction for a tubular pole useful as a utility pole and having a first tapered tubular pole section constructed of a pair of half shells joined at longitudinal seam welds, a second tapered tubular pole section constructed of a pair of half shells joined at longitudinal seam welds, said first pole section having a male portion at one end thereof, said second pole section having a female portion at one end thereof, said male poriton being adapted to fit telescopically within said female portion with a friction tight slip joint connection, the improvement comprising a back-up strip welded to a longitudinal seam weld of said female section on the inside thereof, a longitudinal slot formed in the end of said male portion aligned with a longitudinal seam weld thereof, and a plate welded on the inside of said male portion and extending across and along the longitudinal extent of said slot to cooperate therewith to form a recess for receiving said back-up strip when the slip joint is made.

3,936,207
HIGHWAY COLOR CODE MARKING

James A. Sticha, Madison, Wis.
Continuation of Ser. No. 420,911, Dec. 3, 1973, abandoned. This application June 28, 1974, Ser. No. 483,965
Int. Cl.^{2} E01F *11/00*
U.S. Cl. 404—14 **6 Claims**



1. In a multilevel highway interchange having a plurality of paths, exits and entrances,

a multicolored stripe associated with each major path in the interchange,

the colors of said stripe being provided by marking means,

each of said colors corresponding to only one of said exits and each of said exits having a different color corresponding therewith,

said multicolored stripe having a colored stripe leading away therefrom in association with each path departing from said major path with which it is associated,

said colored stripe leading away from said major path being a multicolored stripe for each such path which may be followed toward more than a single exit,

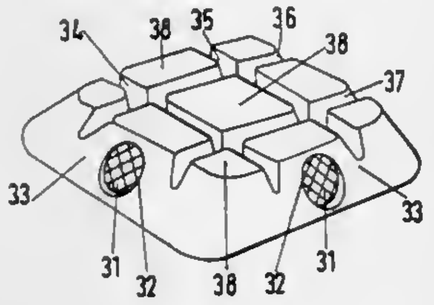
said multicolored stripe having a colored stripe joining it in association with each path which joins said major path,

each entrance provided with sign means indicating the association of colors and exits.

3,936,208
REFLECTOR STUD

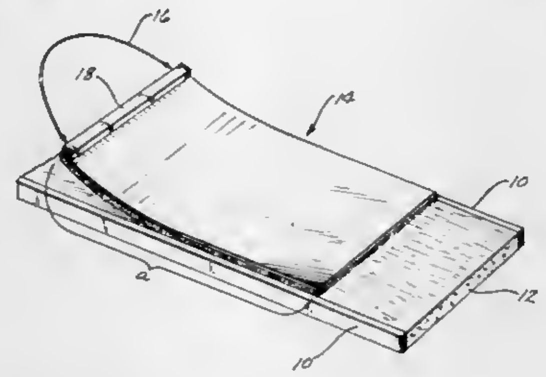
Frederick Baynes, Bowden, and James Munro Lawrie, Bolton, both of England, assignors to Dunlop Limited, London, England
Filed Mar. 28, 1974, Ser. No. 455,905
Claims priority, application United Kingdom, Apr. 3, 1973, 15872/73
Int. Cl.^{2} G08G *1/00*
U.S. Cl. 404—16 **9 Claims**

5. A reflector stud comprising a housing which is of elastomeric material of a hardness of 60 to 95 I.R.H.D. and having a substantially flat under surface to be adhered to a road surface, said housing being divided by means of channels in said housing in the surface opposite to said flat under surface into zones which can deform substantially independently of each other, said housing having at least one side face extending substantially parallel to one of said channels, said side face containing a location for a reflector element, and a reflector element mounted therein.



3,936,209
METHOD FOR TEXTURING A CONCRETE SURFACE

Colonel F. Krage, Sioux City, Iowa, assignor to Russell B. Dickinson, Des Moines, Iowa
Filed Mar. 7, 1974, Ser. No. 449,202
Int. Cl.^{2} E01C *7/35*
U.S. Cl. 404—75 **1 Claim**



1. A method for texturing concrete for use as a supporting surface for vehicle travel, comprising:

pouring uncured concrete on a supporting surface area, troweling said concrete to the approximate desired surface configuration,

dragging a texturing pad over the surface of said concrete in the normal direction of travel of vehicles on the resulting supporting surface, said texturing pad comprising a planar flexible sheet of backing material and a plurality of downwardly presented tufted clusters arranged in a matrix of rows and extending downwardly from said backing material; said clusters each comprising a base attached to the downwardly presented surface of said backing material and a plurality of blades extending downwardly therefrom in a circular array around said base to engage said concrete while moving thereover, each of said clusters being formed from a plastic material, each of said blades being bent intermediate its ends and being flexible so as to deflect irregularly in a plurality of directions whereby said plurality of blades create nonuniform marks in said concrete while being dragged thereover.

3,936,210
CONCRETE FLOAT AND ACCESSORY THEREFOR

Erwin L. Oehlerking, 9798 Oak, Des Plaines, Ill. 60016
Filed Nov. 13, 1974, Ser. No. 523,214
Int. Cl.^{2} E01C *23/02*
U.S. Cl. 404—89 **6 Claims**

1. A concrete finishing tool comprising

a. a float member having an elongated element secured thereto for manipulating said float member to and fro in compacting and finishing the surface of a concreted area;

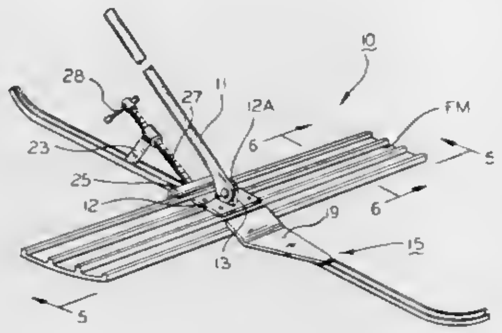
b. means secured to said float member after the same has completed the compacting and finishing operations for describing lines of weakness in the concrete surface for controlling the direction of cracks formed in the concreted area upon subsequent use thereof, said means comprising:

c. a rigid elongated surface engaging member deforming the surface of said concreted area before the curing of same;

1. said member having a length which is much greater than the width of said float member and having upturned ends for causing said member to ride smoothly on said surface in deforming the same;

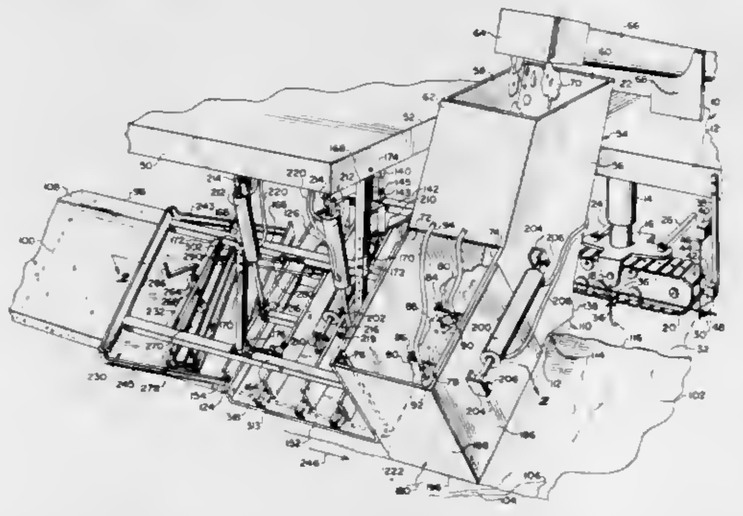
d. means for detachably mounting said member to a side of said float member comprising an element bearing along one edge of said float member and a second element bearing along an opposed edge of said float member;

e. means extending between said elongated member and said second element for exerting pressure against said second element to hold said float member between both of said elements with said elongated member held in position with reference to said float member.



3,936,211
DRAINAGE DITCH MULE

David J. Miller, and Charles P. Miller, both of McHenry, Ill., assignors to Miller Formless Co., Inc., McHenry, Ill.
Filed Apr. 14, 1975, Ser. No. 567,500
Int. Cl.^{2} E01C *19/48*
U.S. Cl. 404—104 **10 Claims**



10. A ditch paving tool adapted for attachment to the side frame of a prime mover to be transported thereby to form a continuous layer of concrete along a sloping wall and top birm of a graded ditch comprising:

an open-bottomed hopper for said concrete including front and rear spaced walls, an inside wall defining the edge of said concrete layer over said birm and a transversely adjustable outside wall defining the edge of said concrete along the bottom of said sloping wall of said ditch;

the front wall of said hopper having its bottom edge contoured to said graded ditch and birm;

the bottom edge of said rear wall being offset above the contour of the bottom edge of said front wall to define the contour of the top surface of said concrete layer;

said rear wall including an integral slip form means comprising a rearwardly extending flat plate conforming longitudinally to the contour of said bottom edge of said rear wall and having a second inside wall coextensive with the inside wall of said hopper defining the edge of said concrete layer over said birms;

said adjustable outside wall of said hopper having a pair of side walls attached to the front and rear edges and extending on the outsides of and in sliding contact with the front and rear walls of said hopper;

one of said sliding walls being adjacent said front wall of said hopper and having its bottom edge substantially on the plane of the bottom edge of said front wall of said hopper;

the second of said side walls being adjacent said rear wall of said hopper and having its bottom edge in sliding relationship over the rearwardly extending plate of said slip form;

a web wall extending rearwardly of the bottom edge of said second sliding side wall of said hopper with its under surface also in sliding relationship over the top of said rearwardly extending plate of said slip form and defining therewith a longitudinal offset on the under surfaces;

hold-down means to retain said web wall in said sliding relationship uon said rearwardly extending plate of said slip form under pressure of concrete thereunder;

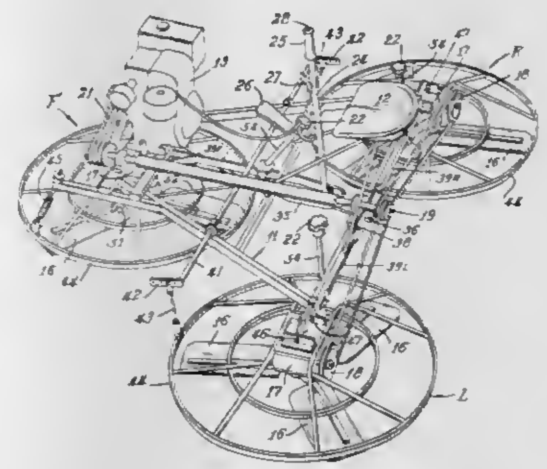
a pan-shaped screed member trailing the rear end of said slip form and having a transverse width about equal to the width of said slip form along said sloping wall;

said screed member having a rounded front edge extending transverse and at an angle to the rear end of said slip form, said angle opening toward the top of the sloping wall of said ditch; and

means to resiliently suspend said screed member behind said slip form in pressure contact with said concrete layer being formed and with its lower trailing corner over said off-set whereby to form a flat top surface in said concrete layer.

3,936,212
RIDE-TYPE SURFACE-WORKING MACHINES

Orville H. Holz, Sr., Palm Harbor, Fla., and Norbert J. Holz, Roselle, Ill., assignors to Orville H. Holz, Jr., Roselle, Ill., a part interest
Continuation-in-part of Ser. No. 258,589, June 1, 1972, abandoned. This application May 14, 1973, Ser. No. 359,740
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl.^{2} E01C *19/22*
U.S. Cl. 404—112 **15 Claims**



1. A ride-type surface-working machine comprising three driven rotors rotating about widely spaced generally vertical axes with each rotor engaging the supporting surface with surface-working means distributed about the rotor axis and which follow an annular path along a supporting surface, a frame carried by the rotors and supporting driving means for the rotors and an operator's position, said rotors being mounted on the frame by means permitting relative tilting of each rotor about one or more horizontal axes, and control

means operatively related to said frame and rotors and controllable by an operator riding on the frame for applying selectively tilting pressures to the rotors, the tilting pressure applied to a rotor tending to tilt the entire rotor unit about a horizontal axis, for controlling the posture and movement of the machine by variations of downward working pressure distribution; said control means including means for applying tilting pressures to all three rotors, to one side of each for forward movement of the machine and alternatively to opposite sides of each for rearward movement of the machine.

3,936,213

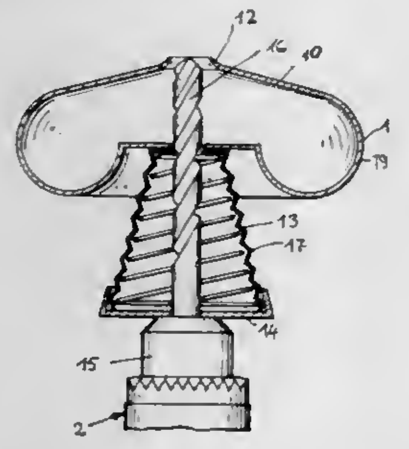
DEVICE FOR USE WITH DRILLS OR THE LIKE FOR THE COLLECTION OF WORKING DEBRIS

Friedrich Kappel, Sudring 3, 8941 Trunkelsberg, Germany

Filed Mar. 14, 1974, Ser. No. 451,272

Int. Cl.² B23B *47/00, 39/00*

U.S. Cl. 408—67 **1 Claim**



1. In combination a debris collection device and a tool having a rotatable working component which generates debris during operation, said collection device comprising a hollow collector housing which is disposed around said working component and rotatable therewith, said housing having a base, an annular side wall and an upper opening for receiving generated debris, said housing being mounted on a part of the tool through compression spring means which urges the housing in the direction of the operative end of the working component of the tool, said spring means being carried by a support plate which rests on said part of the tool, and a bellows disposed on said support plate and around the spring means, said spring means and support plate being positioned between the collector housing and the part of the tool upon which the support plate rests.

3,936,214

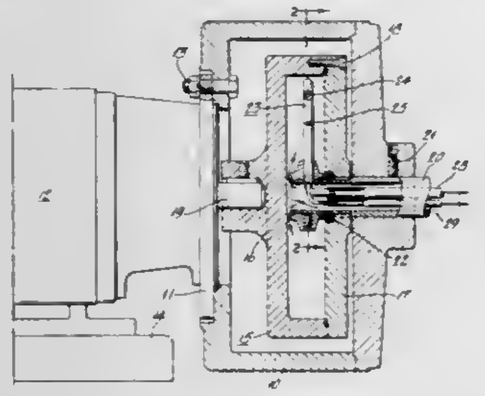
PUMPING TWO-PHASE FLUIDS

Joseph E. Zupanick, Richardson, Tex., assignor to Sun Oil Company, Dallas, Tex.

Filed Jan. 22, 1975, Ser. No. 542,996

Int. Cl.² F04D *29/08*

U.S. Cl. 415—89 **3 Claims**



1. In a centrifugal pump comprising:

- a generally cylindrical pump case rotatable about a central axis and defining a closed cylindrical main pump chamber,
- a stationary arm extending from said central axis to a point within the case,
- a central inlet port by which fluid enters said closed main pump chamber,
- a fluid inlet orifice mounted on the outermost end of said stationary arm,
- a fluid outlet port,
- a passageway positioned within said stationary arm providing fluid communication from said inlet orifice to said fluid outlet port and
- means for rotating said case whereby fluid charge is drawn at inlet pressure into the case via the inlet port, transported to the outer section of the pump case by centrifugal force, removed at a pressure essentially higher than the inlet pressure by the inlet orifice and transported to an exterior location at said pressure higher than the inlet pressure,

an improvement comprising:

- a. a second fluid inlet orifice positioned on the stationary arm at a location essentially closer to the central axis of the rotatable case than the fluid inlet orifice recited above,
- b. a second fluid outlet port, and
- c. a second passageway positioned within said stationary arm providing fluid communication from said second fluid inlet orifice to said second fluid outlet port whereby a second fluid drawn into the case via the inlet port at inlet pressure is removed at a pressure essentially higher than the inlet pressure by said second fluid inlet orifice and transported via said second passageway and said second outlet port to a second exterior location at said pressure higher than the inlet pressure.

3,936,215

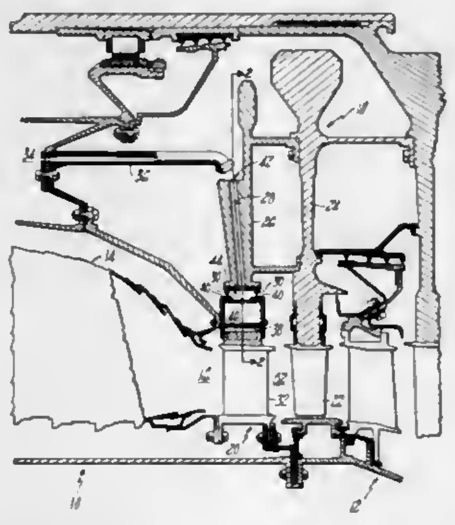
TURBINE VANE COOLING

Richard W. Holl, Newington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 20, 1974, Ser. No. 534,620

Int. Cl.² F01D *5/00*

U.S. Cl. 415—11.5 **8 Claims**



1. In a gas turbine engine of the type having coolable turbine stator vanes and containing apparatus including conduit means leading from the compressor flow path for supplying cooling air to the coolable stator vanes, the improvement comprising:

- compression means disposed between the conduit means and the coolable vane for raising the pressure of the cooling air to a value in excess of the pressure of the air within the compressor flow path; and
- fixed flow straightening means operatively disposed between said compression means and the coolable vanes to recover the velocity pressure head of the cooling air which is discharged from said compression means.

3,936,216

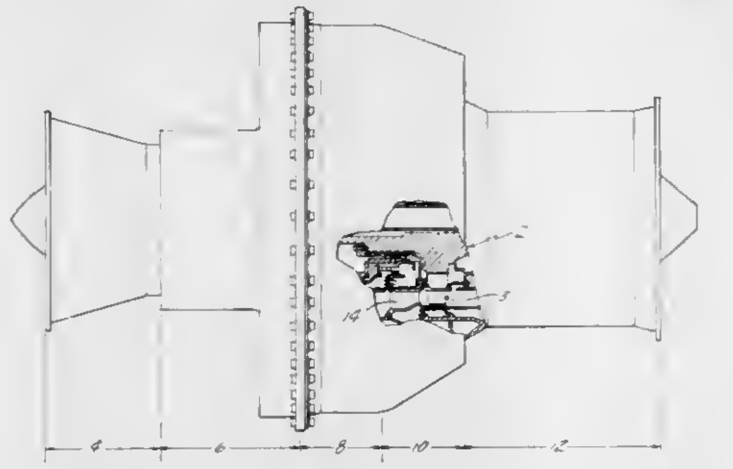
BLADE SEALING AND RETAINING MEANS

James T. Dixon, Tequesta, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 21, 1974, Ser. No. 453,441

Int. Cl.² F04D *31/00;* **F01D** *5/00*

U.S. Cl. 415—116 **6 Claims**



1. In combination, a rotor disk mounted for rotation, said rotor disk having slots provided in the periphery thereof, rotor blades, said rotor blades having root portions shaped to fit the slots in the periphery of the disk, each blade having a small coverplate fixed to its root portion, each small coverplate being contoured so that it extends over the edges of its blade slot for bearing against the side of the disk and having inner and outer edges, a full ring coverplate being positioned adjacent said rotor disk said full ring coverplate having a cylindrical member extending therefrom which engages all of the small coverplates at a point between the inner and outer edges of the root portions and means for providing a biasing force against the small coverplates through said cylindrical member.

3,936,217

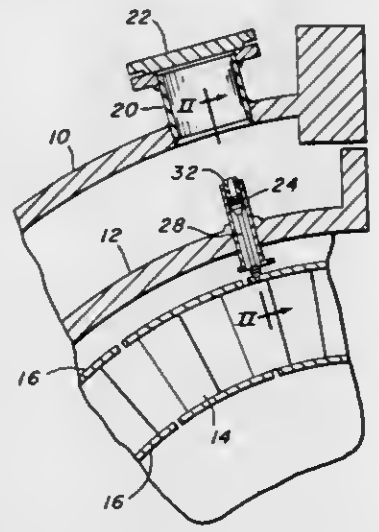
INSPECTION PORT FOR TURBINES

Michael J. Travaglini, Aston, and Joseph F. Abbruzzesi, Swarthmore, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 31, 1975, Ser. No. 546,067

Int. Cl.² F01D *25/00*

U.S. Cl. 415—118 **5 Claims**



1. In a turbine having casing means, with an inspection port, the combination comprising an elongated tubular member extending through at least a part of the casing means in alignment with an opening giving access to the interior region to be inspected, an elongated sealing member extending through said tubular member and engaging said opening in sealing relation, a closure member substantially closing the outer end of the tubular member, and spring means in the tubular member disposed to apply sealing pressure to said sealing member and to apply a force to said closure member to positively retain it in place.

3,936,218

FLUID SYSTEMS

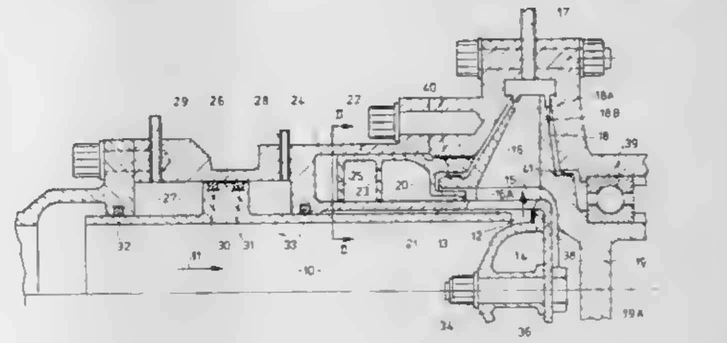
John Rodney Dyson Fuller, Bristol, England, assignor to Rolls-Royce (1971) Limited, London, England

Filed June 4, 1974, Ser. No. 476,336

Claims priority, application United Kingdom, June 12, 1973, 27957/73

Int. Cl.² F04D *29/66*

U.S. Cl. 415—119 **4 Claims**



1. A hydraulic system comprising a duct for the containment of liquid, an orifice in the wall of the duct, a compartment connected to the duct through the orifice and means for generating a partial vacuum which causes a discontinuity in the liquid in the duct such that the discontinuity contains only liquid vapor, the orifice being disposed adjacent said means so that generation of the discontinuity causes the compartment to be substantially emptied through the orifice, and the orifice and the compartment being so sized and disposed that any shock wave propagated upon sudden disappearance of the discontinuity will be dissipated in part at the orifice and in part upon filling of the compartment, and said system further comprising a second compartment connected to the first compartment through a second orifice, the arrangement being such that generation of the discontinuity causes the second compartment to be substantially emptied through the second orifice and any shock wave propagated upon disappearance of the discontinuity will be dissipated in part at the first orifice, in part at the second orifice and in part upon filling of the second compartment.

3,936,219

FLEXIBLE TURBINE MISSILE SHIELD

Martin E. Holmes, Philadelphia, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 10, 1974, Ser. No. 478,130

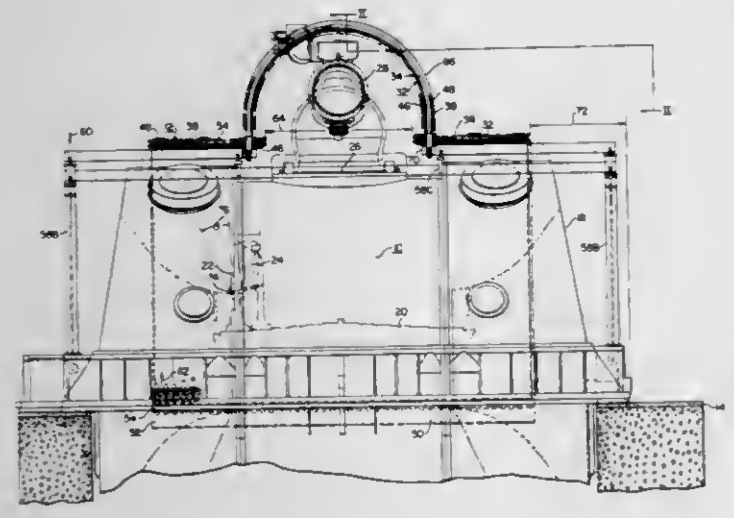
Int. Cl.² F04D *29/70*

U.S. Cl. 415—121 G **16 Claims**

1. A shield for restraining flying objects having kinetic energies associated therewith, said shield enclosing a predetermined volume around a device having movable elements therein, said shield comprising:

- a support framework disposed about said device, and,
- a plate member attached to said framework,
- said support framework comprising:
  - a first support member circumferentially disposed about said device, and,
  - a second support member longitudinally disposed about said device, said second support member being substantially transverse to said first support member, said second support member being connected to said first support member,
  - said first and said second support members defining at least one opening therebetween, said plate member

being disposed so as to cover said opening between said first and said second support members,



said shield being flexible to deflect when said flying objects impinge thereinto, said deflection of said shield dissipating said kinetic energies of said flying objects and containing said flying objects within said predetermined volume.

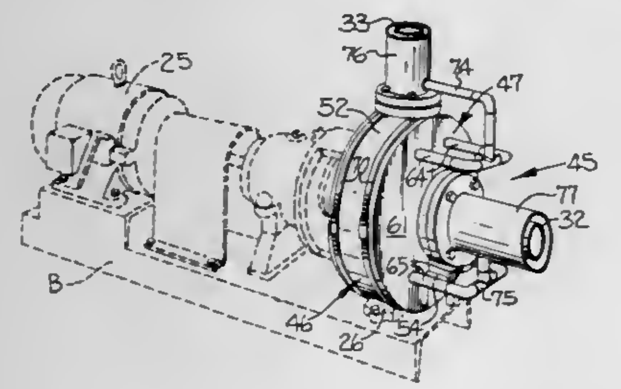
3,936,220
JACKET CONSTRUCTION FOR FLUID-CIRCULATING PUMPS

James R. Henderson, Charlotte, N.C., assignor to Controls Southeast, Inc., Charlotte, N.C.

Filed Aug. 26, 1974, Ser. No. 500,745

Int. Cl.^{2} F01D *5/08*

U.S. Cl. 415—178 **19 Claims**



1. In a fluid-circulating pump of the in-line type having a body provided with inlet and outlet portions projecting outwardly at opposite ends of the body, and impeller means in said body for pumping fluid therethrough; the combination therewith of means substantially surrounding said pump body and outwardly projecting inlet and outlet portions in heat-transferring relation thereto and cooperating with said pump for directing a temperature controlling fluid in heat-transferring relation thereto and comprising a housing of heat-conductive material including inner and outer walls having therebetween at least one fluid passageway provided with inlet and outlet ports for circulation of the temperature controlling fluid through said passageway.

3,936,221
VERTICAL CANTILEVER PUMP

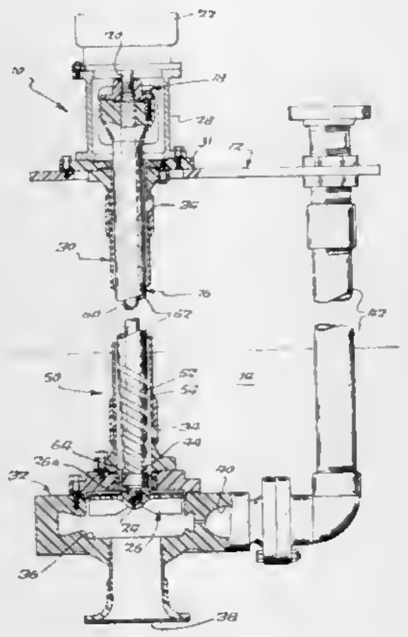
Valenteen S. Lobanoff, Seneca Falls, N.Y., assignor to Goulds Pumps, Inc., Seneca Falls, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,017

Int. Cl.^{2} F04D *1/00, 7/00*

U.S. Cl. 415—200 **2 Claims**

1. A vertical cantilever pump adapted for use in pumping liquids of a corrosive and/or abrasive nature, said pump comprising a vertically downwardly extending cylindrical support pedestal having a pump casing adjacent its lower end for positioning same within a bath of liquid confined by a tank, said pump casing having an opening in an upper wall thereof and a liquid inlet and a pumped liquid outlet, and a pump drive shaft freely extending downwardly through said pedestal and said pump casing opening for supporting an impeller within said pump casing, said pedestal being arranged in flow communication with said pump casing through said pump casing opening and said pedestal being of a substantially closed construction whereby pumped liquid escaping from said pump casing through said pump casing opening upwardly along said pump shaft and into said pedestal forms a tubular column of liquid tending to reach a normal height proportional to normal pumped liquid discharge pressure, said pedestal and said impeller and said casing being formed of a fiber glass synthetic resin thermoset composite resistant to said liquid, said pump shaft being formed with a lengthwise extending metal core element fixed to said impeller and a covering sleeve bonded to said core element for shielding same from contact with said liquid and cooperating therewith to define an extremely rigid pump shaft, said covering sleeve being formed of a wound fiber glass synthetic resin thermoset composit resistant to said liquid, said covering sleeve having its surface shaped to define a pump device cooperating with a relatively closely positioned bounding surface of said pedestal for creating a downwardly directed force acting on said pumped liquid escaping from said pump casing for maintaining said column at a height below an abnormal height permitting escape of liquid from said tank upon occurrence of a back pressure in excess of said normal pumped liquid discharge pressure, and said covering sleeve surface being tapered relative to said bounding surface of said pedestal in a direction downwardly towards said impeller and defining a spiralwise extending pumping groove.



3,936,222
GAS TURBINE CONSTRUCTION

Herbert F. Asplund, South Windsor; John R. Hess, Middletown, and Joseph R. Kozlin, West Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

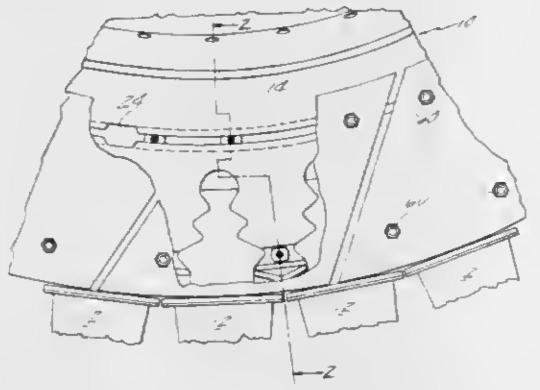
Filed Mar. 28, 1974, Ser. No. 455,838

Int. Cl.^{2} F01D *5/18*

U.S. Cl. 416—95 **6 Claims**

1. In a gas turbine engine, a rotatable disk and blade assembly comprising:
- a disk having a side which is essentially perpendicular to the axis of rotation of the disk and which includes a track incorporated therein;
- a plurality of blades attached to and extending radially from the disk;

- a plurality of sideplates in surface contact with the side of the disk; and
- means for attaching the sideplates to the disk, the attaching means slidably engaging the side track of the disk and having the freedom to relocate within the track under varying engine thermal conditions.



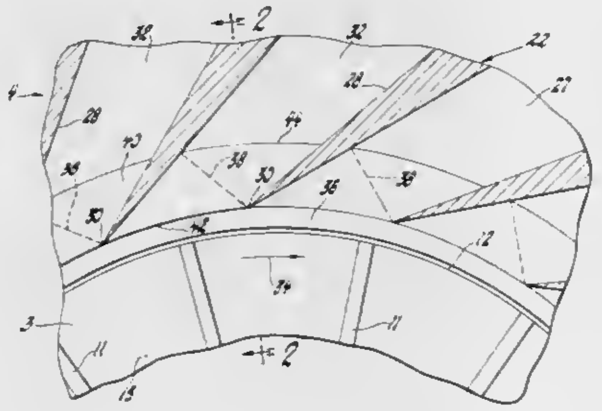
3,936,223
COMPRESSOR DIFFUSER

Samy Baghdadi, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 23, 1974, Ser. No. 508,352

Int. Cl.^{2} F04D *29/44*

U.S. Cl. 415—211 **2 Claims**



1. A centrifugal compressor comprising, in combination, a rotor operable to discharge gas at high velocity from the periphery of the rotor with radial and tangential components of velocity and a stator enclosing the rotor, the stator including a diffuser disposed around the periphery of the rotor to receive and diffuse the gas discharged from the rotor; the diffuser defining an annular aray of diffusing passages extending radially outwardly and circumferentially from the rotor, at least the downstream portion of each passage being divergent in area in the direction of flow; the passages merging at the entrances to the passages and being discrete at the outlets from the passages; the diffuser including front and rear walls extending generally radially from the periphery of the rotor defining the front and rear boundaries of the diffusing passages and including an annular array of vanes each extending radially and circumferentially from a leading edge and from one said wall to the other, the vanes defining the radially outer and inner boundaries of the diffusing passages; each passage having a throat bounded by the walls, by the leading edge of the vane defining the inner boundary of the passage, and by the inner surface of the vane defining the outer boundary of the passage; in which the improvement comprises an annular flow splitter disposed centrally between the front and rear walls, extending circumferentially across each passage and extending radially through the passage throats, the inner and outer perimeters of the flow splitter being substantially at the inner and outer boundaries of the throats, respectively, the flow splitter dividing the entrance to each diffusing passage into a front passage bounded by the front wall and the splitter and a rear passage bounded by the rear wall and the splitter, so as to reduce flow separation in the diffuser.

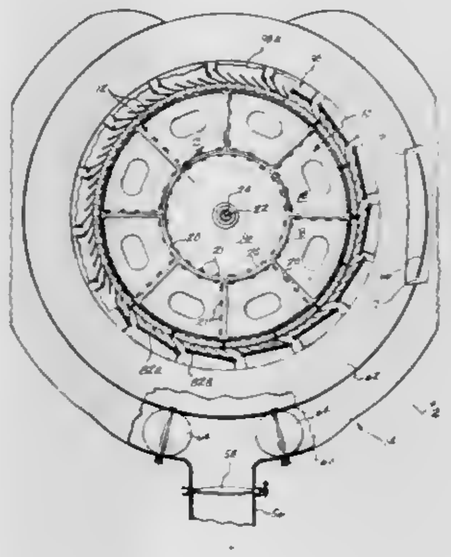
3,936,224
POWER TURBINE

Oscar M. Nordquist, 1931 N. Rainier, Bremerton, Wash. 98310

Filed July 25, 1974, Ser. No. 491,788

Int. Cl.^{2} F01D *1/18*

U.S. Cl. 415—203 **5 Claims**



1. A water turbine apparatus, comprising:
- a. a main turbine wheel mounted for rotation about a generally vertical axis;
- b. a plurality of turbine blades mounted to the turbine wheel at spaced intervals along the circumference of the wheel so as to travel a circular tangentially forward path with said wheel about said axis of rotation;
- c. an annular water inlet distribution structure positioned generally circumferentially around said turbine blades and defining a generally annular water distribution chamber also positioned circumferentially around said turbine blades;
- d. a vane structure positioned circumferentially around said turbine blades and defining a plurality of water nozzles positioned substantially circumferentially around said blades and extending from said distribution chamber to said blades in a tangentially forward and inward direction,
- e. a turbine blade housing structure having a generally annular configuration and having top and side walls substantially enclosing the circular path of said turbine blades so as to fit closely adjacent the top and sides of the blades and providing a downwardly open water discharge passage below said turbine path,
- f. each of said turbine blades having a generally concave impact surface which is curved in a vertical plane with the upper end portion of said curve having a substantial upward and rearward slope, whereby water impacting said impact surface is directed downwardly through said discharge passage.

whereby water flowing under pressure from said distribution chamber travels through said vane water passages to impact said turbine blades to cause rotation of said wheel, with the water being discharged from the blades downwardly through said discharge passage.

3,936,225
DIAGONAL IMPELLER PUMP

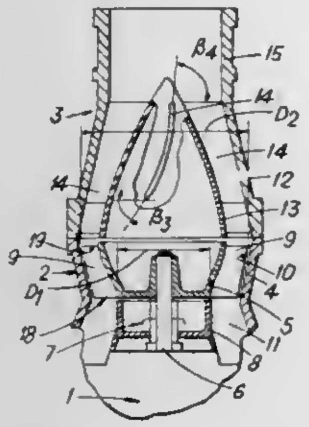
Bo Gustaf Stjernstrom, Tyreso, Sweden, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 1, 1974, Ser. No. 465,785

Claims priority, application Sweden, May 9, 1973, 7306490

Int. Cl.² F04D *1/04, 29/26*

U.S. Cl. 415—207 **2 Claims**



1. An improved pump of the type wherein there is provided an impeller unit having a stationary conical impeller housing, a motor driven impeller rotatably coupled in said housing, and a stationary diffuser unit which extends coaxially with said impeller housing at the outlet side of said impeller, and wherein said impeller comprises a hollow hub having a cross-section which increases from the inlet side of the impeller to the outlet side thereof, the hub outer diameter at the inlet side ranging between 40% and 80% of the maximum outer diameter of said impeller, and wherein the diffuser unit comprises a substantially conical diffuser housing which converges in the flow direction of the pumped medium and which has arranged therein a hollow central body said impeller comprises:

a plurality of radial curved blades on said hollow hub, the outer edges of which lie in a conical imaginary surface in the direction of flow such that the angle between a plane extending at right angles to the pump shaft and a plane tangential to said impeller blades at the outlet edge of the blades lies between 15° and 90° while the corresponding angle at the inlet edge of the blades lies between 10° and 30°; and

a plurality of radial curved guide vanes for holding said central body centered in the diffuser housing, said guide vanes having an inlet angle between 30° and 60° and an outlet edge angle between 75° and 105°.

3,936,226
CONTROL SYSTEM FOR VARIABLE PITCH FAN PROPULSOR WITH REVERSE PITCH

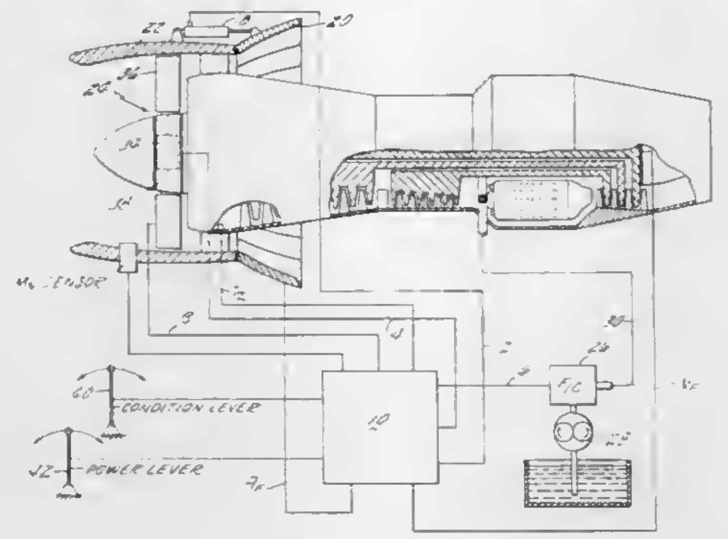
Kermit I. Harner, Windsor, and Roy W. Schneider, Ellington, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed June 7, 1974, Ser. No. 477,533

Int. Cl.² B63H *3/10;* **F02C** *9/02;* **B64C** *11/44*

U.S. Cl. 416—28 **4 Claims**

1. For a ducted fan propulsor for aircraft having variable pitch blades movable to a reverse position through feather and driven by a free turbine of a turbine type power plant, coordinated control means for controlling the pitch of said blades and the flow of fuel to said power plant, said coordinated control means for controlling fuel flow includes scheduling means responsive to power lever position, flight Mach No. and power plant inlet temperature for producing a first signal, means responsive to free turbine speed for producing a second signal, means responsive to said first signal and said second signal for producing an output signal for controlling fuel flow, said coordinated control means for controlling pitch of the blades being responsive to power lever position and flight Mach No., said coordinated control means having reverse power interlock to reduce forward thrust during a landing operation, to coordinate the fuel flow and reverse pitch by having said fuel flow further controlled by the blade angle of said blades and the pitch controlled by power lever position, and an engine operating parameter.



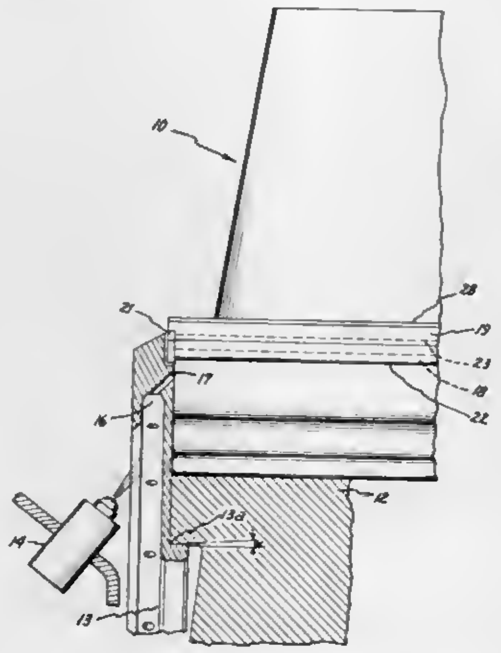
3,936,227
COMBINED COOLANT FEED AND DOVETAILED BUCKET RETAINER RING

Lawrence A. Wojcik, Peabody, Mass., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 385,096, Aug. 2, 1973. This application Jan. 23, 1975, Ser. No. 543,480

Int. Cl.² F01D *5/18*

U.S. Cl. 416—95 **6 Claims**



1. In a gas turbine wherein a turbine disk is mounted on a shaft rotatably supported in a casing, said turbine disk extending substantially perpendicular to the axis of said shaft and having turbine buckets mounted on the outer rim thereof, each bucket having a dovetailed root, means located radially inward of said buckets adjacent said turbine disk for introducing liquid coolant within said turbine in a radially outward direction to an annular gutter to enter open-circuit distribution paths by which said coolant reaches and cools each of said buckets, each distribution path comprising a cooling channel/manifold system in one bucket for traversal of a portion of the bucket by the coolant followed by discharge thereof from the bucket, the improvement comprising, at least one one-piece annular member attached to said outer rim solely by means of an overlap in the generally axial direction between an annular portion of said member and an annular portion of said outer rim, the overlap being an interference fit conformed as a reverse angle, said annular member having an annular gutter formed therein, said gutter being in flow communication with the open-circuit coolant distribution paths via circumferentially spaced feed holes in said annular member.

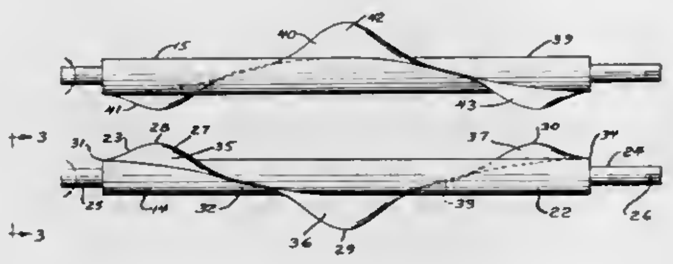
3,936,228
BOAT PROPELLER

Paul P. Symbol, 378 N. Slusser St., Grayslake, Ill.

Filed May 8, 1974, Ser. No. 467,866

Int. Cl.² B63H *1/14*

U.S. Cl. 416—176 **8 Claims**



1. A boat propeller comprising an elongated shaft and three vanes extending outwardly from the surface of the shaft at axially spaced positions there along, the intersection of each vane with the shaft lying along a common helix extending around the shaft, each vane having a smoothly curved outer periphery which extends outwardly from the shaft to form an apex for the vane and then inwardly toward the shaft, the apex of each vane being spaced about 120° from the apex of each adjacent vane around the circumference of the shaft.

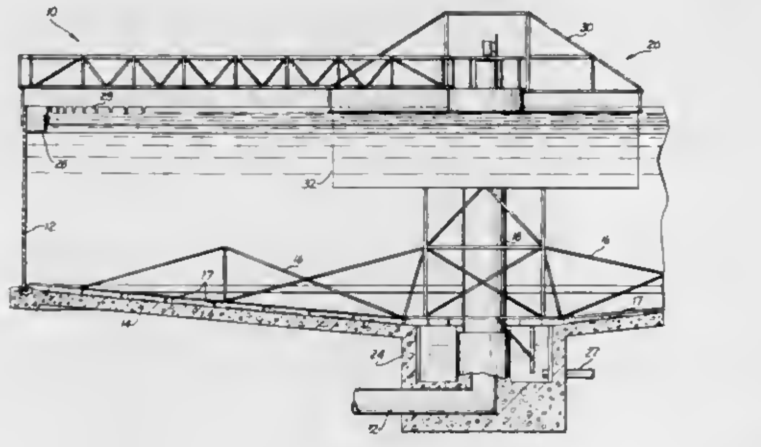
3,936,229
LIQUID AGITATOR

George E. Glover, Philadelphia, Pa., assignor to Crane Co., New York, N.Y.

Continuation-in-part of Ser. No. 10,777, Feb. 12, 1970, abandoned. This application May 10, 1973, Ser. No. 357,401

Int. Cl.² B01F *7/20*

U.S. Cl. 416—178 **11 Claims**



1. A liquid agitator of the type having at lease one paddle mounted for rotation about an axis in a fluid receiving chamber, said paddle having a paddle area which extends radially from said axis, said paddle area being divisible into radial increments, each increment generating an annular volume when said paddle is rotated about said axis, said paddle including at least one pale element in each radial increment, each said pale elements having a predetermined size, shape and disposition for dissipating kinetic energy in a liquid when said paddle is rotated through said liquid whereby the energy dissipated per unit volume of liquid in said annular volumes through which each of said pale elements of said paddle travels is substantially the same.

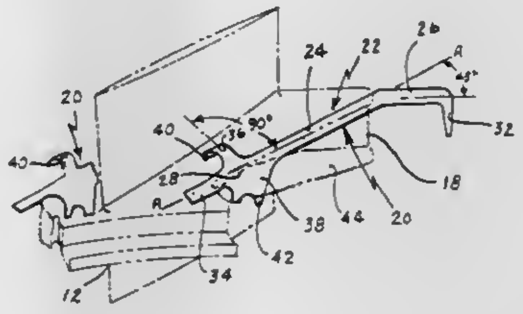
3,936,230
SELF-SUPPORTED, SELF-LOCATING SEAL FOR TURBINE ENGINES

Augustus M. Helmintoller, Jr., Loveland, and Gary B. Manharth, Milford, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 9, 1974, Ser. No. 468,357

Int. Cl.² F01D *5/22*

U.S. Cl. 416—193 R **1 Claim**



1. A self-locating, self-supporting seal adapted to fit within the cavity formed between the midspan joints of adjacent blades of a turbine engine comprising an elongated body formed of a synthetic plastic material having an elongated central portion and a pair of end segments, said central portion lying in a preselected plane and having a longitudinal axis, one of said end segments being of a length substantially half the length of said central portion and being positioned at substantially 45° with respect to said longitudinal axis of said central portion, said one segment having an end portion, said end portion of said one end segment lying in a plane extending substantially 90° from said plane of said central portion in order to provide a rigid support for said seal within said turbine blade cavity, said other end segment being formed of three protrusions, the first of said protrusions being of a substantially rectangular configuration and an extension of said central portion, located along said longitudinal axis of said central portion and lying completely in the same plane as said central portion, the second of said protrusions being positioned at an angle of substantially 90° with respect to said longitudinal axis of said central portion and having an end lying in a plane extending substantially 90° from the plane of said central portion, and the third of said protrusions being located substantially opposite said second protrusion and having an end having a pair of extensions thereon, said pair of extensions extending substantially 90 ° from the plane of said central portion, whereby upon positioning of said seal within the cavity formed between the midspan joints of adjacent blades of a turbine engine said end segments of said seal by their geometry, utilize the centrifugal forces acting theron to fixedly secure said seal in position.

3,936,231
OIL WELL PUMPOFF CONTROL SYSTEM

Bobby L. Douglas, Garland, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 469,264, May 13, 1974, Pat. No. 3,930,752, which is a continuation-in-part of Ser. No. 365,881, June 1, 1973, Pat. No. 3,854,846. This application Nov. 5, 1974, Ser. No. 520,993

Int. Cl.² F04B *49/00*

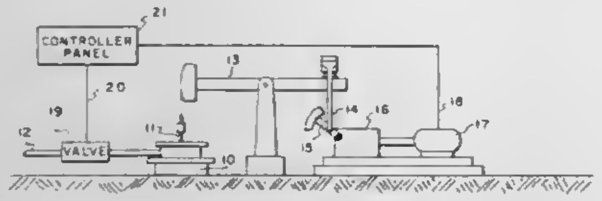
U.S. Cl. 417—12 **15 Claims**

1. A system for controlling the operation of a well pumping installation including an hydraulically actuated downhole pump, a fluid pressurizer communicating with said pump, a motor for operating said pressurizer, and a well fluid flowpipe; said system comprising:

flow detection means located in the well flowpipe and arranged to be responsive to fluid flow therethrough;

signal means connected to said flow detection means and arranged to generate signals indicative of said response;

means for receiving said signals and determining if the percentage of time during a given time interval that such signals are occurring is below a predetermined value; and,



means for terminating the pumping operation when the percentage of time said signals are occurring is less than the predetermined value.

3,936,232
FUEL INJECTION PUMPING APPARATUS WITH TIMING ADJUSTMENT

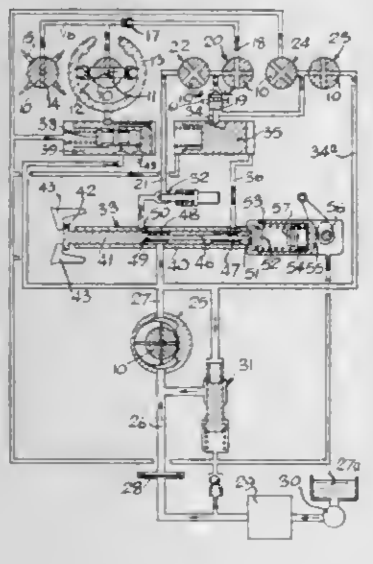
Dorian Farrar Mowbray, Burnham, England, assignor to C.A.V. Limited, Birmingham, England

Filed Apr. 9, 1974, Ser. No. 459,342

Claims priority, application United Kingdom, Apr. 14, 1973, 18096/73

Int. Cl.² F04B *23/12, 19/02, 3/00*

U.S. Cl. 417—206 **4 Claims**



1. A liquid fuel injection pumping apparatus comprising an injection pump adapted to be driven in timed relationship with an engine to which fuel is to be supplied, a shuttle slidable within a bore, means for conveying fuel displaced by movement of the shuttle from one end of the bore to the injection pump during a filling stroke of the injection pump, the excursion of the shuttle being indicative of the amount of fuel supplied to the engine, fluid pressure operable means operatively associated with the injection pump for effecting an adjustment to the timing of injection of fuel to the engine, a fluid pressure control circuit for controlling the fluid pressure applied to said fluid pressure operable means, said control circuit comprising a groove formed on the shuttle, a pair of ports formed in the wall of the bore, said ports being placed in variable communication with each other by the groove to control a flow of liquid between said ports and thereby the pressure applied to said fluid pressure operable means, whereby the fluid pressure applied to said fluid pressure operable means varies in accordance with the amount of fuel supplied to the engine.

3,936,233
FUEL INJECTION PUMPS FOR INTERNAL COMBUSTION ENGINES

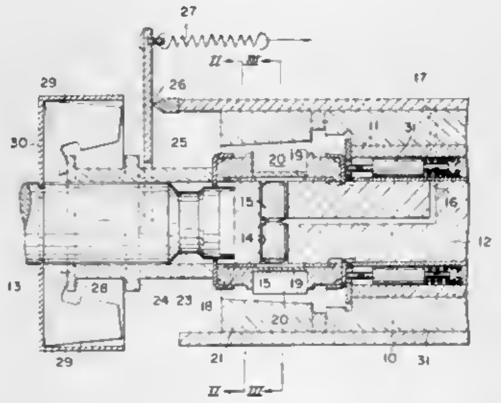
Jean-Claude Bonin, Blois(Loir-et-Cher), France, assignor to Roto Diesel, Clichy (Hauts-de-Seine), France

Division of Ser. No. 450,431, March 12, 1974. This application Jan. 23, 1975, Ser. No. 543,534

Claims priority, application France, Mar. 14, 1973, 73.09050

Int. Cl.² F04B *19/02, 29/00*

U.S. Cl. 417—214 **6 Claims**



1. A fuel injection pump of the kind intended for supplying fuel to internal combustion engines and comprising a body part, a distributor member rotatable within the body part and adapted to be driven in timed relationship with an associated engine, a transverse bore in the distributor member, a pair of pumping plungers reciprocally mounted within the bore, a pair of shoes slidable in radial slots at the outer ends of said bore, said shoes engaging the plungers during inward movement of the shoes, cam engaging means carried by said shoes, an annular cam ring surrounding said distributor, cam lobes formed on the internal periphery of said cam ring and engaging with said cam engaging means during rotation of the distributor member to impart inward movement to said shoes and plungers, fuel delivery means for conveying fuel displaced from said bore to a plurality of fuel outlets in turn, fuel inlet means for supplying fuel to said bore during the periods when the plungers can move outwardly, a carrier member axially slidable on the distributor member, slots in the carrier member in which are located said shoes respectively whereby axial movement of the carrier members will effect axial movement of said shoes, the cam lobes having a different profile throughout their axial length, whereby the extent of outward movement of the plungers is dependent upon the axial setting of said carrier member.

3,936,234
DEVICE FOR LOCKING TURBOMACHINERY BLADES

James W. Tucker, and Robert O. Bobinger, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 10, 1975, Ser. No. 548,678

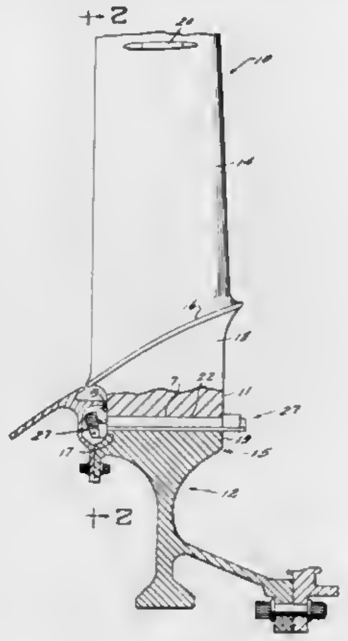
Int. Cl.² F01D *5/32*

U.S. Cl. 416—220 R **12 Claims**

1. A blade locking device for locking radially projecting blades in a rotor, each blade having a dovetail tang at its radially inward end including a forward end face and an aft end face and the rotor having dovetail slots extending across its periphery from one side of the rotor to the other with outwardly facing abutment surfaces on each side of said rotor proximate said dovetail slot, each dovetail tang being received in one of said slots providing a radial space between the tang and the bottom of the slot, said device comprising:

a pair of retaining members in a first position residing in and extending through said radial space, one circumferentially spaced from the other, each having enlarged forward end and aft end portions which protrude from said slot, each of said enlarged end portions providing inwardly facing abutment surfaces;

spacer means disposed between said retaining members for maintaining said retaining members circumferentially spaced from each other and for maintaining said inwardly facing abutment surfaces in confronting and overlapping relationship with said outwardly facing abutment surfaces; and



means for preventing relative axial movement between said spacer means and said retaining members.

3,936,235
FUEL OIL SUPPLY MEANS

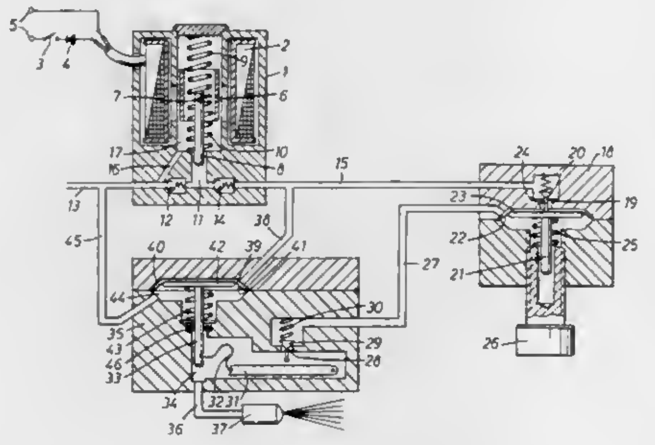
Peder Larsen, Augustenborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Aug. 7, 1974, Ser. No. 495,386

Claims priority, application Germany, Aug. 21, 1973, 2342112

Int. Cl.² F04B *49/00*

U.S. Cl. 417—279 **3 Claims**



1. A fuel oil supply assembly comprising a magnetic pump having a resilient oscillatory system, said pump having a suction line and a delivery line, a nozzle at the terminal end of said delivery line, a pressure regulator in said delivery line having a flow passage, flow restricting means in said passage including a valve means, spring means biasing said valve means in an opening direction, a storage chamber in said delivery line between said pump and said pressure regulator, said storage chamber having resilient wall means, a suction chamber adjacent said storage chamber, said suction chamber and said storage chamber being separated by said resilient wall means, said suction chamber having fluid communication with said suction line.

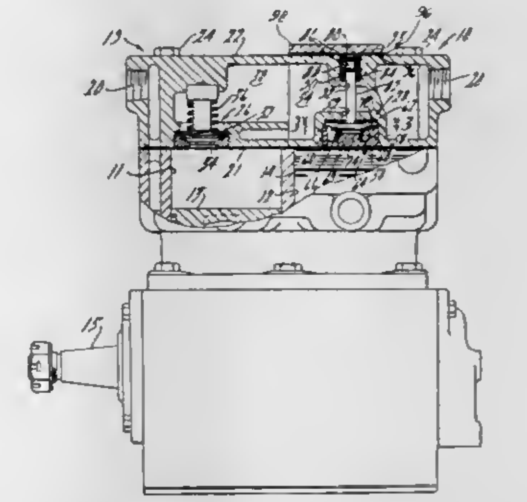
3,936,236
COMPRESSOR INTAKE VALVE AND CONTROL MEANS

Richard J. Day, and LeRoy Yanik, both of Owosso, Mich., assignors to Midland-Ross Corporation, Cleveland, Ohio

Continuation of Ser. No. 296,016, Oct. 10, 1972, abandoned. This application May 22, 1974, Ser. No. 472,112

Int. Cl.² F04B *49/00, 21/02*

U.S. Cl. 417—298 **2 Claims**



1. In a reciprocating compressor having a body portion forming a pair of cylinders, a removable unitary head having a flat bottom surface covering the open ends of said cylinders, said head having a flat top surface parallel to said bottom surface, a pair of first cylindrical chambers formed in said unitary head and opening to said bottom surface and said pair of cylinders, respectively, a pair of second cylindrical chambers axially aligned with said pair of first cylindrical chambers, respectively, and opening to said top surface of said head, an intake chamber formed in said head and communicating with said pair of first chambers, a plate removably connected to said top surface of said head and closing said pair of second chambers, inlet valve means removably disposed in each of said first chambers and being disposed between said cylinders and said intake chamber, means formed by said plate and connecting said pair of second chambers to each other and to a source of fluid pressure, and plunger means removably disposed in each of said second chambers and within said unitary head and including pressure responsive portions simultaneously responsive to pressure in said second chambers, said plunger means including portions projecting from said second chambers into said first chambers and being movable toward said inlet valve means to hold the latter simultaneously open in response to a predetermined pressure in said source, said inlet valve means being separately removable independently of said plunger means upon removal of said removable head and said plunger means being separately removable independently of said valve means upon removal of said plate.

3,936,237
MEMBRANE-AIR PUMP ADAPTED TO FUNCTION AS A TACHOMETER

Asoke Chattopadhayay, Norf, and Georg Habel, Nievenheim, both of Germany, assignors to Deutsche Vergaser GmbH & Co. K.G., Neuss, Germany

Filed Nov. 15, 1973, Ser. No. 416,283

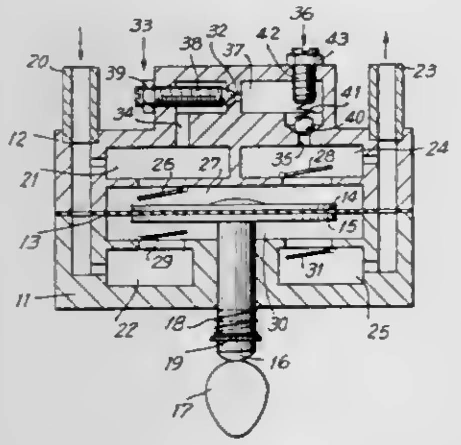
Claims priority, application Germany, Mar. 14, 1973, 2312607

Int. Cl.² F04B *49/00;* **G01D** *9/00;* **G01P** *3/26*

U.S. Cl. 417—311 **1 Claim**

1. In a positive displacement pump, a first flow circuit extending from a flow inlet at the suction side of the pump to a discharge at the delivery side of the pump providing flow or pressure values serving a speed-dependent guide values for control or regulating apparatus, said first flow circuit including a pump chamber; a flexible membrane dividing said pump

chamber into first and second chamber portions sealed from each other; a first suction chamber communicating said first chamber portion with said flow inlet; a first pressure chamber communicating said first chamber portion with said pump discharge, a second suction chamber communicating said second chamber portion with said flow inlet; and a second pressure chamber communicating said second chamber portion with said pump discharge, the improvement comprising: a second flow circuit extending from said first pressure chamber upstream of said pump discharge to said first suction chamber; relief pressure valve means in said second flow circuit inhibiting flow therethrough below a predetermined low flow or pressure value at said pump discharge and permitting return flow therethrough from said first pressure chamber to said first suction chamber at and above said predetermined value; and adjustable throttle means in said second flow circuit located intermediate said relief pressure valve means and said first suction chamber and operable above said predetermined low flow or pressure for adjustably restricting the flow through said second flow circuit and controlling the flow or pressure values at said pump discharge.



3,936,238
ROTARY COMPRESSORS

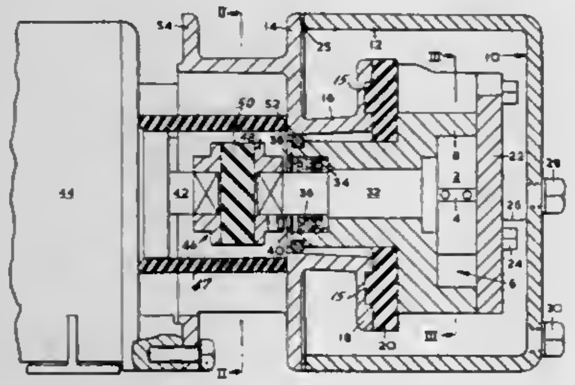
Henryk Wycliffe, Crawley, England, assignor to BOC Limited, trading as Edwards High Vacuum International, Crawley, England

Filed May 8, 1974, Ser. No. 467,924

Claims priority, application United Kingdom, May 9, 1973, 22247/73

Int. Cl.^{2} F04B *17/00*

U.S. Cl. 417—312 **19 Claims**



1. An oil sealed rotary compressor including a sealed sump housing having acoustically-dense walls and acting as an oil sump,

a compression chamber housing positioned in the interior of the sealed sump housing, all external surfaces of the chamber housing being spaced from the adjacent surfaces of the sump housing and separated therefrom by an insulating material at points of interconnection between said sump housing and said chamber housing to absorb vibration between said housings,

a rotor, mounted for rotation within the compression chamber,

a rotary drive shaft connected to the rotor, which drive shaft projects from the chamber,

means for driving the rotary drive shaft, and

at least one body of vibration insulation located between the chamber housing and the sump housing, in which the vibration insulation is adapted to locate and support the chamber housing within the sump housing, and to form a fluid-tight seal between the chamber housing and the sump housing in the region where the rotary drive shaft projects from the chamber housing.

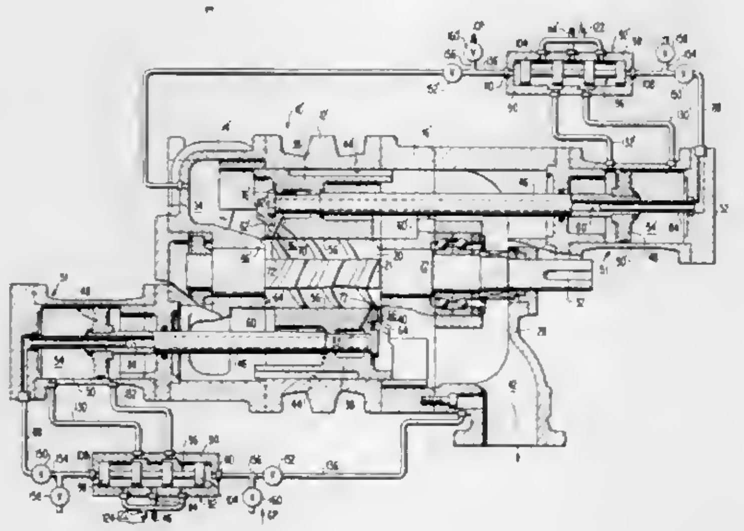
3,936,239
UNDERCOMPRESSION AND OVERCOMPRESSION FREE HELICAL SCREW ROTARY COMPRESSOR

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Filed July 26, 1974, Ser. No. 492,084

Int. Cl.^{2} F04B *49/02*

U.S. Cl. 417—315 **11 Claims**



1. In a positive displacement rotary screw compressor of the type wherien a casing is provided with a barrel portion defined by intersecting bores with coplanar axes located between axially spaced end walls and having low pressure and high pressure ports in communication with said bores at opposite ends of said barrel portion, and helical screw rotors having grooves and lands mounted for rotation within respective bores with the lands and grooves of respective rotors intermeshed, an axially extending recess is provided within the barrel portion of the casing in open communication with the bores, and a slide valve member is axially slidable in the recess with the inner face of the slide valve member being complementary to the envelope of that portion of the bores of the casing structure confronted by the opening of the recess communicating with the bore portion of the casing structure, with the valve member in sealing relation with confronting rotors, the discharge port being located within the barrel portion of the casing structure with the valve member being movable between extreme positions, in one of which, the discharge port is fully open, and the other in which, the discharge port is closed, and wherein the valve member is of sufficient length to cover the entire remaining length of the confronting portion of the rotor structure throughout the range of movement of the valve member between its extreme positions, the improvement comprising:

means for sensing the pressure of the working fluid within a closed thread closely adjacent to the end of the slide valve member closing off the discharge port to the closed thread,

means for sensing the compressor discharge pressure of the working fluid at the discharge port, and

means for controlling shifting of said slide valve member axially to equalize these pressures to prevent undercompression or overcompression of the compressor working fluid within the closed thread, prior to discharge.

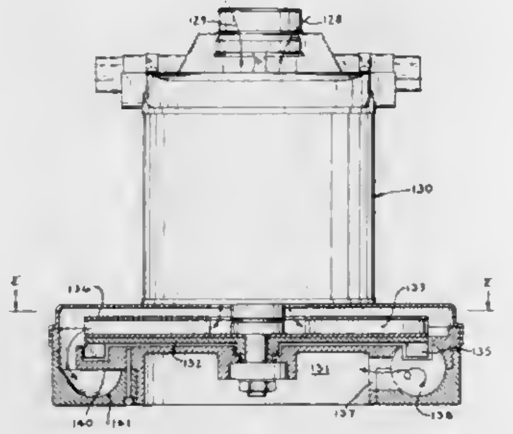
3,936,240
CENTRIFUGAL-VORTEX PUMP

Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Mar. 25, 1974, Ser. No. 454,046

Int. Cl.^{2} F04B *39/06;* **F04D** *17/12*

U.S. Cl. 417—368 **12 Claims**



1. A multiple path vortex pump comprising a casing and a rotor assembly in the casing having a first side and a second side; the first side of the rotor assembly having centrifugal impeller blades therealong and the second side of the rotor assembly having a plurality of vortex impeller blade elements therealong; the casing having an inlet opening therein for admitting fluid medium to the centrifugal impeller blades, a first portion forming an exhaust region for fluid discharged from the centrifugal impeller blades, a second portion forming a vortex pathway along an annular pathway for the vortex impeller blade elements, and means for dividing the vortex channel into a plurality of vortex channel part-annular sections; said casing having at least one portion for defining passage means constraining fluid to move from the exhaust region to the plurality of part-annular sections for admitting fluid medium from the centrifugal impeller blades to the part-annular sections so that substantially all of the fluid exhausted to the exhaust region is admitted to the plurality of part-annular sections, the second portion of the casing having discharge means therein through which the fluid medium previously exhausted from the centrifugal impeller blades is discharged from the vortex channel part-annular sections.

3,936,241
HOUSING SYSTEM FOR GAS TURBINES

Harro Einbeck, Nurnberg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Nurnberg, Germany

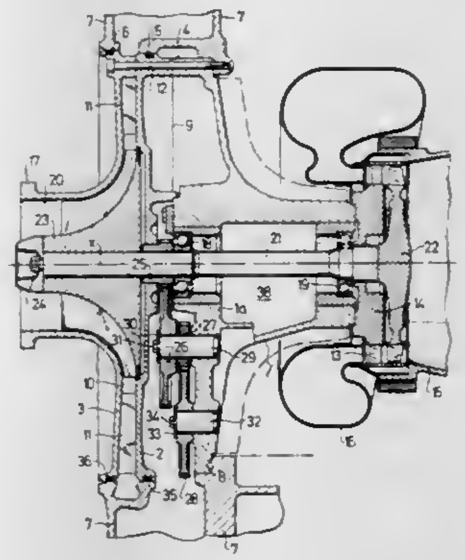
Filed May 16, 1974, Ser. No. 470,605

Claims priority, application Germany, May 17, 1973, 2324880

Int. Cl.^{2} F04B *17/00*

U.S. Cl. 417—407 **8 Claims**

1. In combination in a gas generation housing system for gas turbines, especially vehicle gas turbines: main housing means for a gas turbine, a gas generator housing arranged at least partially in said main housing means and including an externally bell-shaped section forming a bearing housing and provided at the region of its greatest radial extension with a firmly cast on bearing wall, bearing means arranged in said bearing housing, shaft means rotatably journaled in said bearing means, a turbine wheel mounted at one end section of said shaft means for rotation therewith, a compressor wheel mounted at the other end section of said shaft means for rotation therewith, compressor housing means housing said compressor wheel and defining therewith a compressor suction chamber, said compressor housing means including a wall forming a detachable cover and together with said bearing housing defining a transmission chamber, said compressor housing means aside from said cover and said bearing housing means respectively forming individual sections successively and detachable connected to said main housing means, said main housing means including centering means for coaxially receiving and centering said individual sections, and means for detachably connecting all of said individual sections to said main housing.



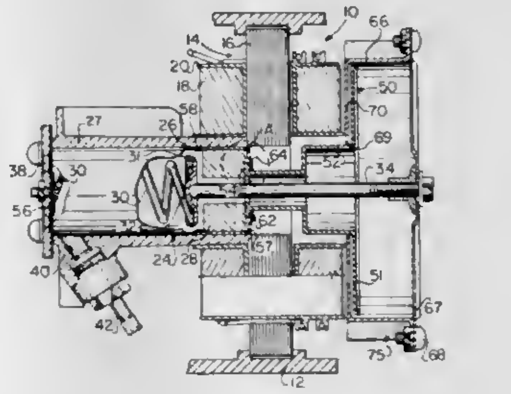
3,936,242
LINEAR MOTOR COOLING FAN

Martin Omer Schrock, Baltimore, and John Earl Dibbern, Jr., Street, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Oct. 30, 1973, Ser. No. 411,296

Int. Cl.^{2} F04B *17/04*

U.S. Cl. 417—417 **2 Claims**



1. An electric linear air compressor comprising a housing, cooling air intake and discharge openings in said housing, a linear electric motor in said housing, piston means connected to said motor and operable therewith, compressed air intake and discharge means operable in conjunction with said piston means to deliver compressed air; the improvement which comprises a fan housing disposed adjacent said linear electric motor; a linear fan disposed in said fan housing and coupled to said motor for operation therewith; a plurality of openings in said fan housing adjacent said electric motor, said openings providing for the reciprocal flow of air therethrough upon movement of said fan; said reciprocal air flow into and out of said openings causing circulation of air about the exterior of said motor.

3,936,243
FUEL PUMP

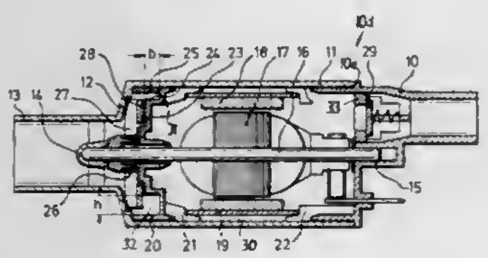
Werner Gakenholz, Bietigheim-Wurtt., Germany, assignor to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH, Germany

Filed June 24, 1974, Ser. No. 482,240

Claims priority, application Germany, July 28, 1973, 2338395

Int. Cl.^{2} F04B *35/04*

U.S. Cl. 417—423 R **3 Claims**



1. A pump for liquids comprising a tubular housing having an inlet and an outlet spaced from said inlet with an intermediate portion located therebetween, said housing having a tapered portion adjacent the inlet and connecting the inlet to said intermediate portion, an electric motor mounted concentrically in said housing and including an armature shaft and a magnetic system, an impeller mounted in said housing on said armature shaft for rotation therewith and having radially extending blades closely adjacent said tapered portion of said housing and adapted, in operation, to take up and guide the liquid toward the circumference of said impeller, and wall means forming an annular radially and longitudinally extending duct adjacent the circumference of said impeller on the side thereof facing said electric motor and shaped to guide the liquid with minimum losses of energy, said means for forming an annular duct comprise an annular duct body which is supported in said housing adjacent the side of said impeller remote from said tapered portion and including an annular plate portion concentrically arranged relative to said armature shaft and terminating in an outer edge, and a duct portion extending along and adjoining said outer edge and having a U-shaped cross-section defined by first and second longitudinally extending wall portions of said duct portion and a radially extending cross-wall therebetween, said plate portion joining the end of said first wall portion of said U-shaped portion at right angles, said second wall portion of said U-shaped portion being of greater length than said first wall portion, and said connecting cross-wall between said two walls being provided with apertures for the liquid, the length of said first shank from the end of said first wall portion to the inside of said connecting crosspiece is such that it increases in longitudinal depth over a comparatively small portion of the circumference of said annular duct body from zero to an end value, and the space of said two wall portions is such that it has a minimum value over the said portion of the circumference and then increases to a maximum value over the remaining part of said circumference.

3,936,244
FUEL INJECTION PUMPING APPARATUS

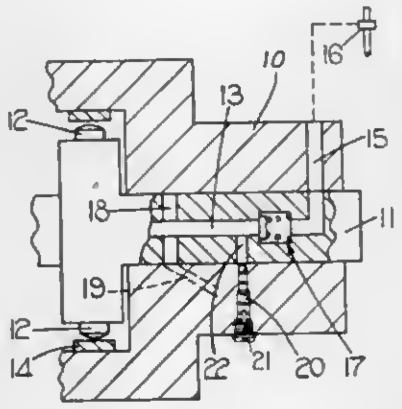
Moshe Drori, East Twickenham, England, assignor to C.A.V. Limited, Birmingham, England

Continuation of Ser. No. 396,533, Sept. 12, 1973, abandoned. This application Feb. 4, 1975, Ser. No. 546,942

Int. Cl.^{2} F04B *19/02, 29/00, 39/00*

U.S. Cl. 417—435 **4 Claims**

1. A liquid fuel injection pumping apparatus for supplying fuel to an internal combustion engine and comprising a body part, a rotary distributor mounted in the body part, an outlet passage in the body part adapted for connection to an injection nozzle of an associated engine and a fuel delivery passage in the distributor member, said delivery passage communicating with the pumping chamber of an injection pump and being arranged to register with said outlet passage during delivery of fuel by said injection pump, the apparatus also incorporating a delivery valve disposed in one of said passages, said delivery valve including a spring-loaded valve element which is opened by the flow of fuel from the injection pump, a valve controlled vent passage in the body part and a vent conduit in the distributor, said vent conduit communicating with said delivery passage at a point intermediate the pumping chamber and said delivery valve, and with the vent passage during a delivery stroke of the injection pump, the valve controlled vent passage comprising a passage having at its end adjacent the exterior of the body part a screw-threaded portion to receive a complementarily screw-threaded plug which can be loosened or removed from the passage to permit bleeding of air, the passage also defining at its end adjacent the distributor, a seating, a valve element for co-operation with said sealing and resilient means biasing the valve element into contact with the seating.



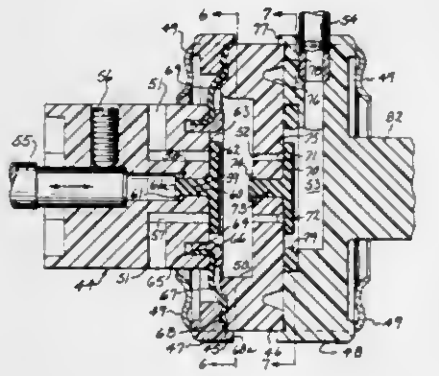
3,936,245
FLUID COMPRESSING APPARATUS

Adolph J. Hilgerl, Mequon, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 240,718, April 3, 1972, Pat. No. 3,784,334. This application July 5, 1973, Ser. No. 376,614

Int. Cl.^{2} F04B *39/10*

U.S. Cl. 417—550 **5 Claims**



1. In a fluid pumping apparatus including a piston member having a diaphragm connected thereto and forming a movable wall of a working chamber, said piston member moving into a final pumping position within the working chamber, said diaphragm being formed of a resilient material and having a preformed unstressed annular convolution of a generally U-shaped configuration immediately adjacent to the outer wall of the piston and inner and outer generally coplanar clamping walls extending from said convolution, said inner clamping wall being secured to the piston member, said working chamber including means axially clamping said outer clamping wall and having a projection aligned with said convolution and having a surface corresponding thereto and mating with and essentially filling said convolution with the piston moved inwardly to an intermediate position within the working chamber prior to and in spaced relation to said final pumping position and with said convolution in the unstressed preformed state, said piston member including inlet valve openings extending generally axally of the piston and terminating in the working chamber, an inlet valve means connected to the piston member and overlying the terminal end of the inlet valve openings, said inlet valve means including a closure member resiliently urged into sealing engagement with the face of the piston member, a valve plate having a plurality of output openings and connected to said diaphragm to form a wall of said working chamber, and an outlet valve means connected to the valve plate and releasably closing said output openings.

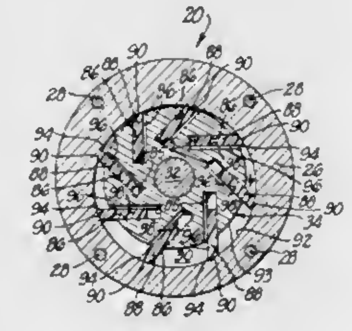
3,936,246
MIXING PUMP AND METHOD OF MIXING USING SAME

Stuart W. Beitzel, Santa Monica, Calif., assignor to Chromalloy American Corporation, City of Industry, Calif.

Filed June 28, 1974, Ser. No. 483,917

Int. Cl.^{2} F01C *21/00;* **F04C** *15/00;* **F04B** *23/12*

U.S. Cl. 418—1 **6 Claims**



1. A process for forming a liquid-gas mixture using a rotary vane pump having a stator, a rotor rotatably mounted in said stator, slot means located in said rotor for holding vanes so that such vanes can be moved relative to said rotor, vane means for use in achieving a pumping action located in said slot means, a gas inlet means leading into said stator to within the space between said stator and said rotor, a liquid inlet means for conveying a liquid into said rotor so that such liquid will operate so as to move said vane means outwardly from said rotor and outlet means for receiving a gas-liquid mixture which comprises the steps of:

rotating said rotor,

simultaneously supplying a liquid under pressure to said liquid inlet means so as to force said vane means outwardly from said rotor into contact with said stator,

drawing a gas into the space between said rotor and said stator as a consequence of the rotation of said rotor within said stator while said vane means are positioned outwardly from said rotor in contact with said stator,

allowing liquid to escape from within said rotor through said slot means into the space between said rotor and said stator in contact with gas within said space,

mixing said liquid and said gas as a result of turbulence within said stator between said stator and said rotor, such turbulence being caused by the movement of said gas and said liquid and the rotation of said rotor and said vane means, forcing said mixture through said outlet means as a consequence of the rotation of said rotor within said stator while said vane means are positioned in contact with said stator.

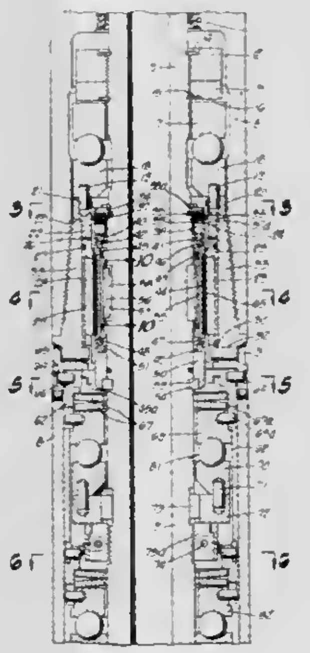
3,936,247
FLOATING FLOW RESTRICTORS FOR FLUID MOTORS

John E. Tschirky, Long Beach, and Gary Monroe Crase, Cypress, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Continuation-in-part of Ser. Nos. 388,586, Aug. 15, 1973, Pat. No. 3,879,094, and Ser. No. 433,284, Jan. 14, 1974, Pat. No. 3,912,425. This application Jan. 27, 1975, Ser. No. 544,353

Int. Cl.^{2} F01C *1/10, 21/04;* **E23B** *3/12, 17/00*

U.S. Cl. 418—48 **19 Claims**



1. A hydraulic motor including a stator in a housing and a rotor in said stator, a shaft connected to said rotor, a fluid inlet to said stator, and a fluid outlet from said stator, a thrust bearing mounted on said shaft and housing, a fluid passageway connected to the fluid outlet from said stator through the housing, a flow restrictor positioned in said passageway between the stator outlet and said thrust bearing, said flow restrictor comprising a first sleeve mounted on said shaft, support means for said first sleeve mounted on said shaft for radial displacement of said sleeve with respect of said shaft, a second sleeve mounted on said housing adjacent to but spaced from said first sleeve.

3,936,248
CASING FOR ROTARY PISTON ENGINES OF TROCHOIDAL CONSTRUCTION

Albert Fritzsche, Markdorf, and Karl Jäger, Immenstaad, both of Germany, assignors to Dornier GmbH, Germany

Filed Apr. 1, 1974, Ser. No. 456,883

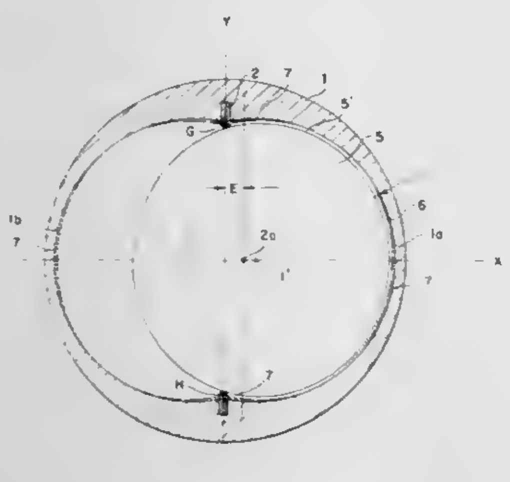
Claims priority, application Germany, May 11, 1973, 2323790

Int. Cl.^{2} F04C *1/02*

U.S. Cl. 418—61 B **1 Claim**

1. In a casing for a rotary piston engine of trochoidal construction having a piston in the shape of an epitrochoid, a casing corresponding to an outer envelope curve, and individual working chambers with radial sealing strips mounted between them,

the improvement comprising that the working chamber delimitation between the radial sealing strips constituting the casing is formed by a circular arc approaching the extent of the envelope curve, whose center is positioned on the axis of symmetry of the respective working chamber, said center of said circular arc being positioned between the point of intersection which results from the respective normal to the envelope curve at the end point of said envelope curve arc associated with the pertinent working chamber and the axis of symmetry of the corresponding working chamber, and the center of the envelope curve radius of curvature on the axis of symmetry of the corresponding working chamber.



3,936,249

ROTARY COMPRESSOR OF OIL COOLING TYPE WITH APPROPRIATE OIL DISCHARGE CIRCUIT

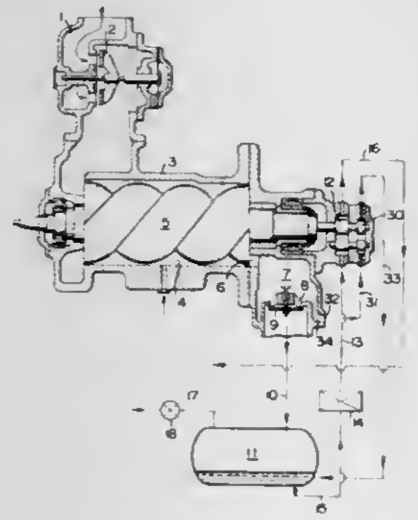
Goro Sato, Atami, Japan, assignor to Hokuetsu Kogyo Co., Ltd., Japan

Filed Sept. 24, 1974, Ser. No. 508,837

Claims priority, application Japan, Nov. 26, 1973, 48-131739

Int. Cl.² F01C *21/04;* **F04C** *29/02;* **F01C** *21/06;* **F04C** *29/04*

U.S. Cl. 418—88 1 Claim



1. In a rotary compressor of the oil cooling type comprising: an unloader, a housing including a rotor chamber therein and connected to said unloader, rotors housed within said housing, said rotor chamber having a discharge port from which an oil-air mixture is discharged under pressure, and a discharge chamber which is in communication with said discharge port, a check valve with a further port provided in said discharge chamber, discharge conduit means communicated with said discharge chamber through said check valve and said further port, a reservoir for compressed air and oil connected at an air space formed therein to said discharge pipe, and second conduit means communicated with said reservoir at the oil space therein and said rotor chamber, said discharge chamber having a second opening which is positioned at a lower portion than said further port, whereby oil is separated from the oil-air mixture and collected in said lower portion, an oil discharge pump drivably connected to one of said rotors, said oil discharge pump being connected at one side to said second opening through third conduit means and at the other side to said reservoir through fourth conduit means whereby the oil is delivered from the discharge chamber to the reservoir continuously during operation of the compressor.

3,936,250

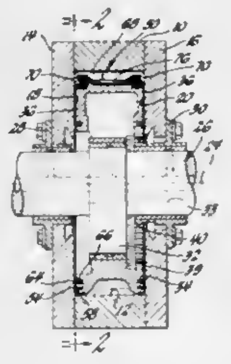
CORNER SEAL COIL SPRING ARRANGEMENT FOR ROTARY ENGINE

Jerry R. Mrlik, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 10, 1974, Ser. No. 487,173

Int. Cl.² F01C *19/04, 19/08;* **F04C** *27/00*

U.S. Cl. 418—121 3 Claims



1. In a rotary machine, a housing having an inwardly facing inner peripheral wall and a pair of spaced oppositely facing inner end walls, a rotor rotatably mounted in said housing having sides opposite said end walls and a plurality of corners that remain adjacent said peripheral wall as said rotor rotates, said rotor and said housing walls cooperatively defining a plurality of chambers separated by said rotor corners that expand and contract as said rotor rotates, each said rotor corner having an apex seal slot extending thereacross facing radially outwardly toward said peripheral wall, each said rotor side at each corner having a corner seal hole immediately joining with one of said apex seal slots and facing outwardly toward one of said end walls, each said rotor side further having a side seal groove extending along the periphery of said rotor side and joining at opposite ends with two of said corner seal holes, apex seal means mounted in each said apex seal slot and extending at opposite ends into the adjoining corner seal holes, a side seal mounted in each said side seal groove and extending at opposite ends into the adjoining corner seal holes and engaging the opposite end wall, a corner seal mounted in each said corner seal hole for engaging the opposite end wall, each said corner seal having a centerline and a periphery engaged by the ends of two adjoining side seals and also having an apex seal slot receiving the adjoining apex seal means whereby the corner seal provides a sealed juncture between the adjoining apex seal means and two side seals, a leaf spring having a center portion seated on the bottom of each apex seal slot in said rotor and having end portions extending into the adjoining corner seal holes to engage and urge the apex seal means radially outward against said peripheral wall, each said corner seal having a relieved portion in the backside thereof, and each said apex seal means having a relieved portion cooperating with the relieved portion in the adjoining corner seal to provide an annular space about the adjoining spring end portion concentric with the corner seal and within the accommodating corner seal hole between the corner seal and the bottom of the accommodating corner seal hole, and a multi-coil coil spring mounted in each said annular space concentric with the adjoining corner seal for biasing the corner seal outward against the opposite end wall.

3,936,251

PRESS, NOTABLY FOR VULCANIZING TIRES

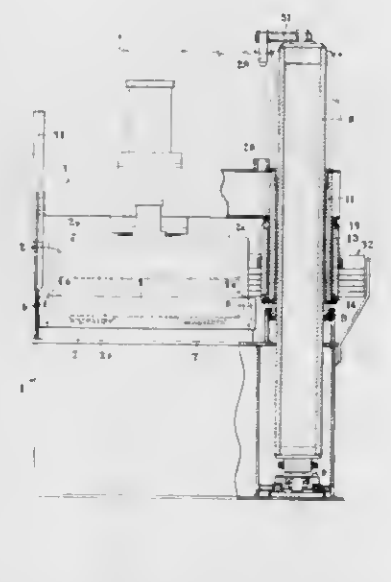
Michel Billey, Montlucon, France, assignor to Etablissements Zelant, Gazuit, Montlucon, France

Filed Mar. 11, 1975, Ser. No. 557,308

Claims priority, application France, Apr. 4, 1974, 74.11967

Int. Cl.² B29H *5/02*

U.S. Cl. 425—38 14 Claims



1. a press for vulcanizing tires, which comprises a frame structure, an unloading station located on one side of said frame structure, a mold comprising a lower portion supported by said frame structure and an upper portion, a cross member from which said upper mold portion is suspended, said cross member extending over said frame structure and being movable in relation thereto between a molding position in which said upper mold portion is vertically aligned with said lower mold portion and an unloading position in which said upper mold portion is vertically aligned with said unloading station, wherein said cross member is mounted at one end in overhanging relationship to a support having a vertical axis, said cross member being so arranged that it can both pivot about the vertical axis of said support and slide therealong.

3,936,252

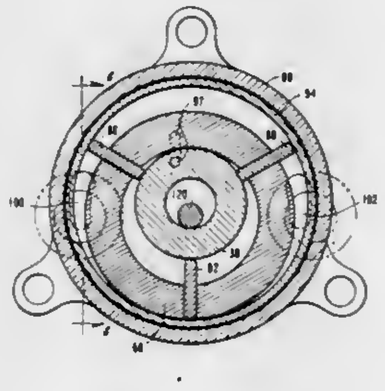
STEAM PROPULSION SYSTEM

William A. Maher, Sepulveda, Calif., assignor to Wilma Ryan, Arlington Heights, Ill.

Division of Ser. No. 165,987, July 26, 1971, Pat. No. 3,820,335. This application June 13, 1974, Ser. No. 479,041

Int. Cl.² F04C *1/00*

U.S. Cl. 418—173 3 Claims



1. A rotary cylinder positive displacement motor comprising:

a. an outer cylinderical shell
b. an inner rotating cylinder
c. a carrier adapted to receive
d. rotor blades which slide in said carrier
e. a rotating disc to position said rotor blades
f. a motor shaft rotatably mounted on roller bearings attached to said carrier
g. ports for the introduction and release of steam adapted to cause said rotors to rotate within said outer shell
h. a thrust bearing assembly interconnecting said outer shell and said cylinder
i. a second thrust bearing assembly interconnecting said disc and said outer shell

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3,936,253

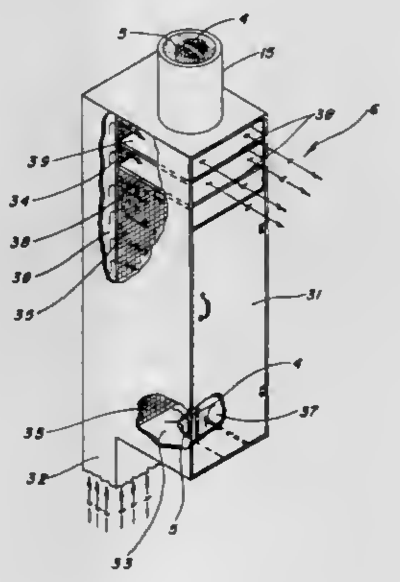
APPARATUS FOR MELT-SPINNING SYNTHETIC FIBERS

William Bernard Fisher; Dong Wha Kim, both of Chester; Orin Wyatt Norwood, Richmond, all of Va.; John Walter Showers, Raleigh, N.C.; Eugene Addison Swanson, Disputanta, and Gene Clyde Weedon, Richmond, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 473,260, May 24, 1974. This application Dec. 10, 1974, Ser. No. 531,261

Int. Cl.² D01D *3/00*

U.S. Cl. 425—72 S 4 Claims

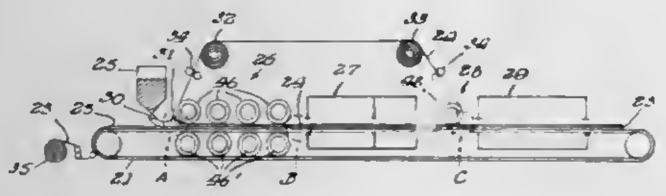


1. An apparatus for the production of a synthetic multifilamentary yarn having uniform quality at a production rate of at least 50 pounds per hour, from a high-molecular weight thermoplastic polymer, selected from the group consisting of linear polyester and polyamide polymers, by melt spinning, comprising a spinning unit which comprises a spinning pump, a spinneret, and a spinning filter disposed between said pump and said spinneret, for extruding a plurality of filaments downwardly into a heating sleeve having a height of 0.5 to 2 feet, the wall of said heated sleeve being imperforate and secured to the spinneret in an air-tight manner, said heated sleeve having a baffle forming an inwardly extending flange at the end of the heated sleeve remote from the spinneret, said heating sleeve leading downwardly to a rectangular quenching chamber at least 60 inches in height, having opposite, essentially vertical inlet and outlet panels for allowing cooling air to pass through the chamber and means for regulating the stream of cooling air passing through said chamber whereby both the volumetric rate of the air steam and its general direction as it contacts the descending plurality of filaments may be regulated, the top portion of said chamber having 2 to 5 parallel baffles which form sections intended to provide guided travel of the cooling air transverse to the movement of the filaments, the outlet panel of said chamber being partially covered by an imperforate door which terminates short of the top of said chamber and presents an open passage for the air discharging from said chamber, said door in combination with said parallel baffles in the top portion of said chamber providing guided travel of the cooling air, whereby said cooling air contacts the

filaments transverse, countercurrent and cocurrent in progressive order of their movement through the quenching chamber.

3,936,254
APPARATUS FOR THE CONTINUOUS MANUFACTURE OF POLYMER PLATES

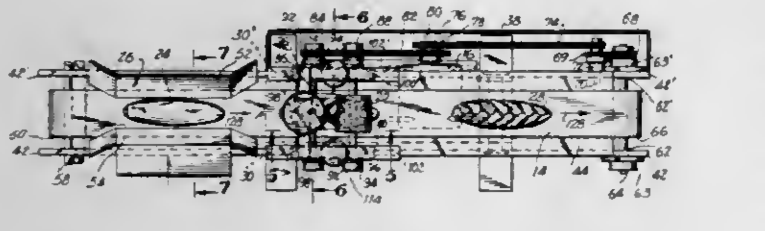
Teruho Sawada; Takeshi Hirayama, and Kenzo Kokubo, all of Osaka, Japan, assignors to Nippon Paint Company Ltd., Osaka, Japan
Division of Ser. No. 344,855, March 26, 1973. This application Sept. 16, 1974, Ser. No. 506,164
Int. Cl.² B29D *7/14*
U.S. Cl. 425—89 **4 Claims**



1. An apparatus for the continuous manufacture of photopolymer printing plates having a metallic support structure and a water-inclusive resin composition in adherent contact therewith comprising: (a) means for containing said resin composition; (b) means for continuously transporting said support structure with respect to said resin containing means to permit the deposit of a layer of resin composition on said support structure; (c) means for applying a continuous sheet of flexible thermoplastic sheet material to the surface of said resin composition; (d) a plurality of successive pairs of spaced apart pressure rollers arranged along the transporting means and disposed on opposite sides of said resin composition layer for applying pressure to said layer of resin composition to uniformly spread said layer over said support structure; (e) means for removing said sheet material from said layer of resin after the application of pressure thereto; (f) means for cooling said layer of resin composition, said thermoplastic sheet material and said support structure; and (g) means for drying said layer of resin composition and said support structure for a time sufficient to firmly secure said layer of resin to said support structure.

3,936,255
DOUGH EMBOSSING APPARATUS

Joseph Vito Bellacicco, Elmhurst, N.J., assignor to Bellacicco & Sons, Inc., Queens Village, N.Y.
Filed July 15, 1974, Ser. No. 488,445
Int. Cl.² A21C *11/04*
U.S. Cl. 425—101 **18 Claims**



1. A dough processing apparatus for embossing wads of dough formed in predetermined masses comprising

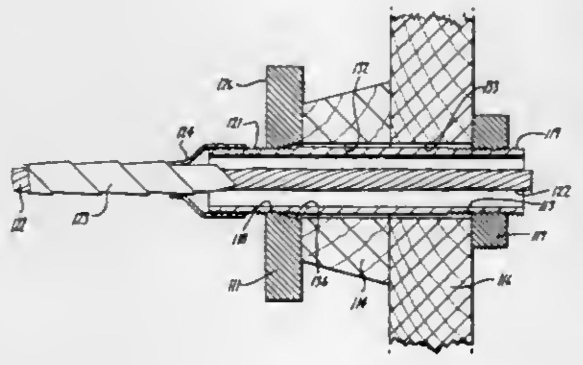
- an endless belt having an upper surface disposed in a substantially horizontal plane and being capable of movement along a longitudinal path,
- power drive means operatively coupled to said endless belt for providing movement thereof,
- frame means for mounting said power drive means and said endless belt,
- embossing means journaled in said frame means with the longitudinal axis thereof disposed substantially transverse to said longitudinal path and operatively coupled to said power drive means for imparting a predetermined design to each of said dough masses disposed on said endless belt,
- brush means journaled in said frame means and having the longitudinal axis thereof disposed substantially transverse to said longitudinal path.

12. An embossing member for use in conjunction with a dough processing apparatus, said member comprising

- a cylindrical core,
- a first plurality of walls extending outwardly from the periphery of said core,
- said first plurality of walls being disposed with respect to one another in a first predetermined pattern so as to substantially form a plurality of parallelograms,
- said parallelograms being angularly disposed with respect to one another so as to be capable of imparting a plurality of brick shaped impressions upon a deformable mass,
- a second plurality of walls extending outwardly from the periphery of said core, and
- said second walls being disposed in a second predetermined pattern with respect to one another and with respect to said first plurality of walls so as to be capable of imparting a predetermined geometric impression upon said deformable mass.

3,936,256
TENDON ANCHORAGE AND MOUNTING MEANS

George H. Howlett, and James W. Howlett, both of Oakland, Calif., assignors to Conenco International Limited, Toronto, Canada
Continuation-in-part of Ser. No. 816,583, April 16, 1969, Pat. No. 3,605,361. This application Mar. 1, 1971, Ser. No. 119,710. The portion of the term of this patent subsequent to Sept. 20, 1988, has been disclaimed.
Int. Cl.² B28B *23/04*
U.S. Cl. 425—111 **3 Claims**

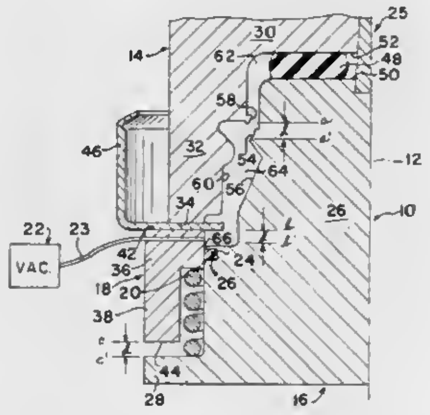


1. In an assembly for use in forming an anchorage for a reinforcing tendon recessed in a concrete member, said assembly including a form board formed with an opening therethrough, a tendon mounted through said opening and extending inwardly of said form board, a spacer having an opening therethrough and being mounted inwardly of said form board with said tendon extending through said opening, and a tendon anchor plate having an opening therethrough and being mounted inwardly of said spacer with said tendon extending through said opening, the improvement comprising:

- an elongated tubular member formed with an axially extending bore dimensioned for receipt of said tendon and for coaxial alignment of said tubular member with said tendon, said tubular member being mounted on said tendon in alignment therewith and extending from a position exteriorly of said form board through said openings in said form board and said spacer to project through said opening in said anchor plate to a bearing surface side of said anchor plate;
- first securement means formed to and releasably joining said tubular member to said anchor plate with said tubular member in axial alignment with said opening in said anchor plate; and
- second securement means mounted to said tubular member exteriorly of said form board and formed to and engaging said form board for application of a clamping force thereto, at least one of said first and second securement means further being selectively axially adjustable to effect tensioning of said tubular member between said first and second securement means to clamp said anchor plate against said spacer means and said spacer means against said form board.

3,936,257
CLOSED STROKE MOLDING

Keith W. Christiansen, Fox River Grove, and Kare Andersen, Elgin, both of Ill., assignors to Chicago Rawhide Manufacturing Company, Elgin, Ill.
Filed June 22, 1971, Ser. No. 155,469
Int. Cl.² B29H *9/10*
U.S. Cl. 425—125 **3 Claims**



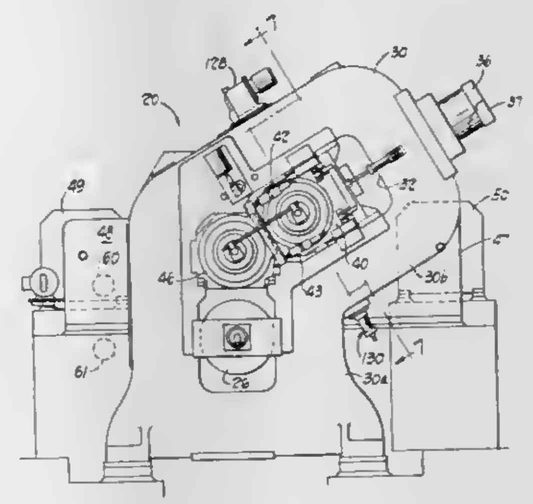
1. A mold assembly for forming an insert molded article comprised of a relatively rigid insert element and a flexible body portion, said mold assembly comprising a first, fixed mold part having surfaces thereon defining at least a portion of a molding cavity, and second and third relatively movable mold parts, at least one of which includes surfaces thereon defining the remainder of said molding cavity, insert-receiving surfaces forming a part respectively of each of said second and third mold parts, means confining said second and third mold parts to a predetermined extent of movement along a given axis relative to said first part, spring means providing resistance to movement of said third part during one portion of said predetermined movement extent when said second and third mold parts move toward said fixed mold part, means for moving said second part away from said third part along said axis to open said second and third parts and to permit positioning of an insert element between said insert-receiving surfaces, and means for moving said second and third parts along said axis against the resistance of said spring while said insert is received between said second and third parts against the resistance of said spring.

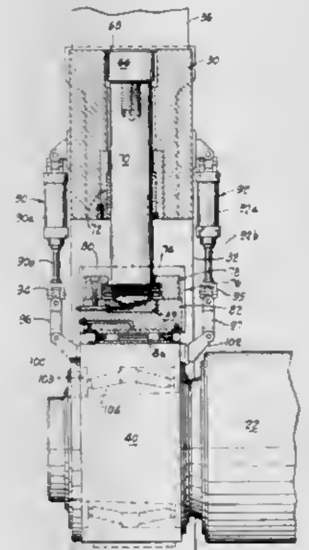
3,936,258
CALENDER

Charles G. Lake, Akron, Ohio, assignor to Intercole Automation, Inc., Cleveland, Ohio
Filed Jan. 30, 1974, Ser. No. 437,771
Int. Cl.² B29C *15/00*; B29D *7/14*; B29H *3/00*
U.S. Cl. 425—135 **7 Claims**

1. A calender comprising:

- first and second cooperating rolls,
- means including a frame and frame supported bearing boxes supporting the rolls at each end for rotation and supporting the first roll for movement toward and away from the second,
- hydraulic means for changing the spacing between said rolls and for applying pressure to the first roll and thence to material between the rolls,
- said hydraulic means comprising a double acting fluid cylinder and reciprocable piston at opposite ends of said first roll acting between the bearing boxes of said roll and said frame,
- each said cylinder and piston having a stroke as great as the total distance through which said first roll is movable,
- fluid actuators connected between said frame and the bearing boxes of the movable first roll to bias the first roll against said hydraulic means,





- means including two linear voltage differential transformers carried on each bearing box of one of said first and second cooperating rolls acting between the bearing boxes of said first and second rolls, sensitive to changes in the bearing box positions of said first and second rolls relative to each other for providing a signal indicative of roll spacing, the two transformers on each box being located on opposite sides of and equidistant from the axis of the carrying roll in a direction that extends at right angles to the direction of relative movement between the rolls, and
- means for actuating said hydraulic means in response to said signal, to adjust the roll spacing.

3,936,259
INJECTION MOULDING MACHINE

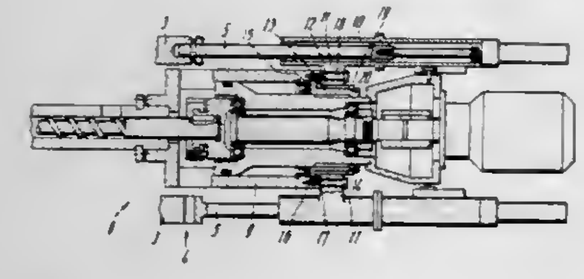
Heinz Höfer, Flammersfelder Str. 33, 5461 Schoneberg; Peter Scheid, Hangweg, 5460 Linz, Rhine, and Ernst Wilwerscheid, Hoelstr. 26, 5400 Koblenz, Rhine, all of Germany

Filed Dec. 18, 1973, Ser. No. 425,877

Claims priority, application Germany, Jan. 17, 1973, 2302167

Int. Cl.² B29C *1/00;* **B29G** *3/00*

U.S. Cl. 425—242 R **21 Claims**



1. In an injection moulding machine for a mould and having an injection unit with a nozzle, said injection unit having guide sleeves slidably supported on at least two rods lying within a common plane, which rods are normally fixed relative to the mould and extend substantially parallel to the axis of said injection unit, the improvement comprising: lockable coupling means connecting each of said rods to said mould for pivotal adjusting movement of said injection unit relative to said mould above a pivot axis generally perpendicular to said rods and for lateral adjusting displacement of said injection unit relative to said mould parallel to said pivot axis when unlocked, and for rigidly securing said injection unit relative to said mould after adjustment when locked.

8. In an injection moulding machine for a mould and having an injection unit with a nozzle, said injection unit having guide sleeves slidably supported on at least two rods generally lying within a common plane, which rods are normally fixed relative to the mould and extend substantially parallel to the axis of said injection unit, the improvement comprising: a rotatable eccentric means disposed between said injection unit and said guide sleeves to be rotatable for laterally shifting the axis of said injection unit relative to said rods and sleeves; and means for locking the position of said injection unit relative to said rods and sleeves against further adjustment to rigidly fix such lateral adjustment.

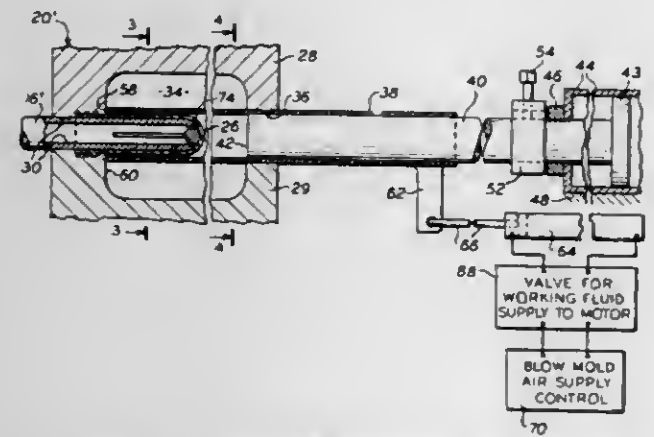
3,936,260
APPARATUS AND METHOD FOR MAKING BLOW MOLDED CONTAINERS WITH HIGH LENGTH TO DIAMETER RATIO

John J. Farrell, Green Brook, N.J., assignor to Farrell Patent Company, Greenbrook, N.J.

Filed Oct. 4, 1974, Ser. No. 512,294

Int. Cl.² B29D *23/02, 23/03*

U.S. Cl. 425—242 B **10 Claims**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VALVE FOR WORKING FLUID SUPPLY TO MOTOR
BLOW MOLD AIR SUPPLY CONTROL
70

1. Injection blow molding apparatus for forming a hollow article having a substantially greater length than diameter including a core rod, an injection station having an injection mold in which a parison is injected over the core rod, a blowing station, means to transfer said core rod and parison from said injection station to said blowing station, said blowing station including a mold having a cavity therein and into which the core rod projects for a blowing operation, the cavity being substantially longer than the core rod and parison in the direction in which the core rod extends into the cavity, and means for increasing the length to diameter ratio to which the parison can be blown including a tube that extends into the mold cavity from the end of the cavity opposite to that at which the core rod extends into the cavity, the core rod and tube being in substantial alignment with one another and the tube having a diameter greater than that of the core rod and with clearance for the parison to extend into the tube, means for blowing the parison to expand it lengthwise in the tube, and means for progressively withdrawing the tube from the blow mold cavity during blowing of the parison.

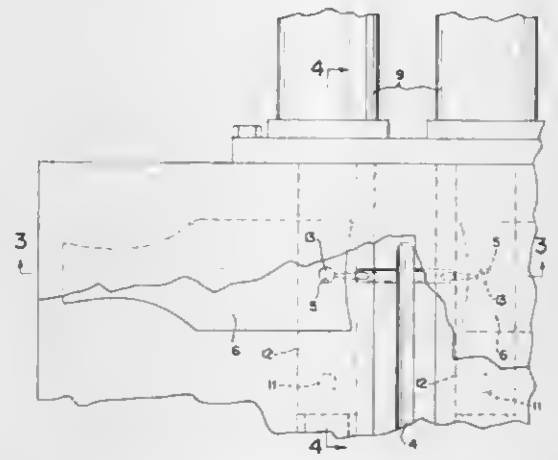
3,936,261
APPARATUS FOR MANUFACTURING BRUSHES

Kenneth B. Jones, and Walter C. Gorenflo, both of Easthampton, Mass., assignors to Vistron Corporation, Cleveland, Ohio

Filed Sept. 20, 1974, Ser. No. 507,768

Int. Cl.² B29F *1/04*

U.S. Cl. 425—245 R **3 Claims**



1. An apparatus comprising a mold which provides a mold cavity, a cylindrical gate section communicating with said mold cavity, said gate section being equipped with a guide pin and a slidably movable punch pin which is in the form of a solid rod which acts as a piston to force the material present in the gate section into the mold and conforms with the internal shape of the gate section and its end being flush with said mold cavity.

3,936,262
MULTI-ORIFICE INJECTOR NOZZLE FOR INJECTION MOLDING MACHINE

Karl Hehl, Arthur-Hehl Strasse 32, 7291 Lossburg, Germany

Filed May 15, 1974, Ser. No. 470,283

Claims priority, application Germany, July 28, 1973, 2338458

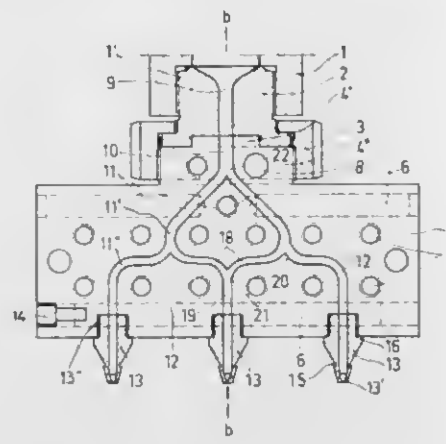
Int. Cl.² B29F *1/03*

U.S. Cl. 425—248 **11 Claims**

1. In an injection molding machine having an injection mold with a plurality of injection ports for the simultaneous injection of plastic material therethrough, and an injection unit with a plastification cylinder for supplying plastified material to the injection mold, a multi-orifice injector nozzle attachment for the injection unit adapted, for example, for the processing of clear, temperature-sensitive plastic materials, the attachment comprising in combination:

- a nozzle head in the form of a split block constituted by two block halves joined together along flat clamping faces defining a central separation plane;

- a system of flow channels extending through the nozzle head in alignment with its separation plane, so that the channel walls are constituted jointly by the contiguous block halves, the channel system including:
  - a main channel entering the nozzle head from one side thereof;
  - three parallel smaller injection channels leaving the nozzle head on the side opposite the main channel;
  - a primary channel bifurcation having an entry portion communicating with the main channel and two exit portions opening into two intermediate channels;
  - two transversely spaced secondary channel bifurcations, each having an entry portion communicating with one of said intermediate channels and two exit portions of which the outer one leads to the respective outer injection channel and the inner one coverges with the inner exit portion of the other secondary bifurcation; and



  - a central channel junction having two entry portions communicating with said converging inner exit portions and an exit portion opening into the central injection channel; and wherein
- the entry and exit portions of the several channel bifurcations and of the channel junction have curved, smoothly continuing wall outlines and gradual diameter transitions, free of recesses, for an even flow of plastic material therethrough; the nozzle attachment further comprising:
- means for removably connecting the nozzle head to the discharge end of the plastification cylinder, so that its main channel sealingly communicates with said cylinder; and
- means for clamping together the two block halves of the nozzle head so as to establish hermetic contact between their clamping surfaces along the outline of said channel system.

3,936,263
APPARATUS IMPROVEMENTS IN A ROTARY BLOW MOLDING MACHINE

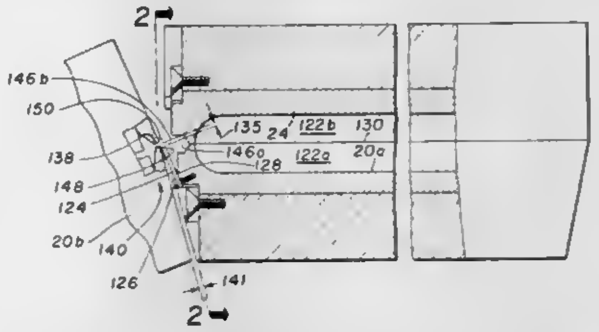
Michael J. Avery, Forrestville, and Lawrence A. Martino, East Hartford, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 480,605, June 19, 1974. This application Apr. 9, 1975, Ser. No. 566,255

Int. Cl.² B29D *23/03*

U.S. Cl. 425—296 **5 Claims**

1. In a rotary machine for blow molding hollow articles from an extruding tube of thermoplastic material which includes a wheel arranged for rotation and having a plurality of arms, each arm carrying a partible mold comprising an inner section and an outer section radially movable along said arm, cam means generally surrounding said wheel including a mold-opening cam portion, means associated with each outer mold section for periodically engaging said mold-opening portion during rotation of said wheel and spring means between the axis of said wheel and each inner mold section for urging each inner section incrementally outwardly as said means associated with each outer mold section traverses the initial section of the mold-opening cam portion, the improvement in said machine which comprises, in combination,



- a wiper blade on the back face of each inner mold section angularly projecting toward and abutting the front face of the next succeeding inner section to shear the plastic against said front face as a result of such incremental outward movement.

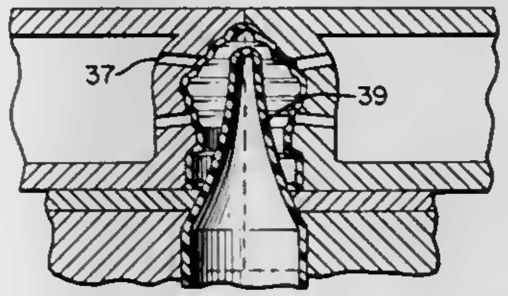
3,936,264
APPARATUS FOR BLOW MOLDING A CONTAINER WITH BREACHABLE SEALING MEMBERS

Walter G. Cornett, III, Wilmette, and Donald G. Gaspar, Burbank, both of Ill., assignors to Respiratory Care, Inc., Arlington Heights, Ill.

Division of Ser. No. 338,878, March 7, 1973, Pat. No. 3,851,029. This application Mar. 6, 1974, Ser. No. 448,684

Int. Cl.² B29D *23/03*

U.S. Cl. 425—326 B **13 Claims**



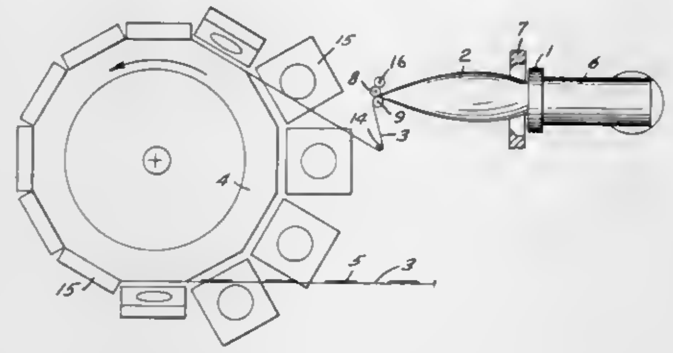
1. An apparatus for molding and sealing a container comprising:

- an extrusion head adapted to extrude a length of thermoplastic tubing;
- at least one sectional mold assembly which is arranged and constructed to enclose said length of extruded tubing;
- said mold assembly including a lower sectional mold adapted to shape the body and close the bottom of the container and to shape at least two neck-like members extending from the top of such container;
- means to sever the extruded tubing at a plane displaced above said neck-like members;
- said mold assembly being so constructed and arranged, and including means above said lower sectional mold adapted to pinch closed all but one of the top portions of the formed neck-like members to form a breachable sealing membrane the major plane of which is disposed generally transverse to a longitudinal axis of said neck-like member;
- fluid pressure applying nozzle adapted to be introduced into the remaining open said neck-like member to supply fluid under pressure to expand said tubing in said lower sectional mold into contact with at least a part of said lower sectional mold to form a body of said container; and
- said mold assembly including an upper sectional mold arranged and constructed to shape that portion of the extruded tubing above said neck-like member into a pinched-off closed cap above said breachable sealing membrane.

3,936,265
MANUFACTURING CLEAR PLASTIC LIDS

James A. McDevitt, Kalamazoo, Mich., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Aug. 15, 1974, Ser. No. 497,586
Int. Cl.^{2} B29D *7/14, 7/26, 23/04*
U.S. Cl. 425—326 R **4 Claims**

1. Apparatus for forming a clear plastic sheet comprising:
means for forming molten thermoplastic into a continuous seamless tubing,
means for cooling the seamless tubing after it leaves the forming means,
a draw roller rotatably mounted with its axis of rotation transverse to the direction of travel of the seamless tubing,
the draw roller being formed of uncoated metal,
the draw roller having internal means for cooling the surface thereof, and
a pressure roller for pressing the seamless tubing against the surface of the draw roller and for pressing the walls of the tubing together along their extent between the draw roller and the pressure roller to fuse the tubing into a continuous weld and thereby provide a single clear sheet of plastic material,
the pressure roller being provided with an elastomeric coating.

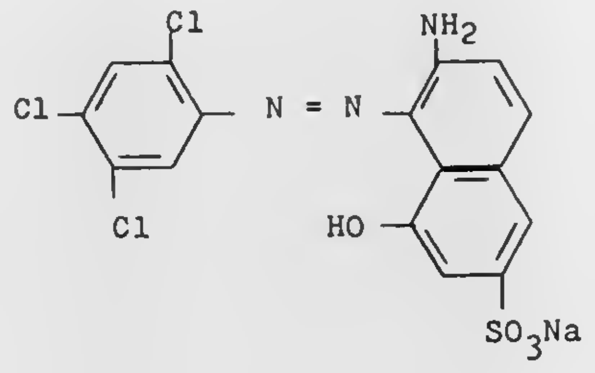


CHEMICAL

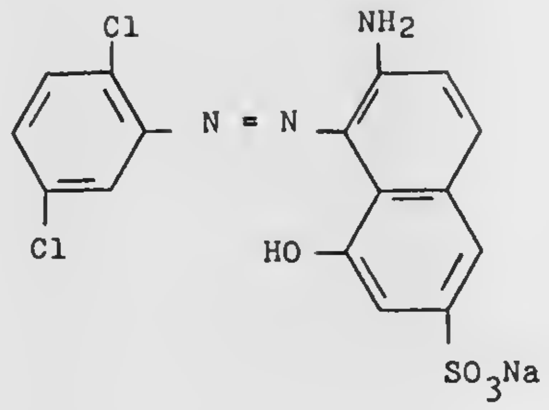
3,936,266
TRIHALO MONOAZO DYESTUFFS

John H. McLeod, Tonawanda, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Feb. 11, 1974, Ser. No. 441,688
Int. Cl.^{2} C09B *27/00, 45/48;* **C07C** *107/08;* **D06P** *1/06*
U.S. Cl. 8—26 **2 Claims**

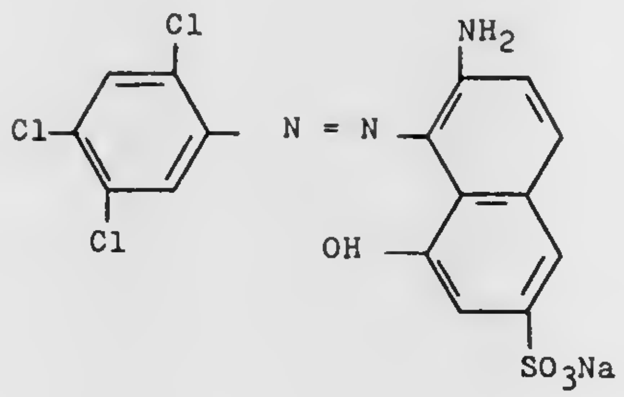
1. As a dye composition, a mixture of from about twenty to 80 weight percent of a compound having the formula



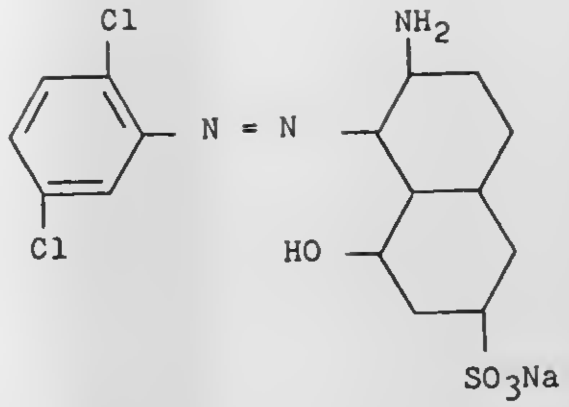
and from about 80 to 20 weight percent of a compound having the formula



2. As a dye composition, a mixture of about 20 weight percent of a compound having the formula



and about 80 weight percent of a compound having the formula



3,936,267
FLAMEPROOFING WOOL TEXTILES

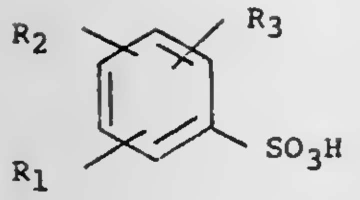
William L. Wasley, Berkeley, and Allen G. Pittman, El Cerrito, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Feb. 27, 1975, Ser. No. 554,055
Int. Cl.^{2} D06M *3/02*
U.S. Cl. 8—128 R **5 Claims**

1. As an article of manufacture, a woolen-containing textile carrying a deposit of N,N′,N″-triallylphosphoramide which has been reacted in situ on the textile with bromine, and wherein the amounts of N,N′,N″-triallylphosphoramide and bromine are sufficient to render the textile flame resistant.

3,936,268
METHOD OF REDUCING BARRÉ IN SYNTHETIC POLYMIDE TEXTILES DYED WITH ACID DYES

John G. Papalos, Ledgewood, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio
Filed Nov. 7, 1974, Ser. No. 521,548
Int. Cl.^{2} D06P *1/84*
U.S. Cl. 8—173 **5 Claims**

1. In a process of dyeing a nylon textile with an acid dye, the improvement which comprises:
dyeing the nylon textile in the presence of a barre-reducing quantity of a combination of anionic surfactants consisting essentially of
A. A dye-leveling alkyl sulfonate, and
B. a dye-leveling alkyl aryl sulfonate,
to obtain a dyed nylon textile having less barre than if similarly dyed in the presence of an equivalent amount of of either (A) or (B) alone;
the quantity of the combination of the anionic surfactants being about 0.25 to 4.0 parts by weight per 100 parts by weight of the nylon textile;
the weight ratio of the alkyl sulfonate to the alkyl aryl sulfonate being within the range of 1:9 to 9:1;
the alkyl sulfonate being a sodium, potassium, ammonium or water-soluble amine salt of an alkyl sulfonic acid having 8 to 20 carbon atoms; and
the alkyl aryl sulfonate being a sodium, potassium, ammonium, or water-soluble amine salt of an alkyl aryl sulfonic acid having the general formula:



where,

R_1 is hydrogen or a methyl group,
R_2 is hydrogen or an alkyl group having 1 to 4 carbon atoms, and
R_3 is an alkyl group having 8 to 20 carbon atoms.

3,936,269
METHOD OF COLD STERILIZATION USING FROZEN DIMETHYL DICARBONATE

Peter D. Bayne, Shorewood, Wis., assignor to Logica International Corporation, Milwaukee, Wis.

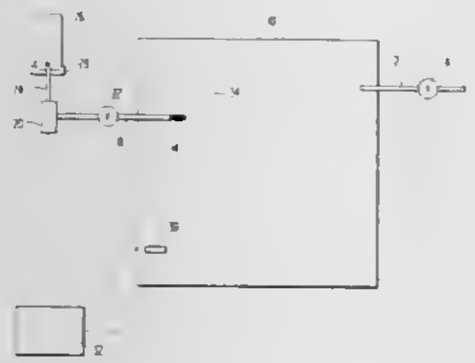
Filed Nov. 25, 1974, Ser. No. 526,529
Int. Cl.² A23B *7/14;* A23L *3/34;* A61L *13/04;* B65B *55/22*
U.S. Cl. 21—58 13 Claims

1. A method of sterilizing a perishable material, comprising the steps of heating frozen dimethyl dicarbonate to a temperature sufficient to liquify the dimethyl dicarbonate while maintaining the dimethyl dicarbonate under an atmosphere of a dry inert gas, admixing the liquified dimethyl dicarbonate with a perishable material, immediately thereafter subjecting the perishable material to a temperature in the range of 25° to 50°C to increase the antimicrobial activity of the dimethyl dicarbonate, and thereafter cooling the material to room tempcrature.

3,936,270
PORTABLE GAS STERILIZER SYSTEM

Donald Albert Gunther, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed June 13, 1972, Ser. No. 262,313
Int. Cl.² A61L *3/00, 3/02, 13/00;* B05B *7/00*
U.S. Cl. 21—91 10 Claims



1. Portable gas sterilizer system comprising
means defining a sterilizing chamber capable of holding articles for gas sterilization and gas under pressure,
atomizing means communicating with such sterilizing chamber to introduce humidifying composition into such chamber in droplet form,
means for supplying humidifying composition to such atomizing means at a pressure above that within the sterilizing chamber,
means to control such humidifying composition supplying means to obtain in such sterilizing chamber a predetermined degree of humidification for coaction in the sterilizing reaction, and
means to introduce sterilizing gas into the sterilizing chamber subsequent to the introduction of humidifying composition.

3,936,271
METHOD FOR PROTEIN ANALYSIS

Simon Statter, Playa Del Rey, Calif., assignor to The Baltimore Spice Company, Baltimore, Md.

Filed Aug. 28, 1974, Ser. No. 501,427
Int. Cl.² G01N *21/20, 33/16*
U.S. Cl. 23—230 B 6 Claims

1. In an Acid Orange 12 dye binding method for the colorimetric determination of the percentage of protein in meat or meat products by emulsification of a sample of the meat or meat products in an acidulant and subsequent reaction with the dye wherein determination of the non-bound dye in a filtrate obtained from the emulsion is utilized to arrive, by difference and reference to a standard curve prepared by a non-colorimetric quantative method, at the percentage protein, the improvement which comprises:

a. emulsifying the meat and meat products under conditions wherein the temperature of the emulsified-acidified sample emulsion is at least about 40°C; and
b. reacting the sample emulsion with a solution of the dye before the temperature drops below about 40°C and allowing from about 5 minutes to about 20 minutes for the dye binding reaction.

3,936,272
METHOD OF SEPARATING AND SCANNING ORGANIC CELLS AND MOLECULES

Cora G. Saltarelli, 316 Brentwood Road, Buffalo, N.Y. 14226

Filed Feb. 7, 1975, Ser. No. 547,946
Int. Cl.² G01N *21/00, 33/16*
U.S. Cl. 23—230 B 14 Claims

1. A method of studying organic cells and molecules which comprises layering photosensitive sucrose-acrylamide solutions of decreasing density in a quartz centrifuge tube, placing a specimen of organic material to be studied on top of the layered solutions, centrifuging the quartz tube and contents to separate constituents of the specimen into the various layers of the solution, exposing the quartz tube and contents to light until the solution is solidified, scanning the resulting gel with ultraviolet light to obtain patterns formed by bands of molecules or cells from the sample that are immobilized in the gel, and recording the bands which form patterns for comparative study.

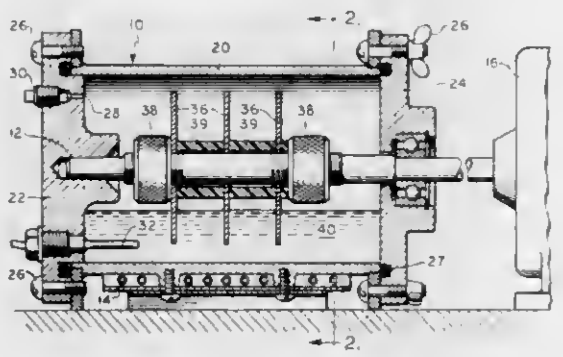
3,936,273
APPARATUS FOR DETERMINING THE CORROSION PROTECTION PERFORMANCE OF A FLUID

Donald L. Powell, Chicago, Ill., assignor to Autoresearch Laboratories, Inc., Chicago, Ill.

Filed Feb. 25, 1974, Ser. No. 445,468
Int. Cl.² G01N *31/00*
U.S. Cl. 23—253 C 4 Claims

1. An apparatus for determining the corrosion protection performance of a fluid comprising:
a sealably encloseable and disassemblable housing, said fluid being contained therein;
means for mounting test specimens, said mounting means including a shaft, means for axially spacing a plurality of test specimens on said shaft and collar means which engage said shaft and maintain said specimens in fixed position thereon, said mounting means disposed within said housing and in spaced relation with the bottom thereof such that said test specimens may be partially immersed in the liquid phase of said fluid;

means for rotating said mounting means with said specimens mounted thereon;

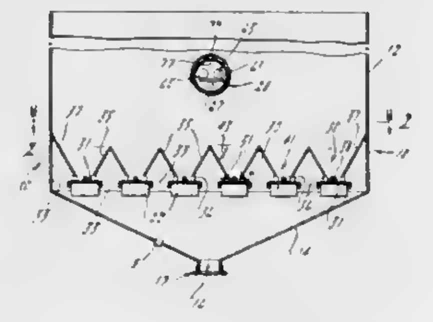


means for regulating the temperature of said fluid and including a heating element positioned externally of, adjacent to and abutting a lower portion of said housing; and
sealable port means disposed in said housing for introducing into said housing a corrosion initiating substance.

3,936,274
SALT DISSOLVER CONSTRUCTION

Melvin E. Leverenz, St. Clair, and Robert L. Vanderscors, Marysville, both of Mich., assignors to Diamond Crystal Salt Company, St. Clair, Mich.

Filed Feb. 14, 1975, Ser. No. 549,772
Int. Cl.² B01D *11/02;* B01F *1/00;* C01D *3/08*
U.S. Cl. 23—270 R 19 Claims

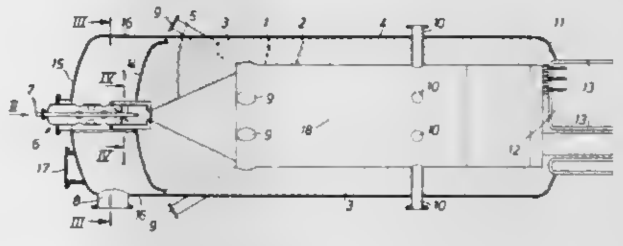


1. A new salt dissolver construction which is capable of self cleaning relative to sludge-impurities formed therein during dissolving, said construction comprising:
a tank for holding the salt therein,
a generally conical bottom portion on said tank,
a drain outlet near the lowermost part of the conical bottom,
a water inlet near the lowermost portion of the conical bottom,
a brine outlet means for removing dissolved salt in the form of brine from the tank and being located substantially above the bottom of the tank but below a liquid level maintained within said tank, which liquid level in turn is maintained below a salt level in said tank,
dissolving zone means located generally near the top of said conical portion and operative to support the salt for dissolving therein while preventing flow of the salt into said conical portion,
said dissolving zone means including, a plurality of transverse support
member means positioned crosswise in the tank with spaces therebetween and operative to support the salt in the tank,
a plurality of umbrella like means positioned over and overlapping said spaces and additionally being operative to support the salt in the tank and to prevent the salt from passing downwardly through said spaces,
said overlapping being such that salt which falls downwardly over said umbrella means will pile up on said support members to form salt piles thereon which have an angle of repose sufficient to enable said salt to be retained on the support members without falling through said spaces;
and water spray conduit means located just above said support members and generally adjacent to and below said umbrella means for periodically rinsing and cleaning out the sludge-impurities which collect in the dissolving zone after first draining all liquid from the tank through said drain outlet.

3,936,275
APPARATUS FOR THE COMBUSTION OF SULPHUR

Jean-Pierre Perret, Tarnos, and Bruno Vidon, Suresnes, both of France, assignors to Societe Anonyme: Pechiney Ugine Kuhlmann, Paris, France

Division of Ser. No. 232,672, March 8, 1972, Pat. No. 3,879,530. This application Oct. 25, 1973, Ser. No. 409,622
Claims priority, application France, Mar. 10, 1971, 71.08343
Int. Cl.² B01J *1/00;* C01B *17/54;* F23D *11/40*
U.S. Cl. 23—278 11 Claims



1. An apparatus for the combustion of liquid sulphur, comprising a tubular combustion chamber having an upstream end wall having at least one conical wall portion, said conical wall portion having an entrance port the entrance port being at the apex of the conical wall portion, the cross sectional area of the conical wall portion enlarging as the wall portion approaches the combustion chamber, an injector means for said at least one conical wall portion for injecting liquid sulphur and primary combustion-supporting gas into the apex of the conical wall portion and toward the interior of the combustion chamber, each of said injector means including a tube, means for introducing primary combustion-supporting gas into said tube, a spray head disposed substantially coaxially in the tube for spraying liquid sulphur toward the entrance port, means for delivering liquid sulphur to the spray head, means in the tube upstream of the spray head for setting the primary combustion-supporting gas in rotational motion therein, and a constricting member partially closing off the end of the tube adjacent to the apex of the conical wall portion, and first means for introducing a dilution and cooling gas into the combustion chamber along the lateral walls thereof and downstream of the end wall in the direction of the flow of gaseous mixture therein.

3,936,276
PROCESS FOR PRODUCING AMETHYST CRYSTAL

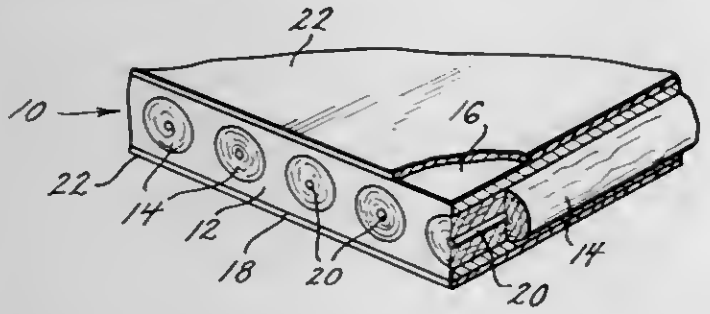
Vladimir Sergeevich Balitsky, ulitsa Lenina, 12, kv. 39; Lev Nikolaevich Khetchikov, ulitsa Lenina, 12, kv. 13; Valentina Petrovna Orlova, ulitsa Krasnoi Molodezhi, 4, kv. 47, and Ljudmila Vasilievna Balitskaya, ulitsa Lenina, 12, kv. 39, all of Vladimirskaya oblast, Alexandrov, U.S.S.R.

Filed Dec. 6, 1973, Ser. No. 422,162
Int. Cl. B01j *17/04;* C01b *33/12;* B01j *17/36*
U.S. Cl. 23—301 R 7 Claims

1. A process for producing amethyst crystals which comprises: introducing into a high-pressure autoclave a silica charge, crystalline quartz seed plates oriented parallel to pinacoid crystallographic planes {0001} or to planes inclined to said pinacoid planes at an angle up to 15° and an aqueous solution of ammonium fluoride with a concentration of from 5 to 30% by weight and containing iron in the form of its oxydic and hydroxydic compounds in an amount of from 5 to

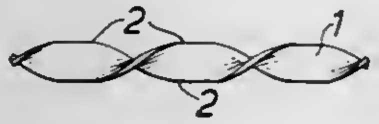
30 g/l of the solution; growing colourless quartz crystals on the seed plates in the autoclave at a crystallization temperature within the range of from 150° to 500°C under a pressure of from 10 to 1,200 kg/cm² and at a crystal growth rate of from 0.05 to 1.5 mm/day; and exposing the resulting colourless quartz crystals to an ionizing radiation.

3,936,277
ALUMINUM ALLOY-BORON FIBER COMPOSITE
William M. Jakway, Creve Coeur, and Ronald B. Kollmansberger, Florissant, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.
Filed Apr. 9, 1970, Ser. No. 26,966
Int. Cl.² B32B *15/14, 35/20*
U.S. Cl. 29—191.6 **3 Claims**



1. An aluminum alloy-boron fiber composite structure constructed by the method of stacking a plurality of similar foils in surface-to-surface relationship on a mold having the shape of the desired composite structure to be formed, each of said foils including a sheet of relatively ductile aluminum having a plurality of boron fibers distributed in a layer throughout, and each of said aluminum sheets having a coating on at least one surface thereof of copper capable of forming a liquid eutectic with the aluminum of the foil and of diffusing relatively uniformly throughout the aluminum without producing melting of any material, said foils being stacked on the mold so that at least one layer of said coating material is between each pair of adjacent foils in the stack, said composite structure being formed by subjecting said stacked foils under pressure to a predetermined temperature sufficient to form a liquid eutectic at the interfaces between the aluminum sheets and the coatings of material thereon, said predetermined temperature being greater than the eutectic temperature but less than the melting temperatures of the foils and the coatings thereon, said cutectic temperature being maintained for a sufficient time for the copper in the coating to diffuse substantially uniformly throughout the foil so as to lose its identity as a distinct coating and to integrally unite adjacent foils.

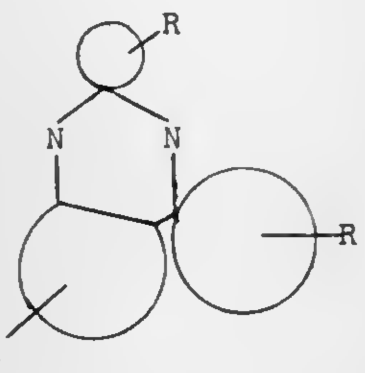
3,936,278
REINFORCING ELEMENTS
Joris Moens, Kortrijk, Belgium, assignor to Trefileries Leon Bekaert, P.V.B.A., Zwevegem, Belgium
Filed Aug. 26, 1968, Ser. No. 755,312
Claims priority, application United Kingdom, Aug. 29, 1967, 39540/67
Int. Cl. B21b *15/02*
U.S. Cl. 29—193 **6 Claims**



1. A tensile reinforcing element for molded or laminated articles consisting of a metal ribbon of rectangular cross section uniformly twisted into a helix along the longitudinal centerline of said ribbon, and a plurality of flattened areas uniformly spaced on at least one edge of said helically twisted ribbon along the length of said ribbon so as to deform the otherwise helically curved edge of said ribbon.

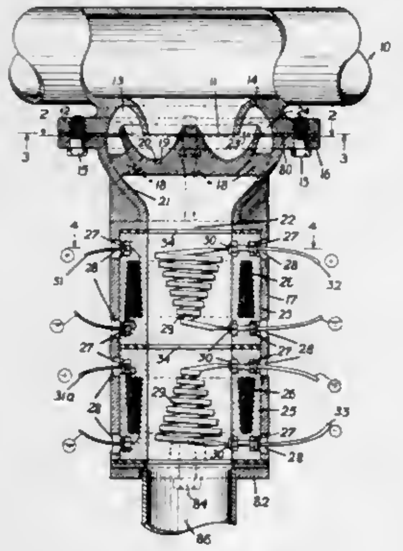
3,936,279
HEXAHYDROPYRIMIDINES AS FUEL ADDITIVES
Bernardus A. Oude Alink, and Ronald P. Hutton, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.
Filed Nov. 2, 1973, Ser. No. 412,300
Int. Cl.² C10L *1/16*
U.S. Cl. 44—63 **6 Claims**

1. A distillate fuel containing a minor but deterioration inhibiting amount of a hexahydropyrimidine having the formula



where each of the circles represents a cycloalkylene structure having from 5 to 7 carbon atoms and where the R's are hydrogen alkyl, cycloalkyl, alkaryl or aralkyl.

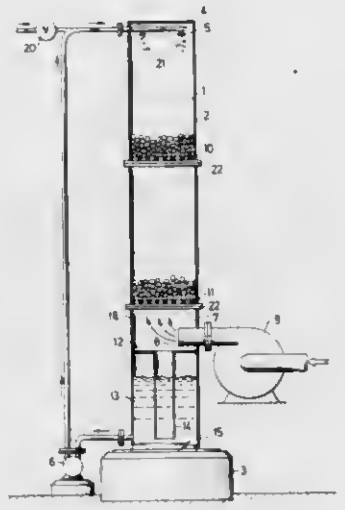
3,936,280
TREATMENT AND APPARATUS FOR SEPARATION OF COMBUSTION BY-PRODUCTS FROM AN INTERNAL COMBUSTION ENGINE
George L. Briggs, Frazier Pasture Road, Box 864, Ogunquit, Maine 03907
Filed Nov. 9, 1973, Ser. No. 414,243
Int. Cl.² B03C *1/00*
U.S. Cl. 55—3 **7 Claims**



1. The method of treating and removing combustion by-products in an effluvium from an internal combustion engine in a housing having means for generating at least one magnetic field within said housing and a first member for removing one or more negative electrons from atoms of said combustion by-products positioned within the housing in said at least one magnetic field and a second member positioned within said magnetic field downstream from said first member for collecting ionized nuclei resulting from the said removal of electrons from said atoms which comprises the steps of:

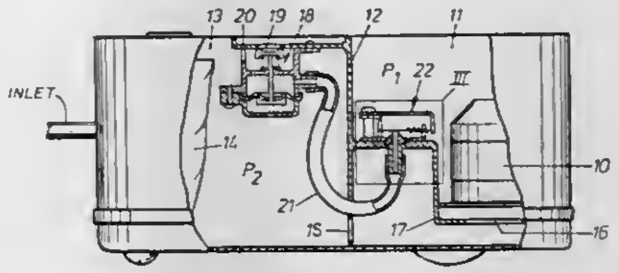
a. supplying electric current to said means to generate one magnetic field within said housing,
b. passing combustion by-products of said effluvium through said housing,
c. supplying positive current voltage to said first member to give it a positive charge to thereby remove one or more negative electrons from said atoms of said combustion by-products,
d. supplying negative current voltage to said second member located downstream of said first member to give it a negative charge to thereby collect ionized nuclei resulting from said removal of electrons from said atoms by said first member, and
e. the said magnetic field directing the charged particles toward the said first and second members.

3,936,281
METHOD AND APPARATUS FOR DEODORIZING WASTE GASES
Hans Kurmeier, Hamburg, Germany, assignor to Sudoldenburger Tierfrischmehl-Anlagengesellschaft, Nordlohne, Germany
Filed Mar. 27, 1974, Ser. No. 455,247
Claims priority, application Germany, Mar. 30, 1973, 2315911
Int. Cl.² B01D *47/14*
U.S. Cl. 55—71 **6 Claims**



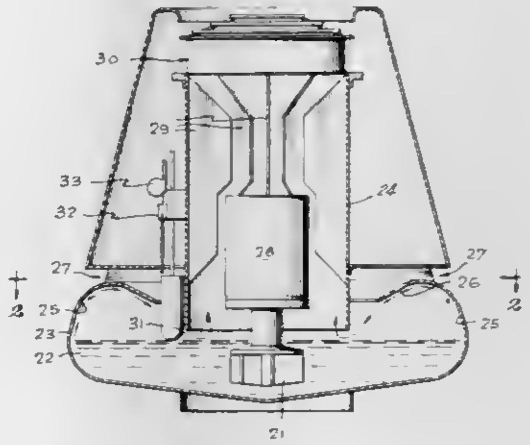
1. In the deodorizing of waste gas containing foul-smelling constituents that are chemically reactive with an aqueous acid formed by desolving an acid-forming gas in water, the method including the steps of:
moving the waste gas upwardly through a loose bed of granular material supported by a grate in a vessel, the bed providing minimal flow resistance to the moving waste gas,
spraying downwardly in the vessel an aqueous suspension of a powdered alkaline earth metal carbonate, the aqueous carbonate suspension trickling downwardly through the bed of granular material in counter-current flow to the simultaneous upward flow of waste gas through the bed and the carbonate suspension providing a large reaction surface, and
continuously mixing the acid-forming gas with the aqueous carbonate suspension prior to trickling the latter through the granular material bed.

3,936,282
VACUUM CLEANER AND TEMPERATURE-RESPONSIVE MOTOR COOLING DEVICE
Ivar Asplund, Solna, and Karl Arvid Henning Waara, Stockholm, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Feb. 27, 1975, Ser. No. 553,540
Claims priority, application Sweden, Mar. 1, 1974, 7402728
Int. Cl.² B01D *46/02*
U.S. Cl. 55—217 **6 Claims**



1. A temperature-responsive vacuum cleaner motor cooling device comprising a vacuum cleaner housing having a first and second compartments at least one fan driven by the vacuum cleaner motor, a dust container, communicating with an inlet the latter together with said motor and fan being located within said housing, said fan when operating functioning to transport air through said compartments while the dust is separated out in said dust container, a temperature sensing means for and adjacent said motor, a valve having a valve body normally covering an opening in said housing and comprising a chamber provided with a diaphragm, one part of said chamber on one side of said diaphragm having an opening communicating with said first compartment in a first space being located between said dust container and the suction side of said fan, an air conduit connecting said one part of said chamber on said one side of the diaphragm to said second compartment downstream of the fan and having a higher pressure and housing said motor, and a blocking means associated with said air conduit and said temperature responsive means being acted upon by said temperature sensing means when the motor temperature is too high to open said valve and thereby establish communication between the atmosphere and said first space and said motor whereby cooling air is permitted to flow about said motor.

3,936,283
COMPACT GAS PURIFIER
Frank Solis, 4283 Tujunga Ave., North Hollywood, Calif. 91604
Filed Sept. 30, 1974, Ser. No. 510,760
Int. Cl.² B01D *47/06*
U.S. Cl. 55—230 **6 Claims**



1. An improved gas purifier comprising:

- a A bowl with a reentrant outer rim, said rim pointing in and down toward the central region of said bowl
- b A liquid contained in said bowl
- c A rotor in the center of said bowl
- d Means for spinning said rotor with such force that said liquid in said bowl is carried outward, up the wall of said bowl, around said reentrant rim and is hurled back down toward the central region of said bowl to be recycled,
- e A hollow tube like structure opening into said central region of said bowl through which gas may flow out of said central region of said bowl allowing additional gas to flow into said central region of said bowl past said reentrant rim of said bowl through said liquid being hurled downward and inward from said rim,
- f Means for drawing gas into said bowl between said rim and said tube and out through said tube so as to cause gas to flow through said purifier.

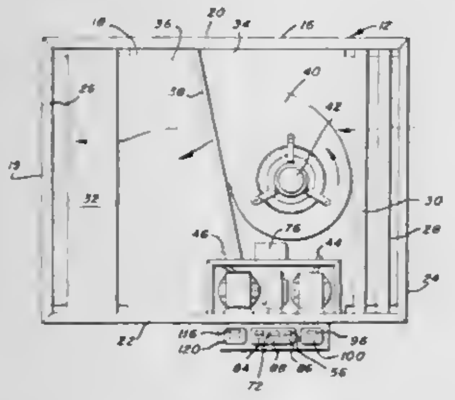
3,936,284
AIR FILTERING APPARATUS

Donald G. Mason, Park Ridge, Ill., assignor to Mason Engineering and Designing Corporation, Rosemont, Ill.

Filed Aug. 16, 1974, Ser. No. 497,842

Int. Cl.^{2} B01D ***46/10***

U.S. Cl. 55—274 8 Claims



1. An air filtering apparatus comprising a chamber having an inlet and an outlet, a prefilter panel disposed across said chamber inlet, a HEPA type filter panel disposed across said chamber outlet, dividing means intermediate said prefilter panel and said HEPA type filter panel for dividing said chamber into adjacent first and second subchambers, said dividing means having an opening through which air may pass from said first subchamber into said second subchamber, blower means intermediate said prefilter panel and said HEPA type filter panel for forcibly blowing air from said first subchamber through said dividing means opening and into said second subchamber, whereby air will be drawn through said prefilter panel into said first subchamber and will be forced into said second subchamber and exhausted through said HEPA type filter panel, pressure responsive indicator means responsive to a predetermined increase in pressure in said second subchamber for indicating when said HEPA type filter panel requires changing, said blower means including an electric blower motor, the speed of which may be varied by varying the voltage applied thereto, a voltage supply circuit, and means for varying the voltage applied by said circuit to said blower means, said voltage varying means including switch means connected to said voltage supply circuit and operable in two alternative positions for supplying two alternative voltages for operation of said blower motor at two alternate speeds, one of which is sufficient to generate pressure conditions within said second subchamber sufficient to actuate said pressure responsive means if the HEPA type filter panel requires changing, control means responsive to a predetermined signal for effecting movement of said switch means from one of said alternative positions to the other, signal applying means operatively connected to said control means for applying an actuating signal to said control means, said signal applying means including radio frequency receiver and signal circuit means operated by said receiver in response to receipt of a predetermined transmitted frequency for applying an actuating signal to said control means, and means for generating the predetermined radio frequency for actuating said radio receiver, whereby said blower means may be remotely controlled to test the condition of said HEPA filter panel.

3,936,285
GLASS FIBER SIZING METHOD

John Maaghul, Monroeville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 7, 1974, Ser. No. 512,646

Int. Cl.^{2} C03C ***25/02***

U.S. Cl. 65—3 C 3 Claims

1. In the method of forming glass fibers comprising:

forming glass fibers from molten cones of glass at the tips of orifices in a bushing by attenuation;

sizing said glass fibers with an aqueous sizing composition;

gathering said fibers into strand; and

collecting said glass fiber strand, the improvement comprising:

sizing said glass fibers with an aqueous sizing composition comprising:

- 1 to 10 percent of a water solubilized carboxylated unsaturated polyester resin, said polyester resin substantially insoluble and aromatic solvents;
- 2 to 10 percent by weight of a second unsaturated, water insoluble polyester resin, said second polyester resin being insoluble in said first solubilized polyester resin, said second polyester resin preventing the migration of said sizing composition;
- 2 to 10 percent by weight of a plasticizer;
- 0.1 to 1.5 percent by weight of methacryloxyalkyltrialkoxy silane to promote adhesion between said glass fibers and said resin matrix;
- 0.1 to 1.5 percent by weight of an amino silane coupling agent;
- 1 to 6 percent by weight of an acrylic thermoplastic polymer being of sufficient low molecular weight to impart pressure sensitive adhesive characteristics to said sizing composition and a major amount of water.

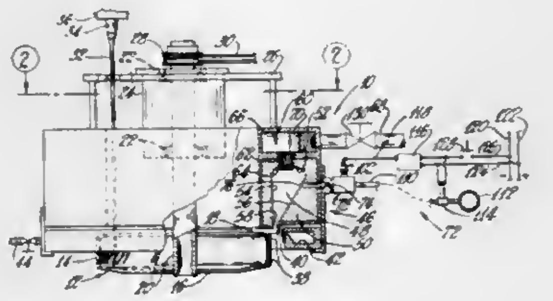
3,936,286
GLASS FIBERIZER WITH IGNITION SYSTEM

Peter A. Dunkailo, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sept. 30, 1974, Ser. No. 510,530

Int. Cl.^{2} C03B ***37/04***

U.S. Cl. 65—14 2 Claims



1. In apparatus for forming fibers from molten glass including in combination, a hollow spinner having an orificed peripheral wall, means for supplying molten glass to said spinner, means for rotating said spinner thereby centrifuging streams of molten glass from said orifices, attenuating means including an annular combustion chamber having an annular exit adjacent the peripheral wall of said spinner such that the mixture combusted therein exits said chamber transversely engaging the molten streams of glass, the improvement comprising, a combustion chamber lighting system including an ignition burner located outside of said combustion chamber and having a flame passage communicating with said combustion chamber, and means for supplying an air-fuel mixture to said ignition burner.

3,936,287
METHOD FOR MAKING GLASS-CERAMIC ARTICLES EXHIBITING HIGH FRANGIBILITY

George H. Beall, Big Flats; William T. Brydges, III.; Joseph Ference, both of Corning, and Theodore R. Kozlowski, Horseheads, all of N.Y., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 28, 1974, Ser. No. 437,008

Int. Cl. C03c ***15/00;*** **C03b** ***29/00***

U.S. Cl. 65—30 E 9 Claims

1. A method for making a unitary glass-ceramic article exhibiting a modulus of rupture in excess of about 150,000 psi which will, upon fracture through the application of essentially no external energy, fragmentize violently, and wherein the crystal assemblage thereof constitutes at least 75% by volume of the article, said article having an integral surface compressive stress layer and an interior tensile stress portion which comprises:

- a. melting a batch for a glass consisting essentially, by weight on the oxide basis, of about 13–15% MgO, 1–3% B_2O_3, 23–26% Al_2O_3, 48–51% SiO_2, 4–8% TiO_2, and 3–7% ZrO_2, wherein the total $TiO_2 + ZrO_2$ ranges between about 9–13%;
- b. simultaneously cooling the melt to at least within the transformation range thereof and shaping a glass body therefrom;
- c. heating said glass body to a temperature between about 900°–1050°C. for a period of time sufficient to crystallize said glass body to a glass-ceramic article wherein the crystal assemblage constitutes at least 75% by volume of the article and consists predominantly of alpha-quartz and sapphirine;
- d. contacting said glass-ceramic article with a source of lithium ions at a temperature between about 850°–1000°C. for a period of time sufficient to replace at least part of the magnesium ions of said Mg^{+2} ion-containing crystals in a surface layer within the article to a depth of at least 1% of the cross section thereof with lithium ions on a two lithium ions-for-one magnesium ion basis to produce crystals of lithium-stuffed beta-quartz solid solution crystals in said surface layer; and then
- e. cooling said article to room temperature to thereby produce an article having an integral compressively stressed surface layer and an interior tensilely stressed portion.

3,936,288
METHOD FOR MAKING A GLASS-CERAMIC RECUPERATOR

Yu K. Pei, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

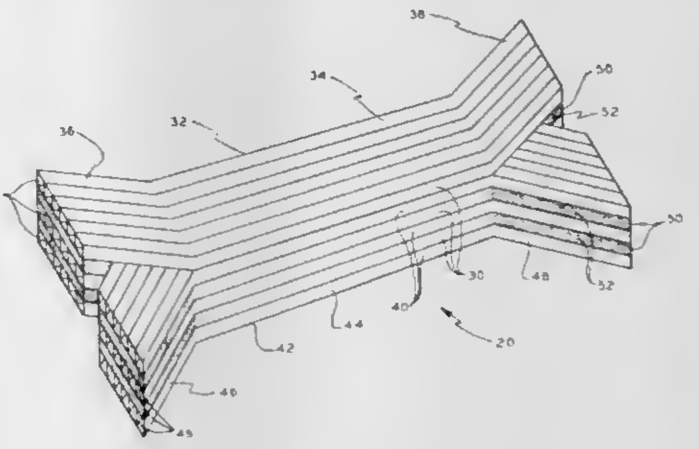
Division of Ser. No. 333,402, Feb. 16, 1973. This application Dec. 10, 1974, Ser. No. 531,235

Int. Cl.^{2} C03B ***32/00;*** **C03C** ***27/00***

U.S. Cl. 65—33 17 Claims

17. A method for making a recuperator heat exchange assembly, comprising

- a. providing first and second pluralities of layers of elongated tubes formed of a glass that is thermally crystallizable to a low expansion glass-ceramic having a coefficient of lineal thermal expansion of about -18 to $+50 \times 10^{-7}$/°C over the range of 0° – 300°C, each of said tubes being filled with a fluid medium that is expansible in response to the application of heat and having sealed ends to retain said expansible fluid medium entrapped therein;
- b. each of said tubes having an essentially straight central portion and header connector portions continuing from each end of the central tube portion to the sealed ends of the tube, the header connector tube portions of said first plurality of layers diverging away from the header connector tube portions of said second plurality of layers at the ends of said central tube portions when one of said layers is placed on top of the other of said layers;
- c. stacking the central tube portions of said first and second pluralities of layers one above the other with the axes thereof all essentially parallel and with the central tube portions of each first plurality layer in heat exchange relationship with the central tube portions of a second plurality layer, the header connector tube portions at each end of said central tube portions of each layer being arranged so that the connector tube portions of said first layers diverge from the connector tube portions of the second layers to provide four sets of separated header connector tube portion ends, each set of header connector tube portion ends for one of said first and second pluralities of layers extending from the stacked array of tubes as a plurality of tube layers spaced apart by the central tube portions of the other of said first and second pluralities of layers;
- d. filling the spaces between the layers and around the tubes adjacent the ends thereof of each set of header connector tube portions with a header connecting material that is thermally crystallizable to a low expansion glass-ceramic having substantially the same coefficient of lineal thermal expansion as said tubes to seal each set against fluid flow between the tubes;
- e. constraining the outer surfaces of the assembly of tube layers and header connecting material to prevent outward movement of the assembly; and
- f. heat treating the constrained assembly to soften the elongated tubes and enable the fluid medium therein to expand and urge the tubes into contact with adjacent tubes and said header connecting material to fuse said assembly into an integral mass, and to effect crystallization of said tubes and header connecting material into a low expansion glass-ceramic.



3,936,289
METHOD AND APPARATUS FOR SELECTIVELY COOLING GLASS DURING ITS ADVANCE ALONG A MOLTEN METAL SURFACE

E. Kears Pollock, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 15, 1974, Ser. No. 514,979

Int. Cl.^{2} C03B ***18/02***

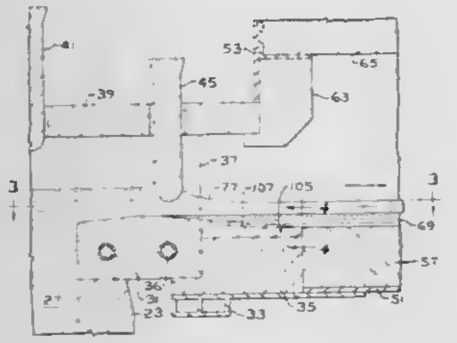
U.S. Cl. 65—65 A 7 Claims

1. In a process for making flat glass wherein molten glass is delivered onto the surface of a pool of molten metal in an enclosed forming chamber having a bottom, an upstream inlet end, a downstream outlet end, and a roof and side walls extending from the upstream end to the downstream end of the chamber and providing an enclosed space between them and

beneath the roof; advancing the glass along the surface of the pool of molten metal from the upstream end toward the downstream end of the chamber; cooling the advancing glass to form a dimensionally stable, continuous sheet of glass therefrom; and removing the continuous sheet of glass from the forming chamber, wherein the advancing glass has a tendency to drift from a direct path of advance; the improvement for treating the glass substantially immediately following its delivery onto the molten metal comprising

maintaining the depth of the molten metal beneath the glass sufficiently deeper in the central portion of the chamber than in the marginal portions of the chamber spaced inwardly from the side walls such that the glass in the central portion is cooled to a greater degree than the glass in the marginal portions, whereby the glass maintains its advance along a path substantially aligned with the centerline of the chamber midway between the side walls of the chamber.

4. In an apparatus for making flat glass comprising a forming chamber, means for delivering a layer of molten glass to the forming chamber; and means for removing a formed continuous sheet of flat glass from the forming chamber; wherein the forming chamber includes a bottom, an upstream end adjacent the molten glass delivery means, a downstream end adjacent the glass sheet removal means, side walls extending from the upstream end to the downstream end and upwardly from the bottom and a roof extending between the side walls and between the upstream and downstream ends providing an enclosed space, the enclosed space containing a pool of molten metal on the bottom for receiving and supporting glass delivered thereto and a headspace overlying the pool of molten metal; means for advancing glass along the surface of the pool of molten metal; and means for cooling the glass during its advance for forming it into a continuous sheet; the improvement wherein



the bottom of the chamber in a region spaced inwardly from the side walls of the chamber and adjacent the upstream end of the chamber is shaped to provide a sufficiently greater depth of molten metal in a central portion of the chamber than along marginal portions of the chamber spaced inwardly from the side walls of the chamber such that the glass in said central portion is cooled to a greater degree than the glass in said marginal portions.

3,936,290
NOVEL FLAT GLASS-PRODUCING FURNACE

Richard L. Cerutti, Seminole, and Henry M. Demarest, Jr., Natrona Heights, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 8, 1974, Ser. No. 458,911
Int. Cl.^{2} C03B *5/16, 5/22*
U.S. Cl. 65—134 13 Claims

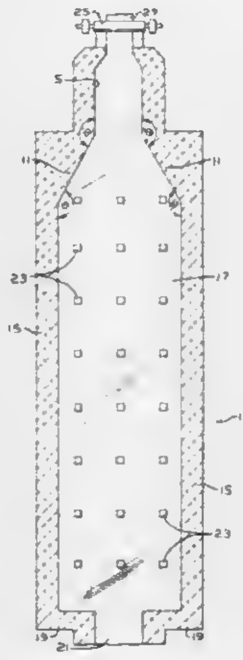
1. In a continuous tank-type furnace producing flat glass of high temperature melting, highly volatile glass batch making ingredients comprising a melter, a canal and flat glass forming means, said melter comprising:

a. a back end wall and front end walls,
b. a top and bottom wall, two generally parallel side walls which define a channel in which the molten glass proceeds from the back wall to the front end walls,

said front end walls having an opening therethrough to permit the passage of glass to flow into the canal which has a narrower cross-section than the melter, the improvement comprising tapered front end walls converging inwardly towards one another from the width of the melter to the width of the canal, such that the angle the front end walls make with the side walls is at least about 140°.

8. A method of making glass comprising:

introducing into a melting zone a glass batch containing an ingredient which is volatile at the elevated temperatures required for melting over a prolonged time so as to cause an adverse loss of said ingredient from the glass, said melting zone having an initial portion thereof defined by spaced substantially parallel boundaries extending toward a molten glass outlet,



heating said glass batch until it is in a molten state,

flowing said molten glass through said initial portion of said melting zone toward the end of the melting zone and said molten glass outlet along a substantially straight linear path of flow, and applying forces to said flowing molten glass at the terminal end of each said boundary of the initial portion of said melting zone and maintaining said forces so as to divert and constrict the flow of molten glass to said outlet, said forces being sufficient to divert the flow of the molten glass at each side edge thereof along lines of flow forming an angle of at least about 140° with the line of flow of the molten glass along the edge thereof at the adjacent boundary of said melting zone,

whereby to streamline the flow of portions of the molten glass along said side edges and thereby decrease the average residence time of said glass portion and decrease the loss of volatilizable components of the molten glass.

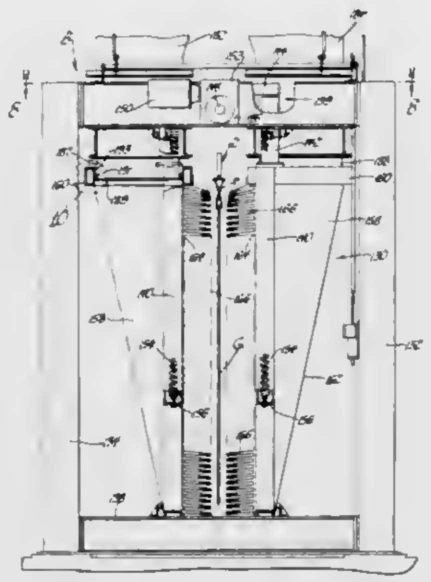
3,936,291
GLASS SHEET TEMPERING BLASTHEAD

Harold A. McMaster, 707 Riverside Drive, Woodville, Ohio 43469

Continuation-in-part of Ser. No. 280,617, Aug. 14, 1972, abandoned, and a continuation-in-part of Ser. No. 435,130, Jan. 21, 1974, abandoned, which is a continuation-in-part of Ser. No. 365,939, June 1, 1973, abandoned. This application Jan. 20, 1975, Ser. No. 542,326
Int. Cl.^{2} C03B *27/00*
U.S. Cl. 65—351 18 Claims

1. A glass tempering blasthead comprising: a pair of plenum chambers, each of said plenum chambers having fluid flow distributing assemblies providing opposed banks of nozzles for

directing cooling fluid onto opposite surfaces of a sheet of glass disposed therebetween, said fluid flow distributing assemblies each including a pair of complementary sheet members, each of said sheet members having a free edge spaced from its respective plenum chamber and being formed with a series of depressions spaced from each other by nozzle portions, each of said nozzle portions and depressions extending inwardly from the free edge of the respective sheet member with a depression between each adjacent pair of nozzle portions, each depression and nozzle portion having an inner end remote from said free edge, the inner end of each depression curving away from said free edge and the inner ends of the adjacent pair of nozzle portions, said sheet members each being formed with a transverse feed passage portion projecting transversely outwardly from the inner ends of said depressions, said pair of complementary sheet members being joined together such that each depression of one sheet member is in complementary abutting relationship with a depression of the other sheet member, and each nozzle portion of one sheet member is in opposed complementary relationship with a nozzle portion of the other sheet member to form a nozzle having an outlet at the juxtaposed free edges of said sheet members and a flared inlet defined by the curved inner ends of the depressions on opposite sides of the nozzle, and said transverse feed passage portions of said sheet members cooperate to define a transverse feed passage projecting from the respective plenum chamber and extending transversely of said nozzles, said transverse feed passage communicating along its length with said plenum chamber and nozzles for transmitting fluid flow from said plenum chamber into the flared inlets of said nozzles each of said plenum chambers having side walls, and further including a plurality of U-shaped components extending across the side walls of the plenum chambers, said U-shaped components having base portions forming the inner faces of the respective plenum chambers and each having a pair of spaced, parallel leg portions projecting from its respective base portions, said leg portions being defined by said sheet members, said components being disposed in side-to-side relationship across the edges of the side walls of the respective plenum chambers such that a leg portion of one component is disposed in complementary relationship with a leg portion of the adjacent components.



18. A glass tempering blasthead comprising a stationary supporting frame having a pair of spaced overhead beams; a motor driven shaft rotatably supported on said overhead beams; an eccentric nonrotatably secured to said shaft; a yoke; said yoke having a base portion supported on said eccentric and a pair of depending leg portions; a pair of plenum chambers; said plenum chambers being supported by the leg members of the yoke; a spring connected between each overhead beam and each plenum chamber for resiliently supporting the plenum chamber with respect to said overhead beam; each of said plenum chambers having an open inlet end; and including a stationary inlet duct received in the inlet end of each of said plenum chambers for conducting air under pressure to said plenum chamber; and dry seal means mounted between the relatively reciprocating surfaces of said inlet ducts and inlet ends of said plenum chambers to prevent leakage therebetween.

3,936,292
COMPOSITIONS FOR USE IN AGRICULTURE AS SOIL MODIFIERS AND THEIR METHOD OF MANUFACTURE

Luigi Piccolo; Benedetto Calcagno, both of Milan; Marcello Ghirga, Bresso (Milan), and Antonio Paolinelli, Milan, all of Italy, assignors to Societa' Italiana Resine S.p.A., Milan, Italy

Filed Sept. 26, 1974, Ser. No. 509,609
Claims priority, application Italy, Sept. 26, 1973, 29397/73
Int. Cl.^{2} C05D *3/02, 9/00;* C10C *1/244;* C01G *49/02*
U.S. Cl. 71—63 8 Claims

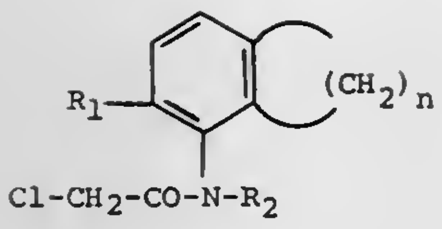
1. A method for preparing a composition useful in agriculture as a soil modifier and fertilizer starting from a waste material which is obtained in the manufacture of titanium dioxide from ilmenites or ilmenite slags by the sulphate process and consists essentially of heptahydrated ferrous sulphate, comprising the steps of thoroughly contacting by a dry mixing the waste material having a grain size up to 3 mm with a compound or a mixture of compounds chosen from the group consisting of potassium carbonate, ammonium carbonate and the oxides, hydroxides and carbonates of calcium and magnesium, said compound or mixture of compounds being alone or in mixture in an ore and said compound or said ore having a grain size from 0.01 to 0.8 mm, at a temperature of from 20°C to the melting point of the heptahydrated ferrous sulphate, thereby obtaining a conversion reaction product consisting essentially of ferrous hydroxide and at least one sulphate of the group consisting of sulphates of calcium, magnesium, potassium and ammonium, and submitting the said conversion reaction product to oxidation in the presence of oxygen or a gas containing molecular oxygen at a temperature from 20° to 80°C to convert at least 90 percent of the ferrous hydroxide into ferric hydroxide.

3,936,293
METHOD OF SELECTIVE WEED CONTROL WITH CERTAIN CHLOROACETAMIDES

Paul Rathgeb, Basel, Switzerland; Jean Claude Tournayre, Lunel, France, and Christian Vogel, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 331,168, Feb. 9, 1973, Pat. No. 3,875,228. This application Jan. 20, 1975, Ser. No. 542,531
Claims priority, application Switzerland, Feb. 11, 1972, 2034/72
Int. Cl.^{2} A01N *9/20*
U.S. Cl. 71—118 7 Claims

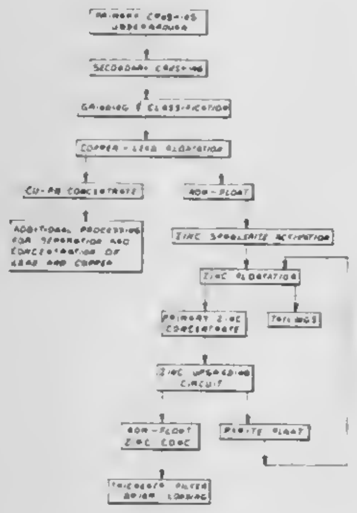
1. Process for the selective control of undesired plant growth in useful plant crops which comprises applying to the plant area a growth controlling effective amount of an active substance corresponding to the formula



wherein R_1 represents hydrogen, methyl or ethyl; R_2 represents hydrogen, methyl, ethyl, n-propyl, isopropyl, methoxyethyl, allyloxymethyl or lower alkyloxymethyl; and n denotes the number 3 or 4.

3,936,294
REAGENT FOR ZINC ORE AND METHOD OF UTILIZING SAME

Kenneth A. Childress, Box 350, Webb City, Mo. 68490
Filed Aug. 28, 1974, Ser. No. 501,221
Int. Cl.² C22B *1/00*; B03D *1/14*
U.S. Cl. 75—2 **6 Claims**


PRIMARY CRUSHING UNDERGROUND
SECONDARY CRUSHING
GRINDING & CLASSIFICATION
COPPER-LEAD FLOTATION
CU-PB CONCENTRATE
NON-FLOAT
ADDITIONAL PROCESSING FOR SEPARATION AND CONCENTRATION OF LEAD AND COPPER
ZINC SPHALERITE ACTIVATION
ZINC FLOTATION
PRIMARY ZINC CONCENTRATE
TAILINGS
ZINC UPGRADING CIRCUIT
NON-FLOAT ZINC CONC
PYRITE FLOAT
THICKENER FILTER DRIER LOADING

1. A method of activating zinc sphalerite mineral for flotation in an aqueous media comprising adding to said media a quantity of a solution selected from the group consisting of an ammoniated aqueous solution of $CuCl_2$, an ammoniated aqueous solution of $CuCO_3$, and an ammoniated aqueous solution comprising $CuCl_2$ and $CuCO_3$.

3,936,295
BEARING MEMBERS HAVING COATED WEAR SURFACES

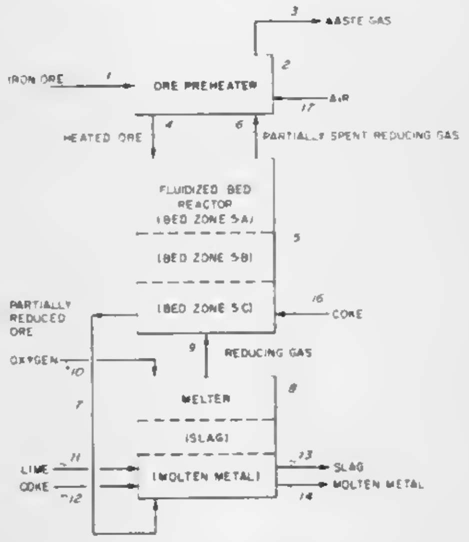
John Edward Cromwell, Baltimore, and Glenn Francis Hyde, Timonium, both of Md., assignors to Koppers Company, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 322,482, Jan. 10, 1973, abandoned. This application Feb. 15, 1974, Ser. No. 443,080
Int. Cl.² C23C *7/00*; B22F *1/02*
U.S. Cl. 75—0.5 R **10 Claims**

1. A powder mixture for plasma spraying onto a wear surface of a bearing member comprising by weight:

0 – 10.5% Ni-Al particles,
  said Ni-Al particles consisting of
    4.5 – 22% elemental aluminum and
    78 – 95.5% elemental nickel;
26.7 – 85% Ni-Mo particles;
  said Ni-Mo particles consisting of a core of
    40 – 60% elemental molybdenum encapsulated in
    60 – 40% elemental nickel;
15 – 39% sintered WC-Co particles,
  said sintered particles consisting of a matrix of
    10 – 14% elemental cobalt particles containing
    86 – 90% tungsten carbide particles; and
0 – 47.8% intermetallic alloy particles,
  said alloy particles consisting of
    63.9 – 77.6% nickel-cobalt alloy of which no more than 1% is cobalt,
    0.6 – 1.3% carbon,
    3.0 – 5.0% silicon,
    13.0 – 20.0% chromium,
    2.75 – 4.75% boron, and
    3.0 – 5.0% iron.

3,936,296
INTEGRATED FLUIDIZED REDUCTION AND MELTING OF IRON ORES

Donald L. Campbell, 5 Cambridge Dr., Short Hills, N.J. 07078
Filed Feb. 25, 1970, Ser. No. 14,119
Int. Cl.² C22B *1/10*; C21B *13/02*
U.S. Cl. 75—26 **11 Claims**



1. A method of reducing and refining iron ore by combining separate reducing refining zones whereby the gas generated in the refining zone is used to fluidize and partially reduce finely divided iron ore in the reduction zone at temperatures below about 1900°F. and the partial reduced ore is subsequently transferred and processed in the refining zone, the improvement comprising:

a. introducing the partially reduced iron ore transferred from the reducing zone and processed in the refining zone below the molten iron-containing metal in the refining zone;
b. introducing a carbonaceous fuel and oxygen in the refining zone to generate sufficient heat to melt and refine the transferred partially reduced iron ore and to liberate a reducing gas having a CO/CO_2 ratio of from about 4:1 to about 9:1 at a temperature of about 2600°F. to 3000°F., and
c. transferring said reducing gas from the refining zone to fluidize and partially reduce the iron ore in the reducing zone to a metallization ranging from about 30 pecent to about 85 percent.

3,936,297
METHOD OF PRODUCING AUSTENITIC STAINLESS STEEL

Albert G. Hartline, III, Tarentum, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 251,637, May 8, 1972, Pat. No. 3,820,980. This application Jan. 4, 1974, Ser. No. 430,853
Int. Cl.² C22C *38/38*
U.S. Cl. 75—130.5 **9 Claims**

1. A method for producing a substantially nonporous, austenitic stainless steel consisting essentially of, in weight percent, from 10 to 30% chromium, from 21 to 45% manganese, from 0.85 to 3% nitrogen, up to 1% carbon, up to 2% silicon, balance essentially iron and residuals; which comprises the steps of: preparing a melt containing from 10 to 30% chromium, from 15 to 45% manganese, up to 1% carbon up to 2% silicon and balance iron and residuals, alloying the melt at an ambient pressure of about one atmosphere, with nitrogen in an amount of from 0.85 to 3%; balancing the elements in accordance with the following equations:

$$\frac{30\,(\%C + \%N) + 0.5\,(\%Mn)}{\%Cr + 1.5\,(\%Si)} \geq 1.5$$

$$\%Cr + 0.8\,(\%Mn) - 11.88\,(\%N - 0.1) - 28.25 \geq 0$$

and solidifying the melt.

3,936,298
METAL COMPOSITION AND METHODS FOR PREPARING LIQUID-SOLID ALLOY METAL COMPOSITION AND FOR CASTING THE METAL COMPOSITIONS

Robert Mehrabian, Arlington, and Merton C. Flemings, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Division of Ser. No. 379,990, July 17, 1973, which is a continuation-in-part of Ser. No. 278,457, Aug. 7, 1972, abandoned. This application May 1, 1974, Ser. No. 465,756
Int. Cl. C22c *33/00*
U.S. Cl. 75—134 R **8 Claims**

1. A metal composition comprising a metal alloy containing discrete degenerate dendritic primary solid particles in a concentration of up to 65 percent by weight based upon said alloy, said primary solid particles being derived from the alloy and being suspended homogeneously in a secondary phase, said secondary phase being derived from the alloy and having a lower melting point than said primary solid particles, said secondary phase containing third phase solid particles homogeneously dispersed in said secondary phase, said third phase particles having a different composition from said primary solid particles and said secondary phase and having a surface composition that is not wet by the metal alloy when said alloy is a liquid.

3,936,299
METHOD FOR PRODUCING TOOL STEEL ARTICLES

Gary Steven, Pittsburgh, Pa., assignor to Crucible Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 822,672, May 7, 1969, Pat. No. 3,627,514. This application Sept. 14, 1971, Ser. No. 180,412
Int. Cl.² B22F *1/00*, *3/00*
U.S. Cl. 75—224 **6 Claims**

1. A method for producing a tool steel article characterized by fine, globular, evenly dispersed carbides, and a combination of good cutting performance and machinability comprising compacting a powdered alloy charge of the following composition, in weight percent:

Carbon	1 to 2.5
Chromium	4 to 6
Vanadium	1 to 8
Tungsten	7.5 to 13
Molybdenum	3.5 to 7
Cobalt	9 to 15
Nitrogen	At least about .03
Iron	Balance

said compacting being conducted after heating said charge and with said charge at elevated temperature to produce a compact of a density greater than about 95%.

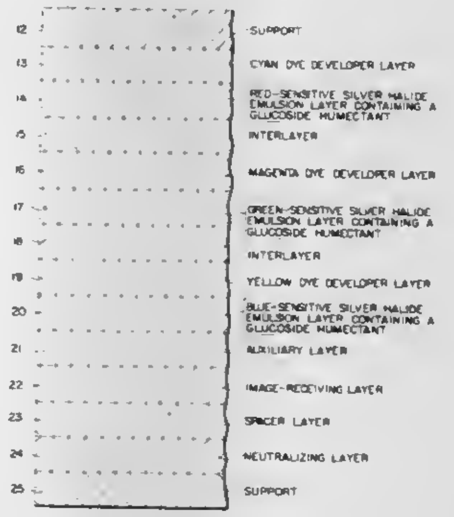
6. A method for producing a tool steel article characterized by fine, globular, evenly dispersed carbides, and a combination of good cutting performance and machinability comprising placing in a gas-tight container a powdered metal charge of the following composition, in weight percent:

Carbon	1 to 1.4
Chromium	4 to 6
Vanadium	1 to 1.5
Tungsten	7.5 to 13
Molybdenum	3.5 to 7
Cobalt	9 to 15
Nitrogen	.03 to .08
Iron	Balance

heating said container and charge to an elevated temperature in excess of about 2000°F, removing from said container gaseous reaction products resulting from said heating and compacting said charge to a density greater than about 95% prior to said charge cooling below a temperature of about 1900°F.

3,936,300
GLUCOSIDE HUMECTANT AS SILVER HALIDE EMULSION STABILIZER

Paul A. Cardone, Framingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of Ser. No. 303,008, Nov. 2, 1972, abandoned. This application Aug. 30, 1974, Ser. No. 502,160
Int. Cl.² G03C *5/54*, *7/00*, *1/40*, *1/34*
U.S. Cl. 96—29 D **12 Claims**


12
SUPPORT
13
CYAN DYE DEVELOPER LAYER
14
RED-SENSITIVE SILVER HALIDE EMULSION LAYER CONTAINING A GLUCOSIDE HUMECTANT
15
INTERLAYER
16
MAGENTA DYE DEVELOPER LAYER
17
GREEN-SENSITIVE SILVER HALIDE EMULSION LAYER CONTAINING A GLUCOSIDE HUMECTANT
18
INTERLAYER
19
YELLOW DYE DEVELOPER LAYER
20
BLUE-SENSITIVE SILVER HALIDE EMULSION LAYER CONTAINING A GLUCOSIDE HUMECTANT
21
AUXILIARY LAYER
22
IMAGE-RECEIVING LAYER
23
SPACER LAYER
24
NEUTRALIZING LAYER
25
SUPPORT

1. In a photosensitive element including at least one light-sensitive silver halide emulsion layer, each of which having a dye image-providing material associated therewith, the improvement which comprises including in at least one of the layers of said element an amount of a glucoside humectant effective to stabilize said emulsion against fog during storage; wherein said glucoside humectant is alpha methyl glucoside.

3,936,301

PROCESS FOR CONTACT PHOTOLITHOGRAPHY UTILIZING A PHOTOMASK HAVING INDENTED CHANNELS

Martin Victor Schneider, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 1, 1974, Ser. No. 456,555

Int. Cl.² G03C *5/00, 5/06*

U.S. Cl. 96—36 **5 Claims**

1. A process for photolithographic printing of a planar structure on a substrate wafer comprising the steps of:

applying a photoresist material onto the surface of the substrate wafer to form a relatively flat portion and a build-up at the periphery of the wafer,

forming a mask having a desired pattern thereon,

cutting in the mask a channel corresponding to the peripheral build-up of the photoresist,

placing the mask in contact with the relatively flat portion of the photoresist, the build-up being positioned within the channel,

exposing the photoresist to light through the mask to form a pattern in the photoresist, and

removing portions of the wafer surface in accordance with the pattern in the photoresist.

3,936,302

METHOD FOR MANUFACTURING FLUORESCENT SCREENS FOR USE IN COLOUR PICTURE TUBES

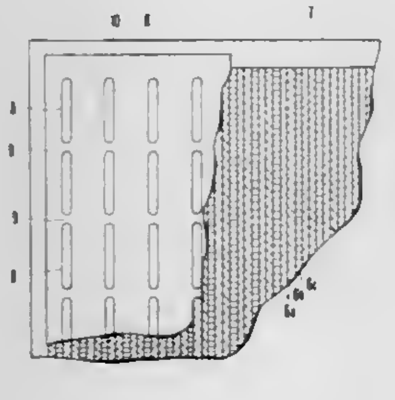
Yasuji Takami; Kenji Fukuda, both of Mobara, and Eiichi Yamazaki, Ichihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 7, 1973, Ser. No. 330,233

Claims priority, application Japan, Feb. 7, 1972, 47-12874

Int. Cl.² G03C *5/00*

U.S. Cl. 96—36.1 **3 Claims**



1. A method of manufacturing a fluorescent screen for use in a colour picture tube wherein photosensitive substances coated on the inner surface of the panel of the tube are exposed to light emanated from a source of light through a plurality of parallel stripe shaped perforations of a colour selecting member each of which is divided into a plurality of slit shaped sections by means of bridges extending at substantially right angles with respect to the longitudinal direction of said perforation thereby forming a fluorescent screen including a plurality of parallel stripes of three colour phosphors, said perforations extending over substantially the entire length of one side of said colour selecting member, improvement in which said fluorescent screen is formed by projecting the exposure light emanated from a linear light source upon said photosensitive substances through said divided slit shaped sections, said linear light source being positioned parallel to said perforations and having an effective length sufficient to expose continuous stripes corresponding to said perforations on said photosensitive substances including the regions behind said bridges.

3,936,303

PHOTOGRAPHIC PHOTOSENSITIVE ELEMENT AND DEVELOPING METHOD THEREOF

Keisuke Shiba; Seiiti Kubodera; Hideki Naito, and Takeshi Hirose, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed July 3, 1974, Ser. No. 485,655

Claims priority, application Japan, July 3, 1973, 48-75126

Int. Cl.² G03C *1/76, 7/16;* **C07D** *3/17*

U.S. Cl. 96—74 **19 Claims**

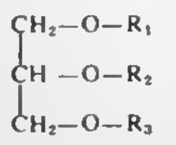
1. A silver halide photographic photosensitive element comprising a hydrophilic colloidal layer having dispersed therein photographic additives in a fatty oil which:

is liquid at room temperature;

boils at temperatures higher than 250°C under atmospheric pressure;

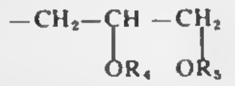
is soluble in water in a proportion of about 10% by weight or less; and

dissolves water in a proportion of about 5% by weight or less, said fatty oil being selected from the group consisting of the compounds of the general formula (I)



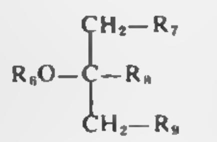
$$\begin{array}{l} CH_2-O-R_1 \\ | \\ CH\ -O-R_2 \\ | \\ CH_2-O-R_3 \end{array} \qquad (I)$$

wherein R_1, R_2, and R_3, which can be the same or different, each is an acyl group containing 8 or less carbon atoms, and where at least one of R_1 and R_3 may be



$$\begin{array}{lll} -CH_2- & CH & -CH_2 \\ & | & \ \ | \\ & OR_4 & OR_5 \end{array}$$

wherein R_4 and R_5, which can be the same or different, each is the same as R_2, or the fatty oil is selected from the group consisting of the compounds of the general formula (II):



$$\begin{array}{ll} & CH_2-R_7 \\ & | \\ R_6O- & C-R_8 \\ & | \\ & CH_2-R_9 \end{array} \qquad (II)$$

wherein

R_6 is the same as R_2, and R_7, R_8, and R_9, which may be the same or different, each is an alkoxycarbonyl group containing 4 to 8 carbon atoms; or

the fatty oil is selected from the group consisting of compounds of the general formula (III):

$$R_{10}-CH_2-(CH_2)_n-CH_2-R_{11} \qquad (III)$$

wherein R_{10} and R_{11} which may be the same or different, each is the same as R_7, and n is an integer of 1 to 6.

3,936,304

ARTICLE HAVING A WHITENED POLYOLEFIN SURFACE

Tsuneo Kasugai; Nobuhiko Minagawa, both of Fujinomiya; Yasushi Hamada; Yujiro Sugahara, both of Tokyo, and Hiroyuki Naito, Tsuruoka, all nf Japan, assignors to Fuji Photo Film Co., Ltd., Japan

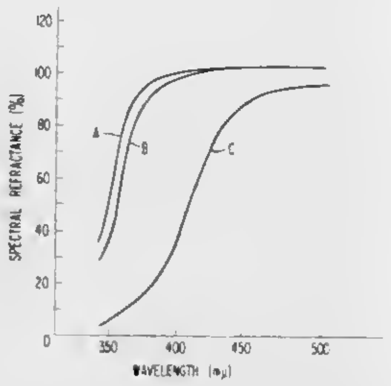
Continuation-in-part of Ser. No. 213,531, Dec. 29, 1971, abandoned. This application Oct. 12, 1973, Ser. No. 405,986

Claims priority, application Japan, Dec. 29, 1970, 45-121449

Int. Cl. D21h *1/28*

U.S. Cl. 96–82 **4 Claims**

1. An article comprising a substrate coated with a layer of a polyolefin composition containing particulate titanium phosphate as a white pigment, the titanium phosphate $(m\mathrm{TiO_2}.n\mathrm{P_2O_5})$ having an m/n ratio larger than 2.0, said polyolefin composition reflecting large proportions of ultraviolet rays of wavelengths shorter than 400 m/μ as compared to titanium dioxide.



3,936,305

COLOR PHOTOGRAPHIC PHOTOSENSITIVE MATERIAL CONTAINING ULTRAVIOLET RAY-ABSORBING COMPOUND

Shigetoshi Hiraishi; Kiyoshi Futaki; Shoichi Horii, and Kiyoshi Yamashita, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Japan

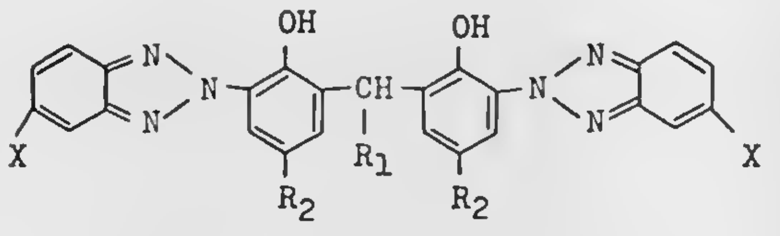
Filed Dec. 2, 1974, Ser. No. 528,925

Claims priority, application Japan, Dec. 3, 1973, 48-134404

Int. Cl.² G03C *1/84*

U.S. Cl. 96—84 UV **13 Claims**

1. A color photographic photosensitive material which comprises a support and photographic layers coated thereon, said photographic layers having incorporated therein an ultraviolet ray-absorbing compound represented by the formula:



wherein R_1 is an alkyl group having 1 to 13 carbon atoms, R_2 is an alkyl group having 1 to 18 carbon atoms and X is a member selected from the group consisting of hydrogen, halogens, alkyl, alkoxy, aryloxy, aralkyloxy and aryl groups.

3,936,306

PROCESS FOR PRODUCING GELATINO-SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS HAVING A HIGH SILVER HALIDE CONTENT

Minoru Minoda; Haruo Masuda; Mitsuru Suzuki, and Hirohi Chikamasa, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Continuation of Ser. No. 35,547, May 7, 1970, abandoned. This application June 28, 1974, Ser. No. 484,018

Claims priority, application Japan, May 7, 1969, 44-34967

Int. Cl.² G03C *1/76*

U.S. Cl. 96—87 R **5 Claims**

1. In a process for producing a gelatino silver halide light-sensitive material containing a high silver halide content which includes applying first a gelatino silver halide emulsion layer having a silver halide to gelatin weight ratio of at least 0.8 and then a gelatin-containing protective layer to a non-hygroscopic film support having good dimensional stability, and then drying of said layers, the improvement which comprises drying said layers on the support in two stages wherein

a. in a first stage said layers are dried to a water content less than 300% and near the critical moisture content with air having a relative humidity of from 10 to 35% and

b. in a second stage said layers are dried to remove water content of less than 300% and below the critical moisture content with air having a relative humidity of from 50 to 75%, said water content being based on the mean drying amount as defined by:

$$\frac{\text{the weight of water in the layers}}{\text{the weight of solids on the support}} \times 100.$$

3,936,307

LIGHT AND HEAT SENSITIVE COMPOSITION FOR PRODUCING A COLORED TRANSFER COMPLEX IMAGE

Shirow Asakawa; Katsue Hasegawa; Reiji Sano, and Shunsuke Matsuda, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 2, 1973, Ser. No. 384,925

Claims priority, application Japan, Aug. 3, 1972, 47-78127

Int. Cl.² G03C *1/00, 1/68*

U.S. Cl. 96—90 R **9 Claims**

1. A photosensitive composition essentially consisting of a dispersion phase in the form of discrete particles of (a) an aromatic compound having an electron donative group and being polymerizable upon exposure to actinic light and (b) an organic compound having a double bond conjugated with an electron attracting group relative to said electron donative group in a solid-hydrophilic-film-forming vehicle in which said combination is insoluble, said compound (a) being a compound selected from the group consisting of N-vinylcarbazole, vinylanthracene, N-benzylacrylamide, N-methoxyphenylmethaacrylamide, β-naphthylvinyl ether, p-phenylstyrene, vinyldiphenylamine, acenaphthylene, vinyl fluorene, β-vinylnaphthalene, 2-vinylphenanthrene, 3-vinylphenanthrene, 1-vinylpyrene and p-phenylenediacrylpropionate, said compound (b) being a compound selected from the group consisting of tetrabromoethylene, 1,2-dibromo-1-iodoethylene, α-chloro-3,5-dinitrostyrene, tetracyanoquinodimethane, tetracyanoethylene, chloranil, bromanil, quinone, anthraquinone, 2,4,7-trinitrofluorenone, trinitrobenzene, and tetranitropyrene, said combination being selected such that melting points of said compounds (a) and (b) differ from each other by more than 10°C and that said compounds (a) and (b) react with each other and produce a colored charge transfer complex when said combination is heated above the lower one of said melting points.

3,936,308

PHOTOGRAPHIC EMULSIONS CONTAINING METHINE DYES HAVING A 1H-IMIDAZO[4,5-B]PYRAZINE NUCLEUS

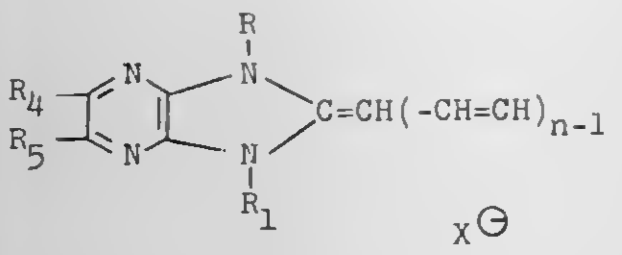
Wilbur Seth Gaugh; Donald Warren Heseltine; David Michael Sturmer, and John Paul Freeman, all of Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

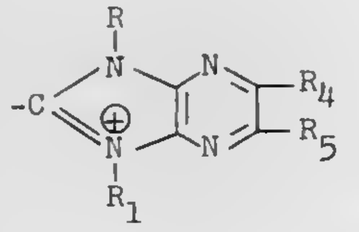
Filed Aug. 16, 1973, Ser. No. 388,867

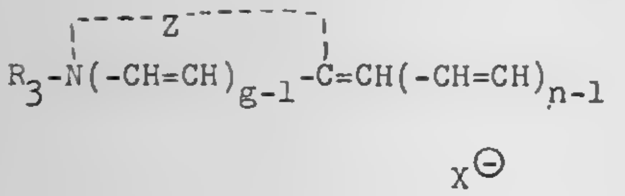
Int. Cl.² G03C *1/18, 1/22*

U.S. Cl. 96—136 **8 Claims**

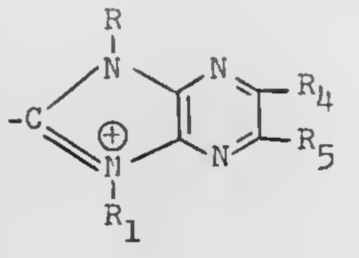
1. A light-sensitive photographic silver halide emulsion containing a sensitizing dye selected from those having one of the following formulas:



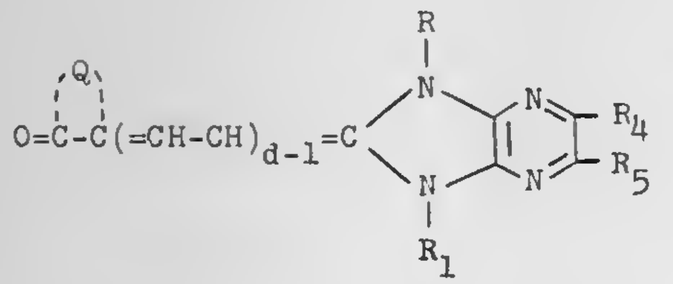




$$R_3\text{-}N(\text{-}CH{=}CH)_{g-1}\text{-}C{=}CH(\text{-}CH{=}CH)_{n-1} \quad X^{\ominus}$$



and



wherein *n* represents a positive integer of from 1 to 4; *g* represents a positive integer of from 1 to 2; *d* represents a positive integer of from 1 to 3; **R**, **R$_1$**, **R$_3$**, **R$_4$** and **R$_5$** each represents a member selected from the group consisting of an alkyl, alkenyl, alkaryl and an aryl substituent; **R$_4$** and **R$_5$** also each represent in the alternative a member selected from the group consisting of hydrogen and alkoxy; X^- represents an acid anion; Z represents the nonmetallic atoms required to complete a sensitizing heterocyclic nucleus of the type used in cyanine dyes containing from 5 to 6 atoms in the heterocyclic ring and Q represents the nonmetallic atoms required to complete a sensitizing heterocyclic nucleus of the type used in merocyanine dyes containing from 5 to 6 atoms in the heterocyclic ring.

3,936,309

HEAT-SENSITIVE RECORDING COMPOSITION AND SHEET

Isao Kohmura; Kiyoshi Futaki, both of Kyoto, and Yuklo Tahara, Takasago, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Japan

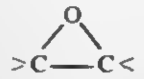
Filed July 18, 1973, Ser. No. 380,238

Claims priority, application Japan, Aug. 5, 1972, 47-78026

Int. Cl.^{2} C09D *11/04*

U.S. Cl. 106—21 **14 Claims**

1. In a heat-sensitive recording composition comprising a normally colorless or somewhat pale-colored chromogenic substance, a phenolic substance capable of developing the color of said chromogenic substance at an elevated temperature, and a water-soluble binder, the improvement wherein a compound having 2 to 10 1,2-epoxy ring structures



is added as a hardener to the composition.

3,936,310

HYDRAULIC COMPOSITION

Tadao Natsuume, Kawasaki, Japan, assignor to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1974, Ser. No. 456,880

Claims priority, application Japan, Apr. 4, 1973, 48-38440

Int. Cl.^{2} C04B *7/02, 7/35*

U.S. Cl. 106—90 **5 Claims**

1. A hydraulic composition comprising 100 parts by weight of a hydraulic substance and 0.01 – 5 parts by weight of a sulfosuccinic acid derivative, which latter compound is obtained by the addition reaction of a compound selected from the group consisting of maleic acid, fumaric acid, citraconic acid, mesaconic acid and the monoalkali metal salts, dialkali metal salts, alkaline earth metal salts, monoammonium salts and diammonium salts of these acids, with the compound selected from the group consisting of sulfurous acid, alkali metal sulphites, alkaline earth metal sulphites, ammonium sulphite, alkali metal hydrogen sulphites, alkaline earth metal hydrogen sulphites and ammonium hydrogen sulphite.

3,936,311

COATING MATERIAL FOR BUILDINGS

Paul-Gerhard Kirst; Karl Maier, and Heinz Winkler, all of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Aug. 5, 1974, Ser. No. 494,938

Claims priority, application Germany, Aug. 14, 1973, 2341085

Int. Cl.^{2} C04B *1/00, 7/02, 7/352*

U.S. Cl. 106—90 **5 Claims**

1. A coating composition for application to buildings to render them water repellent, comprising:

a. 1 part by weight of a member of the group consisting of cement, lime, and mixtures thereof;

b. from about 1 to 12 parts by weight of a weatherproof filler material having a grain size not greater than about 7 mm.;

c. as a hydrophobing additive, about 0.1 to about 3% by weight, calculated on the total weight of dry material, of at least one water soluble ester of saccharose with a fatty acid containing from 10 to 20 carbon atoms.

3,936,312

COMPOSITION FOR THE PREPARATION OF COATINGS ON MEAT AND SAUSAGE GOODS

Mathias Stemmler, and Heinz Stemmler, both of Konrad Adenauer Ufer 35, 5000 Cologne 1, Germany

Filed May 3, 1974, Ser. No. 466,897

Claims priority, application Germany, May 17, 1973, 2324936; Mar. 15, 1974, 2412426

Int. Cl.^{2} C08L *1/08*

U.S. Cl. 106—171 **19 Claims**

1. A coating composition for meat and sausage goods comprising a solution containing about from 20 to 75 parts by weight of a high viscosity cellulose propionate having a viscosity of about from 15 to 95 poise, about from 80 to 25 parts by weight of a fully acetylated distilled monoglyceride having a high iodine value from about 40 to at least 70, and about from 2.5 to 4.5 parts by weight of an organic solvent per part of cellulose propionate present.

3,936,313

METHOD OF PREPARING ADDITIVES FOR CALCIUM SULPHATE PLASTER

Bernt Sture Jörgen Ericson, Ornskoldsvik, Sweden, assignor to MoDoKemi AB, Stenungsund, Sweden

Filed Mar. 11, 1974, Ser. No. 450,033

Claims priority, application Sweden, Mar. 14, 1973, 7303581

Int. Cl.^{2} C08L *1/28;* **C04B** *31/30*

U.S. Cl. 106—197 R **14 Claims**

1. A process for preparing calcium sulphate plaster compositions comprising a water-retaining and setting-retarding cellulose ether salt dissolving rapidly in water and modifying the setting and water-retaining characteristics of the composition, which comprises adding to a water-soluble cellulose ether containing residual alkali resulting from alkali mercerization of the cellulose prior to etherification, an acid the alkali salt of which serves as a calcium sulphate plaster setting retarder, in an amount approximately stoichiometrically equivalent to the amount of alkali hydroxide present in the cullulose ether, thereby neutralizing the alkali and forming said retarder salt in situ in a ratio by weight of the water-retaining cellulose ether to the retarder salt within the range from about 20:1 to about 1:1, and then adding the cellulose ether-retarder salt additive to a calcium sulphate plaster composition in an amount within the range from about 0.1 to about 5% based on the weight of calcium sulfate of the composition.

3,936,314

SODIUM TETRABORATE CARRIER COATING FOR ROD

Walter Andrew Smigel, Homer, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 3, 1974, Ser. No. 430,437

Int. Cl.^{2} C08L *91/00*

U.S. Cl. 106—243 **7 Claims**

1. The carrier coating concentrate consisting essentially of from about 10 to about 30% by weight of one or more waterinsoluble metal soaps selected from the group consisting of calcium, barium, aluminum, magnesium and zinc soaps of fatty acids having from about 12 to about 18 carbon atoms, from about 65 to about 89% by weight of sodium tetraborate, and from about 1 to about 5% by weight of one or more organic dispersing agents.

3,936,315

CONVERSION OF CRUDE PHTHALOCYANINES INTO PIGMENTS

Richard Milledge Ferrill, Jr., Glens Fall, N.Y., and Louis John Gagliano, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Nov. 4, 1974, Ser. No. 521,003

Int. Cl.^{2} C09B *47/04*

U.S. Cl. 106—309 **8 Claims**

1. A process for converting a phthalocyanine crude into a pigment having high tinctorial strength, cleanliness and transparency, which process comprises grinding under conditions of shear, an essentially anhydrous charge consisting essentially of dry phthalocyanine crude, from about 2 to about 8 parts per part of crude of a particulate salt grinding aid, from 0.1 to 0.6 part per part of crude of an alkali metal hydroxide and sufficient of at least one organic liquid conditioning agent to form a dough-like cohesive mass and to maintain the charge under conditions of shear during grinding until a pigment of high tinctorial strength is obtained, and recovering the pigment from the ground charge.

3,936,316

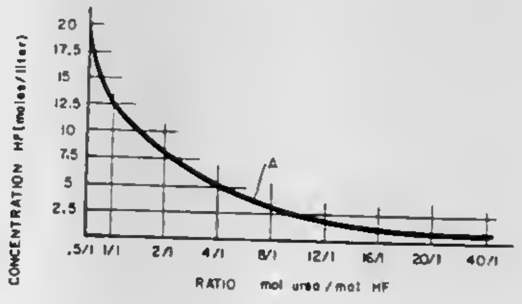
PICKLING SOLUTION

Michael Gulla, Newton, Mass., assignor to Shipley Company, Inc., Newton, Mass.

Filed Nov. 29, 1972, Ser. No. 310,371. The portion of the term of this patent subsequent to May 16, 1989, has been disclaimed.

Int. Cl.^{2} C23G *1/02;* **C09K** *13/06*

U.S. Cl. 134—3 **23 Claims**



11. In a process for pickling a metal comprising the step of contacting said metal with a hydrohalide acid pickling solution consisting essentially of a hydrohalide acid, selected from the group consisting of hydrochloric acid and hydrobromic acid, where said acid is present in an amount of at least 0.5 moles per liter of solution, the improvement comprising the addition of urea to said hydrohalide acid in an amount of at least 0.5 moles per mole of acid and sufficient to substantially reduce fuming of said acid.

3,936,317

DISHWASHING COMPOSITIONS CONTAINING HIGHER 1,2-ALKANEDIOL ETHER MONOSULFATES

Hans-Jürgen Lehmann, Mettmann; Martin Bischoff, Gelsenkirchen; Horst Baumann, Leichlingen, and Peter Krings, Krefeld, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

Continuation-in-part of Ser. No. 362,324, May 21, 1973, abandoned. This application Feb. 21, 1975, Ser. No. 551,710

Claims priority, application Germany, June 2, 1972, 2226988; Feb. 27, 1973, 2309679

Int. Cl.^{2} C11D *1/16, 1/29, 1/37, 17/08*

U.S. Cl. 134—29 **9 Claims**

1. Anionic surface active composition for manually washing and cleansing dishes consisting essentially of (A) from 20% to 90% by weight of a first component selected from the group consisting of alkyl sulfonates having 8 to 20 carbon atoms, olefin sulfonates having 8 to 20 carbon atoms, α-sulfofatty acid alkyl esters having 8 to 20 carbon atoms in the α-sulfofatty acid and 1 to 4 carbon atoms in the alkyl, dialkyl sulfosuccinic acid esters having 8 to 20 carbon atoms in the alkyls, alkylbenzene sulfonates having 8 to 20 carbon atoms in the alkyl, alkyl sulfates having 8 to 20 carbon atoms and the mixtures thereof and (B) from 10% to 80% by weight of a second component selected from the group consisting of a monoglycol ether monsulfate of a 1,2-alkanediol having 10 to 22 carbon atoms and a polyglycol ether monosulfate of a 1,2-alkanediol having 10 to 22 carbon atoms, said sulfation product containing per mol of ether diol from 0.7 to 1.1 moles of sulfuric acid ester and said sulfation product being an adduct of no more than 5 mols of an alkylene oxide having 2 to 3 carbon atoms on said diol said components (A) and (B) being present in the form of their salts selected from the group consisting of alkali metal salts, ammonium salts, lower alkanolamine salts, lower alkylamine salts, and the mixtures thereof.

3,936,318

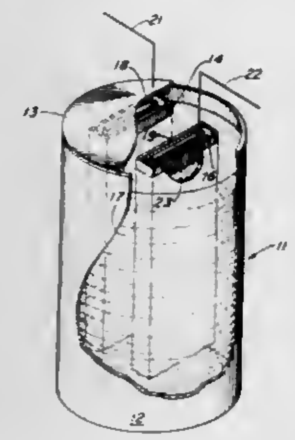
ELECTRICAL ENERGY STORAGE BATTERY MEANS

Charles F. Cole, Jr., Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Jan. 13, 1975, Ser. No. 540,616

Int. Cl.^{2} H01M *10/00*

U.S. Cl. 136—6 R **8 Claims**



1. An improved electrical energy storage battery means comprising:

- a. a case means;
- b. at least two porous electrolyte container means positioned within said case means;
- c. a solid hydrogel positioned within said case means and between said electrolyte container means, said hydrogel containing an effective amount of an electron transferring agent to render said hydrogel conductive;
- d. at least one anode means positioned within at least one of said electrolyte container means;
- e. at least one cathode means positioned within at least one of said electrolyte container means;
- f. a second solid hydrogel positioned within said container means for said cathode, said gel being saturated with a compound selected from the group consisting of zinc chloride, zinc oxide, cadmium chloride and cadmium oxide to render same conductive; and,
- g. a third solid hydrogel positioned within said container means for said anode, said gel being saturated with a compound selected from the group consisting of chromium chloride, chromium oxide, and alkali metal containing chromate salts to render same conductive.

3,936,319

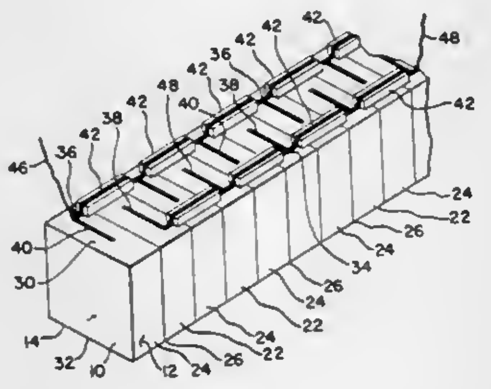
SOLAR CELL

Thomas R. Anthony; Harvey E. Cline, and Donald M. Wincgar, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 30, 1973, Ser. No. 411,010

Int. Cl. H01l *15/02*

U.S. Cl. 136—89 **44 Claims**



1. A solar cell comprising

a body of semiconductor material having two opposed major surfaces substantially parallel to each other and a plurality of side surfaces;

at least one of the surfaces having a preferred planar orientation which is one selected from the group consisting of <100 >, <110 > and <111 >;

the body having a lamellar structure of integral alternate first and second regions of opposite type conductivity and a selected level of resistivity, the material of the second regions comprising recrystallized semiconductor material of the body having solid solubility of a dopant material therein to impart thereto the type of conductivity and the level of resistivity;

a plurality of first P-N junctions, each P-N junction being formed by the contiguous surfaces of each pair of mutually adjacent first and second regions and extending between and terminating in at least two opposed surfaces of the body;

means for electrically connecting all layers of the same type conductivity semiconductor material together into an electrical circuit arrangement, and

means for electrically connecting the regions of like conductivity into an electrical circuit external to the solar cell.

3,936,320

HEADER

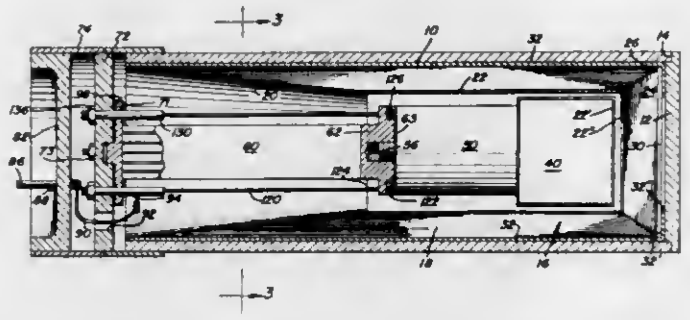
David Earl Goslee, White Marsh, and Harold Newton Barr, Baltimore, both of Md., assignors to Nuclear Battery Corporation, Columbia, Md.

Continuation of Ser. No. 189,838, Oct. 18, 1972, abandoned. This application Jan. 7, 1974, Ser. No. 431,363

Int. Cl. H01v *1/00*

U.S. Cl. 136—242 **7 Claims**

1. A novel header for use in nuclear applications comprising a plate containing at least one bore, the inside surfaces of which carry a nickel coating, an alumina plug in said bore, said alumina plug sealed in said plug by means of a braze, and an integral niobium terminal passing through said plug, said niobium terminal carrying a nickel coating on at least those surfaces where said terminal passes through said alumina plug, said niobium terminal being sealed in said plug by means of a gold-copper or silver-copper braze heated to about 930°C.



3,936,321

METHOD OF MAKING A COMPOUND SEMICONDUCTOR LAYER OF HIGH RESISTIVITY

Daizaburo Shinoda, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

Filed Jan. 25, 1974, Ser. No. 436,802

Claims priority, application Japan, Jan. 31, 1973, 48-13107

Int. Cl.^{2} H01L *21/00*

U.S. Cl. 148—1.5 **4 Claims**

1. A method of making a semiconductor layer having a high resistivity comprising the steps of:

implanting ions into a semiconductor comprising gallium and arsenic at a first acceleration voltage at a concentration higher than the limit of solid solubility of said ions in said semiconductor, said ions being of a material which forms a deep energy level in said semiconductor;

implanting protons into said semiconductor at an acceleration voltage not less than said first acceleration voltage; and

heating said semiconductor.

3,936,322

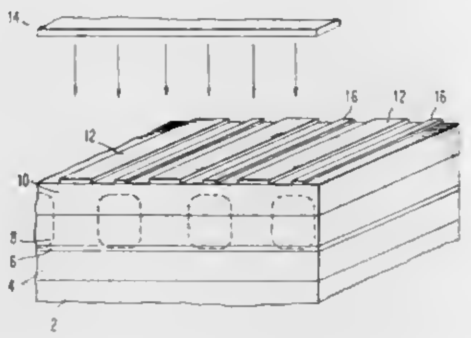
METHOD OF MAKING A DOUBLE HETEROJUNCTION DIODE LASER

Joseph M. Blum, Yorktown Heights; Billy L. Crowder, and James C. McGroddy, both of Putnam Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 29, 1974, Ser. No. 492,667

Int. Cl.^{2} H01L *21/26*

U.S. Cl. 148—1.5 **7 Claims**



1. In a method for making a narrow stripe double heterostructure junction laser having at least three superimposed layers wherein the first layer is GaAs, the second is $Ga_{(1-x)}$-Al_xAs and the third layer is GaAs, the latter region serving as the active region of the laser,

the improvement comprising bombarding through all said layers, save for a very narrow region, with a beam of oxygen ions so as to dope said bombarded regions and make them non-conducting at the operating currents of said junction laser, and heating said layers after bombardment at a temperature of approximately 600°C for approximately 30 minutes.

3,936,323

METHOD FOR PRODUCING FERRITIC STAINLESS STEEL HAVING HIGH ANISOTROPY

Richard Kazeva, Lower Burrell, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Jan. 13, 1975, Ser. No. 540,366

Int. Cl.^{2} C21D *9/48*

U.S. Cl. 148—12 EA **2 Claims**

1. A method for preparing deep drawing, stainless steel comprising:

- A. preparing an alloy to contain from 12–14%w chromium, from 0.2–1.0% columbium, and not more than 0.75%w total of carbon, nitrogen, silicon, manganese, molybdenum, nickel, and copper;
- B. hot rolling said alloy;
- C. annealing said hot rolled alloy at a temperature of from 1600°F–1900°F for a period of from 50–150 minutes per inch of thickness; and
- D. cold rolling the annealed steel to reduce the thickness at least 65 percent.

3,936,324

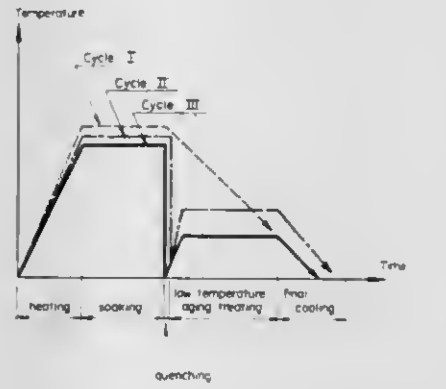
METHOD OF MAKING HIGH STRENGTH COLD REDUCED STEEL BY A FULL CONTINUOUS ANNEALING PROCESS

Kuniki Uchida; Kenzi Araki, both of Yokohama, and Shiro Fukunaka, Fukuyama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1975, Ser. No. 558,326

Int. Cl.^{2} C21D *6/02, 9/46*

U.S. Cl. 148—12 F **3 Claims**



1. An improved method of making a high strength cold reduced steel having most suitable mechanical properties required as safe countermeasures for an auto-car and other vehicles, chracterized in that the chemical composition is substantially adjusted within the range of 0.04 to 0.12% C. 0.50 to 2.00% Si, 0.10 to 1.60% Mn, unavoidable impurities and Fe, after cold reducing through the ordinary making process, the obtained cold reduced steel strip is subjected to the following full continuous annealing process in which:

- a. recrystallization heating step rapidly heating the travelling strip to the range of 650°C to 900°C at rate of 200°C/min and more,
- b. keeping and soaking step holding the strip for 10 to 120 sec. at the above heating temperature,
- c. ordinary cooling down step to the room temperature from the above holding temperature,
- d. and then ordinary coiling step.

3,936,325

FIBROUS BLANKET CONTAINING SOLDER FLUX AND SOLDER FLUX WITH INCREASED MELTED VISCOSITY

Dunbar L. Shanklin, 12 Everett Ave., Winchester, Mass. 01890

Continuation of Ser. No. 311,513, Dec. 4, 1972, abandoned, which is a continuation-in-part of Ser. No. 96,598, Dec. 9, 1970, abandoned, and a continuation-in-part of Ser. No. 96,631, Dec. 9, 1970, abandoned. This application Sept. 23, 1974, Ser. No. 508,725

Int. Cl.^{2} B23K *35/34*

U.S. Cl. 148—26 15 Claims

1. A solder flux of the type adapted to be used on high temperature solder baths, said flux consisting essentially of a fusible fluxing composition consisting essentially of a zinc-ammonium chloride composition and an effective amount in the order of at least about 0.1% by weight of the weight of the fusible fluxing composition of inorganic fibers.

3,936,326

SMOKELESS FLUXING AGENT FOR HOT-TINNING, HOT-GALVANIZING, AND HOT-LEADING OF ARTICLES MADE FROM IRON

Wolfgang Müller, Mannheim, Germany, assignor to Th. Goldschmidt AG, Germany

Filed Nov. 1, 1974, Ser. No. 520,139

Int. Cl.^{2} B23K *35/34*

U.S. Cl. 148—26 5 Claims

1. A smokeless fluxing agent for hot-tinning, hot-galvanizing, and hot-leading iron articles comprising a mixture of zinc chloride, lithium chloride, an eutectic mixture of potassium chloride and sodium chloride, and containing no ammonium chloride.

3,936,327

BORIDING COMPOSITION

Walter Fichtl, Buttgen-Vorst; Gunter Wiebke, Munich; Helmut Kunst, Hanau, Hohe Tanne; Alfred Graf von Matuschka, Eschenried; Georg Bachmann, Berrendorf, and Alfred Lipp, Bad Worishofen, all of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Germany

Continuation-in-part of Ser. No. 287,093, Sept. 7, 1972, abandoned. This application June 10, 1974, Ser. No. 478,110

Int. Cl.^{2} B23K *35/24*

U.S. Cl. 148—27 7 Claims

1. Powdered boriding composition which consists essentially of 1 - 10%, by weight, of an activator selected from the group consisting of alkali metal and ammonium borofluorides, and a mixture of 75 – 99.5%, by weight, of silicon carbide and 25 – 0.5%, by weight, of a boron-releasing agent selected from the group consisting of boron carbide, amorphous boron and ferroboron, based on the total weight of said mixture.

3,936,328

PROCESS OF MANUFACTURING SEMICONDUCTOR DEVICES

Josuke Nakata, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

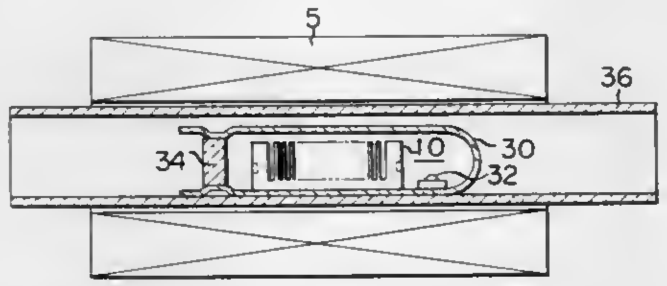
Continuation-in-part of Ser. No. 354,144, April 24, 1973, abandoned. This application Oct. 15, 1974, Ser. No. 515,105

Claims priority, application Japan, Apr. 28, 1972, 47-43061

Int. Cl.^{2} H01L *7/38*

U.S. Cl. 148—171 13 Claims

1. A process of manufacturing semiconductor devices comprising the steps of first forming a plurality of grooves in a substrate of semiconductive material to be substantially parallel to one another while an uncut portion is left in one portion of said substrate, thereby to form a wafer member including a plurality of semiconductive wafer units each defined by a different pair of adjacent grooves, all the wafer units being maintained integrally with one another through said uncut portion of said substrate and then processing said wafer member by growing semiconductor material on each of said plurality of wafer units from a liquid phase.



3,936,329

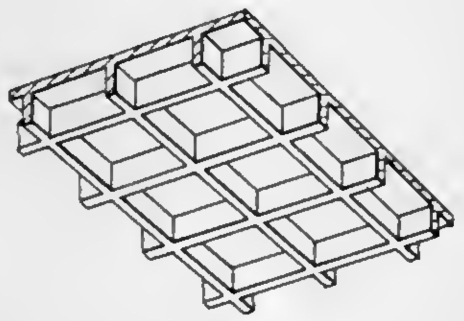
INTEGRAL HONEYCOMB-LIKE SUPPORT OF VERY THIN SINGLE CRYSTAL SLICES

Don Leslie Kendall, Richardson, and John C. Knowles, Jr., Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 3, 1975, Ser. No. 546,378

Int. Cl.^{2} H01L *21/20*

U.S. Cl. 148—187 16 Claims



1. A method of forming very thin semiconductor slices which comprises the steps of:

a. providing a wafer of semiconductor material of predetermined crystallographic orientation and of predetermined conductivity type;
b. forming a mask on a surface of said wafer;
c. etching in said wafer through said mask to form parallelogram shaped grooves
d. removing said mask and depositing semiconductor material in said grooves and along said surface of said wafer of the same conductivity type as said wafer but of lower dopant concentration; and
e. removing the original wafer.

3,936,330

COMPOSITION AND METHOD FOR INFLATION OF PASSIVE RESTRAINT SYSTEMS

Thomas E. Dergazarian, and George A. Lane, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 8, 1973, Ser. No. 386,815

Int. Cl.^{2} C22C *37/00*

U.S. Cl. 149—35 17 Claims

1. A composition which burns to produce gases which are rich in nitrogen and substantially free of elemental alkali metals, oxides of nitrogen and alkali metal oxides, which comprises:

an intimate mixture of an alkali metal azide of the formula MN_3, a metal halide of the formula RX_n and an inorganic oxidizer corresponding to the formula $A(ClO_4)_m$ wherein M is an alkali metal; R is tin, zinc, cobalt, nickel, calcium or magnesium; X is chlorine, bromine or iodine, n is an integer representing the valence state of R; A is potassium, sodium, or magnesium and m is equal to the valence of A, said constituents provided in amounts so that upon burning of the composition, the combustion products are substantially free of oxides of nitrogen, elemental alkali metals, HCN and alkali metal oxides.

13. A method of rapidly generating gases which are rich in nitrogen and substantially free of elemental alkali metals, alkali metal oxides and oxides of nitrogen which comprises:

igniting an intimate mixture of an alkali metal azide of the formula MN_3, a metal halide of the formula RX_n and an inorganic oxidizer corresponding to the formula $A(ClO_4)_m$ wherein M is an alkali metal; R is tin, zinc, cobalt, nickel, calcium or magnesium; X is chlorine, bromine or iodine, n is an integer representing the valence state of R; A is potassium, sodium, or magnesium, and m is equal to the valence of A, said constituents provided in amounts so that upon burning of the composition, the combustion products are substantially free of oxides of nitrogen, elemental alkali metals, HCN and alkali metal oxides.

3,936,331

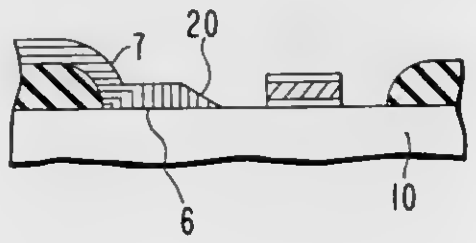
PROCESS FOR FORMING SLOPED TOPOGRAPHY CONTACT AREAS BETWEEN POLYCRVSTALLINE SILICON AND SINGLE-CRYSTAL SILICON

Robert L. Luce, Los Altos, and Arthur J. Bovaird, Santa Clara, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Apr. 1, 1974, Ser. No. 456,499

Int. Cl.^{2} H01L *7/50*

U.S. Cl. 156—17 5 Claims



1. A process for forming a sloped topography buried contact area between a polycrystalline silicon conductive layer and a single crystal silicon substrate through openings in insulation material overlying said substrate without creation of deep crevices in said contact area, comprising:

forming a polycrystalline silicon layer over at least a portion of said insulating material and over the single crystal silicon substrate exposed by said openings in said insulation material, said polycrystalline silicon layer including a contiguous tip of single crystal silicon material where said polycrystalline silicon layer contacts said exposed single crystal silicon substrate; and

defining said polycrystalline layer by masking those areas of said polycrystalline silicon layer to be retained and

etching unwanted polycrystalline silicon areas including said contact area with an orientation selective etch which etches polycrystalline silicon preferentially to single crystal silicon whereby unwanted polycrystalline silicon is removed while said contiguous tip of single crystal silicon material inhibits creation of deep crevices in said contact area.

3,936,332

COPPER AND COPPER ALLOY ETCHING SOLUTIONS AND PROCESS

Akira Matsumoto, and Katsutoshi Itani, both of Fuji, Japan, assignors to Tokai Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 30, 1974, Ser. No. 510,535

Claims priority, application Japan, Nov. 19, 1973, 48-129156

Int. Cl.^{2} C23F *1/00;* **C09K** *13/06*

U.S. Cl. 156—18 10 Claims

6. In the process for etching copper and copper alloys with an aqueous peroxysulfate solution containing from 5 percent by weight to its solubility limit therein of a peroxysulfate, the improvement which comprises adding to said aqueous solution from 50 p.p.m. to its solubility limit therein of a diazine compound and from 5 p.p.m. to 2,000 p.p.m. of a halogen compound, thereby increasing rate of the etching, said halogen compound being a compound which liberates halogen in an aqueous solution.

3,936,333

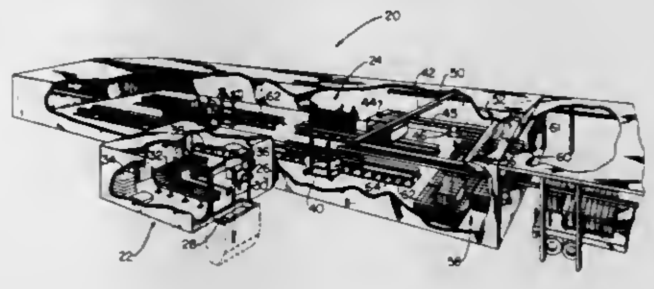
METHOD FOR PREFABRICATING BRICK PANELS

Gage B. Behunin, Arvada, Colo., assignor to Masonry Systems International, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 192,027, Oct. 26, 1971, abandoned. This application Mar. 15, 1974, Ser. No. 451,429

Int. Cl.^{2} E04B *2/00*

U.S. Cl. 156—60 6 Claims



6. A method of prefabricating brick panels in a plant having a storage area for a supply of bricks, a plurality of workbenches, and motorized scaffolds disposed for reciprocal movement along both sides of the workbenches comprising the steps of mixing a supply of mortar, pouring the mortar into a plurality of mortar pots stored on a storage cart, transferring the mortar pots by overhead crane means from the storage cart to the motorized scaffolds, transferring bricks from the storage area to the motorized scaffolds, moving the scaffolds in a first horizontal direction adjacent the side of the associated workbenches, placing bricks from the scaffolds in a first row on the associated workbenches as the scaffolds move along the sides thereof, reversing the direction of movement of the scaffolds in a second horizontal direction opposite to said first direction and spreading a layer of mortar onto the top of the bricks in said first row as the scaffolds move in said second direction, again reversing the direction of movement of the scaffolds in said first direction and placing a second row of bricks on the spread layer of mortar.

3,936,334

COLLAPSABLE TUBE

Hideo Kushida; Yoshio Hara; Toshie Tanaka; Takeshi Itakura, and Shinsaku Nakazato, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 314,920, Dec. 14, 1972, abandoned. This application June 24, 1974, Ser. No. 482,370

Claims priority, application Japan, Dec. 25, 1971, 47-3152

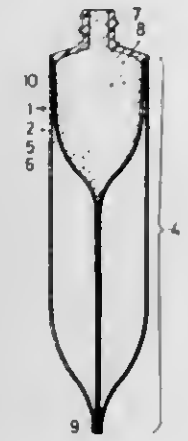
Int. Cl.^{2} B29C *27/14*

U.S. Cl. 156—69 11 Claims

1. A process for fabricating a double-walled collapsable tube, comprising:

forming a shoulder member having a lower peripheral face, an annular connecting portion extending downwardly from the inner edge of said face, a circumferential edge adjacent to and above said peripheral face, and a neck on an upper portion of said shoulder member and adapted to receive a closure member;

joining an end of a flexible inner tube to said shoulder member with said end abutting said lower peripheral face



and with the inside surface of said inner tube adjacent said end mating against the outside surface of said annular connecting portion; and

joining an end of a resilient outer tube to said shoulder member with the inside surface of said end abutting said circumferential edge of said shoulder member, said outer tube encompassing said inner tube and overlapping the joint between said inner tube and said shoulder member.

3,936,335

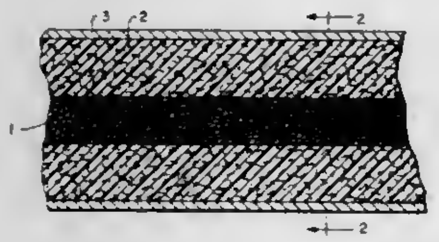
PROCESS FOR PRODUCING A BUOYANT FISHING LINE

Leon L. Martuch, Winter Park, Fla., assignor to Scientific Anglers, Inc., Midland, Mich.

Division of Ser. No. 221,148, Jan. 27, 1972, Pat. No. 3,849,929. This application Nov. 1, 1974, Ser. No. 520,116

Int. Cl.² B32B *5/20*

U.S. Cl. 156—79 **7 Claims**



1. A process for the preparation of a buoyant fishing line comprising (a) coating a thread with foamable material; (b) foaming said foamable material; (c) braiding a filamentous line around a core comprised of said foamed material; (d) coating the resultant line, from step (c), with a primer; (e) coating the resultant line, from step (d), with a flexible surface coating; and (f) curing said surface coating.

3,936,336

METHOD OF FORMING REINFORCED PLASTICS ARTICLES UTILIZING OPENWORK TUBES

Leslie Nathan Phillips, Farnborough, England, assignor to National Research Development Corporation, London, England

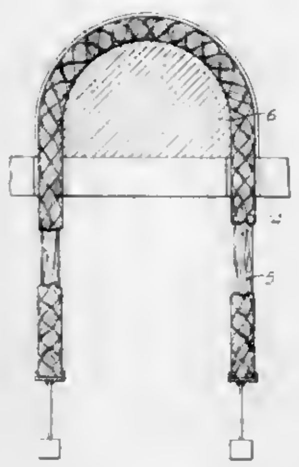
Filed Oct. 23, 1970, Ser. No. 83,457

Claims priority, application United Kingdom, Oct. 24, 1969, 52192/69

Int. Cl.² B32B *31/14;* **B29C** *27/00*

U.S. Cl. 156—86 **8 Claims**

1. A process for the production of a reinforced plastics article comprising the steps of placing the reinforcement and the plastics, in an uncured or part cured state, within a tube of deformable openwork construction arranged so that elongation of the tube results in a significant decrease in its internal cross-sectional area cross-section, supporting the tube



with at least a portion of the external surface of the tube exposed to allow a significant flow of said plastics through said surface, elongating said tube so that it compacts the plastics and reinforcement, and providing for the curing of said plastics.

3,936,337

APPARATUS AND PROCESS FOR THE MANUFACTURE OF STRUCTURAL MATS

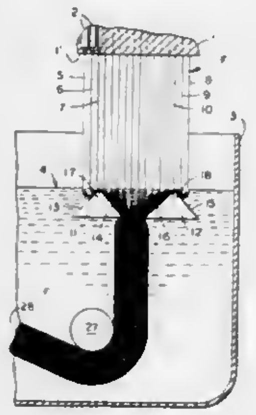
Hans Stapp, Momlingen, Germany, assignor to Akzona Incorporated, Asheville, N.C.

Filed Dec. 16, 1974, Ser. No. 532,885

Claims priority, application Germany, Dec. 18, 1973, 2362856[U]; Dec. 18, 1973, 7344708[U]

Int. Cl.² D04H *3/16*

U.S. Cl. 156—167 **10 Claims**



1. In a process for the manufacture of a structural mat by melt-spinning continuous thermoplastic polymer filaments vertically downwardly in a plurality of rows onto the surface of a liquid cooling bath which exerts a sufficient buoyant force to laterally spread the individual filaments at the bath surface into helical to sinuous loops which become self-bonded at overlapping points of intersection of adjacent filaments within a bonding zone lying a short distance below the bath surface and then withdrawing the resulting coherent mat from the bath, the improvement which comprises:

at least partly compressing the mat between opposing stationary guide surfaces as it is withdrawn from said bonding zone; and

contacting at least one of the outermost rows of filaments corresponding to at least one of the upper and lower surfaces of the mat with a second stationary guide surface which diverges outwardly from one of said first-mentioned guide surfaces at a short distance below the bath surface such that said at least one outermost row of filaments is deflected in a path inwardly and upwardly over

an apex onto said one of said first-mentioned guide surfaces so as to be incorporated into an outer bonded and flattened surface of the mat.

8. In apparatus for the manufacture of a coherent structural mat of parallel rows of continuously looped thermoplastic filaments with the mat being flattened and densified on both its upper and lower surfaces, the improvement in combination with a spinning head having a plurality of parallel rows of spinning nozzles to melt-spin said filaments, a cooling bath means to receive and helically to sinuously loop the filaments and means to withdraw the mat from the bath which comprises:

opposing stationary guide plates converging downwardly toward each other below the bath surface and intersecting the bath surface in a line parallel to the filament rows to provide means to compress the mat therebetween to form its upper and lower surfaces;

at least one additional stationary guide plate diverging downwardly and outwardly from one of said first-mentioned guide plates to form an apex therewith in a line positioned at or below the bath surface parallel to and falling within at least one outermost row of filaments falling vertically down from said spinning nozzles such that said at least one outermost row of filaments is drawn inwardly and upwardly on said additional guide plate over the apex and then downwardly between the two opposing guide plates.

3,936,338

ENDLESS FIBREGLASS BELTING

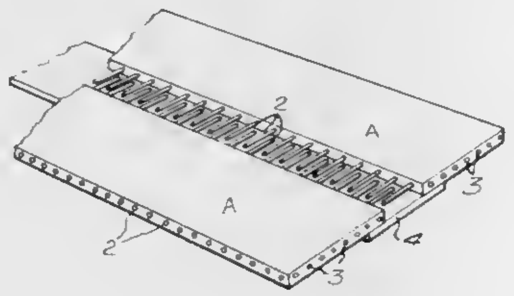
Howard Thomas Gibson, Keighley, England, assignor to Fothergill & Harvey Limited, Summit, England

Filed Nov. 18, 1974, Ser. No. 524,897

Claims priority, application United Kingdom, Nov. 28, 1973, 55150/73

Int. Cl.² B65H *69/06*

U.S. Cl. 156—157 **6 Claims**



1. In a method of making a permanent joint between the edges of two woven fiberglass yarn belt sections that are surface coated on both sides with a high temperature resistant heat fusible fluoro-polymer material and wherein the yarns in said belt sections comprise one group extending generally parallel to the belt edges and another group extending generally at right angles to said edges, the steps of

a. applying strips of glass fibre tape on the upper and lower surfaces of said belt sections along each of the edges to be joined, said tapes having films of heat fusible fluoro-polymer material in contact with the fluoro-polymer material on the belt section ends,

b. applying heat to fuse said contacting fluoro-polymer materials together,

c. stripping said tapes off the belt sections for removing along therewith fused coating from the yarns at said belt section edges;

d. removing the uncoated yarns of said one group, leaving the yarns of said other group projecting at substantially right angles from the belt section edges,

e. bringing together the belt end sections to be joined and interdigiting the projecting yarns in a joint region,

f. applying films of high temperature resistant heat fusible fluoro-polymer material over the interdigited yarn region and across the adjacent belt section end surfaces, and

g. applying heat and pressure to fuse said films and consolidate them with said belt section edges and the yarns in said region for forming a permanent bonded joint having substantially the thickness of the belt sections.

3,936,339

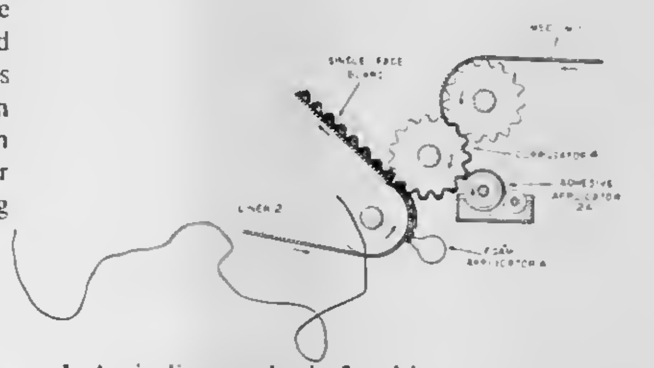
IN-LINE PROCESS FOR THE PRODUCTION OF CORRUGATED BOARD

James A. Lock, Monroe, N.Y.; Leroy C. Holmann, Saddle River, N.J., and Chester P. Kulesza, Statesville, N.C., assignors to International Paper Company, New York, N.Y.

Filed May 29, 1973, Ser. No. 364,547

Int. Cl.² B31F *1/22*

U.S. Cl. 156—205 **18 Claims**



1. An in-line method of making corrugated paperboard with excellent rigid-when-wet strength and having a corrugated medium and at least one liner attached thereto, which method comprises applying to at least one liner or said corrugated medium a rapidly collapsible foam of a dispersion of a water resistant impregnating resin, bringing said corrugated medium and said liner into adhesive contact with each other, heating the resulting composite to complete collapsing of said foam and to thereby complete the impregnation of said medium with said resin, and finally drying said composite after the completion of the collapse of said foam by further heating.

3,936,340

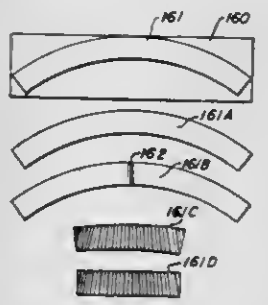
METHOD FOR MAKING CORRUGATED COLLIMATORS FOR RADIATION IMAGING DEVICES

Gerd Muehllehner, Mount Prospect, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 52,924, July 7, 1970, abandoned. This application Feb. 16, 1973, Ser. No. 332,934

Int. Cl.² B32B *31/12;* **G21C** *11/00*

U.S. Cl. 156—210 **5 Claims**



1. A method of making a radiation imaging collimator having collimating apertures converging substantially to a common focus comprising the steps of:

a. producing a plurality of flat strips of lead foil about 0.01 inches in thickness and of uniform width having opposing curved concave and convex edges;

b. inserting each strip, one-at-a-time, between a pair of partly meshed bevel gears having longitudinally extending teeth that focus to a common point such that each of said strips is positioned with said convex edge proximate to said focal point and with said concave edge remove from said focal point;

c. rotating said bevel gears in a direction to sequentially form individual longitudinal corrugations so as to produce an initial corrugated strip;

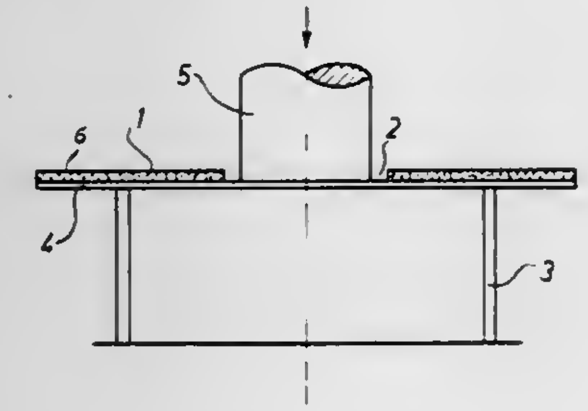
d. pressing, one-at-a-time, said initial corrugated strips between male and female forming dies to produce final corrugated strips having highly regular, reproducible configurations;

e. mounting each of said corrugated strips between successive straight strips of lead foil each about 0.01 inches in thickness to produce a plurality of collimator apertures wherein all of said initial corrugated strips are positioned in alignment with each other; and

f. compressing said mounted strips to ensure alignment of said apertures such that all of said apertures are directed toward a common focus.

3,936,341
ADHESIVE LACQUER, PROCESS FOR ITS USE AND PRODUCTS THEREOF

Jean Nanoux, Brussels, Belgium, assignor to Solvay & Cie, Brussels, Belgium
Filed Mar. 6, 1974, Ser. No. 448,763
Claims priority, application France, Mar. 8, 1973, 73.08424
Int. Cl.^{2} B29B *1/14*
U.S. Cl. 156—242 **15 Claims**



1. A process for joining a thermoplastic resin to a thermosetting resin, comprising applying a layer of an adhesive lacquer to the surface of the thermoplastic resin, said lacquer comprising tetrahydrofuran as a solvent and an acrylate ester polymer containing at least 50 mol % of an acrylate ester, and thereafter applying the thermosetting resin in uncured form to the layer of adhesive lacquer and curing the thermosetting resin.

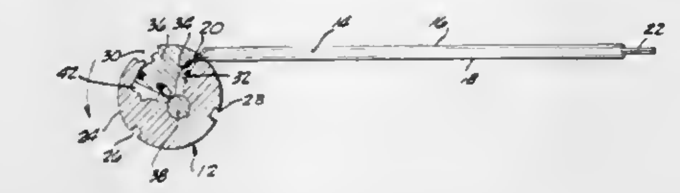
3,936,342
STEEL PLATE BONDING PROCESS AND PRIMER COMPOSITION

Takashi Matsubara; Yuko Takeuchi, and Toshiro Hirose, all of Nagoya, Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan
Filed Feb. 14, 1974, Ser. No. 442,557
Claims priority, application Japan, Feb. 15, 1973, 48-18543
Int. Cl.^{2} B32B *15/08, 27/34, 27/38*
U.S. Cl. 156—330 **8 Claims**

1. A process for bonding steel sheets which comprises applying a primer composition comprising 0.1 to 2.5 weight parts of a bisphenol type A epoxy resin having a mean molecular weight greater than about 800 per 1 weight part of a thermosetting phenolic resin obtained by reacting an aqueous solution of a mixture of orthocresol and phenol in a weight ratio of orthocresol to phenol ranging from about 60 : 40 to 10 : 90 with formaldehyde in the presence of an alkali catalyst, to the surface of the steel sheets, curing the applied primer composition on the steel sheet surfaces, and then bonding said steel sheets with a polyamide.

3,936,343
TAPE REMOVAL MACHINE

Robert R. Walls, Los Angeles County, Calif., assignor to Western Magnum Corporation, Hermosa Beach, Calif.
Filed Apr. 8, 1974, Ser. No. 458,502
Int. Cl.^{2} B32B *31/16, 35/00*
U.S. Cl. 156—368 **11 Claims**



1. A tape removing machine for removing tape which is adhesively secured to one side of a board so that it extends beyond one edge of the board comprising:

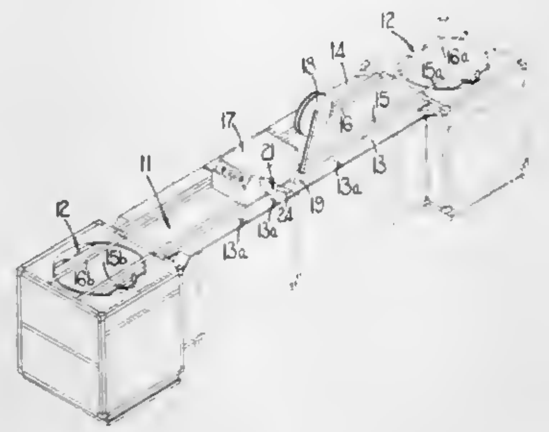
a roller, said roller comprising a mandrel and a jaw carrier, said mandrel having a substantially cylindrical exterior surface, said mandrel having an axis substantially central of said cylindrical surface and said mandrel having a jaw thereon, said jaw carrier being pivoted on said mandrel and having another jaw thereon, said jaw carrier being pivoted on said mandrel on the side of said mandrel axis away from said jaw carrier surface, a cylinder and piston respectively formed in said mandrel and on said jaw carrier so that fluid under pressure in said cylinder causes clamping of said jaws to clamp tape between said jaws and upon release of fluid pressure to release clamped tape and release circumferential tension;

means for rotating said roller so that as said roller is rotated when the tape is grasped in said jaws the tape is wound around said roller; and

means for removing tape wrapped around said roller.

3,936,344
APPARATUS FOR USE IN THE MANUFACTURE OF A WIRING HARNESS

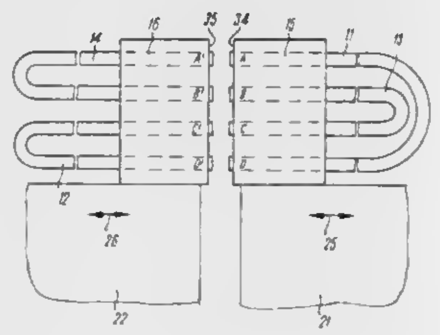
Lewis John Ball; Gordon Roy Frank Smith, and William Lawrence Fry, all of Newcastle, England, assignors to Rist's Wires and Cables Limited, England
Filed Aug. 13, 1973, Ser. No. 387,636
Claims priority, application United Kingdom, Aug. 12, 1972, 37708/72; Nov. 17, 1972, 53086/72
Int. Cl. H01b *13/00*
U.S. Cl. 156—385 **14 Claims**



1. Apparatus for use in the manufacture of a wiring harness, the apparatus including s platform upon which the harness leads, each including an outer thermoplastic sheath, are supported, the platform being arranged to support the leads in the pattern which they will occupy in the harness, and being apertured to permit lead-in, and branch-out of leads intermediate the ends of the harness, and, a heater unit movable along the length of the platform, said heater unit including a dispenser for dispensing thermoplastic tape onto the harness leads as the unit traverses the platform, means for heating the mutually presented surfaces of the thermoplastic tape and the thermoplastic sheaths of the leads, and, a pressure member urging the heated surfaces of the tape and the leads into contact so that the sheaths of the leads fuse to the tape along the length of the tape as the unit traverses the length of the platform.

3,936,345
APPARATUS FOR WELDING FLEXIBLE MEMBERS INTO A FRAME

Ernst Pecha, Grosbettlingen, Germany, assignor to Bielomatik Leuze & Co., Wurttemberg, Germany
Division of Ser. No. 261,241, June 9, 1972, Pat. No. 3,853,655. This application July 17, 1974, Ser. No. 489,390
Claims priority, application Germany, June 11, 1971, 2128922
Int. Cl.^{2} B31F *5/00;* B65H *19/00, 69/02;* G03D *15/04*
U.S. Cl. 156—502 **7 Claims**



1. An apparatus for welding together elongated, flexible members at their respective end points to form a frame comprising:

a. two holders for the flexible members, at least one of said holders being adapted to move towards and away from the other, each having an equal number of separate receptacles for the ends of flexible members, the receptacles holding the members in a generally U-shaped configuration in a respective holder such that the first holder contains at least two of the flexible members in side-by-side relationship whereas the second holder contains at least one flexible member lying, at least in part, within the U-shaped mouth of one other flexible member, each of said receptacles in one holder lying opposite a corresponding receptacle in the other holder such that the respective end portions of the members which are to be welded together to form a frame lie adjacent each other;

b. means for moving at least one of the holders towards the other holder and thereby allow for their relative movement to bring the end portions of the flexible members into a position at which they can be welded to form the frame; and

c. means for welding the respective end portions of the flexible members together to form the frame.

3,936,346
CRYSTAL GROWTH COMBINING FLOAT ZONE TECHNIQUE WITH THE WATER COOLED RF CONTAINER METHOD

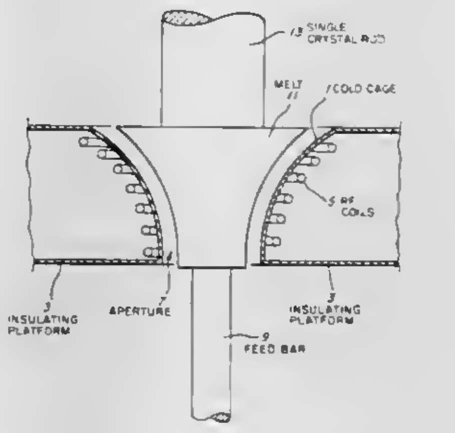
William W. Lloyd, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 26, 1973, Ser. No. 428,266
Int. Cl.^{2} B01J *17/10*
U.S. Cl. 156—620 **7 Claims**

1. A method of forming single crystal material from polycrystalline material which comprises the steps of

a. Providing an electrically conducting cold cage container having top and bottom apertures surrounded by RF coils,

b. feeding a rod of polycrystalline material into said bottom aperture,

c. inducing an electrical current in said container and said material to melt and levitate said material within said container, and to maintain said material free of said container,



d. placing a seed crystal in said metl to initiate crystal growth, and

e. continuing the crystal growth by pulling said seed away from said melt at a controlled rate while maintaining levitation of said melt.

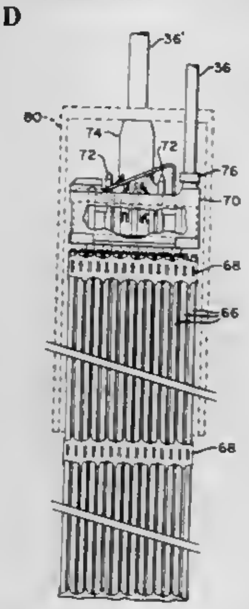
3,936,347
PAPER COMPOSED MAINLY OF PULLULAN FIBERS AND METHOD FOR PRODUCING THE SAME

Tatsuo Nomura, Okayama, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka and Hayashibara Biochemical Laboratories, Incorporated, Okayama, both of Japan
Filed Sept. 3, 1974, Ser. No. 502,860
Claims priority, application Japan, Sept. 5, 1973, 48-99903
Int. Cl.^{2} D21H *5/12*
U.S. Cl. 162—146 **15 Claims**

1. A paper composed of pullulan fibers, or a mixture of 90 to 20% of pullulan fibers with 10 to 80% of vegetable fibers.

3,936,348
METHOD AND APPARATUS FOR DETECTION OF NUCLEAR FUEL ROD FAILURES

William J. Wachter, and Wesley M. Rohrer, both of Pittsburgh, Pa., assignors to Wesley M. Rohrer and William J. Wachter, both of Pittsburgh, Pa., part interest to each
Filed Feb. 5, 1973, Ser. No. 329,635
Int. Cl. G01m *3/24;* G21c *17/06*
U.S. Cl. 176—19 LD **1 Claim**



1. Apparatus for detecting a defective nuclear fuel rod in an assembly of such fuel rods immersed in a liquid, comprising a probe having a lower end adapted to engage said assembly of rods, a vibration detector attached to said probe, the lower

end of said probe contacting a fuel assembly immersed in said liquid whereby vibrations resulting from boiling or turbulent liquid which has leaked into a fuel rod will be transmitted through said probe to the vibration detector which will indicate the existence of a defective fuel rod, and an inverted bell connected to the lower end of said probe and adapted to slide down over a fuel rod assembly, whereby the bell displaces liquid within its interior such that the vibrations due to defective fuel rods will not be damped materially by the surrounding liquid.

3,936,349
NUCLEAR REACTORS

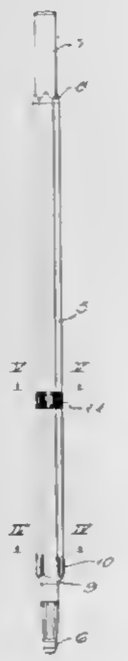
Robert Frank Prescott, Oadby, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 27, 1973, Ser. No. 428,748

Claims priority, application United Kingdom, Jan. 5, 1973, 858/73

Int. Cl.² G21C *3/32*

U.S. Cl. 176—78 **8 Claims**



1. A nuclear reactor core comprising
  an array of closely packed elongate components, the components being arranged in groups with their longitudinal axes generally vertical,
  support means for the array of components,
  means for arranging at least some of the components of each group so that they tilt towards the centre of their respective group wherein at least some of the components of the group are urged laterally into abutment with one another, at least some of the components being nuclear fuel elements having interengaging splined bearing pad means intermediate their ends for resisting relative lateral movement of two adjacent fuel elements.

3,936,350
NUCLEAR REACTOR HAVING THERMALLY COMPENSATED SUPPORT STRUCTURE FOR A FUEL ASSEMBLY

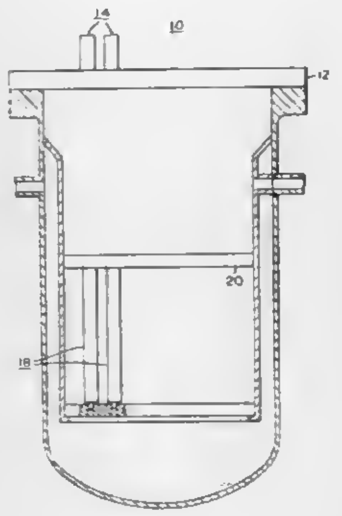
Ray Borst, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 92,981, Nov. 25, 1970, now Defensive Publication No. T901,027. This application Feb. 7, 1973, Ser. No. 330,358

Int. Cl. G21c *3/34*

U.S. Cl. 176—87 **4 Claims**

1. A nuclear reactor, including an upstanding vessel, a reactor core comprising a plurality of assemblies of elongated fuel rods housed within the vessel, and means within the vessel for supporting the fuel rods at a plurality of locations along the longitudinal dimension of the rods for maintaining the rods in a predetermined structural arrangement within the vessel, wherein the support means is constructed to have a measure of thermal expansion under designed reactor operating temperatures at each of the support locations along the rods substantially equal to the thermal expansion of the support means at the other support locations providing support in a parallel plane within the reactor vessel, thus balancing the thermal expansions along parallel planes of support at the plurality of support locations to substantially retain alignment of core components.



3,936,351
METHOD FOR PREPARING GLUCORONYL-GLUCOSAMINO-GLYCAN SULPHATES EXHIBITING ANTILIPASAEMIC ACTIVITY

Pietro Bianchini, Modena, Italy, assignor to Opocrin S.r.l., Modena, Italy

Filed June 13, 1974, Ser. No. 479,036

Claims priority, application Italy, June 14, 1973, 25371/73

Int. Cl.² A61K *35/38;* C12D *3/00;* C08B *37/00;* A61K *31/70*

U.S. Cl. 195—4 **5 Claims**

1. A method of preparing glucosamino glycan sulphates with antilipaemic action comprising the steps of:
  subjecting animal duodenum or pancreas to hydrolysis, in a suspension an aqueous solution of pH between about 5 and about 10 in the presence of an antibacterial agent acting exclusively as a bacterial flora inhibitor,
  keeping the suspension at 30°–70°C for up to 48 hours without contact with air and then heating it to 70°–100°C for 10–40 minutes,
  separating off the solid parts,
  adding to the liquid obtained by separation an organic base having an aliphatic chain of at least 7 carbon atoms, in a quantity from 1% to 4% by weight of the weight of the animal organ treated, the liquid being then brought to pH from 7.5 to 8.5 with a 20–40% solution of an inorganic base,
  heating the liquid to 70°–100°C for from 2 to 20 minutes to increase the precipitate and prepare it for centrifugation,
  separating the solid parts from the liquid,
  washing the precipitate first with distilled water and then with a saline aqueous solution of molarity from 0.5 to 1,
  fractionating the precipitate with an aqueous solution of the same salt used for the previous washing with molarity from 2.5 to 4,
  precipitating the desired compound from the solution using an alcohol having 4 carbon atoms or less and pH from 3 to 5.

3,936,352
PROCESS FOR THE PRODUCTION OF CITRIC ACID

Adel J. Kabil, Vienna, Austria, assignor to Aktiengesellschaft Jungbunzlauer Spiritus- und Chemische Fabrik, Scharzenbergplatz, Austria

Continuation-in-part of Ser. No. 146,555, May 24, 1971, abandoned. This application Oct. 12, 1973, Ser. No. 406,130

Claims priority, application Austria, June 1, 1970, 4891/70

Int. Cl.² C12D *1/04*

U.S. Cl. 195—36 R **6 Claims**

1. In a process for the production of citric acid which comprises subjecting a decationized sugar solution to submerged fermentation with a citric acid producing strain of Aspergillus niger in the presence of metals such as iron and copper, the improvement which comprises providing a decationized sugar solution with a pH of about 2.8 and carrying out said fermentation in the presence of a refined steel which in addition to iron and copper contains at least one component selected from the group consisting of carbon, silicon, manganese, chromium, molybdenum, nickel, niobium and titanium, wherein the amount of copper in the steel is 2%.

5. In a process for the production of citric acid which comprises subjecting a decationized sugar solution to submerged fermentation with a citric acid producing strain of Aspergillus niger in the presence of metals such as iron and copper, the improvement which comprises carrying out the fermentation in the presence of a refined steel selected from the group consisting of steels containing
  a. about 1% silicon, 17.5% chromium, 2% manganese, 20% nickel, 2.25% molybdenum, 2% copper, about 0.07% carbon and an amount of niobium which is greater than 8 times the carbon content; and
  b. about 1% silicon, 18% chromium, 2% manganese 22.0% nickel, 2.75% molybdenum, 2% copper, about 0.07% carbon and an amount of niobium which is greater than 8 times the carbon content.

3,936,353
CONVERSION OF CARBOHYDRATE MATERIALS TO PETROLEUM TYPE HYDROCARBONS

Nai Yuen Chen, Titusville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 20, 1974, Ser. No. 535,008

Int. Cl.² C12C *11/00;* C07C *15/02*

U.S. Cl. 195—37 **3 Claims**

1. In the process of converting carbohydrates to gasoline boiling range hydrocarbons comprising fermenting said carbohydrates to an intermediate product comprising water, alcohol and solid fermentation products; distilling the alcohol from said intermediate product; and converting said alcohol to said hydrocarbons by contacting such with a crystalline aluminosilicate zeolite catalyst having a silica to alumina ratio of at least 12 and a constraint index of about 1 to 12 at about 500° to 1000°F; the improvement which comprises instead of distilling said intermediate product, flashing said intermediate product to remove a distillate of alcohol and about 40 to 70 weight percent water therefrom; and directly contacting said wateralcohol distillate from said flashing with said zeolite at said temperature.

3,936,354
ANTI-TUMOUR PRODUCT OF BACTERIAL ORIGIN

Jean-Rock LaPointe, 410 62nd Ave., Chomedey Laval, Quebec, and Victorien Fredette, 331 Tait, Ville St. Laurent, Quebec, both of Canada

Filed Apr. 29, 1974, Ser. No. 465,074

Int. Cl.² C12K *3/00, 1/10*

U.S. Cl. 195—79 **3 Claims**

1. A process of deriving an attenuated mutant strain of *Clostridium perfringens* which comprises attenuating the wild strain Lechien of *Clostridium perfringens* with N-methyl-N'-nitro-N-nitrosoguanidine.

3,936,355
MICROORGANISM GROWTH MEDIA AND THE STABILIZATION THEREOF

John W. Lawson, Kansas City, Mo., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Nov. 12, 1973, Ser. No. 415,013

Int. Cl.² C12K *1/10*

U.S. Cl. 195—100 **4 Claims**

1. A medium for the induction of the wall defective forms of cocci, including the genus neisseria, comprising a standard virology tissue culture medium known as Medium 199, and added amounts of cysteine, glycerophosphate, alkali metal chloride salts, ammonium chloride salt, magnesium sulfate, glucose, detoxified polyvinylpyrrolidone albumin, and penicillin.

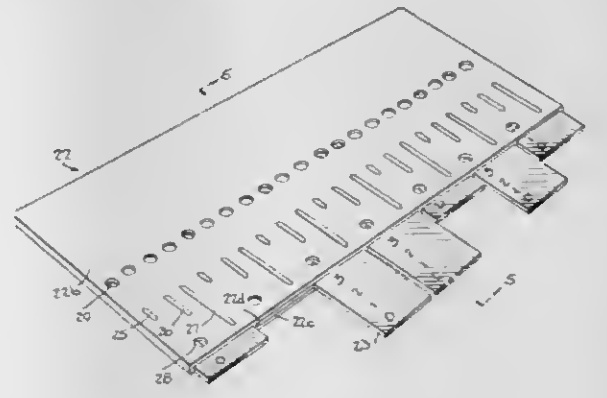
3,936,356
PROFILE RECOGNITION METHOD AND APPARATUS FOR IDENTIFYING BACTERIA

Pierre R. Janin, New York, N.Y., assignor to Analytab Products Inc., Plainview, N.Y.

Continuation-in-part of Ser. No. 349,698, April 10, 1973, abandoned. This application Mar. 21, 1974, Ser. No. 453,434

Int. Cl.² C12K *1/04*

U.S. Cl. 195—103.5 R **23 Claims**



1. In a method for the identification of an unknown substance, a specimen of the substance having been prepared to be analyzed, portions of the prepared specimen being caused to undergo a plurality of different tests, each test having a predetermined indicia when the specimen has not reacted and a different predetermined indicia when the specimen has reacted, the improvement which comprises:
  a. arranging the tests into at least one group which includes a plurality of individual test determinations, each test determination being assigned a score value, the score value for each determination being different depending upon whether the specimen has or has not reacted, the score value of each determination in a group being weighted differently for the condition when the specimen has reacted, and the sum of any combination of score values in a group being different from the sum of any other combination of score values within the group;
  b. comparing the predetermined indicia and the different predetermined indicia of each test to an apparatus having a supporting frame and at least one member corresponding to a group of determinations and containing a representation for the condition when the specimen has not reacted and a representation for the condition when the specimen has reacted, each member being divided into fixed increments, the magnitude of each increment being a function of the weighted score value for each determination in a group corresponding to the movable member, wherein sequential movements of the movable member provide a total movement representative of the combining of score values of the group and the correct indicia of reaction for each determination in a group;
  c. in response to the step of comparing, moving each movable member through the increment for each determination in a group to which the movable member is related

when the specimen has reacted, the moving of the movable member both exposing the representation for the condition when the specimen has reacted and forming a score value for each determination, the movable member being moved sequentially until a total group score value for each group is obtained, the representation of each movable member after moving enabling the representation to be checked against the predetermined indicia and different predetermined indicia of the test; and

d. assembling the score values of all groups into a final value which is distinctive for each different combination of group score values, the final value being indicative of the identification of the unknown substance.

3,936,357

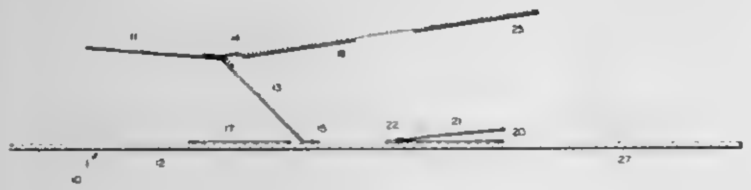
METHOD AND DEVICE FOR DETERMINING THE CONCENTRATION OF A SUBSTANCE IN A FLUID

Terry W. Milligan, Belmont, and Richard F. Wright, Acton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 16, 1974, Ser. No. 498,059

Int. Cl.^{2} G01N *31/14*

U.S. Cl. 195—103.5 R **8 Claims**



1. A device for determining concentration of a substance in a fluid which comprises fluid absorbing means carrying a substantially non-swellable, absorbent material of constant porosity and thickness; a first and second sheet which are carrying a predetermined amount of reagents adapted to react with said substance to provide a visual indication of the concentration of said substance; at least one of said first and second sheets is transparent; said fluid absorbing means intermediate and pivotally secured at each end to said first and second sheets adapted to be moved to a first superposed position where said reagents and said substance coact; said fluid absorbing means and said first and second sheets adapted to be moved to a second superposed position to contact means for generating the visual indication of the concentration of said substance.

3,936,358

METHOD OF CONTROLLING THE FEED RATE OF QUENCH WATER TO A COKING DRUM IN RESPONSE TO THE INTERNAL PRESSURE THEREIN

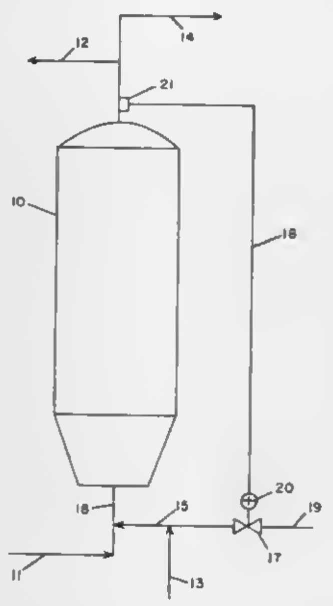
James E. Little, Fort McMurray, Canada, assignor to Great Canadian Oil Sands Limited, Toronto, Canada

Filed Oct. 17, 1974, Ser. No. 515,763

Int. Cl.^{2} C10B *39/04, 39/06, 47/02;* C10G *9/14*

U.S. Cl. 201—39 **2 Claims**

1. In a process for preparing coke from a petroleum feed comprising thermally decomposing said petroleum feed in a coking drum at a temperature in the range of 700°F. to 1000°F. to provide a petroleum distillate product and a residual coke product, cooling the residual coke product with quench water, thereby producing steam which further cools the coke product and which increases the internal pressure in the coking drum the improvement which comprises measuring the internal pressure in the coking drum and in response thereto adjusting the rate of flow of said quench water to maximize said rate of flow while maintaining a substantially constant and safe internal pressure within the coking drum.



3,936,359

PROCESS FOR THE PREPARATION OF PURE DEHYDROACETIC ACID

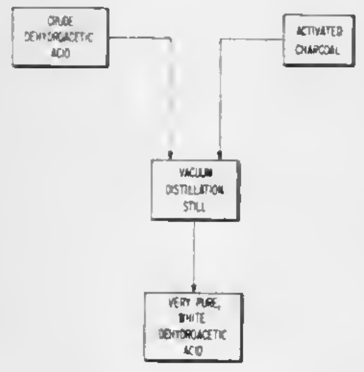
Adrian Marxer, Visp, Switzerland, assignor to Lonza Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 197,525, Nov. 10, 1971, abandoned. This application Jan. 25, 1974, Ser. No. 436,804

Claims priority, application Switzerland, Dec. 1, 1970, 17752/70

Int. Cl.^{2} B01D *15/00*

U.S. Cl. 203—6 **14 Claims**


CRUDE DEHYDROACETIC ACID
ACTIVATED CHARCOAL
VACUUM DISTILLATION STILL
VERY PURE, WHITE DEHYDROACETIC ACID

1. A process for the purification of crude dehydroacetic acid which comprises: admixing crude dehydroacetic acid and activated charcoal in a reduced pressure, simple vacuum distillation still; vacuum distilling said admixture, the distillate being vaporized, and the discoloring agents in the crude dehydroacetic acid not being vaporized and being adsorbed by the activated charcoal; and collecting the distillate, which is comprised of very pure, white dehydroacetic acid.

3,936,360

PROCESS FOR DISTILLATION AND RECOVERY OF OLEFINIC NITRILES

Hsin Chih Wu, Parma, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 132,008, April 7, 1971, abandoned. This application Feb. 9, 1973, Ser. No. 330,980

Int. Cl.^{2} B01D *3/00, 3/10*

U.S. Cl. 203—75 **9 Claims**

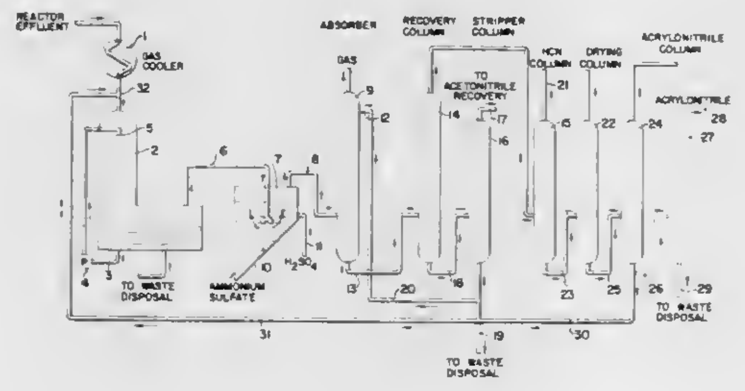
1. In the process for the recovery and purification of acrylonitrile produced by the ammoxidation reaction of propylene, molecular oxygen and ammonia in the presence of ammoxidation catalyst which consists of the steps of;

a. contacting the ammoxidation reactor effluent with an aqueous quench liquid in a quench system to produce a gaseous quench effluent from said quench system having a temperature of about 90° to about 230°F.;

b. removing the gaseious quench effluent from said quench system and absorbing said removed gaseous quench efflluent in water to form a solutionn and distilling most of the by-products produced in the ammoxidation reaction and most of the water from said solution to obtain a liquid stream containing crude acrylonitrile; and

c. distilling the crude acrylonitrile to obtain a gaseous overhead stream of product-quality acrylonitrile and a bottoms stream containing acrylonitrile and impurities and having a pH of about 3–5, the improvement comprising:

recycling part of said liquid bottoms stream obtained in step (c) and using said liquid bottoms stream as at least part of said quench liquid in step (a).



3,936,361

IMAGE RECORDING MEMBER

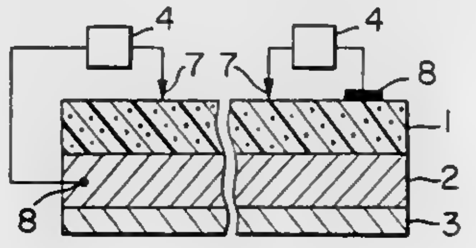
Yasushi Takatori, and Mitsunobu Nakazawa, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1974, Ser. No. 454,979

Claims priority, application Japan, Mar. 26, 1973, 48-34332; Mar. 26, 1973, 48-34333

Int. Cl.^{2} B21H *1/20;* B41C *3/08*

U.S. Cl. 204—2 **21 Claims**



1. In an electrical recording member provided with a recording layer consisting essentially of an image-forming agent, an electrically-conductive agent and a binder therefor, the improvement comprising said electrically-conductive agent comprising at least a compound containing zeolitic water, whereby an image is formed in said recording layer by the application thereto of electrical current.

3,936,362

PROCESS FOR THE MANUFACTURE OF AMMONIUM TUNGSTATE AMMONIUM PARATUNGSTATE, AMMONIUM METATUNGSTATE AND HYDRATED TUNGSTEN TRIOXIDE

Clarence D. Vanderpool; Martin B. MacInnis, and James C. Patton, Jr., all of Towanda, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed June 10, 1974, Ser. No. 477,921

Int. Cl.^{2} C25B *1/00, 1/22;* C01G *41/00;* C01B *1/00*

U.S. Cl. 204—86 **8 Claims**

1. An electrolytic method for producing a tungsten compound selected from the group consisting of ammonium tungstate, ammonium paratungstate, ammonium metatungstate and tungstic acid, the method comprising:

a. contacting the negative side of an anion exchange membrane with an aqueous electrolyte containing a source of tungstate anions, and contacting the opposing side of the membrane with an aqueous electrolyte containing a source of ammonium cations, and

b. applying an electrical potential across the anion exchange membrane, the potential having a magnitude and polarity to cause passage of the tungstate anions through the membrane into the electrolyte containing the ammonium cation source for a time sufficient to achieve a pH of the electrolyte to form the desired tungsten compound.

3,936,363

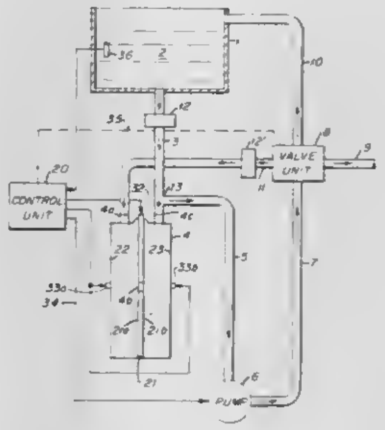
ELECTROLYTIC METAL RECOVERY PROCESS AND APPARATUS

John R. Fesseden, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 8, 1974, Ser. No. 467,963

Int. Cl.^{2} C25C *1/22, 1/00, 7/00*

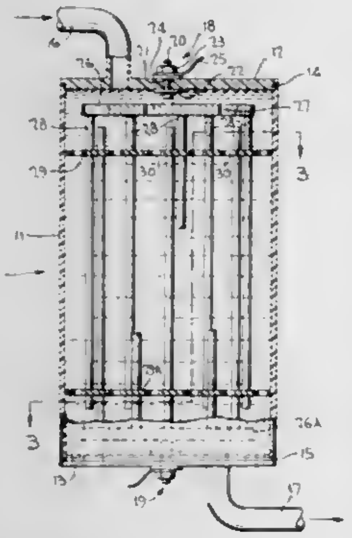
U.S. Cl. 204—105 R **14 Claims**



1. A system for electrolytically removing metal from a solution containining ions thereof, comprising, in combination, an electrolytic cell comprising an enclosed chamber having at least one cathode and at least one anode adapted to be connected to means for impressing an electrical potential, said cell being sealed, against communication with the ambient atmosphere, and said cell having an inlet and an outlet for solution; a source of such a solution; conduit means connected between said outlet and said inlet for recycling solution through said cell, said conduit means comprising a first conduit connected to said inlet for supplying solution to said cell; a second conduit connected to said outlet for removing solution from said cell; a pump having an inlet connected to said second conduit and an outlet connected to said first conduit, said pump being so constructed and arranged as to suck solution from said cell and said second conduit at a subatmosphere pressure and to discharge solution to said first conduit, whereby to maintain a subatmosphere pressure in said cell; and a third conduit connecting said source to said conduit means for supplying solution to said cell.

3,936,364
APPARATUS AND METHOD FOR TREATMENT OF WATER OLIGODYNAMICALLY

Sidney A. Middle, 1718 27th St., Columhus, Nebr. 68601
Filed Feb. 20, 1973, Ser. No. 333,648
Int. Cl.^{2} C02B *3/10, 1/82*
U.S. Cl. 426—66 **4 Claims**



2. The method of claim 1 wherein said step of reversing includes the step of:

reversing said current at intervals of approximately 1 minute.

3,936,365
RADIATION CROSSLINKED BLOCK COPOLYMER BLENDS WITH IMPROVED IMPACT RESISTANCE

Frank L. Saunders, Midland, and Ronald R. Pelletier, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed May 28, 1974, Ser. No. 473,642
Int. Cl.^{2} C08F *2/46, 8/00*
U.S. Cl. 204—159.2 **10 Claims**

1. A method for improving the impact resistance of a normally solid non-elastomeric monovinylidene aromatic polymer which is subjected to mechanical processing, said method comprising the steps of (1) subjecting colloidal size particles of an elastomeric block copolymer of from about 20 to about 80 weight percent of an elastomeric block of conjugated diene and from about 80 to about 20 weight percent of a non-elastomeric block of monovinylidene aromatic monomer to high energy irradiation sufficient to effect crosslinking of the block copolymer and (2) combining an amount of the resulting irradiated block copolymer particulate with the non-elastomeric monovinylidene aromatic polymer containing at least 70 weight percent of polymerized monovinylidene aromatic monomer wherein the amount of copolymer is sufficient to improve the impact strength of the non-elastomeric polymer, said crosslinking being sufficient to enable the block copolymer to remain in the form of colloidal size particles during mechanical processing, but less than that required to render the copolymer non-elastomeric.

3,936,366
RADIATION POLYMERISABLE COMPOSITIONS CONTAINING 3-SORBOYLOXY-2-HYDROXYPROPYL GROUPS

George Edward Green, Cherry Hinton, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Feb. 28, 1974, Ser. No. 446,990
Claims priority, application United Kingdom, Mar. 6, 1973, 10796/73
Int. Cl.^{2} C08F *2/46, 8/18, 4/00*
U.S. Cl. 204—159.23 **28 Claims**

1. A process for polymerising a polysorbate having, per average molecule, at least three 3-sorboyloxy-2-hydroxypropyl groups directly attached to ether oxygen atoms, which polysorbate has been obtained by the additive reaction of a compound containing at least three glycidyl groups with sorbic acid or of glycidyl sorbate with a substance having at least three phenolic or aliphatic hydroxyl groups, which comprises subjecting the polysorbate to actinic radiation.

3,936,367
METHOD OF PRODUCING A LAYER OF DARK COLORED HEAT RADIATING INSULATING MATERIAL FOR HEATERS OF INDIRECTLY HEATED CATHODES

Eberhard Weiss, Stuttgart, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Dec. 18, 1974, Ser. No. 534,027
Claims priority, application Germany, Dec. 22, 1973, 2364403
Int. Cl.^{2} C25D *13/02*
U.S. Cl. 204—181 **2 Claims**

1. A method of producing a dark colored heat radiating layer of insulating material for heaters of indirectly heated cathodes, characterized in that aluminum-oxide powder is intimately mixed with tungsten-oxide powder and chromium-oxide powder, that a coating bath is prepared with said mixture and additions of aluminum nitrate, magnesium nitrate, ethanol and water, that the heaters dipped into said coating bath are coated electrophoretically with a porous, dark colored heat radiating layer of insulating material, with electrolysis taking place simultaneously, and that the heaters are then rinsed, in known manner, in a suitable liquid such as methanol, dried, and finally sintered in a nitrogen-hydrogen atmosphere at about 1,600°C.

3,936,368
METHOD FOR CURING A COATING FILM

Tadashi Watanabe, and Tsutomu Maruyama, both of Hiratsuka, Japan, assignors to Kansai Paint Company, Ltd., Japan
Filed Nov. 27, 1970, Ser. No. 93,466
Claims priority, application Japan, Dec. 3, 1969, 44-96484
Int. Cl.^{2} C25D *13/06*
U.S. Cl. 204—181 **10 Claims**

1. A method for curing a coating film upon a coated electroconductive object comprising in combination the steps of:

a. immersing said object in an electrophoretic bath comprising an aqueous dispersed composition characterized in that said composition is both electrodepositable as an adherent film upon an anode immersed therein and polymerizable thereon by applying ionizing radiation, said aqueous dispersed composition comprising an aqueous dispersion of an acidic film-forming binder, and said acidic film-forming binder being a conjugated unsaturated fatty acid, conjugated unsaturated oil or mixture thereof modified alkyd resin having an oil length in the range of 10–60 weight percent and a resin acid value in the range of 30–100, the carboxylic groups of said modified alkyd resin being neutralized with at least one water-soluble base selected from amino compounds, inorganic alkali compounds and alkaline salts, in the range of 0.7 to 1.2 stoichiometrical equivalents of the carboxyl groups of said modified alkyd resin,
b. providing a direct current through said bath sufficient to effect deposition of a film of said composition upon said object as an anode by providing a difference of electrical potential between said anode and other electrode,
c. transferring the resultant coated object from said bath containing said composition into an irradiation zone, and
d. applying to the electrodeposited film upon said object, a 0.1–40 M rad dose of ionizing radiation until said film is cured by polymerization.

3,936,369
HYDROCARBON CONVERSION WITH A SULFIDED CATALYTIC COMPOSITE

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of Ser. No. 365,782, May 31, 1973, Pat. No. 3,839,193, which is a continuation-in-part of Ser. No. 27,457, April 10, 1970, abandoned. This application Sept. 30, 1974, Ser. No. 510,255
Int. Cl.^{2} C10G *35/08;* **B01J** *11/12*
U.S. Cl. 208—139 **8 Claims**

1. In a process for converting a hydrocarbon which comprises contacting the hydrocarbon at hydrocarbon conversion conditions with a catalytic composite, comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % iridium, about 0.01 to about 5 wt. % germanium, and about 0.1 to about 3.5 wt. % halogen, wherein the platinum or palladium, iridium, and germanium are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum or palladium and iridium are present in the corresponding elemental metallic states and wherein substantially all of the germanium is present in an oxidation state above that of the elemental metal, the improvement which comprises sulfiding the catalytic composite, prior to contact with the hydrocarbon, by treating the composite with a sulfiding gas at conditions selected in incorporate about 0.05 to about 0.5 wt. % sulfur.

3,936,370
PROCESS FOR PRODUCING A ZEOLITE RISER CRACKER FEED FROM A RESIDUAL OIL

Alfred M. Henke, Springdale, and Joel D. McKinney, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Aug. 22, 1973, Ser. No. 390,358
Int. Cl.^{2} C10G *34/00*
U.S. Cl. 208—210 **6 Claims**

1. A process for demetallizing a feed residual petroleum oil containing asphaltenes, sulfur and metals including between 5 and 500 parts per million of nickel and vanadium to an effluent oil wherein the amount of nickel plus one-fifth the amount of vanadium is less than one part per million without a distillation or solvent extraction step for removal of nickel and vanadium comprising passing said feed oil and hydrogen through a plurality of hydrodesulfurization stages in series including an initial stage and a final stage each operating at a temperature between about 650° and 800°F., each stage employing a catalyst comprising Group VI and Group VIII metals on alumina, increasing the temperature in each stage with increasing catalyst age to compensate for catalyst activity aging loss, maintaining a lower hydrogen pressure in said final stage than in said initial stage, removing asphaltenes, metals and sulfur from the feed oil in said initial and said final stages with a greater amount of metals and sulfur being removed from the feed oil in said initial stage than in said final stage, operating said final stage at a hydrogen pressure between 1,300 and 1,900 psi and operating said initial stage at a hydrogen pressure up to 2,300 psi which is higher than the pressure in said final stage so that the ratio of percent demetallization to percent desulfurization is higher in the final stage than in the initial stage, the catalyst in said final stage comprising a higher weight percent of Group VI and Group VIII metals than the catalyst in said initial stage so that the final stage produces an effluent wherein the amount of nickel plus one-fifth the amount of vanadium is less than one part per million, the effluent from said final stage comprising more than 80 volume percent boiling above the gasoline range based on feed residual oil.

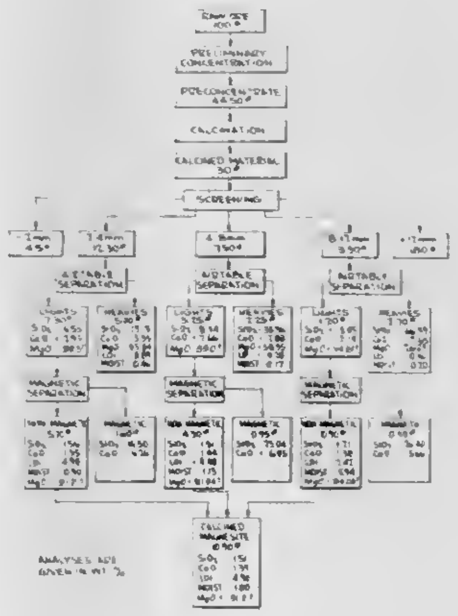
3,936,371
METHOD FOR REMOVING VANADIUM, NICKEL, AND SULFUR FROM HYDROCARBON OILS

Shigeru Ueda; Yoshinori Nakata; Shinichi Yokoyama, all of Sapporo; Naoyuki Todo, Tachikawa; Yuji Yoshida, Sapporo; Tadao Ishii, Sapporo, and Gen Takeya, Sapporo, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan
Filed Mar. 14, 1974, Ser. No. 451,160
Claims priority, application Japan, Mar. 30, 1973, 48-36985
Int. Cl.^{2} C10G *17/00, 29/04*
U.S. Cl. 208—251 H **4 Claims**

1. A method for removing vanadium, nickel, sulfur and asphaltenes from hydrocarbon oils comprising contacting said hydrocarbon oil with red mud having from 18 – 25% by wt. aluminum oxide, 15 – 20% by wt. silicon dioxide, 30 – 40% by wt. ferric oxide, 2 – 8% by wt. titanium dioxide, and 8 – 12% by wt. of matter that is lost by ignition, at elevated temperatures and in the presence of hydrogen.

3,936,372
METHOD FOR BENEFICIATION OF MAGNESITE ORE

Anthony Z. Frangiskos, Athens, Greece, assignor to Financial Mining-Industrial and Shipping Corporation, Greece
Continuation of Ser. No. 307,521, Nov. 17, 1972, abandoned. This application Dec. 10, 1974, Ser. No. 531,446
Claims priority, application Greece, Nov. 24, 1971, 44504
Int. Cl.^{2} B03B *1/02*
U.S. Cl. 209—3 **13 Claims**



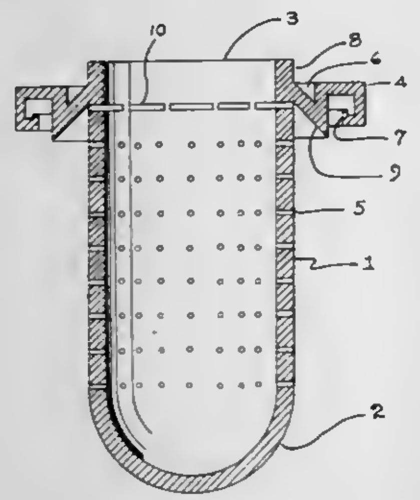
1. A process for recovering magnesite from its ores as a caustic-calcined magnesite comprising the steps of:

calcining a particulate magnesite ore having a particle size between about 2 and about 17mm by gradually heating the ore at a temperature of from about 500°C to about 1000°C so as to gradually raise the temperature of the ore for the desired calcination thereby converting the ore into a mixture of caustic-calcined magnesite having a bulk density in range of from about 1.4 to about 1.6 g/cm^3 and calcined gangue having a bulk density in the range of from about 2.2 to about 2.4 g/cm^3;

subsequently separating said caustic-calcined magnesite from said calcined gangue by a physical separation process by utilizing the difference between said bulk density of the caustic-calcined magnesite and said bulk density of the calcined gangue; and

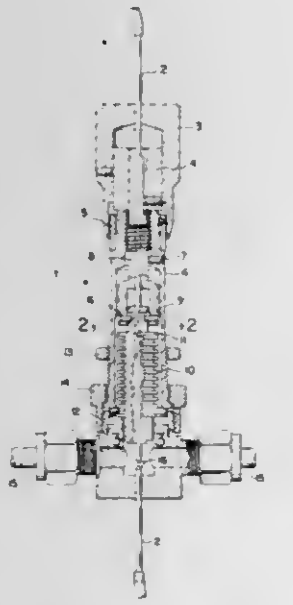
effecting said separation on said mixture without size reduction of the latter.

3,936,373
FECAL EXAMINATION DEVICE
Arnold David Studer, P.O. Box 5, West Grove, Pa. 19390
Continuation-in-part of Ser. No. 525,231, Nov. 19, 1974, abandoned, and a continuation of Ser. No. 528,585, Nov. 29, 1974, abandoned. This application July 2, 1975, Ser. No. 592,495
Int. Cl.^{2} B03B *5/36*
U.S. Cl. 209—17 **5 Claims**



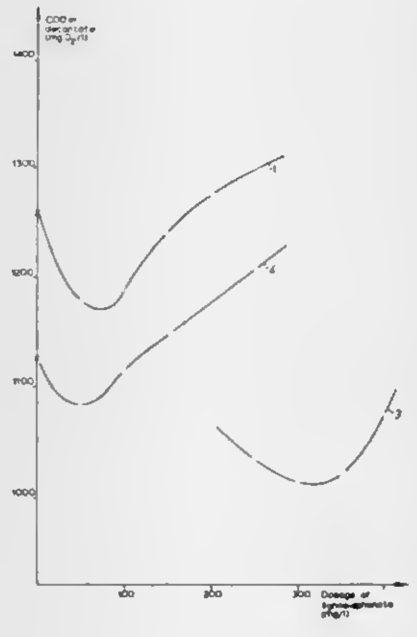
3. In apparatus for use in the sink-or-float separation of ova from feces contained in a transport receptacle, a filter thimble combined with receptacle closure means, the closure means having a top face and a bottom face, the thimble comprising an open top, generally cylindrical tube with a bottom face, the tube carrying below its open top around its upper side surface the said closure means, the said closure bottom face having an upwardly converging surface, the said tube bearing around its lower side surface screening means including perforations at the junction of the said converging surface with said tube.

3,936,374
VARIABLE JET SEPARATOR
M. P. Timothy Bradley, Shaker Heights, and Jacob Shen, Akron, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio
Filed Sept. 30, 1974, Ser. No. 510,609
Int. Cl.^{2} G01D *15/08*
U.S. Cl. 210—31 C **5 Claims**



1. A variable jet separator apparatus useful in chromatograph-mass spectrometer interfacing for coupling the effluent line of a gas or liquid chromatograph to a mass spectrometer comprising an upper capillary tube and a lower capillary tube, both of said tubes having tapered ends, the ends of said tubes being located adjacent to one another in an enclosed chamber, one of said tubes being adjustable to move towards or away from said other tube, one of said tubes being coupled to the effluent line of a gas or liquid chromatograph and the other of said tubes being coupled to a mass spectrometer.

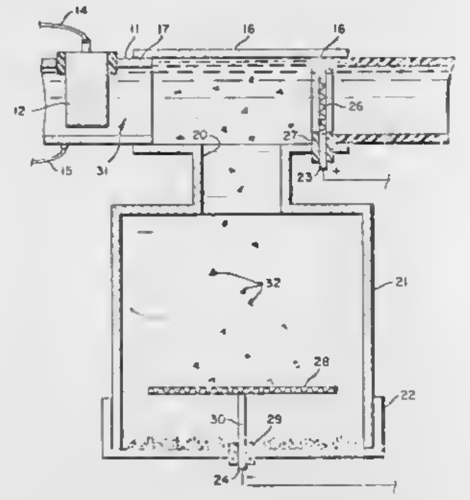
3,936,375
PROCESS FOR DEWATERING A PROTEINACEOUS, AQUEOUS SLUDGE AND FOR REMOVING AND RECOVERING PRECIPITATING AGENTS FROM A PRECIPITATE CONTAINING PROTEINACEOUS SUBSTANCES
Per Nettli, Asker, Norway, assignor to A/S Apothekernes Laboratorium for Specialpraeparater, Oslo, Norway
Continuation-in-part of Ser. No. 342,798, March 19, 1973, abandoned. This application Sept. 25, 1974, Ser. No. 509,317
Claims priority, application Norway, Mar. 20, 1972, 903/72
Int. Cl.^{2} C02B *1/20*
U.S. Cl. 210—45 **10 Claims**



1. A process for coagulating and agglomerating a proteinaceous aqueous sludge, previously precipitated with a precipitating agent, separating said sludge from the water therein contained, and recovering the precipitating agent comprising the sequential steps of;

a. mixing said sludge with, calcium chloride
b. adjusting the pH to a value in the range of 6.5–9.5 by adding a base selected from the group consisting of alkali metal hydroxides and alkaline earth metal hydroxides,
c. heating said mixture to a temperature in the range of 60°–120°C in order to coagulate and agglomerate said sludge, whereby an aqueous phase containing the precipitating agent and a coagulated protein phase are formed, and
d. separating said aqueous phase containing the precipitating agent from said coagulated protein phase.

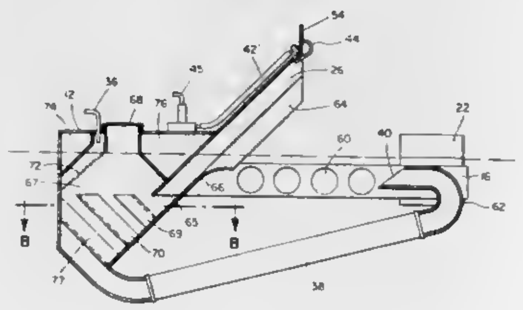
3,936,376
METHOD FOR COLLECTING SCALE FORMATIONS IN WATER PIPES
Philip Centineo, Camarillo, Calif., assignor to Key II Industries, Camarillo, Calif.
Continuation of Ser. No. 472,545, May 23, 1974, abandoned. This application Apr. 9, 1975, Ser. No. 566,266
Int. Cl.^{2} B03C *5/00;* **B01D** *35/06*
U.S. Cl. 210—42 S **1 Claim**



1. A method of inhibiting scale in flowing water and collecting the same comprising, in combination, the steps of:

a. subjecting said flowing water to an alternating square wave electric field to cause conglomerations of charged ions to be entrained in said flowing water;
b. thereafter confining the flowing water to a horizontal flow path;
c. positioning a first screen in a vertical plane in said flow path;
d. providing a chamber below said flow path in communication with said flow path at a point before the flowing water reaches said screen;
e. providing a second screen in an horizontal plane in said chamber;
f. charging said first screen with an electrically positive charge so that said conglomerations are repelled by said first screen and thus tend to drift downwardly into said chamber; and,
g. charging said second screen with an electrically negative charge to thereby attract said conglomerations for collection in said chamber.

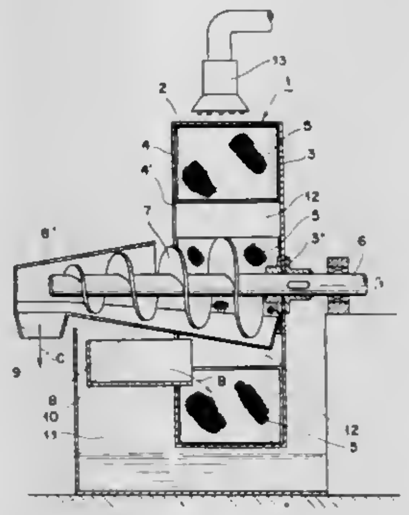
3,936,377
OIL SEPARATION AND RECOVERY METHOD
Frank Galicia, 5043 Catherine St., Philadelphia, Pa. 19143
Division of Ser. No. 352,209, April 18, 1973, Pat. No. 3,890,234. This application Apr. 3, 1975, Ser. No. 564,815
Int. Cl.^{2} B01D *21/00*
U.S. Cl. 210—84 **9 Claims**



6. A method for separating first and second liquids of different densities, said first liquid being disposed upon the surface of a body of said second liquid, comprising the steps of:

providing a plurality of parallel elongate trough structures each having a substantially inverted V-shaped cross section, said trough structures being inclined with respect to the surface of said second liquid so that the cross sections thereof open in a generally downward direction;
providing flotation means associated with said trough structures for supporting said structures in the second liquid;
propelling the trough structures through the liquids to urge the first liquid into the V-shaped cross sections and downwardly within said trough structures;
collecting the liquid urged downwardly within said trough structures within a chamber having upper and lower portions; and
transporting the liquid collected from the lower portion of said chamber to a region before said trough structures;
whereby the less dense of the liquids is accumulated in the chamber and the more dense of the liquids is discharged in advance of the trough structures to induce the advance of the less dense liquid into said structures.

3,936,378
ROTARY STRAINER
Mitsuo Kawada, Toyota, Japan, assignor to Kito Machine Industries Co. Ltd., Toyota, Japan
Filed Jan. 22, 1974, Ser. No. 435,414
Claims priority, application Japan, Jan. 23, 1973, 48-010682
Int. Cl.^{2} B01D *33/06*
U.S. Cl. 210—107 **11 Claims**



1. A rotary strainer comprising in combination:

a box-like structure having a substantially horizontal axis of revolution and provided with an opening at one side thereof, with a filter net being spread over the entire periphery thereof;
a screw extending through the inside of said box-like structure and protruding out of said structure from said opening thereof;
a screw conveyor chute provided below said screw and having a slant bottom face inclined downwardly toward said box-like structure;
a shaft axially connected to the screw and to the box-like structure,
wherein the screw is tapered inward from a maximum dimension near connecting means mounted on the box-like structure opposite the opening, wherein the screw closely approaches the the inclined chute, and
wherein the shaft is connected to the box-like structure and to the screw for simultaneously rotating the box-like structure and the screw,
a passage for introducing a liquid-solid mixture to be separated into said box-like structure through said opening; and

driving means connected to the shaft for rotating said box-like structure and said screw.

3,936,379

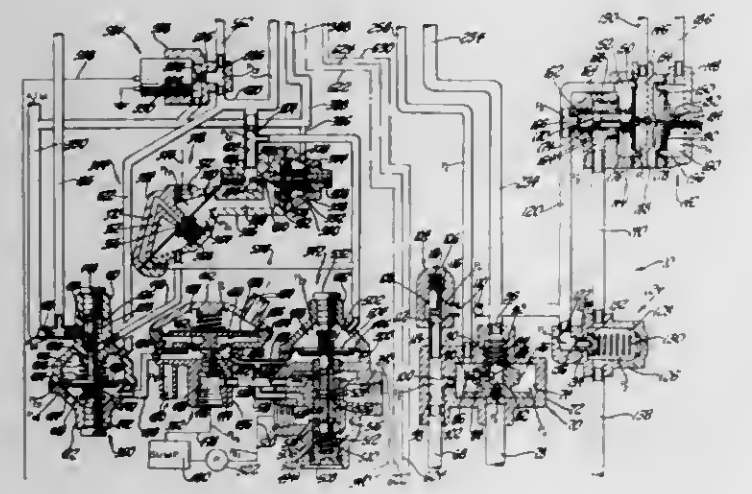
FAIL SAFE DEVICE

Ralph Patrick McCabe, Troy, Mich., assignor to Colt Industries Operating Corporation, New York, N.Y.

Division of Ser. No. 355,819, April 30, 1973. This application Aug. 12, 1974, Ser. No. 496,556

Int. Cl.² B01D *29/36*

U.S. Cl. 210—131 **8 Claims**



1. Fail safe apparatus, comprising house means, chamber means defined at least partly by said housing means, inlet means for admitting a relatively high pressure fluid into said chamber means, first outlet means including a first restriction for directing said fluid from said chamber means to associated means to be acted upon by said fluid in accordance with the magnitude of said pressure of said fluid, filter means situated generally in the path of flow of said fluid, second outlet means having a lesser restriction than said first restriction of said first outlet means for at times dircting said fluid from said chamber means to the associated means, and valving means for controlling the communication between said second outlet means and said chamber means, said valving means being operatively controlled by the deflection experienced by said filter means due to a pressure differential across said filter means generated by said fluid flowing through said filter means and an increasing restrictive effect to flow through said filter means created by clogging of said filter means by particles of dirt, whereby clogging of said filter in the absence of said valve would produce an undetectable, lower-than-normal pressure having an undesired effect on the associated means, as compared to said filter not being clogged, but whereby, upon said filter becoming clogged sufficiently to cause said valve to open, a higher-than-normal pressure is produced and said second outlet means, said higher-than-normal pressure being detectable and useable to have a desired effect on the associated means.

3,936,380

MEANS TO COUNTERACT A CLOGGING OF DRAIN PIPES

Johann Böske, 2849 Goldenstedt, Arkeburg, Germany

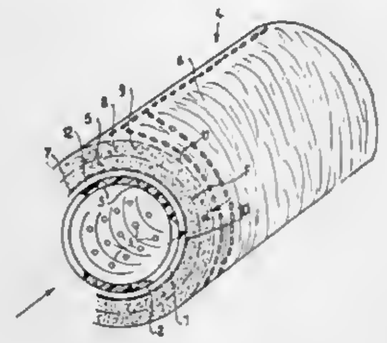
Division of Ser. No. 277,470, Aug. 2, 1972, abandoned. This application July 15, 1974, Ser. No. 488,460

Int. Cl.² C02B *5/06*

U.S. Cl. 210—170 **14 Claims**

1. In a drain plant having underground plastic or clay drainpipes which have porous walls enveloped by filter material wherein local ground water is drained by radial inflow through said walls the improvement comprising,

tannin dispensing means containing tannin connected to said pipe for delivering tannin into the drain flow to convert earth components which otherwise would cause the formation of ochre clogging said pipe into non-clogging materials.



3,936,381

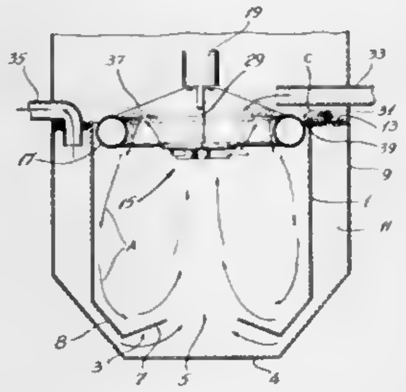
SEWAGE TREATMENT APPARATUS

Jean Pacaud, Saint-Genies, Bellevue, 31240 L'Union, France

Filed July 22, 1974, Ser. No. 490,872

Int. Cl.² C02C *5/04;* **B01F** *3/04*

U.S. Cl. 210—195 R **15 Claims**



1. Domestic sewage water treatment apparatus, comprising:

a. an outer tank having inlet means and outlet means,

b. an inner tank disposed within and spaced from said outer tank, the bottom of said inner tank being vertically displaced from the bottom of said outer tank,

c. the bottom of said inner tank having an aperture therein and an upwardly directed means for preventing light particles from ascending into said outer tank,

d. means provided at the top of said inner tank for creating a sufficient upwards suction providing homogenization, aeration and recirculation of a bath and of activated sludge contained in said inner tank,

e. floating means provided at the top of said inner tank for acting as a protection rampart against turmoil created by the aeration, homogenization and recirculation means,

f. means provided at the top of the space between the outer tank and the inner tank for trapping light floating materials collected at the top of said space and evacuating said floating materials from said top of said space.

3,936,382

FLUID EDUCTOR

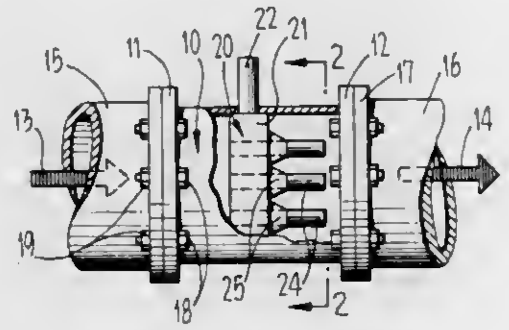
Leslie E. White, Folsom, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Continuation-in-part of Ser. No. 417,856, Nov. 21, 1973, abandoned. This application May 19, 1975, Ser. No. 578,929

Int. Cl.² C02B *1/20*

U.S. Cl. 210—198 R **18 Claims**

1. A fluid eductor for injecting a secondary fluid into a primary fluid flowing along a path in a conduit, said eductor comprising a tank adapted to be coupled to said conduit in the path of said primary fluid, said tank having means defining a hollow interior, said means including an apertured downstream wall, an inlet pipe in fluid communication with said interior and adapted to be coupled to a source of said secondary fluid, a flow-through conduit extending through said tank and terminating in an apertured portion downstream of said tank, said apertured portion having a plurality of apertures formed therein, and a platelet assembly surrounding said downstream portion of said flow-through conduit, said platelet assembly having a plurality of fluid passageways in communication with said hollow interior via said apertured downstream wall and the interior of said flow-through conduit via said apertures in said apertured portion for enabling said secondary fluid to flow from said tank to the interior of said flow-through conduit and intermingle with said primary fluid downstream of said wall.



3,936,383

SOL OF ULTRA-FINE PARTICLES OF SYNTHETIC HECTORITE

Nobutoshi Daimon, No. 195-112, Aza Kanda, Mikuriya, Kawanakajima-cho, Nagano, Nagano Prefecture, and Toichiro Izawa, No. 25-26, Koganekara 7-chome, Matsudo, Chiba Prefecture, both of Japan

Filed May 6, 1974, Ser. No. 467,565

Claims priority, application Japan, May 14, 1973, 48-52531

Int. Cl.² B01J *13/00;* **H01B** *3/02;* **C01B** *33/20*

U.S. Cl. 252—63 **5 Claims**

1. A sol of ultra-fine particles of synthetic hectorite, prepared by swelling and cleaving Li-hectorite having the formula $Li_{1/3}Mg_{2\text{-}2/3}Li_{1/3}(Si_4O_{10})F_2$ or Na-hectorite having the formula $Na_{1/3}Mg_{2\text{-}2/3}Li_{1/3}$ $(Si_4O_{10})F_2$ in water or an organic solvent, and ion-exchanging the Li or Na ions co-ordinated between the lattice layers of the hectorite with a non-hydratable cation selected from the group consisting of K^+, Ag^+, Cu^+, Ba^{2+}, Pb^{2+}, Sn^{2+}, Zn^{2+}, Al^{3+}, Bi^{3+} and Sb^{3+}.

3. A heat-resistant and insulating film-like product prepared by mixing the sol of claim 1 with a filler selected from the group consisting of organic fibers, inorganic fibers, ceramic minerals and mixtures thereof, spreading the thus-prepared mixture on a flat surface, drying it to remove the water or organic solvent therefrom and removing the film-like product from the flat surface.

5. A heat-resistant and insulating film-like composite product prepared by mixing the sol of claim 1 with a filler selected from the group consisting of organic fibers, inorganic fibers, ceramic minerals and mixtures thereof, spreading the thus-prepared mixture onto a substrate selected from the group consisting of metals, ceramics and organic films and drying the mixture to produce the film-like composite product.

3,936,384

RELIGIOUS SOAP

Yancey Williams, G.P.O. Box 1373, New York, N.Y. 10038

Filed Jan. 14, 1975, Ser. No. 540,992

Int. Cl.² C11D *17/00*

U.S. Cl. 252—90 **3 Claims**

1. A bar of soap which is embossed with religious markings.

3,936,385

DENTURE CLEANSER

Shu-Sing Cheng, Hanover Park, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 9, 1973, Ser. No. 387,075

Int. Cl.² C11D *7/54*

U.S. Cl. 252—99 **21 Claims**

1. A solid denture cleanser which on mixing with water effervesces and dissolves in the water to form a solution for soaking dentures, said cleanser comprising a dry stable mixture of a peroxygen compound which yields active oxygen on admixture with water and a chlorine compound which liberates hypochlorite chlorine on contact with water, said peroxygen compound being reactive with the components of said mixture in the presence of said water to liberate bubbles of gas effervesantly, said chlorine compound being present in amount sufficient to provide an amount of hypochlorite chlorine such that the atomic ratio of hypochlorite chlorine to active oxygen of said peroxygen compound is at least greater than about 1.1:1 whereby to provide at least about 100 ppm. of hypochlorite chlorine in water solution after oxygen formation has ceased and an alkaline material comprising a water-soluble anhydrous, alkaline salt which is sufficiently alkaline to give a pH of at least about 9.

3,936,386

DISHWASHING COMPOSITIONS CONTAINING CHLORINATED ISOCYANURATE

Duncan S. Corliss, Roselle, and James F. Pacheco, Willingboro, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Aug. 6, 1973, Ser. No. 385,843

Int. Cl.² C11D *7/56*

U.S. Cl. 252—99 **5 Claims**

1. An agglomerated dishwashing detergent composition containing by weight as its essential ingredients:

Sodium dichloroisocyanurate dihydrate	0.5–10%
A polyphosphate having an Na_2O or K_2O to P_2O_5 ratio of about 1:1 to 2:1	25–60% (anhydrous basis)
Sodium carbonate	0–60% (anhydrous basis)
A sodium silicate having a SiO_2 to Na_2O ratio of from about 2.40 to about 3.22	10–15% (total silicate solids)
Low-foaming chlorine-compatible nonionic surfactant	1–10%
Water	5–20%.

3,936,387

AZEOTROPE OF 1,2-DICHLORO-1-FLUOROETHANE AND METHANOL

Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 223,779, Feb. 4, 1972, abandoned. This application Aug. 27, 1973, Ser. No. 391,663

Int. Cl.² C11D *7/50;* **C23G** *5/02*

U.S. Cl. 252—171 **3 Claims**

1. The azeotrope of (A) 1, 2-dichloro-1-fluoroethane and (B) methanol which at substantially atmospheric pressure is characterized as about 73.5 weight percent (A) and about 26.5 weight percent (B).

3,936,388

PROCESS FOR THE PRODUCTION OF SILICON DIOXIDE ION EXCHANGERS

Klaus Unger, Darmstadt, and Karlheinz Berg, Erftstadt-Lechenich, both of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed May 25, 1973, Ser. No. 364,116

Claims priority, application Germany, May 27, 1972, 2225904

Int. Cl.^{2} B01J *21/08, 37/02*

U.S. Cl. 252—182 **11 Claims**

1. In a process for the introduction of benzyl groups onto the surface of silicon dioxide by reacting silicon dioxide with benzyltrichlorosilane followed by hydrolysis of the thus-introduced benzylchlorosilyl groups to benzylhydroxysilyl groups, the improvement which comprises conducting the reaction of the silicon dioxide with benzyltrichlorosilane at about 200°–300° C. in the absence of solvent, air and moisture.

3,936,389

BIS GLYCOL ESTER OF SODIUM SULFO ISOPHTHALIC ACID FROM ITS DIMETHYL ESTER

Henry L. King, and John W. McGee, both of Cary, N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed June 14, 1973, Ser. No. 370,073. The portion of the term of this patent subsequent to Aug. 19, 1992, has been disclaimed.

Int. Cl.^{2} C08G *79/00*

U.S. Cl. 252—182 **16 Claims**

1. The process of preparing a bis glycol ester of a difunctional aromatic compound possessing one or more metallo sulfonate groups and suitable for use in a subsequent continuous or non-continuous preparation of fiber-forming cationic dyeable copolyesters by copolymerization of the bis glycol ester with a low molecular weight glycol-dicarboxylic acid prepolymer comprising reacting a dimethyl ester of a metallo sulfo dicarboxylic acid with a glycol at a mole ratio of about 4–30 of the glycol to 1 of the dimethyl ester at a temperature of about 160°–250° C and at a pressure of 0–100 psig so as to provide a solution of the bis glycol ester of the metallo dicarboxylic acid containing 20–75% of the bis glycol ester and having a carboxyl plus carboxylate content of not more than about 200μeq/g of bis glycol ester and no more than about 10 weight percent of glycol ether based on the bis glycol ester

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3,936,390

THERMOPHOSPHOR BASED ON LITHIUM FLUORIDE

Lidiya Semenovna Druskina, Nevsky prospekt 150, kv. 93, and Iosif Khaimovich Shaver, prospekt Smirno-va, 59, kv. 153, both of Leningrad, U.S.S.R.

Filed June 20, 1973, Ser. No. 371,695

Claims priority, application U.S.S.R., June 27, 1972, 1801804

Int. Cl. C09k *1/06*

U.S. Cl. 252—301.4 H **3 Claims**

1. A lithium fluoride thermophosphor, consisting essentially of lithium fluoride, from about 0.5 to about 3 weight percent of calcium and from about 0.015, to about 0.1 weight percent of cerium said phosphor exhibiting an ultraviolet thermoluminescent spectrum.

3,936,391

HYDRATED POLYGLYCEROL ESTER COMPOSITION

John Lester Gabby; Dennis Dale Corbin, and Jack Bruner Lowe, all of Evansville, Ind., assignors to Drackett Company, Cincinnati, Ohio

Division of Ser. No. 153,837, June 16, 1971, Pat. No. 3,809,764, which is a continuation-in-part of Ser. No. 74,211, Sept. 21, 1970, abandoned. This application Feb. 13, 1974, Ser. No. 442,015

Int. Cl.^{2} B01F *17/34*

U.S. Cl. 252—356 **9 Claims**

1. An improved polyglycerol ester emulsifier prepared by heating 9 parts by weight of a mixture consisting of 3 parts by weight of a polyglycerol ester, from 3 to 5 parts by weight of glycerol, and 1 to 3 parts by weight of water at a temperature in the range of from 125°F. to 135°F. until a homogeneous paste-like consistency is imparted thereto said polyglycerol ester being molecularly constituted of from 3 to 10 glycerol units and from 1 to 2 saturated fatty acyl ester groups each having from 16 to 20 carbon atoms.

3,936,392

ANTI-CAKING OF POTASSIUM BISULFATE AND RESULTING COMPOSITIONS

Walter Edmund Steinmetz, Shreveport, La., assignor to Pennzoil Company, Shreveport, La.

Filed Jan. 17, 1974, Ser. No. 434,204

Int. Cl.^{2} C09K *3/00;* **C05B** *17/00*

U.S. Cl. 252—385 **8 Claims**

1. A method for inhibiting caking of a mixture consisting essentially of potassium bisulfate during storage periods in excess of 24 hours which consists essentially of adding thereto and mixing therewith about 0.5 to 20.0 weight percent of finely ground phosphate rock at a temperature of about 30°–150°C. to form a mixture consisting essentially of potassium bisulfate mixed with phosphate rock wherein during the storage period there is formed a generally uniform anti-hygroscopic coating on the potassium bisulfate particles, said coating comprising the reaction product of potassium bisulfate and phosphate rock.

6. A storage stable composition of matter consisting essentially of potassium bisulfate admixed with about 0.5 to 20.0 weight percent of phosphate rock and containing a reaction product of potassium bisulfate and phsophate rock as a generally uniform anti-hygroscopic coating on the bisulfate particles, said reaction product being formed during a storage period.

3,936,393

ANTIMICROBIAL AGENTS AND USE THEREOF

Leonard Jurd, Berkeley; A. Douglas King, Jr., Martinez, and William L. Stanley, Richmond, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 74,485, Sept. 22, 1970, Pat. No. 3,745,222. This application Apr. 17, 1973, Ser. No. 351,933

Int. Cl.^{2} C09K *15/08, 15/34;* **A01N** *9/00;* **A23L** *3/00*

U.S. Cl. 252—404 **2 Claims**

1. A composition of matter comprising -

a. a major proportion of a substance normally subject to microbial spoilage, and
b. a minor proportion, sufficient to inhibit microbial growth, of 2-methoxy-4-cinnamyl-phenol.

3,936,394

POLYMER ADSORBENTS AND METHOD FOR MANUFACTURE THEREOF

Tetsuhiro Kusunose; Tatsuo Ishikawa; Norio Akimoto; Noboru Fukuma, and Kazuyoshi Imamura, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 9, 1973, Ser. No. 349,464

Claims priority, application Japan, Apr. 13, 1972, 47-36422; Aug. 28, 1972, 47-85395; Sept. 12, 1972, 47-90974; Jan. 26, 1973, 48-10263

Int. Cl.^{2} B01J *31/02*

U.S. Cl. 252—430 **16 Claims**

1. A method of producing an adsorbent composed of microfibrils, comprising the steps of

a. mixing two synthetic polymer components A and B in a mixing ratio of 20/80 – 80/20, both of said polymer components having a number average molecular weight of at least 10,000 and being incompatible with each other when they are intimately mixed such that they remain undissolved in each other to form a separate phase when they are mixed and molded under heat,
b. subjecting the mixture in molten state to an extrusion molding to shape the article in the form of threads, ropes or films where polymer A forms microfibrils, said molding being done at a draft ratio of 1.0 – 10.0 and thereafter,
c. treating the shaped article with a solvent which is incapable of dissolving or decomposing the polymer A but capable of dissolving or decomposing the other constituent polymer B.

3,936,395

NONACIDIC MULTIMETALLIC DEHYDROGENATION CATALYST

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 365,877, June 1, 1973, Pat. No. 3,856,870, which is a continuation-in-part of Ser. No. 27,457, April 10, 1970, abandoned. This application Apr. 8, 1974, Ser. No. 458,607

Int. Cl.^{2} B01J *21/04, 23/56*

U.S. Cl. 252—466 PT **8 Claims**

1. A nonacidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to 2 wt. % iridium, about 0.01 to about 5 wt. % germanium and about 0.1 to about 5 wt. % of an alkali or alkaline earth metal, wherein the platinum or palladium, iridium, germanium and alkali or alkaline earth metal components are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum or palladium and iridium components are present in the corresponding elemental metallic state, wherein substantially all of the germanium component is present in the oxidation state above that of the elemental metal and wherein substantially all of the alkali or alkaline earth metal component is present in an oxidation state above that of the elemental metal.

3,936,396

VOLTAGE VARIABLE RESISTOR

Takeshi Masuyama, Takatsuki; Mikio Matsuura, Neyagawa; Yoshio Iida, Suita, and Toshioki Amemiya, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

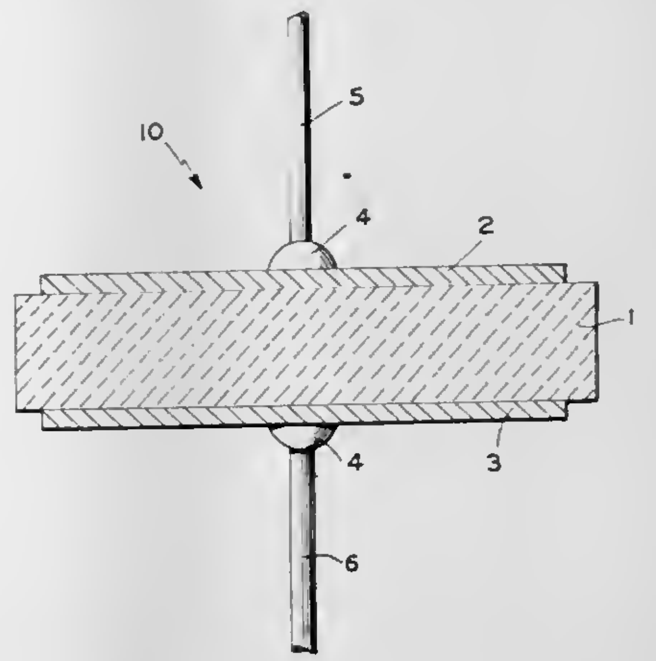
Filed Apr. 17, 1970, Ser. No. 29,416

Claims priority, application Japan, May 2, 1969, 44-34928

Int. Cl.^{2} H01B *1/06*

U.S. Cl. 252—518 **4 Claims**

1. A voltage variable resistor comprising a sintered body consisting essentially of, as a major part, zinc oxide and an additive consisting essentially of 0.1 to 3.0 mole % of bismuth oxide and one member selected from the group consisting of 0.1 to 1.0 mole % of aluminum fluoride, 0.5 to 1.0 mole % of beryllium fluoride, 0.5 to 1.0 mole % of cerium fluoride, 0.5 to 2.5 mole % of nickel fluoride, and 1.0 to 2.0 mole % of vanadium fluoride, and electrodes applied to opposite surfaces of said sintered body.



3,936,397

SEMICONDUCTIVE GLASS-CERAMIC ARTICLES

James E. Rapp, Oregon, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 1, 1974, Ser. No. 438,567

Int. Cl.^{2} H01B *1/06, 3/02, 3/08*

U.S. Cl. 252—518 **10 Claims**

1. A semiconductive, glass-ceramic body having a resistivity of less than about 10^9 ohm-cm at 25°C prepared by the in-situ, thermal crystallization of a thermally crystallizable glass composition consisting essentially of:

Component	Mole %
CdO	50.0–62.0
Bi_2O_3	17.5–29.0
B_2O_3	15.2–19.5
GeO_2	2.0–6.0

said B_2O_3 and GeO_2 being present in the following mole % relationship:

A. when B_2O_3 is 15.2 to <16.5
then GeO_2 is 3.5 to 6.0
B. when B_2O_3 is 16.5 to <17.5
then GeO_2 is 2.0 to 6.0
C. when B_2O_3 is 17.5 to 19.5
then GeO_2 is 2.0 to 4.0.

3,936,398

IMPROVING THE ODOR OF PERFUME BY NOVEL CYCLIC KETAL

Robert F. Tavares, Cedar Grove, N.J.; Jack Agran, Brooklyn, N.Y., and William M. Easter, Hasbrouck Heights, N.J., assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 341,628, March 15, 1973. This application May 15, 1974, Ser. No. 470,244

Int. Cl.^{2} A61K *7/46;* **C11B** *9/00;* **C07D** *321/06*

U.S. Cl. 252—522 **5 Claims**

1. A method for improving the odor of perfume compositions which comprises adding thereto a proportion of 4,7-dihydro-2-isopentyl-2 -methyl-1,3-dioxepin.

3,936,399

PROCESS OF PRODUCING PHENOLIC CHELATE RESIN USING IMINODIACETIC ACID

Masahide Hirai, Uji; Mikio Fujimura, Kamo; Masahiro Kazigase, and Minoru Saito, both of Uji, all of Japan, assignors to Unitika Ltd., Amagasaki, Japan

Filed Jan. 21, 1974, Ser. No. 435,126

Claims priority, application Japan, Jan. 23, 1973, 48-9793

Int. Cl.^{2} C08G *14/06*

U.S. Cl. 260—2.2 C 13 Claims

1. A process of producing a phenolic chelate resin for adsorbing heavy metal ions selectively which comprises the steps of:

a. heating an acidic mixture of a phenol, an aldehyde and iminodiacetic acid to 20° to 90°C under acidic conditions to introduce an iminoacidic acid group into the phenol; and then

b. adding the phenol or the aldehyde or both such that the total amount of aldehyde is in excess to the iminodiacetic acid and then heating the reaction system at 90° to 110°C thereby polycondensing the entire amount of the phenol and said aldehyde.

3,936,400

FLAME RETARDANT FOAMED POLYESTER COMPOSITIONS

Allen D. Wambach, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 233,754, March 10, 1972, Pat. No. 3,833,685. This application July 5, 1974, Ser. No. 486,213. The portion of the term of this patent subsequent to Sept. 3, 1991, has been disclaimed.

Int. Cl.^{2} C08J *9/06;* C08L *69/00*

U.S. Cl. 260—2.5 N 21 Claims

1. A flame retardant composition comprising from 90 to 10 parts by weight of a resinous composition which comprises:

a. a normally flammable high molecular weight polyester and a flame-retardant amount of from 0.5 to 50 parts by weight per 100 parts by weight of the resinous components of

b.

  i. an aromatic carbonate copolymer in which from 25 to 75 wt.% of the repeating units comprise chloro- or bromo-substituted dihydric phenol units and the remainder of the repeating units comprise dihydric phenol, glycol or dicarboxylic acid units;

  ii. an aromatic carbonate homopolymer in which the repeating units comprise chloro- or bromo-substituted dihydric phenol units in combination with an aromatic carbonate homopolymer comprising dihydric phenol units; or

  iii. a combination of (i) with an aromatic carbonate homopolymer comprising dihydric phenol units, in combination with

c. about 0.5 to about 20 parts by weight per 100 parts of combined resinous components in the composition; an inorganic or organic antimony-containing compound; and

d. a foaming agent.

3,936,401

NOVEL POLYMERIC DERIVATIVES OF TETRAZOLE-5-HIOLS AND THEIR METAL AND AMMONIUM SALTS

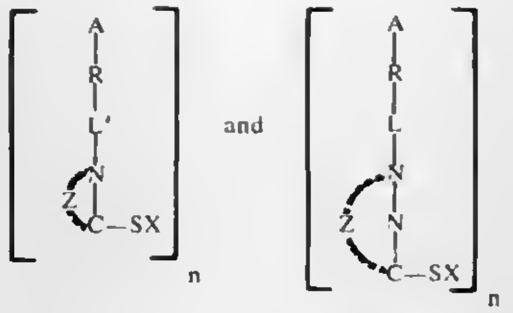
J. Michael Grasshoff, Hudson, and Jerome L. Reid, Wayland, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 429,900, Jan. 2, 1974, abandoned. This application Nov. 5, 1974, Ser. No. 520,983

Int. Cl.^{2} C08L *89/00*

U.S. Cl. 260—8 17 Claims

1. A compound selected from:



wherein A is an ethylenically unsaturated substituent which has been polymerized, R is a resonance stabilized group, L' is an optional linking group, X is hydrogen, ammonium or metal, Z represents the atoms and bonds necessary to complete a tetrazole ring and n is an integer of at least 100.

2. A compound of claim 1 wherein X is ammonium, or monovalent metal.

14. A composition comprising gelatin and a compound of claim 2.

3,936,402

ANHYDROUS PRODUCTS HAVING IMPROVED WETTABILITY CHARACTERISTICS, CASE 5

James J. Keegan, Bloomfield; Girish Patel, Mine Hill, and Howard Rubin, Rockaway, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

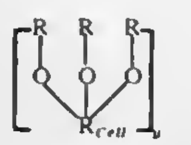
Continuation-in-part of Ser. No. 302,162, Oct. 30, 1972, Pat. No. 3,878,138. This application Dec. 9, 1974, Ser. No. 530,579

Int. Cl.^{2} C08L *1/28*

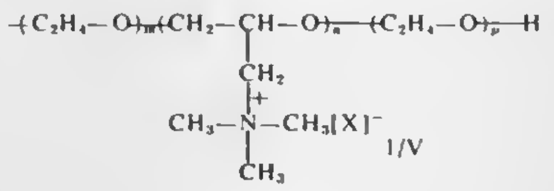
U.S. Cl. 260—17 R 5 Claims

1. A denture adhesive powder having superior wettability characteristics comprises a substantially anhydrous mixture of nontoxic, adhesive ingredients and from about 40% to about 60% by weight, based on the total weight of the denture adhesive ingredients of a powdered polymeric material having an average particle size of less than about 422 microns, said polymeric material being selected from the group consisting of powdered polyethylene having an average molecular weight ranging from about 1000 to about 3500 and polypropylene having an average molecular weight ranging from about 120,000 to about 350,000, said denture adhesive ingredients comprising:

A. from about 5 to about 55% by weight, based on the total weight of the denture adhesive ingredients of at least one cationic polymeric material having the formula:



wherein R_{Cell} is the residue of an anhydroglucose unit, y is an integer having a value of from about 1000 to about 5000, and each R individually represents a substituent group of the general formula:



$$-(C_2H_4-O)_m(CH_2-\underset{\substack{|\\ CH_2\\ |+\\ CH_3-N-CH_3[X]^-_{1/V}\\ |\\ CH_3}}{CH}-O)_n-(C_2H_4-O)_p-H$$

wherein:

m is an integer having a value of from zero to 10;
n is an integer having a value of from zero to 3;
p is an integer having a value of from zero to 10;
X is an anion; V is an integer which is equal to the valence of X; the average value of n per anhydroglucose unit of said cellulose ether is from about 0.01 to about 1; and the average value to $m+p$ per anhydroglucose unit of said cellulose ether is from about 0.01 to about 4; and

B. from about 5% to about 55% by weight, based on the total weight of the denture adhesive, of at least one anionic gum selected from the group consisting of copolymers of maleic acid with vinyl-lower alkyl-ether wherein the alkyl group has from 1 to 5 carbon atoms.

3,936,403

SYNTHETIC RESIN COMPOSITION

Fumio Sakaguchi, Yokohama; Kenji Takemura, Kawasaki; Tadao Suzuki, Fujisawa; Isamu Yamazaki, Oita; Yoshifumi Nishibayashi, Sennan; Kazunobu Shiozawa, Izumisano, and Toshimitsu Sasaki, Sennan, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo and Toyo Cloth Co., Ltd., Sennan, both of, Japan

Filed May 1, 1974, Ser. No. 466,048

Claims priority, application Japan, May 7, 1973, 48-49828

Int. Cl.^{2} C08K *3/22;* C08L *91/00*

U.S. Cl. 260—23 XA 8 Claims

1. A synthetic resin composition capable of forming moldings with good surface hardness and flame resistance consisting essentially of 20 to 50 parts by weight of olefinic resin, 10 to 40 parts by weight of vinyl chloride resin and 70 to 10 parts by weight of alumina trihydrate of the formula α-$Al(OH)_3$ with a gibbsite crystal structure in which the lattice constant is measured as $a = 8.62A$, $b = 5.06A$ and $c = 9.70A$, the β (B) angle is determined to be 85°26' and the refractive index is expressed as $\alpha = 1.568$, $\beta = 1.568$ and $\gamma = 1.567$ and which has an average particle size under 30 microns, said olefinic resin being selected from the group consisting of ethylene homopolymer, copolymers formed of at least 80 mol% ethylene and not over 20 mol% of other α-olefin, propylene homopolymers and copolymers formed of at least 80 mol% propylene and not over 20 mol% of other α-olefin or diolefin, and said vinyl choride resin being selected from the group consisting of vinyl chloride polymer and mixtures thereof with up to 120 parts by weight of plasticizer, up to 10 parts by weight of lubricant and up to 10 parts by weight of stabilizer per 100 parts of vinyl chloride polymer, said vinyl chloride polymer having a degree of polymerization between about 850 to 1,800 and being selected from the group consisting of vinyl chloride homopolymer and copolymers formed of at least 85 mol% vinyl chloride with ethylene, vinylidene chloride, vinyl acetate or acrylic ester.

3,936,404

AQUEOUS BAKING VARNISHES FROM CARBOXYLIC POLYESTER AND CARBOXYLIC POLYIMIDE, AND COATED ARTICLE

Takashi Ishizuka, and Naoki Miwa, both of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 19, 1974, Ser. No. 498,673

Claims priority, application Japan, Aug. 17, 1973, 48-92831

Int. Cl.^{2} B32B *15/08;* C08L *79/08*

U.S. Cl. 260—29.2 N 15 Claims

1. An aqueous baking varnish having a low viscosity and a high concentration suitable for coating conductors which comprises

A. a carboxyl group containing polyester resin having an acid number of about 10 to 150 comprising the reaction product of

  1. an organic carboxylic acid component comprising

    a. about 15 to 100 mol% of at least one of an aromatic tricarboxylic acid and the anhydride thereof in which up to 30 mol% of the aromatic tricarboxylic acid and the anhydride thereof can be replaced by at least one of an aromatic tetracarboxylic acid and the anhydride thereof, and

    b. about 0 to 85 mol% of at least one of a dicarboxylic acid and the anhydride thereof; and

  2. an organic alcohol component comprising at least one organic polyhydric alcohol, the molar ratio of the carboxyl group content in the organic acid component to the hydroxyl group content in the organic alcohol component ranging from about 1:1 to 1:3;

B. a polyimide resin comprising the reaction product of 1,2,3,4-butanetetracarboxylic acid and/or an imide-forming derivative thereof, and at least one organic diamine said polyimide resin having an acid number of about 50 to 400, wherein said resins are dissolved in an aqueous solution with a volatile base selected from the group consisting of ammonia and a volatile organic amine to render the resins soluble.

3,936,405

NOVEL PIGMENT GRINDING VEHICLES

Lance C. Sturni, McKeesport, and Joseph F. Bosso, Lower Burrell, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 281,098, Aug. 16, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,184

Int. Cl.^{2} C09C *3/10;* C25D *13/06*

U.S. Cl. 260—29.2 EP 6 Claims

1. A stable aqueous pigment paste comprising:

A. 2 to 50 percent by weight based on weight of (B) of a water-dispersible cationic polymer produced by reacting a 1,2-epoxy group-containing material with a material selected from the group consisting of amine salts, phosphine-acid mixtures and sulfide-acid mixtures, said cationic polymer having a ratio of final quaternary onium salt groups to initial epoxide groups greater than about 0.4 to 1; and

B. a pigment dispersed therein.

3,936,406

STABLE EMULSIONS

Pat F. Rion, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 11, 1974, Ser. No. 449,641

Int. Cl.^{2} C08L *7/02, 11/02, 15/02*

U.S. Cl. 260—29.7 GP 6 Claims

1. A friction- and storage-stable oil-in-water emulsion concentrate having a pH in the range of 1 to 3.5 and having an oil phase and a water phase and wherein said water phase constitutes from about 25 to 60 weight percent of the total emulsion, wherein said oil phase contains from 2 to 40 weight percent elastomer taken from the group consisting of natural rubber, butadiene styrene copolymers, SBR block copolymers, cis-polyisoprene and trans-polyisoprene dissolved therein, wherein said oil phase is formed of an aromatic oil having an aromatic content of at least 50 percent and a viscosity below about 50 SUS at 210° F. and wherein said emulsion contains a cationic or nonionic emulsifier.

3,936,407

COATED METAL FASTENERS

Robert E. Parkinson, Monroeville, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 295,076, Oct. 4, 1972, Pat. No. 3,853,606, which is a division of Ser. No. 107,864, Jan. 19, 1971, abandoned. This application Sept. 23, 1974, Ser. No. 508,494

Int. Cl.^{2} C08L *93/00*

U.S. Cl. 260—27 R 3 Claims

1. A coating composition particularly useful for coating on nails comprising an emulsified mixture of:

a. from about 50 to about 80 percent by weight of resin solids of rosin or a rosin-like resin which melts at a temperature of from about 60°C to about 150°C, dissolved in an organic solvent; and

b. from about 20 to about 50% by weight of resin solids of an ethylene copolymer or terpolymer comprising from about 60 to about 90 percent by weight ethylene and from about 10 to about 40 percent by weight of an ethylenically unsaturated carboxylic acid or an ester thereof free of groups which are reactive of said rosin or rosin-like resin, said ethylene copolymer or terpolymer dissolved in a hot volatile aqueous alkali solution.

3,936,408

WELL CEMENTING COMPOSITION HAVING IMPROVED FLOW PROPERTIES CONTAINING A POLYAMIDO-SULFONIC ADDITIVE

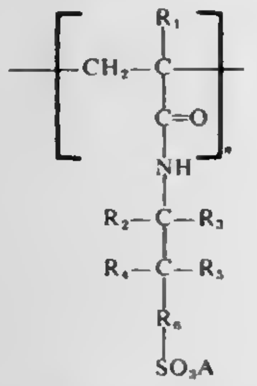
Sally L. Adams, Pittsburgh; Michael M. Cook, Boxford, Mass., and Fred David Martin, McMurray, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed May 1, 1974, Ser. No. 465,936

Int. Cl.^{2} C08K *3/00*

U.S. Cl. 260—29.6 S **9 Claims**

1. A cementing composition comprising hydraulic cement in admixture with from about 0.01 to about 5.0 percent by weight, based on weight of hydraulic cement, of a polyamido-sulfonic compound recurring units represented by the following formula:



wherein R_1 is hydrogen or methyl; R_2, R_3, R_4, and R_5 are each independently selected from the group consisting of hydrogen, phenyl, straight or branched alkyl of from one to twelve carbon atoms, and cycloalkyl of up to six carbon atoms; R_6 is straight or branched alkyl of from one to twelve carbon atoms, cycloalkyl of up to six carbon atoms, phenyl, or is absent; A is hydrogen, alkali metal ion or ammonium; and n is an integer of from 2 to about 100, such that the weight average molecular weight of the polyamido-sulfonic compound is from about 200 to about 10,000.

3,936,409

UREA-URETHANE COMPOSITIONS AND FILMS PREPARED THEREFROM

Herbert M. Schroeder, and Paul C. Stievater, both of Williamsville, N.Y., assignors to Textron, Inc., Providence, R.I.

Continuation of Ser. No. 805,813, March 10, 1969, abandoned, which is a continuation-in-part of Ser. No. 791,202, Nov. 4, 1968, abandoned, which is a continuation of Ser. No. 650,181, June 30, 1967, abandoned. This application Aug. 2, 1971, Ser. No. 168,463

Int. Cl.^{2} C08G *18/06;* **C08K** *5/05, 5/20, 5/34*

U.S. Cl. 260—30.2 **15 Claims**

1. A urea-urethane composition of urethane prepolymer of 1-isocyanato-3-isocyanatomethyl-3,5,5-trimethyl cyclohexane and aliphatic, hydroxy-terminated polyester polyol having a molecular weight of at least about 500, and a substantially stoichiometric amount of cycloaliphatic polyamine, said urethane prepolymer having a free isocyanate content of about 1 to 15 weight percent based on urethane solids.

3,936,410

TRIARYL PHOSPHATE ESTER PLASTICIZERS FOR POLYVINYL CHLORIDE COMPOSITIONS

F. Lee Terhune, Westport, Conn., and Gordon A. Rampy, Nitro, W. Va., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 404,380, Oct. 9, 1973, Pat. No. 3,859,395. This application Sept. 23, 1974, Ser. No. 508,341

Int. Cl.^{2} C08J *3/18;* **C08K** *5/51*

U.S. Cl. 260—30.6 R **1 Claim**

1. A plasticized polyvinyl chloride composition containing 5 to 150 parts by weight of plasticizer per 100 parts of vinyl chloride polymer, wherein said plasticizer is a triaryl phosphate ester of the formula $(RO)_3PO$ wherein R represents radicals consisting essentially of:

a. at least 90% by weight monoisopropylphenyl radicals with the proviso that at least 80% by weight are a mixture of meta- and para- monoisopropylphenyl radicals, said mixture containing at least 50 to 90% by weight meta-isopropylphenyl radicals, based on the weight of said mixture;
b. 0 to 5% by weight phenyl radicals; and
c. 5 to 10% by weight di- or tri-isopropylphenyl radicals.

3,936,411

CROSSLINKED POLYVINYL CHLORIDE FILM

Ernest A. Hahn, Plainfield, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

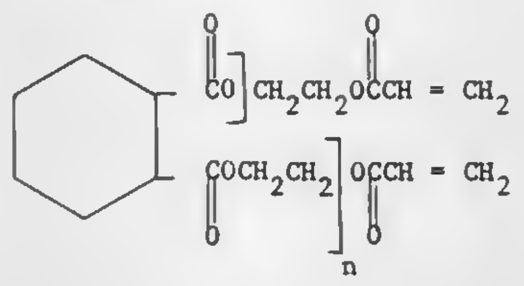
Continuation-in-part of Ser. No. 211,640, Dec. 23, 1971, abandoned. This application Oct. 15, 1973, Ser. No. 406,403

Int. Cl. C08I *15/08, 45/44;* **C07c** *69/54*

U.S. Cl. 260—32.6 R **4 Claims**

1. A coating composition curable by ionizing irradiation consisting essentially of

a. at least about 20 percent by weight of a solution of a chloride polymer in an active solvent for said polymer, wherein
  (1) said polymer contains at least about 90 percent by weight of chloride, and
  (2) said solution comprises from about 10 percent to about 30 percent by weight of said polymer and
b. from about 5 percent to about 80 percent by weight of a mixture of acrylic hexahydrophthlate compounds wherein
  (1) each of said acrylic hexahydrophthalate compounds has the formula



wherein *n* is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10, and
  (2) said mixture contains said acrylic hexahydrophthalate compounds having said formula wherein n is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10.

3,936,412

THERMOSETTING SEALING MATERIALS

Martin-Gottfried Rocholl, Heidelberg, Germany, assignor to Teroson GmbH, Heidelberg, Germany

Filed Sept. 23, 1974, Ser. No. 508,636

Claims priority, application Germany, Oct. 18, 1973, 2352272

Int. Cl.^{2} C08L *81/00, 75/00*

U.S. Cl. 260—37 R **7 Claims**

1. A thermosetting sealing composition especially adapted for curing in a high frequency alternating electric field, said

composition comprising a thermosetting resinous sealant to which has been added electrically nonconducting pigments and/or fillers whose dielectric constant ϵ exceeds 200 in an amount sufficient to accelerate the thermosetting of said resinous sealant.

3,936,413

GLASS REINFORCED THERMOPLASTIC MOLDING MATERIAL CONTAINING ZINC SULFIDE PIGMENT

Rolf Würmb, Heidelberg; Raymond Denni, Ludwigshafen; Hans-Georg Dorst, Altrip, and Rudolf Ilgemann, Hohensachsen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed May 31, 1973, Ser. No. 365,735

Claims priority, application Germany, June 2, 1972, 2226932

Int. Cl.^{2} C08K *5/37, 7/14*

U.S. Cl. 260—40 R **1 Claim**

1. Thermoplastic molding material which comprises a mixture of

a. a plastic selected from the group consisting of polyamide and polybutylene terephthalate; and
b. from 10 to 60% by weight based on the weight of the molding material of glass fibers, said mixture further containing a pigmenting amount of
c. zinc sulfide the amount of said zinc sulfide being from 1 to 2% by weight, based on the weight of the thermoplastic material.

3,936,414

FLAME-RETARDANT RESIN COMPOSITIONS

Carl Leonard Wright, Pasadena, and Harry Hoyt Beacham, Severna Park, both of Md., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 837,911, June 30, 1969, abandoned, This application Dec. 4, 1970, Ser. No. 95,418

Int. Cl.^{2} C08L *71/04*

U.S. Cl. 260—40 R **7 Claims**

1. A thermosetting composition comprising:
1. 10 to 50 parts by weight of a polyunsaturated monomer;
2. 5 to 30 parts by weight of a polychlorinated or polybrominated aromatic hydrocarbon containing at least 50% by weight chlorine or bromine and having a molecular weight of at least 200;
3. 20 to 60 parts by weight of a polyphenylene ether polymer;
4. 0–30 parts by weight of a polyunsaturated polymer having carbon to carbon unsaturation and
5. 2–10 parts by weight per 100 parts of all of (1) plus (2) plus (3) plus (4) of a peroxide catalyst which has a 10 hour half-life in benzene at a temperature in excess of 100°C.

3,936,415

OXIDIZED POLYOLEFIN-HIGH MOLECULAR WEIGHT ELASTOMERIC MIXTURE

Thomas A. Coakley, Heath, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 6, 1974, Ser. No. 467,182

Int. Cl.^{2} C08K *9/06*

U.S. Cl. 260—42.15 **15 Claims**

1. A method of bonding a polyolefin to glass fibers comprising: preparing a liquid mixture of oxidized polyolefin and a carboxylated high molecular weight elastomer having a solubility parameter similar to that of the oxidized polyolefin, coating glass fibers with said mixture, drying the coating to form a film of oxidized polypropylene having high molecular weight molecules of the elastomer therein, and embedding the coated fibers in the matrix of the polyolefin to be reinforced.

3,936,416

NONBURNING, NONDRIPPING, CHAR-FORMING, POLYPROPYLENE COMPOSITION

Donnie G. Brady, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 24, 1973, Ser. No. 382,169

Int. Cl.^{2} C08F *6/00*

U.S. Cl. 260—42.18 **10 Claims**

1. A flame retarded, nonburning, nondripping, char-forming composition of polypropylene containing a flame retarding amount of a mixture of ammonium polyphosphate and dipentaerythritol where every 100 parts of polypropylene contain about 10 to 70 parts ammonium polyphosphate and about 5 to 30 parts dipentaerythritol with the total amount of the two additives being between about 30 and 90 parts.

3,936,417

COILABLE POLYVINYL CHLORIDE PRODUCTS AND METHODS AND COMPOSITIONS FOR PRODUCING THE SAME

Clifford Paul Ronden, Edmonton, Canada, assignor to Grandview Industries, Limited, Rexdale, Canada

Continuation-in-part of Ser. No. 746,737, July 23, 1968, abandoned, which is a continuation-in-part of Ser. No. 656,057, July 26, 1967, abandoned. This application June 5, 1970, Ser. No. 43,944

Int. Cl.^{2} C08L *23/28, 27/06, 55/02;* **B29D** *23/04*

U.S. Cl. 260—42.45 **8 Claims**

1. As a product of manufacture, coilable polymeric pipe, capable of being installed under ground by being plowed in and suitable for natural gas transmission at low ambient temperatures, in the form of a continuous tubular body of a homogeneous fusion blend comprising

polyvinyl chloride having a Fikentscher K-value of 60–80 as determined in 1% cyclohexanone at 25°C.;
chlorinated polyethylene in an amount equal to 4–12% of the weight of said polyvinyl chloride, said chlorinated polyethylene having a chlorine content of 30–55% by weight and a melt viscosity in poises/1000 of 20–30; an additional polymeric material as a processing aid-secondary modifier in an amount equal to 0.5–6% of the weight of said polyvinyl chloride, having a heat distortion temperature of at least 155°F., and selected from the group consisting of methyl methacrylate homopolymer; copolymers of methyl methacrylate and lesser amounts of a lower alkyl acrylate; mixtures of said homopolymer and copolymers; acrylonitrile-butadiene-styrene copolymers containing 20–30% by weight acrylonitrile, 15–30% by weight butadiene and 40–65% by weight styrene; mixtures of said acrylonitrile-butadiene-styrene copolymers with lesser amounts of at least one additional polymeric material selected from the group consisting of said methyl methacrylate homopolymer and copolymers and ethylene-vinyl acetate copolymers containing 10–30% by weight vinyl acetate; copolymers of vinyl chloride with an alkyl vinyl ether in which the alkyl group contains 8–18 carbon atoms, said copolymers containing 60–99.5% by weight vinyl chloride and 0.5–40% by weight alkyl vinyl ether; and polymers produced by grafting vinyl chloride onto an ethylene-vinyl acetate copolymer to produce a polymer containing 40–60% by weight ethylne-vinyl acetate; and a minor proportion of a finely divided inorganic filler selected from the group consisting of titanium dioxide and zinc oxide,
the amount of said filler being in the range of 0.25–1% for titanium dioxide and 0.5–2% for zinc oxide, based on the weight of said polyvinyl chloride;

said pipe having
  an impact strength at 0°C. of at least 85 ft. lbs. as determined for 2 inch O.D. pipe by the ASTM TUP drop test,

an apparent tensile strength of at least 7000 p.s.i. as determined by Canadian Standards Association test CSA B1374--Plastic Pipe for Gas Service, Item 5.5, and

a heat distortion temperature of at least 155°F. as determined by ASTM D648-56 at 264 p.s.i.,

said pipe being sufficiently flexible to be coiled into coils of 4 feet dia., for ½ inch O.D. pipe, and 8 feet dia., for 2 inch O.D. pipe, and uncoiled from such coils at 0°F., without damage to the pipe.

3,936,418
BENZOTRIAZOLE ORTHO-ESTER ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

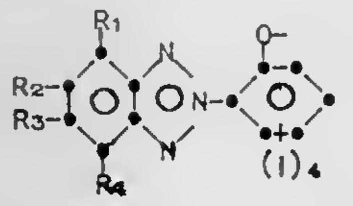
David Martin Pond, and Richard Hsu-Shien Wang, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1974, Ser. No. 511,565
Int. Cl.² C08K *5/34*
U.S. Cl. 260—45.8 NT 40 Claims

1. An organic composition susceptible to ultraviolet degradation stabilized against such degradation with a stabilizing amount of a composition of matter comprising polychromophoric compounds having the formula:

$(A)_x—C$

wherein A is a group having the structure



wherein

R_1, R_2, R_3 and R_4 are hydrogen, chloro, bromo, lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, lower alkylaryl, aryl-substituted-aryl, alkoxy, substituted amino, cyano, carboxy and the substituents R_1 and R_2, R_2 and R_3, and R_3 and R_4, combined with the carbon atoms to which they are attached, are joined alkylene groups completing a carbocyclic ring, which ring can also be substituted with one or more of the substituents listed above for R_1, R_2, R_3 and R_4;

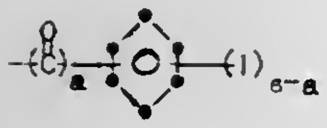
I is the same as R_1, R_2, R_3 and R_4 and is present on all positions of the benzenoid ring, except the carbon atom attached to the heterocyclic ring and the carbon atom attached to the carbonyl group connecting the heterocyclic aromatic A group with the aromatic C group,

a is an integer of 2 to 6

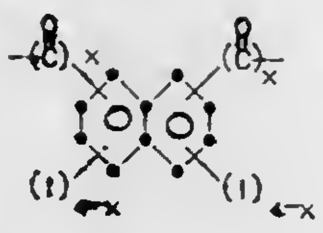
x is an integer of 1 to 6; and

C is one of the following:

1. An aromatic group having the formula:

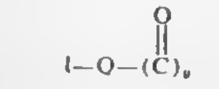


or



wherein I is the same substituent as listed above and is present in all positions of the benzenoid ring except the carbon atom attached to the carbonyl group connecting the A and C moieties, and said I substituents can all be one of the substituents listed above or different listed substituents; or

2. An aliphatic group having the formula



$$I—O—(\overset{O}{\overset{\|}{C}})_y$$

wherein Q is substituted or unsubstituted acyclic, cyclic or polycyclic aliphatic moiety containing 1 to 18 carbons.

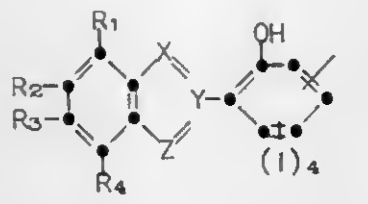
I may be a hydrogen, hydroxy, halogen, cyano, C_1-C_{12} substituted or unsubstituted alkyl, amino, alkylamino, dialkylamino, arylamino, diarylamino, alkoxy, aryl or aryloxy group; y is an integer between 2 and 6.

3,936,419
MULTICHROMOPHORIC ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

Richard H. S. Wang, and Gether Irick, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1974, Ser. No. 511,570
Int. Cl.² C08K *5/10, 5/12, 5/15*
U.S. Cl. 260—45.8 N 16 Claims

1. An organic composition susceptible to ultraviolet degradation stabilized against such degradation with a stabilizing amount of a composition of matter comprising a compound having the formula (A-B_n-C wherein A is a heterocyclic group having the structure



wherein

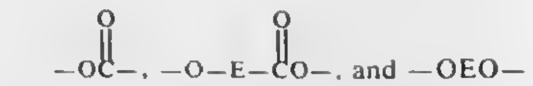
X and Y are a carbon atom or a nitrogen atom;

Z is an oxygen atom, a sulfur atom, a nitrogen atom, or a nitrogen atom containing a hydrogen atom or an unsubstituted or substituted lower alkyl group having 1 to 12 carbon atoms or an aryl group or substituted aryl group having 6 to 18 carbon atoms;

R_1, R_2, R_3 and R_4 are hydrogen, fluoro, chloro, bromo, lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, lower alkylaryl, alkoxy, aryloxy, substituted amino, cyano, carboalkoxy and the substituents R_1 and R_2, R_2 and R_3, R_3 and R_4, combined with the carbon atoms to which they are attached, are joined alkylene groups completing a carbocyclic ring, which ring can also be substituted with one or more of the substituents listed above for R_1, R_2, R_3 and R_4;

I is the same as R_1, R_2, R_3 and R_4 and is present on all positions of the benzenoid ring, except the carbon atom attached to the Y substituent and the carbon atom attached to the B group connecting the heterocyclic aromatic A group with the aromatic C group, said B connecting group is attached to the benzenoid ring in the ortho, meta or para positions from the carbon atom connected to the Y substituent, said I substituents can all be one of the substituents listed above or different listed substituents;

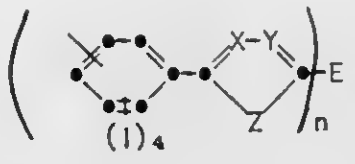
B is a linking group connecting A and C and can have the structure



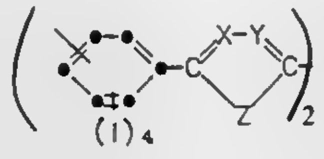
$$—O\overset{O}{\overset{\|}{C}}—,\ —O—E—\overset{O}{\overset{\|}{C}}O—,\ \text{and}\ —OEO—$$

where E is lower alkylene or substituted lower alkylene;

The C group is a heterocyclic group having the structures



and



wherein

X and Y are a carbon atom or a nitrogen atom; Z is an oxygen atom, a sulfur atom, a nitrogen atom, or a nitrogen atom containing a hydrogen atom or a substituted or unsubstituted lower alkyl group having 1 to 12 carbon atoms; I is hydrogen, fluoro, chloro, bromo, lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, lower alkylaryl, aryl-substituted-aryl, alkoxy, aryloxy, substituted amino and cyano; I is present on all positions of the benzenoid ring, except the carbon atom attached to the Y substituent and the carbon atom attached to B group; E is a substituted or unsubstituted, branched or unbranched alkylene containing 1 to 12 carbon atoms or arylene containing 6 to 18 carbon atoms; n is an integer from 1 to 6.

3,936,420
THERMALLY STABLE, NONBURNING, NONDRIPPING, CHAR FORMING POLYOLEFIN FORMULATIONS

Roy A. Gray, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 24, 1973, Ser. No. 382,170
Int. Cl.² C08G *6/00*
U.S. Cl. 260—45.8 NT 7 Claims

1. A method for producing a thermally stable, nonburning, nondripping, char forming polyolefin composition which can be molded with little or no undesirable void formation therein due to gas or foam formation resulting from heating together an admixture consisting essentially of a polyolefin and an additive system of ammonium polyphosphate, dipentaerythritol, and melamine composited with the polyolefin to give it the recited properties which comprises degassing such a composition by heating at an elevated temperature above about 450°F for a period of time sufficient to disengage therefrom gas which otherwise would be formed when molding the composition, and molding the degassed composition into a molded article substantially free of undesirable voids.

3,936,421
PROCESS OF PREPARING POLYTETRAMETHYLENE TEREPHTHALATE

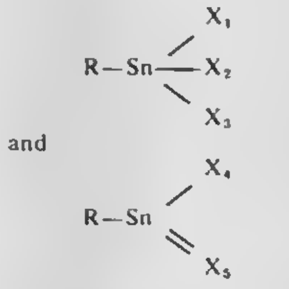
Masahiko Hayashi; Hiroyuki Ikeuchi, and Michihiko Tanaka, all of Ehime, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Nov. 13, 1974, Ser. No. 523,362
Claims priority, application Japan, Nov. 19, 1973, 48-129150
Int. Cl.² C08G *63/14;* **C08K** *5/05, 5/58, 5/13*
U.S. Cl. 260—45.75 K 8 Claims

1. A process of preparing a linear polyester predominantly comprised of the units derived from terephthalic acid and butanediol-1,4 characterized in that the esterification of terephthalic acid with butanediol-1,4 or the transesterification of a lower dialkyl ester of terephthalic acid with butanediol-1,4 is carried out in the presence of, as catalysts, 0.001 to 0.5 percent by weight of at least one organo-tin compound and 0.001 to 0.5 percent by weight of at least one organo-titanium compound, both based on the weight of the resulting polyester, said organo-titanium compound is selected from the group consisting of (1) a compound expressed by the formula.

$(OR)_4$ (1)

where R is selected from an alkyl group having 1 to 30 carbon atoms and an aryl group having 6 to 12 carbon atoms, and the same as or different from each other, (2) a product prepared by the hydrolysis of the compound (1), (3) a product prepared by the transesterification of the compound (1), and (4) a product prepared by the hydrolysis and transesterification of the compound (1), and said organo-tin compound is selected from the group consisting of compounds expressed by the formulae



$$R—Sn\begin{cases}X_1\\X_2\\X_3\end{cases} \quad (2)$$

and

$$R—Sn\begin{cases}X_4\\ =X_5\end{cases} \quad (3)$$

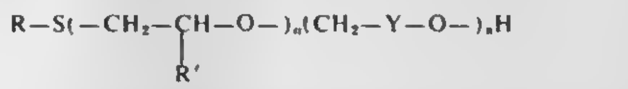
where R is selected from an alkyl group having 1 to 30 carbon atoms and an aryl group having 6 to 12 carbon atoms; X_1, X_2, X_3 and X_4 are selected from an alkyl group having 1 to 30 carbon atoms, an aryl group having 6 to 12 carbon atoms, an acyloxy group having 1 to 10 carbon atoms, cyclohexyl group, hydroxyl group, carboxylic acid residue and halogen, and each of X_1, X_2, and X_3 is the same as or different from the others; and X_5 is either sulfur or oxygen.

3,936,422
ANTI-STATIC MODIFIED THERMOPLASTICS

Hermann O. Wirth, Bensheim-Averbach; Hans-Helmut Friedrich, Lindenfels, Odenwald, both of Germany, and Helmut Linhart, Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

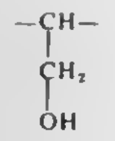
Filed Jan. 7, 1975, Ser. No. 539,139
Claims priority, application Switzerland, Jan. 10, 1974, 286/74
Int. Cl.² C08K *5/36*
U.S. Cl. 260—45.95 N 16 Claims

1. An antistatic mixture of a thermoplastic, comprising (a) a thermoplastic and (b) 0.01 to 5% by weight, relative to the plastic, of one of the substances of formula I or mixtures thereof, said formula being as follows:



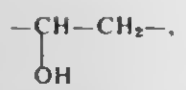
$$R—S(—CH_2—\underset{R'}{\underset{|}{C}}H—O—)_n(CH_2—Y—O—)_nH \quad (I)$$

wherein R′ denotes a hydrogen atom and/or the methyl group. Y denotes



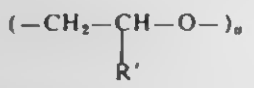
$$-\underset{\underset{OH}{|}}{\underset{CH_2}{\underset{|}{CH}}}-$$

and/or



$$-\underset{OH}{\underset{|}{CH}}-CH_2-,$$

a denotes, as an average value, a number between 1.0 and 12, n denotes, as an average value, a number from 0.5 to 8, R denotes a linear or branched alkyl radical having 8 to 24 carbon atoms, which can preferably be interrupted once by the group —O— or —S—, or denotes phenyl, phenyl substituted by linear or branched alkyl groups, or phenylalkylene having 1 to 3 carbon atoms in the alkylene chain, it being possible for the alkylene chain or the linkage thereof to the phenyl group to be interrupted by a an oxygen or sulphur atom, and for the phenyl radical thereof also to be substituted by linear or branched alkyl groups, and in all cases the whole radical contains 7 to 30 carbon atoms, it being possible, for the case where R′ is the methyl group, for R also to denote a linear or branched alkyl group having 1 to 7 carbon atoms, and in all cases of R the sum of the carbon atoms of R and of the radical



$$(-CH_2-\underset{R'}{\underset{|}{CH}}-O-)_a$$

in formula I being 8 to 40.

3,936,423

PROCESS FOR THE PREPARATION OF POLYALDEHYDES BY POLYMERIZATION OF BIFUNCTIONAL MONOMERS AND RELATED PRODUCTS

Giacomino Randazzo, No. 125F/, Via San Giacomo dei Capri, Naples, Italy

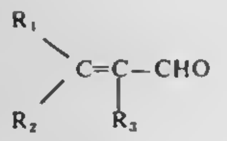
Filed May 3, 1974, Ser. No. 466,853

Claims priority, application Italy, May 30, 1973, 50353/73

Int. Cl.² C08F ***116/34*****; C02C** ***1/40***

U.S. Cl. 260—67 UA **8 Claims**

1. Process for the preparation of polyaldehydes by polymerization with a redox system, of bifunctional monomers having the formula:



$$\begin{matrix}R_1\\ R_2\end{matrix}\!\!>C=\underset{R_3}{\underset{|}{C}}-CHO$$

(I)

wherein $R_1 = R_2 \neq H$ and R_3 is $-H$, $-CH_3$, $-C_2H_5$, $-C_3H_7$, $-C_6H_{13}$, or $-C_6H_5$ or $R_1 = R_3 = H$ and R_2 is $-CH_3$, $-C_6H_5$, or $-CH_3-CH=CH$, comprising performing the polymerization under stirring, in absence of light and in oxygen free nitrogen atmosphere, for a period of 2-20 hours, at a temperature ranging from 0° to 40°C, using degassed and double distilled water as a solvent and $K_2S_2O_8/AgNO_3$ as a redox system, adding degassed and double distilled water to the polymerized mass, collecting the polyaldehyde by filtration and centrifugation, washing several times with water, then with 0.1 N HNO_3, again washing with water and finally with acetone and drying the product.

8. Polyaldehydes according to claim 7, characterized by the fact that said molecular weight is 20,000 – 30,000.

3,936,424

FLAVORING AND PERFUMING INGREDIENTS

Edouard P. Demole, Coppet, Vaud, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

Division of Ser. No. 451,423, March 15, 1974. This application Apr. 2, 1975, Ser. No. 564,451

Claims priority, application Switzerland, Apr. 10, 1973, 5122/73; Apr. 12, 1973, 5274/73

Int. Cl.² C07C ***49/17***

U.S. Cl. 260—594 **1 Claim**

1. A compound selected from the following group:
a. 8-hydroxy-5-isopropyl-non-6-en-2-one,
b. 8-hydroxy-5-isopropyl-nonan-2-one, and
c. 8-hydroxy-5-isopropyl-8-methyl-non-6-en-2-one.

3,936,425

MODIFIED, FIRE RETARDANT POLYURETHANE

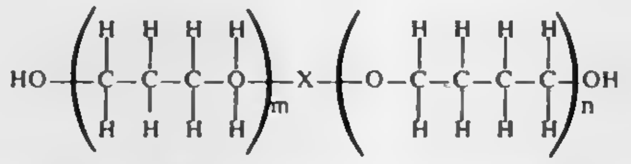
Hideo Tomomatsu, Crystal Lake, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Sept. 13, 1974, Ser. No. 505,535

Int. Cl.² C08G ***18/48***

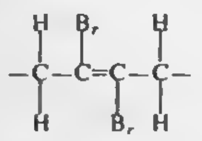
U.S. Cl. 260—77.5 AP **3 Claims**

1. A polyurethane prepared from the reaction between polyisocyanate and a high molecular weight glycol of the formula:



$$HO-\left(\overset{H}{\underset{H}{C}}-\overset{H}{\underset{H}{C}}-\overset{H}{\underset{H}{C}}-\overset{H}{\underset{H}{O}}\right)_m-X-\left(O-\overset{H}{\underset{H}{C}}-\overset{H}{\underset{H}{C}}-\overset{H}{\underset{H}{C}}-\overset{H}{\underset{H}{C}}\right)_n OH$$

wherein *m* and *n* are integers including zero, and wherein both *m* and *n* are not zero at the same time, and wherein X is a structure having the formula:



$$-\overset{H}{\underset{H}{C}}-\overset{Br}{C}=\underset{Br}{C}-\overset{H}{\underset{H}{C}}-$$

wherein *m* and *n* are such that the number average molecular weight of the composition is in the range of 400–500 inclusive.

3,936,426

AMORPHOUS, OPTICALLY CLEAR POLYAMIDE FROM A BIS(4-AMINOCYCLOHEXYL)METHANE AND A PHENYLINDAN DICARBOXYLIC ACID

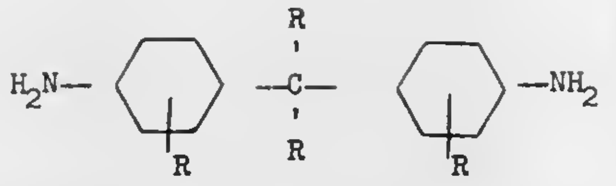
Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 210,598, Dec. 21, 1971, Pat. No. 3,838,111. This application July 25, 1974, Ser. No. 491,834

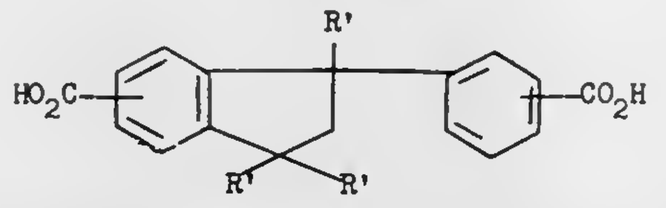
Int. Cl.² C08G 69/26

U.S. Cl. 260—78 R **6 Claims**

1. An amorphous, optically clear solid polyamide consisting essentially of the polymeric condensation product of
a. at least one bis(4-aminocyclohexyl)methane or a methyl derivative thereof of the formula



wherein each R is hydrogen or a methyl radical, and
b. at least one phenylindanedicarboxylic acid or an alkyl derivative thereof of the formula



wherein each R′ is hydrogen or an alkyl radical having 1–3 carbon atoms.

3,936,427

MAGNESIUM SALT COPOLYMERS OF UNSATURATED DICARBOXYLIC ACID ANHYDRIDE AND UNSATURATED MONOMER HAVING A LIPOPHILE CHAIN

Andre Viout, Paris, France; David Esanu, deceased, late of Paris, France, and Lydie Esther Samama, administratrix, Paris, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

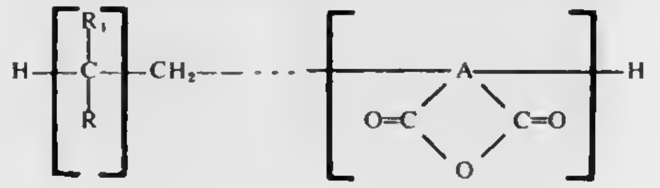
Division of Ser. No. 164,828, July 21, 1971, Pat. No. 3,860,700, which is a continuation-in-part of Ser. No. 136,238, April 21, 1971, abandoned, which is a continuation of Ser. No. 688,969, Dec. 8, 1967, abandoned. This application Mar. 25, 1974, Ser. No. 454,731

Claims priority, application Luxemburg, Dec. 8, 1966, 52541

Int. Cl.² C08F ***222/02***

U.S. Cl. 260—78.5 T **3 Claims**

1. The magnesium salt of a copolymer having the formula

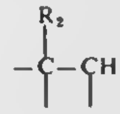


$$H-\left[\overset{R_1}{\underset{R}{C}}\right]-CH_2---\left[\underset{O=C\diagdown O\diagup C=O}{A}\right]-H$$

I II

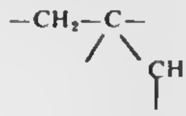
wherein
A is selected from the group consisting of

a.



$$-\overset{R_2}{\underset{|}{C}}-\underset{|}{CH}-,$$

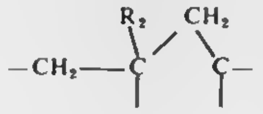
b.



$$-CH_2-\underset{\diagup\;\diagdown CH_2}{C}-$$

and

c.

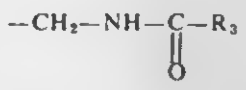


$$-CH_2-\overset{R_2}{\underset{|}{C}}\diagup\overset{CH_2}{}\diagdown\overset{R_2}{\underset{|}{C}}-$$

wherein R_2 is

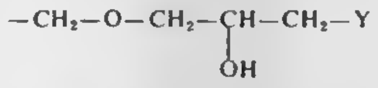
wherein
R_2 is selected from the group consisting of hydrogen and methyl, and
R is selected from the group consisting of

(d) alkyl having 8–18 carbon atoms,
e.



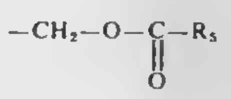
$$-CH_2-NH-\underset{O}{\underset{\|}{C}}-R_3$$

wherein R_3 is alkyl having 17 carbon atoms,
f. $-O-R_4$ wherein R_4 is alkyl having 16 carbon atoms,
g.



$$-CH_2-O-CH_2-\underset{OH}{\underset{|}{CH}}-CH_2-Y$$

wherein Y is selected from the group consisting of $-O-C_{12}H_{25}$, $-S-C_{12}H_{25}$ and $-NH-C_{18}H_{37}$ with the proviso that when R has the values of (d) to (g), R_1 is hydrogen, and
h.



$$-CH_2-O-\underset{O}{\underset{\|}{C}}-R_5$$

wherein R_5 is alkyl having 11–17 carbon atoms, with the proviso that when R has the value of (h), R_1 is selected from the group consisting of hydrogen and methyl, the molar ratio of monomeric units I:II is 1:1 and said copolymer has a weight average molecular weight ranging between 4,000–100,000.

3,936,428

PHOTOPOLYMERIZABLE POLYMER BASED ON AN ETHERIFIED POLYHYDROXYALKYL ACRYLATE

Hans-Jürgen Rosenkranz, Krefeld; Hans Rudolph, Krefeld-Bockum; Erich Wolff, Leichlingen, and Harald von Rintelen, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

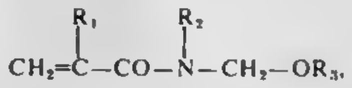
Division of Ser. No. 256,161, May 23, 1972, abandoned. This application Dec. 27, 1973, Ser. No. 428,656

Claims priority, application Germany, May 25, 1971, 2125909

Int. Cl.² C08F ***8/30, 216/06, 220/12, 222/20***

U.S. Cl. 260—78.5 T **15 Claims**

1. A photopolymerizable polymer having a backbone of from 10 to 100% by weight of a free radical polymerized monomer of the formula
$CH_2=CR-CO-A-OH$
and 90 to 0% by weight of at least one free radical polymerized comonomer selected from the group consisting of ethylene, propylene, butylene, butadiene, isoprene, vinyl chloride, vinylidene chloride, vinyl acetate, vinyl propionate, vinyl propyl ether, vinyl isobutyl ether, acrylic acid, methacrylic acid, esters of acrylic and methacrylic acid with alcohols having 1 to 5 carbon atoms, acrylic acid nitrile, methacrylic acid nitrile, maleic acid anhydride and styrene, said backbone having at least two hydroxyl groups which are etherified with a monomer of the formula



$$CH_2=\overset{R_1}{\overset{|}{C}}-CO-\overset{R_2}{\overset{|}{N}}-CH_2-OR_3,$$

each of R and R_1 being separately selected from the group consisting of hydrogen and alkyl having 1 to 4 carbon atoms, R_2 being selected from the group consisting of hydrogen and alkyl having 1 to 8 carbon atoms, R_3 being selected from the group consisting of hydrogen and alkyl having 1 to 8 carbon atoms and A being a bivalent radical selected from the group consisting of ethylene, propylene, isopropylene, butylene and $(CH_2CH_2O)_mCH_2CH_2-$ wherein *m* is 1, 2 or 3.

3,936,429
REACTIVE POLYMER

Yoshio Seoka; Masato Satomura, and Akira Umehara, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

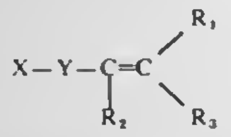
Filed Jan. 29, 1974, Ser. No. 437,564

Claims priority, application Japan, Jan. 30, 1973, 48-12298; Feb. 26, 1973, 48-23436

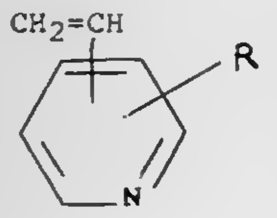
Int. Cl.^{2} C08F *28/00;* **C08G** *75/22;* **G03C** *1/76*

U.S. Cl. 260—79.3 M 22 Claims

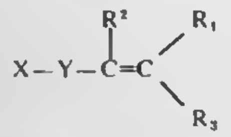
1. A reactive photosensitive composition consisting essentially of a reactive polymer produced by the reaction of a homopolymer or copolymer of vinyl pyridine or a substituted vinyl pyridine with a compound of the formula



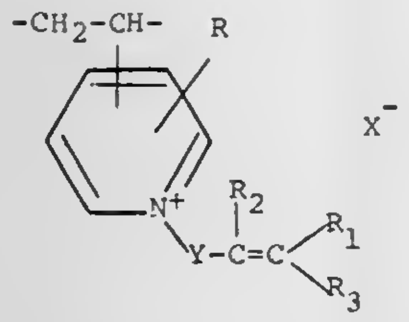
or by the reaction of a monomer of the formula



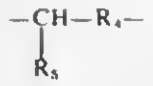
with a compound of the formula



, which reactive polymer contains repeating units of the formula:

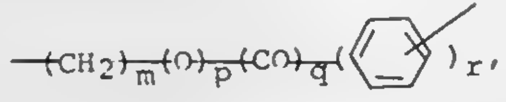


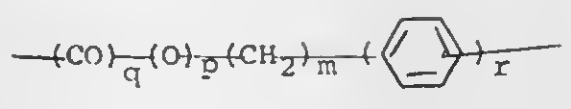
wherein
- R represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms;
- R_1 represents a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, an alkoxycarbonyl group having 2 to 8 carbon atoms, an aryl group, a carbamoyl group having 1 to 8 carbon atoms, a carboxy group or an acyl group having 1 to 8 carbon atoms;
- R_2 represents a hydrogen atom, a methyl group or a cyano group;
- R_3 represents a hydrogen atom, a carbamoyl group having 1 to 8 carbon atoms, a nitro group, a cyano group, an alkoxy group having 1 to 3 carbon atoms or an alkoxycarbonyl group having 2 to 8 carbon atoms;
- Y represents a divalent radical wherein -Y- is



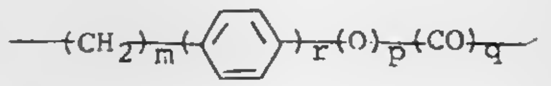
$$-\underset{R_5}{\underset{|}{C}H}-R_4-$$

wherein R_4 represents





or



wherein *m* is 0, 1, 2 or 3; *p*, *q* and *r* is 0 or 1;
- R_5 represents a hydrogen atom or a methyl group
- X represents a halogen atom, an alkylsulfonyloxy group having 1 to 4 carbon atoms, a styrenesulfonyloxy group or an arylsulfonyloxy group having 6 to 10 carbon atoms.

3,936,430
PROCESS FOR THE PREPARATION OF HALOGEN-CARRYING RUBBERLIKE COPOLYMERS

Löwhardt A. A. Schoen; Marinus J. R. Visseren, both of Geleen, and Jean G. van der Sangen, Spaubeek, all of Netherlands, assignors to Stamicarbon N.V.,.Geleen, Netherlands

Filed Dec. 22, 1972, Ser. No. 317,786

Claims priority, application Netherlands, Dec. 23, 1971, 7117709

Int. Cl.^{2} C08F *210/00, 110/02, 212/00*

U.S. Cl. 260—80.78 14 Claims

1. A process for preparing halogenated rubbery copolymers of about 20 to about 74.7 weight percent ethylene, about 25 to about 79.9 weight percent of at least one other α-alkene of up to 8 carbon atoms, from about 0.3 to about 20 weight percent of dicyclopentadiene, alone or with one or more other polyenes of 4 to 12 carbon atoms, said process comprising halogenating the unhalogenated copolymer in the solid state with up to about 20 moles of molecular halogen per gram equivalent of unsaturation in said unhalogenated copolymer at a temperature of between about −30°C and about +80°C.

14. Halogenated rubbery copolymer of about 20 to about 74.7 weight percent ethylene, about 25 to about 79.9 weight percent of at least one other α-alkene of up to 8 carbon atoms. From about 0.3 to about 20 weight percent of dicyclopentadiene and optionally one or more other polyenes of 4 to 10 carbon atoms, containing from about 0.5 to about 5 percent by weight of chlorine, of which at least about 0.35 percent by weight is allylic, taken up in the dicyclopentadiene units of the copolymer.

3,936,431
PROCESS FOR THE POLYMERIZATION OF OLEFINS AND CATALYTIC PRODUCTS

Luigi Reginato, Brussels; Charles Bienfait, Vilvorde, and Jacques Stevens, Braine-L'Alleud, all of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Continuation-in-part of Ser. No. 186,764, Oct. 5, 1971, abandoned. This application Mar. 26, 1973, Ser. No. 344,873

Claims priority, application Luxemburg, Mar. 28, 1972, 65059

Int. Cl.^{2} C08F *4/02, 4/66, 10/02*

U.S. Cl. 260—88.2 R 8 Claims

1. A cocatalyst for use with an organometallic compound of a metal selected from the Groups Ia, IIa, IIb, IIIa and IVa of the Periodic Table to catalyze the polymerization and copolymerization of α-olefins consisting essentially of the reaction product of a fluorinated complex oxide having the general

formula $MgO.Al_2O_3$ with a derivative of titanium selected from the group consisting of halides, oxyhalides, alkoxyhalides, oxyalkoxides and alkoxides, said complex being fluorinated at a temperature of from about 100°C. to about 700°C. and said fluorinated complex having a F/Al atomic ratio of between 0.1 and 0.15.

3,936,432
PROCESS OF POLYMERIZATION OF CONJUGATED DIOLEFINS USING IRON CATALYSTS AND SULFUR LIGANDS

Morford C. Throckmorton, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 22, 1974, Ser. No. 526,356

Int. Cl.^{2} C08F *4/40, 2/06*

U.S. Cl. 260—94.3 13 Claims

1. A process for polymerizing conjugated diolefinic monomers containing from 4 to about 12 carbon atoms by bringing said monomers into contact with a catalytically effective amount of a catalyst consisting essentially of (1) an iron containing compound, (2) an organometallic reducing agent from Groups I and III of the Periodic Table, and (3) a sulfur-containing ligand characterized in that said ligand contains at least two functional groups wherein said functional groups are a combination of (a) two thio groups which are attached to different carbon atoms, (b) a mercapto and an imino, imine or imidazole group, (c) an hydroxyl and an imino, imine or imidazole group, or (d) a thio and an amine or imino group.

3,936,433
O-ETHYL-O-(3-METHYL-6-NITROPHENYL)-N-SECONDARY BUTYL-PHOSPHOROTHIONOAMIDATE

Takeo Satomi, Takarazuka; Kunio Mukai, Nishinomiya; Akihiko Mine; Naganori Hino, both of Toyonaka; Kohshi Tateishi, and Masachika Hirano, both of Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

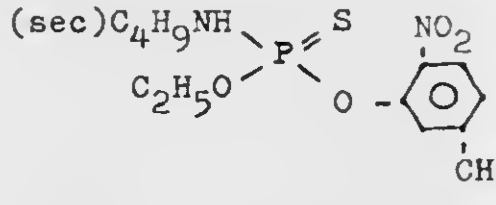
Continuation-in-part of Ser. No. 182,523, Sept. 21, 1971, abandoned. This application May 29, 1974, Ser. No. 474,444

Claims priority, application Japan, Sept. 25, 1970, 45-84432; United Kingdom, June 1, 1973, 26377/73

Int. Cl.^{2} C07F *9/24;* **A01N** *9/36*

U.S. Cl. 260—954 1 Claim

1. A phosphorothionoamidate of the formula:



3,936,434
CYTOBIOTIC GLOBULINS FOR KIDNEY TREATMENT

Robert Ardry, Clamart, and Michel Robilliart, Paris, both of France, assignors to Omnium Financier Aquitaine pour l'Hygiene et la Sante (Sanofi), Courbevoie, France

Continuation-in-part of Ser. No. 312,021, Dec. 4, 1972, which is a continuation-in-part of Ser. No. 111,760, Feb. 1, 1971, abandoned, which is a continuation of Ser. No. 766,313, Oct. 9, 1968, abandoned. This application Apr. 23, 1973, Ser. No. 353,890

Claims priority, application France, Oct. 10, 1967, 67.123862

Int. Cl.^{2} A61K *37/06;* **C07G** *7/00*

U.S. Cl. 260—112 B 2 Claims

1. A method of producing cytobiotic globulins comprising the steps of:

1. macerating a ground-kidney organ of a healthy slaughterhouse animal or preferably of an embryo in an aqueous solution containing about 0.9% by weight sodium chloride, and thereafter centrifugating the suspension to obtain a soluble antigenic extract and an insoluble tissue homogenate;
2. inoculating a horse with said antigenic extract to induce an immunological response in the blood of the inoculated horse;
3. withdrawing blood from said inoculated horse and separating plasama therefrom;
4. extracting a globulin-containing liquid from said plasma by combining said plasma with an aqueous saturated solution of ammonium sulfate to produce a precipitate; separating a solution from the last-mentioned precipitate and treating it with a further quantity of ammonium sulphate to form a further precipitate; forming a paste of said further precipitate in distilled water and dialyzing said paste to complete disappearance of ammonium salts; and recovering a further dialysate constituting said globulin-containing liquid extract;
5. adding water, sodium chloride and sodium hydroxide to said globulin-containing liquid to adjust it to a pH of about 7.3, an ionic strength of 0.16 and a protein concentration of 5%;
6. contacting adjusted globulin-containing liquid with tissue homogenate which has been previously treated with a sodium citrate solution 0.15 M having a ph of about 3.1 and washed with a sodium chloride solution 0.15 M having a pH of about 7.5;
7. decanting the liquid and eluting globulins adsorbed onto tissue homogenate with a sodium citrate solution 0.15 M having a pH of 3.1;
8. adjusting the elution solution to a pH of 7.5, separating the precipitate and dialyzing the elution solution against a sodium chloride solution 0.15 M;
9. lyophilizing the dialyzed solution to obtain cytobiotic globulins.

3,936,435
CATIONIC HETEROCYCLIC-AZO-HETEROCYCLIC COMPOUNDS FROM 5-AMINOIMIDAZO-(1,2-A)PYRIDINES

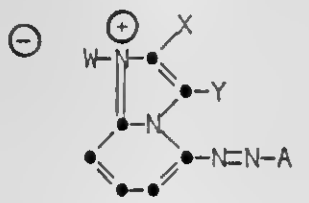
Gary T. Clark, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 8, 1974, Ser. No. 495,619

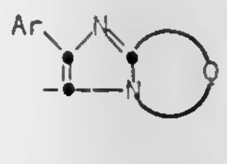
Int. Cl.^{2} C09B *43/00, 29/36*

U.S. Cl. 260—146 R 11 Claims

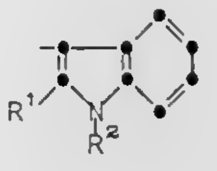
1. Dyestuff having the general formula



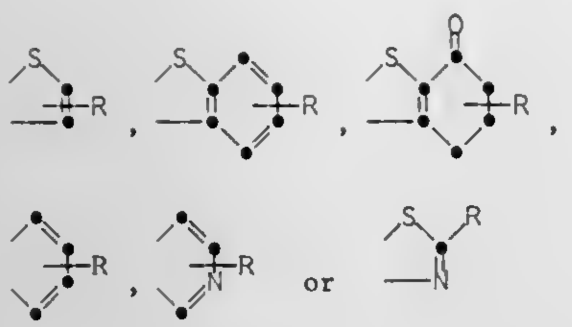
wherein A represents



or



wherein Q is



Ar is phenyl or phenyl substituted with chlorine, bromine, lower alkyl or lower alkoxy;
R is hydrogen, lower alkyl, phenyl or phenyl substituted with lower alkyl, lower alkoxy, chloro or bromo;
R^1 and R^2 are the same or different and each is hydrogen, lower alkyl, benzyl or phenyl;
W is lower alkyl or benzyl;
X is hydrogen or lower alkyl;
Y is hydrogen, lower alkoxycarbonyl, lower alkyl or formyl; and
Z is a basic dye anion.

3,936,436

WATER-SOLUBLE AZO DYESTUFFS CONTAINING TRIAZINE AND 3-AZO-2,6-DIHYDROXYPYRID-6-ONE RADICALS

Alistair Howard Berrie, and Richard Budziarek, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

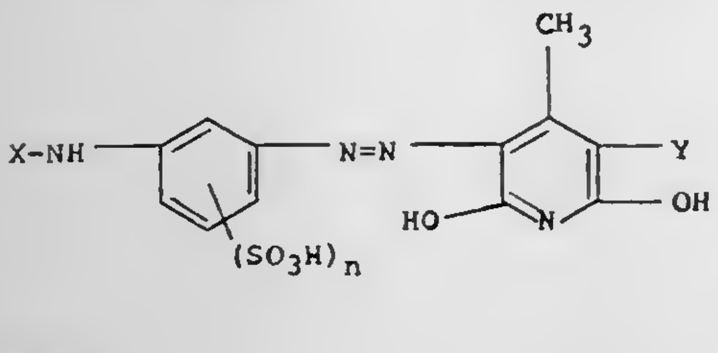
Continuation of Ser. No. 100,449, Dec. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 860,033, Sept. 22, 1969, abandoned. This application May 2, 1973, Ser. No. 356,421

Claims priority, application United Kingdom, Dec. 22, 1969, 60322/69; July 27, 1970, 36199/70

Int. Cl.^{2} C09B *62/08, 62/24, 62/40, 62/50*

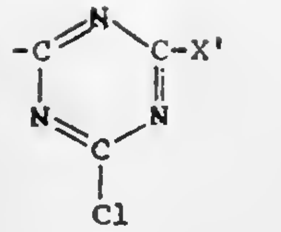
U.S. Cl. 260—153 **4 Claims**

1. A monoazo dyestuff of the formula

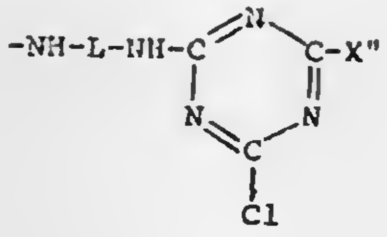


wherein
n is 1 or 2;
Y is selected from the group consisting of hydrogen, lower alkyl and $CONH_2$; and
X is a cellulose reactive group selected from the class consisting of
1. 5-cyano-2,4-dichloropyrimidyl,
2. 5-cyano-2,6-dichloropyrimidyl,
3. 5-chloro-6-methyl-2-methylsulphonylpyrimidyl, and

(4)



wherein X' is selected from the group consisting of Cl, NH_2, lower alkoxy, lower alkylamino, di-(lower alkyl) amino, di-(hydroxy-lower alkyl) amino, morpholino, cyclohexylamino, benzylamino, sulphoanilino, disulphanilino, carboxyanilino, sulphocarboxyanilino, anisidino, sulphoanisidino, sulphotoluidino, sulphochloroanilino, sulphonaphthylamino and



wherein L is mono- or di-sulphonated phenylene and X" is selected from the group consisting of Cl, NH_2, lower alkoxy lower alkylamino, hydroxy-lower alkylamino, anilino, sulphoanilino, disulphoanilino, sulphotoluidino, sulphocarboxyanilino, sulphonaphthylamino, disulphonaphthylamino and trisulphonaphthylamino.

3,936,437

MONOAZO COMPOUNDS DERIVED FROM 2-HYDROXYMETHYL-AMINO BENZOIC ACIDS AND 2,6-DIHYDROXYPYRIDINES

Brian Ribbons Fishwick; Colin William Greenhalgh, and Nigel Hughes, all of Blackley, England, assignors to Imperial Chemical Industries Limited, London, England

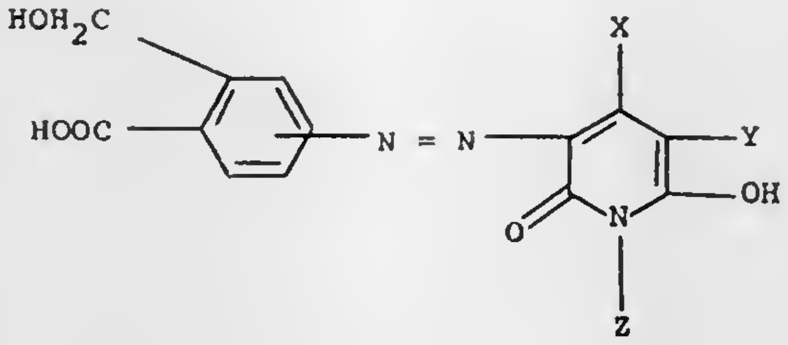
Filed Dec. 17, 1973, Ser. No. 425,278

Claims priority, application United Kingdom, Dec. 22, 1972, 59315/72

Int. Cl.^{2} C09B *29/36*

U.S. Cl. 260—156 **2 Claims**

1. A disperse monoazo dyestuff free from sulphonic acid groups having the formula



wherein X is selected from the group consisting of lower alkyl, phenyl, phenyl lower alkyl linked to the pyridone ring through said lower alkyl, lower alkoxy lower alkyl, cyano lower alkyl, phenoxy lower alkyl, lower alkoxy carbonyl lower alkyl and N:N-di(lower alkyl) carbamoyl; Y is selected from the group consisting of cyano, hydrogen, lower alkyl, carbamoyl, N-lower alkyl carbamoyl, N:N-di(lower alkyl) carbamoyl, lower alkyl sulphonyl, phenylsulphonyl, sulphamoyl, N-lower alkyl sulphamoyl, N:N-di(lower alkyl) sulphamoyl, lower alkoxycarbonyl, lower alkylcarbonyl, benzoyl, bromine, chlorine and lower alkylamino lower alkyl; and Z is selected from the group consisting of hydrogen, alkyl having from 1 to 12 carbon atoms, lower alkoxy lower alkyl, hydroxy lower alkyl, lower alkylcarbonyloxy lower alkyl, lower alkoxycarbonyl lower alkyl, cyclohexyl, phenyl lower alkyl linked to the pyridone ring through said lower alkyl, chloro lower alkyl, phenoxy lower alkyl, phenylthio lower alkyl, cyano lower alkyl, cyano lower alkoxy lower alkyl, benzyl carbonyloxy lower alkyl, phenoxy carbonyloxy lower alkyl, lower alkylcarbonyl lower alkyl, benzoyl lower alkyl, phenylsulphonyl lower alkyl, benzoylamino lower alkyl, phenyl, tolyl, anisyl, chlorophenyl, amino, N-lower alkylamino, N:N-di(lower alkyl) amino, anilino, toluidino, benzylamino and cyclohexylamino.

3,936,438

AROMATIC CARDENOLIDE ACETALS

Hartenstein, Wittental; Gerhard Satzinger, Denzlingen, and Manfred Herrmann, Saint Peter, all of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

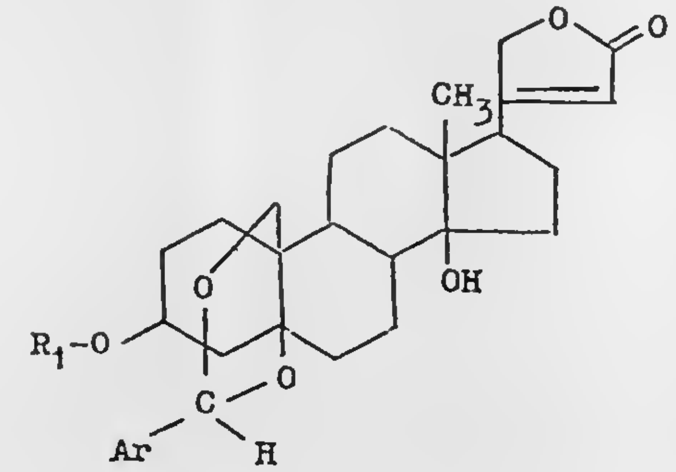
Filed Sept. 27, 1974, Ser. No. 509,752

Claims priority, application Germany, Oct. 8, 1973, 2350392

Int. Cl.^{2} C07J *173/00*

U.S. Cl. 260—210.5 **34 Claims**

1. Cardenolide acetals of the formula:



wherein R_1 is a glycosyl radical and Ar is a phenyl, furyl, thienyl or pyridyl radical which can be substituted by halogen atoms, alkyl or alkoxy radicals containing up to 3 carbon atoms or by trifluoromethyl, methylenedioxy or ethylenedioxy radicals.

3,936,439

2,6-DIAMINONEBULARINE DERIVATIVES

Ryuji Marumoto; Yoshio Yoshioka; Mikio Honjo, and Katsuyoshi Kawazoe, all of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

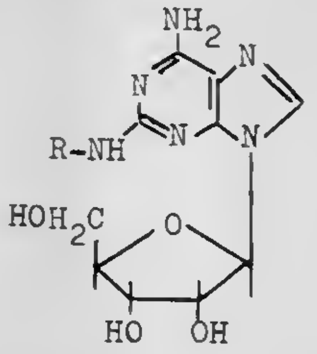
Filed Nov. 30, 1973, Ser. No. 420,380

Claims priority, application Japan, Dec. 8, 1972, 47-123602; Oct. 11, 1973, 48-114542

Int. Cl.^{2} C07H *19/16*

U.S. Cl. 260—211.5 R **15 Claims**

1. A 2,6-diaminonebularine derivative of the formula



wherein R is a phenyl or cyclohexyl group which may be substituted with lower alkyl, lower alkoxy or halogen, or pharmaceutically acceptable mineral acid salts thereof.

3,936,440

METHOD OF LABELING COMPLEX METAL CHELATES WITH RADIOACTIVE METAL ISOTOPES

Amar Nath, Bala Cynwyd, Pa., assignor to Drexel University, Philadelphia, Pa.

Filed May 22, 1974, Ser. No. 472,305

Int. Cl.^{2} C07H *23/00*

U.S. Cl. 260—211.7 **23 Claims**

1. A method of labeling a complex metal chelate compound with a radioactive metal isotope, comprising the steps of;
a. providing a radioactive metal isotope dopant and a complex metal chelate compound in solution; then
b. removing solvent from said solution of radioactive metal dopant and complex metal chelate compound, whereby a solid mixture of said radioactive metal isotope dopant and complex metal chelate compound is formed; then
c. exposing said mixture to an electron-accepting gas; and then
d. subjecting said mixture in the presence of said electron-accepting gas to thermal treatment, whereby isotopic exchange between said radioactive metal isotope dopant and said complex metal chelate compound occurs and said complex metal chelate compound labeled with said radioactive metal isotope is produced.

3,936,441

PROCESS FOR THE PRODUCTION OF WATER ADSORBING BUT WATER-INSOLUBLE CELLULOSE ETHERS

Arno Holst, Wiesbaden-Biebrich; Michael Kostrzewa, Wiesbaden, and Helmut Lask, Wiesbaden-Schierstein, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Nov. 11, 1974, Ser. No. 522,741

Claims priority, application Germany, Nov. 15, 1973, 2357079

Int. Cl.^{2} C08B *11/00, 11/20, 11/193, 15/10*

U.S. Cl. 260—231 A **11 Claims**

1. In the process for the production of water-adsorbing, but largely waterinsoluble, cellulose ethers, in which cellulose is alkalized in the presence of alkali hydroxide and isopropanol as a reaction medium and is so reacted with an etherification agent that by etherification only a water-soluble cellulose ether is produced, and in which process the cellulose is reacted with a cross-linking agent which is polyfunctional

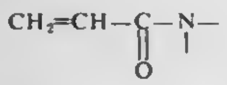
towards cellulose in an alkaline reaction medium before, during, or after the etherification of the cellulose,

the improvement which comprises effecting the etherification of cellulose to carboxymethyl cellulose, carboxymethyl hydroxyethyl cellulose, hydroxyethyl cellulose, or methylhydroxyethyl cellulose,

reacting the cellulose with the polyfunctional cross-linking agent in the presence of 0.8 to 7.5 parts by weight of isopropanol, based upon the cellulose weight,

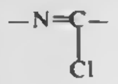
and employing as the cross-linking agent acrylamido methylene chloroacetamide, dichloroacetic acid or phosphorus oxychloride or a compound in which at least two groups functional towards cellulose are

the acrylic amino group



$$CH_2{=}CH-\underset{\displaystyle O}{\underset{\|}{C}}-\underset{|}{N}-$$

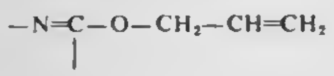
the chlorine azomethine group



$$-N{=}\underset{\displaystyle Cl}{\underset{|}{C}}-$$

or

the allyloxy azomethine group



$$-N{=}\underset{|}{C}-O-CH_2-CH{=}CH_2$$

3,936,442
UNREIDOACETAMIDO-PENICILINS

Hans-Bodo Konig; Wilfried Schrock, both of Wuppertal-Elberfeld; Hans Disselnkotter, Cologne, and Karl Georg Metzer, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

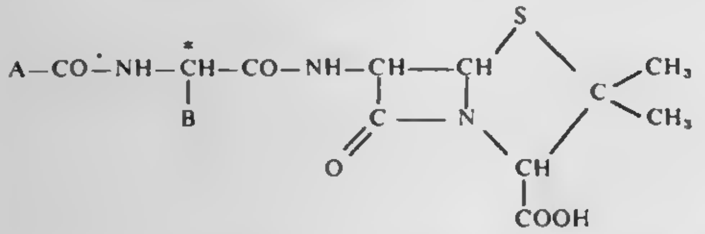
Division of Ser. Nos. 145,809, May 21, 1971, abandoned, and Ser. No. 145,877, May 21, 1971, abandoned. This application Dec. 19, 1973, Ser. No. 426,308

Claims priority, application Germany, May 25, 1970, 2025414; May 25, 1970, 2025415

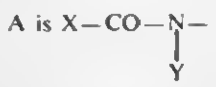
Int. Cl.^{2} C07D *499/58*

U.S. Cl. 260—239.1 **49 Claims**

1. A penicillin of the formula:



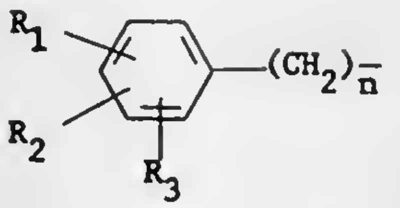
or a pharmaceutically acceptable non-toxic salt thereof wherein



$$A \text{ is } X-CO-\underset{\displaystyle Y}{\underset{|}{N}}-$$

wherein

X is lower alkyl, phenylvinyl, nitro-phenylvinyl, or a group of the formula:



wherein

n is 0 or 1; and

R_1, R_2 and R_3 are the same or different and each is hydrogen, chlorine, bromine, fluorine, nitro, lower alkyl or lower alkoxy, or

one is methoxycarbonylamino and the other two are each hydrogen;

Y is lower alkyl, allyl, phenyl or benzyl;

B is thienyl, phenyl or phenyl substituted by lower alkyl, lower alkoxy, mono-, or di-halogen or lower alkylthio; and

$\overset{*}{C}$ can have either of the two possible R- and W- stereoisomeric configurations or it can be a mixture of such diastereomers.

3,936,443
PENICILLIN ANTIBIOTICS

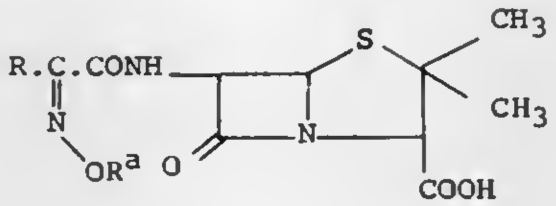
Michael Gregson, London; Martin Christopher Cook, and Gordon Ian Gregory, both of Chalfont St. Peter, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

Division of Ser. No. 466,780, May 3, 1974, which is a division of Ser. No. 274,602, July 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 221,057, Jan. 26, 1972, abandoned. This application July 11, 1975, Ser. No. 595,105

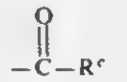
Int. Cl.^{2} C07D *499/70*

U.S. Cl. 260—239.1 **3 Claims**

1. A compound selected from the group consisting of a penicillin antibiotic of the formula



wherein R is thienyl or thienyl substituted by chloro, bromo, hydroxy, lower alkyl, nitro, amino, lower alkylamino, di(lower alkyl)amino, lower alkanoyl, lower alkanoylamido, lower alkoxy, lower alkylthio or carbamoyl; and R^a is hydrogen or



$$-\overset{\displaystyle O}{\overset{\|}{C}}-R^c$$

wherein R^c is C_1–C_4 alkyl, C_1–C_4 chloroalkyl, C_1–C_4 alkoxy, phenyl, nitrophenyl, C_1–C_4 alkylamino or C_1–C_4 chloroalkylamino; and a physiologically acceptable salt thereof, said penicillin antibiotic being in the form of the syn isomer free of the corresponding anti isomer to the extent of at least 75%.

3,936,444
PRODUCTION OF ARYL LACTAM-HYDRAZONES

Arthur Botta, Krefeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

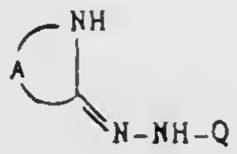
Filed July 9, 1973, Ser. No. 377,862

Claims priority, application Germany, July 18, 1972, 2235177

Int. Cl.^{2} C07D *223/12, 213/77, 207/14, 211/56*

U.S. Cl. 260—239 B **3 Claims**

1. In the production of an aryl lactamhydrazone of the formula

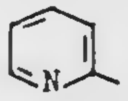


(I)

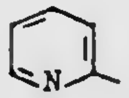
in which

A represents polymethylene of 3 to 11 carbon atoms, and

Q represents phenyl; phenyl carrying at least one substituent selected from the group consisting of $C_{1\text{-}6}$ alkyl, fluorine, chlorine, bromine, nitro and methoxy;

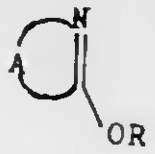


or



substituted by at least one C_1-C_6 alkyl, fluorine, chlorine, bromine, methoxy or nitro group,

in which a lactim-ether of the formula



(II)

in which

R is phenyl or alkyl or 1 to 6 carbon atoms,

is reacted with an arylhydrazine or heteroarylhydrazine of the formula

$H_2N-NH-O$ (III)

the improvement which comprises effecting the reaction at a temperature of −20° to 150°C and in the presence of 1 to 10 mole % based on the lactim-ether of an acid catlyst selected from the group consisting of aluminum chloride, iron (III) chloride, boron fluoride, tin (II) chloride, tin (IV) chloride, titanium (V) chloride and antimony pentachloride.

3,936,445
PROCESS FOR THE PRODUCTION OF IRON COMPLEXES OF TETRAAZAANNULENES

Helmut Pfitzner, Neckargemuend, and Walter Dammert, Frankenthal, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

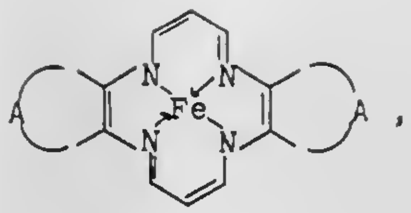
Continuation-in-part of Ser. No. 384,628, Aug. 1, 1973, abandoned. This application Mar. 14, 1974, Ser. No. 451,034

Claims priority, application Germany, July 4, 1973, 2333925

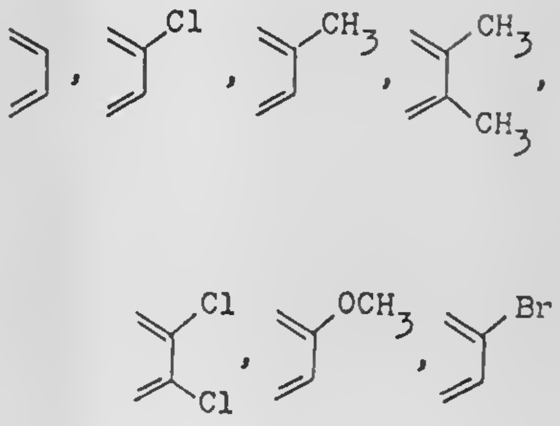
Int. Cl.^{2} C07D *257/00, 259/00*

U.S. Cl. 260—239 DD **3 Claims**

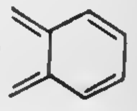
1. Process for the production of an iron complex of a tetraazaannulene of the formula



where A is

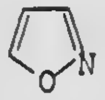


or

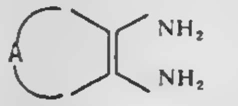


, said process

comprising the step of reacting one mole of isoxazole of the formula



with one mole of a diamine of the formula



where A has the meaning given above, and with about ½ mole of an iron compound selected from the group consisting of.

iron salts of organic mono- or dicarboxylic acids selected from the group consisting of formic, acetic, propionic, glyoxylic, lactic, malic, gluconic, oxalic, malonic, succinic, maleic, fumaric, tartaric and citric acid;

iron acetyl acetonate;

iron carbonate; and

iron hydroxides.

3,936,446
ISOCYANOCEPHALOSPORANATES

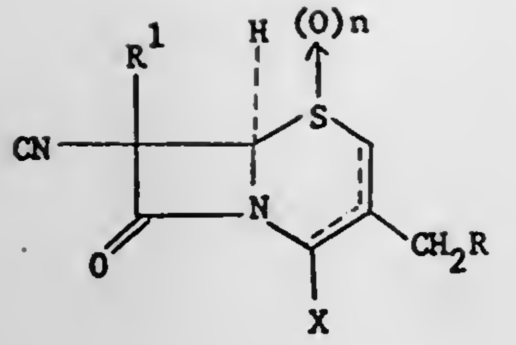
Peter Hubert Bentley, Rudgwick, and John Peter Clayton, Horsham, both of England, assignors to Beecham Group Limited, Germany

Filed Feb. 19, 1974, Ser. No. 443,724

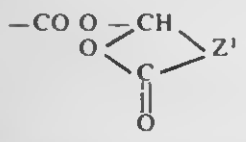
Int. Cl.^{2} C07D *279/08*

U.S. Cl. 260—243 R **8 Claims**

1. A compound of formula:

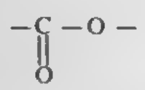


wherein the dotted line represents a double bond at either position 2- or 3-, *n* is zero of 1, X is a carboxylic acid group, a non-toxic salt thereof, or an esterified carboxylic acid group wherein the ester portion is selected from the group consisting of benzyl, para-methoxybenzyl, 2,2,2-trichloroethyl, tertbutyl, acetoxymethyl, pivaloyloxymethyl, phthalidyl and a lactone of the formula



$$-\mathrm{CO}\;\mathrm{O}-\mathrm{CH}\;\mathrm{O}\;\underset{\underset{\mathrm{O}}{\|}}{\mathrm{C}}\;\mathrm{Z}^1$$

wherein Z^1 is 1,2-phenylene or 4,5-dimethoxyphenyl-1,2-ene, R is hydrogen, an acetoxy group, a pyridinium group or a group of the formula $-SR^2$, wherein R^2 represents a 5- or 6-membered heterocyclic ring containing one to four nitrogen heteroatoms, one oxygen heteroatom and one to three nitrogen heteroatoms or one sulphur heteroatom and one to three nitrogen heteroatoms, unsubstituted or substituted with one or two groups selected from alkyl, cycloalkyl, or alkenyl, each having up to four carbon atoms, alkoxy or alkoxyalkyl, each alkyl or alkoxy having one to four carbon atoms, CF_3, NHR^3, NR_2^3, SCH_2, halogen, amino, phenyl and benzyl wherein R^3 is alkyl of 1 to 4 carbon atoms; or X and R taken together represent the divalent radical



$$-\underset{\underset{\mathrm{O}}{\|}}{\mathrm{C}}-\mathrm{O}-;$$

and R^1 is hydroxyloweralkyl, lowerakloxycarbonylloweralkyl, benzyloxycarbonylloweralkyl, benzyl or loweralkylthio.

3,936,447

7-ACYLAMINO-DESACETOXY-CEPHALOSPORANIC ACID ESTERS AND THEIR PRODUCTION

Uwe Petersen, Cologne; Hans-Joachim Kabbe, and Siegfried Petersen, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

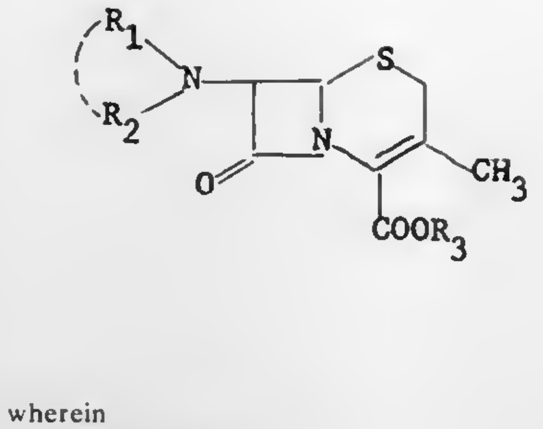
Filed Mar. 26, 1974, Ser. No. 454,921

Claims priority, application Germany, Apr. 19, 1973, 2320040

Int. Cl.² C07D *501/18, 501/10*

U.S. Cl. 260—243 C **28 Claims**

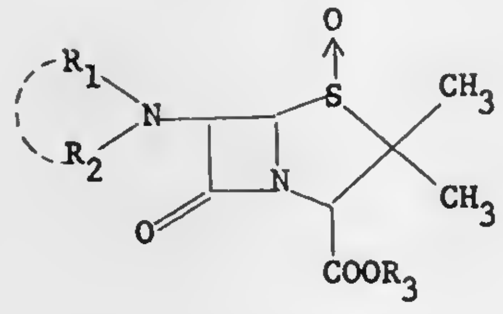
1. A process for the production of a 7-acylamino-desacetoxy-cephalosporanic acid ester of the formula:



I

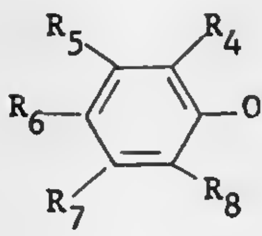
wherein
- R_1 is hydrogen, and
- R_2 is phenacetyl, phenoxyacetyl, trityl, thienylacetyl, tert.-butoxycarbonyl or α-aminophenacetyl in which the amino moiety is protected, and the phenyl ring is unsubstituted or substituted by hydroxyl, lower alkoxy, lower alkylmercapto or halogen; or
- R_1 and R_2 together with the nitrogen atom to which they are attached are phthalimido or succinimido; and
- R_3 is benzyl, methoxybenzyl, nitrobenzyl, diphenylmethyl, trityl, β,β,β-trichloroethyl, cyanomethyl, 9-fluorenyl, tert.-butyl, phenacyl, chlorophenacyl, bromophenacyl, nitrophenacyl, phenylphenacyl, alkoxyphenacyl or trimethylsilyl,

which comprises the steps of heating a 6-aminopenicillanic acid-sulfoxide-ester of the formula:



II

wherein R_1, R_2 and R_3 are as above defined, at temperatures of from 60°C to 150°C in the presence of from 5 to 80 mol % of a phenol of the formula:



wherein R_4, R_5, R_6, R_7 and R_8 are the same or different and each is selected from the group consisting of hydrogen, nitro, cyano, halogen, perhaloalkyl of 1 to 4 carbon atoms, carbalkoxy of 2 to 5 carbon atoms, or phenylsulphonyl, only one of R_4, R_5, R_6, R_7 and R_8 being halogen and not more than two of R_4, R_5, R_6, R_7 and R_8 being hydrogen, and recovering the compound produced.

3,936,448

α-AMINO-β-SULFOSUCCINATES

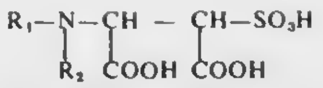
Vincent Lamberti, Upper Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 394,613, Sept. 5, 1973, which is a division of Ser. No. 156,933, June 25, 1971, abandoned. This application July 1, 1974, Ser. No. 484,916

Int. Cl.² C07C *143/15*

U.S. Cl. 260—247.1 E **1 Claim**

1. An α-substituted-β-sulfosuccinic acid having the formula



$$\mathrm{R}_1-\underset{\mathrm{R}_2}{\underset{|}{\mathrm{N}}}-\underset{\mathrm{COOH}}{\underset{|}{\mathrm{C}}}\mathrm{H}-\underset{\mathrm{COOH}}{\underset{|}{\mathrm{C}}}\mathrm{H}-\mathrm{SO_3H}$$

or the alkali metal, ammonium, monoethanolammonium, diethanolammonium, triethanolammonium, methylammonium, dimethylammonium, trimethylammonium, tetramethylammonium, morpholinium, N-methylmonoethanolammonium and N-ethylmonoethanolammonium salts thereof; wherein the groups R_1 and R_2 may be the same or different and are selected from the group consisting of hydrogen, C_1 to C_{20} alkyl, C_1 to C_4 hydroxyalkyl, carboxymethyl, carboxyethyl, sulfomethyl, sulfoethyl; with the proviso that both R_1 and R_2 may not at the same time be hydrogen.

3,936,449

ANTI-ARRHYTHMIC AGENTS

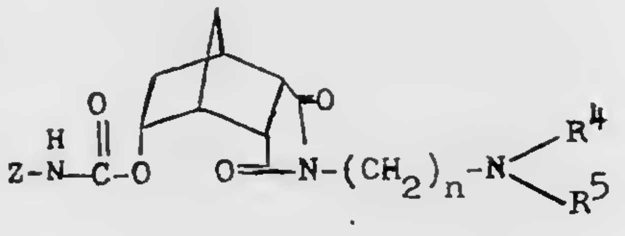
Ichiro Matuo, Machida, and Sadao Ohki, Tokyo, both of Japan, assignors to Sadao Ohki, Tokyo, Japan

Filed Apr. 11, 1974, Ser. No. 459,971

Int. Cl.² C07D *295/02, 295/00*

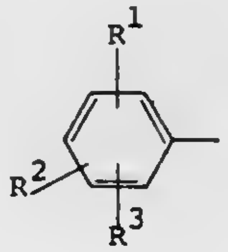
U.S. Cl. 260—247.2 A **16 Claims**

1. A compound having the formula

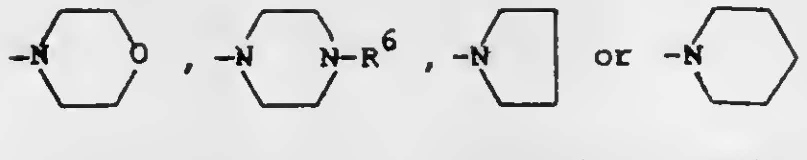


I

in which Z is a radical of the formula



wherein R^1, R^2 or R^3 is H, Cl, Br, F, (lower)alkyl, nitro, OH or (lower)alkoxy, *n* is an integer of 2 to 4 inclusive and R^4 or R^5 is H, (lower)alkyl or when taken together with the nitrogen a radical of the formula



in which R^6 is (lower)alkyl; or a pharmaceutically acceptable acid addition salt thereof.

3,936,450

ANTI-INFLAMMATORY AGENTS AND METHOD FOR THEIR PREPARATION

Roland Yves Mauvernay, Riom; Norbert Bush, Loubeyrat; Jacques Simond, Chamalieres; Andre Monteil, Gerzat, and Jacques Moleyre, Mozac, all of France, assignors to Centre Europeen de Recherches Mauvernay "C.E.R.M.", Riom, France

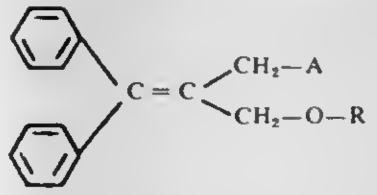
Filed Feb. 7, 1973, Ser. No. 330,455

Claims priority, application United Kingdom, Feb. 8, 1972, 5827/72

Int. Cl.² C07D *295/00;* **C07C** *87/29*

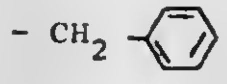
U.S. Cl. 260—247.7 Z **7 Claims**

1. A tetra-substituted ethylene having the general formula

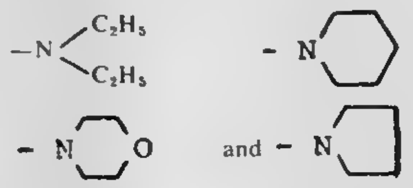


(I)

in which R is selected from the group consisting of alkyl radicals containing 1 to 4 carbon atoms and



and A is selected from the group consisting of



and salts thereof with pharmacologically acceptable acids.

3,936,451

PROCESS FOR PRODUCING SALTS OF HEXAMETHYLENETETRAMINE

Henry Philip Orem; David R. Hart, both of Birmingham, and Jerry E. Hill, Springville, all of Ala., assignors to United States Pipe and Foundry Company, Birmingham, Ala.

Filed Aug. 27, 1974, Ser. No. 500,845

Int. Cl.² C07D *251/04*

U.S. Cl. 260—248.5 **4 Claims**

1. A method of preparing a salt of hexamethylenetetramine comprising:

- thoroughly mixing hexamethylenetetramine, water, and an acid wherein the acid is selected from the group consisting of p-Toluenesulfonic Acid, Methanesulfonic Acid, Phenolsulfonic Acid, Benzenesulfonic Acid, m-Xylenesulfonic Acid, m-Benzenedisulfonic Acid, Oxalic Acid, Malic Acid, Sulfuric Acid, Hydrochloric Acid, beta-Resorcylic Acid, Benzoic Acid, Maleic Acid, and Formic Acid, in which mixture the amount of water is less than 26 percent by weight,
- controlling the temperature of the mixture during the mixing stage below that which would cause decomposition; and
- drying the mixture at a temperature less than that which would cause decomposition.

3,936,452
PROCESS OF PRODUCING PYRIMIDYL THIOCARBONATES

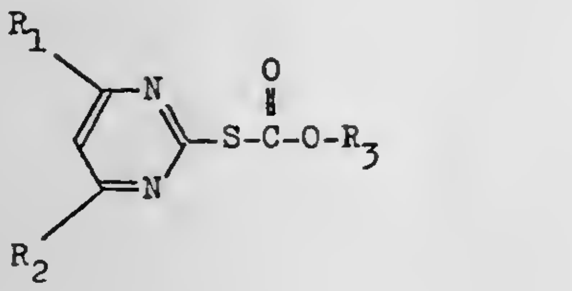
Takeshi Nagasawa; Katumasa Kuroiwa, and Kouichi Narita, all of Koriyama, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Division of Ser. No. 287,410, Sept. 8, 1972, Pat. No. 3,852,290. This application June 13, 1974, Ser. No. 479,189

Int. Cl.^{2} C07D *239/10*

U.S. Cl. 260—251 R **9 Claims**

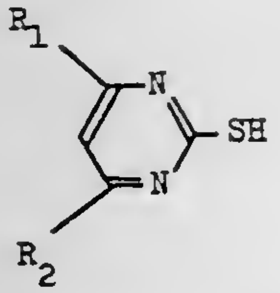
1. A process for producing a thiolcarbonate represented by the formula,



(I)

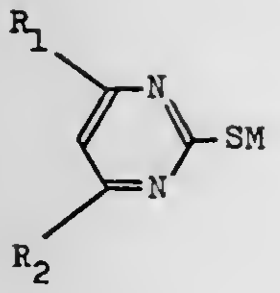
wherein R_1 and R_2 are individually hydrogen or methyl, and R_3 is a straight chain or branched chain alkyl having 1 to 5 carbons, a straight chain or branched chain alkenyl having 2 to 5 carbon, or a benzyl or diphenylmethyl which may be nuclear substituted, which comprises

reacting a 2-mercapto-4- and/or 6-methyl-substituted or unsubstituted pyrimidine represented by the formula,



(V)

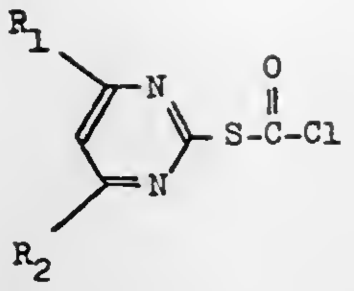
wherein R_1 and R_2 are as defined above, with an alkali metal hydroxide in an aqueous solution to form an alkali metal salt of the formula,



(II)

wherein R_1 and R_2 are as defined above, and M is an alkali metal,

reacting the thus formed alkali metal salt (II) with phosgene in an inert solvent in the absence of water at a temperature below the reflux temperature of said solvent to prepare a pyrimidyl-2-thiolchloroformate of the formula,



(III)

wherein R_1 and R_2 are as defined above, and

then reacting the compound of the formula (III) with an alcohol represented by the formula,

$R_3 - OH$ (IV)

wherein R_3 is as defined above, in an inert solvent in the presence of a base and in the absence of water at a temperature below the reflux temperature of the solvent used.

3,936,453
1-SUBSTITUTED-2-DISUBSTITUTED AMINOQUINAZOLIN-4(1H)-ONES

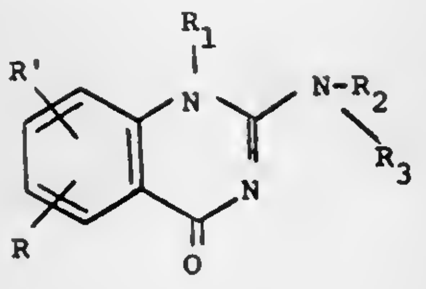
Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 437,472, Jan. 28, 1974, abandoned, which is a continuation-in-part of Ser. No. 373,101, June 25, 1973, abandoned. This application July 24, 1974, Ser. No. 491,309

Int. Cl.^{2} C07D *239/84*

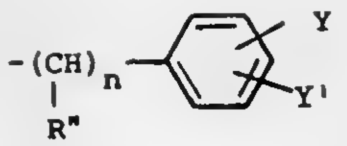
U.S. Cl. 260—256.4 Q **10 Claims**

1. A compound of the formula



wherein

R_1 is alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 8 carbon atoms or phenalkyl of the formula:



n is 1 or 2

R″ is hydrogen or methyl provided that R″ is hydrogen when *n* is 2,

R_2 and R_3 are independently alkyl of 1 to 4 carbon atoms or alkenyl of 3 to 6 carbon atoms,

R and R′ are independently hydrogen, fluoro, chloro, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbons or one is hydrogen and the other bromo or trifluoromethyl, and

Y and Y′ are independently hydrogen, fluoro, chloro, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms or one is hydrogen and the other bromo or trifluoromethyl.

3,936,454
5-AMINO-4-CHLORO-6-(SUBSTITUTED AMINO)-PYRIMIDINES

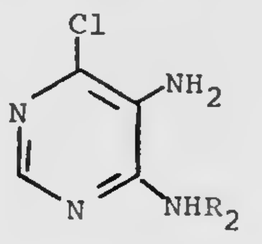
Charles F. Schwender, Lebanon, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 388,290, Aug. 14, 1973, Pat. No. 3,862,189. This application Aug. 5, 1974, Ser. No. 494,661

Int. Cl.^{2} C07D *239/26*

U.S. Cl. 260—256.4 N **5 Claims**

1. A compound of the formula II:



wherein R_2 is naphthyl alkyl of 1 to 3 carbons or phenyl alkyl of 1 to 3 carbons substituted in the aryl moiety by one or two alkoxy of 1 to 6 carbons or one or two chloro.

3,936,455
PIPERIDINESULFONYLUREA DERIVATIVES

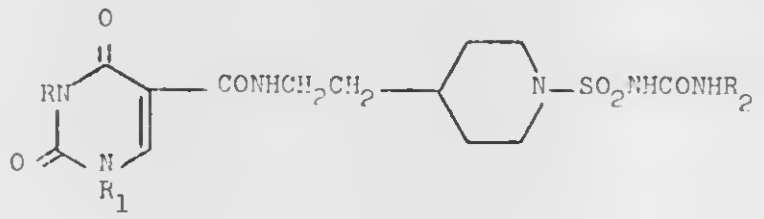
Hans E. Wiedermann, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jan. 31, 1975, Ser. No. 546,003

Int. Cl.^{2} C07D *239/00*

U.S. Cl. 260—256.5 R **11 Claims**

1. A sulfamylurea compound selected from the group consisting of 1-piperidinesulfonylureas of the formula:



and the base salts thereof with pharmacologically acceptable cations, wherein R and R_1 are each alkyl having from one to three carbon atoms, and R_2 is a member selected from the group consisting of bicyclo[2.2.1]hept-5-en-2-yl-endo-methyl, bicyclo[2.2.1]hept-2-yl-endo-methyl, 7-oxabicyclo[2.2.1]hept-2-yl-endo-methyl,

1-adamantyl and cycloalkyl having from five to eight carbon atoms.

3,936,456
SUBSTITUTED PIPERAZINE DIONE OXYLS AND HYDROXIDES AND POLYMER COMPOSITIONS STABILIZED THEREBY

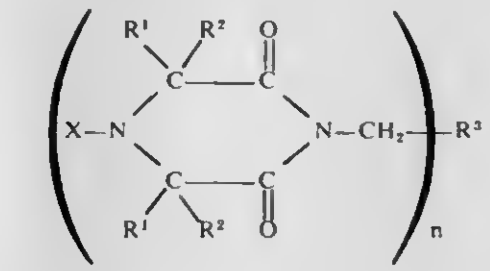
Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciby-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 237,956, March 24, 1972, abandoned. This application July 16, 1973, Ser. No. 379,901

Int. Cl.^{2} C07D *241/02*

U.S. Cl. 260—268 DK **20 Claims**

1. A compound of the formula



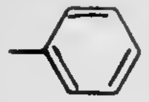
wherein

X is O or OH;

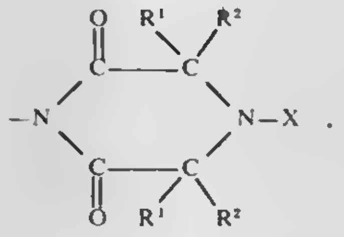
R^1 and R^2 are independently of each other methyl or ethyl or together with the carbon to which they are bound are cyclopentyl or cyclohexyl, which is unsubstituted or substituted with methyl;

n is an integer of from 1 to 3;

when *n* is 1, R^3 is hydrogen, alkyl of from 1 to 19 carbon atoms,



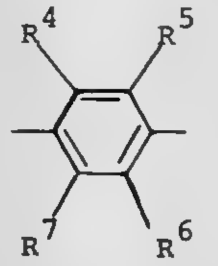
or



wherein

R^1, R^2 and X are as defined above;

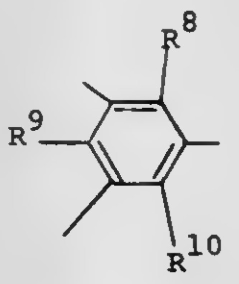
when *n* is 2, R^3 is the direct bond, alkylene of from 1 to 18 carbon atoms, or



wherein

R^4, R^5, R^6, and R^7 are hydrogen or methyl;

when *n* is 3, R^3 is

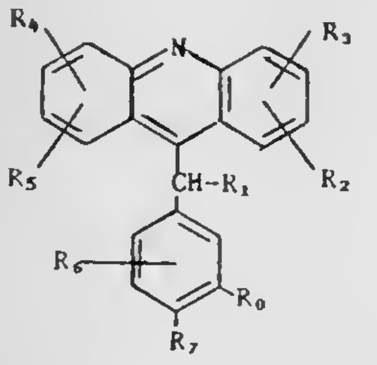


wherein
R^8, R^9, and R^{10} are hydrogen or methyl.

3,936,457
SUBSTITUTED 9-BENZYLACRIDINES

Charles F. Schwender, Lebanon, and Russell E. Pike, Stanhope, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed May 6, 1974, Ser. No. 467,242
Int. Cl.² C07D *219/06, 219/02;* A61K *31/47*
U.S. Cl. 260—279 R **9 Claims**

1. A substituted 9-benzylacridine of the general formula:



I

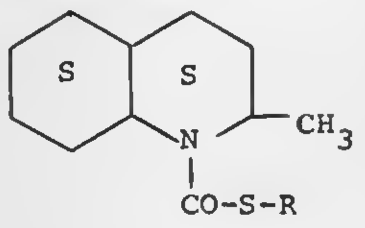
R_1 is selected from the group consisting of
$-H$,
$-CO_2CH_3$;

R_2 is at the number 2 carbon on the acridine ring and is selected from the group consisting of
$-OCH_3$,
$-H$;
R_3 is selected from the group consisting of
$-OCH_3$,
$-H$;
R_4 is
$-H$;
R_5 is
$-H$;
R_6 is
$-H$;
R_7 is selected from the group consisting of
$-OCH_3$,
$-OH$,
$-OC_2H_5$,
$-Cl$;
R_8 is selected from the group consisting of
$-OCH_3$,
$-OH$,
$-OC_2H_5$,
$-H$.

3,936,458
SUBSTITUTED 2-AZABICYCLOALKANES AS SELECTIVE HERBICIDES

Elmar Sturm, Aesch, Basel, and Christian Vogel, Binningen, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation-in-part of Ser. No. 52,986, July 7, 1970, abandoned. This application Nov. 19, 1973, Ser. No. 417,303
Int. Cl.² C07D *215/08*
U.S. Cl. 260—283 S **4 Claims**

1. A compound of the formula

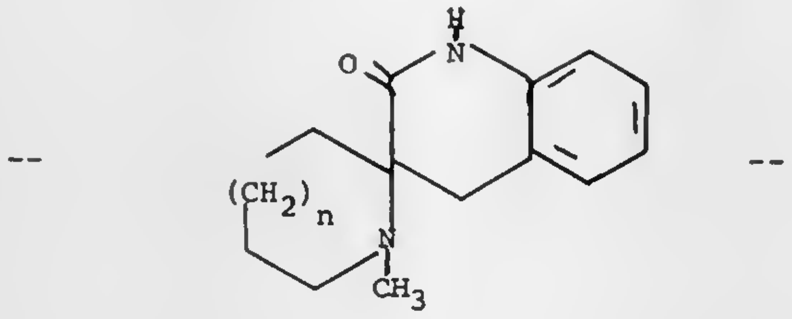


wherein R is ethyl, n-propyl or isopropyl.

3,936,459
1',4'-DIHYDRO-1-METHYL-SPIRO [PIPERIDINE AND PYRROLIDINE-2,3'(2'H)QUINOLINE]-2'-ONE COMPOUNDS

Hideo Kato, and Eiichi Koshinaka, both of Fukui, Japan, assignors to Hokuriku Pharmaceutical Co., Ltd., Katsuyama, Japan
Filed Dec. 11, 1974, Ser. No. 531,452
Claims priority, application Japan, Dec. 19, 1973, 48-141177
Int. Cl.² C07D *215/38, 215/22*
U.S. Cl. 260—288 CE **3 Claims**

1. A spiro compound of the formula:

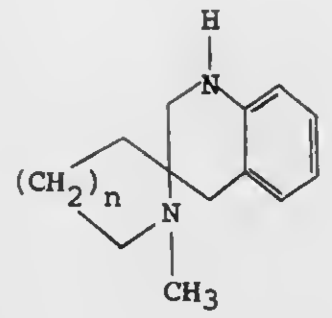


wherein *n* is an integer of 1 or 2, and the corresponding pharmaceutically acceptable acid addition salts thereof.

3,936,460
1',4'-DIHYDRO-1-METHYL-SPIRO[PIPERIDINE AND PYROLIDINE-2,3'(2'H)QUINOLINE] COMPOUNDS

Hideo Kato, and Eiichi Koshinaka, both of Fukui, Japan, assignors to Hokuriku Pharmaceutical Co., Ltd., Fukui, Japan
Filed Dec. 10, 1974, Ser. No. 531,322
Claims priority, application Japan, Dec. 19, 1973, 48-141178
Int. Cl.² C07D *215/38*
U.S. Cl. 260—288 CE **3 Claims**

1. A spiro-compound of the formula:

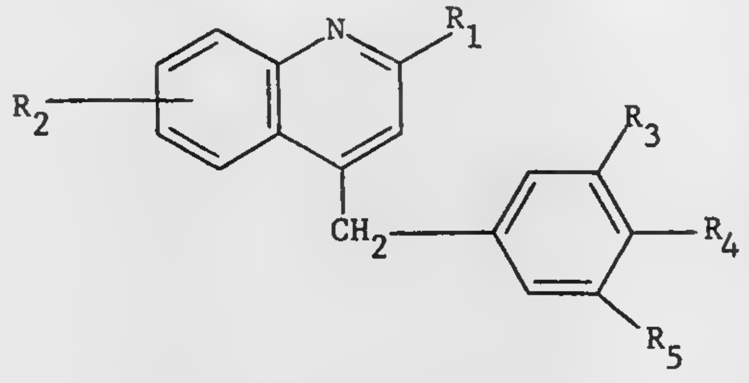


wherein *n* stands for an integer of 1 or 2, and the corresponding pharmaceutically acceptable acid addition salts.

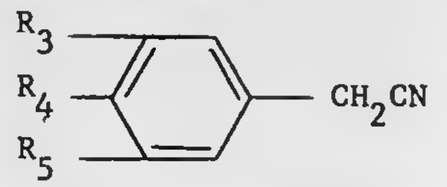
3,936,461
SUBSTITUTED 4-BENZYLQUINOLINES

Charles F. Schwender, Lebanon, and John Shavel, Jr., Mendham, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
Division of Ser. No. 400,102, Sept. 24, 1973, abandoned. This application Oct. 17, 1974, Ser. No. 515,764
Int. Cl.² C07D *215/12, 215/14*
U.S. Cl. 260—289 R **1 Claim**

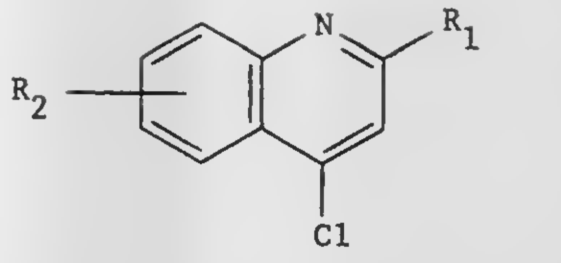
1. A process for producing compounds of the formula:



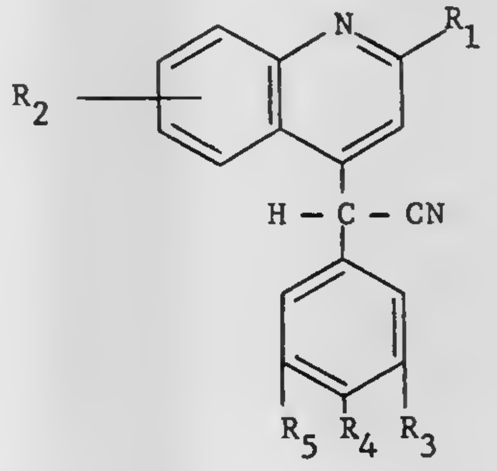
wherein R_1 is hydrogen or alkyl having 1 to 6 carbon atoms, R_2 is hydrogen, halogen, dialkoxy having 1 to 6 carbon atoms in the alkyl residues or methylendioxy, R_3 and R_4 are simultaneously alkoxy having 1 to 6 carbon atoms in the alkyl residue and R_5 is hydrogen or alkoxy having 1 to 6 carbon atoms in the alkyl residue which comprises (a) generating the carbanion of 1.0 molar-equivalent of a R_3, R_4, R_5-substituted phenylacetonitrile of the formula:



wherein R_3, R_4 and R_5 are as hereinbefore defined with about 1.5 molar-equivalents of sodium amide in liquid ammonia at about −25°C. to −30°C., (b) reacting the carbanion so generated with about 0.3 molar-equivalents of a R_1, R_2-substituted-4-chloroquinoline of the formula:



wherein R_1 and R_2 are as hereinbefore defined at about −25°C. to −30°C., (c) recovering the R_1, R_2, R_3, R_4, R_5-substituted-α-(4-quinolinyl)-α-phenylacetonitrile intermediate of the formula:

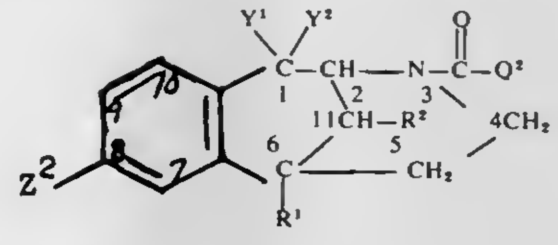


wherein R_1, R_2, R_3, R_4 and R_5 are as hereinbefore defined by extraction, (d) heating the s o obtained α-(4-quinolinyl)-α-phenylacetonitrile with 1-butanol saturated with hydrogen chloride under reflux and (e) recovering the product by extraction.

3,936,462
1,2,3,4,5,6-HEXAHYDRO-1-OXO OR HYDROXY-3-ACYL-,6-METHANO-3-BENZAZOCINES AND CORRESPONDING 1-ESTERS THEREOF

Noel F. Albertson, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.
Continuation-in-part of Ser. No. 257,343, May 26, 1972, Pat. No. 3,823,149, which is a continuation-in-part of Ser. No. 43,556, June 4, 1970, abandoned. This application June 14, 1973, Ser. No. 369,870
Int. Cl.² C07D *221/26*
U.S. Cl. 260—293.54 **11 Claims**

1. 1,2,3,4,5,6-Hexahydro-1-(Y^1)-1-(Y^2)-3-(Q^2-CO-)-8-(Z^2)-6-(R^1)-11-(R^2)-2,6-methano-3-benzazocine having the formula



wherein:

Y^1 is hydroxy or acyloxy of the group consisting of: alkanoyloxy having 1–22 carbon atoms; alkenoyloxy having one or two double bonds and having 4–22 carbon atoms; $Ar—C_mH_{2m}—CO—O—$ wherein *m* is an integer from zero to two and Ar is phenyl or is phenyl substituted by 1–3 members of the group consisting of alkyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, halo, trifluoromethyl, dialkylamino having 2–8 carbon atoms, and alkanoylamino having 1–6 carbon atoms; phenoxyacetoxy; naphthalenccarbonyloxy; pyridinecarbonyloxy; (cycloalkyl or fluorocycloalkyl)—C_mH_{2m}—Co—O— having a total of 4–10 carbon atoms of which 3–7 are ring carbon atoms in cycloalkyl and wherein m is an integer from zero to two, alkylcarbonato having 2–7 carbon atoms, carbamyloxy, or (mono- or di-alkyl)carbamyloxy having 2–9 carbon atoms;

Y^2 is hydrogen, alkyl having 1–6 carbon atoms, or Ar^1—C_nH_{2n}— wherein *n* is an integer from zero to four and Ar^1 is phenyl or phenyl substituted by 1–3 members of the group consisting of alkyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, and dialkylamino having 2–8 carbon atoms; or

Y^1 and Y^2 taken together represent oxo or ethylenedioxy;

Q^2 is alkyl having 1–7 carbon atoms, alkenyl having 2–5 carbon atoms, haloalkenyl having 2–5 carbon atoms and having 1–3 members of the group consisting of chlorine, fluorine, and bromine attached to ethylenic carbon, alkynyl having 2–5 carbon atoms, cycloalkyl—C_qH_{2q}— wherein *q* is an integer from zero to three and wherein cycloalkyl has 3–7 ring carbon atoms and has a total of 3–10 carbon atoms, and Ar^2—C_qH_{2q}— wherein *q* is an integer from zero to three and Ar^2 is phenyl or is phenyl substituted by amino, nitro, alkanoylamino having 1–6 carbon atoms, alkoxy having 1–4 carbon atoms, alkyl having 1–4 carbon atoms, halo, or trifluoromethyl;

Z^2 is hydrogen, hydroxy, one of the acyloxy groups defined by Y^1, alkoxy having 1–6 carbon atoms, difluoromethoxy, trifluoromethoxy, benzyloxy, or alkenyloxy having 3–6 carbon atoms; and

R^1 and R^2 are members of the group consisting of hydrogen and alkyl having 1–4 carbon atoms.

3,936,463
BENZOMORPHANES

Otto Behner; Ulrich Horlein; Friedrich Hoffmeister, and Hans Werner Schubert, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Germany

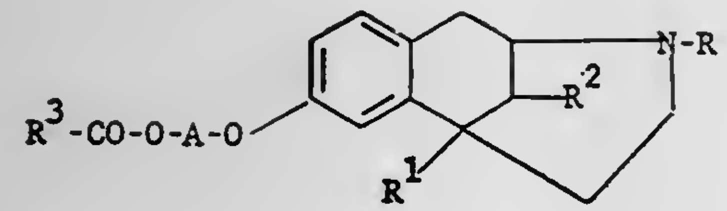
Filed Dec. 3, 1973, Ser. No. 421,439

Claims priority, application Germany, Dec. 7, 1972, 2259979

Int. Cl.^{2} C07D *221/26*

U.S. Cl. 260—293.54 **25 Claims**

1. A benzomorphan of the formula



or a pharmaceutically acceptable nontoxic salt thereof wherein

R is cyclopropylmethyl or cyclobutylmethyl;

R^1 and R^2 are the same or different and each is lower alkyl; and

R^3 is straight- or branched-chain alkyl of 1 to 6 carbon atoms, straight- or branched-chain alkenyl of 2 to 6 carbon atoms or cycloalkyl of 3 to 6 carbon atoms unsubstituted or substituted by alkoxy of 1 to 4 carbon atoms, alkoxycarbonyl of 1 to 4 carbon atoms in the alkoxy moiety, phenoxy, alkoxycarbonylamino of 1 to 4 carbon atoms in the alkoxy moiety or alkoxycarbonyl-alkylamino of 1 or 2 carbon atoms in the alkoxy moiety and 1 or 2 carbon atoms in the alkyl moiety; phenyl or pyridyl unsubstituted or substituted by hydroxy, alkyl of 1 or 2 carbon atoms, alkoxy of 1 or 2 carbon atoms or alkylamino of 1 or 2 carbon atoms; alkylamino of 1 or 2 carbon atoms, dialkylamino of 1 or 2 carbon atoms in each alkyl moiety; phenylamino; alkoxy of 1 or 2 carbon atoms; alkoxycarbonyl-alkylamino of 1 or 2 carbon atoms in the alkoxy moiety; or alkoxycarbonyl-alkylamino of 1 or 2 carbon atoms in the alkoxy moiety and 1 or 2 carbon atoms in the alkyl moiety; and

A is alkylene or alkylidene of 2 to 7 carbon atoms.

3,936,464
1-ACYL-3-[2-(4-PHENYL-1-PIPERIDINYL)ETHYL]INDOLINES

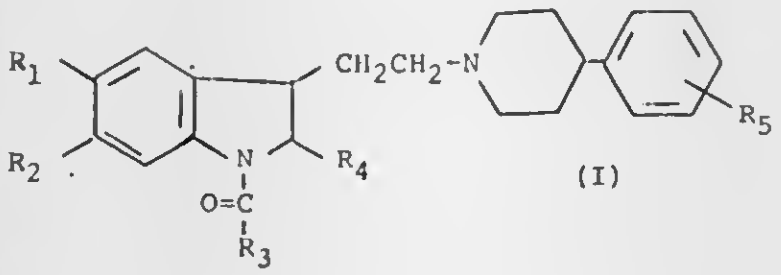
George Rodger Allen, Jr., Old Tappan, N.J., and Francis Joseph McEvoy, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 25, 1974, Ser. No. 518,023

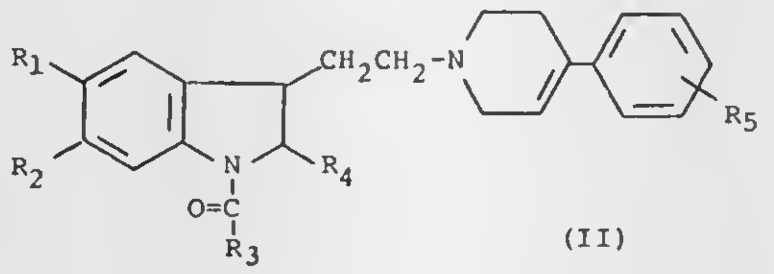
Int. Cl.^{2} C07D *401/06*

U.S. Cl. 260—293.61 **10 Claims**

1. A compound selected from the group consisting of those of the formulae:



(I)



(II)

wherein R_1 is hydrogen or a lower alkoxy group, R_2 is hydrogen and R_1 and R_2 taken together is methylenedioxy, R_3 is a lower alkyl group, R_4 is hydrogen or a lower alkyl group, and R_5 is hydrogen, chloro or trifluoromethyl; and the pharmacologically acceptable acid-addition salts thereof.

3,936,465
CYCLOHEXANE TETROLS AND DERIVATIVES THEREOF

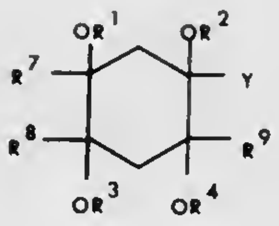
Frederic Peter Hauck, Somerville, and Joseph E. Sundeen, Trenton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed July 30, 1973, Ser. No. 383,642

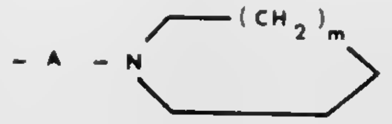
Int. Cl.^{2} C07D *211/32*

U.S. Cl. 260—293.65 **5 Claims**

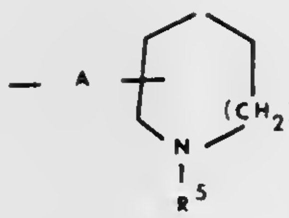
1. A compound of the formula



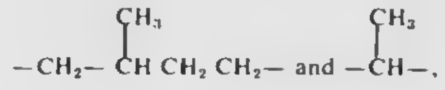
wherein Y is a radical of the formula



or



wherein A is straight-chain alkylene of the structure $(CH_2)_n$ wherein n is an integer from 1 to 6 or A is branched-chain alkylene selected from the group consisting of



$$-CH_2-\overset{\overset{\displaystyle CH_3}{|}}{C}H\,CH_2\,CH_2-\text{ and }-\overset{\overset{\displaystyle CH_3}{|}}{C}H-,$$

m is 0 or 1, and R^5 is hydrogen, or alkyl of 1 to 3 carbons;

R^1, R^2, R^3 and R^4 are the same or different and are alkanoyl of 1 to 4 carbons; haloalkanoyl of 1 to 4 carbons; or alkoxycarbonyl of the formula

$$-\overset{\overset{\displaystyle O}{\|}}{C}OR$$

wherein R is an alkyl radical of 1 to 4 carbons;

R^7 and R^8 are the same or different and are hydrogen or alkyl having 1 to 4 carbon atoms; and

R^9 is hydrogen or a straight or branched chain alkyl radical having 1 to 6 carbon atoms.

3,936,466
3-CHLORO-TETRAHYDRO-1,3-OXAZINES OR OXAZOLIDINES SPIRO SUBSTITUTED

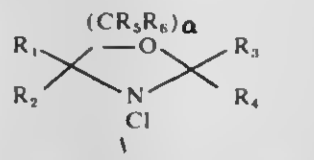
Nicolae S. Bodor, and James J. Kaminski, both of Lawrence, Kans., assignors to Interx Research Corporation, Lawrence, Kans.

Division of Ser. No. 456,744, April 1, 1974, Pat. No. 3,897,425. This application Apr. 10, 1975, Ser. No. 566,746

Int. Cl.^{2} C07D *221/20*

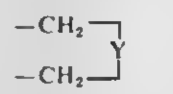
U.S. Cl. 260—293.66 **3 Claims**

1. A 3-chloro-tetrahydro-1,3-oxazine or oxazolidine compound of the formula:



where each of R_1 and R_2, which may be the same or different, represents alkyl of 1 to 20 carbon atoms; wherein each of R_5 and R_6, which may be the same or different, represents hydrogen or alkyl of 1 to 20 carbon atoms.

wherein R_3 and R_4 represent a



group,

wherein Y represents a $-(CH_2)_n-W-(CH_2)_m-$ group or a >CH-Z group,

wherein W represents a member selected from the group consisting of a —O— atom, a $-CH_2-$ group, a $>NCH_3$-group, a $>NHCH_3^+$ group, a $>NC_2H_5$ group, a $>NHC_2H_5^+$ group, a $>N(CH_3)_2$ group, or a $>N(C_2H_5)_2$ group, wherein n is the same or different from *m* and wherein each of *n* and *m* represent an integer of from 0 to 2, and wherein Z is a member selected from the group consisting of a dimethylamino group, a diethylamino group, a trimethylammonium group, a triethylammonium group, a dimethylammonium group, a diethylammonium group, a $-COOR_7$ group, a $-OOCR_8$ group and a $-OR_9$ group, wherein each of R_7 through R_9, respectively, represents an alkyl group of from 1 to 5 carbon atoms or a benzyl group; and wherein *l* represents an integer of 1 or 2.

3,936,467
HYDROXYALKYLENIMINO-PHENYL-ACETIC ACIDS

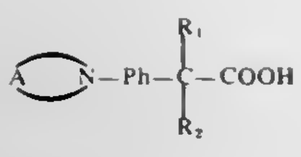
Richard William James Carney, New Providence, and George de Stevens, Summit, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 307,698, Nov. 17, 1972, which is a continuation-in-part of Ser. No. 808,343, March 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 790,863, Jan. 13, 1969, abandoned, which is a continuation-in-part of Ser. No. 757,136, Sept. 3, 1968, Pat. No. 3,657,230, which is a continuation-in-part of Ser. No. 716,347, March 27, 1968, abandoned. This application Mar. 25, 1974, Ser. No. 454,643

Int. Cl.^{2} C07D *211/40*

U.S. Cl. 260—293.82 **5 Claims**

1. A compound of the formula



in which R_1 is hydrogen, R_2 is hydrogen, lower alkyl or 3 to 7 ring-membered cycloalkyl, Ph is 1,3- or 1,4-phenylene, (lower alkyl)-1,3- or 1,4-phenylene, (lower alkoxy)-1,3- or 1,4-phenylene, mono- or di-(halogeno)-1,3- or 1,4-phenylene, (trifluoromethyl)-1,3- or 1,4-phenylene, or (di-lower alkylamino)-1,3- or 1,4-phenylene, the group A N— is 5 to 8 ring-membered hydroxyalkyleneimino, wherein the oxygen atom is separated from the nitrogen atom by at least two carbon atoms, or a lower alkyl ester, the amide, an alkali metal or alkaline earth metal salt or a therapeutically useful acid addition salt thereof.

3,936,468

PHENYLBUTANOL DERIVATIVES

Hisao Yamamoto, Nishinomiya; Masaru Nakao; Kikuo Sasajima, both of Toyonaka; Isamu Maruyama, Minoo, and Shigenari Katayama, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Division of Ser. No. 82,100, Oct. 19, 1970, abandoned. This application Feb. 15, 1973, Ser. No. 332,777

Claims priority, application Japan, Oct. 27, 1969, 44-86175; Nov. 4, 1969, 44-88513; Feb. 3, 1970, 45-9688; Feb. 6, 1970, 45-10930; Feb. 9, 1970, 45-11629; Apr. 17, 1970, 45-33362

Int. Cl.² C07D *211/52*

U.S. Cl. 260—293.84 **4 Claims**

1. 1-(p-Fluorophenyl)-4-[4-(p-chlorophenyl)-4-hydroxypiperidino]-1-butanol or its non-toxic, pharmaceutically acceptable acid addition salt.

3,936,469

PROCESS FOR PREPARING N-CARBOXYLIC ANHYDRIDES OF AMINO ACIDS

Yasuo Fujimoto, Yokohama; Keizo Tatsukawa, Machida; Yoichi Koiwa, Tokyo; Akira Miike, Machida; Tatsuo Nomura, Tokyo, and Shohei Kobayashi, Kooriyama, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1973, Ser. No. 415,016

Claims priority, application Japan, Nov. 13, 1972, 47-112891; Jan. 31, 1973, 48-11924

Int. Cl.² C07D *263/44*

U.S. Cl. 260—307 B **5 Claims**

1. A process for preparing N-carboxylic anhydrides of amino acids comprising the step of reacting an amino acid selected from the group consisting of glycine, alanine, leucine, isoleucine, valine, proline, phenylalanine, cysteine, O-tert-butylserine, O-tert-butylthreonine, O-benzylserine, O-benzylthreonine, O-benzyltyrosine, S-benzylcysteine, methyl aspartate, ethyl asparate, propyl aspartate, methyl glutamate, ethyl glutamate, propyl glutamate, butyl glutamate, benzyl glutamate, N-acetyllysine, N-carbobenzoxylysine, N-carbobenzoxyornithine, arginine, cystine, methionine, and salts thereof; with trichloromethylchloroformate in an amount of from about 0.75 to 2.1 moles per mol of the amino acid at a temperature of from 30° to 150°C in an organic solvent selected from the group consisting of benzene, toluene, xylene, dichloromethane, 1,2-dichloropropane, 1,1,1-trichloroethane, tetrachloroethane, trichloroethylene, perchloroethylene, chlorobenzene, dichlorobenzene, chlorotoluene, benzylchloride, fluorobenzene, fluorotoluene, nitrobenzene, nitrotoluene, methyl acetate, ethyl acetate, propyl acetate, butyl acetate, methyl formate, ethyl formate, propyl formate, butyl formate, acetonitrile, propionitrile, tetrahydrofuran, 1,4-dioxane, propyl ether, chloroethyl ether, ethyleneglycol diethyl ether, methyl ethyl ketone, methyl isobutyl ketone, mixtures of dioxane with 1,2-dichloroethane, dioxane with methylenechloride, dioxane with chloroform, 1,2-dichloroethane with ethylacetate, 1,2-dichloroethane with tetrahydrofuran, chloroform with ethylacetate, benzene with tetrahydrofuran, and toluene with tetrahydrofuran.

3,936,470

1,3-DIOXOLAN-2-YLMETHYLIMIDAZOLES

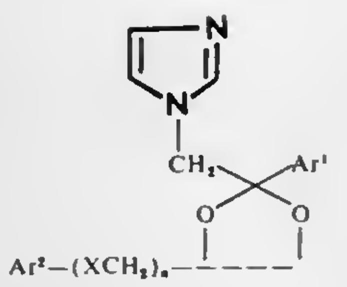
Jan Heeres, Vosselaar, Belgium, assignor to Janssen Pharmaceutica N.V., Beerse, Belgium

Filed Jan. 27, 1975, Ser. No. 544,157

Int. Cl.² C07D *233/60, 405/10*

U.S. Cl. 260—309 **6 Claims**

1. A chemical compound selected from the group consisting of an imidazole derivative having the formula:



and the therapeutically active acid addition salts and stereochemical optical isomeric forms thereof,
wherein:

- Ar^1 is a member selected from the group consisting of phenyl, mono-, di- and trihalophenyl, loweralkylphenyl and loweralkoxyphenyl;
- Ar^2 is a member selected from the group consisting of phenyl, substituted phenyl, naphthyl and halonaphthyl, and wherein substituted phenyl has the meaning of a phenyl group, having thereon from 1 to 3 substituents, independently selected from the group consisting of halo, loweralkyl, loweralkoxy, cyano, phenyl and benzyl;
- X is a member selected from the group consisting of O, S and CH_2; and *n* is the integer 0 or 1.

3,936,471

(HEXAHYDROBENZIMIDAZOL-2-YL)BENZOPHENONES AND DERIVATIVES

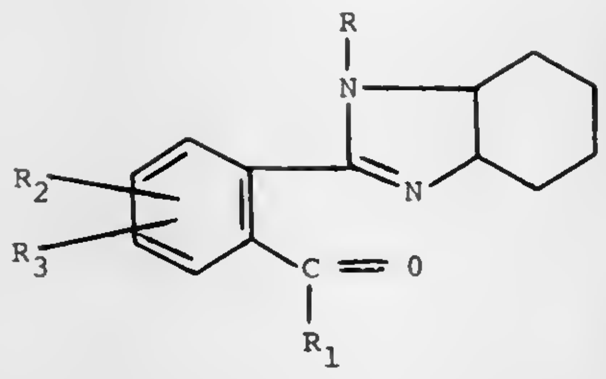
Theodore S. Sulkowski, Wayne, and Albert A. Mascitti, Norristown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Aug. 7, 1974, Ser. No. 495,358

Int. Cl.² C07D *49/34*

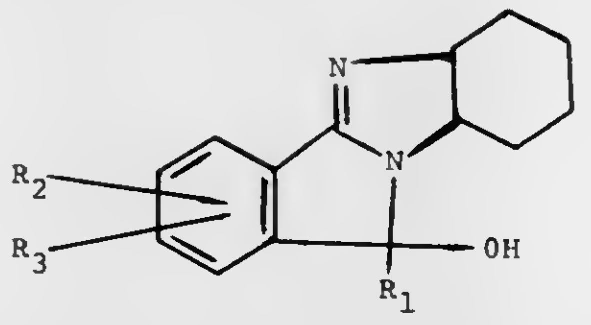
U.S. Cl. 260—309.6 **7 Claims**

1. The pharmaceutically acceptable acid addition salt of a compound having the formula



wherein R is hydrogen or lower alkyl, R_1 is selected from the group consisting of phenyl, monohalophenyl, dihalophenyl, mono(lower)alkylphenyl, di(lower)alkylphenyl, trifluoromethylphenyl, mono(lower)alkoxyphenyl, di(lower)alkoxyphenyl; R_2 is selected from the group consisting of hydrogen, halogen,(lower)alkyl and (lower)alkoxy; R_3 is hydrogen when R_2 and R_3 are dissimilar and when R_2 and R_3 are the same they are both selected from the group consisting of hydrogen, halogen (lower)alkyl and (lower)alkoxy.

6. A compound of the formula:



wherein R_1 is selected from the group consisting of phenyl, monohalophenyl, dihalophenyl, mono(lower)alkylphenyl, di(lower)alkylphenyl, trifluoromethylphenyl, mono(lower)alkoxyphenyl, di(lower) alkoxyphenyl; R_2 is selected from the group consisting of hydrogen, halogen, (lower)alkyl and (lower)alkoxy; R_3 is hydrogen when R_2 and R_3 are dissimilar and when R_2 and R_3 are the same they are both selected from the group consisting of hydrogen, halogen, (lower)alkyl and (lower)alkoxy.

3,936,472

LACTONE ACID SYNTHESIS

Robert Earl Kinney, Lawrenceville; Albert Lloyd Williams, Hopewell Township, and El-Ahmadi Ibrahim Heiba, Princeton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 19, 1973, Ser. No. 324,939

Int. Cl.² C07D *307/28*

U.S. Cl. 260—343.6 **14 Claims**

1. A method of producing a lactone ester comprising the step of mixing alkenylsuccinic anhydride, wherein the alkenyl group has from 14 to 190 carbon atoms, with an organic compound having the formula $R'''(XH)_p$, wherein *p* is from 1 to 4, X is selected from the group consisting of oxygen sulfur and, R''' is alkyl having from 1 to 8 carbon atoms, in the presence of an acid-acting catalyst selected from the group consisting of a liquid acid selected from the group consisting of phosphoric, polyphosphoric, sulfonic, p-toluene sulfonic, phosphonic and hydrogen halide, a cation exchange resin, a crystalline aluminosilicate at least partially in the hydrogen form, and forming said lactone ester.

3,936,473

VINYLATION OF AROMATIC COMPOUNDS

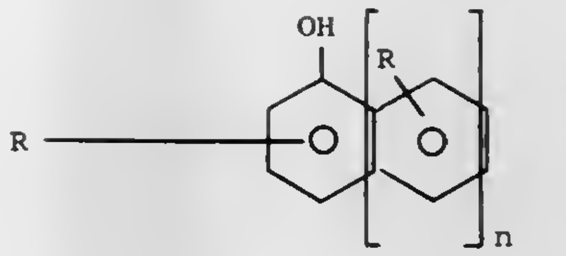
Ted Symon, Lombard, and Nils J. Christensen, Palatine, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 9, 1973, Ser. No. 387,087

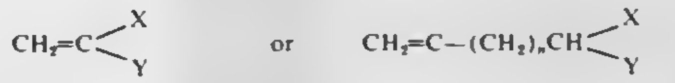
Int. Cl.² C07D *311/08, 311/10*

U.S. Cl. 260—343.2 R **12 Claims**

1. In a process for the preparation of a coumarin which comprises reacting a hydroxy substituted aromatic compound possessing the generic formula:

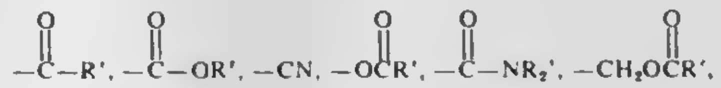


in which R is selected from the group consisting of hydrogen, hydroxyl, alkyl, alkoxyl, aryl, alkaryl, aralkyl, cycloalkyl and halogen radicals and n is an integer of from 0 to about 2 with an ethylenic compound which possesses the generic formula:



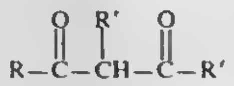
$$CH_2{=}C\genfrac{}{}{0pt}{}{\diagup X}{\diagdown Y} \qquad \text{or} \qquad CH_2{=}C-(CH_2)_nCH\genfrac{}{}{0pt}{}{\diagup X}{\diagdown Y}$$

in which X and Y are selected from the group consisting of hydrogen, alkyl,



$$-\overset{O}{\overset{\|}{C}}-R',\ -\overset{O}{\overset{\|}{C}}-OR',\ -CN,\ -O\overset{O}{\overset{\|}{C}}R',\ -\overset{O}{\overset{\|}{C}}-NR_2',\ -CH_2O\overset{O}{\overset{\|}{C}}R',$$

and OR′ radicals, R′ being selected from the group consisting of hydrogen, alkyl, aryl, cycloalkyl, aralkyl, alkaryl radicals and *n* is an integer of from 0 to about 16 at a temperature in the range of from about ambient to about 250° C. and a pressure in the range of from atmospheric to about 500 atmospheres in the presence of a catalyst system comprising an acetylacetonate or carboxylate salt of copper or a noble metal of Group VIII of the Periodic Table, oxygen, and organic acid and recovering the resultant coumarin compound, the improvement which comprises effecting said vinylation reaction in the presence of a compound containing an active methylene group selected from the group consisting of lower alkyl acetoacetate; lower alkyl propioacetate; lower alkyl butyroacetate; diloweralkyl malonate; *β*-diketones possessing the generic formula:



$$R-\overset{O}{\overset{\|}{C}}-\overset{R'}{\overset{|}{CH}}-\overset{O}{\overset{\|}{C}}-R'$$

in which R and R′ comprise alkyl containing compounds from 1 to about 4 carbon atoms and R′ ′ is selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl, alkaryl and aralkyl radicals and benzyl ketones present in a range of from about 0.1:1 to about 10:1 moles of said active methylene group-containing compound per mole of noble metal of Group VIII of the Periodic Table or copper.

3,936,474

SYNTHETIC HORMONES FOR INSECT CONTROL

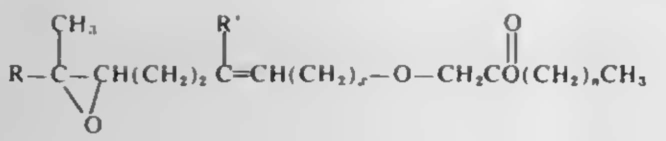
William S. Bowers, Bowie, Md., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 363,294, May 23, 1973, which is a division of Ser. No. 78,577, Oct. 6, 1970, abandoned. This application July 2, 1975, Ser. No. 592,686

Int. Cl.² C07D *303/40*

U.S. Cl. 260—348 A **2 Claims**

1. A compound of the general formula



wherein R and R′ are selected from the group consisting of methyl and ethyl; *x* is a number from 1 to 2; and *n* is a number from 0 to 3.

3,936,475
SYNTHETIC HORMONES FOR INSECT CONTROL

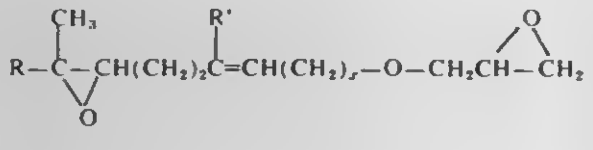
William S. Bowers, Bowie, Md., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 363,294, May 23, 1973, which is a division of Ser. No. 78,577, Oct. 5, 1969, abandoned. This application July 2, 1975, Ser. No. 592,689

Int. Cl.^{2} C07D *303/28*

U.S. Cl. 260—348 R **2 Claims**

1. A compound of the general formula



wherein R and R′ are selected from the group consisting of methyl and ethyl; and *x* is a number from 1 to 2.

3,936,476
SILICONE COMPOSITIONS CONTAINING PLATINUM-CONTAINING MATERIAL AND MANGANESE CARBONATE

Kunio Itoh, and Takeo Yoshida, both of Annaka, Japan, assignors to Shinetsu Chemical Company, Japan

Continuation-in-part of Ser. No. 332,495, Feb. 14, 1973, abandoned. This application Jan. 8, 1975, Ser. No. 539,428

Claims priority, application Japan, Feb. 14, 1972, 47-15479

Int. Cl.^{2} C08L *83/04*

U.S. Cl. 260—37 SB **4 Claims**

1. Silicone compositions which comprise

a. 100 parts by weight of an organopolysiloxane having the formula:

$R_aSiO_{4-a/2}$

wherein R is a member selected from the group consisting of substituted and unsubstituted monovalent hydrocarbon radicals; and *a* is a number from about 1.90 to about 2.05;

b. from about 20 to about 200 parts by weight of finely divided silica filler,

c. from about 5 to about 100 parts by weight of manganese carbonate having a particle size of from about 1μ to about 50μ and

d. from about 5 to about 1,000 parts per million parts by weight of a platinum-containing composition, at least a part of which is platinum, the parts of platinum in said composition being based on the weight of the said organopolysiloxane component (a).

3,936,477
BLUE ANTHRAQUINOID DISPERSE DYES, THEIR PRODUCTION AND USE

Karl Maier, Ludwigshafen, and Ernst Hartwig, Heidelberg, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhine, Germany

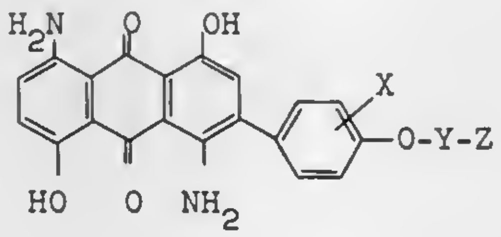
Filed Aug. 28, 1974, Ser. No. 501,069

Claims priority, application Germany, Sept. 13, 1973, 2346047

Int. Cl.^{2} C07C *97/26, 101/80*

U.S. Cl. 260—380 **5 Claims**

1. A dye of the formula:



in which

X is hydrogen, chloro, methyl, methoxy or ethoxy;

Y is saturated alkylene of two to eight carbon atoms or —$(CH_2)_2$—O—$(CH_2)_2$—;

and

Z is —CN or —COOH.

3,936,478
PROCESS FOR THE PREPARATION OF DESMOSTEROL DERIVATIVES

Toru Takeshita, Hino, and Sachio Ishimoto, Tokyo, both of Japan, assignors to Teijin Limited, Osaka, Japan

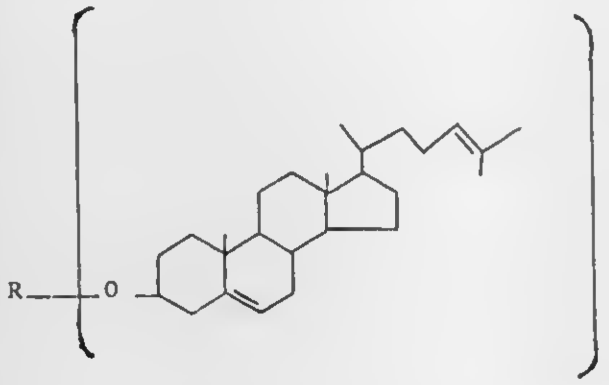
Filed June 19, 1974, Ser. No. 480,823

Claims priority, application Japan, June 20, 1973, 48-68657; July 3, 1973, 48-74367

Int. Cl.^{2} C07J *9/00*

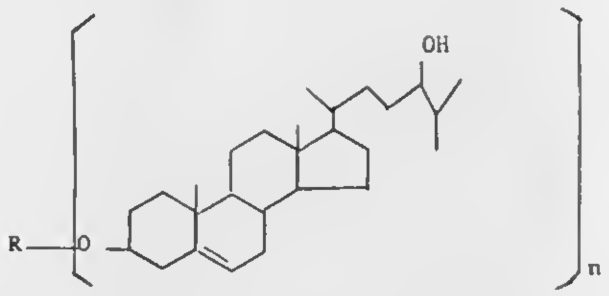
U.S. Cl. 260—397.2 **10 Claims**

1. A process for the preparation of desmosterol of which the hydroxyl group at the 3-position is protected, or bis-form derivatives thereof, of the formula (2) below:



(2)

in which R denotes respectively a monovalent or divalent protective group which is convertible into a hydroxyl group through hydrolysis or reduction, and *n* is respectively 1 or 2, which comprises reacting 24-hydroxycholesterol of which the hydroxyl group at the 3-position is protected, or bis-form derivatives thereof, of the formula (1) below:



(1)

in which R and *n* have the same definitions as given for formula (2), with a dehydrating agent selected from the group consisting of

(A)(1) phosphorus pentoxide, (A)(2) acid potassium sulfate,

(B)(1) phosphorus oxychloride, (B)(2) thionyl chloride, and (B)(3) sulfonyl chlorides, with the proviso that when the dehydrating agent is (B)(1), (B)(2) or (B)(3) it is used in the presence of tertiary amine.

3,936,479
ORGANIC COMPOUNDS

Lajos Avar, Binningen, Basel-Land; Kurt Hofer, Munchenstein, Basel-Land, and Martin Preiswerk, Basel, all of Switzerland, assignors to Sandoz Ltd., (Sandoz AG), Basel, Switzerland

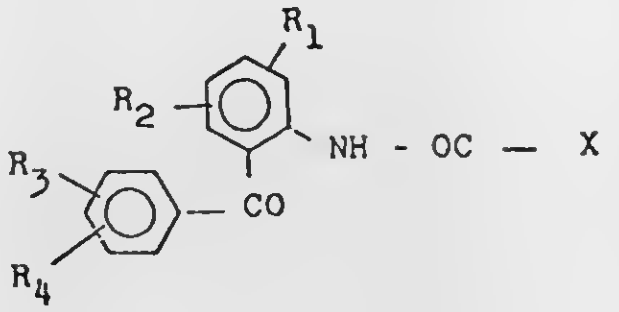
Filed May 4, 1973, Ser. No. 357,375

Claims priority, application Switzerland, May 9, 1972, 6864/72

Int. Cl.^{2} C07C *103/42, 103/62, 103/80*

U.S. Cl. 260—404 **26 Claims**

1. A compound of the formula:



wherein

R_1, R_2, R_3 and R_3 are independently, hydrogen or alkyl of 1 to 4 carbon atoms, and

X is phenyl which is substituted by hydroxy and 1 or 2 alkyls of 1 to 4 carbon atoms, or by alkoxy of 1 to 4 carbon atoms and 1 to 2 alkyls of 1 to 4 carbon atoms, or by phenyl sulphoxide; styryl; or phenylalkyl of 8 carbon atoms which is substituted by hydroxy and 1 or 2 alkyls of 1 to 4 carbon atoms.

3,936,480
ADDITIVES FOR IMPROVING THE DISPERSING PROPERTIES OF LUBRICATING OIL

Bernard Demoures, Puteaux; Daniel Llauro, Crepieux-le-Pape, and Francois Giolito, Lyon, all of France, assignors to Rhone-Progil, Paris, France

Continuation-in-part of Ser. No. 267,048, June 28, 1972, Pat. No. 3,862,981. This application Nov. 16, 1972, Ser. No. 307,062

Claims priority, application France, July 8, 1971, 71.26025; Nov. 17, 1971, 71.41972

Int. Cl.^{2} C10L *1/22;* **C10M** *3/26*

U.S. Cl. 260—404.5 **7 Claims**

1. An additive comprising the reaction product of a hydroxyl compound with a member selected from the class consisting of hydrocarbon chain and chlorinated polyolefin - substituted carboxylic compounds, wherein said hydroxyl compound is a member selected from the class consisting of aliphatic, cycloaliphatic mono- and poly-alcohols and phenolic compounds, wherein said hydrocarbon chain and said chlorinated polyolefin substituent are substantially saturated and contain at least about 30 carbon atoms, which reaction product is neutralized wholly with an ashless basic nitrogen compound selected from the class of aromatic and aliphatic mono-amines, alkylene poly-amines, and ammonia, the residual acidity of said reaction product being such that its total neutralization is accomplished by the addition of sufficient ashless basic nitrogen compound to impart a nitrogen content of between about 0.9% and 2.5% by weight of the final product.

3,936,481
HYDRAZONO-1,3,2-DITHIARSETANES, -STANNETANES AND -STIBITANES

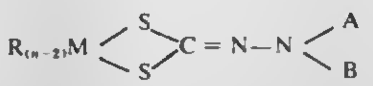
William Lindsay Mosby, North Plainfield, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 1, 1973, Ser. No. 412,000

Int. Cl. C07f *7/22*

U.S. Cl. 260—429.7 **7 Claims**

1. A compound of the formula:



wherein M is a polyvalent metal selected from the group consisting of antimony, arsenic and tin; R is a monovalent hydrocarbyl radical selected from the group consisting of lower alkyl, mono or bicyclic aromatic, and monocyclic aralkyl; *n* is an integer of 3 when M is arsenic or antimony and 4 when M is tin; A is lower alkyl, —CO—aryl or —SO_2—-aryl; B is hydrogen or lower alkyl; and aryl is monocyclic.

3,936,482
ORGANO TIN COMPOUNDS USEFUL AS CATALYSTS IN THE POLYCONDENSATION OF ORGANOSILICON COMPOUNDS

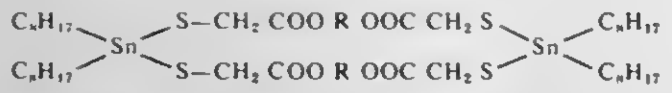
Ferenc Sagi, Bron, and Michel Roussos, Lyon, both of France, assignors to Rhone-Poulenc, S.A., Paris, France

Division of Ser. No. 237,514, March 23, 1972, Pat. No. 3,819,673. This application Apr. 29, 1974, Ser. No. 465,075

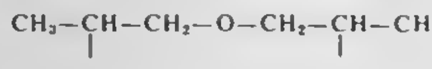
Int. Cl.^{2} C07F *7/22*

U.S. Cl. 260—429.7 **3 Claims**

1. Organothio-tin compounds of the general formula



in which R represents a p-xylylene radical or a



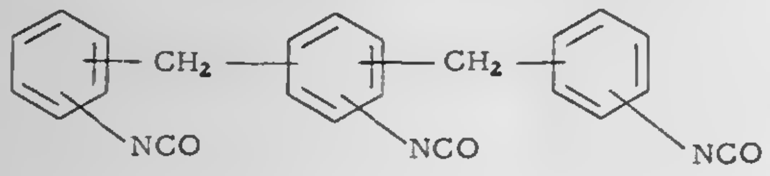
$$CH_3-\underset{|}{C}H-CH_2-O-CH_2-\underset{|}{C}H-CH_3$$

radical.

3,936,483
ORGANIC POLYISOCYANATES

Gemeinhardt, Paul G., Pittsburgh, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 358,633, April 9, 1964, abandoned. This application July 28, 1970, Ser. No. 64,091
Int. Cl.^{2} C07C *119/048*
U.S. Cl. 260—453 AR **6 Claims**

1. A composition comprising a mixture of from about 10 per cent to about 90 per cent by weight of toluylene diisocyanate selected from the group consisting of 2,4-toluylene diisocyanate, 2,6-toluylene diisocyanate and mixtures thereof and the balance a polyphenylpolymethylene-polyisocyanate comprising a mixture of from about 40 per cent to about 60 per cent diphenylmethane diisocyanate, from about 20 per cent to about 30 per cent of triisocyanate having the formula



and the balance higher functional polyphenyl-poltmethylene-polyisocyanates.

3,936,484
PRODUCTION OF ISOCYANATES FROM SUBSTITUTED UREAS

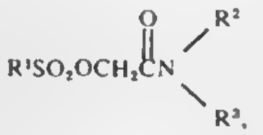
Rudolph Rosenthal, Broomall, and John G. Zajacek, Strafford, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Filed Sept. 25, 1974, Ser. No. 508,972
Int. Cl.^{2} C07C *118/00*
U.S. Cl. 260—453 P **12 Claims**

1. A method for the production of isocyanates from di- and tri-substituted ureas having the formula $R(NHCONR'R''')_x$ wherein R is a substituted or unsubstituted mono-, di- or trivalent organic radical selected from the group consisting of a saturated or mono-olefinic unsaturated straight or branched chain aliphatic or cycloaliphatic radical containing not more than 32 carbon atoms, an alkoxyalkyl radical having not more than 32 carbon atoms, an aryl radical, and an alkaryl radical containing 1 to 5 rings; R' and R'' are the same or different and are the same radicals enumerated for R; R' and R'' but not both may be hydrogen; and *x* is an integer of from 1 to 3, which comprises thermally decomposing said urea at a temperature in the range of from 230°C. to 350°C. while said urea is dissolved in an inert reaction medium solvent to produce the isocyanate and corresponding amine, said reaction medium solvent being higher boiling than the isocyanate product and selected from the group consisting of high molecular weight aliphatic, cycloaliphatic, and aromatic hydrocarbons or substituted hydrocarbons and in the presence of an inert carrier agent consisting of an inert carrier gas or inert carrier solvent or mixtures thereof, said inert carrier gas being selected from the group consisting of nitrogen, helium, argon, methane, ethane and propane, said inert carrier solvent being lower boiling than the isocyanate product and selected from the group consisting of lower boiling aliphatic, cycloaliphatic or aromatic hydrocarbons, substituted hydrocarbons, oxygenated compounds selected from ethers oxygenated compounds selected from ethers or ketones and the sulfur analogues of said oxygenated compounds and separately recovering the isocyanate and amine.

3,936,485
SUBSTITUTED SULFONYLGLYCOLIC ACID ANILIDES

Wolfgang Rohr, Mannheim, and Adolf Fischer, Mutterstadt, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Division of Ser. No. 310,640, Nov. 29, 1972, Pat. No. 3,865,860. This application Oct. 7, 1974, Ser. No. 512,669
Claims priority, application Germany, Dec. 6, 1971, 2160380
Int. Cl.^{2} C07C *143/24*
U.S. Cl. 260—456 A **4 Claims**

1. A N-substituted sulfonylglycolic acid anilide of the formula



where R^1 denotes benzyl, phenyl or phenyl substituted by methyl or ethyl, halogen or nitro, R^2 denotes phenyl or phenyl substituted by alkyl of 1 to 3 carbon atoms, and R^3 denotes alkynyl of 3 to 6 carbon atoms.

3,936,486
PROCESS FOR THE PRODUCTION OF MALONIC ACID DINITRILE

Alfons Egger; Erich Widmer; Adriano Faucci, and Rolf Gregorin, all of Visp (Kanton Wallis), Switzerland, assignors to Lonza Ltd., Basel, Switzerland
Filed Oct. 18, 1974, Ser. No. 516,135
Claims priority, application Switzerland, Oct. 18, 1973, 14759/73
Int. Cl.^{2} C07C *120/00, 121/22*
U.S. Cl. 260—465.8 R **30 Claims**

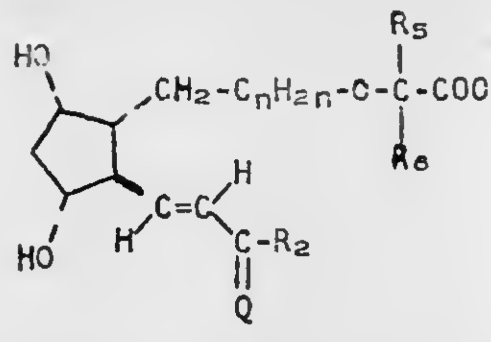
1. The process for the production of malonic acid dinitrile which comprises:

a. quickly preheating acetonitrile to a temperature between 110° and 700°C. by passing said acetonitrile through a preheater at a velocity between 20 and 100 m/sec.;
b. reacting a reaction admixture of cyanogen chloride and said acetonitrile, both in the gaseous state, the molar ratio of said acetonitrile and said cyanogen chloride is between 1:1 and 6:1, at a temperature between 700° and 1200°C., malonic acid dinitrile, in the gaseous state, resulting;
c. chilling the reaction product mixture of step (b) which is comprised of said gaseous malonic acid dinitrile, said gaseous cyanogen chloride, said gaseous acetonitrile and HCl, a reaction byproduct, with liquid mixture, which is comprised of malonic acid dinitrile, cyanogen chloride, acetonitrile and HCl, to a temperature between 40°C. and the boiling point of said reaction product mixture, a liquid reaction product resulting;
d. simultaneously with step (c), refining the exhaust gas from said chilling of said reaction product mixture of step (c) whereby the cyanogen chloride and acetonitrile is separated from the HCl in the exhaust gas; and
e. isolating said malonic acid dinitrile from said liquid reaction product mixture and purifying said malonic acid dinitrile.

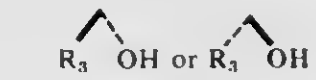
3,936,487
3-OXA PROSTAGLANDIN Fα-TYPE COMPOUNDS

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Continuation of Ser. No. 332,067, Feb. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 47,169, June 17, 1970, abandoned. This application Apr. 17, 1974, Ser. No. 461,483
Int. Cl.^{2} C07C *61/38, 69/74*
U.S. Cl. 260—468 D **70 Claims**

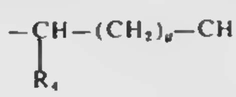
1. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof, wherein C_nH_{2n} is alkylene of one to 10 carbon atoms, inclusive, with 1 to 5 carbon atoms, inclusive, between —CH_2— and —O—; wherein Q is



wherein R_3 is hydrogen or methyl; wherein R_1 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro; wherein R_2 is



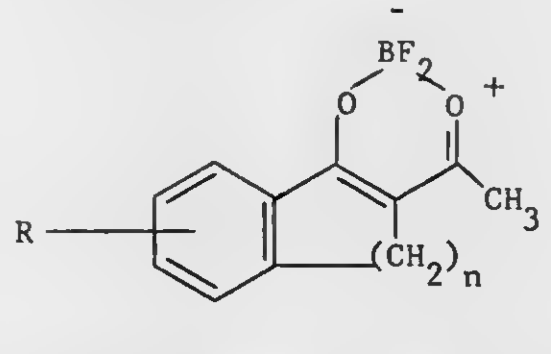
$$-\underset{\substack{|\\R_4}}{C}H-(CH_2)_g-CH_3$$

wherein R_4 is hydrogen or fluoro and g is one, 2, 3, 4, or 5; wherein R_5 and R_6 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,936,488
POLYCYCLIC DIOXABORIN COMPLEXES

Daniel Kaminsky, Parsippany, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Division of Ser. No. 351,912, April 18, 1973, Pat. No. 3,862,144. This application Oct. 17, 1974, Ser. No. 515,765
Int. Cl.^{2} C07F *5/04*
U.S. Cl. 260—462 R **8 Claims**

1. Compounds of the formula III:

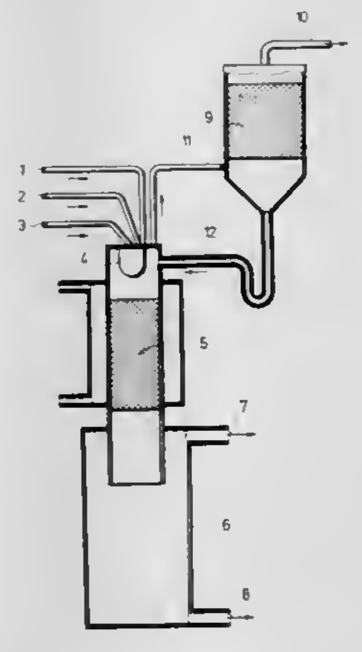


III

wherein R is hydrogen, lower alkyl, or lower acyloxy and *n* represents 1 or 2.

3,936,489
PROCESS AND EQUIPMENT FOR SOLVENT EXTRACTION

Lászlo Rózsa, Miskolc 1.; Lajos Mészáros, Szeged, and Ferenc Mogyorodi, Miskolc 1., all of Hungary, assignors to Eszakmagyarorszagi Vegyimuvek, Sajobabony, Hungary
Filed Nov. 13, 1972, Ser. No. 306,059
Int. Cl.^{2} B01D *11/04;* **C07C** *51/48, 68/08*
U.S. Cl. 260—463 **8 Claims**



1. In a process for the solvent extraction of a component of a mother liquor comprising liquids that are immiscible with each other and have differing specific gravities, the improvement which comprises, in sequence: dispersing said liquids and a solvent by simultaneously atomizing them together with an atomizing gas through a spraying nozzle into an extraction chamber, then condensing the dispersion to terminate the disperse state, and separating the immiscible phases from each other.

3,936,490
PROCESS FOR CONDUCTING ORGANONITRILE ADDITION REACTIONS

John E. Hofmann, and Alan Schriesheim, both of Berkeley Heights, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.
Continuation-in-part of Ser. No. 460,508, June 1, 1965, Pat. No. 3,595,930. This application Dec. 22, 1970, Ser. No. 100,811
Int. Cl.^{2} C07C *120/00*
U.S. Cl. 260—465.3 **10 Claims**

1. A process for preparing a tri substituted nitrile which comprises reacting acetonitrile with butadiene, at a temperature of from about 10° to 100°C for a period of from about 1 to 25 hours, in the presence of a basic alkali metal catalyst, said catalyst being selected from the group consisting of alkali metal hydrides, alkali metal organo amides, alkali metal alkoxides, alkali metal hydroxides, and alkali metal alkyls, said reaction taking place in a solvent selected from the group consisting of trimethyl phosphoramide, hexamethyl phosphoramide, tetramethyl urea, and N-methyl-2-pyrollidone.

3. A process for preparing dimethyl butenyl acetonitrile which comprises reacting isobutyronitrile with butadiene at a temperature of from about 10° to 100°C for a period of from 1 to 25 hours in the presence of a basic alkali metal catalyst, said catalyst being selected from the group consisting of alkali metal hydrides, alkali metal organo amides, alkali metal alkoxides, alkali metal hydroxides, and alkali metal alkyls, said reaction taking place in a solvent selected from the group consisting of trimethyl phosphoramide, hexamethyl phosphoramide, tetramethyl urea, and N-methyl-2-pyrollidone.

3,936,491
ADAMANTYLENE COMPOUNDS

Volkert Claassen, Weesp, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

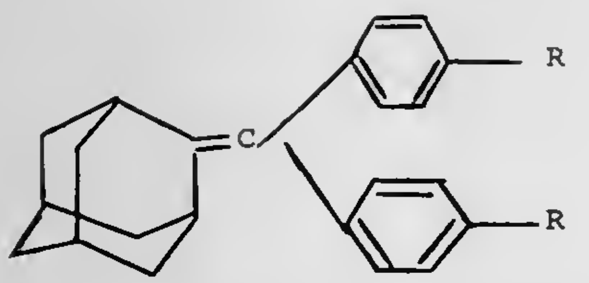
Filed Nov. 29, 1968, Ser. No. 779,987

Claims priority, application Netherlands, Dec. 2, 1967, 6716437

Int. Cl.^{2} C07C *39/16, 39/17, 43/20, 69/02*

U.S. Cl. 260—479 R **7 Claims**

1. An adamantylidene compound of the formula



wherein R is a member selected from the group consisting of hydroxy, alkoxy of 1 to 3 carbon atoms inclusive, alkanoyloxy of up to 20 carbon atoms and benzoyloxy.

3,936,492
MONOMERIC EMULSION STABILIZERS

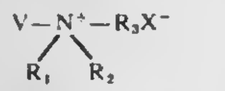
Carlos M. Samour, Wellesley Hills, and Mildred C. Richards, Wakefield, both of Mass., assignors to The Kendall Company, Walpole, Mass.

Division of Ser. No. 272,282, July 17, 1972, abandoned, which is a division of Ser. No. 867,899, Oct. 20, 1969, Pat. No. 3,780,092. This application Aug. 9, 1974, Ser. No. 496,320

Int. Cl.^{2} C07C *87/30*

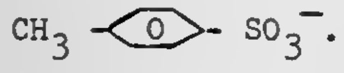
U.S. Cl. 260—482 R **3 Claims**

1. Compounds corresponding to the formula



$$\underset{R_1\qquad R_2}{V-N^+-R_3X^-}$$

wherein V is selected from the class consisting of vinyl acetoxy, (CH_2=CH—O—CO—CH_2—), allyl acetoxy, (CH_2=CH—CH_2—O—CO—CH_2—), and methallyl acetoxy (CH_2=C(CH_3)—CH_2—O—CO—CH_2—) groups;
R_1 and R_2 are selected from the class consisting of benzyl groups and alkyl groups of from 1 to 7 carbon atoms; R_3 is a lipophilic saturated aliphatic hydrocarbon group of from 7 to 28 carbon atoms; and X is a radical selected from the class consisting of F^-, Cl^-, Br^-, I^-, and



3,936,493
DIARYLMETHYLENES

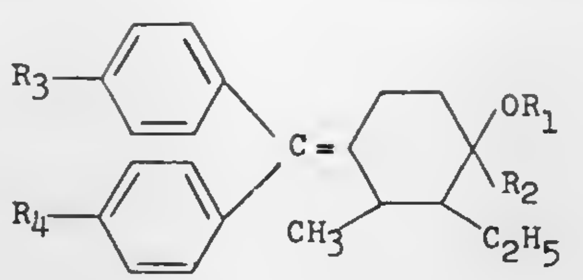
George Karmas, Bound Brook, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Apr. 17, 1973, Ser. No. 351,940

Int. Cl.^{2} C07C *69/02, 69/14*

U.S. Cl. 260—488 CD **6 Claims**

1. A compound of the formula:



wherein R_1 is hydrogen or —COR wherein R is lower alkyl of from 1–5 carbon atoms, R_2 is hydrogen, lower alkyl of from 1–5 carbon atoms or lower alkynyl of from 2–5 carbon atoms, R_3 and R_4 are the same or different hydrogen, lower alkyl of from 1–5 carbon atoms, lower alkoxy of from 1–5 carbon atoms or a lower alkanoyloxy group of from 2–5 carbon atoms.

3,936,494
NAPHTHENOHYDROXAMIC ACID PREPARATION

Stanley A. Lipowski, Livingston, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Sept. 25, 1974, Ser. No. 509,283

Int. Cl.^{2} C07C *119/00*

U.S. Cl. 260—500.5 H **9 Claims**

1. In a process for producing naphthenohydroxamic acid from an ester of napthenic acid, the improvement comprising reacting at about 25°C to about 30°C about equimolar quantities of
   a. ester of naphthenic acid,
   b. hydroxylamine dissolved in an alcohol/water/alkali metal sulfate slurry wherein the water content of the slurry is insufficient to hydrolyze the ester during conversion to naphthenohydroxamic acid, and
   c. an alkali metal hydroxide dissolved in alcohol.

3,936,495
PURIFICATION PROCESS

Alan P. Sullivan, Jr., Lebanon, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 27, 1973, Ser. No. 419,304

Int. Cl.^{2} C07C *143/28*

U.S. Cl. 260—501.12 **2 Claims**

1. The p-toluene sulfonic acid addition salt of α-hydrazino-α-methyl-β-(3,4-dihydroxyphenyl)propionic acid.

3,936,496
ORGANIC COMPOUNDS

Zdenek Allan, Allschwil, and August Schweizer, Muttenz, both of Switzerland, assignors to Sandoz Ltd., (Sandoz AG), Basel, Switzerland

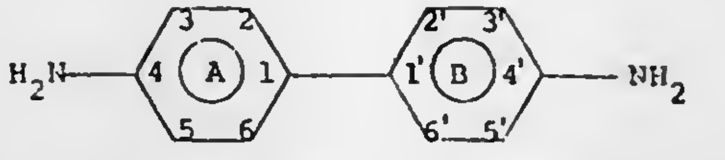
Filed Dec. 13, 1972, Ser. No. 314,675

Claims priority, application Switzerland, Dec. 15, 1971, 18353/71; Jan. 31, 1972, 1379/72; Feb. 17, 1972, 2297/72

Int. Cl.^{2} C07C *143/56*

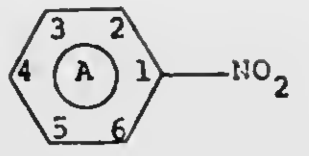
U.S. Cl. 260—510 **9 Claims**

1. A process for the production of compounds of formula I,



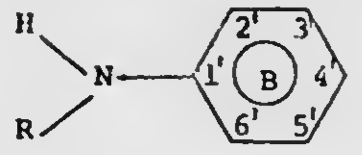
I

in which in ring A at least one of the positions 2, 3, 5 and 6 is substituted by a sulphonic acid group and the rings A and B are otherwise unsubstituted or substituted by halogen of atomic number from 9 to 53 and/or by alkyl or alkoxy of 1 to 6 carbon atoms, which comprises reacting a compound of formula II,



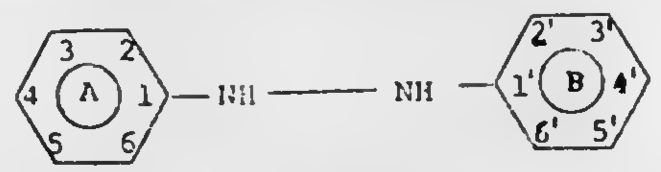
II

in which the ring A is defined as above, the position 4 being unsubstituted, with a compound of formula III,



III

in which
  R signifies methyl, ethyl or β-hydroxyethyl, and
  ring B is as defined above, the position 4′ being unsubstituted,
at a temperature of at least 50°C and a pH of at least 12, and reducing the resulting azo reaction product, under conditions whereby the reduction does not proceed beyond the hydrazo stage, to a hydrazo compound of formula IV,



IV

in which rings A and B are as defined above, the positions 4 and 4′ being unsubstituted, and rearranging the compound of formula IV in a strongly acid medium to produce the compound of formula I.

3,936,497
PROCESS FOR PREPARATION OF 4,4′-DIAMINOSTILBENE-2,2′-DISULFONIC ACID OR SALTS THEREOF

Naonori Hirata, Toyonaka, and Masatoshi Matsuo, Takatsuki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 2, 1974, Ser. No. 528,658

Claims priority, application Japan, Dec. 3, 1973, 48-136563; Dec. 5, 1973, 48-136998

Int. Cl.^{2} C07C *143/56*

U.S. Cl. 260—510 **7 Claims**

1. A process for preparing disodium 4,4′-diaminostilbene2,2′-disulfonate, which comprises reducing disodium 4,4′-dinitrostilbene-2,2′-disulfonate with hydrogen in the presence of a nickel metal catalyst in an aqueous medium at a temperature of 20° to 200°C in which the pH of the reaction system is adjusted to a range from 5 to 10 using a buffer.

3,936,498
DETERGENT BUILDERS

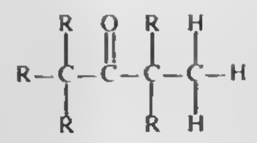
Herman A. Bruson, Woodridge, Conn., and Henry Gould, Houston, Tex., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 183,277, Sept. 23, 1971, Pat. No. 3,767,598. This application Oct. 15, 1973, Ser. No. 406,325. The portion of the term of this patent subsequent to Oct. 2, 1990, has been disclaimed.

Int. Cl.^{2} C07C *55/24*

U.S. Cl. 260—537 R **3 Claims**

1. A detergent builder composition having the formula:



$$R-\underset{R}{\overset{R}{C}}-\overset{O}{\overset{\|}{C}}-\underset{R}{\overset{R}{C}}-\underset{H}{\overset{H}{C}}-H$$

wherein R is $-CH_2-CH_2-COOX$, X being a member selected from the class consisting of hydrogen, alkali metals, and ammonium.

3,936,499
PROCESS FOR THE PRODUCTION OF PRILLED UREA HAVING A LOW BIURET CONTENT

Umberto Zardi, San Donato Milanese; Vincenzo Lagana, and Carlo Mantegazza, both of Milan, all of Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed May 21, 1970, Ser. No. 39,292

Claims priority, application Italy, May 29, 1969, 17499/69

Int. Cl.^{2} C07C *126/00*

U.S. Cl. 260—555 C **2 Claims**

1. A process for the production of prilled urea having a low biuret content comprising the steps of crystallizing urea of low biuret content, melting the resulting crystals and pelleting the melted urea, wherein the improvement comprises supplying to the urea crystals to be pelleted sufficient heat to melt from only 30% to 70% of said crystals, forming therefrom a heterogeneous mixture of melted urea with crystals in suspension, and feeding said mixture to pelleting apparatus.

3,936,500
PROCESS FOR PREPARING UREA

Petrus J. C. Kaasenbrood, and Johannes D. M. Verstegen, both of Sittard, Netherlands, assignors to Unie Van Kunstmestfabrieken, B.V., Utrecht, Netherlands

Filed June 12, 1973, Ser. No. 369,391

Claims priority, application Netherlands, June 12, 1972, 7207940

Int. Cl.^{2} C07C *126/00*

U.S. Cl. 260—555 A **4 Claims**

1. In a continuous process for the preparation of urea wherein NH_3 and CO_2 are reacted at elevated temperature and pressure in a synthesis zone to continuously provide ammonium carbamate, thereafter converting the ammonium carbamate into a urea solution containing unconverted ammonium carbamate and stripping the carbamate from said solution in a stripping zone by decomposing the carbamate by continuously contacting said solution with a stripping gas at a temperature of about 180° to at most 200° C. and under a pressure of about 125 to at most 200 atm. continuously in said stripping zone, said urea synthesis zone and stripping zone being operated under substantially the same pressure, expelling the resulting NH_3, CO_2 and H_2O from said stripping zone, condensing the resulting mixture of stripping gas and gases expelled from said urea solution after addition of further NH_3 or CO_2 to form a carbamate solution, and returning the thus formed carbamate solution to said urea synthesis zone for further urea synthesis,
   the improvement comprising conducting said urea synthesis and stripping zone at a pressure of at least 225 atm., and contacting said urea solution with said stripping gas at an initial temperature of at least 205° C. said stripping step occurring under substantially adiabatic conditions devoid of the addition of heat to said stripping zone.

3,936,501

PROCESS FOR THE MANUFACTURE OF CRYSTALLINE UREA PHOSPHATE

Dahlia Simeona Greidinger, and Benedict Cytter, both of Haifa, Israel, assignors to Chemicals & Phosphates, Ltd., Haifa, Israel

Filed May 7, 1974, Ser. No. 467,670

Claims priority, application Israel, June 29, 1973, 42624

Int. Cl.^{2} C07C *126/00*

U.S. Cl. 260—555 R **5 Claims**

1. An exothermic process for the direct manufacture of crystalline urea phosphate characterized in that solid urea is reacted stoichiometrically in equimolar quantities with orthophosphoric acid at a temperature of about 60°–90°C wherein said orthophosphoric acid contains above 90% H_3PO_4 by weight.

3,936,502

COPPER COMPOUND CATALYSTS FOR HYDRATION OF NITRILES TO AMIDES

William Austin Barber, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 30, 1972, Ser. No. 302,363

Int. Cl.^{2} C07C *103/08*

U.S. Cl. 260—561 N **3 Claims**

1. A process for production of acrylamide by hydration of acrylonitrile comprising contacting said nitrile in the presence of water with a solid heterogeneous catalyst selected from copper acetylide and copper nitride.

3,936,503

ARYL-SUBSTITUTED ALIPHATIC DIQUATERNARY COMPOUNDS

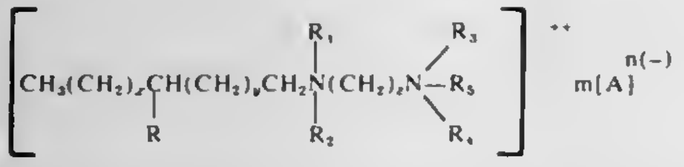
Eugene J. Miller, Jr., Wheaton, and Harlan E. Tiefenthal, Western Springs, both of Ill., assignors to Akzona Incorporated, Asheville, N.C.

Continuation-in-part of Ser. No. 731,695, May 24, 1968, abandoned, which is a continuation-in-part of Ser. No. 502,563, Oct. 22, 1965, abandoned. This application Apr. 9, 1970, Ser. No. 27,161

Int. Cl.^{2} C07C *87/30*

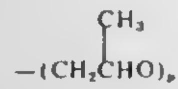
U.S. Cl. 260—567.6 P **17 Claims**

1. Diquaternary ammonium compounds represented by the formula



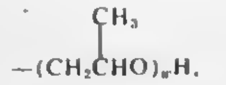
$$\left[CH_3(CH_2)_x\underset{\displaystyle R}{CH}(CH_2)_yCH_2\overset{\displaystyle R_1}{\underset{\displaystyle R_2}{N}}(CH_2)_zN\begin{matrix}R_3\\ -R_5\\ R_4\end{matrix}\right]^{++} m[A]^{n(-)}$$

wherein R_1 and R_5 are selected from the group consisting of alkyl radicals having from 1 to 3 carbon atoms; R_2 is selected from the group consisting of alkyl radicals having from 1 to 3 carbon atoms, $-(CH_2CH_2O)_pH$, and



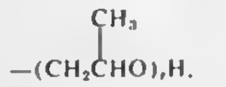
$$-(CH_2\overset{\displaystyle CH_3}{CH}O)_pH.$$

R_3 is selected from the group consisting of alkyl radicals having from 1 to 3 carbon atoms, $-(CH_2CH_2O)_wH$, and



$$-(CH_2\overset{\displaystyle CH_3}{CH}O)_wH.$$

R_4 is selected from the group consisting of alkyl radicals having from 1 to 3 carbon atoms, $-(CH_2CH_2O)_rH$, and



$$-(CH_2\overset{\displaystyle CH_3}{CH}O)_rH.$$

wherein *p*, *r*, and *w* are integers from 1 to 40 and the sum of *p*, *r*, and *w* is less than 80; R is selected from phenyl, naphthyl, and phenyl-substituted with from 1 to 2 groups selected from methyl, hydroxy, and methoxy; *x* is an integer from 0 to 18, *y* is an integer from 1 to 19, and the sum of *x* and *y* is an integer from 8 to 19; *z* is an integer from 2 to 6; A is an anion; *m* and *n* are integers from 1 to 2 and the product of *m* times *n* is 2; said compounds consisting of isomeric mixtures with respect to the position of attachment of R to the alkyl chain.

3,936,504

ANTI-ALLERGIC PHARMACEUTICAL COMPOSITIONS

Derek Richard Buckle, Redhill, and Harry Smith, Maplehurst, near Horsham, both of England, assignors to Beecham Group Limited, United Kingdom

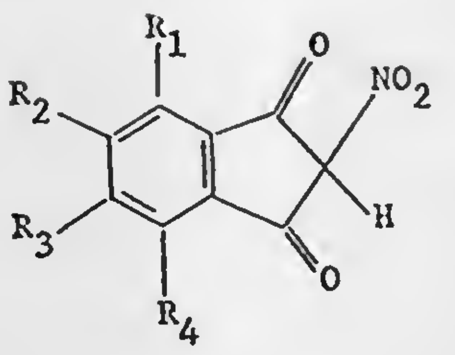
Filed Dec. 21, 1972, Ser. No. 317,296

Claims priority, application United Kingdom, Jan. 25, 1972, 3348/72; Mar. 22, 1972, 13300/72; June 20, 1972, 28707/72; Oct. 18, 1972, 48027/72

Int. Cl.^{2} C07C *49/76*, *49/80*, *49/84*

U.S. Cl. 260—590 D **21 Claims**

1. A compound of the formula (I) or a pharmaceutically acceptable non-toxic salt thereof:



(I)

wherein

1 or 2 of R_1, R_2, R_3 and R_4 are methyl, ethyl, n-propyl, iso-propyl, n-butyl, sec-butyl, t-butyl, methoxy, ethoxy, n-propoxy, iso-propoxy, n-butoxy, sec-butoxy or t-butoxy and the remaining 2 or 3 are each hydrogen or one of R_1, R_2, R_3 and R_4 is fluoro, phenyl or benzyl and the remaining 3 are each hydrogen, or each of R_1, R_2, R_3 and R_4 is chloro, or R_1 and R_2, or R_2 and R_3, or R_3 and R_4 taken together are the residue of a 1,2-phenylene ring or a 1,2-cyclohexylene ring.

3,936,505

PROCESS FOR PREPARING UNSATURATED ALDEHYDE HAVING THREE TO FOUR CARBON ATOMS

Yoshio Oda; Keiichi Uchida, both of Yokohama; Manabu Suhara, Tokyo, and Takeshi Morimoto, Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Feb. 22, 1973, Ser. No. 334,727

Claims priority, application Japan, Feb. 22, 1972, 47-17653; Apr. 11, 1972, 47-35725; Apr. 17, 1972, 47-37800

Int. Cl.^{2} C07C *45/02*

U.S. Cl. 260—604 R **4 Claims**

1. A process for preparing an unsaturated aldehyde having three to four carbon atoms, which comprises:

reacting the corresponding olefin with molecular oxygen in a mole ratio of oxygen to olefin ranging from 3 : 1 to 1 : 5 in the vapor phase at a temperature of from 350°C to 520°C and a pressure of 1 to 10 atms. in the presence of a metal oxide catalyst having the formula:

$$\mathrm{Mo}_{12}\text{—}X_a\text{—}\mathrm{Bi}_b\text{—}Y'_c\text{—}O_d$$

wherein X is Nb, or Ta; Y' is at least one metal, but not more than 2 metals selected from the group consisting of alkali metals, Cu, Te, As, Sb and Fe; *a* is 0.1 to 9; *b* is 1 to 12; *c* is 0.1 to 15; and *d* is 37 to 114.

3,936,506

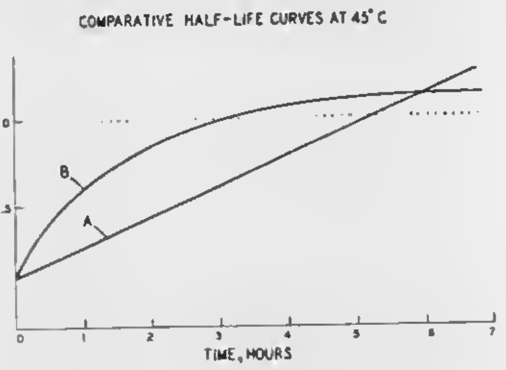
PREPARATION OF UNSYMMETRICAL HALOGEN-SUBSTITUTED DIACYL PEROXIDES

Robert V. Berthold, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

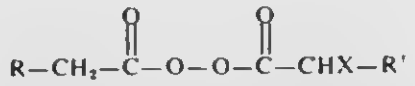
Continuation-in-part of Ser. No. 193,717, Oct. 29, 1971, abandoned. This application Feb. 26, 1973, Ser. No. 335,813

Int. Cl.^{2} C07C *179/14*

U.S. Cl. 260—610 D **14 Claims**



1. A method of preparing unsymmetrical α-halogen substituted diacyl peroxides having the formula:

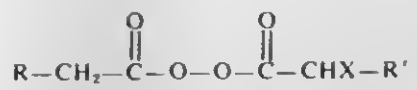


$$R-CH_2-\overset{\displaystyle O}{\overset{\|}{C}}-O-O-\overset{\displaystyle O}{\overset{\|}{C}}-CHX-R'$$

wherein each of R and R' is a long chain alkyl radical having about 10 to about 16 carbon atoms and X is a halogen selected from the group consisting of bromine and chlorine, which comprises the steps of:

a. agitating an aqueous solution of an alkali metal peroxide at about 0° to about 10°C.;
b. adding a hydrocarbon solvent which is liquid at 0°C. to the agitated solution of (a) while maintaining a temperature of about 0° to about 10°C.;
c. rapidly adding about 1 mol of an α-halogen substituted aliphatic acyl halide having about 12 to about 18 carbons therein;
d. agitating the resultant mixture of (a), (b) and (c) for at least about 2 hours at about 0° to about 10°C.;
e. adding about 1 mol of an aliphatic acyl halide having about 12 to 18 carbon atoms therein in small regular increments to the agitated mixture of (d) and continuing agitation for at least 0.5 hours at a temperature of about 0° to about 10°C.;
f. lowering the pH of the agitated mixture of (e) to about 1 to 1.5 by acidification of said agitated mixture of (e);
g. allowing the resultant reaction mixture to stand unagitated until said reaction mixture separates into a hydrocarbon solution layer and an aqueous layer; and
h. isolating the hydrocarbon solution layer containing unsymmetrical halogen substituted diacyl peroxide.

8. A method of preparing unsymmetrical α-halogen substituted diacyl peroxides having the formula:



$$R-CH_2-\overset{\displaystyle O}{\overset{\|}{C}}-O-O-\overset{\displaystyle O}{\overset{\|}{C}}-CHX-R'$$

wherein each of R and R' is a long chain alkyl radical having about 10 to about 16 carbon atoms and X is a halogen selected from the group consisting of bromine and chlorine, which comprises the steps of:

A. agitating an aqueous solution of an alkali metal peroxide at about 0° to about 10°C.;
B. adding a hydrocarbon solvent which is liquild at 0°C. to the agitated solution of (A) while maintaining a temperature of about 0° to about 10°C.;
C. rapidly adding about 1 mol of an aliphatic acyl halide having about 12 to about 18 carbons therein;
D. agitating the resultant mixture of (A), (B), and (C) for at least about 2 hours at about 0° to about 10°C.;
E. adding about 1 mol of an α-halogen substituted aliphatic acyl halide having about 12 to 18 carbons therein in small regular increments to the agitated mixture of (D) while continuing agitation for at least about 0.5 hours at a temperature of about 0° to about 10°C.;
F. lowering the pH of the agitated mixture of (E) to about 1 to 1.5 by acidification of said agitated mixture of (E);
G. allowing the resultant reaction mixture to stand unagitated until said reaction mixture separates into an hydrocarbon solution layer and an aqueous layer; and
H. isolating the hydrocarbon solution layer containing unsymmetrical α-halogen substituted diacyl peroxide.

3,936,507

PROCESS FOR THE PRODUCTION OF 2,2-(4,4'-DIHYDROXY-DIPHENYL)PROPANE

Ferdinando Ligorati; Vittorio Emanuele Nova, and Giancarlo Aglietti, all of Milan, Italy, assignors to Societá' Italiana Resine S.p.A., Milan, Italy

Filed Dec. 26, 1973, Ser. No. 428,576

Claims priority, application Italy, Dec. 22, 1972, 33446/72

Int. Cl.^{2} C07C *37/00*, *37/20*, *37/38*

U.S. Cl. 260—619 A **7 Claims**

1. A process for the production of 2,2-(4,4'-dihydroxydiphenyl)propane, which comprises the steps of:

a. reacting phenol with acetone in a molar ratio of phenol to acetone of at least 2:1 and not exceeding 10:1 in the presence of an acid catalyst at a temperature not exceeding 80°C;
b. removing the acid catalyst and water from the resulting reaction mixture;
c. crystallizing and separating from said reaction mixture formed in (b) an addition product of 2,2-(4,4'-dihydroxydiphenyl)propane and phenol in a molar ratio of 1:1;
d. washing or recrystallizing the crystallized addition product using a solvent selected from the group consisting of paraffinic, aromatic and chlorinated hydrocarbons having a boiling point lower than about 150°C and employing weight ratios of solvent to addition product of from about 0.1:1 to 1:1 in the washing and from about 0.5:1 to 2:1 in the crystallization;
e. melting said separated addition product at a temperature between 90° to 120°C and then vaporizing said melted addition product by thin film evaporation at a temperature of from 180° to 250°C and at a pressure of from 1 to 20 mmHg for a time of from 0.1 to 30 minutes to obtain a gaseous mixture containing phenol and 2,2-(4,4'-dihydroxydiphenol)propane; and
f. subjecting said gaseous mixture to fractional condensation, thus separating and recovering said 2,2-(4,4'-dihydroxydiphenyl)propane at a temperature of from about 160° to 170°C and said phenol at a temperature of about 45°C.

3,936,508
PROCESS FOR THE PREPARATION OF CHLOROPRENE

Rupert Wenzel, and Gerhard Scharfe, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Feb. 27, 1974, Ser. No. 446,495

Claims priority, application Germany, Mar. 3, 1973, 2310744

Int. Cl.^{2} C07C *17/34, 21/21*

U.S. Cl. 260—655 **5 Claims**

1. A process for producing chloroprene which comprises dehydrating a mixture of an aqueous alkali metal hydroxide solution and n-butanol by azeotropic distillation, then reacting resulting dehydrated mixture with 3,4-dichlorobutene-1, removing insoluble alkali metal chloride from resulting reaction mixture and distilling resulting liquid reaction product to separate chloroprene and n-butanol.

3,936,509
PROCESS FOR SEPARATING DIMETHYL NAPHTHALENES COMPRISING 2,6-DIMETHYL NAPHTHALENES AS MAIN COMPONENT

Shizuo Nagahama; Keizo Shimada; Takeo Nishikawa, all of Hino, and Toshiaki Harada, Hachioji, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 4, 1974, Ser. No. 520,688

Int. Cl.^{2} C07C *7/01*

U.S. Cl. 260—674 N **2 Claims**

1. A process for separating dimethyl naphthalenes having a component comprising 2,6-dimethyl naphthalene in the form of complexes with a complex-forming compound, which comprises contacting a dimethyl naphthalene isomer mixture comprising at least 2,6-dimethyl naphthalene or a hydrocarbon mixture containing said dimethyl naphthalene isomer mixture with a complex-forming compound selected from the group consisting of nitro compounds of 2,6-naphthalene dicarboxylic acid, trimellitic anhydride and 2-chloro-5-nitrobenzoic acid, thereby to form a mixture of complexes of the dimethyl naphthalenes with said complex-forming compound having a main component comprising a complex of 2,6-dimethyl naphthalene with the complex-forming compound, and separating the complexes in the solid state from the reaction mixture.

3,936,510
CURED AROMATIC RESINS

Glyn Islwyn Harris, Stourbridge, and Alfred Gerald Edwards, Stourport-on-Severn, both of England, assignors to Albright & Wilson Limited, West Midlands, England

Continuation of Ser. No. 282,614, Aug. 21, 1972, abandoned, which is a division of Ser. No. 9,946, Feb. 9, 1970, abandoned. This application July 19, 1974, Ser. No. 490,025

Claims priority, application United Kingdom, Feb. 17, 1969, 8479/69

Int. Cl.^{2} C08L *63/00, 63/02, 65/04*

U.S. Cl. 260—831 **39 Claims**

1. A composition comprising the cured aromatic resin product consisting essentially of the product obtained by reacting at a temperature between 110° and 210°C

A. the reaction product obtained by reacting at a temperature between 130° and 200°C

  1. a compound selected from the group consisting of aralkyl others of the general formula $R^1(-CH_2OR)_a$ and aralkyl halides of the general formula $R^1(-CH_2X)_a$ where R is an alkyl radical containing less than six carbon atoms, R^1 is a mono nuclear aromatic group, X is selected from the group consisting of chlorine, bromine and iodine, and *a* is 2 or 3, with
  2. a phenol with 1 – 3 hydroxyl groups attached to the aromatic nucleus with at least two free nuclear hydrogen atoms per molecule, in a molar ratio of said phenol (2) to said ether or halide compound (1) being from 1.3 : 1 to 3 : 1, with

B. an epoxy compound containing at least two epoxy groups per molecule, the molar ratio of phenolic groups in the reaction product (A) to the epoxy groups of the epoxy compound (B) being from 1 : 2 to 2 : 1.

3,936,511
PROCESS FOR THE PRODUCTION OF ACRYLONITRILE-VINYL CHLORIDE COPOLYMERS

Joachim König, Schildgen, and Carlhans Süling, Odenthan-Hahnenberg, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 11, 1974, Ser. No. 487,648

Claims priority, application Germany, Jan. 8, 1973, 2300713

Int. Cl.^{2} C08L *33/20*

U.S. Cl. 260—881 **3 Claims**

1. In the process for the production of acrylonitrile-vinyl chloride copolymers comprising 20 to 80% by weight of acrylonitrile and 80 to 15% by weight of vinyl chloride by emulsion polymerization; the improvement comprising conducting the emulsion polymerization at a temperature of 5° to 40°C. by adding acrylonitrile, as the sole added monomer, to a starting emulsion containing, in addition to a large excess of vinyl chloride, a latex of acrylonitrile-vinyl chloride copolymer, whereby the volume-time yield of copolymer and conversion of vinyl chloride is increased compared to the corresponding process conducted in the absence of said latex of acrylonitrile-vinyl chloride copolymer in the starting emulsion; the product of said process having a uniform acrylonitrile:vinyl chloride ratio and having good fiber properties.

3,936,512
PROCESS FOR MANUFACTURING A SYNTHETIC MICROFLAKE AGGREGATE

Yoshijiro Tabara; Hiroshi Akiyama; Masayuki Igawa; Tadashi Maekawa, and Tokuo Shinomiya, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Japan

Division of Ser. No. 864,457, Oct. 7, 1969. This application May 6, 1974, Ser. No. 467,592

Claims priority, application Japan, Oct. 14, 1968, 43-74209; Oct. 14, 1968, 43-74210; July 31, 1969, 44-60502; Aug. 2, 1969, 44-61322; Aug. 4, 1969, 44-61518

Int. Cl.^{2} C08F *6/12*

U.S. Cl. 260—897 A **17 Claims**

1. A process for manufacturing a synthetic microflake aggregate useful for producing a paper-like synthetic sheet, comprising

a. preparing, in a closed container, a solution at a temperature not lower than 100°C, containing 5 to 40 weight percent of at least one polyolefin in an organic solvent capable of dissolving said polyolefin and having a boiling point not higher than said temperature of said solution at normal pressure, in the presence of 0.01 to 15%, based on the weight of said polyolefin, of at least one surface active compound,

b. spraying said polyolefin solution from said closed container through an orifice into an atmosphere maintained at a lower pressure than the pressure of said solution in said closed container, and

c. rapidly evaporating said organic solvent from said sprayed solution, whereby said solution is finely divided and converted to an aggregate of numerous irregular shaped micro-flakes.

3,936,513
GLOSS-STABILISED FIBRES AND FILMS OF ACRYLONITRILE COPOLYMERS

Günter Lorenz, Dormagen; Siegfried Korte, Leverkusen, and Carlhans Süling, Odenthal-Hahnenberg, all of Germany, assignors to Bayerwerk Aktiengesellschaft, Leverkusen, Germany

Filed June 19, 1973, Ser. No. 371,547

Claims priority, application Germany, June 19, 1972, 2229800

Int. Cl.^{2} C08L *33/24*

U.S. Cl. 260—898 **12 Claims**

1. A synthetic film, fiber or filament comprising a mixture of

a. from 80 to 96% by weight of a copolymer of acrylonitrile with from 20 to 80% by weight of vinylidene chloride, vinyl chloride, vinyl bromide or a mixture of these, and with from 0 to 5% by weight of a monomer with at least one functional acid group, a monomer with at least one functional basic group or a monomer with at least one functional acid and basic group; and

b. from 20 to 4% by weight of a polymer obtained by reacting a polyacrylic acid ester with dimethylamine under conditions which result in said polymer (b) containing 40 to 90 mol % of N,N-dimethylacrylamide units; said film, fiber or filament having improved gloss characteristics compared to the corresponding film, fiber or filament in which the (b) component is a polymer prepared by conventional addition copolymerization of the acrylic acid ester and N,N-dimethylacrylamide.

3,936,514
POLYALKYLENE GLYCOL VINYL PHOSPHATES

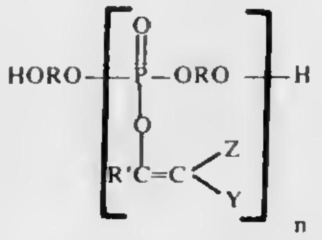
Kyung S. Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 410,674, Nov. 12, 1973, which is a continuation-in-part of Ser. No. 86,313, Nov. 2, 1970, Pat. No. 3,819,750, which is a continuation-in-part of Ser. No. 63,262, Aug. 6, 1970, abandoned. This application Sept. 6, 1974, Ser. No. 502,992. The portion of the term of this patent subsequent to June 25, 1991, has been disclaimed.

Int. Cl.^{2} C07F *9/02*

U.S. Cl. 260—929 **8 Claims**

1. Polyalkylene glycol vinyl phosphates having the formula:



$$\mathrm{HORO}-\left[\begin{array}{c}\mathrm{O}\\ \|\\ \mathrm{P{-}ORO}\\ |\\ \mathrm{O}\\ |\\ \mathrm{R'C{=}C}\begin{smallmatrix}\diagup Z\\ \diagdown Y\end{smallmatrix}\end{array}\right]_n-\mathrm{H}$$

wherein R is a polyalkylene glycol residue defined as that portion remaining after two hydroxyl groups have been removed from a polyalkylene glycol having the formula:

$HO-R''-O\ ]_m\ H$

where R'' is an alkylene group of from 2 to about 20 carbon atoms, and m designates the number of repeating alkylene ether units and is from 2 to about 20, *n* is an integer from 1 to about 100, R' is selected from the group consisting of hydrogen, alkyl and haloalkyl having from 1 to 4 carbon atoms, Z and Y are each selected from the group consisting of halogen, hydrogen and alkyl, provided Z and Y are not both hydrogen ar alkyl.

3,936,515
SLINGER MEANS FOR HUMIDIFIER

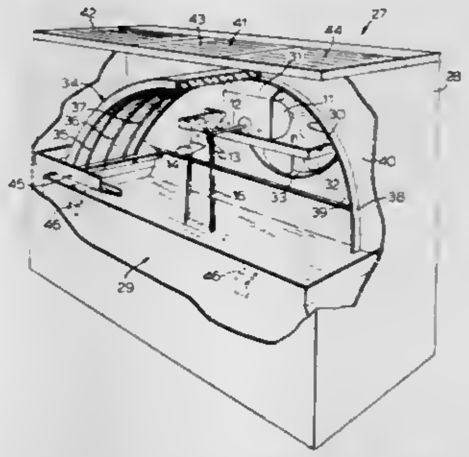
Juan Pablo Barreto, Barrie, Canada, assignor to General Electric Company, Bridgeport, Conn.

Filed Dec. 21, 1973, Ser. No. 427,147

Claims priority, application Canada, July 24, 1973, 177247

Int. Cl.^{2} B01F *3/04*

U.S. Cl. 261—29 **8 Claims**



1. A slinger device for use in a humidifer liquid dispersion system comprising a hub member mountable on a drive shaft in a plane normal thereto and for rotation therewith, and at least two divergent fin members connected to said hub member, said fin members symmetrically arranged around said hub member and each of the fin members including a base portion forming an angled extension of the surface of said hub member, said base portion inclined outwardly from said hub member relative to said drive shaft at an angle selected to cause liquid to flow outward along said base portion when said hub member is rotated by said drive shaft, each of the fin members further including flange means substantially coextensive with at least one side edge of said respective base portion, the outer edge of each flange means extending at a constant distance from the axis of rotation of said drive shaft.

3,936,516
CARBURETOR HAVING AN ALTITUDE-EFFECTS COMPENSATION MECHANISM AND A METHOD FOR THE MANUFACTURE OF SAME

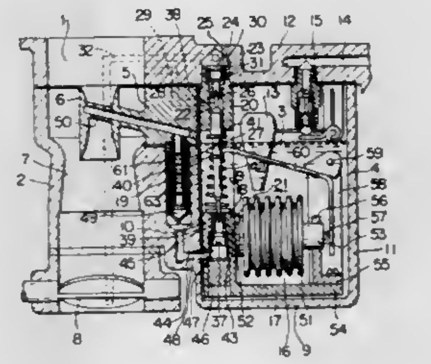
Toru Nakagawa, Mito, and Takashi Mihashi, Yokohama, both of Japan, assignors to Hitachi, Ltd. and Nissan Motor Co., Ltd., both of, Japan

Filed Nov. 23, 1973, Ser. No. 418,172

Claims priority, application Japan, Nov. 27, 1972, 47-118727

Int. Cl.^{2} F02M *7/20*

U.S. Cl. 261—39 A **7 Claims**



1. An altitude effects compensated carburetor comprising an induction passage having a venturi therein and a throttle valve downstream of said venturi, a member defining said induction passage, a float chamber containing fuel therein, a metering body in said float chamber, said metering body having a substantially vertical part and a substantially horizontal part, an air jet provided in the upper portion of said vertical part, each end of which communicates with said induction

passage upstream of said venturi and downstream of said venturi respectively, a main fuel jet provided in the lower portion of said vertical part of said metering body, each end of which communicates with the fuel in said float chamber and said venturi respectively, a needle for controlling opening of each of said main fuel jet and said air jet, a bellows disposed within the fuel in said float chamber, the axis of which is substantially horizontal, one end of said bellows being fixed to said vertical part of said metering body, the other end being movable along said axis according to a change of atmospheric pressure, and means for operating said needle according to the movement of the movable end of said bellows.

3,936,517
METHOD FOR REDUCING PARTICLE SIZE

H. Ronald Thomas, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1974, Ser. No. 432,715

Int. Cl.² B05B *3/00*

U.S. Cl. 264—28 **10 Claims**

1. A process for preparing solvent soluble solids in finely divided form comprising:
  a. providing a solution of a solid material in solvent therefor;
  b. freezing said solution;
  c. comminuting said frozen solution;
  d. mixing said comminuted frozen solution with a liquid which is a non-solvent for said solid material under conditions of high shear agitation, said non-solvent being miscible with said solvent;
  e. agitating said mixture such that said solvent melts and diffuses into said non-solvent and said solid precipitates out of solution in finely divided form;
  f. recovering said solid in finely divided form, wherein the average particle size of said recovered solid in 20 microns or less.

3,936,518
PROCESS FOR PREPARING A SYNTHETIC WOOD

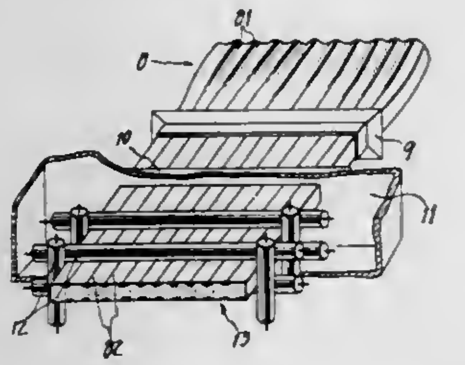
Shigenari Soda, Nagaokakyo, and Motoshige Hayashi, Ikoma, both of Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, Japan

Filed June 18, 1974, Ser. No. 480,360

Claims priority, application Japan, June 20, 1973, 48-70176

Int. Cl.² B29D *7/22, 27/00*

U.S. Cl. 264—45.5 **6 Claims**



1. In a process for preparing a foamed thermoplastic article wherein a softened foamable thermoplastic resin is passed through an orifice of a die and is permitted to expand after passing through said orifice, the improvement comprising:
  a. passing the softened thermoplastic resin through an orifice having a cross-section corresponding substantially to the cross-section of the desired article and having a plurality of recesses on the outer periphery thereof, said recesses extending toward the inlet side of said orifice,
  (b) allowing the resin to expand to form a foamed shaped article having peaks and valleys on the surface thereof corresponding to the recesses of said orifice, and thereafter,
  c. pressing the surface of said article while it is in a softened state so as to level the peaks and to provide a smooth-surfaced shaped article having surface structure characterized by high density portions corresponding to said peaks and low density portions corresponding to said valleys.

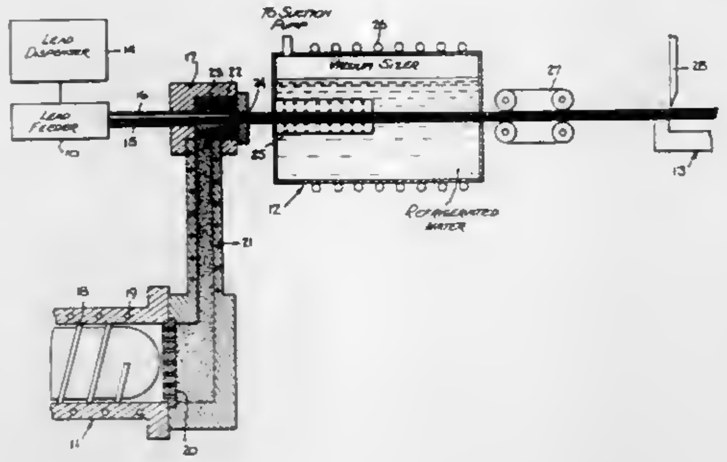
3,936,519
METHOD OF EXTRUDING FOAMED PLASTIC SHEATHED PENCILS

Milton Crystal, 1541 Lemoine Ave., Fort Lee, N.J. 07024

Filed Apr. 24, 1974, Ser. No. 463,813

Int. Cl.² B29D *27/00;* **B29F** *3/10;* **B43K** *19/14*

U.S. Cl. 264—46.1 **3 Claims**



1. The method of fabricating pencils comprising the steps of:
  A. advancing through the central tube of a coaxial die a graphite-clay lead pre-treated with a layer of heatactivatable adhesive, said die having an annular chamber surrounding said tube,
  B. forcing into said annular chamber a molten plastic material containing a blowing agent, whereby the lead emerging from the die is coated with a cylindrical sheath of the molten foamed plastic material, the heat of which activates said adhesive,
  C. passing the ensheathed lead through a cooling station to set said adhesive to effect a bond between the lead and the sheath and to rigidify said molten foamed plastic material to form a pencil rod.

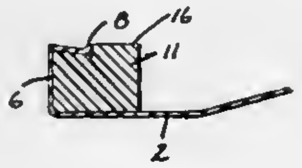
3,936,520
PROCESS FOR MANUFACTURING PLASTIC SHUTTERS AND THE LIKE

Donald L. Garofalo, St. Paul, Minn., assignor to Andersen Corporation, Bayport, Minn.

Continuation of Ser. No. 328,067, Jan. 30, 1973, abandoned. This application Oct. 10, 1974, Ser. No. 513,575

Int. Cl.² B29C *17/02*

U.S. Cl. 264—90 **3 Claims**



1. The process of manufacturing shutters and the like without substantial adhesive bonding which comprises the steps of:
  a. forming a relatively thin rigid sheet of plastic material to thereby form a generally rectangular, panshaped shroud having a decorative front face and upturned sidewalls, said forming process creating a generally outwardly extending peripheral lip on said sidewalls;
  b. removing at least a portion of the outwardly extending lip from the sidewalls;
  c. positioning a frame within the shroud with the front face of the frame abutting the shroud and the outer rim of the frame lying adjacent the upturned sides of the shroud, said frame having a channel in its back face with an inclined bottom surface;
  d. notching the four open corners of the shroud to thereby create a foldable marginal tab on each of the sidewalls;
  e. heating the upturned sidewalls along a line generally parallel to the decorative front face of the plastic shroud;
  f. post-forming the heated upturned sidewalls to embrace the outer rim of the frame without use of vacuum means, by the steps of:
    i. applying mechanical force to the marginal tab to bend it along the heated line;
    ii. positioning the mechanical force to bend the marginal tab 90° along the heated line and into the frame channel without generally causing the plastic shroud to permanently deform except along the heated line;
    iii. applying mechanical force to the sidewall lip to bend the tab beyond 90° along the heated line and adjacent the channel bottom surface to at least partially prevent elastic restoring forces from displacing the tab out of the channel when cooled; and
  g. cooling the plastic shroud in abutting engagement with the frame to provide a non-adhesive interlock between the frame and the marginal tab which resists deformation due to temperature variations.

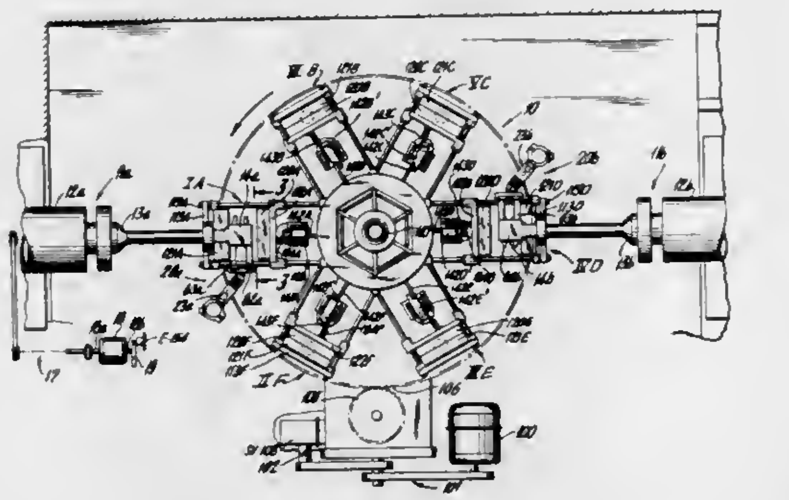
3,936,521
METHOD FOR MULTIPLE BLOW MOLDING WITH ROTARY TURNTABLE

Donald M. Pollock, Morristown, and Fulton W. Hallowell, Rumson, both of N.J., assignors to Consupak, Inc., Morristown, N.J.

Division of Ser. No. 368,249, June 8, 1973, Pat. No. 3,854,855. This application July 18, 1974, Ser. No. 489,469

Int. Cl.² B29C *17/07*

U.S. Cl. 264—98 **10 Claims**



1. A method for parison loading and blow molding object unloading of a partible mold on a rotary indexing turntable comprising the steps of:
  a. opening the mold containing said object as the mold is being indexed while continuously holding a flash portion of the object until the mold opens clear of the object;
  b. forming a parison above the opened mold during said indexing;
  c. releasing the flash portion and allowing the object to fall free of the opened mold;
  d. positioning the parison between the open mold as the object falls past the mold; and
  e. closing the mold on the parison and holding a flash portion of the parison prior to blowing and cooling.

3,936,522
PROCESS FOR THE PREPARATION OF INTERMEDIATES OF POLYADDITION AND POLYCONDENSATION RESINS

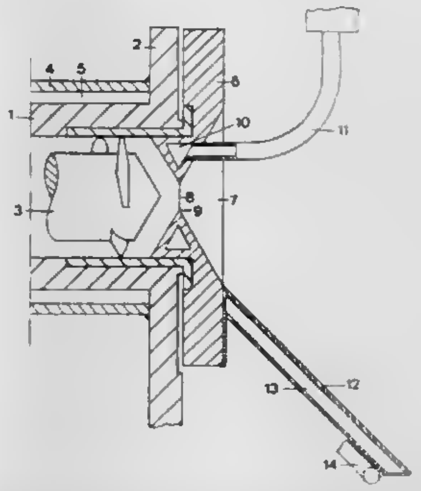
Peter Franz, Mumpf, Switzerland, assignor to Buss, A.G., Basel, Switzerland

Filed Aug. 20, 1973, Ser. No. 389,896

Claims priority, application Germany, Aug. 24, 1972, 2241616. The portion of the term of this patent subsequent to Feb. 22, 1989, has been disclaimed.

Int. Cl.² D01D *1/00*

U.S. Cl. 264—141 **1 Claim**



1. A process for the preparation of fusible resinous intermediates of fully cross-linkable polyaddition and polycondensation resins, consisting essentially of:
  continuously proportioning and feeding the resin precursor composition containing one of the precursors as a linear polymer, in solid or liquid form, in a mixing and kneading machine;
  intensively mixing the resin precursor composition in both the longitudinal and transversal directions and simultaneously heating said composition, thereby plasticizing and homogenizing the same below the temperature of cross-linking and hardening and at a temperature of 50° to 90° C during a brief average dwell time in the mixing chamber of said machine which will prevent stiffening of the mixture whereby the mixture is in the form of a pasty mass at a temperature of about 50° to 90°;
  continuously expelling the plasticized pasty mass at said temperature of 50° to 90° C through a hollow heated die having an outlet in the form of a twin conical throat with acute edges sloping away smoothly at inlet and outlet sides to a temperature of not more than 50° C;
  preforming said expelled mass between a pair of rollers to form a strand;
  cooling and solidifying the expelled strand into a friable state; and,
  breaking up and grinding said strand into a powder adapted to fuse and cross-link.

3,936,523
METHOD FOR THE MANUFACTURE OF ELONGATED MATERIAL PARTICULARLY ELECTRIC CABLE AND WIRE

Wolfgang Kleeberg, Erlangen; Rudolf Wiedenmann, Nurnberg, and Helmut Ahne, Rottenbach, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 20, 1974, Ser. No. 444,100

Claims priority, application Germany, Feb. 21, 1973, 2308637

Int. Cl.² B29C *25/00*

U.S. Cl. 264—211 **48 Claims**

1. In a method for the manufacture of formed elongated articles of cross-linked polyethylene in which the polyethylene is shaped in the non-cross-linked condition and is subsequently cross-linked by the application of heat in the presence of organic radical-forming agents, the improvement wherein 0.1 to 20% by weight of polyethylene of a cross-link promot-

ing coagent selected from the group consisting of 2,4-dienoxy-6-amino-alkyl(ene)-s-triazines and N,N'-bis-(2,4-dienoxy-s-triazine-6)-diamines, is admixed with said polyethylene and is thereafter shaped and continuously cross-linked by application of heating at about atmospheric pressure and at a temperature above about 150°C. and below the decomposition temperature of the components of said mixture.

3,936,524
PROCESS FOR PREPARING POLYISOBUTYLENE OXIDE MOLDINGS OF EXCELLENT WORKABILITY

Hirotaka Toba; Keiichi Ohata, and Nagayoshi Tsukane, all of Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan
Filed Jan. 22, 1973, Ser. No. 325,924
Claims priority, application Japan, Jan. 27, 1972, 47-10119
Int. Cl.^{2} C08G *65/04, 65/30*
U.S. Cl. 264—288 7 Claims

1. Isobutylene oxide polymer selected from the group consisting of homopolymers of isobutylene oxide and copolymers of isobutylene oxide and a copolymerizable cyclic ether or a copolymerizable compound containing an unsaturated carbon to carbon double bond, said copolymer containing at least 70 percent by weight of isobutylene oxide units said isobutylene oxide polymer having an x-ray diffraction pattern with a characteristic peak at 2θ= about 12°, having an elongation at room temperature of from 200 to 400 percent and having a reduced specific viscosity of at least 1.0, said viscosity being determined by dissolving the isobutylene oxide polymer in o-dichlorobenzene in a concentration of 0.1 g/100 ml. and measuring the viscosity at 110°C.

3,936,525
REMOVAL OF SULFUR DIOXIDE FROM STACK GASES WITH PHOSPHATE SLIMES

Robert L. Lanning, Winter Haven, Fla., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Oct. 1, 1973, Ser. No. 402,644
Int. Cl.^{2} C01B *17/00*
U.S. Cl. 423—242 6 Claims

1. Method of removing sulfur dioxide from gases containing at least 100 parts per million by volume sulfur dioxide comprising scrubbing said gases with an effective amount of phosphate slimes to absorb the sulfur dioxide therein to cause chemical reaction of said phosphate slimes with a substantial portion of said sulfur dioxide, which is removed from said waste gas, and exposing the phosphate slime containing the thus removed sulfur dioxide to air for a period of at least 3 days.

3,936,526
ALKYL ESTERS OF POLYENE ANTIBIOTICS

Tiberio Bruzzese, and Rodolfo Ferrari, both of Milan, Italy, assignors to SPA-Societa Prodotti Antibiotici S.p.A., Italy
Filed July 23, 1973, Ser. No. 381,563
Claims priority, application United Kingdom, July 24, 1972, 34497/72
Int. Cl.^{2} A61K *35/00*
U.S. Cl. 424—119 5 Claims

1. A process for the preparation of an alkyl ester of Amphotericin B, wherein Amphotericin B is reacted with a diazoalkane containing from one to four carbon atoms in the presence of a basic substance selected from the group consisting of ammonia, triethylamine and pyridine in a substantially stoichiometric quantity, the resulting pH being 10 to 10.5 (determined after dilution to 1%), the reaction being carried out at a temperature between 15 and 30°C.

3,936,527
TREATMENT OF PETS

Conrad Hugh Alper, East Rockaway, N.Y., assignor to Damon Corporation, Needham Heights, Mass.
Continuation of Ser. No. 886,725, Dec. 19, 1969, abandoned. This application Mar. 21, 1974, Ser. No. 453,211
Int. Cl.^{2} A61K *37/00*
U.S. Cl. 424—177 7 Claims

1. A method of alleviating strong mouth odor in a dog or cat having said odor which comprises feeding said dog or cat an effective amount of methionine to reduce said odor.

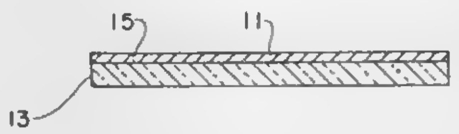
3,936,528
ANALGESIC FORMULATIONS HAVING ENHANCED THERAPEUTIC ACTIVITY

Martin Katz, Palo Alto, Calif., assignor to Syntex Corporation, Palo Alto, Calif.
Filed Feb. 13, 1974, Ser. No. 442,004
Int. Cl.^{2} A61K *31/19, 31/22, 31/235, 31/485*
U.S. Cl. 424—260 16 Claims

9. A method of treating a mammal to relieve pain which comprises administering to said mammal a therapeutically effective amount of an analgesic formulation comprising, as a first component, about 50 to about 750 mg. of d 2-(6-methoxy-2-naphthyl)propionic acid, or a pharmaceutically acceptable salt thereof, and, in combination therewith, as a second component, a central nervous system active analgesic compound selected from the group consisting of codeine, propoxyphene, or a pharmaceutically acceptable salt thereof; said components being present in the ratio of about 0.2 part by weight of said second component, expressed as propoxyphene hydrochloride, or about 0.02 to about 0.16 by weight of said second component, expressed as codeine sulfate, per part by weight of said first component, expressed as d 2-(6-methoxy-2-naphthyl)propionic acid; said formulation exhibiting enhanced analgesic activity over that which can be obtained utilizing either of said components alone.

3,936,529
ORIENTED PHOTOEMITTERS

Walter Roth, San Diego, Calif., assignor to Diagnostic Instruments, Inc., San Diego, Calif.
Filed Aug. 21, 1972, Ser. No. 282,028
Int. Cl. H05b *33/28;* **B44d** *1/44*
U.S. Cl. 427—36 7 Claims



1. A method of forming an improved ionographic photoemitter comprising: selecting a substrate of mica; depositing on the substrate a layer of a photoemissive material consisting of lead, the photoemissive material being deposited in a preferred crystallographic orientation providing relatively high photoemissivity; subjecting the photoemissive material to x-ray exposure, causing a decrease in the photoemissive yield thereof; and annealing the photoemissive material on the substrate to partially restore and stabilize the photoemissive yield thereof.

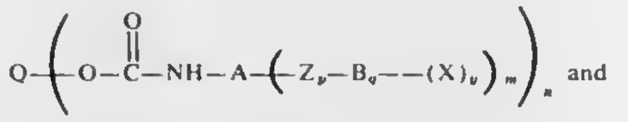
3,936,530
METHOD FOR PREPARING COATINGS USING CURABLE SOLID STYRENE-ALLYL ALCOHOL COPOLYMER BASED POLYENE AND POLYTHIOL COMPOSITIONS

Charles R. Morgan, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.
Division of Ser. No. 250,729, May 5, 1972, Pat. No. 3,832,421. This application Dec. 18, 1973, Ser. No. 425,748
Int. Cl.^{2} B05D *3/06*
U.S. Cl. 427—43 20 Claims

1. A process which comprises:

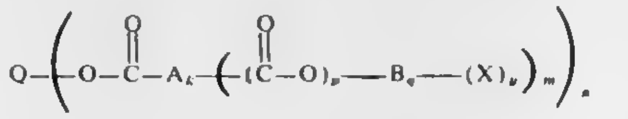
A. applying to the surface of a substrate a solid layer of a curable composition consisting essentially of
   1. a solid polyene containing at least 2 reactive unsaturated carbon to carbon bonds per molecule selected from the group consisting of polyene compounds having the general formula:

(I)



$$Q\left(-O-\overset{O}{\overset{\|}{C}}-NH-A\left(-Z_p-B_q-(X)_y\right)_m\right)_n \text{ and}$$

(II)



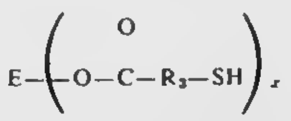
$$Q\left(-O-\overset{O}{\overset{\|}{C}}-A_k-\left(-(\overset{O}{\overset{\|}{C}}-O)_p-B_q-(X)_y\right)_m\right)_n$$

wherein Q is a styrene-allyl alcohol copolymeric moiety remaining after n hydroxyl groups of a styrene-allyl alcohol copolymer have reacted to form (i) n urethane linkages in Formula I and (ii) n ester linkages in Formula II; A and B are polyvalent organic radical members free of reactive carbon to carbon unsaturation and are independently selected from the group consisting of aryl, substituted aryl, aralkyl, substituted aralkyl, cycloalkyl, substituted cycloalkyl, alkyl and substituted alkyl containing 1 to 36 carbon atoms and mixtures thereof, said group members can be internally connected to one another by a chemically compatible linkage selected from the group consisting of —O—, —S—, carboxylate, carbonate, carbonyl, urethane and substituted urethane, urea and substituted urea, amide and substituted amide, amine and substituted amine and hydrocarbon; Z is a divalent chemically compatible linkage selected from the group consisting of -NH-C-O-,
—O— and —S—; X is a member selected from the group consisting of:

a. $-(CH_2)_d-CR'=CHR$
b. $-O(CH_2)_d-CR'=CHR$
c. $-S-(CH_2)_d-CR'=CHR$
d. $-(CH_2)_d-C\equiv CR$
e. $-O-(CH_2)_d-C\equiv CR$
f. $-S-(CH_2)_d-C\equiv CR$

and mixtures thereof; where R and R′ each are independently selected from the group consisting of hydrogen and methyl radicals; *d*, *k*, *p* and *q* are each integers from 0 to 1; *y* is an integer from 1 to 10; *m* and *n* are each integers of at least 1; with the proviso that when *n* is 1, *y* or *m* is at least 2; and

   2. a solid polythiol containing at least 2 thiol groups per molecule of the general formula:



$$E\left(-O-\overset{O}{C}-R_3-SH\right)_x$$

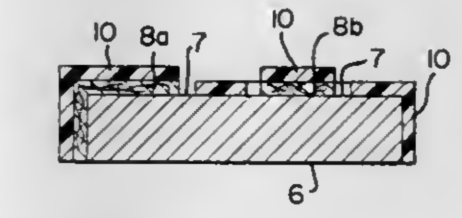
wherein *x* is an integer of at least 2; E is a styrene-allyl alcohol copolymeric moiety remaining after removal of *x* hydroxyl groups from a styrene-allyl alcohol copolymer to form *x* ester linkages; and R_3 is a polyvalent organic radical member free of reactive carbon to carbon unsaturation and is selected from the group consisting of aryl, substituted aryl, aralkyl, substituted aralkyl, cycloalkyl, substituted cycloalkyl, alkyl and substituted alkyl groups containing 1 to 16 carbon atoms and mixtures thereof, the total combined functionality of (1) the reactive unsaturated carbon to carbon bonds per molecular in the polyene and (2) the thiol groups per molecule in the polythiol being greater than 4;

B. exposing selected areas of said composition to a free radical generator, thereby curing the exposed areas of said composition; and

C. removing the unexposed uncured areas of the curable composition, thereby baring the surface of said substrate beneath the removed uncured areas of the composition.

3,936,531
MASKING PROCESS WITH THERMAL DESTRUCTION OF EDGES OF MASK

Peter H. Hofer, Berkeley Heights, N.J., assignor to Union Carbide Corporation, New York, N.Y.
Filed May 1, 1973, Ser. No. 356,214
Int. Cl. B49d *1/52*
U.S. Cl. 427—49 27 Claims



1. A process for masking a defined area on a substrate which is to be coated with a combustible coating material which suffers a loss at a temperature of > 25°C., of at least about 125 percent in the elongation value of such combustible material as measured at 25°C., which comprises

- providing heating element means along the edges of said defined area,
- placing combustible masking means over said defined area and said heating element means,
- applying the combustible coating material to the substrate so as to coat the unmasked area of said substrate and at least those portions of the combustible masking means which cover said heating element means,
- heating said heating element means to a temperature and for a period of time as is sufficient to decompose said masking means and said coating material along the edges of said defined area, and
- removing the remaining masking means and said heating element means from said substrate.

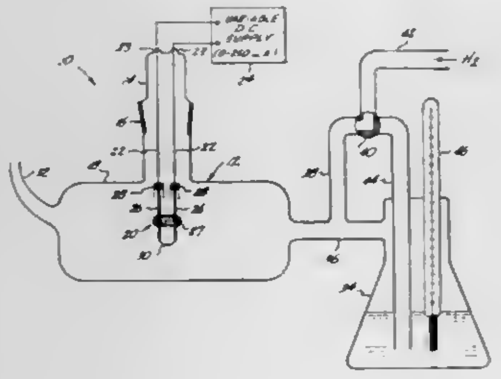
3,936,532
ACTIVATION OF THIN WIRE EMITTERS FOR FIELD IONIZATION/FIELD DESORPTION MASS SPECTROMETRY

Douglas F. Barofsky, Portland, Oreg., assignor to Oregon Graduate Center for Study and Research, Beaverton, Oreg.
Filed Feb. 8, 1974, Ser. No. 440,826
Int. Cl.^{2} B05D *5/12*
U.S. Cl. 427—111 10 Claims

1. In the manufacture of an activated wire field anode for field ionization and field desorption mass spectrometry by a

method including the activation of a tungsten wire, the improvement comprising the preactivation steps of

providing a substantially uniform granular oxide surface layer on the wire, and



reducing the oxide layer to the parent metal, yielding a substantially uniformly roughened surface.

3,936,533
METHOD FOR APPLYING CONTRAST COLOURED MARKING LINES TO THE SURFACE OF ROADS

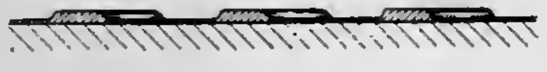
Jan de Jong, Roermond, Netherlands, assignor to Fabran Holding B.V., The Hague, Netherlands

Filed June 15, 1973, Ser. No. 370,553

Claims priority, application Netherlands, June 16, 1973, 7208316

Int. Cl.² B44D *3/22*

U.S. Cl. 427—137 **9 Claims**



1. A method for continuously forming and applying contrast colored marking lines including raised periodic projecting crossrib structures on the surface of a road, said method including the steps of:

providing a storage trough containing a contrast colored viscous marking material,

passing said storage trough over said road surface along a path over which it is desired to apply said marking line,

providing a controllable slit-shaped opening along the lower trailing edge of said storage trough with the opening dimensions being controlled by an upwardly and downwardly movable back wall member, said slit-shaped opening being carried above and substantially parallel to the said road surface and discharging said marking material therefrom,

repetively moving said back wall member upwardly with a fast impulse motion such that an upper limit position is attained within a time shorter than one-half of the time period between such upwardly directed impulse movements, and

repetively moving said back wall member downwardly to a lower limit position after each of said upwardly directed movements thereby continuously forming and applying marking lines having a basic thickness corresponding to said lower limit position, a raised crossrib projection thickness corresponding to said upper limit position, and a relatively steeply inclined reflecting face on each such crossrib corresponding to the upwardly directed fast impulse motion of said back wall member.

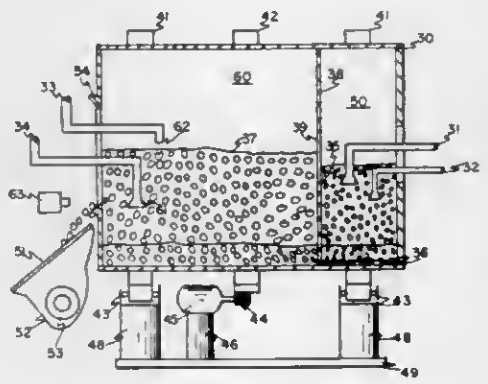
3,936,534
PROCESS FOR PRODUCING FREE FLOWING PARTICULATE SULFUR

Alvin H. Schallis, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed June 18, 1973, Ser. No. 371,006

Int. Cl.² B05D *7/00, 3/12*

U.S. Cl. 427—215 **13 Claims**



1. A process for preparing free flowing solid sulfur particles comprising:

- a. tumbling a bed of solid sulfur particles;
- b. introducing molten sulfur into said tumbling bed to distribute and provide a coat of molten sulfur on the surface of said solid sulfur particles;
- c. introducing an amount of water into said bed to cool and solidify the molten sulfur coating on said solid sulfur particles to thereby form free flowing coated sulfur particles;
- d. removing said free flowing substantially dust free coated sulfur particles from said bed.

3,936,535
METHOD OF PRODUCING FIBER-REINFORCED COMPOSITE MEMBERS

Horst Böder, Westendorf uber Donauworth, Germany, assignor to Sigri Elektrographit GmbH, Meitingen b. Augsburg, Germany

Filed Feb. 7, 1973, Ser. No. 330,186

Claims priority, application Germany, Feb. 12, 1972, 2206700

Int. Cl.² B05D *3/02*

U.S. Cl. 427—228 **6 Claims**

1. Method of producing heat-resistant, fiber-reinforced composite members which comprises coating fibers formed of a substance selected from the group consisting of carbon and graphite first with a substance selected from the group consisting of a dilute solution of hardenable resin and an emulsion of hardenable resin dispersed in a liquid, drying the coated fibers so as to remove, respectively, the solvent or the liquid therefrom, laying out the fibers in layers, curing the layers at 120° to 180° C whereby said fibers are surrounded by a firmly adhering layer of said resin, then impregnating the fiber layers with tar pitch and heating the tar pitch-impregnated fiber layers to a temperature above 800°C to carbonize the tar pitch and the resin.

3,936,536
METHOD OF MAKING RUBBER-COATED WIRE

Marlyn J. Brock, deceased, late of Akron, Ohio, by Betty R. Brock, executrix, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Feb. 13, 1974, Ser. No. 442,257

Int. Cl.² B05D *3/02, 1/38*

U.S. Cl. 427—229 **1 Claim**

1. The method of adhering a sulfur-curable carbon black containing diene rubber compound to zinc-coated steel, which method comprises covering the zinc surface with a diene rubber containing substantially 15 to 90 parts by weight of carbon black and 0.1 to 5 parts by weight of $CoCl_2 . 2NH_3$ which contains 2 molecules of water, per 100 parts by weight of the rubber, curing the rubber and heating for a sufficient time for ammonia to be given off and for action of the ammine complex to form a strong bond with the zinc.

3,936,537
DETERGENT-COMPATIBLE FABRIC SOFTENING AND ANTISTATIC COMPOSITIONS

Ralph James Baskerville, Jr., and Francis Gennaro Schiro, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinati, Ohio

Filed Nov. 1, 1974, Ser. No. 520,187

Int. Cl.² B05D *3/12;* **D06M** *13/46*

U.S. Cl. 427—242 **36 Claims**

13. A detergent composition adapted to prevent static buildup on textiles laundered therewith consisting essentially of:

1. 50 to 90% by weight of the composition of a surfactant selected from the group consisting of anionic, nonionic, and zwitterionic surfactants,
2. 10 to 50% by weight of the composition of a particulate combination comprising an intimate mixture consisting essentially of:
   - A. 80 to 20% by weight of the particles of quaternary ammonium compounds of formula $[R_1R_2R_3R_4N]^+Y^-$, wherein at least one of $R_1R_2R_3$ and R_4 is an organic radical containing a group selected from a C_{16}–C_{22} aliphatic radical, or an alkyl phenyl or alkyl benzyl radical having 10 to 16 carbon atoms in the alkyl chain, the remaining group or groups being selected from C_1–C_4 alkyl, C_2–C_4 hydroxyalkyl, and cyclic structures in which the nitrogen atom forms part of the ring, Y constituting an anionic radical selected from the group consisting of halide and methosulfate ions,
   - B. 20 to 80% by weight of the particles of a dispersion inhibitor, being a solid organic material having a solubility in water of 50 ppm max at 25°C and a softening point in the range 100°F to 200°F, said material being selected from the group consisting of paraffinic waxes, cyclic and acyclic mono- and polyhydric alcohols, substituted and unsubstituted aliphatic carboxylic acids, esters of the foregoing alcohols and acids, C_3–C_4 alkylene oxide condensates of any of the foregoing materials and mixtures thereof,

substantially all of the individual particles having a size within the range 10μ to 500μ, said product having a solubility in water of 50 ppm max at 25°C and having a softening point in the range 100° to 200°F

3,936,538
POLYMERIC FILM DRYER-ADDED FABRIC SOFTENING COMPOSITIONS

Susan Kathryn Marshall, Pittsburgh, Pa.; Thomas Graham Gerding, Rumson, N.J., and Elmer Miller King, Coraopolis, Pa., assignors to Calgon Consumer Products Company Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 452,224, March 18, 1974, abandoned. This application Sept. 25, 1974, Ser. No. 508,931

Int. Cl.² B05D *3/12;* **D06M** *15/00, 15/08*

U.S. Cl. 427—242 **16 Claims**

1. A fabric-softening composition consisting essentially of an essentially uniform, self-supporting preformed film comprising at least one film-forming polymer having a molecular weight of at least 100,000, a fabric softener and a waxy surfactant.

3,936,539
HIGH TEMPERATURE RESISTANT DIFFUSION COATING

Alfonso L. Baldi, Drexel Hill, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 254,403, May 18, 1972, Pat. No. 3,785,854, which is a continuation-in-part of Ser. No. 90,682, Nov. 18, 1970, Pat. No. 3,764,371. This application Nov. 6, 1972, Ser. No. 304,220

Int. Cl. C23c *13/02*

U.S. Cl. 427—253 **8 Claims**

1. The process of pack aluminizing method workpieces at temperatures of about 1000°F or below using an aluminum halide enerigizer selected from the group consisting of aluminum chloride, aluminum bromide, aluminum iodide or hydrated derivatives thereof, wherein the energizer is held in at least one porous container placed in the pack.

3,936,540
HOT DIP GALVANISING

Ian James, Birmingham, England, assignor to Foseco International Limited, Birmingham, England

Filed June 12, 1974, Ser. No. 478,830

Claims priority, application United Kingdom, July 12, 1973, 33313/73

Int. Cl.² C23C *1/00*

U.S. Cl. 427—310 **7 Claims**

1. In the method of hot dip galvanising a ferrous metal article which comprises passing the article into molten zinc through a molten flux disposed on the surface of the zinc, and subsequently removing the article from the molten zinc, the improvement which comprises using a flux melting below 500°C and consisting essentially of 30 – 70% by weight magnesium chloride and 20 – 70% by weight of at least one compound selected from the class consisting of sodium chloride, potassium chloride and mixtures thereof.

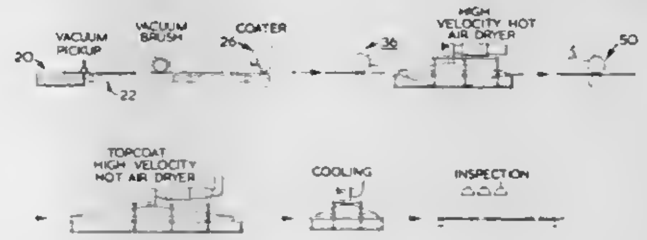
3,936,541
SURFACE DECORATION OF EMBOSSED OR TEXTURED PANEL PRODUCTS

Larry M. Plowman, Royal Oak, and Thomas G. Lahaye, Holland, both of Mich., assignors to Abitibi Corporation, Troy, Mich.

Filed Dec. 26, 1973, Ser. No. 427,708

Int. Cl.² B05D *5/00*

U.S. Cl. 427—262 **8 Claims**


VACUUM PICKUP
VACUUM BRUSH
COATER
HIGH VELOCITY HOT AIR DRYER
20
22
26
36
50
TOPCOAT HIGH VELOCITY HOT AIR DRYER
COOLING
INSPECTION

1. A method of producing a distinctive pattern on a panel comprising passing a panel in a path of travel, the panel having a multi-level surface pattern of pronounced ridges and walled recesses or valleys, applying a liquid coating of coloring material over said surface, and thereafter removing at least some of said liquid material from at least the higher ones of the ridges and portions of the walls of the recesses or valleys by transferring the liquid material onto a non-absorbent resiliently deformable surface of a rotating roll, said transferring of the liquid material including effecting pressurized contact between the resiliently deformable roll surface and the moving panel surface with the surface speed and direction of rotation of the roll being so related to the speed and direction respectively of the panel surface as to avoid substantial relative motion at the regions of contact therebetween whereby to avoid substantial displacement of the liquid material into said recesses or valleys, continually removing from the roll surface

the liquid material which has been transferred thereto from the panel surface so that the roll continually presents a substantially clear surface to the coated panel surface, and thereafter, effecting drying or curing of the liquid material remaining on the panel.

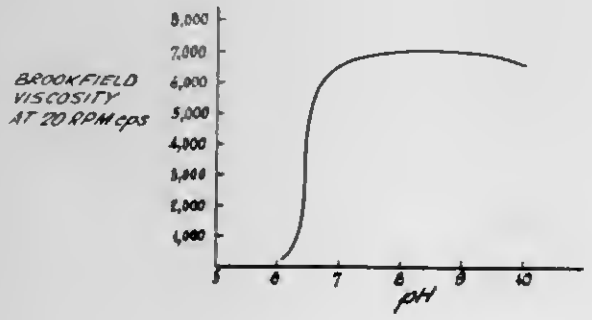
3,936,542
METHODS OF CONTROLLING MIGRATION OF SYNTHETIC RESINS APPLIED TO POROUS MATERIALS

Andrew John Cox, Usk, United Kingdom, assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Nov. 15, 1973, Ser. No. 416,342

Int. Cl.^{2} B05D *5/00*

U.S. Cl. 427—288 **11 Claims**



1. A method of print bonding nonwoven fibrous webs in an intermittent print pattern with a stable resin binder composition and controlling the binder migration thereon which comprises:

treating nonwoven fibrous webs with an alkaline material to raise the pH above about 7 to give same an alkaline reserve potential; and

applying the stable resin binder composition to said fibrous webs with a binder applying print roll, said resin binder composition having a viscosity of less than 1000 centipoises and comprising a synthetic resin and low viscosity, self-thickening resin having a polycarboxylate capability of converting said acidic resin composition to a neutral or alkaline resin composition having a viscosity of more than 3,000 centipoises upon neutralization and conversion of the polycarboxylic function from the acid form at an acidic pH less than about 7 to an alkali or ammonium carboxylate salt form at a neutral pH of about 7 or an alkaline pH greater than about 7, whereby said resin composition substantially immediately thickens in place on said fibrous webs with a minimum of migration thereon.

3,936,543
METHOD OF COATING CARBON STEEL

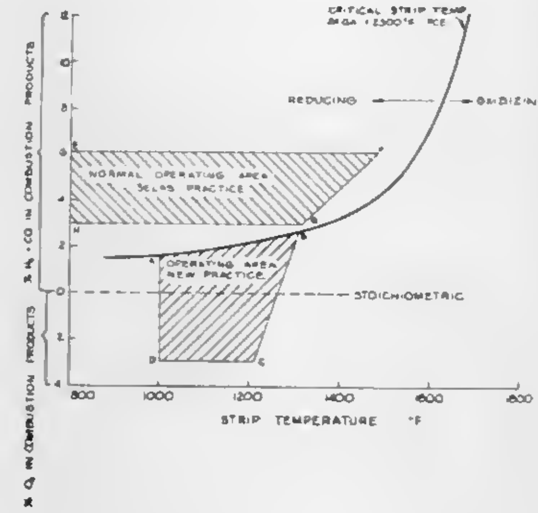
Fred Byrd, Lebanon; Marvin B. Pierson, Franklin; Thomas A. Compton, Middletown, and Frank C. Dunbar, Monroe, all of Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Filed Aug. 22, 1974, Ser. No. 499,772

Int. Cl.^{2} C23C *1/00*

U.S. Cl. 427—320 **11 Claims**

1. A method of preparing carbon steel strip and sheet for fluxless hot dip metallic coating, comprising the steps of heating said strip and sheet in a furnace heated by direct combustion of fuel and air therein and in an atmosphere containing from about 3% by volume oxygen to about 2% by volume excess combustibles in the form of hydrogen and carbon monoxide, controlling the strip and sheet temperature within the range of about 540° to about 705° C, and thereafter heating said strip and sheet in a subsequent furnace containing at least about 5% hydrogen by volume and balance substantially nitrogen to a temperature of at least about 675°C.



3,936,544
PROCESS FOR THE MANUFACTURE OF FLAT-SHAPED ARTICLES

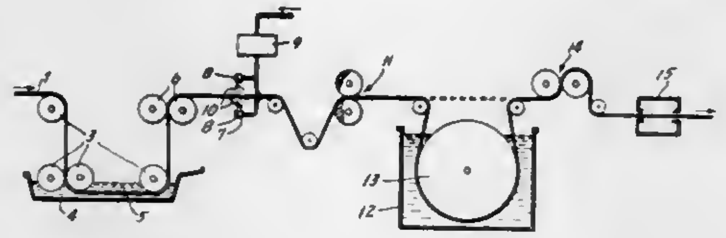
Helmut Kriebitz, Viersen; Theodor Ploetz, Hoesl, and Popko Julius Westerhuis, Hueckelhoven-Baal, all of Germany, assignors to Feldmuehle Aktiengesellschaft, Dusseldorf-Oberkassel, Germany

Filed May 10, 1974, Ser. No. 469,041

Claims priority, application Germany, May 10, 1973, 2323583

Int. Cl.^{2} B05D *3/04, 3/10*

U.S. Cl. 427—335 **12 Claims**



1. A method of producing binder-treated flat-shaped fibrous articles, such as paper, woven fabric, knitted fabric and nonwoven fabric, by a process which includes a step of uniformly treating the articles with a desired amount of an aqueous dispersion of a polymeric binder including a sensitizing agent for causing said dispersion to coagulate at a temperature substantially below 100°C., heating the articles to coagulate the binder and thereafter drying the articles, the heating step being characterized by directing at least one jet of steam at a pressure higher than atmospheric pressure, said pressure being at least about 7.5 p.s.i.g., against at least one major surface of each of the articles to suddenly coagulate the binder without evaporation of the aqueous vehicle in the dispersion.

3,936,545
METHOD OF SELECTIVELY FORMING OXIDIZED AREAS

Klaus Brill, Korntal, and Christian Glassman, Stuttgart, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Oct. 31, 1972, Ser. No. 302,629

Claims priority, application Germany, Dec. 3, 1971, 2160008

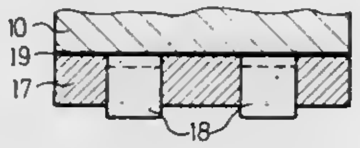
Int. Cl.^{2} C23C *11/00, 13/00*

U.S. Cl. 427—343 **16 Claims**

1. A method of producing a visibly patterned metal layer supported on a carrier which comprises the steps of:

vapor-depositing a layer of a first metal under vacuum on said carrier substrate,

vapor-depositing under vacuum, at selected locations on said carrier, a second metal having corrosion inciting properties with respect to the first metal, such as to promote the formation of corrosion products of said first metal at said locations, and then



exposing the metal layer on said carrier to an oxidizing atmosphere to produce at said selected locations modified portions of the metal layer remaining fixed on said carrier and having characteristics readily distinguishable optically from unaffected portions of said metal layer,

the two aforesaid metal layer deposition steps being performed successively in the order above set forth under continued maintenance of vacuum.

3,936,546
PROLONGING THE STABILITY OF COATING BATHS

Wilbur S. Hall, Plymouth Meeting, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Continuation of Ser. No. 152,994, June 14, 1971, abandoned. This application May 31, 1973, Ser. No. 365,699

Int. Cl.^{2} B05D *1/18;* **B04D** *3/10*

U.S. Cl. 427—375 **26 Claims**

1. In the method wherein an organic resinous coating is applied to a metallic surface by immersing said surface in an acidic aqueous coating composition containing an oxidizing agent and dispersed solid particles of an organic coating-forming resin dispersed in said composition by a dispersing agent associated therewith, said dispersing agent and resin being present in a predetermined proportion, and wherein metal ions are formed by the dissolution of said metallic surface through the chemical action of said coating composition, and wherein said metal ions are oxidized to a form which renders said dispersed resin unstable in the region of said surface and wherein said unstabilized resin deposits and forms on said surface a resinous coating, the thickness or amount of which increases during at least a portion of the time said surface is immersed in said composition, and wherein said resinous coated surface is withdrawn from said composition and is heated to fuse the resin, and wherein additional metallic surfaces are immersed in said composition and are coated as set forth, and wherein ingredients of said composition are consumed as said surfaces are coated, and wherein additional amounts of said ingredients are added to said composition to replenish the concentrations thereof, and wherein as said metallic surfaces are coated as set forth, there is formed in said composition additional excess oxidized metal ions which tend to cause said dispersed resin to become unstable, not only in the region of said metallic surface, but also throughout the other portions of said coating compositions, as characterized by flocculation, coagulation or gelation of the dispersed resin particles, thereby rendering said composition inoperative for coating, the improvement comprising adding dispersing agent and resin to said composition in amounts to replenish these ingredients and in a proportion such that the proportion of said added dispersing agent to said added resin is greater than said predetermined proportion and sufficient to maintain the stability of said dispersed resin in said other portions of said composition thereby prolonging the operability of said coating composition.

3,936,547
PROCESS OF PREPARING MELAMINE RESIN FILMS BY IMPREGNATION OF PAPER, CELLULOSE, FLEECE OR FABRIC

Karl Schnee, Dornigheim; Dieter Tichy, Frankfurt am Main; Walter Michel, Frankfurt am Main, and Günter Gruber, Frankfurt am Main, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Germany

Filed Feb. 14, 1974, Ser. No. 442,644

Claims priority, application Germany, Feb. 24, 1973, 2309334

Int. Cl.^{2} B05D *3/02;* **C08L** *61/20*

U.S. Cl. 427—390 **8 Claims**

1. A process for preparing a melamine resin film which comprises impregnating paper, cellulose fleece or fabric with a solution of monomeric dimethylolmelamine monomethylether, dimethylolmelamine dimethylether, trimethylolmelamine monomethylether, trimethylolmelamine dimethylether, or trimethylolmelamine trimethylether or a mixtue thereof and drying the same at temperatures of about 90° to about 200°C., preferably of 130° to 180°C.

3,936,548
METHOD FOR THE PRODUCTION OF MATERIAL FOR PRINTED CIRCUITS AND MATERIAL FOR PRINTED CIRCUITS

Jiri K. Konicek, Perstorp, Sweden, assignor to Perstorp AB, Perstorp, Sweden

Continuation-in-part of Ser. No. 283,955, Aug. 28, 1972. This application Feb. 27, 1974, Ser. No. 446,334

Claims priority, application Sweden, Feb. 28, 1973, 7302829; Feb. 28, 1973, 7302830

Int. Cl.^{2} B44D *1/34;* **C23F** *1/34, 1/44*

U.S. Cl. 427—405 **9 Claims**

1. A method for the production of a material for use in the production of printed circuits comprising applying a thin layer of zinc to a foil of aluminum or an aluminum alloy galvanically replacing the layer of zinc wholly or partly, by a layer of a metal selected from the group consisting of nickel, iron, chrome, tin, cadmium and cobalt and plating a layer of copper to the metal layer.

3,936,549
METHOD AND APPARATUS FOR APPLYING A LIQUID COATING TO STRIP MATERIAL

John B. Kohler, and Ronald R. Brookes, both of North Canton, Ohio, assignors to The Kohler Coating Machinery Corporation, Greentown, Ohio

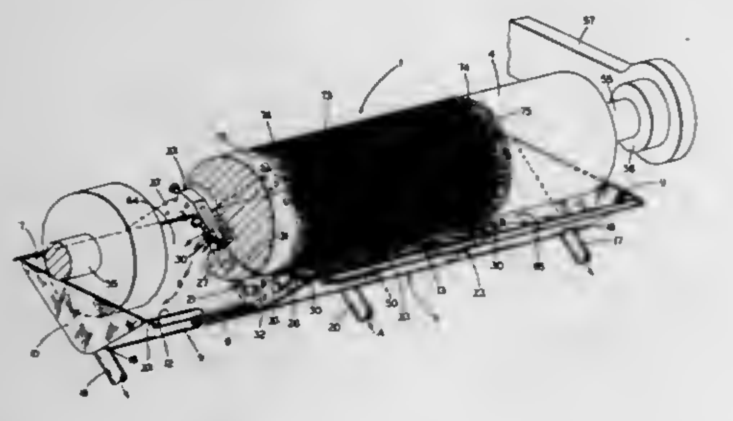
Filed Nov. 17, 1972, Ser. No. 307,385

Int. Cl. C23c *1/02;* **B05c** *1/08*

U.S. Cl. 427—428 **12 Claims**

1. The method of applying a coating liquid to a surface of a moving object including the steps of providing an elongated coating liquid container having spaced weirs each formed with an upper curved portion; continually supplying coating liquid to said liquid container in excess so that a body of coating liquid is maintained in the container between the weirs; moving an object to be coated in a direction normal to the elongated container through the liquid body therein in a curved path with the object extending laterally of the liquid body in each direction beyond the weirs; providing a spacing between the curved weir portions and the object being coated; flowing coating liquid outwardly beyond the weirs laterally of the object being coated through the controlled spacings; controlling the spacing between the object being coated and the curved weir portions to prevent contact between the weir

portions and the moving object being coated, and to control the flow of liquid between the moving object and the curved weir portions; providing coating liquid collecting compartments outside of the weirs; collecting coating liquid flowing through the controlled spacings beyond the curved weir portions and the moving object in said collection compartments; and maintaining the liquid level in the collecting compartments below the lowest level of the curved weir portions.



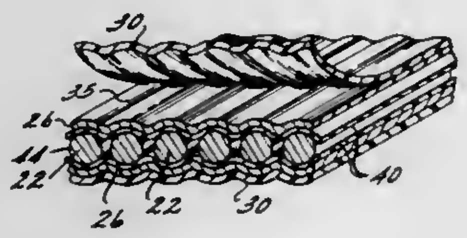
3,936,550
COMPOSITE METALLIC PREFORM TAPE

Robert G. Carlson, and Carl A. Steinhagen, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 133,207, April 12, 1971, Pat. No. 3,719,538. This application Dec. 4, 1972, Ser. No. 311,813

Int. Cl. B32b *3/00*

U.S. Cl. 428—294 **2 Claims**



1. A composite metallic tape comprising;
a single layer of a plurality of aligned, substantially spaced apart, high strength, high modulus filaments held between a pair of metallic foils through a thin, non-metallic adhesive bonding material which will decompose leaving substantially no residue upon heating at a temperature below that at which the foil and filament will melt,
each foil being plastically deformed around at least a portion of substantially each filament in an amount sufficient to hold the aligned filaments therebetween in the substantially spaced apart relationship.

3,936,551
FLEXIBLE WOOD FLOOR COVERING

Armin Elmendorf, 56 Granada Court, Portola Valley, Calif. 94303, and Roland Etzold, 487A Thompson Ave., Mountain View, Calif. 94043

Filed Jan. 30, 1974, Ser. No. 438,087

Int. Cl.² B32B *3/10*

U.S. Cl. 428—50 **9 Claims**

1. The method of making a flexible wood floor covering which comprises the steps of producing wood blocks from 1/16-inch to 3/16-inch thick, assembling the blocks in edge-to-edge relationship, covering the assembled blocks with a plastic resin film with an adhesive between the film and the blocks, placing an elastic cushion on the film, subjecting the assembly to heat adequate to soften the film, then cooling the assembly under pressure to cause the adhesive to bond the film to the blocks.

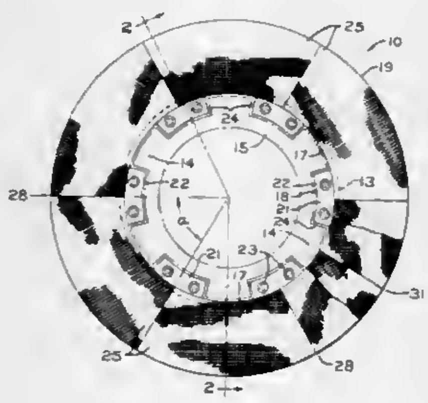
3,936,552
NONMETALLIC COMPOSITE FRICTION MEMBER

Carroll P. Krupp, Akron, and Hildreth W. Stevenson, Medina, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 5, 1975, Ser. No. 547,245

Int. Cl.² B32B *1/04, 3/10;* **F16D** *13/60, 69/00*

U.S. Cl. 428—64 **10 Claims**



1. In a disc brake which includes a rotor and a stator wherein at least one of said rotor or stator is a nonmetallic composite friction member, said friction member comprising:
a. a first disc shaped carbon component having two radially extending faces and consisting essentially of bulk graphite; and
b. a second carbon component comprising at least one ply of carbon cloth impregnated with a carbonized resin, wherein the second carbon component is bonded to a face of the first carbon component.

3,936,553
INSULATING MATERIALS

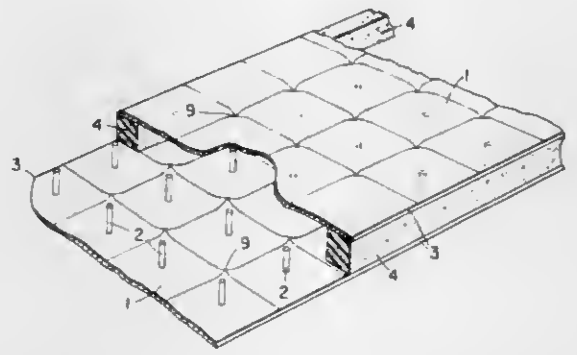
Alexander W. Rowe, Johannesburg, South Africa, assignor to Rorand (Proprietary) Limited, South Africa

Filed Nov. 23, 1973, Ser. No. 418,202

Claims priority, application South Africa, Nov. 24, 1972, 72/8342

Int. Cl.² B32B *3/12, 5/18, 27/38;* **E04B** *2/28*

U.S. Cl. 428—81 **9 Claims**



1. Insulation material comprising a pair of generally parallel surface sheets of fluid impervious material sealed together through thermally insulating material at their free edges and held in spaced relation by a series of transverse pins spaced apart over the area of the surface sheets, the space between the surface sheets being evacuated and provided with a plastic film having a metallic coating.

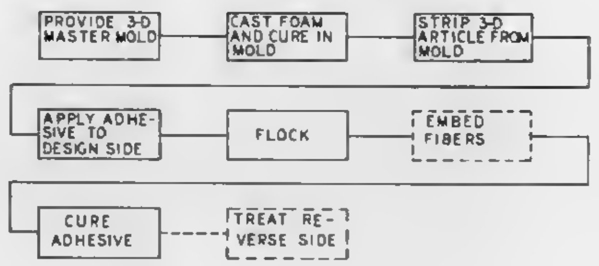
3,936,554
THREE DIMENSIONAL DECORATIVE MATERIAL AND PROCESS FOR PRODUCING SAME

William H. Squier, Taylors, S.C., assignor to M. Lowenstein & Sons, Inc., New York, N.Y.

Division of Ser. No. 272,340, July 17, 1972. This application Apr. 19, 1974, Ser. No. 462,210

Int. Cl.² B32B *3/30*

U.S. Cl. 428—88 **6 Claims**


PROVIDE 3-D MASTER MOLD
CAST FOAM AND CURE IN MOLD
STRIP 3-D ARTICLE FROM MOLD
APPLY ADHESIVE TO DESIGN SIDE
FLOCK
EMBED FIBERS
CURE ADHESIVE
TREAT REVERSE SIDE

1. A three dimensional stock material comprising:
a. an organic polymeric foam base, said base having been foamed in situ over a pattern having a three dimensional surface, whereby said base has an exposed in situ molded three dimensional surface design conforming to said pattern surface;
b. an organic polymeric adhesive layer on said exposed three dimensional surface design; and
c. short synthetic polymeric textile fibers secured in said adhesive layer, said fibers being positioned in said layer to simulate the surface characteristics of said pattern.

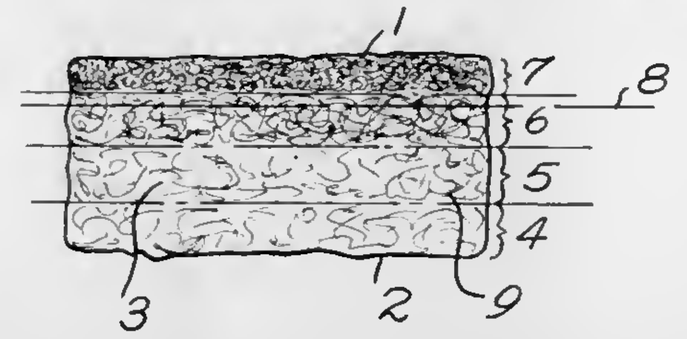
3,936,555
FILLED TEXTILE FABRIC WITH A DENSITY GRADIENT

Alexander M. Smith, II, Elkin, N.C., assignor to The Fiberwoven Corporation, Elkin, N.C.

Continuation-in-part of Ser. No. 221,614, Jan. 28, 1972, Pat. No. 3,817,820. This application Oct. 17, 1973, Ser. No. 407,169. The portion of the term of this patent subsequent to June 18, 1991, has been disclaimed.

Int. Cl.² B32B *5/06, 5/22*

U.S. Cl. 428—151 **40 Claims**



1. A filled textile fabric characterized by high bulk density, a network of entangled fibers and a positioned axis of flexure; comprising textile fibers needled together into an integral needled structure having coherent fiber entanglement and an overall bulk density of at least 10 pounds per cubic foot; and a filler within the needled structure preferantially disposed toward the face surface thereof in an amount insufficient to fill all of the intersticies between the fibers of the structure; said filled fabric having an overall bulk density of between 20 and 60 pounds per cubic foot, a bulk density gradient wherein the bulk density increases from the back surface of the fabric to the face surface thereof and an axis of flexure which lies within about 0.4 of the distance from the face to the back surface.

24. A method for producing a filled textile fabric comprising needling textile fibers together into an integral structure with a face surface and back surface so that the overall bulk density of the needled structure is at least 10 pounds per cubic foot and the bulk density increases from the back surface to the face surface and produces an axis of flexure within 0.4 of the distance from the face surface to the back surface; applying a liquid phase filler to the needled structure in an amount insufficient to fill the voids of the needled structure, lagging the structure for a time sufficient to allow the liquid to move by capillary action to preferentially dispose the liquid phase filler toward the face surface, coagulating the filler from the liquid phase into particulate form which is at most loosely bonded to the fibers of the structure, and removing the liquid phase from the structure, whereby the fabric produced has an overall bulk density of between 20 and 60 pounds per cubic foot and the said bulk density gradient and position of the axis of flexure of the needled structure is at least preserved.

3,936,556
MARKING OF ARTICLES

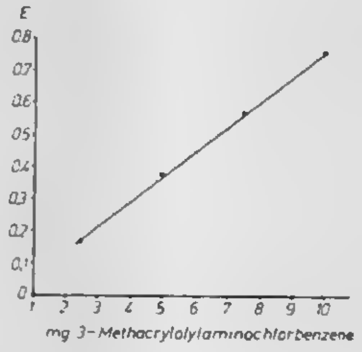
Carlhans Süling, Odenthal-Hahnenberg; Hans Theidel; Hellmut Striegler, both of Leverkusen, and Wolfram von Langenthal, Pulheim, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Feb. 13, 1974, Ser. No. 442,177

Claims priority, application Germany, Feb. 16, 1973, 2307592

Int. Cl.² B41M *3/14*

U.S. Cl. 428—195 **9 Claims**



1. A process for marking a manufactured article with identification which comprises applying a marking agent to said manufactured article, said marking agent being a high molecular weight compound containing at least one group which can be removed by a cleaving reaction to form a low molecular weight compound, said low molecular weight compound being a diazotizable amine or an amine or phenol which can be coupled with a diazonium salt and thus converted into a dye.

3,936,557
EPOXIDE BLEND FOR POLYMERIZABLE COATING COMPOSITIONS AND PROCESS

William Russell Watt, Princeton Junction, N.J., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 144,668, May 18, 1971, Pat. No. 3,794,576. This application Apr. 9, 1973, Ser. No. 349,487

Int. Cl.² B50D *3/06*

U.S. Cl. 428—211 **33 Claims**

1. The process of producing an epoxide polymer, comprising:
forming an essentially solventless mixture, fluid at room temperature, consisting essentially of
  1. at least one epoxidic prepolymer material having an epoxy equivalent weight below 200, constituting between about 10% and 85% of the weight of the epoxidic materials in the mixture, and selected from the group consisting of
    A. an epoxy resin prepolymer consisting predominantly of the monomeric diglycidyl ether of bisphenol A,
    B. a polyepoxidized phenol novolak or cresol novolak,

- C. a polyglycidyl ether of a polyhydric alcohol, and
- D. a diepoxide of a cycloalkyl or alkylcycloalkyl hydrocarbon or ether,

2. an epoxidic ester having two epoxycycloalkyl groups and constituting at least about 15% of the weight of the epoxidic materials in the mixture, and
3. radiation-sensitive catalyst precursor which decomposes upon exposure to electron beam or electromagnetic irradiation to provide a Lewis acid effective to initiate polymerization of said epoxidic materials in said mixture;

applying a portion of the mixture so formed to a substrate

and subsequently exposing said mixture on the substrate to electron beam or electromagnetic irradiation to effect substantial polymerization of said epoxidic materials.

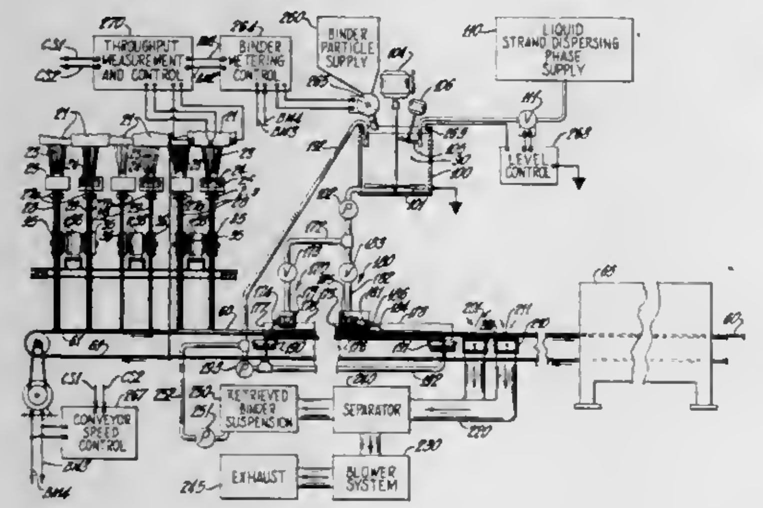
3,936,558
FIBROUS BODIES AND METHOD AND APPARATUS FOR PRODUCING SAME

Gerhard N. Bolen; Sidney C. Dunbar, both of Granville, and George E. Smock, Heath, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 233,549, March 10, 1972, abandoned. This application May 3, 1974, Ser. No. 466,764

Int. Cl.² B32B *7/02*

U.S. Cl. 428—212 **7 Claims**



1. A nonwoven mat having strands of continuous glass filaments generally disposed in irregularly shaped looping formation comprising at least two layers of the strands of continuous filaments, a portion of the strands of one of the layers being filamentized such that the filaments of those strands are separated from each other and binder material in each of the layers such that the one layer having strands that are filamentized contains more binder material than the other layer, the binder material in each layer being uniformly distributed in that layer.

2. A nonwoven fibrous mat having strands of continuous filaments generally disposed in irregularly shaped looping formation comprising:

- a. two contiguous layers of the strands of continuous filaments, one layer having the filaments of that layer more dispersed than the filaments in the other layer; and
- b. binder material joining the filaments into an integral mat where one layer contains more binder material than the other layer.

3,936,559
PRESSURE-SENSITIVE TRANSFER ELEMENTS

Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Division of Ser. No. 117,162, Feb. 19, 1971, abandoned. This application Mar. 5, 1973, Ser. No. 337,926

Int. Cl.² B32B *7/02*

U.S. Cl. 428—212 **6 Claims**

1. A pressure-sensitive transfer element comprising a plastic film foundation carrying a solidified layer comprising pressure-transferable imaging material which is transferable to a copy sheet under the effects of typing pressure, said foundation comprising a laminate of two different extruded plastic films, each having a maximum caliper of about 1 mil, one said film having an impact strength greater than about 40 kg/cm and low deformability under the effects of typing pressure and the other of said film having an impact strength below about 20 kg/cm but deforming easily about a type face under the effects of typing pressure, said films being bonded together by means of a thin adhesive intermediate layer to form a laminate having greater deformability under the effects of typing pressure than the said one film and greater impact strength than the said other film and having greater dimensional stability under the effects of changes in temperature and humidity than either of said films per se.

4. A pressure-sensitive transfer element according to claim 1 in which the foundation comprises a laminate of polyethylene terephthalate polyester as the one film and a polyolefin as the other film.

3,936,560
SELF-SEALABLE CORROSION PROTECTABLE PACKAGING MATERIAL AND METHOD OF MAKING

Pasco R. Santurri, Ballwin; Howard W. Mumm, St. Louis County, and Thomas E. Yockey, Florissant, all of Mo., assignors to The Orchard Corporation of America, St. Louis, Mo.

Filed Feb. 22, 1974, Ser. No. 444,906

Int. Cl.² C23F *15/00*

U.S. Cl. 428—219 **15 Claims**

1. A packaging material providing sealed containers for ferrous metal articles comprising a flexible transparent film substrate from the class consisting of polybutylene, polyethylene, polypropylene, polystyrene, and polyethylene terephthalate, said container having first and second confronting surface portions for mutual adherence when said container is closed, a homogeneous coating provided upon said substrate including said confronting first and second surface portions, said coating comprising between 5 to 25% by weight of a water soluble aliphatic nitrite-amide composition and approximately 75 to 95% by weight of a dried latex, said amide composition being from the class consisting of propionamide, allyl urea, acetamide, propyl carbamate, butyramide, dimethyl urea, guanidine, stearamide, and N-butyl urea.

3,936,561
ANTI-DUSTING TREATMENT OF TEXTILES

James F. Cotton, West Point, Ga., assignor to West Point-Pepperell, Inc., West Point, Ga.

Filed Apr. 2, 1974, Ser. No. 457,347

Int. Cl.² B32B *7/00, 23/00*

U.S. Cl. 428—264 **1 Claim**

1. In a durable press cellulosic fabric which has been treated with a durable press cross-linking textile resin and thereafter cured, the improvement in which the tendency of the treated fabric to form dust has been reduced by applying to the fabric a dust-inhibiting amount of polyethylene glycol whose molecular weight is at least about 100,000.

3,936,562
FIRE RETARDANT FABRICS

Marshall W. Duke, and Razmic S. Gregorian, both of Aiken, S.C., assignors to United Merchants and Manufacturers, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 222,681, Feb. 1, 1972, abandoned. This application Jan. 21, 1974, Ser. No. 434,783

Int. Cl.² C09K *3/28;* **C09D** *5/18*

U.S. Cl. 428—277 **12 Claims**

1. A process for rendering a cellulose containing fabric fire retardant comprising:

- a. impregnating the fibers of the cellulose-based fabric with an aqueous aminoplast resin composition, such that the fibers become wet and swollen, in an amount sufficient to produce a resin content in the final fabric in the range from about 2% to 25% by weight based on the total weight of the fabric;
- b. polymerizing the resin in the impregnated fabric while the fibers are in a wet and swollen state;
- c. adjusting the pH of the fabric to a value greater than about 7.0;
- d. impregnating the fabric with a solution of tetrakis (hydroxymethyl) phosphonium hydroxide in an amount sufficient to produce a phosphorus content in the final fabric in the range from about 1% to 3% by weight based on the total weight of the fabric;
- e. subjecting the impregnated fabric to curing conditions consisting essentially of heating the fabric at a temperature in the range from about 300°F to 400°F for a time period from about 2 to 20 minutes; and
- f. washing and drying the fabric.

3,936,563
HYDROXYMETHYLENE-SUBSTITUTED CHROMONE-3-ARBOXALDEHYDES, PROCESS FOR THEIR PREPARATION AND INTERMEDIATES PRODUCED THEREBY

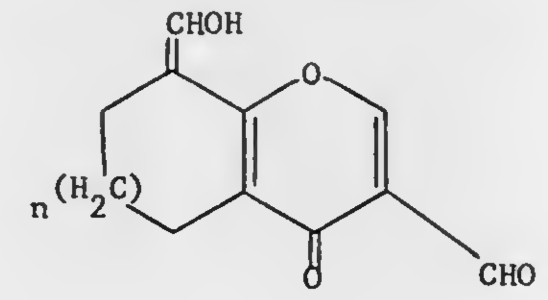
Daniel Kaminsky, Parsippany, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 352,134, April 18, 1973, Pat. No. 3,879,426. This application Dec. 20, 1974, Ser. No. 534,599

Int. Cl.² A61K *31/35*

U.S. Cl. 424—283 **1 Claim**

1. A method for preventing asthmatic symptoms which comprises administering to a mammal in need thereof from 5 to 50 mg/kg of body weight of a compound having the formula:



wherein *n* represents 1 or 2.

3,936,564
PRESSURE-SENSITIVE COPYING PAPER CONTAINING LACTONE COMPOUNDS OF PYRIDINE-CARBOXYLIC ACID

Yoshihide Miyazawa; Minoru Ozutsumi; Satoshi Ogawa, all of Tokyo; Keiso Saeki, and Akio Watanabe, both of Fuojimiya, all of Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo and Fuji Photo Film Co., Ltd., Minami-ashigara, both of, Japan

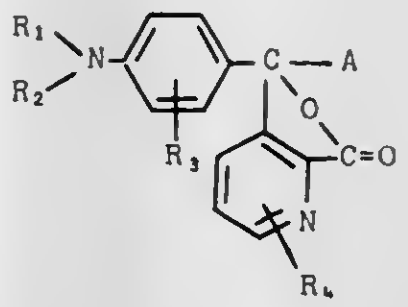
Filed July 24, 1974, Ser. No. 491,193

Claims priority, application Japan, July 24, 1973, 48-82648

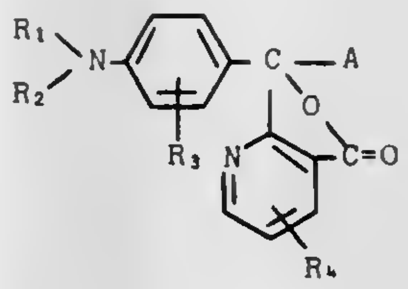
Int. Cl.² B41M *5/16*

U.S. Cl. 428—307 **2 Claims**

1. A pressure-sensitive copying paper coated with a microencapsulated using as a color former a lactone compound of a pyridine-carboxylic acid represented by the formula



or (I)

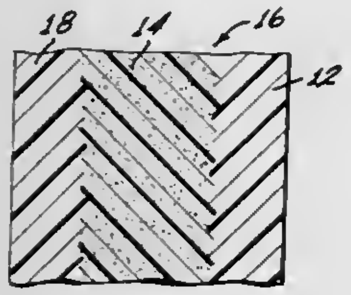


or a mixture thereof, wherein R_1 and R_2 each represents a hydrogen atom, an acyl group, a lower alkyl group which may be substituted with a halogen atom, a cyano, hydroxyl, lower alkoxy, lower alkylamino, acetyl or phenoxy group, or a benzyl or phenyl group which may be substituted with a lower alkyl group, a halogen atom, a lower alkoxy, nitro, amino or lower alkylamino group, or R_1 and R_2 may, when taken together with a nitrogen atom to which R_1 and R_2 are attached, form a part of a saturated hydrocarbon chain of a heterocyclic ring; R_3 represents a hydrogen or halogen atom, a nitro, amino, lower alkylamino group or a lower alkyl group which may be substituted with a halogen atom or a lower alkoxy group, a lower alkoxy group which may be substituted with a halogen atom, or a benzyl, benzyloxy or phenoxy group which may be substituted with a halogen atom, a lower alkyl, alkoxy or lower alkylamino group; R_4represents a hydrogen or halogen atom, a lower alkyl group or a phenyl group; and A represents a carbazolyl, acridinyl, phenothiazinyl, thienyl, thianaphthenyl, morpholinophenyl, julolidinyl or tetrahydroquinolyl group which may be substituted with a lower alkyl, lower alkylamino, acyl or nitro group; the alkyl moiety in said lower alkyl, lower alkoxy or lower alkylamino group containing 1 to 5 carbon atoms.

3,936,565
MOLDED PLASTIC ARTICLE AND METHOD

Elmer H. Good, Woodland Hills, Calif., assignor to Hollowform, Inc., Woodland Hills, Calif.

Filed May 3, 1974, Ser. No. 466,622
Int. Cl.² B32B *3/26*
U.S. Cl. 428—315 7 Claims



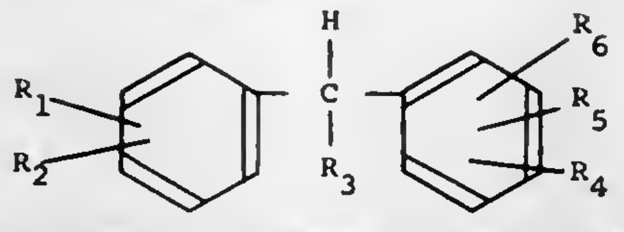
1. A foamed lightweight plastic structure having the properties of rigidity, thermal and acoustic insulation, impact resistance and buoyancy comprising a rigid foam core of high density polyethylene,
- said foam having a density of between 8 and 20 pounds per cubic foot,
- said foam being a closed foam in which at least 90% of the cells are closed,
- said polyethylene having a density of at least 0.960,
- said foam core having affixed thereto at least one skin member,
- said skin member being a cross-linked polyethylene having a density in the cured condition of at least 0.94,
- said skin member being affixed to said core by a bond characterized by the absence of applied adhesive and being the adherent joint formed by curing said cross-linked polyethylene in contact with said foam core, and
- the flexural strength of said foam core and affixed skin being greater than the flexural strengths of said foam core and said skin member.

3,936,566
PRESSURE SENSITIVE RECORD MATERIAL EMPLOYING DIARYL ALKANE SOLVENTS

Atsushi Sato, Yokohama; Yoshiaki Aida, and Isoo Shimizu, both of Kawasaki, all of Japan, assignors to Nippon Petrochemicals Company Ltd., Tokyo, Japan

Division of Ser. No. 229,195, Feb. 24, 1972, abandoned. This application Oct. 19, 1973, Ser. No. 407,986
Claims priority, application Japan, Mar. 2, 1971, 46-10542; Mar. 15, 1971, 46-13965
Int. Cl.² B41M *5/02*
U.S. Cl. 428—323 1 Claim

1. A pressure sensitive record material which comprises a paper sheet coated with microcapsules holding internally a liquid containing a dye-precursor and at least one compound represented by the general formula:

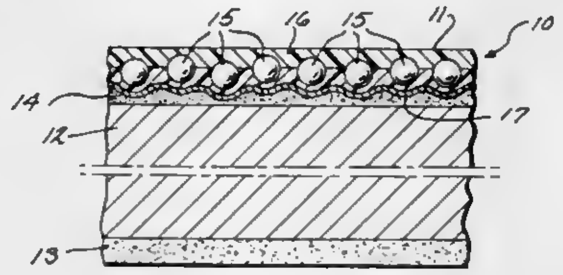


in which R_1 and R_2 are hydrogen; R_3 is methyl; R_4 and R_5 are hydrogen, methyl or ethyl; R_6 is an alkyl group selected from methyl, ethyl, n-propyl, isopropyl, sec-butyl and tert-butyl, and the total carbon atom number of R_4, R_5 and R_6 is 1–4.

3,936,567
LIGHT-REFLECTIVE ADHESIVE LABEL

Edward U. Vesely, Glendale, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Mar. 25, 1974, Ser. No. 454,588
Int. Cl.² B32B *3/16*
U.S. Cl. 428—325 2 Claims



1. A composite light-reflective adhesive label construction comprising, in combination:
1. a first film having
   - a. an outer layer of light reflective film consisting of small sphere lenses embedded in a transparent binder and a light reflective coating behind the sphere lenses to provide reflex reflection of incident light; and
   - b. a pressure sensitive adhesive layer;
2. a second plastic film adhered to the pressure sensitive adhesive of the first film to form a supporting layer for the first film, the first and second films being joined together prior to manufacture of the label; and
3. a layer of adhesive applied to the second film on a surface thereof opposite from the first film and which is used to affix the label to an object.

3,936,568
THICK FILM VARIABLE RESISTOR

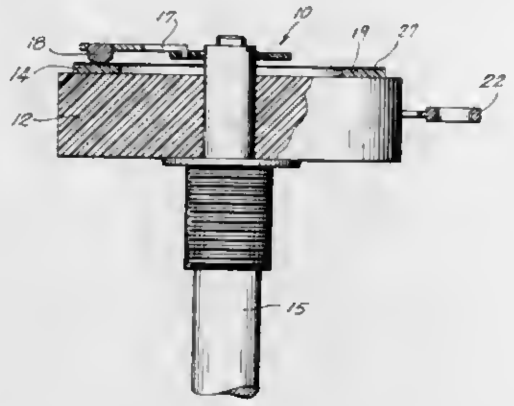
Clifford Joseph Pukaite, Mequon, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Nov. 7, 1974, Ser. No. 521,576
Int. Cl.² B05D *5/12*
U.S. Cl. 428—333 7 Claims

1. A thick film resistor for use in a variable resistor or potentiometer comprising:
- an insulating substrate

- a thick film resistor layer attached to said substrate, said resistor layer comprising an amorphous ceramic material containing a predetermined amount of conductive material and having an exposed contact surface, said contact surface being etched with acid, and
- a thin layer of a conductive metal selected from the group consisting of gold, silver or platinum deposited on said etched surface.

4. A method of making a thick film resistor for use in a potentiometer or variable resistor comprising the steps of:
- forming a fluid mixture of a thick film resistive material and an organic vehicle;



- applying a film of said mixture to a non-conductive ceramic substrate;
- firing said mixture and said substrate at an elevated temperature to remove said organic vehicle;
- etching the exposed surface of said resistor film with acid; and
- applying a thin layer of a conductive metal selected from the group consisting of gold, silver or platinum to said etched surface.

3,936,569
METALS COATED WITH 3,3,3-TRIFLUORO-2-TRIFLUOROMETHYL PROPENE/VINYLIDENE FLUORIDE COPOLYMER COMPOSITIONS

William A. Miller, Somerville, and Brian W. Robinson, Chester, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 12, 1973, Ser. No. 424,031
Int. Cl.² B32B *15/08, 27/30*
U.S. Cl. 428—339 9 Claims

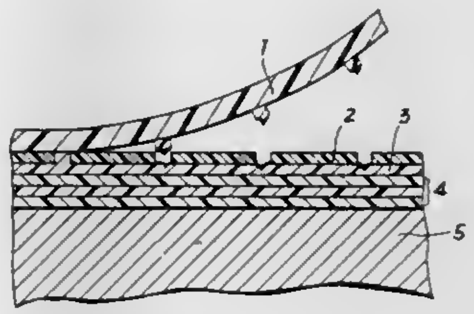
1. A coated article comprising a metal substrate having an overlying layer coated directly thereon comprising a copolymer of 3,3,3-trifluoro-2-trifluoromethyl propene and vinylidene fluoride and an effective amount of a stabilizing agent to prevent surface microcracks in said overlying layer, said stabilizing agent being selected from the group consisting of the oxides and salts of divalent metals and mixtures thereof and said overlying layer having a thickness of at least about one mil.

3,936,570
TRANSFER MATERIAL

Torayoshi Iwata, Kyoto, Japan, assignor to Nissha Printing Co., Ltd., Kyoto, Japan

Filed Apr. 12, 1974, Ser. No. 460,448
Claims priority, application Japan, Apr. 19, 1973, 48-46293
Int. Cl.² C09J *7/02;* B41M *3/12*
U.S. Cl. 428—349 4 Claims

1. A transfer material comprising a carrier sheet, a stripping layer releasably disposed on discrete spaced-apart portions of the surface of said carrier sheet, a color-containing design layer adhesively secured to the portions of the surface of said carrier sheet not covered by the stripping layer and extending over adjacent portions of the stripping layer, said design layer being sufficiently adhesively secured to the carrier sheet to provide tearing of the design layer when the carrier sheet is removed from the stripping layer whereby depressions having matted surfaces are formed in the stripping layer by the torn portions of the design layer, and a laminate assembly adhesively secured to the design layer and to any portion of the stripping layer not covered by the design layer, the laminate assembly including an outermost layer of heat-sensitive adhesive adapted to be secured to a receiving article.



3,936,571
ADHESIVE TAPE

Albert Emiel Van Hoof, Berchem, and Georges Arthur Holvoet, Mortsel, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Continuation of Ser. No. 260,201, June 6, 1972, abandoned. This application June 24, 1974, Ser. No. 482,562
Claims priority, application United Kingdom, June 7, 1971, 19182/71
Int. Cl.² C09J *7/02;* B32B *9/04*
U.S. Cl. 428—355 9 Claims

1. An adhesive tape comprising a support and an adhesive layer characterized in that said adhesive layer is water-soluble and/or alkali-soluble and is composed of a homogeneous mixture of at least one water-soluble and/or alkali-soluble polymer and a tackifier consisting of a carboxylated monoether of a polyglycol which corresponds to the general formula:

R — X — O — A — COOH

wherein:
- R represents an alkyl-substituted phenyl group, the alkyl group of which contains 8 or 9 carbon atoms, or a saturated or mono-unsaturated aliphatic hydrocarbon of 12 to 18 carbon atoms,
- A represents methylene or ethylene, and
- X stands for 7 to 30 recurring oxyethylene groups, which may be interrupted by one or more oxypropylene groups.

3,936,572
ELECTRIC CABLE INSULATED WITH A CORONA RESISTANT POLYETHYLENE COMPOSITION CONTAINING A SILICON ADDITIVE

Burton Thornley MacKenzie, Jr., Monroe, and Charles Frank Wallace, Jr., Fairfield, both of Conn., assignors to General Electric Company, New York, N.Y.

Division of Ser. No. 246,153, April 21, 1972, Pat. No. 3,795,646, which is a continuation of Ser. No. 794, Jan. 5, 1970, abandoned. This application Nov. 30, 1973, Ser. No. 420,515
Int. Cl.² B32B *15/08;* H01B *17/62*
U.S. Cl. 428—379 13 Claims

4. An electric cable comprising a metallic conductor and a thermoset insulation having improved resistance to corona surrounding said conductor, said thermoset insulation consisting of the cured product of:
- a. a polymeric member containing not less than about 50by weight of ethylene selected from the group consisting of polyethylene, blends of polyethylene and other polymers, and copolymers of ethylene and other polymerizable materials selected from the group consisting of propylene and vinyl acetate;
- b. a peroxide curing agent for effecting cross-linking of said polymeric member; and
- c. a silicone fluid having a viscosity not greater than about 100 centistokes at 25°C present in the range of from

about 2 to 5 parts by weight per 100 parts by weight of polymeric material.

3,936,573

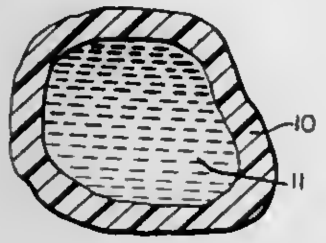
MICROCAPSULE HAVING HYDROPHILIC WALL MATERIAL AND CONTAINING WATER SOLUBLE CORE MATERIAL

Bruce W. Bruckett, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Division of Ser. No. 159,312, July 2, 1971, Pat. No. 3,861,941. This application Aug. 23, 1974, Ser. No. 499,820

Int. Cl.² B01J *13/02*

U.S. Cl. 428—402 **7 Claims**



1. A pressure-rupturable liquid-droplet-containing microcapsule comprising hydrophilic, water-swellable, organic, polymericfilm wall material and core material comprising a water-immiscible oil which is capable of dissolving about one to ten percent by weight of water, said oil being further characterized by having dissolved therein water and a water-soluble color-forming reactant material all mutually dissolved to yield a core material of a single phase solution.

3,936,574

OXIDATION RESISTANT CARBONACEOUS BODIES AND METHOD OF PRODUCING SAME

Glenn R. Marin, Niagara Falls, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,264

Int. Cl. B44d *1/02;* **C23c** *17/06*

U.S. Cl. 428—408 **2 Claims**

1. A method for making a carbonaceous article comprising reinforced and laminated carbon oxidation resistant by forming a coating thereon, comprising the steps of:

a. coating the surface of the article with a thin uniform layer of a suspension comprising about 10 to about 35% of elemental boron having an average particle diameter in the range of about 0.5 to about 2 microns, said elemental boron being dispersed in a thermosetting resin solution, said solution comprising about 40 to about 60% furfuryl alcohol prepolymer, about 40 to about 60% furfural and about 1 to 10% maleic anhydride; and

b. heating the coated article in the temperature range of about 300° to about 400°F under an inert atmosphere, thereby curing the coated suspension for forming the oxidation resistant coating on the article.

3,936,575

FLEXIBLE METAL-CLAD LAMINATES AND METHOD FOR MANUFACTURING THE SAME

Tsutomu Watanabe; Takahiro Nakayama, and Sigenori Yamaoka, all of Yokohama, Japan, assignors to Sumitomo Bakelite Company, Limited, Tokyo, Japan

Filed Feb. 19, 1974, Ser. No. 443,621

Claims priority, application Japan, Feb. 21, 1973, 48-20246; June 20, 1973, 48-68800

Int. Cl.² E05D *3/48, 3/96, 15/00*

U.S. Cl. 428—417 **28 Claims**

1. A method for manufacturing a metalclad laminate for flexible printed circuits, which comprises impregnating an electrically insulating fibrous base material with a resin composition comprising a mixture of 100 parts by weight of at least one polyepoxy compound having at least two epoxy groups in the molecule and 10 to 300 parts by weight of at least one copolymer selected from the group consisting of copolymers (A) of aromatic vinyl compounds with maleic anhydride, said copolymers containing at least 30 mole percent of maleic anhydride structural units in the molecule, alkyl partial esters (B) of said copolymers (A), copolymers (C) of aromatic vinyl compounds with alkyl maleates, said copolymers containing at least 30 mole percent of mono-alkyl maleate structural units in the molecule, and copolymers (D) of aromatic vinyl compounds with maleic anhydride and alkyl maleates, said copolymers containing at least 30 mole percent, in total, of maleic anhydride structural units and monoalkyl maleate structural units in the molecule and having a number average molecular weight of from 2,000 to 30,000, then placing the resulting impregnated base material and a metal foil one over the other, and bonding together by application of heat and pressure.

3,936,576

RUBBER LAMINATES

Edward Leo Kay, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 12, 1974, Ser. No. 496,420

Int. Cl.² B32B *27/40;* **B29H** *5/02*

U.S. Cl. 428—424 **8 Claims**

1. A lamination of two rubber substrates adhered by the cured adhesive composition of an organic isocyanate and an adhesion promoter of the class consisting of 2-chlorocyclohexanone oxime, mono or di-nitrosylchloride adduct of dicyclopentadiene in the oxime form and a substantially 16.5-weight per cent nitrosyl chloride adduct of polybutadiene in the oxime form.

3,936,577

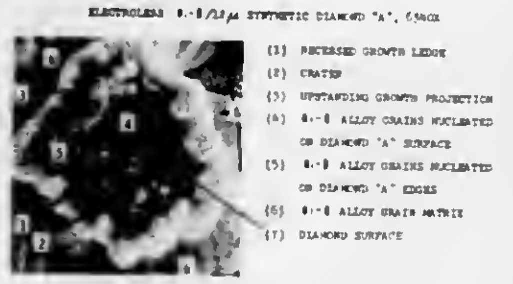
METHOD FOR CONCOMITANT PARTICULATE DIAMOND DEPOSITION IN ELECTROLESS PLATING, AND THE PRODUCT THEREOF

Theodore Peter Christini, Kennett Square, Pa.; Albert Lawrence Eustice, and Arthur Hughes Graham, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 208,233, Dec. 15, 1971, abandoned. This application Mar. 15, 1973, Ser. No. 341,529

Int. Cl.² B32B *15/00;* **B05D** *3/10*

U.S. Cl. 428—426 **6 Claims**


ELECTROLESS
SYNTHETIC DIAMOND "A"
1
2
3
4
5
6
(1) RECESSED GROWTH LEDGE
(2) CRATER
(3) UPSTANDING GROWTH PROJECTION
(4) ALLOY GRAINS NUCLEATED ON DIAMOND "A" SURFACE
(5) ALLOY GRAINS NUCLEATED ON DIAMOND "A" EDGES
(6) ALLOY GRAIN MATRIX
(7) DIAMOND SURFACE

1. A coated article formed by electroless plating comprising a co-deposited uniform dispersion of diamond particles secured by substantial nucleation within a metallic matrix comprising one of the group consisting of: (1) an alloy including a metal of the sub-group made up of nickel, cobalt and mixtures thereof with one of the elements phosphorus, boron and mixtures thereof and (2) elemental copper, deposited on a supporting substrate consisting of polymer, metal, ceramic or glass.

2. A method of forming a composite structure on an article by electroless plating comprising immersing said article in a stable electroless plating bath having a composition effecting concurrent deposition of particulate diamond dispersed in a metallic matrix comprising one of the group consisting of: (1)

an alloy including a metal of the sub-group made up of nickel, cobalt and mixtures thereof with one of the elements phosphorus, boron and mixtures thereof and (2) elemental copper, while maintaining agitation of said bath retaining said particulate diamond in suspension, and removing said article carrying said composite structure from said bath when said composite structure has been plated out on said article in preselected amount.

3. A coated article formed by electroless plating consisting of a shaped substrate, a metallic matrix coating deposited on said shaped substrate, and a uniform dispersion of co-deposited diamond particles secured by nucleation bonding within said metallic matrix, wherein

1. said substrate is one of the group consisting of (a) an organic polymer, including reinforced organic polymers, (b) metals, (c) ceramics, (d) glass,
2. said metallic matrix consists primarily of at least one of the group consisting of (a) nickel, (b) cobalt, (c) copper, together with smaller proportions of other components commonly codeposited from electroless plating baths, and
3. said diamond particles constitute from 1 to 50% by volume of said metallic matrix, with a particle size ranging from about 0.1μ to about 75μ, but predominantly in the size range between 0.5μ to 25μ.

3,936,578

METHOD OF RENDERING A SUBSTRATE NON-STICK TOWARDS TACKY SUBSTANCES BY COATING THE SUBSTRATE WITH AN ORGANOSILICON COMPOSITION

Jean Dumoulin, and Louis Linguenheld, both of Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France

Division of Ser. No. 350,760, April 13, 1973, Pat. No. 3,821,154. This application Dec. 7, 1973, Ser. No. 423,377

Claims priority, application France, Apr. 14, 1972, 72.13250

Int. Cl.² B32B *15/08, 17/10, 27/06, 27/28*

U.S. Cl. 428—429 **13 Claims**

1. A method of rendering a substrate non-stick towards tacky substances which comprises applying to the substrate an organosilicon composition comprising by weight:

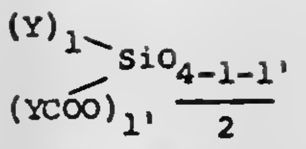
a. 100 parts of an α-ω-dihydroxydimethylpolysiloxane polymer, with a viscosity of at least 25,000 centipoise at 25°C, containing at most 0.1% by weight of hydroxyl groups,

b. 3 to 250 parts of a dimethylpolysiloxane rubber terminated at each end of its chain by a unit of the formula $(CH_3)_3SiO_{0.5}$ or $(CH_3)_2CH_2{=}CHSiO_{0.5}$, with a viscosity of at least 1 million centipoise at 25°C,

c. 10 to 50 parts of a crosslinking agent of the general formula $(Q)_{4-n}Si[(OCH_2CH_2)_pOQ']_n$ in which the symbol Q represents a hydrolyzable radical selected from the group consisting of N,N-dialkylaminoxy, ketoniminoxy and aldiminoxy radicals, the symbol Q′ represents a methyl or ethyl radical, the symbol n represents a number from 1 to 4 and the symbol *p* represents 1 or 2,

d. 1 to 10 parts of a catalyst selected from the group consisting of organic derivatives of tin, chelates of titanium, chelates of iron, metal salts of aliphatic carboxylic acids and polymers possessing $\equiv$Ti-O-Sn$\equiv$ chains,

e. 0 to 10 parts of a vulcanisation accelerator of the general formulae $YSi(OCOY)_3$ and

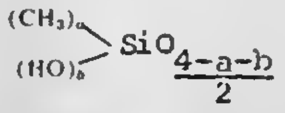


$$(Y)_l(YCOO)_{l'}SiO_{\frac{4-l-l'}{2}}$$

in which each symbol Y independently represents an alkyl radical of 1 to 4 carbon atoms, a vinyl radical or a phenyl radical, the symbol l represents a number from 1 to 1.98 and the symbol l′ represents a number from 0.08 to 2,

f. 500 to 5,000 parts of an organic solvent, and

g. 5 to 30 parts of a hydroxylic methylpolysiloxane oil containing at least 3% by weight of hydroxyl groups, of viscosity between 3 and 400 centipoise at 25°C, of the average general formula:



$$(CH_3)_a(HO)_bSiO_{\frac{4-a-b}{2}}$$

in which the symbol *a* represents a number from 1.7 to 2.3 and the symbol *b* represents a number from 0.14 to 1.

13. A method according to claim 1, wherein the substrate is a sheet or film of paper, cardboard, parchment, cellulosic material, polyamide, polyester, metal, glass or asbestos.

3,936,579

ABSORBENT FILM PRODUCED BY VACUUM EVAPORATION

Yoshiaki Ogasawara, Yokohama, and Katsumi Noguchi, Gamagohri, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation-in-part of Ser. No. 117,288, Feb. 22, 1971, abandoned. This application Feb. 22, 1973, Ser. No. 334,572

Claims priority, application Japan, Feb. 25, 1970, 45-15505

Int. Cl.² B32B *17/06;* **G02B** *1/10, 5/22*

U.S. Cl. 428—432 **2 Claims**

1. In an absorbent film deposited on a substrate having a refractive index of about 1.52 by evaporating a mixture of plural materials within a vacuum; the improvement wherein the mixture comprises Cr, Ti and MgF_2 and the ratio in weight of said Cr, Ti and MgF_2 is 1.0 : 0.02 to 0.2 : 0.10 to 1.5 such that the absorbent film has the same refractive index as the substrate and an absorption coefficient of from about 0.01 to about 0.4.

3,936,580

ELECTRICALLY CONDUCTIVE GLASSLIKE FILMS ON GLASS OR CERAMIC SURFACES FROM ALUMINUM AND PLUMBITE-TREATED CELLULOSICS

Truman L. Ward, and Ruth R. Benerito, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 22, 1974, Ser. No. 499,688

Int. Cl.² B32B *9/04, 9/06*

U.S. Cl. 428—446 **4 Claims**

1. A process for the preparation of glasslike, hard, electrically conductive films adhered firmly to and prepared on the surface of silicon-containing hard surfaces, the process comprising

a. placing a sheet-type cellulosic material that has been treated with an aqueous sodium plumbite or potassium plumbite solution to contain about from 8% to 37% of lead, in contact with and flat against a high silicon content glass or ceramic surface.

b. coating the sheet of (a) with metallic aluminum,

c. inserting the assembled components of (b) into an oven preheated to a temperature below about 200°C,

d. elevating the temperature of the closed oven to about from 600° to 700°C. thereafter maintaining said temperature for about 60 minutes, and

e. cooling the oven and contents gradually to avoid the cracking of the assembled components due to thermal strain.

3,936,581
HARDENABLE COMPOSITIONS

William David Garden, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Apr. 29, 1974, Ser. No. 465,439
Claims priority, application United Kingdom, May 3, 1973, 21014/73
Int. Cl.² B32B *27/10*
U.S. Cl. 428—447 17 Claims

1. A hardenable composition comprising 80 to 99 parts by weight of a liquid hydroxy-ended diorganopolysiloxane, 1 to 20 parts by weight of a liquid organohydrogenpolysiloxane, an organic sulphur complex of platinum in an amount, calculated as platinum, up to 0.1 part by weight per 100 parts by weight of total organopolysiloxanes, said complex consisting of a compound of platinum containing one or more ligand organosulfur groupings of divalent sulfur which can donate electrons to form a bond with the platinum metal, and a compound containing at least one olefinic double bond in which the remaining valences of the 2 carbon atoms forming the double bond are satisfied by bonding to a hydrogen atom, and ether radical, a silicon atom, a sulphur atom or a carbon atom, the three remaining valences of which are satisfied by bonding atoms selected from carbon, silicon, sulphur, hydrogen and oxygen provided that not more than two of the valences are satisfied by bonding to oxygen, said compound being free from phosphorus, arsenic and divalent sulphur and derivatives of ammonia, wherein the three N valences of said ammonia are satisfied by bonding to an atom from the group S, H, O, N or Si, and said complex being present in amounts such that there is not less than 1 mol of olefinic double bond per g. atom of Pt.

3,936,582
DIFFERENTIAL RELEASE COATED ARTICLES

LeRoy H. Keiser, Clarendon Hills, Ill., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed June 3, 1974, Ser. No. 475,978
Int. Cl.² B44D *1/10;* **B32B** *7/06;* **C09J** *7/04*
U.S. Cl. 428—447 10 Claims

1. A differential release coated article comprising a substrate coated on one side with

- I. a low release value cured polyorganosiloxane coating comprising a mixture of
  - a. a polyorganosiloxane having silicon-bonded hydroxyl groups on the ends of the molecule,
  - b. a polymethylhydrogensiloxane having an average of at least three SiH groups per molecule and
  - c. a functional amount sufficient to effect curing of said polyorganosiloxane of a carboxylic acid salt of an organic metallic compound selected from lead, zinc, iron or tin; and

coated on the opposite side with

- II. a high release cured polyorganosiloxane coating comprising a mixture of
  - d. a polyorganosiloxane having silicon-bonded hydroxyl groups on the ends of the molecule,
  - e. a polymethylhydrogensiloxane having an average of at least three SiH groups per molecule,
  - f. a three-dimensional highly cross-linked polyorganosiloxane containing triorganosiloxy end groups in which the ratio of the monovalent hydrocarbon radicals to SiO_2 units ranges from about 1.5:1 to about 3:1, and
  - g. a curing catalyst mixture comprising a functional amount sufficient to effect curing of said polyorganosiloxane of a carboxylic acid salt of an organometallic compound selected from lead, zinc, iron or tin and an organic peroxide.

3,936,583
PREVENTION OF CORROSION IN METALS

Geoffrey Oliver Lloyd, Twickenham; John Ernest Rhoades-Brown, Hanworth, and Stuart Richard John Saunders, New Malden, all of England, assignors to Secretary of State for Trade & Industry in Her Britannic Majesty's Govt. of U.K. of Gt. Britain & Northern Ireland, London, England
Filed Oct. 25, 1973, Ser. No. 409,592
Claims priority, application United Kingdom, Oct. 26, 1972, 49460/72
Int. Cl.² C23F *7/00*
U.S. Cl. 428—450 7 Claims

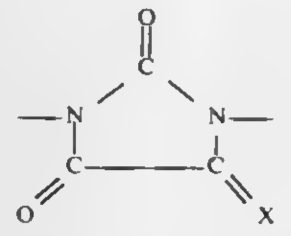
1. A process for the protection of the surface of an article, said surface being an iron or nickel alloy which contains at least 1 per cent by weight of chromium, against high temperature oxidation comprising contacting the same article with a solution or a suspension of a material selected from the group consisting of borax, sodium metaborate, zinc borate and boric acid, in a volatile polar organic solvent, whereby, after removal of the solvent, a film weighing at least 3 $\mu g/cm^2$ of the said material is deposited on the surface of the article.

5. A process according to claim 1 wherein the solution or suspension of a borate contains additionally silica or tetraethylorthosilicate.

3,936,584
FORMATION OF POLYPARABANIC ACID COATINGS AND FILMS BY SOLVENT TREATMENT OF POWDERED LAYER

Tad L. Patton, Baytown, Tex., assignor to Exxon Research and Engineering Company, Linden, N.J.
Filed Sept. 17, 1973, Ser. No. 397,646
Int. Cl.² B05D *3/02, 3/04*
U.S. Cl. 428—458 24 Claims

1. A method for producing structures from solid polymeric materials having repeating heterocyclic rings of the following structure:



where X is NH or O,
which comprises depositing a layer of a fine powder of said polymer on a supporting substrate and subjecting said powder layer on said substrate to the action of the vapor or spray or mist or fog, of a aprotic dipolar solvent for said powder until said powder particles are wetted with not more than 25 wt. % with solvent, subsequently heating the wetted powders to cause said powder to flow and coalesce below the boiling temperature of said solvent and subsequently heating the resulting coating to remove the absorbed solvent and cause said film to adhere tightly to said substrate unless said substrate has been treated or selected so as not to have an affinity for said polymer.

3,936,585
FIRE RETARDING TEXTILE MATERIALS

Robert Bruce Leblanc, and Destin A. Leblanc, both of Wickford, R.I., assignors to Robert Bruce Leblanc, East Greenwich, R.I.
Filed Dec. 5, 1973, Ser. No. 422,058
Int. Cl.² D06M *13/44*
U.S. Cl. 428—921 12 Claims

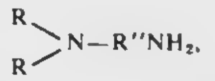
1. The process for rendering a textile material fire retardant comprising impregnating a textile material with an aqueous solution of a condensation product of a poly(α-hydroxyalkyl)-phosphorus compound of the formula

$$(RCHOH)_n(RCHR')_{4-n}P\text{-}Y$$

or

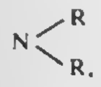
$$(RCHOH)_m(RCHR')_{3-m}P$$

and a nitrogen compound of the formula $RNH_2,HD—R''NH_2$
or



$$R_2N—R''NH_2,$$

wherein
each R is independently hydrogen or alkyl of 1 to 3 carbon atoms,
R′ is OR or



$$NR_2,$$

R″ is alkylene of 1 to 3 carbon atoms,
Y is at least one anion selected from the group consisting of chloride, sulfate, phosphate, acetate and formate,
n is an integer from 2 to 4, and
m is an integer from 2 to 3,
the phosphorous compound being present in about 0.5 to 6 times the molar amount of the nitrogen compound, drying the textile material, and curing the textile material by heating.

3,936,586
ARC FURNACES AND TO METHODS OF TREATING MATERIALS IN SUCH FURNACES

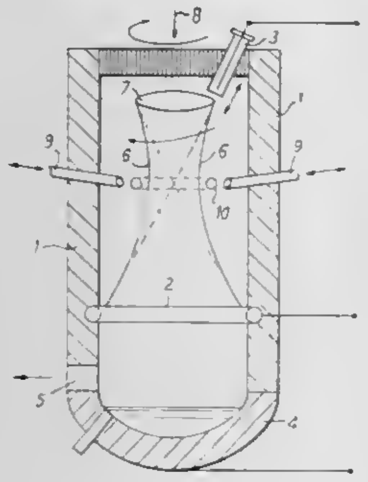
Josef Kazimierz Tylko, Faringdon, England, assignor to Tetronics Research and Development Co. Ltd., Faringdon, England

Filed Apr. 30, 1975, Ser. No. 572,956

Claims priority, application United Kingdom, May 7, 1974, 20160/74

Int. Cl.^{2} H05B *7/10*

U.S. Cl. 13—9 R **12 Claims**



1. In a plasma arc furnace comprising a furnace body, a stationary electrode mounted in said furnace body and at least one orbiting electrode movable in a substantially circular path, means for moving said electrode about its orbital axis of rotation with sufficient velocity to develop a radially-expanded plasma column in a zone lying between the path of said orbiting electrode and said stationary electrode and means for introducing feedstocks into the plasma column, the improvement which comprises directing the orbiting electrode inwardly toward the axis of rotation and at a point on the stationary electrode so as to generate a plasma column having a portion of generally inverted conical shape in the vicinity of the orbiting electrode.

3,936,587
ELECTRODE CONSTRUCTION FOR RESISTANCE HEATING FURNACE

George J. Sitek, Stevensville; Robert N. Revesz, and Charles W. Berk, both of St. Joseph, all of Mich., assignors to Leco Corporation, St. Joseph, Mich.

Filed June 28, 1974, Ser. No. 484,453

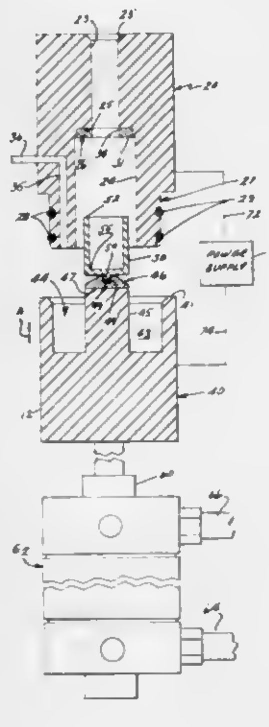
Int. Cl.^{2} F27D *11/02;* H05B *3/08*

U.S. Cl. 13—23 **19 Claims**

1. For use in a furnace for heating an electrically resistive crucible held between electrodes, improved electrode construction comprising:

a pair of electrodes made of an electrically conductive material, at least one of said electrodes movable toward and away from the remaining electrode for alternately clamping and releasing an electrically resistive specimen-holding crucible between said electrodes; and

a thin insert mounted to said at least one electrode to contact said crucible, said insert comprising an electrically conductive material with a melting point exceeding about 2500° Centigrade.



3,936,588
CONTROL SYSTEM FOR ELECTRICAL FURNACES

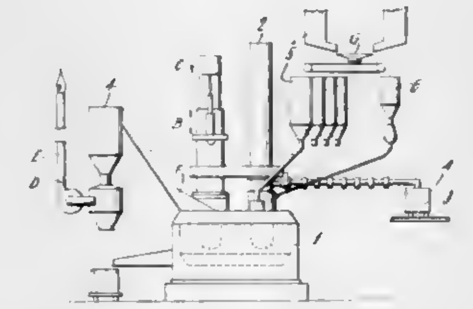
Bjorn Asphaug, Vagsbygd, and Thor Pedersen, Hauketo, both of Norway, assignors to Elkem-Spigerverket, Oslo, Norway

Continuation-in-part of Ser. No. 342,394, March 19, 1973. This application Dec. 4, 1974, Ser. No. 529,264

Claims priority, application Norway, Mar. 20, 1972, 895/72

Int. Cl.^{2} F27D *3/10*

U.S. Cl. 13—33 **16 Claims**



1. A control system for electrical furnaces comprising:

1. computer means operative to receive a plurality of input signals indicative of metallurgical process parameters, and further operative to process said plurality of input signals and to generate a plurality of output signals for controlling the quantity and mixture of charge fed to the associated furnace, for controlling the position of the electrodes in the associated furnace, and for controlling the power consumed by the associated furnace; and
2. charge feed means operative in response to at least one of said plurality of output signals to feed and control the quantity and mixture of charge to the associated furnace.

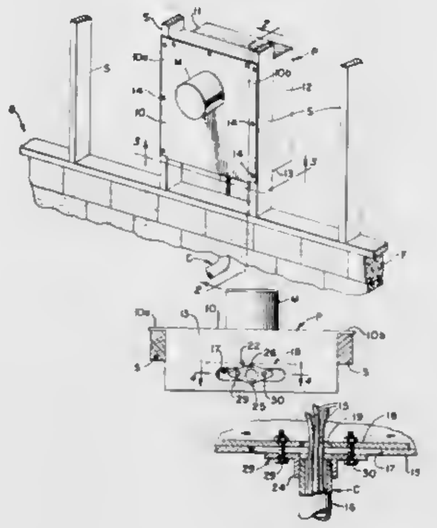
3,936,589
ELECTRIC SERVICE PANEL FOR UNDERGROUND SERVICE INSTALLATIONS HAVING ADJUSTABLE CONDUIT ATTACHING MEANS

Darrel L. Teeters, Sr., P. O. Box 401, and Garey D. Teeters, 35213 Date St., both of, Yucaipa, Calif. 92399

Filed June 21, 1974, Ser. No. 481,767

Int. Cl.^{2} H02G *3/06*

U.S. Cl. 174—65 R **1 Claim**



1. An electric service panel for underground service installations, wherein an electrical cable means including a cable inside a rigid conduit for supplying electric power to the service panel leads to the service panel from below ground, said service panel having a front wall, opposite side walls and a bottom wall, said bottom wall having an elongate opening therein through which the cable can enter the service panel, conduit attaching means at the bottom wall for receiving and holding the end of the conduit, said conduit attaching means being laterally adjustable relative to the opening in the bottom wall to compensate for misalignment between the conduit and service panel and comprising a rectangular adapter plate disposed inside the service panel against the bottom wall thereof in overlying relationship to the opening through the bottom wall to close the opening, a hub means below the bottom wall, said hub means having flange means thereon engaged against the underside of the bottom wall at the edges of the opening, said adapter plate and hub means having aligned openings therethrough through which the cable can extend, said adapter plate having a size in relation to the size of the opening such that it effectively closes the opening in all adjusted positions of the attaching means, and fastening means extending through said flange means and through said opening and through said adapter plate to securely clamp the adapter plate and hub means on opposite sides of the bottom wall in adjusted position relative to the opening.

3,936,590
SEAL RING AND SPLICE ENCLOSURE

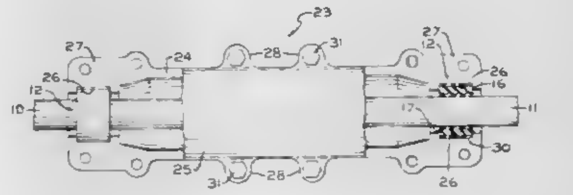
Philip A. Albano, 10311 Tanager Trail, Brecksville, Ohio 44141

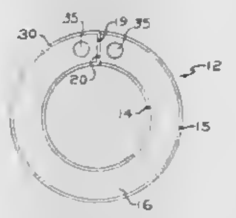
Filed Dec. 9, 1974, Ser. No. 530,955

Int. Cl.^{2} H02G *15/08*

U.S. Cl. 174—92 **6 Claims**

1. An electrical seal ring comprising an annular deformable member; said member having an inner circumferentially extending surface and an outer circumferentially extending surface; said member having a slit that extends from said inner circumferentially extending surface to said outer circumferentially extending surface to provide a pair of spaced end faces adapted to abuttingly engage each other to form a closed annular ring; and deformable tape means encircling said annular member by extending along said entire outer circumferential surface, said entire inner circumferential surface, and at least one of said end faces.





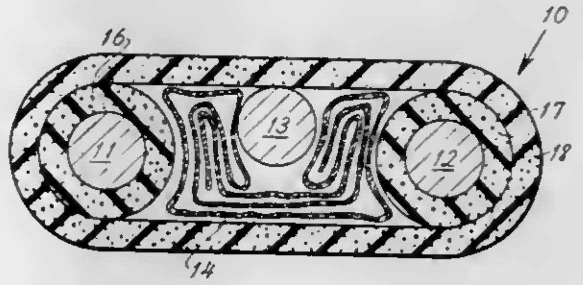
3,936,591
NONMETALLIC-SHEATHED CABLE

Lambert C. Smith; Verne A. Meridith, both of Athens, Ga., and Robert M. Wade, Wabash, Ind., assignors to The Anaconda Company, Mont.

Filed July 5, 1974, Ser. No. 486,042

Int. Cl.^{2} H01B *11/02*

U.S. Cl. 174—116 **6 Claims**



1. A nonmetallic-sheathed cable comprising

A. a plurality of conductors comprising a metal selected from the group consisting of copper and aluminum,

B. a wall of expanded polyvinyl chloride insulation surrounding each of said conductors, said wall comprising 8–24%, by volume, of gas,

C. a thin-walled tubular jacket of expanded polyvinyl chloride surrounding the totality of said insulated conductors said jacket comprising 8–24%, by volume, of gas.

3,936,592
ELECTRICAL BUSHING HAVING A CENTRAL CONDUCTOR WITH LARGE PLANAR TERMINAL PORTIONS AT EACH END

James R. Gamble, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

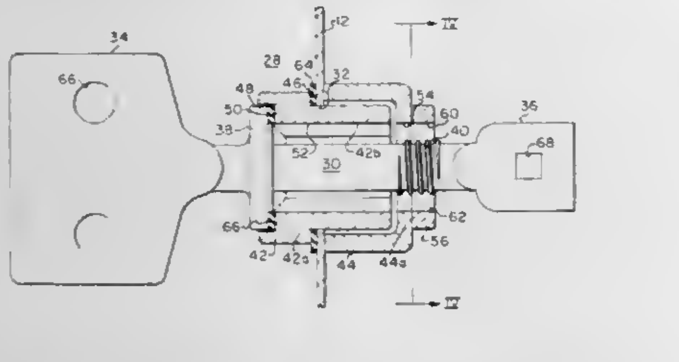
Filed Jan. 2, 1975, Ser. No. 538,065

Int. Cl.^{2} H01B *17/26*

U.S. Cl. 174—153 R **3 Claims**

1. An electrical bushing suitable for extending through an aperture in a housing wall, the bushing comprising a pair of tubular insulating members having oppositely disposed facing surfaces adapted to engage opposite sides of a housing wall, a conductor extending through the members and having first and second longitudinally extending planar terminal surfaces,

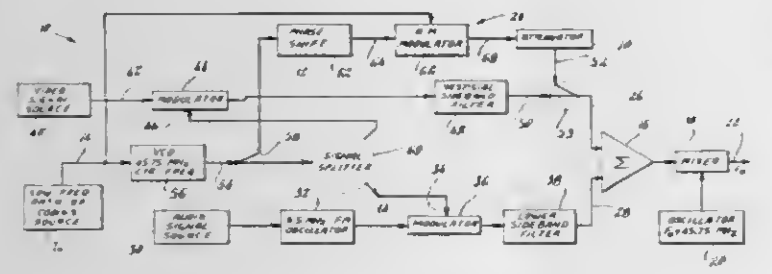
means on the conductor for clamping the insulating members in place against said opposite sides and comprising an integral flange having surface means on the conductor near the first planar terminal surface, the means also comprising a threaded segment on the conductor near the second planar terminal surface, the means also comprising a nut engaging the threaded segment, the surface means adapted to abut a first transverse surface on one of said members, the nut abutting a second transverse surface on the other of said members for



holding the pair of tubular insulating members in place on a housing wall, the first and second planar terminal surfaces having transverse dimensions greater than the diameter of the threaded segment, the second planar terminal surface being insertable through the tubular insulating members, the nut comprising aperture means including a threaded portion and a slot portion extending outwardly from said threaded portion, and the second planar terminal surface being passable through the aperture means.

3,936,593
SCRAMBLER AND DECODER FOR A TELEVISION SIGNAL

Gerald Aaronson, Brookline, and William D. Murphy, Burlington, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.
Filed Aug. 5, 1974, Ser. No. 494,653
Int. Cl.² H04N *1/44*
U.S. Cl. 178—5.1 20 Claims



1. In a system for scrambling and decoding a television signal modulated on a normal carrier which is replaced with a scrambling carrier having the same frequency as the normal carrier but with a predetermined phase difference therefrom and where the scrambled television signal is decoded at a receiving end by regenerating the normal carrier from the scrambling carrier for the latter's replacement by the regenerated normal carrier the improvement comprising

means for generating a coding signal of a frequency selected to enable modulation of the scrambling carrier for enhanced security;

means responsive to the coding signal for amplitude modulating of the scrambling carrier;

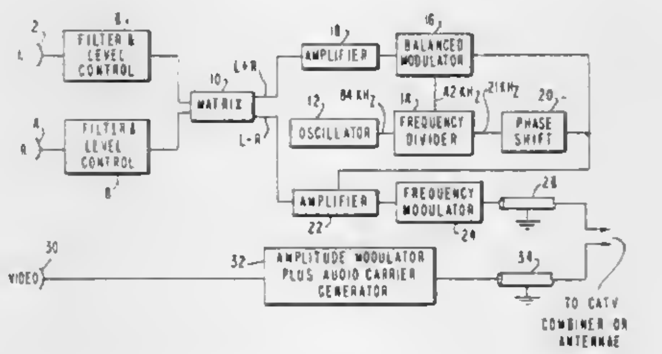
means responsive to the coding signal for frequency modulating of the scrambling carrier;

means at the receiving end for detecting the frequency modulation to reproduce the coding signal; and

means for replacing the scrambling carrier at the receiving end with the inverse amplitude modulated normal carrier to provide a normally displayable television signal.

3,936,594
SECURE TELEVISION SYSTEM

Mark Schubin, Hoboken, and George Andersen, Dumont, both of N.J., assignors to Lincoln Center for the Performing Arts, Inc., New York, N.Y.
Filed Aug. 5, 1974, Ser. No. 494,819
Int. Cl.² H04N *1/44*
U.S. Cl. 178—5.1 5 Claims



1. In a television transmission system, means for transmitting a television program including means for transmitting the video portion of the television program on a video channel and means for transmitting the audio portion of the television program stereophonically on a separate audio channel unrelated in frequency to said video channel, said audio channel transmission means including a first source of audio information and a second source of audio information, means for combining said first and second audio signals to produce a sum combination of said audio signals and a difference combination of said audio signals, means for deriving a subcarrier wave having a frequency which is at least twice as high as the highest frequencies in said audio signals, means for amplitude modulating said subcarrier wave with said sum combination of audio signals to produce sum combination signal sidebands in such manner that said subcarrier wave is suppressed, means for deriving a pilot carrier wave having a frequency related to the frequency of said subcarrier wave, the frequency of said pilot wave not at the frequency of 19 kHz, means for applying said difference combination of audio signals, said sum combination signal sidebands and said pilot signal to a frequency modulator so as to frequency modulate a carrier wave with said difference combination audio signal, said sum combination sideband signal and said pilot signal for transmission with the video portion of said television program.

3,936,595
SIGNAL TRANSMISSION SYSTEM FOR TRANSMITTING PROGRAMED INFORMATION SUCH AS PROGRAMED INSTRUCTION

Akio Yanagimachi, Kawasaki; Takashi Uehara, Inagi; Tetsuo Yamamoto, Machida; Hisakichi Yamane, Tokyo; Eiichi Sawabe, Machida; Takehiko Yoshino, Yokohama; Teruhiro Takezawa, Komae; Michio Masuda, Tokyo; Hiroaki Nabeyama, Yokohama; Masaaki Fukuda, Kodaira, and Tatsuo Kayano, Hachioji, all of Japan, assignors to Nippon Hoso Kyokai; Hitachi, Ltd. and Hitachi Electronics Co., Ltd., all of Tokyo, Japan
Filed Aug. 29, 1973, Ser. No. 392,557
Claims priority, application Japan, Sept. 4, 1972, 47-88553
Int. Cl.² H04N *7/08;* G09B *7/04*
U.S. Cl. 178—5.6 24 Claims

1. A signal transmission system for transmitting programmed information including signals corresponding to a plurality of program materials, comprising at a transmitter end:

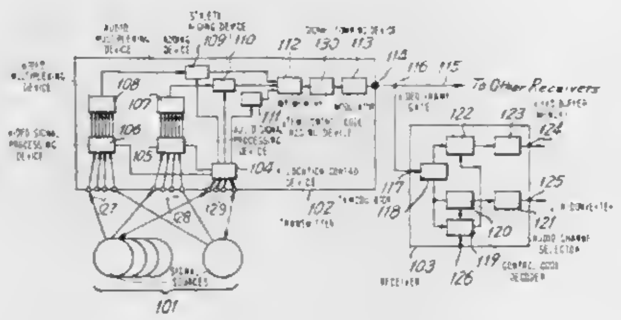
a program material source for producing said signals corresponding to said plurality of program materials;

means for producing a plurality of identification signals a respective one of which denotes each of said signals corresponding to said plurality of program materials;

means for producing a plurality of label signals each of which denotes a minimum program material group comprising a minimum significant information unit composed of one or more of said signals corresponding to said program materials;

means for receiving said identification and label signals to form a program material control signal composed of a plurality of combinations of said label and identification signals, each of said combinations including a respective label signal and one or more identification signals which denote one or more of said signals corresponding to said program materials in said minimum program material group denoted by said respective label signal;

composite signal forming means for receiving said signals corresponding to said program materials and said program material control signal to form a composite signal; and



means for transmitting said composite signal; and at a receiver end:

means for receiving said composite signal;

means for reproducing at least a part of said program material control signal from the received composite signal;

label determining means for determining a label signal of a minimum program material group to be displayed;

identification signal detecting means for receiving said reproduced program material control signal and said determined label signal to detect one or more identification signals which form one of said combinations in said reproduced program material control signal together with said determined label signal;

means for extracting from the received composite signal a minimum program material group of one or more of said signals corresponding to said program materials denoted by said one or more detected identification signals; and

means for displaying said one or more extracted signals corresponding to said program materials.

3,936,596
OPTICAL PROJECTION APPARATUS

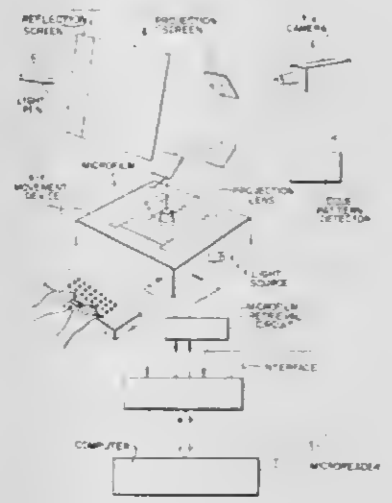
Masafumi Inuiya, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Jan. 22, 1974, Ser. No. 435,626
Claims priority, application Japan, Jan. 22, 1973, 48-9361
Int. Cl.² G08B *5/00;* H04N *7/14, 7/18*
U.S. Cl. 178—6 6 Claims

1. An optical projection apparatus including a projection screen on which a microimage is projected on an enlarged scale and adapted to be connected with an information processing system comprising;

microfilm feeding means which feeds and stops a microfilm on which a plurality of images are recorded, each image of said microfilm comprising an image frame portion and a code pattern portion recorded adjacent the image frame, each code in the code pattern portion representing information concerning a part of the image of the image frame portion positioned at a position corresponding to said code,

an optical projection system for projecting an image of the image frame portion onto a transmission type projection screen and projecting an image of the code pattern portion onto a reflection type projection screen provided in a side by side relation with said transmission type projection screen,

a light source means for illuminating a part of the image projected on the transmission type projection screen selectively from the opposite side of said optical projection system,



means for taking a view of the screen from the side of the projection system and putting out an image signal representing the view taken thereby, signal conversion means for receiving said output image signal and converting said signal into a computer input signal representing the information concerning a part of the image of said image frame portion illuminated by said light source means, and

control means for controlling said microfilm feeding means according to an output signal of the computer.

3,936,597
VIDEO FREQUENCY AMPLIFIER OPERABLE IN EITHER OF TWO BIAS CONDITIONS

Denis Peter Dorsey, Levittown, Pa., and William E. Rodda, Trenton, N.J., assignors to RCA Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 273,534, July 20, 1972, abandoned. This application Sept. 19, 1973, Ser. No. 398,853
Claims priority, application United Kingdom, Apr. 24, 1972, 19021/72
Int. Cl.² H04N *3/00, 3/16*
U.S. Cl. 178—6.8 7 Claims

1. In a television image transmission system of the type wherein a single storage device is employed both for the selection of a particular frame of television information for transmission to a remote receiver location by an audio communications link and for the reception and re-creation of frame information so transmitted, the combination therewith of:

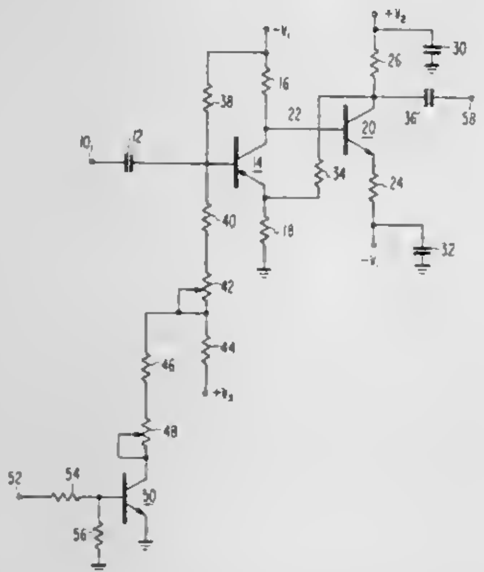
an amplifier stage having an input terminal to which image representative television information is supplied and an output terminal at which amplified versions of said image representative information is developed for application to said storage device for the selection or re-creation of said information dependent upon when said device is operating within said system in the transmitting or receiving mode;

first means for biasing said amplifier stage to develop amplified image representative signals of a first magnitude at its output terminal referenced to a first direct current level;

second means for biasing said amplifier stage to develop amplified image representative signals of a second, different magnitude at its output terminal referenced to a second, different direct current level;

and control means coupled to said first and second biasing means for conditioning at least one of said biasing means to operation to set the magnitude of developed amplified signals and the direct current level to which said amplified signals are referenced;

said control means also being dependent upon the mode of operation of said storage device within said television image transmission system to establish Class A amplifier operation and said first signal magnitude and direct current level as a reference when said storage device is employed to select a particular television frame for transmission and to establish Class B amplifier operation and said second signal magnitude and direct current level as a reference when said storage device is employed to re-create a television frame received along said audio communications link.



3,936,598

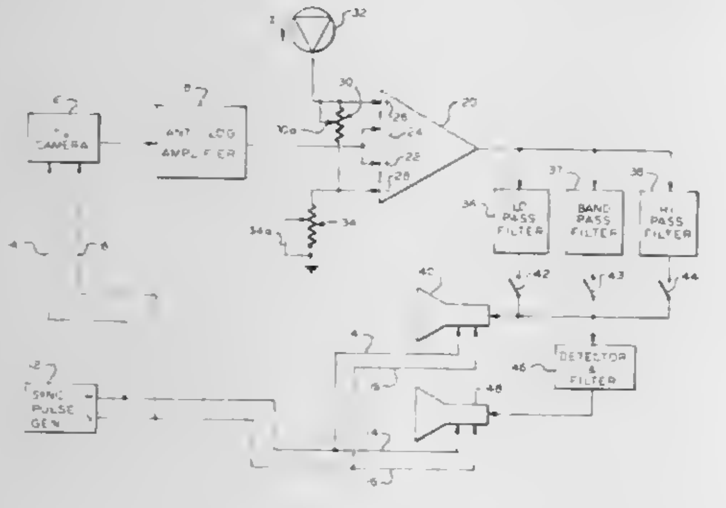
ELECTRONIC IMAGE DENSITY ANALYSIS

John Henry Newitt, 123 Puritan Lane, Sudbury, Mass. 01776

Filed Feb. 14, 1974, Ser. No. 442,445

Int. Cl.^{2} H04N *7/02, 7/18*

U.S. Cl. 178—6.8 **9 Claims**



1. In the method of providing a display representative of objects of a scene where a video source provides a camera video signal having an amplitude proportional to an amount of light flux from said scene along a line of sight which traces a raster on said scene, the steps of:

providing a density signal having an amplitude proportional to the antilogarithm of the amplitude of said camera video signal;

comparing said density signal with a known range of density signals and providing a processed video signal having first and second amplitudes in response to said density signal being respectively within and outside of said known range; and

displaying an image in response to selected frequency components of said processed video signal.

3,936,599

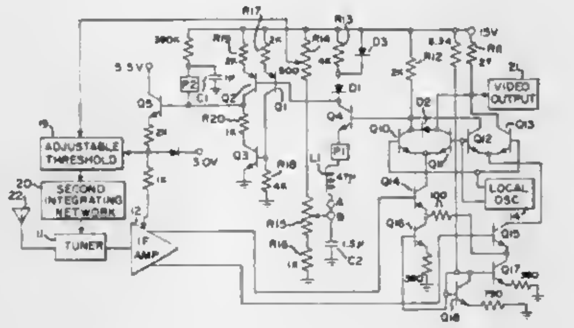
AUTOMATIC GAIN CONTROL SYSTEM

William Peil, North Syracuse, and Joseph P. Hesler, Liverpool, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Continuation of Ser. No. 370,916, June 18, 1973, abandoned, which is a continuation-in-part of Ser. No. 304,564, Nov. 7, 1972. This application Apr. 30, 1975, Ser. No. 573,190

Int. Cl.^{2} H04N *5/52*

U.S. Cl. 178—7.3 DC **16 Claims**



1. An AGC system comprising:

a. a demodulator of modulated signals containing spaced repetitive pulses representing a maximum carrier level,

b. a first amplifier for said modulated signals whose output is coupled to said demodulator and whose gain is subject to electrical control, and

c. a feedback network not requiring gating to produce a control voltage from said pulses suitable for automatic gain control of said first amplifier, said feedback network comprising:

1. a second amplifier coupled to the output of said demodulator having a threshold set at less than the maximum carrier level to produce output pulses consisting of portions of said repetitive pulses in excess of said threshold,
2. a third amplifier coupled to the output of said second amplifier for non-linearly amplifying said thresholded pulses as a function of their magnitude, said third amplifier having an output characteristic having an initial slope of one sign and reproducing said thresholded pulses in the output in a first current direction; followed by a change in slope in said output characteristic to one of opposite sign, continuing until the pulses in the output have a second, reversed current direction, said second sloping region providing a gain stabilizing action when said feedback loop is closed, said third amplifier having negligible output current in the absence of input current,
3. an integrating network comprising a storage capacitor shunting the output of said third amplifier for providing a smoothed gain control voltage from said non-linearly amplified thresholded pulses, and
4. means to couple said integrating network to said first amplifier to increase or decrease the gain thereof about a quiescent point as said third, non-linear amplifier supplies current to or withdraws current from said integrating network as a function of signal strength.

3,936,600

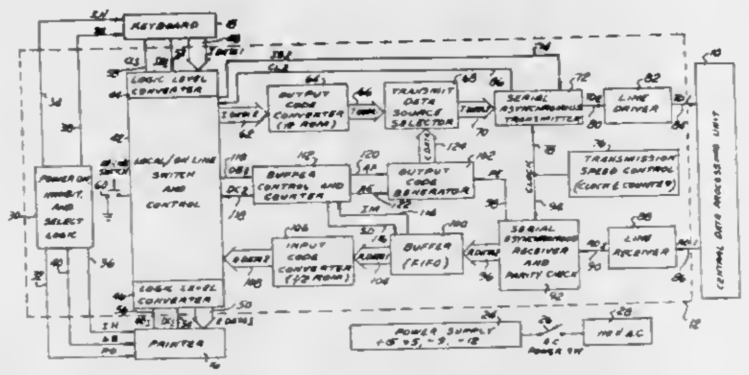
KEYBOARD-PRINTER TERMINAL INTERFACE FOR DATA PROCESSING

Robert E. Galbraith, Pontiac, Mich., assignor to World Computer Corporation, Birmingham, Mich.

Filed Aug. 21, 1974, Ser. No. 499,140

Int. Cl.^{2} H04L *11/00*

U.S. Cl. 178—17.5 **6 Claims**


KEYBOARD
LOGIC LEVEL CONVERTER
OUTPUT CODE CONVERTER
TRANSMIT DATA SOURCE SELECTOR
SERIAL ASYNCHRONOUS TRANSMITTER
LINE DRIVER
POWER ON INHIBIT AND SELECT LOGIC
LOCAL/ON LINE SWITCH AND CONTROL
BUFFER CONTROL AND COUNTER
OUTPUT CODE GENERATOR
TRANSMISSION SPEED CONTROL (CLOCK & COUNTER)
INPUT CODE CONVERTER
BUFFER (FIFO)
SERIAL ASYNCHRONOUS RECEIVER AND PARITY CHECK
LINE RECEIVER
CENTRAL DATA PROCESSING UNIT
LOGIC LEVEL CONVERTER
PRINTER
POWER SUPPLY
AC POWER SW

1. An interface for interconnecting a terminal comprising a keyboard and a printer to a data processing apparatus, said keyboard and printer being adapted for data communication in parallel code and said data processing apparatus being adapted for data communication in serial code, said interface comprising control means for placing said keyboard and printer in direct communication with each other in a first mode of operation and in communication with said data processing apparatus in a second mode of operation, serial asynchronous transmitter means for converting said data from parallel to serial code and for supplying said serial coded data to said data processing apparatus through a first transmission line, transmit data source selector means for supplying command data to said data processing apparatus, serial asynchronous receiver means for converting data received from said data processing apparatus through a second transmission line from serial to parallel code, buffer storage means for storing said received data and for supplying said stored data to said printer, storage control means for controlling said buffer storage to supply said stored data to said printer only when said printer is in a ready state and up-down counter means for controlling said transmit data source selector means for commanding said data processing apparatus through said first transmission line to stop transmission when said buffer storage means is nearly full and to resume transmission when said buffer storage means is nearly empty.

3,936,601

METHOD AND APPARATUS FOR ALTERING THE SYNCHRONOUS COMPARE CHARACTER IN A DIGITAL DATA COMMUNICATION SYSTEM

Carl Obeginski, South Lyon, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 28, 1974, Ser. No. 473,716

Int. Cl.^{2} H04K *1/00;* **H04L** *7/04*

U.S. Cl. 178—22 **6 Claims**

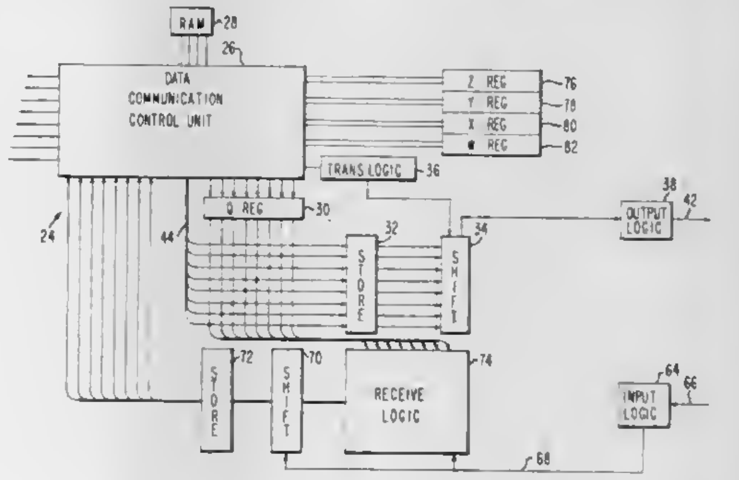
2. A method for transmitting digital data to a receiving apparatus in a synchronous mode comprising the steps of:

generating a first synchronous character;

transmitting said first synchronous character to the receiving apparatus;

transmitting a first message in digital form to the receiving apparatus; and

generating different synchronous characters in a preselected nonrepetitious pattern to provide dynamically altered characters to precede future message transmissions thereby preventing unauthorized interception thereof.



3,936,602

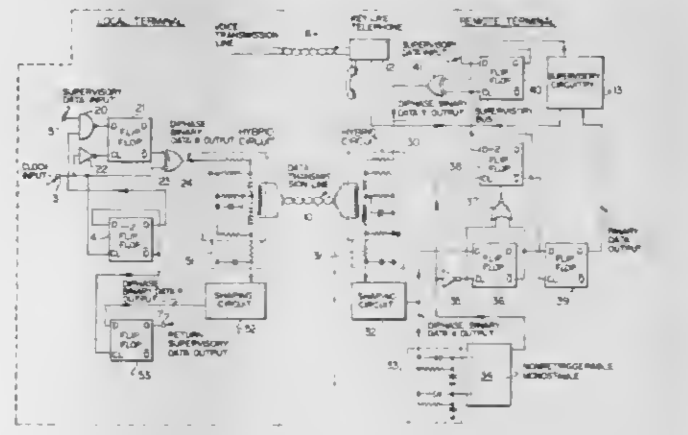
FULL DUPLEX DATA TRANSMISSION SYSTEM USING TWO SPEEDS OF DIPHASE SIGNAL FOR SIMPLIFIED SYNC

Klaas Korver, Ottawa, Canada, assignor to Northern Electric Company Limited, Montreal, Canada

Filed Oct. 23, 1974, Ser. No. 517,218

Int. Cl.^{2} H04J *3/06*

U.S. Cl. 178—58 R **4 Claims**



1. A method for exchanging data between local and remote terminals, via a two wire transmission line, the method comprising the steps of:

a. in the local terminal, transmitting a coded diphase signal having first and second portions, respectively representing data bits of first and second states, the first portions having two transitions per data bit and the second portion having four transitions per data bit; and

b. in the remote terminal, receiving the coded diphase signal,

c. generating, from the received coded diphase signal, first signals at the baud rate of the coded diphase signal and synchronized therewith and second signals at half of said baud rate and in phase with said first portions,

d. decoding the received coded diphase signal in synchronism with the first and second signals, to derive the data bits,

e. transmitting a diphase signal, at half the baud rate of the coded diphase signal, synchronized with said second signal and representing other data bits; and

f. in the local terminal receiving the diphase signal delayed by less than half the period of the baud rate of the coded diphase signal,

g. decoding the diphase signal in synchronism with a signal in phase with said first portions, to derive the other data bits.

3,936,603
DIGITAL COMMUNICATION SYSTEMS

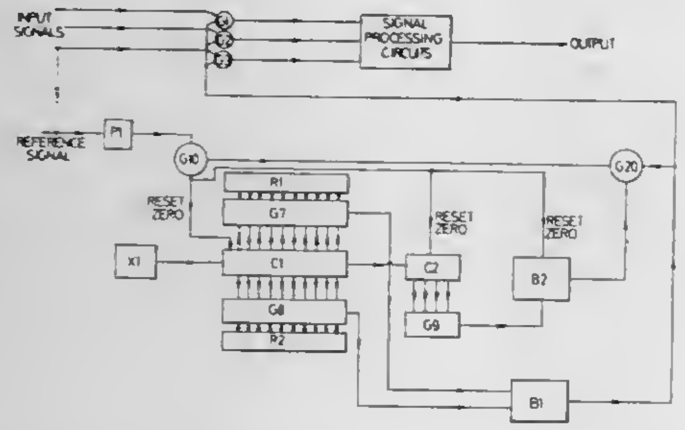
John R. Guppy, Hitchin, and Robin D. Roe, Luton, both of England, assignors to British Aircraft Corporation Limited, London, England

Filed Sept. 19, 1974, Ser. No. 507,418

Claims priority, application United Kingdom, Sept. 21, 1973, 44395/73

Int. Cl.² H04B *1/16*; **H04L** *15/24*; **G06G** *7/00*

U.S. Cl. 178—69.5 R **4 Claims**



1. A receiver for use in a digital communication system in which incoming data pulses occur at fixed intervals, the receiver including a data processing circuit, a first gate through which incoming data pulses are passed to said data processing circuit, a counter having a reset input and a clock input, a second gate through which reference pulses having a predetermined pulse repetition rate equal to the repetition rate of the incoming data pulses are fed to said reset input of said counter such that each reference pulse resets the counter to zero, a clock generator for feeding clock pulses to said clock input of said counter such that the counter is repeatedly stepped through a predetermined cycle, the nominal period of the counter cycle being equal to the nominal period of the reference pulses, means responsive to the count stored in the counter reaching a first predetermined value during any given cycle of the counter for latching both said first and said second gates open, and means responsive to the count in the counter reaching a second predetermined value during the next succeeding cycle for releasing the latch whereby the two gates remain open for a predetermined period before and after the expected arrival time of a data pulse.

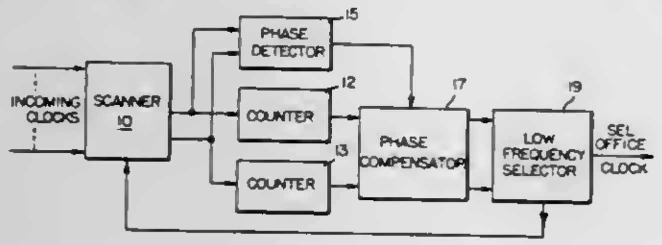
3,936,604
SYNCHRONIZATION OF CLOCKS IN DIGITAL SIGNALLING NETWORKS

Uwe A. Pommerening, Webster, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 97, Jan. 2, 1970, abandoned. This application Feb. 20, 1975, Ser. No. 551,495

Int. Cl.² H04L *7/00*

U.S. Cl. 178—69.5 R **3 Claims**



1. Method of synchronizing a signalling network of the pulse code modulated type having a plurality of local offices more than one of which has an independent clock for producing clock signals to time its operation comprising synchronizing all the local offices in accordance with the slowest clock in the network.

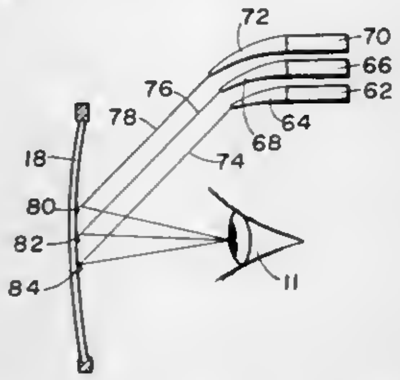
3,936,605
EYEGLASS MOUNTED VISUAL DISPLAY

Hubert W. Upton, Arlington, Tex., assignor to Textron, Inc., Providence, R.I.

Filed Feb. 14, 1972, Ser. No. 225,741

Int. Cl.² G02B *17/00*

U.S. Cl. 179—1 SP **21 Claims**



1. In a personal information system where a light variable display is located out of view at the side of the eye of a person, the improvement which comprises:

a. a generally spherical mirror subtending a solid angle of not more than about 7° of the field of vision of said person when positioned in front of said eye at a distance less than the minimal focal length of said eye, and

b. structure for supporting said mirror at about said distance from said eye and for supporting said display at about the focal length of said mirror at a location such that the mirror axis bisects the angle between said light source and said eye.

19. The method of assisting speech interpretation which comprises:

a. forming by reflection from a magnifying mirror subtending a solid angle of not more than about 7° in the field of vision on an eyeglass in focus images of an information source located at about the focal plane of said mirror in response to frictional, plosive, and vowel voicing characteristics.

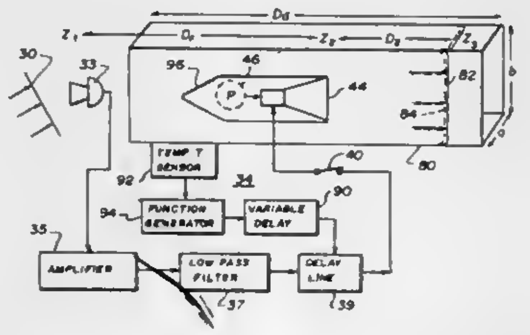
3,936,606
ACOUSTIC ABATEMENT METHOD AND APPARATUS

Ronald L. Wanke, 1960 N. Lincoln Park West, Chicago, Ill. 60614

Continuation-in-part of Ser. No. 205,598, Dec. 7, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 313,958

Int. Cl.² H04R *1/28*

U.S. Cl. 179—1 P **39 Claims**



1. A method for attenuating a predetermined range of frequencies within an acoustic wave propagating along different vectors through a medium, comprising the steps of:

generating an anti wave limited to only said predetermined range of frequencies and of mirror symmetry with respect to said acoustic wave,

propagating said anti wave in said medium along a given vector which is at a skew with respect to one of said different vectors,

altering a vector of at least one of said waves to produce substantially coinciding vectors of propagation only for the predetermined range of frequencies, and

aligning the wavefront of at least one of said waves to produce substantially coinciding wavefronts.

29. A system for attenuating an acoustic wave propagating through a medium, comprising:

source means including receiver means for detecting said acoustic wave, transmitter means responsive to said receiver means for producing an anti wave which interferes with said acoustic wave to produce a cancellation effect, and time delay means for varying the transmission time of the source means to change the position of said anti wave in said medium,

sensing means for sensing a condition which indicates misalignment between the anti wave and the acoustic wave which were initially aligned, and

correction means responsive to said sensing means for automatically varying said time delay means to again align the anti wave with the acoustic wave.

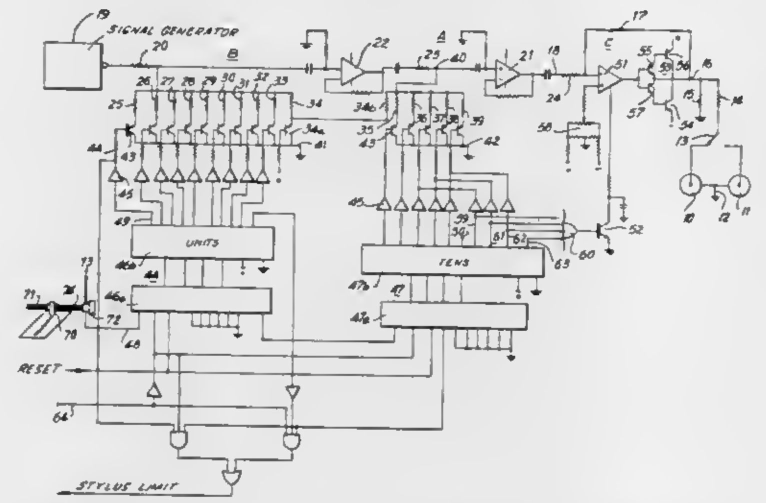
3,936,607
ELECTRONICALLY VARIABLE AUDIOMETER OF THE VON BEKESY TYPE

Sidney Gordon, New York, N.Y., assignor to Michael Davis, Riverdale, N.Y.

Filed Nov. 28, 1973, Ser. No. 419,602

Int. Cl.² H04R *29/00*

U.S. Cl. 179—1 N **15 Claims**



10. A controllably effective voltage divider output for an electronically attenuated audiometer circuit or the like, which comprises

a. first and second resistance means connected in series,

b. at least a portion of the second resistance means constituting an output load,

c. said first resistance being a multiple of the second,

d. electronically attenuated power means for supplying power to said voltage divider input, and

e. circuit means effective when actuated to effectively neutralize the effect of said first resistance means,

f. said circuit means including a unity gain operational amplifier and a transistorized current amplifier.

3,936,608
MULTIMETERING FOR TELEPHONE SWITCHING SYSTEMS

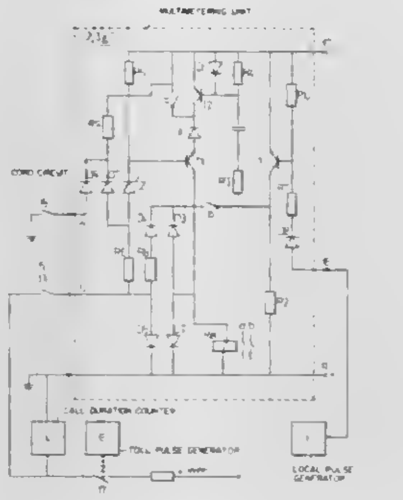
Ole Svein Danielsen, Oslo, Norway, assignor to International Standard Electric Corporation, New York, N.Y.

Filed July 26, 1974, Ser. No. 492,048

Int. Cl.² H04M *15/12*

U.S. Cl. 179—7.1 R **7 Claims**

1. A multimetering method adaptable to existing telecommunication switching systems in which the establishment of a connection between a calling subscriber and a called subscriber is effected at least partly via a cord circuit and where the calling subscriber is allocated a call duration counter which is arranged to be stepped forward by periodic metering signals generated by a metering signal generator, characterized in that the metering signals, which are common for all subscribers, are continuously led to an inhibiting circuit for each subscriber which in dependence on whether his call duration counter is connected to the cord circuit or not, respectively feeds the metering signals further towards his call duration counter or stops these signals.



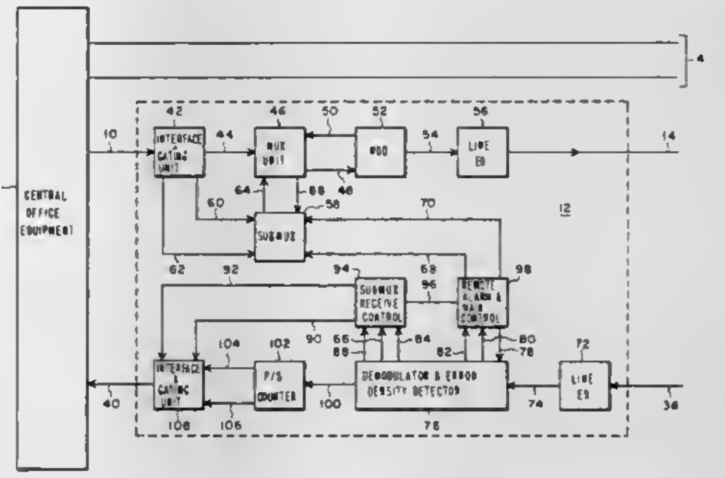
3,936,609
SUBMULTIPLEX TRANSMISSION OF ALARM STATUS SIGNALS FOR A TIME DIVISION MULTIPLEX SYSTEM

Gary C. Waldeck, Foster City, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 14, 1974, Ser. No. 442,522

Int. Cl.² H04J *3/14*

U.S. Cl. 179—15 BF **5 Claims**



1. In a common channel signaling system wherein a predetermined number of equal interval time-divided spaces comprise a frame which includes; a space for a system framing signal, a plurality of spaces for transmission of signaling information, and a space for carrying one of a plurality of status signals, n, during each frame, apparatus for time sequencing said status signals for transmission of one status signal each frame, which comprises:

means for deriving said predetermined number of equal interval time-divided spaces, including the status space and for deriving the system frame synchronization signal for each frame;

submultiplexing means operatively connected to said deriving means and arranged to accept *n*-1 status signals for time multiplexing, said submultiplexing means including means for creating a submultiplexer frame status signal and combining means operatively connected to said system frame synchronizing signal and said submultiplexer frame status signal; said combining means generating a synchronizing signal for transmission every n^{th} frame when both the system frame synchronizing signal and the submultiplexer frame status signal are recurrent; and generating a loss of synchronization signal for transmission when either said frame synchronization signal or said submultiplexer frame status signal is not recurrent.

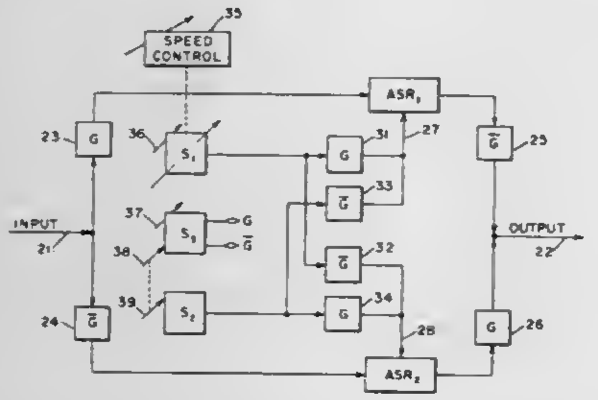
3,936,610
DUAL DELAY LINE STORAGE SOUND SIGNAL PROCESSOR

Murray M. Schiffman, Westport, Conn., assignor to Cambridge Research and Development Group, Westport, Conn.; Sanford D. Greenberg, Washington, D.C.; DT Liquidating Partnership, New York, N.Y. and Murray M. Schiffman, Westport, Conn.

Continuation of Ser. No. 224,035, Feb. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 171,571, Aug. 1, 1971, Pat. No. 3,786,195. This application May 28, 1974, Ser. No. 473,437

Int. Cl.² H04J *3/18*

U.S. Cl. 179—15.55 T 2 Claims



1. A processor for analog electric signals representing coded audible signals such as speech or the like, said electric signals being analog representations of said audible signals with the frequency components of said electric signals related by a given factor to the frequency components of said audible signals comprising:

two similar analog shift register delay lines having input terminals coupled to a source of said analog electric signals for serially entering sequential analog samples of said analog electric signals at said input terminals thereof and having output terminals for serially removing said analog samples from said delay lines at said output terminals;

said input terminals coupled to said source of analog signals through input switch means operable to supply said analog signals alternately to said input terminals; and

said output terminals coupled through output switch means operable alternately to pass said analog samples emerging from said delay lines;

first and second predetermined frequency clock sources for clocking said delay lines;

means for controlling said delay lines alternately from said clock frequency sources for simultaneous alternate serial entry and removal of said analog samples at said first and second clock frequencies, respectively, to produce predetermined frequency transformation for signals made up of the sequence of said analog samples emerging at said output terminals of said delay lines, said means for controlling said delay lines also controlling said input and output switches to input one said line while outputting the other said line and vice-versa; and

analog signal processing means coupled to said output terminals of both said delay lines through said output switch means and responsive to said analog samples emerging alternately from said delay lines which have been subject to said predetermined frequency transformation for producing an output analog signal reproducible as an audible representation of said electric signals having frequency components altered by substantially the inverse of said factor to approximate the frequency components of said audible signals.

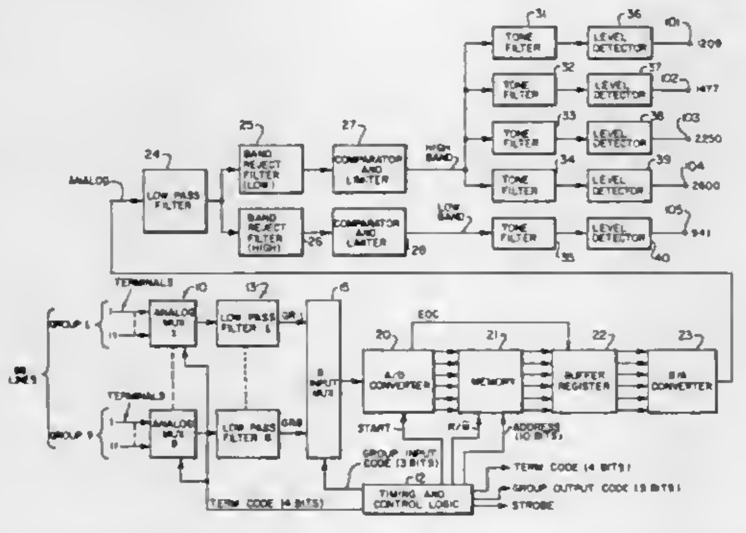
3,936,611
TIME COMPRESSION SCANNER

Margaret A. Poole, Wayland, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Sept. 4, 1974, Ser. No. 502,933

Int. Cl.² H04B *1/66*

U.S. Cl. 179—15.55 T 10 Claims



1. Scanning apparatus for detecting the presence of signals of predetermined frequencies on any of a plurality of lines, the plurality of lines being arranged in a number of groups with a number of lines in each group, said apparatus including in combination

first multiplexing means for repeatedly sampling the lines of each group, a corresponding one of the lines in each group being sampled simultaneously during a line sampling period;

said first multiplexing means having a number of output connections equal to the number of groups and each output connection having present thereon during a line sampling period a sampled portion of the input signal from a different one of said groups;

second multiplexing means coupled to the output connections of the first multiplexing means for repeatedly sampling said output connections in sequence during each line sampling period, and for producing at its output connection a multiplicity of analog samples of each of said sampled portions;

analog-to-digital converting means coupled to the output connection of the second multiplexing means for converting in sequence each of said analog samples to a digital sample;

memory means coupled to said analog-to-digital converting means for storing said digital samples;

memory readout means for reading out of the memory means the digital samples associated with each of the groups of lines, all of the samples associated with a group being read out for each group in turn, the multiplicity of digital samples associated with a group being read out in the same sequence as the analog samples associated with that group were produced by the second multiplexing means;

digital-to-analog converting means coupled to the memory means for converting each of said digital samples to an analog pulse;

filter means coupled to the digital-to-analog converting means for converting the multiplicity of analog pulses associated with a group of lines to an analog signal, the signal frequencies present in an analog signal being equal to the predetermined frequencies present in the associated sampled portion of the input signal times the number of groups;

detecting means coupled to the filter means for determining the presence or absence of each of the signal frequencies in the analog signal and for producing indications thereof which indicate the presence or absence of each of the predetermined frequencies in the associated sampled portion of the input signal; and

line address means for producing line identifying signals designating the particular group and particular line of the group with which said indications are associated.

3,936,612
CONTROL AND HOLDING CIRCUIT FOR RELAY MATRICES

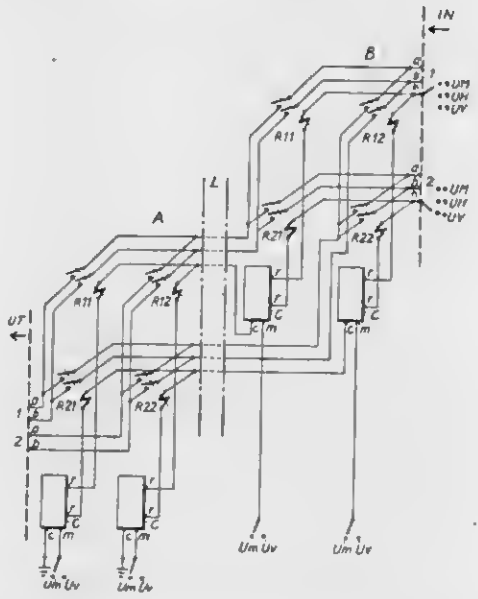
Royne Gunnar Hjortendal, Sorunda, and Jöns Kurt Alvar Olsson, Tullinge, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed June 5, 1974, Ser. No. 476,412

Claims priority, application Sweden, June 27, 1973, 7309028

Int. Cl.² H04Q *1/52*

U.S. Cl. 179—18 GE 11 Claims



1. A matrix switch comprising a matrix of relays arrayed in groups, each of said relays having signal transfer contact means and an energizing means with first and second terminals, a plurality of first signal transfer terminal means, each of said first signal transfer terminal means being connected in parallel to the signal transfer contact means of one of the relays in each of said groups of relays, a plurality of second signal transfer terminal means, each of said second signal transfer terminal means being connected in parallel to the signal transfer contacts of fall of the relays in a different group of said groups of relays, a plurality of first control current terminals, each of said first control current terminals being connected in parallel to the first terminal of the energizing means of one of the relays in each of said groups of relays, a plurality of second control current terminals, a plurality of control and holding circuits each associated with a different one of said groups of relays, each of said control and holding circuits having a control signal input for receiving a marking signal, and first and second control current transfer means, each of said control and holding circuits having switching means connecting said first and second control current transfer means and rendered conductive when a marking signal is received at its control signal input and at least a given current is available for flowing from one to the other of its control current transfer means and is rendered non-conductive thereafter when the available current is less than said given current, means for connecting first control current transfer means of each of said control and holding circuits in parallel to the second terminals of the energizing means for each relay in the associated group, means connecting the second control current transfer means of each of said control and holding circuits to a different one of said second control current terminals, means for selectively applying marking signals to the control signal inputs of said control and holding circuits, and means for selectively applying sources of current with a controllable amplitude across said first and second control current terminals.

3,936,613
CAMP-ON DETECTING SYSTEM FOR AUTOMATIC TELEPHONE EXCHANGE

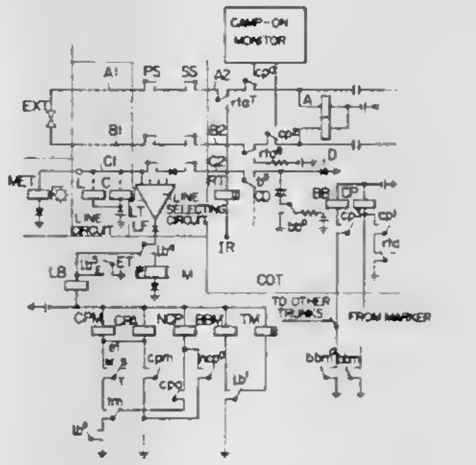
Shogo Nishigori, Kanagawa, and Masahiko Kusama, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Japan

Filed May 17, 1974, Ser. No. 471,048

Claims priority, application Japan, May 21, 1973, 48-55631

Int. Cl.² H04M *3/42*

U.S. Cl. 179—18 BG 6 Claims



1. In a common control type automatic telephone exchange having a marker, trunk circuits and subscriber's line circuits associated therewith, a camp-on detecting system comprising, in combination:

first means, coupled to a subscriber's line circuit, for detecting the existence of a prescribed busy potential on the control line of said subscriber's line circuit;

second means, coupled to said first means, and responsive to the existence of a camp-on connection of a trunk circuit with said subscriber's line circuit, for changing the potential on the control line of said trunk circuit to a prescribed camp-on potential only when said first means has detected the presence of said prescribed busy potential on the control line of said subscriber's line circuit.

3,936,614
PBX GROUND START TRUNK INTERFACE FOR STATION CARRIER SYSTEMS

Morris A. Suntop, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,482

Int. Cl.² H04M *7/06;* **H04Q** *3/62*

U.S. Cl. 179—16 EC 18 Claims

1. In a station carrier system having a plurality of central office trunks each arranged for communicating by assigned carrier channels to a corresponding one of a plurality of subscriber terminals over a transmission line, each of said central office trunks and each of said subscriber terminals including first and second voice communication leads, a ground start interface circuit comprising:

central office detection means for detecting the application of a ground signal by the central office to the first of the voice communication leads of one of said central office trunks;

first circuit means for communicating the detection of said central office ground signal to the respective subscriber terminal over said transmission line via an assigned ground start carrier channel;

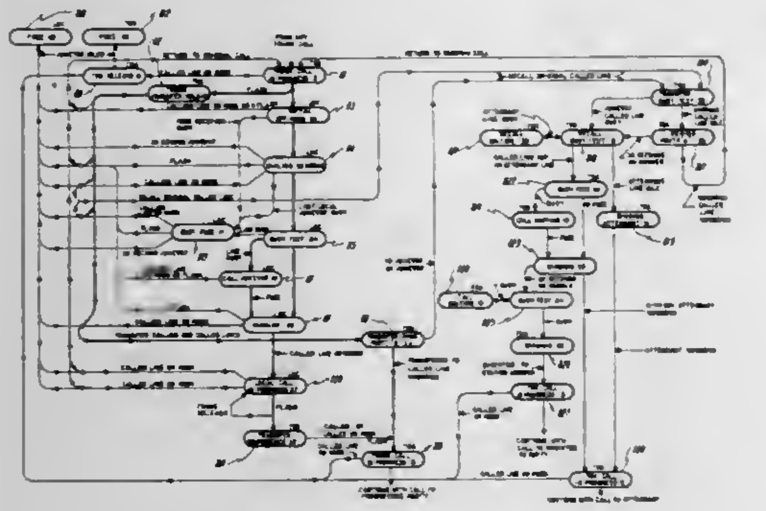
individual subscriber terminal grounding means responsive to the ground detection communication of said first circuit means for applying a ground signal to the first of the

voice communication leads of said respective subscriber terminal;
subscriber terminal detection means for detecting the application of a ground signal by a subscriber to the second voice communication lead of said subscriber terminal;
second circuit means for communicating the detection of a ground signal at said subscriber terminal to the corresponding central office trunk over said transmission line;
central office grounding means responsive to the ground detection communication from said second circuit means for applying a ground signal to the second voice communication lead of said central office trunk;
battery reversal detection means for detecting a battery reversal by the central office at said central office trunk leads;
third circuit means for communicating the detection of said battery reversal signal to said corresponding subscriber terminal over said transmission line via said ground start channel, and
battery reversal means responsive to the battery reversal communication of said third circuit means for effecting a battery reversal at said corresponding subscriber terminal.

3,936,615
TRUNK TRANSFER CIRCUIT

Uwe A. Pommerening, Webster, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Mar. 25, 1975, Ser. No. 561,744
Int. Cl.² H04M *3/58*
U.S. Cl. 179—18 AD 14 Claims

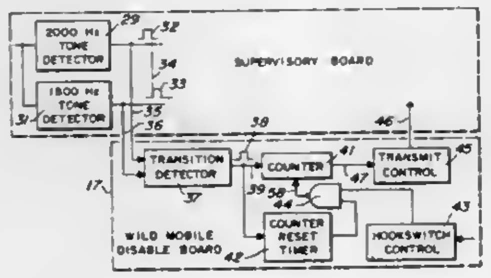


1. In a private automatic branch exchange having a solid state switching matrix for connecting local calling stations to local called stations and connecting local stations to incoming and outgoing trunk parties therethrough and a common control for effecting said connections by individual ones of a plurality of local and trunk junctors, having a memory associated with said local and trunk junctors, a trunk transfer circuit comprising:
holding circuit means, responsive to a trunk transfer indication from a transferring local station connected to a trunk transfer party by one of said trunk junctors, for placing the trunk transfer party in a holding status;
forwarding circuit means, responsive to said trunk transfer indication, for forwarding said transferring station to one of said local junctors while said transfer party is in said holding status;
signaling circuit means, directed by said transferring station connected to said one local junctor for signaling a local transferee station of an impending trunk transfer; and
first connecting circuit means, responsive to an answering signal by said local transferee station, for effecting a connection between said trunk transfer party and said transferee station.

3,936,616
"WILD" MOBILE DISABLE CIRCUIT

Dominic J. DiGianfilippo, Chicago, and Douglas W. Nickerson, East Dundee, both of Ill., assignors to Motorola, Inc., Chicago, Ill.

Filed Sept. 23, 1974, Ser. No. 508,370
Int. Cl.² H04Q *7/04*
U.S. Cl. 179—41 A 7 Claims

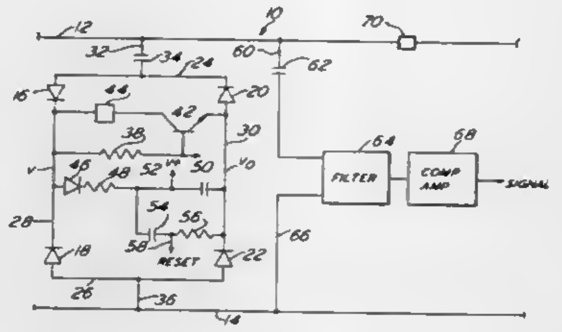


2. In a mobile telephone system including a mobile unit having a transmitter, a receiver and a handset having on hook and off hook positions, the receiver comprising:
means for receiving a sequence of pulses of audio frequencies,
means for counting the number of said pulses, and
means responsive to the count of a predetermined number of said pulses for shutting off said transmitter when said handset is non-functionally in its off hook position.

3,936,617
CODE-CONTROLLED RINGER ATTACHMENT FOR TELEPHONES

Duane Ridgely Bolgiano, Bala Cynwyd, Pa., assignor to International Mobile Machines Corporation, Philadelphia, Pa.

Filed Aug. 12, 1974, Ser. No. 496,450
Int. Cl.² H04M *3/38*
U.S. Cl. 179—84 R 8 Claims

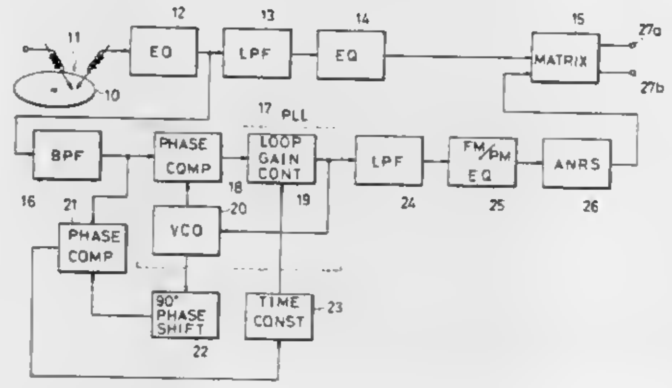


1. A system for detecting a predetermined transmitted signal comprising a signal transmitter coupled to a signal receiver, a relay coupled between said transmitter and said receiver, said relay acting to inhibit the passage of signals from said transmitter to said receiver when said relay is actuated, actuating means coupled to said relay and to said transmitter, said actuating means being energized by first predetermined signals from said transmitter to actuate said relay and being deenergized in the absence of such signals, a switch means coupled to said transmitter and to said actuating means, said switch means being operated to deenergize said actuating means in response to second predetermined signals from said transmitter, means to reset said switch means to permit energization of said actuating means in the intervals between said second predetermined signals, and a power supply means coupled to said transmitter and to the other components of said system, said power supply means acting to store energy from said first predetermined signals sent by said transmitter and to release said energy to said other components of said system in the intervals between said first predetermined signals from said transmitter, said power supply means being the sole source of power for said system.

3,936,618
MULTICHANNEL RECORD DISC REPRODUCING SYSTEM AND APPARATUS

Nobuaki Takahashi, Yamato; Hideo Onoye, Yokohama; Teruo Muraoka, and Masao Kasuga, both of Sagamihara, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Mar. 6, 1974, Ser. No. 448,732
Claims priority, application Japan, Mar. 9, 1973, 48-27715
Int. Cl.² G11B *3/00, 3/74*
U.S. Cl. 179—100.4 ST 15 Claims



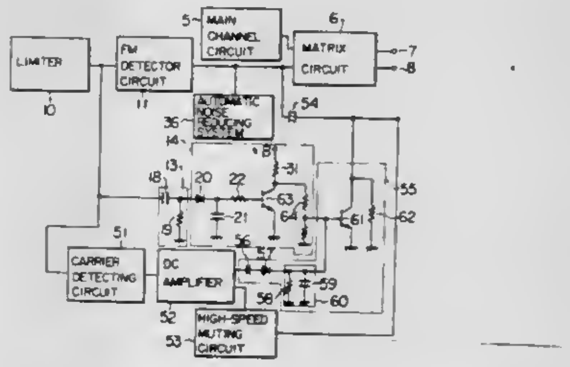
1. A multichannel record disc reproducing system comprising:
a phase locked loop circuit means containing a phase comparator and a voltage controlled oscillator for demodulating an angle-modulated wave signal separated from a signal picked up from a multichannel record disc on which a direct wave signal and an angle-modulated wave signal are recorded in a multiplexed state, the output of said phase locked loop being a demodulated signal;
a synchronous detector means for comparing the phases of said angle-modulated wave signal and the output signal of said voltage controlled oscillator and operating when the phase difference of said two signals deviates from a predetermined phase difference to produce as output a voltage in accordance with the deviation of the phase difference from said predetermined phase difference; and
attenuation means coupled to said phase locked loop for obtaining a demodulated output signal in which the level of at least a frequency band wherein a noise component is distributed has been attenuated in accordance with the output of said synchronous detector.

3,936,619
FOUR-CHANNEL STEREOPHONIC REPRODUCING SYSTEM FOR REPRODUCING DISCRETE CD-4 FOUR-CHANNEL STEREO DISC

Yukio Sugimoto, Katano; Matoto Okamasa, Kyoto, and Toyoshi Fukumura, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 24, 1974, Ser. No. 463,667
Claims priority, application Japan, Apr. 25, 1973, 48-48030
Int. Cl.² G11B *3/00, 3/74;* H04B *5/00*
U.S. Cl. 179—100.4 ST 12 Claims

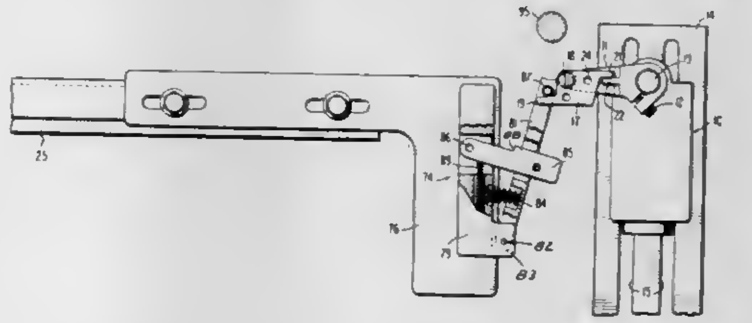
1. A four-channel stereophonic reproducing system for reproducing a discrete CD-4 four-channel stereo disc wherein left and right stereophonic composite signals are recorded on the left and right walls of the groove on said disc, said left stereophonic composite signal comprising the sum of a first main channel signal and a first sub-channel signal and said right stereophonic composite signal comprising the sum of a second main channel signal and a second sub-channel signal, said first main channel signal comprising the sum of first and second channel signals and said second main channel signal comprising the sum of third and fourth channel signals, said first sub-channel signal comprising the frequency-modulated difference between said first and second channel signals and said second sub-channel signal comprising the frequency-modulated difference between said third and fourth channel signals, comprising
means for reproducing a main channel signal and a sub-channel signal having a carrier from each of left and right stereophonic composite signals recorded on said disc;
detector means for detecting said sub-channel signals reproduced by said reproducing means;
matrix means for matrixing said main channel signals reproduced by said reproducing means and output signals from said detector means to produce four discrete stereophonic audio signals;
switching means provided between said detector means and said matrix means;
level discriminating means for detecting when the carrier level of a sub-channel signal is lower than a predetermined value; and
control means controlled by the output of said level discriminating means whereby, when said carrier level becomes lower than said predetermined value, said switching means is rendered nonconductive to prevent application of the output of said detector means to said matrix means.



3,936,620
UNIDIRECTIONAL LIMIT SWITCH ACTUATOR ELEMENT

Bobby J. Williamson, Greenville, S.C., assignor to Southern Machinery Company, Greer, S.C.

Filed Apr. 10, 1974, Ser. No. 459,613
Int. Cl.² H01H *3/16*
U.S. Cl. 200—47 5 Claims



1. In a limit switch or the like having a rotary switch actuator arm adapted to extend toward the path of movement of a reciprocating machine element, the improvement which comprises a one way engaging and one way inactive switch actuator arm extension freely pivotally secured to the actuator arm and extending on opposite sides of its pivot axis and longitudinally of said arm, the center of mass of said arm extension being eccentric to said pivot axis whereby the extension is weighted to an engaging position in response to gravity, said switch actuator arm having an abutment thereon, a first end terminal on the weighted portion of said extension engaging said abutment under the influence of gravity and being free to separate from the abutment on pivoting of the extension in one direction, and a second end terminal on the other end of

said extension and on the opposite side of said pivot axis and projecting into the path of movement of a machine element to be engaged thereby, engagement of the second end terminal by said machine element moving in one direction causing throwing of the limit switch due to engagement of the first end terminal with said abutment and engagement of the second end terminal by said machine element moving in the opposite direction causing pivoting and yielding of the extension on its pivot and separation of the first end terminal from said abutment without throwing of the limit switch.

3,936,621
DESTRUCTIBLE TYPE SWITCH HAVING FRANGIBLE CONDUCTIVE ELEMENT

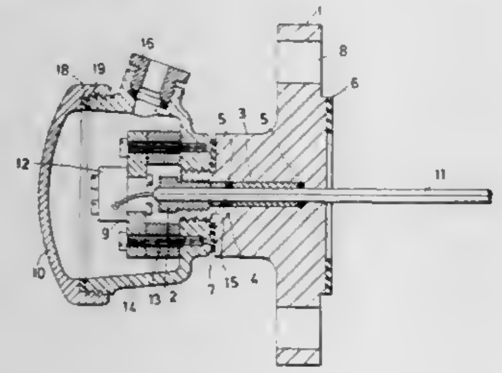
Alfred Palin, and John Wesley Slack, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

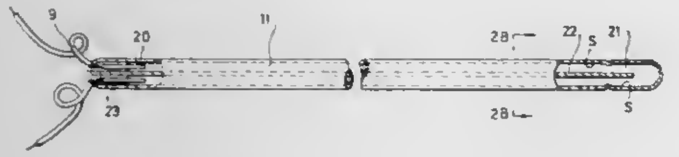
Filed Oct. 15, 1974, Ser. No. 515,018

Claims priority, application United Kingdom, Oct. 17, 1973, 48271/73

Int. Cl.² H01H *35/00, 9/02*

U.S. Cl. 200—61.08 **9 Claims**





1. A detector for the detection of a rupture of a closure member, operable by the breakage of an electrical circuit to detect the said failure, comprising a U-shaped brittle electrical conducting element having its ends supported in a housing and the U-shaped portion protruding from said housing, electrical leads extending through the wall of said housing and making electrical contact with said ends of said brittle conducting element, means mounting said housing adjacent a rupturable closure member in vessel in a position such that the protruding U-shaped portion of said brittle conducting element is disposed in a place which ensures fracturing of said portion upon rupture of the closure member whereby when said portion fractures into a plurality of fragments, electrical continuity between the electrical leads is broken and the fragments cannot dispose themselves in any way which restores the electrical continuity under the conditions consequent upon the failure.

3,936,622
LOAD LIMITER

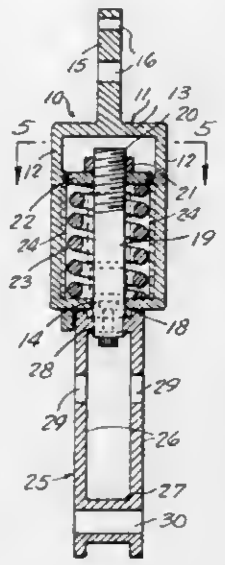
Robert C. McElroy, Libson, Ohio, assignor to Cable Climber Safety Devices Incorporated, Lisbon, Ohio

Filed Apr. 4, 1974, Ser. No. 457,967

Int. Cl.² H01H *3/14*

U.S. Cl. 200—85 R **1 Claim**

1. A load limiter comprising a support member including spaced parallel vertically disposed side walls, spaced parallel, horizontally disposed top and bottom walls, an upper element affixed to said top wall for connection to a hoist, there being an opening in said bottom wall, a vertically disposed moveable rod extending through said opening and said rod having it's upper end threaded, a horizontally disposed vertically moveable plate mounted on the upper portion of said rod, stop guides on said side walls cooperating with said plate for preventing the spring from being deflected out of its proper position on over loads, means mounted above said plate adjustably engaging the upper end of said rod, a coil spring surrounding said rod and interposed between said plate and said bottom wall, a bracket mounted below said support member and said bracket including a pair of spaced parallel side sections and a bottom portion, means for connecting said bracket to a load, a top piece extending between said side sections and having the lower end of said rod extending therethrough, a vertically disposed support piece affixed to said support member, a micro-switch connected to said support piece, and an adjustment screw connected to the lower end of said micro-switch and to a lug on said upper element.



3,936,623
MULTIPLE CONTACT ROTARY SWITCH OF HELICAL CONFIGURATION

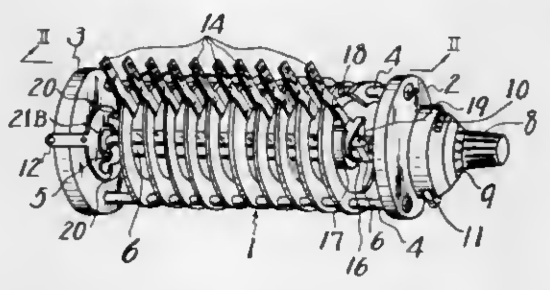
Eitaro Shimoda, 4-7-1, Matsubara, Setagaya, Tokyo, Japan

Filed Sept. 11, 1974, Ser. No. 504,979

Claims priority, application Japan, Sept. 29, 1973, 48-109647; Nov. 8, 1973, 48-129338[U]; Jan. 24, 1974, 49-10659[U]; Feb. 26, 1974, 49-23048[U]

Int. Cl.² H01H *3/40, 19/54*

U.S. Cl. 200—158 **9 Claims**



1. A helical rotary switch comprising:
a. a spiral-shaped helical coil made of insulating material;
b. a plurality of contacts attached to said helical coil;
c. a rotary contact which engages with said helical coil;
d. a slide member to which said rotary contact is attached;
e. a shaft on which said slide member is slidably mounted;
f. a conductor attached to said shaft and said rotary contact electrically contacting with said conductor;
g. a terminal slidably attached one end of said conductor;
h. a frame member rotatably supporting said shaft; and

i. a second means supporting said helical coil from said frame member,

said slide member being so mounted on said shaft that when said shaft is rotated, said slide member is rotated and also moved on said shaft in its axial direction with said rotary contact in electrical contact with said conductor and said rotary contact attached to said slide member and guided by said helical coil and said contacts and said contacts successively electrically connected to said terminal through said conductor and said rotary contact.

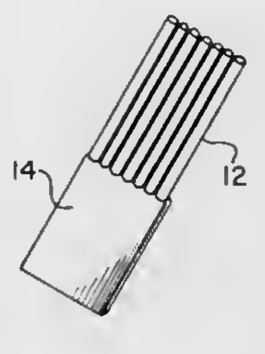
3,936,624
MULTIFINGER CONTACT

Stephen Verner Andersen, Burbank, Calif., and Edwin Grant Swick, Bartlett, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 4, 1974, Ser. No. 447,612

Int. Cl.² H01C *1/12;* **H01H** *1/28*

U.S. Cl. 200—283 **2 Claims**



1. An integral, one piece, multifinger electrical contact member formed from a single sheet of conductive material, the contact member including a base portion, a plurality of elongate resilient contact fingers having individual widths and lengths of approximately .005 inch and .075 inch respectively, emanating from and forming uninterrupted slender extensions of one end of the base and densely arranged thereon, each finger having a generally arcuate surface forming the opposing longitudinal edges on adjacent fingers whereby the fingers are free to flex essentially independent of one another.

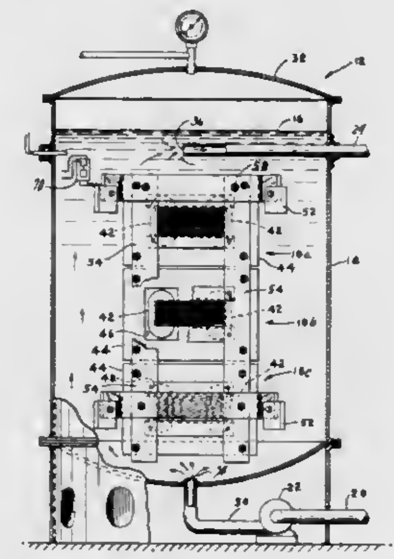
3,936,625
ELECTROMAGNETIC INDUCTION HEATING APPARATUS

Henry J. Burnett, West Hartford, Conn., assignor to Pollutant Separation, Inc., Elmwood, Conn.

Filed Mar. 25, 1974, Ser. No. 454,675

Int. Cl.² H05B *5/08*

U.S. Cl. 219—10.51 **5 Claims**



1. An electromagnetic induction heating apparatus comprising a closed tank having side and end walls and including a removable end cover providing a closure for one end thereof, said tank containing a quantity of liquid to be heated, an inlet conduit connected to an inlet opening in said tank and defining a liquid flow path into said tank from a location remote from said tank, an outlet conduit connected to an outlet opening in said tank and defining a liquid flow path out of said tank to a location remote from said tank, a pump connected in series with one of the conduits, at least one electromagnetic induction heater assembly disposed within said tank between said inlet and outlet openings and wholly submerged in the liquid to be heated, said heater assembly including a generally rectangular magnet core having parallel core sections, primary coils wound on said core sections and connected in electrical series, support members attached to opposite ends of said magnet core, a plurality of rods attached to and extending between said support members in spaced relation to said core and in generally parallel relation to said core sections, a spaced apart series of vertically disposed heater plates carried by said rods, said heater plates comprising electrical secondaries in which eddy currents are induced and having openings therein receiving therethrough said core sections and said primary coils wound thereon, said heater plate openings being substantially larger than associated portions of said core sections and said primary coils received therethrough, said rods maintaining said heater plates in spaced relation to each other and in spaced relation to said primary coils and said core sections, means for supporting said heater assembly including mounting brackets attached to said support members at opposite ends of said core, each of said brackets having legs extending outwardly from its associated support member and in the direction of said side wall, a plurality of mounting bosses equal in number to said legs, each of said mounting bosses secured to the inner surface of said side wall and having a slot therein opening in the direction of said one end receiving an outer end portion of an associated leg therein, and fasteners releasably securing said legs to said bosses, and electrical control means responsive to the temperature of the liquid in said tank for energizing said primary coils whereby to induce eddy currents in said heater plates to heat the liquid in said tank and to maintain it at a substantially predetermined temperature.

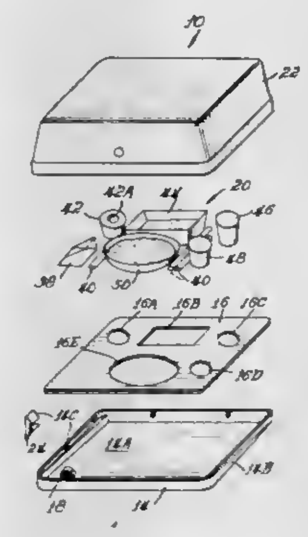
3,936,626
METHOD OF HEATING COMESTIBLES

Donald G. Moore, Glencoe, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Filed Oct. 25, 1972, Ser. No. 300,763

Int. Cl.² H05B *9/06*

U.S. Cl. 219—10.55 M **5 Claims**



1. The method of preparing a meal including a plurality of food items for concurrent equal duration heating in the cavity of a microwave oven under the control of a microwave energy absorbing sensor which exhibits a detectable change in a

characterisitc thereof upon receiving a given quantity of microwave energy, which method comprises the steps of:

- selectively shielding at least a portion of said food items with electrically conductive material to provide a generally uniform heating time to bring each item to a condition suitable for consumption,
- positioning said food items within the microwave oven and at locations relative to said sensor and to one another so that said food items all receive an amount of microwave energy which is sufficient to heat said food items within the same time interval that said sensor requires to exhibit said detectable change, and
- preparing a carrier for detachably holding said food items in said relative positions.

3,936,627

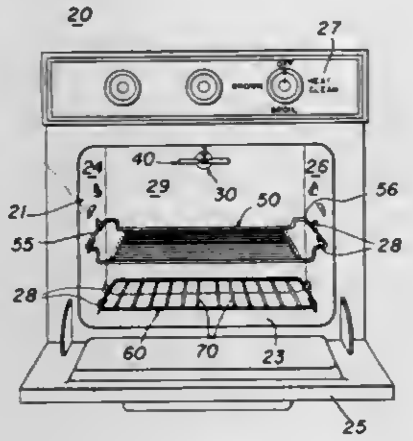
MICROWAVE OVEN WITH SPECIAL RACK DESIGNS

Louis H. Fitzmayer, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 17, 1974, Ser. No. 434,232

Int. Cl.² H05B *9/06*

U.S. Cl. 219—10.55 F **16 Claims**



1. In an electronic heating apparatus, the combination comprising a metal enclosure defining a heating cavity for receiving therein a body to be heated, source means for transmitting microwave energy of a predetermined frequency into said heating cavity for establishing therein a predetermined electromagnetic field mode substantially at said predetermined frequency, and a metal rack disposed horizontally within said heating cavity and having a plurality of spaced-apart rods interconnected only adjacent to the ends thereof and extending substantially parallel to the direction of the electric field of said predetermined electromagnetic field mode, said rack being dimensioned and positioned in said heating cavity for terminating said predetermined electromagnetic field mode substantially at said predetermined frequency, whereby said rack permits the supporting thereon of a body to be heated while accommodating pyro-cleaning of the oven and the termination of said predetermined electromagnetic field mode in said heating cavity.

12. In an electronic heating apparatus, the combination comprising a metal enclosure defining a heating cavity for receiving therein a body to be heated, source means for transmitting microwave energy of a predetermined frequency into said heating cavity for establishing therein a predetermined electromagnetic field mode substantially at said predetermined frequency, a first metal rack disposed horizontally within said heating cavity and having a plurality of spaced-apart rods interconnected only adjacent to the ends thereof and extending substantially parallel to the direction of the electric field of said predetermined electromagnetic field mode, said first rack being dimensioned and positioned in said heating cavity for terminating said predetermined electromagnetic field mode substantially at said predetermined frequency, and a second metal rack disposed horizontally within said heating cavity in the wave pattern of said predetermined electromagnetic field mode terminated by said first rack and having a plurality of spaced-apart rods interconnected only adjacent to the ends thereof and extending substantially perpendicular to the direction of the electric field of said predetermined electromagnetic field mode, said second rack being movable among a plurality of different positions within said heating cavity for facilitating optimum heating of associated bodies of different impedances while having no adverse effect on the electromagnetic field pattern in said heating cavity, whereby said racks permit the supporting thereon of bodies to be heated in a plurality of different positions within the heating cavity while accommodating pyro-cleaning of the oven and terminating of said electromagnetic field mode without otherwise interfering with the electromagnetic wave pattern in said heating cavity.

3,936,628

APPARATUS FOR FORMING ELONGATE REINFORCING ELEMENTS

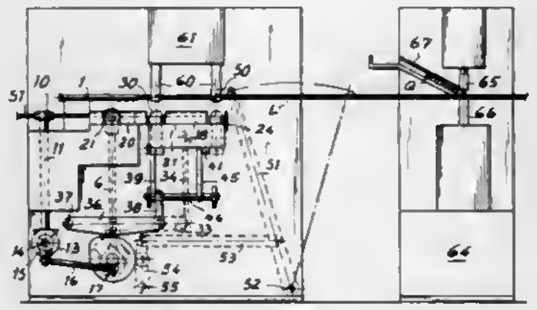
Gerhard Ritter; Josef Ritter; Klaus Ritter; Wilhelm Boyer, and Hans Gott, all of Graz, Austria, assignors to EVG Entwicklungs- u. Verwertungsgesellschaft m.b.H., Graz, Austria

Filed May 2, 1974, Ser. No. 466,482

Claims priority, application Austria, May 3, 1973, 3895/73

Int. Cl.² B23K *11/02*

U.S. Cl. 219—56 **9 Claims**



1. Apparatus for manufacturing elongate reinforcing elements consisting of a pair of rods and transverse rungs welded therebetween at right angles to said rods, said apparatus comprising two parallel rod guides spaced apart by substantially the distance required in said finished elements; a transverse rung carrier positioned below the plane of said rod guides, receiving one of said transverse rungs in a direction substantially parallel to said rod guides, and movable to a welding position in which said rung is positioned between, and at right angles to, said rods; a pair of welding electrodes engageable with said rods; and means for drawing said rods through said apparatus.

3,936,629

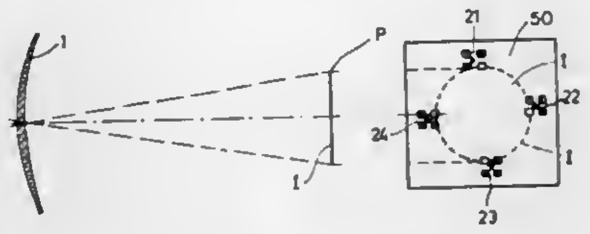
HORIZON SENSOR FOR A SATELLITE IN GEOSTATIONARY ORBIT

Francois Desvignes, Bourge-la-Reine, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 7, 1974, Ser. No. 512,893

Int. Cl.² G01J *1/04*

U.S. Cl. 250—209 **7 Claims**



1. A horizon sensor for a satellite in a geostationary orbit, comprising means to project the image of the earth-space transition in a first plane, a reference frame located in said first plane to define a portion of the projected earth-space

transition image relative to a predetermined axis, reflecting means mounted behind said reference frame for reflecting said portion of the transition image and for performing an angular oscillatory movement within the range of a predetermined scanning angle in a second plane perpendicular to said first plane and aligned with said axis, grating means located in said first plane opposite said reflecting means to pass through radiation from the projected earth-space transition image, first and second radiation detecting means located in said first plane to receive, respectively, reflected secondary images from said frame and said grating means during the scanning movement of said reflecting means, and pulse counting means connected to the outputs of said first and second detecting means to indicate, the count of pulses derived from said grating means during a pulse derived from said transition image in said frame.

3,936,630

INTEGRATED SEMICONDUCTOR DEVICE FOR SCANNING AN IMAGE

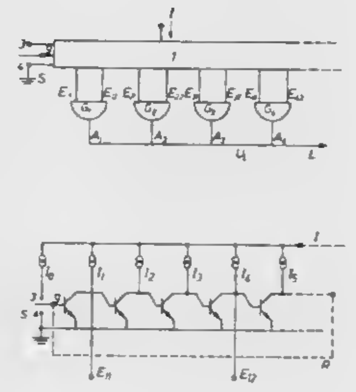
Lothar Blossfeld, Hochdorf, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Dec. 24, 1974, Ser. No. 536,053

Claims priority, application Germany, Jan. 30, 1974, 2404237

Int. Cl.² H01L *31/00*

U.S. Cl. 250—211 J **8 Claims**



1. An integrated semiconductor device for scanning an image comprising:

- a row of photosensitive transistors coupled together as a row of inverters and exposed to the brightness profile of a scanned line, said row comprising a plurality of partial rows;
- a common read line;
- a plurality of groups of gates, each of said gates having outputs coupled to said common read line and the inputs of each of said plurality of groups coupled to an allotted partial row such that each gate converts a light intensity change via a change in transit speed in the associated partial row to pulse-width changes at said common read line; and
- a switch coupled to the first transistor of said row of inverters for triggering the scanning operation.

3,936,631

OPTICAL FIBER POWER TAP

Willis Martin Muska, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

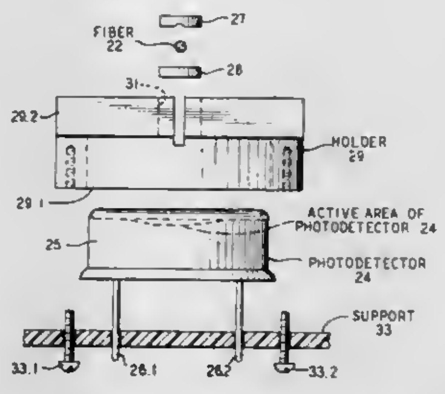
Filed Nov. 11, 1974, Ser. No. 522,518

Int. Cl.² G02B *5/14*

U.S. Cl. 250—227 **11 Claims**

1. An arrangement for tapping optical power from an intermediate portion of an optical fiber waveguide without requiring that the fiber be terminated or broken, said fiber including a guiding region in which the optical power is essentially confined, and including a cladding medium surrounding said guiding region, said arrangement being characterized by

- a first body of dielectric material having a first major surface disposed in a coupling relationship to an intermediate length of said fiber to couple optical power out of said guiding region of said fiber, said first body having an index of refraction which is approximately equal to or greater than the index of refraction of the medium surrounding said guiding region of said fiber and is selected to couple only a minor portion of the optical power propagating in said fiber waveguide guiding region toward a surface of said dielectric body laterally offset from said guiding region, the material of said first body being substantially more compliant than the material of said fiber;



- adjustable means for pressing said fiber against said first body to provide an area of contact between said first surface of said first body and said intermediate length of said fiber, comprising a second body of dielectric material having an index of refraction less than that of said first body; and
- a photodetector contacting said laterally offset surface of said dielectric body and including an active area responsive to the wavelength of the optical signal to be propagated through said fiber, said active area of said photodetector being oriented to intercept the optical power coupled out of said guiding region of said fiber by said first body.

3,936,632

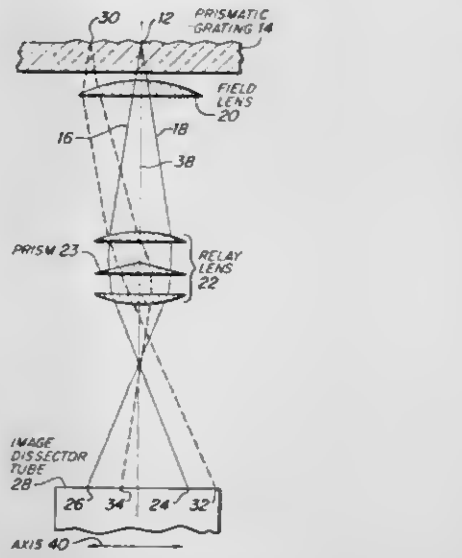
POSITION DETERMINING SYSTEM

William C. Bradley, Chelmsford; Allen H. Greenleaf, Lexington, and Roger K. Lee, Jr., Watertown, all of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Jan. 3, 1974, Ser. No. 430,422

Int. Cl.² G01J *1/20*

U.S. Cl. 250—237 R **15 Claims**



1. A system for precisely determining the position of a beam of incident radiation and comprising:

a. a prismatic grating means having the beam of radiation incident thereon and having a plurality of spaced prismatic grooves with the prismatic groove upon which the radiation beam is incident refracting the radiation into several separate beams with the relative intensity of each beam varying according to the precise position of the incident radiation relative to that prismatic groove;

b. means for determining the particular prismatic groove upon which said radiation beam is incident, said determining means including means responsive to the location of at least one of said several separate beams of radiation; and,

c. means for measuring the relative intensities of the separate beams of radiation produced by said prismatic grating means, whereby the precise location of the incident radiation beam relative to the prismatic groove upon which the radiation beam is incident may be determined.

3,936,633
METHOD OF DETERMINING LANTHANIDIES IN A TRANSITION ELEMENT HOST

Edward L. De Kalb, and Velmer A. Fassel, both of Ames, Iowa, assignors to The United States of America as represented by the United States Energy Research & Development Administration, Washington, D.C.

Division of Ser. No. 321,064, Jan. 4, 1973, Pat. No. 893,939. This application Jan. 16, 1975, Ser. No. 541,476

Int. Cl.^{2} G01N *23/20*

U.S. Cl. 250—273 **5 Claims**

1. A method of detecting trace quantities of fluorescing lanthanides in a transition element alloy comprising:

A. preparing a host composition including yttrium and a transition element;

B. exciting the fluorescing elements within said composition with electromagnetic radiation;

C. spectrometrically analyzing the resulting fluorescent radiation to quantitatively determine trace quantities of lanthanides.

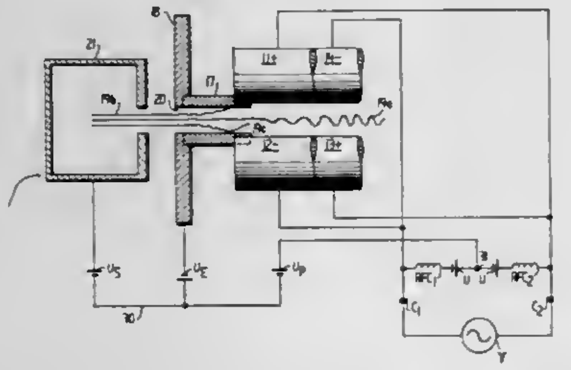
3,936,634
METHOD AND APPARATUS FOR IMPROVED FOCUSING OF ION CURRENTS IN QUADRUPOLE MASS FILTER

Wade L. Fite, Pittsburgh, Pa., assignor to Extranuclear Laboratories Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 346,250, March 30, 1973, Pat. No. 3,867,632. This application Dec. 10, 1974, Ser. No. 531,375

Int. Cl.^{2} H01J *39/34*

U.S. Cl. 250—281 **22 Claims**



1. In a method of mass analysis which utilizes a quadrupole mass filter and comprises the steps of producing positive ions with an initial kinetic energy E_i from an ion source having an electrical potential U_S, introducing said ions into the space between the poles of the quadrupole mass filter wherein the electric potential along the axis of said poles is U_P, causing the transmission of only those ions of a selected mass-to-charge ratio through the space between said poles, providing a selective shielding at at least one end of said poles which functions substantially as a conductor to the substantially dc fields and substantially as a dielectric to ac fields, said shielding having an electric connection at a potential of U_E, and maintaining said potential U_E less than said potential U_P, and said potential U_P less than said potential of U_S plus E_i/e where e is the charge of the ion.

3,936,635
CORONA GENERATING DEVICE

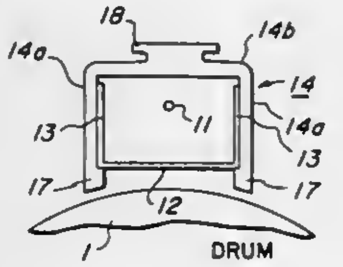
Peter Frederick Clark, Ware, England, assignor to Xerox Corporation, Stamford, Conn.

Filed June 11, 1974, Ser. No. 478,182

Claims priority, application United Kingdom, Dec. 21, 1973, 59526/73

Int. Cl.^{2} H01T *19/00*

U.S. Cl. 250—325 **10 Claims**



1. A corona generating device comprising a coronode, a metal screen, a shield defined by upturned integral flanges on said screen, and a support member of insulating material, the support member having a channel-shaped cross section, the shield/screen being supported in the channel and retained in the channel-shaped support member behind lips along the free edges of the channel side walls.

3,936,636
METHOD OF PRODUCING A REPRESENTATION OF A PLANAR SECTION OF A BODY USING SCANNING RADIOLOGY

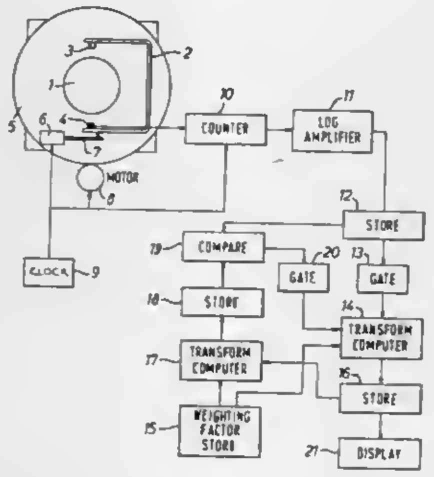
William Spencer Percival, London, England, assignor to EMI Limited, Hayes, England

Filed Mar. 27, 1974, Ser. No. 455,394

Claims priority, application United Kingdom, Apr. 7, 1973, 16783/73

Int. Cl.^{2} G01T *1/16*

U.S. Cl. 250—336 **3 Claims**



1. A method of producing a representation of the absorption of elements in a planar section of a body in response to an examination of the body with penetrating radiation such as X- or γ- radiation including the steps of:

i. deriving a respective edge value indicative of the absorption suffered by said radiation on traversing each of a plurality of substantially co-planar paths of which at least some intersect, the cross sectional dimensions of each ray being small compared with the dimensions of the body,

ii. performing a transformation process upon said edge values to provide mesh signals indicative of a first estimate of the values of the coefficient of radiation absorption of respective ones of a plurality of elements in a matrix of elements notionally delineated in said body in the plane of said paths, and

iii. operating upon said mesh signals by:

a. deriving, from said mesh signals, further edge values indicative of the values which respective ones of said first mentioned edge values should assume if the said mesh signals are correct,

b. comparing said first edge values with respective ones of said further edge values to derive edge error signals,

c. transforming said edge error signals to mesh error signals indicative of errors in said mesh signals, and

d. changing said mesh signals in accordance with said mesh error signals.

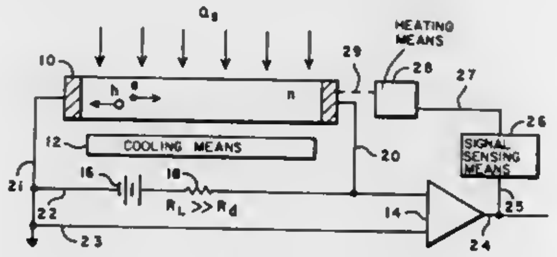
3,936,637
THERMALLY STIMULATED DETRAPPING OF CHARGED CARRIERS IN CRYOGENIC PHOTOCONDUCTIVE MATERIAL

Marion B. Reine, Wellesley, and Ralph A. Rotolante, Acton, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 13, 1974, Ser. No. 469,266

Int. Cl.^{2} G01D *1/00*

U.S. Cl. 250—352 **13 Claims**



1. In a detector having a photoconductive body, cooling means for maintaining said body at a predetermined quiescent temperature, and output means for receiving a signal from said body upon incidence of signal producing radiation, the improvement comprising:

heating means responsive to said output means for heating said body to a temperature and for a time sufficient to accelerate decay of said radiation produced signal.

3,936,638
RADIOLOGY

David John Gibbons, Ickenham, England, assignor to EMI Limited, Hayes, England

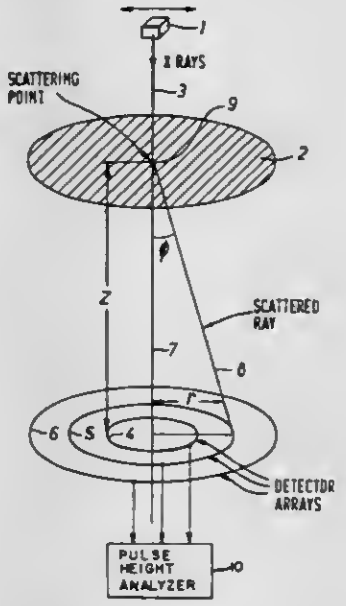
Filed June 26, 1974, Ser. No. 483,451

Claims priority, application United Kingdom, July 6, 1973, 32422/73

Int. Cl.^{2} G01N *23/00;* **G01T** *1/22*

U.S. Cl. 250—358 R **3 Claims**

1. Apparatus for examining a body by means of radiation such as X- or γ- radiation, including a source of a beam of radiation of energy in the range 0.2 to 2.0 MeV, means for directing said radiation into said body, a detecting arrangement disposed on the opposite side of said body to said source, the detecting arrangement comprising a plurality of arrays of detectors, arranged in circles concentric about the said beam,



and means associated with said detectors for determining the energy of radiation detected thereby.

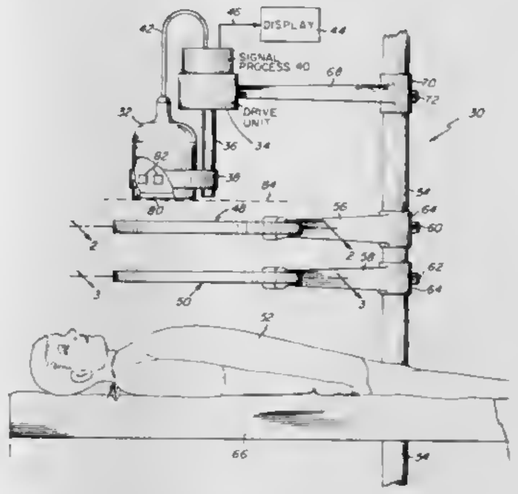
3,936,639
RADIOGRAPHIC IMAGING SYSTEM FOR HIGH ENERGY RADIATION

Harrison H. Barrett, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed May 1, 1974, Ser. No. 465,940

Int. Cl.^{2} G01T *1/166*

U.S. Cl. 250—369 **39 Claims**



1. An imaging system comprising:

means for detecting high energy radiation emanating from a source of such radiation;

means for spatially modulating said radiation, said modulating means having regions which are relatively opaque to said radiation interspersed among regions relatively transparent to said radiation, the depths of said opaque regions being less than the spacing between said opaque regions to permit shadows of said opaque regions cast by rays of radiation emanating from one part of said source to overlap a shadow of said opaque regions cast by rays of radiation emanating from a second part of said source spaced apart from said first part of said source, said modulating means being positioned between said source and said detecting means;

means for imparting a relative motion between said detecting means and said modulating means, said detecting means including means for providing an array of data points having data relative to an image of the shadows cast by said modulating means; and

means coupled to said detecting means for reconstructing from said array of data points a true image of said source.

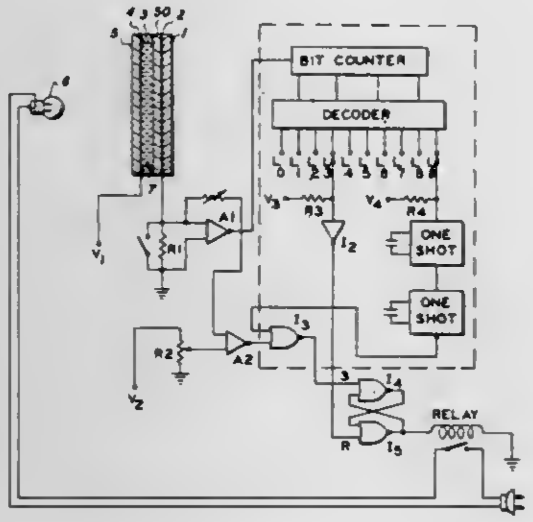
3,936,640
IMAGING SYSTEM

Werner E. L. Haas, Webster, and Joseph F. Stephany, Sodus, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 25, 1974, Ser. No. 509,210

Int. Cl.² G01J *1/42*; G02B *5/23*

U.S. Cl. 250—372 **11 Claims**



1. An electro-optic device, comprising:

a. an electro-optic member comprising between two electrodes a layer of pure liquid crystalline composition comprising a pure trans-stilbene nematic liquid crystalline material;
b. an electrically energizable source of ultraviolet radiation positioned to impinge said layer with radiation upon energization;
c. in electrical connection with said member, comparison means for comparing the electrical resistivity of said layer with a predetermined resistivity value and for generating an electrical signal when the layer resistivity is greater than said predetermined resistivity value; and
d. in electrical connection with said comparison means and said energizable source of ultraviolet radiation, energizing means for receiving said electrical signal and, upon receipt thereof, for energizing said source of ultraviolet radiation.

3,936,641
HEAD IMMOBILIZING DEVICE FOR PANORAMIC X-RAY APPARATUS

Karl Heimur, Newdorp, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

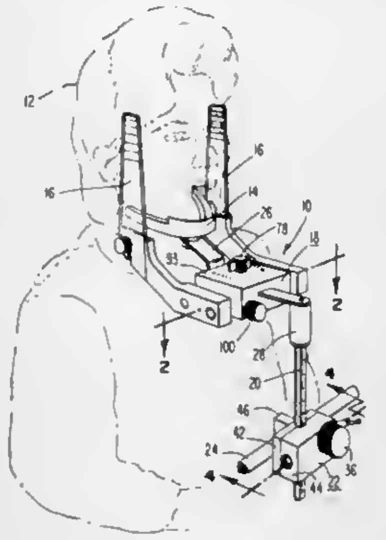
Filed Oct. 21, 1974, Ser. No. 516,344

Int. Cl.² G03B *41/16*

U.S. Cl. 250—439 **10 Claims**

1. In a human head immobilizing device for panoramic x-ray apparatus, the combination of

a. a pair of horizontally spaced, upright arms movable in horizontal directions, adapted to contact the sides of a patient's head,
b. a chin rest disposed between the lower portions of said arms, adapted to receive a patient's chin thereon,
c. a housing rigidly supporting said chin rest and also movably supporting said arms,
d. an elongated, upright bar carrying said housing and depending downwardly therefrom, and
e. improved supporting means engaging a lower portion of said bar and providing vertically adjustable support therefor, said supporting means including
f. a gear box,
g. a toothed rack extending longitudinally on one side of said upright bar and being slidable through said box in generally vertical direction with said upright bar,
h. a pinion rotatable within said gear box engaging said toothed rack to move it in opposite vertical directions,
i. knob means outside said gear box and connected to said pinion for manually rotating said pinion, whereby the elevation of said chin rest and said arms is adjustable, and
j. a vise operatively associated with said gear box for securing said upright bar in selected vertical positions, comprising first and second movable jaws and a screw cooperatively threaded to said jaws.



3,936,642
X-RAY FILM-HANDLING ARRANGEMENT FOR X-RAY DIAGNOSTIC APPARATUS

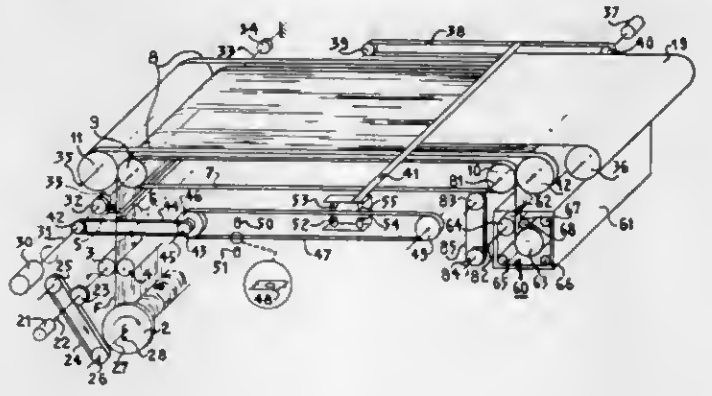
Pierre Lajus, and Edmond Chambron, both of Paris, France, assignors to Compagnie Generale de Radiologie, Paris, France

Filed Oct. 9, 1974, Ser. No. 513,510

Claims priority, application France, Oct. 12, 1973, 73.36608

Int. Cl.² G11B *1/00*

U.S. Cl. 250—469 **5 Claims**



1. An X-ray film-handling arrangement using roll-film, comprising: means for supplying film from a roll including a first pair of contiguous feeding rollers driven by a first motor; means for transferring the film including two pairs of flat superposed and contiguous conveyor belts respectively stretched on a second and a third pair of transfer rollers driven by a second motor, the two pairs of belts being so arranged as to grip the lateral edges of the film, said second motor having a shaft coupled, by means of a clutch to one of said second pair of transfer rollers whose shaft being provided with a brake; means for cutting said film including a pair of blades arranged between said supplying means and said transferring means to cut the film when it has been transferred to its the exposure position; and a movable member including a leaded mask displaceable by means of a third motor for limiting the length of the film format being irradiated to any length whatsoever between predetermined maximum and minimum lengths; and means for reproducing the displacement of the film including an indexing belt held in parallel with the conveyor belts on a pair of pulleys respectively located beyond the extreme positions of the said movable member, one of said pulleys being coupled to the shaft of said second motor so that a random point on the indexing belt can be moved for a distance identical to the length of film which is transferred by said conveyor belts, said indexing belt being provided with a marker for co-operating with at least one detection device secured to the end of said movable member, said detection device delivering a first electrical control signal, when the said marker passes adjacent thereto, transmitted to the said clutch and/or brake for controlling the displacements of said conveyor belts, to stop said latter when the end of the film reaches that of the movable member.

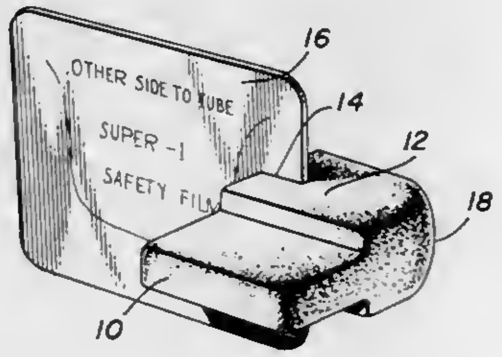
3,936,643
X-RAY DENTAL FILM HOLDER

Anthony S. Toner, Walnut Creek, Calif., assignor to Sterling Drug Inc., New York City, N.Y.

Filed Sept. 3, 1974, Ser. No. 502,758

Int. Cl.² G03B *41/18*

U.S. Cl. 250—478 **I Claim**



1. A disposable one piece plastic holder for dental X-ray film said holder comprising a bite portion and a film holding portion which are integral, wherein the film-holding portion has a slot therein for frictional but separable reception of the X-ray film and wherein the slot is arranged perpendicularly with respect to the plane of the bite portion so that the film is held likewise in a perpendicular plane to the bite portion.

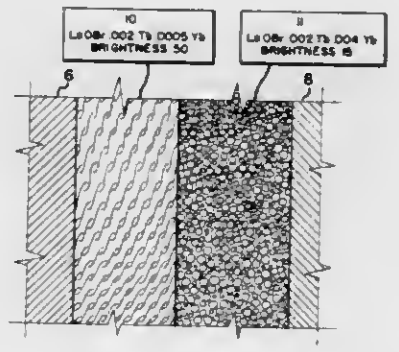
3,936,644
MULTI-LAYER X-RAY SCREENS

Jacob G. Rabatin, Chardon, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 14, 1974, Ser. No. 451,102

Int. Cl.² G01J *1/58*; G01N *21/52*

U.S. Cl. 250—486 **7 Claims**



1. An x-ray intensifying screen for reducing radiographic quantum mottle comprising a photographic film and a plurality of contiguous phosphor layers being disposed with respect to said film so that the phosphor layers are of different chemical compositions wherein one of said phosphor compositions is a terbium activated rare-earth oxyhalide phosphor to provide increasing luminous efficiency under x-ray excitation from the phosphor layer nearest the film to the outermost layer, and each of said layers being of such predetermined thickness such that total x-ray absorption and brightness for the plurality of phosphor layers is approximately equal to a single phosphor layer having the same thickness as the total thickness of the plurality of phosphor layers.

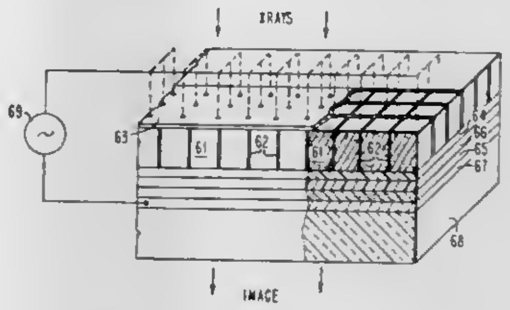
3,936,645
CELLULARIZED LUMINESCENT STRUCTURES

Arthur H. Iversen, Saratoga, Calif., assignor to Radiologic Sciences, Inc., Santa Clara, Calif.

Filed Mar. 25, 1974, Ser. No. 454,383

Int. Cl.² G01J *1/58*

U.S. Cl. 250—486 **2 Claims**



1. A structure for responding to X-ray radiation, comprising

a cellularized member of luminescent material which emits light in response to X-ray radiation, said member comprising a plurality of volumes of said luminescent material separated by wall members,
a photoconductive layer disposed on one surface of said cellularized member to be exposed to X-rays,
an electroluminescent layer disposed on the opposite side of said cellularized member from said photoconductive layer, and
a source of electrical energy connected to said photoconductor and said electroluminescent material,
said luminescent material emitting light in response to X-ray radiation to vary the photoconductive effect exhibited by said photoconductive layer, said variations in photoconductive effect producing variations in the potential across and the electroluminescence of said electroluminescent layer.

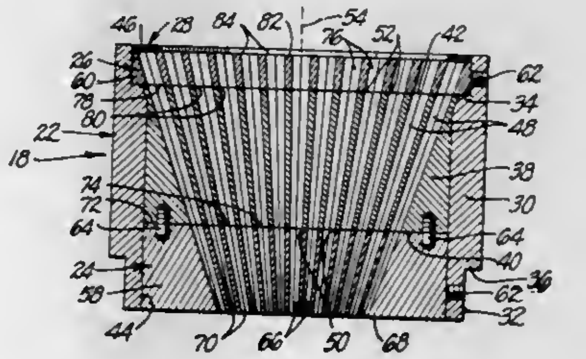
3,936,646
COLLIMATOR KIT

Roelof R. Jonker, 15912 Maybrook St., Westminster, Calif. 92683

Continuation of Ser. No. 268,135, June 30, 1972, abandoned. This application Nov. 29, 1973, Ser. No. 420,137

Int. Cl.² H01J *35/16*

U.S. Cl. 250—509 **11 Claims**



1. A collimator kit for providing focusing collimators having different performance characteristics, for radioisotope imaging apparatus comprising:

first and seconnd collimator parts each having a central longitudinal axis, inlet and exit end faces normal to said axis, and tapered collimating holes opening at their small ends through said inlet face to provide an array of inlet pupils and at their large ends through said exit face to form an array of exit pupils,

said parts being adapted to be assembled in coaxial end to end relation with said exit face of said first part and said inlet face of said second part in face to face contact,

said collimating holes of said first part having longitudinal axes which intersect the longitudinal axis of the latter part substantially at a common point located a first distance beyond the inlet face of said first part,

said collimating holes of said second part having longitudinal axes which intersect the longitudinal axis of the latter part substantially at a common point located beyond the inlet face of said second part a second distance approximately equal to the sum of said first distance and the axial length of said first part,

the exit pupil array of said first part and inlet pupil array of said second part being congruent, whereby when said parts are assembled, each exit pupil of said first part registers with a corresponding inlet pupil of said second part, the registering pupils having the same dimensions and their respective collimating holes having the same taper angle, whereby said parts when assembled form a first collimator having radioisotope imaging characteristics, and

one of said parts being a basic collimator part which by itself forms a second collimator having different performance characteristics than said first collimator.

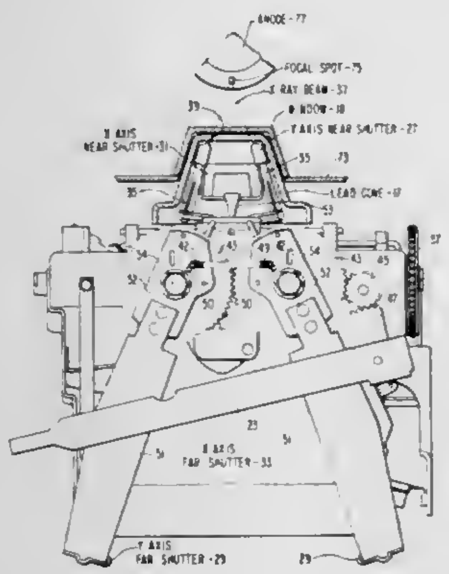
3,936,647
X-RAY COLLIMATOR FOR CONTROLLING THE EMISSION OF SECONDARY RADIATION

Nicholas M. G. Fekete, Ellicott City, Md., assignor to CGR Medical Corporation, Baltimore, Md.

Continuation of Ser. No. 357,241, May 4, 1973, abandoned. This application July 29, 1974, Ser. No. 492,842

Int. Cl.^{2} G21F *5/04*

U.S. Cl. 250—512 **11 Claims**



1. X-ray collimator apparatus comprising in combination:

a collimator housing having a central axial opening therethrough adapted for the passage of an X-ray beam therethrough and additionally including actuator means for selectively controlling the movement and position of near and far shutter means for controlling the shape and size of an X-ray beam transmitted to a target area from an X-ray generator, said X-ray generator having a window of predetermined shape for the passage of said X-ray beam therethrough;

an outwardly projecting lead cone type shield member impervious to X-rays located between the near shutter means and the focal spot of said X-ray generator, said shield member including an aperture in substantial alignment with said X-ray beam adjacent said window, the size of said aperture defining the maximum size of the X-ray beam permitted to enter and pass through said collimator housing, said shield member being further adapted to envelop as well as protect the near shutter means, being attached to the top of said collimator housing over said opening and having a shape substantially conforming to the shape of said window thereby confining secondary or off-focus radiation emitted from said X-ray generator and permitted to enter said collimator housing entirely to said aperture;

a first and second pair of adjustable near shutters, comprising said near shutter means, coupled to said actuator means and comprising blade shutter elements for respective orthogonal axes, both pairs of near shutters being located entirely within said shield member adjacent said aperture and being adapted for mutually independent non-obstructed movement therein for not only defining the desired shape and size of the X-ray beam by movement past the boundary of said aperture into the open space provided thereby to intersect the X-ray beam, but also more effectively confining and restricting said secondary radiation present at said aperture, said confining being accomplished by the relatively closer positioning of said near shutter pairs to said window and said aperture and accordingly to the focal spot of said X-ray generator whereby an additional shielding effect is provided by the shutters themselves due to the movement of said near shutters past the boundary of said aperture, said first pair of shutter means being relatively smaller in size than said second pair of shutters and having a respective leading edge located immediately adjacent said aperture while said second pair of shutters is located immediately below said first pair of shutters and having a respective leading edge orthogonal to the leading edges of said first pair of shutters; and

means coupled to said actuator means for selectively providing manual and motor driven operation of said shutters.

3,936,648
FLAME MONITORING APPARATUS

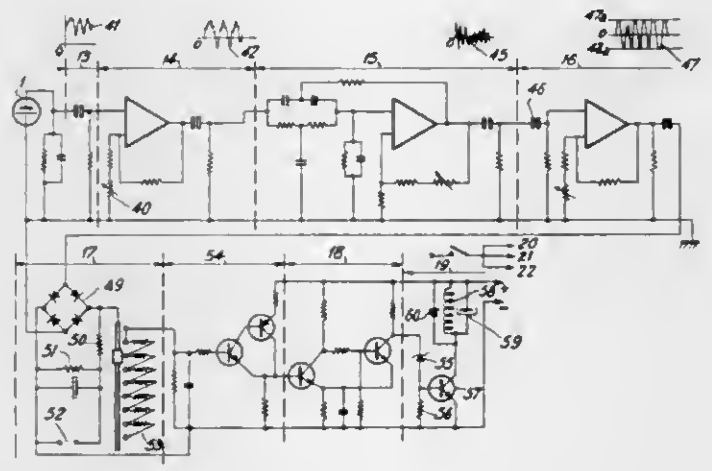
Pierre J. B. Cormault, Fourqueux, and Jean M. Megnoux, Poissy, both of France, assignors to Electricite de France, Paris, France

Filed Mar. 18, 1974, Ser. No. 452,449

Claims priority, application France, Mar. 20, 1973, 73.09936; Mar. 8, 1974, 74.07933

Int. Cl.^{2} G01N *21/58*

U.S. Cl. 250—554 **11 Claims**



8. Flame monitoring apparatus comprising:

wide frequency band photo-electric pick-up means, capacitive coupling means having its input connected to the output of said pick-up means,

first amplifying means having its input connected to the output of the capacitive coupling means,

high-pass filter means having a cut-off frequency of about 50Hz having its input connected to the output of said first amplifying means,

second amplifying means adapted to saturate and having its input connected to the output of said high-pass filter means,

detector integrator means having its input connected to the output of said second amplifying means,

trigger means having its input connected to the output of said detector integrator means, and output circuit means having its input connected to the output of said trigger means and adapted to provide an output signal if the flame being monitored is extinguished.

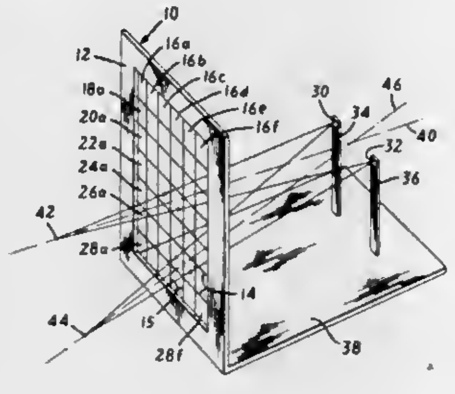
3,936,649
METHOD AND APPARATUS FOR USE IN POSITION DETERMINING

Paul L. Di Matteo, 6 Carol Court, Dix Hills, N.Y. 11746; Joseph A. Ross, 26 Trescott Path, Fort Salonga, N.Y. 11768, and Howard K. Stern, 89 Derby Ave., Greenlawn, N.Y. 11740

Filed July 22, 1974, Ser. No. 490,875

Int. Cl.^{2} G01C *11/12*

U.S. Cl. 250—558 **16 Claims**



1. Apparatus for generating signals for use in determining the positional coordinates of a given location having unknown positional coordinates comprising:

a. reticle means for defining a plurality of separately discernible cells, each cell defining a predetermined distinct extent of a field of view extending from said given location to said reticle means;

b. means for defining a discernible indicium;

c. means for spacedly positioning said reticle means and said indicium defining means in said field of view; and

d. means for generating a signal indicative of the one of said cells defining the extent of said field of view inclusive of the line optical path extending from said given location to said indicium.

3,936,650
DIRECTION OF MOVEMENT SENSING DEVICE FOR A PERFORATED CODE CARRIER TAPE

Sven Gunnar Yalter Stenudd, Lidingo, Sweden, assignor to Facit Aktiebolag, Atvidaberg, Sweden

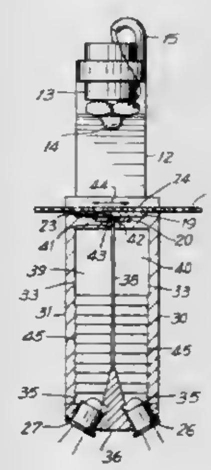
Filed Apr. 1, 1974, Ser. No. 456,820

Claims priority, application Sweden, Apr. 2, 1973, 7304585

Int. Cl.^{2} G01N *21/30*

U.S. Cl. 250—571 **3 Claims**

1. A device for sensing the direction of movement of a perforated code carrier tape comprising a light source positioned on one side of said tape, at least one elongated enclosed channel, a longitudinally extending partition dividing said channel into two longitudinal sections, at least one pair of photosensitive members located at the other side of said tape and at a distance therefrom at one end of said channel, one photosensitive member of said pair being located in one longitudinal section while the other photosensitive member is located in the other longitudinal section, means upon movement of said tape in a predetermined direction for dividing the light emitted from said light source and passing the light through one part of a hole in said code carrier tape and through one of said divided longitudinal sections of said channel for directing said light to one of said pair of photosensitive members, said light passing through another part of said hole and through the other divided longitudinal section of said channel for directing said light to the other photosensitive member upon the continued movement of the tape in said predetermined direction, the end of said channel adjacent to said code carrier tape being provided with an opening of reduced dimensions, the size of which corresponds to the size of the hole in said code carrier tape, said partition having a tab projecting into said opening which is integral with said partition to thereby divide said opening into two portions of substantially the same size.



3,936,651
TURBOSET INCLUDING A HELIUM TURBINE AND A HELIUM-COOLED GENERATOR

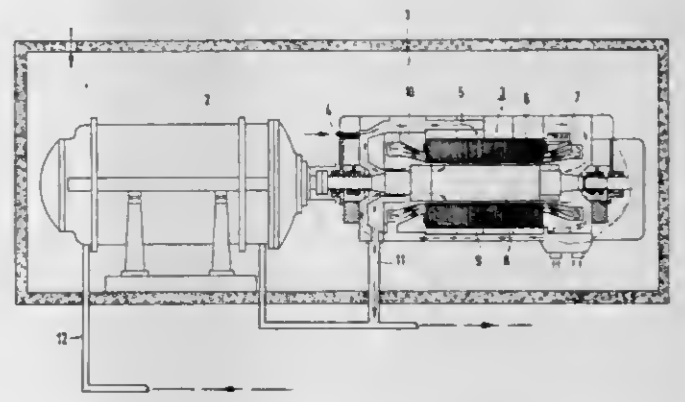
Arnold Abolins, Mulheim (Ruhr); Hermann Finckh, Boxdorf; Dietrich Lambrecht, Mulheim (Ruhr), and Martin Trabler, Erlangen, all of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed Jan. 15, 1974, Ser. No. 433,520

Claims priority, application Germany, Jan. 18, 1973, 2302456

Int. Cl. H02p *9/04*

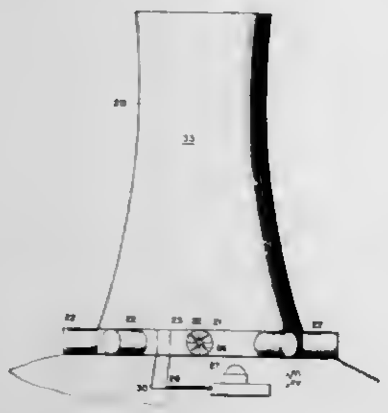
U.S. Cl. 290—1 R **7 Claims**



1. Turboset comprising an engine room filled with helium, a helium turbine mounted in said engine room, and a generator connected to said helium turbine in said engine room, said generator having means defining at least one opening exposing the interior thereof to the helium in said engine room so as to be cooled thereby, and means connecting the interior of said generator to a supply of helium outside said engine room having a helium pressure lower than the helium pressure in said engine room.

3,936,652
POWER SYSTEM

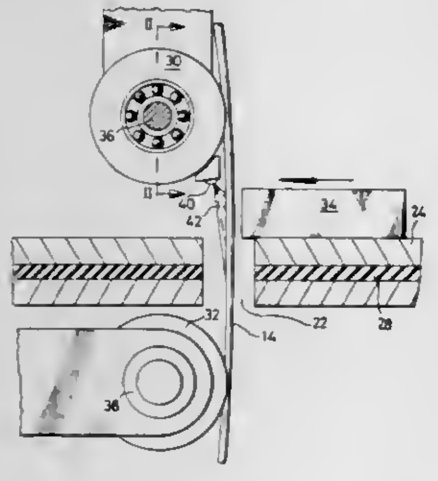
Steven K. Levine, 713 Washington St., New York, N.Y. 10014
Filed Mar. 18, 1974, Ser. No. 451,755
Int. Cl.² F03D *9/00*
U.S. Cl. 290—2 **1 Claim**



1. A power system comprising, in combination, a tower containing a single interior duct having a vertical rise of at least one hundred meters, passages leading to the bottom of the duct, insulation lining said duct, heating coils mounted on the inner side of said insulation, said heating coils heating air to rise in said duct and draw additional air in through said passages, an atomic reactor, a working fluid circulating between said atomic reactor and said heating coils, generators, and rotatably mounted vanes disposed in said passages driven by air passing through said duct and said passages, said vanes driving said generators providing power.

3,936,653
PROCESS AND DEVICE FOR CUTTING ELECTRICALLY CONDUCTIVE MATERIAL WORKPIECES

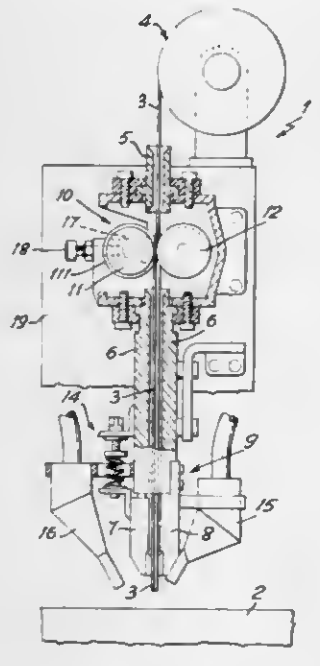
Hans Gunter Bals, Blumgesgrundstrasse 44, Gelnhausen-Hailer, Germany
Filed Mar. 25, 1974, Ser. No. 454,703
Claims priority, application Germany, Mar. 27, 1973, 2315095
Int. Cl.² B23P *1/12*
U.S. Cl. 219—68 **18 Claims**



1. A process for cutting an electrically conductive workpiece, comprising the steps of:
  establishing relative movement in a cutting direction between the workpiece and a circulating endless electrode,
  and cyclically moving the electrode and the workpiece into and out of contact with each other at a cutting place on the workpiece, during at least a portion of each cycle applying between the electrode and the workpiece an electrical voltage strong enough to produce an arc therebetween which heats the workpiece to soften and melt the material thereof, and during a portion of said cycle as the workpiece and the element are moved into contact with each other, mechanically removing both softened and melted workpiece material by movement of the circulating electrode through the cutting place.

3,936,654
PROCESS AND APPARATUS FOR THE PERFORMANCE OF ARC WELDING AND OVERLAYING, PREFERABLY SUBMERGED ARC

Ugo Cannata, Genoa, Italy, assignor to La Soudure Electrique Autogene, Procedes Arcos, Belgium
Filed Apr. 5, 1974, Ser. No. 458,230
Claims priority, application Italy, Feb. 21, 1974, 12611/73
Int. Cl.² B23K *9/18*
U.S. Cl. 219—73 **2 Claims**

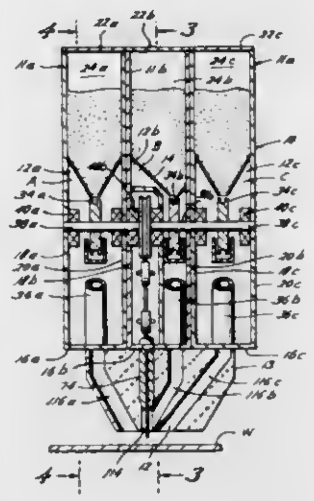


1. An electric welding or overlaying process by submerged arc which comprises unwinding filler material strip from a roll, feeding the strip between jaws of a vise which pulls the strip forward and supplies electric current, maintaining an arc between the strip and the work, submerging the arc beneath a flux and continuously deforming the strip laterally to produce undulations along the strip by rolls with knurled ribs in contact with the concave surfaces of the resulting undulations and by smooth rolls opposite the corresponding convex surfaces, so as to produce compulsory contact between the strip and the slide jaws and preferred electrical current paths between the strip and the work to provide smooth arcing across the strip.

3,936,655
MAGNETIC FEEDING OF POWDER IN SUBMERGED ARC WELDING

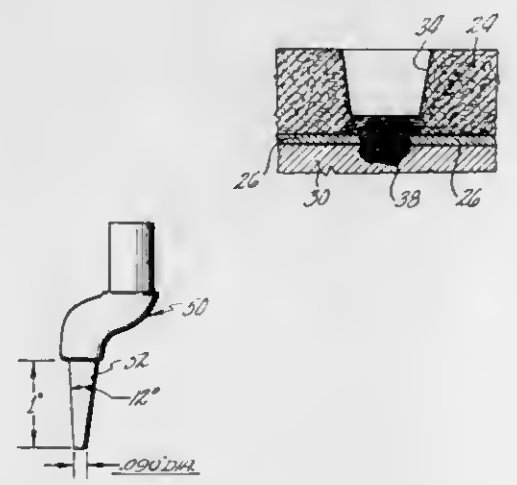
Roman F. Arnoldy, P.O. Box 19527, Houston, Tex. 77024
Filed Sept. 26, 1974, Ser. No. 509,427
Int. Cl.² B23K *9/18*
U.S. Cl. 219—73 **11 Claims**

5. A feeder for use in welding in a weld zone including,
  a discharge nozzle formed of an electrically non-conductive material,
  means for feeding an electrically conductive consummable electrode through the nozzle to the weld zone,
  means for feeding particles of magnetically-responsive weld material to the electrode,
  means for feeding fluxing material to the weld zone, and
  means for causing an electric current to flow in the electrode thereby providing a magnetic field about the electrode,
  whereby the particles of magnetically-responsive weld materials fed to the electrode magnetically adhere to it and are pulled down by it through the fluxing material to the weld zone as the electrode is fed to the weld zone.



3,936,656
METHOD OF AFFIXING AN ABRADABLE METALLIC FIBER MATERIAL TO A METAL SUBSTRATE

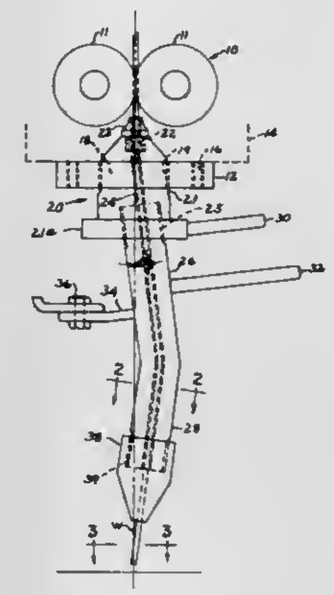
Robert Middleton, Palm Beach Gardens, and William E. Smith, Lake Park, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 16, 1974, Ser. No. 533,410
Int. Cl.² B23K *9/04;* **B21J** *1/06*
U.S. Cl. 219—76 **7 Claims**



1. A method for fixing an abradable material formed of metallic particles randomly affixed to each other and sintered to a specified thickness and density to a metal substrate comprising the steps of:
  1. fixing the abradable material to a metal backing plate;
  2. placing the abradable material and backing plate so that the backing plate will engage a surface of a metal substrate;
  3. compressing the abradable material to substantially a solid mass at spaced locations;
  4. heating the compressed spaced locations of abradable material by electrical resistance to a sintering temperature and pressing the spots to form a solid mass;
  5. heating the solid mass of locations of abradable material to an increased temperature by electrical resistance, welding the solid mass of abradable material to the substrate completely penetrating the backing plate.

3,936,657
UNIVERSAL POSITIONING WELDING TORCH

Willis G. Groth, Creve Coeur, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed July 5, 1974, Ser. No. 486,155
Int. Cl.² B23K *9/00*
U.S. Cl. 219—136 **14 Claims**



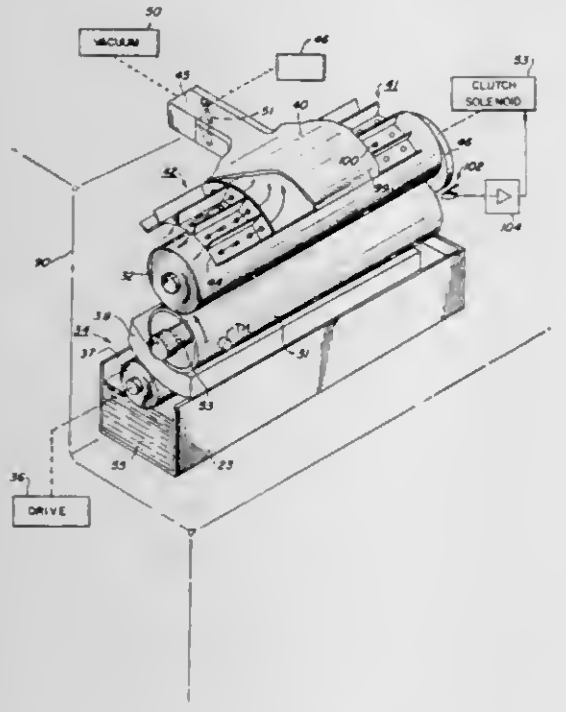
1. Apparatus for welding comprising: means for feeding weld wire in a general direction toward a target work piece having a target area thereon, the weld wire passing through a welding assembly and through an adapter attachment portion having an adapter attachment opening therein; an adapter fitted into said adapter attachment opening, said adapter having a first adapter opening which is generally circular and of smaller diameter than said attachment opening; said first adapter opening defining a weld wire axis generally perpendicular to said target; said adapter having a second adapter opening at a skew angle to said weld wire axis to define a skew axis; said second adapter opening being in communication with said first adapter opening; said adapter having a third adapter opening also at a skew angle to said weld wire axis having a greater diameter than said second opening and in communication with said second opening; a weld guide fitted into said third adapter opening along said skew axis; said weld guide being bent at a portion external from said third adapter opening so as to intersect said weld wire axis; weld wire adapted to pass through said first, second and third adapter openings during welding; first manual operating means for selectively manually rotating said adapter about said weld wire axis to generally define a circle on said target when said target is perpendicular to said weld wire axis; and second manual operating means for selectively manually rotating said weld guide about said skew axis to define generally an ellipse on said target whereby selective manual rotation of said adapter and weld guide will allow intersection by said weld wire of any point within the target area.

3,936,658
FUSER APPARATUS FOR ELECTROSTATIC REPRODUCING MACHINES

Robert L. Tralster, Fairport, and Edward G. Reehil, Henrietta, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Feb. 22, 1974, Ser. No. 445,012
Int. Cl.² H05B *1/00*
U.S. Cl. 219—216 **4 Claims**

1. In an electrostatic reproducing machine wherein latent electrostatic images are formed and developed with toner particles deposited on photo-conductor means, said developed images transferred to copy sheets, an improved fusing apparatus for fusing said toner particles to said copy sheets comprising:

a fuser roller;
means for heating said fuser roller;
a pressure roller;
means for driving said pressure roller into a first position in response to a first control signal wherein said pressure roller is urged against said fuser roller at a predetermined pressure level, said drive means moving said pressure roller into a second position in response to a second control signal wherein said pressure roller is removed from said fuser roller; and

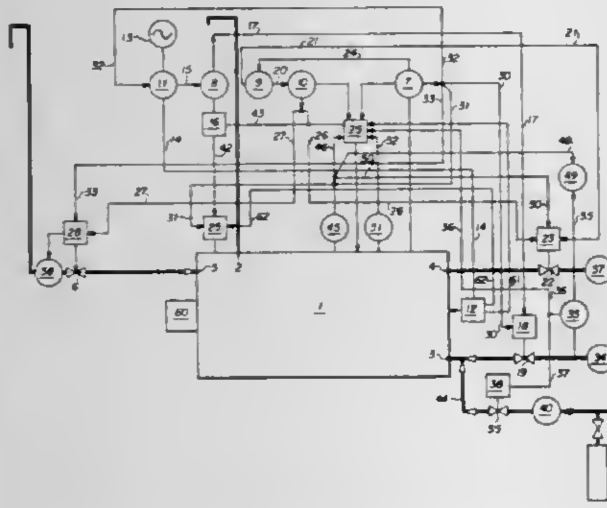


means for controlling said drive means, said control means applying said first control signal to said drive means when machine condition signals indicate a start of a copying operation, said control means applying said second control signal to said drive means in response to signals indicating completion of said copy operation, said control means applying said second control signal to said drive means in response to machine condition signals indicating a copy operation malfunction.

3,936,659
ELECTRICALLY HEATED OVEN FOR HIGH TEMPERATURE CLEANING

Kenneth R. Mainord, 522 N. First, Apt. 105, Longview, Tex. 75601

Filed May 31, 1974, Ser. No. 474,916
Int. Cl.² H05B *1/02*
U.S. Cl. 219—413 **8 Claims**



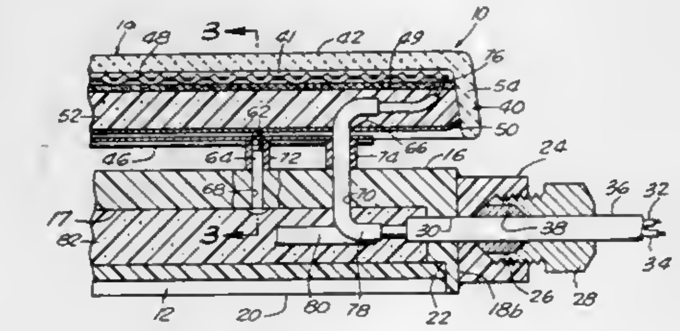
1. In an electrically heated, high temperature cleaning oven in which organic contaminants are pyrolyzed and the resulting residues are oxidized, the combination which comprises:

a. a plurality of timers to automatically direct a cleaning operation;
b. a start button connected to a power source to initialize one of said plurality of timers to direct the purging of said oven with inert gas;
c. interlock means electrically connected to said start button for automatically locking an oven door when said oven is energized;
d. temperature regulating means having a temperature probe within said oven for initiating a second of said plurality of timers to control the duration of pyrolysis, with a third of said plurality being responsive to an end of cycle pulse from said second of said plurality to direct the oxidation of contaminant residues;
e. a plurality of electrically controlled pneumatic valves interposed between said oven and sources of air and inert gas, and responsive to signals from said timers;
f. means responsive to signals from said temperature regulating means and from said one and said third of said plurality of timers for controlling electrical heaters within said oven;
g. automatic correcting means having a high temperature gas detector probe within said oven and electrically connected to said heater control means, to one of said plurality of valves controlling the flow of air from a pressurized air source into said oven, and to an alarm for signaling the presence of combustible gas and taking corrective action;
h. pressure sensing means connected between said oven and an inert gas source for signaling failure of said gas source;
i. means connected between said oven and said sources of pressurized air and inert gas for maintaining a preset air and inert gas mixture when air is admitted into said oven;
j. temperature control means having a temperature probe within said oven for deenergizing said heater control means in event of overheating or rapid temperature changes; and
k. means forming a caged panel within a wall of said oven to relieve pressure while retaining debris in event gases within said oven ignite.

3,936,660
HOT PLATE

Robert S. Blackwood, Chanhassen, Minn., assignor to Fluoroware Systems Corporation, Chaska, Minn.

Filed Sept. 30, 1974, Ser. No. 510,148
Int. Cl.² H05B *3/68*
U.S. Cl. 219—459 **3 Claims**

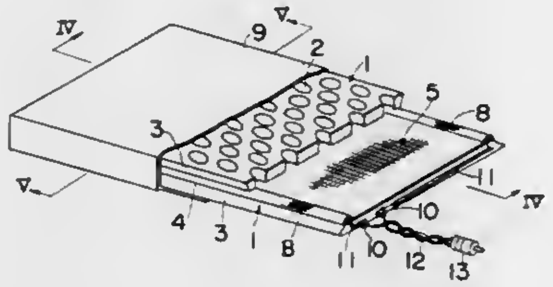


1. A hot plate comprising in combination a top portion having a top ceramic deck defining a heated working surface, the deck also having down-turned edges defining a peripherally continuous depending wall, there being a heater compartment beneath the deck and within the depending wall; a heating element operably disposed in said heater compartment below said working surface and having electrical terminals; circuit means for supplying electrical energy from a power source to said terminals; a base portion for operably supporting said top portion in thermal isolation therefrom; and means including epoxy foam beneath the heating element and extending across and substantially filling the heater compartment, the epoxy foam providing a seal to the depending wall and cooperating with the deck and depending peripheral wall for encapsulating said heating element and said circuit means to confine substantially all of the heat generated to said working surface, said base portion being constructed of fluorocarbon materials as a separate structure and attached to said top portion in spaced apart configuration to further provide additional thermal isolation between said heated working surface and said base portion, said circuit means extending through said base portion for protection from heat and hostile environments.

3,936,661
ELECTROTHERMALLY DEFORMABLE LEVELLING PAD

Haruhisa Furuishi, Suita; Yoshihiro Murata, Katano; Hidenori Suzaki, Hirakata; Misao Sumoto, and Hiroshi Imanaka, both of Otsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd. and Toyo Boseki Kabushiki Kaisha, both of, Japan

Filed Oct. 1, 1974, Ser. No. 511,472
Claims priority, application Japan, Oct. 1, 1973, 48-110852
Int. Cl.² H05B *3/34*
U.S. Cl. 219—528 **6 Claims**

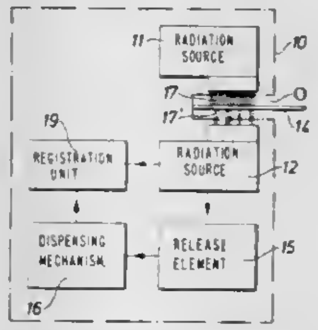


1. An electrically heated alignment pad which comprises at least one flat plate member of thermoplastic resin, and at least one thin flat electric heater having one surface laying against substantially the whole flat surface of said plate member for heating said plate member to soften said plate member, the other surface of said heater adapted to be held in electrically insulated relationship to the surface supporting it and to an article to the aligned, said plate member and heater having a structure the thickness of which is reduced when an external compressive force is applied thereto when said plate member is in the heat softened condition, whereby an object through which the compressive force is applied can be moved by the reduction of thickness of the alignment pad for adjusting the position thereof in the direction of the force being applied to the alignment pad; said plate member having a plurality of apertures therein into which portions of said plate member around said apertures flow laterally upon the softening of said plate member when said compressive force is applied thereto and to be filled up with melted portion of the thermoplastic resin when the latter is heated; said thermoplastic resin being a random copolymerized polyester which comprises an acid component, which contains an aromatic carboxylic acid and an aliphatic dicarboxylic acid having not less than 6 carbon atoms, the mole ratio of the aromatic carboxylic acid residue relative to the aliphatic dicarboxylic acid residue relative to the aliphatic dicarboxylic acid residue in said copolymer being within the range of 40/60 to 95/5, and a glycol component which is at least one compound selected from the group consisting of an aliphatic diol, an aromatic diol and an alicyclic diol.

3,936,662
INTERLOCKING SYSTEM WITH A NUMBER OF INDIVIDUAL KEY ELEMENTS

Anders Ruben Rausing, Via Kenia 22-24, Rome, Italy (I)

Filed Jan. 14, 1974, Ser. No. 433,373
Int. Cl. G06k *19/06, 7/10*
U.S. Cl. 235—61.12 N **1 Claim**

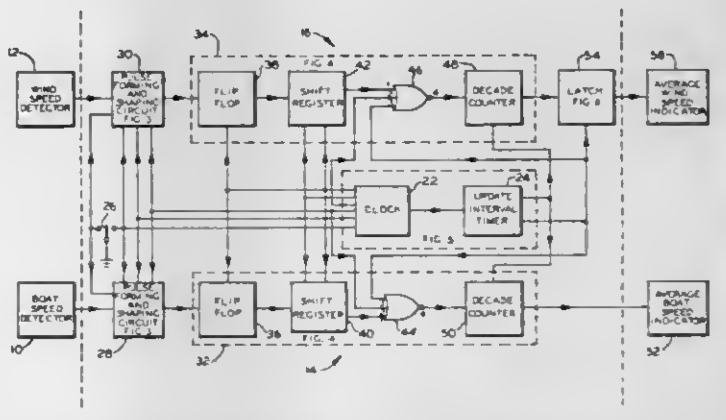


1. In an interlocking system actuatable by any one of a plurality of differently coded key elements, said system comprising an interlocking device including a radio-active source of radiation, a radiation code detector having its input side located in spaced relation to said radiation source, a release element connected to the output side of said code detector and means for receiving the coded key elements between said radiation source and said code detector, the improvement wherein each said coded key element comprises a sheet of plastic material, the portions of said sheet opaque to the radiation being established by a coating of a chemical compound incorporating a heavy metal and the portions of said sheet transparent to the radiation and representing the code pattern being established by a different coating but which has a visual appearance similar to that of the opaque coating so that the sheet of plastic material appears homogeneous throughout its surface and thereby in effect makes the code pattern invisible.

3,936,663
SIGNAL AVERAGING CIRCUIT

Lucian W. Taylor, Los Altos, and John M. Yarborough, Jr., Palo Alto, both of Calif., assignors to Velcon Filters, Inc., San Jose, Calif.

Division of Ser. No. 376,709, July 5, 1973, Pat. No. 3,881,094. This application Sept. 12, 1974, Ser. No. 500,964
Int. Cl.² G06F *15/20;* **G01P** *3/52*
U.S. Cl. 235—150.51 **17 Claims**



1. A circuit for producing an output signal representing a running average of a continuous input signal comprising:
an input for said continuous input signal;
a pulse forming and shaping means responsive to said continuous input signal for producing a train of output pulses;
a pulse accumulating means responsive to said output pulse train for accumulating a predetermined number of pulses representing said running average output signal whereby the most recent pulse replaces the oldest pulse in said pulse accumulating means; and
a clock means for controlling said pulse forming and shaping means and said pulse accumulating means.

3,936,664

METHOD AND APPARATUS FOR GENERATING CHARACTER PATTERNS

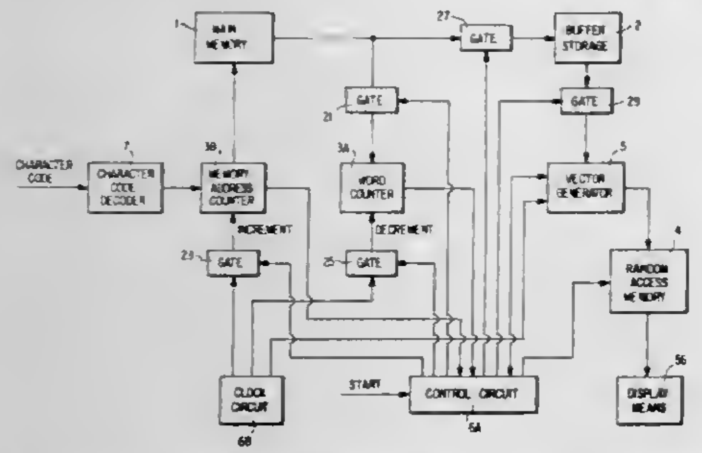
Hiroshi Sato, Tokyo, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sept. 24, 1974, Ser. No. 508,850

Claims priority, application Japan, Sept. 25, 1973, 48-106946

Int. Cl.^{2} H04N *3/00*

U.S. Cl. 235—151 **6 Claims**



1. Apparatus for generating a character pattern comprising vector producing means for sequentially producing a plurality of vectors comprising said character pattern;

first storing means for storing said vectors where the configuration of said vectors in said first storing means corresponds to the configuration of said character pattern so that display or recording thereof is readily effected;

said vector producing means including

second storing means for storing vector control words containing information about each of said vectors; and

processing means for sequentially processing said vector control words to produce said plurality of vectors;

said first storing means having said vectors stored therein in accordance with a predetermined coordinate system and where the vector control words stored by said second storing means includes information on the coordinates of the starting point of each vector in said predetermined coordinate system, (b) the length of each vector and (c) the direction thereof; and

said first storing means including a plurality of locations for storing bits of information and said processing means including

a first coordinate axis counter for controlling said first storing means so that the first coordinate of the location of each bit stored in said first storing means is determined by said first coordinate axis counter,

a second coordinate axis counter for controlling said first storing means so that the second coordinate of the said location is determined by said second coordinate axis counter; and

means for sequentially loading said first and second coordinate axis counters with said information in said second storing means relating to said first and second coordinates.

3,936,665

SHEET MATERIAL CHARACTERISTIC MEASURING, MONITORING AND CONTROLLING METHOD AND APPARATUS USING DATA PROFILE GENERATED AND EVALUATED BY COMPUTER MEANS

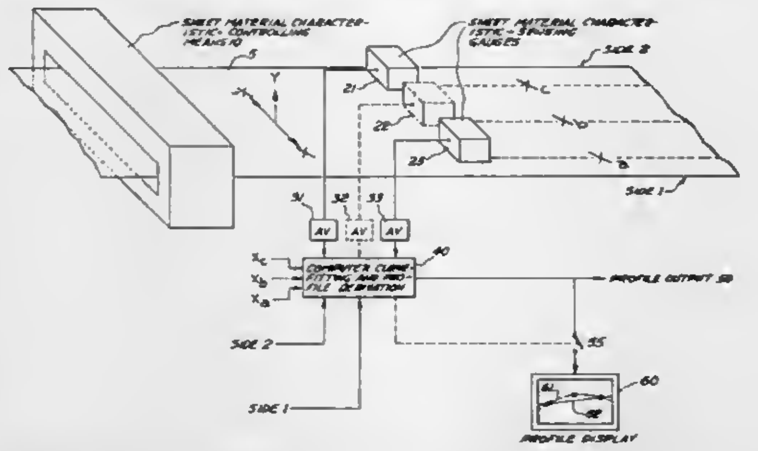
John Francis Donoghue, Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Continuation of Ser. No. 261,998, June 12, 1972, abandoned. This application Apr. 29, 1974, Ser. No. 464,947

Int. Cl.^{2} G05B *15/02;* **G06F** *15/46*

U.S. Cl. 235—151.3 **26 Claims**

1. A method of controlling a machine direction characteristic of a sheet comprising measuring a property of a sheet related to the characteristic at a plurality of locations across the sheet to derive an indication of the property at each of a plurality of discrete, spaced cross sheet points, responding to the indications and a predetermined mathematical expression relating values of the property to cross direction location to derive a signal representing a continuous, analytic equation that approximates the values of the property as a function of cross direction location substantially across the entire sheet width, deriving a machine direction control indication by integrating the signal representing the equation over a cross direction interval of the sheet that is substantially across the entire sheet width, and controlling the characteristic uniformly across the sheet width in response to the control indication.



SHEET MATERIAL CHARACTERISTIC- CONTROLLING MEANS 10
5
SHEET MATERIAL CHARACTERISTIC- SENSING GAUGES
SIDE 2
Y
21
22
23
SIDE 1
31
32
33
AV
AV
AV
40
X_c
X_b
X_a
COMPUTER CURVE FITTING AND PROFILE DERIVATION
PROFILE OUTPUT 50
SIDE 2
55
60
SIDE 1
PROFILE DISPLAY

3,936,666

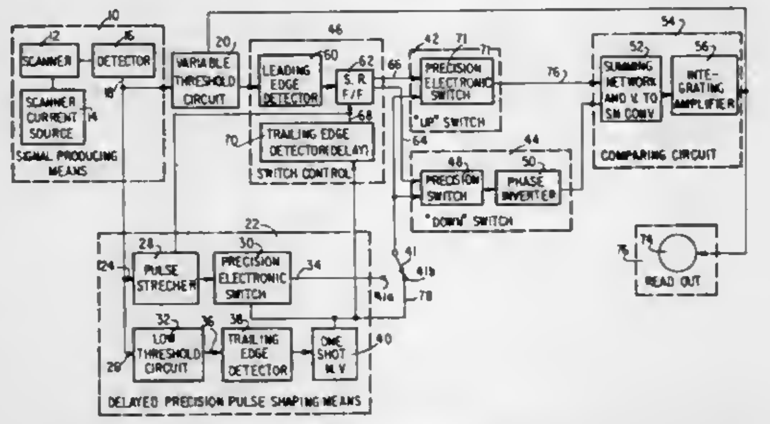
APPARATUS FOR MEASURING A PARTICLE SIZE DIVIDING ONE OF THE MASS OR PARTICLE NUMBER OF A PARTICULATE SYSTEM INTO PREDETERMINED FRACTIONS

Walter R. Hogg, Miami Lakes, and Edward Neal Doty, Pompano Beach, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Sept. 16, 1974, Ser. No. 505,970

Int. Cl.^{2} G01N *15/00*

U.S. Cl. 235—151.3 **21 Claims**



1. An apparatus for ascertaining that particle size above and below which size predetermined fractions of one of the total mass and number of the system are respectively included, said particle size being the dividing size between fractions, which comprises:

A. signal producing means including:

i. means for moving a representative sample of a particulate system suspended in a fluid medium relative to a sensing device responsive to movement of individual particles to produce electrical changes in said sensing means proportional to the respective sizes of particles; and

ii. means for producing electrical pulses as a result of such changes, the respective electrical pulses being proportional in amplitude to the size of the respective particles producing the changes;

B. means for generating first representative electrical quantities respectively proportional to the amplitude of said electrical pulses;

C. means for generating second constant representative electrical quantities in response to said electrical pulses;

D. means for separating said representative electrical quantities into two categories on the basis of the size of the particles respectively producing the same, the first category comprising all quantities greater than a measuring level, and the second category comprising all quantities less than the measuring level, said measuring level being calibrated to be proportional to particle size;

E. means for accumulating one of said first and second representative electrical quantities;

F. means for adjusting the measuring level to produce a desired relationship between categories such that accumulated representative quantities are indicative of said relationship and identifies said dividing size.

3,936,667

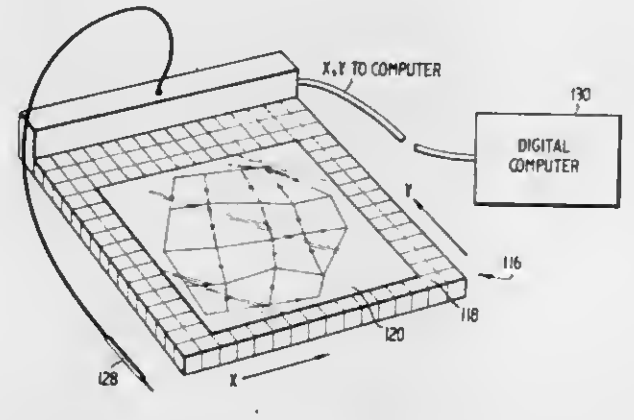
PROCESS AND APPARATUS FOR EVALUATING SUBREGIONS

Peter S. Loubal, 700 Grizzly Peak Blvd., Berkeley, Calif. 94708

Filed Apr. 23, 1974, Ser. No. 463,394

Int. Cl.^{2} G06K *11/00;* **G06F** *7/00*

U.S. Cl. 235—185 **14 Claims**



1. A method of analysing a subregion of a region divided into elemental areas wherein each elemental area has a predetermined parameter value associated with it and is surrounded by a boundary, comprising the steps of:

arranging said elemental areas in a chain-wise topographical order,

preparing a table containing the sums of said parameter values associated with said arranged elemental areas to provide a running sum value for association with each elemental area,

selecting a cross-over point on said boundary of each said elemental area,

physically establishing a border within said region to define said subregion, said border surrounding an integral number of said elemental areas; and,

alternately adding and subtracting said running sum values for each elemental area having a cross-over point which falls on said border,

whereby the total parameter value of all elemental areas within said subregion is determined.

6. An apparatus for analysing a subregion of a region divided into elemental areas wherein each elemental area has a predetermined parameter value associated with it and wherein each parameter value is associated with a selected cross-over point of each said elemental area, comprising:

arranging means for arranging said elemental areas in a chain-wise topographical order,

electrical contact means coupled to said arranging means and located at said selected points for providing electrical signals related to said predetermined parameter values of said elemental areas,

electrical probe means for engaging said electrical contact means and for carrying said electrical signals; and,

signal processing means coupled to probe means for sensing said electrical signals and for permitting a total parameter value of said subregion to be determined.

3,936,668

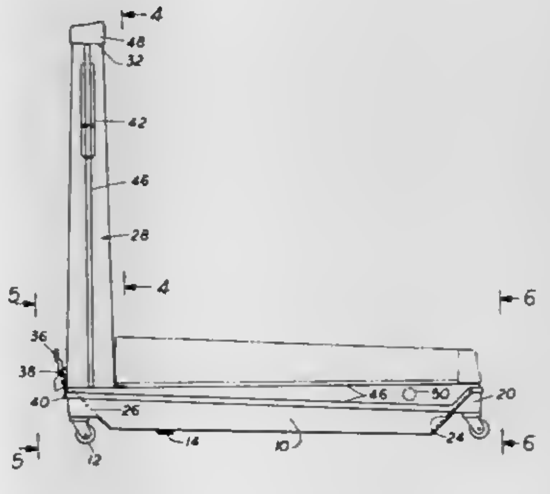
APPARATUS FOR VIEWING THE UNDERSIDE OF VEHICLES

Frederick Siebel, Puritan Road, Rye, N.Y. 10580

Filed May 3, 1974, Ser. No. 466,816

Int. Cl.^{2} F21V *33/00*

U.S. Cl. 240—4.2 **6 Claims**



1. Apparatus for viewing the underside of a vehicle comprising a elongated hollow first frame member having front and rear ends and upper and lower surfaces, said upper surface having an aperture formed adjacent at least each of its extreme forward and rearward ends, and means secured to the lower surface for movably supporting said first frame member in a horizontal plane upon a floor, a mirror located beneath each of the apertures facing each other and disposed at an angle to sight through said apertures, a elongated hollow second frame member having upper and lower surfaces interconnected by side walls, said second frame member being open at each end, hinge means securing said second frame member to said first frame member, said hinge means having a first leaf secured to the upper surface of said first frame member adjacent the aperture formed at the rearward end thereof, a second leaf secured to the edge of said second frame member adjacent one end thereof and a pivot axis disposed transversely of said first frame member to permit said second frame member to swing with respect to said first frame member from a closed position substantially overlying said first frame member in a parallel plane thereof, to an open position substantially normal to the plane of said first frame member, said one end of said second frame member being in alignment with the aperture at the rearward end of said first frame member to form an enclosed optical path through said first frame member and said second frame member to the other end of said second frame member, a source of light disposed within said first frame adjacent the aperture at the frontal end of said first frame member and between said facing mirrors, a battery source of power for said lights disposed within one of said first and second frame members and switch means mounted on said second frame member controlling said source of light, said mirrors acting to reflect said source of light onto the undercarriage of said vehicle.

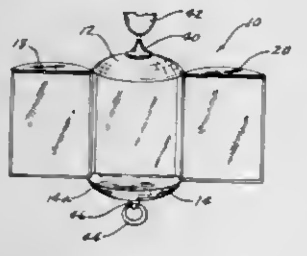
3,936,669
BEAUTY SWAG LAMP

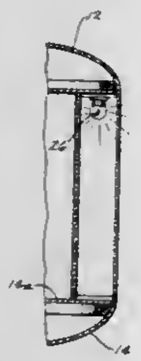
Ruth E. Gardner, Des Moines, Iowa, assignor to Marton C. Gaston and Joan C. Gaston, both of Booneville, Iowa, part interest to each

Filed July 11, 1974, Ser. No. 487,552

Int. Cl.^{2} F21V *33/00*

U.S. Cl. 240—4.2 **8 Claims**





1. A lamp comprising:

a lamp frame forming an enclosed compartment and comprising a top wall, a bottom wall, at least one upstanding wall and at least one door wall,

said door wall and said upstanding wall each comprising spaced apart inner and outer panels, said outer panels being adapted to let light pass therethrough,

at least one mirror within said compartment;

said door wall being movable from a closed position wherein said compartment and said mirror are hidden from view from outside said compartment to an open position wherein said compartment and said mirror are exposed to view;

light means comprising at least one light emitting device within the space between said inner and outer panels of each of said door and upstanding walls, said outer panels of said door and upstanding walls permitting light to pass outwardly from said light emitting devices.

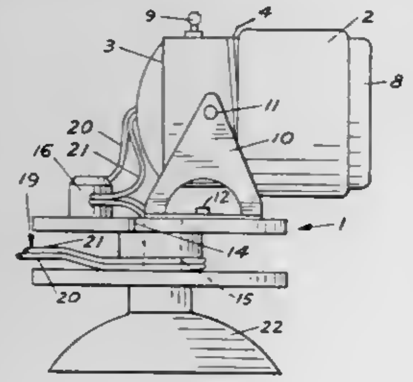
3,936,670
PORTABLE LIGHT

Harry Emitt Allen, Sr., 2584 Crape Myrtle St., Shreveport, La. 71108

Filed Oct. 29, 1074, Ser. No. 518,570

Int. Cl.^{2} F21V *13/04*

U.S. Cl. 240—41.3 **4 Claims**



1. A portable light comprising:

a. a light source;

b. a cylindrically shaped forward cover carrying said light source in the interior thereof and a cylindrically shaped rear cover mating with said forward cover in threaded relationship;

c. a forward cover reflector mounted in the interior of said forward cover;

d. a flat, circular lens removably carried by said forward cover;

e. a cylindrically shaped beam concentrator in cooperation with said lens and said forward cover;

f. a concavo-convex lens reflector mounted on said lens with the concave surface of said reflector facing said light source, and adapted to reflect light from said light source back onto said forward cover reflector and intensify said light;

g. a swivel frame carried by said rear cover in pivoting relationship;

h. an external, horizontally disposed reel in cooperation with said swivel frame and adapted to receive a supply of electric cord thereon in wound fashion; and

i. a suction cup carried by said reel and adapted to removably adhere to smooth, substantially uniform surface.

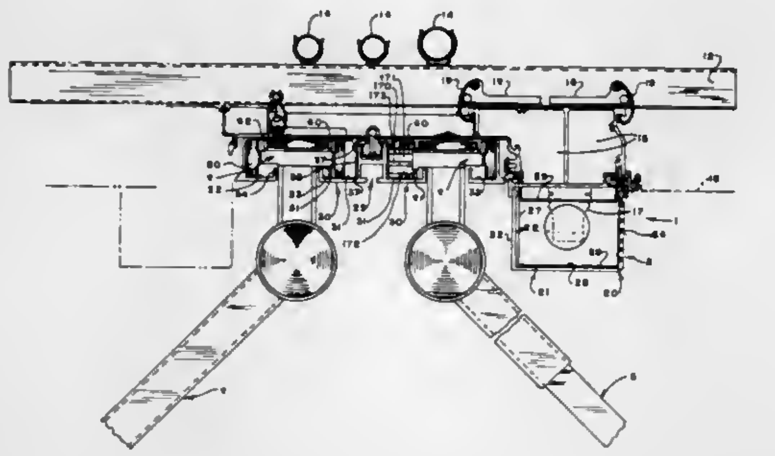
3,936,671
ILLUMINATION SYSTEM

Mitchell Bobrick, Redondo Beach, Calif.; Murray L. Quin, St. Louis, and Morris M. Buzan, St. Charles, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo., by said Murray L. Quinn and Morris M. Buzan

Filed Aug. 12, 1974, Ser. No. 496,879

Int. Cl.^{2} F21V *9/08*

U.S. Cl. 240—46.59 **4 Claims**



1. In an illumination system for a medical facility, wherein an elongated fluorescent lighting fixture is positioned along a side of an elongated carriage track, the improvement comprising an elongated enclosure for said lighting fixture, a primary lamp enclosure having high brightness light transmitting bottom and side walls, and separate means for reducing light transmission and brightness of the bottom wall and a first side wall of the primary lamp enclosure, said first side wall facing said elongated carriage track, said means for reducing light transmission and brightness of the bottom wall and a first side wall of the primary lamp enclosure comprising a separate L-shaped diffuse transmitting insert mounted within the primary lamp enclosure.

3,936,672
ILLUMINATION DEVICE FOR COPYING MACHINE

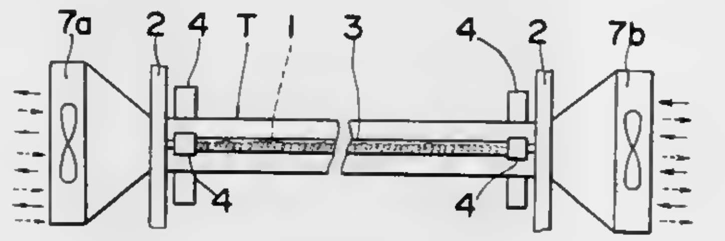
Atsuyuki Tanaka, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed July 1, 1974, Ser. No. 484,890

Claims priority, application Japan, Aug. 6, 1973, 48-92565[U]

Int. Cl.^{2} F21V *29/00*

U.S. Cl. 240—47 **4 Claims**



1. An illumination device for use in a copying apparatus of a type wherein the optical system comprises an image transmitter formed by a bundle of optical fibers having a refractive index distribution in the cross section thereof, said illumination comprising a substantially U-sectioned casing having a pair of adjoining side edges which define an opening facing a transparent support surface of the copying apparatus, said surface being adapted to support thereon an original to be copied, the inner surface of said casing forming a reflector, a source of light mounted in position within said casing, means for, upon receipt of rays of light from said light source, producing a slit-shaped beam of light to illuminate the original on the support-surface, and cooling means for directing cooling air alternately in both directions past said light source and parallel to the longitudinal axis thereof.

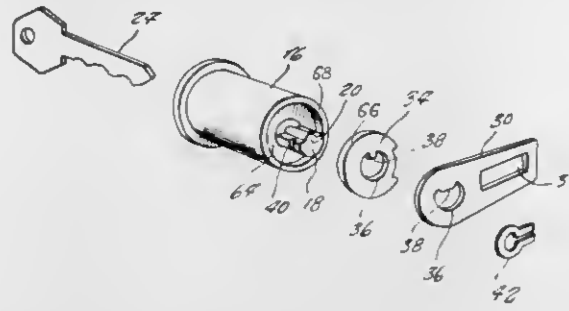
3,936,673
AUTO DOOR LOCK ALARM

John F. Kelly, 393 Britton Ave., Staten Island, N.Y. 10304, and Frank Rizzo, 200 Catherine St., Staten Island, N.Y. 10302

Filed Feb. 24, 1975, Ser. No. 552,306

Int. Cl.^{2} B60R *25/00*

U.S. Cl. 307—10 AT **10 Claims**



1. A combination key operated vehicle door lock and burglar alarm switch comprising:

a. a cylindrical lock adapted to be mounted on a vehicle door including, an approximately semi-circular shaft axially extending therefrom and capable of being rotated an arcuate amount of either direction by a key;

b. latch means for controlling the opening of the door, rotatably mounted on said shaft, and

c. switch means for completing the electrical circuit of a burglar alarm, also rotatably mounted on said shaft, each of said latch means and said switch means including, a circular opening receiving said shaft and a notched portion extending into the circular opening above the semi-circular shaft, whereby when said semi-circular shaft is rotated in one direction, it engages both said notched portions to rotate said latch means and said switch means in one direction to open the door and simultaneously open the electrical circuit, and when said shaft is rotated in the opposite direction it engages both said notched portions to rotate said latch means and said switch means in said opposite direction to lock the door and simultaneously complete the electric circuit.

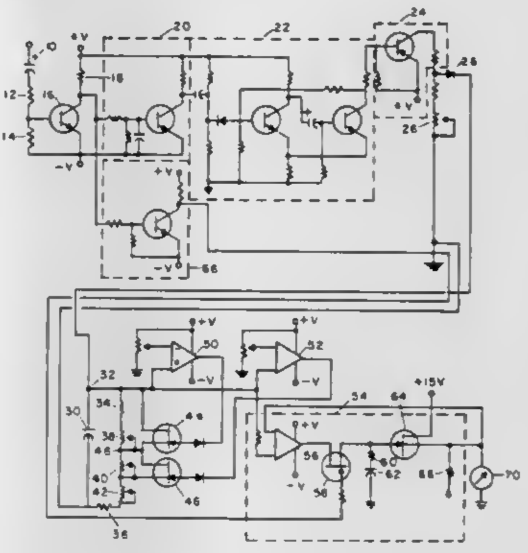
3,936,674
RATE SIGNAL GENERATOR CIRCUIT

Philip A. Hughes, Littleton, Colo., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Mar. 5, 1974, Ser. No. 448,293

Int. Cl.^{2} H03K *1/16;* **H03B** *3/04*

U.S. Cl. 307—233 R **3 Claims**



1. A rate signal generating circuit for determining the rate of recurrence of electrical signals, said circuit comprising means for sensing said electrical signals, a capacitor, charging circuit means connected between said sensing means and said capacitor to charge said capacitor to a predetermined voltage level during a predetermined time interval in response to the sensing of one of said electrical signals, a plurality of resistors connected in series and coupled to said capacitor to provide a discharge path therefor, electronic switch means connected to said resistors and said capacitor for shorting selected said resistors in response to predetermined charged voltages across said capacitor, wherein said capacitor discharges to define a rate function, and sample and hold means coupled to said capacitor and said sensing means for actuation by each successive said electrical signal to provide an output voltage proportional to the rate of recurrence of said signals.

3,936,675
REFERENCE POINT POTENTIAL COMPENSATING CIRCUIT FOR USE WITH PHASE CONTROLLER

Tetsuo Yoshida, Tokyo, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1973, Ser. No. 428,015

Claims priority, application Japan, Dec. 29, 1972, 48-3722

Int. Cl. H03k *17/00, 1/12;* **G05f** *3/00*

U.S. Cl. 307—252 F **4 Claims**

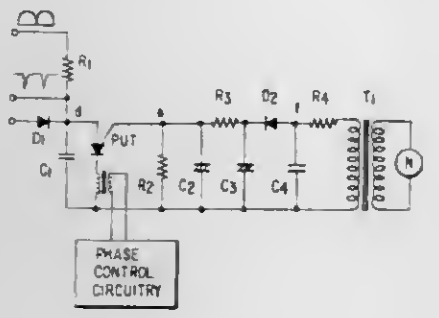
1. Reference point potential compensating circuitry for controlling phase control circuitry, which regulates the value of a predetermined parameter, said compensating circuitry comprising means for generating a first signal which varies in amplitude periodically with time;

means for generating a second signal, the amplitude of which varies as a function of said predetermined parameter;

means for adding all values of said first and second signals to develop a third signal which is a substantially linear sum of said first and second signals;

means, responsive to said first signal, for generating a fourth signal, the amplitude of which is a function of the frequency of said first signal and which is representative of a desired value of said parameter;

means for comparing said third and fourth signals to generate a fifth signal when said third and fourth signals are substantially equal, said fifth signal being applied to said phase control circuitry so that said phase control circuitry can maintain said parameter at said desired value independent of frequency or amplitude variations of said first signal.



3,936,676

MULTI-LEVEL VOLTAGE SUPPLY CIRCUIT FOR LIQUID CRYSTAL DISPLAY DEVICE

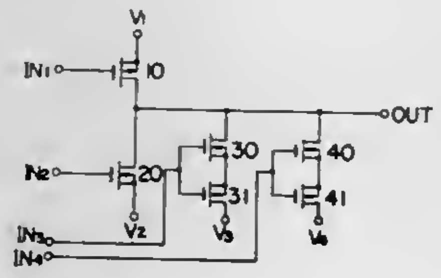
Minoru Fujita, Kodaira, Japan, assignor to Hitachi, Ltd., Japan

Filed Aug. 8, 1974, Ser. No. 495,788

Claims priority, application United Kingdom, May 16, 1974, 21904/74

Int. Cl.^{2} H03K *19/08, 1/02;* **G02F** *1/13;* **H01L** *29/78*

U.S. Cl. 307—270 8 Claims



1. A voltage supply circuit comprising:
first and second switching means each of said first and second switching means having an input electrode, an output electrode, and a control electrode, the input and output electrodes of said first and second switching means being connected in series between first and second voltage sources;
at least one pair of field-effect transistors, the source and substrate regions of which are respectively connected in common, and the gate electrodes of which are connected together;
first means for connecting the drain region of one of said field-effect transistors to a common connection of said first and second switching means;
second means for connecting the drain region of the other of said field-effect transistors to a third voltage source, the voltage level of which lies between the voltage levels of said first and second voltage sources;
third means for deriving an output voltage from the common connection of said first and second switching means and;
fourth means for applying input voltages respectively to the control electrodes of said first and second switching means and to the gate electrodes of said at least one pair of field-effect transistors, whereby said output voltage will have a voltage level corresponding to the level of one of said first through third voltage sources.

3,936,677

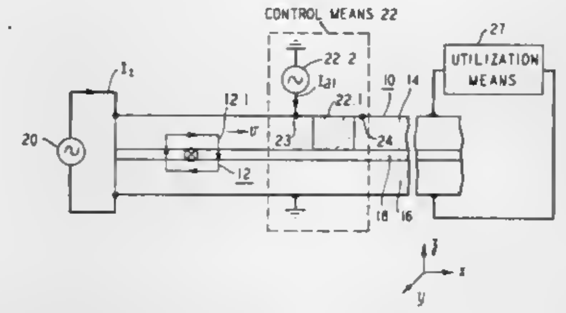
SUPERCURRENT DEVICE FOR CONTROLLING MOBILE FLUX VORTICES

Theodore Alan Fulton, Warren Township, Somerset County, N.J., and John Kirtland Galt, Albuquerque, N. Mex., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 21, 1975, Ser. No. 542,712

Int. Cl.^{2} H03K *3/38, 19/195, 17/92*

U.S. Cl. 307—306 17 Claims



1. Superconductive apparatus comprising
a supercurrent transmission line which includes a pair of superconductive layers and a weak-link layer separating said superconductive layers and contigous therewith,
said line being adapted to support the propagation of mobile flux vortices therein and having a length, as measured in the direction of said propagation, which is much greater than the Josephson penetration depth λ_J,
characterized in that said apparatus includes means for changing the velocity of said vortices comprising
a normal metal segment which interrupts at least one of said superconductive layers in the direction of said propagation, and
control means for applying a control current in a region of said line in operative relation to said segment.

3,936,678

MAGNETICALLY LATCHED PIEZOELECTRIC STRIKING IGNITER

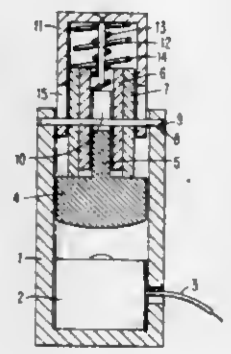
Walter Mohr, Frankfurt am Main, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 12, 1974, Ser. No. 496,588

Claims priority, application Germany, Aug. 8, 1973, 2341544; Aug. 17, 1973, 2341714

Int. Cl.^{2} H01L *41/04*

U.S. Cl. 310—8.7 8 Claims



1. A piezoelectric igniter with a striking mechanism, more especially for lighters, having a piezoelectric transducer, a hammer which is movable in the direction of the latter and which co-operates with an energy storing spring which can be compressed by an actuating member, having a movement release device for the hammer and having a housing which surrounds these parts and against the one front end of which the piezoelectric transducer butts, wherein the movement release device forms a magnetic holding circuit comprising a permanent magnet (45) with laterally mounted pole plates (46), which is fixed in the housing and which is magnetized transversely to the direction of movement of the hammer (42) and which has a free axial passage, the energy storing spring (44) lies in a blind hold in the hammer (42), which blind hole is in alignment with the axial passage and is biased by a holding member (43) which is fastened to the hammer, and wherein the actuating member (47) comprises a shank which extends into the axial passage and which is provided with a slot (60) at the points of the holding member.

3,936,679

ELASTIC SURFACE WAVE TRANSDUCER

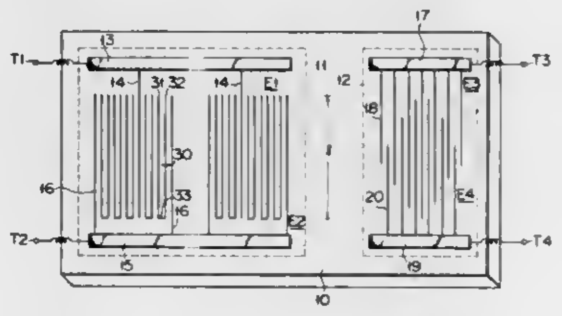
Kimio Shibayama, and Kazuhiko Yamanouchi, both of Sendai, Japan, assignors to Kimio Shibayama, Sendai, Japan

Filed Aug. 26, 1974, Ser. No. 500,697

Claims priority, application Japan, Aug. 31, 1973, 48-97886

Int. Cl. H01l *41/08*

U.S. Cl. 310—9.8 10 Claims



1. An elastic surface wave interdigital transducer comprising:
a piezoelectric substrate;
first and second electrodes disposed on said piezoelectric substrate, each of said first and second electrodes having a common electrode connected to an external terminal and a plurality of electrode fingers connected to said common electrode, the electrode fingers of said first electrode overlapping with and being interdigitated by the electrode fingers of said second electrode, the overlap lengths of the interdigital electrode fingers of said first and second electrodes being substantially uniform throughout the transducer; and
a plurality of floating electrodes, each floating electrode including a pair of parallel conductors connected together at one end, said floating electrodes being disposed on said piezoelectric substrate between said interdigital electrode fingers of said first and second electrodes, the number of said floating electrodes located between respective pairs of said interdigital electrode fingers progressively increasing from the center of said transducer to both ends of said transducer.

3,936,680

MINIATURE SELF-STARTING ELECTRIC MOTOR

Tomohisa Kuwako, Anjo; Toshio Tanase, Gifu, and Naoshi Sasase, Toyohashi, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Japan

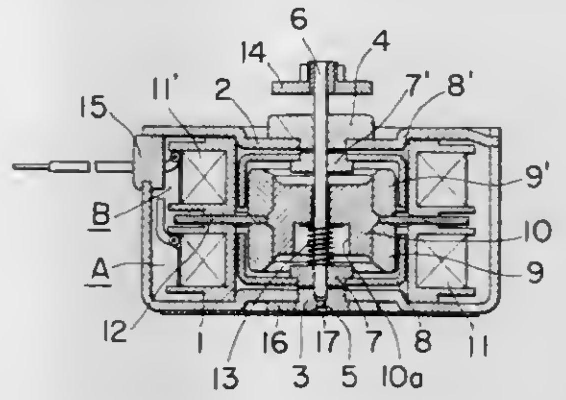
Filed July 9, 1974, Ser. No. 486,789

Claims priority, application Japan, July 10, 1973, 48-77684; July 11, 1973, 48-78145

Int. Cl.^{2} H02K *11/00, 21/26*

U.S. Cl. 310—40 MM 9 Claims

1. A miniature self-starting electric motor comprising a rotor shaft rotatably disposed in a casing; two rotors fixed to said rotor shaft and each having a circular body portion of soft magnetic material, each said circular body portion having a periphery with pole teeth extending therefrom and spaced from each other at equal angular spacings; two exciting coils each being disposed to face the pole teeth; two permanent magnets each providing radially north and south poles alternating at an equal angle, the poles of each said permanent magnet being axially aligned with poles of the same polarity of the other magnet, the poles of each said permanent magnet facing the pole teeth of the corresponding rotor, the number of poles on each permanent magnet being an even multiple of the number of pole teeth, said two rotors being opposed to each other, the pole teeth of one of said two rotors being staggered from the pole teeth of the other by a predetermined electric angle; the pole teeth of one said rotor being circumferentially offset from the pole teeth and intervening spaces therebetween of the other rotor by another preselected angle; and a condensor alternatively connectible to either one of said two exciting coils for selecting the direction of rotation of said motor.



3,936,681

COOLING ARRANGEMENT FOR ELECTRIC GENERATORS OF UNDERWATER POWER PLANTS

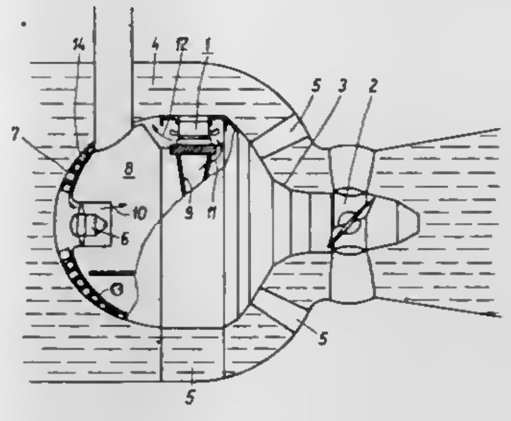
Wolfgang Liebe, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 16, 1973, Ser. No. 416,522

Claims priority, application Germany, Dec. 4, 1972, 2259738

Int. Cl.^{2} H02K *9/00*

U.S. Cl. 310—54 9 Claims



1. In an underwater electric generator contained in a body wherein coolant is circulated for cooling the generator, a cooling arrangement including a cowl covering the end-face of the generator and forming a portion of the body, the outer surface of the cowl being exposed to the turbine water and the inner surface of the cowl defining an arcuate path for conducting the coolant therealong for recooling the coolant, the improvement in said cooling arrangement comprising: a plurality of cooling fins, each of the fins being made from a flat member and having two end-portions bent toward each other to give the fin a hook-like configuration, each of the fins being fixedly mounted to the inner surface of the cowl at one of said end-portions thereof and being short relative to the length of the path.

3,936,682

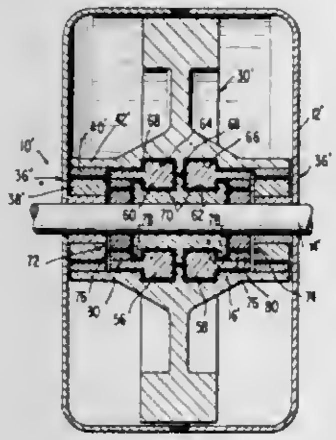
GAS BEARING REACTION WHEEL

Robert Lee Gates, Littleton, Colo., assignor to Martin Marietta Corporation, New York, N.Y.

Filed Sept. 14, 1972, Ser. No. 289,028

Int. Cl. H02k *7/00*

U.S. Cl. 310—66 **12 Claims**



1. In a momentum exchange actuator including relatively movable first and second generally concentric, rotary members mounted for rotation about a common axis and first driving means for bidirectionally driving one member relative to the other about said axis, the improvement comprising:

at least one intermediate third member positioned between said first and second members and generally concentrically thereto for rotation about said axis,

second driving means for driving said intermediate member substantially faster than said driven one member when said intermediate member is rotated in the same direction as said one member, and

hydrodynamic fluid bearing means carried by said intermediate member on both surfaces thereof, responsive to rotation of said intermediate member and acting respectively on said first and second members,

whereby, regardless of reversal in direction of motion or cessation of motion between said first and second members, there is no loss of the hydrodynamic fluid bearing between said intermediate member and said first and said second members.

3,936,683

MAGNETIC COUPLING

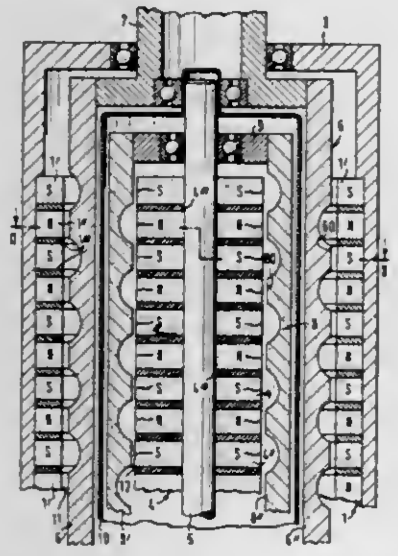
Alan John Walker, 3 Argyle St., Dornoch, Sutherland, England

Filed Aug. 16, 1974, Ser. No. 497,925

Claims priority, application United Kingdom, Aug. 17, 1973, 38988/73

Int. Cl.^{2} H02K *49/06*

U.S. Cl. 310—103 **8 Claims**



1. A magnetic transmission device by which torque can be transmitted without contact of the driving and driven elements comprising a first stationary magnetic pole ring, a second stationary magnetic pole ring circumferentially surrounding and radially spaced from said first magnetic pole ring, a first rotatable torque transmitting ring connected to one of said elements and having an even number of axially aligned bars of highly magnetic material causing a magnetic connection between said first pole ring and said second pole ring, and a second rotatable torque transmitting ring connected to the other of said elements with the first torque ring circumferentially surrounding and being radially spaced from said second torque ring and with said first and second torque transmitting rings separating said magnetic rings in the radial direction.

3,936,684

ANGULAR VELOCITY DETECTOR ASSEMBLY FOR WHEELS OF MOTOR VEHICLES HAVING ANTI-SKID BRAKE SYSTEMS

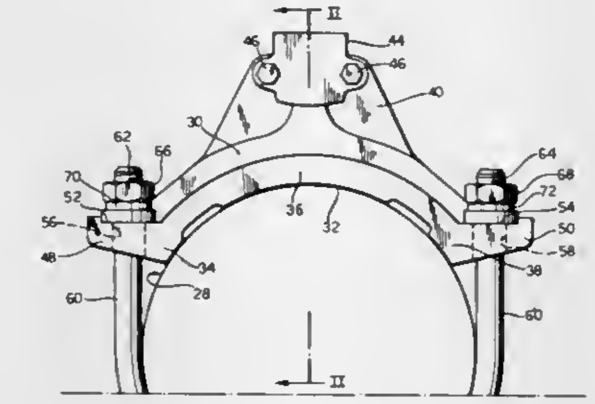
Giovanni Anselmino, Turin; Roberto Pozzetto, Collegno, and Gianfranco Carollo, Turin, all of Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed June 25, 1974, Ser. No. 482,932

Claims priority, application Italy, June 25, 1973, 68882/73

Int. Cl.^{2} H02K *5/00*

U.S. Cl. 310—168 **1 Claim**



1. In an electromagnetic angular velocity transducer assembly for a vehicle wheel of the type comprising a toothed wheel and an electromagnetic pick-up device relatively moveable with respect to said toothed wheel upon rotation of said vehicle wheel upon which said toothed wheel is mounted, a mounting support for said electromagnetic pick-up comprising a curved body having a substantially semi-cylindrical surface adapted to be mounted on a cylindrical shaft, means securing said electromagnetic pick-up device adjacent the midpoint of said body intermediate the end thereof, a pair of recesses formed in said semi-cylindrical surface of said body adjacent to, but spaced inwardly from each end of said body to reduce the thickness of said body, an apertured lug integral with an extending outwardly from each end of said body, curved tie rod means adapting to extend around said shaft with the opposite ends thereof extending through said apertured lugs and threaded means for securing the ends of said tie rod to said lugs; said semi-cylindrical surface of said body between said recesses being substantially greater than the distances from said recesses to the ends of said body while the reduced thickness of said body in the vicinity of said recesses allows for the flexing of the ends of said body upon tightening of said threaded means to bring the ends of said body into contact with a shaft having a radius of curvature less than the radius of curvature of said semi-cylindrical surface of said body.

3,936,685

ROTOR STACK FOR A SQUIRREL-CAGE, SLIDING ROTOR TYPE MOTOR

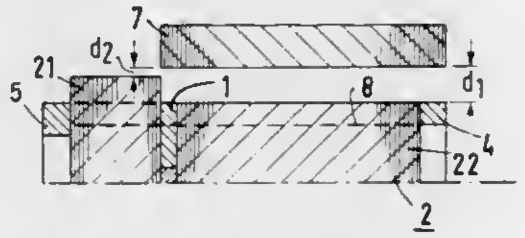
Ehard Glockner, Eibelstadt, and Bodo Ulrich, Lengfeld, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 25, 1974, Ser. No. 464,199

Claims priority, application Germany, Apr. 27, 1973, 2321435

Int. Cl.^{2} H02K *23/44*

U.S. Cl. 310—209 **6 Claims**



1. In a squirrel-cage sliding rotor type motor, including a laminated stator stack, a laminated rotor stack, an axial shorting ring disposed on at least one end of said rotor stack, an intermediate shorting ring interposed in said rotor stack at the other end thereof, said intermediate ring dividing said rotor stack into first and second rotor stack sections of unequal axial length, said first rotor stack section being disposed between said intermediate and axial shorting rings and having an axial length greater than said second rotor stack section, the latter being disposed between said intermediate shorting ring and said other end of said rotor stack, and rotor bars disposed axially through said rotor stack and coupled by said shorting rings, the improvement comprising a second rotor stack section having a diameter greater than that of said first rotor stack section.

3,936,686

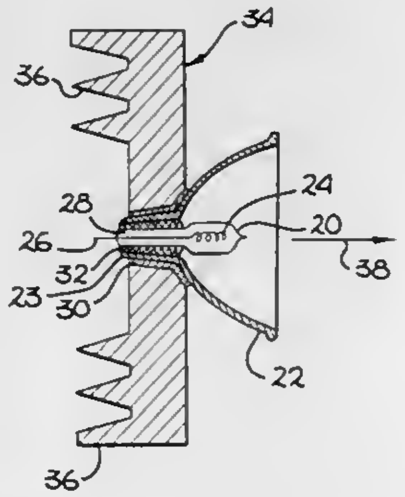
REFLECTOR LAMP COOLING AND CONTAINING ASSEMBLIES

Donald W. Moore, 827 Montline Lane, Los Angeles, Calif. 90024

Filed May 7, 1973, Ser. No. 357,823

Int. Cl.^{2} H01J *61/52;* **H01K** *1/58*

U.S. Cl. 313—36 **6 Claims**



1. In combination,

a. a high brightness incandescent lamp having an operating temperature and a seal end temperature substantially high in comparison to the corresponding temperature of inert gas incandescent lamps,

b. means for dissipating heat from the seal end of said incandescent lamp comprising a mass of material having the heat conductivity characteristic thereof at least that of metals and of a quantity sufficient to prevent failure of the seal end region of said lamp, and

c. flexible heat conductive adhesive means between said lamp seal end and said heat dissipating means for adhering said lamp and said heat dissipating means and for allowing expansion of said heat dissipating means and said lamp seal end without injury to the latter, said adhesive means comprising a flexible material of low heat conductivity combined with a material of high heat conductivity.

3,936,687

PHOTOCATHODE WITH PLURALITY OF CONCENTRIC CONDUCTING RINGS

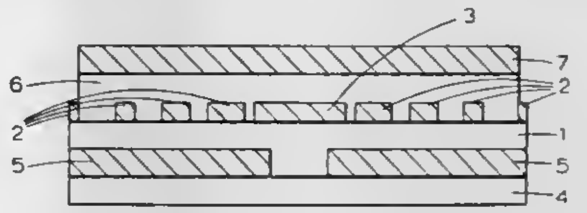
Pieter Schagen, and Pamela May Stubberfield, both of Salfords, near Redhill, England, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 395,913, Sept. 10, 1973, abandoned, which is a continuation of Ser. No. 224,923, Feb. 9, 1972, abandoned. This application July 18, 1974, Ser. No. 489,578

Claims priority, application United Kingdom, Mar. 1, 1971, 5655/71

Int. Cl.^{2} H01J *39/18, 39/04*

U.S. Cl. 313—101 **4 Claims**



1. A photocathode comprising a support having an insulating layer with an aperture therein, a layer of photoemissive material spaced from said insulating layer, a layer of electrically resistive material supported by said electrically insulating layer and in electrical contact with said layer of photoemissive material, a plurality of spaced, discrete, concentric electrically conductive rings and a central conductive disc within the innermost ring disposed on one surface of said layer of electrically resistive material, and means to apply a potential between the central disc and the outermost ring including a conductive member having an electrical connection to said central disc through said aperture in said insulating layer for obtaining a potential gradient across said layer of photoemissive material.

3,936,688

GAS DISCHARGE PANEL HAVING ELECTRODES SECURED TO FLAT INSULATING PLATES BY MEANS OF GLAZE

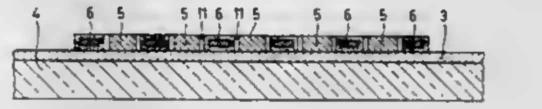
Johannes van Esdonk, and Johannes Petrus Hornman, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 22, 1974, Ser. No. 526,133

Claims priority, application Netherlands, Dec. 22, 1973, 7317648

Int. Cl.^{2} H01J *61/30*

U.S. Cl. 313—220 **3 Claims**



1. A gas discharge panel comprising an insulating base plate and an insulating transparent top plate, said plates each having a set of parallel conductors, the conductors of the base plate and the top plate crossing each other at an angle and defining cavities therebetween in which an electric discharge can occur, the conductors of at least one set being secured to the insulating plate by means of a glass which melts below 570°C, the sides of adjacent conductors being separated by insulating partitions of superficially oxidized aluminum strips which are secured on the insulating plate.

3,936,689

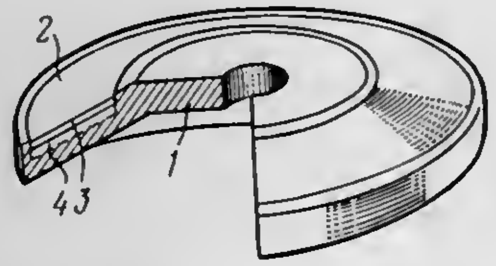
ROTARY ANODE FOR POWER X-RAY TUBES AND METHOD OF MAKING SAME

Tatyana Anatolievna Birjukova, ulitsa Kropotkinskaya, 13, kv. 17; Nikolai Ivanovich Freze, ulitsa Fersmana, 5, kv. 13; Alexei Alexeevich Schukin, 2 Kolobovsky pereulok 14, kv. 28; Anatoly Vasilievich Abalikhin, ulitsa Amurskaya, 21, korpus 3, kv. 52; Mikhail Vasilievich Maltsev, ulitsa Streletskaya, 26a, kv. 40; Nikolai Nikolaevich Evgrafov, ulitsa Kolenchataya, 13/17, kv. 4, all of Moscow; Sergei Gavrilovich Semenov, ulitsa Lomonosova, 26, kv. 17, Leningrad; Valentina Pavlovna Zhukova, Moskovskoe shosse, 36, kv. 29, Leningrad; Maria Ilinichna Teumin, ulitsa Grazhdanskaya, 112, korpus 2, kv. 87, Leningrad; Veronika Vasilievna Isaichenko, ulitsa Kronverkskaya, 25, kv. 32, Leningrad; Mikhail Minovich Nerodenko, ulitsa Observatornaya, 8, kv. 8, Kiev; Galina Nikolaevna Alexeenko, ulitsa Dovnar-Zapolskogo, 8, kv. 86, Kiev; Alexei Fedorovich Tetervak, ulitsa Volodarskogo, 22, kv. 9, Kiev; Samuil Mordkovich Gurevich, ulitsa Lesi Ukrainki, 2, kv. 2, Kiev; Grigory Vasilievich Tjukalov, Varshavskoe shosse, 18, korpus 2, kv. 241, Moscow, and Georgy Vladimirovich Kurganov, ulitsa Lipetskaya 26, kv. 144, Moscow, all of U.S.S.R.

Filed Jan. 10, 1974, Ser. No. 432,330

Int. Cl.² H01J *35/08*

U.S. Cl. 313—330 **5 Claims**



1. A rotating anode for X-ray tubes, comprising a body of melted metal selected from the group consisting of molybdenum and alloys based thereon and a composite coating of tungsten-rhenium alloy, said anode having a composition varying so that an outer layer of tungsten-rhenium has constant rhenium content followed by a layer of tungsten-rhenium-molybdenum alloys with the content of rhenium decreasing towards the interior and the content of molybdenum increasing.

3,936,690

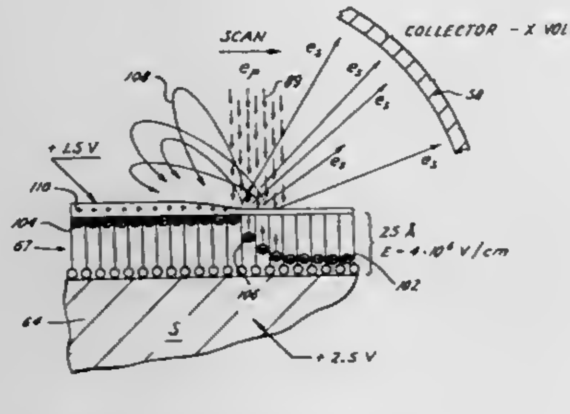
MOBILE ION FILM MEMORY

Francis John Salgo, Dallas, Tex., assignor to Butler, Binion, Rice, Cook & Knapp, Houston, Tex.

Filed Sept. 19, 1974, Ser. No. 507,278

Int. Cl.² H01J *31/58, 29/10*

U.S. Cl. 313—392 **34 Claims**



1. A data storage apparatus comprising

a plurality of charged particles;

a film adapted to contain the charged particles in a plurality of positions;

writing means for altering said particles' positions within said film; and

reading means for determining the presence of said particles at each of said positions in said film

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3,936,691

COLOR CATHODE RAY TUBE FRAME-COLOR SELECTION ELECTRODE SUPPORT STRUCTURE

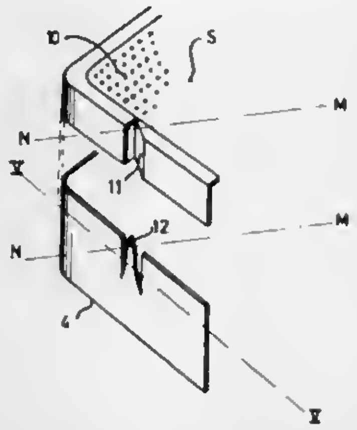
Gijsbertus Bakker, and Johannes Aloysius van Leeuwen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 1, 1974, Ser. No. 520,008

Claims priority, application Netherlands, Nov. 21, 1973, 7315905

Int. Cl.² H01J *29/06, 31/20*

U.S. Cl. 313—407 **6 Claims**



1. A color cathode ray tube comprising an evacuated envelope and, within said envelope, means for generating at least two electron beams, a display screen on a part of the wall of said envelope, a substantially rectangular color selection electrode located near the display screen, a supporting frame spaced from and surrounding the edge of said color selection electrode, and a plurality of resilient supporting strip-shaped members connecting edge portions of said electrode to said frame, each supporting member being twisted near its center such as to be resilient both in radial and in tangential directions with respect to the center of said electrode.

3,936,692

ELECTRON GUN ASSEMBLY FOR USE IN MULTI-BEAM TYPE CATHODE RAY TUBE

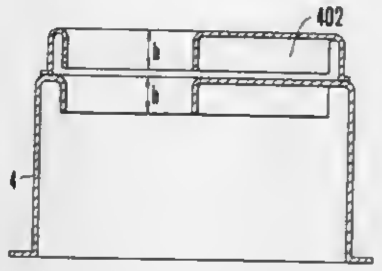
Yukihiro Izumida, Mobara; Kihachiro Koizumi, and Yoshihiko Miyata, both of Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1974, Ser. No. 494,754

Claims priority, application Japan, Aug. 8, 1973, 48-88423

Int. Cl.² H01J *29/50, 29/51, 29/82*

U.S. Cl. 313—414 **7 Claims**



1. A multi beam type electron gun assembly for use in a cathode ray tube comprising a plurality of electron guns including a plurality of cathode electrodes emanating electron beams directed toward a fluorescent screen and a plurality of grid electrode structures which are constituted with a plurality of common electrodes comprising each grid electrode which has identical function in respective electron guns, said common electrodes being formed integrally, one of said common electrodes comprising a hollow side wall member forming an enclosure surrounding all paths of the electron beams and an end member, said end member comprising two plate members, each plate member having a plurality of openings being used for the passage of the electron beams and each opening being provided with an axially extending peripheral flange formed integrally along the respective peripheries of said openings, said flanges being close-aligned respectively by superposing said plate members with each other to have an aggregate axial height at least not less than half the diameter of said opening, whereby an electric field occurred in the neighborhood of said openings is prevented from being adversely affected by the side wall member.

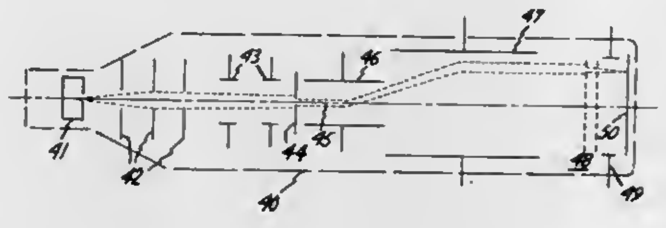
3,936,693

TWO-APERTURE IMMERSION LENS

Harold G. Parks, and William C. Hughes, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y. Division of Ser. No. 294,021, Oct. 2, 1972, abandoned. This application May 8, 1974, Ser. No. 467,999

Int. Cl.² H01J *29/62, 29/80*

U.S. Cl. 313—427 **5 Claims**



1. In an electron beam optical system including a source of electrons, coarse deflection means for directing said electrons toward an electron focussing means in the form of an electron beam, and means for focussing said beam on a target, the improvement comprising:

said focussing means consisting solely of a pair of substantially parallel plates spaced apart from each other and positioned between all of said coarse deflection means and said target, each plate having a plurality of substantially circular apertures therein with said apertures in each plate aligned along the optical axis of said electrom beam so as to form a matrix of lenslets, and means for biassing said plates to cause electrons passing through said apertures to be accelerated or decelerated before impinging on said target;

said coarse deflection means comprising a first assembly for deflecting the electron beam from said source from the center axis of the electron optical system, and a second assembly for deflecting the deflected electron beam in an opposite direction to cause the twice deflected electron beam to enter a selected lenslet of said matrix.

3,936,694

DISPLAY STRUCTURE HAVING LIGHT EMITTING DIODES

Katsuhiko Akiyama, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 23, 1974, Ser. No. 535,173

Claims priority, application Japan, Dec. 28, 1973, 49-3360; Nov. 21, 1974, 49-134643

Int. Cl.² H01L *15/00*

U.S. Cl. 313—500 **12 Claims**

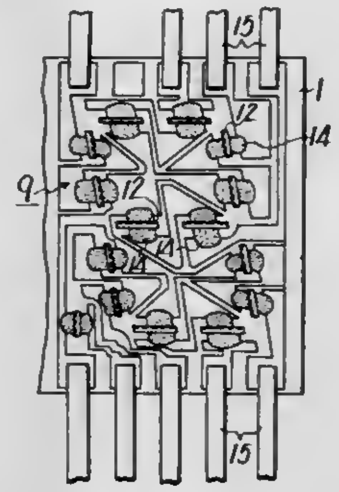
1. A display structure comprising:

a. a substrate of insulating material;

b. a plurality of light emitting diodes disposed on one major surface of said substrate in a predetermined pattern with their pn junctions perpendicular to said substrate;

c. multi-layer paths carried on said one surface of said substrate, at least the outer layer of which is formed of conductive material;

d. said paths being shaped to provide recesses, each larger than the width of a diode;



e. said diodes being in said recesses with the outer layer of an associated one of said multi-layer paths bent down into said recess to mechanically grip and electrically connect with each diode.

3,936,695

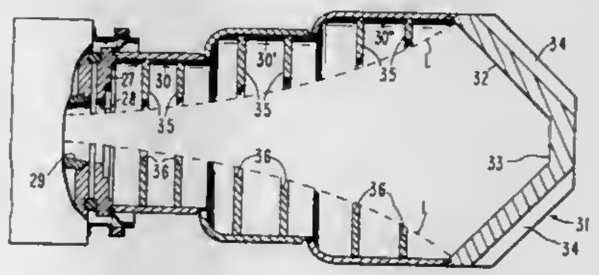
ELECTRON COLLECTOR HAVING MEANS FOR TRAPPING SECONDARY ELECTRONS IN A LINEAR BEAM MICROWAVE TUBE

Robert C. Schmidt, Woodside, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Apr. 26, 1974, Ser. No. 464,420

Int. Cl.² H01J *25/34*

U.S. Cl. 315—3.5 **5 Claims**



1. A linear beam electron discharge device dimensioned to operate under preselected parameters of voltage, fields and frequencies comprising: electron gun means for forming and projecting a beam of electrons over an elongated path extending from an upstream end of said device, wave beam interaction circuit means axially coextensive with and adjacent to a portion of said beam path for velocity modulating said beam at said preselected frequencies, means for extracting an output radio frequency signal from said velocity modulated beam at the downstream end of said device, hollow collector means within which said beam expands in transverse cross section in the downstream direction, the inner surfaces of said collector means being dimesnioned with respect to the shape of said expanding cross sections when said device is operated under said parameters, said inner surfaces of said collector means comprising, at the upstream end thereof, a constricted entrance portion dimensioned to allow passage of said beam therethrough; at the downstream end thereof, an electron impact portion dimensioned to intercept substantially all of said beam and dissipate its energy; and between said entrance portion and said impact surface portion, and electrically conductive wall portion dimensioned to surround said beam; said wall portion comprising outer transverse cross sections substantially outside said beam, said wall portion further comprising a plurality of baffle members spaced along the direction of said beam, said baffle members extending inwardly from said outer transverse cross sections to define apertures with peripheries outside said beam.

3,936,696

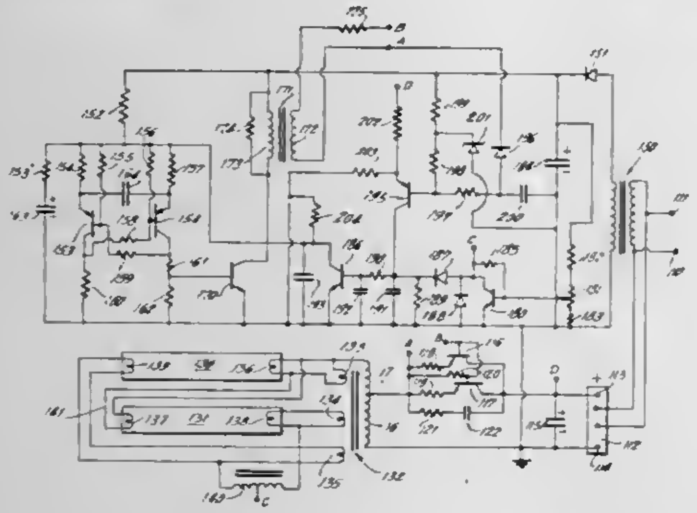
DIMMING CIRCUIT WITH SATURATED SEMICONDUCTOR DEVICE

George Gray, Lambertville, N.J., assignor to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Aug. 27, 1973, Ser. No. 391,953

Int. Cl.² H05B *37/02*

U.S. Cl. 315—210 **31 Claims**



1. An energizing circuit for a gas discharge lamp; said energizing circuit including a source of electric power, oscillator circuit means for producing a pulse current at a relatively high frequency, and a pulse modulator circuit which includes a transistor having base, collector and emitter electrodes; said source of electric power, said emitter and collector electrodes of said transistor and said gas discharge lamp being connected in series; said oscillator circuit means being connected to said transistor to inject said pulse current into said base of said transistor; said pulse current having a minimum magnitude sufficiently high to drive said transistor into saturation; said source of electric power including an a-c source and a d-c converter connected to said a-c source; said oscillator circuit means and said transistor and lamp being driven from the d-c output of said d-c converter.

3,936,697

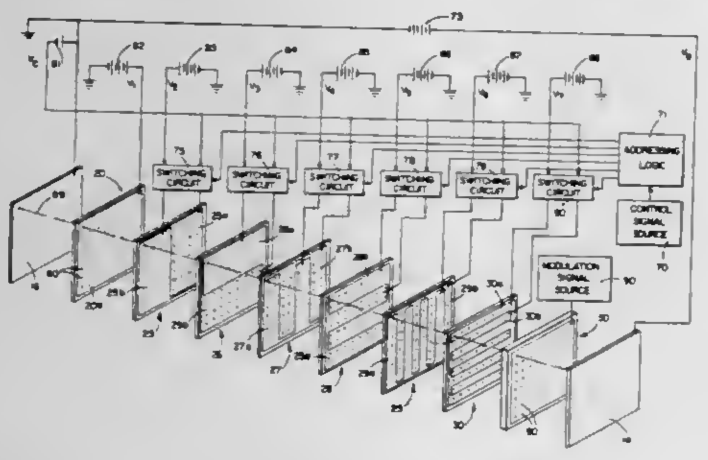
CHARGED PARTICLE BEAM SCANNING DEVICE

Warner Curtis Scott, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 25, 1974, Ser. No. 463,934

Int. Cl.² H01J *29/41*

U.S. Cl. 315—12 R **9 Claims**

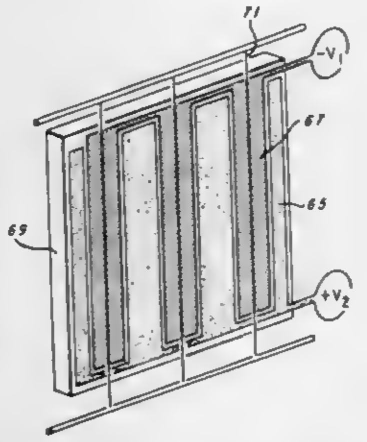


1. A charged particle beam scanning device comprising:

an area source of charged particles for providing a uniform flow of charged particles over a predetermined area, said area source including elongated charged particle generating means for generating charged particles, a first electrode having a negative potential, positioned behind said generating means, and a second electrode having a positive potential interdigitated with said first electrode

an area target,

a plurality of control plates sandwiched between said source and said target for controlling the flow of charged particles therebetween, each of said control plates having a plurality of apertures formed therein, corresponding apertures of said control plates being aligned to form charged particles beam channels between the source and the target, said control plates each having a plurality of electrodes on at least one of the surfaces thereof, said electrodes on each of said surfaces being electrically insulated from each other,



means for providing potentials to at least one of the electrodes of each successive control plate to focus said charged particles through selected control plate apertures,

and means for providing a cutoff potential to the remaining electrodes of said control plates,

whereby a beam of charged particles is focused by said focusing potentials through the channels formed by said selected apertures.

3,936,698

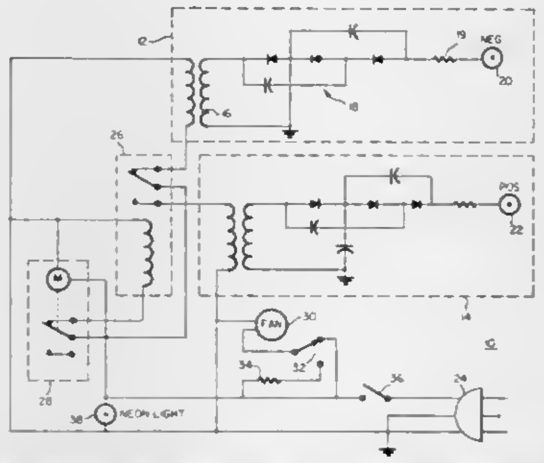
ION GENERATING APPARATUS

George F. Meyer, 6995 Trolley Way, Playa del Rey, Calif. 90291

Continuation of Ser. No. 21,284, March 20, 1970. This application Aug. 27, 1973, Ser. No. 391,937

Int. Cl. H01j *3/04*

U.S. Cl. 317—4 **8 Claims**



1. Ion generating apparatus for exposing a subject such as a patient or the like to an ion flow, comprising, in combination:

first ion generating means for generating negatively charged ions comprising a first electrode and first power supply means for applying a negative voltage to said first electrode;

second ion generating means for generating positively charged ions comprising a second electrode and second power supply means for applying a positive voltage to said second electrode;

means for blowing air across said first and second electrodes; and

timing means for alternately energizing said first and second power supply means in a predetermined time cycle, said time cycle having a first negative ion emitting time portion and a second positive ion emitting time portion in which said second time portion is sufficiently long to at least neutralize any negative charge accumulated by the subject during said first time portion, whereby the subject does not saturate in a condition of repelling negatively charged ions and continues to receive the benefits of negatively charged ions as long as said apparatus remains energized.

3,936,699

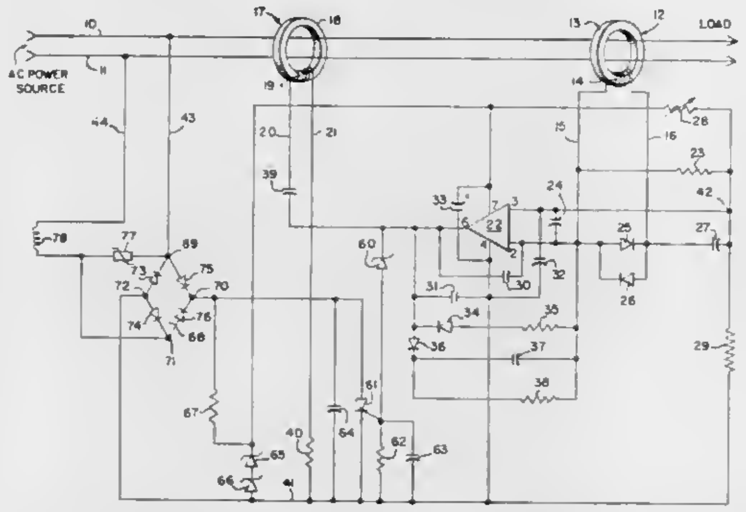
GROUND FAULT PROTECTIVE CIRCUITRY

William H. Adams, Pompey, N.Y., assignor to Pass & Seymour, Inc., Syracuse, N.Y.

Filed Nov. 30, 1973, Ser. No. 420,654

Int. Cl.² H02H *3/28*

U.S. Cl. 317—18 D **9 Claims**



1. A protective system for use in an electrical system having at least a first conductor and a second conductor extending from a source of alternating current to a load, said protective system comprising:

- a. a transformer having a core, a primary on said core and a secondary formed by said at least first and second conductors;
- b. an amplifier;
- c. means to couple the output of said amplifier to said primary of said transformer; and
- d. means including said transformer for causing said amplifier to break into self-sustained oscillations upon the occurrence of a given event relating to said at least first and second conductors.

3,936,700

ELECTRONIC OVERCURRENT PROTECTION OF A DC DATA TRANSMISSION CIRCUIT

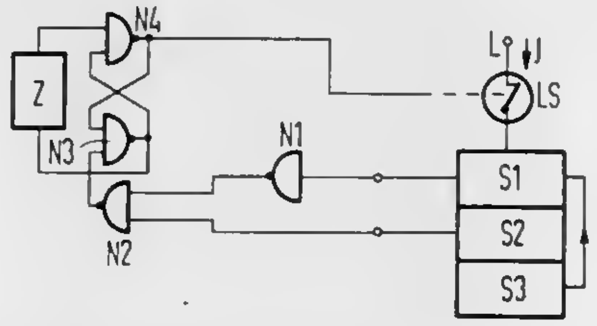
Herbert Reiter, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 4, 1974, Ser. No. 529,494

Claims priority, application Germany, Dec. 5, 1973, 2360689

Int. Cl.² H02H *5/00*

U.S. Cl. 317—22 **9 Claims**



1. A circuit arrangement for protecting a transmission circuit against over-current conditions, said circuit including at least two threshold logic elements for evaluation of current conditions on said line, characterized by,

an additional threshold responsive logic element whose output is coupled to at least one of said threshold logic circuits for controlling the output signal level thereof in response to current in said circuit in excess of said threshold,

overcurrent logic signalling means having an input connected to the output of said two threshold logic elements,

a line switch connected in said transmission circuit for controlling the passage of said current to said threshold logic elements, the state of said switch being fixed by the output of said over-current logic signalling means, whereby said switch is opened upon indication of the over-current condition by said two threshold devices,

and a supplementary monitoring circuit having an output directed to said switch for returning the state thereof to the initial condition, thereby reclosing said line switch.

3,936,701

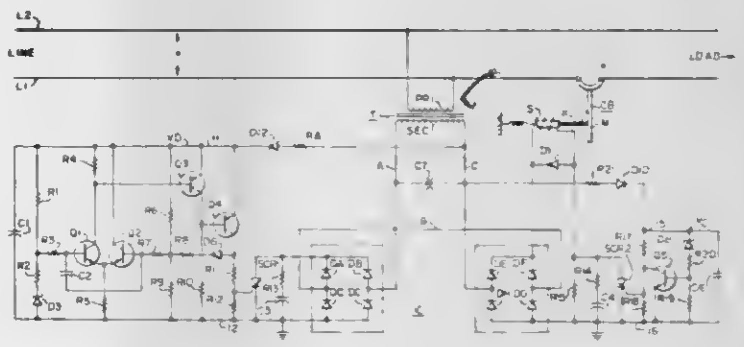
TIMING CIRCUIT FOR ELECTRONIC UNDERVOLTAGE DETECTING DEVICE AND LATCH

John T. Wilson, and Wardell Gary, both of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 29, 1974, Ser. No. 501,561

Int. Cl.² H02H *3/24*

U.S. Cl. 317—31 **5 Claims**



1. An undervoltage protection device, comprising:

- a. circuit breaker means for opening an electrical system when the system voltage is below a first predetermined value and for closing said electrical system when said system voltage is above
a second predetermined value;
- b. sensing means for sensing said system voltage;
- c. alternating current coil means energizable at a predetermined alternating coil voltage for preventing said circuit breaker means from closing upon said electrical system, said coil means controlling a spring loaded plunger means, said coil means when energized with said predetermined coil voltage keeping said spring loaded plunger means from causing said circuit breaker means to close upon said electrical system;
- d. control means interconnected with said sensing means and said coil means, said control means deenergizing said coil means when said system voltage is below said first predetermined value but applying a coil voltage significantly larger than said predetermined coil voltage to said coil means for a predetermined period of time to positively load said plunger means against its spring to allow said circuit breaker means to be closed by independent means when said system voltage is above said second predetermined value, said control means thereafter maintaining said coil means at said predetermined coil voltage.

3,936,702

ELECTRICAL PROTECTION MEANS

Emil Robert Plasko, Washington Township, Ohio, assignor to Micro Devices Corporation, Dayton, Ohio

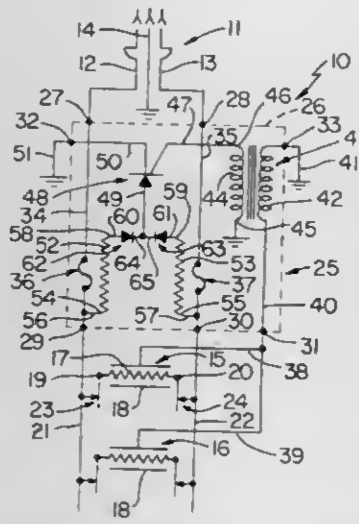
Continuation-in-part of Ser. No. 229,120, Feb. 24, 1972, abandoned. This application Jan. 8, 1973, Ser. No. 321,752

Int. Cl.² H01H *83/00*

U.S. Cl. 317—40 A **2 Claims**

1. In combination, a ground lead, a pair of main leads for interconnecting an electrical power source to at least one

electrically operated unit, each main lead having a thermally activated device therein for opening the respective main lead when said device is activated, said main leads being respectively interconnected to a pair of branch leads respectively having a pair of electrically operated heating means therein for respectively activating said devices when said branch leads are operatively interconnected to ground, and control means for substantially simultaneously interconnecting said branch leads to said ground lead, said control means being condition responsive so as to operatively interconnect said branch leads to said ground lead only when sensing a predetermined condition, said condition responsive means being adapted to be responsive to a broken glass-top range cooking surface.



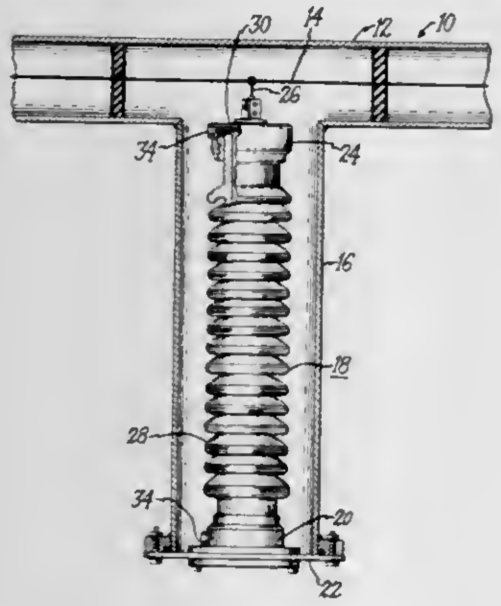
3,936,703
GAS-INSULATED ELECTRIC POWER APPARATUS INCLUDING A SURGE ARRESTER WITH HOT GAS RELIEF MEANS

Eugene C. Sakshaug, Lanesborough, Mass., assignor to General Electric Company, N.Y.

Filed July 11, 1974, Ser. No. 487,656

Int. Cl.^{2} H02H *9/06*

U.S. Cl. 317—62 **1 Claim**



1. Electrical power apparatus of the type having a grounded metal enclosure containing an insulating gas and having a voltage surge arrester mounted inside said enclosure, wherein the improvement comprises:

a gas vent provided adjacent the line voltage terminal end of said arrester for venting gases generated inside said arrester, said vent being directed toward, and in close proximity to, the inside surface of said metal enclosure.

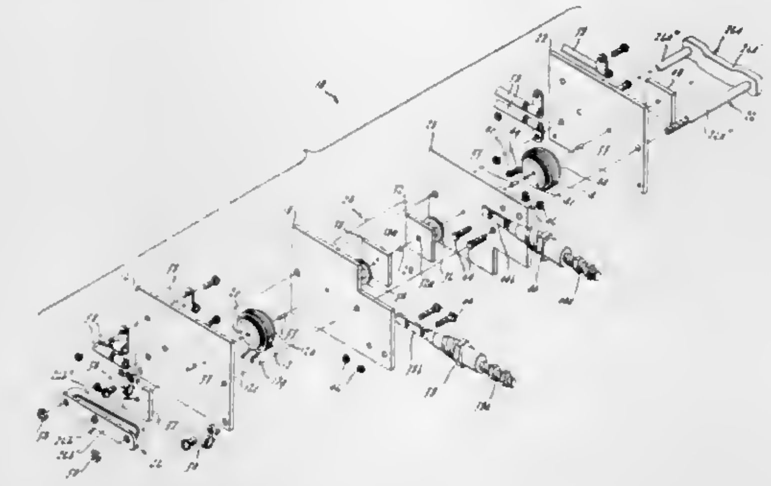
3,936,704
MOUNTING ARRANGEMENT FOR ELECTRONIC SEMI-ONDUCTOR DEVICES

Daniel Andrew Brenneman, Kettering; Ramon Wright Ragan, Dayton, and Thomas Harry Brockie, West Carrollton, all of Ohio, assignors to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 18, 1974, Ser. No. 524,601

Int. Cl.^{2} H01L *23/12, 23/40*

U.S. Cl. 317—118 **14 Claims**



1. In a mounting arrangement for electronic semi-conductor devices, the combination comprising:

a pair of electronic semi-conductor devices, each having a flat terminal surface, disposed with said flat terminal surfaces thereof facing each other;

a pair of electrical conductor members disposed between said pair of devices, each member having a flat surface disposed against the flat terminal surface of a corresponding one of said devices;

spacing means disposed between said members; and mounting means mounting said devices, said members and said spacing means including means applying a clamping force to hold said devices, said members and said spacing means together;

said spacing means including a pivotal connection between said conductor members permitting said members to relatively position themselves in response to application of said clamping force and maintaining said flat surface of each member against said flat terminal surface of the corresponding one of said devices,

said spacing means further including insulating means preventing current flow through said pivotal connection between said members.

3,936,705
MONITOR CIRCUIT

Leo Jozef Maria Billion, 19, Rijkestraat, 3009-Winksele, Belgium

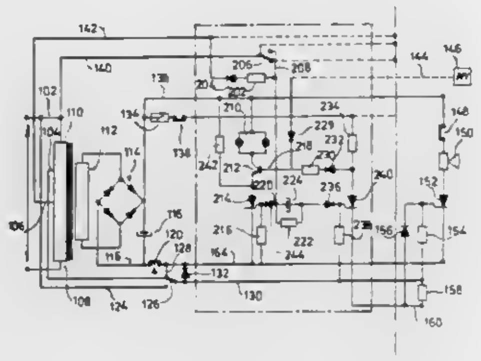
Division of Ser. No. 357,921, May 7, 1973, now Pat. No. 3,845,363. This application Aug. 20, 1974, Ser. No. 499,006

Int. Cl.^{2} H01H *47/32*

U.S. Cl. 317—136 **4 Claims**

1. Monitoring system comprising a number of signalizing circuits each comprising a first electronic switch, such as a thyristor, having a control electrode and associated with a signalling device which is to be activated by current flowing through it, all first thyristors being connected into parallel between two common lines of which the first one is connected to the first terminal of a direct current source and of which the second one is connected through a normally closed reset switch to the second terminal of this current source, a source of control voltage being provided for switching any one of the first thyristors from the non-conducting into the conducting state in response to the application of this voltage to its control electrode, said source being connected to the inputs of alarm switching elements each one of which, being coupled to the control electrode the first thyristor of a signalizing circuit and

through a capacitor to the control electrode of a second thyristor of this signalizing circuit, the respective second thyristors of the signalizing circuits being connected to a common parallel circuit, which second thyristor controls the state of conductivity of a transistor or the like element associated with the first thyristor and with the signalling device and of which the conductivity is also controlled by the output signal of a source of alternating voltage.



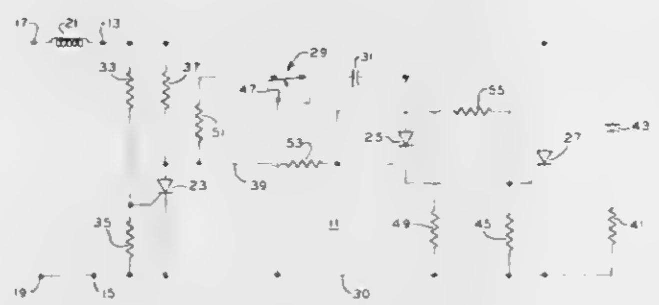
3,936,706
CONTROL CIRCUIT

David C. Hamstra, Clinton, Iowa, assignor to General Electric Company, Fort Wayne, Ind.

Filed Sept. 18, 1974, Ser. No. 506,998

Int. Cl.^{2} H03K *17/56*

U.S. Cl. 317—148.5 B **15 Claims**



1. A control circuit for supplying not more than one complete cycle of alternating current from a source thereof to a load upon command comprising a plurality of gate controlled switching devices each non-conducting until simultaneously properly poled and gated to thereafter conduct until the current therethrough decreases below a conduction threshold, a multiple state command switch, and an energy storage device for selectively accumulating energy during current excursions of one polarity and only when the command switch is in a first state, a first of the switching devices being connected in the circuit to begin conducting a short time interval after the beginning of each current excursion of the other polarity, a second of the switching devices being connected in the circuit in series between the source and the load for supplying electrical energy to the load when gated, a third of the switching devices being connected in the circuit to conduct when gated to deplete the store of energy in the storage device only when the command switch is in a second state, the conduction of the third switching device gating the second switching device, and gating of the third switching device occurring only during current excursions of the other polarity and when the first switching device is non-conducting.

3,936,707
OPERATING APPARATUS FOR ELECTRICALLY DRIVEN VEHICLES

Susumu Yoshida, and Masaharu Suzuki, both of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Feb. 12, 1974, Ser. No. 441,809

Claims priority, application Japan, Feb. 14, 1973, 48-19356; Oct. 15, 1973, 48-115590; 48-115591; 48-115592; Nov. 29, 1973, 48-133732; 48-133733

Int. Cl.^{2} H02P *5/06*

U.S. Cl. 318—139 **16 Claims**

1. An operating apparatus for an electrically driven vehicle having a main circuit wherein power is fed from a DC source to an electric motor, via a chopper voltage regulation circuit, the apparatus comprising:

- a. an accelerator circuit including a variable resistor-transducer coupled to an accelerator pedal of said vehicle;
- b. a signal generator including a control circuit for controlling said chopper circuit, and controlled by said variable resistor-transducer, for generating a gating signal for said chopper circuit, dependent on the instantaneous position of said accelerator pedal;
- c. an overcurrent detector circuit controlling the current of said chopper circuit, by detecting the variation of voltage in accordance with the current of said main circuit, said overcurrent detector circuit comprising means for detecting the variation of voltage produced by the inductive resistance component which changes in response to the value of chopper current, and means for controlling the chopper current of said chopper circuit.

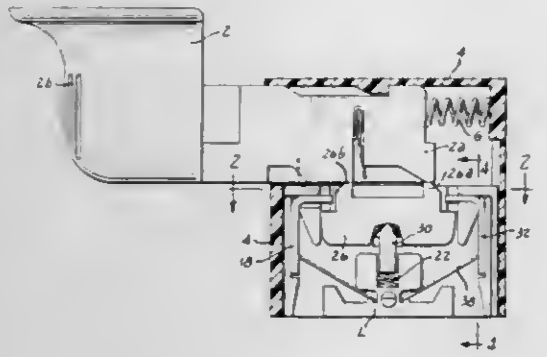
3,936,708
TRIGGER SPEED CONTROL SWITCH WITH PLASTIC PACK SEMI-CONDUCTOR

Merlin R. Dummer, Arab, Ala., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed July 9, 1974, Ser. No. 486,767

Int. Cl.^{2} H02P *5/16*

U.S. Cl. 318—249 **10 Claims**



1. A double-pole, variable control trigger switch comprising:

- a return spring biased trigger adapted for operation by the forefinger of the user;
- a frame mounting said trigger for movement therein and having a base-embracing portion;
- a split base held fixed within said base-embracing portion of said frame with the tops of the base halves continguous to said trigger and defining therebetween a central compartment and defining with said frame left and right compartments;
- double-pole switch means with one pole thereof in each said left and right compartment and means for operating said switch poles by said trigger;
- and a semi-conductor variable control circuit in said central compartment comprising:
- a plastic pack semi-conductor element having cathode and gate terminals;
- a resistor strip at the top of said central compartment; an elongated connector disposed alongside said resistor strip and being electrically connected to the anode of said semiconductor element;
- an electrical contact driven by said trigger to slide along said resistor strip and said connector to vary the amount of resistance in said variable control circuit;
- a capacitor connected across said cathode and gate terminals;
- and means for connecting said variable control circuit to said double-pole switch means and to an electric power source and load.

3,936,709
CONTROL CIRCUITS FOR ELECTRICALLY DRIVEN VEHICLES

Maurice James Wright, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

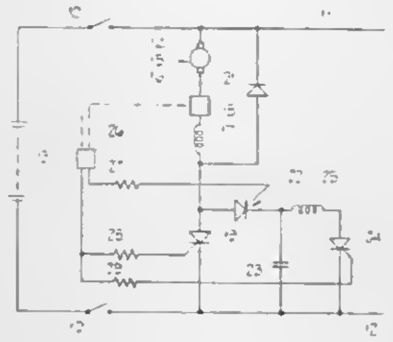
Filed June 14, 1974, Ser. No. 479,533

Claims priority, application United Kingdom, June 30, 1973, 31301/73

Int. Cl.^{2} H02P *3/00*

U.S. Cl. 318—269 **2 Claims**

1. A control circuit for an electrically driven vehicle, comprising in combination a traction motor for driving the vehicle, an accelerator pedal which when depressed provides electrical drive and also determines the current in the motor armature, a brake pedal which when depressed provides electrical braking and also determines the current in the motor armature, contactors for selectively effecting said motor's armature-field connection, a thyristor chopper circuit controlling the operation of the motor, said chopper circuit including a main thyristor in series with the motor, a commutating capacitor for turning the main thyristor off, and a commutating thyristor controlling the commutating capacitor, a control unit which receives a signal representing the actual armature current and a signal from one of said pedals representing demanded armature current, the control unit providing gating pulses to the thyristors, in sequence in accordance with the actual and demanded current signals so as to control the armature current, and control means operable whenever the motor is switched from its forward drive to its forward braking condition and vice versa for reducing the demand signal fed to said control unit to a low value during changeover of said contactors effecting motor armature-field connection, and maintaining said demand signal at said low value for a predetermined time period initiated by said contactors closing to prevent incorrect firing of the thyristors due to contactor bounce.



3,936,710
SYNCHRONOUS DRIVE CONTROL SYSTEM FOR DC MOTOR

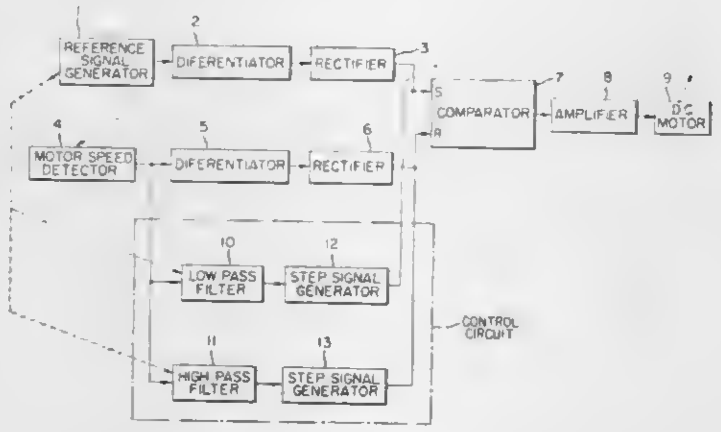
Kinji Tanikoshi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 5, 1974, Ser. No. 476,662

Claims priority, application Japan, June 4, 1973, 48-65614; June 11, 1973, 48-65615; June 11, 1973, 48-78587

Int. Cl.^{2} H02P *5/00*

U.S. Cl. 318—318 **19 Claims**



1. A DC motor and control system therefor comprising, in combination:

- a. a DC motor;
- b. motor-speed detecting means for detecting the rotational speed of said DC motor and generating an electrical signal having a frequency corresponding to the instantaneously changing rotational speed of said DC motor, said motor-speed detecting means being associatively arranged with said DC motor;
- c. means for generating a reference signal having a predetermined frequency in accordance with which said DC motor rotates at a predetermined constant speed;
- d. means for comparing said electrical signal and said reference signal to supply to said DC motor a potential corresponding to the phase difference of said signals; and
- e. control means inserted between said motor-speed detecting means and said comparing means to form an auxiliary feed back loop, said control means being arranged to produce a control signal operative to disable said comparing means only when the electrical signal frequency exceeds said reference signal by a predetermined amount and to interrupt said supply of the potential corresponding to the phase difference of said signals to said DC motor.

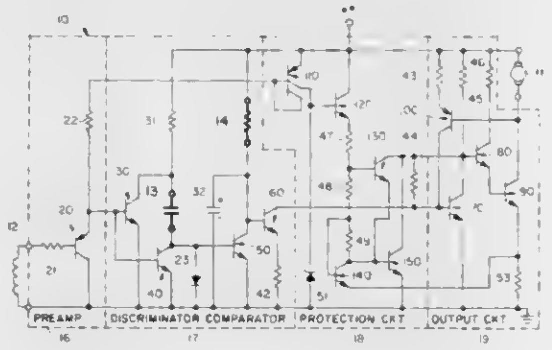
3,936,711
MOTOR SPEED CONTROL CIRCUIT

Michael J. Gay, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Continuation of Ser. No. 171,996, Aug. 16, 1971, abandoned. This application Sept. 28, 1973, Ser. No. 401,722

Int. Cl.^{2} H02P *5/36, 5/06*

U.S. Cl. 318—345 **10 Claims**



1. A circuit for controlling the speed of an electric motor such that the speed of the motor is independent of variations in supply voltage and temperature applied to said circuit, comprising:

- means mechanically linked to the motor for generating an input signal having a frequency which varies proportionately to the speed of the motor;
- means for generating a series of rectangular pulses of current, the magnitude of said current pulses being substantially constant with the number of said pulses generated over a predetermined time interval corresponding to the frequency of said input signal;
- means for generating a reference current having a magnitude representing the desired speed of said motor and for subtracting said pulses of current from said reference current so as to develop an output current having an amplitude dependent on the difference of said pulses of current and said reference current, said pulse current and said reference current having similar dependencies on said supply voltage and temperature such that said output current is independent of the variations in the power supply voltage and temperature, said output current corresponding to the difference in the actual speed of the motor and the desired speed of the motor; and
- means responsive to said output current for generating voltage drive to the motor so as to control the speed of the motor, said voltage drive generating means including shunt feedback means being responsive to the voltage magnitude appearing across the motor for developing a negative feedback signal to ensure that a low impedance is presented in series with the motor and to stabilize the voltage drive to the motor.

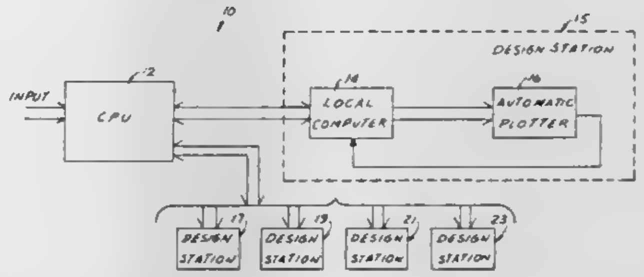
3,936,712
INTERACTIVE GRAPHIC SYSTEM

Heinz Joseph Gerber, West Hartford; David J. Logan, Glastonbury, and Leonard G. Rich, West Hartford, all of Conn., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.

Continuation-in-part of Ser. No. 353,115, April 20, 1973, abandoned. This application July 9, 1973, Ser. No. 377,769

Int. Cl. G05b *19/42*

U.S. Cl. 318—568 **38 Claims**



1. A computer controlled plotting system in which lines and symbols are automatically drawn on a drawing material in response to control signals, which drawing material resides upon a supporting surface of said plotting system, including a carriage assembly movable generally in a plane over said drawing material, said carriage assembly being capable of motion in two generally orthogonal coordinate directions in said plane and at least one writing instrument mounted on said carriage assembly for writing on said drawing material when said carriage is moved in response to said control signals, the improvement comprising: a cursor manually positionable over said drawing material for indicating the coordinate location of said cursor with respect to said supporting surface, said cursor being operably connected to said carriage assembly such that motion of said cursor with respect to said supporting surface generates said control signals which cause said carriage to move in response thereto, said cursor being mechanically suspended from said carriage assembly and having limited freedom of movement in the two coordinate directions relative to the carriage assembly and the support surface of the plotting system.

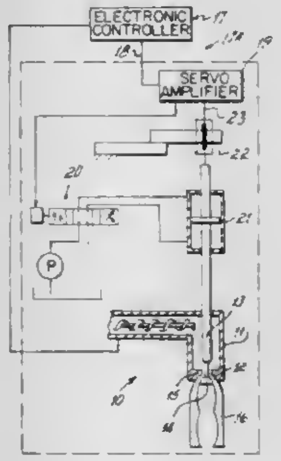
3,936,713
MACHINE CONTROL CIRCUIT

Denes B. Hunkar, Cincinnati, Ohio, assignor to Hunkar Laboratories, Inc., Cincinnati, Ohio

Filed Apr. 8, 1974, Ser. No. 458,470

Int. Cl.^{2} G05B *19/24*

U.S. Cl. 318—573 **5 Claims**



1. A circuit for analog control of a machine during its machine cycle, comprising, in combination:

- timing pulse generator for producing a plurality of timing pulses at equally spaced time intervals during the machine cycle;
- a counter responsive to said timing pulse to produce a stepping pulse after a predetermined number of timing pulses are counted;

- a control voltage programmer for generating a plurality of control voltages, each said control voltage corresponding to the desired control voltage for the machine at the beginning of a defined time interval of the machine cycle;
- a first selector means responsive to said control voltage programmer and said counter for sequentially placing each of said plurality of control voltages on the first selector output in response to said stepping pulses;
- a second selector means responsive to said control voltage programmer and said counter for sequentially placing each of said plurality of control voltages on the second selector output in response to said stepping pulses, said first selector means being operative to select the control voltage desired at the beginning of one time interval in the machine cycle while said second selector means being operative to select the desired control voltage at the beginning of the next time interval in the machine cycle;
- a ladder network connected at one end to said first selector output and at its other end to said second selector output to produce a plurality of voltage outputs starting at the voltage at said first selector output and ending at the voltage at the output of said second selector;
- a third selector means responsive to said ladder network and said timing pulses for selectively connecting in sequence the plurality of voltages from said ladder network to the third selector output in response to said timing pulses, the output of the third selector means being a staircase voltage during each machine cycle interval.

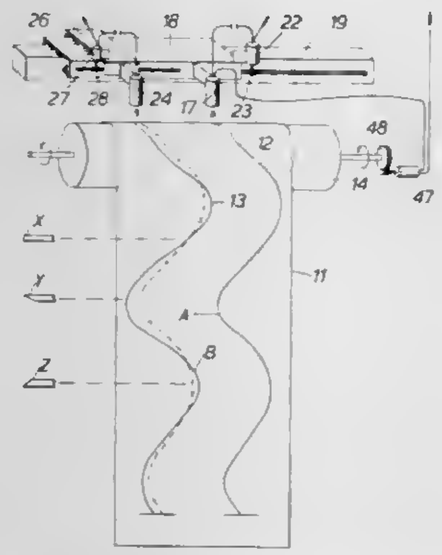
3,936,714
PROFILING OF METALS

Victor Gregory Marshall, Gainsborough, and John Maurice Thompson, Waddingham, both of England, assignors to Redpath Dorman Long Limited, Bedford, England

Filed June 24, 1974, Ser. No. 482,657

Int. Cl.^{2} G05B *19/36*

U.S. Cl. 318—576 **11 Claims**



1. A control arrangement for plate cutting apparatus capable of making a cut which curves in, and is angled with respect to, the local plane of a plate, which arrangement comprises a programme representation defining a curve and relating an angle to that curve, which representation comprises two lines related to a common datum, and a first sensor device operatively responsive to a representation of the curve and a second sensor device operatively responsive to a representation of the corresponding angle, said sensor devices being operatively connected to send signals respectively capable of controlling relative translational movement between the plate and a cutting device such that a constant relative speed is maintained therebetween, and angular movement between the line of cut and the local plane of the plate, in accordance with said programme representation.

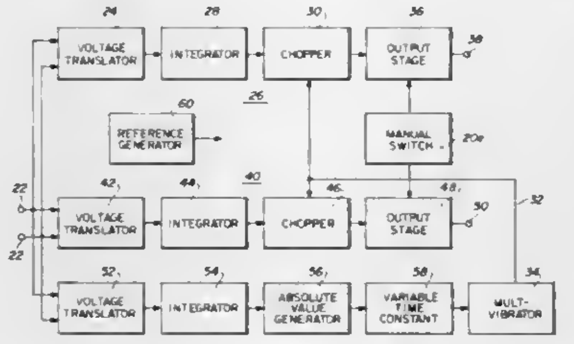
3,936,715
ELECTRONIC TRIM SYSTEM

John M. Nixon, Springdale, and James R. Younkin, Fayetteville, both of Ark., assignors to Edo-Aire Mitchell Industries, Inc., Mineral Wells, Tex.

Filed Aug. 9, 1974, Ser. No. 496,357

Int. Cl.^{2} B64C *13/16*; G05D *1/00*

U.S. Cl. 318—580 **22 Claims**



1. An aircraft control system, comprising in combination:
- an automatic pilot having a primary servo system for moving a primary control surface of an aircraft, the primary servo system including a primary servomotor coupled to the primary control surface and means for applying an electrical signal to actuate the servomotor and thereby move the primary control surface;
- means including a two terminal, trim servomotor for actuating a trim control means associated with the primary control surface;
- a first amplifier channel connected to respond to the electrical signal applied to the primary servomotor and providing an output of one polarity;
- a second amplifier channel connected to respond to the electrical signal applied to the primary servomotor and providing an output having a polarity complementary to the output of the first amplifier channel; and
- means for connecting the output of said first channel to one terminal of said trim servomotor and the output of the second channel to the second terminal of the trim servomotor.

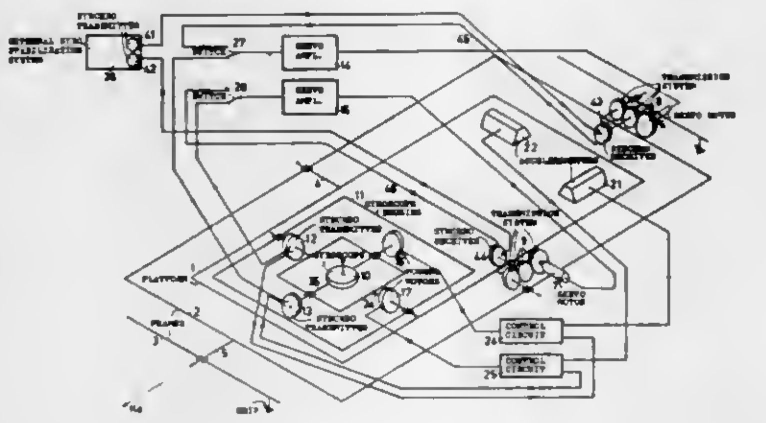
3,936,716
STABILISATION SYSTEM

Johannes Bos, Hengelo, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 200,921, Nov. 22, 1971, abandoned. This application Nov. 28, 1973, Ser. No. 419,684

Int. Cl.^{2} G05B *7/00*

U.S. Cl. 318—591 **10 Claims**



1. A stabilisation system for a naval radar installation whereby a gyro housing, which contains a vertical gyro in a cardanic suspension, is mounted on a platform to be stabilised, which is cardanically suspended by means of two concentric gimbal frames and stabilised about two corresponding co-planar orthogonal shafts, the stabilisation about each of said shafts occurring by a servo system controlled by said gyro, wherein, in a first step, the spin axis of the vertical gyro is brought, to some extent, from a random orientation to a position vertical with respect to the earth surface by means of two synchro transmitters coupled to the gyro, first control circuits connected to each of these synchro transmitters, and two torque motors connected to a corresponding first control circuit, whereby each of said first control circuits is composed successively of a demodulator, a compensation network and a matching amplifier, and in a second step the vertical gyro is held in said vertical position in a known manner, by means of two accelerometers mounted on the platform to be stabilised, second control circuits connected to each of these accelerometers, and the above-mentioned torque motors, whereby each of said second control circuits is composed successively of a filter, the compensation network and the matching amplifier.

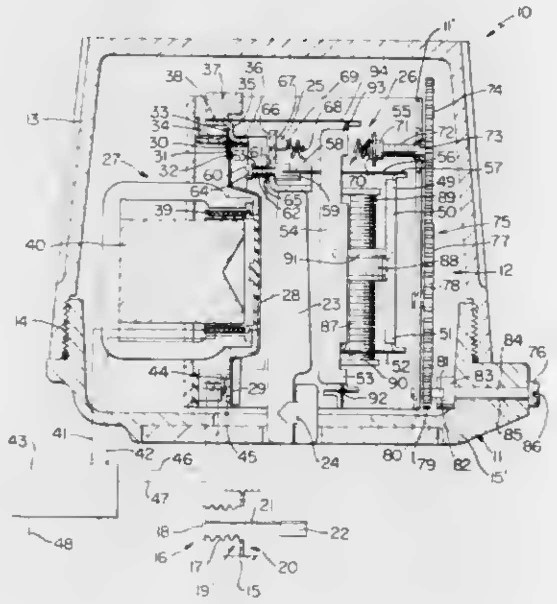
3,936,717
FORCE BALANCE TRANSMITTER AND PARTS THEREFOR OR THE LIKE

George T. Hardin, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 21, 1974, Ser. No. 499,319

Int. Cl.^{2} G05B *1/06*

U.S. Cl. 318—676 **16 Claims**



1. In a force balance transmitter having a frame means and a process element carried by said frame means and provided with a movable part adapted to move in response to changes in said process, said transmitter having feedback means carried by said frame means and having output signal means for producing a signal in relation to a feedback force thereof created to oppose movement of a movable feedback part thereof, the improvement comprising three levers pivotally mounted to said frame means transmitting motion of said movable part of said process element to said movable feedback part of said feedback means, said three levers comprising first, second and third levers respectively having opposed ends, said first lever having one end thereof interconnected to said movable part of said process element to be pivoted thereby, said second lever having one end thereof interconnected to the other end of said first lever, said third lever having one end thereof interconnected to the other end of said second lever and having the other end thereof interconnected to said movable feedback part of said feedback means, said three levers being arranged in substantially a parallel side-by-side relation with said third lever being disposed intermediate said first and second levers.

3,936,718
BATTERY CHARGING CONTROL CIRCUITS

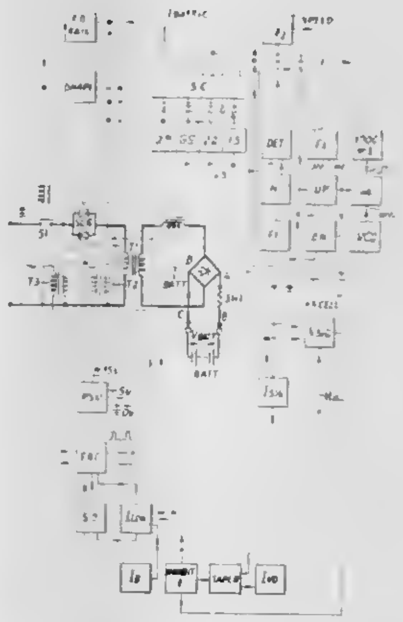
William Gordon Melling; Peter George Mclellan, and Brian Turton Smith, all of London, England, assignors to Westinghouse Brake & Signal Company Limited, London, England

Continuation-in-part of Ser. No. 400,001, Sept. 24, 1973, Pat. No. 3,890,556. This application Oct. 16, 1974, Ser. No. 515,200

Claims priority, application United Kingdom, Sept. 25, 1974, 41820/74

Int. Cl.^{2} H02J *7/10*

U.S. Cl. 320—20 **4 Claims**



1. In a battery charging control circuit for controlling the charging of a battery in which gassing can occur at some stage during charging, said circuit being of the type wherein the state of battery charge is assessed by measurement when the battery charging current is interrupted and including timing means operated during an interruption to time a period of time, voltage register means responsive to the end of said period to register the battery voltage, comparison means to compare the registered battery voltage with the battery voltage registered earlier during a previous interruption of charging current, and comparison responsive control means responsive to the result of the comparison to permit, prevent or modify the charging current thereafter applied to the connected battery, the improvement wherein said comparison responsive control means includes means responsive to a minimum between decreasing and increasing differences between compared registered voltages indicative of the onset of a gassing phase of the charging of the battery to modify the charging current to a level appropriate to charging of the battery while the battery is gassing.

3,936,719
HIGH VOLTAGE GENERATOR FOR A TELEVISION RECEIVER

Keisuke Miyoshi, Katano, and Naoki Shibano, Sakai, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 15, 1973, Ser. No. 416,119

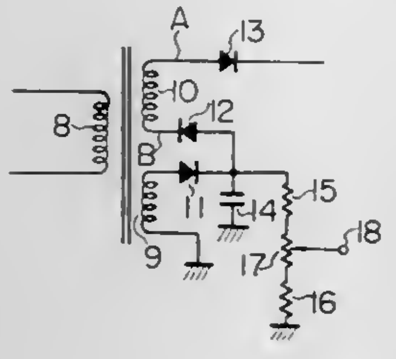
Claims priority, application Japan, Nov. 20, 1972, 47-116936; Nov. 20, 1972, 47-116973; Nov. 20, 1972, 47-116974

Int. Cl.^{2} H02M *3/22*

U.S. Cl. 321—2 **4 Claims**

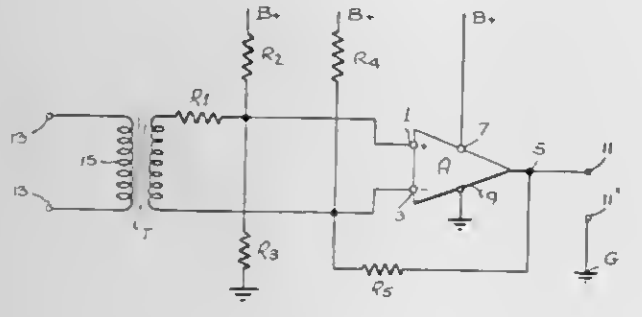
1. A high voltage generator for energizing a cathode ray tube of a television receiver comprising a high voltage transformer having a primary winding and first and second secondary windings; a first rectifier having one end connected to one end of said first secondary winding, the other end of said first

secondary winding being directly connected to ground, said first rectifier being connected in series with said first secondary winding; a second rectifier connected directly between the other end of said first rectifier and one end of said second secondary winding, the connection point between said first and second rectifiers forming a terminal for the derivation of a D.C. voltage; and a third rectifier having one end connected to the other end of said second secondary winding, the other end of said third rectifier being connected to an anode of said cathode ray tube, said second rectifier, said second secondary winding, and said third rectifier being connected in series, whereby fifth or higher odd harmonic tuning is obtained between said primary winding and at least one of said first and second secondary windings.



3,936,720
HALF-WAVE RECTIFIER CIRCUIT

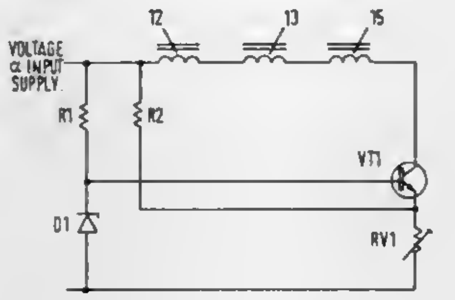
Daniel R. von Recklinghausen, Arlington, Mass., assignor to Eastern Air Devices, Inc., Great Neck, N.Y.
Filed Aug. 12, 1974, Ser. No. 496,647
Int. Cl.^{2} H02M *7/00*
U.S. Cl. 321—8 R 6 Claims



1. An improved half-wave rectifying circuit comprising the combination of:
- a differential amplifier having inverting input, noninverting input, output, supply voltage, and ground terminals;
- a voltage source;
- a negative feedback comprising a resistor R5 coupled between said output and inverting terminals;
- means to supply an offset current to said inverting input terminal comprising a resistor R4 coupling said voltage source to said inverting input terminal;
- means for supplying an operating bias to said noninverting input terminal comprising serially connected resistors R2 and R3 coupling said voltage source to the ground with the noninverting input terminal connected to the junction of the resistors R2 and R3; and
- said resistors R2, R3, R4 and R5 being proportioned to provide a substantially zero output compared to the ground terminal in the absence of an input signal.

3,936,721
ELECTRICAL POWER SUPPLIES

Michael Lord Butterworth, Bognor Regis, England, assignor to Weir Electronics Limited, Sussex, England
Filed Nov. 15, 1973, Ser. No. 415,931
Claims priority, application United Kingdom, Nov. 16, 1972, 52926/72
Int. Cl.^{2} H02M *5/10*
U.S. Cl. 321—25 6 Claims

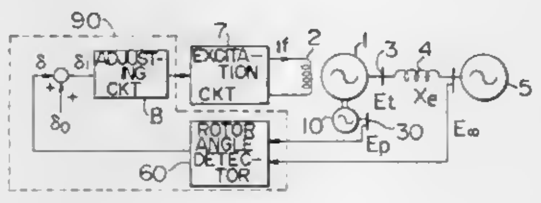


1. An electrical power supply arranged to provide an alternating voltage output, said power supply comprising: an a.c. input source; a pair of transductors or saturable reactors having their output windings connected in phase opposition in series with the input source and the output; inverter means for supplying the input windings of the transductors with a constant d.c. control current independent of the output so as to operate in the forced magnetization mode thereby providing a constant current source with a high output impedance, the output current being set by the control current; and

means for compensating "transfer admittance" in the d.c. control circuit, said compensating means comprising a transistor coupled in series with the transductors or reactors; a resistor in parallel with the series connected transistor and said transductors or reactors; means adapted to control the current through the resistor to be proportional to the input supply voltage, said transistor arranged so that the combined current through the resistor and the transductors or reactors is constant thereby causing the d.c. control current to be reduced when the input supply voltage increases.

3,936,722
FIELD EXCITATION CONTROL SYSTEM FOR THE SYNCHRONOUS GENERATOR

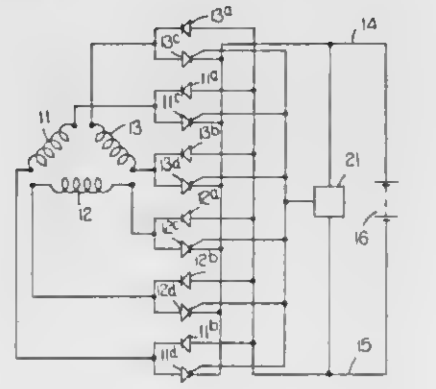
Masuo Goto, and Akira Isono, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan
Filed Apr. 3, 1974, Ser. No. 457,506
Claims priority, application Japan, Apr. 4, 1973, 48-37773
Int. Cl.^{2} H02P *9/14*
U.S. Cl. 322—20 6 Claims



1. A field excitation control system of the synchronous generator comprising:
- a synchronous generator including a field winding;
- rotor angle detector means to detect the rotor angle of the synchronous generator;
- rotor angle setting means to provide a set value of the rotor angle;
- summing means to sum the output of said rotor angle detector means and the output of said rotor angle setting means;
- phase regulating means for regulating the phase of the output of said summing means; and
- field excitation voltage control means to control the terminal voltage of the field winding of the synchronous generator in response to the phase-regulated output of said summing means.

3,936,723
BATTERY CHARGING SYSTEMS FOR USE IN ROAD VEHICLES

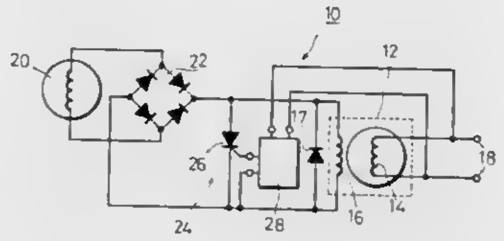
Paul Anthony Harris, Walsall, England, assignor to The Lucas Electrical Company Limited, Birmingham, England
Filed May 8, 1973, Ser. No. 358,321
Claims priority, application United Kingdom, May 20, 1972, 23833/72
Int. Cl.^{2} H02P *9/26*
U.S. Cl. 322—28 1 Claim



1. A battery charging system comprising in combination a permanent magnet alternator having at least three separate single phase windings, positive and negative supply lines for connection to a vehicle battery, and a plurality of pairs of diodes and pairs of thyristors, there being one pair of diodes and one pair of thyristors for each winding, and each winding having its ends connected to the negative supply line through its pair of diodes respectively, and its ends further connected to the positive supply line through its pair of thyristors respectively, the system further including voltage sensitive means connected between the supply lines for providing gate current to the thyristors only when the voltage between the supply lines is below a predetermined value.

3,936,724
AUTOMATIC VOLTAGE REGULATOR FOR A SEPARATELY EXCITED GENERATOR

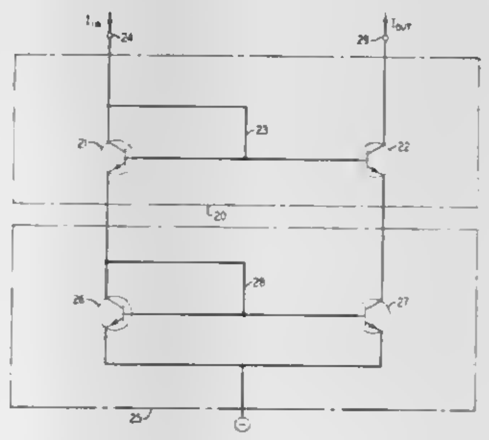
Yoshihiko Ikeda, Susono, Japan, assignor to Kokusan Denki Co., Ltd., Shizuoka, Japan
Filed Feb. 13, 1975, Ser. No. 549,705
Claims priority, application Japan, Feb. 19, 1974, 49-20057[U]
Int. Cl.^{2} H02P *9/26*
U.S. Cl. 322—28 5 Claims



1. An automatic voltage regulator for a separately excited generator comprising a main AC generator including an armature winding and an exciting winding and an exciter of an AC magento generator associated with said exciting winding of said main AC generator, said regulator comprising a single controlled semiconductor switching device disposed in parallel to said exciting winding of said main AC generator; an output voltage detecting and control signal generating circuit having the input connected to the output of said armature winding to detect the output voltage of said main AC generator and having the output connected to a controlled electrode of said controlled semiconductor switching device to apply a control signal to said controlled electrode when the output voltage of said main AC generator reaches more than a predetermined value; and the exciting output voltage from said AC magneto generator having frequency much higher than that of the output voltage of said main AC generator.

3,936,725
CURRENT MIRRORS

Herbert Anton Schneider, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 15, 1974, Ser. No. 497,687
Int. Cl.^{2} G05F *3/08*
U.S. Cl. 323—1 7 Claims



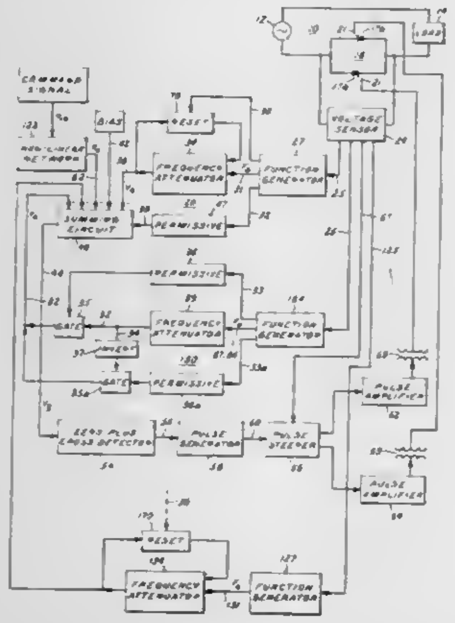
1. In combination,
- a first current mirror and a second current mirror, each of said current mirrors comprising first and second transistors, means for interconnecting the bases of said first and second transistors and means connected to the collector of said first transistor for providing base current for said first and second transistors, and
- cascode means for connecting said first and second current mirrors in a cascode configuration, said cascode means comprising means for coupling the emitter of each of said first and second transistors of said first current mirror to the collector of a respective one of said first and second transistors of said second current mirror.

3,936,726
GATING CONTROL FOR A STATIC SWITCHING ARRANGEMENT WITH IMPROVED DYNAMIC RESPONSE

Fred W. Kelley, Jr., Media, Pa., assignor to General Electric Company, Philadelphia, Pa.
Filed Sept. 3, 1974, Ser. No. 503,143
Int. Cl.^{2} G05F *1/56*
U.S. Cl. 323—24 8 Claims

1. A gating control for a complementary pair of alternately conducting controllable electric valves which are cyclically fired at gating angles that can be varied to control the subsequent conduction angel of each valve in turn, said gating control comprising:
- a. first means for supplying a control signal having a magnitude indicative of the conduction angles desired for said valves;
- b. second means for developing an on-time indicating signal having a magnitude during each of the intermittent intervals when neither valve is conducting that is proportional to the actual conduction angle of the last conducting valve;

c. third means for developing an off-time indicating signal that varies in magnitude as a function of the duration of each of said intermittent non-conducting intervals;
d. summing means connected to said first, second, and third means and effective during each non-conducting interval

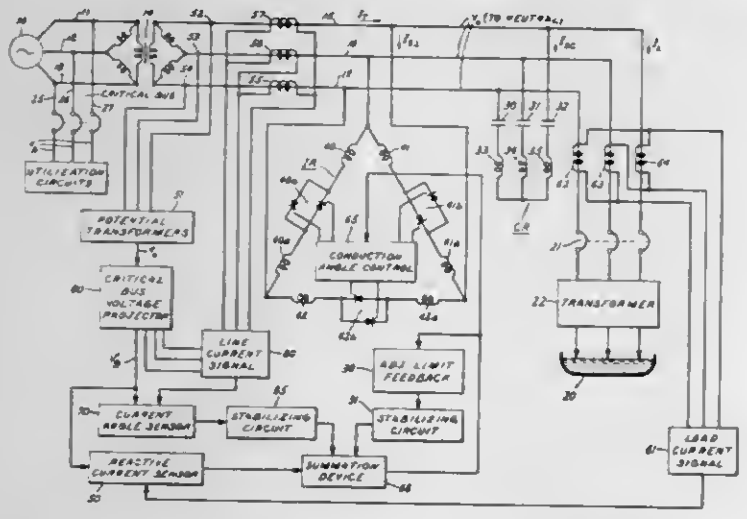


for providing a gating control signal the magnitude of which depends on the sum of all three of said signals; and
e. means responsive to said gating control signal for initiating the firing of the next to conduct valve when said gating control signal reaches a predetermined threshold level.

3,936,727
HIGH SPEED CONTROL OF REACTIVE POWER FOR VOLTAGE STABILIZATION IN ELECTRIC POWER SYSTEMS

Fred W. Kelley, Jr., Media, Pa., and Georges R. E. Lezan, Cherry Hill, N.J., assignors to General Electric Company, Philadelphia, Pa.

Filed Oct. 12, 1973, Ser. No. 406,139
Int. Cl.² G05F *1/68*
U.S. Cl. 323—102 **24 Claims**

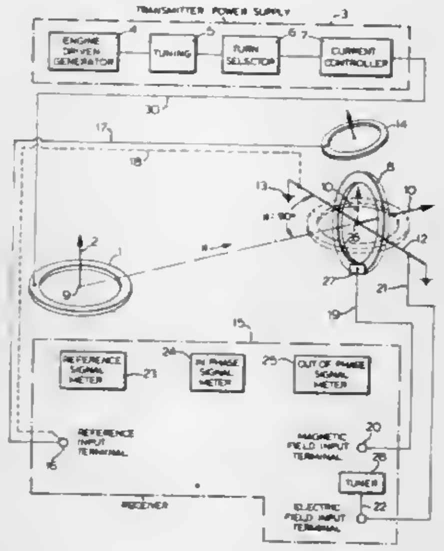


1. Reactive current compensating apparatus for a multiphase alternating current electric power circuit having load terminals and supply conductors and subject to varying reactive current demand at said load terminals comprising, fixed multiphase capacitor means connected in said power circuit, fixed multiphase inductor means, alternating current static switching means connected in series with each phase of said inductor means, means connecting the series combination of said inductor means and switching means in parallel circuit relation with said capacitor means, each said switching means including gating means for varying the conduction angle of said switching means thereby to control the magnitude of reactive current traversing one phase of said inductor means, means for generating a group of individual signals representative in each half cycle of power circuit frequency of the reactive component of current in each phase of an electrical load connected to said load terminals, and means individually responsive to each said signal for so controlling said gating means in the associated phase that the net effective reactive impedance of said fixed capacitor means and said fixed inductor means in each phase is substantially equal and opposite to reactive current demand at the load terminal of each phase.

3,936,728
METHOD AND MEANS FOR INVESTIGATING THE DISTRIBUTION OF ELECTRICAL CONDUCTIVITY IN THE GROUND

Mrinal K. Ghosh, Scarborough, and Philip G. Hallof, Don Mills, both of Canada, assignors to McPhar Geophysics Limited, Don Mills, Canada

Filed Nov. 29, 1973, Ser. No. 420,019
Int. Cl.² G01V *3/08, 3/10*
U.S. Cl. 324—6 **15 Claims**



1. A method of investigating the distribution of electrical conductivity in the ground for the purpose of delineating geophysical structures comprising creating an electromagnetic field at a transmitting point and measuring at a receiving point at a finite distance from said transmitter point at a series of frequencies within the frequency range of from about 5 cycles per second to about 43,000 cycles per second one or more of the magnetic induction field and the electric induction field components created by said electromagnetic field measured both in phase and out of phase with a reference signal derived electromagnetically, adjacent the receiving point, from the created electromagnetic field, and having a random phase relation thereto such measurements providing a source of information for delineating any discontinuities in the electrical conductivity in the ground.

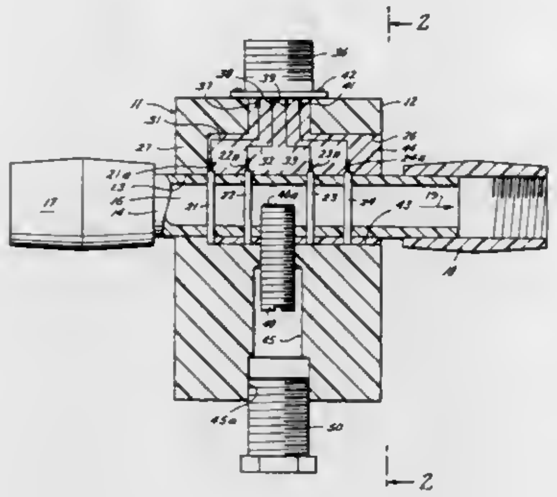
3,936,729
CONDUCTIVITY MEASUREMENT PROBE

Joseph D. Winslow, Jr., Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Feb. 28, 1974, Ser. No. 446,854
Int. Cl.² G01N *27/42*
U.S. Cl. 324—30 B **10 Claims**

1. A conductivity probe comprising:
a. a body formed of a rigid insulating material and having a cylindrical opening therethrough;

b. a tubular electrically nonconducting member positioned coaxially within said opening of said body with an annulus therebetween extending at least partially through said body and said tubular member forming a cylindrical flow passage within said body thereby providing an insulated boundary defining a flux channel to polarization current;
c. said tubular member extending beyond the exterior surface of said body and carrying end connections adapted to function as inlet and outlet means for passing aqueous liquid through said flow passage;
d. four metallic electrodes of elongated configuration disposed in the flow passage and mounted with at least one of their ends penetrating the wall of said tubular member within said annulus between said body and said tubular member, and said electrodes positioned in parallel relationship with their longitudinal axes transverse to said flow passage and residing in a plane containing the longitudinal axis of said flow passage;
e. one pair of said electrodes being auxiliary electrodes for providing current flow in said flow passage and another pair of said electrodes being reference electrodes serving as polarization potential monitors, said auxiliary electrodes residing adjacent one another and said reference electrodes residing remote from one another at the limits of said flux channel and adjacent each auxiliary electrode;

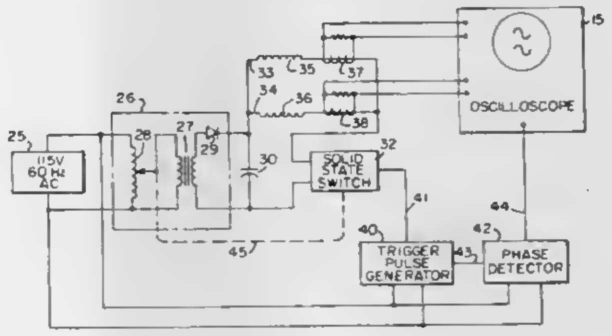


f. each of said reference electrodes spaced equidistantly from the adjacent auxiliary electrode, and said auxiliary electrodes spaced apart a greater distance from one another than said auxiliary electrodes from said reference electrodes;
g. an elongated opening provided in said body intersecting said annulus and said elongated opening disposed in juxtaposition with said tubular member with one end of said electrodes being exposed by said elongated opening, and said elongated opening communicating with the exterior of said body;
h. electrically conductive means extending from said auxiliary and reference electrodes within said elongated opening to the exterior of said body; and
i. a cast insulating material filling void-free said annulus and elongated opening for integrally securing said tubular member, electrodes, electrically conductive means and body into a fluid-tight and rigid relationship, and said cast insulating material insulating said conductive means from each other in said body whereby said conductive means form circuits through said electrodes during conductivity measurements.

3,936,730
INSULATION TEST APPARATUS INCLUDING IMPROVED MEANS FOR SIMULTANEOUS DISPLAY

Paul F. Pittman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 24, 1971, Ser. No. 146,233
Int. Cl.² G01R *31/14*
U.S. Cl. 324—54 **7 Claims**

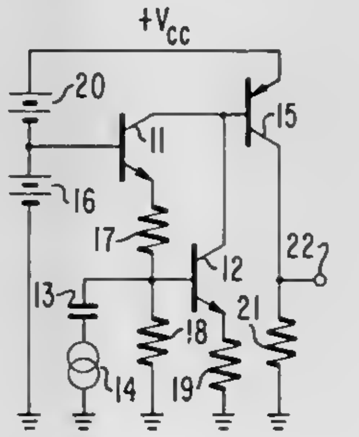


1. In insulation test apparatus wherein a capacitor discharge applies a high frequency voltage to an insulated conductor under test and producing a waveform whose characteristics, including frequency, indicate the quality of insulation on the conductor, the improvement comprising:
means to connect a plurality of insulated conductors under test respectively in mutually parallel circuit branches which are all connected in a single capacitor discharge circuit; means for sensing current variations in each of said parallel circuit branches; means for displaying signals from each of said means for sensing current variations.

3,936,731
AMPLIFIER WITH FAST RECOVERY AFTER INPUT SIGNAL OVERSWING

Carl Franklin Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 14, 1974, Ser. No. 523,742
Int. Cl.² H03F *3/68*
U.S. Cl. 330—17 **23 Claims**

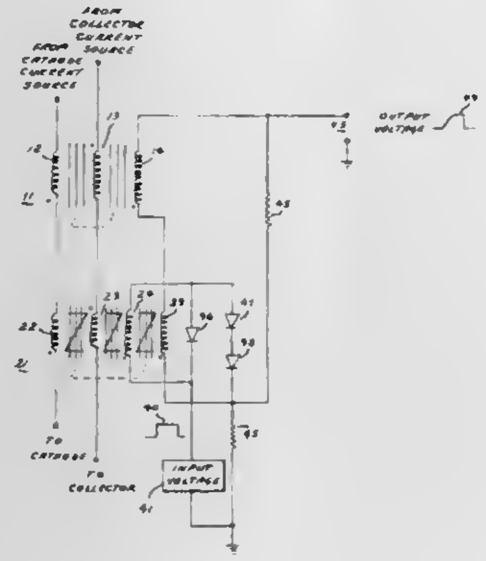


23. In combination:
a driver transistor of one conductivity type having base, emitter and collector electrodes, adapted to receive an input signal between its base and emitter electrodes;
an amplifier including a second transistor of opposite conductivity to said driver transistor, having base, emitter and collector electrodes and direct coupled at its base electrode to the collector electrode of said driver transistor, said second transistor exhibiting a capacitance at its base electrode which tends to discharge when said driver transistor cuts off and tends to drive said second transistor to cut-off; and
means coupled to an electrode of said driver transistor for sensing the approach the cut-off in said driver transistor and responding to supply a charging current to said capacitance.

3,936,732
TRAVELING WAVE TUBE BODY CURRENT SENSOR

Victor J. Modiano, Anaheim, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 31, 1974, Ser. No. 537,791
Int. Cl.² H03F *3/58*
U.S. Cl. 330—43 **2 Claims**



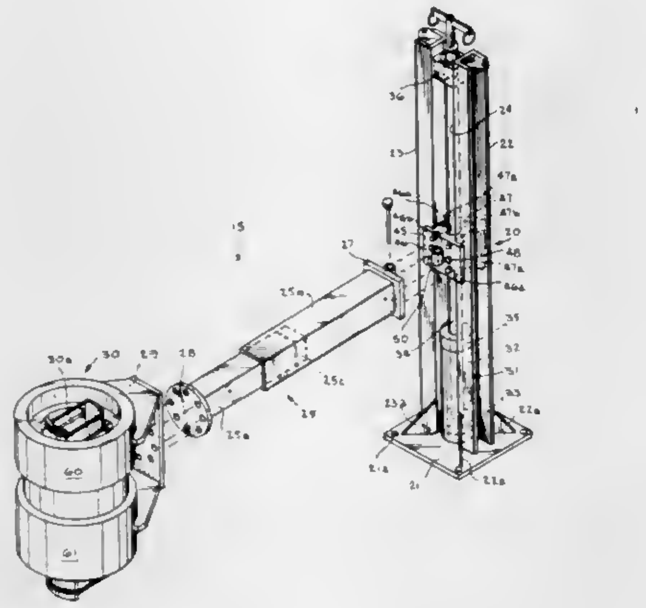
1. A traveling wave tube body current sensor for serially connecting between the cathode of the traveling wave tube and the cathode current power source and serially connecting between the collector of the traveling wave tube and the collector current power source, providing an output voltage proportional to the said body current, the said sensor comprising:

- a. a linear core transformer having a first winding and a second winding of substantially unity turns ratio wound in opposition, and a third winding; each winding having an input and an output connection;
- b. a nonlinear core transformer having a first winding and a second winding of substantially unity turns ratio wound in opposition, and a third winding, and a fourth winding, each winding having an input and an output connection;
- c. means for serially connecting the said first winding of the said linear core transformer with the said first winding of the said nonlinear core transformer and serially connecting the said serially connected first windings between the said cathode current source and the said cathode of the traveling wave tube;
- d. means for serially connecting the said second winding of the said linear core transformer with the said second winding of the said nonlinear core transformer and serially connecting the said serially connected second windings between the said collector current source and the said collector of the traveling wave tube;
- e. a pulse generator providing a constant pulse voltage;
- f. means including a first resistance for applying the said pulse voltage to the said third winding of the said nonlinear core transformer through the said first resistance;
- g. means for serially connecting the said third winding of the said linear core transformer with the said fourth winding of the said nonlinear core transformer;
- h. a second resistance connected across the said serially connected third and fourth windings;
- i. means for connecting the said first resistance to the said second resistance; and
- j. means for providing an output connection across the said connected first and the said second resistance.

3,936,733
APPARATUS FOR SUPPORTING AN INSPECTION DEVICE FOR TUBULAR MEMBERS AND ACCOMMODATING LATERAL SHIFTING OF THE TUBULAR MEMBERS AS THEY ARE RUN INTO OR PULLED FROM A WELL BORE

Derwin R. Clary, Odessa, Tex., assignor to Trip Inspectors, Inc., Odessa, Tex.

Continuation-in-part of Ser. No. 431,093, Jan. 7, 1974, abandoned. This application Dec. 16, 1974, Ser. No. 533,322
Int. Cl.² G01R *33/12*
U.S. Cl. 324—37 **9 Claims**



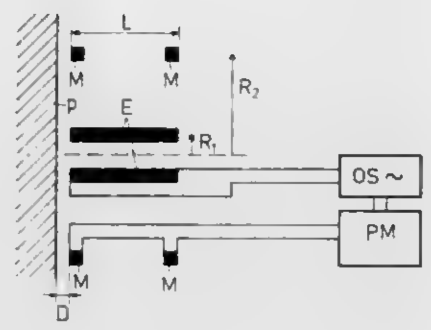
1. An arrangement for supporting an inspection device adjacent a well bore for moving tubular members through the inspection device as they are run into or pulled from the well bore including:

- a. an upwardly extending support for positioning adjacent a well bore;
- b. laterally extending arm means secured to said upwardly extending support and being normally positioned, during operation, at a given angular disposition with respect thereto;
- c. a single pivot means between said upwardly extending support and said laterally extending arm means for allowing, at all times, free pivotal movement of said arm means with respect to said support and about a single axis in either angular direction away from said normal position;
- d. said arm means comprising two members in telescoping relationship and arranged to accommodate, at all times, free axial sliding of one member with respect to the other in directions of both extension and retraction;
- e. bearing means between said two members to facilitate said free axial sliding and to guide and support said members;
- f. a device for inspecting tubular members, said inspection device surrounding a central aperture defined by said inspection device and through which tubular members may pass, said inspection device being carried by said arm means; whereby said telescoping members of said arm and said pivot means allow free movement of said inspection device within a plane of limited bounds to accommodate lateral shifting of tubular members as they are run into or pulled from the well bore without affecting operation of the inspection device.

3,936,734
METHOD FOR CONTACTLESS MEASUREMENT OF CONDUCTIVITY AND/OR TEMPERATURE ON METALS BY MEANS OF EDDY CURRENTS

Gerold Brandli, Windisch, and Pierre Keller, Baden, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jan. 21, 1975, Ser. No. 542,774
Claims priority, application Switzerland, Feb. 6, 1974, 1617/74
Int. Cl.² G01R *33/12*
U.S. Cl. 324—40 **3 Claims**

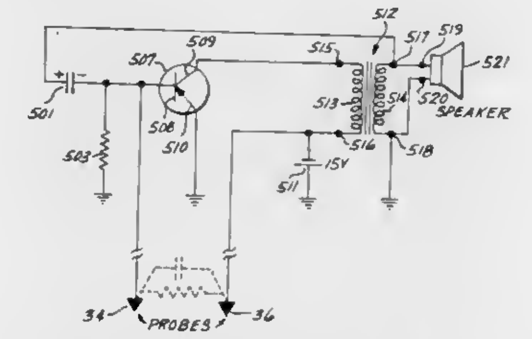


1. A method for contactless measurement of conductivity and/or temperature on metals by means of eddy currents, whereby with the aid of a measuring head including thereon an excitation coil fed with an alternating current and having its axis standing vertically on the test specimen, an alternating magnetic field is generated which penetrates into the surface of the metal and by inductive means gives rise to eddy currents, and in addition to the excitation coil there are two measuring coils of equal radius arranged coaxially and symmetrically with respect to the excitation coil, the length of each measuring coil being substantially smaller than the length of the excitation coil, the measuring coils are connected in series opposition and the phase angle between the signal in the excitation coil and signal in the measuring coils is used as an indication of the measured variable, characterized in that the radius ratio between the excitation coil on the one hand, and the measuring coils on the other, is smaller than ¼ or greater than 4, depending on whether the measuring coils are located outside or insdie the excitation coil, and the distance between the measuring head and the specimen surface is adjusted until the said phase angle between the excitation-coil signal and the measuring-coil signal exhibits a maximum.

3,936,735
CIRCUIT HAVING AUDIO OUTPUT PULSE RATE RELATED TO MEASURED RESISTANCE AND OUTPUT PULSE MODULATION RELATED TO MEASURED CAPACITANCE

Bjorn N. deBough, 8011 First Ave. N.E., Seattle, Wash. 98115

Filed Apr. 15, 1974, Ser. No. 460,712
Int. Cl.² G01R *27/00*
U.S. Cl. 324—57 R **19 Claims**

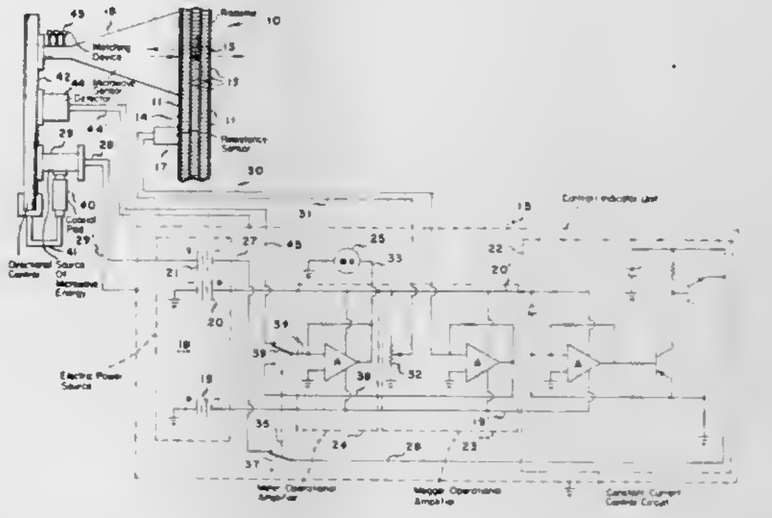


16. The method of claim 15 wherein said step of simultaneously generating electrical signals representative of said measured resistance and capacitance comprises generating periodic audio pulses having a repetition rate which is a function of the measured resistance and a pitch which is a function of the measured capacitance.

3,936,736
RADOME TEST INSTRUMENT

N. Reece Ray, Marietta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Aug. 28, 1974, Ser. No. 501,038
Int. Cl.² G01R *27/04*
U.S. Cl. 324—58.5 R **9 Claims**



1. A test instrument for radomes of multilayer sandwich construction designed to pass a prescribed frequency and having an outer surface covered with a coating of electrically conductive paint adapted to bleed-off static charges thereon comprising:

- a microwave sensor adapted to be placed against the surface of a radome wall;
- a first electrical circuit including said microwave sensor, a source of microwave energy, a matching device to adjust the impedance of said microwave sensor to a predetermined value, a detector, a directional control for the flow of energy from said microwave energy source to said microwave sensor and the flow of reflected energy from said radome wall to said detector corresponding to variations from said predetermined value and an indicator connected to said detector and operable in response to the reflected energy aforesaid;
- a resistance sensor adapted to be placed against said outer surface of said radome wall;
- a second electrical circuit including said resistance sensor, a source of electrical energy, an amplifier and the indicator aforesaid; and
- a selector switch common to said first and second electrical circuits and operative to connect one of said circuits to, and concurrently disconnect the other of said circuits from, said indicator.

3,936,737
CORROSION MONITORING SYSTEM

Fitch B. Jefferies, Sr., Springfield, N.J., assignor to C.M.S. Inc., Springfield, N.J.

Filed Apr. 10, 1975, Ser. No. 566,832
Int. Cl.² G01R *27/02*
U.S. Cl. 324—65 CR **15 Claims**

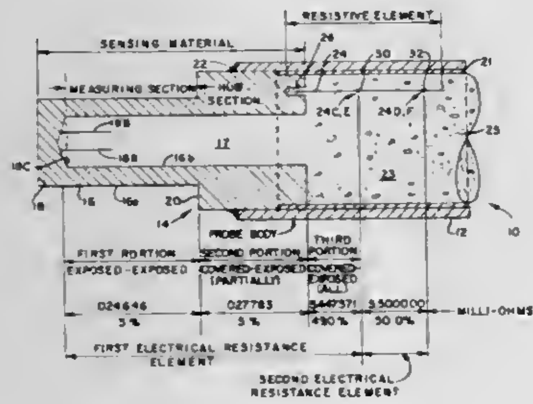
1. Apparatus for measuring corrosion of an electrically conductive material in a corrosive medium, said apparatus including probe means in combination with bridge circuit means, said probe means comprising:

- a closed end corrosion measuring portion made from such conductive material and adapted for insertion into said corrosive medium, said measuring portion being a first portion of a first electrical resistance element in said bridge circuit means, said measuring portion having a relatively low resistance, said measuring portion being subjected to fluctuation of temperatures in said corrosive medium;

a hub portion adjoining said measuring portion and in electrical circuit therewith, said hub portion being formed from such conductive material and having a relatively thick wall compared to said measuring portion, and further having a very low resistance, said hub portion being a second portion of a first electrical resistance element in said bridge circuit means, said hub portion being subjected to temperature variations in said corrosive medium;

a body portion adjoining said hub portion;

a resistive element within said probe means and in electrical circuit therewith, said resistive element having a very low electrical resistance, a first portion of said resistive element being a third portion of a first electrical resistance element;



first circuit means and second circuit means for defining a second portion of said resistive element as a second electrical resistance element in said bridge circuit means;

additional circuit means connected to at least some of said first and second electrical resistance elements to provide electrical connections to said bridge circuit means;

a source of electrical potential in said bridge circuit means for energizing said electrical resistance elements simultaneously, said bridge circuit including means for measuring the output voltage due to an imbalance in said bridge circuit means thereby to measure changes in the electrical resistance of the first portion of the first electrical resistance element to indicate the corrosion of said measuring portion.

3,936,738

METHOD OF AND APPARATUS FOR MEASURING THE AMOUNT OF COATING MATERIAL APPLIED TO SUBSTRATES

Frederick L. Maltby, Jenkintown, Pa., assignor to Drexelbrook Controls, Inc., Glenside, Pa.

Filed Jan. 2, 1974, Ser. No. 429,743

Int. Cl.² G01N *27/00;* G01R *27/02*

U.S. Cl. 324—71 R 9 Claims

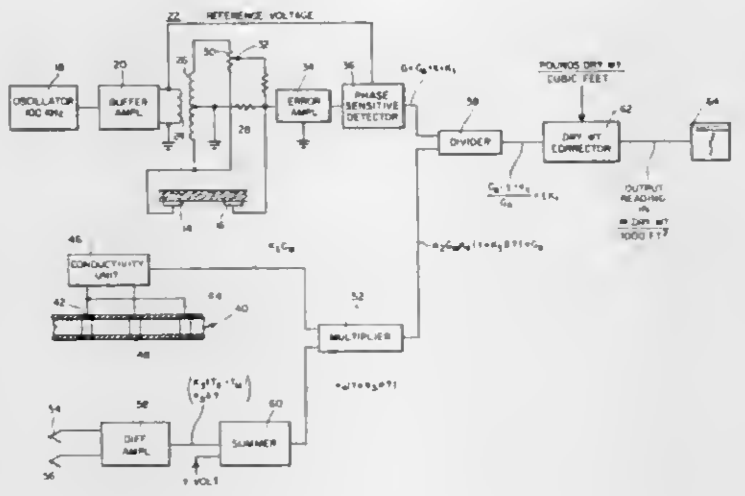
1. Apparatus for determining the thickness of a coating on a substrate comprising:

conductivity measuring means for generating a signal representing the conductivity of the coating material at a temperature before application to the substrate;

temperature sensing means for generating a signal representing the difference in the temperature of said coating material before application to said substrate and the temperature of the coating on the substrate;

conductance measuring means for generating a signal representing the overall conductance of the coating material on the substrate at the actual temperature of the coating material on the substrate; and

circuit means coupled to said conductivity measuring means, said temperature sensing means and said conductance measuring means for generating a signal representing the thickness of the coating material in response to said conductivity signal, said temperature difference signal and said conductance signal.



3,936,739

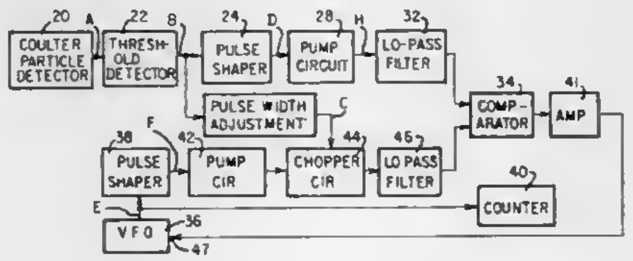
METHOD AND APPARATUS FOR GENERATING ERROR CORRECTED SIGNALS

Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Feb. 12, 1974, Ser. No. 441,752

Int. Cl.² G01N *27/00;* G01G *7/12*

U.S. Cl. 324—71 CP 32 Claims



1. A method for generating error corrected signals in response to detected signals which are subject to error due to coincidence including the steps of:

generating the error corrected signals,

varying the repetition rate of the error corrected signals in accordance with variations in an applied control signal,

developing first signals in response to the detected signals each having a duration equal to a predetermined function of the duration of the same one of the detected signals,

developing second signals in response to the error corrected signals and said first signals which vary in accordance with the repetition rate and duration of said second signals and the repetition rate of the error-corrected signals, and

comparing said second signals and the detected signals and developing said control signal, said control signal varying in accordance with variations between said second signals and the repetition rate of said detected signals.

3,936,740

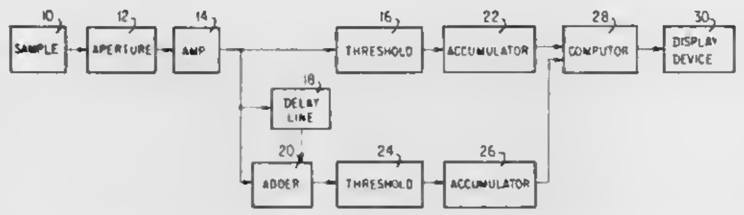
METHOD AND APPARATUS FOR AUTOMATICALLY SAMPLING PULSES A PREDETERMINED AVERAGE NUMBER OF TIMES FOR STORAGE AND SUBSEQUENT REPRODUCTION

Walter R. Hogg, Miami Lakes, and Wallace H. Coulter, Miami Springs, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Feb. 13, 1974, Ser. No. 442,110

Int. Cl.² G01N *27/00;* H03K *5/20*

U.S. Cl. 324—71 CP 30 Claims



1. A method for automatically sampling each pulse in a series of pulses a predetermined average number of times, for sequentially storing the samples, and for reproducing each pulse in the series, delayed in time, including the steps of:

detecting the duration of at least a portion of each pulse in the series,

developing first signals having a variable repetition rate,

varying the repetition rate of the first signals for developing a predetermined average number of first signals during said detected duration of each pulse,

sampling each pulse in the series in response to said first signals,

storing said samples for a period of time in response to said first signals.

22. In a particle study device which develops particle pulses in response to detection of particles and counts said particle pulses, and which includes error correction circuitry for providing a particle count of particle pulses corrected for detection and counting errors, the improvement comprising, delay circuit means for automatically sampling each particle pulse a predetermined average number of times, for sequentially storing the samples, and for reproducing each pulse from said samples delayed in time.

3,936,741

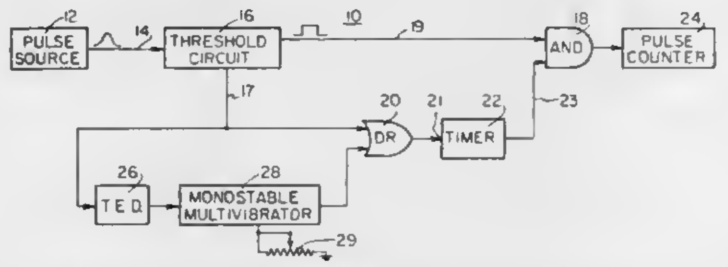
METHOD AND APPARATUS FOR PROVIDING PRIMARY COINCIDENCE CORRECTION DURING PARTICLE ANALYSIS UTILIZING TIME GENERATION TECHNIQUES

Wallace H. Coulter, Miami Springs; Walter R. Hogg, Miami Lakes; Edward Neal Doty, Pompano; Millard D. Longman, North Miami, and Stephen Campbell, Hialeah, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Continuation of Ser. No. 407,235, Oct. 17, 1973, abandoned. This application July 2, 1974, Ser. No. 485,160

Int. Cl.² G01N *27/00;* H03K *5/20*

U.S. Cl. 324—71 CP 25 Claims



1. A method for correcting a particle pulse count subject to coincidence error including the steps of:

counting the particle pulses received for a predetermined period of time,

increasing said predetermined period of time by a time increment that is a function of the pulse width of the pulses counted.

11. An apparatus for automatically correcting a particle pulse count subject to coincidence error wherein the particle pulses are developed in response to passage of particles in a particulate system through a particle sensing device, said apparatus including in combination,

timer means operative to count the particle pulses for a predetermined period of time, and

control means coupled to said timer means and operative to increase said predetermined period of time by a time increment in response to each particle pulse, said time increment duration being a function of the particular characteristics of each particle pulse.

3,936,742

APPARATUS FOR MEASURING ELECTRICAL QUANTITIES AT HIGH-VOLTAGE POTENTIAL

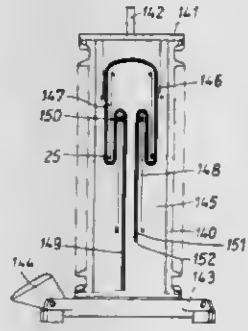
Dieter Krause, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 10, 1973, Ser. No. 423,172

Claims priority, application Germany, Dec. 11, 1972, 2261151

Int. Cl.² G01R *31/00, 19/00*

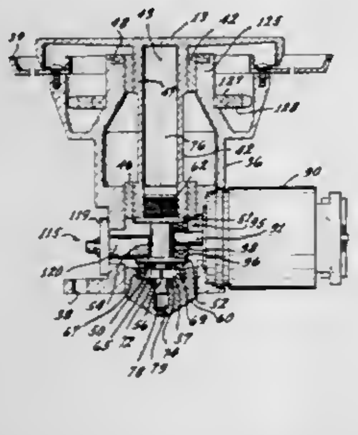
U.S. Cl. 324—96 29 Claims



1. A measuring apparatus for measuring voltages on high-voltage conductors whereat fields are developed having an intensity indicative of the value of the high-voltage, the apparatus comprising: a sensing coil for conducting polarized light therein, said sensing coil being made from a wound light-wave conductor having respective ends; a single light-wave conductor for receiving polarized light having a polarization and for feeding the same to said sensing coil at one of said ends thereof; said sensing coil being placeable in the vicinity of the fields whereby the polarization of the polarized light is changed by an amount corresponding to the value of the voltage being measured; reflection means disposed at the other one of said ends of said sensing coil away from said single light-wave conductor for reflecting the polarized light fed to said sensing coil whereby the polarized light of changed polarization passes through said single light-wave conductor; evaluation means for translating the changed polarization into a quantity proportional to the electrical quantity being measured; an optical device arranged ahead of said single light-wave conductor for feeding the polarized light to said single light-wave conductor and for directing said polarized light of changed polarization from said single light-wave conductor to said evaluation means; and, an uncontrolled high-voltage insulator defining an axis, said sensing coil defining a longitudinal axis, said coil being arranged in said insulator so that the axis of said coil extends in the direction of the axis of said insulator, said high-voltage insulator comprising a plurality of control electrodes imbedded therein, said control electrodes being spaced one adjacent the other so as to define a region between each two mutually adjacent ones of said control electrodes, said coil being arranged in said regions.

3,936,743
HIGH SPEED PRECISION CHUCK ASSEMBLY

Jacques L. Roch, San Jose, Calif., assignor to Electroglas, Inc., Menlo Park, Calif.
Filed Mar. 5, 1974, Ser. No. 448,370
Int. Cl.^{2} G01R *31/02;* B23Q *1/14*
U.S. Cl. 324—158 F 10 Claims



1. In a system for testing and grading integrated circuit components wherein a wafer containing multiple circuit components is supported on a platform which is indexed in an X–Y coordinate and then moved vertically to a test position wherein one or more probe assemblies test preselected portions of the circuit components, the improvement comprising;

platform means for supporting a wafer and movable vertically along a predetermined reference axis between a predetermined upper and lower position,

means supporting said platform for rotation about said reference axis while maintaining said platform perpendicular to said reference axis,

means including spool means at one end thereof mounting said platform for said vertical movement,

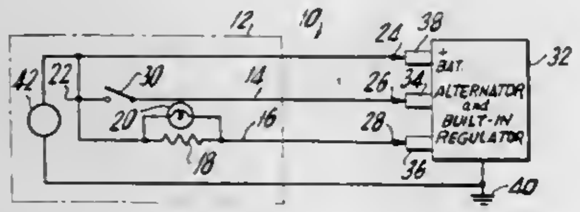
eccentric means cooperating with said spool means for effecting said vertical movement of said mounting means,

motor means driving said eccentric means, and

said motor means cooperating with said eccentric to provide a sinusoidal speed characteristic to said platform after reaching a maximum speed and decelerating said platform sinusoidally as said platform approaches said predetermined upper position.

3,936,744
AUTOMOTIVE ALTERNATOR AND SOLID STATE REGULATOR TESTER

David Perlmutter, 98 Harrison Ave., Island Park, N.Y. 11558
Filed Apr. 30, 1974, Ser. No. 465,600
Int. Cl.^{2} G01R *15/12, 31/02*
U.S. Cl. 324—158 R 10 Claims



1. A tester for a solid state voltage regulator and/or associated alternator having two outputs, comprising:

first and second circuit branches; said first circuit branch including, in parallel combination, resistance means and indicator light bulb means continuously connected in said first circuit;

first terminal means adapted to be interconnected to a battery source;

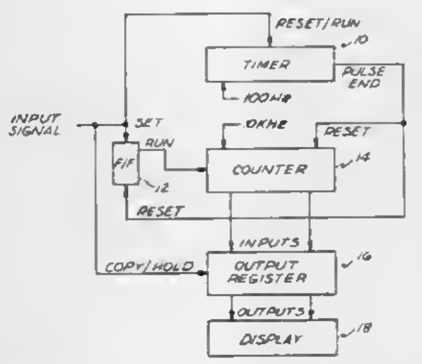
second and third output terminal means adapted to interconnect respectively to said regulator output contacts;

one end of said first and second circuit branches being interconnected and the interconnection coupled to said first terminal means;

the other ends of said first and second circuit branches respectively being simultaneously coupled to said second and third output terminal means, and normally open switch means serially interconnected only in said second circuit branch.

3,936,745
METHOD OF MEASURING THE DURATION OF A DISCONTINUOUS SIGNAL

Timothy M. Harrington, Sierra Madre, Calif., assignor to MDH Industries, Inc., Monrovia, Calif.
Filed Nov. 12, 1974, Ser. No. 523,119
Int. Cl.^{2} G04F *10/00*
U.S. Cl. 324—186 10 Claims



1. For use in an electrical circuit, a method of measuring the duration of a discontinuous signal, which consists of groups of pulses with the duration of the gap between individual pulses in the same group being smaller than the time between groups, comprising the steps of:

a. starting the operation of a time-measuring device at the time of arrival of the leading edge of the first pulse in the pulse group whose duration is to be measured;

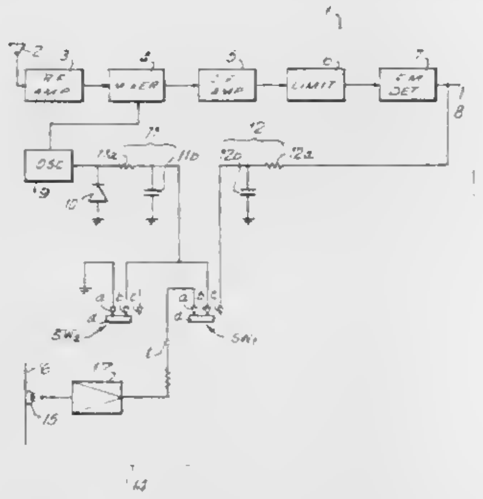
b. copying the measured value from the time-measuring device, without stopping the time-measuring device, at the time of arrival of the trailing edge of the first pulse in the pulse group whose duration is to be measured; and

c. storing the copied measured value from the time-measuring device during gaps in the discontinuous signal.

3,936,746
FM RECEIVER HAVING TRANSMITTING FUNCTION

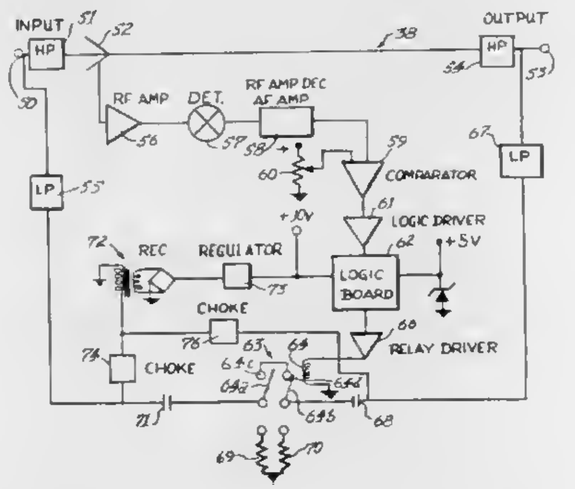
Osamu Irie, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed July 8, 1974, Ser. No. 486,314
Claims priority, application Japan, July 31, 1973, 48-90492[U]
Int. Cl.^{2} H04B *1/44*
U.S. Cl. 325—20 4 Claims

1. In an FM receiver having an antenna; a local oscillator for supplying an oscillating signal to a mixer coupled to said antenna for producing an intermediate frequency FM signal, a leakage portion of said oscillating signal being radiated from said antenna as a spurious wave; an FM detector for demodulating said intermediate frequency FM signal to derive an audio signal therefrom; and frequency controlling means connected to said local oscillator for controlling the frequency of said oscillating signal in response to a control signal; apparatus for selectively operating said FM receiver in an AFC receiving mode or in a signal transmission mode, comprising: a first switch connected to said frequency controlling means and having a first state to couple an output signal of said FM detector to said frequency controlling means as said control signal therefor and a second state to couple a source of audio signals to said frequency controlling means as said control signal therefor to thereby produce a frequency modulated oscillating signal for transmission; a second switch operable independently of said first switch and having a first state to permit said control signals to be applied to said frequency controlling means and a second state to prevent said control signals from being applied to said frequency controlling means; and a low pass filter for transmitting said control signals to said frequency controlling means.



3,936,747
CODE OPERATED SWITCHING DEVICE FOR COMMUNICATIONS SYSTEMS AND THE LIKE

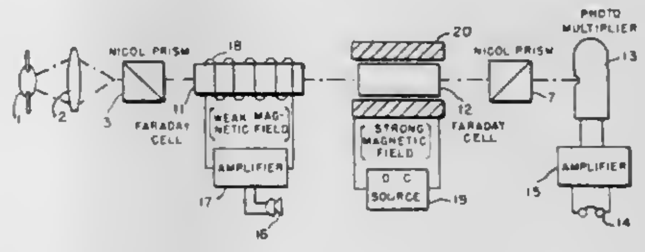
David S. McVoy, Sarasota, Fla., assignor to Coaxial Scientific Corporation, Sarasota, Fla.
Filed July 5, 1973, Ser. No. 376,386
Int. Cl.^{2} H04B *1/06;* H02B *1/00;* H04B *1/00, 1/16*
U.S. Cl. 325—30 16 Claims



1. In a communication system for sending and receiving data, the combination including: a plurality of data transmitting means each being represented bby a predetermined discrete interrogation code, code interrogation means for generating a discrete code signal corresponding to a selected one of the interrogation codes and representing a particular one of said data transmitting means, code operated switch means coupled to each of said data transmitting means, each code operated switch means including, input means for receiving first and second RF frequencies having predetermined difference and sum frequencies, a single filter circuit coupled to said input for passing said first and second RF frequencies and said control signal, at least one of said first and second RF frequencies being modulated with a control signal, detector means coupled to said single filter circuit for receiving said first and second RF frequencies and producing therefrom an intermediate frequency which includes said control signal, normally open circuit means coupled to said detector means and operative in response to said control signal, and data retrieval means coupled to said code operated switch means to receive data signals from the discrete data transmitting means which has been interrogated when said normally open circuit means is closed.

3,936,748
SECRET COMMUNICATION SYSTEM EMPLOYING MAGNETIC CONTROL OF SIGNAL MODULATION ON MICROWAVE OR OTHER ELECTROMAGNETIC CARRIER WAVE

Hans A. Bomke, Sea Girt, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sept. 10, 1956, Ser. No. 610,445
Int. Cl.^{2} H04K *1/00;* H04B *9/00*
U.S. Cl. 325—32 10 Claims



1. A system for transmitting varying amplitude signals with a high degree of secrecy over a wave transmission medium, including a source of polarized electromagnetic waves of predetermined wavelength at the input to said medium, three transmission devices each adapted for transmitting electromagnetic waves in a given direction, and including a substance having a resonance spectrum with a strong, sharp absorption line therein including said predetermined wavelength within its frequency limits, and exhibiting strong anomalous dispersion in the immediate neighborhood of said line, a first and a second one of said devices being located at the input to said medium and the third being located at the output of said medium, means to apply an electromagnetic wave from said source to said first device in said given direction, means simultaneously to apply to said first device in the direction of wave propagation a weak magnetic field varying in accordance with the amplitude of the signals to be transmitted, in order to produce rotation effects in the applied wave proportional to the instantaneous signal amplitudes, representing signal modulation, means to apply the resulting modulated wave to the second of said devices in said given direction, means simultaneously to apply to said second device in the direction of wave propagation a strong magnetic field of such strength as effectively to cause the removal from the modulated wave in transmission through that device of the rotation effects representing signal modulation, and thus to render the signals carried by that wave secret to a high degree before the wave is transmitted over said medium, means at the output of said medium to apply the received wave to said third device in said given direction, means simultaneously to apply to said third device in the direction of wave propagation a strong magnetic field of the same strength as that applied to said second device but reversed in direction with respect thereto to reinsert effectively in the applied wave in transmission through said third device the rotation effects representing signal modulation removed by said second device, means to convert the rotation effects in the resulting wave into proportional amplitude modulation and means to detect the signals from the resulting amplitude modulated wave.

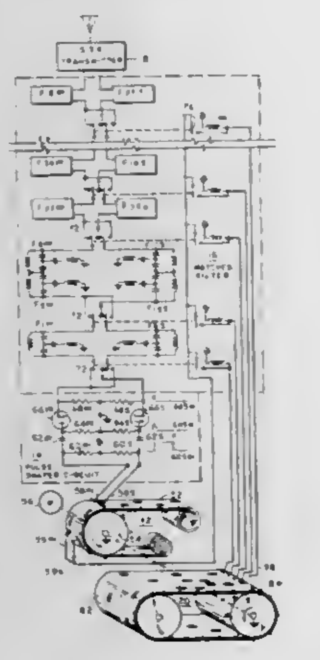
3,936,749
MATCHED FILTER COMMUNICATION SYSTEMS

Ernst A. Guillemin, Wellesley, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 23, 1961, Ser. No. 120,146

Int. Cl.² G01R *33/12*

U.S. Cl. 325—42 **5 Claims**



1. In a wideband matched filter communication system or transmitting digital information identified by initial sharp pulses from a transmitter thru a communication channel to a receiver, a filter network comprising a multiplicity of filter sections of differing phase-frequency characteristics all in series, the overall characteristic of the entire multiplicity of sections being linear, said sections being distributed between a group at said transmitter and another group at said receiver, the overall characteristics of the sections in each group being non-linear, whereby the various frequency components of the initial sharp pulse are differently delayed in the transmitter group to decrease the amplitude of the pulse signal by spreading its energy over a substantial time period and also differently delayed in the receiver group, but in a complementary manner, to restore the pulse in the receiver at a predetermined time delay due to the operation of the filter.

3,936,750
AM-FM RECEIVER HAVING IMPROVED BIAS SUPPLY CIRCUIT

William Peil, North Syracuse, and Robert J. McFadyen, Syracuse, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Continuation-in-part of Ser. No. 435,456, Jan. 22, 1974, abandoned. This application Jan. 20, 1975, Ser. No. 542,623

Int. Cl.² H04B *1/06*

U.S. Cl. 325—315 **20 Claims**

1. In a superheterodyne radio receiver in the integrated circuit format, the combination comprising:

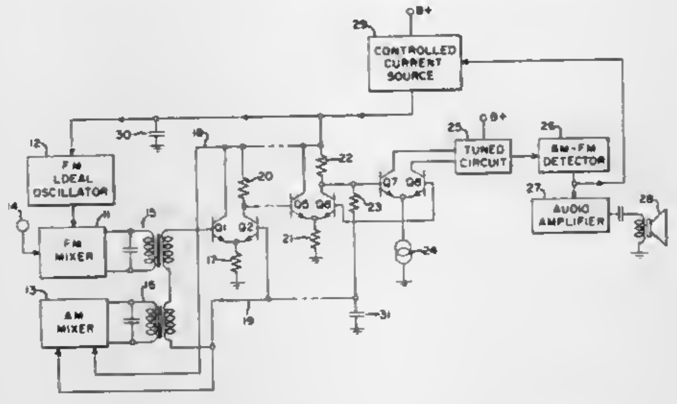
a. a tuner for converting received AM and FM signals to two predetermined intermediate frequencies, an FM portion of said tuner having a first terminal for connection to a source of d.c. bias potentials and having a local oscillator energized through said terminal, tunable by bias voltage adjustment,

b. an intermediate frequency amplifier for said two intermediate frequency signals energized through a second terminal for connection to a source of d.c. bias potentials, said amplifier comprising at least one stage of amplification, said amplification being subject to control by bias variation, increasing with increased bias,

c. an AM-FM detector for said intermediate frequency signals for producing a d.c. voltage for automatic frequency control proportional to the error in center tuning when an FM signal is detected and for producing a d.c. voltage for automatic gain control proportional to the amplitude when an AM signal is detected,

d. bias supply means comprising:

  1. means for deriving energy from a primary source of d.c. bias potentials,
  2. means coupled to said energy deriving means for controlling the potential applied to said two terminals, said control means having a first control for establishing a lower average bias for AM operation and a higher average bias for FM operation and a second control responsive to said detector output for controlling said bias about said averages as a function of detector output,



e. capacitive means coupled to said terminals to provide filtering action for automatic frequency control and automatic gain control, and

f. mode switching means for converting said tuner, said bias supply means, and said AM-FM detector to AM or FM operation.

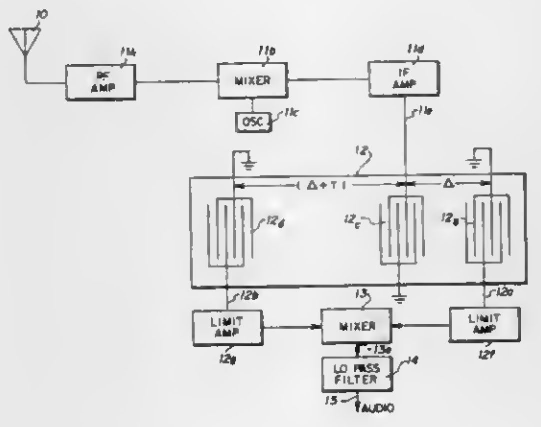
3,936,751
SWD FM DETECTOR AND IF FILTER

Jerry D. Holmes, Dallas, Tex.; Benjamin L. Lowe, Huntsville, Ala., and Samuel D. Moore, Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 5, 1974, Ser. No. 503,943

Int. Cl.² H04B *1/16*

U.S. Cl. 325—347 **13 Claims**



1. In a radio receiver, the combination comprising:

a. an SWD structure providing two channels each with an input section and an output section, said channels having different spacing between their input and output sections respectively such that predetermined different delays are imposed on modulated signals passing through said channels,

b. a mixer,

c. means to apply a modulated input signal to said input sections of said SWD structure, and

d. means to receive output signals from each of said output sections and to apply said output signals from said two channels to said mixer to produce at the output of said mixer an audio output signal representing the modulation of said input signal.

3,936,752
DEVICE FOR PRESETTING A TELEVISION PROGRAM AND THE LIKE

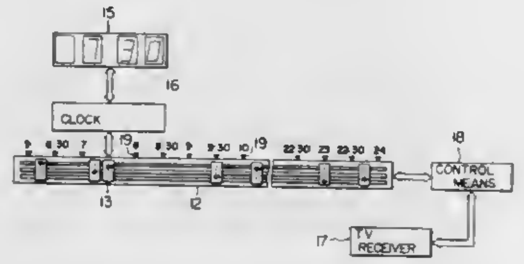
Kaoru Sasabe, Ikeda; Hiroaki Kotera, Takatsuki; Toshihide Hane, Sakai; Nobuyoshi Kihara, Amagasaki, and Masao Takebe, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 25, 1973, Ser. No. 373,171

Claims priority, application Japan, June 27, 1972, 47-64594

Int. Cl.² H04B *1/16*

U.S. Cl. 325—396 **7 Claims**



1. A device for presetting a television program or the like, comprising clock means for generating time information, a program board provided with a plurality of time pointer means the positions of which are optionally changed respectively to designate the times at which a television receiver is to be operated, a plurality of recording means provided separately from and each for each of said time pointer means for presetting channels to be received, and means for reading the information recorded in the recording means corresponding to said time pointer means in accordance with the time information generated by said clock means and applying to said television receiver signals for receiving the preset channels.

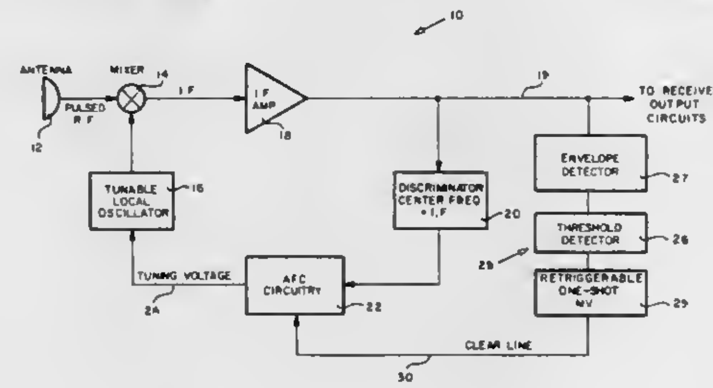
3,936,753
DIGITAL AUTOMATIC FREQUENCY CONTROL CIRCUIT

Ronald R. Clark, Ocoee, Fla., assignor to Martin Marietta Corporation, Orlando, Fla.

Filed July 12, 1974, Ser. No. 488,083

Int. Cl.² H04B *1/32*

U.S. Cl. 325—420 **4 Claims**



1. In a scanning type of superheterodyne radio receiver having a local oscillator, a mixer, and an intermediate frequency amplifier, a digital automatic frequency control circuit having a search mode and a lock mode for causing such receiver to automatically lock onto a received pulsed radio frequency signal falling within the scanning range of the receiver while rejecting the image frequency of such signal, said digital automatic frequency control circuit comprising:

- a discriminator connected to the output of said intermediate frequency amplifier and having a center frequency equal to the intermediate frequency and providing a pulse output signal of one polarity and, after passing through zero, of the opposite polarity as the receiver scan approaches and then passes the received signal,
- pulse polarity sequence sensing means connected to the output of said discriminator actuated only by a predetermined polarity sequence of pulses from said discriminator for generating a control signal in response to a first polarity when followed by a certain number of pulses of a second polarity,
- a source of scanning pulses,
- switching means connected to receive and be operated by said control signal and having first and second functional positions, said switching means receiving as switched inputs said source of scanning pulses and pulses representing one polarity and the opposite polarity from said pulse polarity sequence sensing means, said switching means when in its first functional position providing as an output said scanning pulses and upon receiving said control signal and switching to its second functional position providing as an output said pulses from said pulse polarity sequence sensing means,
- up-down counter means connected to receive the pulse output of said switching means for counting in a first direction in response to said scanning pulses, in said first direction in response to pulses representing one polarity from said pulse polarity sequence sensing means, and in a second direction in response to pulses representing the opposite polarity from said pulse polarity sequence sensing means, and
- digital-to-analog converter means connected to said up-down counter means for generating an incrementally variable tuning voltage for said local oscillator proportional to the count stored in said up-down counter means.

3,936,754
DEVICE FOR DETECTING THE OPENING OF THROTTLE VALVE OF DIESEL ENGINE FOR VEHICLE

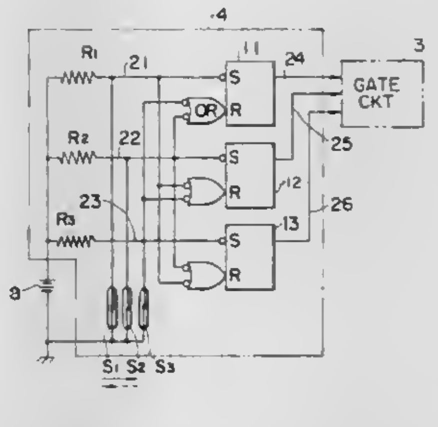
Teruo Minami, Yokohama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed June 5, 1974, Ser. No. 476,728

Claims priority, application Japan, Nov. 21, 1973, 48-130129

Int. Cl.² G01H *27/00;* H01H *9/00*

U.S. Cl. 328—1 **4 Claims**



1. A device for detecting the opening of a throttle valve of a diesel engine, said device comprising a housing; a magnetic means positioned within said housing; a plurality of switch means positioned within said housing; magnetic shield means positioned between said magnetic means and said plurality of switch means, said magnetic shield means having a gap therein such that a said magnetic means operates one of said plurality of switch means corresponding to the position of said gap, and wherein the position of said gap is a function of the position

of said throttle valve; and a plurality of bistable circuit means, each bistable circuit means having a set input coupled to a corresponding one of said switch means and a reset input coupled to all of the others of said switch means, wherein the operation of one of said switch means sets the corresponding bistable circuit means and resets all of the other bistable circuit means, whereby the position of said throttle valve produces a corresponding output in said bistable circuit means.

3,936,755

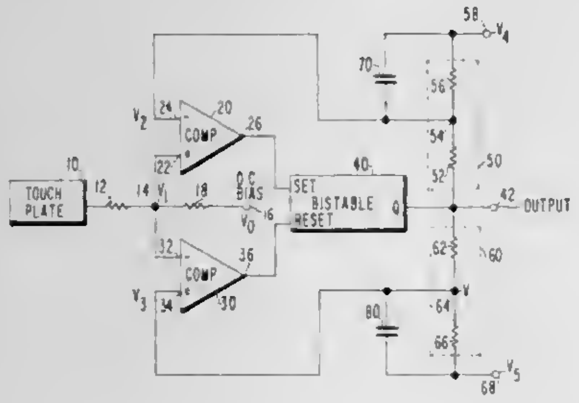
PROXIMITY SWITCH CIRCUIT

Abel Ching Nam Sheng, Morris Plains, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 19, 1974, Ser. No. 490,010

Int. Cl.^{2} G08B *13/26*

U.S. Cl. 328—5 **7 Claims**



1. The combination of:

input means normally at a given quiescent bias level V_x and responsive to the proximity of an object for producing an alternating output signal of amplitude V_y;

two variable threshold circuits connected to said input means, one at an initial threshold setting closer to V_x than V_y and the other at an initial threshold setting further from V_x than V_y; and

circuit means responsive to the actuation of said one threshold circuit in response to said alternating output signal for changing the threshold of said one threshold circuit to a new threshold setting further from V_x than V_y and for changing the threshold of said other threshold circuit to a new threshold setting closer to V_x than V_y, and responsive to subsequent actuation of said other threshold circuit for returning said two threshold circuits to their initial threshold settings.

3,936,756

FIELD EMISSION ELECTRON GUN HAVING AUTOMATIC CURRENT CONTROL

Teruo Someya, Akishima; Nobuyuki Kobayashi, Kodaira, and Toshinori Goto, Fussa, all of Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 245,328, April 19, 1972, Pat. No. 3,825,839. This application Jan. 31, 1974, Ser. No. 438,384

Claims priority, application Japan, Apr. 30, 1971, 46-28753; July 12, 1971, 46-51610

Int. Cl.^{2} H02H *7/20*

U.S. Cl. 328—9 **4 Claims**

1. A field emission type electron gun comprising:

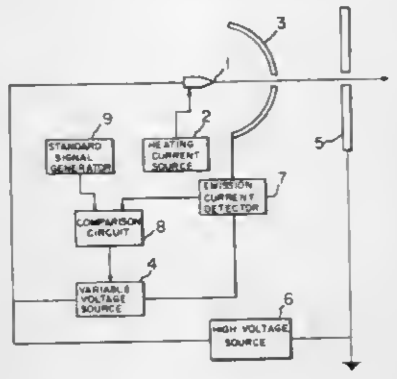
an emitter for emitting an electron beam,

a first anode for generating a strong electric field at said emitter,

a first voltage source for generating a potential difference between said first anode and said emitter,

a second anode located behind the first anode maintained at ground potential,

a second high voltage source for supplying negative high potential to said emitter for accelerating said electron beam, a detecting means for detecting the electron beam emitted from said emitter and providing an output signal indicative of the electron beam fluctuation,



a comparing means for comparing the output signal of said detecting means with a reference signal and providing an output signal indicative of the comparison, and

a current control means that varies the current by varying the output voltage of the first voltage source and therefore the potential of the first anode in response to the output signal of the comparing means such that the electron current remains substantially constant.

3,936,757

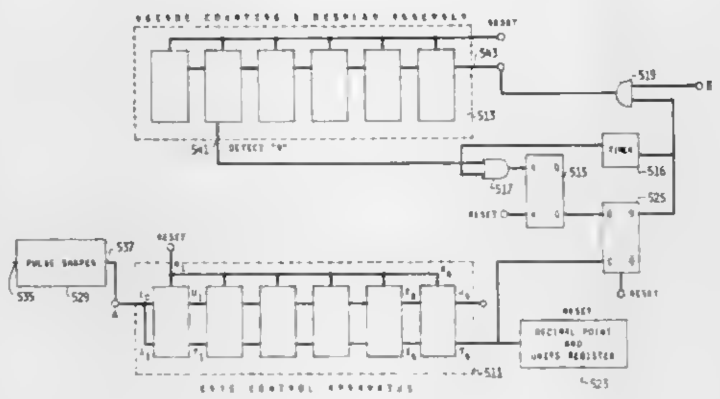
AUTOMATIC GATE CONTROL SYSTEM

Ian T. Band, Los Altos, and Kenneth J. MacLeod, San Jose, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 17, 1974, Ser. No. 515,730

Int. Cl.^{2} H03K *17/00, 3/66*

U.S. Cl. 328—72 **3 Claims**



1. Selective timing means comprising:

first gating means having a first input coupled to receive an applied train of pulses and a second input for producing the applied train of pulses at an output in response to a signal being applied at the second input;

a gate control apparatus having a number of stages for producing a gate control signal at an output in response to $AB^0 + 1$, $AB^1 + 1 \ldots AB^{x-1} + 1$ and $nB^x + 1$ signal pulses applied at an input, where x is an integer representing the number of stages in the gate control apparatus, *n* is an integer 0 or greater, B is an integer greater than 1, and A is an integer greater than zero and less than or equal to B − 1;

timing means responsive to a signal being applied at the second input of the first gating means for producing a timing signal; and

logic means coupled to receive the timing signal and the gate control signal for applying a signal at the second input of the first gating means is response to said timing signal and said gate control signal.

3,936,758

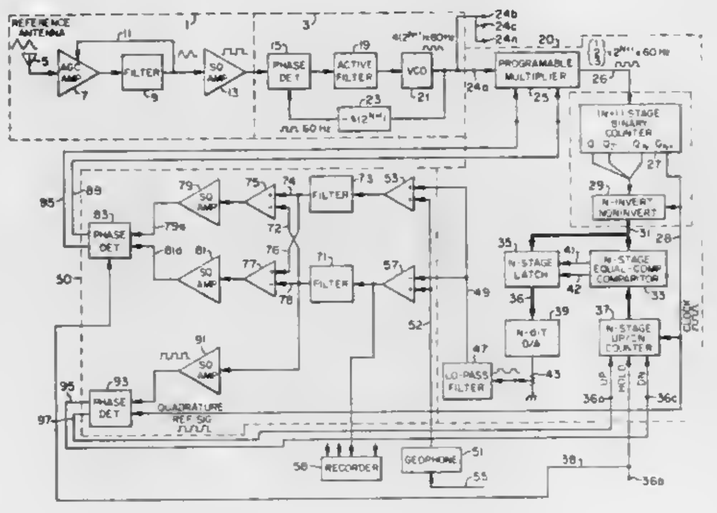
PHASE DIFFERENCE DETECTOR

Richard J. Kostelnicek; Curtis B. Herbert, Jr., both of Houston, Tex., and Thomas H. Crawford, Dhahran, Saudi Arabia, assignors to Exxon Production Research Company, Houston, Tex.

Division of Ser. No. 421,384, Dec. 3, 1973, Pat. No. 3,889,229. This application Mar. 20, 1975, Ser. No. 560,067

Int. Cl.^{2} H03B *3/04*

U.S. Cl. 328—133 **1 Claim**



1. Apparatus for detecting the phase difference between a first substantially monochromatic sinusoidal electrical signal and a second substantially monochromatic sinusoidal signal having substantially the same frequency as said first substantially monochromatic signal that is a component of a composite electrical signal which may contain other signals, which comprises:

means for producing a residual signal equal to the difference between said composite signal and said first substantially monochromatic signal;

means for producing a first sum signal equal to the sum of said composite signal and said first substantially monochromatic signal;

first filtering means for filtering from said residual signal all frequency components not of substantially the frequency of said first substantially monochromatic signal;

second filtering means having a transfer function substantially equal to the transfer function of said first filtering means for filtering said first sum signal;

means for producing a second sum signal indicative of the sum of the filtered first sum signal and the filtered residual signal;

means for producing a difference signal indicative of the difference between the filtered first sum signal and the filtered residual signal; and

means for detecting the phase difference between the output signals of said means for producing a second sum signal and said means for producing a difference signal.

3,936,759

OFFSET REDUCTION APPARATUS FOR ANALOG CIRCUITS

Gary W. Macheel, Anaheim, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 17, 1974, Ser. No. 461,671

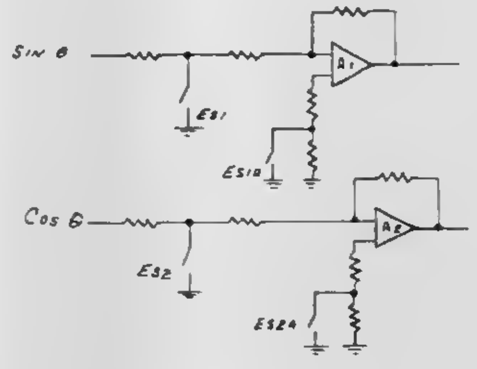
Int. Cl.^{2} H04B *15/00*

U.S. Cl. 328—162 **8 Claims**

1. An offset reduction apparatus for analog circuits comprising in combination:

means for forcing the input of an analog circuit to zero, the output of said analog circuit being the DC offset of said analog circuit, said analog circuit receiving input signals, said analog circuit having a negative input terminal, said analog circuit providing an error signal in response to said input signals, said error signal being an output signal and said DC offset, and

means for storing and subtracting said DC offset connected to said output of said analog circuit, said storing and substracting means storing said DC offset from said analog circuit, said storing and substracting means substracting said DC offset from said error signal, a compensation



network connected between said negative input terminal and ground, said compensation network providing a constant DC output from said analog circuit during normal and correction circuit operation, said compensation network comprising a pair of resistors connected in series and a switch connected from the junction of said resistors to ground.

3,936,760

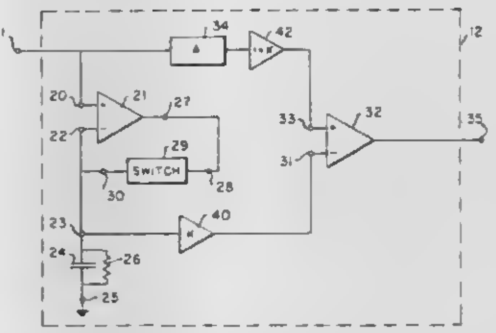
D.C. RESTORER CIRCUIT

Robert Rosen, Granada Hills, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 460,317, April 12, 1974, Pat. No. 3,890,545. This application Jan. 14, 1975, Ser. No. 541,037

Int. Cl.^{2} H03B *3/02*

U.S. Cl. 328—162 **8 Claims**



4. A d.c. restorer circuit comprising:

first means for comparing voltage levels and having two input terminals;

second means for comparing voltage levels and having two input terminals;

means for applying an input signal V_{in} to one of the input terminals of both said first and said second comparing means;

means for duplicating the level of the most negative-going excursion V_{neg} of said input signal V_{in}, said duplicating means being connected to the other input terminal of both said first and said second comparing means; and

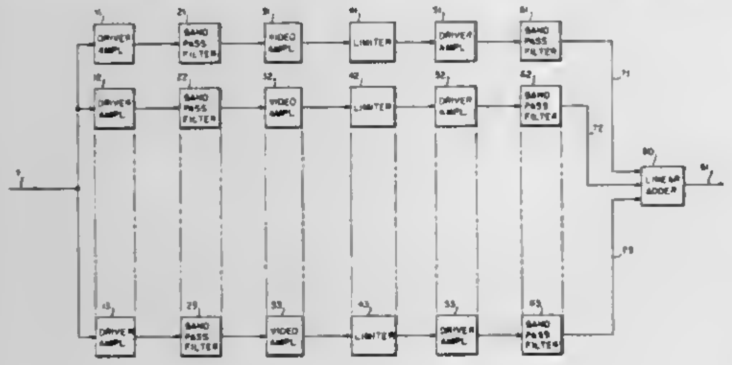
feedback means for providing a feedback path from the output of said first comparing means to the input of said first comparing means to which said duplicating means is connected, said feedback means opening and closing its feedback path in accordance with the output voltage from said first comparing means,

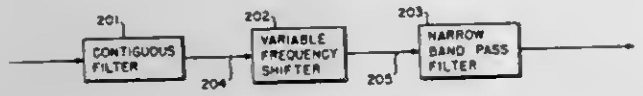
wherein the output from said second comparing means is proportional to the resultant of the input signal V_{in} and a d.c. level.

3,936,761
PLURAL CHANNEL FILTER

Garold K. Jensen, Alexandria, Va., and James E. McGeogh, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 27, 1967, Ser. No. 649,795
Int. Cl.^{2} H04B *1/10, 15/00*
U.S. Cl. 328—167 **10 Claims**





1. An arrangement for discriminating against narrow bandwidth signals and in favor of desired varying frequency signals wherein all of said signals occur in a predetermined frequency bandwidth, said arrangement comprising:

a plurality of channels having incremental bandwidths which are dimensioned in frequency to cover in their aggregate said predetermined bandwidth, said channels responsive to said signals to limit the amplitude of said signals to produce first signals;

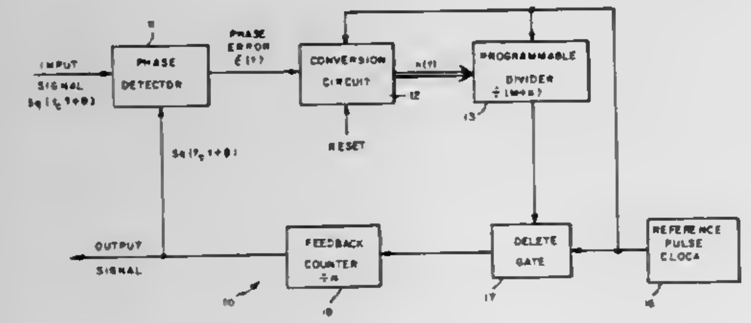
means for vectorially adding said first signals to derive second signals and;

varying frequency means to receive said second signals and to produce output signals only when said second signals vary in frequency at a predetermined rate.

3,936,762
DIGITAL PHASE-LOCK LOOP SYSTEMS FOR PHASE PROCESSING OF SIGNALS

Duncan B. Cox, Jr., Manchester, and William H. Lee, Arlington, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed June 17, 1974, Ser. No. 480,032
Int. Cl.^{2} H04L *27/14;* **H03C** *3/24*
U.S. Cl. 329—104 **25 Claims**



1. A phase processing system comprising means responsive to an input signal having a first phase and further responsive to an output signal having a second phase for producing an error signal representing the phase difference between said first and second phases;

means for producing a reference clock signal having a fixed clock frequency;

means responsive to said clock signal and to said error signal for converting said error signal to a digital signal having a value representing said error signal;

means responsive to said clock signal and to said digital signal for producing a pulse control signal having a frequency which varies in accordance with the time-varying value of said digital signal;

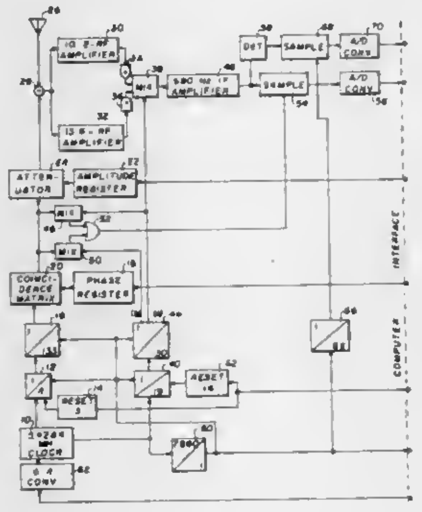
means responsive to said pulse control signal and to said reference pulse clock signal for controllably changing the number of pulses from said reference pulse clock signal in response to said pulse control signal to produce an intermediate clock signal;

means responsive to said intermediate clock signal for producing said output signal, the phase of which depends on said controlled number of pulses.

3,936,763
NULL INPUT OMEGA TRACKING FILTER SYSTEM

Winslow Palmer, Fort Myers, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 15, 1974, Ser. No. 524,025
Int. Cl.^{2} H03D *3/24*
U.S. Cl. 329—104 **6 Claims**



1. Tracking filter apparatus for determining the relative phase of synchronized CW navigation systems comprising:

input terminal means for receiving remote signals whose phase is to be determined;

first signal generating means for generating a sinusoidal signal having a phase and magnitude to that of the fundamental component of received signal;

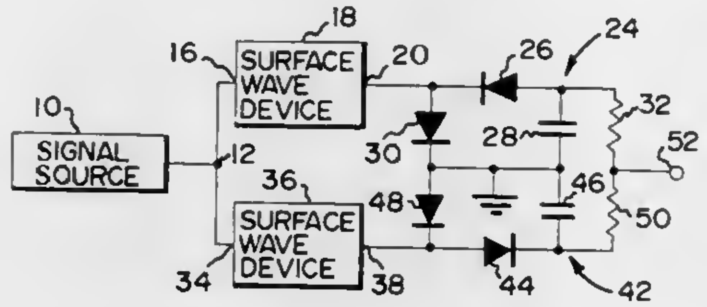
a difference circuit coupled to said input terminal and said first signal generating means and having an output that is proportional to the phasor difference of its inputs;

phase register means coupled to said first signal generating means for providing a signal that has a value that causes the fundamental component of said signal generated by said first signal generating means to match the phase of the corresponding incoming signal component and is a measure of the phase difference of the incoming signal.

3,936,764
FREQUENCY DISCRIMINATOR UTILIZING SURFACE WAVE DEVICES

Martin Fischman; G. Norman Williams, both of Seneca Falls, N.Y., and Jean M. Van Noppen, Kessel-Lo, Belgium, assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Oct. 21, 1974, Ser. No. 516,174
Int. Cl.^{2} H03H *9/26;* **H03D** *3/26*
U.S. Cl. 329—117 **8 Claims**



1. A frequency discriminator comprising:

a signal source having a terminal for providing a signal at said terminal having frequencies that vary about a center frequency;

first and second surface wave devices each having a single transducer with first and second combs of interleaved electrodes disposed on a piezoelectric substrate, said first and second surface wave devices having impedance maximums at frequencies lower and higher, respectively, than said center frequency;

first and second envelope detectors;

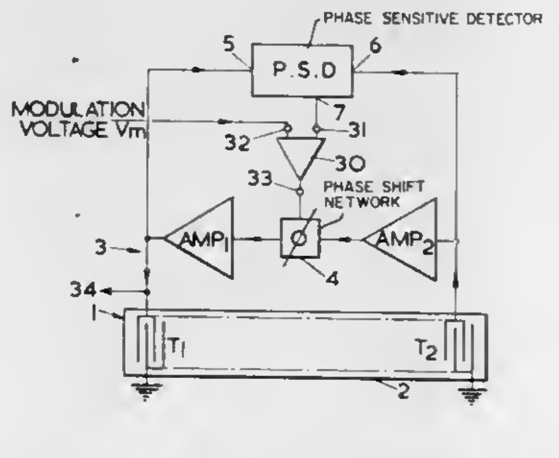
means connecting said first comb of electrodes of said first and second surface wave devices to said terminal of said signal source and further connecting said second comb of electrodes of said first and second surface wave devices to said first and second envelope detectors, respectively, for providing first and second output signals; and

means connected to said first and second envelope detectors for summing said first and second output signals to provide a signal having an amplitude representative of the frequency deviation of the signal provided by said signal source from said center frequency.

3,936,765
SURFACE ACOUSTIC WAVE OSCILLATORS

Meirion Francis Lewis, and James Dennis Maines, both of Malvern, England, assignors to National Research Development Corporation, London, England

Filed June 4, 1974, Ser. No. 476,275
Claims priority, application United Kingdom, June 6, 1973, 27095; May 3, 1974, 19653
Int. Cl.^{2} H03B *3/04, 5/30*
U.S. Cl. 331—1 R **11 Claims**

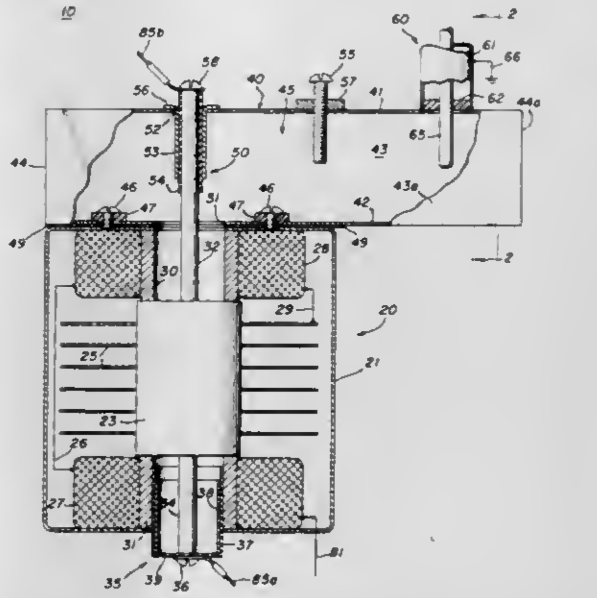


1. An acoustic wave oscillator comprising a surface acoustic wave delay line having an input transducer and an output transducer mounted on a substrate capable of supporting acoustic waves, an amplifier circuit having its input connected to the output of the output transducer, and its output connected to the input of the input transducer a phase sensitive detector for measuring the phase difference between signals received from two transducers mounted on the substrate and giving an output dependent on said phase difference, and means controlled by the phase sensitive detector for applying to the amplifier circuit a correcting signal to maintain a desired phase difference measured by the phase sensitive detector.

3,936,766
MAGNETRON WITH CAPACITIVELY COUPLED EXTERNAL CAVITY RESONATOR

James E. Staats, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 5, 1975, Ser. No. 555,391
Int. Cl.^{2} H01J *25/50;* **H03B** *9/10*
U.S. Cl. 331—88 **13 Claims**

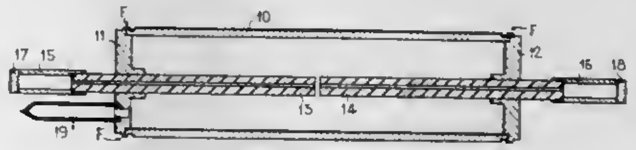


1. In combination, a crossed-field electron discharge device for generating ultra-high frequency electromagnetic energy, a cavity resonator disposed externally of said discharge device for stabilizing the frequency of operation thereof, and capacitive coupling means galvanically insulating said cavity resonator from said discharge device while coupling microwave energy therebetween.

3,936,767
COLD CATHODE GAS LASERS

André Besson, and Jacques Becrelle, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 18, 1973, Ser. No. 361,605
Claims priority, application France, May 24, 1972, 72.18488
Int. Cl.^{2} H01S *3/22, 3/03*
U.S. Cl. 331—94.5 D **4 Claims**

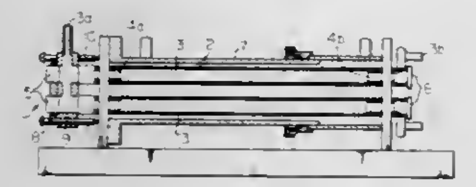


1. A cold cathode gas laser of the coaxial type comprising: a cylindrical aluminium tube cathode; at least one insulating capillary tube coaxially disposed in said cathode; end plates coupled to said cathode, at least one of which for receiving said capillary tube for fixedly positioning said tube, one extremity of said capillary tube extending beyond the end of said tube cathode; said capillary tube having an opening to provide an open path between the interior of said capillary tube and

the interior of said cylindrical aluminium tube forming said cathode; at least one cylindrical anode fixed at said one extremity of said capillary tube; two semi-reflective mirrors terminating a path which includes the interior of said at least one capillary tube for constituting an optical resonant cavity; means for sealing said cathode, said at least one capillary tube, said end plates, said at least one anode and said two semi-reflective mirrors and forming a gas-tight enclosure (i.e. the interior of said cathode and the interior of said optical resonant cavity); and said tight enclosure being filled with a laser gas mixture.

3,936,768
MOLECULAR GAS LASER DEVICE WITH AN IMPROVED OUTPUT MIRROR MEANS

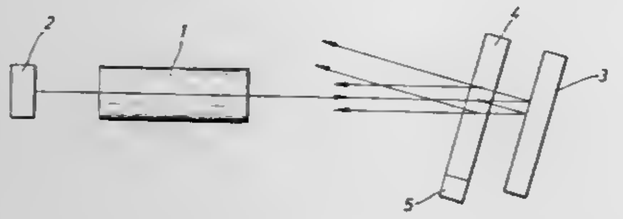
Akira Ichinose, and Norio Karube, both of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed July 5, 1973, Ser. No. 376,825
Claims priority, application Japan, July 5, 1972, 47-67729
Int. Cl.^{2} H01S *3/08*
U.S. Cl. 331—94.5 C **4 Claims**



1. A high power multibeam laser system comprising: a plurality of oscillator tubes containing therein a laser medium and positioned approximately parallel to one another, at least one totally reflecting mirror disposed at one end of said oscillator tubes, an output coupling mirror disposed at the other end of said oscillator tubes, and means for applying pump energy to said laser medium for establishing a population inversion therein, and wherein said output coupling mirror comprises plural segmented mirror elements having at least the inner faces which face said oscillator tubes lying in a single flat plane.

3,936,769
ACOUSTO-OPTICALLY Q-SWITCHED LASER WITH MODULATED OUTPUT

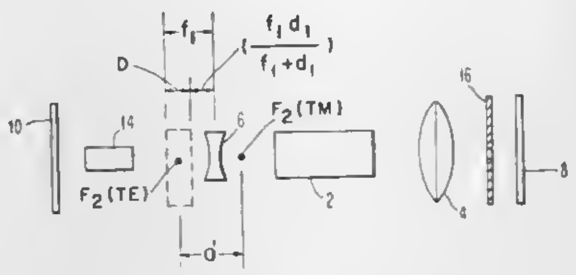
Michiel de Wit, Dallas, and Roddy Fro Hotz, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 28, 1973, Ser. No. 429,319
Int. Cl.^{2} H01S *3/10*
U.S. Cl. 331—94.5 M **3 Claims**



1. A method of modulating the output of an acousto-optically Q-switched laser including a lasing means and two reflectors, with an acousto-optic Q-switch between said lasing means and one of said reflectors, said method comprising:
- transmitting a light beam as the output from the lasing means toward the Q-switch and said one reflector,
- activating said Q-switch by introducing acoustic energy thereinto having a frequency approximately equal to the frequency difference between adjacent longitudinal modes of the light beam output or a multiple or submultiple thereof as the light beam output passes through the Q-switch,
- feeding back at least a portion of the light beam output by said one reflector, and
- modulating the light beam output as a consequence of said Q-switch activation as it is fed back by said one reflector by shifting the frequency of the feedback light beam in an amount equal to the frequency difference between adjacent longitudinal lasing modes or a multiple or submultiple thereof to produce a resultant modulated lasing output waveform.

3,936,770
SINGLE LASER CAVITY FOR GENERATING TE OR TM MODES

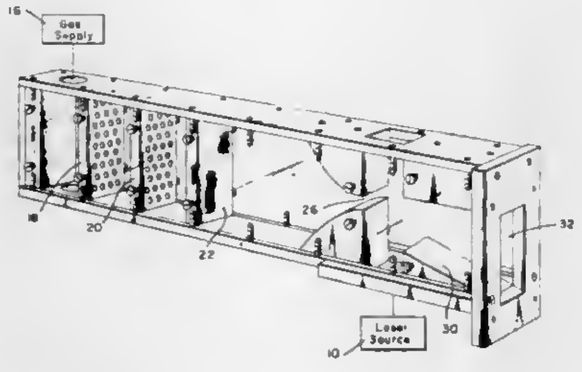
John Francis Reintjes, Jr., Alexandria, Va., and James Jeffrey Wynne, Mount Kisco, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 28, 1973, Ser. No. 429,409
Int. Cl.^{2} H01S *3/082, 3/098*
U.S. Cl. 331—94.5 C **8 Claims**



1. A laser cavity generator for generating either the rotationally symmetric TE or TM mode comprising
- two light reflectors facing each other to form the outer boundaries of an optical resonant cavity,
- a laser medium in said cavity adjacent one of said reflectors,
- a convex lens and a concave lens located between said laser medium and said other light reflector,
- a birefringent material inserted between said lenses,
- and means for varying the optical thickness between said lenses for alternatively generating the TE mode or the TM mode.

3,936,771
SUBSONIC FLOW AERODYNAMIC WINDOW FOR HIGH ENERGY LASER

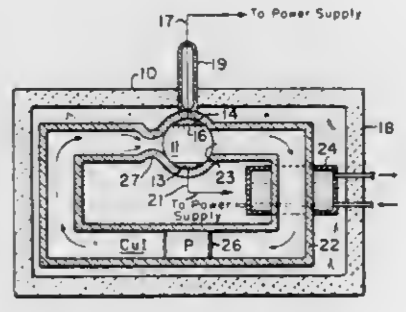
James M. Kallis, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Mar. 27, 1974, Ser. No. 455,437
Int. Cl.^{2} H01S *3/05*
U.S. Cl. 331—94.5 C **2 Claims**



1. A subsonic flow aerodynamic window in a high energy gas laser, which seals off the laser optical cavity from the ambient gas while minimizing the degradation of the laser output beam, comprising:
- a gas laser for providing a laser beam including a laser cavity and an outlet chamber for said beam to traverse;
- an entrance in said chamber for receiving said laser beam from said laser cavity;
- means connected to a flow system for providing a gas for producing a subsonic gas jet flowing transversely to said laser output beam for sealing off said chamber from the ambient gas with reduced degradation of said output laser beam;
- an exhaust duct transverse to said chamber for exhausting said gas jet;
- convergent nozzle for acceleration of the gas to provide said subsonic flow; and
- a plurality of plates and screens positioned in said cavity between said means and said convergent nozzle for reducing the turbulence of the gas jet.

3,936,772
HIGH FLOW METAL HALIDE VAPOR LASER

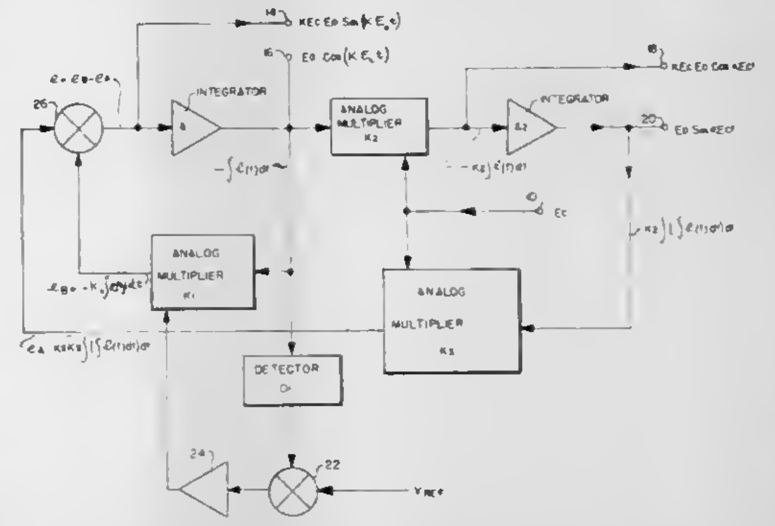
Eugene W. Sucov, and Lelland A. C. Weaver, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 339,670, March 9, 1973, abandoned. This application Oct. 4, 1974, Ser. No. 511,966
Int. Cl.^{2} H01S *3/22*
U.S. Cl. 331—94.5 G **12 Claims**



1. A method for obtaining pulsed metal vapor laser transitions at temperatures substantially below the metal vaporization temperature, said method comprising:
- A. placing a metal halide of the desired metal within an enclosure;
- B. vaporizing said metal halide by heating said metal halide to a temperature not substantially in excess of that required to provide a high molecular vapor pressure and transversely flowing said vapors at at least sonic velocities across a discharge region;
- C. maintaining a temperature not substantially greater than said vaporization temperature, said temperature level being such as to prevent substantial thermal dissociation of said metal halide, and, at said temperature
  - i. collisionally dissociating the metal halide vapor with energized electrons to provide ground state metal atoms of sufficient number density to create resonance radiation trapping, and substantially simultaneously therewith
  - ii. creating a population inversion between a desired upper laser level and lower laser level of said metal by exciting ground state metal atoms with energized electrons and maintaining a sufficient number of metal atoms in the ground state to preserve said resonance radiation trapping, said energized electrons of steps (i) and (ii) being produced by ionization and having a mean electron energy of at least that required to excite the upper laser level of said metal atom;
- D. maintaining said flow velocity to permit said excited metal atoms to remit laser radiation by stimulated emission to a lower laser level within said discharge region and to remove said lower laser level atoms from said discharge region;
- E. resonating said stimulated emission; and
- F. repeating steps C, D, E and F.

3,936,773
TWO-PHASE QUADRATURE VOLTAGE-CONTROLLED SINE-WAVE OSCILLATOR

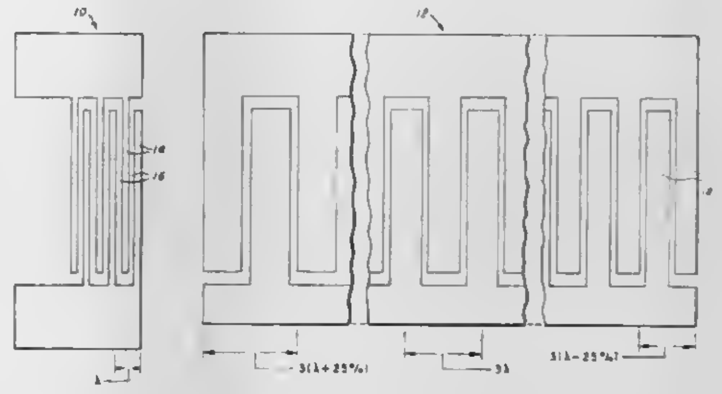
Bruce L. Wilkinson, Torrance, Calif., assignor to Taylor C. Fletcher, Long Beach, Calif.
Filed Oct. 17, 1974, Ser. No. 515,499
Int. Cl.^{2} H03B *5/20*
U.S. Cl. 331—135 **6 Claims**



1. A voltage controlled oscillator for generating at least one sinusoidal output signal, said oscillator including: a first loop circuit including analog multiplier means and integrator means serially connected with one another; output terminal means connected to said loop circuit; and input terminal means connected to said analog multiplier meanns to control the multiplication factor of said analog multiplier means in accordance with the value of an applied control voltage so as to control the frequency of the output signal in a linear and continuous direct proportional relationship with the value of the applied control voltage, and in which said first loop circuit includes a first operational integrator and a second operational integrator, a first analog multiplier interposed between the first and second operational integrators, and a second analog multiplier interposed between the second and first operational integrators.

3,936,774
HIGH BULK MODE REJECTION SURFACE WAVE DEVICE

Donald Williams Mellon, Plano, and Richard Alan Kempf, McKinney, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 14, 1974, Ser. No. 450,966
Int. Cl.^{2} H03H *9/02, 9/26, 9/30;* **H04R** *17/10;* **310** *8;8.1;9.7;9.8*
U.S. Cl. 333—30 R **6 Claims**



1. A surface wave device having substantially no bulk mode signal output comprising:
- a. a substrate for conveying acoustic waves;
- b. a first transducer having a plurality of electrodes in operative association with the substrate for generating acoustic surface waves, each of said plurality of electrodes having a preselected spacing as to an adjacent electrode

at one-half wavelength at a desired operating frequency to reduce substantially the response of the first transducer to bulk waves at the operating frequency; and

c. a second transducer having a plurality of electrodes in operative association with the substrate for receiving the first transducer output, each of said plurality of electrodes having preselected spacings from an adjacent electrode at one-half wavelength of a preselected subharmonic of said operating frequency.

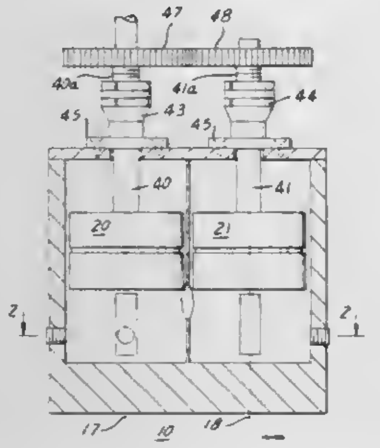
3,936,775
MULTICAVITY DUAL MODE FILTER

Richard V. Snyder, Old Bridge, N.J., assignor to Harvard Industries, Inc., Farmingdale, N.J.

Filed Sept. 30, 1974, Ser. No. 510,167

Int. Cl.² H01P *1/16, 1/20, 7/06*

U.S. Cl. 333—73 W **8 Claims**



1. A multicavity waveguide filter comprising a plurality of cylindrical cavaties in which each of said cavities has a pair of orthogonally related modes of propogation,

a plunger for tuning each of said cavities, each of said plungers being disposed within a respective cavity,

each of said cavities having a side wall and being positioned side by side in a series with the long axis of each of said cavities being aligned parallel to each other but not coaxial,

each of said cavities having obstacle splitting means for coupling each pair of orthogonally related modes within the cavity,

iris means formed on a side wall of each of said cavities for coupling selected one of said cavities, and

means mechanically coupling said tuning plungers for simultaneously moving said tuning plungers to predetermined positions within said cavities.

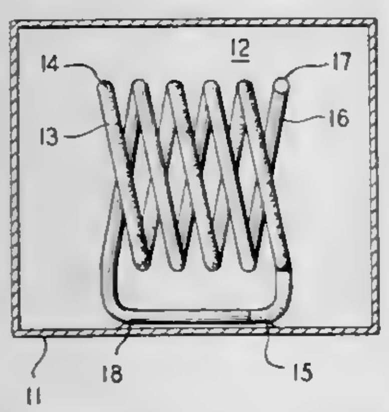
3,936,776
INTERSPERSED DOUBLE WINDING HELICAL RESONATOR WITH CONNECTIONS TO CAVITY

John Robert Sundquist, Melrose, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 10, 1975, Ser. No. 556,565

Int. Cl.² H01P *1/20, 7/04*

U.S. Cl. 333—73 R **10 Claims**



1. A helical resonator of the type comprising a housing forming a conductive shield, a helical conductive coil having an end attached to a wall of said shield and an end within said shield, and means insulated from said shield for coupling from outside said shield to said coil, characterized in that said coil includes first and second helical portions having like pitches and interspersed turns, one pair of opposite ends of the two respective portions being connected to said shield.

3,936,777
ARRANGEMENTS FOR SIMULATING INDUCTANCE AND FILTER NETWORKS INCORPORATING SUCH IMPROVEMENTS

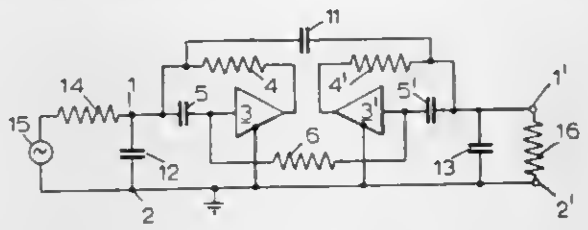
John Mortimer Rollett, and David Richard Wise, both of London, England, assignors to The Post Office, London, England

Filed Sept. 27, 1974, Ser. No. 509,968

Claims priority, application United Kingdom, Oct. 1, 1973, 45860/73

Int. Cl.² H03H *11/00*

U.S. Cl. 333—80 R **7 Claims**



1. In a filter network a circuit arrangement comprising a first and second amplifier element each having an overall gain substantially equal to unity and each having a single input and a single output interconnected by way of a first and a second series network respectively, each series network including a resistive impedance element and a capacitive impedance element and a first junction point between said resistive and said capacitive impedance elements and wherein the product of the values or resistance and capacitance of the elements in the series network for each of said first and second amplifiers is equal, a first non-inductive coupling element interconnecting the series networks of the first and second amplifiers, the circuit arrangement being a symmetrical mirror image in terms of components about said first non-inductive coupling element.

3,936,778
MICROSTRIP DEVICE HAVING MODE SUPPRESSING MEANS

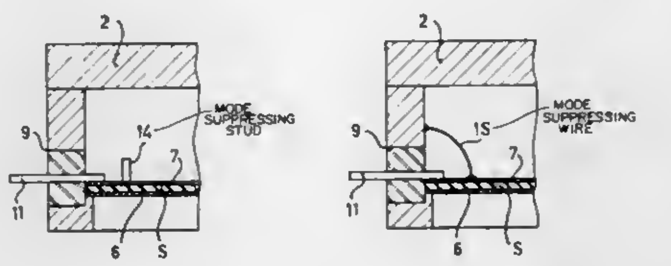
Frans Christiaan De Ronde, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 10, 1974, Ser. No. 513,705

Claims priority, application Netherlands, Oct. 17, 1973, 7314268

Int. Cl.² H01P *1/16*

U.S. Cl. 333—84 M **2 Claims**



1. A microwave device comprising: a box of conductive material; a substrate arranged parallel to and spaced from one wall of the box, the surface of the substrate facing said one wall being provided with a microstrip line and the opposite surface with a conductive ground plane; at least one coaxial terminal leading through another wall of said box and connected to said microstrip line to supply thereto and derive therefrom microwave operating signals; and at least one electrically conductive stud connected at one end thereof to the microstrip line and forming substantially right angles therewith, said stud having a length of about ¼ of the wavelength of the operating microwave signal and is spaced from the terminal about ½ of said wavelength.

3,936,779
VACUUM-TIGHT WINDOW ARRANGEMENT FOR A RECTANGULAR-HOLLOW CONDUCTOR

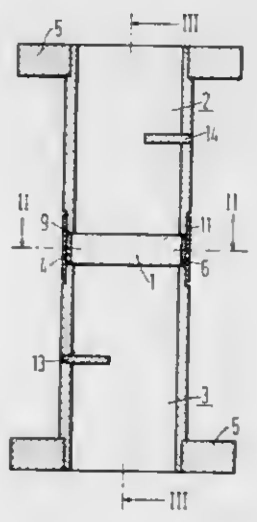
Eugen Achter; Fritz Hanf, both of Munich, and Wolf Wiehler, Neubiberg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 5, 1975, Ser. No. 555,566

Claims priority, application Germany, Mar. 12, 1974, 2411798

Int. Cl.² H01P *1/04, 1/08*

U.S. Cl. 333—98 P **7 Claims**



7. A window and hollow conductor device for microwave utilizing devices comprising a rectangular shaped hollow conductor member having four sides including two short sides and two long sides, a rectangular shaped wave permeable window constructed of a dielectric material received in said hollow conductor, the short sides of said hollow conductor having openings therethrough intermediate the ends of the hollow conductor, the openings dimensioned approximately equal to the opposed dimensions of the window received therethrough, the window extending within the hollow conductor from the opening in one short wall to the opening in the other short wall, end portions of the window extending partially into said openings and being contacted on opposite sides of the window by end wall portions of the short sides defining the openings, metallic spacer plates received in said openings in contact with walls of the window, a four-piece bandage sleeve received around said hollow conductor in the area of the window, the four-piece bandage sleeve including two shorter pieces engaging the short side walls of the hollow conductor and covering the spacer plates and the openings, two longer pieces of the bandage sleeve contacting the long sides of the hollow conductor, the bandage sleeve pieces being in end overlapping relationship with adjacent bandage sleeve pieces, and the bandage sleeve being fixed in place by soldering and providing a vacuum tight seal around the window.

3,936,780
SAFETY DEVICE WITH THERMAL AND ELECTROMAGNETIC RELEASE FOR A MULTI-CONTACT CIRCUIT-BREAKER

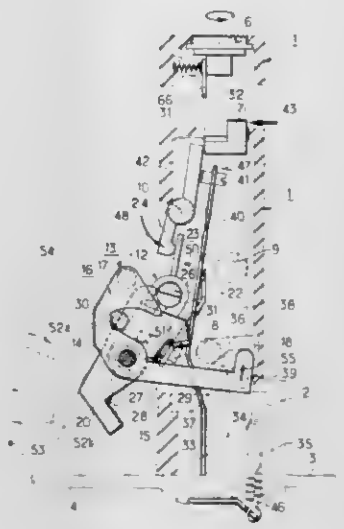
Jean Hennemann, Hombliercs, France, assignor to UNELEC, Paris, France

Filed Feb. 12, 1975, Ser. No. 549,461

Claims priority, application France, Feb. 20, 1974, 74.05734

Int. Cl.² H01H *73/48*

U.S. Cl. 335—23 **8 Claims**



1. Safety device having a thermal and an electromagnetic release for a multi-pole circuit-breaker comprising means for the detection respectively of overcharge and of short-circuiting actuating, independently from each other, the element for controlling the locking of the said circuit-breaker, characterized in that the said control element (15) is driven respectively directly by an electromagnetic release shaft (8) common to all the poles and which is actuated by the said electromagnetic means (35) for detecting short-circuiting and indirectly through a mechanical power amplifier (12) interposed and controlled by an auxiliary shaft (10) common to all the poles and which are actuated by the said means (40) for the thermal detection of overcharge and in that the said mechanical amplifier (12) comprises a cage (21) having uprights (70); a rotating catch (22) assembled so as to rotate on a shaft transversal to the said cage (21) and which is actuated by the said auxiliary shaft (10), a plunger (20) controlled by the said catch (22) assembled to rotate about a shaft (14) and transmiting the mechanical power of a spring (27) to the said control element (15).

3,936,781
SELECTING DEVICE FOR CROSSBAR SWITCHES

Sven-Erik Lindeberg, Huddinge, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Sept. 5, 1974, Ser. No. 503,340

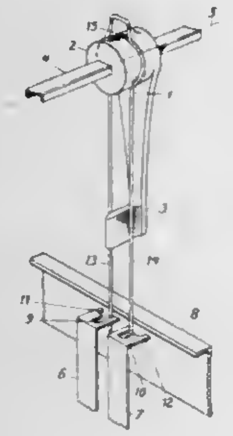
Claims priority, application Sweden, Sept. 18, 1973, 7312665

Int. Cl.² H01H *67/04*

U.S. Cl. 335—112 **10 Claims**

1. In a selecting device for crossbar switches of the type in which selecting wires are actuated by selecting bars performing turning movements about an axis of rotation by the action of selecting bar magnets for selection of predetermined contact groups whereby said contact groups can be actuated by lifting devices, moving in a direction substantially parallel to the selecting bars, on operation of bridge magnets, due to transfer of the movements of the lifting devices to the contact groups via the actuated selecting wires, the improvements

comprising selecting wires made of flexible material shaped in a plane to form a symmetrical loop form with two legs, said wires being movably supported in such a manner that each of said selecting bars is encircled by bent ends of the appertaining selecting wires and so that said legs of the selecting wires are swingable in said plane about an axis which is substantially parallel to said axis of rotation of said selecting bar, inner stops and outer stops being arranged adjacent to said selecting wires, whereby, when inactive, said legs of said selecting wires are arranged to rest against said inner stops situated between said legs and by bending-out to be brought into contact with said outer stops lying outside said legs and each of said selecting bars being provided with a selecting wing adjacent to each selecting wire, which, when the respective selecting bar is in the inactive condition, is arranged to occupy a position midway between said legs of the respective selecting wire when they rest against said inner stops, and by rotation of said selecting bar to lift one of said legs to engage the respective one of said outer stops, whereby said selecting wire is exposed to elastic deformation.



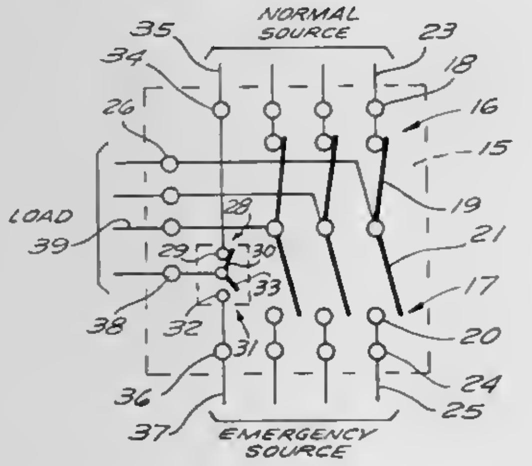
3,936,782
AUTOMATIC TRANSFER SWITCH

William A. Moakler, Basking Ridge, and Charles Stotz, Upper Montclair, both of N.J., assignors to Automatic Switch Company, Florham Park, N.J.

Filed Jan. 29, 1975, Ser. No. 545,052

Int. Cl.² H01H *9/20*

U.S. Cl. 335—161 **12 Claims**



1. An automatic transfer switch for transferring an electrical load from a normal source of electric power to an emergency source of electric power, and vice versa, comprising:

a. a first set of phase switches for connection between the normal source and a load,

b. a second set of phase switches for connection between the emergency source and the load,

c. a first neutral switch for connection between a normal source neutral conductor and the load neutral conductor,

d. a second neutral switch for connection between an emergency source neutral conductor and the load neutral conductor,

e. means for operating said phase switches so that only one of said sets of phase switches is closed at any one time and for opening the closed set before closing the open set when transferring the load from one of the power sources to the other, and

f. means for operating said neutral switches so that prior to operation of said phase switches by said means (e) the neutral switch corresponding to the closed set of phase switches is closed and the neutral switch corresponding to the open set of phase switches is open, and during transfer of the load both of said neutral switches are closed before the closed set of phase switches open and both of said neutral switches remain closed until after the closed set of phase switches open and the open set of phase switches close, whereupon the neutral switch which had originally been open remains closed and the neutral switch which had originally been closed opens.

3,936,783
MEDIUM FREQUENCY POWER TRANSFORMER WITH A SECONDARY WINDING SUITABLE FOR A RIGID CONNECTION WITH AN INDUCTOR THROUGH WHICH THE COOLANT FLOWS

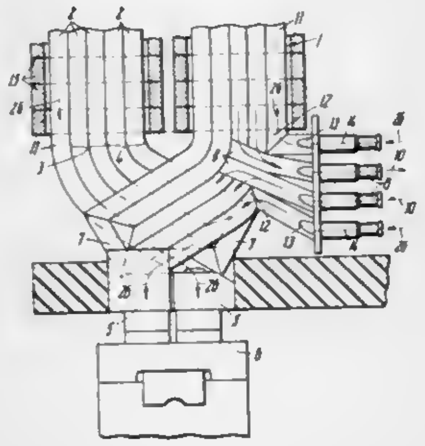
Wilfried Wagemer, Wuppertal, Germany, assignor to AEG-Elotherm G.m.b.H., Remscheid-Hasten, Germany

Filed June 3, 1974, Ser. No. 475,959

Claims priority, application Germany, June 1, 1973, 2328024

Int. Cl.² H01F *27/08*

U.S. Cl. 336—62 **4 Claims**



1. In a medium frequency power transformer with a frame, two layers of primary windings, a secondary winding comprising a plurality of secondary conductors which overlap in the area of rigid secondary coolant connections to an inductor through which coolant flows, said two layers of primary windings being arranged at both sides of the secondary winding and formed by hollow conductors and lined up to a packet, and a plurality of ferrite, framelike core bodies enclosing the primary and secondary windings, whereby in the area of the transformer secondary connections, in which the secondary conductors of the secondary winding overlap, no core elements are provided and whereby the overall dimensions of the transformer are small in the direction perpendicularly to the front surfaces of the secondary winding and of the layers of the primary winding as compared to its overall dimensions parallel to these front surfaces, the improvement compising:

a coolant line arranged with the secondary winding conductors in one layer and disposed along the periphery of the secondary winding, said coolant line having a first separation to which the separation ends are connected by means of coolant connections arranged in the transformer frame, and a second separation in the area of the transformer secondary connections, the ends of the second separation of which are connected with the coolant connections of the inductor.

3,936,784
OIL-FILLED APPARATUS WITH MEANS FOR ACHIEVING PRESSURE BETWEEN PARTS THEREOF

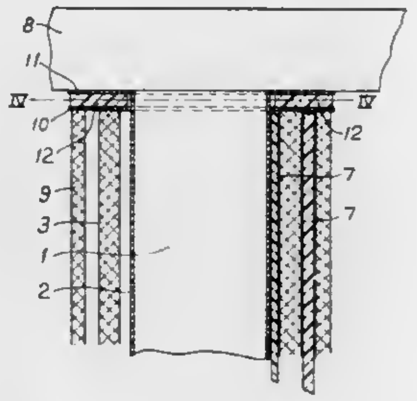
Carl Elfgren, and Erich Spicar, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed May 23, 1974, Ser. No. 472,906

Claims priority, application Sweden, June 20, 1973, 7308657

Int. Cl.² H01F *27/30*

U.S. Cl. 336—94 **4 Claims**



1. An oil-filled apparatus having an iron core part and winding parts arranged on said core part, a casing enclosing said parts, there being a space between two of said parts, and means for exerting pressure force between said core part and said winding parts, said means comprising bodies of an elastomer which absorbs oil and swells as a result of such absorption located in said space.

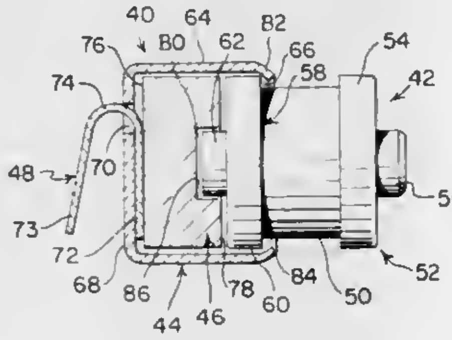
3,936,785
GAS TUBE ARRESTER SUBASSEMBLY

Gary W. Novak, Des Plaines, Ill., assignor to Cook Electric Company, Morton Grove, Ill.

Continuation of Ser. No. 456,778, April 1, 1974, abandoned. This applicatiun Jan. 15, 1975, Ser. No. 541,125

Int. Cl.² H01H *61/00, 39/00*

U.S. Cl. 337—29 **18 Claims**



1. An arrester subassembly having an arrester with an electrode at one end, said arrester subassembly further comprising:

a shell portion having one end substantially closed and one end substantially open, said shell portion having securing means at said open end to secure said electrode in said shell portion;

a spring means removably mounted on said shell portion at said closed end of said shell portion; and

a contact means disposed in said shell portion between said spring means and said electrode.

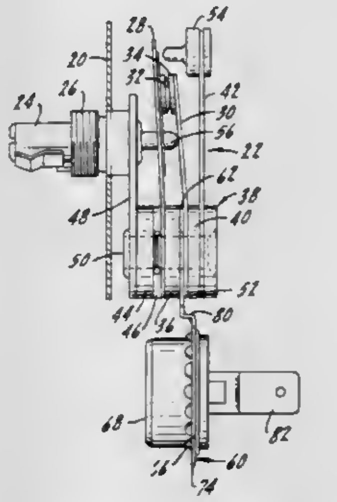
3,936,786
TEMPERATURE SENSITIVE TIPSWITCH

James A. Peterson, and Donald A. Mc Cabe, both of Morris, Ill., assignors to Bimet Corporation, Morris, Ill.

Filed Feb. 13, 1975, Ser. No. 549,674

Int. Cl.² H01H *29/00*

U.S. Cl. 337—80 **9 Claims**



1. A temperature sensitive and gravity sensitive switch including a pair of flexible conductive arms arranged for contact adjacent one end thereof, insulation means mounting and separating the opposite ends of said arms, a temperature responsive actuating arm and insulating means mounting and separating one end thereof from said conductive arms, means on said actuating arm positioned for contact with one of said conductive arms to effect opening and closing of said conductive arms,

a bracket in electrical contact with a conductive arm and mounted thereto by said insulation means, and a conductive liquid tipswitch mounted in said bracket and connected in series with said conductive arm through said bracket.

3,936,787
CARTRIDGE FUSE CARRIER ASSEMBLY

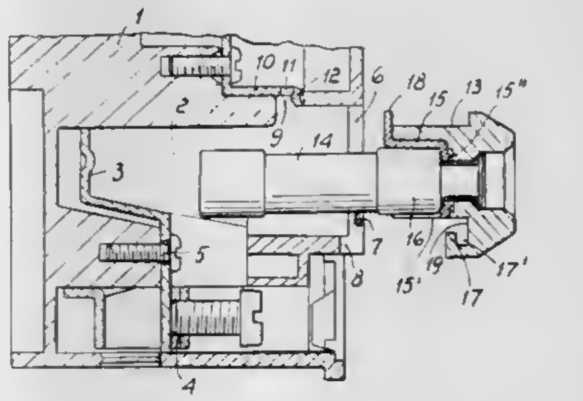
Pierluigi Ranzanigo, Brescia, Italy, assignor to Bassani S.p.A., Milan, Italy

Filed Mar. 29, 1974, Ser. No. 456,278

Claims priority, application Italy, May 30, 1973, 24840/73

Int. Cl.² H01H *85/14*

U.S. Cl. 337—228 **8 Claims**



1. In a fuse assembly for mounting fuses having electrically conductive ends, a combination comprising a housing having an elongated recess for axially receiving a fuse through an opening; a pair of electrical contact means in said recess at longitudinally spaced locations thereof; fuse cap means for engaging one of said ends of the fuse and axially inserting the latter for effecting electrical contact between the other of said ends of the fuse and one of said spaced contact means; and locking means on said fuse cap means in electrically conductive contact with said one end of the fuse and adapted for movement in a direction transverse to said elongation of said recess for effecting electrical contact between said one end

and the other of said spaced contact means only subsequent to said electrical contact created by the axial insertion of said fuse cap means.

3,936,788

THERMOBIMETAL-CARRYING ELASTIC MEMBER AND TEMPERATURE-CONTROL CIRCUIT COMPONENT USING THE MEMBER AS SENSING ELEMENT

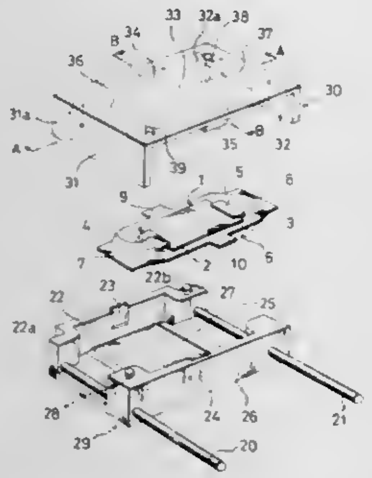
Tomoyoshi Uchiya, Misato, Japan, assignor to Uchiya Co., Ltd., Tokyo, Japan

Filed Sept. 19, 1974, Ser. No. 507,360

Claims priority, application Japan, Nov. 6, 1973, 48-124728

Int. Cl.^{2} H01H *37/52*

U.S. Cl. 337—372 **4 Claims**



1. A temperature-control circuit component, such as a thermostat, having a thermobimetal-carrying elastic member composed of a bimetal that will recurve or rebound in a springing manner with a temperature change beyond a preset limit and an electrically conductive elastic member having catches for loosely holding the bimetal at both ends, said bimetal being adapted to permit, in the course of its recurving, spring deformation of the elastic member, too, said elastic member being formed with lugs for support on both sides, and a pair of electric contact members adapted to perform electric switching action in cooperation with the elastic member, said electric switching action with temperature changes depending upon the springing deformation of the elastic member with the recurving of the bimetal, the improvement therein comprising a case body having electric contacts at both ends and containing the elastic member, a cover for the case body, and means provided between the case body and the cover to support the lugs of the elastic member in place.

3,936,789

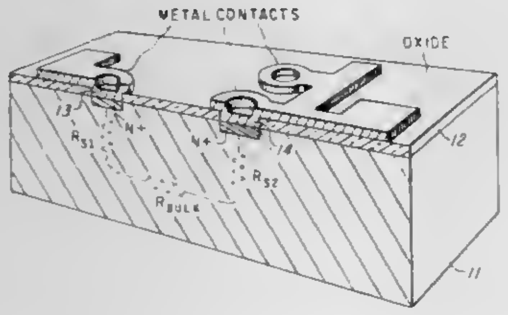
SPREADING RESISTANCE THERMISTOR

Walter T. Matzen, and Don L. Kendall, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 3, 1974, Ser. No. 475,712

Int. Cl.^{2} H01C *7/04*

U.S. Cl. 338—22 SD **4 Claims**



1. A two-terminal resistor comprising a body of resistive material, an insulating film covering said body and having a plurality of apertures therein which define electrical contact areas, a plurality of spreading-resistance thin-film metal contacts to said body in said apertures, at least two of said thin-film contacts being connected in common to constitute a single terminal of said resistor, and at least one of the remaining contacts constituting the other terminal of said resistor.

3,936,790

TEMPERATURE SENSITIVE RESISTOR HAVING A CRITICAL TRANSITION TEMPERATURE OF ABOUT 140°C

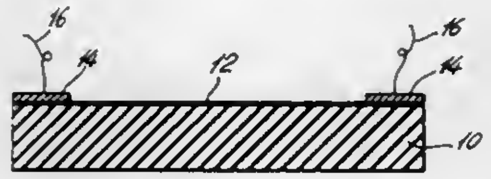
H. Keith Eastwood, Beaconsfield; Thomas R. Simon, Cote St. Luc, and Nguyen N. Khoi, Montreal, all of Canada, assignors to Multi-State Devices, Ltd., Dorval, Canada

Filed Aug. 26, 1974, Ser. No. 500,732

Claims priority, application Canada, July 22, 1974, 205362

Int. Cl.^{2} H01C *7/00*

U.S. Cl. 338—25 **6 Claims**



1. A solid state switching device comprising a temperature sensitive resistive element of V_3O_5 material which exhibits an abrupt decrease in electrical resistance at about 140°C, and electrode lead wires attached to spaced points of said temperature sensitive resistive element for connecting such temperature sensitive resistive element to an electrical circuit.

3,936,791

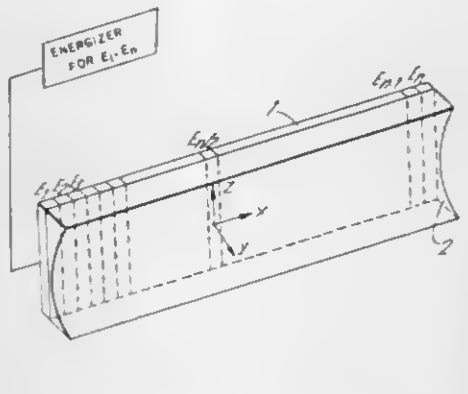
LINEAR ARRAY ULTRASONIC TRANSDUCER

George Kossoff, Northbridge, Australia, assignor to The Commonwealth of Australia, Australian Capital Territory, Australia

Filed Sept. 13, 1973, Ser. No. 397,003

Int. Cl.^{2} G01N *29/04;* **G01S** *9/66*

U.S. Cl. 340—1 R **3 Claims**



1. Apparatus for the ultrasonic examination of an object comprising:

- a phased array transducer comprising a plurality of transducer elements for directing pulses of ultrasonic energy along a beam into the said object;
- means for exciting the elements of the array in phased relation for focusing and scanning the beam in the longitudinal plane of the transducer; and
- focusing means for focusing the dimensions of said beam normal to the longitudinal plane of the transducer.

3,936,792

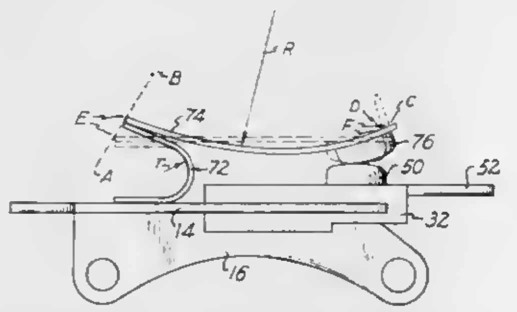
CIRCUIT BREAKER APPARATUS

Ronald E. Senor, Norton, Mass., and George Trenkler, East Providence, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 302,158, Oct. 30, 1972, Pat. No. 3,818,404. This application Apr. 10, 1974, Ser. No. 459,527

Int. Cl.^{2} H01H *61/04*

U.S. Cl. 337—85 **6 Claims**



1. A switch for breaking an electric circuit upon the occurrence of a predetermined overload comprising a base, a generally U-shaped first thermostatic member having respective high and low coefficient of expansion sides and having a first value of resistivity per unit of length, the first thermostatic member having a first and second leg joined by a bight portion, the first leg extending along the surface of the base and physically attached thereto, a generally flat second thermostatic strip member having respective high and low coefficient of expansion sides and having a value of resistivity per unit of length less than that of the first thermostatic member, the second leg of the first thermostatic member extending along a portion of the second thermostatic member and physically attached thereto with the sides contacting each other of dissimilar coefficient of expansion, a stationary contact mounted on the base electrically separated from the first and second thermostatic members, a movable contact mounted on the second thermostatic member and adapted to move into and out of engagement with the stationary contact, and means to provide electrical connection to the thermostatic members and the stationary contact whereby heating of the first thermostatic member causes increased contact force and contact wiping until deflection of the second thermostatic member causes separation of the contacts.

3,936,793

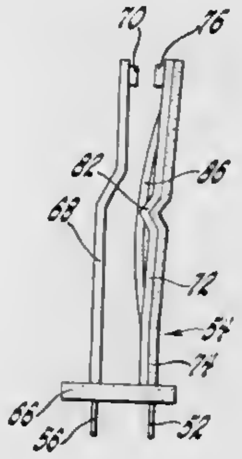
HUMIDITY AND TEMPERATURE RESPONSIVE SWITCH

William A. Armstrong, Grosse Ile, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 11, 1974, Ser. No. 522,474

Int. Cl.^{2} H01H *37/02*

U.S. Cl. 337—300 **3 Claims**



1. A temperature and humidity responsive switch comprising: a base member; an elongated stationary member with one end attached to said base member and a second end supporting a contact; an elongated bendable switch element having one end attached to said base member and a movable second end supporting a contact in alignment with the contact on said stationary member so as to cause engagement of said contacts when the second end of the switch element moves toward said stationary member during bending of the switch element; said switch element having a laminated structure with a metal portion and a plastic portion bonded together in a manner so that differences in their respective coefficients of thermal expansion affect the position of the movable second end of said switch element with respect to said second end of the stationary member; said elongated switch element being separated by slot means into side by side strip portions whose end portions adjacent said movable second end are joined and whose mid-portions are movable in the lateral direction with respect to one another; at least one of said strip portions being shortened in length, thereby causing the middle of the remaining strip portion to bend laterally in one direction from the general plane of the switch element during a low range of ambient temperatures and to cause the contact on the movable second end of the switch element to be positioned away from the contact on said second end of said stationary member and subsequently causing the middle portion to pass through the plane of the switch element and to bend in an opposite lateral direction with increasing ambient temperatures due to the differences in thermal coefficients of the metal and plastic so as to cause the contact on the second end of the switch element to engage the contact on the stationary member in a rapid and positive manner.

3,936,794

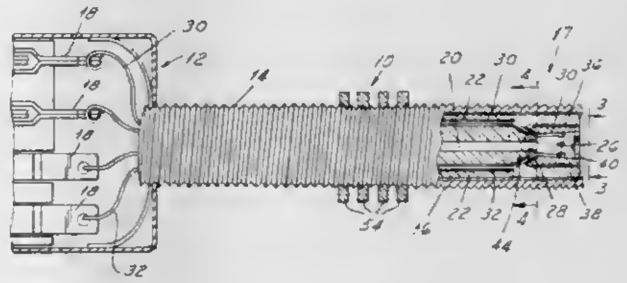
EXHAUST GAS SENSOR PROBE

Gordon L. Beaudoin; Dante S. Giardini, both of Dearborn Heights, and Allen H. Meitzler, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 27, 1974, Ser. No. 483,723

Int. Cl.^{2} H01C *13/02*

U.S. Cl. 338—34 **12 Claims**



1. A probe for inserting a wafer of exhaust gas sensor ceramic material into the exhaust gas flow system of an internal combustion engine, comprising in combination:

- an elongated ceramic support member having a plurality of generally longitudinally directed passages extending therethrough and a cup-shaped end portion arranged to open longitudinally away from said passages;
- said cup-shaped portion having a pair of generally longitudinally directed slots on the inner surface thereof defining means for receiving and supporting a wafer of exhaust gas sensor ceramic materials;
- a generally continuous groove formed about the outer periphery of said cup-shaped portion and extending along substantially the entire length of said cup-shaped portion;
- housing means fixedly attached to the exterior portion of said support member and including means for mounting the housing to an exhaust gas system so that the cup-shaped portion of the support member extends into the interior of the exhaust gas system;
- electrical terminal means attached to said housing so as to be exterior to the exhaust gas system when said housing means is attached to an exhaust gas system;
- electrical heater wire means received within said groove for heating the interior of the cup-shaped portion and arranged to electrically communicate through at least a portion of said plurality of support member passages with said electrical terminal means.

3,936,795

COMBINED VARIABLE RESISTOR ASSEMBLY PROVIDED WITH TAP POSITION INDICATOR MEANS

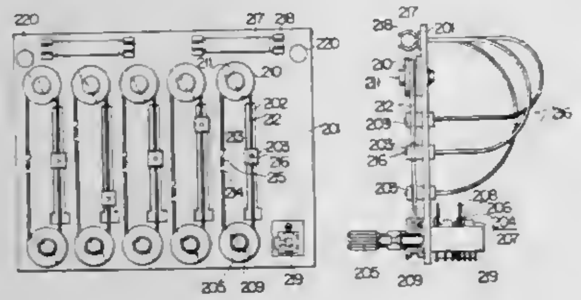
Matsuo Nishioka; Shunzo Oka, both of Hirakata; Akitoshi Miyashita, Suita, and Kazuo Oshima, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 427,735, Dec. 26, 1973. This application Feb. 12, 1975, Ser. No. 549,149

Claims priority, application Japan, Dec. 28, 1972, 48-4578[U]

Int. Cl.² H01C *5/00*

U.S. Cl. 338—119 **6 Claims**



1. A combined variable resistor assembly provided with position indicator means, comprising a panel formed with a plurality of slots, variable resistors corresponding in number to the number of said slots and mounted on said panel, slide members slidably engaged in said respective slots, said variable resistors having respective operable shafts and terminals extending straight and in the same direction, each of said variable resistors further including a brush holder rotatable in unison with said operable shaft, first pulleys secured to the operable shaft of said respective variable resistors, second pulleys paired with said respective first pulleys and rotatably mounted on the front side of said panel at respective positions spaced from the slidable span of the respective associated slide members, rope means each passed through each pair of said first and second pulleys and connected to each said slide member, a light source, and optical fibers each having one end held in the neighborhood of said light source and the other end connected to each said slide member.

3,936,796

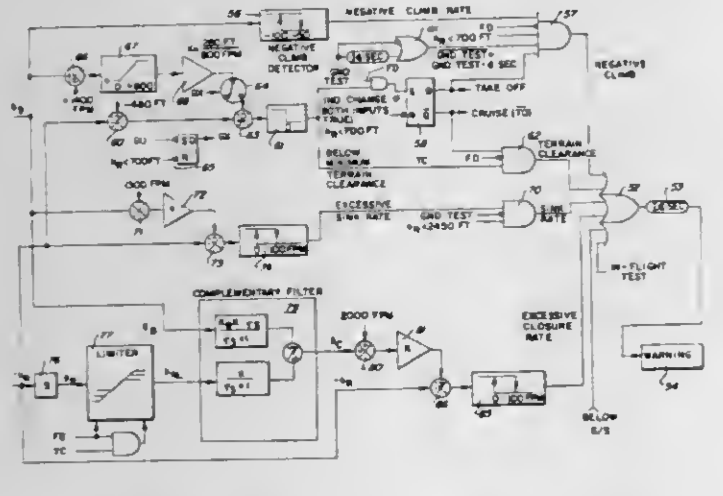
AIRCRAFT GROUND PROXIMITY WARNING INSTRUMENT

Charles Donald Bateman, Bellevue, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Division of Ser. No. 480,727, June 19, 1974. This application Jan. 27, 1975, Ser. No. 544,484

Int. Cl.² G01C *5/00*

U.S. Cl. 340—27 AT **11 Claims**



1. In an aircraft instrument for generating a warning to an operator in the event an aircraft descends below a predetermined altitude, except with flaps extended in a landing configuration, means inhibiting generation of a warning for enabling a warning free low altitude approach to a landing with the flaps up and landing gear down, comprising:
- means generating a signal representing the barometric rate of descent of the aircraft;
- means responsive to the barometric descent rate signal indicating a descent rate less than a predetermined value for generating a warning inhibit signal;
- means sensing the position of the aircraft landing gear; and
- means responsive to the landing gear being in a landing configuration to connect said warning inhibit signal with said warning generating instrument.

3,936,797

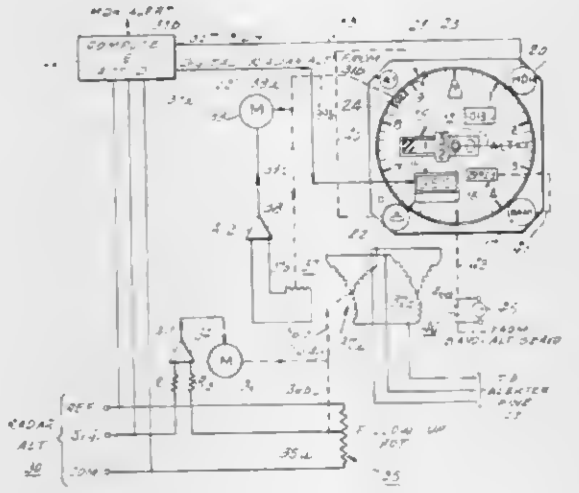
RADAR-BAROMETRIC ALTITUDE INDICATOR

John H. Andresen, Jr., Georgetown, British W. Indies, assignor to Intercontinental Dynamics Corporation, Englewood, N.J.

Filed May 28, 1974, Ser. No. 473,514

Int. Cl.² B64D *43/00*

U.S. Cl. 340—27 AT **7 Claims**



1. An instrument for use in aircraft comprising:
- a dial face having graduations;
- a mechanism including a movable pointer cooperating with said graduations to provide a corrected barometric altitude reading;
- a first index movable along said graduations;
- manually operable knob means coupled to said first index for positioning said first index at any desired location along said graduations to provide an altitude reading representative of the altitude of an aircraft landing strip typically relative to sea level;
- second index means movable along said graduations;
- first means for receiving a signal representative of radar altitude;
- second means for receiving a first signal representative of barometric altitude;
- third means for combining the signals received from said first and second means for positioning said second index at a position along said graduations to provide an instantaneous reading relative to said movable pointer of the height of the aircraft above the terrain over which the aircraft is passing whereby the separation distance between said first and second indices represents the difference in height between the aircraft landing strip whose height has been set into said instrument and the height of the terrain below the aircraft, said first and second indices cooperating to provide a self-checking feature to determine the accuracy of the information introduced into the instrument and of the operation of the instrument such that the first and second indices should be superimposed upon one another before touchdown of the aircraft on the aforesaid landing strip.

3,936,798

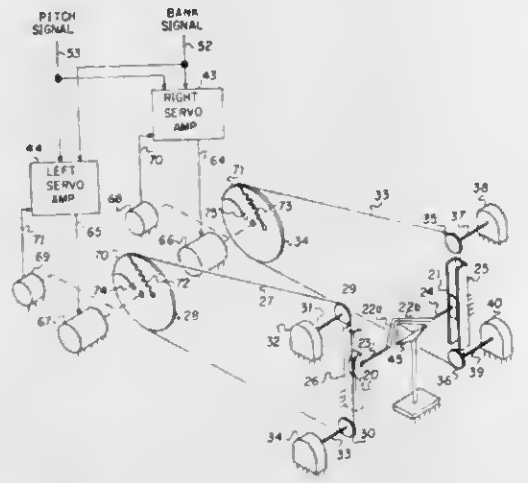
INDICATOR DISPLAY MECHANISM

Lester W. Haerther, and Leo P. Kammerer, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 29, 1974, Ser. No. 518,439

Int. Cl.² G08G *5/00*

U.S. Cl. 340—27 NA **16 Claims**



1. An indicator mechanism comprising: a fixed reference index member symmetrically disposed about the longitudinal viewing axis of an instrument, a moveable indicating member supported in a plane substantially normal to the longitudinal axis of said instrument and extending in said plane symmetrically with respect to, and transverse of, the vertical center axis of said instrument; drive means for displacing said indicating member within the plane defined thereby and transversely of said instrument longitudinal axis in accordance with a first input parameter and for rotating said indicating member about a point on said vertical center axis in accordance with a second input parameter, said drive means comprising termination means between which respective ends of said indicating members are extended, said terminating means comprising at least diametrically opposed peripheral portions of a cylinder with said indicating member extending along that diameter of said cylinder; first and second dial cords in respective driving engagement with said termination means, each said dial cord being of fixed length and having first and second portions thereof oppositely extending in peripheral engagement with said termination means and carried circumferentially over the arcuate periphery thereof and affixed thereto at a circumferential point beyond the point of tangency defined by the diameter along which said indicating member extends, first and second drive pulley means over which said first and second drive cords are respectively carried, and means for rotating each of said drive pulleys as a predetermined differential function of said first and second input paramenters.

3,936,799

AUTOMOTIVE VEHICLE ROTARY DISPLAY AND WARNING DEVICE

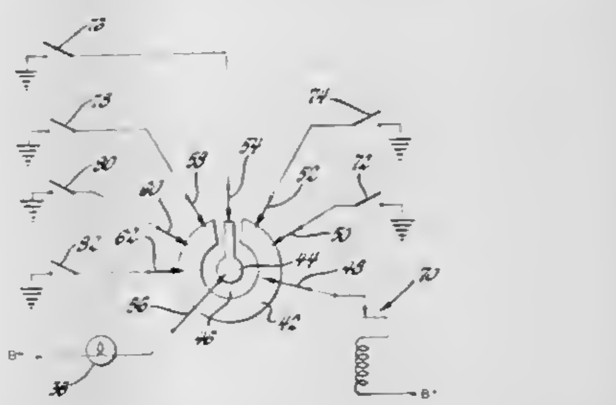
Roy G. Hynes, Flushing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 1, 1973, Ser. No. 384,612

Int. Cl.² G08B *19/00*

U.S. Cl. 340—52 F **2 Claims**

1. An automotive vehicle rotary display and warning device for indicating the occurrence of events at remote locations in the vehicle, comprising: a plurality of event sensors positioned at remote locations in the vehicle, each of said event sensors being responsive to the occurrence of a respective event for generating an electrical signal upon said occurrence; a viewing window; a drum rotatably supported adjacent the viewing window; a plurality of messages spaced around the drum so as to be sequentially positioned adjacent the viewing window as the drum is rotated, each of the messages representing the occurrence of a respective one of the events; a lamp for illuminating the message adjacent the viewing window when said lamp is energized; an audible indicator; and rotary switch means operated by rotation of the drum, the rotary switch means including first coupling means for exclusively coupling the event sensor which monitors the occurrence of the event represented by the message positioned adjacent the viewing window to the lamp and second coupling means for exclusively coupling the event sensors which monitor the occurrence of the events represented by the messages positioned away from the viewing window to the audible indicator, the lamp and the audible indicator being energized by an electrical signal generated by one of the event sensors coupled thereto, whereby an audible warning is immediately provided upon the occurrence of an event not represented by the message adjacent the viewing window and the audible indicator is extinguished and the lamp is energized to illuminate the message representing the occurrence of said event when the drum is rotated to position said message adjacent the viewing window.



3,936,800

PATTERN RECOGNITION SYSTEM

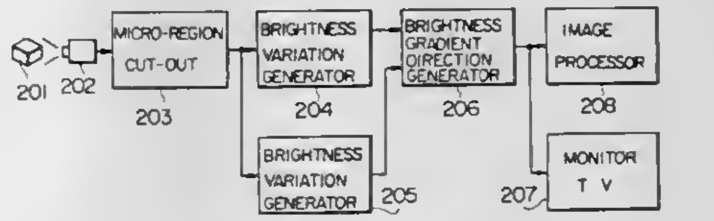
Masakazu Ejiri, Tokorozawa; Michihiro Mese, Kokubunji; Haruo Yoda, and Sadahiro Ikeda, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 27, 1974, Ser. No. 455,420

Claims priority, application Japan, Mar. 28, 1973, 48-34493

Int. Cl.² G06K *9/12*

U.S. Cl. 340—146.3 MA **7 Claims**


201
202
MICRO-REGION CUT-OUT
203
BRIGHTNESS VARIATION GENERATOR
204
BRIGHTNESS VARIATION GENERATOR
205
BRIGHTNESS GRADIENT DIRECTION GENERATOR
206
IMAGE PROCESSOR
208
MONITOR T V
207

1. A pattern recognition system comprising:
- at least one pick-up device for converting an image of a picture plane into an electrical signal indicative thereof;
- means for successively taking out of a plurality of electrical signals, each electrical signal being representative of a divided region of the image of the picture plane, region by region from the output of said pickup device;
- means for producing first and second signals indicating rates of changes in brightness along different directions of a region by reference to signals representative of adjacent regions thereto;
- means for producing third signals, each signal indicating the direction of the change in the brightness within each of said regions, from said first and second signals;
- means for encoding said third signals into a code signal by classifying said third signals in accordance with directions of the change in the brightness, counting said signals classified into said respective directions, and digitizing

the respective counted values in accordance with a predetermined value;

means for storing in advance a code signal indicative of an image corresponding to the background of the picture plane; and

means for comparing the code signal from said encoding means with the code signal from said storing means to detect the degree of disagreement therebetween as an indication of an object in the picture plane.

3,936,801

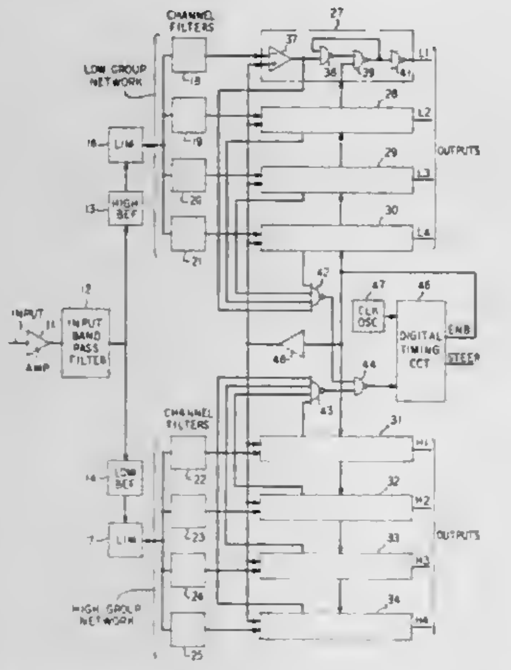
MULTIFREQUENCY SIGNAL RECEIVER TIMING CIRCUIT

Dennis Shuman, Brooklyn, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 12, 1974, Ser. No. 505,204

Int. Cl.² H04Q *5/00*

U.S. Cl. 340—171 R **11 Claims**



1. Signal translating means for generating a first output signal of a first preselected duration in response to an input signal of a second preselected duration comprising, in combination, clocking means for generating a periodic signal at a predetermined repetition rate, counting means responsive to the presence of said input signal for beginning and maintaining a count of said periodic signal, and controlling means for ascertaining when said counting means arrives at a preselected point in the count serving to verify the persistence of said input signal for the second preselected duration, said controlling means in response to the arrival at said preselected point producing said first output signal and recycling said counting means for conducting at least one other count of said periodic signal independent of the presence of said input signal thereby establishing the first preselected duration of said first output signal.

3,936,802

CONTROL DEVICE FOR RECORDING ELEMENTS

Robert Francois Champiau, and André Achille Brecy, both of Belfort, France, assignors to Societe Industrielle Honeywell Bull, Paris, France

Filed Sept. 5, 1972, Ser. No. 286,513

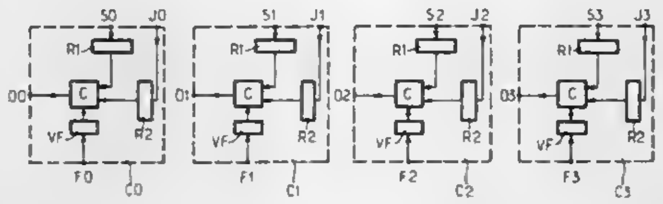
Int. Cl.² G06F *3/08*, *3/12*, *7/04*

U.S. Cl. 340—172.5 **10 Claims**

1. In a control system including a plurality of recording elements each capable of recording successive characters of a unique sequence of characters at respected discrete time intervals during a time period, said time period being divided into a plurality of cycles and said recording elements being grouped into sets such that each recording element of a given set has the capability of recording once and at a unique discrete time interval during a given cycle, the unique discrete time interval respective to one recording element within a given set being different from the unique discrete time interval respective to any other recording element within the same given set; a plurality of control circuits, one for each recording element, each control circuit being effective to cause a given recording element to record a desired character of said unique sequence within said time period, each control circuit comprising in combination:

first memory means having an output for producing, in response to successive enabling signals, said successive characters of said unique sequence at said discrete time intervals during said time period;

second memory means having an output during said time period, which output corresponds to said desired character, said second memory means each including an enabling circuit for causing said second memory means to be updated with a new desired character, said enabling circuits being interconnected so as to effect successive updating of each of said second memory means;



comparison means connected to the outputs of said first and second memory means for producing an output signal when said first memory means produces a character which matches said desired character as indicated by said second memory means, each of said comparison means including a further enabling circuit which enables the output signal of said comparison means only during its respective unique discrete time intervals; and

further means connected to said comparison means and responsive to said output signal of said comparison means so as to actuate said given recording element causing it to record said desired character.

3,936,803

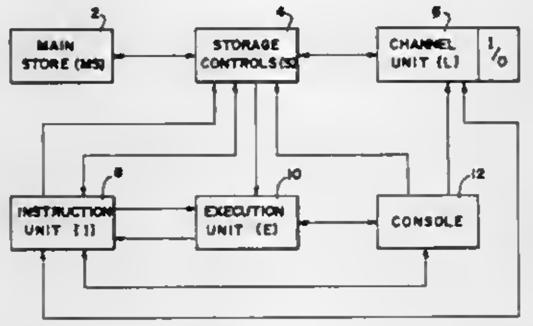
DATA PROCESSING SYSTEM HAVING A COMMON CHANNEL UNIT WITH CIRCULATING FIELDS

James A. Katzman, and Yoshiro Yoshioka, both of San Jose, Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Nov. 19, 1973, Ser. No. 417,256

Int. Cl.² G06F *3/04*

U.S. Cl. 340—172.5 **13 Claims**



1. A data processing system including system storage apparatus and channel unit apparatus for transmitting data received from input/output devices over a plurality of channels to said storaoge apparatus, the improved channel unit apparatus comprising,

channel store means for storing information including said data to be transferred over said channels,

state memory means, common to all of said channels, having a plurality of groups of locations, one group for each of said channels where each group stores information for a different associated channel; said state memory means including, for each group, first locations for storing a count to designate a remaining transfer length where the remaining transfer length specifies a number of bytes of said data remaining to be transferred over the associated channel, and

data access control means, common to all of said channels, for controlling the transfer of said data over said channels, said control means including means connected to said state memory means for cyclically accessing the locations for each channel, means for storing said count in each of said first locations, and means for requesting a data transfer, having a requested transfer length, over each channel in response to a decode of said count in each of said first locations, said control means including means for decrementing the count in said first locations for each actual data transfer by a count equal to the requested transfer length; said control means including means connected to said channels and responsive to information stored in said memory means for controlling the accessing of said channel store means for the fetching and storing of said data for each channel.

3,936,804

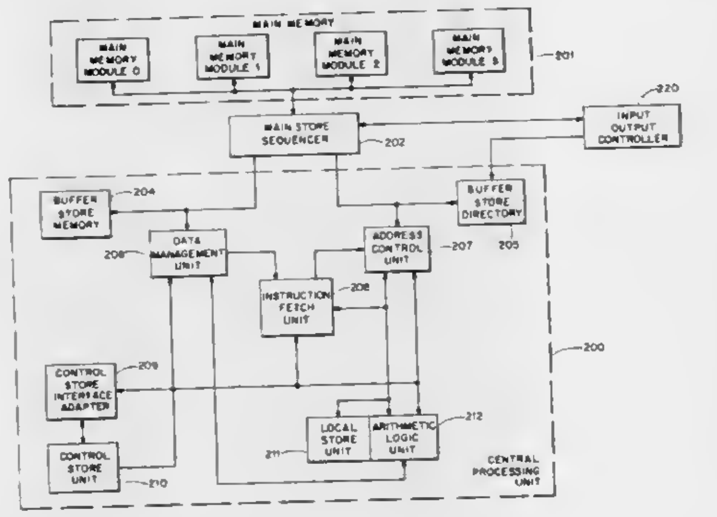
DATA PROCESSING SYSTEM INCORPORATING A LOGICAL MOVE INSTRUCTION

Charles W. Bachman, Lexington, Mass., assignor to Honeywell Information Systems, Inc., Phoenix, Ariz.

Filed Dec. 13, 1973, Ser. No. 424,381

Int. Cl.² G06F *9/12*

U.S. Cl. 340—172.5 **6 Claims**



1. An apparatus for moving data fields having a plurality of data structures from a first location to a destination said apparatus comprising:

means for storing a move instruction;

means responsive to one portion of said move instruction for addressing said first location which contains a first data field descriptor, said first data field descriptor describing the location and attributes of a data field;

second means responsive to a second portion of said move instruction for addressing said destination which contains a second data field descriptor, said second data field descriptor describing the location and attributes of a data field when stored in said destination; and

means responsive to a third portion of said move instruction for transferring one data field from said first location to said destination, said transferring means including means for reformatting at execution time said one data field to conform with the attributes described by said second data field descriptor;

said attributes of said first and said second data field descriptors including data type, key field and length descriptions.

3,936,805

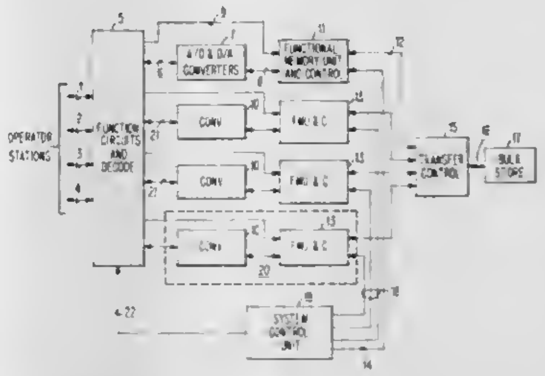
DICTATION SYSTEM FOR STORING AND RETRIEVING AUDIO INFORMATION

Charles Ronald Bringol; Denis Earl Lowry, and Charles Luther Ridings, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1973, Ser. No. 427,755

Int. Cl.² G06F *3/16*

U.S. Cl. 340—172.5 **18 Claims**



1. A dictation system comprising:

a. receiving means for receiving information input into said system in audio form;

b. converting means for converting information received by said receiving means in audio form to digital form;

c. first and second storage means for storing information received in audio form by said receiving means and converted to digital form by said converting means;

d. third storage means, for storing information transferred from said first and second storage means;

e. fourth storage means, being a bulk store such as a recording belt, for storing information transferred from said first and second storage means;

f. transfer means for 1) transferring information converted by said converting means alternately to said first and second storage means at a first clock rate, and 2) alternately transferring information stored in said first and second storage means out of said first and second storage means and to said third storage means at a second clock rate for immediate processing: and;

g. control means for causing information alternately transferred out of said first and second storage means by said transfer means to be transferred to said fourth storage means at said second clock rate for more permanent storage.

3,936,806

SOLID STATE ASSOCIATIVE PROCESSOR ORGANIZATION

Kenneth E. Batcher, Stow, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 270,903, July 12, 1972, abandoned. This application Apr. 1, 1974, Ser. No. 457,155

Int. Cl.² G06F *7/00*; H03K *19/00*

U.S. Cl. 340—172.5 **5 Claims**

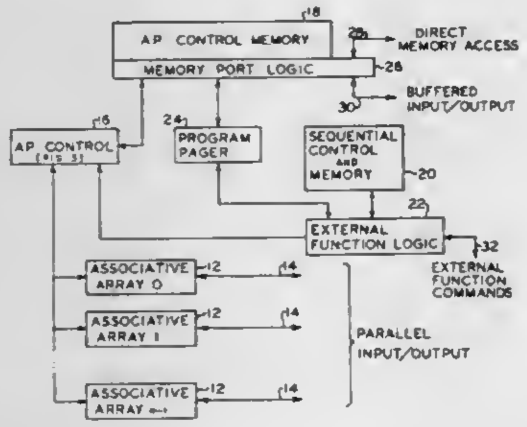
1. A digital computer organization, comprising:

a memory array comprised of a plurality of address line encoded binary solid state memory modules and containing data bit storage elements wherein data may be stored as bit-comprised words with bit B of module M containing bit B of word W in accordance with the formula $M = B W$ and wherein B, M, and W are n-element binary vectors, respectively unique for each bit, module, and word, and where n is an integer greater than 1;

a logic circuit means connected to the memory array for simultaneously performing logic and arithmetic operations on all accessed data bits;

a coding circuit; and

permuting circuit means connected to the coding circuit and between the memory array and logic circuit means for ordering the lineal order of data into and out of the



memory array in accordance with the output of the coding circuit.

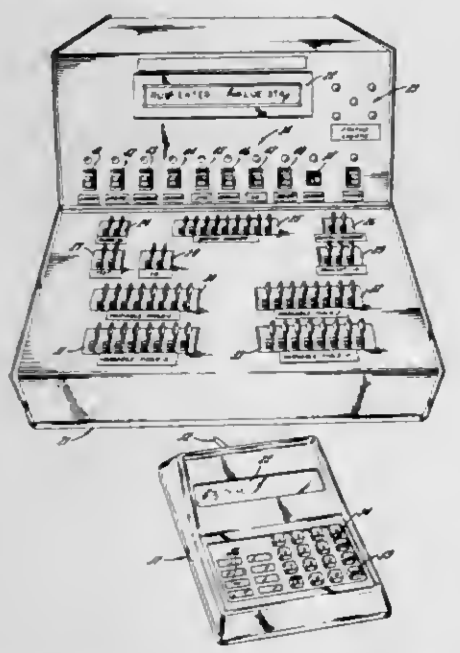
3,936,807
SENSOR BASED COMPUTER TERMINAL

Raymond A. Edwards, New York, N.Y., assignor to Michigan Avenue National Bank of Chicago, Chicago, Ill.

Filed Apr. 12, 1974, Ser. No. 460,461

Int. Cl.² G06F *3/02, 3/04;* G08C *15/12;* H04J *3/12*

U.S. Cl. 340—172.5 **13 Claims**



1. In a data acquisition system having a plurality of data sources at a collection station, a processor at a processing station, and transmission means coupling said stations, the combination comprising, input means at the collection station coupled to the data sources for receiving input data, means for assigning a source address to each data source, scanning means coupled to the input means for selecting individual ones of the data sources and forming an input digital word including the source address and the input data received by the selected source, means for serializing the input digital words and coupling the serialized words to the transmission means, means at the processing station coupled to the transmission means for receiving and deserializing the serialized words, means for loading the deserialized words including the data and source address into the processor, whereby data collected at the collection station is efficiently identified and transferred to the processor, output means at the collection station for responding to output data, said output means having at least one output channel, means for assigning a destination address to each output channel, means at the processing station for receiving output data and the address of a selected output channel from the processor, means for forming an output digital word including the output data and the destination address of the selected output channel, means for serializing the output digital word and coupling said serialized word to the transmission means, and means at the collection station for deserializing the serialized word and coupling the data within said word to the addressed output channel, whereby effective two-way communication is provided between the processing station and the collection station.

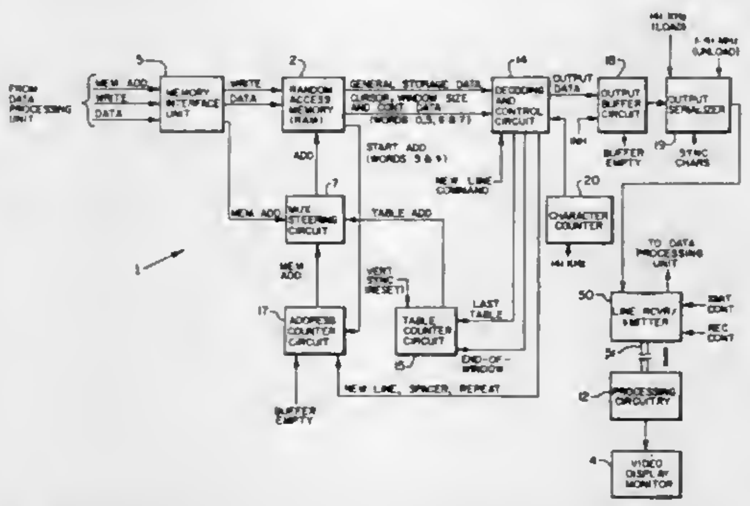
3,936,808
DATA STORAGE AND PROCESSING APPARATUS INCLUDING PROCESSING OF REPEAT CHARACTER SEQUENCES

Joseph L. O'Neill, Jr., Haddonfield, N.J., assignor to Ultronic Systems Corporation, Moorestown, N.J.

Filed Sept. 3, 1974, Ser. No. 502,988

Int. Cl.² G06F *3/14*

U.S. Cl. 340—172.5 **9 Claims**



1. Data storage and processing apparatus for storing and processing data for use by a display device, said display device displaying data characters in a plurality of display lines, said data storage and processing apparatus comprising:

storage means having an output and arranged to store in successive storage locations therein coded data characters including a coded repeat character sequence, said coded repeat character sequence including a first coded data character specifying a repeat operation, a second coded data character specifying a particular number of times that a particular data character is to be repeated consecutively in a display line of the display device, and a third coded data character specifying the particular data character to be repeated consecutively in the display line of the display device;

readout means operative to cause coded data characters stored in the storage means to be read out therefrom to the output of the storage means;

first receiving means coupled to the output of the storage means and operative to receive and store in succession each of the coded data characters read out from the storage means;

first circuit means coupled to the first receiving means and operative to detect the first coded data character of the repeat character sequence received and stored in the first receiving means;

second receiving means coupled to the first receiving means and having an output, said second receiving means being operative to receive and store therein coded data characters received by and stored in the first receiving means;

second circuit means coupled to the first circuit means and to the second receiving means and operative in response to the detection by the first circuit means of the first coded data character of the repeat character sequence to inhibit the second receiving means from receiving the first and second coded data characters of the repeat character sequence;

third circuit means coupled to the first circuit means and having first, second and third stages, said third circuit means being operative in response to the detection by the first circuit means of the first data character of the repeat character sequence to establish an item of information in the first stage thereof;

fourth circuit means coupled to the third circuit means and operative to transfer the aforesaid item of information in succession along the stages of the third circuit means;

fifth circuit means coupled to the second stage of the third circuit means, to the first receiving means and to the readout means, said fifth circuit means being operative when the item of information in the third circuit means has been transferred by the fourth circuit means from the first stage to the second stage to receive and retain therein the number as specified by the second coded data character of the repeat character sequence, and operative in response to the receipt and retention therein of the aforesaid number to inhibit the readout means from causing the further readout from the storage means of additional coded data characters and to enable the first receiving means to freeze therein the third coded data character of the repeat character sequence then present in the first receiving means;

said second circuit means also being coupled to the third stage of the third circuit means and operative when the item of information in the third circuit means has been transferred by the fourth circuit means from the second stage to the third stage to enable the second receiving means to receive and store therein the third coded data character of the repeat character sequence then present in the first receiving means;

sixth circuit means operative to cause the third coded data character of the repeat character sequence received by the second receiving means to be applied repeatedly to the output of the second receiving means until the third coded data character is no longer present in the first receiving means;

seventh circuit means coupled to the fifth circuit means and operative to reduce the number retained in the fifth circuit means, by successive counts, to a predetermined value;

said fifth circuit means being operative when the number therein has been reduced to the predetermined value by the seventh circuit means to cause the first receiving means to release the third coded data character of the repeat character sequence, whereby the third coded data character is repeated at the output of the second receiving means for a total number of times determined by the number specified by the second coded data character of the sequence and initially applied to the fifth circuit means, and further operative to enable the readout means to permit the readout from the storage means of additional data characters.

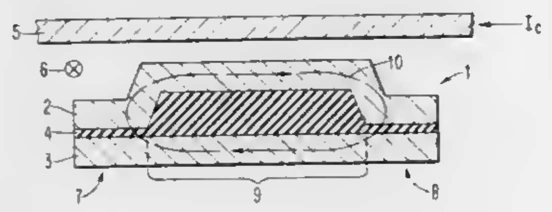
3,936,809
SINGLE FLUX QUANTUM STORAGE DEVICES AND SENSING MEANS THEREFOR

Hans H. Zappe, Granite Springs, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 7, 1974, Ser. No. 477,387

Int. Cl.² G11C *11/44*

U.S. Cl. 340—173.1 **45 Claims**



1. A Josephson junction device for storing single flux quantum in the absence of an external magnetic field comprising first and second superconductive elements,

an insulation layer the thickness of which is sufficient to permit Josephson tunneling along the length thereof disposed between said elements, and

means integral with at least one of said elements and said layer for generating a current density profile having a larger magnitude at the boundary portions of said device than at the center portion of said device.

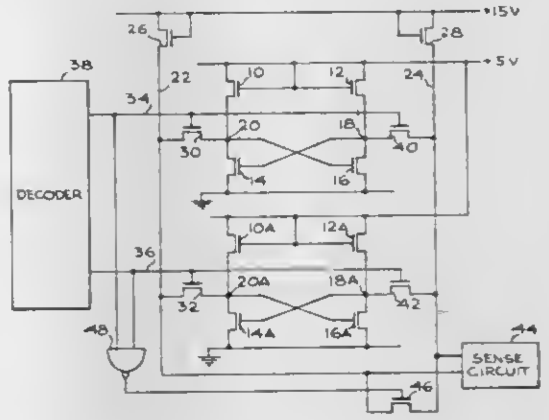
3,936,810
SENSE LINE BALANCING CIRCUIT

William C. Dunn, Scottsdale, Ariz., assignor to Semi, Inc., Phoenix, Ariz.

Filed Jan. 20, 1975, Ser. No. 542,395

Int. Cl.² G11C *11/40*

U.S. Cl. 340—173 FF **4 Claims**



1. In a semiconductor memory of the type wherein there is an array of binary memory elements, for each column of elements there is provided a common pair of sense lines connected to each element, for each row of elements there being provided a common access line for enabling read out of the data stored in the elements connected thereto, the improvement comprising

for each pair of sense lines, a separate means for equalizing voltages on said pair of sense lines during the intervals between actuation of said chip select lines for providing a read out from said memory.

3,936,811
ASSOCIATIVE STORAGE CIRCUIT

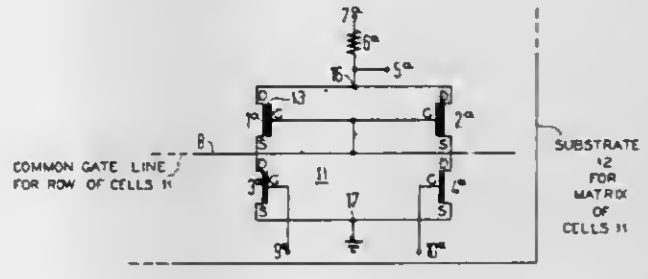
Karlheinrich Horninger, Eglharting, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 24, 1974, Ser. No. 508,807

Claims priority, application Germany, Sept. 24, 1973, 23479687

Int. Cl.² G11C *11/40*

U.S. Cl. 340—173 AM **10 Claims**



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COMMON GATE LINE FOR ROW OF CELLS 11
11
17
SUBSTRATE 12 FOR MATRIX OF CELLS 11

1. As associative storage circuit including a storage cell capable of assuming two logical conditions and comprising:

a pair of output circuit points for supplying a binary output signal representing the identity or lack of identity of an external logical comparison signal supplied to said storage cell and the logical condition of said storage cell,

a pair of circuit arms connected in parallel between said output circuit points and forming said storage cell, each of said circuit arms having a storage transistor and a switching transistor in series,

a supply voltage circuit connected with said output circuit points for supplying operating potentials to said transistors,

said switching transistors each being controllable in accordance with an external logical comparison signal supplied thereto during a readout operation, and each being controllable in accordance with a logical information signal representing the information to be stored in said storage cell during a write-in operation,

said storage transistors each having a gate including a gate insulator for providing selectively a first threshold condition and a second threshold condition of the storage transistor, and

said circuit arms being responsive to write-in potentials applied to the gates of said storage transistors in conjunction with the logical information signal applied to each of said switching transistors during a write-in operation to place a corresponding one of said storage transistors in its second threshold condition while the other storage transistor exhibits its first threshold condition thereby to establish a logical condition of said storage cell in accordance with the information represented by said information signal.

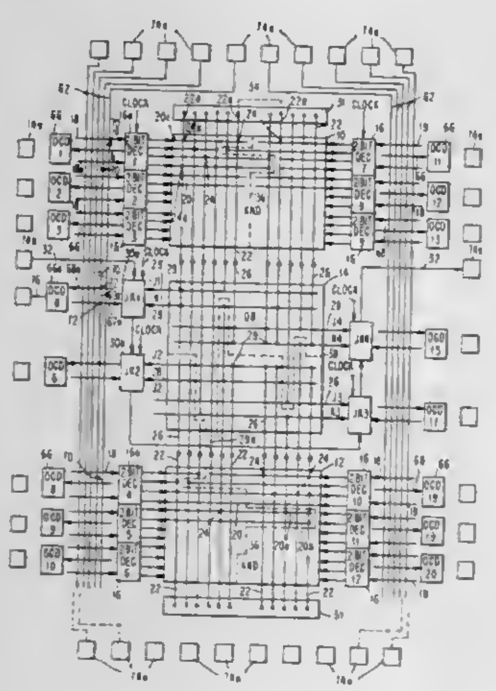
3,936,812
SEGMENTED PARALLEL RAIL PATHS FOR INPUT/OUTPUT SIGNALS

Dennis T. Cox, Kingston; William T. Devine, Ulster Park, and Gilbert J. Kelly, Red Hook, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Dec. 30, 1974, Ser. No. 537,218

Int. Cl.^{2} G11C *5/02, 5/06*

U.S. Cl. 340—173 R **8 Claims**



1. In a programmable logic array chip comprising at least two arrays and a string of latches in which one of the arrays receives interrogation signals from decoders and feeds the response thereto to the second array which in turn supplies inputs to the latches, an arrangement for the supplying of inputs to the decoders and receiving of outputs from the latches comprising:

connections to the inputs of the decoders and the outputs of the latches extending in a side by side relationship; and

a series of colinear rails crossing the connections to form a grid of intersecting connections, individual rails being electrically coupled to certain of the connections and electrically isolated from others and having breaks therein which divide the rails into segments so that signals on different segments of the same rail are electrically isolated from one another.

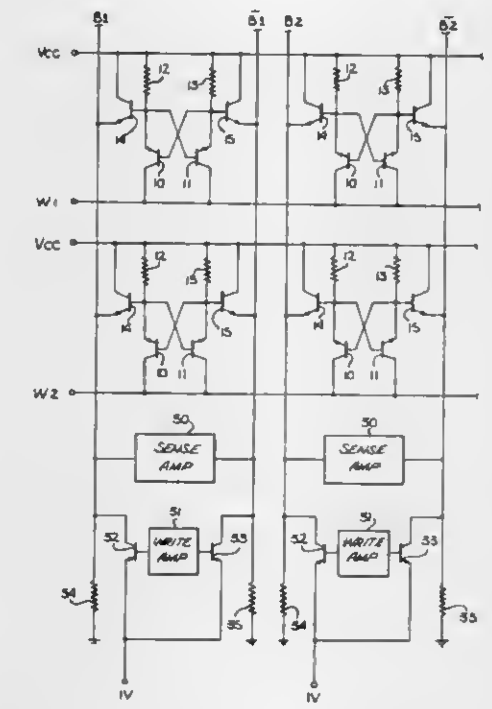
3,936,813
BIPOLAR MEMORY CELL EMPLOYING INVERTED TRANSISTORS AND PINCHED BASE RESISTORS

Frederick Tsang, Saratoga, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 354,252, April 25, 1973, abandoned. This application Jan. 20, 1975, Ser. No. 542,346

Int. Cl.^{2} G11C *11/40*

U.S. Cl. 340—173 FF **11 Claims**



10. A memory cell comprising:

first and second transistors formed in a first region of a first conductivity type, each having an emitter and a base, and having common collectors formed by said first region;

third and fourth transistors formed in a second region of a first conductivity type, said third and fourth transistors each having an emitter and a base and having a common collector formed by said second region;

first and second resistors formed by extensions of the base regions of said third and fourth transistors;

means for coupling said emitter of said first transistor to said base of said second transistor and said base of said third transistor; and

means for coupling said base of said first transistor to said emitter of said second transistor and said base of said fourth transistor.

3,936,814
SMOKE DETECTOR AND ALARM

Otto Muller-Girard, Rochester, and Chester W. Bray, Hilton, both of N.Y., assignors to Bernz-O-Matic Corporation, Rochester, N.Y.

Filed Apr. 29, 1974, Ser. No. 465,442

Int. Cl.^{2} G08B *17/10*

U.S. Cl. 340—237 S **7 Claims**

1. Smoke detector and alarm comprising

a. smoke chamber means;

b. circuit means connecting a light source, a first light sensitive resistor, a second light sensitive resistor and electronic alarm means;

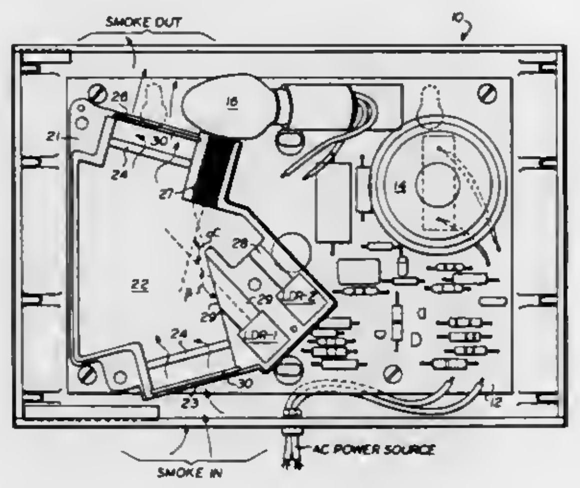
c. the smoke chamber means having

i. a first light passage permitting light from the light source to illuminate the interior of said chamber;

ii. a second light passage positioned relative to said first passage so as to permit light from said first passage to fall on said second light sensitive resistor;

iii. a third light passage positioned relative to said first passage so as to permit only light reflected by smoke present in said chamber to fall on said first light sensitive resistor said third light passage being parallel to said second light passage; and

iv. said first, second and third light passages providing unobstructed, direct communication for said light source and said light sensitive resistors with the interior of said smoke chamber;



d. said circuit means having:

i. alarm circuit means causing said alarm means to emit a continuous sound when light from said source is reflected by smoke present in said chamber onto said first light sensitive resistor; and

ii. trouble circuit means causing said alarm means to emit an intermittent sound when light fails to fall on said second light sensitive resistor.

3,936,815
APPARATUS AND METHOD FOR WRITING STORABLE IMAGES INTO A MATRIX-ADDRESSED IMAGE-STORING LIQUID CRYSTAL DISPLAY DEVICE

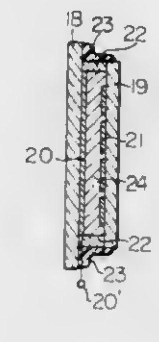
Osamu Kogure, Mito; Hisao Takada, Tokyo; Yoshinori Kato, and Masao Kawachi, both of Mito, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed July 29, 1974, Ser. No. 492,421

Claims priority, application Japan, Aug. 6, 1973, 48-87580; Sept. 7, 1973, 48-100365; Mar. 8, 1974, 49-26205; June 11, 1974, 49-65623

Int. Cl.^{2} G02F *1/18*

U.S. Cl. 340—324 M **7 Claims**



1. Apparatus for writing storable images into a matrix-addressed image-storing liquid crystal display device, said apparatus comprising the combination of:

1. a matrix-addressed display section in which an inductively positive cholesteric phase liquid crystal is contained in a cell formed with a pair of optically transparent plates having on one surface of each a plurality of parallel strip electrodes, said electrodes on at least one of said plates being transparent, and opposed to each other through a spacer with the electrodes mutually intersecting at right angles so as to form row and column electrode groups, the inner surfaces of said plates being subjected to a treatment of vertical orientation so as to render liquid crystal molecules adjacent said surfaces vertical with respect to said surfaces, and said cholesteric phase liquid crystal having its molecules adjacent the inner surfaces of the transparent plates arranged vertical to the surfaces by said treatment.

2. means for applying to all intersections of said row and column electrode groups a voltage above a threshold voltage V_H at which said liquid crystal shifts from the cholesteric phase to a nematic phase so that a transparent state is achieved at all said intersections,

3. means for sequentially scanning the column electrodes while applying to selected intersections, for displaying the image on the column electrodes being scanned, an effective voltage below the voltage V_H to effect a shift from the nematic phase to the cholesteric phase at such intersections, applying to the other intersections on the column electrodes being scanned an effective voltage not less than said voltage V_H to maintain the transparent state at such intersections, and applying to all intersections of other column electrodes an effective voltage near the voltage V_H to stabilize the existing phase at such intersections, and,

4. means for simultaneously interrupting all the voltages applied to all intersections so as to store the image within a short time period after completion of said scanning.

3,936,816
FLAT DISPLAY SYSTEM

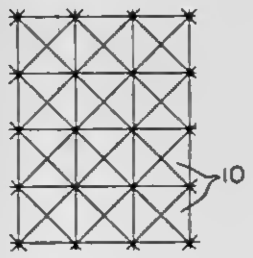
Yuich Murata, Kamakura, Japan, assignor to Dai Nippon Toryo Kabushiki Kaisha, Japan

Filed Oct. 31, 1973, Ser. No. 411,414

Claims priority, application Japan, Nov. 2, 1972, 47-126262; Dec. 20, 1973, 48-2338

Int. Cl.^{2} G08B *5/36*

U.S. Cl. 340—336 **10 Claims**



1. A flat display system having a display screen constituted by a planar arrangement of a plurality of individual pattern segments, each in the form of an isosceles triangle with an apex angle of 90°, said individual pattern segments having identical dimensions and being arranged in a plurality of squares each including four substantially juxtaposed pattern segments having their apices located at the center of the respective square; said individual pattern segments being capable of selective and independent display activation to provide a flat display of numerical figures, alphabetical characters, and other symbols and patterns, in an easily discernible form, on said display screen.

3,936,817
THERMOELECTRIC DISPLAY DEVICE

Sidney Levy, Oaklyn, N.J., and Abraham Friedman, Brooklyn, N.Y.

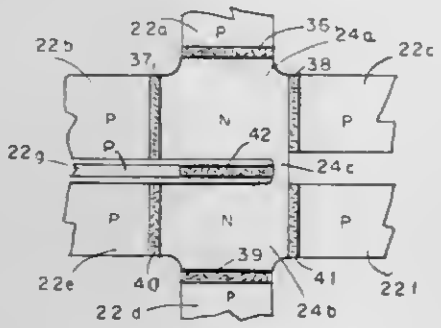
Filed June 6, 1974, Ser. No. 476,927

Int. Cl.^{2} G02F *1/18*

U.S. Cl. 340—336 **8 Claims**

1. A visual display device comprising a thermoelectric element having a surface which exhibits a reversible temperature

which is a function of magnitude and direction of a current passing through said element, a liquid crystal material disposed on said surface in thermally conductive relation therewith, said liquid crystal material being variable between different optical states as a function of temperature to which said liquid crystal is exposed, each optical state which the display device exhibits being a function of the magnitude and direction of the current passing through said thermoelectric element, said thermoelectric element including two dissimilar conductors disposed in overlapping relationship to provide predetermined areas defining a junction, said surface being a part of one of said conductors and being substantially coextensive with said predetermined area defining said junction so



that regulation of the current through said junction controls the temperature at said surface and the optical state of said liquid crystal material, a heat sink being connected to each conductor in a thermally conductive relation therewith at a point remote from said junction to permit flow of heat therebetween, said conductors being fabricated from semi-conductor materials, one conductor being a p-type semi-conductor and the other conductor being an n-type semi-conductor, whereby reversal of the current through said junction provided by said p-type and n-type semi-conductors effects a change in thermal characteristic of said junction between a heat generating system and a heat absorbing system to raise and lower the temperature of said surface.

3,936,818

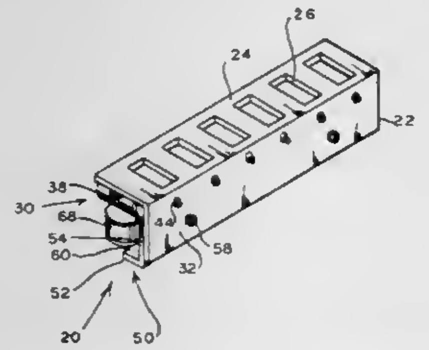
ELECTROMAGNETIC INDICATOR HAVING OPPOSITELY MAGNETIZED STAMPED MAGNETIC CORES

Alfred Skrobisch, Huntington, N.Y., assignor to The Staver Company, Incorporated, Bay Shore, N.Y.

Continuation of Ser. No. 381,880, July 23, 1973, abandoned. This application July 15, 1974, Ser. No. 488,465

Int. Cl.² G08B *5/24*

U.S. Cl. 340—373 **11 Claims**



1. An electromagnetic indicator assembly, comprising:

a support frame for displaying symbols;

a plurality of permanently magnetized rotors carried by said frame in laterally spaced axially parallel position, with each of said rotors carrying a symbol for display at said frame; and

a stator assembly carried by said frame and comprising:

a stamped magnetic metal plate having a plurality of laterally spaced fingers each defining a magnetic core which terminates close to one of said rotors, and

a plurality of stator coils each axially mounted on one of said cores for magnetizing the same when said coil is energized electrically to cause rotation in one direction of the adjacent rotor and displaying of said symbols carried thereon.

3,936,819

AMPLIFIER FOR ANALOGUE SIGNAL SAMPLES WITH AUTOMATIC GAIN CONTROL, AND CIRCUIT FOR DIGITISATION OF SUCH SAMPLES

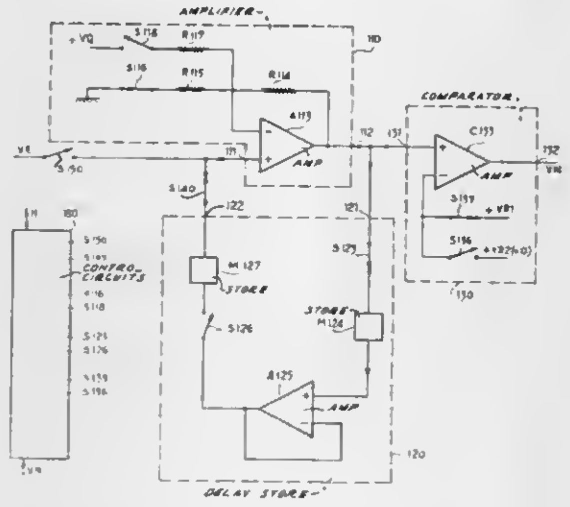
Philippe Angelle, Thouare, and Georges Lefevre, Nantes, both of France, assignors to Societe D'Etudes, Recherches Et Constructions Electroniques Sercel, Carquefou, France

Filed Jan. 10, 1973, Ser. No. 322,333

Claims priority, application France, Jan. 11, 1972, 72.00799

Int. Cl.² H03K *13/02*

U.S. Cl. 340—347 AD **28 Claims**



1. An electronic device for floating point digitisation of samples of analogue signals of constant definite polarity, comprising:

amplifier means operative in a first state with a first predetermined gain from a signal input to an output, and in a second state for selectively supplying on its output either the difference between its signal input amplified by a second gain and a quantification value, or only its signal input amplified by said second gain, depending upon a polarity control;

delay means having an input and an output adapted to be coupled to said output and said signal input of the amplifier means, respectively, for controllably re-circulating the output thereof after a time interval as a signal input to be re-amplified by the amplifier means;

comparator means coupled to the output of the amplifier means and operative in first and second states for indicating when the output of the amplifier means exceeds first and second reference values, respectively; and

control means, effective upon application of a sample of an analogue signal to said signal input of the amplifier means, for operating said amplifier means and said comparator means in their respective first states, while repetitively controlling said delay means to re-circulate the output of the amplifier means unless said comparator means indicates that the output of the amplifier means exceeds the first reference value, and for subsequently operating said amplifier means and comparator means in their respective second states, while repetitively controlling said delay means to re-circulate the output of the amplifier means a selected number of times and each time supplying to said amplifier means a polarity control depending upon the indication of said comparator means.

3,936,820

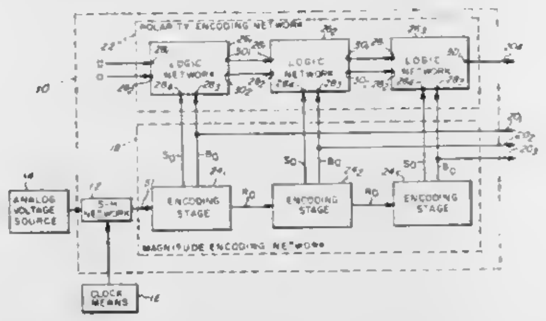
ANALOG-TO-DIGITAL CONVERTER

Bertram J. Goldstone, Lexington, and John Memishian, Jr., Arlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed June 27, 1974, Ser. No. 483,502

Int. Cl.² H03K *13/02*

U.S. Cl. 340—347 AD **5 Claims**



1. In an analog-to-digital converter adapted to operate over a range of analog signal levels, such converter including a series of cascade-coupled encoding stages, a first one of such stages having applied thereto an analog signal to be converted, each one of such stages being adapted to operate over the range of analog signal levels and including means for producing a digital output signal in accordance with the magnitude of the analog signal applied to such stage and, means for producing a residue analog signal in accordance with the analog signal applied to such stage and for applying such residue analog output signal to the succeeding encoding stage, such means having a linear transfer characteristic in the middle region of the operating range of the stage, the improvement characterized by such residue analog signal producing means comprising:

a. a pair of amplifiers, each one thereof having a pair of input terminals and an output terminal;

b. a pair of reference voltage souces, each one thereof being coupled to one of the pair of input terminals of a corresponding one of the pair of amplifiers;

c. a pair of diodes having one electrode thereof coupled to a corresponding one of the pair of output terminals and a second electrode coupled to a first junction, such junction being coupled to the succeeding encoding stage; and,

d. a pair of resistors serially connected between the first junction and the input terminal of the encoding stage, the second one of the pair of input terminals of the amplifiers being connected at a junction between such resistors.

3,936,821

SUPERVISORY CIRCUIT FOR PARALLEL CONNECTED DEVICES

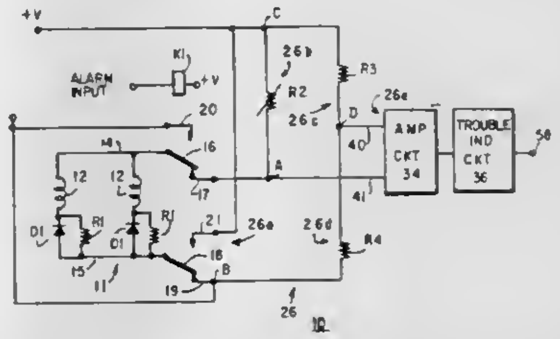
Glenn F. Cooper, West Springfield, and Daniel J. Marceau, Springfield, both of Mass., assignors to Standard Electric Time Corporation, Springfield, Mass.

Filed May 15, 1974, Ser. No. 470,063

Int. Cl.² G08B *23/00*

U.S. Cl. 340—409 **13 Claims**

1. In a circuit having a plurality of functional devices at least some of which are connected in parallel between a pair of conductors for enabling energization of said functional devices, a supervisory circuit for supervising continued operability of each of said functional devices comprising a plurality of impedance means each individually connected in series with a different one of said functional devices between said conductors, each of said impedance means including a first circuit means connecting the corresponding functional device in a first circuit path between said conductors to provide an energizing path of a first impedance for enabling operation of the functional device and a second circuit means connecting the functional device in a second circuit path between said conductors to provide a supervisory path of a higher impedance indicative of the operability of the functional device for enabling supervision of the operability of the functional device,



and means connected to said circuit and operable in the event of an impedance change in at least one of said supervisory paths to provide an output indicative of the inoperability of at least one of said functional devices.

3,936,822

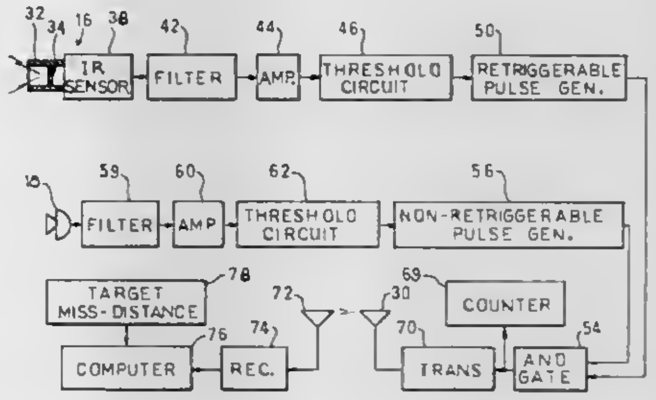
METHOD AND APPARATUS FOR DETECTING WEAPON FIRE

Kenneth A. Hirschberg, 13866 Espada Court, Saratoga, Calif. 95070

Filed June 14, 1974, Ser. No. 479,225

Int. Cl.² G08B *17/12*

U.S. Cl. 340—420 **13 Claims**



1. A method of detecting the occurrence of only an event which occurs at known distances from signal transducers, which event produces first and second signals having different velocities of propagation, such as electromagnetic and acoustic signals, which method comprises,

locating at known distances from the event to be detected first and second transducers for detecting said first and second different velocity signals produced as a consequence of said event to be detected,

generating in response to detected first and second signals received by said transducers first and second pulses having simultaneously existing portions when the first and second signals are produced as a consequence of said event to be detected, and

producing a signal upon simultaneous existence of said first and second pulses to indicate the detection of the occurrence of the event to be detected.

3,936,823

FAST SEARCH AND LOCK-ON MEANS FOR DISTANCE MEASURING EQUIPMENT

Charles A. Weber, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

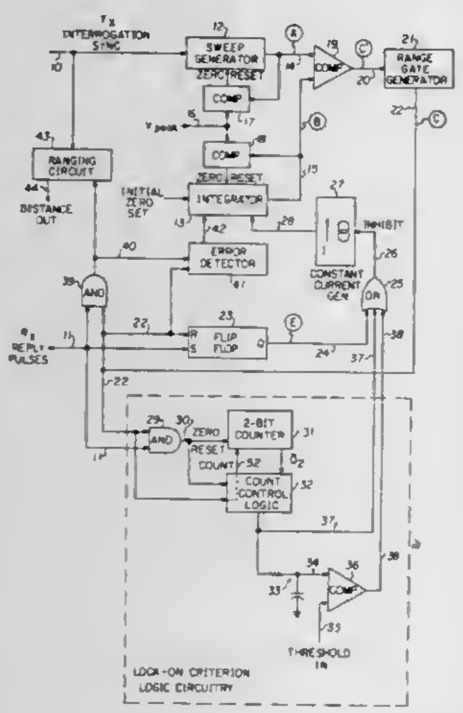
Filed Aug. 1, 1974, Ser. No. 494,262

Int. Cl.² G01S *9/14, 9/56*

U.S. Cl. 343—7.3 **10 Claims**

1. In an electronic ranging system, means for generating a range gate in time synchronism with replies to successive transmitted pulses, comprising voltage sweep generating

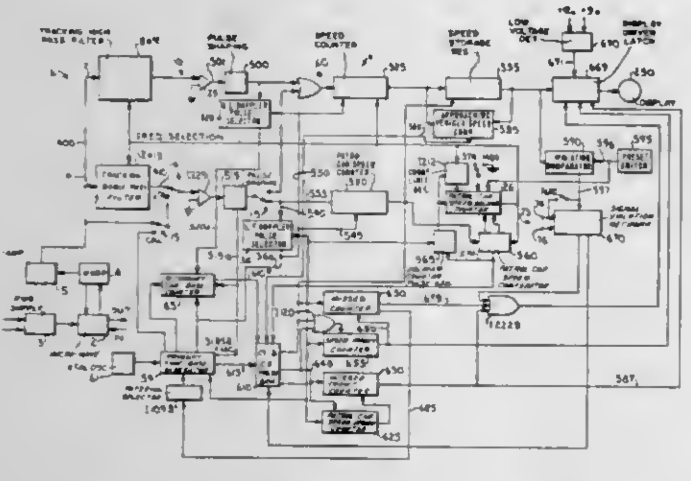
means responsive to the time occurrence of an initial and subsequent ones of said transmitted pulses to generate a sweep output waveform having a predetermined slope, reference voltage generating means responsive to an initial transmitted pulse to generate a reference output waveform having a slope less than that of said sweep generator output waveform, range gate generating means responsive to the relative magnitudes of said reference and sweep generating means to generate said range gate, means responsive to successive ones of said range gates to enable said reference voltage generating means, and means responsive to the first reply pulse received after the generation of successive ones of said range gates to disable said reference voltage generating means



3,936,824
METHOD AND APPARATUS FOR DIGITALLY MEASURING SPEED

John L. Aker; Donald L. Geist, both of Chanute; Freddie R. Kittle, Savonburg, and Fred M. Berry, Leawood, all of Kans., assignors to Kustom Electronics, Inc., Chanute, Kans.

Filed May 18, 1973, Ser. No. 361,822
Int. Cl.² G01S *9/46*
U.S. Cl. 343—8 **20 Claims**



1. A doppler radar device for use in law enforcement and service vehicle speed surveilance and for determining the speed of an approaching target vehicle when the radar platform vehicle is either moving or stationary, said device comprising:

means for producing a continuously running time base;

a single means for receiving a composite doppler signal having components relating to the speed of said target vehicle and the speed of the radar platform vehicle;

means for separating said doppler frequency into a first frequency component and a second frequency component;

means for correlating the frequency of said first frequency component with said time base;

means for correlating the frequency of said second frequency component with said time base;

means for counting cycles of each of said time base correlated frequency components, said correlating means and said frequency component counting means çooperating to count each of said frequency components in a preselected time increment, said time increment relating to said time base;

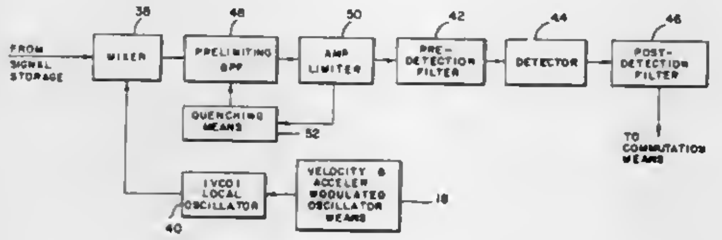
means for subtracting said counted cycles of said first frequency component from said counted cycles of said second frequency component; and

means for displaying the result from said subtracting means in unit indicative of speed of said approaching vehicle.

3,936,825
COMBINED CONTIGUOUS FILTER AND ACCELERATION AND VELOCITY ANALYZER FOR RADAR

Garold K. Jensen, Alexandria, Va., and James E. McGeogh, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 16, 1971, Ser. No. 154,234
Int. Cl.² G01S *9/44*
U.S. Cl. 343—9 **5 Claims**



1. In each velocity-and-acceleration analyzer of an O-T-H radar of the parallel range bin type, each said analyzer comprising a mixer, a local oscillator, a velocity-and-acceleration modulated oscillator means, a predetection filter, a detector and a post-detection filter, a single filter means comprising:

prelimiting filter means connected to receive the output of said mixer for filtering; and

amplifying and limiting means connected to receive the output of said prelimiting filter for amplifying and limiting the output of said prelimiting filter and for providing its output to said predetection filter,

said velocity-and-acceleration modulated oscillator means driving said local oscillator to provide sets of frequency-swept signals to said mixer which serially sweep through narrow contiguous frequency channels, the complete set of frequency channels covering the entire doppler frequency bandwidth.

3,936,826
N DIMENSIONAL TARGET DESIGNATION VECTOR

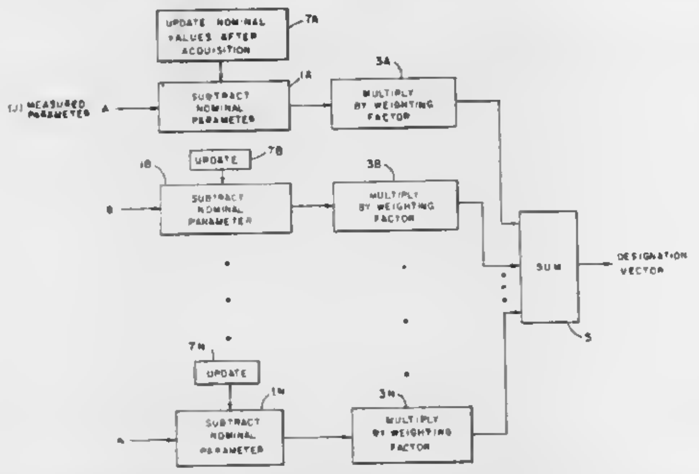
James W. Hoffman, Palos Verdes Estates, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 19, 1974, Ser. No. 490,167
Int. Cl.² G01R *17/02;* G01S *9/02*
U.S. Cl. 343—5 SA **5 Claims**

1. In a detection system a method for evaluating received parameters from an object comprising the steps of:

separating the different parameters of the object to be evaluated;

subtracting from each parameter an amount equal to the normal parameter of a ideal return from a true target; and

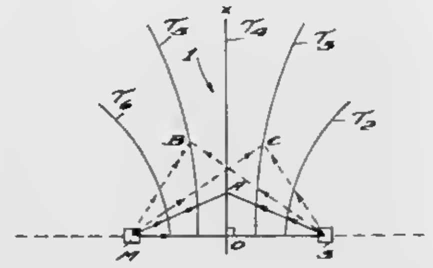

UPDATE NOMINAL VALUES AFTER ACQUISITION
7A
(1) MEASURED PARAMETER
A
SUBTRACT NOMINAL PARAMETER
1A
3A
MULTIPLY BY WEIGHTING FACTOR
UPDATE
7B
1B
B
3B
SUM
DESIGNATION VECTOR
5
7N
1N
3N

combining the difference of these parameters so as to obtain a summation of all the differences.

3,936,827
SECURE HYPERBOLIC GUIDANCE USING NOISE SIGNALS AND CORRELATION DETECTION

Joseph J. Albert, Timonium, Md., assignor to Martin Marietta Corporation, Orlando, Fla.

Filed May 22, 1956, Ser. No. 586,538
Int. Cl.² G01S *1/30*
U.S. Cl. 343—105 R **16 Claims**



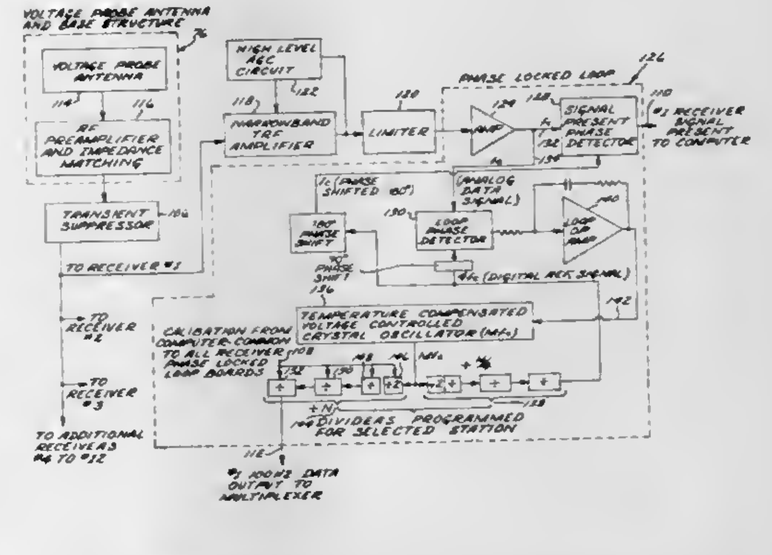
1. A method for use in controlling the flight of an aircraft which includes radiating from two base stations respectively a first noise signal and a second noise signal identical to said first noise signal but at a slightly different frequency and at a controlled interval with respect thereto, receiving both of said signals at said aircraft, simultaneously deriving at said aircraft a first oscillating voltage related to the envelope of the correlation function of said signals at a first delay time therebetween and a second oscillating voltage related to said envelope of said correlation function of said signals at a second delay time therebetween, subtracting said voltages to yield a difference voltage, and utilizing said difference voltage to control the airfoils of said aircraft.

8. An air-borne system for controlling an aircraft in response to a pair of controlled radiated noise signals whenever the aircraft containing said system drifts from a path yielding a predetermined time delay between said signals, comprising an antenna, a receiver having its input connected to said antenna, a pair of correlators having one input of each connected to the output of said receiver, a first delay means having its input connected to said output of said receiver and its output connected to the remaining input of one of said correlators, a second delay means having its input connected to said output of said receiver and its output connected to the remaining input of the remaining one of said pair of correlators, a pair of detectors having their inputs connected respectively to the outputs of said pair of correlators, a pair of filters having their inputs connected respectively to the outputs of said detectors, means joining a like polarity terminal of each of the outputs of said filters, and a utilization means having its input connected to the remaining terminals of said outputs of said filters.

3,936,828
VLF NAVIGATION SYSTEM

Allen R. Muesse, Orange, and Jess C. Wright, El Cajon, both of Calif., assignors to Communications Components Corporation, Costa Mesa, Calif.

Continuation-in-part of Ser. No. 317,738, Dec. 22, 1972, abandoned. This application Nov. 19, 1973, Ser. No. 417,384
Int. Cl.² G01S *1/30*
U.S. Cl. 343—105 R **73 Claims**


VOLTAGE PROBE ANTENNA AND BASE STRUCTURE
VOLTAGE PROBE ANTENNA
RF PREAMPLIFIER AND IMPEDANCE MATCHING
HIGH LEVEL AGC CIRCUIT
NARROWBAND TRF AMPLIFIER
LIMITER
PHASE LOCKED LOOP
AMP
SIGNAL PRESENT PHASE DETECTOR
#1 RECEIVER SIGNAL PRESENT TO COMPUTER
TRANSIENT SUPPRESSOR
TO RECEIVER #1
180° PHASE SHIFT
LOOP PHASE DETECTOR
LOOP OP AMP
90° PHASE SHIFT
(ANALOG DATA SIGNAL)
(DIGITAL REF SIGNAL)
TO RECEIVER #2
TO RECEIVER #3
TO ADDITIONAL RECEIVERS #4 TO #12
TEMPERATURE COMPENSATED VOLTAGE CONTROLLED CRYSTAL OSCILLATOR
CALIBRATION FROM COMPUTER-COMMON TO ALL RECEIVER PHASE LOCKED LOOP BOARDS
DIVIDERS PROGRAMMED FOR SELECTED STATION
#1 100HZ DATA OUTPUT TO MULTIPLEXER

68. The navigation method which comprises the steps of:

receiving at least one radio signal from a distant radio station;

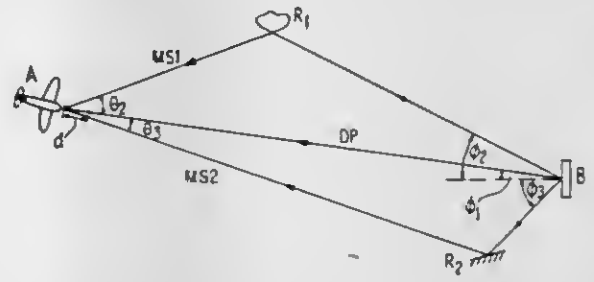
developing a pair of cyclically varying electrical signals having known like frequency and differing in phase by an amount corresponding to the difference in phase between two other cyclically varying electrical signals one of which is said radio signal; and

measuring the time interval between occurance of corresponding portions of the cycles of said first-mentioned pair of cyclically varying electrical signals.

3,936,829
METHOD OF RADIO NAVIGATION

Francis G. Overbury, Washington, D.C., assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 5, 1974, Ser. No. 529,989
Claims priority, application United Kingdom, Dec. 6, 1973, 56513/73
Int. Cl.² G01S *1/38*
U.S. Cl. 343—106 R **6 Claims**



1. A method of determining, at the site of a radio beacon, the location of any beacon signal reflecting objects, in which method the beacon is caused to transmit a directionally coded signal over a given service sector, in which during said signal transmission a radio receiver is moved towards said beacon along a predetermined path in said sector, in which during said movement all beacon-derived signals received by the receiver are recorded in a form such as to be coded at least in respect of beacon related bearings and receiver related bearings, and in which said recorded signals are individually isolated in such a manner as to permit identification and location of any of said reflecting objects.

3,936,830

DOPPLER NAVIGATION SYSTEM WITH TRACKING FILTER FOR MULTIPATH DISCRIMINATION

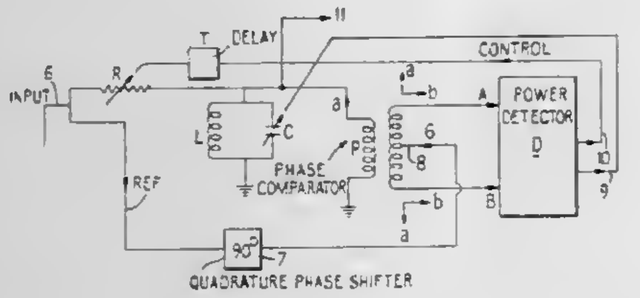
Francis G. Overbury, Cuffley, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 1, 1974, Ser. No. 465,861

Claims priority, application United Kingdom, May 10, 1973, 22291/73

Int. Cl.² G01S *5/02*

U.S. Cl. 343—113 DE **6 Claims**



1. In Doppler navigation equipment responsive to ground transmissions from a commutated antenna array, including a receiver, frequency counting means responsive to the output of said receiver, and indicating means responsive to said counter to present angular information as a function of the count extant in said counter, a circuit operatively connected between said receiver and said counter comprising:

- a filter circuit in the signal path from said receiver to said counter, said filter circuit comprising a resonant frequency controllable LC circuit substantially in parallel with the output terminals of said filter circuit, and a controllable value resistance in series with the signal path from the input terminal of said filter to said filter output terminal;
- and first means for comparing the output of said filter with the frequency spectrum of signals at the output of said receiver to produce and apply a control signal to said LC circuit and to said controllable resistance to cause the center frequency to vary toward the frequency of the maximum power spectral line and to also narrow the passband of said filter, thereby to tend to eliminate signal energy corresponding to multipath reception.

3,936,831

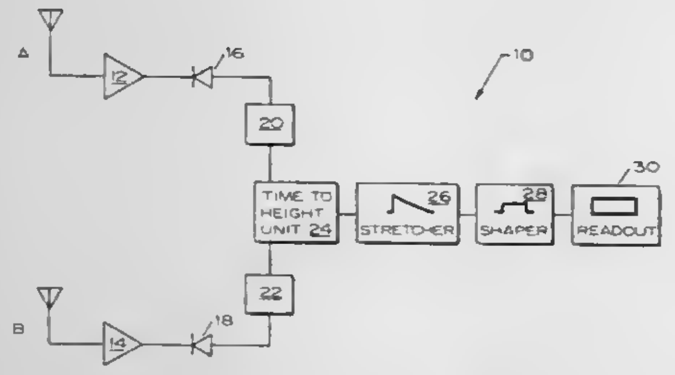
SINGLE PULSE TO A MEASUREMENT SYSTEM

Gerald N. Jones, Inyokern, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 15, 1971, Ser. No. 210,265

Int. Cl.² G01S *3/50*

U.S. Cl. 343—113 R **6 Claims**



1. A system for finding the direction of an emitter of electromagnetic pulses comprising:

- first receiving means including a first antenna connected to circuitry means defining a CHANNEL A;
- second receiving means including a second antenna spaced from said first antenna and connected to circuitry means defining a CHANNEL B;
- each said channel including a NORMALIZER circuit unit receiving electromagnetic pulses from said antenna and having an output;
- A TIME TO HEIGHT UNIT receiving the output from each of channels A and B and outputting a new pulse having characteristics representative of the time difference between receipt of said electromagnetic pulse at the antenna of channel A and the receipt thereof at the antenna of channel B;
- each said NORMALIZER circuit including;
  - pulse divider means halving said received pulse,
  - delay means repeating said pulse after a predetermined time,
  - voltage comparison means receiving and comparing the half pulses with said repeated pulses,
  - amplifier means receiving the output of said comparison means and producing an input to said TIME TO HEIGHT UNIT; and
  - readout means responsive to said new pulse providing a readout based on said time difference and indicative of the direction of the emitter with respect to a reference.

3,936,832

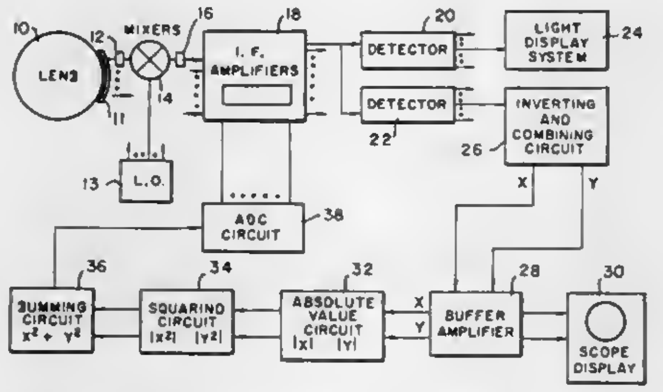
SYSTEM TO PROCESS ANTENNA BEAMS TO OBTAIN THE ANGULAR LOCATION OF TARGET WITH HIGH RESOLUTION AND ACCURACY

Marvin C. Behnke, deceased, late of Hermosa Beach, Calif., by Rita Behnke, legal representative, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 13, 1974, Ser. No. 505,719

Int. Cl.² G01S *3/30*

U.S. Cl. 343—119 **11 Claims**



1. A system to process antenna beams to obtain target angular location comprising:

- a plurality of antennas disposed to provide overlapping output beams, thus providing complete coverage of some predetermined sector of area;
- mixing means for providing an I.F. signal from the output from each of said plurality of antennas;
- a plurality of first detector means, a different one for each one of said I.F. signals developed at said mixing means;
- comparison means to which the detected I.F. signals from each of said first detector means are applied for determining which of the I.F. signals from said plurality of antennas has the largest amplitude signal and thus the strongest target signal and displaying this information on a first display means;
- a plurality of second detector means, a different one for each one of the I.F. signals developed at said mixing means;
- inverting and combining means to which the detected I.F. signals from said second detector means are applied, said inverting and combining means selectively inverting and serially combining the I.F. signals from alternate antennas so that at least two approximate sine-waves are formed;
- second display means to which the two sine-waves are applied to vary the coordinates of the response in said display means in accordance therewith so that the antenna beam azimuth across which the target travels is expanded such that the target location within a particular beam can be determined very accurately.

3,936,833

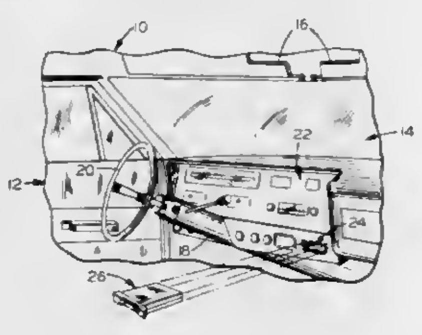
GARAGE DOOR RADIO CONTROL TRANSMITTER ASSEMBLY

Walter R. Bush, West Simsbury, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed June 12, 1974, Ser. No. 478,640

Int. Cl.² H04B *1/03*

U.S. Cl. 343—225 **10 Claims**



1. A garage door radio control transmitter assembly for use with a motor vehicle having an instrument panel comprising:

- a. a garage door radio control transmitter having a first operating condition and a second operating condition, said transmitter embodying electrical cirrcuitry operable when said transmitter is in said first operating condition to produce and transmit a signal receivable by a cooperating receiver located in spaced relation to said transmitter, said transmitter being operable to be powered selectively from an internal electrical power supply and an external electrical power supply;
- b. switch means connected in electrical circuit relation with the electrical circuitry of said transmitter and mounted on said transmitter so as to be externally accessible, said switch means having an actuated position and an unactuated position, said switch means being operable when in said actuated position thereof to effect the establishment of said first operating condition of said transmitter and being operable when in said unactuated position thereof to effect the establishment of said second operating condition of said transmitter;
- c. disconnect means connected in electrical circuit relation with the electrical circuitry of said transmitter and mounted on said transmitter so as to be externally accessible, said disconnect means having an unactuated position and an actuated position, said disconnect means being operable when in said unactuated position thereof to permit said transmitter to derive electrical power from the internal electrical power supply and being operable when in said actuated position thereof to disconnect the electrical circuitry of said transmitter from the internal electrical power supply;
- d. first terminal means connected in electrical circuit relation with the electrical circuitry of said transmitter and mounted on said transmitteer so as to be externally accessible, said first terminal means being operable for establishing an electrical connection between the electrical circuitry of said transmitter and the external electrical power supply;
- e. a housing formed on the instrument panel of the motor vehicle, said housing comprising a multiplicity of wall members interconnected together to form a receptacle having one open wall, said housing having internal dimensions greater than the external dimensions of said transmitter and having an internal configuration conforming to the external configuration of said transmitter to permit said transmitter to be inserted into said housing through said open wall;
- f. second terminal means mounted on one of said multiplicity of wall members of said housing in the path of movement of said first terminal means of said transmitter and connectible to said first terminal means of said transmitter when said transmitter is inserted into said housing to effect an electrical circuit connection between said first and second terminal means;
- g. conductor means having one end thereof connected in electrical circuit relation with said second terminal means and the other end thereof connected in electrical circuit relation in the electrical system of the motor vehicle, said conductor means being operable for connecting the electrical circuitry of said transmitter in electrical circuit relation with the external electrical power supply consisting of the electrical system of the motor vehicle through the interconnection of said first and second terminal means when said transmitter is inserted into said housing; and
- h. actuator means supported on one of said multiplicity of wall members of said housing in the path of movement of said disconnect means on said transmitter for engagement therewith when said transmitter is inserted into the housing, said actuator means being operable to automatically cause said disconnect means through the engagement therewith to occupy said actuated position thereof and thereby automatically effect a disconnection of the electrical circuitry of said transmitter from the internal electrical power supply as said transmitter is being inserted into said housing.

3,936,834

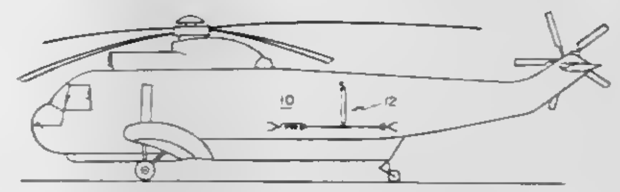
HIGH POWERED FERRITE LOADED HELICOPTER ANTENNA

Lucio M. Vallese, Glen Ridge, N.J.; Gordon L. Clark, Takoma Park, and James C. Bailey, Hollywood, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 21, 1972, Ser. No. 266,524

Int. Cl.² H01Q *1/28*

U.S. Cl. 343—708 **5 Claims**



1. An antenna system mounted upon the side of a helicopter comprising:

- means for feeding a signal to and from a transmitter and receiver;
- radiating means having a ferrite loading connected to said feeding means, said radiating means including a vertically aligned rod encased in ferrite material;
- said radiating means being mounted a distance D from the surface of the helicopter whereby the helicopter is coupled to the radiating means and a circular antenna radiation pattern is generated by the helicopter and the radiating means.

3,936,835

DIRECTIVE DISK FEED SYSTEM

Harry Richard Phelan, Indialantic, Fla., assignor to Harris-Intertype Corporation, Cleveland, Ohio

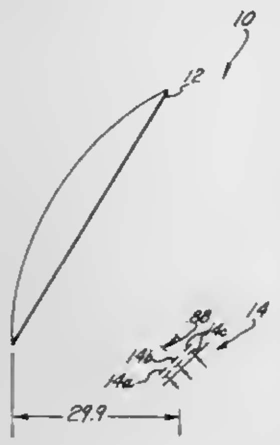
Filed Mar. 26, 1974, Ser. No. 454,910

Int. Cl.² H01Q *19/16, 21/26*

U.S. Cl. 343—753 **21 Claims**

1. A multiple-beam antenna comprising a collimating means for redirecting electromagnetic energy; and a feed array including a feed-system ground plane, a plurality of element antennas spaced apart 0.7 to 0.9 wavelength for illuminating said collimating means by respective feed energy paths, each of said feed element antennas having a primary radiator spaced about one-fourth wavelength from said ground plane and a generally circular director, said director being disposed on and transverse to the respective feed energy path and about

one-quarter wavelength from the respective primary radiator and proportioned for mutual electric and magnetic coupling with others of said directors for inducing parasitic radiation to produce a substantially angular sector-shaped feed radiation pattern when one respective primary radiator is directly excited in array.

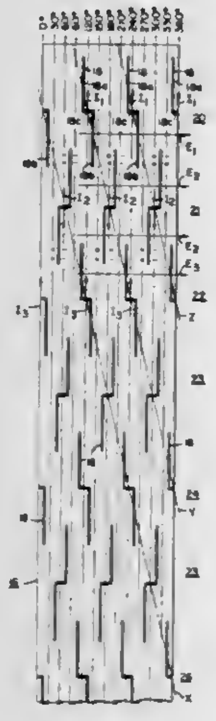


3,936,836
Z SLOT ANTENNA
Myron S. Wheeler, Baltimore, and Hall R. McComas, Laurel, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 25, 1974, Ser. No. 491,916

Int. Cl.² H01Q *13/12*

U.S. Cl. 343—771 **5 Claims**



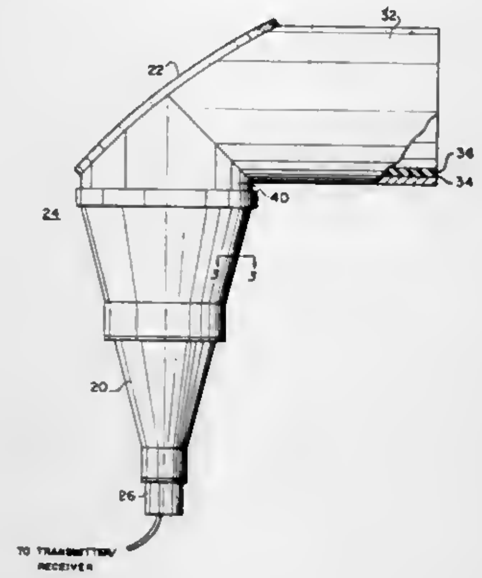
1. An antenna assembly comprising a coaxial transmission line having inner and outer coaxial conductors, said outer conductor having a plurality of radiating slots spaced circumferentially of said line, said slots extending longitudinally of said outer conductor and including respective coupling sections which extend transversely of said line to provide coupling apertures to current on said line,
   said plurality of slots being arranged in bays, each of said bays being composed of a plurality of slots having respective coupling sections lying in the same plane transverse to the longitudinal axis of said transmission line,
   adjacent bays of radiating slots being angularly displaced with respect to individual radiating slots of the respective bays for improving the omnidirectional coverage of the pattern of said antenna assembly.

3,936,837
CORRUGATED HORN FED OFFSET PARABOLOIDAL REFLECTOR
H. Paris Coleman, Alexandria, Va.; Russell M. Brown, Bethesda, and Billy D. Wright, Oxon Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 25, 1975, Ser. No. 552,907

Int. Cl.² H01Q *15/16*

U.S. Cl. 343—781 **5 Claims**



1. A high frequency antenna system for radiating and receiving electromagnetic energy comprising:
   a feed-horn having corrugations disposed on the interior conducting surface thereof;
   parabolic reflective means disposed opposite the open end of said feed-horn for reflecting spherical wave-front energy radiated from said corrugated feed-horn and for converting the energy into plane-wave-front energy, and wherein said feed-horn is disposed so that none of the plane-wave-front energy is intercepted by said feed-horn;
   whereby said corrugations cause low edge illumination of energy from said feed-horn incident on said parabolic reflective means;
   and further wherein said feed-horn has a feed element located at the origin of an orthogonal x, y, z, axis reference system, the axis of the horn coinciding with the x axis, said feed-horn having an angle α between the feed-horn interior surface and the x axis and a length $2F(k^2-1)^{1/2} - (2FK)$; and
   said parabolic reflective means having a parabolic surface satisfying the equation $x^2 + y^2 = 4F(z + F)$ where F is the focal length of said parabolic surface, and K is equal to $\tan\alpha$;
   wherein spherical energy radiating from said feedhorn is converted to plane wavefront energy traveling in the direction of the x axis.

3,936,838
MULTIMODE COUPLING SYSTEM INCLUDING A FUNNEL-SHAPED MULTIMODE COUPLER
Peter Foldes, Montreal, Canada, assignor to RCA Corporation, New York, N.Y.

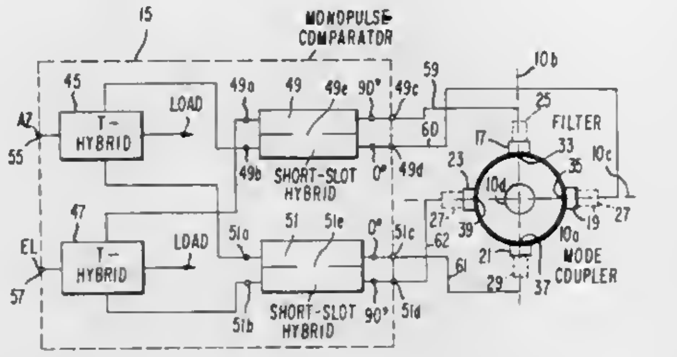
Filed May 16, 1974, Ser. No. 470,574

Int. Cl.² H01Q *13/00;* G01S *9/22*

U.S. Cl. 343—786 **23 Claims**

1. A coupling system for symmetrical mode signals and asymmetrical mode signals comprising:
   a hollow truncated cone shaped member having tapering side walls and two orthogonal symmetry planes and a first opening at one end and a larger opening at the opposite end, said first opening at one end adapted to present a low reflection coefficient coupling path to symmetrical mode signals,

   an asymmetrical mode signal terminal,
   first and second coupling apertures in the tapering side wall of said hollow member with said first and second side wall apertures at diametrically opposite surfaces of said member in one of said symmetry planes,
   third and fourth coupling apertures in the tapering side wall of said hollow member with said third and fourth side wall apertures at diametrically opposite surfaces of said member in the second of said orthogonal symmetry planes,
   and coupling means coupled between said first, second, third and fourth apertures and said asymmetrical mode signal terminal characterized by a response to signals at said terminal for coupling equal portions of the signal energy at the terminal to said first, second, third and fourth apertures with the phase of the coupled signals at the first and third apertures being advanced 90° relative to the phase of the signals at the second and fourth apertures.

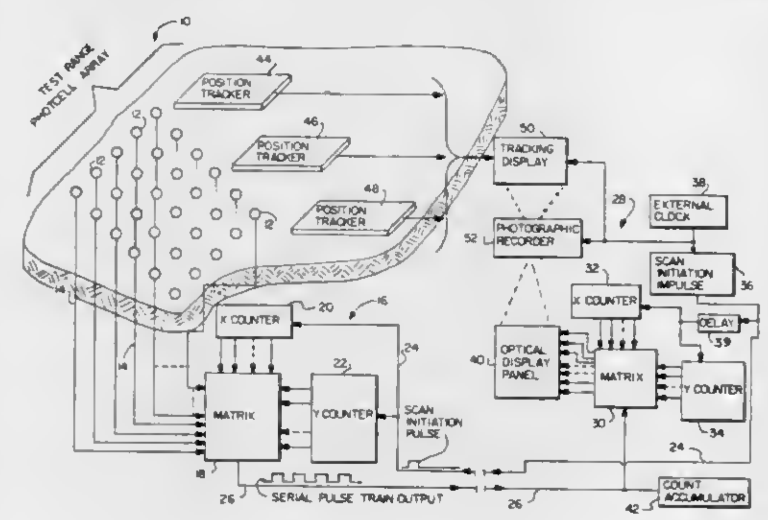


3,936,839
METHOD AND SYSTEM FOR MONITORING THE LIGHT OUTPUT OF PYROTECHNIC LUMINANTS UNDER DYNAMIC CONDITIONS
Wahner E. Brooks, Yuma, Ariz., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 14, 1975, Ser. No. 567,897

Int. Cl.² G01D *9/00, 9/42;* H01J *39/12*

U.S. Cl. 346—1 **5 Claims**



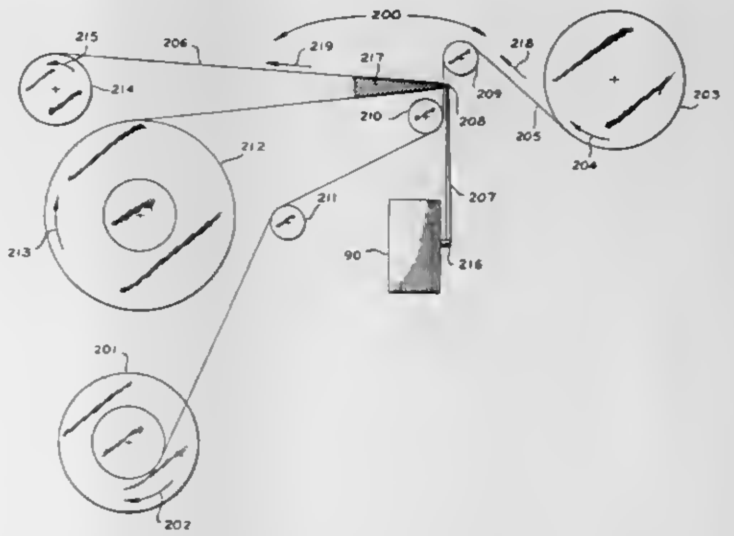
1. A method of monitoring the light output of pyrotechnic luminants under dynamic conditions to obtain data representative of ground surface illumination as a function of time and position of the illumination source, said method comprising the steps of:
   disposing an array of spaced-apart light sensing means at substantially ground level throughout a range testing area;
   firing a pyrotechnic luminant-containing projectile over the range testing area to commence a testing period;
   sequentially scanning each light sensing means to provide serial electrical data representative of the output of each light sensing means in response to the pyrotechnic illumination characteristics;
   receiving the electrical data at a location remote from the range testing area;
   sequentially demodulating the received electrical data and converting same into an optical display synchronously with said scanning in a pattern simulating the illumination impinging on the array of light sensing means throughout the range testing area;
   simultaneously tracking the position of the projectile over the range testing area and providing a display representative of acquired tracking information; and
   recording the illumination display pattern in correlation with the tracking information display.

3,936,840
RECORDING SYSTEM USING CARBON-PAPER
Werner Buckreus, Stockdorf, Munich, Germany, assignor to Fritz Schwarzer, GmbH, Munich, Germany

Filed Mar. 22, 1974, Ser. No. 453,625

Int. Cl.² G01D *15/00*

U.S. Cl. 346—32 **1 Claim**



1. A system for recording at least one electrical signal, said system comprising means for amplifying said signal thereby generating an amplified signal, means for applying said electrical signal to an input of said amplifying means, electro-mechanical means including a rotatable shaft for registering the output of said amplifying means, optical feedback means including an optical mask with apertures affixed to said shaft for generating feedback light signal pulses whose sum is related to angular displacement of said shaft and to amplitude of said electrical signal, means for detecting said feedback light signal pulses, means including a forwards-backwards counter and a digital/analog converter for counting said feedback light signal pulses and converting said sum to an analog feedback electrical signal, said amplifying means including means for comparing said analog feedback electrical signal and said amplified signal for generating said output of said amplifying means, said electro-mechanical, means further comprising: chart paper, carbon paper in controllably-operative contact with said chart paper, the thickness of said carbon paper being substantially less than the thickness of said chart paper, galvanometer pen means responsive to said rotatable shaft for contacting and applying controlled pressure to said carbon paper thereby finely scribing on said chart paper along paths representative of said fluctuations, means for steadily moving said chart paper transverse to directions of said paths thereby generating an effective time axis for recording a representation of said electrical signal on said chart paper, and means for moving said carbon paper in a direction opposite to the direction of motion of said chart paper.

3,936,841

PHOTOCOMPOSING APPARATUS

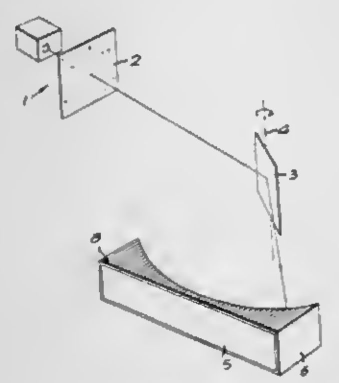
Josef Maria Herbert Tiefenthal, Surrey, England, assignor to The Monotype Corporation, Limited, London, England

Filed Sept. 26, 1973, Ser. No. 400,826

Claims priority, application United Kingdom, Oct. 2, 1972, 45296/72

Int. Cl.^{2} G03B *23/00*

U.S. Cl. 354—10 **6 Claims**



1. In a photocomposing apparatus comprising a projection system for projecting optical images onto a photosensitive surface of a recording member by way of a mirror, which is rotatable to displace projected images with respect to the recording member; means defining a position for the recording member; an optical field-flattening element formed by substantially parallel optical fibers and arranged berween the rotatable mirror and said position for a recording member, the element having a first concave major surface, which faces the rotatable mirror so as to receive optical images reflected therefrom, and a second major surface which is substantially flatter than the first major surface, the optical fibers being arranged to transmit optical images from said first to said second major surface, whereby the field of said optical images is substantially flattened on transmission from said first to said second major surface, said means defining a position comprising means for retaining the recording member with its photsensitive surface adjacent the second major surface and the axis of rotation of the mirror being at the effective center of curvature of the first major surface.

3,936,842

AUTOMATIC EXPOSURE TIME CONTROL CIRCUITRY FOR A CAMERA USING A PHOTODIODE AS A LIGHT MEASURING ELEMENT

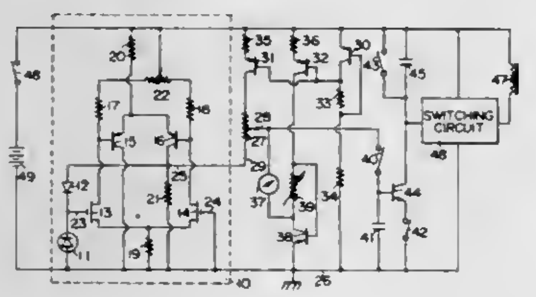
Yasuhiro Nanba, Sakai, and Motonobu Matsuda, Izumi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed June 21, 1974, Ser. No. 481,811

Claims priority, application Japan, June 23, 1973, 48-70465

Int. Cl.^{2} G03B *7/08;* **G01J** *1/44*

U.S. Cl. 354—24 **6 Claims**



1. An automatic exposure time control device for a camera comprising:

a high input impedance differential amplifying circuit having first and second input terminals and an output terminal;

a photodiode connected between said first and second input terminals;

a logarithmic compressing diode connected from said output terminal to said first input terminal for providing negative feedback, whereby a voltage proportional to the logarithm of the light intensity detected by said photodiode is produced between said output terminal and said second input terminal;

an electrical element having two terminals one of which is connected to said output terminal, the resistance between said two terminals of the electrical element being variable in accordance with at least film sensitivity;

means for feeding said electrical element with a current, which is constant at a given temperature, in a direction so as to increase the level of the other terminal of the electrical element from that of said second input terminal of the differential amplifying circuit;

means including a capacitor for storing a voltage proportional to the voltage between said second input terminal of the differential amplifying circuit and said other terminal of said electrical element;

an antilogarithmic converting circuit including a transistor having an emitter, a collector and a base for generating a collector current proportional to the antilogarithm of the base-emitter voltage, said capacitor being connected between said base and emitter; and

means for integrating said collector current to control the exposure time.

3,936,843

CAMERA WITH OPTIONALLY OPERABLE MANUAL CONTROLS

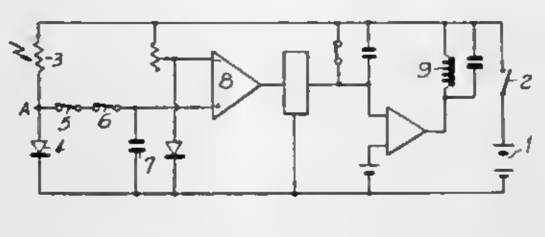
Hiroshi Kurei, Kawagoe; Fumio Urano, Omiya, and Katsuhiko Nomura, Kawagoe, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1973, Ser. No. 425,807

Claims priority, application Japan, Dec. 30, 1972, 48-456; Dec. 30, 1972, 48-457

Int. Cl.^{2} G03B *7/08*

U.S. Cl. 354—51 **8 Claims**



1. In a camera having an electrical circuit for automatically determining exposure time, light-measuring means for measuring light and converting the measured light into a given electrical quantity, mirror means swingable between a light-reflecting position for directing light to said light-measuring means and an exposure position in which light is no longer reflected by said mirror means to said light-measuring means, capacitor means for storing said quantity, and switch means electrically connected between said capacitor means and light-measuring means for transmitting said quantity to said capacitor means when said switch means is in a closed position and for assuming an open position prior to exposure so that said capacitor means will retain and store said quantity even if light is not received by said light-measuring means at the instant of and just prior to exposure, said capacitor means, switch means, and light-measuring means forming part of said circuit, automatic means operable during normal exposures for automatically opening said switch means and displacing said mirror means to said exposure position thereof, and manually operable means accessible at the exterior of the camera and operatively connected with said switch means for manually opening said switch means at the option of the operator independently of said automatic means while the latter remains inoperative, said manually operable means remaining in a predetermined rest position when said automatic means operates during normal exposures for automatically opening said switch means and displacing said mirror means to said exposure position thereof.

3,936,844

EYE-FUNDUS CAMERA EASY FOR ALIGNMENT OF PUPIL

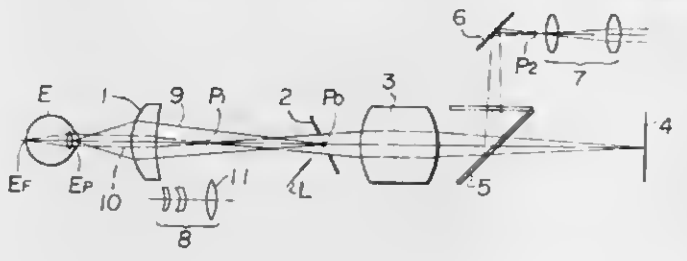
Isao Matsumura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Japan

Filed Mar. 18, 1974, Ser. No. 452,252

Claims priority, application Japan, Mar. 22, 1973, 48-33745

Int. Cl.^{2} G03B *29/00*

U.S. Cl. 354—62 **7 Claims**



1. An optical system for observation and photography of the eye-fundus in an eye-fundus camera, said system providing simplified pupil alignment, comprising:

an eye station for establishing the position of the eye;

an objective lens facing the eye-to-be-examined for forming an eye-fundus image at a point, P_1, along the optical axis of the optical system;

a photographic lens system disposed along the system optical axis on the side of the objective lens away from the eye beyond said eye-fundus image forming point, said photographic lens system for reforming the eye-fundus image formed by the objective lens;

an eye-fundus-observing optical system, receptive to light passed by said photographic lens, for providing a focussed eye-fundus image for observation;

means for providing said reformed image of said eye-fundus to said observing optical system during observation and for providing said reformed image to an image plane during photography; and

and optical alignment means for removable insertion into the optical system only during alignment, for providing the pupil image of the eye-to-be-examined at said point, P_1, along the system optical axis, said optical alignment means being disposed along the system optical axis between said objective lens and said observing optical system, said optical alignment means being removable from a position in the system optical axis to a position outside of the optical axis during observation and photography.

3,936,845

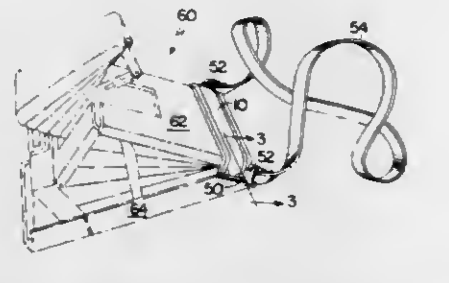
CARRYING STRAP ATTACHMENT FOR A PHOTOGRAPHIC CAMERA

John B. Morse, Boston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1974, Ser. No. 430,070

Int. Cl.^{2} A45C *11/38;* **G03B** *17/02*

U.S. Cl. 354—82 **18 Claims**



1. A carrying strap attachment adapted to be coupled to underlying edges of opposite sides of a photographic camera, said attachment comprising:

a support bar having opposing ends;

means for securing a carrying strap to said support bar; coupling means including spaced surfaces for engaging the underlying edges;

means extending from said opposing ends of said support bar to form inwardly facing opposing sides of said attachment for receiving the underlying edges therebetween; and

means for pivotally mounting said coupling means in spaced relation upon said extending means, said pivot means being spaced apart by a distance not greater than the spacing between said surfaces of said coupling means thereby providing for pivotal movement upon said extending means of said coupling means from a first operative position wherein said surfaces are engageable with the underlying edges to a second inoperative position wherein said spaced surfaces are out of securing relation with the underlying edges.

10. Photographic apparatus including a photographic camera and a carrying strap attachment constructed of interlocking components to form an assemblage for releasably securing a carrying strap upon said camera, comprising in combination:

a support including a first recess and a second recess subjacent to said first recess;

means for securing a carrying strap to said support:

coupling means including slot means coupled to said support for lateral movement towards opposite sides of said camera into a first operative position wherein said coupling means engage said opposite sides and a second inoperative position wherein said coupling means are moved laterally in a direction away from said opposite sides and out of securing relation therewith, said coupling means including means for pivotally connecting said coupling means within said second recess of said support wherein said coupling means remain pivotally movable from said first position to said second position; and

biasing means disposed within said first recess for resiliently biasing said coupling means into said first position, said biasing means having opposite ends attached to said coupling means within said slot means and operating to secure said coupling means to said support.

3,936,846

BATTERY MAGAZINE IN SINGLE LENS REFLEX CAMERA

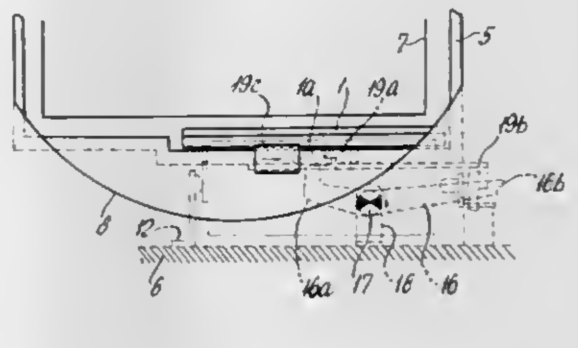
Keisuke Haraguchi, Kamifukuoka, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1974, Ser. No. 458,146

Claims priority, application Japan, Apr. 9, 1973, 48-42629; Apr. 9, 1973, 48-42630

Int. Cl.^{2} G03B *19/12*

U.S. Cl. 354—152 **7 Claims**



1. In a single lens reflex camera including a camera body and a separable objective providing an access opening into

said body upon detachment thereof and a mirror member movable along a predetermined path between a viewing, advanced position and a photographing retracted position, a battery accommodating magazine disposed in said body out of the path of said mirror member and accessible through said opening, and including a magazine cover member movable between a retracted magazine closing position and an advanced magazine open position along a path intercepting said mirror member predetermined path, and interlocking means responsive to the movement to an advanced position of one of said members for preventing the movement to an advanced position of the other of said members.

3,936,847

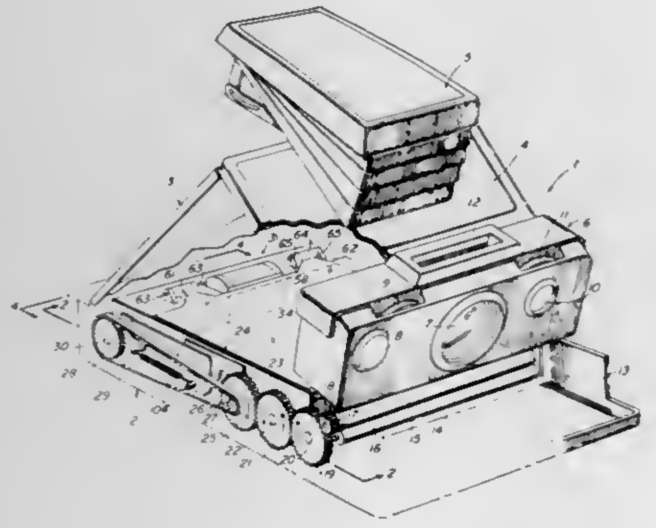
SHAFT DRIVE AND CONTROL SYSTEM FOR AUTOMATIC CAMERA

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 1, 1974, Ser. No. 484,407

Int. Cl.² G03B *19/12*

U.S. Cl. 354—152 **7 Claims**



1. A unitary shaft drive and control assembly for use in an automatic camera having a generally rectangular well for receiving a film pack, comprising a first shaft, an electric motor, a two-stage strain wave drive shaft speed reducer connected berween said electric motor and said first shaft, a generally L-shaped mounting plate having a first portion and a second portion, said first portion extending at right angles to said first portion and said first portion being perpendicular to said second portion, said plate being adapted to be mounted in the camera along two sides of the well, means mounting said electric motor and said shaft speed reducer on said first portion of said mounting plate, means comprising a bearing formed on said second portion for mounting said first shaft on said first portion and extending through said second portion for rotation about an axis normal to said second portion, a first gear having a first diameter fixed to said first shaft for rotation therewith, a cam fixed to said first shaft for rotation therewith, a second gear having a smaller diameter than said first gear, means rotatably mounting said second gear on said second portion, a timing belt connecting said first gear to said second gear, and an actuating element connected to said second gear for rotation therewith.

3,936,848

INDEPENDENT MIRROR SWING-UP MEANS IN A SINGLE LENS REFLEX CAMERA WITH MEMORY EXPOSURE DEVICE

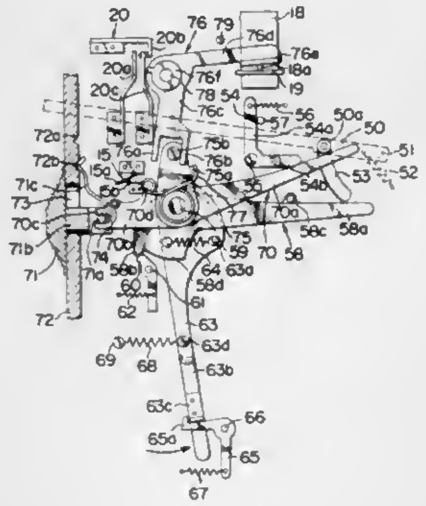
Kazuhiro Akiyama, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Oct. 15, 1973, Ser. No. 406,317

Claims priority, application Japan, Oct. 20, 1972, 47-105035

Int. Cl.² G03B *19/12, 7/08*

U.S. Cl. 354—156 **14 Claims**



1. In a single lens reflex camera having a focal plane shutter, a mirror automatically swingable from a reflecting position to a folded position by means of an automatic mirror swing up means, in response to the release of the shutter of the camera, a memory type electric shutter control means having a memorizing capacitor and circuit means controlling the operation of the focal plane shutter in the camera, a taking lens, the quantity of light passing through the taking lens being measured by a photoelectric element located in a view finder optical system receiving the light reflected from the mirror, the output of this photoelectric element being connected to said memorizing capacitor in the memory type electric shutter control means, and an electric power supply for the memory type electric shutter control means the improvement comprising: a variable resistor connected across said electrical power supply, means for swinging the mirror to the folded position independently of the release of the shutter, electrical responsive means having a needle movable in response to an electrical potential applied thereto and being connected in parallel with the memorizing capacitor, said needle forming a contact for said variable resistor, the position of said needle being determined by said potential which exists across terminals of the memorizing capacitor, a switch-over means for selectively coupling the memorizing capacitor or the variable resistor to circuit means in the electric shutter control means, locking means operatively connected between said means for independently swinging the mirror and said slidable contact, said locking means fixing the position of said slidable contact on said variable resistor and operating said switch-over means to connect said variable resistor in, and to disconnect said memorizing capacitor from, said circuit means when said means for independently swinging said mirror to its folded position is operated.

3,936,849

DEVICE FOR DETECTING FOCUSSING IN OPTICAL INSTRUMENTS

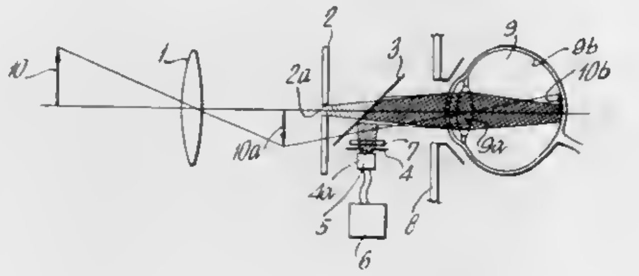
Kayoshi Tsujimoto, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 8, 1974, Ser. No. 495,962

Claims priority, application Japan, Aug. 9, 1973, 48-89464

Int. Cl.² G03B *3/00*

U.S. Cl. 354—195 **14 Claims**



1. In an optical instrument, a device for detecting focussing conditions comprising:

an objective lens;

an imaginary reference plane predetermined at a position optically equal to a plane on which a real image of an object formed by said objective lens is intended to be focussed;

means for adjusting said objective lens to shift said real image from positions forwardly and rewardly of said reference plane;

a viewing window positioned to permit the eye of an operator of the instrument to view said real image there through; and

means for detecting that said reference plane and the retina of said eye of the operator are optically conjugate to each other with respect to the crystalline lens of said eye which views said real image, whereby indirectly detecting that the position of said real image coincides with said reference plane.

3,936,850

PHOTOGRAPHIC CAMERA EQUIPPED WITH AUTOMATIC FILM TRANSPORTING MECHANISM

Toshio Goto, Omiya, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

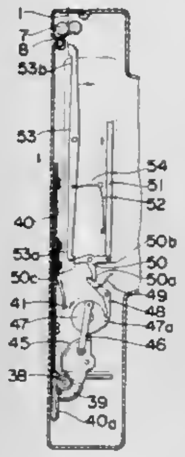
Filed Nov. 27, 1974, Ser. No. 527,781

Claims priority, application Japan, Nov. 27, 1973, 48-133708

Int. Cl.² G03B *1/32, 1/00*

U.S. Cl. 354—212 **3 Claims**

1. In a photographic camera having a camera body provided at the rear thereof with a hingedly supported back lid for selectively opening and closing a chamber for accommodating therein a photosensitive element on which an image of a subject to be photographed is recorded, said back lid being supported to the camera body by means of a spindle supported in position on said body and within said chamber, a transporting mechanism which comprises a motion transmitter mounted on said spindle, means for transporting said photosensitive element, means for mounting said transporting means within said back lid for movement relative to said back lid, a drive unit built in said camera body, and means for operatively coupling said motion transmitter to said drive unit for transporting said photosensitive element through said transporting means.



3,936,851

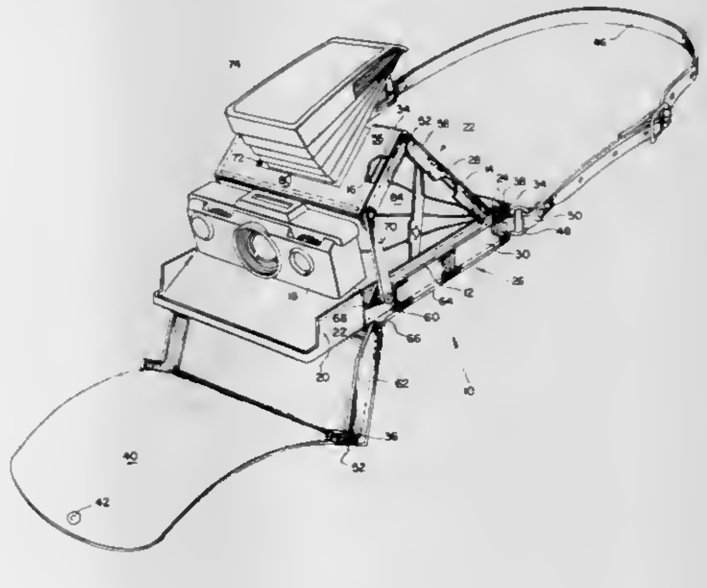
EVER-READY CAMERA CASE

Richard R. Wareham, Marblehead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 26, 1974, Ser. No. 509,693

Int. Cl.² G03B *17/02*

U.S. Cl. 354—288 **10 Claims**



1. A carrying case of the ever-ready type for a photographic camera of the compact collapsible type which is extendible and erectible to a fully operative position in use, said carrying case comprising:

a top portion and a bottom portion transversely hinged to each other near a rear end of said case, said top portion including a transverse hinge dividing said top portion into forward and rear sections and said bottom portion including a transverse hinge dividing said bottom portion into forward and rear sections; and

means connecting a forward end of said forward section of said top portion to a forward end of said rear section of said bottom portion, said top portion being movable from a closed position with respect to said bottom portion to an erected position on erection of the camera to its operative position, with said forward and rear sections of said top portion assuming an inverted V-shape configuration which snugly fits and retains erected parts of the camera and with said connecting means adequately spacing said forward end of said forward top section from said lower rear sections.

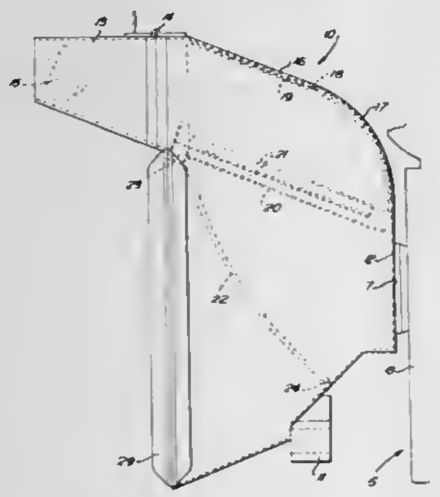
3,936,852
CAMERA WITH A DEVICE FOR DIRECTING SUPPLEMENTARY LIGHT INTO THE IMAGING LENS

Gerald Leslie Turpin, Knoll Cottage, Fulmer Road, Fulmer, England

Filed Oct. 22, 1974, Ser. No. 517,059

Int. Cl.² G03B *11/00*

U.S. Cl. 354—295 6 Claims



1. A camera having an imaging lens for directing light from a scene to be recorded onto a light sensitive film within the camera, a housing disposed in front of the imaging lens and having an opening to permit light from the field of vision of the lens to reach the lens, an electric light source disposed in the housing outside of the field of vision of the lens, a transparent reflector mounted in the housing in a position in front of the lens such that light from the source is reflected by the reflector through the lens while the light from the scene being photographed passes through the reflector to the lens and at least one coloured filter disposed between the light source and reflector to colour the light directed thereto, wherein the improvement comprises a reflector formed from a curved transparent sheet having a concave reflector surface facing the filter and imaging lens to direct light from the former into the latter and wherein the reflector is formed from clear acrylic plastic.

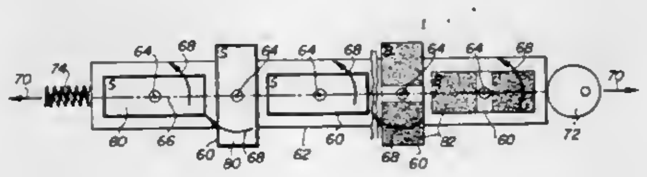
3,936,853
DEVELOPER APPARATUS FOR LITHOGRAPHIC PLATE PROCESSING SYSTEM

Milam E. Mart, P.O. Box 29, Carrollton, Tex. 75006

Filed June 6, 1974, Ser. No. 476,918

Int. Cl.² G03D *13/00*

U.S. Cl. 354—297 9 Claims



1. A lithographic plate processing system comprising:

means for moving an exposed lithographic plate having at least a predetermined width along a predetermined path at a predetermined rate;

means positioned on the path for applying developer to the exposed surface of the lithographic plate;

means positioned on the path for uniformly developing the entire exposed surface of the plate;

said developing means comprising:

a plurality of rectangularly shaped developer spreading members positioned at spaced points along a line extending subtantially transversely to the direction of movement of the lithographic plate along the predetermined path, each said spreading member mounted for engagement with the exposed surface of the lithographic plate, the line of developer spreading members extending completely across the processor, and having a width at least equal to said predetermined width;

means for rotating the developer spreading members about spaced apart axes each extending substantially perpendicularly to the plane of the exposed surface of the lithographic plate;

each of said spreading members extending in both directions from its axis of rotation more than half the distance between adjacent axes so that the paths of rotation of adjacent developer spreading members overlap one another, thereby applying developer uniformly to the entire surface of the plate exposed to the line of said developer spreading members; and

means for simultaneously oscillating all of the rotating developer spreading members along a line extending substantially transversely to the direction of movement of the lithographic plate;

the rate of said oscillation being wholly independent of the rate of movement of the lithographic plate along said predetermined path;

means positioned on the path of movement of the lithographic plate for washing the exposed surface of the plate to remove excess developer therefrom; and

means positioned on the path of movement of the lithographic plate for applying gum arabic to the exposed surface thereof.

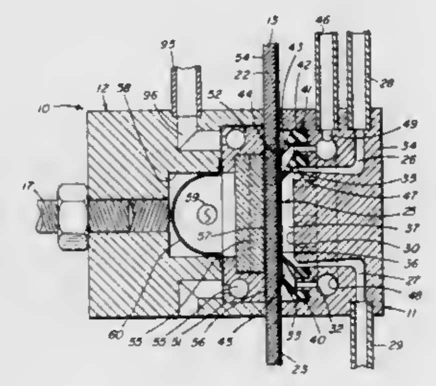
3,936,854
APPARATUS FOR DEVELOPING PHOTOSENSITIVE MATERIAL

David S. Smith, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 24, 1974, Ser. No. 473,034

Int. Cl.² G03D *13/00, 3/08*

U.S. Cl. 354—299 5 Claims



1. In apparatus for the fluid processing of a photosensitive material comprising a support and at least one photosensitive layer bearing a latent image area of a predetermined size and shape, the combination comprising:

a first member having an open-end chamber of a size and shape larger than the latent image area, at least one duct having an entry into the open-end chamber outwardly of an area of the open-end chamber generally equivalent to that of the latent image area for interconnecting the open-end chamber to a first source of air under pressure, at least one inlet and at least one outlet interconnecting the open-end chamber within the area to a second source of air under pressure and to at least one source of processing fluid;

sealing means arranged within the open-end chamber comprising a pair of similar flexible, extending members arranged in spaced and coaxial relation with one another, the outermost member being of a size larger than the latent image area and arranged outwardly of the duct entry for engaging the photosensitive layer when the material is arranged with respect thereto, and the innermost member being of a size for engaging the photosensitive layer immediately adjacent the latent image area and arranged between the duct entry and the inlet and the outlet for confining the processing fluid to the latent image area;

a second member movable relative to the first member for clamping the material therebetween with the latent image area generally aligned with the sealing means;

means interconnected to the second member for moving the latter into a material clamping position relative to the first member; and

control means associated with the, first and second sources of air and with the source of processing fluids and operable when the first and second members are in the material clamping position, for introducing a flow of the processing fluid and a first flow of air from the second source through the open-end chamber and over the latent image area within the confines of the innermost member, and a second flow of air from the first source between the outermost and innermost members to increase the effective seal of the outermost member with the material and at the same time to disengage the innermost member from the material, whereby the second flow of air removes any accumulation of the processing fluid at the effective seal of the innermost member.

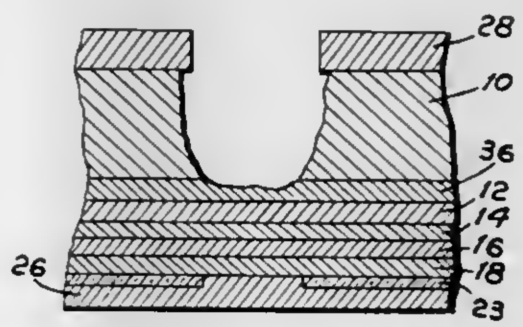
3,936,855
LIGHT-EMITTING DIODE FABRICATION PROCESS

James Emanuel Goell, Roanoke, Va., and Yet-Zen Liu, Fort Wayne, Ind., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 8, 1974, Ser. No. 495,697

Int. Cl.² H01L *33/00*

U.S. Cl. 357—17 11 Claims



1. A gallium arsenide-aluminum gallium arsenide light-emitting diode comprising,

a GaAs substrate layer of a first conductivity type, said GaAs layer being capable of being etched by a given etchant,

a first AlGaAs layer of said first conductivity type on said substrate layer, said first AlGaAs layer having a sufficiently high concentration of aluminum so that said first AlGaAs layer is resistant to etching by said given etchant,

a first AlGaAs layer of a second conductivity type over said first AlGaAs layer of said first type,

a second AlGaAs layer of said second conductivity type on said first AlGaAs layer of said second type, and

a GaAs layer of said second conductivity type on said second AlGaAs layer of said second type.

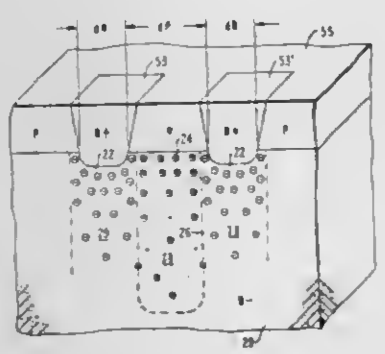
3,936,856
SPACE-CHARGE-LIMITED INTEGRATED CIRCUIT STRUCTURE

Steven Magdo, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1974, Ser. No. 473,650

Int. Cl.² H01L *29/74*

U.S. Cl. 357—21 **10 Claims**



1. An integrated circuit structure comprising:
a high resistivity substrate of at least 10,000 ohm-cm semiconductor material of a first conductivity type;
a plurality of impurity zones of said first conductivity type and a second conductivity type extending from one surface of said substrate to the interior thereof to form at least first and second space-charge-limited transistors of a first conductivity type;
an isolation zone of said second conductivity type separating the collectors of said transistors;
the ratio of the lateral width of said isolation zone to the lateral width of either of said collectors being greater than 0.75;
the emitter and collector of each said transistor being isolated from one another by a base zone of said second conductivity type, the ratio of the lateral width of said base zone to the lateral width of either of said emitter and collector zones being greater than 0.75; and
the ratio of the lateral width of said collector to the lateral width of either of said base and isolation zones being greater than 0.25.

3,936,857
INSULATED GATE FIELD EFFECT TRANSISTOR HAVING HIGH TRANSCONDUCTANCE

Michihiro Ota, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

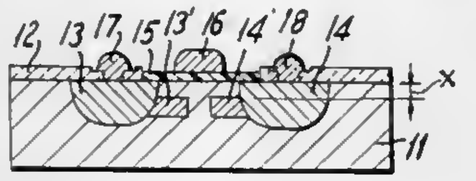
Filed June 28, 1974, Ser. No. 484,350

Claims priority, application Japan, July 2, 1973, 48-74612

Int. Cl.² H01L *29/78*

U.S. Cl. 357—23 **8 Claims**

1. An insulated gate field effect transistor comprising a semiconductor substrate of one conductivity type, source and drain regions of the opposite conductivity type formed in said semiconductor substrate, at least one extended region of said opposite conductivity type electrically connected to and extending from one of said source and drain regions toward the other of said source and drain regions, said at least one extended region being formed within said semiconductor substrate and electrically isolated from the other of said source and drain regions by a gap, a gate insulation film formed on said surface of said semiconductor substrate between said source and drain regions, and a gate electrode formed on said gate insulation film, said gate electrode overlying said gap and overlapping at least a part of said extended region.



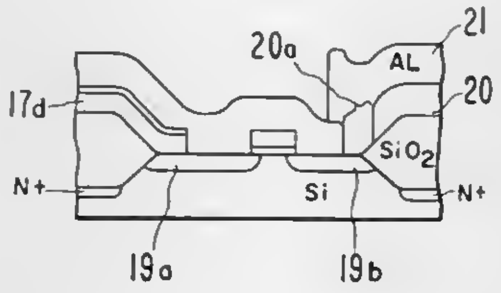
3,936,858
MOS TRANSISTOR STRUCTURE

Robert B. Seeds, and Robert L. Luce, both of Los Altos Hills, Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Continuation of Ser. No. 323,672, Jan. 15, 1973, abandoned. This application Aug. 19, 1974, Ser. No. 498,674

Int. Cl.² H01L *29/78*, *29/34*, *29/06*

U.S. Cl. 357—23 **6 Claims**



1. A metal-oxide-semiconductor structure which comprises:
semiconductor material containing a source region and a drain region formed adjacent a surface of said material;
insulation overlying said surface of said semiconductor material, said insulation comprising a first portion of a first substantially uniform thickness overlying that portion of the surface of said semiconductor material between said source region and said drain region and parts of said source region and said drain region, a second portion of a second substantially uniform thickness overlying the field of said semiconductor material surrounding said source region, said drain region and the region between said source region and said drain region, and a third portion connecting said first portion to said second portion and overlying the peripheries of said source region and said drain region and the region of said field directly adjacent to said source region and said drain region, said third portion of insulation comprising a first section of insulation extending from said first portion toward said second portion and a second section of insulation material extending from said first section of insulation into contact with said second portion, said first section having a thickness which increases gradually from the thickness of said first portion to a peak; the top surface of said first section rising gradually to said peak, said first section ending at said peak, said second section beginning at said peak and having a thickness equal to that of said first section beneath said peak and which remains approximately constant for a selected distance and then gradually increases until at the point where said second section joins said second portion, said second section has a thickness equal to that of said second portion, said second section having a top surface which in the region adjacent said peak has a slope opposite in sign to that of the top surface of said first section, said top surface of said second section forming a trough in the region between said peak and said second portion; a gate electrode formed over said insulation between said source region and said drain region;
insulating material covering the top surfaces of said source region and said drain region, said gate electrode and said insulation; and
contact leads contacting said source region, said drain region, and said gate electrode through openings in said insulating material.

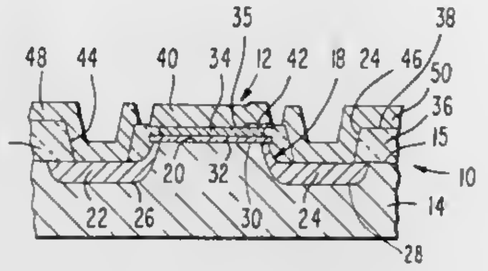
3,936,859
SEMICONDUCTOR DEVICE INCLUDING A CONDUCTOR SURROUNDED BY AN INSULATOR

Andrew Gordon Francis Dingwall, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 385,669, Aug. 6, 1973, abandoned. This application Apr. 22, 1975, Ser. No. 570,516

Int. Cl.² H01L *29/78*, *29/34*, *29/06*

U.S. Cl. 357—23 **6 Claims**



1. An insulated gate field effect semiconductor device comprising
- a body of silicon having a first surface, a mesa projecting from said first surface, and a second surface on said mesa generally parallel to said first surface,
- regions of one type conductivity in said mesa adjacent to respective opposite sides of said mesa, a zone of said mesa between said regions being of conductivity type opposite to that of said regions,
- a layer of insulating material on said second surface of said body of silicon,
- a layer of conductive material adjacent to said layer of insulating material and having a planar surface substantially parallel to the second surface of said body of silicon, and
- a single-layered homogeneous body of insulating material on said first surface of said body of silicon and in contiguous surrounding relation to said mesa, said insulating layer, and said conductive layer, and having a surface spaced from and substantially parallel to said first surface of said body of silicon, said planar surface of said conductive layer being everywhere the same distance from or closer to said first surface of said body of silicon than the surface of said body of insulating material is to said first surface of said body of silicon when these distances are measured in a direction substantially normal to said first surface of said body of silicon.

3,936,860
FABRICATION OF A SEMICONDUCTOR DEVICE

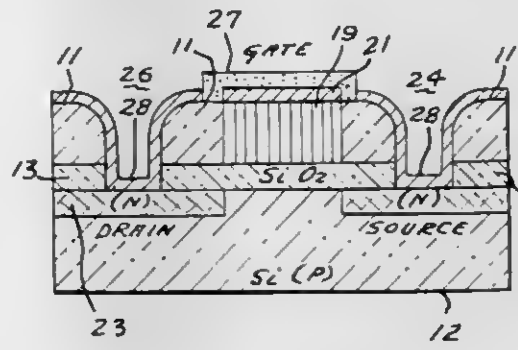
Bryan H. Hill, 305 Glenridge Road, Kettering, Ohio 45429

Division of Ser. No. 423,854, Dec. 11, 1973, Pat. No. 3,873,373, which is a continuation-in-part of Ser. No. 269,359, July 6, 1972, abandoned. This application Dec. 23, 1974, Ser. No. 535,768

Int. Cl.² H01L *29/78*, *29/04*

U.S. Cl. 357—23 **5 Claims**

1. An insulated gate, field effect transistor comprising a semiconductor body of a first conductivity type having a top and a bottom surface; a layer of an oxide of the semiconductor disposed intermediate the top and bottom surfaces of the semiconductor body; a source area and a drain area positioned in the semiconductor body adjacent the lower surface of the oxide layer and separated from one another by a region of the body between the top surface of the body and the upper surface of the oxide layer and a region of the body below the lower surface of the oxide layer, each area having a conductivity type opposite the first conductivity type; and a gate electrode positioned on the top surface of the region of the semiconductor body between the top surface of the body and the upper surface of the oxide layer, the region being in a degenerate state.



3,936,861
CHARGE-COUPLED DEVICE AND METHOD OF FABRICATION OF THE DEVICE

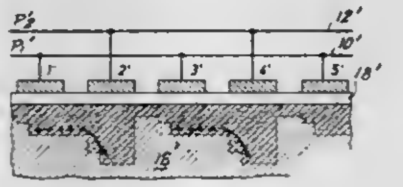
Joseph Borel, Echirolles; Jacques Lacour, Grenoble, and Gerard Merckel, La Tronche, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

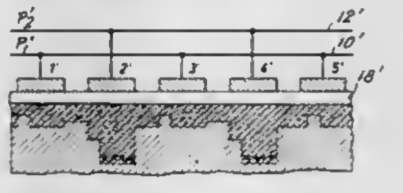
Continuation of Ser. No. 217,595, Jan. 13, 1972, abandoned. This application Mar. 12, 1974, Ser. No. 450,433

Claims priority, application France, Jan. 14, 1971, 71.01182. The portion of the term of this patent subsequent to Aug. 13, 1991, has been disclaimed.

Int. Cl.² H01L *29/78*

U.S. Cl. 357—24 **2 Claims**

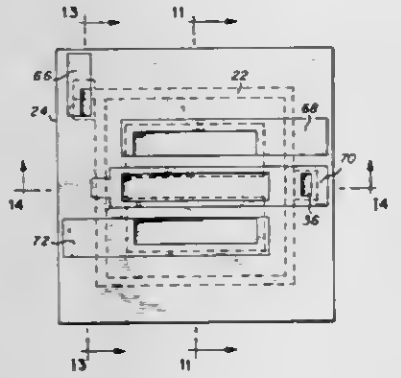




1. A charge-coupled device comprising, a doped semi-conductor substrate coated with an insulating thin film carrying at least one assembly *2a* of conductive electrodes which are disposed in succession along one axis, said substrate having a doped surface region beneath said assembly, a surface region beneath each electrode more heavily doped beneath the upstream edge of the electrode than beneath the remainder of said electrode whereby a potential barrier for the minority carriers is created upstream, with respect to the direction of transfer of said carriers, of a charge-storage region in approximately coincident relation with the region which is subjacent to one of the electrodes, means for injecting a predetermined charge of minority carrier beneath at least the first electrode, and means for establishing the same value of potential for all the odd-numbered electrodes as well as the same value of potential for all the even-numbered electrodes and for modifying these values in cycles each of which causes the transfer of the carrier from each alternate electrode to one of the adjacent electrodes whose potential barrier is located on the same side as the electrode from which the charge is derived.

3,936,862
MISFET AND METHOD OF MANUFACTURE

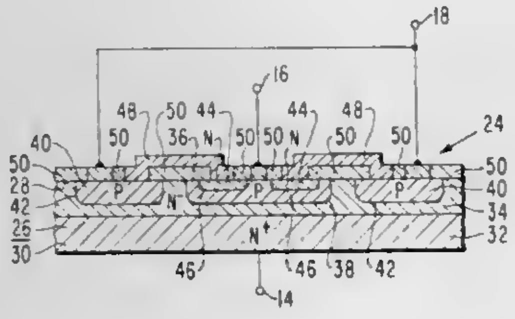
Kenneth J. Moyle, Los Altos Hills, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Division of Ser. No. 764,543, Oct. 2, 1968, Pat. No. 3,518,750.
This application Mar. 30, 1970, Ser. No. 29,321
Int. Cl.² H01L *29/78*
U.S. Cl. 357—41 **8 Claims**



1. A metal-insulator-semiconductor field-effect transistor means comprising:
- a body of semiconductive material of a first conductivity type having formed therein a pair of spaced apart regions of a second conductivity type respectively forming the source and drain of said transistor means;
- a belt-like region of said first conductivity type circumscribing said source and drain regions, said belt-like region having a higher impurity concentration than said body of semiconductive material;
- an external region of said second conductivity type disposed outside said belt-like region and contiguous therewith so as to form a P-N junction therebetween; and
- metallic gate electrode means disposed above and electrically insulated from the region separating said source and drain regions and extending across said P-N junction, said gate electrode ohmically contacting said external region, said P-N junction providing a gate breakdown protection means for said transistor means.

3,936,863
INTEGRATED POWER TRANSISTOR WITH BALLASTING RESISTANCE AND BREAKDOWN PROTECTION

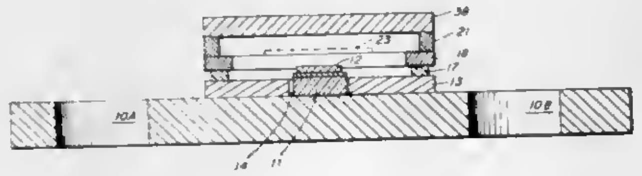
John Aaron Olmstead, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Sept. 9, 1974, Ser. No. 504,362
Int. Cl.² H01L *27/02, 29/90, 29/72;* **H03K** *3/26*
U.S. Cl. 357—51 **8 Claims**



1. An integrated semiconductor device having resistor ballasting and having reverse bias breakdown protection comprising:
- a body of semiconductor material having one type conductivity and having at least a first and a second surface,
- at least one first region, having a second type conductivity, adjacent said first surface and forming an equal number of first PN junctions at the interface therebetween,
- at least one second region, having said second type conductivity, adjacent said first surface, and forming at least one second PN junction at the interface with said body of semiconductor material and being spaced apart from said first region thereby,
- at least one third region, having said one type conductivity, within said first region and separated from said body of semiconductor material thereby, said third region and said first region have a third PN junction at their interface,
- a plurality of jumper means, insulatingly disposed over said body of semiconductor material, providing electrical paths from said second region to said third region,
- first terminal means providing electrical contact to said body of semiconductor material,
- second terminal means providing electrical contact to said first region, and
- third terminal means providing electrical contact to said second region, said third terminal means being spaced apart from said plurality of jumper means.

3,936,864
MICROWAVE TRANSISTOR PACKAGE

James A. Benjamin, Boxford, Mass., assignor to Raytheon Company, Lexington, Mass.
Continuation of Ser. No. 361,731, May 18, 1973, abandoned.
This application Oct. 4, 1974, Ser. No. 512,829
Int. Cl.² H01L *23/02, 23/12*
U.S. Cl. 357—74 **10 Claims**



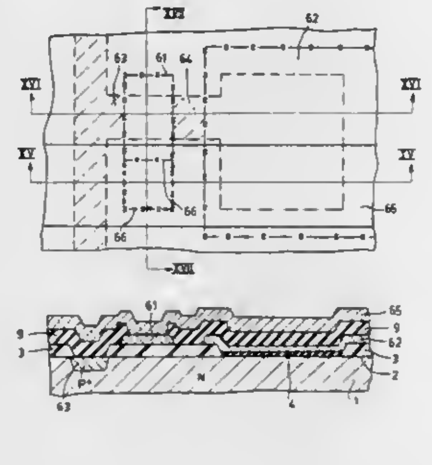
1. A semiconductor device comprising in combination:
- a thermally and electrically conducting base member;
- an electrically conducting planar member coupled to said base member, said planar member having an aperture therein;
- a thermally conducting, electrically insulating support for a semiconductor body, said support having upper and lower surfaces, said support being positioned in said aperture of said planar member, said lower surface being coupled to said base member, and said upper surface having a conductive coating thereon; and
- at least one lead for electrically coupling said conductive coating to said base member through said planar member, one end of said lead being coupled to said conductive coating and the other end of said lead being coupled to the surface of said planar member.

3,936,865
SEMICONDUCTOR DEVICES HAVING CONDUCTOR TRACKS AT DIFFERENT LEVELS AND INTERCONNECTIONS THEREBETWEEN

David Phythian Robinson, Vigo, England, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 26, 1974, Ser. No. 446,103
Claims priority, application United Kingdom, Feb. 28, 1973, 9713/73
Int. Cl.² H01L *29/40, 23/48, 29/46*
U.S. Cl. 357—68 **9 Claims**

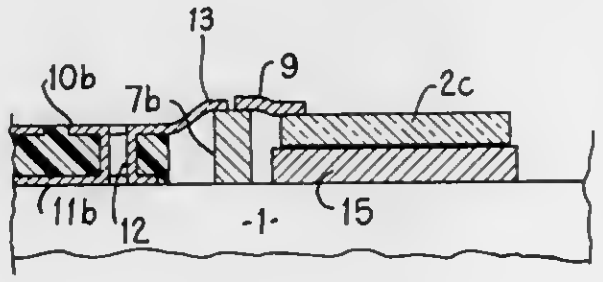
1. A semiconductor device comprising a semiconductor body comprising a first surface, a first insulating layer on said first surface of the semiconductor body, a first conductive connection layer comprising a strip portion and disposed on said first insulating layer, a second insulating layer overlying said first insulating layer and first conductive connection layer, and a second conductive connection layer situated on

said second insulating layer, said second insulating layer comprising an aperture that at least partly overlies said strip portion of said first conductive connection layer and has a cross-dimension d in a direction substantially at right angles to the longitudinal direction of said strip portion, a contact portion of said second conductive connection layer completely covering said aperture and contacting said strip portion of said first conductive connection layer via said aperture, wherein $x < d + 2t$ and x represents the width of said strip portion and t the alignment tolerance associated with the definition of said aperture with respect to said strip portion.



3,936,866
HEAT CONDUCTIVE MOUNTING AND CONNECTION OF SEMICONDUCTOR CHIPS IN MICRO-CIRCUITRY ON A SUBSTRATE

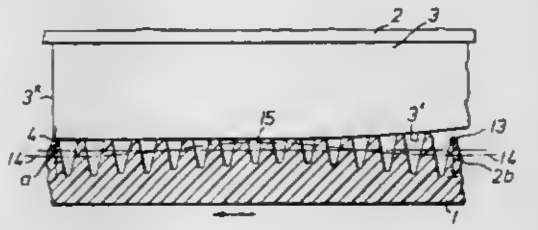
Norman J. Grossman, Malibu, and Jacques F. Linder, Palos Verdes Peninsula, both of Calif., assignors to Northrop Corporation, Los Angeles, Calif.
Filed June 14, 1974, Ser. No. 479,410
Int. Cl.² H01L *39/02*
U.S. Cl. 357—80 **4 Claims**



1. A heat conductive mounting for an integrated circuit chip in an electronic assembly, comprising:
- a. an electrical insulating and heat conducting substrate having a top surface with electrical circuitry thereon for connection to leads from an integrated circuit chip;
- b. an integrated circuit chip having one face with terminal pads thereon, said chip positioned terminal-face up above said top surface of said substrate, beam leads having two ends each, one of said ends connected respectively to said terminal pads, and the other ends of said beam leads extending outwardly beyond said chip;
- c. a solid pedestal of heat conductive metal electroformed directly onto said substrate top surface and bonded continuously to the lower face of said integrated circuit chip opposite said terminal face thereof; and
- d. means electrically bonding said other ends of said beam leads respectively to predetermined portions of said electrical circuitry.

3,936,867
RECORD CARRIER, METHOD OF PRODUCING THE RECORD CARRIER AND METHOD FOR REPRODUCING STORED SIGNAL THEREFROM

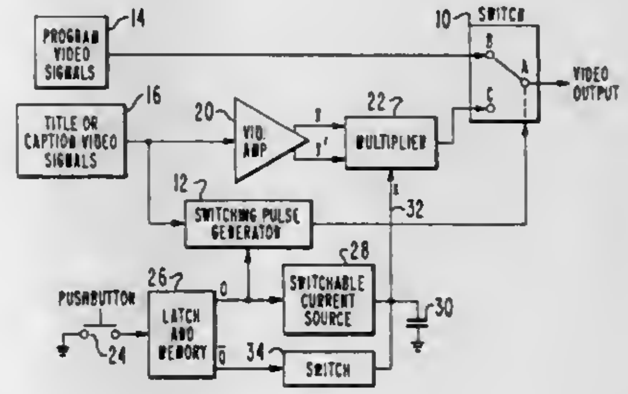
Hans-Joachim Thuy, and Gerhard Dickopp, both of Berlin, Germany, assignors to TED Bildplatten Aktiengesellschaft, AEG-Telefunken, TELDEC, Zug, Switzerland
Continuation of Ser. No. 155,910, June 23, 1971, abandoned.
This application Jan. 28, 1974, Ser. No. 437,047
Claims priority, application Germany, June 23, 1970, 2032269
Int. Cl.² H04N *9/00;* **G11B** *3/00, 3/70*
U.S. Cl. 358—4 **14 Claims**



1. A method of producing a record carrier having signals mechanically stored thereon for use with a pickup means which is maintained substantially immovable in the direction of a force acting to maintain the pickup means in engagement with the record carrier, comprising the steps of: applying to a flexible, compressible record carrier hill and dale undulations constituting a spatial representation of a broadband signal in the form of a frequency modulated carrier oscillation and at least one further signal of lower frequency than the frequency of the broadband carrier oscillation; and imparting an amplitude to the lower frequency signal such that when the stored signals are played back by the pickup means, which operates by compression of the hills of the hill and dale undulations, even the broadband signal hills which coincide with dales of the further signal contact the pickup means and are compressed thereby, while the broadband signal hills which coincide with hills of the further signal are compressed less than completely thereby.

3,936,868
TELEVISION STUDIO CONTROL APPARATUS

Laurence Joseph Thorpe, Marlton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 8, 1974, Ser. No. 449,451
Int. Cl.² H04N *5/22*
U.S. Cl. 358—22 **5 Claims**



1. Television studio control apparatus, comprising:
- a mixer having a pair of input terminals, a control terminal and an output terminal;
- means applying first video signals to one of said pair of input terminals;
- means applying second video signals to the other of said pair of input terminals;
- means applying switching signals to said control terminal substantially in time synchronism with the application of

said second video signals to said mixer for coupling said second video signals to said output terminal in the presence of said switching signal and for coupling said first video signals to said output terminal in the absence of said switching signals;

said second video signal applying means applying its signals to said other of said pair of input terminals at an amplitude level which varies linearly with time.

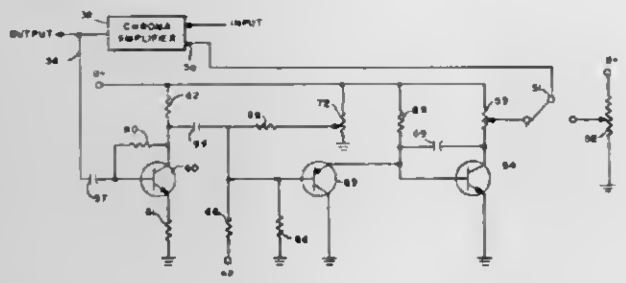
3,936,869
AUTOMATIC COLOR LEVEL CIRCUIT WITH PEAK DETECTOR

Howard F. Jirka, Mount Prospect, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Nov. 2, 1973, Ser. No. 412,220

Int. Cl.^{2} H04N *9/535*

U.S. Cl. 358—27 **7 Claims**



1. In combination: a source of signals subject to a substantial range of amplitude variation; means for amplifying said signals; sample-and-hold control means, including peak detector means, detecting portions of said signals having amplitudes exceeding a predetermined threshold level and supplying a control potential to said amplifying means for producing a compensating gain adjustment, said control means including a transistor normally operated near saturation but being subject to cutoff, said transistor presenting a relatively long time constant during conduction and a short time constant during cutoff.

3,936,870
AUTOMATIC GAIN CONTROL FOR COLOR TELEVISION CAMERA WITH REPRODUCED COLOR FIDELITY

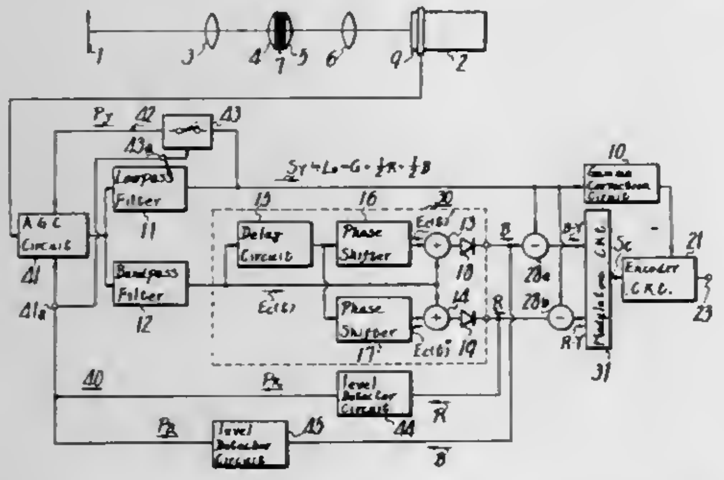
Takashi Nakamura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 28, 1974, Ser. No. 474,054

Claims priority, application Japan, May 29, 1973, 48-60066

Int. Cl.^{2} H04N *9/04*

U.S. Cl. 358—27 **7 Claims**



1. Color television camera apparatus, comprising an image pickup tube; color filter means for forming color separated images of a viewed object on said image pickup tube; means for deriving a composite color video signal from said image pickup tube representative of said color separated images, said composite signal including a luminance signal and a chrominance signal, the latter being comprised of plural color components; means for separating said composite color video signal into said luminance and chrominance signals, respectively; level control means for controlling the magnitude of said composite color video signal in response to said luminance signal when none of said color components of said chrominance signal exceeds a predetermined level; and means for controlling said level control means with a different signal when a color component of said chrominance signal exceeds said predetermined level.

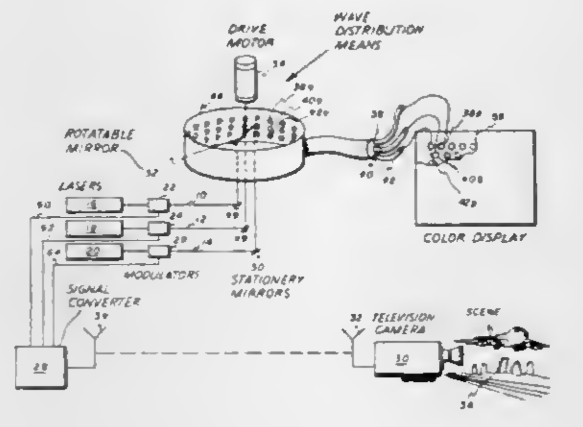
3,936,871
MULTI-WAVELENGTH DISPLAY SYSTEM

Windell N. Mohon, Winter Park, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 16, 1974, Ser. No. 470,415

Int. Cl.^{2} H04N *9/12, 1/02*

U.S. Cl. 358—56 **6 Claims**



1. A multi-wavelength display system comprising

a. a plurality of electro-magnetic radiation source means, each of different wavelength and all within the frequency range of 10^9 to 10^{17} cycles per second;

b. an arrangement of groups of waveguides having input and output ends, one group for each radiation source;

c. wave distribution means connected to pass radiation waves from each of said source means sequentially to the input ends of an associated group of said waveguides;

d. support means and means forming on said support a raster type display formed of said output ends of said waveguides arranged in a pattern to provide horizontal and vertical scan from said wave distribution means;

e. analog data input means for supplying voltage signals representative of an image and modulator means for receiving said input electrical signals to vary the intensity of radiation beam from each radiation source to reproduce on said display said image in radiation source wavelengths;

said wave distribution means including

f. means holding said input ends of each group of waveguides in sequential circular arrangement inwardly directed toward a common axial center, each group in a plane parallel to its adjacent group;

g. reflector means including stationary reflectors and a rotatable reflector;

h. said stationary reflectors being positioned each to pass waves from as associated radiation source to said rotatable reflector and said rotatable reflector being positioned, with respect to said wavelength input ends, centrally and concentric therewith to redirect radiation rays from each of said radiation source to an associated group of said input ends of said waveguide groups in sequential manner as said rotatable reflector is rotated; and

i. means for rotating said rotatable reflector at a speed selected to provide a desired raster scan rate.

3,936,872
VIDEO SIGNAL REPRODUCING DEVICE WITH ELECTRON BEAM SCANNING VELOCITY MODULATION

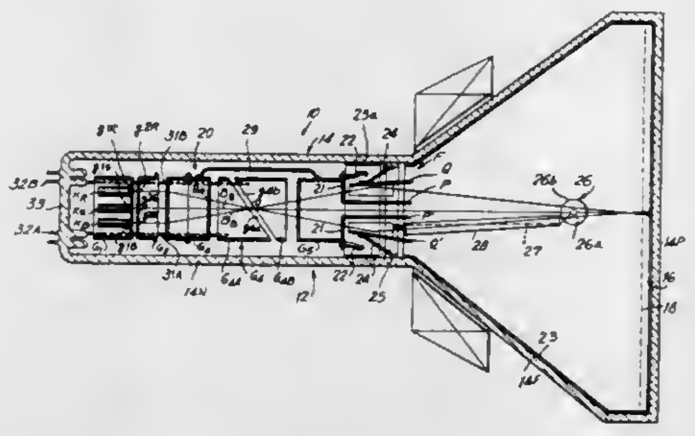
Senri Miyaoka, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 17, 1974, Ser. No. 515,665

Claims priority, application Japan, Dec. 21, 1973, 48-3433; June 4, 1974, 49-64815

Int. Cl.^{2} H04N 9/16

U.S. Cl. 358—64 **17 Claims**



1. In a video signal reproducing device comprising a cathode ray tube having a phosphor screen; an electron gun in said tube including beam producing means directing at least one electron beam along the axis of said tube toward said screen for impingement on the latter, and main electron lens means disposed between said beam producing means and said screen for focusing each said beam at said screen, said main electron lens means having at least two tubular electrodes arranged coaxially in succession along said axis of the tube for the passage of each said beam through said electrodes with a relatively low potential being applied to one of said electrodes and a relatively high potential being applied to the other of said electrodes for producing an electrical field which effects said focusing of each said beam; and deflection yoke means on said tube between said main electron lens means and said screen for causing each said beam to scan said screen in line-scanning and vertical directions, respectively: the improvement of said one tubular electrode which is maintained at said relatively low potential being formed in two parts which are axially separated along a vertical plane that is inclined relative to said axis of the tube, and circuit means for applying across said two parts of said one tubular electrode a control signal which varies the scanning speed of each said beam in said line-scanning direction in response to transient changes in the brightness of the video signal being reproduced.

3,936,873
CONVEYOR BELT SYSTEM

Stig Allan Junior Alfredsson, Sandviken, Sweden, assignor to Sandvik Aktiebolag by change of name from Sandvikens, Jernverks Aktiebolag, Sandviken, Sweden

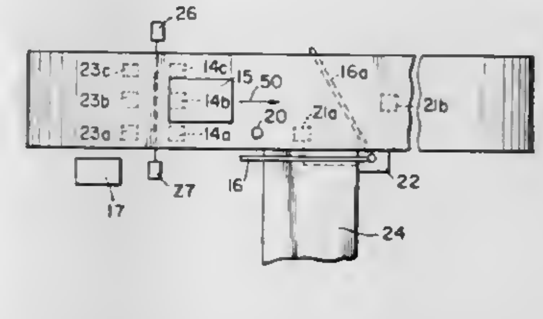
Division of Ser. No. 876,967, Nov. 14, 1969, Pat. No. 3,666,080. This application May 26, 1972, Ser. No. 257,451

Claims priority, application Sweden, Apr. 28, 1969, 5929/69. The portion of the term of this patent subsequent to May 30, 1989, has been disclaimed.

Int. Cl.^{2} G11B *5/00*

U.S. Cl. 360—1 **8 Claims**

1. In control means for a steel belt conveyor wherein the steel belt is of sheet steel and has top and bottom surfaces and extends along a conveyor run which carries load units to a plurality of discharge stations, the combination of, magnetizing means to produce magnetized signal portions in said belt in the form of magnetized spots, each of said magnetized signal portions comprising the entire portion of the belt between two opposite coextensive discrete areas of the belt surfaces at a predetermined distance from one edge of the belt, said magnetizing means being operative to substantially saturate each of said signal portions between its discrete surface areas with flux perpendicular to said belt surfaces and to thereby produce a magnetic pole of single-polarity throughout said signal portion, a plurality of detector means each of which is positioned adjacent said bottom surface of the belt at a zone along the belt path relative to the position of a selected discharge station, a plurality of cores of magnetizable material



positioned respectively below each of said detector means opposite said bottom surface and extending therefrom away from said bottom surface whereby said core aids in concentrating magnetic flux paths through said detector means, control means responsive to the detection of a magnetized signal portion by each of said detector means, and means to discharge load units from said belt at each of said selected discharge stations in response to such detection by its detector means and under the control of said control means.

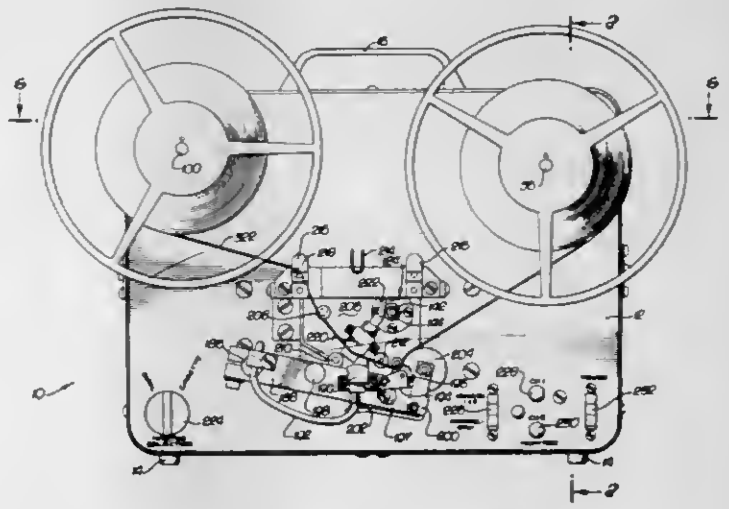
3,936,874
MULTI-FORMAT TAPE DUPLICATOR

Norman G. Dusanek, Tarzana, Calif., assignor to Glen Miller, Panorama City, Calif.

Filed Oct. 11, 1973, Ser. No. 405,672

Int. Cl.^{2} G11B *5/86*

U.S. Cl. 360—15 **2 Claims**



1. A tape duplicator capable of duplicating master tape in reel form as well as in cassette form onto a blank cassette tape and a blank reel tape simultaneously at relatively high speeds, comprising:

single drive means for advancing said tapes over a playback head and recording heads, respectively;

single capstan means having different diameters for producing a different speed for said cassette tape from the speed for said reel tape;

audio amplifier means connected between said playback head and said recording heads, said audio amplifier means having an automatic volume control circuit comprising:

input transistor means having a pre-determined base-emitter voltage;

circuit means for providing a pre-determined volume level on said blank tapes for duplicating a master tape whose recorded volume level is below said pre-determined volume level and for duplicating a master tape whose recorded volume level is above said pre-determined volume level; and

circuit means including a field effect transistor for maintaining constant amplifier gain while the signal input to said automatic volume control circuit remains insufficient to overcome said pre-determined base-emitter voltage of said input transistor means, thereby preventing a change in the amplifier gain until after receipt of a signal input sufficient to overcome said pre-determined base-emitter voltage of said input transistor means,

whereby all of said tapes move simultaneously and in synchronization at all times.

3,936,875

METHOD OF ADDRESSING MAGNETIC MEMORY

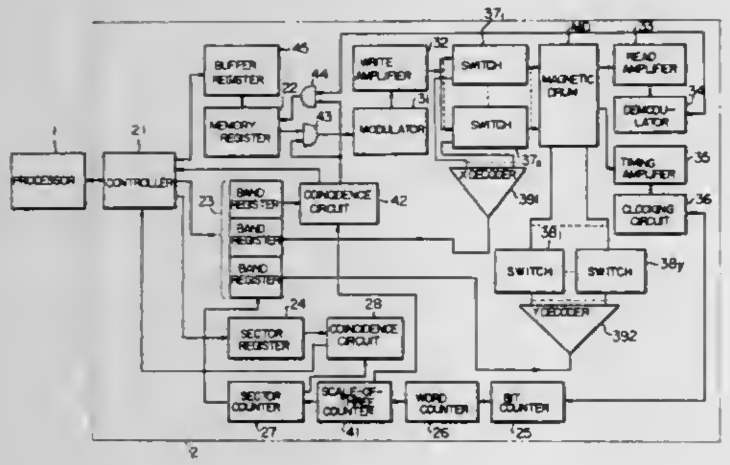
Yukitaka Hayashi, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Feb. 2, 1973, Ser. No. 329,093

Claims priority, application Japan, Feb. 4, 1972, 47-12218

Int. Cl.^{2} G11B *5/09*

U.S. Cl. 360—48 **15 Claims**



1. A method comprising the steps of providing a sector type of magnetic memory having thereon 2^q tracks (q = positive integer), forming each of said tracks with M bands ($M > 2$) with each band consisting of 2^p sectors (p = positive integer), and addressing said bands and said sectors to address the magnetic memory.

3,936,876

ROTATABLE DATA STORAGE APPARATUS WITH TRACK SELECTION ACTUATOR HAVING MULTIPLE VELOCITIES

John R. Taylor, Eastleigh, England, assignor to International Business Machines Corporation, Armonk, N.Y.

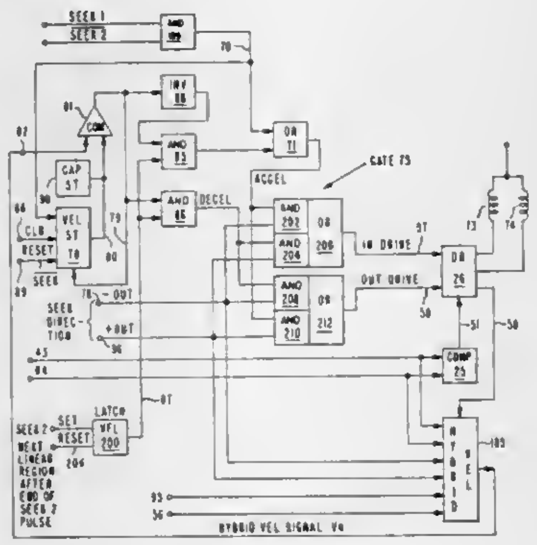
Filed Jan. 21, 1974, Ser. No. 435,140

Claims priority, application United Kingdom, Jan. 31, 1973, 4865/73

Int. Cl.^{2} G11B *21/08, 5/55*

U.S. Cl. 360—78 **7 Claims**

1. Data storage apparatus comprising a rotatable storage medium having a number of data tracks thereon, a data transducer moveable over the data tracks, an actuator for so moving the data transducer, means supplying signals to said actuator to cause the actuator to accelerate said transducer over a first predetermined distance, means supplying control signals to said actuator to move said transducer at a substantially uniform velocity over a second predetermined distance with the uniform velocity being equal or substantially equal to the velocity attained by said transducer as a result of the acceleration, means for retarding said transducer over the remaining distance until said transducer is over its destination track on said rotatable storage medium, means for determining the instantaneous velocity value of said data transducer as it moves, and means for storing a value representative of the velocity attained by said transducer as a result of the acceleration, said means supplying control signals to said actuator to move said transducer at a substantially uniform velocity including a compare circuit for comparing the instantaneous velocity value of said data transducer with said stored value and means connecting said compare circuit with said actuator so as to slow and hasten the movement of the actuator with different outputs of said compare circuit depending on the velocity corresponding to said stored value and the instantaneous velocity of the actuator, said means for supplying control signals to move said transducer at a substantially uniform velocity including a too slow logic gate and a too fast logic gate which respectively accelerate and retard said actuator and said transducer and each of which is connected with the output of said compare circuit so that, depending on whether the output of the compare circuit is up or down, the appropriate logic gate is energized to control the speed of the actuator and transducer and maintain the speed at said substantially uniform velocity.



5. Data storage apparatus comprising a rotatable storage medium having a number of data tracks thereon, a data transducer moveable over the data tracks, an actuator for moving the data transducer, means for determining the instantaneous velocity value of said data transducer as it moves, means for storing a value representative of a desired velocity of said transducer, means for controlling the velocity of said transducer including a compare circuit for comparing the instantaneous velocity value of said data transducer with said stored value, and means connecting said compare circuit with said actuator so as to slow and hasten the movement of the transducer with different outputs of the compare circuit depending on the velocity corresponding to said stored value and the instantaneous velocity value of the transducer and including a too slow logic gate and a too fast logic gate which respectively accelerate and retard said actuator and said transducer and each of which is connected with the output of said compare circuit so that depending on whether the output of the compare circuit is up or down the appropriate logic gate is energized to control the speed of the actuator and transducer, said actuator for moving the data transducer including a coil carrying a current in order to provide movement of the data transducer, said means for determining the instantaneous velocity value of said data transducer including means for providing a position error signal which is proportional to the position of said transducer as said transducer crosses said tracks and means which is subject to said position error signal and is subject to the current through said coil for producing said instantaneous velocity value depending upon both said position error signal and the current flowing in said coil.

3,936,877

TAPE TRANSPORT APPARATUS FOR CASSETTE TYPE TAPE RECORDER

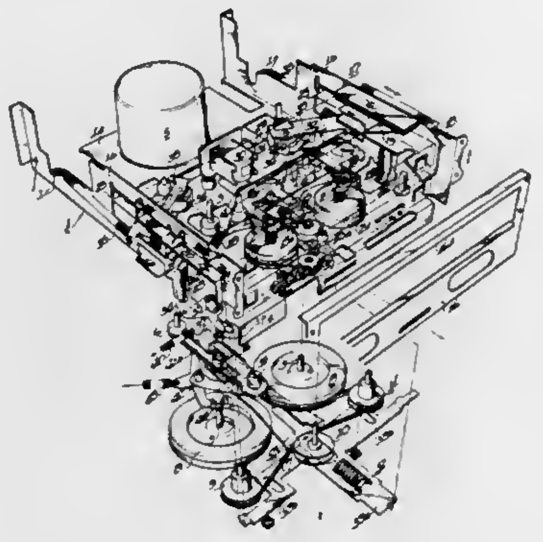
Yoshio Maruyama; Yoshihiro Magata; Akihiro Fushimi; Yoshiharu Ueki, and Katsuhisa Shimizu, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 11, 1974, Ser. No. 450,265

Claims priority, application Japan, Mar. 9, 1973, 48-29552[U]

Int. Cl.^{2} G11B *23/04, 15/43, 15/28*

U.S. Cl. 360—96 **2 Claims**



1. A tape transport apparatus for cassette type tape recorder comprising:

a. a lift deck means engaging a tape cassette, which is movable between a first position wherein the cassette is retained in a stationary position, and a second position which allows insertion or removal of the cassette from the tape recorder;

b. means to move said lift deck means in a first direction from said first position to an intermediate position and in a second direction perpendicular to said first direction from said intermediate position to said second position;

c. an electric motor for rotating a capstan and at least one reel driving spindle in the forward or backward direction;

d. a carriage means supporting a magnetic transducer head means, said carriage movable between a first position wherein the transducer head is in contact with the tape in a cassette and a second position displaced from said first position by a predetermined distance;

e. a pinch roller adapted to engage said capstan when said carriage means is in said first position;

f. means to control said electric motor so as to rotate the supply reel in the backward or rewind direction when the lift deck means is placed in the first position;

g. means for detecting the rotation of a take-up reel driving spindle in the backward direction so as to switch the rotating direction of said electric motor, and

h. means for detecting the starting of rotation of said capstan in the forward direction to shift said carriage means from said second position to said first position.

3,936,878

DISC INTERFACE LOCATION

Walter R. Chrysler, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,601

Int. Cl.^{2} G11B *17/22, 5/016, 25/04*

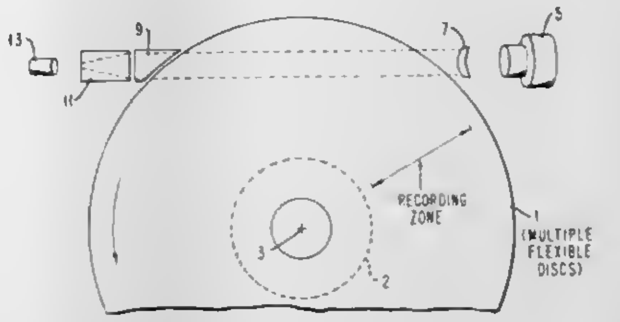
U.S. Cl. 360—98 **9 Claims**

1. In a rotating disc storage file comprising multiple spaced flexible discs and access position sensing apparatus movable relative to edges of said discs for detecting spaces between said discs and for providing signals which can be used to accurately count said spaces, improved sensing apparatus comprising:

a source of light for illuminating said spaces;

a pair of photocells; and

a pair of offset fiber optic shaping arrays movably positioned between said discs and said photocells for conveying light from said spaces to respective said photocells in a form congruent to the shape of said photocells; said arrays having line-shaped light receiving ends arranged in parallel lines offset from each other in the direction of the axis of rotation of the discs by an offset spacing distance less than the width of a disc space.



3,936,879

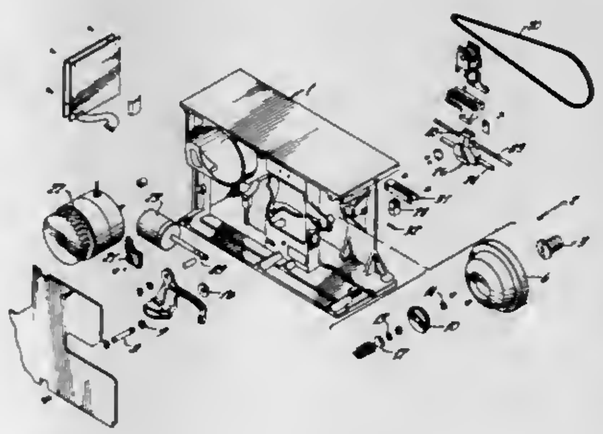
CARTRIDGE TYPE PLAINT DISC APPARATUS

Kenneth Allan Gustafson, Villa Park, Calif., assignor to Century Data Systems, Inc., Anaheim, Calif.

Filed Mar. 16, 1973, Ser. No. 342,167

Int. Cl.^{2} G11B *15/16, 21/08*

U.S. Cl. 360—99 **1 Claim**



1. In a pliant disk recording system of the type utilizing a rigid cartridge for retaining the disk, the improvement which comprises:

a stepping motor having helically cut armature extension;

a carriage adapted to translate in accordance with the rotation of said helically cut armature;

a read/write straddle erase head attached to siad carriage adjacent to the recording surface of said pliant disk;

means for actuating said stepping motor in accordance with external commands whereby said head may be incrementally moved from one track positon to another;

means for detecting the limit positions of carriage travel, said means comprising:

a tower having a photelectric sensor, said tower to be positioned adjacent to location at the end of carriage travel whereby the presence of the carriage will interrupt light impinging on said photoelectric sensor.

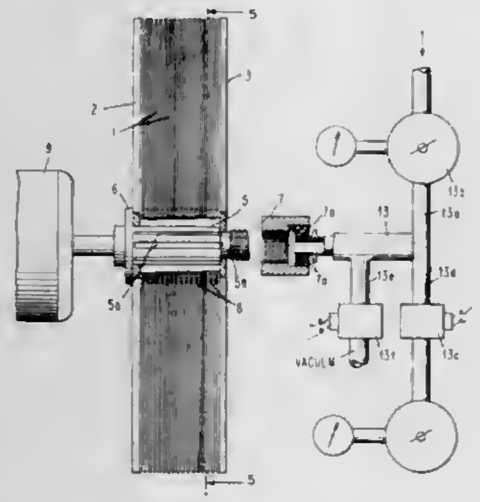
3,936,880
BISTABLE DEFLECTION SEPARATION OF FLEXIBLE DISKS

Bernard W. McGinnis, Poughkeepsie; Anthony W. Orlando, Highland, and James A. Weidenhammer, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 1, 1974, Ser. No. 484,830

Int. Cl.² G11B *5/012, 5/60, 17/22, 21/08*

U.S. Cl. 360—99 **45 Claims**



1. In a data storage device including multiple centrally restrained flexible storage disks arranged in a stack for continuous rotation about a common axis, with fluid-permeable open spaces between recording surfaces of successive disks and with the disks bendable between their centers and peripheries while rotating to effect stable expansion and contraction of any selected space between recording surfaces of successive said disks suitable for providing random selective external transducing access to surfaces adjacent the selected space, the improvement comprising:

pressure control apparatus for establishing a first fluid pressure condition, in a predetermined pressure range, in said spaces between said disks; said condition having the effect of allowing the rotation of said disks to be stabilized uniquely in discrete first and second rotational configurations characterized in that the disks are all evenly spaced and inaccessible in said first configuration and unevenly separated at one selected space in said second configuration rendering said selected space accessible to receive an external transducer; said condition characterized in that it does not permit the rotational positions of the disks to stabilize in configurations of separation intermediate said first and second configurations and thereby renders the disks subject to expansion manipulations to said second configuration by small transiently applied forces.

3,936,881
AIR DAMPED HEAD SUSPENSION

Anthony W. Orlando, Highland, and James A. Weidenhammer, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 1, 1974, Ser. No. 484,828

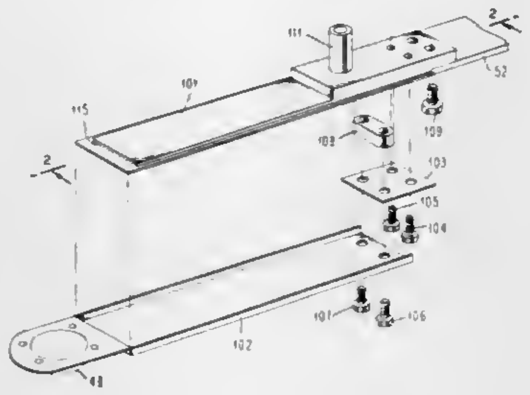
Int. Cl.² G11B *5/60, 17/32, 21/20*

U.S. Cl. 360—103 **7 Claims**

1. In a flexible disk magnetic recording device wherein a stack of flexible disks are mounted for rotation on a spindle, said device including means for placing a transducing head into proper compliant transducing relationship with any selected track on any selected disk surface, an improved head suspension assembly for use with a source of gas under elevated pressure relative to the external environment of said assembly, including:

damping means for preventing oscillation of the transducing head over all frequencies of oscillation induced in said head from following variations in the plane of disk rotation, wherein said damping means includes a gaseous filled chamber means receiving gas under elevated pressure from said source, and an escape path means connected to said chamber means for providing a constant gas flow resistance to the escape of gas from said chamber means over a transducing working range of axial head movement to provide for a substantially constant mating force between head and disk surface throughout said working range,

whereby the axial movements of said head in following variations in the plane of disk rotation are damped in a manner not dependent upon the amplitude or frequency of said variations.



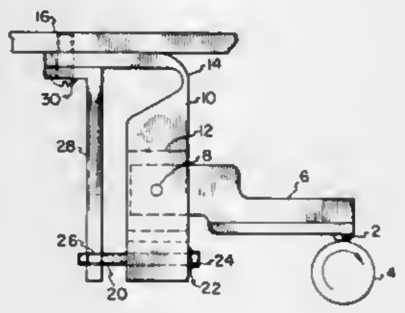
3,936,882
ADJUSTABLE MOUNTING ARRANGEMENT FOR RECORDING HEAD

Charles E. Lane, III, Meadowbrook, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 27, 1974, Ser. No. 500,870

Int. Cl.² G11B *5/56, 5/48*

U.S. Cl. 360—104 **5 Claims**



1. A mounting device for a transducer head comprising:

a lever having means for mounting a transducer head at one end thereof and a transverse hole for passing a pivot pin therethrough at the other end thereof,

a support block having a bow-tie shaped slot passing therethrough with the narrowed portion of the slot having confronting faces spaced apart a distance sufficient to allow the end of said lever having said transverse hole to pass therebetween, said lever having a predetermined portion of the end containing said transverse hole located between said confronting faces,

a pivot pin hole passing through said support block in alignment with said confronting faces, and

a pivot pin located in said pivot pin hole in said support block and extending across said narrowed portion of said bow-tie shaped slot and through said transverse hole in said lever

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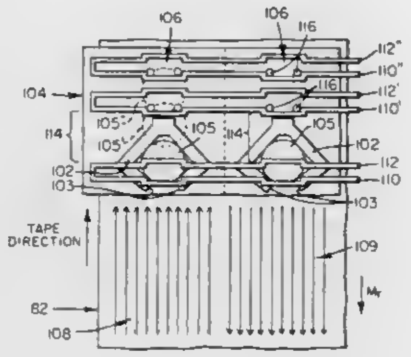
3,936,883
MAGNETIC BUBBLE READ/WRITE HEAD

Clarence Herbert Heckler, Jr., Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Dec. 27, 1974, Ser. No. 527,691

Int. Cl.² G11B *5/12;* **B11C** *11/14;* **G11C** *19/00*

U.S. Cl. 360—110 **32 Claims**



1. A bubble write head for recording information in a magnetic medium, and including a normal bias field for biasing the head to a condition which stably supports the generation and storage of single wall domains, the head comprising; write bubble platelet means disposed in recording position relative to the recording medium for selectively generating single wall magnetic domains commensurate with the information being recorded, which domains generate stray fields which are insufficient to cause interaction with the magnetic medium;

said bubble platelet means including integral bubble expander means for expanding the existing insufficient domains to a size sufficient to apply a write magnetic field to the medium only upon expansion of the domains, thereby to perform the write process.

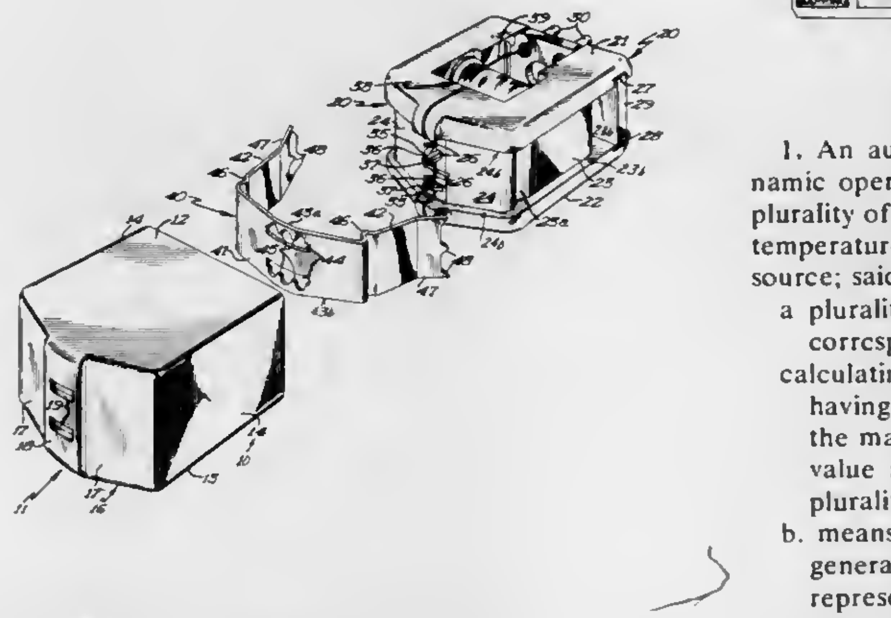
3,936,884
MAGNETIC TAPE HEAD WITH CLAMPED CORE HOLDERS

John W. Hogan, Golden Valley, Minn., assignor to MagTech Industries, Inc., Minneapolis, Minn.

Filed July 3, 1974, Ser. No. 485,541

Int. Cl.² G11B *5/10, 5/28*

U.S. Cl. 360—125 **8 Claims**



1. A magnetic tape head comprised of

a magnetic core including a pair of magnetic core elements, each core element having a tip,

a pair of similar core holder members formed of nonconductive material and each member engaging and supporting said magnetic core elements,

a generally U-shaped resilient clip formed of a conductive material and engaging and clamping said core holders in abutting engagement, and urging the tips of said core elements towards each other to form an electromagnetic circuit, said clip including a bight portion and a pair of symmetrical legs integral therewith diverging outwardly therefrom, said bight portion engaging said core elements adjacent said tips,

a housing formed of a conductive material and having an open end and a closed end, an opening in said closed end, said core holder being positioned interiorly of said housing so that said core tips project exteriorly through the opening in the closed end thereof, the legs of said clip having outer ends engaged by the inner surface of said housing to ground said magnetic cores and to urge the legs inwardly with scissors action to thereby increase the clamping action on the core holders and to further urge the tips of the magnetic core towards each other.

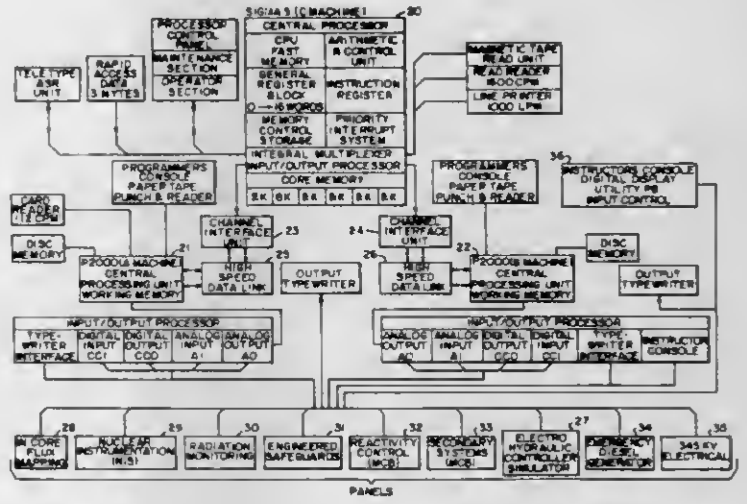
3,936,885
TRAINING SIMULATOR AND METHOD FOR NUCLEAR POWER PLANT HEATER AND NON-LINEAR MODELING

Boris A. Mutafelija, Allison Park, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 23, 1973, Ser. No. 335,183

Int. Cl. G06f *15/06, 15/56;* **G09b** *9/00*

U.S. Cl. 444—1 **20 Claims**



1. An automated training simulator for the real-time dynamic operation of a steam generating plant that includes a plurality of interconnected heat exchangers for increasing the temperature of a fluid by using steam from a predetermined source; said simulator comprising

a plurality of manually operable command devices each corresponding to a distinct plant control device;

calculating means including sequence controlling means having the following components; (a) means governed by the manually operable devices to generate a single data value relating to physical values for the representative plurality of interconnected heat exchangers,

b. means governed by the single generated data value to generate an output data value relating to each of the representative plurality of heat exchangers; and

indicating means responsive to the output data values to monitor the operation of the representative plurality of heat exchangers.

DESIGN PATENTS

GRANTED FEBRUARY 3, 1976

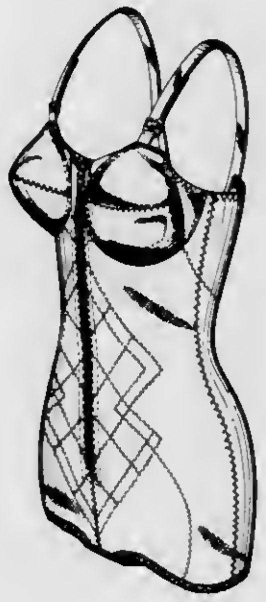
ERRATA

For CLASS	See PATENT NO.
083-012. R	238,717

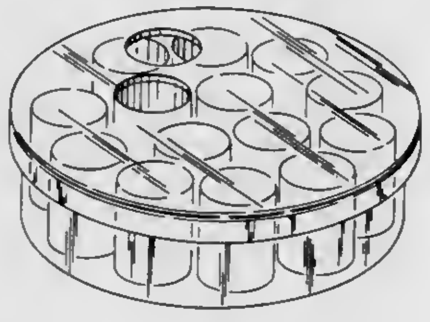
DESIGNS

FEBRUARY 3, 1976

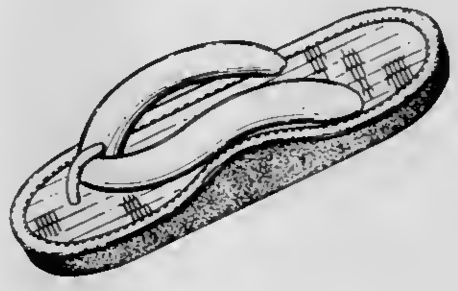
238,623
FOUNDATION GARMENT
Jack J. Lo Cascio, Bayonne, N.J., assignor to
Rapid-American Corporation, New York, N.Y.
Filed May 2, 1974, Ser. No. 466,332
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—3



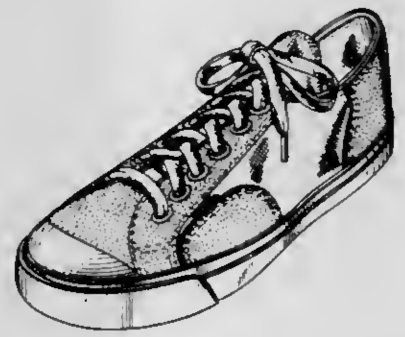
238,624
BOBBIN CASE
Margaret A. McArthur, 4289 Lake Road,
Youngstown, Ohio 44514
Filed Mar. 29, 1974, Ser. No. 456,214
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—19 B



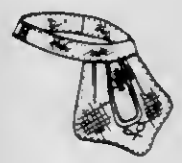
238,625
THONG SANDAL
Harold D. York, Jr., 3952 Bluff St.,
Torrance, Calif. 90505
Filed Nov. 14, 1974, Ser. No. 523,583
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—270



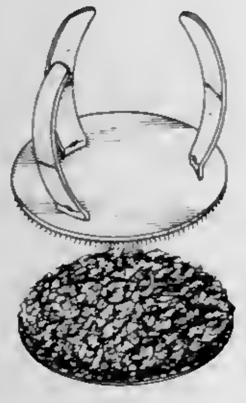
238,626
SPORT SHOE
Jonas Senter, Greenwich, Conn., assignor to
CITC Industries Inc., New York, N.Y.
Filed Sept. 11, 1974, Ser. No. 505,201
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



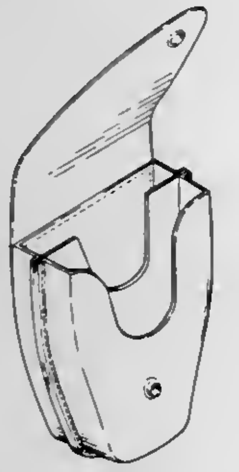
238,627
COMBINED BELT AND POCKET
Ruth G. Lewis, 1721 Dorchester Drive,
Oklahoma City, Okla. 73120
Filed Dec. 27, 1973, Ser. No. 428,704
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—381



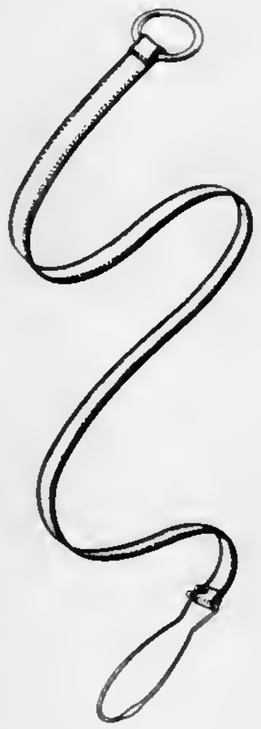
238,628
TENNIS BALL HOLDER ATTACHABLE TO A GARMENT
Walter L. Davis, 3158 E. Sonthcross,
San Antonio, Tex. 78223
Filed Feb. 26, 1974, Ser. No. 445,974
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D2—400



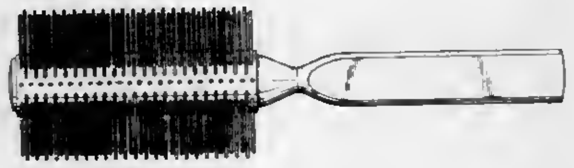
238,629
DOUBLE HANDCUFF CASE
Paul E. Tibbetts, Chula Vista, Calif.
(2920 Ares Way, San Diego, Calif. 92139)
Filed Aug. 2, 1974, Ser. No. 494,199
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—400



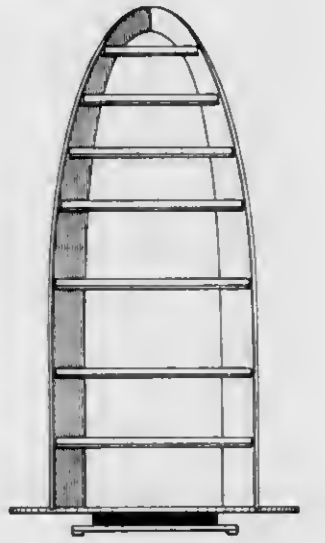
238,630
ZIPPER PULLER
Robert Grant Ammons, Sr., 1533 Northwick Road,
Baltimore, Md. 21218
Filed Sept. 11, 1974, Ser. No. 505,094
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—415



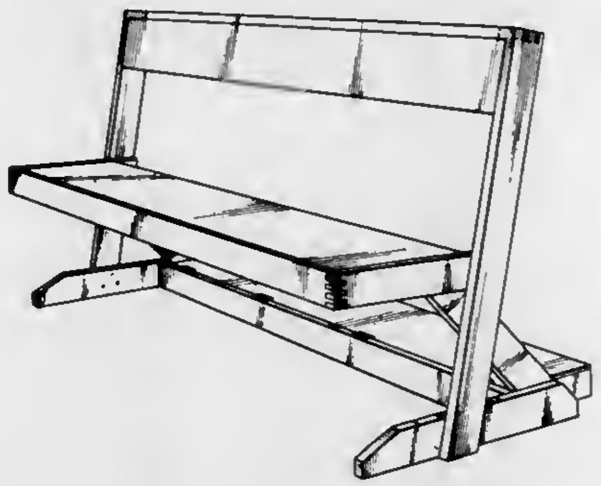
238,631
HAIR BRUSH
Harold Leighton, Apt. 15, St. John's Wood Court, St. John's Wood Road, London N.W. 8, England
Filed Aug. 3, 1973, Ser. No. 385,253
Claims priority, application Great Britain Feb. 8, 1973
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—31



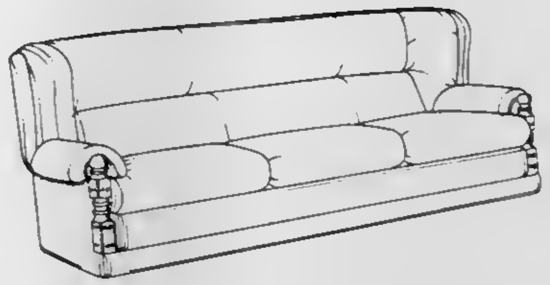
238,632
DISPLAY STAND
Gary Wilding, Chicago, Ill., assignor to Richton International Corporation, New York, N.Y.
Filed May 13, 1974, Ser. No. 469,334
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—23



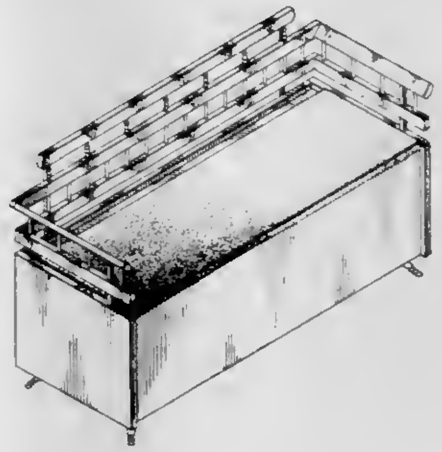
238,633
PEW
Frederick Clive Hunter, "St. Claire," Twyford Gardens, Twyford, Banbury, England
Filed Jan. 31, 1974, Ser. No. 438,454
Claims priority, application Great Britain Aug. 6, 1973
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—59



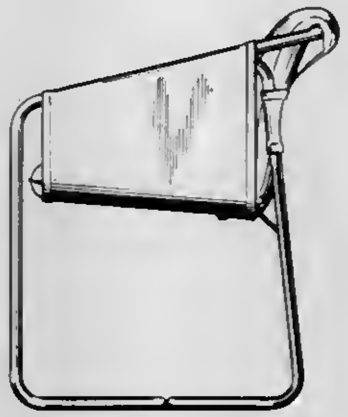
238,634
SEAT
Thomas Winrow, Naperville, Ill., assignor to Futorian Corporation, Amsterdam, N.Y.
Filed July 23, 1973, Ser. No. 382,088
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



238,635
COMBINED BENCH AND STORAGE CHEST
James F. Curtin, 16044 E. Queenside Drive,
Covina, Calif. 91722
Filed Oct. 2, 1974, Ser. No. 511,168
Term of patent 14 years
Int. Cl. D6—*01, 04*
U.S. Cl. D6—64



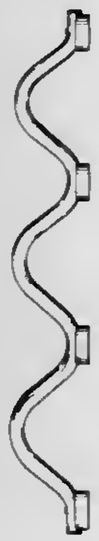
238,636
CHAIR
Ogden R. Olson and Roy E. Knoedler, Columbus, Ind., assignors to Cosco, Inc., Columbus, Ind.
Filed July 29, 1974, Ser. No. 492,505
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



238,637

GRAB BAR

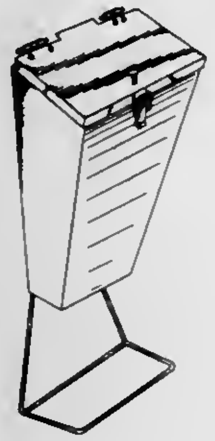
Hans Arne Valentin Johansson, Eslov, Sweden, assignor to John Richard Johansson, Eslov, Sweden
Filed May 16, 1974, Ser. No. 470,456
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—86



238,638

DISPENSING CONTAINER

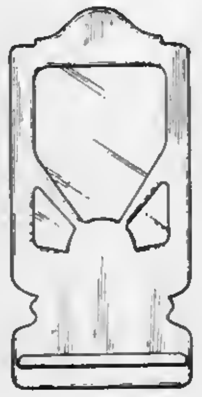
Thomas C. Fischer, 238 E. Westplains, Gretna, Nebr. 68028
Filed May 6, 1974, Ser. No. 467,069
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—95



238,639

COMBINED MIRROR AND SHELF

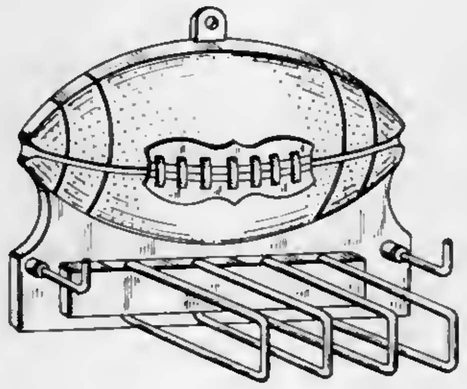
John W. Johnson, 626 E. Gutierrez St., Santa Barbara, Calif. 93101
Filed Dec. 9, 1974, Ser. No. 530,764
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—132



238,640

WALL MOUNTABLE RACK

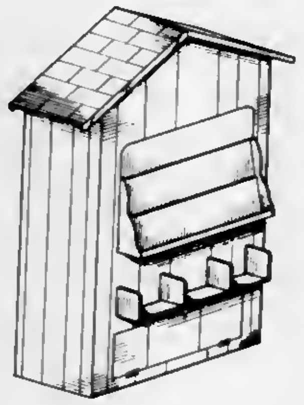
Jeffrey Snyder, 5225 Collins Ave., Miami Beach, Fla. 33140
Filed July 3, 1973, Ser. No. 376,150
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—114



238,641

LITERATURE DISPLAY RACK

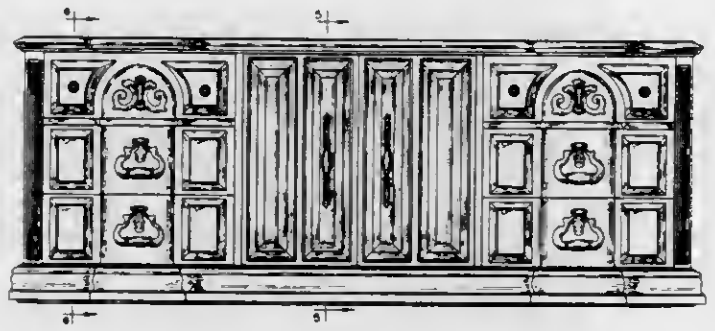
Kenneth Edelson, Caldwell, N.J., assignor to Children's House, Inc., Caldwell, N.J.
Filed Feb. 28, 1974, Ser. No. 446,614
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



238,642

CABINET OR THE LIKE

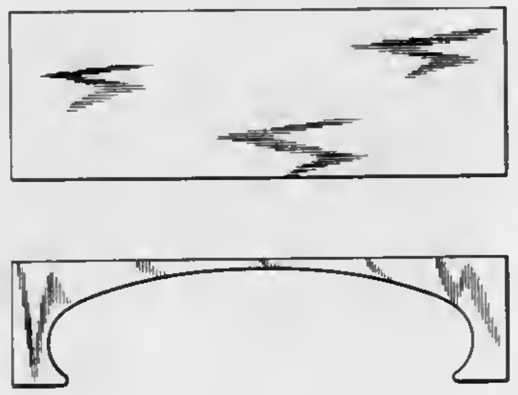
Huey T. Keller, High Point, N.C., assignor to Hooker Furniture Corporation
Filed Apr. 17, 1972, Ser. No. 245,028
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—164



238,643

TABLE

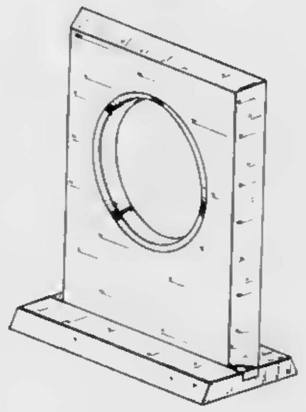
Elliot J. Binzen, 45 W. 11th St., New York, N.Y. 10011
Filed Nov. 27, 1972, Ser. No. 309,951
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



238,644

COIN STAND

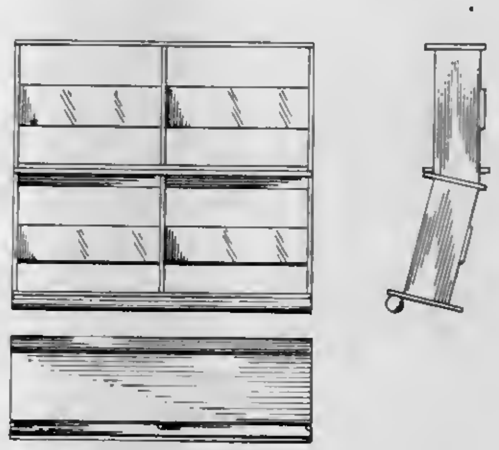
Jerome J. Pasquarella, West Chester, Pa., assignor to Franklin Mint Corporation, Franklin Center, Pa.
Filed July 27, 1972, Ser. No. 275,643
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—181



238,645

RACK

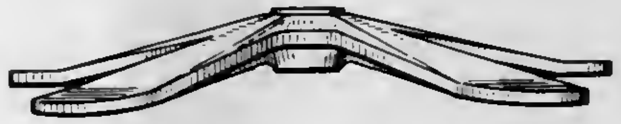
William M. Becker, 5915 Onondaga Road, Bethesda, Md. 20016
Filed Sept. 27, 1974, Ser. No. 509,933
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—184



238,646

FURNITURE BASE

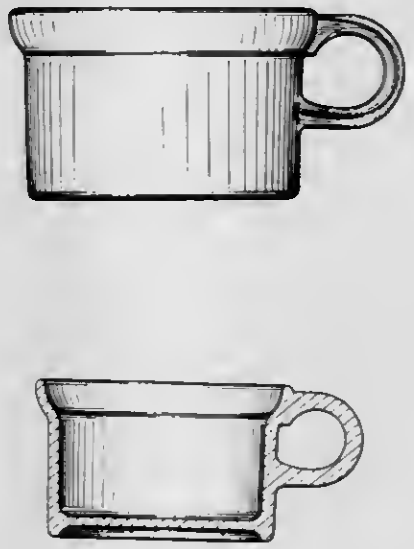
Svante Schoblom, Pipplarp, S-573 00 Tranas, Sweden
Filed July 16, 1974, Ser. No. 488,977
Claims priority, application Sweden Jan. 21, 1974
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196



238,647

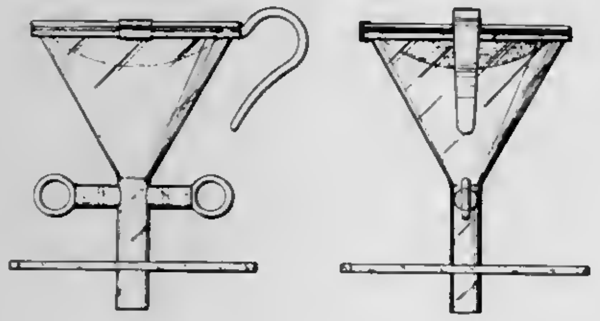
CUP

Gerald Gulotta, New City, N.Y., assignor to Block China Corporation, New York, N.Y.
Filed Dec. 20, 1973, Ser. No. 426,896
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—9



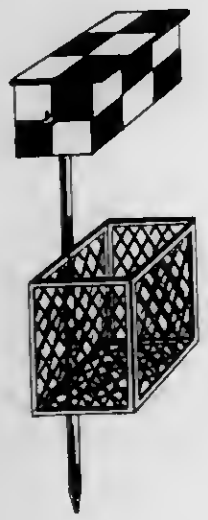
238,648
COMBINED STRAINER AND FAT SEPARATOR FUNNEL

Elizabeth S. Jablecki, 1422 Damon Court SE.,
Rochester, Minn. 55901
Filed Apr. 29, 1975, Ser. No. 572,744
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—68



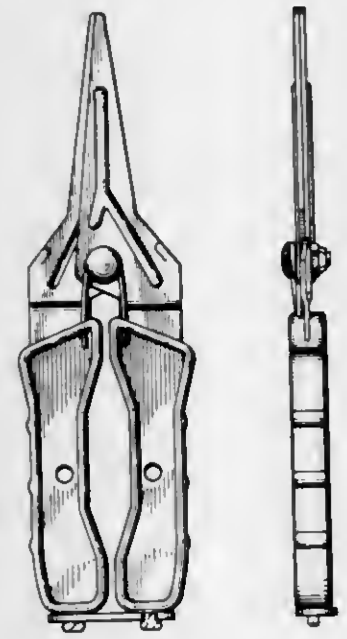
238,649
COMBINED TOWEL DISPENSER AND TRASH RECEPTACLE

William F. Martin, 350 Stonycroft Road,
Ridgewood, N.J. 07450
Filed Sept. 20, 1974, Ser. No. 507,736
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—191



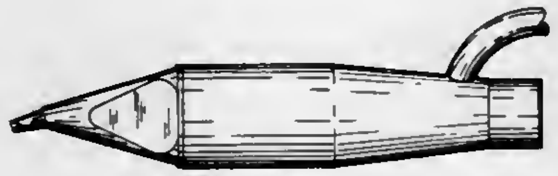
238,650
CUTTING IMPLEMENT

Jeffrey M. Koblick, New Brighton, Minn., assignor to K-Tel International, Inc.
Filed Nov. 29, 1974, Ser. No. 528,042
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—5



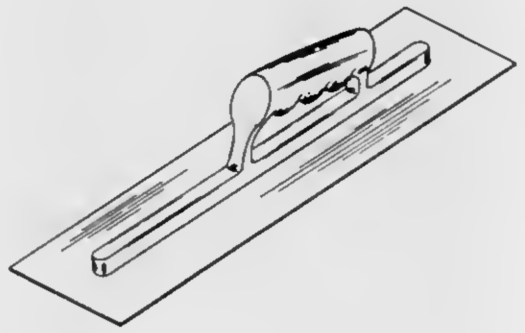
238,651
AIR BLOWING-VACUUMING DESOLDERING APPLIANCE OR THE LIKE

William S. Fortune, 14250 Dearborn St.,
Panorama City, Calif. 91402
Filed Nov. 27, 1974, Ser. No. 527,645
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



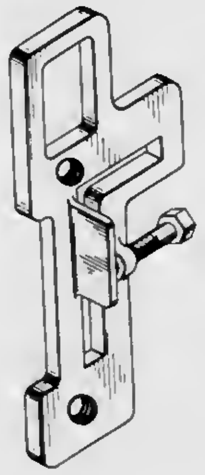
238,652
CONCRETE FINISHING TOOL

William S. Halvala and Paul E. Griggs, Wichita, Kans., assignors to Halvala Concrete Tools, Inc., Wichita, Kans.
Filed Jan. 13, 1975, Ser. No. 540,641
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—45



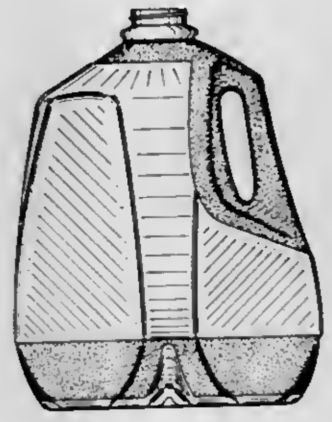
238,653
SHIM CLIP OR THE LIKE FOR ADJUSTABLY MOUNTING A SHORE SUPPORT ON A COLUMN OR A WALL

Dole J. Kelley, Jr., Jacksonville, Fla., assignor to Strickland Systems, Inc., Jacksonville, Fla.
Filed May 2, 1974, Ser. No. 466,215
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—246



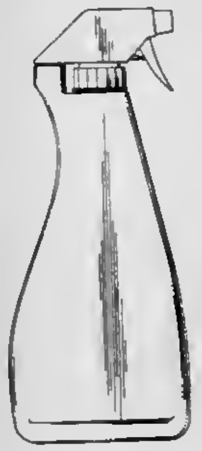
238,654
JUG

Richard L. Platte, Ann Arbor, Mich., assignor to Hoover Ball and Bearing Company, Saline, Mich.
Filed Nov. 11, 1974, Ser. No. 522,336
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40

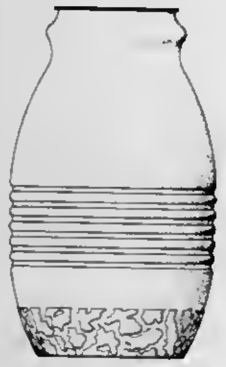


238,655
SPRAYER BOTTLE OR SIMILAR ARTICLE

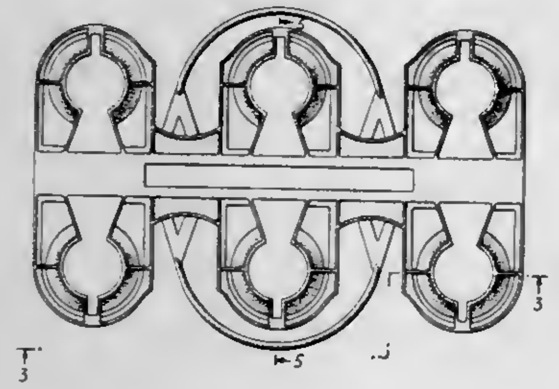
James C. McKinney, Simpsonville, and William J. Britt and John G. Antonio, Greenville, S.C., and Sam Han, Leonia, N.J., assignors to Morton-Norwich Products, Inc.
Filed Apr. 24, 1974, Ser. No. 463,464
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—63



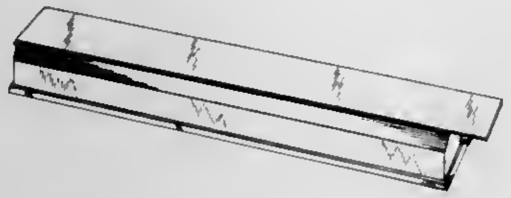
238,656
BEVERAGE CONTAINER OR THE LIKE
Leslie Stephan Marco, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Apr. 29, 1974, Ser. No. 465,021
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—100



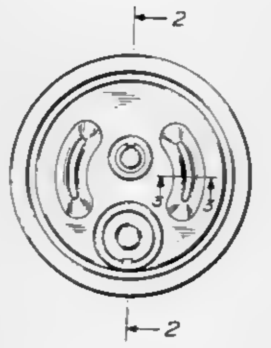
238,657
BOTTLE CARRIER
Gerald Erickson, P.O. Box 6175, Surfside, Fla. 33154
Filed May 22, 1974, Ser. No. 472,087
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—178

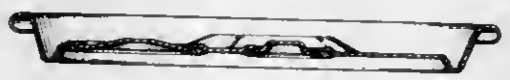


238,658
DEVELOPER POWDER CONTAINER
Stanford C. Stone, South St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company
Filed Dec. 7, 1973, Ser. No. 422,885
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—210

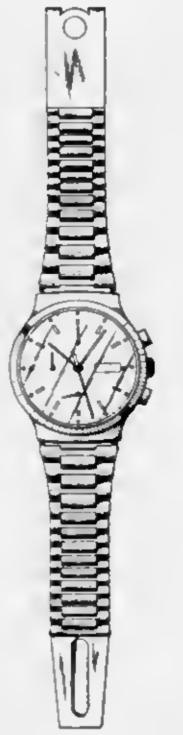


238,659
CONTAINER END
Sydney Johnstone Wallace, Allendale, N.J., assignor to American Can Company, Greenwich, Conn.
Filed Mar. 18, 1974, Ser. No. 452,004
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—253

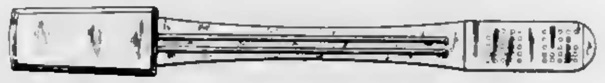




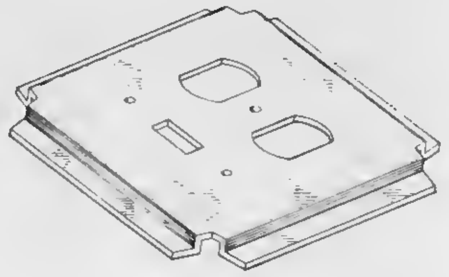
238,660
WRISTWATCH
Roland Ruefli, Grenchen, Switzerland, assignor to Montres Orfina, S.A., Grenchen, Switzerland
Filed June 4, 1974, Ser. No. 476,325
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39



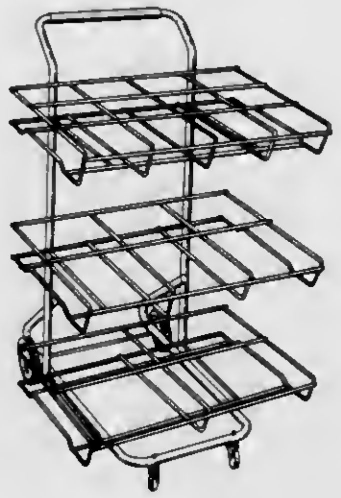
238,661
ORAL THERMOMETER
Zsigmond L. Sagi, Parsippany, and Berel Weinstein, Fort Lee, N.J., and John Pardo, Yonkers, N.Y., assignors to Bio-Medical Sciences, Inc., Fairfield, N.J.
Filed Jan. 28, 1974, Ser. No. 437,000
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57



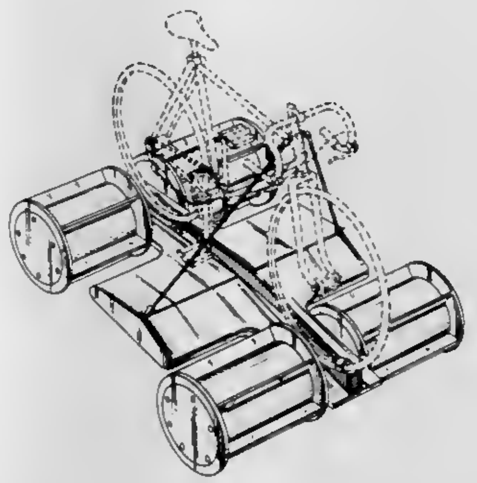
238,662
WALLPAPER TEMPLATE FOR A COMBINATION DOUBLE OUTLET AND ELECTRICAL SWITCH PLATE
John Douglass Black, 9332 Ambassador Drive, Westminster, Calif. 92683
Filed Nov. 22, 1974, Ser. No. 526,142
Term of patent 14 years
Int. Cl. D8—*09;* D19—*08*
U.S. Cl. D10—64



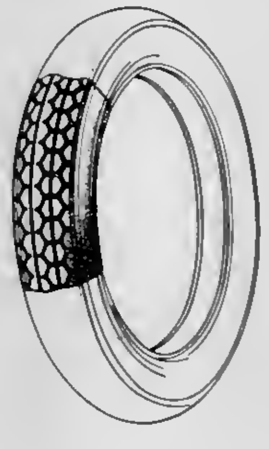
238,663
CART
Edward J. Schifman, Nashville, Tenn., assignor to Aladdin Industries, Inc., Nashville, Tenn.
Filed Sept. 16, 1974, Ser. No. 506,562
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—30



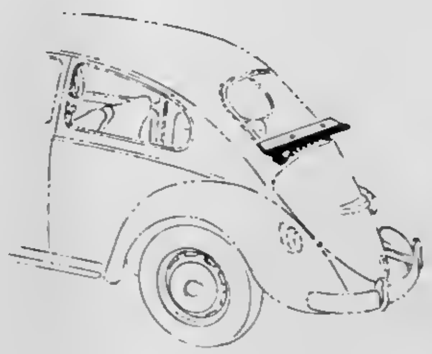
238,664
PROPULSION APPARATUS FOR WATER CYCLE
Donald F. Branstrom, 855 Portola Way, Oxnard, Calif. 93030
Filed July 8, 1974, Ser. No. 486,466
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—68



238,665
TIRE FOR A VEHICLE WHEEL
Hiroshi Tomoda, Nishinomiya, Japan, assignor to Dunlop Limited, London, England
Filed Feb. 6, 1974, Ser. No. 439,990
Claims priority, application Japan Aug. 10, 1973
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



238,666
STABILIZER VANE
John A. Herrod, Fountain Valley, Calif. (1970 16th St., Apt. N103, Newport Beach, Calif. 92660)
Filed June 6, 1974, Ser. No. 477,004
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181

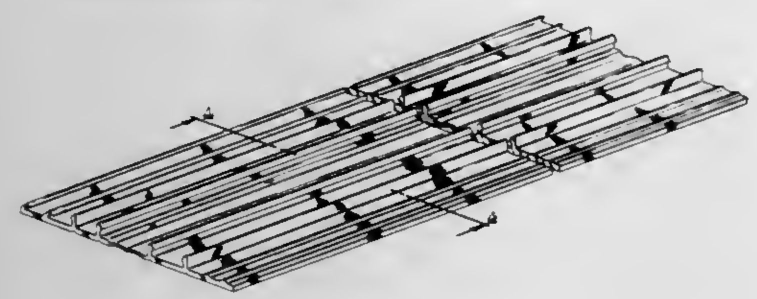


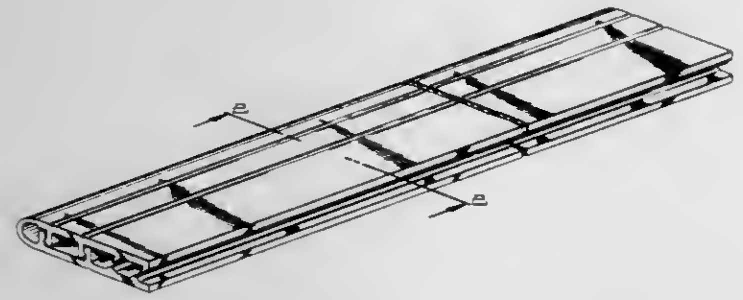
238,667

FOLDABLE PANEL-HOLDING STRIP OR SIMILAR ARTICLE

Robert D. Bero, Westerville, Ohio, assignor to Plaskolite, Inc., Columbus, Ohio
Filed Apr. 29, 1974, Ser. No. 465,061
Term of patent 14 years
Int. Cl. D25—*01*

U.S. Cl. D13—6



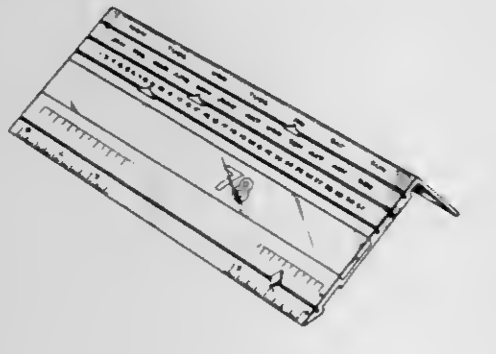


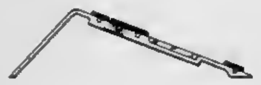
238,668

COMBINED THERMOMETER, SCALE AND PERPETUAL CALENDAR

Arthur T. Michaud, 9255 Doheny Road, Los Angeles, Calif. 90069
Filed May 15, 1974, Ser. No. 470,112
Term of patent 14 years
Int. Cl. D19—*03*

U.S. Cl. D19—21



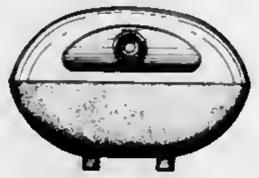


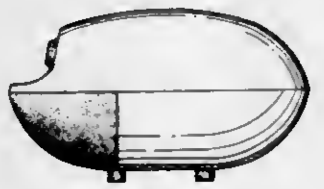
238,669

ELECTRIC PENCIL SHARPENER

Francis W. MacGregor, New Britain, Conn., assignor to Hunt Manufacturing Co., Philadelphia, Pa.
Filed Oct. 29, 1973, Ser. No. 410,628
Term of patent 14 years
Int. Cl. D19—*06*

U.S. Cl. D19—73



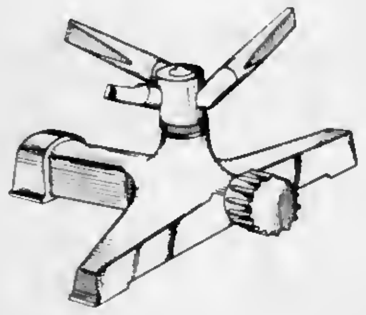


238,670

ROTARY LAWN SPRINKLER

John D. Beamer, West Covina, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.
Filed Feb. 10, 1975, Ser. No. 548,412
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—7

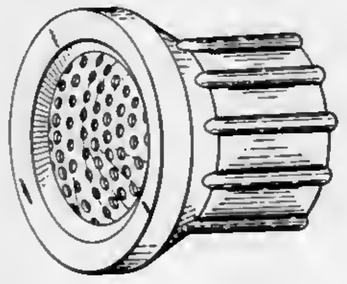


238,671

SPRAY NOZZLE

Edwin C. Rosenberger, Piqua, and Jerome A. Waker, Troy, Ohio, assignors to Chem-Lawn Corporation, Dublin, Ohio
Filed June 9, 1975, Ser. No. 584,848
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—35

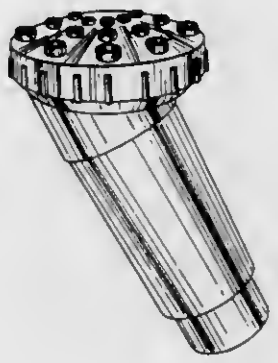


238,672

HAND HELD SHOWER SPRAY HEAD

Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co., Kansas City, Mo.
Filed Jan. 15, 1975, Ser. No. 541,216
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—35

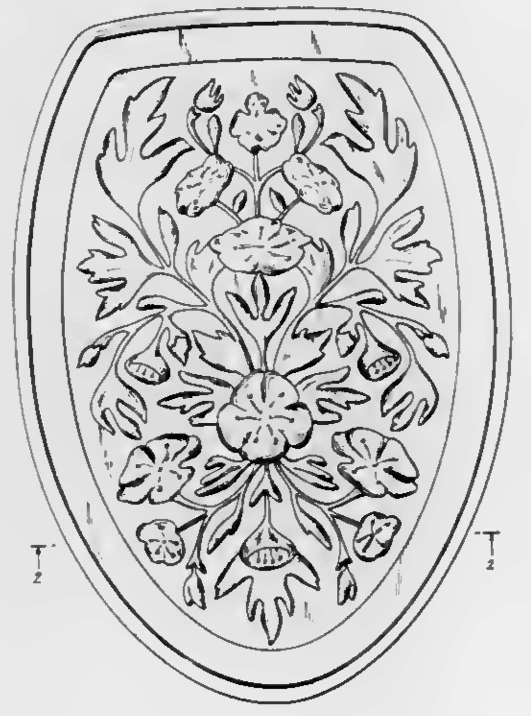


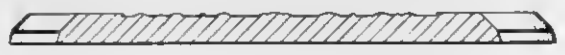
238,673

TOILET SEAT COVER

Henry M. Stairs, Jr., Somerville, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Feb. 24, 1975, Ser. No. 552,575
Term of patent 14 years
Int. Cl. D23—*02*

U.S. Cl. D23—71



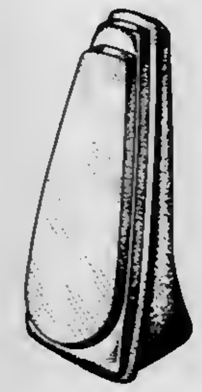


238,674

AIR FRESHENER CONTAINER OR THE LIKE

Warren J. Luedtke and Richard L. Davenport, Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.
Filed May 6, 1974, Ser. No. 467,351
Term of patent 14 years
Int. Cl. D23—*04*

U.S. Cl. D23—150

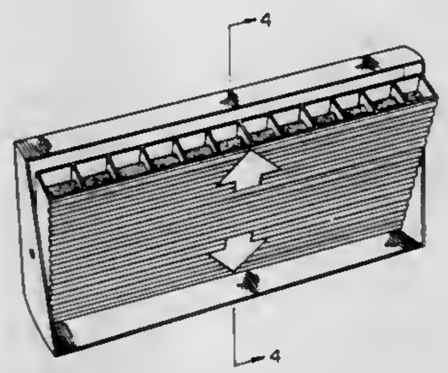


238,675

AIR FRESHENER OR SIMILAR ARTICLE

Georg Schimanski, Rummenohl, Germany, assignor to Globol-Werk GmbH, Nenburg an der Donan, Germany
Filed Sept. 12, 1974, Ser. No. 505,390
Claims priority, application Germany May 2, 1974
Term of patent 14 years
Int. Cl. D23—*04*

U.S. Cl. D23—150

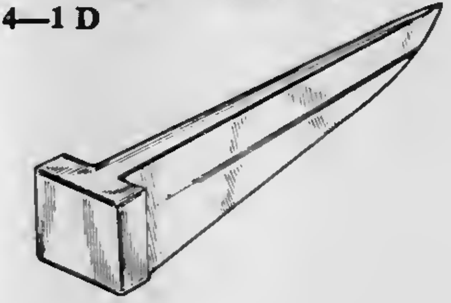


238,676

INTERDENTAL WEDGE OR SIMILAR ARTICLE

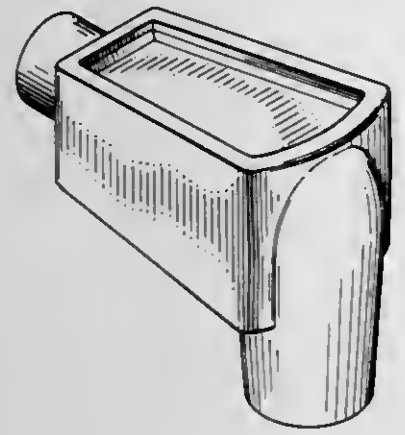
Carl-Johan Sjodahl, Orebro, Sweden, assignor to Dentalvarutjanst AB, Orebro, Sweden
Filed Oct. 9, 1974, Ser. No. 513,936
Claims priority, application Sweden May 3, 1974
Term of patent 14 years
Int. Cl. D24—*04*

U.S. Cl. D24—1 D



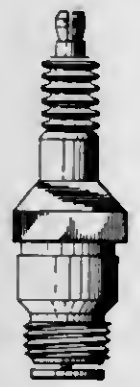
238,677
IGNITION WIRE BOOT

Richard P. Dugger, South Bend, Ind., assignor to
Ristance Wire, Inc., Bremen, Ind.
Filed Jan. 6, 1975, Ser. No. 538,609
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A



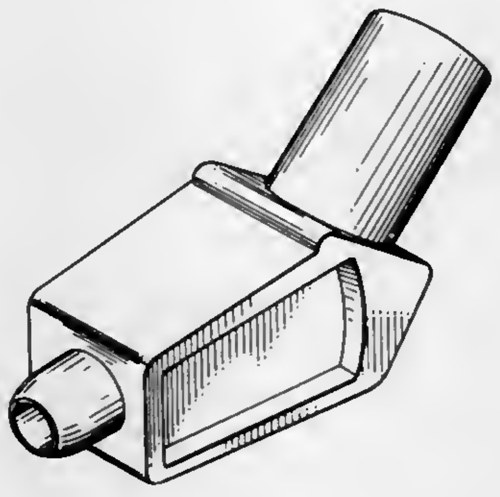
238,678
SPARK PLUG

Richard E. Hornsby, Conyers, Ga.
(932 Gresham Ave. SE., Atlanta, Ga. 30316)
Filed May 2, 1974, Ser. No. 466,126
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D26—1 J



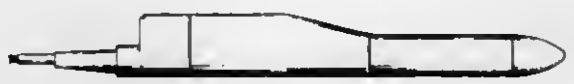
238,679
IGNITION WIRE BOOT

Richard P. Dugger, South Bend, Ind., assignor to
Ristance Wire, Inc., Bremen, Ind.
Filed Jan. 6, 1975, Ser. No. 538,926
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A



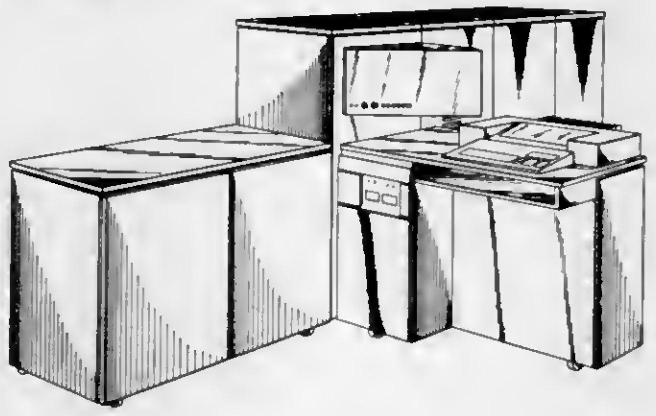
238,680
OPTICAL SCANNER

Arthur J. Pulos, Fayetteville, and Paul B. Sweeney, Syracuse, N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.
Filed Feb. 4, 1974, Ser. No. 439,269
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



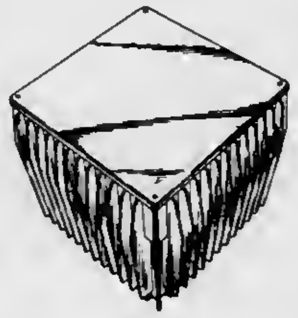
238,681
COMPUTER CONSOLE OR SIMILAR ARTICLE

Edward K. Driscoll, Marlboro, and John F. Graham, Sudbury, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Mar. 22, 1974, Ser. No. 453,909
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



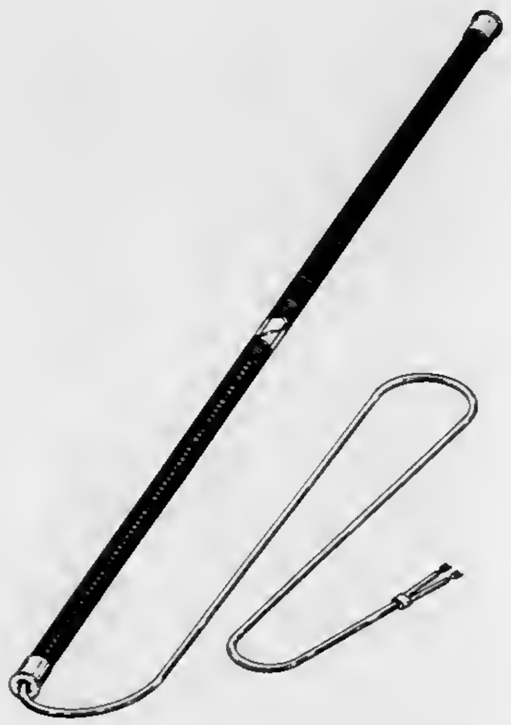
238,682
CASING FOR ELECTRICAL EQUIPMENT

Kjeld Lehmann, Sonderborg, Denmark, assignor to
Danfoss A/S, Nordborg, Denmark
Filed June 27, 1973, Ser. No. 374,257
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—5 R



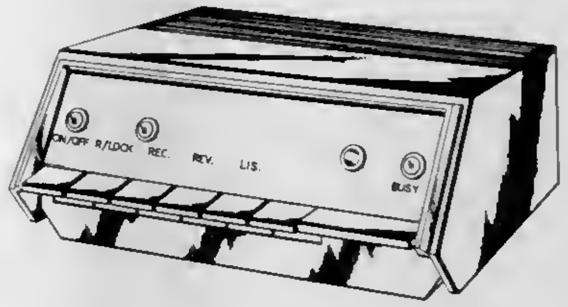
238,683
ELONGATED TELEVISION ANTENNA FOR INDOOR USE

Marvin P. Middlemark, 96 Store Hill Road,
Old Westbury, Long Island, N.Y. 11568
Filed Mar. 27, 1975, Ser. No. 562,795
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 F



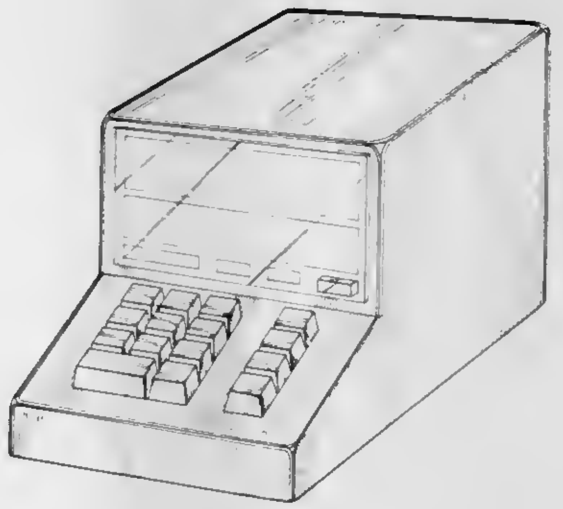
238,684
CONFERENCE MICROPHONE OR SIMILAR ARTICLE

David K. Walz, Atlanta, Ga., assignor to Lanier
Electronic Laboratory, Inc., Atlanta, Ga.
Filed Feb. 14, 1974, Ser. No. 442,658
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D26—14 J

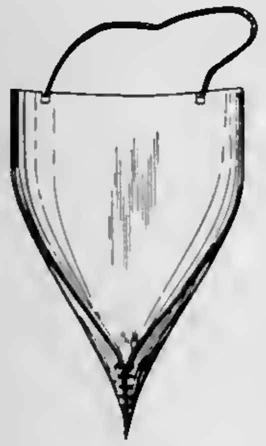


238,685
FLIGHT DATA COMPUTER

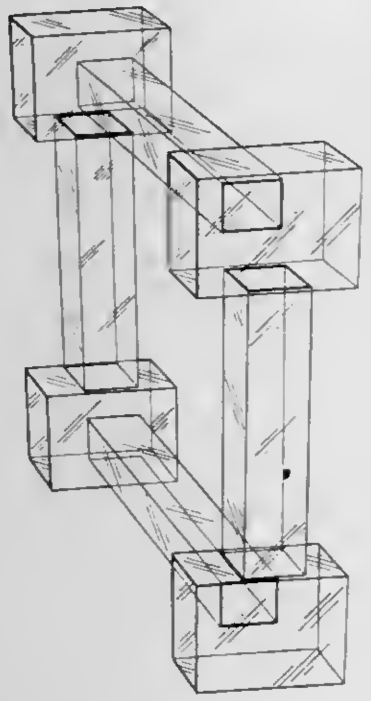
Charles S. Walters, 61st Ave., Plantation, Fla. 33317
Filed May 28, 1974, Ser. No. 473,403
Term of patent 14 years
Int. Cl. D14—*02;* D18—*01*
U.S. Cl. D26—5 C



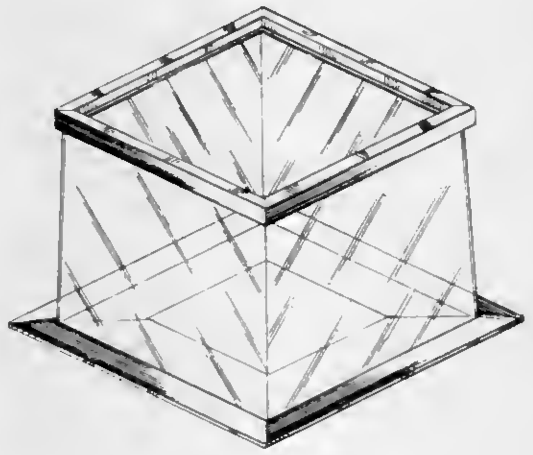
238,686
ASH COLLECTOR
William F. Martin, 350 Stonycroft Road,
Ridgewood, N.J. 07450
Filed Feb. 21, 1974, Ser. No. 444,269
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—14



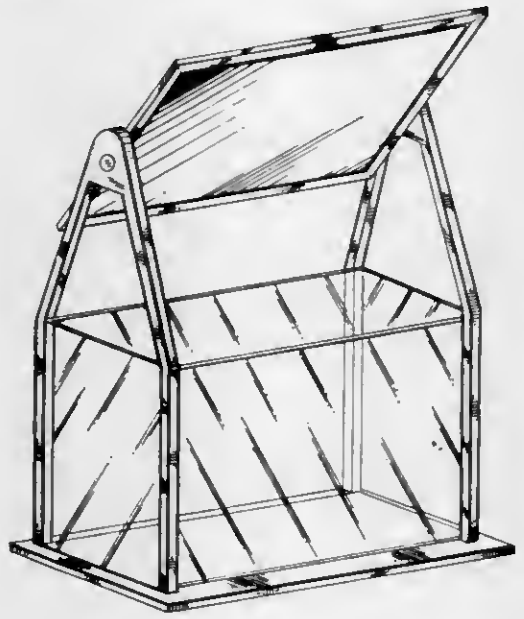
238,687
AQUARIUM
Malcolm R. Braid, 1005 Cumberland Drive,
Auborn, Ala. 36830
Filed Oct. 19, 1973, Ser. No. 408,157
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—6



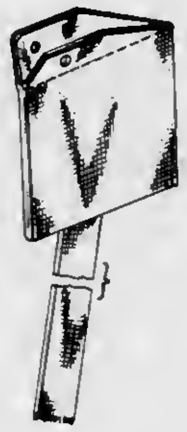
238,688
AQUARIUM
Samuel Shalom, 577 Grand St.,
New York, N.Y. 10002
Filed Jan. 21, 1974, Ser. No. 435,081
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—8



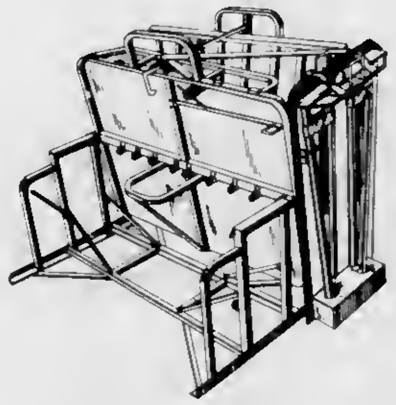
238,689
COMBINED AQUARIUM AND MIRROR
Samuel Shalom, 577 Grand St.,
New York, N.Y. 10002
Filed Jan. 21, 1974, Ser. No. 435,003
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—11

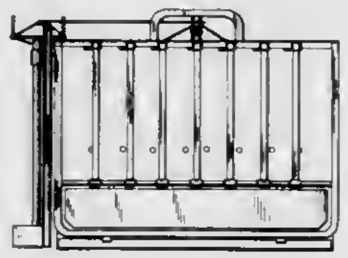


238,690
FACE FLY REPELLENT DISPENSER FOR CATTLE
Roy Goodwin, Rte. 2, Lancaster, Mo. 63548
Filed May 23, 1974, Ser. No. 473,406
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99

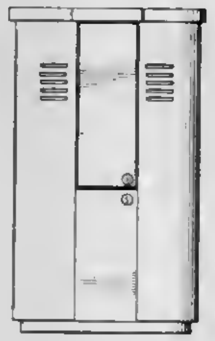


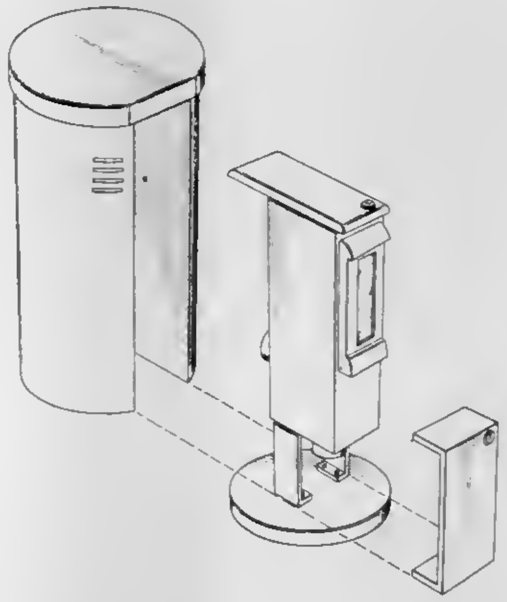
238,691
COMBINED LIVESTOCK TILT TABLE AND HEAD GATE
Frank Kratky, Bellvue, Colo., assignor to Westguard Products, Inc., Fort Collins, Colo.
Filed Sept. 16, 1974, Ser. No. 506,432
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



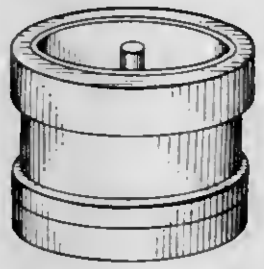


238,692
PNEUMATIC TUBE TERMINAL FOR REMOTE BANKING
Ross Cook, Rolling Hills, and Donald Keith Polgrean, Los Angeles, Calif., assignors to Ross Cook, Inc., Los Angeles, Calif., and said Polgrean, fractional part interest to each
Filed June 14, 1974, Ser. No. 479,359
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D31—22





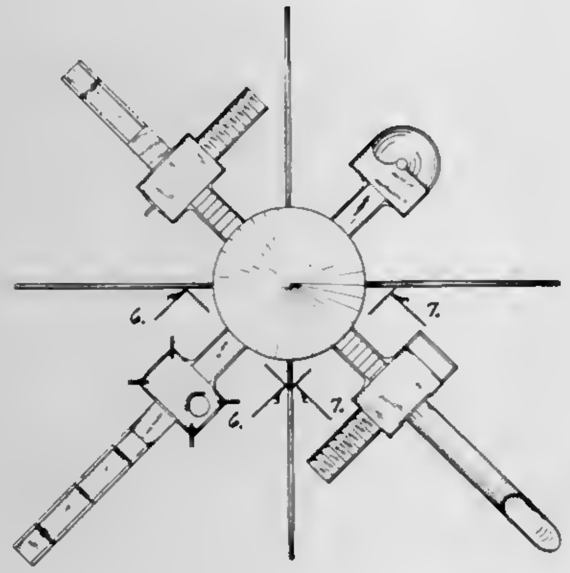
238,693
CELL FOR X-RAY SPECTROSCOPY OR SIMILAR ARTICLE
Monte J. Solazzi, 34 Bradley Road,
Scarsdale, N.Y. 10583
Filed May 1, 1974, Ser. No. 465,919
Term of patent 14 years
Int. Cl. D24—*02, 99*
U.S. Cl. D32—1 R



238,694
PLAYGROUND UNIT

Grant E. Jamison, Los Angeles, Calif., assignor to Jamison, Inc., Los Angeles, Calif.
Filed Mar. 18, 1974, Ser. No. 451,841
Term of patent 14 years
Int. Cl. D21—*03*

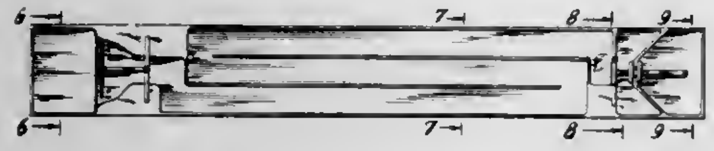
U.S. Cl. D34—5 H



238,695
AQUATIC GAME SPEEDWAY

Harold N. Braunhut, % Honey Toy Industries, Inc., 200 5th Ave., New York, N.Y. 10010
Filed May 22, 1974, Ser. No. 472,288
Term of patent 14 years
Int. Cl. D21—*01*

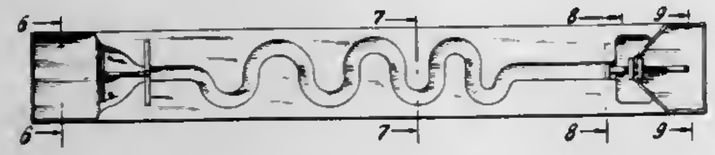
U.S. Cl. D34—5 CC



238,696
AQUATIC GAME SPEEDWAY

Harold N. Braunhut, % Honey Toy Industries, Inc., 200 5th Ave., New York, N.Y. 10010
Filed May 22, 1974, Ser. No. 472,434
Term of patent 14 years
Int. Cl. D21—*01*

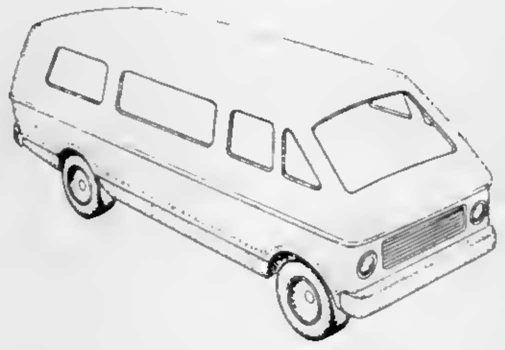
U.S. Cl. D34—5 CC



238,697
TOY VEHICLE

Tom P. McKague, 12312 SE. Steele, Portland, Oreg. 97236
Filed Feb. 1, 1974, Ser. No. 438,546
Term of patent 14 years
Int. Cl. D21—*01*

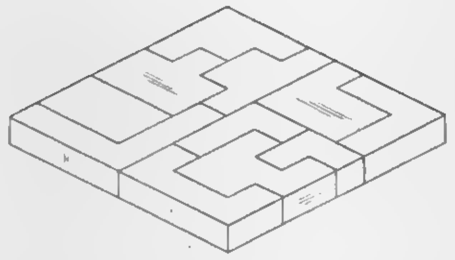
U.S. Cl. D34—15 AJ



238,698
PUZZLE

Robert H. Cook, Detroit, Mich. (29084 Fairfax, Southfield, Mich. 48276)
Filed Apr. 8, 1974, Ser. No. 458,862
Term of patent 14 years
Int. Cl. D21—*01*

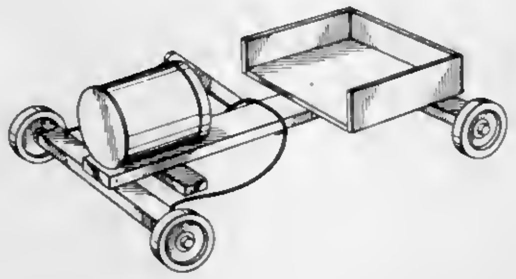
U.S. Cl. D34—15 M



238,699
TOY COASTER

Anthony L. Hodges, 3123 41st St., San Diego, Calif. 92105
Filed July 31, 1974, Ser. No. 493,317
Term of patent 14 years
Int. Cl. D21—*01*

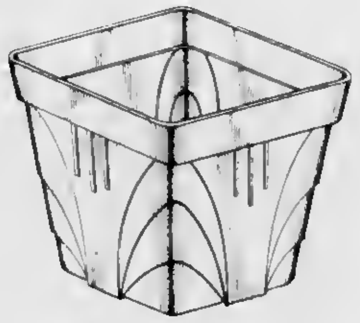
U.S. Cl. D34—15 AJ



238,700
POTTED PLANT RECEPTACLE

Barnell L. Cobia, Winter Garden, Fla., assignor to Green Island International, Inc., Winter Garden, Fla.
Filed Dec. 12, 1973, Ser. No. 426,683
Term of patent 14 years
Int. Cl. D11—*02*

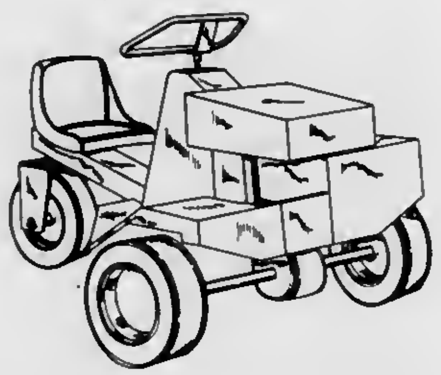
U.S. Cl. D35—3 A



238,701
LAWN AND GARDEN TRACTOR

Donald G. Haffner, Glendale, and Knud H. Hoffmeyer and Edward J. Lazzeroni, Sr., Racine, Wis., assignors to Jacobson Manufacturing Company, Racine, Wis.
Filed Aug. 23, 1974, Ser. No. 500,143
Term of patent 14 years
Int. Cl. D12—*09*

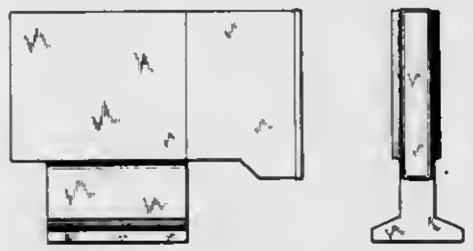
U.S. Cl. D40—5



238,702
HEAD FOR A RIVETING MACHINE

Paul O. Rawson, Easton, Conn., assignor to Milford Rivet & Machine Company, Milford, Conn.
Filed Feb. 20, 1975, Ser. No. 551,273
Term of patent 14 years
Int. Cl. D15—*09*

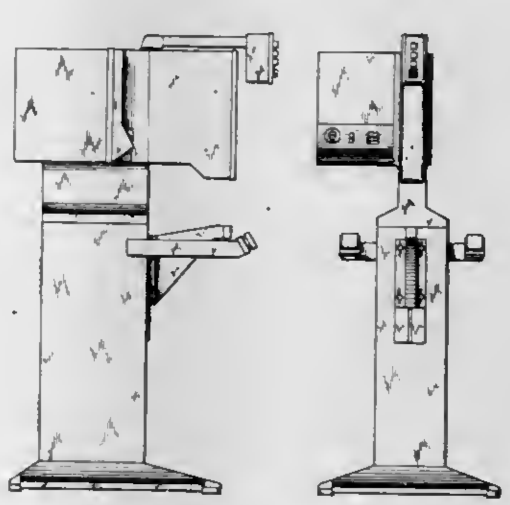
U.S. Cl. D54—10



238,703
PEDESTAL RIVETING MACHINE

Paul O. Rawson, Easton, Conn., assignor to Milford Rivet & Machine Company, Milford, Conn.
Filed Feb. 20, 1975, Ser. No. 551,392
Term of patent 14 years
Int. Cl. D15—*09*

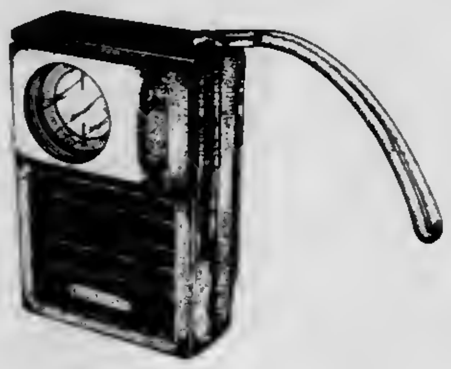
U.S. Cl. D54—10



238,704
RADIO RECEIVER

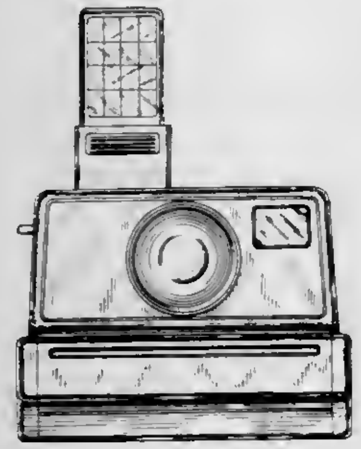
Kikuo Ohta, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jan. 9, 1974, Ser. No. 431,971
Claims priority, application Japan Aug. 14, 1973
Term of patent 14 years
Int. Cl. D14—*03*

U.S. Cl. D56—4 B



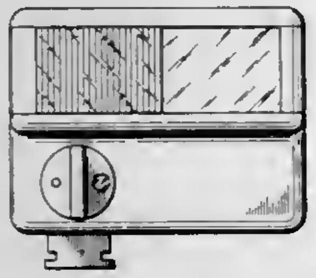
238,705
CAMERA

Ronald Emmerling, New City, N.Y., assignor to Berkey Photo, Inc., New York, N.Y.
Filed May 3, 1974, Ser. No. 466,735
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B



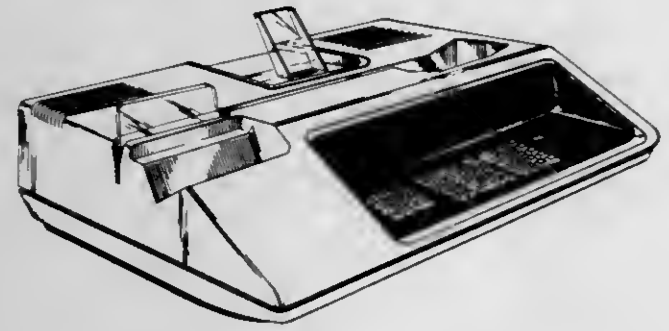
238,706
ELECTRONIC FLASH UNIT

Jochen Kramer, Wolfsburg, and Claus Prochnow, Braunschweig, Germany, assignors to Rollei-Werke Franke & Heldecke, Braunschweig, Germany
Filed Aug. 27, 1974, Ser. No. 501,099
Claims priority, application Germany Mar. 4, 1974
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 F



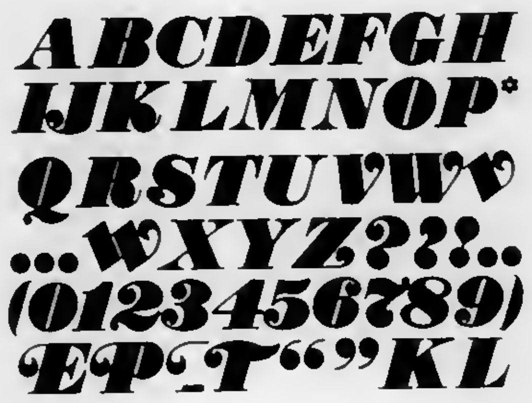
238,707
CASE FOR A CHECK ENCODER

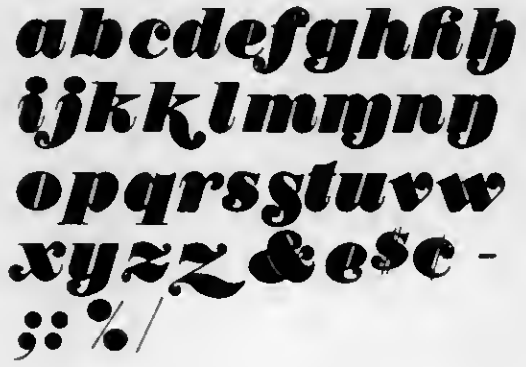
James W. Jacobson, Saint-Nom-La-Breteche, France, and Richard G. Clayton, Detroit, and Jerry J. Sims, Southfield, Mich., assignors to Burroughs Corporation, Detroit, Mich.
Continuation-in-part of design application Ser. No. 395,276. Sept. 7, 1973. This application Mar. 6, 1975, Ser. No. 555,960
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D64—11 C



238,708
FONT OF TYPE

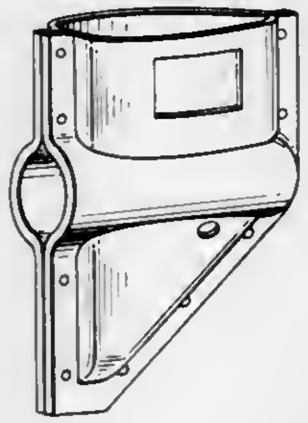
Thomas Paul Carnase, New York, N.Y., assignor to Playgirl, Inc., Century Park, Calif.
Filed May 6, 1974, Ser. No. 467,059
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B





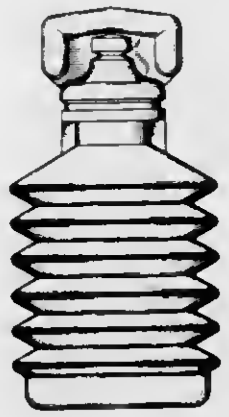
238,709
OUTBOARD MOTOR SKEG COVER

Filed June 3, 1974, Ser. No. 475,865
Arthur J. Rocka, Rte. 1, Box 276, Tomball, Tex. 77375
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1 A



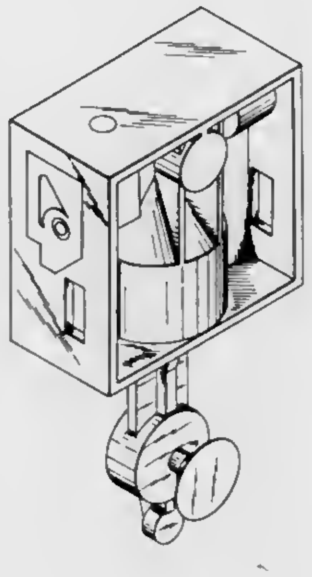
238,710
BOTTLE FOR MEDICAL LIQUID

Vincent A. Cacanindin, Chicago, Ill., assignor to American Hospital Supply Corporation, Chicago, Ill.
Filed Oct. 29, 1974, Ser. No. 518,568
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1 U



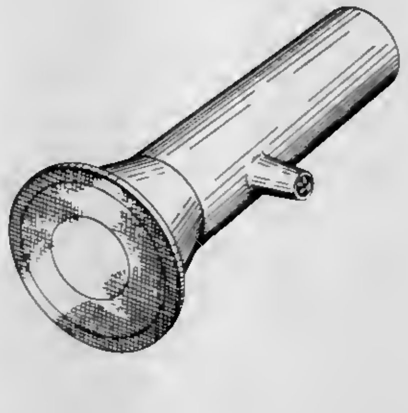
238,711
DISPOSABLE PUMP CASSETTE FOR MEDICAL INFUSION PUMPS

Sydney Hudspith, San Diego, Calif., assignor to Imed Corporation, San Diego, Calif.
Filed Aug. 6, 1973, Ser. No. 386,041
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 F



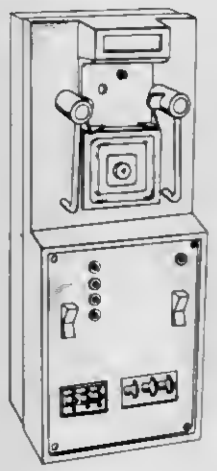
238,712
MOUTHPIECE SENSOR FOR SPIROMETER MEDICAL APPARATUS

Bernard N. Gray, 135 Parkwood Drive, East Pepperell, Mass. 01437, and John W. Burke, 34 E. Wyoming St., Melrose, Mass. 02176
Filed Mar. 20, 1974, Ser. No. 452,815
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 F

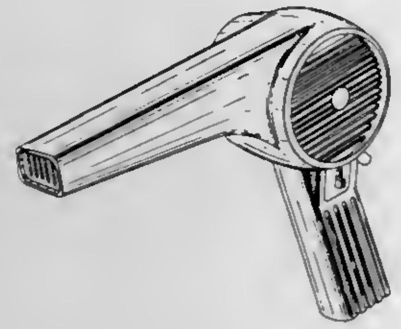


238,713
FRONT PANEL FOR A MEDICAL INFUSION PUMP

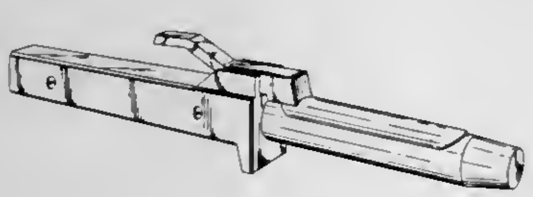
Sydney Hudspith, San Diego, Calif., assignor to Imed Corporation, San Diego, Calif.
Filed Aug. 10, 1973, Ser. No. 387,440
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 F



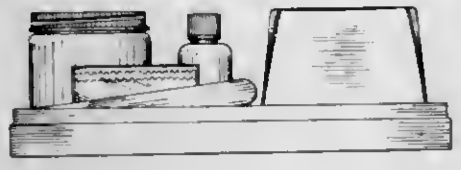
238,714
MANUALLY HELD ELECTRIC HAIR DRYER
Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co., Kansas City, Mo.
Filed Mar. 1, 1974, Ser. No. 447,134
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



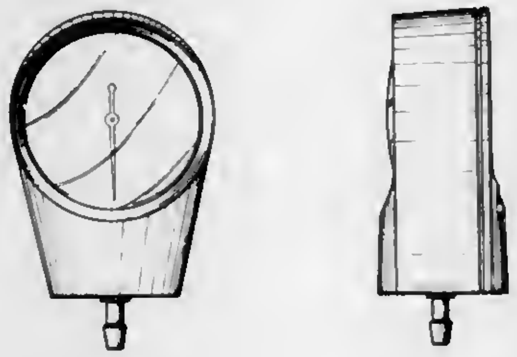
238,715
ELECTRIC HAIR CURLER
Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co., Kansas City, Mo.
Filed Feb. 26, 1974, Ser. No. 445,962
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E



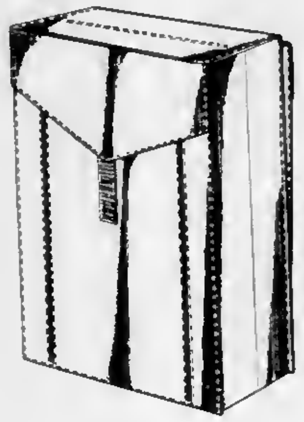
238,716
DEPILATORY KIT
Frank Michaels, Mahwah, N.J.
(1449 2nd Ave., New York, N.Y. 10021)
Filed Feb. 4, 1974, Ser. No. 439,414
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 C



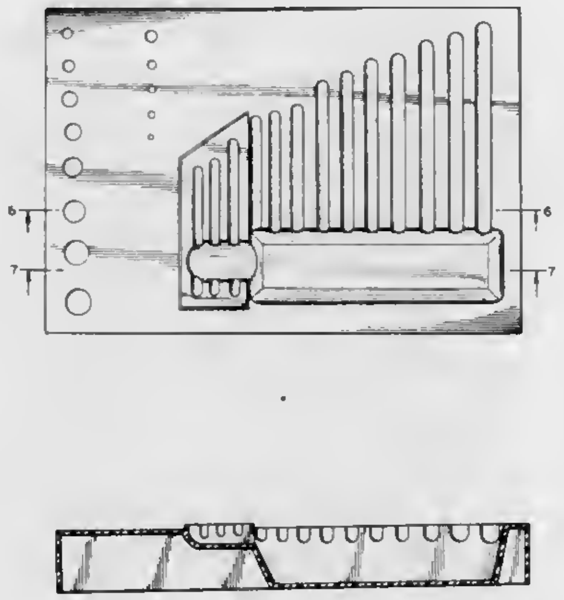
238,717
SPHYGMOMANOMETER
Edward Lynn Peart, Arden, and John Bayne Ashe, Asheville, N.C., assignors to Sybron Corporation, Rochester, N.Y.
Filed May 3, 1974, Ser. No. 466,694
Term of patent 14 years
Int. Cl. D10—*04;* D24—*02*
U.S. Cl. D83—12 R



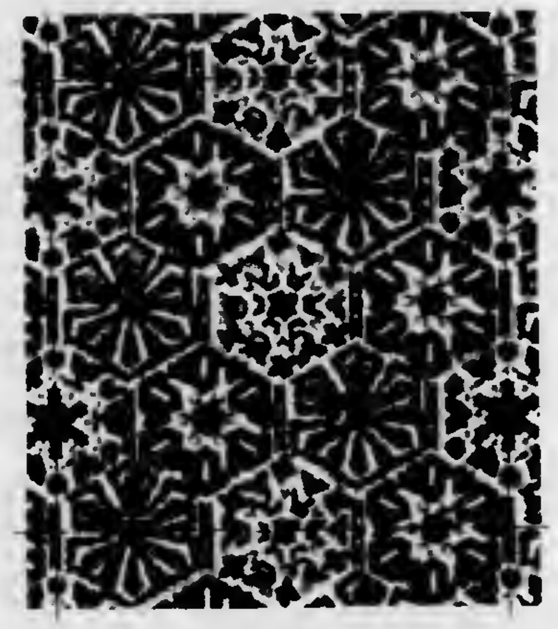
238,718
TRAVELING CASE FOR GARMENTS
Frederick K. Bauer, P.O. Box 1705, Beverly Hills, Calif. 90213
Filed May 13, 1974, Ser. No. 469,247
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



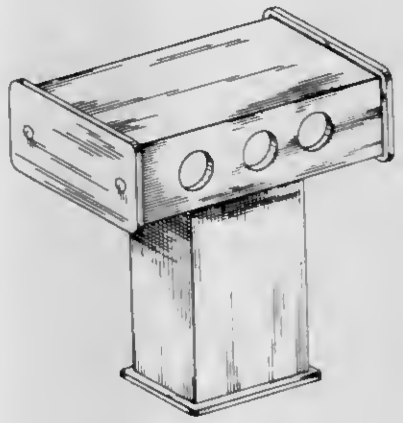
238,719
COMBINED DRILL BIT HOLDER AND HOLE SIZE INDICATOR
Joel A. Howard, Fort Lee, N.J., assignor to Howard Hardware Products, Inc., Bloomfield, N.J.
Filed Jan. 14, 1974, Ser. No. 433,199
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



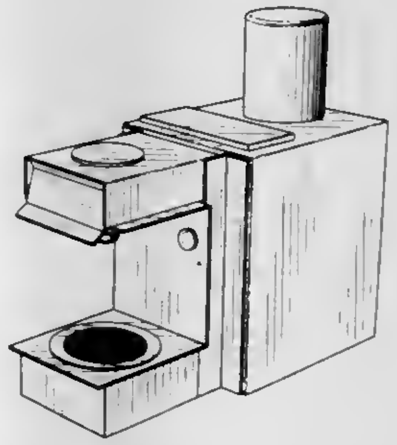
238,720
SOFT SURFACE FLOOR COVERING OR SIMILAR ARTICLE
Gerald E. White, 53 Plainfield Road, Albertson, N.Y. 11507
Filed Feb. 15, 1974, Ser. No. 442,699
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D92—4 R



238,721
LIQUID DISPENSER TOWER
Herman L. Buffington, 2840 NE. 55th St., Fort Lauderdale, Fla. 33308
Filed Feb. 25, 1974, Ser. No. 445,243
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3 B



238,722
COFFEEMAKER
Stewart L. Black, Lee's Summit, Mo., assignor to The Vendo Company, Kansas City, Mo.
Filed Oct. 21, 1974, Ser. No. 516,434
Term of patent 14 years
Int. Cl. D7—*02;* D15—*08*
U.S. Cl. D94—3 B



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  - Brennen, Michael B.; and Abbondanti, Alberto, B 511,886.
- Addressograph Multigraph Corporation: *See—*
  - Root, Russell L., B 493,501.
- Air Products and Chemicals, Inc.: *See—*
  - Bechara, Ibrahim S.; Carroll, Felix P.; Mascioli, Rocco L.; and Panchak, John R., B 497,194.
- Aiuola, Franco, to Azionaria Costruzioni Macchine Automatiche A.C.-M.A. S.p.A. Apparatus for arranging, at a predetermined spacing on a reception conveyor, objects originating in a disordered manner from a delivery conveyor. B 424,989, Cl. 198-179.000.
- Alburn, Harvey E.; and Grant, Norman H., to American Home Products Corporation. Amides of 1-aminocyclopentane carboxylic acid. B 386,257, Cl. 260-557.00R.
- Allied Chemical Corporation: *See—*
  - Mares, Frantisek, B 506,148.
- American Hoechst Corporation: *See—*
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- Andersson, Rickard, to Linden-Alimak AB. Method and device of reblocking to an increased or reduced number of rope parts at a hoisting gear. B 437,559, Cl. 254-188.000.
- Andrews, Harry N.: *See—*
  - Frisch, Erling, deceased; and Andrews, Harry N., B 367,621.
- Angadiyavar, Channabasappa S.; and Srinivasan, Rangaswamy. 2,4,6 Trisubstituted pyridine dye lasers. B 506,916, Cl. 331-94.50L.
- Appleford, David Dale; and King, David Philip, to Monsanto Limited. Apparatus for measuring specific gravity. B 528,401, Cl. 73-437.000.
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  - Frisch, Kurt C.; Reegen, Sidney L.; and Bauer, Harry L., B 306,668.
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- Bank, Thomas A.; Gieck, Jack E.; and Weitzenhof, David A., to Firestone Tire & Rubber Company, The. Semi-pneumatic energy absorbing bumper system for motor vehicles. B 552,932, Cl. 293-71.00P.
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  - Schaupp, Kurt, B 465,955.
  - Stolzer, Claus; Behrenz, Wolfgang; and Hammann, Ingeborg. B 386,673.
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- Baysinger, Robert L., to Emerson Electric Co. Electrostatic air cleaner with air flow responsive switch. B 490,806, Cl. 55-105.000.
- Bechara, Ibrahim S.; Carroll, Felix P.; Mascioli, Rocco L.; and Panchak, John R., to Air Products and Chemicals, Inc. Quaternary hydroxyalkyl tertiary amine bases as polyurethane catalysts. B 497,194, Cl. 260-2.5AC.
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- Berkman, John Worrall; and Pexton, Frederic Cyrus, to International Business Machines Corporation. Cable clamp and strain relief device. B 494,806, Cl. 248-73.000.
- Bernstein, William A.; and Doggett, Robert H., to International Business Machines Corporation. Prefixing in a multiprocessing system. B 461,336, Cl. 340-172.500.
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- Borsuk, Alvin; and Johnson, Charles H., to Oscar Mayer & Co. Inc. Gang-type product knockout and receiving means. B 557,299, Cl. 99-355.000.
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- Branson, Charles D., to Robertshaw Controls Company. Fuel control system and method of operating the same and diverter valve therefor. B 558,813, Cl. 236-15.00A.
- Brennen, Michael B.; and Abbondanti, Alberto, to Westinghouse Electric Corporation. Method and circuits for the derivation of an analog slip frequency signal of an induction motor in a tachometerless motor drive. B 511,886, Cl. 318-231.000.
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- Clampitt, Richard L., to Phillips Petroleum Company. Selective plugging of formations with foam. B 569,519, Cl. 166-272.000.
- Copeland, John Alexander, III, to Bell Telephone Laboratories, Incorporated. Voltage maintenance apparatus. B 512,849, Cl. 307-296.000.

- Cormany, Charles L., to PPG Industries, Inc. Method of removing hydrogen peroxide from drycleaning solvents. B 423,867, Cl. 8-142.000.
- Cowardin, Robert L.; and Laurer, George J., to International Business Machines Corporation. Wand for reading optically encoded graphic symbols. B 560,765, Cl. 250-227.000.
- Crockett, William B.; and Mueller, Otward, to General Electric Company. Power amplifier having protective circuits. B 553,460, Cl. 330-207.00P.
- Darlington, William B.: *See—*
  - Foster, Robbie T.; Darlington, William B.; and Korach, Malcolm, B 402,929.
- Deere & Company: *See—*
  - Fowler, Gene Roger, B 567,854.
- Dellner, Raymond P., to General Motors Corporation. Belt drive for scraper elevator device. B 558,819, Cl. 37-8.000.
- DeMario, Edmond E.: *See—*
  - Wehrli, Henry A., II; DeMario, Edmond E.; and Hovanec, Thomas R., B 396,164.
- Demi, Roy C.: *See—*
  - Branson, Charles D.; and Demi, Roy C., B 530,605.
- Demole, Edouard P., to Firmenich SA. Aromatic compositions. B 586,387, Cl. 131-144.000.
- Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. Amino derivatives of [4,3-c]pyrazolopyridine carboxylic acids and esters. B 458,617, Cl. 260-295.50B.
- Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. Amino derivatives of pyrido(2,3-b)pyrazine carboxylic acids and esters. B 491,883, Cl. 260-250.0BC.
- Depommier, Rene; and Martin, Edouard, to Produits Chimiques Ugine Kuhlmann. Process for lowering nitrogen oxides in effluent gases. B 491,455, Cl. 423-393.000.
- Desmarchais, Walter E.: *See—*
  - Katz, Leonard R.; Marshall, James R.; and Desmarchais, Walter E., B 373,344.
- de Stevens, George: *See—*
  - Carney, Richard William James; and de Stevens, George, B 307,698
- Diassi, Patrick A.: *See—*
  - Stiller, Eric T.; Levine, Seymour D.; Principe, Pacifico A.; and Diassi, Patrick A., B 510,850.
- Dobson, Thomas A.: *See—*
  - Schilling, Guenther; and Dobson, Thomas A., B 302,160.
- Doggett, Robert H.: *See—*
  - Bernstein, William A.; and Doggett, Robert H., B 461,336.
- Dolfini, Joseph Edward; and Bohme, Ekkehard, to E. R. Squibb & Sons, Inc. 7-Substituted cephalosporanic acid and derivatives thereof. B 526,096, Cl. 260-243.00C.
- Drake, Charles A.: *See—*
  - Turk, Stanley D.; and Drake, Charles A., B 398,084.
  - Turk, Stanley D.; and Drake, Charles A., B 456,900.
- Dreyer, John F., to Minnesota Mining and Manufacturing Company. Apparatus and method for converting mechanical wave energy to optical energy. B 522,309, Cl. 73-67.50H.
- Driscoll, Gary L.; and Haseltine, Marcus W., Jr., to Sun Ventures, Inc. Organo tin compound. B 464,587, Cl. 260-429.700.
- DuBell, Thomas L.; and Campbell, Thomas C., to General Electric Company. Cooled igniter. B 398,220, Cl. 431-264.000.
- Dziub, Gerald: *See—*
  - Lo, Gerald Joy-Pak; Papworth, Francis Leo; Tenne-Sens, Nicolas Elmars; O'Donovan, Michael Valentine; and Dziub, Gerald, B 339,194.
- E. R. Squibb & Sons, Inc.: *See—*
  - Breuer, Hermann, B 516,296.
  - Chen, James Ling, B 495,489.
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  - Stiller, Eric T.; Levine, Seymour D.; Principe, Pacifico A.; and Diassi, Patrick A., B 510,850.
- Eley, Edgar R., to Westinghouse Electric Corporation. Non-load tapchanger switch. B 531,425, Cl. 200-11.0TC.
- Eloy, Fernand G. F.; and Shanahan, Robert W., to Mallinckrodt Chemical Works, now by change of name Mallinckrodt, Inc. S-triazolo-[3,4-a]isoquinolines in treating inflammatory disorders. B 426,639, Cl. 424-258.000.
- Emerson Electric Co.: *See—*
  - Baysinger, Robert L., B 490,806.
- Emtage, Peter R.: *See—*
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- Essex International, Inc.: *See—*
  - Grawcock, Patrick L., B 590,159.
- Farley, James R.; Salvati, John G.; and Ricci, Louis N., to Westinghouse Electric Corporation. Metal enclosed switchgear having well-shaped front covers. B 509,606, Cl. 317-120.000.
- Fathergill, Rex D.; Howarth, Arthur M.; and Soard, Edward L., to International Business Machines Corporation. Printing system having a hot roll fuser with a scraping blade cleaner. B 579,116, Cl. 15-256.530.
- Fayling, Richard E., to Minnesota Mining and Manufacturing Company. Data accumulation system. B 283,941, Cl. 360-15.000.
- Fernandez, Miguel A., to Phillips Petroleum Company. Method and apparatus for texturing yarn. B 497,292, Cl. 28-1.600.
- Firestone Tire & Rubber Company, The: *See—*
  - Bank, Thomas A.; Gieck, Jack E.; and Weitzenhof, David A., B 552,932.
- Firmenich SA: *See—*
  - Demole, Edouard P., B 586,387.
- Fives-Cail Babcock: *See—*
  - Pacault, Pierre Henri, B 538,472.
- Flumm, Paul T.; and Harris, Vernon B., to Robertshaw Controls Company. Digital timer means and method of making the same. B 516,825, Cl. 58-21.130.
- Foster, Robbie T.; Darlington, William B.; and Korach, Malcolm, to PPG Industries, Inc. Treatment of asbestos diaphragms and resulting diaphragm. B 402,929, Cl. 428-289.000.
- Fowler, Gene Roger, to Deere & Company. Self-aligning idler. B 567,854, Cl. 74-242.10A.
- Fozzard, George B., to Phillips Petroleum Company. Fluoro compound preparation. B 330,736, Cl. 260-648.00F.
- Freestone, Harry T., to General Electric Company. Line selection circuit for a television receiver. B 508,817, Cl. 178-7.50R.
- Frisch, Dorthy Randall, administratrix: *See—*
  - Frisch, Erling, deceased; and Andrews, Harry N., B 367,621.
- Frisch, Erling, deceased (by Frisch, Dorthy Randall, administratrix); and Andrews, Harry N., to Westinghouse Electric Corporation. Hydraulic drive for control rods. B 367,621, Cl. 176-36.00R.
- Frisch, Kurt C.; Reegen, Sidney L.; and Bauer, Harry L., to Atlantic Richfield Company. Cyclic nitriles as crosslinking agents and compositions therefrom. B 306,668, Cl. 260-77.5CR.
- General Dynamics Corporation: *See—*
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- General Electric Company: *See—*
  - Chamay, Anthony Joseph; Smith, James; and Hull, Thomas Neil, Jr., B 445,459.
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  - DuBell, Thomas L.; and Campbell, Thomas C., B 398,220.
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- General Motors Corporation: *See—*
  - Dellner, Raymond P., B 558,819.
  - Klomp, Edward D., B 570,172.
  - Munden, Curtis D.; and Campbell, Robert E., B 519,932.
  - Yew, Ming-Chih, B 563,780.
- Giaimo, Edward Charles, Jr., to RCA Corporation. Method of increasing the image exposure and developing sensitivity of magneto-electric printing system. B 200,759, Cl. 96-1.400.
- Gieck, Jack E.: *See—*
  - Bank, Thomas A.; Gieck, Jack E.; and Weitzenhof, David A., B 552,932.
- Giroux, Eugene L.: *See—*
  - Henkin, Robert I.; and Giroux, Eugene L., B 490,995.
- Graff, Robert. Line marker on ice. B 557,621, Cl. 401-219.000.
- Grant, Norman H.: *See—*
  - Alburn, Harvey E.; and Grant, Norman H., B 386,257.
- Grawcock, Patrick L., to Essex International, Inc. Apparatus and method for forming circular dynamoelectric machine field windings by pushing. B 590,159, Cl. 140-92.100.
- Guidicelli, Charles. Liquid level measuring and indicating apparatus. B 464,290, Cl. 73-302.000.
- Guldberg, Jens: *See—*
  - Nathanson, Harvey C.; Guldberg, Jens; and Muss, Daniel R., B 442,970.
- Gutman, Arnold G., to Stauffer Chemical Company. Insecticidal and miticidal method containing phosphorus compounds. B 576,903, Cl. 424-203.000.
- Hammann, Ingeborg: *See—*
  - Hoffmann, Hellmut; and Hammann, Ingeborg, B 566,464.
  - Stolzer, Claus; Behrenz, Wolfgang; and Hammann, Ingeborg, B 386,673.
- Harris, Vernon B.: *See—*
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- Hartman, Wayne J.: *See—*
  - Van Brussel, William R.; Lestage, Joseph C.; and Hartman, Wayne J., B 559,954.
- Hartmann, Peter; and Theidel, Hans, to Bayer Aktiengesellschaft. Benzodifuran compounds. B 440,858, Cl. 260-346.20M.
- Haseltine, Marcus W., Jr.: *See—*
  - Driscoll, Gary L.; and Haseltine, Marcus W., Jr., B 464,587.
- Hauck, Frederic Peter; and Cimarusti, Christopher Michael, to E. R. Squibb & Sons, Inc. Perhydrofluorenetetrol and perhydrophenanthrenetetrol derivatives. B 447,000, Cl. 260-293.560.
- Haugwitz, Rudiger D.: *See—*
  - Narayanan, Venkatachala Lakshmi; and Haugwitz, Rudiger D., B 486,280.
- Heinold, Lloyd K.; and Helton, Eugene L., to Caterpillar Tractor Co. Retaining means for earthworking tips. B 511,099, Cl. 37-142.00A.
- Helsley, Grover C.; and Taylor, C. R., Jr., to American Hoechst Corporation. Aminoalkylthiopyranopyrroles. B 477,481, Cl. 260-326.900.
- Helton, Eugene L.: *See—*
  - Heinold, Lloyd K.; and Helton, Eugene L., B 511,099.
- Henkin, Robert I.; and Giroux, Eugene L., to United States of America, Health, Education and Welfare. Method of controlling obesity with purified active principle of fruit of synsepalum dulcificum. B 490,995, Cl. 424-177.000.

- Hill, John Anthony: *See—*
  - LaVia, Anthony Laurence; and Hill, John Anthony, B 439,778.
- Hoechst Aktiengesellschaft: *See—*
  - McDowell, William; and Weingarten, Rudolf, B 344,967.
  - von der Eltz, Hans-Ulrich; and Maier, Hans-Peter, B 497,473.
- Hoehn, Hans: *See—*
  - Denzel, Theodor; and Hoehn, Hans, B 458,617.
  - Denzel, Theodor; and Hoehn, Hans, B 491,883.
- Hoffmann, Hellmut; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. N,N-dimethyl-O-(1-methyl-3-N-methylcarbaminyl-methyl-pyrazol(5)yl)-carbamic acid ester. B 566,464, Cl. 424-273.000.
- Holt, Brian, to Ciba-Geigy Corporation. Azine derivatives of piperidine. B 506,648, Cl. 260-45.80N.
- Hornagold, John T., to American Hoist & Derrick Company. Self-storing outrigger float assembly. B 583,051, Cl. 280-150.500.
- Hornle, Reinhold: *See—*
  - Wolf, Karlheinz; Nonn, Konrad; Hornle, Reinhold; Unterbirker, Hans; and Koerner, Jurgen, B 422,063.
- Hovanec, Thomas R.: *See—*
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- Howarth, Arthur M.: *See—*
  - Fathergill, Rex D.; Howarth, Arthur M.; and Soard, Edward L., B 579,116.
- Huebner, Charles Ferdinand, to Ciba-Geigy Corporation. 4-Piperidinobutyrophenones as neuroleptics. B 407,737, Cl. 424-267.000.
- Hull, Thomas Neil, Jr.: *See—*
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- Illinois Tool Works Inc.: *See—*
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- International Business Machines Corporation: *See—*
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  - Tseng, Samuel Chin-Chong, B 537,722.
- Ishikawa, Makoto: *See—*
  - Kono, Osamu; Matsudaira, Takeshi; and Ishikawa, Makoto, B 513,756.
- Jaegtnes, Karl O., to Westinghouse Electric Corporation. Positioning device for a turbine rotor position sensor. B 471,735, Cl. 415-14.000.
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  - Borsuk, Alvin; and Johnson, Charles H., B 557,299.
- Johnson, Gordon Carlton; Metzler, Richard Bruce; and Bailey, Donald Leroy, to Union Carbide Corporation. Quadripolymer siloxanes containing Si-H bonds. B 390,408, Cl. 260-448.20H.
- Jones, Gardner D., Jr., to International Business Machines Corporation. Digital automatic gain control circuit. B 534,016, Cl. 235-154.000.
- Jones, Ivor; Mueller, Hans R.; Wild, Daniel; and Zafiropulo, Pitro A., to International Business Machines Corporation. Method of information transmission with priority scheme in a time-division multiplex communication system comprising a loop line. B 496,500, Cl. 179-15.0AL.
- Jorgensen, Arne R., to Illinois Tool Works Inc. Boring bar with removable and indexable cutting insert. B 521,986, Cl. 408-146.000.
- Kamikawa, Kiyohide, to Shimano Industrial Company, Ltd. Device for rotating a spool of a fishing reel. B 518,999, Cl. 74-546.000.
- Kaminow, Ivan Paul; and Kogelnik, Herwig Werner, to Bell Telephone Laboratories, Incorporated. Thin-film optical waveguide. B 381,985, Cl. 350-96.0WG.
- Katz, Leonard R.; Marshall, James R.; and Desmarchais, Walter E., to Westinghouse Electric Corporation. Fuel transfer system for a nuclear reactor. B 373,344, Cl. 214-18.00N.
- Katzer, Ernst, to Knorr-Bremse GmbH. Centering device for a rail brake magnet unit. B 567,435, Cl. 188-165.000.
- Kauffman, Robert N.: *See—*
  - Smith, James D. B.; and Kauffman, Robert N., B 441,605.
- Kihara, Nobutoshi, to Sony Corporation. Video recording and/or reproducing apparatus, and record assembly for use therein. B 500,176, Cl. 360-81.000.
- King, David Philip: *See—*
  - Appleford, David Dale; and King, David Philip, B 528,401.
- King, Harold W. Hot stamping die chase. B 562,813, Cl. 425-384.000.
- Kinney, Alfred W., to Phillips Petroleum Company. Method and apparatus for filling containers. B 508,878, Cl. 53-77.000.
- Klomp, Edward D., to General Motors Corporation. Rotary engine combustion arrangement. B 570,172, Cl. 123-8.450.
- Knorr-Bremse GmbH: *See—*
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- Koen, Toshiharu, to Victor Company of Japan, Limited; and Nifco Inc. Push-pull-lock device for slide shaft. B 513,789, Cl. 403-107.000.
- Koerner, Jurgen: *See—*
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- Kogelnik, Herwig Werner: *See—*
  - Kaminow, Ivan Paul; and Kogelnik, Herwig Werner, B 381,985.
- Kono, Osamu; Matsudaira, Takeshi; and Ishikawa, Makoto, to Sony Corporation. Amplifying circuit for use with a high impedance source transducer. B 513,756, Cl. 179-1.00A.
- Korach, Malcolm: *See—*
  - Foster, Robbie T.; Darlington, William B.; and Korach, Malcolm, B 402,929.
- Krapcho, John, to E. R. Squibb & Sons, Inc. Anti-inflammatory agents. B 348,433, Cl. 260-244.00R.
- Krogseng, Gerald P.; and Paul, Fred R., Jr., to Minnesota Mining and Manufacturing Company. Ballistic inoculation of animals and projectile therefor. B 524,121, Cl. 128-260.000.
- Krolik, Kenneth J., to Motorola, Inc. Beta compensated integrated current mirror. B 508,961, Cl. 357-36.000.
- Laurer, George J.: *See—*
  - Cowardin, Robert L.; and Laurer, George J., B 560,765.
- LaVia, Anthony Laurence; and Hill, John Anthony, to E. R. Squibb & Sons, Inc. Sweetening compositions. B 439,778, Cl. 426-548.000.
- Lestage, Joseph C.: *See—*
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- Levine, Seymour D.: *See—*
  - Stiller, Eric T.; Levine, Seymour D.; Principe, Pacifico A.; and Diassi, Patrick A., B 510,850.
- Lewis, Paul A., to Union Carbide Corporation. Seed coating. B 548,028, Cl. 47-57.600.
- Lin, Yeong S.; Liu, Chao N.; and Tang, Donald T. Cryptographic magnetic bubble domain memory. B 455,425, Cl. 340-174.0TF.
- Linden-Alimak AB: *See—*
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- Liu, Chao N.: *See—*
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- Lo, Gerald Joy-Pak; Papworth, Francis Leo; Tenne-Sens, Nicolas Elmars; O'Donovan, Michael Valentine; and Dziub, Gerald, to RCA Corporation. Metal plated body composed of graphite fibre epoxy composite. B 339,194, Cl. 333-73.00W.
- Lossev, Alexander. Traction means for resilient tires of motor vehicles. B 445,690, Cl. 152-213.00R.
- Luisi, James A.; Padgett, Clarence W.; and Street, Dana C., to Rockwell International Corporation. High speed-low cost, clock controlled CMOS logic implementation. B 513,368, Cl. 307-205.000.
- Maier, Hans-Peter: *See—*
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- Malifaud, Pierre, to Ste de Recherche et de Promotion d'Activities Nouvelles ACNO. Optical projectors. B 454,283, Cl. 240-41.35R.
- Mallinckrodt Chemical Works, now by change of name Mallinckrodt, Inc.: *See—*
  - Eloy, Fernand G. F.; and Shanahan, Robert W., B 426,639.
- Mares, Frantisek, to Allied Chemical Corporation. Process for producing caprolactam from 6-aminocaproic acid. B 506,148, Cl. 260-239.30A.
- Marshall, James R.: *See—*
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- Mascioli, Rocco L.: *See—*
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- Massey, Arie F., Jr., to Robertshaw Controls Company. Valve construction and method of making the same. B 490,589, Cl. 251-319.000.
- Matsudaira, Takeshi: *See—*
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- Mayer-Mader, Rudolf; and Boldt, Jurgen, to Bayer Aktiengesellschaft. Mixture of benzene-soluble and benzene-insoluble chloroprene polymers wherein the former polymer is prepared in the presence of a dialkoxyxanthogendisulphide. B 495,408, Cl. 260-890.000.
- McDowell, William; and Weingarten, Rudolf, to Hoechst Aktiengesellschaft. Process for the dyeing of synthetic fibres with water-insoluble dyestuffs from organic solvents according to the exhaustion method. B 344,967, Cl. 8-174.000.
- McKenna, George E., to Phillips Petroleum Company. Vaporization of oil feed by addition of regenerated catalyst. B 467,250, Cl. 208-78.000.
- McKenzie, Patrick J.: *See—*
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- Metzler, Richard Bruce: *See—*
  - Johnson, Gordon Carlton; Metzler, Richard Bruce; and Bailey, Donald Leroy, B 390,408.
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- Minnesota Mining and Manufacturing Company: *See—*
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- Monsanto Limited: *See—*
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- Motorola, Inc.: *See—*
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- Mueller, Otward: *See—*
  - Crockett, William B.; and Mueller, Otward, B 553,460.
- Muller, Friedhelm: *See—*
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- Munden, Curtis D.; and Campbell, Robert E., to General Motors Corporation. Electrical angle delay circuit. B 519,932, Cl. 307-293.000.
- Muss, Daniel R.: *See—*
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- Nalepa, Philip J.; Emtage, Peter R.; and Miller, Robert C., to Westinghouse Electric Corporation. Composition for VO_2 incandescent lamp current inrush limiters. B 585,731, Cl. 252-518.000.
- Narayanan, Venkatachala Lakshmi; and Haugwitz, Rudiger D., to E. R. Squibb & Sons, Inc. Anthelmintic isothiocyanobenzoxazoles. B 486,280, Cl. 260-307.00D.
- Nathanson, Harvey C.; Guldberg, Jens; and Muss, Daniel R., to Westinghouse Electric Corporation. Optical imaging system utilizing a light valve array and a coupled photoemissive target. B 442,970, Cl. 178-7.30D.
- National Can Corporation: *See—*
  - Traczyk, Edward S.; Quinton, Jack; and Warnell, Walter C., B 546,631.
- Needham, Riley B., to Phillips Petroleum Company. Method of recovering oil using steam. B 529,836, Cl. 166-303.000.
- Newell, William H., to Perkin-Elmer Corporation, The. X, Y, θ alignment mechanism. B 509,586, Cl. 74-479.000.
- Nielsen, Donald R., to PPG Industries, Inc. Trisulfosuccinic acid. B 494,669, Cl. 260-513.00R.
- Nifco Inc.: *See—*
  - Koen, Toshiharu, B 513,789.
- Nonn, Konrad: *See—*
  - Wolf, Karlheinz; Nonn, Konrad; Hornle, Reinhold; Unterbirker, Hans; and Kuerner, Jurgen, B 422,063.
- Norton Company: *See—*
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- Oediger, Hermann; and Bradeo, Rudolf, to Bayer Aktiengesellschaft. Coumaranedione-3-monoximes. B 495,550, Cl. 260-343.30R.
- Oediger, Hermann; and Braden, Rudolf, to Bayer Aktiengesellschaft. 3-Amidocoumaranones. B 495,554, Cl. 260-343.30R.
- Orihara, Yasunori: *See—*
  - Tomioka, Masao; and Orihara, Yasunori, B 501,253.
- Orlando, Carl, to United States of America, Army. Image stabilization system. B 533,580, Cl. 354-70.000.
- Oscar Mayer & Co. Inc.: *See—*
  - Borsuk, Alvin; and Johnson, Charles H., B 557,299.
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  - Rickard, James H., B 556,897.
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- Pacault, Pierre Henri, to Fives-Cail Babcock. Thermal power plant. B 538,472, Cl. 60-645.000.
- Padgett, Clarence W.: *See—*
  - Luisi, James A.; Padgett, Clarence W.; and Street, Dana C., B 513,368.
- Panchak, John R.: *See—*
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- Papworth, Francis Leo: *See—*
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- Phillips Petroleum Company: *See—*
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- PPG Industries, Inc.: *See—*
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190		B 473,972	M	Jan. 13, 1976
	Class 229			
2.5		B 537,990	M	Jan. 13, 1976
17R		B 461,257	M	Jan. 13, 1976
62.5		B 429,157	M	Jan. 27, 1976
	Class 235			
151.34		B 492,946	E	Jan. 27, 1976
152		B 559,737	E	Jan. 20, 1976
154		B 534,016	E	Feb. 3, 1976
156		B 536,009	E	Jan. 27, 1976
181		B 520,924	E	Jan. 27, 1976
	Class 236			
15A		B 558,813	M	Feb. 3, 1976
	Class 239			
424		B 580,921	M	Jan. 13, 1976
424		B 586,215	M	Jan. 20, 1976
	Class 240			
41.35R		B 454,283	E	Feb. 3, 1976
	Class 242			
43R		B 521,600	M	Jan. 27, 1976
	Class 244			
134R		B 535,928	M	Jan. 13, 1976
169		B 511,346	M	Jan. 27, 1976
	Class 248			
73		B 494,806	M	Feb. 3, 1976
	Class 249			
135		B 548,155	M	Jan. 13, 1976
	Class 250			
210		B 515,908	E	Jan. 20, 1976
227		B 522,577	E	Jan. 27, 1976
		B 560,765	E	Feb. 3, 1976
291		B 500,981	E	Jan. 27, 1976
402		B 451,534	E	Jan. 13, 1976
	Class 251			
319		B 490,589	M	Feb. 3, 1976
	Class 252			
301.4S		B 535,813	C	Jan. 27, 1976
364		B 370,309	C	Jan. 20, 1976
454		B 450,967	C	Jan. 13, 1976
518		B 585,731	C	Feb. 3, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 254			
188	B 437,559	M	Feb. 3, 1976
Class 259			
191	B 556,057	M	Jan. 13, 1976
Class 260			
2.5AC	B 497,194	C	Feb. 3, 1976
	B 537,102	C	Jan. 13, 1976
2.5AM	B 422,063	C	Feb. 3, 1976
2.5AR	B 483,606	C	Jan. 27, 1976
	B 502,589	C	Jan. 27, 1976
2.5AV	B 460,441	C	Jan. 13, 1976
2.5R	B 471,579	C	Jan. 13, 1976
23XA	B 483,865	C	Jan. 13, 1976
28.5AS	B 501,540	C	Jan. 13, 1976
29.2EP	B 526,997	C	Jan. 13, 1976
33 6AQ	B 657,438	C	Jan. 20, 1976
37EP	B 441,605	C	Feb. 3, 1976
37R	B 465,955	C	Feb. 3, 1976
45.8N	B 506,648	C	Feb. 3, 1976
77.5CR	B 306,668	C	Feb. 3, 1976
78.5R	B 437,209	C	Feb. 3, 1976
88.2C	B 417,014	C	Jan. 13, 1976
112.5R	B 503,817	C	Jan. 13, 1976
239A	B 349,370	C	Jan. 27, 1976
239D	B 520,256	C	Jan. 13, 1976
	B 536,935	C	Jan. 13, 1976
239.3A	B 506,148	C	Feb. 3, 1976
243C	B 516,296	C	Feb. 3, 1976
	B 526,096	C	Feb. 3, 1976
244R	B 348,433	C	Feb. 3, 1976
248NS	B 537,711	C	Jan. 13, 1976
250BC	B 491,883	C	Feb. 3, 1976
285.5	B 530,318	C	Jan. 13, 1976
293.56	B 447,000	C	Feb. 3, 1976
294.8D	B 526,510	C	Jan. 20, 1976
295.5B	B 458,617	C	Feb. 3, 1976
296R	B 477,252	C	Jan. 13, 1976
307D	B 486,280	C	Feb. 3, 1976
308A	B 488,111	C	Jan. 13, 1976
309.2	B 542,158	C	Jan. 13, 1976
326R	B 398,084	C	Feb. 3, 1976
326.5B	B 276,026	C	Feb. 3, 1976
326.9	B 477,481	C	Feb. 3, 1976
330.5	B 552,498	C	Jan. 13, 1976
343.3	B 536,675	C	Jan. 20, 1976
343.3R	B 495,550	C	Feb. 3, 1976
	B 495,554	C	Feb. 3, 1976
346.2M	B 440,858	C	Feb. 3, 1976
	B 302,160	C	Feb. 3, 1976
348.5L	B 521,324	C	Jan. 27, 1976
348.6	B 546,295	C	Jan. 20, 1976
429.7	B 464,587	C	Feb. 3, 1976
448.2H	B 390,408	C	Feb. 3, 1976
465.9	B 456,900	C	Feb. 3, 1976
471R	B 388,521	C	Jan. 13, 1976
472	B 472,256	C	Jan. 13, 1976
513R	B 494,669	C	Feb. 3, 1976
515A	B 390,031	C	Jan. 13, 1976
516	B 386,828	C	Feb. 3, 1976
534R	B 301,143	C	Jan. 27, 1976
557R	B 386,257	C	Feb. 3, 1976
593R	B 468,350	C	Jan. 13, 1976
601R	B 208,916	C	Jan. 13, 1976
609E	B 474,573	C	Jan. 20, 1976
621K	B 470,348	C	Jan. 13, 1976
647	B 394,248	C	Jan. 27, 1976
648F	B 330,736	C	Feb. 3, 1976
674SA	B 426,274	C	Jan. 20, 1976
873	B 465,688	C	Jan. 27, 1976
890	B 495,408	C	Feb. 3, 1976
942	B 386,673	C	Feb. 3, 1976
Class 261			
39A	B 562,462	C	Jan. 13, 1976
98	B 480,702	C	Jan. 27, 1976
Class 264			
36	B 308,659	C	Jan. 27, 1976
51	B 508,369	C	Jan. 13, 1976
161	B 555,437	C	Feb. 3, 1976
225	B 453,759	C	Jan. 27, 1976
Class 274			
37	B 526,388	M	Feb. 3, 1976
Class 280			
150.5	B 583,051	M	Feb. 3, 1976
Class 293			
71P	B 552,932	M	Feb. 3, 1976
Class 296			
35R	B 463,671	M	Jan. 13, 1976
Class 298			
35M	B 510,588	M	Jan. 27, 1976
Class 305			
27	B 506,566	M	Jan. 20, 1976
Class 307			
88.3	B 540,872	E	Jan. 20, 1976
137	B 466,444	E	Jan. 20, 1976
205	B 513,368	E	Feb. 3, 1976
232	B 540,078	E	Jan. 13, 1976
255	B 492,688	E	Jan. 20, 1976
270	B 497,960	E	Jan. 20, 1976
293	B 519,932	E	Feb. 3, 1976
296	B 512,849	E	Feb. 3, 1976
Class 310			
9.6	B 501,482	E	Jan. 13, 1976
41	B 561,784	E	Jan. 27, 1976
155	B 592,143	C	Jan. 27, 1976
Class 313			
42	B 534,443	E	Jan. 27, 1976
60	B 513,706	M	Jan. 13, 1976
99	B 518,859	E	Feb. 3, 1976
273	B 531,929	E	Jan. 20, 1976
366	B 515,455	E	Jan. 27, 1976
404	B 523,696	E	Jan. 13, 1976
452	B 160,045	E	Jan. 13, 1976
477	B 279,969	E	Jan. 13, 1976
Class 315			
169TV	B 463,322	E	Jan. 20, 1976
371	B 483,615	E	Jan. 27, 1976
388	B 516,002	E	Jan. 13, 1976
399	B 467,971	E	Jan. 13, 1976
Class 317			
9R	B 488,634	E	Jan. 20, 1976
120	B 509,606	E	Feb. 3, 1976
259	B 506,461	E	Jan. 20, 1976
Class 318			
139	B 475,236	E	Feb. 3, 1976
231	B 511,886	E	Feb. 3, 1976
257	B 502,973	E	Jan. 27, 1976
Class 321			
2	B 533,734	E	Jan. 27, 1976
7	B 509,185	E	Feb. 3, 1976
61	B 495,759	E	Feb. 3, 1976
Class 323			
1	B 430,276	E	Jan. 20, 1976
17	B 459,811	E	Jan. 20, 1976
	B 583,089	E	Jan. 27, 1976
Class 324			
13	B 079,099	E	Jan. 13, 1976
51	B 534,767	E	Feb. 3, 1976
62	B 465,393	E	Jan. 27, 1976
Class 325			
40	B 558,220	E	Jan. 27, 1976
468	B 544,961	E	Jan. 13, 1976
Class 328			
155	B 550,693	E	Jan. 20, 1976
Class 330			
33	B 439,542	E	Jan. 27, 1976
207P	B 553,460	E	Feb. 3, 1976
Class 331			
44ST	B 527,669	E	Jan. 13, 1976
51	B 538,686	E	Jan. 13, 1976
94.5C	B 549,931	E	Jan. 20, 1976
94.5L	B 506,916	E	Feb. 3, 1976
94.5P	B 394,350	E	Jan. 13, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
116R	B 527,693	E	Feb. 3, 1976
Class 333			
30R	B 453,616	E	Jan. 27, 1976
72	B 534,991	E	Jan. 27, 1976
73W	B 339,194	E	Feb. 3, 1976
Class 335			
210	B 541,517	E	Jan. 13, 1976
Class 338			
166	B 489,526	E	Feb. 3, 1976
Class 340			
172.5	B 461,336	E	Feb. 3, 1976
	B 482,907	E	Jan. 20, 1976
173R	B 545,945	M	Jan. 27, 1976
174DC	B 443,712	E	Jan. 27, 1976
174TF	B 455,425	E	Feb. 3, 1976
	B 476,681	E	Jan. 13, 1976
	B 499,718	E	Jan. 27, 1976
198	B 546,665	E	Jan. 20, 1976
347AD	B 507,647	E	Jan. 27, 1976
	B 526,106	E	Jan. 27, 1976
347CC	B 498,500	E	Jan. 20, 1976
Class 343			
7A	B 248,240	E	Jan. 13, 1976
100LE	B 488,395	E	Jan. 27, 1976
100LE	B 496,502	E	Jan. 20, 1976
786	B 547,994	E	Jan. 20, 1976
815	B 563,244	E	Jan. 27, 1976
Class 350			
96WG	B 381,985	M	Feb. 3, 1976
	B 537,722	M	Feb. 3, 1976
103	B 586,663	M	Feb. 3, 1976
173	B 469,947	M	Jan. 20, 1976
310	B 520,543	M	Jan. 27, 1976
320	B 548,440	M	Feb. 3, 1976
Class 354			
70	B 533,580	E	Feb. 3, 1976
298	B 489,328	E	Jan. 20, 1976
Class 355			
17	B 493,501	M	Feb. 3, 1976
Class 357			
16	B 496,487	E	Jan. 20, 1976
36	B 508,961	E	Feb. 3, 1976
65	B 470,798	E	Jan. 20, 1976
Class 358			
41	B 502,289	E	Jan. 13, 1976
Class 360			
1	B 484,365	E	Jan. 27, 1976
15	B 283,941	E	Feb. 3, 1976
17	B 461,874	E	Jan. 27, 1976
27	B 427,883	E	Jan. 20, 1976
80	B 403,477	E	Feb. 3, 1976
81	B 500,176	E	Feb. 3, 1976
85	B 501,253	E	Feb. 3, 1976
130	B 579,806	E	Feb. 3, 1976
Class 401			
219	B 557,621	M	Feb. 3, 1976
Class 403			
107	B 513,789	M	Feb. 3, 1976
318	B 540,632	M	Jan. 13, 1976
Class 404			
71	B 452,672	M	Jan. 13, 1976
77	B 434,206	M	Feb. 3, 1976
Class 408			
124	B 501,993	M	Jan. 13, 1976
146	B 521,986	M	Feb. 3, 1976
Class 415			
14	B 471,735	M	Feb. 3, 1976
213R	B 512,547	M	Jan. 13, 1976
214	B 552,006	M	Feb. 3, 1976
Class 416			
61	B 549,394	M	Jan. 27, 1976
Class 423			
238	B 485,401	C	Jan. 27, 1976
315	B 471,221	C	Jan. 13, 1976
390	B 549,198	C	Jan. 13, 1976
393	B 491,455	C	Feb. 3, 1976
580	B 379,177	C	Jan. 27, 1976
Class 424			
9	B 426,424	C	Feb. 3, 1976
122	B 524,179	C	Jan. 13, 1976
177	B 490,995	C	Feb. 3, 1976
203	B 576,903	C	Feb. 3, 1976
230	B 487,133	C	Jan. 27, 1976
257	B 374,588	C	Jan. 27, 1976
258	B 426,639	C	Feb. 3, 1976
263	B 466,929	C	Jan. 27, 1976
267	B 307,698	C	Feb. 3, 1976
	B 407,737	C	Feb. 3, 1976
273	B 566,464	C	Feb. 3, 1976
274	B 496,431	C	Jan. 13, 1976
311	B 457,862	C	Jan. 27, 1976
317	B 510,850	C	Feb. 3, 1976
362	B 495,489	C	Feb. 3, 1976
Class 425			
222	B 163,463	M	Jan. 27, 1976
384	B 562,813	C	Feb. 3, 1976
Class 426			
276	B 535,944	C	Jan. 13, 1976
548	B 439,778	C	Feb. 3, 1976
Class 427			
39	B 476,837	C	Jan. 20, 1976
70	B 381,709	C	Jan. 13, 1976
207	B 501,415	C	Jan. 13, 1976
343	B 160,099	C	Jan. 13, 1976
372	B 409,848	C	Jan. 27, 1976
389	B 519,377	C	Jan. 27, 1976
Class 428			
73	B 481,737	C	Jan. 13, 1976
289	B 402,929	C	Feb. 3, 1976
315	B 373,354	C	Jan. 27, 1976
434	B 457,886	C	Jan. 13, 1976
Class 431			
175	B 534,313	M	Jan. 27, 1976
264	B 398,220	M	Feb. 3, 1976

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF FEBRUARY, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A & E Plastik Pak Co., Inc.: *See—*
  - Crane, Walton B., 3,935,990.
  - Crane, Walton B., 3,935,991.
- A/S Apothekernes Laboratorium for Specialpraeparater: *See—*
  - Nettli, Per, 3,936,375.
- A-T-O Inc.: *See—*
  - Henderson, Raymond G., 3,935,719.
- Aaronson, Gerald; and Murphy, William D., to GTE Laboratories Incorporated. Scrambler and decoder for a television signal. 3,936,593, Cl. 178-5.100.
- AB Printing Equipment: *See—*
  - Keijser, Karl Olov, 3,935,815.
- Abalikhin, Anatoly Vasilievich: *See—*
  - Birjukova, Tatyana Anatolievna; Freze, Nikolai Ivanovich; Schukin, Alexei Alexeevich; Ahalikhin, Anatoly Vasilievich; Maltsev, Mikhail Vasilievich; Evgrafov, Nikolai Nikolaevich; Semenov, Sergei Gavrilovich; Zhukova, Valentina Pavlovna; Teumin, Maria Ilinichna; Isaichenko, Veronika Vasilievna; Nerodenko, Mikhail Minovich; Alexeenko, Galina Nikolaevna; Tetervak, Alexei Fedorovich; Gurevich, Samuil Mordkovich; Tjukalov, Grigory Vasilievich; and Kurganov, Georgy Vladimirovich, 3,936,689.
- Abbruzzesi, Joseph F.: *See—*
  - Travaglini, Michael J.; and Abbruzzesi, Joseph F., 3,936,217.
- Abitibi Corporation: *See—*
  - Plowman, Larry M.; and Lahaye, Thomas G., 3,936,541.
- Abolins, Arnold; Finckh, Hermann; Lambrecht, Dietrich; and Trabler, Martin, to Kraftwerk Union Aktiengesellschaft. Turboset including a helium turbine and a helium-cooled generator. 3,936,651, Cl. 290-1.00R.
- Absher, Eugene L., to Alpha Nova Development Company. Fulcrum toy assembly. 3,935,666, Cl. 46-131.000.
- ABTEC Limited: *See—*
  - Benham, Hugh Michael, 3,935,738.
- ACF Industries, Incorporated: *See—*
  - Groth, Willis G., 3,936,657.
- Achter, Eugen; Hanf, Fritz; and Wiehler, Wolf, to Siemens Aktiengesellschaft. Vacuum-tight window arrangement for a rectangular-hollow conductor. 3,936,779, Cl. 333-98.00P.
- Aciers et Outillage Peugeot: *See—*
  - Chery, Francois, 3,935,905.
- Adams, Sally L.; Cook, Michael M.; and Martin, Fred David, to Calgon Corporation. Well cementing composition having improved flow properties containing a polyamido-sulfonic additive. 3,936,408, Cl. 260-29.60S.
- Adams, William H., to Pass & Seymour, Inc. Ground fault protective circuitry. 3,936,699, Cl. 317-18.00D.
- AEG-Elotherm G.m.b.H.: *See—*
  - Wagemer, Wilfried, 3,936,783.
- Aeritalia S.p.A.: *See—*
  - Comollo, Virgilio, 3,935,754.
- Aerojet-General Corporation: *See—*
  - White, Leslie E., 3,936,382.
- Agejev, G. Sz.: *See—*
  - Heller, Laszlo; Forgo, Laszlo; Bodas, Janos; Agejev, G. Sz.; and Alekszejev, I. A., 3,935,902.
- Agency of Industrial Science & Technology: *See—*
  - Ueda, Shigeru; Nakata, Yoshinori; Yokoyama, Shinichi; Todo, Naoyuki; Yoshida, Yuji; Ishii, Tadao; and Takeya, Gen, 3,936,371.
- AGFA-GEVAERT N.V.: *See—*
  - Van Hoof, Albert Emiel; and Holvoet, Georges Arthur, 3,936,571.
- Aglietti, Giancarlo: *See—*
  - Ligorati, Ferdinando; Nova, Vittorio Emanuele; and Aglietti, Giancarlo, 3,936,507.
- Agran, Jack: *See—*
  - Tavares, Robert F.; Agran, Jack; and Easter, William M., 3,936,398.
- Ahl, Nils Goran: *See—*
  - Nordstrom, Kjell Helge; and Ahl, Nils Goran, 3,935,914.
- Ahne, Helmut: *See—*
  - Kleeberg, Wolfgang; Wiedenmann, Rudolf; and Ahne, Helmut, 3,936,523.
- Aida, Yoshiaki: *See—*
  - Sato, Atsushi; Aida, Yoshiaki; and Shimizu, Isoo, 3,936,566.
- Airwick Industries, Inc.: *See—*
  - Sansanelli, Edward, 3,935,956.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Murakami, Noboru, 3,935,793.
- Akahori, Motokazu: *See—*
  - Ishizawa, Toshitugu; Akahori, Motokazu; and Sato, Hideki, 3,935,842.
- Akasaka, Hideki: *See—*
  - Ikeda, Hideo; and Akasaka, Hideki, 3,936,136.
- Aker, John L.; Geist, Donald L.; Kittle, Freddie R.; and Berry, Fred M., to Kustom Electronics, Inc. Method and apparatus for digitally measuring speed. 3,936,824, Cl. 343-8.000.
- Akimoto, Nnrio: *See—*
  - Kusunose, Tetsuhiro; Ishikawa, Tatsuo; Akimoto, Norio; Fukuma, Noboru; and Imamura, Kazuyoshi, 3,936,394.
- Akiyama, Hiroshi: *See—*
  - Tabara, Yoshijiro; Akiyama, Hiroshi; Igawa, Masayuki; Maekawa, Tadashi; and Shinomiya, Tokuo, 3,936,512.
- Akiyama, Katsuhiko, to Sony Corporation. Display structure having light emitting diodes. 3,936,694, Cl. 313-500.000.
- Akiyama, Kazuhiro, to Fuji Photo Optical Co., Ltd. Independent mirror swing-up means in a single lens reflex camera with memory exposure device. 3,936,848, Cl. 354-156.000.
- Akopov, Ernest Mikhailovich; Kapitanov, Nikolai Nikolaevich; Strekopytov, Alexei Alexeevich; Ogoltsova, Evgenia Sergeevna; and Paches, Alexandr Ilich. Surgical apparatus for suturing organs and tissues with metal staples. 3,935,981, Cl. 227-19.000.
- Aktiebolaget Electrolux: *See—*
  - Asplund, Ivar; and Waara, Karl Arvid Henning, 3,936,282.
- Aktiebolaget Smaefa: *See—*
  - Nordstrom, Kjell Helge; and Ahl, Nils Goran, 3,935,914.
- Aktiebolaget Svenska Flaktfabriken: *See—*
  - Lindestrom, Lars-Erik E.; and Wibring, Arne S., 3,935,880.
  - Saterdal, Edgar, 3,935,625.
  - Westergren, Folke, 3,935,898.
- Aktiengesellschaft Fr. Mettler's Sohne Maschinenfabrik: *See—*
  - Mettler, Hermann, 3,935,623.
- Aktiengesellschaft Jungbunzlauer Spiritus- und Chemische Fabrik: *See—*
  - Kabil, Adel J., 3,936,352.
- Akzona Incorporated: *See—*
  - Miller, Eugene J., Jr.; and Tiefenthal, Harlan E., 3,936,503.
  - Stapp, Hans, 3,936,337.
  - Weber, Bernd, 3,935,621.
- Albano, Philip A. Seal ring and splice enclosure. 3,936,590, Cl. 174-92.000.
- Albert, Joseph J., to Martin Marietta Corporation. Secure hyperbolic guidance using noise signals and correlation detection. 3,936,827, Cl. 343-105.00R.
- Albertson, Noel F., to Sterling Drug Inc. 1,2,3,4,5,6-Hexahydro-1-oxo or hydroxy-3-acyl-2,6-methano-3-benzazocines and corresponding 1-esters thereof. 3,936,462, Cl. 260-293.540.
- Albright & Wilson Limited: *See—*
  - Harris, Glyn Islwyn; and Edwards, Alfred Gerald, 3,936,510.
- Alburger, James R. Method and means for improving flaw entrapment efficiency in water-washable inspection penetrants. 3,935,731, Cl. 73-104.000.
- Aldrink, Larry D.; Nielsen, Edward G.; and Vogelaar, Willard G., to Laser Alignment, Inc. Self-leveling laser assembly. 3,936,197, Cl. 356-250.000.
- Alekszejev, I. A.: *See—*
  - Heller, Laszlo; Forgo, Laszlo; Bodas, Janos; Agejev, G. Sz.; and Alekszejev, I. A., 3,935,902.
- Alexander, William R. Collection receptacle. 3,936,087, Cl. 294-1.00R.
- Alexeenko, Galina Nikolaevna: *See—*
  - Birjukova, Tatyana Anatolievna; Freze, Nikolai Ivanovich; Schukin, Alexei Alexeevich; Abalikhin, Anatoly Vasilievich; Maltsev, Mikhail Vasilievich; Evgrafov, Nikolai Nikolaevich; Semenov, Sergei Gavrilovich; Zhukova, Valentina Pavlovna; Teumin, Maria Ilinichna; Isaichenko, Veronika Vasilievna; Nerodenko, Mikhail Minovich; Alexeenko, Galina Nikolaevna; Tetervak, Alexei Fedorovich; Gurevich, Samuil Mordkovich; Tjukalov, Grigory Vasilievich; and Kurganov, Georgy Vladimirovich, 3,936,689.
- Alfredsson, Stig Allan Junior, to Sandvik Aktiebolag by change of name from Sandvikens, Jernverks Aktiebolag. Conveyor belt system. 3,936,873, Cl. 360-1.000.
- Alladin Enterprises Ltd.: *See—*
  - Hamid, Michael; Krush, Emil; and Boulanger, Roger, 3,935,662.
- Allan, Zdenek; and Schweizer, August, to Sandoz Ltd., (Sandoz AG). Organic compounds. 3,936,496, Cl. 260-510.000.
- Allegheny Ludlum Industries, Inc.: *See—*
  - Harltine, Albert G., III, 3,936,297.
  - Kazeva, Richard, 3,936,323.
- Allen, Douglas, Jr.; Caffrey, Richard F.; and Scanlon, J. Philip, to Johnson & Johnson. Surgical gown with transfer device. 3,935,596, Cl. 2-114.000.
- Allen, George Rodger, Jr.; and McEvoy, Francis Joseph, to American Cyanamid Company. 1-Acyl-3-[2-(4-phenyl-1-piperidinyl)ethyl]indolines. 3,936,464, Cl. 260-293.610.
- Allen, Harry Emitt, Sr. Portable light. 3,936,670, Cl. 240-41.300.

- Allied Chemical Corporation: *See—*
  - Fisher, William Bernard; Kim, Dong Wha; Norwood, Orin Wyatt; Showers, John Walter; Swanson, Eugene Addison; and Weedon, Gene Clyde, 3,936,253.
  - McLend, John H., 3,936,266.
  - Miller, William A.; and Robinson, Brian W., 3,936,569.
- Allied Industries, Inc.: *See—*
  - Leonard, James H., Jr., 3,936,037.
- Allis-Chalmers Corporation: *See—*
  - Northup, Edwin M.; Moore, David L.; and Shaver, J. Lyle, 3,935,866.
- Allmanna Svenska Elektriska Aktiebolaget: *See—*
  - Elfgren, Carl; and Spicar, Erich, 3,936,784.
- Alloy Surfaces Company, Inc.: *See—*
  - Baldi, Alfonso L., 3,936,539.
- Alper, Conrad Hugh, to Damon Corporatinn. Treatment of pets. 3,936,527, Cl. 424-177.000.
- Alpha Nova Development Company: *See—*
  - Absher, Eugene L., 3,935,666.
- Alphamedics Mfg. Corporation: *See—*
  - Berman, Richard M.; and Schwartz, Bernard, 3,936,031.
- Alter, Richard R. Capsule-filling machines. 3,935,885, Cl. 141-279.000.
- Alza Corporation: *See—*
  - Hoff, Seymour, 3,935,860.
- Ambitex Company: *See—*
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- Amchem Products, Inc.: *See—*
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- Amdahl Corporation: *See—*
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- American Cyanamid Company: *See—*
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- American Home Products Corporation: *See—*
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- American Hospital Supply Corporation: *See—*
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- American Sterilizer Company: *See—*
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- Andersen Corporation: *See—*
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- Andersen, Kare: *See—*
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- Andersen, Stephen Verner; and Swick, Edwin Grant, to Illinois Tool Works Inc. Multifinger contact. 3,936,624, Cl. 200-283.000.
- Anderson Company, The: *See—*
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- Anderson, Paul R. Oversize document storage cabinet. 3,936,113, Cl. 312-297.000.
- Ando, Yujiro: *See—*
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  - Tanaka, Keiji; Ando, Yujiro; and Ohara, Katsunobu, 3,936,184.
- Andresen, John H., Jr., to Intercontinental Dynamics Corporation. Radar-barometric altitude indicator. 3,936,797, Cl. 340-27.0AT.
- Angelle, Philippe; and Lefevre, Georges, to Societe D'Etudes, Recherches Et Constructions Electroniques Sercel. Amplifier for analogue signal samples with automatic gain control, and circuit for digitisation of such samples. 3,936,819, Cl. 340-347.0AD.
- Anselmino, Giovanni; Pozzetto, Roberto; and Carollo, Gianfranco, to Fiat Societa per Azioni. Angular velocity detector assembly for wheels of motor vehicles having anti-skid brake systems. 3,936,684, Cl. 310-168.000.
- Anthony, Thomas R.; Cline, Harvey E.; and Winegar, Donald M., to General Electric Company. Solar cell. 3,936,319, Cl. 136-89.000.
- Aoi Sansho Kabushiki Kaisha: *See—*
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- Aono, Shigeo; and Mizoguchi, Norio, to Nissan Motor Company Limited; and Hicachi, Ltd. Ignition timing control device for autnmotive ignition system. 3,935,845, Cl. 123-117.00R.
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- Ardry, Robert; and Robilliart, Michel, to Omnium Financier Aquitaine pour l'Hygiene et la Sante (Sanofi). Cytohiotic glohulins for kidney treatment. 3,936,434, Cl. 260-112.00B.
- Arendt, Henry P., to Otis Engineering Corporatinn. Well tuhing protective fluid injection system. 3,935,903, Cl. 166-184.000.
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- Ariyama, Kenzo, to Ricoh Co., Ltd. Sheet stripping device for copying apparatus. 3,936,045, Cl. 271-174.000.
- Armco Steel Corporation: *See—*
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- Armstrong Machine Wnrks: *See—*
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- Armstrong, William A., to General Motors Corporation. Humidity and temperature responsive switch. 3,936,793, Cl. 337-300.000.
- Arnoldy, Rnman F. Magnetic feeding of powder in submerged arc welding. 3,936,655, Cl. 219-73.000.
- Arp, Ewald A.; Arp, Robert A.; and Moody, Gene S., to Larson, Arnold W. G., a part interest. Ticket dispensing apparatus. 3,935,978, Cl. 225-15.000.
- Arp, Robert A.: *See—*
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- Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
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  - Kurei, Hiroshi; Urano, Fumio; and Nomura, Katsuhiko, 3,936,843.
- Asakawa, Shirow; Hasegawa, Katsue; Sano, Reiji; and Matsuda, Shunsuke, to Matsushita Electric Industrial Co., Ltd. Light and heat sensitive composition for producing a colored transfer complex image. 3,936,307, Cl. 96-90.00R.
- Asberg, Store Lennart, to SKF Industrial Trading and Development Company, B.V. Bearing with one or more flange-shaped rings. 3,936,105, Cl. 308-187.100.
- Aschberger, Anton A., to Continental Can Company, Inc. Ultraviolet curing oven. 3,935,647, Cl. 34-105.000.
- Asphaug, Bjorn; and Pedersen, Thor, to Elkem-Spigerverket. Control system for electrical furnaces. 3,936,588, Cl. 13-33.000.
- Asplund, Herbert F.; Hess, John R.; and Kozlin, Joseph R., to United Technologies Corporation. Gas turbine construction. 3,936,222, Cl. 416-95.000.
- Asplund, Ivar; and Waara, Karl Arvid Henning, to Aktiebolaget Electrolux. Vacuum cleaner and temperature-responsive motor cooling device. 3,936,282, Cl. 55-217.000.
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- Aurin, Friedrich, Kantor, Paul; Knutti, Helmut; and Weinheimer, Hans-Richard, to Stiftung, Carl Zeiss. Binocular viewing device. 3,936,152, Cl. 350-202.000.
- Auth, Gerald L., to Eocom Corporation. Multiplex interferometer. 3,936,193, Cl. 356-106.00S.
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- Avery, Michael J.; and Martino, Lawrence A., to Monsanto Company. Apparatus improvements in a rotary blow molding machine. 3,936,263, Cl. 425-296.000.
- Aya, Norimoto; Takahashi, Kunihoiro; Osaka, Kenji; and Kusunose, Naohito, to Nissan Motor Co., Ltd. Vehicle door. 3,936,090, Cl. 296-146.000.
- Ayer, George Edward, to Bunker Ramo Corporation. Terminal block having flat flexible interconnecting circuits. 3,936,119, Cl. 339-17.00F.
- Aylott, Eric V., to Eylure Limited. Packaging of artificial eyelashes. 3,935,872, Cl. 132-88.700.
- B. F. Goodrich Company, The: *See—*
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- Bachman, Charles W., to Honeywell Information Systems, Inc. Data processing system incorporating a logical move instruction. 3,936,804, Cl. 340-172.500.
- Bachmann, Georg: *See—*
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- Baghdadi, Samy, to General Motors Corporation. Compressor diffuser. 3,936,223, Cl. 415-211.000.
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- Bakker, Gijsbertus; and van Leeuwen, Johannes Aloysius, to U.S. Philips Corporation. Color cathode ray tube frame-color selection electrode support structure. 3,936,691, Cl. 313-407.000.
- Baldi, Alfonso L., to Alloy Surfaces Company, Inc. High temperature resistant diffusion coating. 3,936,539, Cl. 427-253.000.
- Balitskaya, Ljudmila Vasilievna: *See—*
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- Balitsky, Vladimir Sergeevich; Khetchikov, Lev Nikolaevich; Orlova, Valentina Petrovna; and Balitskaya, Ljudmila Vasilievna. Process for producing amethyst crystal. 3,936,276, Cl. 23-301.00R.
- Ball, Lewis John; Smith, Gordon Roy Frank; and Fry, William Lawrence, to Rist's Wires and Cables Limited. Apparatus for use in the manufacture of a wiring harness. 3,936,344, Cl. 156-385.000.
- Bals, Hans Gunter. Process and device for cutting electrically conductive material workpieces. 3,936,653, Cl. 219-68.000.
- Baltimore Spice Company, The: *See—*
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- Band, Ian T.; and MacLeod, Kenneth J., to Hewlett-Packard Company. Automatic gate control system. 3,936,757, Cl. 328-72.000.
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- Banko, Anton: *See—*
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- Banner, Kurt Albert. Feed device for bulk material. 3,935,952, Cl. 214-17.00D.
- Bar-on, Ari, to Xerox Corporation. Metering blade for a fuser roll. 3,935,836, Cl. 118-60.000.
- Barber, William Austin, to American Cyanamid Company. Copper compound catalysts for hydration of nitriles to amides. 3,936,502, Cl. 260-561.00N.
- Barcos-Berry, Inc.: *See—*
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- Bareis, Alfred; Dangelmaier, Karl; and Von Wlassaty, Joachim, to L. Scholer GmbH. Punching press with tool exchanging means. 3,935,770, Cl. 83-95.000.
- Barlow, Conrad R., to Transland, Inc. Jettisonahle agricultural sprayer. 3,936,018, Cl. 244-136.000.
- Barnes, Philip E., to United Technologies Corporation. Fan propolsor oil escapement means. 3,935,704, Cl. 60-226.00R.
- Barnett, Steven V.: *See—*
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- Barofsky, Douglas F., to Oregon Graduate Center for Study and Research. Activation of thin wire emitters for field ionization/field desorption mass spectrometry. 3,936,532, Cl. 427-111.000.
- Barowski, Karlheinz; Schubel, Kort; and Welnhofer, Hans, to Braun Aktiengesellschaft; and Enna-Werk Optische Anstalt. Device for moving slides vertically in projectors. 3,936,169, Cl. 353-115.000.
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- Barreto, Juan Pablo, to General Electric Company. Slinger means for homidifier. 3,936,515, Cl. 261-29.000.
- Barrett, Harrison H., to Raytheon Company. Radiographic imaging system for high energy radiation. 3,936,639, Cl. 250-369.000.
- Barrett, William T., to Wehr Corporation. Magnetic refuse separator. 3,935,947, Cl. 209-111.800.
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  - Maier, Karl; and Hartwig, Ernst, 3,936,477.
- Baskerville, Ralph James, Jr.; and Schiro, Francis Gennaro, to Procter & Gamble Company, The. Detergent-compatible fabric softening and antistatic compositions. 3,936,537, Cl. 427-242.000.
- Bassani S.p.A.: *See—*
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- Bassett, Alvin Lee. Portable cutting device. 3,935,777, Cl. 83-471.300.
- Batcher, Kenneth E., to Goodyear Aerospace Corporation. Solid state associative processor organization. 3,936,806, Cl. 340-172.500.
- Bateman, Charles Donald, to Sundstrand Data Control, Inc. Aircraft ground proximity warning instrument. 3,936,796, Cl. 340-27.0AT.
- Bauer, Hans, to Dietz-Druckguss KG. Grilling apparatos usable as a space heating means. 3,935,809, Cl. 99-447.000.
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- Bawden, Ralph D.; and Robert Olson, a/k/a John R. Olson, tn Recreational Plastics, Inc. Self-propelled boat vehicle. 3,935,832, Cl. 115-.50A.
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  - Konig, Hans-Bodo; Schrock, Wilfried; Disselnkotter, Hans; and Metzer, Karl Georg, 3,936,442.
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  - Petersen, Uwe; Kabbe, Hans-Joachim; and Petersen, Siegfried, 3,936,447.
  - Rosenkranz, Hans-Jurgen; Rudolph, Hans; Wolff, Erich; and von Rintelen, Harald, 3,936,428.
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- Bayerwerk Aktiengesellschaft: *See—*
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- Bayne, Peter D., to Logica International Corporation. Method of cold sterilization using frozen dimethyl dicarbonate. 3,936,269, Cl. 21-58.000.
- Baynes, Frederick; and Lawrie, James Munro, to Dunlop Limited. Reflector stud. 3,936,208, Cl. 404-16.000.
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- Beall, George H.; Brydges, William T., III.; Ference, Joseph; and Kozlowski, Theodore R., to United States of America, Energy Research and Development Administration. Method for making glass-ceramic articles exhibiting high frangibility. 3,936,287, Cl. 65-30.00E.
- Beaudoin, Gordon L.; Giardini, Dante S.; and Meitzler, Allen H., to Ford Motor Company. Exhaust gas sensor probe. 3,936,794, Cl. 338-34.000.
- Beck, Martin. Method and apparatus for automatically harvesting and stacking sod. 3,935,904, Cl. 172-20.000.
- Beckman, Paul, to United States Surgical Corporation. Clinical thermometer. 3,935,744, Cl. 73-361.000.
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  - Buckle, Derek Richard; and Smith, Harry, 3,936,504.
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- Behnke, Marvin C., deceased (by Behnke, Rita, legal representative), to United States of America, Navy. System to process antenna beams to obtain the angular location of target with high resolution and accuracy. 3,936,832, Cl. 343-119.000.
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- Beitzel, Stuart W., to Chromalloy American Corporation. Mixing pump and method of mixing using same. 3,936,246, Cl. 418-1.000.
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- Benham, Hugh Michael, to ABTEC Limited. Liquid level detecting devices. 3,935,738, Cl. 73-295.000.
- Benjamin, James A., to Raytheon Company. Microwave transistor package. 3,936,864, Cl. 357-74.000.

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- Bennett, David W., to Grandview Industries Limited. Pipeline expansion joint having a smooth bore. 3,936,080, Cl. 285-175.000.
- Bennett, Robert A. Unitary beverage container. 3,935,961, Cl. 220-266.000.
- Bentley, Peter Huhert; and Clayton, John Peter, to Beecham Group Limited. Isocyanocephalosporanates. 3,936,446, Cl. 260-243.00R.
- Beny, Janos: *See—*
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- Berg, Robert D. W. Coin operated locking device. 3,935,935, Cl. 194-78.000.
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- Berkowitz, Irving L., to Kason Hardware Corporation. Inside safety release latch device. 3,936,086, Cl. 292-341.170.
- Berman, Richard M.; and Schwartz, Bernard, to Alphamedics Mfg. Corporation. Self-contained vacuum aspirator. 3,936,031, Cl. 251-284.000.
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- Berrie, Alistair Howard; and Budziarek, Richard, to Imperial Chemical Industries Limited. Water-soluble azo dyestuffs containing triazine and 3-azo-2,6-dihydroxypyrid-6-one radicals. 3,936,436, Cl. 260-153.000.
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- Berthold, Rohert V., to Union Carbide Corporation. Preparation of unsymmetrical halogen-substituted diacyl peroxides. 3,936,506, Cl. 260-610.00D.
- Besson, Andre; and Becrelle, Jacques, to Thomson-CSF. Cold cathode gas lasers. 3,936,767, Cl. 331-94.50D.
- Bianchini, Pietro, to Opocrin S.r.l. Method for preparing glucoronylglucosamino-glycan sulphates exhibiting antilipasaemic activity. 3,936,351, Cl. 195-4.000.
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- Billey, Michel, to Etablissements Zelant, Gazuit. Press notably for vulcanizing tires. 3,936,251, Cl. 425-38.000.
- Billion, Leo Jozef Maria. Monitor circuit. 3,936,705, Cl. 317-136.000.
- Bimet Corporation: *See—*
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- Birjukova, Tatyana Anatolievna; Freze, Nikolai Ivanovich; Schukin, Alexei Alexeevich; Abalikhin, Anatoly Vasilievich; Maltsev, Mikhail Vasilievich; Evgrafov, Nikolai Nikolaevich; Semenov, Sergei Gavrilovich; Zhukova, Valentina Pavlovna; Teumin, Maria Ilinichna; Isaichenko, Veronika Vasilievna; Nerodenko, Mikhail Minovich; Alexeenko, Galina Nikolaevna; Tetervak, Alexei Fedorovich; Gurevich, Samuil Mordkovich; Tjukalov, Grigory Vasilievich; and Kurganov, Georgy Vladimirovich. Rotary anode for power X-ray tubes and method of making same. 3,936,689, Cl. 313-330.000.
- Birkeland, Odd Thorbjorn; and Graaner, Finn. Bung with selectable flow openings. 3,935,969, Cl. 222-541.000.
- Bischoff, Martin: *See—*
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  - Schrock, Martin Omer; and Dibbern, John Earl, Jr., 3,936,242.
- Blackwood, Robert S., to Fluoroware Systems Corporation. Hot plate. 3,936,660, Cl. 219-459.000.
- Bladholm, Thomas A.; and McCalla, William T., to Contran Corporation. Transmission line structure. 3,935,689, Cl. 52-722.000.
- Bliek, Arie. Tonneau cover for fifth wheel camper trucks. 3,936,077, Cl. 280-423.00R.
- Blossfeld, Lothar, to ITT Industries, Inc. Integrated semiconductor device for scanning an image. 3,936,630, Cl. 250-211.00J.
- Blum, Joseph M.; Crowder, Billy L.; and McGroddy, James C., to International Business Machines Corporation. Method of making a double heterojunction diode laser. 3,936,322, Cl. 148-1.500.
- Blumenkranz, James J., to R & G Sloane Manufacturing Co., Inc. Pipe joint and method of making same. 3,936,081, Cl. 285-231.000.
- Blythe, Alan Avery; and Milligan, Robert Ian, to Hawker Siddeley Aviation Limited. Combined noise shield and thrust reverser. 3,936,017, Cl. 244-110.00B.
- Bobinger, Robert O.: *See—*
  - Tucker, James W.; and Bobinger, Robert O., 3,936,234.
- Bobrick, Mitchell; Quin, Murray L.; and Buzan, Morris M., to Emerson Electric Co., by said Murray L. Quinn and Morris M. Buzan. Illumination system. 3,936,671, Cl. 240-46.590.
- BOC Limited, trading as Edwards High Vacuum International: *See—*
  - Wycliffe, Henryk, 3,936,238.
- Bock, Nils-Erik Ragnar, to Morgardshammar Aktiebolag. Roller guide. 3,935,722, Cl. 72-250.000.
- Bodas, Janos: *See—*
  - Heller, Laszlo; Forgo, Laszlo; Bodas, Janos; Agejev, G. Sz.; and Alekszejev, I. A., 3,935,902.
- Boder, Horst, to Sigri Elektrographit GmbH. Method of producing fiber-reinforced composite members. 3,936,535, Cl. 427-228.000.
- Bodor, Nicolae S.; and Kaminski, James J., to Interx Research Corporation. 3-Chloro-tetrahydro-1,3-oxazines or oxazolidines spiro substituted. 3,936,466, Cl. 260-293.660.
- Boehret, C. Franklin. Device for locating mass centers and other purposes. 3,935,747, Cl. 73-483.000.
- Boeing Company, The: *See—*
  - Comollo, Virgilio, 3,935,754.
- Boland, Steven H.; and Olah, Stephen, to Ultra-Violet Products, Inc. Apparatus for exposing diazo printing plates and the like. 3,936,186, Cl. 355-83.000.
- Bolen, Gerhard N.; Dunbar, Sidney C.; and Smock, George E., to Owens-Corning Fiberglas Corporation. Fibrous bodies and method and apparatus for producing same. 3,936,558, Cl. 428-212.000.
- Boler, Leonard J.: *See—*
  - Desnick, Mandel L.; and Boler, Leonard J., 3,935,881.
- Bolgiano, Duane Ridgely, to International Mobile Machines Corporation. Code-controlled ringer attachment for telephones. 3,936,617, Cl. 179-84.00R.
- Bolton-Emerson, Inc.: *See—*
  - Clendaniel, William Richard, 3,936,001.
- Bomke, Hans A., to United States of America, Army. Secret communication system employing magnetic control of signal modulation on microwave or other electromagnetic carrier wave. 3,936,748, Cl. 325-32.000.
- Bonin, Jean-Claude, to Roto Diesel. Fuel injection pumps for internal combustion engines. 3,936,233, Cl. 417-214.000.
- Bonnett, Robert B. Ski equipment carrier. 3,935,977, Cl. 224-45.00S.
- Boquette, Lawrence E., Jr., to Klotz, Howard S. Construction for cartridge. 3,935,816, Cl. 102-41.000.
- Borel, Joseph; Lacour, Jacques; and Merckel, Gerard, to Commissariat a l'Energie Atomique. Charge-coupled device and method of fabrication of the device. 3,936,861, Cl. 357-24.000.
- Borg-Warner Corporation: *See—*
  - Kelbel, Donald W.; and Holdeman, John W., 3,935,752.
  - Newton, Alwin B., 3,935,715.
- Borst, Ray, to Westinghouse Electric Corporation. Nuclear reactor having thermally compensated support structure for a fuel assembly. 3,936,350, Cl. 176-87.000.
- Bos, Johannes, to U.S. Philips Corporation. Stabilisation system. 3,936,716, Cl. 318-591.000.
- Boske, Johann. Means to counteract a clogging of drain pipes. 3,936,380, Cl. 210-170.000.
- Bosso, Joseph F.: *See—*
  - Sturni, Lance C.; and Bosso, Joseph F., 3,936,405.
- Boteler, Kenneth M.; Mayfield, Cecil E.; and Harris, Vivian C., to B & W Manufacturing Company, Inc. Tubing bending machine. 3,935,721, Cl. 72-22.000.
- Botta, Arthur, to Bayer Aktiengesellschaft. Production of aryl lactamhydrazones. 3,936,444, Cl. 260-239.00B.
- Botzenhardt, Leonhard, to Licentia Patent-Verwaltungs-G.m.b.H. Method of producing a semiconductor arrangement. 3,935,635, Cl. 29-578.000.
- Boulanger, Roger: *See—*
  - Hamid, Michael; Krush, Emil; and Boulanger, Roger, 3,935,662.
- Bovaird, Arthur J.: *See—*
  - Luce, Robert L.; and Bovaird, Arthur J., 3,936,331.
- Boving, Egon. Rotatable cylinder lock. 3,935,720, Cl. 70-276.000.
- Bowers, William S., to United States of America, Agriculture. Synthetic hormones for insect control. 3,936,474, Cl. 260-348.00A.
- Bowers, William S., to United States of America, Agriculture. Synthetic hormones for insect control. 3,936,475, Cl. 260-348.00R.
- Bowes, Michael A., to Kaman Aerospace Corporation. Vibration isolator. 3,936,027, Cl. 248-358.0AA.
- Boyer, Wilhelm: *See—*
  - Ritter, Gerhard; Ritter, Josef; Ritter, Klaus; Boyer, Wilhelm; and Gott, Hans, 3,936,628.
- Bradley, M. P. Timothy; and Shen, Jacob, to Standard Oil Company, The. Variable jet separator. 3,936,374, Cl. 210-31.00C.
- Bradley, William C.; Greenleaf, Allen H.; and Lee, Roger K., Jr., to Itek Corporation. Position determining system. 3,936,632, Cl. 250-237.00R.
- Brady, Donnie G., to Phillips Petroleum Company. Nonburning, nondripping, char-forming, polypropylene composition. 3,936,416, Cl. 260-42.180.
- Brajituli, Peter. Ring binder. 3,936,202, Cl. 402-24.000.
- Brandli, Gerold; and Keller, Pierre, to BBC Brown Boveri & Company Limited. Method for contactless measurement of conductivity and/or temperature on metals by means of eddy currents. 3,936,734, Cl. 324-40.000.
- Brandt, Robert O. Pneumatic amplifier having a gain adjustment mechanism incorporated therein. 3,936,029, Cl. 251-61.100.
- Brandt, William E.; and Clark, Allen L. Body physical conditioning machine. 3,936,047, Cl. 272-57.00A.
- Braun Aktiengesellschaft: *See—*
  - Barowski, Karlheinz; Schubel, Kurt; and Welnhofer, Hans, 3,936,169.
  - Mohr, Walter, 3,936,678.
- Braun, Hans; and Mohn, Gerhard, to Paul Kuhbier & Co. Construction of bearing boxes. 3,936,099, Cl. 308-15.000.
- Bray, Chester W.: *See—*
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- Brecy, Andre Achille: *See—*
  - Champiau, Robert Francois; and Brecy, Andre Achille, 3,936,802.
- Brenneman, Daniel Andrew; Ragan, Ramon Wright; and Brockie, Thomas Harry, to Chrysler Corporation. Mounting arrangement for electronic semi-conductor devices. 3,936,704, Cl. 317-118.000.
- Bretford Manufacturing, Inc.: *See—*
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- Breyfogle, Forrest Wesley, III; and Bruer, James Dudley, to International Business Machines Corporation. Spindle depress/brake mechanism. 3,936,056, Cl. 274-9.00B.
- Bridgestone Tire Company, Ltd.: *See—*
  - Arimura, Iwao; Suzuki, Yasuo; Matsuda, Akira; and Sato, Akio, 3,935,892.
- Briggs, George L. Treatment and apparatus for separation of combustion by-products from an internal combustion engine. 3,936,280, Cl. 55-3.000.
- Bright, William L. Safety lock for enclosures. 3,936,083, Cl. 292-149.000.
- Brill, Klaus; and Glassman, Christian, to Rohert Bosch G.m.b.H. Method of selectively forming oxidized areas. 3,936,545, Cl. 427-343.000.
- Bringol, Charles Ronald; Lowry, Denis Earl; and Ridings, Charles Luther, to International Business Machines Corporation. Dictation system for storing and retrieving audio information. 3,936,805, Cl. 340-172.500.
- Brinkman, Earl W., to Davenport Machine Tool Division of Dover Corporation. Bearing assembly for screw machine spindle. 3,936,104, Cl. 308-151.000.
- British Aircraft Corporation Limited: *See—*
  - Guppy, John R.; and Roe, Robin D., 3,936,603.
- British Steel Corporation: *See—*
  - Fieldsend, Alan; and Jubb, Ronald, 3,935,723.
- Broch, Jan, to Schulstad Brod A/S. Machine for packaging box-shaped articles in bags. 3,935,691, Cl. 53-59.00R.
- Brock, Betty R., executrix: *See—*
  - Brock, Marlyn J., deceased, 3,936,536.
- Brock, Marlyn J., deceased (by Brock, Betty R., executrix), to Firestone Tire & Rubber Company, The. Method of making rubber-coated wire. 3,936,536, Cl. 427-229.000.
- Brockett, Bruce W., to NCR Corporation. Microcapsule having hydrophilic wall material and containing water soluble core material. 3,936,573, Cl. 428-402.000.
- Brockie, Thomas Harry: *See—*
  - Brenneman, Daniel Andrew; Ragan, Ramon Wright; and Brockie, Thomas Harry, 3,936,704.
- Brodie, Donald E.; Camarota, Matthew; and Jankowski, Charles R. Temperature indicators. 3,935,743, Cl. 73-343.00R.
- Brooke, Edric Raymond, to Xerox Corporation. Electrostatographic methods and apparatus. 3,936,171, Cl. 355-3.00R.
- Brookes, Ronald R.: *See—*
  - Kohler, John B.; and Brookes, Ronald R., 3,936,549.
- Brooks, Wahner E., to United States of America, Army. Method and system for monitoring the light output of pyrotechnic luminants under dynamic conditions. 3,936,839, Cl. 346-1.000.
- Brotchie, Walter J., to USM Corporation. Shoe last with insole holding devices. 3,935,609, Cl. 12-128.00D.
- Brown, Edward A.: *See—*
  - Johnson, Peter B.; and Brown, Edward A., 3,935,818.
- Brown, Russell M.: *See—*
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- Bruce-Lake Company: *See—*
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- Bruer, James Dudley: *See—*
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- Bruson, Herman A.; and Gould, Henry, to Olin Corporation. Detergent builders. 3,936,498, Cl. 260-537.00R.
- Bruzzese, Tiberio; and Ferrari, Rodolfo, to SPA-Societa Prodotti Antibiotici S.p.A. Alkyl esters of polyene antibiotics. 3,936,526, Cl. 424-119.000.
- Bryant, Robert G., to GEM Industries, Inc. Adjustable hanger handle for a crib frame. 3,935,603, Cl. 5-11.000.
- Brydges, William T., III.: *See—*
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- BSL Bignier Schmid Laurent: *See—*
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- Buckle, Derek Richard; and Smith, Harry, to Beecham Group Limited. Anti-allergic pharmaceutical compositions. 3,936,504, Cl. 260-590.00D.
- Buckreus, Werner, to Fritz Schwarzer, GmbH. Recording system using carbon-paper. 3,936,840, Cl. 346-32.000.
- Budziarek, Richard: *See—*
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- Buhrmann, Gilbert W., Jr., to United States of America, Army. Frost line indicator. 3,935,834, Cl. 116-114.00V.
- Bulova Watch Company, Inc.: *See—*
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- Bumberger, Herbert: *See—*
  - Fastner, Thorwald; Niedermayr, Alois; Bachner, Ernst; and Bumberger, Herbert, 3,935,895.
- Bunker, Jack E. Tank fabrication process. 3,935,633, Cl. 29-559.000.
- Bunker Ramo Corporation: *See—*
  - Ayer, George Edward, 3,936,119.
  - Hutter, Harold Gregory, 3,936,125.
  - Hutter, Harold Gregory, 3,936,132.
- Bunnell, Edward Dennman, to AMP Incorporated. Removable wiring device assembly. 3,935,637, Cl. 29-628.000.
- Burch, Arthur Robert, to Quality Steel Fabricators, Inc. Industrial robot. 3,935,950, Cl. 214-1.0BB.
- Burnett, Henry J., to Pollutant Separation, Inc. Electromagnetic induction heating apparatus. 3,936,625, Cl. 219-10.510.
- Burroughs Corporation: *See—*
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- Burroughs, John D.: *See—*
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- Bush, Louis, to Flanders Filters, Inc. Air filtration apparatus. 3,935,803, Cl. 98-36.000.
- Bush, Norbert: *See—*
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- Bush, Walter R., to Stanley Works, The. Garage door radio control transmitter assembly. 3,936,833, Cl. 343-225.000.
- Buss, A.G.: *See—*
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- Butler, Binion, Rice, Cook & Knapp: *See—*
  - Salgo, Francis John, 3,936,690.
- Butler, Jerry Allan, to Chamberlain Manufacturing Corporation. Extension ladder. 3,935,926, Cl. 182-208.000.
- Butterworth, Michael Lord, to Weir Electronics Limited. Electrical power supplies. 3,936,721, Cl. 321-25.000.
- Buttriss, Albert T., to Eaton Corporation. Roof nailing machine. 3,935,983, Cl. 227-110.000.
- Butz, David E., to Belmont Industries, Incorporated. Paper log roller. 3,936,007, Cl. 242-67.10R.
- Buzan, Morris M.: *See—*
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- Byrd, Fred; Pierson, Marvin B.; Compton, Thomas A.; and Dunbar, Frank C., to Armco Steel Corporation. Method of coating carbon steel. 3,936,543, Cl. 427-320.000.
- Byrns, Edson H.; and Endress, James W., to Carrier Corporation. Rotary shaft tilting shoe bearing. 3,936,103, Cl. 308-73.000.
- C.A.V. Limited: *See—*
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  - Mowbray, Dorian Farrar, 3,936,232.
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- C.M.S. Inc.: *See—*
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- Cable Climber Safety Devices Incorporated: *See—*
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- Cady, Percy L., Jr., to Houdaille Industries, Inc. Punch and stripping guide assembly. 3,935,771, Cl. 83-140.000.
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- Calcagno, Benedetto: *See—*
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- Caldwell, Edward N., to Robertshaw Controls Company. Valve construction and system utilizing the same. 3,935,998, Cl. 236-1.00C.
- Calgon Consumer Products Company Inc.: *See—*
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- Cam Gears Limited: *See—*
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- Cambridge Research and Development Group: *See—*
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- Campbell, Donald L. Integrated fluidized reduction and melting of iron ores. 3,936,296, Cl. 75-26.000.
- Camphell, Robert W., to Phillips Petroleum Company. Amorphous, optically clear polyamide from a bis(4-aminocyclohexyl)methane and a phenylindan dicarboxylic acid. 3,936,426, Cl. 260-78.00R.
- Carapbell, Stepher: *See—*
  - Coulter, Wallace H.; Hogg, Walter R.; Doty, Edward Neal; Longman, Millard D.; and Campbell, Stephen, 3,936,741.
- Cannata, Ugo, to La Soudure Electrique Autogene, Procedes Arcos. Process and apparatus for the performance of arc welding and overlaying, preferably submerged arc. 3,936,654, Cl. 219-73.000.
- Canon Kabushiki Kaisha: *See—*
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  - Moriyama, Inao; Ando, Yujiro; Ohara, Katsunobu; and Tanaka, Keiji, 3,936,177.
  - Tanaka, Keiji; Ando, Yujiro; and Ohara, Katsunobu, 3,936,184.
  - Tanikoshi, Kinji, 3,936,710.
- Cantwell, Robert Roger; and Pohl, Harold J., to Kellwood Company. Inflatable boat. 3,935,607, Cl. 9-2.00A.
- Carborundum Company, The: *See—*
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Carminati, Amos; and Bienati, Alberto. Method for manufacturing stockings, socks and the like. 3,935,718, Cl. 66-9.00R.
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Clark, Peter Frederick, to Xerox Corporation. Corona generating device. 3,936,635, Cl. 250-325.000.
Clark, Ronald R., to Martin Marietta Corporation. Digital automatic frequency control circuit. 3,936,753, Cl. 325-420.000.
Clark, Thomas S.; and Reynolds, Hugh M., to United States of America, Navy. Transverse stiffness augmentation bearing. 3,936,058, Cl. 277-88.000.
Clary, Derwin R., to Trip Inspectors, Inc. Apparatus for supporting an inspection device for tubular members and accommodating lateral shifting of the tubular members as they are run into or pulled from a well bore. 3,936,733, Cl. 324-37.000.
Claus, Ulrich; and Dischmann, Dieter. Apparatus for pulling and replacing heat exchange tubing. 3,935,951, Cl. 214-1.00P.
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Clifton, Arthur E., to Armstrong Machine Works. Light holder. 3,936,023, Cl. 248-228.000.
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Co, Eddy D. Cardiac catheter. 3,935,857, Cl. 128-2.050.
Coakley, Thomas A., to Owens-Corning Fiberglas Corporation. Oxidized polyolefin-high molecular weight elastomeric mixture. 3,936,415, Cl. 260-42.150.
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McVoy, David S., 3,936,747.
Cohan, Richard Philip. Dental instrument. 3,935,640, Cl. 32-40.00R.
Cohen, Helen. Umbrella assembly. 3,935,874, Cl. 135-16.000.
Cohen, Maurice. Position locating device for display hanger. 3,935,949, Cl. 211-168.000.
Cohen, Samuel W.; and Banko, Anton, to Surgical Design Corporation. Instruments for measuring visual fields. 3,936,164, Cl. 351-23.000.
Cole, Charles F., Jr., to Continental Oil Company. Electrical energy storage battery means. 3,936,318, Cl. 136-6.00R.
Coleman, H. Paris; Brown, Russell M.; and Wright, Billy D., to United States of America, Navy. Corrugated horn fed offset paraboloidal reflector. 3,936,837, Cl. 343-781.000

Colgate-Palmolive Company: *See*—
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Collins, Robert A. Support device for lifting and supporting patients. 3,935,604, Cl. 5-90.000.
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Conrad, William Arthur. Lockable tilting chair with frictional tilt resistance. 3,936,094, Cl. 297-328.000.
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Cooper, Jack A.; and Debruine, Carl, to Lear Siegler, Inc. Vehicle guidance mechanism. 3,935,922, Cl. 180-98.000.
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Corliss, Duncan S.; and Pacheco, James F., to FMC Corporation. Dishwashing compositions containing chlorinated isocyanurate. 3,936,386, Cl. 252-99.000.
Cormault, Pierre J. B.; and Megnoux, Jean M., to Electricite de France. Flame monitoring apparatus. 3,936,648, Cl. 250-554.000.
Cornell, Lew W., to Minnesota Mining and Manufacturing Company. Tamper indicator tape. 3,935,960, Cl. 220-260.000.
Cornett, Walter G., III; and Gaspar, Donald G., to Respiratory Care, Inc. Apparatus for blow molding a container with breachable sealing members. 3,936,264, Cl. 425-326.00B.
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Cox, Dennis T.; Devine, William T.; and Kelly, Gilbert J., to International Business Machines Corporation. Segmented parallel rail paths for input/output signals. 3,936,812, Cl. 340-173.00R.
Cox, Duncan B., Jr.; and Lee, William H., to Charles Stark Draper Laboratory, Inc., The. Digital phase-lock loop systems for phase processing of signals. 3,936,762, Cl. 329-104.000.
Cox, Jack R. Tobacco curing apparatus and method. 3,935,648, Cl. 34-131.000.
Cox, Richard D. Bow pulpit mounted pivoting fluke type anchor holder. 3,935,830, Cl. 114-210.000.
Craddy, Richard Adrian, to Masson Scott Thrissell Engineering Limited. Mounting devices for a blade of a rotary cutting machine. 3,935,774, Cl. 83-355.000.
Craigie, Samuel W., to M. L. Aviation Company Limited. Ejector release unit for use in aircraft. 3,936,019, Cl. 244-137.00R.
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Crane, Walton B., to A & E Plastik Pak Co., Inc. Plastic reinforced produce container. 3,935,991, Cl. 229-34.00R.
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Crotti, Renato. Apparatus for producing a coiled thread package. 3,935,622, Cl. 28-21.000.
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Crystal, Milton. Method of extruding foamed plastic sheathed pencils. 3,936,519, Cl. 264-46.100.
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Daniels, Dennis, to U.S. Amada, Ltd. Turret alignment apparatus. 3,935,755, Cl. 74-815.000.
Danielsen, Ole Svein, to International Standard Electric Corporation. Multimetering for telephone switching systems. 3,936,608, Cl. 179-7.10R.
D'Annessa, Anthony Thomas; Gustin, Paul Rudolph; Smith, Donald Tolman; and Zalmans, Janis John, to Bell Telephone Laboratories, Incorporated; and Western Electric Company. Solderless electrical connector for connecting a plurality of insulated wires. 3,936,128, Cl. 339-98.000.

- Dart Industries Inc.: *See—*
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  - Miller, Gregory H., 3,936,126.
- Darvishian, Arthur. Security mailbox. 3,935,994, Cl. 232-36.000.
- Das, Salil K., to Continental Can Company, Inc. Container bottom structure. 3,935,955, Cl. 215-1.00C.
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- David Brown Tractors Limited: *See—*
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- Day, Richard J.; and Yanik, LeRoy, to Midland-Ross Corporation. Compressor intake valve and control means. 3,936,236, Cl. 417-298.000.
- Dean, James Clement, to United Technologies Corporation. Retractable collective pitch stick. 3,936,015, Cl. 244-83.00F.
- deBough, Bjorn N. Circuit having audio output pulse rate related to measured resistance and output pulse modulation related to measured capacitance. 3,936,735, Cl. 324-57.00R.
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- de Jong, Jan, to Fahran Holding B.V. Method for applying contrast coloured marking lines to the surface of roads. 3,936,533, Cl. 427-137.000.
- De Kalb, Edward L.; and Fassel, Velmer A., to United States of America, Energy Research & Development Administration. Method of determining lanthanidies in a transition element host. 3,936,633, Cl. 250-273.000.
- Demag Aktiengesellschaft: *See—*
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- Demole, Edouard P., to Firmenich SA. Flavoring and perfuming ingredients. 3,936,424, Cl. 260-594.000.
- Demoures, Bernard; Llauro, Daniel; and Giolito, Francois, to Rhone-Progil. Additives for improving the dispersing properties of lubricating oil. 3,936,480, Cl. 260-404.500.
- Demus, Duane J.; and Von Langendorff, Vitmar G., to Houdaille Industries, Inc. Punching device having selectable pinch point clearance. 3,935,772, Cl. 83-140.000.
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- Derbyshire, George Cecil, to Jacobs Manufacturing Co., Ltd., The. Hand tools. 3,935,889, Cl. 145-24.000.
- De Remigis, Joseph, to Sentrol Systems Ltd. On-line system for monitoring the color, opacity and brightness of a moving web. 3,936,189, Cl. 356-73.000.
- Dergazarian, Thomas E.; and Lane, George A., to Dow Chemical Company, The. Composition and method for inflation of passive restraint systems. 3,936,330, Cl. 149-35.000.
- Derner, Paul; and Weigt, Paul, to Flachglas Aktiengesellschaft Delog-Detag. Multipane window structure. 3,935,683, Cl. 52-172.000.
- De Ronde, Frans Christiaan, to U.S. Philips Corporation. Microstrip device having mode suppressing means. 3,936,778, Cl. 333-84.00M.
- Desnick, Mandel L.; and Boler, Leonard J., to Cherne Industrial, Inc. Apparatus for steady-state volume rate flow control. 3,935,881, Cl. 137-578.000.
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- Desvignes, Francois, to U.S. Philips Corporation. Horizon sensor for a satellite in geostationary orbit. 3,936,629, Cl. 250-209.000.
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- de Wit, Michiel; and Hotz, Roddy Fro, to Texas Instruments Incorporated. Acousto-optically Q-switched laser with modulated output. 3,936,769, Cl. 331-94.50M.
- Dezelan, Joseph E.; and Jessen, Henry J., to Caterpillar Tractor Co. Pilot pump bleed control for earthmoving scrapers. 3,935,792, Cl. 91-438.000.
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- Diamond Crystal Salt Company: *See—*
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- Dietz, Gunter, to Gebr. Happich, GmbH. Safety harness. 3,936,092, Cl. 297-385.000.
- Dietz, Wolfgang Friedrich Wilhelm, to RCA Corporation. Start-up circuit for a deflection system. 3,936,115, Cl. 315-399.000.
- DiGianfilippo, Dominic J.; and Nickerson, Douglas W., to Motorola, Inc. "Wild" mobile disable circuit. 3,936,616, Cl. 179-41.00A.
- Di Matteo, Paul L.; Ross, Joseph A.; and Stern, Howard K. Method and apparatus for use in position determining. 3,936,649, Cl. 250-558.000.
- Dingus, James C. Paper cutting machine. 3,935,776, Cl. 83-425.400.
- Dingwall, Andrew Gordon Francis, to RCA Corporation. Semiconductor device including a conductor surrounded by an insulator. 3,936,859, Cl. 357-23.000.
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- Dochterman, Richard W., to General Electric Company. Centrifugal-vortex pump. 3,936,240, Cl. 417-368.000.
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- Doerman, Eryk Stefan, to Molins Limited. Testing of cigarettes. 3,935,728, Cl. 73-41.000.
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- Dolnick, Seymour S., to Glen Mfg. Inc. Cover for toilet tanks. 3,935,890, Cl. 150-52.00R.
- Donoghue, John Francis, to Industrial Nucleonics Corporation. Sheet material characteristic measuring, monitoring and controlling method and apparatus using data profile generated and evaluated by computer means. 3,936,665, Cl. 235-151.300.
- Donovan, John J.; and Isham, Daniel R., to R. E. Phelon Company, Inc. Spark plug connector and ignition coil module for engine ignition system. 3,935,852, Cl. 123-148.00A.
- Dorman, Ira S. Refuse carrier. 3,936,068, Cl. 280-34.00B.
- Dornier GmbH: *See—*
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- Dorsey, Alva Nelson, to Black and Decker Manufacturing Company, The. Reversing valve. 3,935,789, Cl. 91-317.000.
- Dorsey, Denis Peter; and Rodda, William E., to RCA Corporation. Video frequency amplifier operable in either of two bias conditions. 3,936,597, Cl. 178-6.800.
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- Doucette, Eugene F., to Owens-Illinois, Inc. Apparatus for feeding shell-like articles. 3,935,967, Cl. 221-222.000.
- Douglas, Bobby L., to Dresser Industries, Inc. Oil well pumpoff control system. 3,936,231, Cl. 417-12.000.
- Douglas, Thomas P. Adjustable drawing sweep. 3,935,641, Cl. 33-177.000.
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- Dozois, James H., to General Motors Corporation. Vehicle drain hole plug. 3,935,686, Cl. 52-302.000.
- Drackett Company: *See—*
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- Drori, Moshe, to C.A.V. Limited. Fuel injection pumping apparatus. 3,936,244, Cl. 417-435.000.
- Druskina, Lidiya Semenovna; and Shaver, Iosif Khaimovich. Thermophosphor based on lithium fluoride. 3,936,390, Cl. 252-301.40H.

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- Dubugue Awning & Tent Company: *See—*
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- Duffield, Peter L., to Mead Corporation, The. Catching apparatus and method for jet drop recording. 3,936,135, Cl. 346-1.000.
- Duke, Marshall W.; and Gregorian, Razmic S., to United Merchants and Manufacturers, Inc. Fire retardant fabrics. 3,936,562, Cl. 428-277.000.
- Dummer, Merlin R., to Cutler-Hammer, Inc. Trigger speed control switch with plastic pack semi-conductor. 3,936,708, Cl. 318-249.000.
- Dumoulin, Jean; and Linguenheld, Louis, to Rhone-Poulenc S.A. Method of rendering a substrate non-stick towards tacky substances by coating the substrate with an organosilicon composition. 3,936,578, Cl. 428-429.000.
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- Dunbar, Sidney C.: *See—*
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- Duncan, Alexander R., to Molsons Companies Limited, The. Filler tube. 3,935,886, Cl. 141-392.000.
- Dunham-Bush, Inc.: *See—*
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- Dunkailo, Peter A., to Owens-Corning Fiberglas Corporation. Glass fiberizer with ignition system. 3,936,286, Cl. 65-14.000.
- Dunlap, Glenn H.; and Foote, James B., to Owens-Illinois, Inc. Lung exercise device. 3,936,048, Cl. 272-57.00F.
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- Dunn, William C., to Semi, Inc. Sense line balancing circuit. 3,936,810, Cl. 340-173.0FF.
- Du Pont de Nemours, E. I., and Company: *See—*
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- Dusanek, Norman G., to Miller, Glen. Multi-format tape duplicator. 3,936,874, Cl. 360-15.000.
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- Elfgren, Carl; and Spicar, Erich, to Allmanna Svenska Elektriska Aktiebolaget. Oil-filled apparatus with means for achieving pressure between parts thereof. 3,936,784, Cl. 336-94.000.
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- Ericson, Bernt Sture Jorgen, to MoDoKemi AB. Method of preparing additives for calcium sulphate plaster. 3,936,313, Cl. 106-197.00R.
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- Fisher, John H. Rotary engine. 3,935,840, Cl. 123-8.230.
- Fisher, Julian Vernon, to Illinois Tool Works Inc. Door handle anchor. 3,935,787, Cl. 85-80.000.
- Fisher, William Bernard; Kim, Dong Wha; Norwood, Orin Wyatt; Showers, John Walter; Swanson, Eugene Addison; and Weedon, Gene Clyde, to Allied Chemical Corporation. Apparatus for melt-spinning synthetic fibers. 3,936,253, Cl. 425-72.00S.
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- Fite, Wade L., to Extranuclear Laboratories Inc. Method and apparatus for improved focusing of ion currents in quadrupole mass filter. 3,936,634, Cl. 250-281.000.
- Fitzmayer, Louis H., to General Electric Company. Microwave oven with special rack designs. 3,936,627, Cl. 219-10.55F.
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- Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Sumoto, Misao; and Imanaka, Hiroshi, to Matsushita Electric Industrial Co., Ltd.; and Toyo Boseki Kabushiki Kaisha. Electrothermally deformable levelling pad. 3,936,661, Cl. 219-528.000.
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- Galbraith, Robert E., to World Computer Corporation. Keyboard-printer terminal interface for data processing. 3,936,600, Cl. 178-17.500.
- Galicia, Frank. Oil separation and recovery method. 3,936,377, Cl. 210-84.000.
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- Gamell, Joseph A., to Joseph Gamell Industries, Incorporated. Combined supercharger and carburetion system for internal combustion engine. 3,935,847, Cl. 123-119.0CF.
- Gamell, Joseph A., to Joseph Gamell Industries, Incorporated. Supercharger system for internal combustion engine. 3,935,848, Cl. 123-119.0CF.
- Garcia, Luis. Board game apparatus. 3,936,054, Cl. 273-134.0AD.
- Garden, William David, to Imperial Chemical Industries Limited. Hardenable compositions. 3,936,581, Cl. 428-447.000.
- Gardner, Ruth E., to Gaston, Marton C.; and Gaston, Joan C., part interest to each. Beauty swag lamp. 3,936,669, Cl. 240-4.200.
- Garmire, Richard G.: *See—*
  - Main, Bertyl L.; and Garmire, Richard G., 3,935,807.
- Garofalo, Donald L., to Andersen Corporation. Process for manufacturing plastic shutters and the like. 3,936,520, Cl. 264-90.000.
- Garrett Corporation, The: *See—*
  - Scott, John W.; and Hosie, Alan P., 3,935,942.
- Gary, Wardell: *See—*
  - Wilson, John T.; and Gary, Wardell, 3,936,701.
- Gaspar, Donald G.: *See—*
  - Cornett, Walter G., III; and Gaspar, Donald G., 3,936,264.
- Gasseling, Franciscus Wilhelmus Engelbert: *See—*
  - Harrewijne, Arend; Michels, Albertus Peter Johannes; and Gasseling, Franciscus Wilhelmus Engelbert, 3,935,708.
- Gaston, Joan C.: *See—*
  - Gardner, Ruth E., 3,936,669.
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  - Gardner, Ruth E., 3,936,669.
- Gastonguay, James L.: *See—*
  - Willard, Charles F.; Marsden, Brian D.; Richardson, John G.; and Gastonguay, James L., 3,936,180.
- Gates, Robert Lee, to Martin Marietta Corporation. Gas bearing reaction wheel. 3,936,682, Cl. 310-66.000.
- Gaudy, Claude Francois; Giraud, Adrien; Tassin, Claude J.; and Pech, Christian H., to Compagnie Francaise des Petroles. Method and apparatus for moulding protective tubing simultaneously with bore hole drilling. 3,935,910, Cl. 175-17.000.
- Gaugh, Wilbur Seth; Heseltine, Donald Warren; Sturmer, David Michael; and Freeman, John Paul, to Eastman Kodak Company. Photographic emulsions containing methine dyes having a 1H-imidazo[4,5-b]pyrazine nucleus. 3,936,308, Cl. 96-136.000.
- Gauntlett, John Harry. Containers. 3,935,975, Cl. 222-490.000.
- Gay, Michael J., to Motorola, Inc. Motor speed control circuit. 3,936,711, Cl. 318-345.000.
- Geberth, John D., Jr. Adjustable spray tip. 3,936,002, Cl. 239-455.000.
- Gebr. Happich, GmbH: *See—*
  - Dietz, Gunter, 3,936,092.
- Gebruder Bellmer KG: *See—*
  - Keck, Jurgen, 3,935,941.
- Gebruder Heller, Firma: *See—*
  - Weinreich, Siegfried, 3,935,624.
- Geist, Donald L.: *See—*
  - Aker, John L.; Geist, Donald L.; Kittle, Freddie R.; and Berry, Fred M., 3,936,824.
- GEM Industries, Inc.: *See—*
  - Bryant, Robert G., 3,935,603.
- Gemeinhardt, Paul G., to Mobay Chemical Corporation. Organic polyisocyanates. 3,936,483, Cl. 260-453.0AR.
- Genbauff, Francis S., to Robertshaw Controls Company. Plural range pressure regulator construction or the like and the method of making the same or the like. 3,935,626, Cl. 29-157.10R.
- General Dynamics Corporation: *See—*
  - Riparbelli, Carlo, 3,935,817.
- General Electric Company: *See—*
  - Anthony, Thomas R.; Cline, Harvey E.; and Winegar, Donald M., 3,936,319.
  - Barreto, Juan Pablo, 3,936,515.
  - Carlson, Robert G.; and Steinhagen, Carl A., 3,936,550.
  - Dochterman, Richard W., 3,936,240.
  - Fitzmayer, Louis H., 3,936,627.
  - Hamstra, David C., 3,936,706.
  - Kelley, Fred W., Jr., 3,936,726.
  - Kelley, Fred W., Jr.; and Lezan, Georges R. E., 3,936,727.
  - MacKenzie, Burton Thornley, Jr.; and Wallace, Charles Frank, Jr., 3,936,572.
  - Parks, Harold G.; and Hughes, William C., 3,936,693.
  - Peil, William; and Hesler, Joseph P., 3,936,599.
  - Peil, William; and McFadyen, Robert J., 3,936,750.
  - Rabatin, Jacob G., 3,936,644.
  - Sakshaug, Eugene C., 3,936,703.
  - Staats, James E., 3,936,766.
  - Tucker, James W.; and Bobinger, Robert O., 3,936,234.
  - Wambach, Allen D., 3,936,400.
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  - Woolley, Samuel J., 3,935,714.
- General Motors Corporation: *See—*
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  - Baghdadi, Samy, 3,936,223.
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  - King, Jack B., 3,935,850.
  - Kleinbohl, Helmut, 3,935,996.
  - Mathues, Thomas P.; and Parker, Donald L., 3,935,709.
  - Mrlik, Jerry R., 3,936,250.
  - Ricketts, James B., Jr.; Hehs, William A.; Auman, John T.; and Schlax, Timothy R., 3,936,071.

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Ghosh, Mrinal K.; and Hallof, Philip G., to McPhar Geophysics Limited. Method and means for investigating the distribution of electrical conductivity in the ground. 3,936,728, Cl. 324-6.000.

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Gihbons, David John, to EMI Limited. Radiology. 3,936,638, Cl. 250-358.00R.

Giheault, Robert E. Method and means of combustion. 3,935,824, Cl. 110-8.00C.

Gibson, Howard Thomas, to Fothergill & Harvey Limited. Endless fibreglass belting. 3,936,338, Cl. 156-157.000.

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Globe-Union Inc.: *See—*

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Glockner, Ehard; and Ulrich, Bodo, to Siemens Aktiengesellschaft. Rotor stack for a squirrel-cage, sliding rotor type motor. 3,936,685, Cl. 310-209.000.

Glover, George E., to Crane Co. Liquid agitator. 3,936,229, Cl. 416-178.000.

Goell, James Emanuel; and Liu, Yet-Zen, to International Telephone and Telegraph Corporation. Light-emitting diode fabrication process. 3,936,855, Cl. 357-17.000.

Goff, Raymon L., to TRW Inc. Integral power steering assembly. 3,935,790, Cl. 91-375.00A.

Goldfarb, Adolph E.; Benkoe, Erwin; Everitt, Delmar K.; Chesley, Ronald F.; and Frierdich, Richard D., to Goldfarb, Adolph E.; and Benkoe, Erwin. Toy vehicle target game. 3,936,053, Cl. 273-108.000.

Goldstone, Bertram J.; and Memishian, John, Jr., to Raytheon Company. Analog-to-digital converter. 3,936,820, Cl. 340-347.0AD.

Good, Elmer H., to Hollowform, Inc. Molded plastic article and method. 3,936,565, Cl. 428-315.000.

Goodwin, Roy. Face fly device. 3,935,839, Cl. 119-156.000.

Goodyear Aerospace Corporation. *See—*

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Goodyear Tire & Rubber Company, The: *See—*

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Podojil, James W., 3,935,948.

Throckmorton, Morford C., 3,936,432.

Gordon, Alexander L., to Federal-Mogul Corporation. Sealing boundary gasket for compression between flanged portions of two mating metal members. 3,936,059, Cl. 277-166.000.

Gordon, Sidney, to Davis, Michael. Electronically variable audiometer of the von Bekesy type. 3,936,607, Cl. 179-1.00N

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Goslee, David Earl; and Barr, Harold Newton, to Nuclear Battery Corporation. Header. 3,936,320, Cl. 136-242.000.

Gossett, Willie P.; and White, Robert F. Electrical plug ejecting apparatus. 3,936,123, Cl. 339-45.00M.

Goto, Masuo; and Isono, Akira, to Hitachi, Ltd. Field excitation control system for the synchronous generator. 3,936,722, Cl. 322-20.000.

Goto, Toshinori: *See—*

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Goto, Toshio, to Fuji Photo Film Co., Ltd. Photographic camera equipped with automatic film transporting mechanism. 3,936,850, Cl. 354-212.000.

Gott, Hans: *See—*

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Graf, Carl R.; Janes, Harry E.; and Slikas, Anthony W., to Pennsylvania Crusher Corporation. Material reducer. 3,936,004, Cl. 241-5.000.

Graham, Albert; and McCullough, Norman Heory, to I-T-E Circuit Breaker (Canada) Limited. Plug-in fuse receptacle interchangeable with circuit breaker. 3,936,130, Cl. 339-125.00R.

Graham, Arthur Hughes: *See—*

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Granberg, Elof. Chain saw tool. 3,935,757, Cl. 76-74.000.

Grandine, Joseph D.; and Snyder, James E., to Millipore Corporation. Gel electrophoresis slide drying. 3,935,646, Cl. 34-92.000.

Grandview Industries Limited: *See—*

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Grasshoff, J. Michael; and Reid, Jerome L., to Polaroid Corporation. Novel polymeric derivatives of tetrazole-5-thiols and their metal and ammonium salts. 3,936,401, Cl. 260-8.000.

Gray, George, to Lutron Electronics Co., Inc. Dimming circuit with saturated semiconductor device. 3,936,696, Cl. 315-210.000.

Gray, Roy A., to Phillips Petroleum Company. Thermally stahle, nonburning, nondripping, char forming polyolefin formulations. 3,936,420, Cl. 260-45.8NT.

Great Canadian Oil Sands Limited: *See—*

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Grede Foundries, Inc.: *See—*

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Green, George Edward, to Ciba-Geigy Corporation. Radiation polymerisable compositions containing 3-sorboyloxy-2-hydroxypropyl groups. 3,936,366, Cl. 204-159.230.

Greenberg, Sanford D.: *See—*

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Gregory, Gordon Ian: *See—*

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Gregson, Michael; Cook, Martin Christopher; and Gregory, Gordon Ian, to Glaxo Laboratories Limited. Penicillin antibiotics. 3,936,443, Cl. 260-239.100.

Greidinger, Dahlia Simeona; and Cytter, Benedict, to Chemicals & Phosphates, Ltd. Process for the manufacture of crystalline urea phosphate. 3,936,501, Cl. 260-555.00R.

Greiner, Alan: *See—*

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Groat, James E.; Hobson, Stanley C.; and Woolman, Lawrence B., to Anaconda Company, The. Continuous tape paying apparatus. 3,935,980, Cl. 226-43.000.

Gross, Frank C., to Scott Paper Company. Apparatus and method for holding a film on a carrier and detecting correct placement. 3,936,185, Cl. 355-73.000.

Grossman, Norman J.; and Linder, Jacques F., to Northrop Corporation. Heat conductive mounting and connection of semiconductor chips in micro-circuitry on a substrate. 3,936,866, Cl. 357-80.000.

Groth, Willis G., to ACF Industries, Incorporated. Universal positioning welding torch. 3,936,657, Cl. 219-136.000.

Groves, Karl, to VLN Corporation. Starting apparatus. 3,935,749, Cl. 74-6.000.

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GTE Automatic Electric Laboratories Incorporated: *See—*

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GTE Sylvania Incorporated: *See—*

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Guillemin, Ernst A., to United States of America, Army. Matched filter communication systems. 3,936,749, Cl. 325-42.000.

Gulf Research & Development Company: *See—*

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Gulla, Michael, to Shipley Company, Inc. Pickling solution. 3,936,316, Cl. 134-3.000.

Gunther, Donald Albert, to American Sterilizer Company. Portable gas sterilizer system. 3,936,270, Cl. 21-91.000.

Guppy, John R.; and Roe, Robin D., to British Aircraft Corporation Limited. Digital communication systems. 3,936,603, Cl. 178-69.50R.

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Gustafson, Hans Hjalmar: *See—*

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Gustafson, Kenneth Allan, to Century Data Systems, Inc. Cartridge type plaint disc apparatus. 3,936,879, Cl. 360-99.000.

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Guy, Rodney J., to Western Electric Company, Inc. Molded plastic hood assembly for a cable connector plug. 3,936,129, Cl. 339-103.00R.

H. Heer & Co.: *See—*

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Haas, Werner E. L.; and Stephany, Joseph F., to Xerox Corporation. Imaging system. 3,936,640, Cl. 250-372.000.

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Haerther, Lester W.; and Kammerer, Leo P., to Rockwell International Corporation. Indicator display mechanism. 3,936,798, Cl. 340-27.0NA.

Hagelberg, Anders Torvald Sverker, to Bengt Petersson New Products Investment AB. Safety device in electrical connection devices. 3,936,122, Cl. 339-41.000.

Hahn, Ernest A., to PPG Industries, Inc. Crosslinked polyvinyl chloride film. 3,936,411, Cl. 260-32.60R.

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Hall, Wilbur S., to Amchem Products, Inc. Prolonging the stability of coating baths. 3,936,546, Cl. 427-375.000.

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Hamid, Michael; Krush, Emil; and Boulanger, Roger, to Alladin Enterprises Ltd. Electronic insect trap. 3,935,662, Cl. 43-112.000.

Hampel, Herbert J.; and Hoffman, William A., to Ultronic Systems Corporation. Swivel base assembly. 3,936,026, Cl. 248-349.000.

Hamstra, David C., to General Electric Company. Control circuit. 3,936,706, Cl. 317-148.50B.

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Hanf, Fritz: *See—*

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Hapgood, William H.; and Protopapas, Donald G., to Raytheon Company. Multiport high density burner. 3,936,003, Cl. 239-559.000.

Hara, Michio: *See—*

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Haraguchi, Keisuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Battery magazine in single lens reflex camera. 3,936,846, Cl. 354-152.000.

Haraikawa, Tetsuo, to Tokico Ltd. Disc brake for use in two-wheeled vehicle. 3,935,927, Cl. 188-73.300.

Hardin, George T., to Robertshaw Controls Company. Pneumatically operated force balance transmitter and method of making the same. 3,935,875, Cl. 137-84.000.

Hardin, George T., to Robertshaw Controls Company. Force balance transmitter and parts therefor or the like. 3,936,717, Cl. 318-676.000.

Hardtmann, Goetz E., to Sandoz, Inc. 1-Substituted-2-disubstituted aminoquin azolin-4(1h)-ones. 3,936,453, Cl. 260-256.40Q.

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Harltine, Albert G., III, to Allegheny Ludlum Industries, Inc. Method of producing austenitic stainless steel. 3,936,297, Cl. 75-130.500.

Harmsen, Ulf O.; and Pottken, Wolfgang S., to Doduco, Eugen Durrwachter. Process of producing solderable composites containing AgCdO. 3,935,988, Cl. 228-252.000.

Harner, Kermit I.; and Schneider, Roy W., to United Technologies Corporation. Control system for variable pitch fan propulsor with reverse pitch. 3,936,226, Cl. 416-28.000.

Harper, Ernest T. Combination stereo-bar. 3,936,106, Cl. 312-107.000.

Harrewijne, Arend; Michels, Albertus Peter Johannes; and Gasseling, Franciscus Wilhelmus Engelbert, to U.S. Philips Corporation. Device for converting calorific energy into mechanical energy. 3,935,708, Cl. 60-517.000.

Harrington, Timothy M., to MDH Industries, Inc. Method of measuring the duration of a discontinuous signal. 3,936,745, Cl. 324-186.000.

Harris Corporation: *See—*

Crum, James N., 3,936,008.

Harris, Glyn Islwyn; and Edwards, Alfred Gerald, to Albright & Wilson Limited. Cured aromatic resins. 3,936,510, Cl. 260-831.000.

Harris-Intertype Corporation: *See—*

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Harris, Paul Anthony, to Lucas Electrical Company Limited, The. Battery charging systems for use in road vehicles. 3,936,723, Cl. 322-28.000.

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Harroff, Marlin R., to Orthopedic Equipment Company, Inc. Knee immobilizer. 3,935,858, Cl. 128-80.00C.

Hart, David R.: *See—*

Orem, Henry Philip; Hart, David R.; and Hill, Jerry E., 3,936,451.

Harte, James Richard. Multi-purpose mathematical aid. 3,935,649, Cl. 35-31.00D.

Hartenstein; Satzinger, Gerhard; and Herrmann, Manfred, to Warner-Lambert Company. Aromatic cardenolide acetals. 3,936,438, Cl. 260-210.500.

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Harvard Industries, Inc.: *See—*

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Hasegawa, Katsue: *See—*

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Hasegawa, Tsutomu, to Kawasaki Jukogyo Kabushiki Kaisha. Insulation for double walled cryogenic storage tank. 3,935,957, Cl. 220-9.0LG.

Hauck, Frederic Peter; and Sundeen, Joseph E., to E. R. Squibb & Sons, Inc. Cyclohexane tetrols and derivatives thereof. 3,936,465, Cl. 260-293.650.

Hauser, Raimund: *See—*

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Hawker Siddeley Aviation Limited: *See—*

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Hawley, Jack S., to Pneumeric Corporation. Actuating mechanism. 3,935,795, Cl. 92-5.00R.

Hayashi, Masahiko; Ikeuchi, Hiroyuki; and Tanaka, Michihiko, to Toray Industries, Inc. Process of preparing polytetramethylene terephthalate. 3,936,421, Cl. 260-45.75K.

Hayashi, Motoshige: *See—*

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Hayashi, Yukitaka, to Hitachi, Ltd. Method of addressing magnetic memory. 3,936,875, Cl. 360-48.000.

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Hayden, Mark William: *See—*

Williams, John Francis; and Hayden, Mark William, 3,935,995.

Hayes, John C., to Universal Oil Products Company. Hydrocarbon conversion with a sulfided catalytic composite. 3,936,369, Cl. 208-139.000.

Hayes, John C., to Universal Oil Products Company. Nonacidic multimetallic dehydrogenation catalyst. 3,936,395, Cl. 252-466.0PT.

Hazelton, Heath Rohin, to Burroughs Wellcome Co. Column packing device. 3,935,884, Cl. 141-80.000.

Heckler, Clarence Herbert, Jr., to Ampex Corporation. Magnetic bubble read/write head. 3,936,883, Cl. 360-110.000.

Heeres, Jan, to Janssen Pharmaceutica N.V. 1,3-Dioxolan-2-ylmethylimidazoles. 3,936,470, Cl. 260-309.000.

Hehl, Karl. Hydraulic drive for the die closing unit of an injection molding machine. 3,935,791, Cl. 91-411.00R.

Hehl, Karl. Multi-orifice injector nozzle for injection molding machine. 3,936,262, Cl. 425-248.000.

Hehs, William A.: *See—*
  Ricketts, James B., Jr.; Hehs, William A.; Auman, John T.; and Schlax, Timothy R., 3,936,071

Heiba, El-Ahmadi Ibrahim: *See—*
  Kinney, Robert Earl; Williams, Albert Lloyd; and Heiba, El-Ahmadi Ibrahim, 3,936,472.

Heimur, Karl, to Pennwalt Corporation. Head immobilizing device for panoramic x-ray apparatus. 3,936,641, Cl. 250-439.000.

Heine, Helmut A., to Propper Manufacturing Company, Inc.; and Optotechnik Heine KG. Ophthalmoscope illumination arrangement. 3,936,161, Cl. 351-6.000.

Heinrich Reichmann: *See—*
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Heinz Kettler Metallwarenfabrik: *See—*
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Heinz, Werner. Apparatus for measuring viscosity of liquids. 3,935,726, Cl. 73-60.000.

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Helmintoller, Augustus M., Jr.; and Manharth, Gary B., to United States of America, Air Force. Self-supported, self-locating seal for turbine engines. 3,936,230, Cl. 416-193.00R.

Helms, Jimmy L.: *See—*
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Henderson, Raymond G., to A-T-O Inc. Recirculating. 3,935,719, Cl. 68-58.000.

Henke, Alfred M.; and McKinney, Joel D., to Gulf Research & Development Company. Process for producing a zeolite riser cracker feed from a residual oil. 3,936,370, Cl. 208-210.000.

Henkel & Cie G.m.b.H.: *See—*
  Lehmann, Hans-Jurgen; Bischoff, Martin; Baumann, Horst; and Krings, Peter, 3,936,317.

Hennemann, Jean, to UNELEC. Safety device with thermal and electromagnetic release for a multi-contact circuit-breaker. 3,936,780, Cl. 335-23.000.

Herbert, Curtis B., Jr.: *See—*
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Hermann, Milton A. S. Sanitary toilet seat ring lift. 3,935,601, Cl. 4-251.000.

Herrmann, Manfred: *See—*
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Hibi, Masao: *See—*
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  Aono, Shigeo; and Mizuguchi, Norio, 3,935,845.

Hickey, Thomas L., to Rockford Servo Corporation. Web alignment apparatus for multi-level web material. 3,935,979, Cl. 226-19.000.

Hickman, Albert F.; and Moore, Robert G., to Hickman Developments, Inc. Tandem axle vehicle spring suspension. 3,936,073, Cl. 280-104.50A.

Hickman Developments, Inc.: *See—*
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Hicks, Leon E.; Peterson, Wayne A.; and Schexnayder, Lawrence F., to Caterpillar Tractor Co. Dual source hydraulic steering system. 3,935,918, Cl. 180-79.20R.

Hildebrandt, William J.; and Russell, Richard H., to Stanley Works, The. Mitre box. 3,935,779, Cl. 83-762.000.

Hilgert, Adolph J., to Johnson Service Company. Fluid compressing apparatus. 3,936,245, Cl. 417-550.000.

Hill, Bryan H. Fabrication of a semiconductor device. 3,936,860, Cl. 357-23.000.

Hill, Frank Arthur, to Ozalid Group Holdings Limited. Copying machines. 3,936,181, Cl. 355-14.000.

Hill, Jerry E.: *See—*
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Hirai, Masahide; Fujimura, Mikio; Kazigase, Masahiro; and Saito, Minoru, to Unitika Ltd. Process of producing phenolic chelate resin using iminodiacetic acid. 3,936,399, Cl. 260-2.20C.

Hiraishi, Shigetoshi; Futaki, Kiyoshi; Horii, Shoichi; and Yamashita, Kiyoshi, to Mitsubishi Paper Mills, Ltd. Color photographic photosensitive material containing ultraviolet ray-absorbing compound. 3,936,305, Cl. 96-84.0UV.

Hirano, Masachika: *See—*
  Satomi, Takeo; Mukai, Kunio; Mine, Akihiko; Hino, Naganori; Tateishi, Kohshi; and Hirano, Masachika, 3,936,433.

Hirao, Kenichi, to Fuji Electric Company, Ltd. Means for detecting opening degree of claws of an electrically driven machine tool chuck. 3,936,060, Cl. 279-1.00H.

Hirata, Naonori; and Matsuo, Masatoshi, to Sumitomo Chemical Company, Limited. Process for preparation of 4,4′-diaminostilbene-2,2′-disulfonic acid or salts thereof. 3,936,497, Cl. 260-510.000.

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Hitachi Electronics Co., Ltd.: *See—*
  Yanagimachi, Akio; Uehara, Takashi; Yamamoto, Tetsuo; Yamane, Hisakichi; Sawabe, Eiichi; Yoshino, Takehiko; Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Fukuda, Masaaki; and Kayano, Tatsuo, 3,936,595.

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Hofer, Heinz; Scheid, Peter; and Wilwerscheid, Ernst. Injection moulding machine. 3,936,259, Cl. 425-242.00R.

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Hofer, Peter H., to Union Carbide Corporation. Masking process with thermal destruction of edges of mask. 3,936,531, Cl. 427-49.000.

Hofer, Walter David. Multiposition detachable combine tooth device. 3,935,697, Cl. 56-400.000.

Hoff, Richard W., to United Technologies Corporation. Turbine vane cooling. 3,936,215, Cl. 415-11.500.

Hoff, Seymour, to Alza Corporation. Intrauterine device with restrictor for maintaining device in uterine cavity. 3,935,860, Cl. 128-130.000.

Hoffman, James W., to United States of America, Army. N Dimensional target designation vector. 3,936,826, Cl. 343-5.0SA.

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Hoffmann, John A. Band saw drive arrangement. 3,935,780, Cl. 83-820.000.

Hoffmeister, Bernhard, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Gripping device for a lifting mechanism, especially in a core reactor for depositing and picking up fuel elements and control rods. 3,936,089, Cl. 294-86.00A.

Hoffmeister, Friedrich: *See—*
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Hofmann, John E.; and Schriesheim, Alan, to Exxon Research and Engineering Company. Process for conducting organonitrile addition reactions. 3,936,490, Cl. 260-465.300.

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Hogan, John W., to MagTech Industries, Inc. Magnetic tape head with clamped core holders. 3,936,884, Cl. 360-125.000.

Hogg, Walter R.; and Doty, Edward Neal, to Coulter Electronics, Inc. Apparatus for measuring a particle size dividing one of the mass or particle number of a particulate system into predetermined fractions. 3,936,666, Cl. 235-151.300.

Hogg, Walter R., to Coulter Electronics, Inc. Method and apparatus for generating error corrected signals. 3,936,739, Cl. 324-71.0CP.

Hogg, Walter R.; and Coulter, Wallace H., to Coulter Electronics, Inc. Method and apparatus for automatically sampling pulses a predetermined average number of times for storage and subsequent reproduction. 3,936,740, Cl. 324-71.0CP.

Hogg, Walter R.: *See—*
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Holmes, Martin E., to Westinghouse Electric Corporation. Flexible turbine missile shield. 3,936,219, Cl. 415-121.00G.

Holst, Arno; Kostrzewa, Michael; and Lask, Helmut, to Hoechst Aktiengesellschaft. Process for the production of water adsorbing but water-insoluble cellulose ethers. 3,936,441, Cl. 260-231.00A.

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Hornsby, James R., Jr. Tether ball apparatus with attached striking members. 3,936,050, Cl. 273-95.00A.

Hornsby, James R., Jr. Projector and dispenser activated when all targets are hit. 3,936,052, Cl. 273-101.000.

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Hutter, Harold Gregory, to Bunker Ramo Corporation. Electrical connector with metal to metal seal. 3,936,125, Cl. 339-94.00C.

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- Janiszewski, Kasimir. Guiding means for boring bar. 3,935,764, Cl. 82-1.200.
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- Jelliffe, Robin Stewart. Maternity protection device. 3,936,075, Cl. 280-150.00B.
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- Jonell, Per Olof; and Elmgren, Kjell Ingvar. Pore water pressure measuring device. 3,935,745, Cl. 73-398.00R.
- Jones, Gerald N., to United States of America, Navy. Single pulse TOA measurement system. 3,936,831, Cl. 343-113.00R.
- Jones, Kenneth B.; and Gorenflo, Walter C., to Vistron Corporation. Apparatus for manufacturing brushes. 3,936,261, Cl. 425-245.00R.
- Jones, Robert N., to Xerox Corporation. Internally shielded transfer roller. 3,936,175, Cl. 355-3.0TR.
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- Kuminsky, Daniel, to Warner-Lambert Company. Hydroxymethylene-substituted chromone-3-carboxaldehydes, process for their preparation and intermediates produced thereby. 3,936,563, Cl. '24-283.000.
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- Kato, Hideo; and Koshinaka, Eiichi, to Hokuriku Pharmaceutical Co., Ltd. 1',4'-Dihydro-1-methyl-spiro [piperidine and pyrrolidine-2,3'(2'H)quinoline]-2'-one compounds. 3,936,459, Cl. 260-288.0CE.
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- Kaufmann, Karl Ernst, to Demag Aktiengesellschaft. Monorail trolley 3,935,822, Cl. 104-93.000.
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- Kawamura, Takahide; Yoshino, Muneki; and Taniguchi, Koichi, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic seat belt locking system for vehicle 3,935,919, Cl 180-82.00C.
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- Keegan, William P. Pipettes. 3,935,734, Cl. 73-425.600.
- Keijser, Karl Olov, to AB Printing Equipment Inking apparatus for printing press. 3,935,815, Cl. 101-349.000.
- Keiser, LeRoy H., to Phillips Petroleum Company Differential release coated articles. 3,936,582, Cl. 428-447.000.
- Kelbel, Donald W.; and Holdeman, John W., to Borg-Warner Corporation. Transmission. 3,935,752, Cl. 74-473.00R.
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- Kirst, Paul-Gerhard; Maier, Karl; and Winkler, Heinz, to Wacker-Chemie GmbH. Coating material for buildings. 3,936,311, Cl 106-90.000.
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- Kliger, Herbert L. Surgical sponge. 3,935,863, Cl. 128-296.000.
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- Leonard, James H., Jr., to Allied Industries, Inc. Vented gravity blender. 3,936,037, Cl. 259-180.000.
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- Mizrach, Murray. Multiple garment hanger. 3,935,976, Cl. 223-88.000.
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- Moakler, William A.; and Stotz, Charles, to Automatic Switch Company. Automatic transfer switch. 3,936,782, Cl. 335-161.000.
- Mobay Chemical Corporation: *See—*
  - Gemeinhardt, Paul G., 3,936,483.
- Mobil Oil Corporation: *See—*
  - Chen, Nai Yuen, 3,936,353.
  - Kinney, Robert Earl; Williams, Albert Lloyd; and Heiba, El-Ahmadi Ibrahim, 3,936,472.
- Modiano, Victor J., to United States of America, Air Force. Traveling wave tube body current sensor. 3,936,732, Cl. 330-43.000.
- MoDoKemi AB: *See—*
  - Ericson, Bernt Sture Jorgen, 3,936,313.
- Moens, Joris, to Trefileries Leon Bekaert, P.V.B.A. Reinforcing elements. 3,936,278, Cl. 29-193.000.
- Mogyorodi, Ferenc: *See—*
  - Rozsa, Laszlo; Meszaros, Lajos; and Mogyorodi, Ferenc, 3,936,489.
- Mohn, Gerhard: *See—*
  - Braun, Hans; and Mohn, Gerhard, 3,936,099.
- Mohon, Windell N., to United States of America, Navy. Multiwavelength display system. 3,936,871, Cl. 358-56.000.
- Mohr, Walter, to Braun Aktiengesellschaft. Magnetically latched piezoelectric striking igniter. 3,936,678, Cl. 310-8.700.
- Moleyre, Jacques: *See—*
  - Mauvernay, Roland Yves; Bush, Norbert; Simond, Jacques; Monteil, Andre; and Moleyre, Jacques, 3,936,450.
- Molins Limited: *See—*
  - Doerman, Eryk Stefan, 3,935,728.
- Molitor, Arvid A. Flow indicator. 3,935,737, Cl. 73-228.000.
- Moll, Dean H.; and Greiner, Alan, to Singer Company, The. Balancing system for a rotating mass. 3,935,746, Cl. 73-462.000.
- Molsons Companies Limited, The: *See—*
  - Duncan, Alexander R., 3,935,886.
- Momose, Haruhiko, to Konishiroku Photo Industry Co., Ltd. Distance measuring device. 3,936,187, Cl. 356-1.000.
- Monnet, Francois, to S.A.R.L. Sud est Electro Mecanique S.E.E.M. Process and apparatus for the measurement of volume, flow rate and consumption, at a predeterminable pressure, of combustible liquid by an apparatus in place and functioning. 3,935,732, Cl. 73-118.000.
- Monnin, Andre: *See—*
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- Monotype Corporation, Limited, The: *See—*
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- Monsanto Company: *See—*
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- Moore, David L.: *See—*
  - Northup, Edwin M.; Moore, David L.; and Shaver, J. Lyle, 3,935,866.
- Moore, Donald G., to Chemetron Corporation. Method of heating comestibles. 3,936,626, Cl. 219-10.55M.
- Moore, Donald W. Reflector lamp cooling and containing assemblies. 3,936,686, Cl. 313-36.000.
- Moore, Paul: *See—*
  - Neal, Archie E.; and Moore, Paul, 3,935,906.
- Moore, Robert G.: *See—*
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- Moore, Samuel D.: *See—*
  - Holmes, Jerry D.; Lowe, Benjamin L.; and Moore, Samuel D., 3,936,751.
- Moores, Robert Gordon, Jr.; and Walton, Richard Eugene, II, to Black and Decker Manufacturing Company, The. Bearing mounting system. 3,936,100, Cl. 308-15.000.
- Moorhouse, Stephen, to David Brown Tractors Limited. Brake operating systems. 3,935,932, Cl. 192-13.00R
- Morabito, James: *See—*
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- Morgan, Charles R., to W. R. Grace & Co. Method for preparing coatings using curable solid styrene-allyl alcohol copolymer based polyene and polythiol compositions. 3,935,530, Cl. 427-43.000.
- Morgardshammar Aktiebolag: *See—*
  - Bock, Nils-Erik Ragnar, 3,935,722.
- Mori, Yasunori: *See—*
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- Morimoto, Takeshi: *See—*
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- Morin, Bernard. Hand control apparatus for an aircraft usable by a person lacking use of his legs. 3,936,014, Cl. 244-83.00R.
- Moriyama, Inao; Ando, Yujiro; Ohara, Katsunobu; and Tanaka, Keiji, to Canon Kabushiki Kaisha. Electrostatic copying machine. 3,936,177, Cl. 355-4.000.
- Morrison, Charles R., to Truck-Lite Company, Inc. Lamp mounting assembly. 3,936,127, Cl. 339-97.00L.
- Morse, John B., to Polaroid Corporation. Carrying strap attachment for a photographic camera. 3,936,845, Cl. 354-82.000.
- Moshy, William Lindsay, to American Cyanamid Company. Hydrazono-1,3,2-dithiarsetanes, -stannetanes and -stibitanes. 3,936,481, Cl. 260-429.700.
- Motorola, Inc.: *See—*
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  - Gay, Michael J., 3,936,711.
- Mowbray, Dorian Farrar, to C.A.V. Limited. Fuel injection pumping apparatus with timing adjustment. 3,936,232, Cl. 417-206.000.
- Moyle, Kenneth J., to National Semiconductor Corporation. MISFET and method of manufacture. 3,936,862, Cl. 357-41.000.
- Mrlik, Jerry R., to General Motors Corporation. Corner seal coil spring arrangement for rotary engine. 3,936,250, Cl. 418-121.000.
- Muehllehner, Gerd, to G. D. Searle & Co. Method for making corrugated collimators for radiation imaging devices. 3,936,340, Cl. 156-210.000.
- Mueller, Richard J.: *See—*
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- Mukai, Kunio. *See—*
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- Mulch, Hans, to Ernst Leitz G.m.b.H. Circular magazine for a slide projector. 3,935,652, Cl. 40-78.000.
- Mulhern, Philip J. Pet feeder. 3,935,837, Cl. 119-51.120.
- Muller-Girard, Otto; and Bray, Chester W., to Bernz-O-Matic Corporation. Smoke detector and alarm. 3,936,814, Cl. 340-237.00S.
- Muller, Thomas P., to Caterpillar Tractor Co. Engine enclosure having a counterweight mounting device secured thereon. 3,935,921, Cl. 180-89.00R.
- Muller, Wolfgang, to Th. Goldschmidt AG. Smokeless fluxing agent for hot-tinning, hot-galvanizing, and hot-leading of articles made from iron. 3,936,326, Cl. 148-26.000.
- Multi Fab. Inc.: *See—*
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- Multi-State Devices, Ltd.: *See—*
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- Mumm, Howard W., *See—*
  - Santurri, Pasco R.; Mumm, Howard W.; and Yockey, Thomas E., 3,936,560.
- Murakami, Noboru, to Aisin Seiki Kabushiki Kaisha. Hydraulic pressure regulating system 3,935,793, Cl. 91-446.000.
- Murakami, Sanjiro, to Minolta Camera Kabushiki Kaisha. Variable characteristic light filter. 3,936,147, Cl. 350-158.000.
- Murakami, Shinichi, to Rank Xerox Ltd. Support structure for a duplicator optical system. 3,936,179, Cl 355-11.000.
- Muraoka, Teruo: *See—*
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- Murata, Yoshihiro: *See—*
  - Furuishi, Haruhisa; Murata, Yoshihiro, Suzaki, Hidenori; Sumoto, Misao, and Imanaka, Hiroshi, 3,936,661.
- Murata, Yuich, to Dai Nippon Toryo Kabushiki Kaisha. Flat display system. 3,936,816, Cl. 340-336.000.
- Murphy, Eugene Scott; and Stevens, Clyde Bennett, to General Signal Corporation Hydraulic control system 3,935,707, Cl. 60-444.000.
- Murphy, William D : *See—*
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- Murray, Pierre Charles; and Chattin, Richard Maclay, to Illinois Tool Works Inc. Self-drilling rivet 3,935,786, Cl. 85-68.000.
- Murray, Stephen C. Hang glider. 3,936,012, Cl. 244-16.000.
- Muska, Willis Martin, to Bell Telephone Laboratories, Incorporated Optical fiber power tap. 3,936,631, Cl. 250-227.000.
- Mutafelija, Boris A., to Westinghouse Electric Corporation. Training simulator and method for nuclear power plant heater and non-linear modeling. 3,936,885, Cl. 444-1.000.
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  - Yanagimachi, Akio; Uehara, Takashi, Yamamoto, Tetsuo; Yamane, Hisakichi; Sawabe, Eiichi; Yoshino, Takehiko; Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Fukuda, Masaaki; and Kayano, Tatsuo, 3,936,595.
- Nagahama, Shizuo; Shimada, Keizo; Nishikawa, Takeo; and Harada, Toshiaki, to Teijin Limited. Process for separating dimethyl naphthalenes comprising 2,6-dimethyl naphthalenes as main component. 3,936,509, Cl. 260-674.00N.
- Nagao, Shozo, Mitani, Naoyuki, Ikuta, Michinobu; and Fujisawa, Kenji, to Toray Industries, Inc. Vibratory material of paper pulp and carbon fibers 3,935,924, Cl. 181-169.000.
- Nagasawa, Takeshi; Kuroiwa, Katumasa; and Narita, Kouichi, to Nitto Boseki Co., Ltd Process of producing pyrimidyl thiocarbonates. 3,936,452, Cl. 260-251.00R.
- Naito, Hideki: *See—*
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- Naito, Hiroyuki: *See—*
  - Kasugai, Tsuneo; Minagawa, Nobuhiko; Hamada, Yasushi; Sugahara, Yujiro; and Naito, Hiroyuki, 3,936,304.
- Nakagawa, Toru; and Mihashi, Takashi, to Hitachi, Ltd.; and Nissan Motor Co., Ltd. Carburetor having an altitude-effects compensation mechanism and a method for the manufacture of same. 3,936,516, Cl. 261-39.00A.
- Nakamura, Takashi, to Sony Corporation. Automatic gain control for color television camera with reproduced color fidelity. 3,936,870, Cl. 358-27.000
- Nakao, Masaru: *See—*
  - Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo, Maruyama, Isamu; and Katayama, Shigenari, 3,936,468.
- Nakata, Josuke, to Mitsubishi Denki Kabushiki Kaisha. Process of manufacturing semiconductor devices 3,936,328, Cl. 148-171.000.
- Nakata, Yoshinori: *See—*
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- Nakazato, Shinsaku: *See—*
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- Nakazawa, Mitsunobu: *See—*
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- Nanba, Yasuhiro; and Matsuda, Motonobu, to Minolta Camera Kabushiki Kaisha. Automatic exposure time control circuitry for a camera using a photodiode as a light measuring element. 3,936,842, Cl. 354-24.000.
- Nanoux, Jean, to Solvay & Cie. Adhesive lacquer, process for its use and products thereof 3,936,341, Cl. 156-242.000.
- Narita, Kouichi: *See—*
  - Nagasawa, Takeshi; Kuroiwa, Katumasa; and Narita, Kouichi, 3,936,452.
- Nath, Amar, to Drexel University. Method of labeling complex metal chelates with radioactive metal isotopes. 3,936,440, Cl. 260-211.700.
- National Research Development Corporation: *See—*
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  - Phillips, Leslie Nathan, 3,936,336.
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- Natsuome, Tadao, to Nippon Zeon Co., Ltd Hydraulic composition. 3,936,310, Cl 106-90.000.
- Naylor, Kenneth. Foldable carton tray. 3,935,989, Cl. 229-31.00R.
- NCR Corporation: *See—*
  - Brockett, Bruce W., 3,936,573.
- Neal, Archie E.; and Moore, Paul, to J. E. Love Company. Adjustable height soil conditioner with frame extending rearwardly from cultivating implement. 3,935,906, Cl. 172-177.000.
- Nelson, Norman A., to Upjohn Company, The. 3-Oxa prostaglandin $F\alpha$-type compounds. 3,936,487, Cl. 260-468.00D
- Nerodenko, Mikhail Minovich: *See—*
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- Nettli, Per, to A/S Apothekernes Laboratorium for Specialpraeparater. Process for dewatering a proteinaceous, aqueous sludge and for removing and recovering precipitating agents from a precipitate containing proteinaceous substances. 3,936,375, Cl. 210-45.000.
- Neubierl, Hermann. Connector arrangement for detachable fastening of airplane wings to the fuselage of model airplane. 3,935,664, Cl. 46-76.00R.
- Neumann, Rudolf, to Heinz Kettler Metallwarenfabrik. Table tennis net holder. 3,936,049, Cl. 273-30.000.
- Neuschel, James K. Wire inserting apparatus for tire treads. 3,935,982, Cl. 227-101.000.
- New Age Mirror & Tile Industries: *See—*
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- Newitt, John Henry. Electronic image density analysis. 3,936,598, Cl. 178-6.800.
- Newman, Douglas A., to Columbia Ribbon and Carbon Manufacturing Co., Inc. Pressure-sensitive transfer elements. 3,936,559, Cl. 428-212.000.
- Newmar, Julie. Brassiere. 3,935,865, Cl 128-488.000.
- Newton, Alwin B., to Borg-Warner Corporation. Vapor condenser for a refrigeration system. 3,935,715, Cl. 62-475.000.
- Nicholl, Thomas H. Lantern and support structure therefor. 3,936,022, Cl. 248-137.000.
- Nickerson, Douglas W.: *See—*
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- Nicolay, Karl; and Osten-Sacken, Ernst V. D., to Durkoppwerke GmbH. Method of and apparatus for feeding a workpiece along a surface of a sewing machine. 3,935,826, Cl. 112-212.000.
- Niedermayr, Alois: *See—*
  - Fastner, Thorwald; Niedermayr, Alois; Bachner, Ernst; and Bumberger, Herbert, 3,935,895.
- Nielsen, Edward G.: *See—*
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- Nielsen Hardware Corporation, The: *See—*
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- Nihon Denshi Kabushiki Kaisha: *See—*
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- Niimi, Itaru; Kaneko, Yasuhisa; Komiyama, Yoshiro; Tokui, Masaaki; Kondo, Katsumi; and Kouno, Akio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Wear and seizure resistant aluminum alloy piston. 3,935,797, Cl. 92-223.000.
- Nippon Electric Company Limited: *See—*
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  - Shinoda, Daizaburo, 3,936,321.
- Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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- Nippon Hoso Kyokai: *See—*
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- Nippon Kogaku K.K.: *See—*
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- Nippon Kokan Kabushiki Kaisha: *See—*
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- Nippon Petrochemicals Company Ltd.: *See—*
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- Nippondenso Co., Ltd.: *See—*
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- Nishihayashi, Yoshifumi: *See—*
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- Nishigori, Shogo; and Kusama, Masahiko, to Hitachi, Ltd. Camp-on detecting system for automatic telephone exchange. 3,936,613, Cl. 179-18.0BG.
- Nishikawa, Takeo: *See—*
  - Nagahama, Shizuo; Shimada, Keizo; Nishikawa, Takeo; and Harada, Toshiaki, 3,936,509.
- Nishimiya, Torazo; and Mori, Yasunori, to Hitachi, Ltd. Ignition timing control system. 3,935,844, Cl. 123-117.00R.
- Nishioka, Matsuo; Oka, Shunzo; Miyashita, Akitoshi; and Oshima, Kazuo, to Matsushita Electric Industrial Co., Ltd. Combined variable resistor assembly provided with tap position indicator means. 3,936,795, Cl. 338-119.000.
- Nissan Motor Company Limited: *See—*
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  - Aya, Norimoto; Takahashi, Kunihoiro; Osaka, Kenji; and Kusunose, Naohito, 3,936,090.
  - Ishizawa, Toshitugu; Akahori, Motokazu; and Sato, Hideki, 3,935,842.
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- Nitto Boseki Co., Ltd.: *See—*
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- Nixon, John M.; and Younkin, James R., to Edo-Aire Mitchell Industries, Inc. Electronic trim system. 3,936,715, Cl. 318-580.000.
- Noguchi, Katsumi: *See—*
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- Noguchi, Masaru, to Fuji Photo Film Co., Ltd. Method of reconstructing holograms using a reflected undiffracted beam as a reconstruction beam. 3,936,138, Cl. 350-3.500.
- Nomi Bosaikogyo Kabushiki Kaisha: *See—*
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- Nomura, Katsuhiko: *See—*
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- Nomura, Tatsuo, to Sumitomo Chemical Company, Limited; and Hayashibara Biochemical Laboratories, Incorporated. Paper composed mainly of pullulan fibers and method for producing the same. 3,936,347, Cl. 162-146.000.
- Nomura, Tatsuo: *See—*
  - Fujimoto, Yasuo; Tatsukawa, Keizo; Koiwa, Yoichi; Miike, Akira; Nomura, Tatsuo; and Kobayashi, Shohei, 3,936,469.
- Norberg, Lars, to Stal-Laval Turbin AB. Releasable axial clutch. 3,935,934, Cl. 192-46.000.
- Nordquist, Oscar M. Power turbine. 3,936,224, Cl. 415-203.000.
- Nordstrom, Kjell Helge; and Ahl, Nils Goran, to Aktiebolaget Smaefa. Vehicle platform scale. 3,935,914, Cl. 177-134.000.
- Northern Electric Company Limited: *See—*
  - Korver, Klaas, 3,936,602.
- Northrop Corporation: *See—*
  - Grossman, Norman J.; and Linder, Jacques F., 3,936,866.
- Northup, Edwin M.; Moore, David L.; and Shaver, J. Lyle, to Allis-Chalmers Corporation. Grain loss monitor. 3,935,866, Cl. 130-24.000.
- Norton, Ian Fredric; and O'Grady, James, to Crane Canada Limited. Flush valve. 3,936,028, Cl. 251-5.000.
- Norwood, Orin Wyatt: *See—*
  - Fisher, William Bernard; Kim, Dong Wha, Norwood, Orin Wyatt; Showers, John Walter; Swanson, Eugene Addison; and Weedon, Gene Clyde, 3,936,253.
- Nosaka, Ihachi. Eyeglasses. 3,936,165, Cl. 351-128.000.
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- Novak, Gary W., to Cook Electric Company. Gas tube arrester subassembly. 3,936,785, Cl. 337-29.000.
- Nuclear Battery Corporation: *See—*
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- Nuova San Giorgio S.p.A.: *See—*
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- N.V. Werktuigenfabrieke Mulder: *See—*
  - van Vliet, Cors, 3,935,855.
- Obeginski, Carl, to Burroughs Corporation. Method and apparatus for altering the synchronous compare character in a digital data communication system. 3,936,601, Cl. 178-22.000.
- Obenshain, David Noel, to Westvaco Corporation. Tandem collect single web sheet cutter and stacker. 3,935,769, Cl. 83-79.000.
- O'Brien, Paul J., to Barcus-Berry, Inc. End plug adapter. 3,935,782, Cl. 84-1.160.
- Oda, Yoshio; Uchida, Keiichi; Suhara, Manabu; and Morimoto, Takeshi, to Asahi Glass Company, Ltd. Process for preparing unsaturated aldehyde having three to four carbon atoms. 3,936,505, Cl. 260-604.00R.
- Oehlerking, Erwin L. Concrete float and accessory therefor. 3,936,210, Cl. 404-89.000.
- Ogasawara, Yoshiaki; and Noguchi, Katsumi, to Nippon Kogaku K.K. Absorbent film produced by vacuum evaporation. 3,936,579, Cl. 428-432.000.
- Ogawa, Satoshi: *See—*
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- Ogoltsova, Evgenia Sergeevna: *See—*
  - Akopov, Ernest Mikhailovich; Kapitanov, Nikolai Nikolaevich; Strekopytov, Alexei Alexeevich; Ogoltsova, Evgenia Sergeevna; and Paches, Alexandr Ilich, 3,935,981.
- O'Grady, James: *See—*
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- Ogura, Iwao: *See—*
  - Yamazaki, Eiichi; Ueda, Toshio; Maruyama, Koichi; and Ogura, Iwao, 3,936,151.
- Ogura, Toshinobu, to Minolta Camera Kabushiki Kaisha. Retrofocus type objective lens system. 3,936,153, Cl. 350-216.000.
- Ohara, Katsunobu: *See—*
  - Moriyama, Inao; Ando, Yujiro; Ohara, Katsunobu; and Tanaka, Keiji, 3,936,177.
  - Tanaka, Keiji; Ando, Yujiro; and Ohara, Katsunobu, 3,936,184
- Ohata, Keiichi: *See—*
  - Toba, Hirotaka; Ohata, Keiichi; and Tsukane, Nagayoshi, 3,936,524
- Ohki, Sadao: *See—*
  - Matuo, Ichiro; and Ohki, Sadao, 3,936,449.
- Ohman, Rolf Gunnar: *See—*
  - Krakau, Carl Erik Torsten; and Ohman, Rolf Gunnar, 3,936,162
- Ohnishi, Yasushi; and Matsuura, Shunichi, to Perkin-Elmer Corporation, The; and Hitachi, Ltd. Fluorescence spectrophotometer for absorption spectrum analysis. 3,936,190, Cl. 356-96.000.
- Oka, Shunzo: *See—*
  - Nishioka, Matsuo; Oka, Shunzo; Miyashita, Akitoshi; and Oshima, Kazuo, 3,936,795.
- Okamasa, Makoto: *See—*
  - Sugimoto, Yukio; Okamasa, Makoto; and Fukumura, Toyoshi, 3,936,619.
- Okamoto, Michio; Izawa, Shigeru; and Hara, Michio, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus for indicating relative azimuth 3,935,645, Cl. 33-363.00R.
- Okazaki, Kakumichi. Apparatus for manufacturing spiral tubes 3,935,801, Cl. 93-80.000.
- Olah, Stephen: *See—*
  - Boland, Steven H.; and Olah, Stephen, 3,936,186.
- Olin Corporation: *See—*
  - Bruson, Herman A.; and Gould, Henry, 3,936,498.
- Olmstead, John Aaron, to RCA Corporation. Integrated power transistor with ballasting resistance and breakdown protection. 3,936,863, Cl. 357-51.000.
- Olmsted, Bernie A., to Package Machinery Company. Mixer for plastic injection molding machine. 3,936,038, Cl. 259-191.000.
- Olson, John W., to C & D Valve Manufacturing Company. Method and apparatus for maintaining and servicing a pressurized refrigeration system or the like. 3,935,713, Cl. 62-77.000.
- Olsson, Jons Kurt Alvar: *See—*
  - Hjortendal, Royne Gunnar; and Olsson, Jons Kurt Alvar, 3,936,612.
- Olympia Werke AG: *See—*
  - Schmidt, Uwe; and Chvatlinsky, Kurt, 3,935,939
- Olympus Optical Co., Ltd.: *See—*
  - Imai, Toshihiro, 3,936,149.
- Omnium Financier Aquitaine pour l'Hygiene et la Sante (Sanofi): *See—*
  - Ardry, Robert; and Robilliart, Michel, 3,936,434.
- Omron Tateisi Electronics Co., Ltd.: *See—*
  - Tanaka, Toshio; Hirayama, Mamoru, and Minami, Noriaki, 3,935,933.
- Onal, Hasan F., to Sundstrand Corporation. Jet boat pump. 3,935,833, Cl. 115-12.00R.
- Ondocsin, John: *See—*
  - Wright, William Paul; Shafer, Leroy; Ondocsin, John; and Carter, Ivor W., 3,935,851.
- O'Neill, Joseph L., Jr., to Ultronic Systems Corporation. Data storage and processing apparatus including processing of repeat character sequences. 3,936,808, Cl. 340-172.500.
- Onoye, Hideo: *See—*
  - Takahashi, Nobuaki; Onoye, Hideo; Muraoka, Teruo; and Kasuga, Masao, 3,936,618.
- Opocrin S.r.l.: *See—*
  - Bianchini, Pietro, 3,936,351.
- Optotechnik Heine KG: *See—*
  - Heine, Helmut A., 3,936,161.
- Orchard Corporation of America, The: *See—*
  - Santurri, Pasco R.; Mumm, Howard W.; and Yockey, Thomas E., 3,936,560.
- Oregon Graduate Center for Study and Research: *See—*
  - Barofsky, Douglas F., 3,936,532.
- Orem, Henry Philip; Hart, David R.; and Hill, Jerry E., to United States Pipe and Foundry Company. Process for producing salts of hexamethylenetetramine. 3,936,451, Cl. 260-248.500.
- Orlando, Anthony W.; and Weidenhammer, James A., to International Business Machines Corporation. Air damped head suspension. 3,936,881, Cl. 360-103.000.
- Orlando, Anthony W.: *See—*
  - McGinnis, Bernard W.; Orlando, Anthony W.; and Weidenhammer, James A., 3,936,880.
- Orlova, Valentina Petrovna: *See—*
  - Balitsky, Vladimir Sergeevich; Khetchikov, Lev Nikolaevich; Orlova, Valentina Petrovna; and Balitskaya, Ljudmila Vasilievna, 3,936,276.
- O'Rourke, James L. Toothbrush with dentifrice attachment. 3,936,200, Cl. 401-184.000.

Orr, John L., to Keystone Consolidated Industries, Inc. Privacy lock. 3,936,084, Cl. 292-169.150.

Ortho Pharmaceutical Corporation: *See—*
- Karmas, George, 3,936,493.

Orthopedic Equipment Company, Inc.: *See—*
- Harroff, Marlin R., 3,935,858.

Osaka, Kenji: *See—*
- Aya, Norimoto; Takahashi, Kunihoiro; Osaka, Kenji; and Kusunose, Naohito, 3,936,090.

Oshima, Kazuo: *See—*
- Nishioka, Matsuo; Oka, Shunzo; Miyashita, Akitoshi; and Oshima, Kazuo, 3,936,795.

Osten-Sacken, Ernst V. D.: *See—*
- Nicolay, Karl, and Osten-Sacken, Ernst V. D., 3,935,826.

Ostevik, Petter P. Arrangement in heat input to a gully for draining water in order to avoid accumulation of snow and ice. 3,935,878, Cl. 137-334.000.

Ota, Michihiro, to Nippon Electric Company Limited. Insulated gate field effect transistor having high transconductance. 3,936,857, Cl. 357-23.000.

Otis Engineering Corporation: *See—*
- Arendt, Henry P., 3,935,903.

Oude Alink, Bernardus A.; and Hutton, Ronald P., to Petrolite Corporation. Hexahydropyrimidines as fuel additives. 3,936,279, Cl. 44-63.000.

Overbury, Francis G., to International Standard Electric Corporation. Method of radio navigation. 3,936,829, Cl. 343-106.00R.

Overbury, Francis G., to International Standard Electric Corporation. Doppler navigation system with tracking filter for multipath discrimination. 3,936,830, Cl. 343-113.0DE.

Owens-Corning Fiberglas Corporation: *See—*
- Bolen, Gerhard N.; Dunbar, Sidney C.; and Smock, George E., 3,936,558.
- Coakley, Thomas A., 3,936,415.
- Dunkailo, Peter A., 3,936,286.

Owens-Illinois, Inc.: *See—*
- Doucette, Eugene F., 3,935,967.
- Dunlap, Glenn H.; and Foote, James B., 3,936,048.
- Pei, Yu K., 3,936,288.
- Rapp, James E., 3,936,397.

Owings, Kenneth B. Carts. 3,936,070, Cl. 280-47.180.

Oxford Pendaflex Corporation: *See—*
- Chitester, John Alvin, 3,936,108.

Ozalid Group Holdings Limited: *See—*
- Hill, Frank Arthur, 3,936,181.

Ozutsumi, Minoru: *See—*
- Miyazawa, Yoshihide; Ozutsumi, Minoru; Ogawa, Satoshi; Saeki, Keiso; and Watanabe, Akio, 3,936,564.

Pacaud, Jean. Sewage treatment apparatus. 3,936,381, Cl. 210-195.00R.

Paccar Inc.: *See—*
- Schiel, Douglas W., 3,935,920.

Pacheco, James F.: *See—*
- Corliss, Duncan S.; and Pacheco, James F., 3,936,386.

Paches, Alexandr Ilich: *See—*
- Akopov, Ernest Mikhailovich; Kapitanov, Nikolai Nikolaevich; Strekopytov, Alexei Alexeevich; Ogoltsova, Evgenia Sergeevna; and Paches, Alexandr Ilich, 3,935,981.

Package Machinery Company: *See—*
- Olmsted, Bernie A., 3,936,038.

Page, Bernard F.: *See—*
- Smith, Vernon J.; Smith, Howard M.; Page, Bernard F.; and Miller, Laurence G., 3,936,042.

Palin, Alfred; and Slack, John Wesley, to Imperial Chemical Industries Limited. Destructible type switch having frangible conductive element. 3,936,621, Cl. 200-61.080.

Palmer, Winslow, to United States of America, Navy. Null input OMEGA tracking filter system. 3,936,763, Cl. 329-104.000.

Pannone, Robert John; and Surko, Walter Edward, Jr., to Emhart Corporation. Electromechanical door holder-closer. 3,935,614, Cl. 16-48.500.

Paolinelli, Antonio: *See—*
- Piccolo, Luigi; Calcagno, Benedetto; Ghirga, Marcello; and Paolinelli, Antonio, 3,936,292.

Papalos, John G., to Diamond Shamrock Corporation. Method of reducing barre in synthetic polymide textiles dyed with acid dyes. 3,936,268, Cl. 8-173.000.

Papoff, Paolo; Guidarini, Dante; and Fragale, Carlo, to Consiglio Nazionale Delle Ricerche. Double pump device for mixing two or more liquids with variable relative ratios and concentrations. 3,935,971, Cl. 222-134.000.

Parker, Donald L.: *See—*
- Mathues, Thomas P.; and Parker, Donald L., 3,935,709.

Parkinson, Robert E., to United States Steel Corporation. Coated metal fasteners. 3,936,407, Cl. 260-27.00R.

Parks, Harold G.; and Hughes, William C., to General Electric Company. Two-aperture immersion lens. 3,936,693, Cl. 313-427.000.

Pass & Seymour, Inc.: *See—*
- Adams, William H., 3,936,699.

Patel, Girish: *See—*
- Keegan, James J.; Patel, Girish; and Rubin, Howard, 3,936,402.

Patel, Jitendra G.: *See—*
- Matthews, Charles W.; and Patel, Jitendra G., 3,935,825.

Patton, James C., Jr.: *See—*
- Vanderpool, Clarence D.; MacInnis, Martin B.; and Patton, James C., Jr., 3,936,362.

Patton, Tad L., to Exxon Research and Engineering Company. Formation of polyparabanic acid coatings and films by solvent treatment of powdered layer. 3,936,584, Cl. 428-458.000.

Paul Kuhbier & Co.: *See—*
- Braun, Hans; and Mohn, Gerhard, 3,936,099.

Pavel, Raymond. Agricultural tool bar. 3,935,696, Cl. 56-385.000.

Pavenick, Stanford, to New Age Mirror & Tile Industries. Heat shrunk plastic film mirror. 3,936,159, Cl. 350-310.000.

Paxton, Gerald C., to SWF Machinery, Inc. Container assembling machine. 3,935,798, Cl. 93-39.00R.

Pech, Christian H.: *See—*
- Gaudy, Claude Francois; Giraud, Adrien; Tassin, Claude J.; and Pech, Christian H., 3,935,910.

Pecha, Ernst, to Bielomatik Leuze & Co. Apparatus for welding flexible members into a frame. 3,936,345, Cl. 156-502.000.

Pedersen, Thor: *See—*
- Asphaug, Bjorn; and Pedersen, Thor, 3,936,588.

Pei, Yu K., to Owens-Illinois, Inc. Method for making a glass-ceramic recuperator. 3,936,288, Cl. 65-33.000.

Peil, William; and Hesler, Joseph P., to General Electric Company. Automatic gain control system. 3,936,599, Cl. 178-7.3DC.

Peil, William; and McFadyen, Robert J., to General Electric Company. AM-FM receiver having improved bias supply circuit. 3,936,750, Cl. 325-315.000.

Pelletier, Ronald R.: *See—*
- Saunders, Frank L.; and Pelletier, Ronald R., 3,936,365.

Peltier, Henri; Catrain, Michel; and Monnin, Andre, to Regie Nationale des Usines Renault. Automatic camshaft lathe. 3,935,765, Cl. 82-19.000.

Pennsylvania Crusher Corporation: *See—*
- Graf, Carl R.; Janes, Harry E.; and Slikas, Anthony W., 3,936,004

Pennwalt Corporation: *See—*
- Heimur, Karl, 3,936,641.
- Smigel, Walter Andrew, 3,936,314.

Pennzoil Company: *See—*
- Steinmetz, Walter Edmund, 3,936,392.

Pepe, Charles R. Pile hammers. 3,935,908, Cl. 173-127.000.

Percival, William Spencer, to EMI Limited. Method of producing a representation of a planar section of a body using scanning radiology. 3,936,636, Cl. 250-336.000.

Perez, Thomas. Coffee brewer. 3,935,804, Cl. 99-293.000.

Perkin-Elmer Corporation, The: *See—*
- Ohnishi, Yasushi; and Matsuura, Shunichi, 3,936,190.

Perlmutter, David. Automotive alternator and solid state regulator tester. 3,936,744, Cl. 324-158.00R.

Perret, Jean-Pierre; and Vidon, Bruno, to Societe Anonyme: Pechiney Ugine Kuhlmann. Apparatus for the combustion of sulphur. 3,936,275, Cl. 23-278.000.

Perrin, Jack Louis; and Christensen, Stanley Theodnre, to Towlsaver, Inc. Construction and method of dispensing crimped paper toweling. 3,935,802, Cl. 93-84.00R.

Perry, Gary D.: *See—*
- Lowder, James E.; and Perry, Gary D., 3,936,203.

Personal Products Company: *See—*
- Kraskin, Kenneth S., 3,935,862.

Perstorp AB: *See—*
- Konicek, Jiri K., 3,936,548.

Peter, Bruno E.; and Deetken, Reinhardt R., to Grede Foundries, Inc. Grinding fixture. 3,935,679, Cl. 51-239.000.

Petersen, Siegfried: *See—*
- Petersen, Uwe; Kabbe, Hans-Joachim; and Petersen, Siegfried, 3,936,447.

Petersen, Uwe; Kabbe, Hans-Joachim; and Petersen, Siegfried, to Bayer Aktiengesellschaft. 7-Acylamino-desacetoxy-cephalosporanic acid esters and their production. 3,936,447, Cl. 260-243.00C.

Peterson, James A.; and Mc Cabe, Donald A., to Bimet Corporation. Temperature sensitive tipswitch. 3,936,786, Cl. 337-80.000.

Peterson, Wayne A.: *See—*
- Hicks, Leon E.; Peterson, Wayne A.; and Schexnayder, Lawrence F., 3,935,918.

Petrolite Corporation: *See—*
- Oude Alink, Bernardus A.; and Hutton, Ronald P., 3,936,279.
- Winslow, Joseph D., Jr., 3,936,729.

Pfitzner, Helmut; and Dammert, Walter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Process for the production of iron complexes of tetraazaannulenes. 3,936,445, Cl. 260-239.0DD.

Pfizer Inc.: *See—*
- Wiedermann, Hans E., 3,936,455.

Pfund, Charles E. Method and apparatus for obtaining maximum sail boat velocity. 3,935,828, Cl. 114-102.000.

Phelan, Harry Richard, to Harris-Intertype Corporation. Directive disk feed system. 3,936,835, Cl. 343-753.000.

Philipp, Karl-Heinz: *See—*
- Finsterwalder, Kurt; Philipp, Karl-Heinz; Veil, Martin; Widmann, Karl; and Zwerina, Karl, 3,935,724.

Phillips, James T., Jr. Non circular hoop. 3,935,668, Cl. 46-220.000.

Phillips, Leslie Nathan, to National Research Development Corporation. Method of forming reinforced plastics articles utilizing openwork tubes. 3,936,336, Cl. 156-86.000.

Phillips Petroleum Company: *See—*
- Brady, Donnie G., 3,936,416.
- Campbell, Robert W., 3,936,426.
- Gray, Roy A., 3,936,420.
- Keiser, LeRoy H., 3,936,582.
- Reusser, Robert E., 3,936,387.
- Rion, Pat F., 3,936,406.

Piccolo, Luigi; Calcagno, Benedetto; Ghirga, Marcello; and Paolinelli, Antonio, to Societa' Italiana Resine S.p.A. Compositions for use in agriculture as soil modifiers and their method of manufacture. 3,936,292, Cl. 71-63.000.

Pierson, Marvin B.: *See—*
- Byrd, Fred, Pierson, Marvin B.; Compton, Thomas A.; and Dunbar, Frank C., 3,936,543.

Pietsch, Gunter W. E.: *See—*
- Walter, Gerhard W. H.; and Pietsch, Gunter W. E., 3,936,057.

Pike, Russell E.: *See—*
- Schwender, Charles F.; and Pike, Russell E., 3,936,457.

Pioneer Electronic Corporation: *See—*
- Maruyama, Yoshio; Magata, Yoshihiro; Fushimi, Akihiro; Ueki, Yoshiharu; and Shimizu, Katsuhisa, 3,936,877.

Pipe Supports Limited: *See—*
- Salter, Anthony John, 3,936,021.

Piro, Mario, to Nuova San Giorgio S.p.A. Pin insertion machine for needle selecting cylinders of circular knitting machines. 3,935,629, Cl. 29-208.00C.

Piscionere, Anthony G., Sr. Battery clamp. 3,936,134, Cl. 339-235.000.

Pitel, Irving; Silverman, Richard S.; and Mueller, Richard J., to Rowe International, Inc. Gun and mint delivery unit for helical feed merchandising machine. 3,935,966, Cl. 221-75.000.

Pitney-Bowes, Inc.: *See—*
- Sette, Paul R.; and Storace, Anthony, 3,935,800.
- Storace, Anthony; and Morabito, James, 3,936,114.
- Tramposch, Herbert, 3,935,937.

Pittman, Allen G.: *See—*
- Wasley, William L.; and Pittman, Allen G., 3,936,267.

Pittman, Paul F., to Westinghouse Electric Corporation. Insulation test apparatus including improved means for simultaneous display. 3,936,730, Cl. 324-54.000.

Plasko, Emil Robert, to Micro Devices Corporation. Electrical protection means. 3,936,702, Cl. 317-40.00A.

Playart Ltd.: *See—*
- Tong, Duncan, 3,935,665.

Plew, Franklin T. Noisemaking device for use with fishing lure or bait and method of making same. 3,935,660, Cl. 43-42.310.

Ploetz, Theodor: *See—*
- Kriebitz, Helmut; Ploetz, Thendor; and Westerhuis, Popko Julius, 3,936,544.

Plowman, Larry M.; and Lahaye, Thomas G., to Abitibi Corporation. Surface decoration of embossed or textured panel products. 3,936,541, Cl. 427-262.000.

Pluenneke, Ricks H.; and Dykes, Willis G., to Lasco Corporation. Apparatus for selectively applying electrical current to plants. 3,935,670, Cl. 47-1.300.

Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
- Pouilloux, Jacques, 3,935,894.

Pneumeric Corporation: *See—*
- Hawley, Jack S., 3,935,795.

Podojil, James W., to Goodyear Tire & Rubber Company, The. Storage rack for unvulcanized pneumatic tires. 3,935,948, Cl. 211-23.000.

Pohl, Harold J.: *See—*
- Cantwell, Robert Roger; and Pohl, Harold J., 3,935,607.

Polaroid Corporation: *See—*
- Cardone, Paul A., 3,936,300.
- Erlichman, Irving, 3,936,847.
- Grasshoff, J. Michael; and Reid, Jerome L., 3,936,401.
- Milligan, Terry W.; and Wright, Richard F., 3,936,357.
- Morse, John B., 3,936,845.
- Scholz, Donald T., 3,936,166.
- Wareham, Richard R., 3,936,851.

Pollock, Donald M.; and Hallowell, Fulton W., to Consupak, Inc. Method for multiple blow molding with rotary turntable. 3,936,521, Cl. 264-98.000.

Pollock, E. Kears, to PPG Industries, Inc. Method and apparatus for selectively cooling glass during its advance along a molten metal surface. 3,936,289, Cl. 65-65.00A.

Pollutant Separation, Inc.: *See—*
- Burnett, Henry J., 3,936,625.

Polzin, Dean A.; Trickey, Arthur J.; and Trickey, Arthur M. Tool for applying masking tape to moldings. 3,935,758, Cl. 81-3.00R.

Pommerening, Uwe A., to Stromberg-Carlson Corporation. Synchronization of clocks in digital signalling networks. 3,936,604, Cl. 178-69.50R.

Pommerening, Uwe A., to Stromberg-Carlson Corporation. Trunk transfer circuit. 3,936,615, Cl. 179-18.0AD.

Pond, David Martin; and Wang, Richard Hsu-Shien, to Eastman Kodak Company. Benzotriazole ortho-ester ultraviolet stabilizers and their use in organic compositions. 3,936,418, Cl. 260-45.8NT.

Poole, Margaret A., to GTE Sylvania Incorporated. Time compression scanner. 3,936,611, Cl. 179-15.55T.

Post Office, The: *See—*
- Rollett, John Mortimer; and Wise, David Richard, 3,936,777.

Potrzuski, Stanley G.; and Potrzuski, Walter John. Electrical signal mechanism actuated in response to rotation about any of three axes. 3,935,669, Cl. 46-228.000.

Potrzuski, Walter John: *See—*
- Potrzuski, Stanley G.; and Potrzuski, Walter John, 3,935,669.

Pottken, Wolfgang S.: *See—*
- Harmsen, Ulf O.; and Pottken, Wolfgang S., 3,935,988.

Pouilloux, Jacques, to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes. Tire having ends of carcass cords extending circumferentially in bead area. 3,935,894, Cl. 152-356.000.

Powell, Donald L., to Autoresearch Laboratories, Inc. Apparatus for determining the corrosion protection performance of a fluid. 3,936,273, Cl. 23-253.00C.

Pozzetto, Roberto: *See—*
- Anselmino, Giovanni; Pozzetto, Roberto; and Carollo, Gianfranco, 3,936,684.

PPG Industries, Inc.: *See—*
- Cerutti, Richard L.; and Demarest, Henry M., Jr., 3,936,290
- Hahn, Ernest A., 3,936,411.
- Maaghul, John, 3,936,285.
- Pollock, E. Kears, 3,936,289.
- Sturni, Lance C.; and Bosso, Joseph F., 3,936,405.

Preiswerk, Martin: *See—*
- Avar, Lajos; Hofer, Kurt; and Preiswerk, Martin, 3,936,479.

Prescott, Robert Frank, to United Kingdom Atomic Energy Authority. Nuclear reactors. 3,936,349, Cl. 176-78.000.

Presto Lock Company, Division of Walter Kidde & Company, Inc.: *See—*
- Scholfield, Richard P., 3,936,112.

Pretty, Frederick A., to USM Corporation. Apparatus for actuating a plurality of piston and cylinder assemblies. 3,935,778, Cl. 83-639.000.

Price, Ralph E., to Landis Tool Company. Machine tool fault indicator. 3,935,675, Cl. 51-105.0SP.

Prinoth, Ernesto. Vehicle chassis. 3,936,074, Cl. 280-106.00R.

Pritchard, William Stratton. Picture frame system. 3,935,656, Cl. 40-155.000.

Probst, Kendall D. Cycle shock absorber. 3,936,076, Cl. 280-276.000.

Procter & Gamble Company, The: *See—*
- Baskerville, Ralph James, Jr.; and Schiro, Francis Gennaro, 3,936,537.
- Zeffren, Eugene; and Turner, Jerry, 3,935,868.

Produits Findus S.A.: *See—*
- Richardson, George Wilfred, 3,935,867.

Propper Manufacturing Company, Inc.: *See—*
- Heine, Helmut A., 3,936,161.

Protopapas, Donald G.: *See—*
- Hapgood, William H.; and Protopapas, Donald G., 3,936,003.

Prudhomme, Alain; and Kotcharian, Michel, to BSL Bignier Schmid Laurent. Support for welding head carriage. 3,935,985, Cl. 228-45.000.

Pukaite, Clifford Joseph, to Globe-Union Inc. Thick film variable resistor. 3,936,568, Cl. 428-333.000.

Pulver, Donald W. Method of solar heating and cooling. 3,935,897, Cl. 165-1.000.

Pupillo, Sam S.: *See—*
- Williams, Alverson B.; Dolinski, Bolek J.; and Pupillo, Sam S., 3,935,674.

Putschky, Ernst, to ITT Industries, Inc. Electromagnetic valve. 3,936,030, Cl. 251-129.000.

Quaker Oats Company, The: *See—*
- Tomomatsu, Hideo, 3,936,425.

Quality Steel Fabricators, Inc.: *See—*
- Burch, Arthur Robert, 3,935,950.

Quin, Murray L.: *See—*
- Bobrick, Mitchell; Quin, Murray L.; and Buzan, Morris M., 3,936,671.

R. E. Phelon Company, Inc.: *See—*
- Donovan, John J.; and Isham, Daniel R., 3,935,852.

R & G Sloane Manufacturing Co., Inc.: *See—*
- Blumenkranz, James J., 3,936,081.

Rabatin, Jacob G., to General Electric Company. Multi-layer X-ray screens. 3,936,644, Cl. 250-486.000.

Rabinowitz, Azriel Jay, to Sybron Corporation. Headrest for dental chair. 3,936,091, Cl. 297-188.000.

Radiologic Sciences, Inc.: *See—*
- Iversen, Arthur H., 3,936,645.

Ragan, Ramon Wright: *See—*
- Brenneman, Daniel Andrew; Ragan, Ramon Wright; and Brockie, Thomas Harry, 3,936,704.

Ramey, Chester E.; and Luzzi, John J., to Ciby-Geigy Corporation. Substituted piperazine dione oxyls and hydroxides and polymer compositions stabilized thereby. 3,936,456, Cl. 260-268.0DK.

Ramillon, Rene. Safety ski binding. 3,936,065, Cl. 280-11.35T.

Rampy, Gordon A.: *See—*
- Terhune, F. Lee; and Rampy, Gordon A., 3,936,410.

Randazzo, Giacomino. Process for the preparation of polyaldehydes by polymerization of bifunctional monomers and related products. 3,936,423, Cl. 260-67.0UA.

Rank Xerox Ltd.: *See—*
- Murakami, Shinichi, 3,936,179.
- Smith, Vernon J.; Smith, Howard M.; Page, Bernard F.; and Miller, Laurence G., 3,936,042.

Ranzanigo, Pierluigi, to Bassani S.p.A. Cartridge fuse carrier assembly. 3,936,787, Cl. 337-228.000.

Rapp, James E., to Owens-Illinois, Inc. Semiconductive glass-ceramic articles. 3,936,397, Cl. 252-518.000.

Rathgeb, Paul; Tournayre, Jean Claude; and Vogel, Christian, to Ciba-Geigy Corporation. Method of selective weed control with certain chloroacetamides. 3,936,293, Cl. 71-118.000.

Rausing, Anders Ruben. Interlocking system with a number of individual key elements. 3,936,662, Cl. 235-61.12N.

Rausing, Ruben A., to Tetra Pak Developpement SA. Packing container. 3,935,968, Cl. 222-479.000.

Rawlins, Philip G.: *See—*
Lieder, Gaylerd; and Rawlins, Philip G., 3,936,043.

Ray, N. Reece, to Lockheed Aircraft Corporation. Radome test instrument. 3,936,736, Cl. 324-58.50R.

Raymond Lee Organization, Inc., The: *See—*
Connolly, Timothy J., 3,935,806.
Loftin, Wayne M., 3,935,856.
Martin, William F., 3,936,198.
Simpson, Kenneth, 3,935,658.

Raytheon Company: *See—*
Barrett, Harrison H., 3,936,639.
Benjamin, James A., 3,936,864.
Goldstone, Bertram J.; and Memishian, John, Jr., 3,936,820.
Hapgood, William H.; and Protopapas, Donald G., 3,936,003.

RCA Corporation: *See—*
Dietz, Wolfgang Friedrich Wilhelm, 3,936,115.
Dingwall, Andrew Gordon Francis, 3,936,859.
Dorsey, Denis Peter; and Rodda, William E., 3,936,597.
Foldes, Peter, 3,936,838.
Olmstead, John Aaron, 3,936,863.
Sheng, Abel Ching Nam, 3,936,755.
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Recreational Plastics, Inc.: *See—*
Bawden, Ralph D.; and Robert Olson, a/k/a John R. Olson, 3,935,832.

Redfield, Carl: *See—*
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Redpath Dorman Long Limited: *See—*
Marshall, Victor Gregory; and Thompson, John Maurice, 3,936,714.

Reehil, Edward G.: *See—*
Traister, Robert L.; and Reehil, Edward G., 3,936,658.

Regie Nationale des Usines Renault: *See—*
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Peltier, Henri; Catrain, Michel; and Monnin, Andre, 3,935,765.
Rivere, Jean-Pierre, 3,935,853.

Reginato, Luigi; Bienfait, Charles; and Stevens, Jacques, to Solvay & Cie. Process for the polymerization of olefins and catalytic products. 3,936,431, Cl. 260-88.20R.

Reid, Jerome L.: *See—*
Grasshoff, J. Michael; and Reid, Jerome L., 3,936,401.

Reine, Marion B.; and Rotolante, Ralph A., to Honeywell Inc. Thermally stimulated detrapping of charged carriers in cryogenic photoconductive material. 3,936,637, Cl. 250-352.000.

Reinke, Richard F. Irrigation pivot stand construction. 3,936,117, Cl. 339-8.00R.

Reinsch, Arnold O. Winfried. Applicator drive unit. 3,935,869, Cl. 132-9.000.

Reintjes, John Francis, Jr.; and Wynne, James Jeffrey, to International Business Machines Corporation. Single laser cavity for generating TE or TM modes. 3,936,770, Cl. 331-94.50C.

Reischl, Norbert M. Automobile frame and body repairing apparatus. 3,935,725, Cl. 72-451.000.

Reiter, Herbert, to Siemens Aktiengesellschaft. Electronic overcurrent protection of a DC data transmission circuit. 3,936,700, Cl. 317-22.000.

Rem Die Casting, Inc.: *See—*
Cianciolo, Joseph; and McGargal, Robert E., 3,936,158.

Renal Systems, Inc.: *See—*
Massie, Harold Lee; and Cosentino, Louis C., 3,935,876.

Resco, Inc.: *See—*
Schindler, Earle R., 3,935,733.

Respiratory Care, Inc.: *See—*
Cornett, Walter G., III; and Gaspar, Donald G., 3,936,264.

Reusser, Robert E., to Phillips Petroleum Company. Azeotrope of 1,2-dichloro-1-fluoroethane and methanol. 3,936,387, Cl. 252-171.000.

Revesz, Robert N.: *See—*
Sitek, George J.; Revesz, Robert N.; and Berk, Charles W., 3,936,587.

Reynolds, Frank J.: *See—*
Luongo, Albert Michael; Reynolds, Frank J.; and Ruetsch, Rudolph R., 3,935,730.

Reynolds, Hugh M.: *See—*
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Rhoades-Brown, John Ernest: *See—*
Lloyd, Geoffrey Oliver; Rhoades-Brown, John Ernest; and Saunders, Stuart Richard John, 3,936,583.

Rhone-Poulenc S.A.: *See—*
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Sagi, Ferenc; and Roussos, Michel, 3,936,482.

Rhone-Progil: *See—*
Demoures, Bernard; Llauro, Daniel; and Giolito, Francois, 3,936,480.

Rich, Leonard G.: *See—*
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Richards, Mildred C.: *See—*
Samour, Carlos M.; and Richards, Mildred C., 3,936,492.

Richardson, George Wilfred, to Produits Findus S.A. Stripping of Brussels sprouts from their stems. 3,935,867, Cl. 130-30.00R.

Richardson, John G.: *See—*
Willard, Charles F.; Marsden, Brian D.; Richardson, John G.; and Gastonguay, James L., 3,936,180.

Richardson, Josephine M. Portable podium. 3,936,109, Cl. 312-223.000.

Ricketts, James B., Jr.; Hehs, William A.; Auman, John T.; and Schlax, Timothy R., to General Motors Corporation. Steering system monitoring apparatus and procedure 3,936,071, Cl. 280-95.00R.

Ricoh Co., Ltd.: *See—*
Ariyama, Kenzo, 3,936,045.
Shiina, Toshio; Yaejima, Masao; Sekiya, Tadayuki; and Bando, Toshiro, 3,936,041.

Ridings, Charles Luther. *See—*
Bringol, Charles Ronald; Lowry, Denis Earl; and Ridings, Charles Luther, 3,936,805.

Riegler, Ernst; and Schmidt, Manfred, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Drive and bearing assembly for a converter construction. 3,936,098, Cl. 308-6.00R.

Riegler, Ernst; and Schmidt, Manfred, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Bearing assembly for accommodating angular displacements in torque-transmitting trunnions. 3,936,102, Cl. 308-72.000.

Riet, John C., to International Harvester Company. Coupling assembly for multiple implements. 3,935,907, Cl. 172-314.000.

Rinck, Hans-Joachim. Apparatus for checking the level of liquid in containers. 3,935,835, Cl. 116-118.00R.

Rion, Pat F., to Phillips Petroleum Company. Stable emulsions. 3,936,406, Cl. 260-29.7GP.

Riparbelli, Carlo, to General Dynamics Corporation. Penetrating spear. 3,935,817, Cl. 102-52.000.

Rist's Wires and Cables Limited: *See—*
Ball, Lewis John; Smith, Gordon Roy Frank; and Fry, William Lawrence, 3,936,344.

Ritter, Gerhard; Ritter, Josef; Ritter, Klaus; Boyer, Wilhelm; and Gott, Hans, to EVG Entwicklungs- u. Verwertungsgesellschaft m.b.H. Apparatus for forming elongate reinforcing elements. 3,936,628, Cl. 219-56.000.

Ritter, Josef: *See—*
Ritter, Gerhard; Ritter, Josef; Ritter, Klaus; Boyer, Wilhelm; and Gott, Hans, 3,936,628.

Ritter, Klaus: *See—*
Ritter, Gerhard, Ritter, Josef; Ritter, Klaus; Boyer, Wilhelm; and Gott, Hans, 3,936,628.

Rivere, Jean-Pierre, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Internal combustion engine cold-start fuel injector. 3,935,853, Cl. 123-179.00G.

Rizzo, Frank: *See—*
Kelly, John F.; and Rizzo, Frank, 3,936,673.

Robert Bosch G.m.b.H.: *See—*
Brill, Klaus; and Glassman, Christian, 3,936,545.

Robert Olson, a/k/a John R. Olson: *See—*
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Robertshaw Controls Company: *See—*
Caldwell, Edward N., 3,935,998.
Genbauff, Francis S., 3,935,626.
Hardin, George T., 3,935,875.
Hardin, George T., 3,936,717.

Robilliart, Michel: *See—*
Ardry, Robert; and Robilliart, Michel, 3,936,434.

Robins, Sy Raymond. Production of belgium endive. 3,935,673, Cl. 47-58.000.

Robinson, Brian W.: *See—*
Miller, William A.; and Robinson, Brian W., 3,936,569.

Robinson, David Phythian, to U.S. Philips Corporation. Semiconductor devices having conductor tracks at different levels and interconnections therebetween. 3,936,865, Cl. 357-68.000.

Roch, Jacques L., to Electroglas, Inc. High speed precision chuck assembly. 3,936,743, Cl. 324-158.00F.

Rocholl, Martin-Gottfried, to Teroson GmbH. Thermosetting sealing materials. 3,936,412, Cl. 260-37.00R.

Rockford Headed Products, Inc.: *See—*
Lathom, Paul R., 3,935,785.

Rockford Servo Corporation: *See—*
Hickey, Thomas L., 3,935,979.

Rockwell International Corporation: *See—*
Cumming, James C., 3,936,096.
Haerther, Lester W.; and Kammerer, Leo P., 3,936,798.
Weber, Charles A., 3,936,823.

Rodda, William E.: *See—*
Dorsey, Denis Peter; and Rodda, William E., 3,936,597.

Roe, Robin D.: *See—*
Guppy, John R.; and Roe, Robin D., 3,936,603.

Roesch, Eduard, to Dixi S.A. Device for determining the position of a structural element. 3,936,195, Cl. 356-170.000.

Rohm and Haas Company: *See—*
Lesnik, Jack Vender, 3,935,698.

Rohr, Wolfgang; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Substituted sulfonylglycolic acid anilides. 3,936,485, Cl. 260-456.00A.

Rohrer, Wesley M.: *See—*
Wachter, William J.; and Rohrer, Wesley M., 3,936,348.

Rollett, John Mortimer; and Wise, David Richard, to Post Office, The. Arrangements for simulating inductance and filter networks incorporating such improvements. 3,936,777, Cl. 333-80.00R.

Rolls-Royce (1971) Limited: *See—*
Fuller, John Rodney Dyson, 3,936,218.

Ronden, Clifford Paul, to Grandview Industries, Limited. Coilable polyvinyl chloride products and methods and compositions for producing the same. 3,936,417, Cl. 260-42.450.

Rookus, James E. Sharpener for electric shavers. 3,935,638, Cl. 30-37.000.

Rorand (Proprietary) Limited: *See—*
Rowe, Alexander W., 3,936,553.

Rosen, Robert, to United States of America, Navy. D.C. restorer circuit. 3,936,760, Cl. 328-162.000.

Rosenkranz, Hans-Jurgen; Rudolph, Hans; Wolff, Erich; and von Rintelen, Harald, to Bayer Aktiengesellschaft. Photopolymerizable polymer based on an etherified polyhydroxyalkyl acrylate. 3,936,428, Cl. 260-78.50T.

Rosenthal, Rudolph; and Zajacek, John G., to Atlantic Richfield Company. Production of isocyanates from substituted ureas. 3,936,484, Cl. 260-453.00P.

Ross, Joseph A.: *See—*
Di Matteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., 3,936,649.

Roth, Paul. Device for baring insulated electrical conductor wire and stranded wire. 3,935,759, Cl. 81-9.510.

Roth, Walter, to Diagnostic Instruments, Inc. Oriented photoemitters. 3,936,529, Cl. 427-36.000.

Roto Diesel: *See—*
Bonin, Jean-Claude, 3,936,233.

Rotolante, Ralph A.: *See—*
Reine, Marion B.; and Rotolante, Ralph A., 3,936,637.

Roussos, Michel: *See—*
Sagi, Ferenc; and Roussos, Michel, 3,936,482.

Rowe, Alexander W., to Rorand (Proprietary) Limited. Insulating materials. 3,936,553, Cl. 428-81.000.

Rowe International, Inc.: *See—*
Pitel, Irving; Silverman, Richard S.; and Mueller, Richard J., 3,935,966.

Roy, Richard M. Shock absorber spring changing tool. 3,935,630, Cl. 29-227.000.

Rozsa, Laszlo; Meszaros, Lajos; and Mogyorodi, Ferenc, to Eszak-magyarorszagi Vegyimovek. Process and equipment for solvent extraction. 3,936,489, Cl. 260-463.000.

Rubin, Howard: *See—*
Keegan, James J.; Patel, Girish; and Rubin, Howard, 3,936,402.

Rubin, Irene E., to Rubin, Irene E. Illuminated vehicular display sign. 3,935,654, Cl. 40-129.00C.

Rudolph, Hans: *See—*
Rosenkranz, Hans-Jurgen; Rudolph, Hans; Wolff, Erich; and von Rintelen, Harald, 3,936,428.

Ruell, Hartwig, to Siemens Aktiengesellschaft. Arrangement for sequential data storage. 3,936,140, Cl. 350-3.500.

Ruetsch, Rudolph R.: *See—*
Luongo, Albert Michael; Reynolds, Frank J.; and Ruetsch, Rudolph R., 3,935,730.

Rumsey, Rollin Douglas. Radial piston pump/motors. 3,935,794, Cl. 91-488.000.

Russell, Anthony William. Directional drilling of bore holes. 3,935,642, Cl. 33-302.000.

Russell, Anthony William: *See—*
Russell, Michael King; and Russell, Anthony William, 3,935,643.

Russell, Michael King; and Russell, Anthony William. Methods of and means for measuring angles. 3,935,643, Cl. 33-312.000.

Russell, Richard H.: *See—*
Hildebrandt, William J.; and Russell, Richard H., 3,935,779.

Ryan, Wilma: *See—*
Maher, William A., 3,936,252.

Rybak, Boris. Low-inertia hygrometer. 3,935,742, Cl. 73-336.500.

S.A.R.L. Sud est Electro Mecanique S.E.E.M.: *See—*
Monnet, Francois, 3,935,732.

Sadamatsu, Shigeru, to Fuji Xerox Co., Ltd. Electrophotographic copying machine with improved cleaning blade. 3,936,183, Cl. 355-15.000.

Saeki, Keiso: *See—*
Miyazawa, Yoshihide; Ozotsumi, Minoru; Ogawa, Satoshi; Saeki, Keiso; and Watanabe, Akio, 3,936,564.

Sagi, Ferenc; and Roussos, Michel, to Rhone-Poulenc, S.A. Organo tin compounds useful as catalysts in the polycondensation of organosilicon compounds. 3,936,482, Cl. 260-429.700.

Saito, Minoru: *See—*
Hirai, Masahide; Fujimura, Mikio; Kazigase, Masahiro; and Saito, Minoru, 3,936,399.

Sakaguchi, Fumio; Takemura, Kenji; Suzuki, Tadao; Yamazaki, Isamu; Nishibayashi, Yoshifumi; Shiozawa, Kazunobu; and Sasaki, Toshimitsu, to Showa Denko Kabushiki Kaisha; and Toyo Cloth Co., Ltd. Synthetic resin composition. 3,936,403, Cl. 260-23.0XA.

Sakshaug, Eugene C., to General Electric Company. Gas-insulated electric power apparatus including a surge arrester with hot gas relief means. 3,936,703, Cl. 317-62.000.

Sakurai, Yoshifumi: *See—*
Sawai, Yukio; Sakurai, Yoshifumi; and Terata, Hiroshi, 3,935,711.

Salgo, Francis John, to Butler, Binion, Rice, Cook & Knapp. Mobile ion film memory. 3,936,690, Cl. 313-392.000.

Saltarelli, Cora G. Method of separating and scanning organic cells and molecules. 3,936,272, Cl. 23-230.00B.

Salter, Anthony John, to Pipe Supports Limited. Pipe supports. 3,936,021, Cl. 248-54.0CS.

Samama, Lydie Esther, administratrix: *See—*
Viout, Andre; Esanu, David, deceased; and Samama, Lydie Esther, administratrix, 3,936,427.

Samour, Carlos M.; and Richards, Mildred C., to Kendall Company, The. Monomeric emulsion stabilizers. 3,936,492, Cl. 260-482.00R.

Sandoz, Inc.: *See—*
Hardtmann, Goetz E., 3,936,453.
Hughes, Philip A., 3,936,674.

Sandoz Ltd., (Sandoz AG): *See—*
Allan, Zdenek; and Schweizer, August, 3,936,496.
Avar, Lajos; Hofer, Kurt; and Preiswerk, Martin, 3,936,479.

Sandvik Aktiebolag by change of name from Sandvikens, Jernverks Aktiebolag: *See—*
Alfredsson, Stig Allan Junior, 3,936,873.

Sango Company, Limited: *See—*
Sato, Masami, 3,935,775.

Sano, Reiji: *See—*
Asakawa, Shirow; Hasegawa, Katsue; Sano, Reiji; and Matsuda, Shunsuke, 3,936,307.

Sansanelli, Edward, to Airwick Industries, Inc. Container and hanger clip therefor. 3,935,956, Cl. 215-100.00R.

Santurri, Pasco R.; Mumm, Howard W.; and Yockey, Thomas E., to Orchard Corporation of America, The. Self-sealable corrosion protectable packaging material and method of making. 3,936,560, Cl 428-219.000.

Sasabe, Kaoru; Kotera, Hiroaki; Hane, Toshihide; Kihara, Nobuyoshi; and Takebe, Masao, to Matsushita Electric Industrial Co., Ltd. Device for presetting a television program and the like. 3,936,752, Cl. 325-396.000.

Sasajima, Kikuo: *See—*
Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, 3,936,468.

Sasaki, Toshimitsu: *See—*
Sakaguchi, Fumio; Takemura, Kenji; Suzuki, Tadao; Yamazaki, Isamu; Nishibayashi, Yoshifumi; Shiozawa, Kazunobu; and Sasaki, Toshimitsu, 3,936,403.

Sasase, Naoshi: *See—*
Kuwako, Tomohisa; Tanase, Toshio; and Sasase, Naoshi, 3,936,680.

Saterdal, Edgar, to Aktiebolaget Svenska Flaktfabriken. Method of manufacturing axial fans of different sizes. 3,935,625, Cl. 29-156.80R.

Sato, Akio: *See—*
Arimura, Iwao; Suzuki, Yasuo; Matsuda, Akira; and Sato, Akio, 3,935,892.

Sato, Atsushi; Aida, Yoshiaki; and Shimizu, Isoo, to Nippon Petrochemicals Company Ltd. Pressure sensitive record material employing diaryl alkane solvents. 3,936,566, Cl. 428-323.000.

Sato, Goro, to Hokuetsu Kogyo Co., Ltd. Rotary compressor of oil cooling type with appropriate oil discharge circuit. 3,936,249, Cl. 418-88.000.

Sato, Hideki: *See—*
Ishizawa, Toshitugu; Akahori, Motokazu; and Sato, Hideki, 3,935,842.

Sato, Hiroshi, to Fuji Xerox Co., Ltd. Method and apparatus for generating character patterns. 3,936,664, Cl. 235-151.000.

Sato, Masami, to Sango Company, Limited. Iron piece shearing machine. 3,935,775, Cl. 83-355.000.

Sato, Setsuo, to Aoi Sansho Kabushiki Kaisha. Optical fibre end connector. 3,936,143, Cl. 350-96.00C.

Satomi, Takeo; Mukai, Kunio; Mine, Akihiko; Hino, Naganori; Tateishi, Kohshi; and Hirano, Masachika, to Sumitomo Chemical Company, Limited. O-Ethyl-O-(3-methyl-6-nitrophenyl)-n-secondary butyl-phosphoronthionamidate. 3,936,433, Cl. 260-954.000.

Satomura, Masato: *See—*
Seoka, Yoshio; Satomura, Masato; and Umehara, Akira, 3,936,429.

Satzinger, Gerhard: *See—*
Hartenstein; Satzinger, Gerhard; and Herrmann, Manfred, 3,936,438.

Saunders, Frank L.; and Pelletier, Ronald R., to Dow Chemical Company, The. Radiation crosslinked block copolymer blends with improved impact resistance. 3,936,365, Cl. 204-159.200.

Saunders, Stuart Richard John: *See—*
Lloyd, Geoffrey Oliver; Rhoades-Brown, John Ernest; and Saunders, Stuart Richard John, 3,936,583.

Sawabe, Eiichi: *See—*
Yanagimachi, Akio; Uehara, Takashi; Yamamoto, Tetsuo; Yamane, Hisakichi; Sawabe, Eiichi; Yoshino, Takehiko; Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Fukuda, Masaaki; and Kayano, Tatsuo, 3,936,595.

Sawada, Teruho; Hirayama, Takeshi; and Kokubo, Kenzo, to Nippon Paint Company Ltd. Apparatus for the continuous manufacture of polymer plates. 3,936,254, Cl. 425-89.000.

Sawai, Yukio; Sakurai, Yoshifumi; and Terata, Hirushi, to Mitsubishi Jukogyo Kabushiki Kaisha. Flap gate. 3,935,711, Cl. 61-25.000.

Sawyer, Baldwin, to Sawyer Research Products, Inc. Color sorting of irradiated materials and a calibrated color comparison array. 3,936,188, Cl. 356-36.000.

Sawyer Research Products, Inc.: *See—*
Sawyer, Baldwin, 3,936,188.

Saxe, Van Rensselaer P. Trash can protector. 3,935,964, Cl. 220-318.000.

Scanlon, J. Philip: *See—*
Allen, Douglas, Jr.; Caffrey, Richard F.; and Scanlon, J. Philip, 3,935,596.

Schaar, Charles H., to Colgate-Palmolive Company. Method of making a disposable diaper. 3,935,768, Cl. 83-39.000.

Schagen, Pieter; and Stubberfield, Pamela May, to U.S. Philips Corporation. Photocathode with plurality of concentric conducting rings. 3,936,687, Cl. 313-101.000.

Schallis, Alvin H., to Stauffer Chemical Company. Process for producing free flowing particulate sulfur. 3,936,534, Cl. 427-215.000.

Scharfe, Gerhard: *See—*
Wenzel, Rupert; and Scharfe, Gerhard, 3,936,508.

Scheid, Peter: *See—*
Hofer, Heinz; Scheid, Peter; and Wilwerscheid, Ernst, 3,936,259.

Schexnayder, Lawrence F.: *See—*
Hicks, Leon E.; Peterson, Wayne A.; and Schexnayder, Lawrence F., 3,935,918.

Schiel, Douglas W., to Paccar Inc. Grille system for tilt cab truck. 3,935,920, Cl. 180-89.00A.

Schiff, Robert: *See—*
Wilson, John C.; and Schiff, Robert, 3,935,944.

Schiffman, Murray M., to Cambridge Research and Development Group; Greenberg, Sanford D.; DT Liquidating Partnership; and Schiffman, Murray M. Dual delay line storage sound signal processor. 3,936,610, Cl. 179-15.55T.

Schild, Josef, to Vockenhuber, Karl; and Hauser, Raimund. Film camera. 3,936,168, Cl. 352-209.000.

Schindler, Earle R., to Resco, Inc. Electronic transmission dynamometer. 3,935,733, Cl. 73-136.00A.

Schiro, Francis Gennaro: *See—*
Baskerville, Ralph James, Jr.; and Schiro, Francis Gennaro, 3,936,537.

Schlax, Timothy R.: *See—*
Ricketts, James B., Jr.; Hehs, William A.; Auman, John T.; and Schlax, Timothy R., 3,936,071.

Schmidt, Albert Leo. Flapper flush valve. 3,935,598, Cl. 4-57.00P.

Schmidt, Manfred: *See—*
Riegler, Ernst; and Schmidt, Manfred, 3,936,098.
Riegler, Ernst; and Schmidt, Manfred, 3,936,102.

Schmidt, Robert C., to Varian Associates. Electron collector having means for trapping secondary electrons in a linear beam microwave tube. 3,936,695, Cl. 315-3.500.

Schmidt, Uwe; and Chvatlinsky, Kurt, to Olympia Werke AG. Automatic threading of a typing ribbon. 3,935,939, Cl. 197-175.000.

Schnee, Karl; Tichy, Dieter; Michel, Walter; and Gruber, Gunter, to Cassella Farbwerke Mainkur Aktiengesellschaft. Process of preparing melamine resin films by impregnation of paper, cellulose, fleece or fabric. 3,936,547, Cl. 427-390.000.

Schneider, Herbert Anton, to Bell Telephone Laboratories, Incorporated. Current mirrors. 3,936,725, Cl. 323-1.000.

Schneider, Martin Victor, to Bell Telephone Laboratories, Incorporated. Process for contact photolithography utilizing a photomask having indented channels. 3,936,301, Cl. 96-36.000.

Schneider, Roy W.: *See—*
Harner, Kermit L.; and Schneider, Roy W., 3,936,226.

Schnell, Karl. Perforated plate for crushing machines. 3,936,005, Cl. 241-83.000.

Schoen, Lowhardt A. A.; Visseren, Marinus J. R.; and van der Sangen, Jean G., to Stamicarbon N.V. Process for the preparation of halogen-carrying rubberlike copolymers. 3,936,430, Cl. 260-80.780.

Scholfield, Richard P., to Presto Lock Company, Division of Walter Kidde & Company, Inc. Cradle selector controls for motorized rotary files. 3,936,112, Cl. 312-267.000.

Scholz, Donald T., to Polaroid Corporation. Multipurpose audio-visual cassette method. 3,936,166, Cl. 352-38.000.

Schriesheim, Alan: *See—*
Hofmann, John E.; and Schriesheim, Alan, 3,936,490.

Schrock, Martin Omer; and Dibbern, John Earl, Jr., to Black and Decker Manufacturing Company, The. Linear motor cooling fan. 3,936,242, Cl. 417-417.000.

Schrock, Wilfried: *See—*
Konig, Hans-Bodo; Schrock, Wilfried; Disselnkotter, Hans; and Metzer, Karl Georg, 3,936,442.

Schroeder, Herbert M.; and Stievater, Paul C., to Textron, Inc. Urea-urethane compositions and films prepared therefrom. 3,936,409, Cl. 260-30.200.

Schubel, Kurt: *See—*
Barowski, Karlheinz; Schubel, Kurt; and Welnhofer, Hans, 3,936,169.

Schubert, Hans Werner: *See—*
Behner, Otto; Horlein, Ulrich; Hoffmeister, Friedrich; and Schubert, Hans Werner, 3,936,463.

Schubert, John C.; Cyr, Steven; and Case, Charles B., to Standard Oil Company. Container. 3,935,962, Cl. 220-306.000.

Schuhin, Mark; and Andersen, George, to Lincoln Center for the Performing Arts, Inc. Secure television system. 3,936,594, Cl. 178-5.100.

Schukin, Alexei Alexeevich: *See—*
Birjukova, Tatyana Anatolievna; Freze, Nikolai Ivanovich; Schukin, Alexei Alexeevich; Abalikhin, Anatoly Vasilievich; Maltsev, Mikhail Vasilievich; Evgrafov, Nikolai Nikolaevich; Semenov, Sergei Gavrilovich; Zhukova, Valentina Pavlovna; Teumin, Maria Ilinichna, Isaichenko, Veronika Vasilievna; Nerodenko, Mikhail Minovich; Alexeenko, Galina Nikolaevna; Tetervak, Alexei Fedorovich; Gurevich, Samuil Mordkovich; Tjukalov, Grigory Vasilievich; and Kurganov, Georgy Vladimirovich, 3,936,689.

Schulstad Brod A/S: *See—*
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Schultz, Ronald L., to Chromalloy-Alcon, Inc. Antenna connector. 3,936,120, Cl. 339-17.00M.

Schwartz, Bernard: *See—*
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Schweizer, Gottfried, to Gertsch AG. Ski binding. 3,936,062, Cl. 280-11.35D.

Schwender, Charles F., to Warner-Lambert Company. 5-Amino-4-chloro-6-(substituted amino)-pyrimidines. 3,936,454, Cl. 260-256.40N.

Schwender, Charles F.; and Pike, Russell E., to Warner-Lambert Company. Substituted 9-benzylacridines. 3,936,457, Cl. 260-279.00R.

Schwender, Charles F.; and Shavel, John, Jr., to Warner-Lambert Company. Substituted 4-benzylquinolines. 3,936,461, Cl. 260-289.00R.

Scientific Anglers, Inc.: *See—*
Martuch, Leon L., 3,936,335.

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Scott, Kenneth Clive: *See—*
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Scott Paper Company: *See—*
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Scott, Rocco A., to Michaelson, Joseph B. Golf practice device. 3,936,055, Cl. 273-176.00H.

Scott, Warner Curtis, to Texas Instruments Incorporated. Charged particle beam scanning device. 3,936,697, Cl. 315-12.00R.

Scribner, William N. Swimming pool. 3,935,600, Cl. 4-172.130.

Secretary of State for Trade & Industry in Her Britannic Majesty's Govt. of U.K. of Gt. Britain & Northern Ireland: *See—*
Lloyd, Geoffrey Oliver; Rhoades-Brown, John Ernest; and Saunders, Stuart Richard John, 3,936,583.

Seeds, Robert B.; and Luce, Robert L., to Fairchild Camera and Instrument Corporation. MOS transistor structure. 3,936,858, Cl. 357-23.000.

Seilly, Alec Harry; and Scott, Kenneth Clive, to Simms Group Research & Development Limited. Weighing device. 3,935,915, Cl. 177-136.000.

Sekisui Kaseihin Kogyo Kahushiki Kaisha: *See—*
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Sekiya, Tadayuki: *See—*
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Senor, Ronald E.; and Trenkler, George, to Texas Instruments Incorporated. Circuit breaker apparatus. 3,936,792, Cl. 337-85.000.

Sentrol Systems Ltd.: *See—*
De Remigis, Joseph, 3,936,189.

Seoka, Yoshio; Satomura, Masato; and Umehara, Akira, to Fuji Phnto Film Co., Ltd. Reactive polymer. 3,936,429, Cl. 260-79.30M.

Sette, Paul R.; and Storace, Anthony, to Pitney-Bowes, Inc. Flap separating mechanism. 3,935,800, Cl. 93-61.00R.

Shafer, Leroy: *See—*
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Shanklin, Dunbar L. Fibrous blanket containing solder flux and solder flux with increased melted viscosity. 3,936,325, Cl. 148-26.000.

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Shaver, J. Lyle: *See—*
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Shaw, David N., to Dunham-Bush, Inc. Undercompression and overcompression free helical screw rotary compressor. 3,936,239, Cl. 417-315.000.

Shaw, Jerry; and Solitt, Samuel G. Jewelry display and viewing device. 3,936,156, Cl. 350-235.000.

Sheikh, Sikander, to Xerox Corporation. Control arrangement for an electrostatographic reproduction apparatus. 3,936,182, Cl. 355-14.000.

Shell Oil Company: *See—*
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Shen, Jacob: *See—*
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Sheng, Abel Ching Nam, to RCA Corporation. Proximity switch circuit. 3,936,755, Cl. 328-5.000.

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Shiba, Keisuke; Kubodera, Seiiti; Naito, Hideki; and Hirose, Takeshi, to Fuji Photo Film Co., Ltd. Photographic photosensitive element and developing method thereof. 3,936,303, Cl. 96-74.000.

Shibano, Hiroshi; and Isao, Iizaka, to Minolta Camera Kabushiki Kaisha. Elastic electroconductive product. 3,936,170, Cl. 355-3.00R.

Shibanu, Naoki: *See—*
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Shibata, Mituo. Anchoring device and method for settling the device in the ground. 3,935,912, Cl. 175-264.000.

Shibayama, Kimio; and Yamanouchi, Kazuhiko, to Kimio Shibayama. Elastic surface wave transducer. 3,936,679, Cl. 310-9.800.

Shiber, Samuel. Airplane's anti-wheel-lock and spin-up system. 3,936,016, Cl. 244-103.00S.

Shiina, Toshio; Yaejima, Masao; Sekiya, Tadayuki; and Bando, Toshiro, to Ricoh Co., Ltd. Automatic original supply device for electronic copying apparatus. 3,936,041, Cl. 271-4.000.

Shikishima Tipton Mfg. Co., Ltd.: *See—*
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Shim, Kyung S., to Stauffer Chemical Company. Polyalkylene glycol vinyl phosphates. 3,936,514, Cl. 260-929.000.

Shimada, Keizo: *See—*
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Shimizu, Katsuhisa: *See—*
Maruyama, Yoshio; Magata, Yoshihiro; Fushimi, Akihiro; Ueki, Yoshiharu; and Shimizu, Katsuhisa, 3,936,877.

Shimoda, Eitaro. Multiple contact rotary switch of helical configuration. 3,936,623, Cl. 200-158.000.

Shinetsu Chemical Company: *See—*
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Shinnick, David M.: *See—*
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Shinoda, Daizaburo, to Nippon Electric Company Limited. Method of making a compound semiconductor layer of high resistivity. 3,936,321, Cl. 148-1.500.

Shinomiya, Tokuo: *See—*
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Fisher, William Bernard; Kim, Dong Wha; Norwood, Orin Wyatt; Showers, John Walter; Swanson, Eugene Addison; and Weedon, Gene Clyde, 3,936,253.

Shuman, Dennis, to Bell Telephone Laboratories, Incorporated. Multifrequency signal receiver timing circuit. 3,936,801, Cl. 340-171.00R.

Siebel, Frederick. Apparatus for viewing the underside of vehicles. 3,936,668, Cl. 240-4.200.

Siemens Aktiengesellschaft: *See—*
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Glockner, Ehard; and Ulrich, Bodo, 3,936,685.
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Simms Group Research & Development Limited: *See—*
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Simon, Thomas R.: *See—*
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Simond, Jacques: *See—*
Mauvernay, Roland Yves; Bush, Norbert; Simond, Jacques; Monteil, Andre; and Moleyre, Jacques, 3,936,450.

Simpson, Harold Graves, to Star Manufacturing Company. Cleaning fasteners. 3,935,682, Cl. 52-105.000.

Simpson, Kenneth, to Raymond Lee Organization, Inc., The, a part interest. Illuminated bladder buoy. 3,935,658, Cl. 43-17.500.

Singer Company, The: *See—*
Moll, Dean H.; and Greiner, Alan, 3,935,746.

Sitek, George J.; Revesz, Robert N.; and Berk, Charles W., to Leco Corporation. Electrode construction for resistance heating furnace. 3,936,587, Cl. 13-23.000.

Sittmann, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch and Co. GmbH. Retaining mechanism for ski bindings. 3,936,063, Cl. 280-11.35P.

Skala, George F., to Environment/One Corporation. Optical fluid contamination and change monitor. 3,936,192, Cl. 356-104.000.

SKF Industrial Trading and Development Company, B.V.: *See—*
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Skrobisch, Alfred, to Staver Company, Incorporated, The. Electromagnetic indicator having oppositely magnetized stamped magnetic cores. 3,936,818, Cl. 340-373.000.

Slack, John Wesley: *See—*
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Slikas, Anthony W.: *See—*
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Smigel, Walter Andrew, to Pennwalt Corporation. Sodium tetraborate carrier coating for rod. 3,936,314, Cl. 106-243.000.

Smith, Alexander M., II, to Fiberwoven Corporation, The. Filled textile fabric with a density gradient. 3,936,555, Cl. 428-151.000.

Smith, Brian Turton: *See—*
Melling, William Gordon; Mclellan, Peter George; and Smith, Brian Turton, 3,936,718.

Smith, David S., to Eastman Kodak Company. Apparatus for developing photosensitive material. 3,936,854, Cl. 354-299.000.

Smith, Donald Tolman: *See—*
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Smith, George M.; and Silva, Joseph, to Textron, Inc. Open sided partially circular headed nail with recess along the open-sided edge thereof and stick package formed therefrom. 3,935,945, Cl. 206-343.000.

Smith, Gordon Roy Frank: *See—*
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Smith, Harry: *See—*
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Smith, Howard M.: *See—*
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Smith International, Inc.. *See—*
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Smith, Lambert C.; Meridith, Verne A.; and Wade, Robert M., to Anaconda Company, The. Nonmetallic-sheathed cable. 3,936,591, Cl. 174-116.000.

Smith, Trevor Stanley, to Joseph Lucas (Industries) Limited. Fuel control system for gas turbine engine. 3,935,703, Cl. 60-39.28R.

Smith, Vernon J.; Smith, Howard M.; Page, Bernard F.; and Miller, Laurence G., to Rank Xerox Ltd. Sheet feeding devices. 3,936,042, Cl. 271-9.000.

Smith & Wesson Chemical Company, Inc.: *See—*
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Smith, William E.: *See—*
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Smock, George E.: *See—*
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Snyder, James E.: *See—*
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Snyder, Richard V., to Harvard Industries, Inc. Multicavity dual mode filter. 3,936,775, Cl. 333-73.00W.

Societa' Italiana Resine S.p.A.: *See—*
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Societe Anonyme dite: L'Oreal: *See—*
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Societe Anonyme: Pechiney Ugine Kuhlmann: *See—*
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Societe D'Etudes, Recherches Et Constructions Electroniques Sercel: *See—*
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Societe Industrielle Honeywell Bull: *See—*
Champiau, Robert Francois; and Brecy, Andre Achille, 3,936,802.

Soda, Shigenari; and Hayashi, Motoshige, to Sekisui Kaseihin Kogyo Kabushiki Kaisha. Process for preparing a synthetic wood 3,936,518, Cl. 264-45.500.

Solis, Frank. Compact gas purifier. 3,936,283, Cl. 55-230.000.

Solitt, Samuel G.: *See—*
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Solvay & Cie: *See—*
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Reginato, Luigi; Bienfait, Charles; and Stevens, Jacques, 3,936,431.

Someya, Teruo; Kobayashi, Nobuyuki; and Goto, Toshinori, to Nihon Denshi Kahushiki Kaisha. Field emission electron gun having automatic current control. 3,936,756, Cl. 328-9.000.

Sony Corporation: *See—*
Akiyama, Katsuhiko, 3,936,694.
Irie, Osamu, 3,936,746.

  - Miyaoka, Senri, 3,936,872.
  - Nakamura, Takashi, 3,936,870.
- Soot, Olaf. Retractable suspension system. 3,935,606, Cl. 9-1.00T.
- Soot, Olaf. Modular planter panel system. 3,935,671, Cl. 47-34.00R.
- Southern Machinery Company: *See—*
  - Williamson, Bobby J., 3,936,620.
- SPA-Societa Prodotti Antibiotici S.p.A.: *See—*
  - Bruzzese, Tiberio; and Ferrari, Rodolfo, 3,936,526.
- Spaulding Fibre Company, Inc.: *See—*
  - Glenn, Robert B., 3,935,763.
- Spaw, Robert L. Automatic level measuring and control system for dispensing bin. 3,935,970, Cl. 222-56.000.
- Speakman, Eugene R., to McDonnell Douglas Corporation. Crowned head riveted joint. 3,936,205, Cl. 403-279.000.
- Spectrotherm Corporation: *See—*
  - Wickersheim, Kenneth A., 3,936,196.
- Spicar, Erich: *See—*
  - Elfgren, Carl; and Spicar, Erich, 3,936,784.
- Spinner, Georg. Coaxial HF multiple rotary connection. 3,936,116, Cl. 339-8.00R.
- Spitz, Erich: *See—*
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- Splitt, Frank G.; and Frantz, William P., to Cook Electric Company. Connector block for telephone equipment. 3,936,133, Cl. 339-198.00R.
- Squier, William H., to M. Lowenstein & Sons, Inc. Three dimensional decorative material and process for producing same. 3,936,554, Cl. 428-88.000.
- Staar, S.A.: *See—*
  - Staar, Theophiel Clement Jozef Lodewijk, 3,936,011.
- Staar, Theophiel Clement Jozef Lodewijk, to Staar, S.A. Tape cassette transport. 3,936,011, Cl. 242-198.000.
- Staats, James E., to General Electric Company. Magnetron with capacitively coupled external cavity resonator. 3,936,766, Cl. 331-88.000.
- Stach, Paul E.; and Sherrin, Thomas P. Syringe filling apparatus with disposable fluid conducting elements. 3,935,883, Cl. 141-27.000.
- Stal-Laval Turbin AB: *See—*
  - Norberg, Lars, 3,935,934.
- Stamicarbon N.V.: *See—*
  - Schoen, Lowhardt A. A.; Visseren, Marinus J. R.; and van der Sangen, Jean G., 3,936,430.
- Standard Electric Time Corporation: *See—*
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- Standard Manifold Company: *See—*
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  - Chih Wu, Hsin, 3,936,360.
  - Schubert, John C.; Cyr, Steven; and Case, Charles B., 3,935,962.
- Stang, Peter L.; and Van Ornum, Joel V., to General Motors Corporation. Self-sealing vehicle tire and sealant composition. 3,935,893, Cl. 152-347.000.
- Stange, Klaus K., to Xerox Corporation. Front and side sheet registering apparatus. 3,936,046, Cl. 271-250.000.
- Stanley, Robert K.: *See—*
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- Stanley, William L.: *See—*
  - Jurd, Leonard, King, A. Douglas, Jr.; and Stanley, William L., 3,936,393.
- Stanley Works, The: *See—*
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  - Hildebrandt, William J.; and Russell, Richard H., 3,935,779.
- Stapp, Hans, to Akzona Incorporated. Apparatus and process for the manufacture of structural mats. 3,936,337, Cl. 156-167.000.
- Star Manufacturing Company: *See—*
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- Stark, Robert. Movable swimming pool bulkhead. 3,935,599, Cl. 4-172.000.
- Statter, Simon, to Baltimore Spice Company, The. Method for protein analysis. 3,936,271, Cl. 23-230.00B.
- Stauffer Chemical Company: *See—*
  - Schallis, Alvin H., 3,936,534.
  - Shim, Kyung S., 3,936,514.
- Staver Company, Incorporated, The: *See—*
  - Skrobisch, Alfred, 3,936,818.
- Stedman, Robert N., to Caterpillar Tractor Co. Implement mounting means for earthworking vehicles. 3,935,953, Cl. 214-145.00A.
- Steinhagen, Carl A.: *See—*
  - Carlson, Robert G.; and Steinhagen, Carl A., 3,936,550.
- Steinmetz, Walter Edmund, to Pennzoil Company. Anti-caking of potassium bisulfate and resulting compositions. 3,936,392, Cl. 252-385.000.
- Stemmler, Heinz: *See—*
  - Stemmler, Mathias; and Stemmler, Heinz, 3,936,312.
- Stemmler, Kurt; and Ehlscheid, Gunter, to Winkler & Dunnebier. Apparatus for making envelopes with broad or pointed closures from a paper web. 3,935,799, Cl. 93-61.00R.
- Stemmler, Mathias; and Stemmler, Heinz. Composition for the preparation of coatings on meat and sausage goods. 3,936,312, Cl. 106-171.000.
- Stenudd, Sven Gunnar Valter, to Facit Aktiebolag. Direction of movement sensing device for a perforated code carrier tape. 3,936,650, Cl. 250-571.000.
- Stephany, Joseph F.: *See—*
  - Haas, Werner E. L.; and Stephany, Joseph F., 3,936,640.
- Sterling Drug Inc.: *See—*
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  - Toner, Anthony S., 3,936,643.
- Stern, Howard K.: *See—*
  - Di Matteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., 3,936,649.
- Steven, Gary, to Crucible Inc. Method for producing tool steel articles. 3,936,299, Cl. 75-224.000.
- Stevens, Clyde Bennett, to General Signal Corporation. Hydraulic control system. 3,935,706, Cl. 60-444.000.
- Stevens, Clyde Bennett: *See—*
  - Murphy, Eugene Scott; and Stevens, Clyde Bennett, 3,935,707.
- Stevens, Jacques: *See—*
  - Reginato, Luigi; Bienfait, Charles; and Stevens, Jacques, 3,936,431.
- Stevens, Robert B., to Stevens & Thompson Paper Company. Toilet tissue dispenser. 3,935,965, Cl. 221-48.000.
- Stevens & Thompson Paper Company: *See—*
  - Stevens, Robert B., 3,935,965.
- Stevenson, Hildreth W.: *See—*
  - Krupp, Carroll P.; and Stevenson, Hildreth W., 3,936,552.
- Sticha, James A. Highway color code marking. 3,936,207, Cl. 404-14.000.
- Stievater, Paul C.: *See—*
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- Stiftung, Carl Zeiss: *See—*
  - Aurin, Friedrich; Kantor, Paul; Knutti, Helmut; and Weinheimer, Hans-Richard, 3,936,152.
- Stjernstrom, Bo Gustaf, to ITT Industries, Inc. Diagonal impeller pump. 3,936,225, Cl. 415-207.000.
- Stone Container Corporation: *See—*
  - Meyer, Melvin H.; Vickers, James L.; Waycie, Edmund A.; and Weitzel, Gerald, 3,935,943.
- Storace, Anthony; and Morabito, James, to Pitney-Bowes, Inc. Postage meter mounting fixture. 3,936,114, Cl. 312-311.000.
- Storace, Anthony: *See—*
  - Sette, Paul R.; and Storace, Anthony, 3,935,800.
- Stotz, Charles: *See—*
  - Moakler, William A.; and Stotz, Charles, 3,936,782.
- Strekopytov, Alexei Alexeevich: *See—*
  - Akopov, Ernest Mikhailovich; Kapitanov, Nikolai Nikolaevich; Strekopytov, Alexei Alexeevich; Ogoltsova, Evgenia Sergeevna; and Paches, Alexandr Ilich, 3,935,981.
- Striegler, Hellmut: *See—*
  - Suling, Carlhans; Theidel, Hans; Striegler, Hellmut; and von Langenthal, Wolfram, 3,936,556.
- Stromberg-Carlson Corporation: *See—*
  - Pommerening, Uwe A., 3,936,604.
  - Pommerening, Uwe A., 3,936,615.
  - Suntop, Morris A., 3,936,614.
- Stubberfield, Pamela May: *See—*
  - Schagen, Pieter; and Stubberfield, Pamela May, 3,936,687.
- Studer, Arnold David. Fecal examination device. 3,936,373, Cl. 209-17.000.
- Sturm, Elmar; and Vogel, Christian, to Ciba-Geigy Corporation. Substituted 2-azabicycloalkanes as selective herbicides. 3,936,458, Cl. 260-283.00S.
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- Sucov, Eugene W.; and Weaver, Lelland A. C., to Westinghouse Electric Corporation. High flow metal halide vapor laser. 3,936,772, Cl. 331-94.50G.
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- Tudisco, Vincent J., to Creative Tools, Inc. Tool assembly for mounting bits. 3,935,762, Cl. 81-177.00G.
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  - Zeffren, Eugene; and Turner, Jerry, 3,935,868.
- Turpin, Gerald Leslie. Camera with a device for directing supplementary light into the imaging lens. 3,936,852, Cl. 354-295.000.
- Tuttle, John D.; and Wagner, Delbert J. Waterproof connector. 3,936,124, Cl. 339-60.00M.
- Tyco Laboratories, Inc.: *See—*
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- Tylko, Josef Kazimierz, to Tetronics Research and Development Co. Ltd. Arc furnaces and to methods of treating materials in such furnaces. 3,936,586, Cl. 13-9.00R.
- Tyrone Hydraulics, Inc.: *See—*
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- Uchiya Co., Ltd.: *See—*
  - Uchiya, Tomoyoshi, 3,936,788.
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- Ueda, Toshio: *See—*
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  - Yanagimachi, Akio; Uehara, Takashi; Yamamoto, Tetsuo; Yamane, Hisakichi; Sawabe, Eiichi; Yoshino, Takehiko; Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Fukuda, Masaaki; and Kayano, Tatsuo, 3,936,595.
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  - O'Neill, Joseph L., Jr., 3,936,808.
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- Unger, Klaus; and Berg, Karlheinz, to Merck Patent Gesellschaft mit beschrankter Haftung. Process for the production of silicon dioxide ion exchangers. 3,936,388, Cl. 252-182.000.
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  - Kaasenbrood, Petrus J. C.; and Verstegen, Johannes D. M., 3,936,500.
- Union Carbide Corporation: *See—*
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- Vandale, Leonard A.: *See—*
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- Vanderpool, Clarence D.; MacInnis, Martin B.; and Patton, James C., Jr., to GTE Sylvania Incorporated. Process for the manufacture of ammonium tungstate ammonium paratungstate, ammonium metatungstate and hydrated tungsten trioxide. 3,936,362, Cl. 204-86.000.

- van der Sangen, Jean G.. *See*—
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- Van Haaften, Egbert, to Bulova Watch Company, Inc. Switching mechanism for electronic watch electro-optic display. 3,935,700, Cl 58-4.00A
- Van Hoof, Albert Emiel, and Holvoet, Georges Arthur, to AGFA-GEVAERT N.V Adhesive tape. 3,936,571, Cl. 428-355.000.
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- Virgil, Eldon E. Diesel fuel line heater. 3,935,901, Cl. 165-52.000
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- Von Bieren, Karlheinz. Interferometer for the measurement of wavefront sections of general imaging systems including the human eye. 3,936,160, Cl. 351-6.000.
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- Wacker-Chemie GmbH: *See*—
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- Wade, Virdell H. Rifle rest. 3,935,657, Cl. 42-94.000.
- Wagemer, Wilfried, to AEG-Elotherm G.m.b.H. Medium frequency power transformer with a secondary winding suitable for a rigid connection with an inductor through which the coolant flows. 3,936,783, Cl. 336-62.000.
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- Wagner Electric Corporation: *See*—
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- Wagner, Herbert A.; and Katkov, Robert B., to Howe Richardson Scale Company. Platform weighing scale. 3,935,913, Cl. 177-134.000.
- Wakahara, Shigeo, to Nippon Kogaku K.K. Device for automatically controlling a protective filter in a film projector. 3,936,167, Cl. 352-148.000.
- Wakeman, Alfred W. Joint forming tape for a collapsible cylindrical container. 3,935,615, Cl. 16-150.000.
- Waldeck, Gary C., to GTE Automatic Electric Laboratories Incorporated. Submultiplex transmission of alarm status signals for a time division multiplex system. 3,936,609, Cl. 179-15.0BF.
- Walker, Alan John. Magnetic coupling. 3,936,683, Cl. 310-103.000.
- Walker, Wilmer David, Jr. Tethered-ball game having suspended receiving means. 3,936,051, Cl. 273-95.00A.
- Wall, Albert. Guide means for cutting hair. 3,935,870, Cl. 132-45.00R.
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- Walter, Gerhard W. H.; and Pietsch, Gunter W. E., to Howaldtswerke - Deutsche Werft Aktiengesellschaft Hamburg und Kiel. Shaft seals. 3,936,057, Cl. 277-59.000.
- Walton, Richard Eugene, II: *See*—
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- Wang, Richard H. S.; and Irick, Gether, Jr., to Eastman Kodak Company. Multichromophoric ultraviolet stabilizers and their use in organic compositions. 3,936,419, Cl. 260-45.80N.
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- Ward, Truman L.; and Benerito, Ruth R., to United States of America, Agriculture. Electrically conductive glasslike films on glass or ceramic surfaces from aluminum and plumbite-treated cellulosics. 3,936,580, Cl. 428-446.000.
- Wareham, Richard R., to Polaroid Corporation. Ever-ready camera case. 3,936,851, Cl. 354-288.000.
- Warn Industries, Inc.: *See*—
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- Wasley, William L.; and Pittman, Allen G., to United States of America, Agriculture. Flameproofing wool textiles 3,936,267, Cl. 8-128.00R.
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- Watanabe, Tadashi; and Maruyama, Tsutomu, to Kansai Paint Company, Ltd Method for curing a coating film. 3,936,368, Cl 204-181.000.
- Watanabe, Tsutomu; Nakayama, Takahiro, and Yamaoka, Sigenori, to Sumitomo Bakelite Company, Limited. Flexible metal-clad laminates and method for munufacturing the same. 3,936,575, Cl. 428-417.000.
- Waters, Elmer Dale, to McDonnell Douglas Corporation. Permafrost structural support with integral heat pipe means. 3,935,900, Cl. 165-45.000.
- Watt, William Russell, to American Can Company. Epoxide blend for polymerizable coating compositions and process. 3,936,557, Cl. 428-211.000.
- Waycie, Edmund A.: *See*—
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- Weber, Charles A., to Rockwell International Corporation. Fast search and lock-on means for distance measuring equipment. 3,936,823, Cl. 343-7.300.
- Weedon, Gene Clyde: *See*—
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- Weinreich, Siegfried, to Gebruder Heller, Firma. Cutter tool for use in a boring head. 3,935,624, Cl. 29-95.00R.
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- Weisgerber, Willi, to Miller Printing Machinery Co. Sheet delivery apparatus. 3,935,814, Cl. 101-232.000.
- Weiss, Eberhard, to International Standard Electric Corporation. Method of producing a layer of dark colored heat radiating insulating material for heaters of indirectly heated cathodes. 3,936,367, Cl. 204-181.000.
- Weitzel, Gerald: *See*—
  - Meyer, Melvin H.; Vickers, James L.; Waycie, Edmund A.; and Weitzel, Gerald, 3,935,943.
- Welnhofer, Hans: *See*—
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- Welschof, Hans-Heinrich, to Lohr & Bromkamp GmbH. Universal joint. 3,935,717, Cl. 64-21.000.
- Wentz, Edward A.; and Shinnick, David M., to American Chain & Cable Company, Inc. Sorter system induction means. 3,935,940, Cl 198-25.000.
- Wenzel, Rupert; and Scharfe, Gerhard, to Bayer Aktiengesellschaft Process for the preparation of chloroprene. 3,936,508, Cl. 260-655.000.
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- Westergren, Folke, to Aktiebolaget Svenska Flaktfabriken. Device for air-conditioning a number of rooms the heat requirements of which are different and vary preferably with respect to time. 3,935,898, Cl. 165-22.000.
- Westerhuis, Popko Julius: *See*—
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- Western Electric Company: *See*—
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- Western Electric Company, Inc.: *See*—
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B 265,862	3,915,915	Oct. 28, 1975	B 312,477	3,923,714	Dec. 2, 1975
B 266,195	3,923,599	Dec. 2, 1975	B 313,098	3,925,045	Dec. 9, 1975
B 269,673	3,914,377	Oct. 21, 1975	B 313,531	3,925,548	Dec. 9, 1975
B 270,089	3,923,875	Dec. 2, 1975	B 313,594	3,924,626	Dec. 9, 1975
B 271,104	3,925,400	Dec. 9, 1975	B 313,900	3,915,932	Oct. 28, 1975
B 274,945	3,924,992	Dec. 9, 1975	B 314,049	3,920,588	Nov. 18, 1975
B 275,426	3,925,168	Dec. 9, 1975	B 314,255	3,923,764	Dec. 2, 1975
B 276,271	3,916,028	Oct. 28, 1975	B 314,271	3,921,845	Nov. 25, 1975
B 276,560	3,916,030	Oct. 28, 1975	B 314,489	3,925,016	Dec. 9, 1975
B 277,449	3,924,048	Dec. 2, 1975	B 314,800	3,930,087	Dec. 30, 1975
B 278,491	3,921,170	Nov. 18, 1975	B 314,977	3,923,459	Dec. 2, 1975
B 278,991	3,914,469	Oct. 21, 1975	B 315,363	3,920,673	Nov. 18, 1975
B 279,583	3,923,749	Dec. 2, 1975	B 315,397	3,923,963	Dec. 2, 1975
B 280,015	3,925,378	Dec. 9, 1975	B 315,731	3,914,108	Oct. 21, 1975
B 280,395	3,919,604	Nov. 11, 1975	B 316,014	3,920,861	Nov. 18, 1975
B 281,341	3,920,643	Nov. 18, 1975	B 316,239	3,913,546	Oct. 21, 1975
B 281,943	3,924,013	Dec. 2, 1975	B 316,917	3,925,494	Dec. 9, 1975
B 282,081	3,913,483	Oct. 21, 1975	B 317,080	3,925,324	Dec. 9, 1975
B 282,252	3,924,997	Dec. 9, 1975	B 317,347	3,923,552	Dec. 2, 1975
B 283,124	3,923,512	Dec. 2, 1975	B 317,624	3,925,167	Dec. 9, 1975
B 283,300	3,925,011	Dec. 9, 1975	B 318,195	3,915,699	Oct. 28, 1975
B 284,297	3,913,722	Oct. 21, 1975	B 318,618	3,915,365	Oct. 28, 1975
B 285,200	3,923,680	Dec. 2, 1975	B 318,640	3,925,186	Dec. 9, 1975
B 285,796	3,914,303	Oct. 21, 1975	B 318,745	3,916,571	Nov. 4, 1975
B 286,499	3,914,129	Oct. 21, 1975	B 319,226	3,925,082	Dec. 9, 1975
B 286,614	3,924,696	Dec. 9, 1975	B 319,339	3,916,056	Oct. 28, 1975
B 286,913	3,928,696	Dec. 23, 1975	B 319,402	3,919,568	Nov. 11, 1975
B 287,164	3,914,139	Oct. 21, 1975	B 319,414	3,928,666	Dec. 23, 1975
B 287,270	3,924,825	Dec. 9, 1975	B 320,261	3,924,033	Dec. 2, 1975
B 287,275	3,925,141	Dec. 9, 1975	B 320,452	3,925,083	Dec. 9, 1975
B 287,373	3,918,568	Nov. 11, 1975	B 320,603	3,915,571	Oct. 28, 1975
B 288,018	3,925,239	Dec. 9, 1975	B 321,018	3,921,623	Nov. 25, 1975
B 288,627	3,916,179	Oct. 28, 1975	B 321,101	3,917,163	Nov. 4, 1975
B 288,638	3,925,132	Dec. 9, 1975	B 321,938	3,923,889	Dec. 2, 1975
B 289,175	3,924,309	Dec. 9, 1975	B 322,182	3,925,390	Dec. 9, 1975

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JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 322,239	3,920,973	Nov. 18, 1975	B 346,901	3,915,583	Oct. 28, 1975
B 322,564	3,914,373	Oct. 21, 1975	B 348,083	3,923,774	Dec. 2, 1975
B 322,611	3,920,863	Nov. 18, 1975	B 348,383	3,923,452	Dec. 2, 1975
B 322,777	3,924,382	Dec. 9, 1975	B 348,495	3,914,654	Oct. 21, 1975
B 323,127	3,923,967	Dec. 2, 1975	B 348,558	3,914,109	Oct. 21, 1975
B 323,191	3,914,566	Oct. 21, 1975	B 349,141	3,915,363	Oct. 28, 1975
B 323,203	3,916,165	Oct. 28, 1975	B 349,177	3,914,033	Oct. 21, 1975
B 323,568	3,920,536	Nov. 18, 1975	B 349,231	3,915,831	Oct. 28, 1975
B 323,666	3,924,568	Dec. 9, 1975	B 349,321	3,916,103	Oct. 28, 1975
B 324,495	3,928,664	Dec. 23, 1975	B 349,948	3,914,557	Oct. 21, 1975
B 324,503	3,928,524	Dec. 23, 1975	B 350,025	3,927,415	Dec. 16, 1975
B 324,505	3,925,294	Dec. 9, 1975	B 350,143	3,924,419	Dec. 9, 1975
B 324,739	3,924,990	Dec. 9, 1975	B 350,219	3,917,802	Nov. 4, 1975
B 324,879	3,923,538	Dec. 2, 1975	B 350,245	3,914,331	Oct. 21, 1975
B 325,102	3,924,355	Dec. 9, 1975	B 350,523	3,924,726	Dec. 9, 1975
B 325,262	3,921,304	Nov. 25, 1975	B 350,589	3,927,419	Dec. 16, 1975
B 326,514	3,925,080	Dec. 9, 1975	B 350,708	3,923,871	Dec. 2, 1975
B 327,109	3,925,350	Dec. 9, 1975	B 350,843	3,915,461	Oct. 28, 1975
B 327,363	3,923,504	Dec. 2, 1975	B 351,055	3,914,074	Oct. 21, 1975
B 327,612	3,925,620	Dec. 9, 1975	B 351,218	3,914,186	Oct. 21, 1975
B 327,674	3,918,540	Nov. 11, 1975	B 351,222	3,921,179	Nov. 18, 1975
B 327,899	3,925,674	Dec. 9, 1975	B 351,348	3,923,563	Dec. 2, 1975
B 328,164	3,914,703	Oct. 21, 1975	B 351,421	3,914,733	Oct. 21, 1975
B 328,200	3,916,031	Oct. 28, 1975	B 351,493	3,914,758	Oct. 21, 1975
B 328,205	3,914,106	Oct. 21, 1975	B 351,535	3,915,239	Oct. 28, 1975
B 328,210	3,914,275	Oct. 21, 1975	B 351,665	3,919,701	Nov. 11, 1975
B 328,870	3,916,486	Nov. 4, 1975	B 351,672	3,914,000	Oct. 21, 1975
B 329,115	3,924,727	Dec. 9, 1975	B 351,735	3,913,385	Oct. 21, 1975
B 329,476	3,920,562	Nov. 18, 1975	B 351,863	3,914,700	Oct. 21, 1975
B 329,612	3,925,128	Dec. 9, 1975	B 351,883	3,924,657	Dec. 9, 1975
B 329,787	3,920,688	Nov. 18, 1975	B 351,926	3,914,133	Oct. 21, 1975
B 329,816	3,923,947	Dec. 2, 1975	B 351,939	3,913,480	Oct. 21, 1975
B 330,536	3,925,452	Dec. 9, 1975	B 352,445	3,928,746	Dec. 23, 1975
B 330,828	3,913,589	Oct. 21, 1975	B 352,934	3,913,692	Oct. 21, 1975
B 331,417	3,914,157	Oct. 21, 1975	B 352,950	3,922,590	Nov. 25, 1975
B 331,557	3,916,577	Nov. 4, 1975	B 352,965	3,921,926	Nov. 25, 1975
B 331,895	3,916,403	Oct. 28, 1975	B 353,317	3,916,446	Nov. 4, 1975
B 332,527	3,924,017	Dec. 2, 1975	B 353,387	3,924,404	Dec. 9, 1975
B 332,811	3,924,359	Dec. 9, 1975	B 353,546	3,913,273	Oct. 21, 1975
B 333,876	3,921,208	Nov. 18, 1975	B 354,008	3,925,081	Dec. 9, 1975
B 333,928	3,927,172	Dec. 16, 1975	B 354,098	3,925,547	Dec. 9, 1975
B 334,251	3,924,719	Dec. 9, 1975	B 354,145	3,927,279	Dec. 16, 1975
B 334,868	3,919,469	Nov. 11, 1975	B 354,296	3,914,580	Oct. 21, 1975
B 334,985	3,923,912	Dec. 2, 1975	B 354,510	3,928,658	Dec. 23, 1975
B 335,670	3,928,686	Dec. 23, 1975	B 354,889	3,913,204	Oct. 21, 1975
B 335,741	3,925,615	Dec. 9, 1975	B 354,979	3,914,251	Oct. 21, 1975
B 335,773	3,920,953	Nov. 18, 1975	B 355,095	3,925,656	Dec. 9, 1975
B 336,129	3,923,606	Dec. 2, 1975	B 355,269	3,914,561	Oct. 21, 1975
B 336,243	3,925,422	Dec. 9, 1975	B 355,510	3,913,704	Oct. 21, 1975
B 336,345	3,925,179	Dec. 9, 1975	B 355,595	3,925,649	Dec. 9, 1975
B 336,652	3,914,211	Oct. 21, 1975	B 355,876	3,925,685	Dec. 9, 1975
B 336,902	3,918,897	Nov. 11, 1975	B 356,032	3,928,636	Dec. 23, 1975
B 336,946	3,919,425	Nov. 11, 1975	B 356,253	3,925,025	Dec. 9, 1975
B 336,978	3,923,968	Dec. 2, 1975	B 356,602	3,927,393	Dec. 16, 1975
B 337,235	3,919,386	Nov. 11, 1975	B 356,724	3,924,586	Dec. 9, 1975
B 337,409	3,925,258	Dec. 9, 1975	B 357,039	3,924,406	Dec. 9, 1975
B 337,442	3,913,658	Oct. 21, 1975	B 357,057	3,913,738	Oct. 21, 1975
B 337,703	3,914,690	Oct. 21, 1975	B 357,131	3,924,453	Dec. 9, 1975
B 337,787	3,923,506	Dec. 2, 1975	B 357,402	3,914,180	Oct. 21, 1975
B 339,057	3,924,822	Dec. 9, 1975	B 357,682	3,924,973	Dec. 9, 1975
B 339,218	3,925,121	Dec. 9, 1975	B 357,803	3,919,470	Nov. 11, 1975
B 339,699	3,933,527	Jan. 20, 1976	B 358,174	3,924,958	Dec. 9, 1975
B 339,838	3,930,221	Dec. 30, 1975	B 358,244	3,913,411	Oct. 21, 1975
B 340,212	3,922,645	Nov. 25, 1975	B 358,311	3,923,561	Dec. 2, 1975
B 340,833	3,925,208	Dec. 9, 1975	B 358,939	3,924,713	Dec. 9, 1975
B 341,579	3,913,363	Oct. 21, 1975	B 359,174	3,914,117	Oct. 21, 1975
B 342,084	3,928,694	Dec. 23, 1975	B 359,187	3,924,525	Dec. 9, 1975
B 342,423	3,925,334	Dec. 9, 1975	B 359,540	3,915,235	Oct. 28, 1975
B 342,886	3,923,507	Dec. 2, 1975	B 359,740	3,936,212	Feb. 3, 1976
B 343,136	3,919,453	Nov. 11, 1975	B 359,791	3,929,430	Dec. 30, 1975
B 343,240	3,925,693	Dec. 9, 1975	B 359,825	3,921,344	Nov. 25, 1975
B 343,506	3,916,021	Oct. 28, 1975	B 359,946	3,914,132	Oct. 21, 1975
B 343,577	3,921,165	Nov. 18, 1975	B 359,947	3,914,653	Oct. 21, 1975
B 344,203	3,928,719	Dec. 23, 1975	B 360,208	3,923,750	Dec. 2, 1975
B 344,479	3,924,042	Dec. 2, 1975	B 360,296	3,916,720	Nov. 4, 1975
B 345,060	3,916,018	Oct. 28, 1975	B 360,719	3,915,715	Oct. 28, 1975
B 345,384	3,916,146	Oct. 28, 1975	B 360,910	3,925,696	Dec. 9, 1975
B 345,422	3,914,392	Oct. 21, 1975	B 361,265	3,923,569	Dec. 2, 1975
B 345,527	3,927,365	Dec. 16, 1975	B 361,443	3,927,405	Dec. 16, 1975
B 345,567	3,913,985	Oct. 21, 1975	B 361,569	3,914,554	Oct. 21, 1975
B 346,165	3,913,293	Oct. 21, 1975	B 361,604	3,922,702	Nov. 25, 1975
B 346,210	3,916,142	Oct. 28, 1975	B 361,734	3,915,764	Oct. 28, 1975
B 346,350	3,915,824	Oct. 28, 1975	B 362,589	3,914,012	Oct. 21, 1975
B 346,487	3,927,406	Dec. 16, 1975	B 363,205	3,923,744	Dec. 2, 1975
B 346,585	3,913,820	Oct. 21, 1975	B 363,337	3,928,639	Dec. 23, 1975
B 346,613	3,923,545	Dec. 2, 1975	B 363,457	3,922,595	Nov. 25, 1975

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 363,674	3,929,716	Dec. 30, 1975	B 387,761	3,914,245	Oct. 21, 1975
B 363,892	3,913,395	Oct. 21, 1975	B 387,790	3,925,380	Dec. 9, 1975
B 363,962	3,921,826	Nov. 25, 1975	B 387,818	3,918,935	Nov. 11, 1975
B 364,022	3,913,499	Oct. 21, 1975	B 388,580	3,923,712	Dec. 2, 1975
B 364,163	3,916,092	Oct. 28, 1975	B 389,070	3,914,171	Oct. 21, 1975
B 364,241	3,916,668	Nov. 4, 1975	B 389,285	3,914,631	Oct. 21, 1975
B 364,334	3,924,670	Dec. 9, 1975	B 389,327	3,924,504	Dec. 9, 1975
B 364,528	3,919,510	Nov. 11, 1975	B 389,639	3,914,626	Oct. 21, 1975
B 364,786	3,921,673	Nov. 25, 1975	B 389,726	3,921,010	Nov. 18, 1975
B 364,910	3,925,335	Dec. 9, 1975	B 389,807	3,922,623	Nov. 25, 1975
B 365,490	3,918,527	Nov. 11, 1975	B 389,932	3,913,268	Oct. 21, 1975
B 365,834	3,914,702	Oct. 21, 1975	B 389,933	3,913,267	Oct. 21, 1975
B 365,841	3,925,628	Dec. 9, 1975	B 390,679	3,913,668	Oct. 21, 1975
B 365,855	3,917,258	Nov. 4, 1975	B 390,732	3,913,878	Oct. 21, 1975
B 366,287	3,924,946	Dec. 9, 1975	B 391,184	3,914,214	Oct. 21, 1975
B 366,402	3,928,053	Dec. 23, 1975	B 391,210	3,914,220	Oct. 21, 1975
B 366,589	3,914,719	Oct. 21, 1975	B 391,437	3,915,416	Oct. 28, 1975
B 367,021	3,914,752	Oct. 21, 1975	B 391,509	3,925,175	Dec. 9, 1975
B 367,040	3,924,775	Dec. 9, 1975	B 391,675	3,916,017	Oct. 28, 1975
B 367,661	3,914,158	Oct. 21, 1975	B 392,154	3,923,809	Dec. 2, 1975
B 367,739	3,923,648	Dec. 2, 1975	B 392,242	3,926,636	Dec. 16, 1975
B 367,812	3,924,789	Dec. 9, 1975	B 392,696	3,916,175	Oct. 28, 1975
B 368,081	3,924,691	Dec. 9, 1975	B 392,732	3,914,903	Oct. 21, 1975
B 368,387	3,924,923	Dec. 9, 1975	B 392,753	3,916,341	Oct. 28, 1975
B 368,392	3,913,812	Oct. 21, 1975	B 392,894	3,914,763	Oct. 21, 1975
B 368,397	3,914,677	Oct. 21, 1975	B 393,163	3,914,535	Oct. 21, 1975
B 368,862	3,925,549	Dec. 9, 1975	B 393,970	3,914,638	Oct. 21, 1975
B 369,563	3,924,449	Dec. 9, 1975	B 394,088	3,914,740	Oct. 21, 1975
B 369,607	3,923,786	Dec. 2, 1975	B 394,188	3,924,591	Dec. 9, 1975
B 369,997	3,913,533	Oct. 21, 1975	B 394,300	3,914,159	Oct. 21, 1975
B 370,706	3,925,242	Dec. 9, 1975	B 394,712	3,916,306	Oct. 28, 1975
B 371,073	3,930,135	Dec. 30, 1975	B 395,478	3,922,577	Nov. 25, 1975
B 371,085	3,923,783	Dec. 2, 1975	B 395,496	3,919,435	Nov. 11, 1975
B 371,787	3,921,217	Nov. 18, 1975	B 395,671	3,920,418	Nov. 18, 1975
B 371,805	3,914,433	Oct. 21, 1975	B 395,889	3,913,190	Oct. 21, 1975
B 371,836	3,923,541	Dec. 2, 1975	B 396,025	3,913,869	Oct. 21, 1975
B 372,823	3,924,660	Dec. 9, 1975	B 396,551	3,921,929	Nov. 25, 1975
B 373,297	3,924,436	Dec. 9, 1975	B 397,027	3,923,736	Dec. 2, 1975
B 373,326	3,920,433	Nov. 18, 1975	B 397,527	3,913,488	Oct. 21, 1975
B 373,428	3,915,511	Oct. 28, 1975	B 397,990	3,914,848	Oct. 28, 1975
B 375,220	3,920,417	Nov. 18, 1975	B 398,262	3,913,481	Oct. 21, 1975
B 375,652	3,921,303	Nov. 25, 1975	B 398,551	3,924,924	Dec. 9, 1975
B 376,504	3,914,570	Oct. 21, 1975	B 398,597	3,913,743	Oct. 21, 1975
B 376,654	3,922,513	Nov. 25, 1975	B 398,625	3,920,996	Nov. 18, 1975
B 376,742	3,924,392	Dec. 9, 1975	B 399,292	3,914,810	Oct. 28, 1975
B 376,799	3,913,955	Oct. 21, 1975	B 399,304	3,919,567	Nov. 11, 1975
B 377,172	3,918,255	Nov. 11, 1975	B 399,349	3,925,694	Dec. 9, 1975
B 377,683	3,924,433	Dec. 9, 1975	B 399,766	3,915,667	Oct. 28, 1975
B 377,833	3,913,884	Oct. 21, 1975	B 400,080	3,925,163	Dec. 9, 1975
B 377,869	3,917,002	Nov. 4, 1975	B 400,293	3,923,719	Dec. 2, 1975
B 378,621	3,923,840	Dec. 2, 1975	B 400,310	3,915,507	Oct. 28, 1975
B 379,038	3,923,994	Dec. 2, 1975	B 401,133	3,924,443	Dec. 9, 1975
B 379,172	3,914,379	Oct. 21, 1975	B 401,992	3,924,898	Dec. 9, 1975
B 379,282	3,913,462	Oct. 21, 1975	B 402,065	3,925,413	Dec. 9, 1975
B 379,955	3,913,157	Oct. 21, 1975	B 402,555	3,914,688	Oct. 21, 1975
B 380,014	3,921,915	Nov. 25, 1975	B 403,140	3,913,486	Oct. 21, 1975
B 380,141	3,925,161	Dec. 9, 1975	B 403,355	3,913,352	Oct. 21, 1975
B 380,310	3,921,048	Nov. 18, 1975	B 403,990	3,914,684	Oct. 21, 1975
B 380,312	3,913,953	Oct. 21, 1975	B 403,996	3,916,016	Oct. 28, 1975
B 380,338	3,924,873	Dec. 9, 1975	B 404,290	3,924,918	Dec. 9, 1975
B 380,446	3,923,836	Dec. 2, 1975	B 404,437	3,915,200	Oct. 28, 1975
B 380,900	3,913,307	Oct. 21, 1975	B 405,136	3,915,565	Oct. 28, 1975
B 380,926	3,925,095	Dec. 9, 1975	B 405,137	3,915,566	Oct. 28, 1975
B 381,074	3,919,583	Nov. 11, 1975	B 405,160	3,924,821	Dec. 9, 1975
B 381,632	3,914,732	Oct. 21, 1975	B 405,248	3,926,294	Dec. 16, 1975
B 381,847	3,921,152	Nov. 18, 1975	B 405,305	3,922,111	Nov. 25, 1975
B 382,018	3,929,742	Dec. 30, 1975	B 405,360	3,913,403	Oct. 21, 1975
B 382,021	3,913,212	Oct. 21, 1975	B 405,495	3,924,577	Dec. 9, 1975
B 382,261	3,914,991	Oct. 28, 1975	B 405,938	3,920,109	Nov. 18, 1975
B 382,290	3,924,717	Dec. 9, 1975	B 406,065	3,914,199	Oct. 21, 1975
B 382,783	3,919,527	Nov. 11, 1975	B 406,357	3,924,529	Dec. 9, 1975
B 382,798	3,924,435	Dec. 9, 1975	B 407,736	3,924,463	Dec. 9, 1975
B 382,840	3,922,007	Nov. 25, 1975	B 407,357	3,924,614	Dec. 9, 1975
B 383,465	3,927,412	Dec. 16, 1975	B 407,728	3,925,240	Dec. 9, 1975
B 383,532	3,914,246	Oct. 21, 1975	B 408,487	3,924,046	Dec. 2, 1975
B 383,581	3,925,318	Dec. 9, 1975	B 408,749	3,914,116	Oct. 21, 1975
B 384,499	3,925,135	Dec. 9, 1975	B 409,026	3,925,497	Dec. 9, 1975
B 384,658	3,913,452	Oct. 21, 1975	B 409,220	3,915,648	Oct. 28, 1975
B 384,773	3,915,416	Oct. 28, 1975	B 409,251	3,922,620	Nov. 25, 1975
B 385,210	3,913,406	Oct. 21, 1975	B 409,657	3,927,362	Dec. 16, 1975
B 386,403	3,924,895	Dec. 9, 1975	B 409,816	3,921,317	Nov. 25, 1975
B 386,592	3,925,305	Dec. 9, 1975	B 410,062	3,923,855	Dec. 2, 1975
B 387,039	3,924,510	Dec. 9, 1975	B 410,168	3,914,717	Oct. 21, 1975
B 387,331	3,913,701	Oct. 21, 1975	B 411,145	3,914,168	Oct. 21, 1975
B 387,363	3,927,378	Dec. 16, 1975	B 411,356	3,919,649	Nov. 11, 1975
B 387,687	3,918,151	Nov. 11, 1975	B 411,483	3,925,196	Dec. 9, 1975

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JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 411,633	3,914,741	Oct. 21, 1975	B 425,541	3,914,051	Oct. 21, 1975
B 412,516	3,927,417	Dec. 16, 1975	B 425,572	3,923,822	Dec. 2, 1975
B 412,619	3,925,292	Dec. 9, 1975	B 427,631	3,921,433	Nov. 25, 1975
B 412,867	3,924,587	Dec. 9, 1975	B 428,177	3,914,624	Oct. 21, 1975
B 413,006	3,914,850	Oct. 28, 1975	B 428,795	3,921,056	Nov. 18, 1975
B 413,546	3,924,314	Dec. 9, 1975	B 429,442	3,923,485	Dec. 2, 1975
B 414,129	3,925,484	Dec. 9, 1975	B 430,106	3,918,941	Nov. 11, 1975
B 414,288	3,925,537	Dec. 9, 1975	B 430,140	3,922,084	Nov. 25, 1975
B 415,113	3,915,717	Oct. 28, 1975	B 430,798	3,918,204	Nov. 11, 1975
B 415,124	3,915,944	Oct. 28, 1975	B 430,944	3,922,096	Nov. 25, 1975
B 415,845	3,925,076	Dec. 9, 1975	B 432,373	3,919,670	Nov. 11, 1975
B 415,847	3,914,208	Oct. 21, 1975	B 433,587	3,914,567	Oct. 21, 1975
B 415,957	3,925,635	Dec. 9, 1975	B 435,343	3,919,244	Nov. 11, 1975
B 415,977	3,927,359	Dec. 16, 1975	B 435,844	3,925,170	Dec. 9, 1975
B 416,598	3,923,473	Dec. 2, 1975	B 437,173	3,924,627	Dec. 9, 1975
B 416,832	3,924,975	Dec. 9, 1975	B 437,172	3,913,251	Oct. 21, 1975
B 416,710	3,923,746	Dec. 2, 1975	B 437,195	3,914,618	Oct. 21, 1975
B 416,933	3,924,968	Dec. 9, 1975	B 437,450	3,922,479	Nov. 25, 1975
B 417,299	3,918,235	Nov. 11, 1975	B 438,053	3,916,013	Oct. 28, 1975
B 418,121	3,925,023	Dec. 9, 1975	B 438,706	3,925,050	Dec. 9, 1975
B 418,153	3,925,251	Dec. 9, 1975	B 439,168	3,919,676	Nov. 11, 1975
B 418,302	3,913,252	Oct. 21, 1975	B 439,669	3,921,499	Nov. 25, 1975
B 419,327	3,921,197	Nov. 18, 1975	B 440,898	3,921,789	Nov. 25, 1975
B 419,481	3,924,970	Dec. 9, 1975	B 441,024	3,913,629	Oct. 21, 1975
B 420,016	3,914,572	Oct. 21, 1975	B 441,416	3,913,851	Oct. 21, 1975
B 420,148	3,927,414	Dec. 16, 1975	B 442,280	3,914,054	Oct. 21, 1975
B 420,514	3,923,929	Dec. 2, 1975	B 442,859	3,918,570	Nov. 11, 1975
B 420,568	3,925,069	Dec. 9, 1975	B 442,919	3,925,483	Dec. 9, 1975
B 421,026	3,914,785	Oct. 21, 1975	B 444,614	3,927,996	Dec. 23, 1975
B 421,362	3,924,817	Dec. 9, 1975	B 445,471	3,914,711	Oct. 21, 1975
B 421,383	3,925,047	Dec. 9, 1975	B 445,740	3,923,612	Dec. 2, 1975
B 421,797	3,914,023	Oct. 21, 1975	B 448,571	3,924,760	Dec. 9, 1975
B 422,399	3,928,656	Dec. 23, 1975	B 449,647	3,916,797	Nov. 4, 1975
B 422,467	3,924,804	Dec. 9, 1975	B 450,499	3,920,526	Nov. 18, 1975
B 422,949	3,921,873	Nov. 25, 1975	B 450,546	3,924,417	Dec. 9, 1975
B 424,415	3,919,458	Nov. 11, 1975	B 450,927	3,913,844	Oct. 21, 1975
B 424,462	3,920,522	Nov. 18, 1975	B 455,520	3,922,543	Nov. 25, 1975
B 424,572	3,924,979	Dec. 9, 1975	B 455,775	3,914,356	Oct. 21, 1975
B 424,748	3,924,395	Dec. 9, 1975	B 456,346	3,914,531	Oct. 21, 1975
B 425,035	3,914,025	Oct. 21, 1975	B 459,425	3,928,773	Dec. 23, 1975
B 425,345	3,922,015	Nov. 25, 1975	B 461,872	3,919,586	Nov. 11, 1975
B 425,470	3,923,796	Dec. 2, 1975	B 467,684	3,915,119	Oct. 28, 1975
B 425,539	3,916,742	Nov. 4, 1975	B 468,198	3,925,340	Dec. 9, 1975

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 3RD DAY OF FEBRUARY, 1976

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687.

- Brackeen, Billie E.: *See—*
  - Schorn, Victor J., and Brackeen. T943,003.
- Canter, Frank C.: *See—*
  - Hagemeyer, Hugh J., Jr., Canter, and De Jean. T943,002.
- Davis, Lee H.: *See—*
  - Leonard, Don R., and Davis. T943,007.
- Giaccone, Leonard F., and L. J. Woodrum, to International Business Machines Corp. Dynamic priority queueing mechanism method and means. T943,006, 2-3-76, Cl. 444—1.
- Hagemeyer, Hugh J., Jr., F. C. Canter, and R. A. De Jean. Process for the oxidation of olefinically unsaturated compounds to carbonyl compounds. T943,002, 2-3-76, Cl. 260—604.
- Hara, Hisao, to Hitachi Metals, Ltd. Method for manufacturing tool alloys by powder metallurgy. T943,008, 2-3-76, Cl. 148—11.5.
- Hitachi Metals, Ltd.: *See—*
  - Hara, Hisao. T943,008.
- ICC United States: *See—*
  - Pettoruto, Nicholas R. T943,010.
- International Business Machines Corp.: *See—*
  - Mennone, Angelo. T942,001.
  - Giaccone, Leonard F., and Woodrum. T943,006.
  - Schneider, Richard C. T943,004.
- Leonard, Don R., and L. H. Davis. Rigid unsaturated polyester cellular material. T943,007, 2-3-76, Cl. 260—2.5.
- Mennone, Angelo, to International Business Machines Corp. Dynamic redundancy method for an automated logic mapping system. T943,001, 2-3-76, Cl. 444—1.
- Monsanto Co.: *See—*
  - Smith, Andrew I. T943,009.
- Pettoruto, Nicholas R., to ICC United States. Foamable chlorexidine-containing system. T943,010, 2-3-76, Cl. 424—316.
- Schneider, Richard C., to International Business Machines Corp. Read signal equalization or compensation network. T943,004, 2-3-76, Cl. 360—65.
- Schorn, Victor J., and B. E. Bracken. Atmospheric ambient air temperature monitoring system and probe therefore. T943,003, 2-3-76, Cl. 73—362.
- Smith, Andrew I., to Monsanto Co. Stabilized spandex polymers. T943,009, 2-3-76, Cl. 260—45.8.
- Smithkey, John D., Jr. Method of building a radial tire. T943,005, 2-3-76, Cl. 156—123.
- Woodrum, Luther J.: *See—*
  - Giaccone, Leonard F., and Woodrum. T943,006.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF FEBRUARY, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Beale, Julian Robert Anthony: *See—*
  - Robinson, David Phythian; Beale, Julian Robert Anthony; Shannon, John Martin; Kerr, John Anthony; and Das, Mukunda Behari. Re. 28,704.
- Das, Mukunda Behari: *See—*
  - Robinson, David Phythian; Beale, Julian Robert Anthony; Shannon, John Martin; Kerr, John Anthony; and Das, Mukunda Behari. Re. 28,704.
- Dorey, Howard Anthony, to Solartron Electronic Group Limited, The. Triple-slope analog-to-digital converters. Re. 28,706, Cl 340-347.0NT
- General Electric Company: *See—*
  - Hoffmeyer, William R., Re. 28,705.
- Hoffmeyer, William R., to General Electric Company. Stator slot and winding arrangements. Re. 28,705, Cl. 310-180.000.
- Kerr, John Anthony: *See—*
  - Robinson, David Phythian; Beale, Julian Robert Anthony; Shannon, John Martin, Kerr, John Anthony; and Das, Mukunda Behari. Re. 28,704
- Koelmans, Hein: *See—*
  - Te Velde, Ties Siebolt; and Koelmans, Hein. Re. 28,703.
- Robinson, David Phythian; Beale, Julian Robert Anthony; Shannon, John Martin; Kerr, John Anthony; and Das, Mukunda Behari, to U.S. Philips Corporation. Semiconductor devices. Re. 28,704, Cl. 148-1.500.
- Shannon, John Martin: *See—*
  - Robinson, David Phythian; Beale, Julian Robert Anthony; Shannon, John Martin; Kerr, John Anthony; and Das, Mukunda Behari, Re. 28,704.
- Solartron Electronic Group Limited, The: *See—*
  - Dorey, Howard Anthony, Re. 28,706.
- Te Velde, Ties Siebolt; and Koelmans, Hein, to U.S. Philips Corporation. Method of manufacturing a semiconductor device. Re. 28,703, Cl. 29-571.000.
- U.S. Philips Corporation: *See—*
  - Robinson, David Phythian; Beale, Julian Robert Anthony; Shannon, John Martin; Kerr, John Anthony; and Das, Mukunda Behari, Re. 28,704.
  - Te Velde, Ties Siebolt; and Koelmans, Hein, Re. 28,703.

LIST OF PLANT PATENTEES

- Baughan-Jacklin Corp., The: *See—*
  - Jacklin, Arden W. 3,828.
- Jacklin, Arden W., to The Baughan-Jacklin Corp. Canada bluegrass plant. 3,828, 2-3-76, Cl. 88.
- Jackson & Perkins Co.: *See—*
  - Warriner, William A. 3,829.
- Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,829, 2-3-76, Cl. 25.

LIST OF DESIGN PATENTEES

- Aladdin Industries, Inc.: *See—*
  - Schifman, Edward J. 238,663.
- American Can Co.: *See—*
  - Wallace, Sydney J. 238,659.
- American Hospital Supply Corp.: *See—*
  - Cacanindin, Vincent A. 238,710.
- American Standard Inc.: *See—*
  - Stairs, Henry M., Jr. 238,673.
- Ammons, Robert G., Sr. Zipper puller. 238,630, 2-3-76, Cl. D2—415.
- Bauer, Frederick K. Traveling case for garments. 238,718, 2-3-76, Cl. D87—1.
- Beamer, John D., to Rain Bird Sprinkler Mfg. Corp. Rotary lawn sprinkler. 238,670, 2-3-76, Cl. D23—7.
- Becker, William M. Rack. 238,645, 2-3-76, Cl. D6—184.
- Berkey Photo, Inc.: *See—*
  - Emmerling, Ronald. 238,705.
- Bero, Robert D., to Plaskolite, Inc. Foldable panel-holding strip. 238,667, 2-3-76, Cl. D13—6.
- Binzen, Elliot J. Table. 238,643, 2-3-76, Cl. D6—177.

- Bio-Medical Sciences, Inc.: *See—*
  - Sagi, Zsigmond L., Weinstein, and Pardo. 238,664.
- Black, John D. Wallpaper template for a combination double outlet and electrical switch plate. 238,662, 2-3-76, Cl. D10—64.
- Black, Stewart L., to The Vendo Co. Coffeemaker. 238,722, 2-3-76, Cl. D94—3.
- Block China Corp.: *See—*
  - Gulotta, Gerald. 238,647.
- Braid, Malcolm R. Aquarium. 238,687, 2-3-76, Cl. D30—6.
- Branstrom, Donald F. Propulsion apparatus for water cycle. 238,664, 2-3-76, Cl. D12—68.
- Braunhut, Harold N. Aquatic game speedway. 238,695, 2-3-76, Cl. D34—5.
- Braunhut, Harold N. Aquatic game speedway. 238,696, 2-3-76, Cl. D34—5.
- Britt, William J.: *See—*
  - McKinney, James C., Britt, Antonio, and Han. 238,655.
- Buffington, Herman L. Liquid dispenser tower. 238,721, 2-3-76, Cl. D94—3.
- Burke, John W.: *See—*
  - Gray, Bernard N., and Burke. 238,712.
- Burroughs Corp.: *See—*
  - Jacobson, James W., Clayton, and Sims. 238,707.
- CITC Industries Inc.: *See—*
  - Senter, Jonas. 238,626.
- Cacanindin, Vincent A., to American Hospital Supply Corp. Bottle for medical liquid. 238,710, 2-3-76, Cl. D83—1.
- Carnase, Thomas P., to Playgirl, Inc. Font of type. 238,708, 2-3-76, Cl. D64—12.
- Chem-Lawn Corp.: *See—*
  - Rosenberger, Edwin C., and Waker. 238,671.
- Children's House, Inc.: *See—*
  - Edelson, Kenneth. 238,641.
- Clayton, Richard G.: *See—*
  - Jacobson, James W., Clayton, and Sims. 238,707.
- Cobia, Barnell L., to Green Island International, Inc. Potted plant receptacle. 238,700, 2-3-76, Cl. D35—3.
- Cook, Robert H. Puzzle. 238,698, 2-3-76, Cl. D34—15.
- Cook, Ross, and D. K. Polgrean, to Ross Cook, Inc., and Donald K. Polgrean, ½ interest to each. Pneumatic tube terminal for remote banking. 238,692, 2-3-76, Cl. D31—22.
- Curtin, James F. Combined bench and storage chest. 238,635, 2-3-76, Cl. D6—64.
- Danfoss A/S: *See—*
  - Lehmann, Kjeld. 238,682.
- Davis, Walter L. Tennis ball holder. 238,628, 2-3-76, Cl. D2—400.
- Dazey Products Co.: *See—*
  - McNair, Samuel L. 238,672
  - McNair, Samuel L. 238,714.
  - McNair, Samuel L. 238,715.
- Dentalvarutjanst AB: *See—*
  - Sjodahl, Carl-Johan. 238,676.
- Devenport, Richard J.: *See—*
  - Luedtke, Warren J., and Devenport. 238,674.
- Driscoll, Edward K., and J. F. Graham, to Honeywell Information Systems, Inc. Computer console or similar article. 238,681, 2-3-76, Cl. D26—5.
- Dugger, Richard P., to Ristance Wire, Inc. Ignition wire boot. 238,677, 2-3-76, Cl. D26—1.
- Dugger, Richard P., to Ristance Wire, Inc. Ignition wire boot. 238,679, 2-3-76, Cl. D26—1.
- Dunlop Ltd.: *See—*
  - Tomoda, Hiroshi. 238,665.
- Edelson, Kenneth, to Children's House, Inc. Literature display rack. 238,641, 2-3-76, Cl. D6—154.
- Emmerling, Ronald, to Berkey Photo, Inc. Camera. 238,705, 2-3-76, Cl. D61—1.
- Erickson, Gerald. Bottle carrier. 238,657, 2-3-76, Cl. D9—178.
- Fischer, Thomas C. Dispensing container. 238,638, 2-3-76, Cl. D6—95.
- Fortune, William S. Air blowing-vacuum desoldering appliance or the like. 238,651, 2-3-76, Cl. D8—30.
- Franklin Mint Corp.: *See—*
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  - Winrow, Thomas. 238,634.
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  - Schimanski, Georg. 238,675.
- Goodwin, Roy. Face fly repellent dispenser for cattle. 238,690, 2-3-76, Cl. D30—99.
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  - Driscoll, Edward K., and Graham. 238,681.
- Gray, Bernard N., and J. W. Burke. Mouthpiece sensor for spirometer medical apparatus. 238,712, 2-3-76, Cl. D83—1.
- Green Island International, Inc.: *See—*
  - Cobia, Barnell L. 238,700.
- Griggs, Paul E.: *See—*
  - Haivala, William S., and Griggs. 238,652.
- Gulotta, Gerald, to Block China Corp. Cup. 238,647, 2-3-76, Cl. D7—9.
- Haffner, Donald G., K. H. Hoffmeyer, and E. J. Lazzeroni, Sr., to Jacobsen Mfg. Co. Lawn and garden tractor. 238,701, 2-3-76, Cl. D40—5.
- Haivala Concrete Tools, Inc.: *See—*
  - Haivala, William S., and Griggs. 238,652.
- Haivala, William S., and P. E. Griggs, to Haivala Concrete Tools, Inc. Concrete finishing tool. 238,652, 2-3-76, Cl. D8—45.
- Herrod, John A. Stabilizer vane. 238,666, 2-3-76, Cl. D12—181.
- Hodges, Anthony L. Toyconster. 238,699, 2-3-76, Cl. D34—15.
- Hoffmeyer, Knud H.: *See—*
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- Hoover Ball and Bearing Co.: *See—*
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- Hooker Furniture Corp.: *See—*
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- Howard Hardware Products, Inc.: *See—*
  - Howard, Joel A. 238,719.
- Howard, Joel A., to Howard Hardware Products, Inc. Combined drill bit holder and hole size indicator. 238,719, 2-3-76, Cl. D87—1.
- Hudspith, Sydney, to IMED Corp. Disposable pump cassette for medical infusion pumps. 238,711, 2-3-76, Cl. D83—1.
- Hudspith, Sydney, to IMED Corp. Front panel for a medical infusion pump. 238,713, 2-3-76, Cl. D83—1.
- Hunter, Frederick C. Pew. 238,633, 2-3-76, Cl. D6—59.
- Hunt Mfg. Co.: *See—*
  - MacGregor, Francis W. 238,669.
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- Jablecki, Elizabeth S. Combined strainer and fat separator funnel. 238,648, 2-3-76, Cl. D7—68.
- Jacobson, James W., R. G. Clayton, and J. J. Sims, to Burroughs Corp. Case for a check encoder. 238,707, 2-3-76, Cl. D64—11.
- Jacobsen Mfg. Co.: *See—*
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- Jamison, Grant E., to Jamison, Inc. Playground unit. 238,694, 2-3-76, Cl. D34—5.
- Jamison, Inc.: *See—*
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- Kelley, Dole J., Jr., to Strickland Systems, Inc. Shim clip or the like for adjustably mounting a shore support on a column or a wall. 238,653, 2-3-76, Cl. D8—246.
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- K-Tel International, Inc.: *See—*
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- Leighton, Harold. Hair brush. 238,631, 2-3-76, Cl. D4—31.
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- Luedtke, Warren J., and R. J. Devenport, to S. C. Johnson & Son, Inc. Air freshener container or the like. 238,674, 2-3-76, Cl. D23—150.
- MacGregor, Francis W., to Hunt Mfg. Co. Electric pencil sharpener. 238,669, 2-3-76, Cl. D19—73.
- Marco, Leslie S., to Illinois Tool Works Inc. Beverage container or the like. 238,656, 2-3-76, Cl. D9—100.
- Martin, William F. Combined towel dispenser and trash receptacle. 238,649, 2-3-76, Cl. D7—191.
- Martin, William F. Ash collector. 238,686, 2-3-76, Cl. D27—14.
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- McKinney, James C., W. J. Britt, J. G. Antonio, and S. Han, to Morton-Norwich Products, Inc. Sprayer bottle. 238,655, 2-3-76, Cl. D9—63.
- McNair, Samuel L., to Dazey Products Co. Hand held shower spray head. 238,672, 2-3-76, Cl. D23—35.
- McNair, Samuel L., to Dazey Products Co. Manually held electric hair dryer. 238,714, 2-3-76, Cl. D86—10.
- McNair, Samuel L., to Dazey Products Co. Electric hair curler. 238,715, 2-3-76, Cl. D86—10.
- Michaels, Frank. Depilatory kit. 238,716, 2-3-76, Cl. D86—10.
- Michaud, Arthur T. Combined thermometer, scale and perpetual calendar. 238,668, 2-3-76, Cl. D19—21.
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  - Rawson, Paul O. 238,703.
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- Pasquarella, Jerome J., to Franklin Mint Corp. Coin stand. 238,644, 2-3-76, Cl. D6—181.

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Rocka, Arthur J. Outboard motor skeg cover. 238,709, 2-3-76, Cl. D77—1.

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Ross Cook, Inc. (California Corp.) and D. K. Polgrean: *See*—
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Shalom, Samuel. Combined aquarium and mirror. 238,689, 2-3-76, Cl. D30—11.

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Sweeney, Paul B.: *See*—
Pulos, Arthur J., and Sweeney. 238,680.

Sybron Corp.: *See*—
Peart, Edward L., and Ashe. 238,717.

Tibbetts, Paul E. Double handcuff case. 238,629, 2-3-76, Cl. D2—400.

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Vendo Co., The: *See*—
Black, Stewart L. 238,722.

Waker, Jerome A.: *See*—
Rosenberger, Edwin C., and Waker. 238,671.

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Westguard Products, Inc.: *See*—
Kratky, Frank. 238,691.

Wilding, Gary, to Richton International Corp. Display stand. 238,632, 2-3-76, Cl. D6—23.

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CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 3, 1976

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
114	3,935,596
207	3,935,597
CLASS 4	
57P	3,935,598
172	3,935,599
172.13	3,935,600
251	3,935,601
292	3,935,602
CLASS 5	
11	3,935,603
90	3,935,604
351	3,935,605
CLASS 8	
26	3,936,266
128R	3,936,267
173	3,936,268
CLASS 9	
1T	3,935,606
2A	3,935,607
319	3,935,608
CLASS 12	
128D	3,935,609
CLASS 13	
9R	3,936,586
23	3,936,587
33	3,936,588
CLASS 15	
21R	3,935,610
160	3,935,611
250.42	3,935,612
CLASS 16	
30	3,935,613
48.5	3,935,614
150	3,935,615
CLASS 21	
58	3,936,269
91	3,936,270
CLASS 23	
230B	3,936,271
	3,936,272
253C	3,936,273
270R	3,936,274
278	3,936,275
301R	3,936,276
CLASS 24	
20EE	3,935,616
81B	3,935,617
141	3,935,619
230AL	3,935,618
279	3,935,620
CLASS 28	
1.6	3,935,621
21	3,935,622
63	3,935,623
CLASS 29	
95R	3,935,624
156.8R	3,935,625
157.1R	3,935,626
159R	3,935,627
191.6	3,936,277
193	3,936,278
203DT	3,935,628
208C	3,935,629
227	3,935,630
432.1	3,935,631
455R	3,935,632
559	3,935,633
571	Re.28,703
577	3,935,634
578	3,935,635
619	3,935,636
628	3,935,637
CLASS 30	
37	3,935,638
47	3,935,639
CLASS 32	
40R	3,935,640
CLASS 33	
177	3,935,641
302	3,935,642
312	3,935,643
324	3,935,644
363R	3,935,645
CLASS 34	
92	3,935,646
105	3,935,647
131	3,935,648
CLASS 35	
31D	3,935,649
48B	3,935,650
71	3,935,651
CLASS 40	
78	3,935,652
125H	3,935,653
129C	3,935,654
145R	3,935,655
155	3,935,656
CLASS 42	
94	3,935,657
CLASS 43	
17.5	3,935,658
17.6	3,935,659
42.31	3,935,660
60	3,935,661
112	3,935,662
CLASS 44	
63	3,936,279
CLASS 46	
60	3,935,663
76R	3,935,664
91	3,935,665
131	3,935,666
202	3,935,667
220	3,935,668
228	3,935,669
CLASS 47	
1.3	3,935,670
34A	3,935,672
34R	3,935,671
58	3,935,673
CLASS 49	
212	3,935,674
CLASS 51	
105SP	3,935,675
106R	3,935,676
134.5R	3,935,677
170T	3,935,678
239	3,935,679
313	3,935,680
CLASS 52	
1	3,935,681
105	3,935,682
172	3,935,683
173DS	3,935,684
223L	3,935,685
302	3,935,686
483	3,935,687
622	3,935,688
722	3,935,689
CLASS 53	
24	3,935,690
59R	3,935,691
126	3,935,692
184R	3,935,693
389	3,935,694
CLASS 55	
3	3,936,280
71	3,936,281
217	3,936,282
230	3,936,283
274	3,936,284
CLASS 56	
13.4	3,935,695
385	3,935,696
400	3,935,697
CLASS 57	
18	3,935,698
52	3,935,699
CLASS 58	
4A	3,935,700
50R	3,935,701
144	3,935,702
CLASS 60	
39.28R	3,935,703
226R	3,935,704
302	3,935,705
444	3,935,706
	3,935,707
517	3,935,708
547	3,935,709
657	3,935,710
CLASS 61	
25	3,935,711
72.6	3,935,712
CLASS 62	
77	3,935,713
187	3,935,714
475	3,935,715
CLASS 64	
13	3,935,716
21	3,935,717
CLASS 65	
3C	3,936,285
14	3,936,286
30E	3,936,287
33	3,936,288
65A	3,936,289
134	3,936,290
351	3,936,291
CLASS 66	
9R	3,935,718
CLASS 68	
58	3,935,719
CLASS 70	
276	3,935,720
CLASS 71	
63	3,936,292
118	3,936,293
CLASS 72	
22	3,935,721
250	3,935,722
275	3,935,723
345	3,935,724
451	3,935,725
CLASS 73	
37	3,935,727
41	3,935,728
60	3,935,726
	3,935,729
100	3,935,730
104	3,935,731
118	3,935,732
136A	3,935,733
194A	3,935,735
201	3,935,736
228	3,935,737
295	3,935,738
304C	3,935,739
	3,935,740
313	3,935,741
336.5	3,935,742
343R	3,935,743
361	3,935,744
398R	3,935,745
425.6	3,935,734
462	3,935,746
483	3,935,747
484	3,935,748
CLASS 74	
6	3,935,749
61	3,935,750
230.18	3,935,751
473R	3,935,752
650	3,935,753
665F	3,935,754
815	3,935,755
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.5R	3,936,295
2	3,936,294
26	3,936,296
130.5	3,936,297
134R	3,936,298
224	3,936,299
CLASS 76	
24R	3,935,756
74	3,935,757
CLASS 81	
3R	3,935,758
9.51	3,935,759
55	3,935,760
	3,935,761
177G	3,935,762
CLASS 82	
1C	3,935,763
1.2	3,935,764
19	3,935,765
21A	3,935,766
CLASS 83	
5	3,935,767
39	3,935,768
79	3,935,769
95	3,935,770
140	3,935,771
	3,935,772
331	3,935,773
355	3,935,774
	3,935,775
425.4	3,935,776
471.3	3,935,777
639	3,935,778
762	3,935,779
820	3,935,780
CLASS 84	
1.11	3,935,781
1.16	3,935,782
1.21	3,935,783
435	3,935,784
CLASS 85	
46	3,935,785
68	3,935,786
80	3,935,787
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12R	3,935,788
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317	3,935,789
375A	3,935,790
411R	3,935,791
438	3,935,792
446	3,935,793
488	3,935,794
CLASS 92	
5R	3,935,795
12.2	3,935,796
223	3,935,797
CLASS 93	
39R	3,935,798
61R	3,935,799
	3,935,800
80	3,935,801
84R	3,935,802
CLASS 96	
29D	3,936,300
36	3,936,301
36.1	3,936,302
74	3,936,303
82	3,936,304
84UV	3,936,305
87R	3,936,306
90R	3,936,307
136	3,936,308
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36	3,935,803
CLASS 99	
293	3,935,804
300	3,935,805
340	3,935,806
352	3,935,807
353	3,935,808
447	3,935,809
467	3,935,810
CLASS 100	
53	3,935,811
214	3,935,812
CLASS 101	
93.31	3,935,813
232	3,935,814
349	3,935,815
CLASS 102	
41	3,935,816
52	3,935,817
70.2P	3,935,818
CLASS 104	
23FS	3,935,819
88	3,935,820
89	3,935,821
93	3,935,822
CLASS 106	
21	3,936,309
90	3,936,310
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197R	3,936,313
243	3,936,314
309	3,936,315
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CLASS 110	
8C	3,935,824
165R	3,935,825
CLASS 112	
212	3,935,826
252	3,935,827
CLASS 114	
102	3,935,828
206R	3,935,829
210	3,935,830
235A	3,935,831
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.5A	3,935,832
12R	3,935,833
CLASS 116	
114V	3,935,834
118R	3,935,835
CLASS 118	
60	3,935,836
CLASS 119	
51.12	3,935,837
54	3,935,838
156	3,935,839
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8.23	3,935,840
8.47	3,935,841
52MF	3,935,842
117A	3,935,843
117R	3,935,844
	3,935,845
	3,935,846
119CF	3,935,847
	3,935,848
122AA	3,935,849
136	3,935,850
139E	3,935,851
148A	3,935,852
179G	3,935,853
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24R	3,935,854
CLASS 126	
110R	3,935,855
208	3,935,856
CLASS 128	
2.05C	3,935,984
2.5R	3,935,857
80C	3,935,858
89R	3,935,859
130	3,935,860
142R	3,935,861
287	3,935,862
296	3,935,863
418	3,935,864
488	3,935,865
CLASS 130	
24	3,935,866
30R	3,935,867
CLASS 132	
7	3,935,868
9	3,935,869
45R	3,935,870
54	3,935,871
88.7	3,935,872
CLASS 133	
5R	3,935,873
CLASS 134	
3	3,936,316
29	3,936,317
CLASS 135	
16	3,935,874
CLASS 136	
6R	3,936,318
89	3,936,319
242	3,936,320
CLASS 137	
84	3,935,875
177	3,935,876
296	3,935,877
334	3,935,878
355.16	3,935,879
499	3,935,880
578	3,935,881
CLASS 138	
30	3,935,882
CLASS 141	
27	3,935,883
80	3,935,884
279	3,935,885
392	3,935,886
CLASS 144	
235	3,935,887
327	3,935,888
CLASS 145	
24	3,935,889
CLASS 148	
1.5	Re.28,704
	3,936,321
	3,936,322
12EA	3,936,323
12F	3,936,324
26	3,936,325
	3,936,326
27	3,936,327
171	3,936,328
187	3,936,329
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35	3,936,330
CLASS 150	
52R	3,935,890
CLASS 152	
225R	3,935,891
330RF	3,935,892
347	3,935,893
356	3,935,894
CLASS 156	
17	3,936,331
18	3,936,332
60	3,936,333
69	3,936,334
79	3,936,335
86	3,936,336
157	3,936,338
167	3,936,337
205	3,936,339
210	3,936,340
242	3,936,341
330	3,936,342
368	3,936,343
385	3,936,344
502	3,936,345
620	3,936,346
CLASS 162	
146	3,936,347
CLASS 164	
56	3,935,895
89	3,935,896
CLASS 165	
1	3,935,897
22	3,935,898
29	3,935,899
45	3,935,900
52	3,935,901
110	3,935,902
CLASS 166	
184	3,935,903
CLASS 172	
20	3,935,904
40	3,935,905
177	3,935,906
314	3,935,907
CLASS 173	
127	3,935,908
163	3,935,909
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65R	3,936,589
92	3,936,590
116	3,936,591
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CLASS 177
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3,935,914
136 3,935,915

CLASS 178
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3,936,594
5.6 3,936,595
6 3,936,596
6.8 3,936,597
3,936,598
7.3DC 3,936,599
17.5 3,936,600
22 3,936,601
58R 3,936,602
69.5R 3,936,603
3,936,604

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1N 3,936,607
1P 3,936,606
7.1R 3,936,608
15BF 3,936,609
15.55T 3,936,610
3,936,611
16EC 3,936,614
18AD 3,936,615
18BG 3,936,613
18GE 3,936,612
41A 3,936,616
84R 3,936,617
100.4ST 3,936,618
3,936,619

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53R 3,935,917
79.2R 3,935,918
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89A 3,935,920
89R 3,935,921
98 3,935,922

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33K 3,935,923
169 3,935,924
192 3,935,925

CLASS 182
208 3,935,926

CLASS 188
73.3 3,935,927
73.4 3,935,928
331 3,935,929
344 3,935,930

CLASS 190
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13R 3,935,932
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4 3,936,351
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79 3,936,354
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53 3,935,937
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139 3,935,941
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47 3,936,620
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158 3,936,623
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CLASS 201
39 3,936,358

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CLASS 204
2 3,936,361
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100R 3,935,956

CLASS 219
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10.55F 3,936,627
10.55M 3,936,626
56 3,936,628
68 3,936,653
73 3,936,654
3,936,655
76 3,936,656
136 3,936,657
216 3,936,658
413 3,936,659
459 3,936,660
528 3,936,661

CLASS 220
9LG 3,935,957
19 3,935,958
22 3,935,959
260 3,935,960
266 3,935,961
306 3,935,962
315 3,935,963
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48 3,935,965
75 3,935,966
222 3,935,967

CLASS 222
56 3,935,970
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479 3,935,968
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541 3,935,969

CLASS 223
88 3,935,976

CLASS 224
45S 3,935,977

CLASS 225
15 3,935,978

CLASS 226
19 3,935,979
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CLASS 227
19 3,935,981
101 3,935,982
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CLASS 228
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34R 3,935,990
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36 3,935,994

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61.12N 3,936,662
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150.51 3,936,663
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237R 3,936,632
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325 3,936,635
336 3,936,636
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372 3,936,640
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486 3,936,644
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558 3,936,649
571 3,936,650

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129 3,936,030
284 3,936,031

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90 3,936,384
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	415	238,630
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	67	238,636
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	114	238,640
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	191	238,649
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	253	238,659
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	64	238,662
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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PATENT AND TRADEMARK OFFICE NOTICES

Second Trial Voluntary Protest Program

A Second Trial Voluntary Protest Program will be conducted during the coming months. It will be increased in scale and somewhat modified in procedure from the first such program. Announcement of and description of the rules for the first program appeared in 923 O.G. 2 on June 4, 1974.

As before, the objective is to gain experience in carrying out such a program and to determine the extent of interest by the public in participating and in supplying pertinent references. To the extent there is participation, the program should be beneficial by bringing new art to the attention of the Office, preventing inadvertent issuance of invalid patents, and increasing confidence in the strength of those patents which survive the protest proceedings.

The first Trial Voluntary Protest Program showed a considerable interest by applicants and the public in taking part in protest proceedings. A summary of the results will be published soon in this Gazette. The second Trial Voluntary Protest Program is designed to gain additional information as to public participation and also to follow more closely the procedures which would be required in a continuing, permanent protest program.

Applications Involved

In the second Trial Voluntary Protest Program, a Request to Participate and Waiver of Confidentiality form (PTOL–224 Temp.) will be sent to each applicant to whom a Notice of Allowance is mailed during a selected three week period, probably in October, 1975. The total number of requests mailed will be about 4,500. Applications for plant patents will be excluded from the program. The reason for this exclusion is the high cost of printing colored drawings and the relatively limited prior art available. No other applications will be excluded from the trial program, regardless of subject matter, type of application or earlier proceedings.

Waiver of Confidentiality

Two copies of the form letter requesting voluntary waiver of confidentiality (form PTOL–224 Temp.) will be mailed in the same envelope along with the Notice of Allowance. An additional copy of the form letter will be made of record in each application at the time of mailing. The applicant will have three months from the notice of allowance date in which to either (1) elect to participate in the Trial Voluntary Protest Program by filing a signed waiver of confidentiality, or (2) elect not to participate in the program by paying the issue fee. If he does neither, the application will become abandoned, as provided in 37 C.F.R. 1.316. The waiver of confidentiality is a part of form PTOL–224 Temp. This procedure will avoid any increase in pendency time for those applications in which an election is made not to participate in the program. An early filing of a waiver of confidentiality by the applicant will result in early publication of the application.

Publication

If the applicant decides not to participate in the protest program and payment of the issue fee is timely made, the patent will issue routinely without delay.

If the applicant elects to participate in the protest program and a signed waiver of confidentiality is filed in the Office within 3 months of the notice of allowance date, the Notice of Allowance will be vacated. In such a case the issue fee should not be filed, as it will not be accepted and applied if filed with a signed waiver of confidentiality. An additional Notice of Allowance will be issued after the protest proceedings have been completed if only allowable claims remain in the application.

After a signed waiver has been filed, the application will be printed in the form of a patent and be available for sale as in the first Trial Voluntary Protest Program. At least one claim and a drawing figure, if any, will be printed in the OFFICIAL GAZETTE. These published applications will appear in about 6 to 9 issues of the OFFICIAL GAZETTE early in 1976. Advance notice will be given in the OFFICIAL GAZETTE of the dates on which applications will be published under this program.

Inspection of Files

The Patent and Trademark Office files of the published applications will be available for inspection by the public for a period of three months after publication. The application files will be retained in a single location in the Patent Issue Division during the protest period. This single location will be staffed with personnel to process papers directed to these files, supervise inspection of the files by the public, provide copies of file contents when ordered, and perform other related duties. A coin operated copying machine will also be available at this location.

Filing of Protests

Protests relating to the patentability of any published application must be filed in writing in the Patent and Trademark Office no later than three months after publication of the application. No extension of the three month protest period will be granted. Each protest must be filed in duplicate (one copy will be forwarded to the applicant and the other copy will be placed in the application file) and must indicate the grounds for protesting the allowance of any claim contained in the published application. If the protest involves prior art not of record in the application, two copies of the alleged prior art, together with an explanation of the relevance of such prior art to the allowed claims, should be included. The protester may also comment on the prior art record in the application and the manner in which it was applied.

In those applications where prima facie evidence of prior public use or sale the claimed invention is presented in accordance with 37 C.F.R. 1.292, public use proceedings will give the protester an opportunity to present evidence.

Should claims be copied from a published application for interference purposes, the applicant copying claims must also file a notice of such copying in the file of the published application to avoid the possibility of inadvertent issuance of the published application as a patent before conclusion of any interference proceedings.

For easy identification, all protests should be headed, "Protest Under Trial Voluntary Protest Program" and be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

The protester should fully identify himself and include his mailing address so that communications may be addressed to him. In view of administrative problems encountered in the first Trial Voluntary Protest Program in protecting the confidentiality of the identity of protesters, no attempt will be made by the Office to maintain the confidentiality of any protester under the new program.

If no protests are received during the protest period, the application file will be rerouted for the mailing of a new Notice of Allowance. The file will not be returned to the examining group except for consideration of matters which normally require return of an allowed file.

If one or more protests are filed in an application, the application file and the protest(s) will be returned to the examining group for consideration.

Consideration of Protest

The examining group will acknowledge receipt of all protests. The authority for deciding whether or not the evidence submitted constitutes a prima facie showing of unpatentability of any allowed claim will reside with the Group Director. If the Group Director decides that no such showing has been made, the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. Protesters will be notified in such cases that prosecution has not been reopened, and the applicant will be sent a duplicate copy of all protests. The decision of the Group Director will be final and will not be subject to petition by a protester.

If the Group Director decides that the submitted evidence constitutes a prima facie showing of unpatentability of any allowed claim, prosecution of the application will be reopened. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim considered unpatentable. The duplicate copy of each protest will be mailed to the applicant with the Office action. Protesters who submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

Response by the Applicant to Subsequent Office Actions

During this period, the applicant may present amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters who submitted evidence on which a rejection in the Office action is based to participate in later prosecution and to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response filed, including any appeal brief. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

Comment on Applicant's Response by the Protester

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent and Trademark Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

Any appeal by the applicant to the Board of Appeals in a protested application will be made special and will be taken up out of order.

Conclusion of Prosecution

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified and the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. A decision of the primary examiner to allow an application will not be subject to petition or appeal by any protester.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Sept. 16, 1975.

[938 O.G. 945]

Identifying Application Correspondence With Issue Batch Number

Applicants or their attorney or agent can facilitate matching incoming papers with the corresponding application file by indicating the Issue Batch Number on all papers filed in the Office after receiving the Notice of Allowance and before the time the Issue Fee Receipt is received.

The Issue Batch Number is printed on the Notice of Allowance form in Box 4 in the lower left-hand corner below the address. The Issue Batch Number consists of a capital letter followed by two digits, for example; "A03," "D18," "F42," "J79." Any lower case letters before the Issue Batch Number should be ignored since they are the typist's initials. Use of the Issue Batch Numbers is important since the allowed applications are filed by these numbers.

Any paper filed receiving the Issue Fee Receipt should include the indicated patent number rather than the Issue Batch Number. At this time in the processing, the Issue Batch Number is no longer useful since the application has been removed from the batch at the time the patent number was assigned.

RICHARD J. SHAKMAN,
Assistant Commissioner for Administration.

Jan. 16, 1976.

Relocation of Customer Relations Center

In order to expand facilities in the Public Search Room of the Patent and Trademark Office, it has become necessary to relocate the Customer Relations Center.

As of January 19, 1976, the Center was moved to Building No. 2, Room 4C08. The telephone number of the Center will continue to be (703) 557–2003.

WILLIAM I. MERKIN,
Acting Assistant Commissioner for Administration.

January 1976.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,482,055, B. M. Duggar, AUREOMYCIN AND PRODUCTION OF SAME; **2,609,329**, J. G. Niedercorn, PROCESS FOR PRODUCING AUREOMYCIN; **2,734,018**, Minieri, Sokol and Firman, PROCESS FOR PREPARATION OF TETRACYCLINE AND CHLORTETRACYCLINE; **Re. 25,840**, Growich and Deduck, TETRACYCLINE FERMENTATION, filed Jan. 22, 1974, D.C. Minn. (Minneapolis), Doc. 4–74–36, *United States of America* v. *American Cyanamid Company.*

2,609,329. (See 2,482,055.)

2,734,018. (See 2,482,055.)

2,866,011, O. Kornel, MAGNETIC TRANSDUCER HEAD, filed Oct. 17, 1975, D.C., S.D. Calif. (San Diego), Doc. 75–0924–E, *Gould Inc.* v. *Eastman Technology Inc.*

2,893,992, L. H. Sternbach, 1,4-BENZODIAZEPINE-4-OXIDES, filed Jan. 20, 1975, D.C.N.J. (Newark), Doc. 75–96, *Hoffmann-La Roche, Inc.* v. *Zenith Laboratories Inc. and Paramount Surgical Supply Corp.* Consent order for permanent injunction, against the defendants, Oct. 6, 1975.

2,989,837, A. W. Vibber, TWISTING SPINDLE BALLOON CONTROL, filed Feb. 3, 1975, D.C.N.J. (Newark), Doc. 75–174, *Alfred W. Vibber* v. *Uniroyal Inc.* Order of dismissal of action, Oct. 8, 1975.

3,012,515, C. F. High, ROTOR SLIDE-TYPE PUMP WITH ROTOR OF FREE-FLOATING SEGMENTS; **3,211,598**, H. C. O'Brien, METHODS OF COATING PIPE, filed Oct. 15, 1975, D.C., E.D. Ohio (Cleveland), Doc. C–75–902, *H. C. Price Co. and Plicoflex Inc.* v. *Samuel Moore and Company.*

3,130,113, D. Silman, SELF-ADHESIVE DECORATIVE SURFACE COVERING MATERIAL, filed Aug. 7, 1973, D.C., S.D.N.Y., Doc. 73–C–3453, *National Gypsum Company* v. *United Merchants & Manufacturers, Inc.* Stipulation and order of dismissal of action, including all claims, counterclaims with prejudice, Sept. 26, 1975.

3,211,598. (See 3,012,515.)

3,565,830, Keith, Kenah and Bair, COATED FILM OF CATALYTICALLY ACTIVE OXIDE ON A REFRACTORY SUPPORT, filed Oct. 22, 1975, D.C., S.D.N.Y., Doc. 75–C–5219, *Engelhard Minerals and Chemicals Corporation* v. *Johnson, Matthey & Co. Ltd.*

3,674,401, Annis and Kyritsis, APPARATUS FOR INJECTION MOLDING ARTICLES OF FOAM MATERIAL; **3,776,989**, same, METHOD FOR INJECTION MOLDING ARTICLES OF FOAM MATERIAL INVOLVING AUTOGENOUS FLOW; **3,801,686**, Kyritsis and Simmonds, METHOD OF INJECTION MOLDING ARTICLES OF FOAM MATERIAL, filed Apr. 16, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1056, *USM Corp.* v. *Service Plastics Inc.*

3,684,871, C. A. Schaffner, NETWORK PLOTTING SYSTEM, filed Oct. 16, 1975, D.C., N.D. Calif. (San Francisco), Doc. C–75–2185–SC, *Systonetics Inc.* v. *Project Software & Development Inc.*

3,776,989. (See 3,674,401.)

3,801,686. (See 3,074,401.)

3,884,439, J. Jeninga, GOLF BAG CRADLE-BRACKET, filed Oct. 22, 1975, D.C., E.D. Wis. (Milwaukee), Doc. 75–613, *Atlantic Products Corp.* v. *Ajay Enterprises Inc.*

3,894,356, W. B. Imhoff, DOOR COORDINATOR, filed Oct. 22, 1975, D.C., C.D. Calif. (Los Angeles), Doc. CV 75–3572–DWW, *Leigh Products Inc.* v. *Builders Brass Works Corp.*

3,905,398, Johansen, Phillippi and Green, COMPOSITE REINFORCED HOSE WHEREIN THE REINFORCING MATERIAL IS BRAIDED AROMATIC POLYAMIDE FILAMENTS, **filed** Oct. 20, 1975, D.C., W.D. Okla. (Oklahoma City), Doc. 75–0889–C, *Samuel Moore and Company* v. *American Hose & Reel Co. Inc.*

D. 227,352, J. Meng, PACKAGE WITH STAGGERED PRODUCT SLICES, **filed** Oct. 9, 1975, D.C. Minn. (Minneapolis), Doc. 4–75–C–520, *Land O'Lakes Inc.* v. *L. D. Schreiver Cheese Co., Inc.*

D. 230,527, J. L. Berkman, TAPE CARTRIDGE CABINET, **filed** May 12, 1975, D.C.N.J. (Newark), Doc. 75–804, *Joseph L. Berkman and Service Manufacturing Co. Inc.* v. *Peerless Vid Tronic Corp.* Consent judgment for permanent Injunction, Oct. 8, 1975.

D. 232,601, Rich and Rich, MOLDED POULTRY PRODUCT, **filed** Oct. 21, 1975, D.C., N.D. Tex. (Dallas), Doc. CA3–75–1301, *Louis Rich Food, Inc.* v. *Plantation Foods Inc. and James Jandrain, Menguel M. Krueger.*

Re. 25,840. (See 2,482,055.)

PATENT NOTICES

Certificates of Correction for the Week of Feb. 10, 1976

Re. 28,562
Re. 28,595
D. 236,788
D. 236,965
D. 236,966
3,615,962
3,656,925
3,658,968
3,710,610
3,720,927
3,725,526
3,742,197
3,743,284
3,748,390
3,755,034
3,755,927
3,760,599
3,762,663
3,763,692
3,783,974
3,789,033
3,799,135
3,806,596
3,817,991
3,826,068
3,830,447
3,831,193
3,832,280
3,843,374
3,846,309
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3,849,326
3,853,626
3,862,365
3,869,132
3,869,496
3,869,517
3,870,519
3,871,108
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3,918,901
3,918,995
3,919,315
3,919,412
3,919,622
3,919,697
3,920,618

Disclaimer and Dedication

Design 236,381.—*Richard L. Evenson* and *William J. Overton,* Portland, Oreg. X-RAY FILM DUPLICATOR/SUBTRACTOR UNIT. Patent dated Aug. 19, 1975. Disclaimer and dedication filed Nov. 26, 1975, by the assignee, *Northwest Refining Company.*

Hereby disclaims and dedicates to the Public the entire term of said patent.

Adverse Decisions in Interferences

In the designated interference involving the indicated claims of the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,503,289, J. I. R. Friberg, DEVICE FOR CUTTING A CONTINUOUS STRIP FROM AN ELONGATED SHEET, Interference No. 98,627, decided Oct. 15, 1975, claims 1, 2, 3, 4, 6, and 7.

Patent No. 3,592,686, R. P. Barber, G. R. Moses, and D. L. Waugh, PROCESS FOR MAKING DURABLE PRESS AND SOIL RELEASE TEXTILE AND RESULTANT ARTICLE, Interference No. 98,439, decided Aug. 29, 1975, claims 1, 2, 3, 6, 7, and 8.

Patent No. 3,632,448, M. Beltzer, ALUMINUM-HALOGEN SECONDARY BATTERY METHOD WITH MOLTEN ELECTROLYTE, Interference No. 98,236, decided Aug. 18, 1975, claims 6, 7, and 8.

Patent No. 3,649,229, F. P. Otto, LIQUID HYDROCARBON FUELS CONTAINING HIGH MOLECULAR WEIGHT MANNICH BASES, Interference No. 98,623, decided Oct. 6, 1975, claims 1, 2, 3, 4, 5, 6, 7, 8, and 9.

Patent No. 3,692,769, M. A. Weaver and J. M. Straley, AZO COMPOUNDS CONTAINING AN ARYLSULFONYL PHENYL DIAZO COMPONENT, Interference No. 98,776, decided Oct. 20, 1975, claims 1, 2, and 5.

Patent No. 3,723,399, Y. Amiard, J. P. Bellissent, and G. Marie, COPOLYMERS OF OLEFINS OR OLEFINS AND NONCONJUGATED DIENES WITH NORBORNENE DERIVATIVES, Interference No. 98,882, decided Oct. 30, 1975, claims 1, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 15, 17, 18, 19, and 20.

Patent No. 3,733,548, W. H. Coulter and W. R. Hogg, APPARATUS AND METHOD FOR MEASURING PARTICLE CONCENTRATION OF A SUSPENSION PASSING THROUGH A SENSING ZONE, Interference No. 98,718, decided Oct. 24, 1975, claims 1, 5, 6, 10, 18, 19, 20, 25, and 26.

Dedications

3,210,175.—*Geoffrey E. Barnsley,* Canterbury, Kent, England. METHOD OF INCREASING FRUIT YIELD. Patent dated Oct. 5, 1965. Dedication filed Dec. 12, 1975, by the assignee, *Shell Oil Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,776,394.—*Dennis Brian Miller,* Ewing Township, Mercer County, N.J. METHODS AND APPARATUS FOR IMPARTING A DESIRED ORIENTATION TO AN ARTICLE. Patent dated Dec. 4, 1973. Dedication filed Nov. 10, 1975, by the assignee, *Western Electric Company, Incorporated.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,832,603.—*Seymour R. Cray* and *Maurice D. Roush,* Chippewa Falls, Wis. INTERCONNECT TECHNIQUE FOR STACKED CIRCUIT BOARDS. Patent dated Aug. 27, 1974. Disclaimer filed Nov. 13, 1975, by the assignee, *Control Data Corporation.*

Hereby dedicates the entire term of said patent.

3,911,008.—*Michael N. Edinberry,* Dover, and *Grant W. McLay,* Sandwich, England. POLAR-SUBSTITUTED PROPANOLAMINES AS ANTI-ANGINA AND ANTI-HYPERTENSIVE AGENTS. Patent dated Oct. 7, 1975. Dedication filed Dec. 2, 1975, by the assignee, *Pfizer Inc.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimers

3,419,867.—*Peter M. Pifer,* Atlanta Ga. AUTOMATIC TRACKING SYSTEM UTILIZING CODED SCAN RATE. Patent dated Dec. 31, 1968. Disclaimer filed Aug. 18, 1975, by the assignee, *Scientific-Atlanta, Inc.*

Hereby disclaims the entire term of said patent.

3,651,931.—*Du Yung Hsiung,* Park Forest, Ill. DISPENSING PACKAGE FOR TWO-PART HAIR-TREATING COMPOSITIONS. Patent dated Mar. 28, 1972. Disclaimer filed June 6, 1975, by the assignee, *The Gillette Company.*

Hereby enters this disclaimer to claim 5 of said patent.

3,669,601.—*Bruno Lainesse,* St. Hyacinthe, Quebec, Canada. APPARATUS FOR INJECTION MOLDING. Patent dated June 13, 1972. Disclaimer filed Dec. 22, 1975, by the inventor.

Hereby enters this disclaimer to claims 1, 2, 3, 4, and 6 of said patent.

3,680,531.—*Donald H. Holdt,* Cambridge, Md. AUTOMATIC BOILER BLOWDOWN CONTROL. Patent dated Aug. 1, 1972. Disclaimer filed Nov. 10, 1975, by the assignee, *Chemed Corporation.*

Hereby enters this disclaimer to all claims of said patent.

3,687,276.—*Robert A. Pelletier,* Winter Park, Fla. SELF-PROPELLED CONVEYOR APPARATUS. Patent dated Aug. 29, 1972. Disclaimer filed Dec. 10, 1975, by the assignee, *Morgen Manufacturing Co.*

Hereby enters this disclaimer to claim 1 of said patent.

3,746,231.—*Eddy Humberto Del Rio,* Palm Beach Gardens, Fla. AUTOMATIC WEAR COMPENSATING MECHANISM. Patent dated July 17, 1973. Disclaimer filed Apr. 10, 1975, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claims 1 through 7, inclusive of said patent.

3,756,013.—*John M. Bergey* and *Richard S. Walton,* Lancaster, Pa. SOLID STATE WATCH. Patent dated Sept. 4, 1973. Disclaimer filed Oct. 17, 1975, by the assignee, *Time Computer, Inc.*

Hereby disclaims the entire term of said patent.

3,763,179.—*Martin Gall,* Kalamazoo, Mich. 2-IMIDAZOL-1-YL BENZOPHENONES. Patent dated Oct. 2, 1973. Disclaimer filed Nov. 17, 1975, by the assignee, *The Upjohn Company.*

Hereby enters this disclaimer to claims 1 and 6 of said patent.

3,781,930.—*Melvin P. Spitz,* Beverly Hills, Calif. CONNECTING DEVICE FOR ADJUSTABLE BEDFRAME. Patent dated Dec. 25, 1973. Disclaimer filed May 19 ,1975, by the inventor.

Hereby enters this disclaimer to claims 1, 4, and 5 of said patent.

3,790,339.—*Hans Larker, Sven-Erik Isaksson, Mats Lindberg,* all of Robertsfors, and *Gunnar Granberg,* Umea, all of Sweden. CYLINDRICAL ELONGATED FURNACE FOR TREATING MATERIAL AT HIGH TEMPERATURE IN A GASEOUS ATMOSPHERE UNDER HIGH PRESSURE. Patent dated Feb. 5, 1974. Disclaimer filed Nov. 24, 1975, by the assignee, *Allmanna Svenska Elektriska Aktiebolaget.*

Hereby enter this disclaimer to claims 1, 2, 3, 8, and 9 of said patent.

3,795,347.—*Ernst Singer,* Vancouver, British Columbia, Canada. POWER PURGED LIQUID SAMPLER. Patent dated Mar. 5, 1974. Disclaimer filed Dec. 8, 1975, by the assignee, *Sirco Products, Ltd.*

Hereby enters this disclaimer to claims 1 and 10 of said patent.

3,852,666.—*Hermann Gahwiler,* Zurich, Switzerland. METHOD AND APPARATUS FOR COMPENSATION OF THE TEMPERATURE-DEPENDENCY OF THE CONDUCTIVITY OF A FLUID WITH SUSPENDED PARTICLES. Patent dated Dec. 3, 1974. Disclaimer filed Dec. 22, 1975, by the assignee, *Contraves AG.*

Hereby, enters this disclaimer to claims 1, 2, 5, and 6 of said patent.

3,855,209.—*Vinton A. Hoyle, Jr.,* Kingsport, Tenn. SYNTHESIS OF INDOLININIUM METHINE DYES. Patent dated Dec. 17, 1974. Disclaimer filed Nov. 7, 1975, by the assignee, *Eastman Kodak Company.*

Hereby enters this disclaimer to all claims of said patent.

3,871,822.—*Henry G. Goodman, Jr.,* White Plains, *Carol A. Duproz,* Flushing (Corona), and *George H. Lourigan,* New City, N.Y. TREATMENT OF CELLULOSIC TEXTILE FABRICS WITH METHYLOLATED ALKOXYALKYL CARBAMATES. Patent dated Mar. 18, 1975. Disclaimer filed July 8, 1975, by the assignee, *Union Carbide Corporation.*

Hereby enters this disclaimer to claims 1 to 4 of said patent.

3,876,459.—*Peter Martin Burrill,* Glamorgan, Wales. TREATMENT OF FIBRES. Patent dated Apr. 8, 1975. Disclaimer filed Dec. 8, 1975, by the assignee, *Dow Corning Limited.*

Hereby enters this disclaimer to claims 5 and 6 of said patent.

3,885,070.—*John C. Chapman,* Western Springs, Ill. SELF-ADHESIVE CLOSURE. Patent dated May 20, 1975. Disclaimer filed Nov. 28, 1975, by the assignee, *Avery Products Corporation.*

Hereby enters this disclaimer to all claims of said patent.

3,920,340.—*Robert D. Jones* and *Jerry L. Hall,* Oskaloosa, Iowa. CABLE CONNECTOR. Patent dated Nov. 18, 1975. Disclaimer filed Dec. 12, 1975, by the assignee, *Intraco, Inc.*

Hereby enters this disclaimer to claims 1, 2, and 3 of said patent.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 17, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds: Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry: Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-19-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur: Misc. Esters; Carbohydrates: Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-2-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-3-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products: Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions: Bleaching; Dyeing and Photography.	2-10-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-5-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination: Horology; Acoustics; Recorders; Weighing Scales.	12-23-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition: Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-12-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-18-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-10-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	9-23-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-10-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	4-15-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-2-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-13-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures: Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	6-25-75

Expiration of patents: The patents within the range of numbers indicated below expire during February 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,871,479 to 2,875,444 inclusive
Plant Patents	Numbers 1,805 to 1,813 inclusive

PATENT APPLICATIONS

PUBLISHED FEBRUARY 10, 1976
UNDER THE SECOND TRIAL VOLUNTARY PROTEST PROGRAM

NOTE- A copy of the notice setting forth the details of the Second Trial Voluntary Protest Program may be found in the Patent and Trademark Notices section of this issue.

Any protests relating to the patentability of these published applications must be filed in writing before May 10, 1976. These applications are available for inspection in the Allowed Files Branch, Crystal Plaza, Room 2-10C28. All correspondence should be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

Printed copies of the published applications may be purchased from the Patent and Trademark Office at 50 cents each.

An "Index of Applicants and Assignees of Published Applications" and a concordance entitled "Classification of Published Patent Applications" are located in the back of this issue.

GENERAL AND MECHANICAL APPLICATIONS

B 480,350
APPARATUS FOR THE DETERMINATION OF THE THERMAL EFFICIENCY OF CHEMICAL REACTIONS

Willy Regenass, Basel, and Hanspeter Gfrorer, Muttenz, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 18, 1974, Ser. No. 480,350

Claims priority, application Germany, June 25, 1973, 2332135; Nov. 2, 1973, 2354997

Int. Cl.^{2} G01K *17/00*

U.S. Cl. 73—190 R **16 Claims**

References Cited

UNITED STATES PATENTS

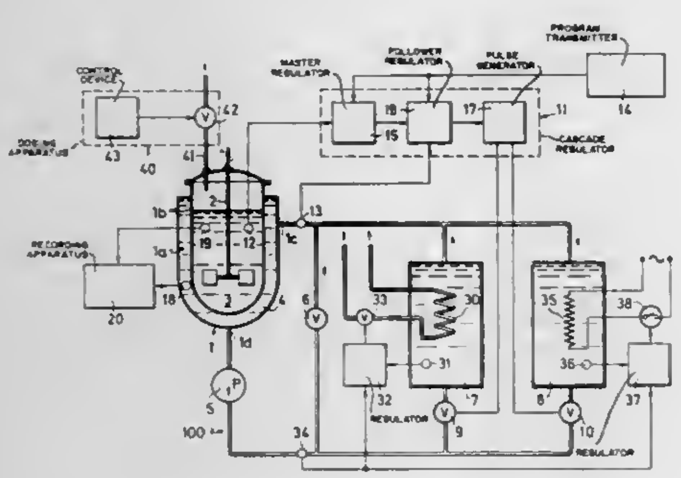
3,080,219	3/1963	Harvey, Jr.	23/253
3,373,607	3/1968	Schoenlaob	73/190

FOREIGN PATENTS OR APPLICATIONS

455,325	4/1966	Switzerland	73/190

OTHER PUBLICATIONS

Andersen, "Polymerization Rates by Calorimetry" in Journal of Polymer Science, A-1, Vol. 7, 1969, pp. 2888–2896.



1. In an apparatus for determining the thermal efficiency of a chemical reaction, comprising a reaction vessel equippeed with agitation means, a circulation system for a heat transfer fluid medium in communication with said reaction vessel, a heat exchanger for influencing the temperature of the reaction mixture in contact with said reaction vessel and positioned in said circulation system, means positioned in said circulation system for circulating the heat transfer fluid medium, measuring feeler means positioned, respectively, in said reaction vessel and said circulation system for determining the temperature of the reaction mixture and the heat transfer fluid medium, a regulating system cooperatingly connected to said measuring feeler means for controlling the temperature of the reaction mixture, said regulating system including a reference value transmitter for the temperature of the rection mixture and a temperature regulator for opposingly changing the temperature of the heat transfer fluid medium entering the heat exchanger by a multiple of the amount of the reference value deviation from an instantaneous value to establish a set point for the heat transfer fluid, the improvement comprising the reaction vessel being equipped with a double-wall shell constituting said heat exchanger, said shell having inlet and outlet means; the means for circulating the heat transfer fluid medium comprising a circulating mechanism for circulating the heat transfer medium so rapidly that the difference of its temperature at the inlet and at the outlet of said shell over the entire reaction duration, except during possibly occurring momentary unstable points in the reaction kinetics, does not exceed 1°C; the temperature regulator comprising a mixing regulator having a first container for a heat transfer fluid medium which is warmer than the temperature of the heat transfer fluid medium circulating in the circulation system and a second container for a heat transfer medium which is colder than the temperature of the heat transfer fluid medium circulated in the circulation system, means responding to said feeler means and connected to said circulation system for selectively discharging said warmer and colder heat transfer fluid mediums into the circulation system as a function of the reference value deviation of the temperature of the reaction mixture and as a function of the deviation of the temperature of the heat transfer medium from said set point; and means for the continuous determination of the difference between the temperatures of the reaction mixture and the heat transfer fluid medium at a random location of the heat exchanger, said temperature difference being representative of the thermal efficiency to be measured.

B 494,234
METHOD AND APPARATUS FOR APPLYING FLEXOGRAPHIC PRINTING PLATES TO THE PRINTING CYLINDERS OF A MULTI-CYLINDER PRINTING MACHINE

John Maxwell Jackson, Potters Bar, England, assignor to Chromax Ltd., Watford, England

Continuation-in-part of Ser. No. 309,688, Nov. 27, 1972, abandoned. This application Aug. 2, 1974, Ser. No. 494,234

Claims priority, application United Kingdom, Dec. 2, 1971, 55992/71

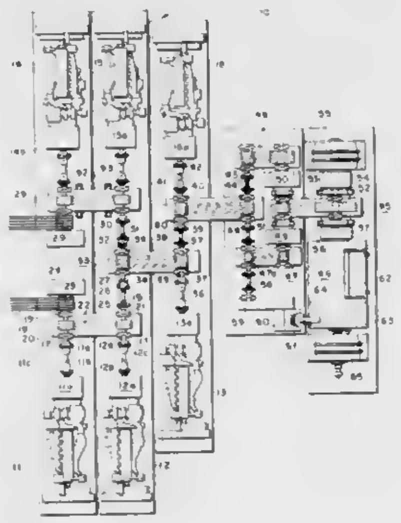
Int. Cl.^{2} B41L *37/04, 29/06, 29/20*

U.S. Cl. 101—401.3 **8 Claims**

References Cited

UNITED STATES PATENTS

414,991	11/1889	Parker et al.	156/446
1,295,016	2/1919	Eastman et al.	156/446
1,421,360	7/1922	Biery	101/378
1,480,489	1/1924	Banzett	101/415.1
2,192,924	3/1940	Maher et al.	101/415.1 X
2,418,007	3/1947	Barnes et al.	101/426
2,539,965	1/1951	Moss et al.	101/DIG. 12
2,689,411	9/1954	Huck	101/DIG. 12
2,694,975	11/1954	Garver	101/381 X
2,711,691	6/1955	Leavens, Jr.	101/DIG. 12
2,916,990	12/1959	Dubois	101/415.1
3,161,129	12/1964	Taylor	101/212
3,361,060	1/1968	Hoexter et al.	101/216
3,390,633	7/1968	Boughton	101/401.1
3,533,355	10/1970	Wall	101/415.1



1. A method of mounting flexographic printing plates on the printing cylinders of a multi-cylinder printing machine of the type described, comprising;
- stretching one of the flexographic printing plates to a length greater than the length of any of the other printing plates in an unstressed condition, and supporting the plate in the stretched condition on a platform at a precisely predetermined position thereon with the print on the plate facing the platform;
- mounting the cylinder at a precisely predetermined position on a rotatable hub having axial and radial abutments engageable with axial and radial abutments on the cylinder, said hub having a precisely predetermined position relative to said platform, the surface of the printing plate facing away from the platform being tangential to the surface of the cylinder;
- coating the surface of the cylinder or the last mentioned surface of the printing plate with adhesive;
- moving said platform and said hub relative to one another to effect rolling of the cylinder along the stretched printing plate whereby the printing plate adheres to the cylinder at a precisely predetermined position relative to the axial and radial abutments thereon;
- removing the cylinder from said hub;
- successively stretching each of the other flexographic printing plates to a length precisely equal to that of the first mentioned plate in the stretched condition and on the platform; and
- successively repeating said mounting, coating, moving and removing steps with each of said other plates and other cylinders, whereby all the printing plates fitted on cylinders have precisely the same length, and the radial and axial abutments on each cylinder fitted with a plate are in the same spatial relationship relative to the area of the plate corresponding to the total design to be printed, so that the printing media on the plates on the cylinders will be in register with one another for printing purposes when the cylinders are mounted on the printing machine.

B 506,167
ADJUSTABLE WIRE CONTROL MECHANISM

Maurice H. Brown, 11655 S. Mayfield, Worth, Ill. 60482

Filed Sept. 16, 1974, Ser. No. 506,167

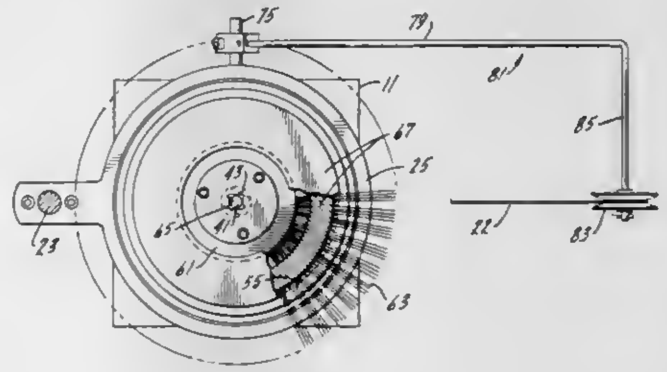
Int. Cl.^{2} B65H *49/00, 59/00*

U.S. Cl. 242—129.8 **10 Claims**

References Cited

UNITED STATES PATENTS

3,491,967	1/1970	Sawyer et al.	242/129
3,632,062	1/1972	Sole	242/147 R
3,811,639	5/1974	Jordan	242/129.8



1. A wire tensioning device including
- a disc adapted to be mounted on an axial end of a spool of wire,
- said disc having a plurality of radially extending resilient filaments that protrude beyond the periphery of the axial end of the spool of wire,
- said filaments engaging the wire as it is unwound from the spool over the axial end of the spool to thereby apply a resistance to the uncoiling of said wire, and
- means to bend said filaments in the direction of uncoiling of said wire as the uncoiling resistance increases to thereby maintain a relatively constant resistance against the wire during uncoiling.

B 511,407
HELICOPTER TRANSPORTABLE DRILLING RIG

Kenneth Harmon Eddy, and Kenneth Harmon McGill, both of Beaumont, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 2, 1974, Ser. No. 511,407

Int. Cl.^{2} B66D *1/14*

U.S. Cl. 254—186 R **15 Claims**

References Cited

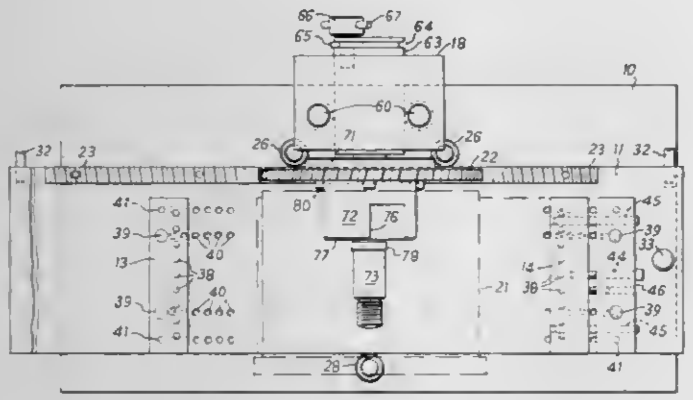
UNITED STATES PATENTS

2,405,546	8/1946	Archer	74/661
2,613,059	10/1952	Maier	74/661
2,650,065	8/1953	Young	254/187 A
2,651,947	9/1953	Wilson	74/722
2,784,557	3/1957	Wilson	74/661
2,936,654	5/1960	Wilson	74/661
3,079,811	3/1963	Isenberg	74/661
3,767,329	10/1973	Houck	417/360

1. A power system for an oil well drilling rig, said system being constructed of integral componets each being portable and having a weight of less than about 4000 pounds, said system comprising:
- a plurality of prime movers arranged in close proximity to each other;
- means for receiving and mounting each of said prime movers and for transmitting power from said prime movers; said means comprising an integral, portable unit for each said prime mover;

power transfer means interconnectable with said transmitting means and adapted to receive power from at least two of said prime movers via said transmitting means and to transfer said power to an output shaft, said power transfer means comprising a plurality of integral power transfer systems, each system being an integral unit fully transportable without disassembly thereof, and each said system having easily disconnected and reconnected power input and output means;

power accumulator means for receiving the power from all



of said prime movers and having alternately selective dual power outputs;

transmission means connected to said accumulator means and having a high speed transmission connected to one of said accumulator means power outputs, and a low speed transmission connected to the other of said accumulator means power outputs;

main drum drive means releasably connected to both of said transmissions and arranged to selectively receive power from either of said transmissions and transmit power to two output shafts; said main drum drive means being an integral, fully portable unit in itself;

a main drawworks drum connected to one of said output shafts of said main drum drive means in driven relationship therewith; and,

main drum brake means connected to said main drum and arranged to apply braking forces thereto, said brake means comprising an integral brake system disconnectable from said main drum brake means without disassembly of said integral brake system.

B 558,973

SAFETY SUPPORT FOR HARVESTER COMBINE FEEDERS

Thomas A. Hocking, Colona, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Mar. 17, 1975, Ser. No. 558,973

Int. Cl.² A01D *41/06*

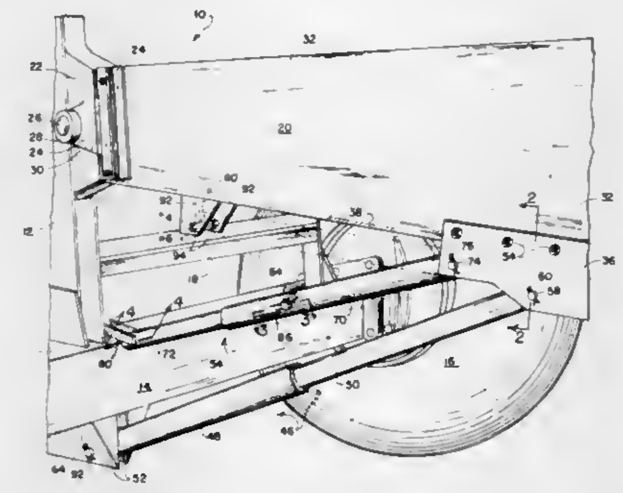
U.S. Cl. 56—15.9 11 Claims

References Cited

UNITED STATES PATENTS

2,949,716	8/1960	Thompson	56/14.3

1. In a harvester combine having a framework including a horizontally disposed transverse axle housing, a crop feeder pivoted at its rear end to the forward end of the combine framework for swinging movements between an operative crop infeed position and a raised inoperative position, and at least one hydraulically operable lift cylinder effective between said framework and feeder for producing such swinging movements, the improvement which compresses an extensible and contractible brace-like safety stand effective in compression between said axle housing and feeder for maintaining the latter in a predetermined elevated position, said safety stand comprising at least one extensible and contractible pair of telescopic inner and outer parts including a forward part effectively pivoted to a forward region of the feeder and a rearward part engageable with said axle housing when said stand is in its fully extended position, a removable pin projecting diametrically through said outer part and serving to maintain the stand in such fully extended position, and a parking bracket fixedly secured to said feeder rearwardly of the point of pivotal connection between said forward part and the feeder and the effective to support the rear end portion of the rear part when said pin is removed and said stand is contracted.



B 572,642

SPEED-CHANGE OPERATING MECHANISM FOR A BICYCLE

Shozo Shimada, Sakai, Japan, assignor to Shimano Industrial Co., Ltd., Osaka, Japan

Filed Apr. 29, 1975, Ser. No. 572,642

Int. Cl.² B62M *25/02*

U.S. Cl. 280—236 5 Claims

References Cited

UNITED STATES PATENTS

1,919,531	7/1933	Rosner	188/2 D
3,021,728	2/1962	Shimano	74/750 B

FOREIGN PATENTS OR APPLICATIONS

983,927	6/1951	France	188/24
985,433	7/1951	France	188/24
359,705	6/1938	Italy	188/24

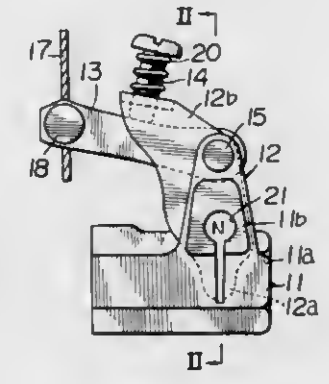
1. A speed-change operating mechanism for a bicycle, which is adapted to be operated with a control wire so as to actuate a push rod which is freely axially movably inserted into a hollow hub shaft at a speed transmission hub, comprising

a. a bracket fixed to said hub shaft,

b. a first operating member pivoted to said bracket and capable of oscillation in relation to said bracket, said first operating member having an axial bore at the middle portion thereof and extending substantially at both sides of said bore to form a control portion and an engageable portion respectively, said control portion being at one end of said first operating member to reach and come in contact with the foremost end of an extension of said push rod, said engageable portion being at the other end of said first operating member and outwardly extending in a given length,

c. a second operating member pivoted to said bracket and capable of oscillation in relation to said bracket, said second operating member having an axial bore at a base thereof and extending in the direction corresponding to said engageable portion at the first operating member so as to form a fore end provided with a retainer for fixing one terminal of said control wire therewith, and

d. an adjustor provided between the engageable portion of said first operating member and the middle portion of said second operating member, said adjustor being mounted to one of said operating members for engagement with the other of said operating members, whereby when said control wire is operated the oscillation of said second operating member is conveyed to said first operating member.



B 590,158

APPARATUS AND METHOD FOR FORMING CIRCULAR DYNAMOELECTRIC MACHINE FIELD WINDINGS BY PUSHING

Ralph A. Vogel, Three Rivers, Mich., and Patrick L. Grawcock, Fort Wayne, Ind., assignors to Essex International, Inc., Fort Wayne, Ind.

Continuation of Ser. No. 473,679, May 28, 1974, abandoned. This application June 25, 1975, Ser. No. 590,158

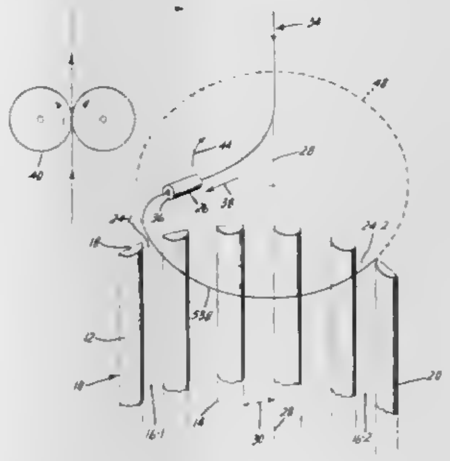
Int. Cl.² H02K *15/04*

U.S. Cl. 140—92.1 6 Claims

References Cited

UNITED STATES PATENTS

3,347,474	10/1967	Frank	242/1.1 R
3,514,837	6/1970	Smith	29/205 D
3,579,791	5/1971	Arnold	29/205 D
3,714,973	2/1973	Kieffer et al.	140/92.1
3,791,419	2/1974	Arick et al.	140/92.1



1. Apparatus for placing magnet wire in slots respectively defined by the blades of coil transfer apparatus which lie on an imaginary cylinder in a cylindrical array to form a circular dynamoelectric machine field winding, said apparatus comprising means for guiding said wire toward said blades, means for pushing wire through said guide means without applying tension thereto, and means for moving said guide means relative to said blades in a circular path which overlaps said cylindrical array of blades and which is aligned with the open ends of two or said slots whereby said wire is pushed in a direction away from the center of said path and is also pushed into said two slots.

B 747,785
TRIAMINOGUANIDINE CYANOFORMATE

Milton B. Frankel, Tarzana, Calif., and Lionel A. Dickinson, Indian Head, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 25, 1968, Ser. No. 747,785
Int. Cl.² C07C *121/42*
U.S. Cl. 260—465.5 R **3 Claims**

References Cited
OTHER PUBLICATIONS

Byrkit et al., Ind. and Eng. Chem., Vol. 42, Sept. 1950, pp. 1862 – 1875.
Lessing, Scientific American, Vol. 189, No. 1, July 1953, pp. 30–33.

1. $[(NH_2NH)_3C]+[C(CN)_3]-$

B 236,342
FLAME RETARDANTS FOR POLYMERS

Timothy P. Murtha, and Roy A. Gray, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 20, 1972, Ser. No. 236,342
Int. Cl.² C08J *3/20*
U.S. Cl. 260—45.85 R **5 Claims**

References Cited
UNITED STATES PATENTS

3,252,922	5/1966	Degener	260/858
3,700,625	10/1972	Brady	260/45.75 R
3,864,306	2/1975	Dieckmann	260/45.75

FOREIGN PATENTS OR APPLICATIONS

915,193	11/1972	Canada

1. A flame-retardant composition comprising 1,11-diacetoxy-6-acetoxymethyl-2,2,6,10,10-penta(bromomethyl)-4,8-dioxaundecane and a synthetic polymer plastic.

B 311,779
PIGMENT FORMULATION

Hans-Heinz Mölls; Karlheinz Wolf, both of Leverkusen; Reinbold Hörnle, Cologne, all of Germany; Gottfried Popp, Charleston, S.C.; Konrad Nonn, Leverkusen, and Jurgen Spille, Schildgen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 4, 1972, Ser. No. 311,779
Claims priority, application Germany, Dec. 4, 1971, 2160208
Int. Cl.² C09C *3/00*
U.S. Cl. 106—309 **12 Claims**

References Cited
UNITED STATES PATENTS

3,042,540	7/1962	Cabot	106/308
3,252,810	5/1966	Somers	106/309
3,748,164	7/1973	Akamatsu	106/288 Q

1. In the process of comminution of aqueous pigment dispersions or pigment pastes in the presence of a surface active agent; the improvement comprising utilizing as said surface-active agent in an amount of 0.1 to 50% relative to pigment, a surface-active agent which is saponifiable under acidic or alkaline conditions; following comminution, saponifying said surface active agent under acidic or alkaline conditions; and removing saponification products having solubility in water; the resulting pigment being free of surface-active agent.

B 385,024
INTERMEDIATE FOR PRODUCING SEMI-SYNTHETIC PENICILLINS AND CEPHALOSPORINS

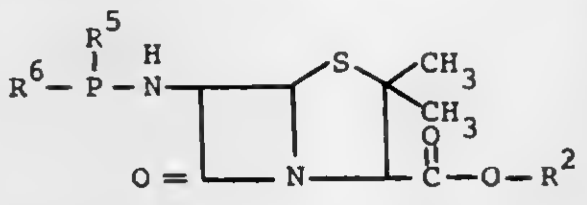
John H. Sellstedt, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 197,142, Nov. 9, 1971, Pat. No. 3,859,298. This application Aug. 2, 1973, Ser. No. 385,024
Int. Cl.² C07D *499/04, 501/02*
U.S. Cl. 260—306.7 C **6 Claims**

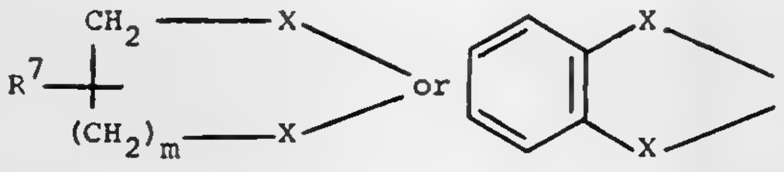
References Cited
UNITED STATES PATENTS

3,809,699	5/1974	Ishimaru	260/306.7

1. A compound having the following formula which is useful as an intermediate for obtaining non-toxic penicillins having antibacterial activity against gram positive and/or gram negative microorganisms:



wherein: R² is a member selected from the class consisting of hydrogen, alkali metal and a tertiary amine; R⁵ and R⁶ are each selected from the class consisting of (lower)alkyl, phenyl, naphthyl, phenyl(lower)alkyl and naphthyl(lower)alkyl; and R⁵ and R⁶ when joined together with the phosphorus atom form the ring:



wherein: X is selected from the class consisting of oxygen, methylene and sulfur; m is an interger from 1 to 6; R⁷ is selected from the class consisting of hydrogen and (lower)alkyl.

B 403,766
TRIAZOLYL STILBENE BRIGHTENERS METHOD OF PREPARING AND DETERGENTS THEREWITH

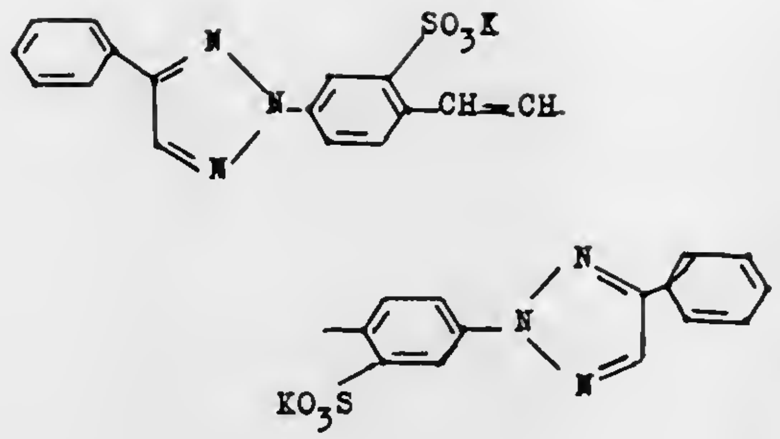
Alfons Dorlars, Leverkusen; Heinrich Gold, Bergisch-Gladbach, and Walter Horstmann, Bergisch-Gladbach, Schildgen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 5, 1973, Ser. No. 403,766
Claims priority, application Germany, Oct. 5, 1972, 2248820
Int. Cl.² C07D *249/20;* **C11D** *3/28*
U.S. Cl. 252—543 **7 Claims**

References Cited
UNITED STATES PATENTS

2,927,866	3/1960	Williams et al.	260/240 C X
3,453,268	7/1969	Dorlars et al.	260/240 C
3,485,831	12/1969	Dorlars et al.	260/240 C
3,578,653	5/1971	Wallace	260/240 C X

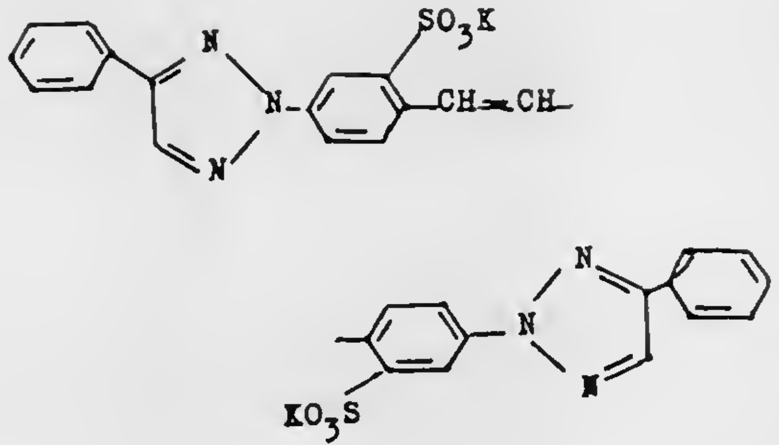
1. The compound of the formula



(I)

in the β-modification, characterised by the following d-values in the X-ray spectrum: 20.20 A; 3.99 A; 3.69 A and 2.91 A.

3. The compound of the formula



(I)

in the γ-modification, characterized by the following d-values in the X-ray spectrum; 19.97 A; 6.45 A; 4.89 A; and 3.60 A.

B 414,266
SULFONATED AROMATIC POLYISOCYANATES AND PREPARATION OF STABLE ANIONIC POLYURETHANE OR POLYUREA LATICES THEREFOR

Robert C. Carlson, Hastings, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 841,570, July 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 749,573, Aug. 2, 1968, abandoned. This application Nov. 9, 1973, Ser. No. 414,266
Int. Cl.² C08J *3/00*
U.S. Cl. 260—29.2 TN **13 Claims**

References Cited
UNITED STATES PATENTS

3,178,310	4/1965	Berger et al.	117/142
3,395,129	7/1968	Dieterich et al.	260/77.5
3,479,310	11/1969	Dieterich et al.	260/29.2 TN
3,479,325	11/1969	Blomeyer et al.	260/77.5
3,491,050	1/1970	Heberle et al.	260/29.2 TN
3,617,352	11/1971	Shima et al.	260/29.2 TN
3,759,878	9/1973	Breslow	260/77.5 AT
3,826,769	7/1974	Carlson	260/29.2 TN

FOREIGN PATENTS OR APPLICATIONS

1,078,202	8/1967	United Kingdom	260/77.5
1,076,688	7/1967	United Kingdom	260/29.2 TN

OTHER PUBLICATIONS

Bieber, JACS, 75, 1409–1412, 3–53, "Bieber II".
Degering, Organic Chemistry, 6th Ed., Barnes & Noble, NY, 1957, pp. 206–207.
Saunders et al., Part I, Interscience, NY, 1962, pp. 94 & 95.

1. A method of making a self-emulsified aqueous polyurethane latex comprising

a. reacting an aromatic polyisocyanate with a sulfonating agent, said aromatic polyisocyanate selected from the group consisting of an aromatic diisocyanate monomer having a molecular weight of at least 160, and an isocyanate-terminated prepolymer having a molecular weight of less than about 25,000, and said sulfonating agent selected from the group consisting of H_2SO_4, SO_3, $ClSO_3H$, and mixtures thereof, the number of moles of said sulfonating agent being less than the number of moles of said aromatic polyisocyanate and the ratio of the number of moles of said sulfonating agent to the numerical difference between the moles of said aromatic polyisocyanate and the moles of said sulfonating agent being 0.02:1 to 0.5:1;

b. reacting the resulting sulfonated aromatic polyisocyanate with a base to form a sulfuric acid salt-substituted polyisocyanate; provided, that when said aromatic diisocyanate is the said diisocyanate monomer, the resulting sulfonic acid salt-substituted aromatic diisocyanate is converted to said prepolymer by reaction with a polyoxyalkylene compound having two or more active hydrogen-bearing functional groups; and

c. mixing said sulfonic acid salt-substituted aromatic polyisocyanate prepolymer with water to obtain a chain extended polymer self-emulsified in water.

B 415,122
POLYMER COMPOSITION

Terence John Henman, Haslingfield, and Graham Williams, Hitchin, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 12, 1973, Ser. No. 415,122
Claims priority, application United Kingdom, Nov. 27, 1972, 54674/72
Int. Cl.² C08K *3/30, 7/14*
U.S. Cl. 260—42.15 **11 Claims**

References Cited
UNITED STATES PATENTS

3,579,476	5/1971	Rieke et al.	260/42.18

FOREIGN PATENTS OR APPLICATIONS

1,095,700	12/1967	United Kingdom
1,174,943	12/1969	United Kingdom

1. A polymeric composition comprising a blend of (a) a graft copolymer obtained by grafting an unsaturated dicarboxylic acid or the anhydride thereof onto a propylene polymer wherein the grafted acid or anhydride is present in an amount sufficient to give an acid moiety which is at least equivalent to that provided by 0.01 percent by weight of maleic anhydride,

and (b) at least one acid selected from the group consisting of sulphur-containing acids of the formula

RSO_nH

wherein 1–90 percent by weight of the acid moieties of the blend of (a) and (b) are present in the acid and/or anhydride component of the graft copolymer; and

R is NR'''_2, a hydrocarbyl group, or a substituted hydrocarbyl group, and when the group is an aromatic group, any substituent containing an atom other than carbon, hydrogen or oxygen is located in a position which is other than meta- to the $—SO_nH$ group;

R''' is hydrogen or a hydrocarbyl group; and *n* is 2 or 3.

B 428,103
DIMERIZATION OF MONOOLEFINS WITH CATALYSTS ON SOLID SUPPORTS

Clifford E. Smith; Edward L. Czenkusch, and Grant C. Bailey, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 872,409, Oct. 29, 1969, abandoned. This application Dec. 26, 1973, Ser. No. 428,103

Int. Cl.² C07C *3/21*

U.S. Cl. 260—683.15 D **16 Claims**

References Cited

UNITED STATES PATENTS

3,482,001	12/1969	Eberhardt	260/683.15 D
3,483,269	12/1969	Magoon et al.	260/683.15 D
3,591,656	7/1971	Kroll	260/683.9
3,592,869	7/1971	Cannell	260/683.15 D
3,709,953	1/1973	Bergem et al.	260/683.15 D
3,755,490	8/1973	Yoo et al.	260/683.15 D

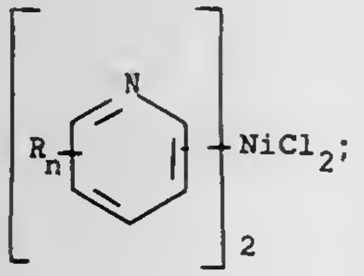
FOREIGN PATENTS OR APPLICATIONS

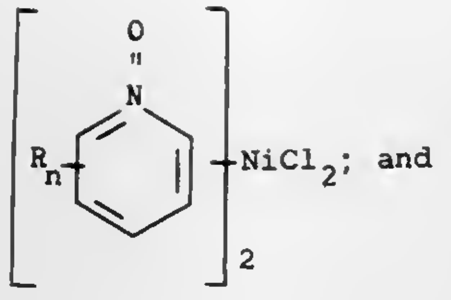
711,042	8/1968	Belgium

1. A process for dimerizing at least one monoolefin selected from the group consisting of ethylene and propylene which comprises contacting said monoolefin with a catalyst under suitable reaction conditions, said catalyst having been prepared by:

A. heat treating a solid catalyst support consisting essentially of silica, silica-alumina, or mixtures thereof, with flowing air at a temperature in te range of 800° to 1500°F. for a time in the range of 0.1 to 24 hours, said solid catalyst support being characterized by a pH value of less than 6 when slurried with distilled and decarbonated water, and

B. contacting the thus heat treated solid catalyst support with (a) a nickel complex selected from the group consisting of compounds having the formula





$(R_3P)_2NiCl_2$, wherein each R is individually selected from alkyl radicals having up to 20 carbon atoms; and *n* is zero or an integer in the range of 1 to 5; and (b) an aluminum compound having the formula R_xAlCl_y, wherein R is as previously defined, and *x* and *y* are integers in the range of 0 to 3 with the sum of *x* and *y* being 3.

B 429,018
GAPLESS PROPAGATION STRUCTURES FOR MAGNETIC BUBBLE DOMAINS

Emerson W. Pugh, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1973, Ser. No. 429,018

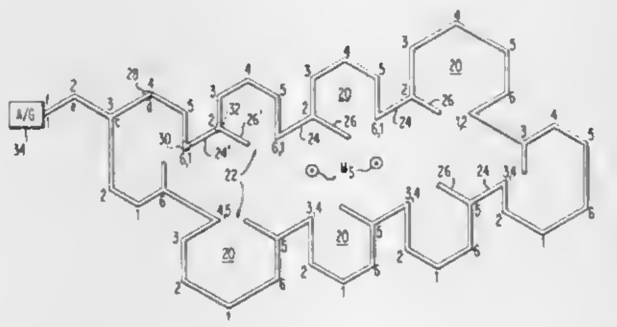
Int. Cl.² G11C *11/14, 19/08*

U.S. Cl. 340—174 TF **8 Claims**

References Cited

UNITED STATES PATENTS

3,516,077	6/1970	Bobeck et al.	340/174 TF
3,518,643	6/1970	Perneski	340/174 TF
3,534,346	10/1970	Bobeck	340/174 TF
3,534,347	10/1970	Bobeck	340/174 TF
3,644,908	2/1972	Bobeck	340/174 TF
3,689,901	9/1972	Bobeck	340/174 TF
3,778,788	12/1973	Bobeck et al.	340/174 TF
3,815,107	6/1974	Almasi	340/174 TF
3,828,329	8/1974	Fischer et al.	340/174 TF



1. A gapless, single-sided propagation structure for implementing the continuous, generally unidirectional movement of magnetic bubble domains in a supporting material in response to an externally applied, in-plane magnetic field rotating in a constant circular direction through a plurality of phases, comprising:

a generally undulating, non-self-crossing strip of magnetic material having in-plane magnetization,

trapping means associated with each undulation at a discrete predetermined position thereon for momentarily holding a bubble substantially stationary at said position during at least two sequential phases of said magnetic field rotation as the magentic field continues to rotate, and

pole establishing means adjacent each trapping means for establishing a discrete magnetic pole for attracting a bubble from said position to thereby cause its continued, generally unidirectional movement into the next undulation,

wherein the magnetic bubble domains are propagated along the path defined by the undulating strip of magnetic material, and wherein the pole establishing means intersects said path but does not comprise a substantial portion thereof along which the bubble domains propagate in normal operation.

B 431,713
NITROANTHRAQUINONES

Walter Hohmann, Leverkusen; Helmut Herzog, Bergisch-Neukirchen, and Hans-Samuel Bien, Burscheid, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 8, 1974, Ser. No. 431,713

Claims priority, application Germany, Jan. 8, 1973, 2300592

Int. Cl.² C09B *1/16*

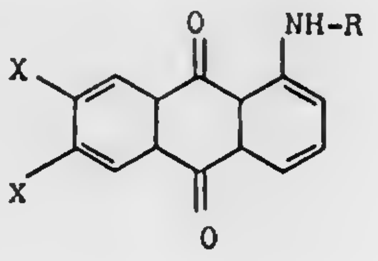
U.S. Cl. 260—378 **5 Claims**

References Cited

UNITED STATES PATENTS

1,828,588	10/1931	Bally et al.	260/378
2,273,966	2/1942	Klein	260/378
2,727,045	12/1955	McSheehy	260/378
2,759,940	8/1956	Bucheler et al.	260/378 X
3,123,605	3/1964	Turetzky et al.	260/378 X
3,491,126	1/1970	Schwander et al.	260/378 X
R27,413	6/1972	Schwander et al.	260/378 X

1. Compound or mixtures of compounds having the formula



in which

one X is a nitro and the other X is hydrogen; and R is C_1–C_{12}-alkyl; phenyl-C_1–C_8-alkyl; phenyl-C_1–C_{12}-alkyl; phenyl-C_1–C_{12}-alkyl substituted in the phenyl ring by C_1–C_4-alkyl; cyclohexyl; or cyclohexyl substituted by benzyl, phenyl or cyclohexyl.

B 440,633
PROCESS FOR THE MANUFACTURE OF POLYETHERS CONTAINING IONIC BONDS

Alfred Renner, Munchenstein, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 7, 1974, Ser. No. 440,633

Claims priority, application Switzerland, Feb. 14, 1973, 2086/73

Int. Cl.² C08G *30/14*

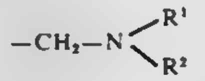
U.S. Cl. 260—47 EP **25 Claims**

References Cited

UNITED STATES PATENTS

3,436,373	4/1969	Cox et al.	260/47 X
3,462,382	8/1969	Kolka	260/51.5 X
3,625,684	12/1971	Poot et al.	260/2 X
3,790,606	2/1974	Sellet	260/51.5 X

1. A process for the manufacture of crosslinked macromolecular polyethers containing ionic bonds, wherein polyhydric mononuclear or polynuclear phenols (A) which possess, as substituents in the o- or p-positions to the OH groups, a total of at least 2 radicals of the formula I



$$—CH_2—N\begin{matrix}\diagup R^1\\ \diagdown R^2\end{matrix} \qquad (I)$$

in which R^1 and R^2 are identical or different and denote a saturated or unsaturated hydrocarbon radical with 1 to 4 carbon atoms or together denote the morpholino radical (such phenols being Mannich bases), are reacted with compounds (B) which contain at least one Cl or Br or I atom bonded to a hydrocarbon radical and at least one 1,2-epoxide group, with addition of the 1,2-epoxide groups to the phenol groups and with quaternization of the halogenated hydrocarbon radicals with the radicals of the formula I, and optionally with organic compounds (C) which contain at least one Cl or Br or I atom bonded to a hydrocarbon radical, with quaternizaton of the halogenated hydrocarbon radicals with the radicals of the formula I, optionally in the presence of water or organic solvents at temperatures of 20° to 200°C.

B 450,196
COATED POLYESTER FILMS

Cyril John Ealding, Puckeridge, and Gordon Edmund Alfred Pears, Harpenden, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 11, 1974, Ser. No. 450,196

Claims priority, application United Kingdom, Apr. 2, 1973, 15704/73; July 16, 1973, 33715/73

Int. Cl.² B32B *27/06, 27/36*

U.S. Cl. 428—341 **4 Claims**

References Cited

UNITED STATES PATENTS

3,437,484	4/1969	Nadeau	117/138.8 X
3,598,641	8/1971	Miller et al.	117/138.8 E
3,819,773	6/1974	Pears	264/37

1. An antistatic polyester film coated on one side with an antistatic layer comprising lithium nitrate and an acrylic or methacrylic polymer or copolymer binder wherein the coat weight of lithium nitrate is at least 100 μg/dm².

B 456,579

PROCESS FOR FORMING FIRE RETARDANT POLYMERS OF BIS (HYDROCARBYL) VINYLPHOSPHONATE

Jesse C. H. Hwa, Stamford, Conn., and Paul Kraft, Spring Valley, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 1, 1974, Ser. No. 456,579
Int. Cl.^{2} C08L *27/06, 27/08, 27/10*
U.S. Cl. 260—884 **15 Claims**

References Cited
UNITED STATES PATENTS

3,583,956	6/1971	Pointer et al.	204/159.17
3,691,127	9/1972	Kraft et al.	260/884
3,726,839	4/1973	Jin	260/884
3,798,287	3/1974	Murayama et al.	260/878 R
3,800,007	3/1974	Bafford	260/877

1. In a process for forming a polymer of a bis(hydrocarbyl) vinylphosphonate comprising the steps of forming a polymerization medium containing a bis(hydrocarbyl) vinyl phosphonate monomer and polymerizing said monomer, wherein the improvement comprises adding a monoethylenically unsaturated monomer selected from the group consisting of the vinyl and vinylidene chlorides and bromides to the polymerization medium only when the percent conversion of monomer therein is 40% or greater and residual unreacted vinylphosphonate monomer remains.

B 457,850

WATER-SOLUBLE COMPLEX OF CUPROUS CHLORIDE, HYDROCHLORIC ACID AND AT LEAST ONE AMINE OR AMINE SALT

Ferdinand Hagedorn; Karlfried Wedemeyer, and Rodulf Mayer-Mader, all of Cologne, Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Apr. 4, 1974, Ser. No. 457,850
Claims priority, application Germany, Apr. 11, 1973, 2318115
Int. Cl.^{2} B01J *31/30*
U.S. Cl. 252—429 R **6 Claims**

References Cited
UNITED STATES PATENTS

2,328,275	8/1943	Heard	260/663
2,503,264	4/1950	Hampton	252/429 R X
3,078,283	2/1963	Hay	252/429 R X
3,388,176	6/1968	Sheard	252/429 R X
3,651,019	3/1972	Asscher et al.	260/77.2
3,819,730	6/1974	Nakata et al.	252/429 R X

1. A composition consisting essentially of the aqueous phase reaction product of:
- I. cuprous chloride,
- II. hydrochloric acid and
- III. at least one amine or amine salt having an atomic ratio of carbon to nitrogen less than 14 and being either
  - a. a pyridine having 1 to 3 alkyl groups as carbon atom substituents thereof,
  - b. an N,N-dialkylaniline or said aniline having the aromatic nucleus thereof substituted with one or two methyl groups,
  - c. diethylamine,
  - d. triethylamine or
  - e. a hydrochloride of one of the amines of *a* to *d*, reactants I–III for forming said composition being present in amounts producing a water-soluble complex useful as a catalyst for the addition of hydrogen chloride to chloroprene for preparing 1,3-dichlorobutene-(2) in the liquid phase.

B 468,052

1-SUBSTITUTED-6-(2-SUBSTITUTED AMINOETHOXY)XANTHEN-9-ONES

Arthur A. Santilli, Havertown; Anthony C. Scotese, King of Prussia; Stanley C. Bell, Penn Valley, and Marvin E. Rosenthale, Havertown, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed May 8, 1974, Ser. No. 468,052
Int. Cl.^{2} C07D *405/12*
U.S. Cl. 260—247.7 T **4 Claims**

References Cited
UNITED STATES PATENTS

3,555,043	1/1971	Archer	260/335
3,597,420	8/1971	Archer	260/335

FOREIGN PATENTS OR APPLICATIONS

776,555	4/1972	Belgium	260/335

1. 1-Hydroxy-6-(2-morpholinoethoxy)xanthen-9-one.

B 471,405

MIXTURES OF HIGH AND LOW MOLECULAR WEIGHT POLYOLS RESISTANT TO PHASE SEPARATION

Benny Gene Barron, 110 Oyster Bend Lane, Lake Jackson, Tex. 77566, assignor to The Dow Chemical Company, Midland, Mich.

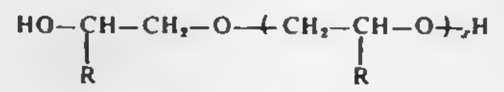
Filed May 20, 1974, Ser. No. 471,405
Int. Cl.^{2} C08G *18/65*
U.S. Cl. 252—182 **13 Claims**

References Cited
UNITED STATES PATENTS

3,630,973	12/1971	Ardis et al.	260/2.5 AM X

1. A composition resistant to phase separation which comprises:
- A. an insoluble mixture which is susceptible to phase separation which comprises:
  - 1. from about 95% to about 50% by weight of a relatively high molecular weight polyoxy alkylene polyol wherein the majority of the polyoxyalkylene groups are other than oxyethylene groups and have an average of from about 2 to about 4 OH groups per molecule an·ᵈ an average OH equivalent weight of from about 650 to about 3000 or mixtures thereof, and
  - 2. from about 5% to about 50% by weight of a relatively low molecular weight polyol selected from the group consisting of ethylene glycol, diethylene glycol, tetraethylene glycol, liquid polyoxyethylene glycols, 1,4-butane diol, glycerine and mixtures thereof; and
- B. as a solubilizer for Component A, a minor but effective quantity of a compound or mixture of compounds represented by the formulas

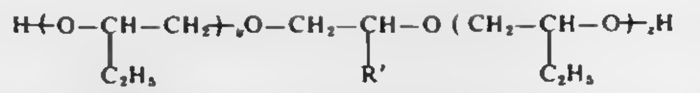
I.



$HO-\underset{R}{CH}-CH_2-O-(CH_2-\underset{R}{CH}-O)_xH$

wherein R is methyl or ethyl and *x* has a value from 0 to about 3 with the proviso that when *x* is O, R is ethyl;

II.



$H(O-\underset{C_2H_5}{CH}-CH_2)_yO-CH_2-\underset{R'}{CH}-O(CH_2-\underset{C_2H_5}{CH}-O)_zH$

wherein R' is hydrogen or methyl, *y* and *z* independently have a value from zero to about 2 with the proviso that at least one of *y* and *z* must have a value of at least 1.

B 471,617

PROCESS FOR THE MANUFACTURE OF PEPTIDES CONTAINING CYSTINE

Bruno Kamber, Basel; Peter Sieber, Reinach; Bernhard Riniker, Frenkendorf, all of Switzerland; Albert Hartmann, Grenzach, Germany, and Werner Rittel, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 20, 1974, Ser. No. 471,617
Claims priority, application Switzerland, May 24, 1973, 7526/73; Sept. 14, 1973, 13274/73
Int. Cl.^{2} C07C *103/52;* **A61K** *37/26;* **C07G** *7/00*
U.S. Cl. 260—112.5 R **15 Claims**

References Cited
OTHER PUBLICATIONS

Hermann et al.: Chem. Abstr. 78: 136,656m, (1973).
Kamber: Chem. Abstr. 78: 124,894z, (1973).
Moroder et al.: Chem. Abstr. 78: 160,089z, (1973).

1. In a process for the manufacture of peptides containing more than one disulphide bond from peptides containing cysteine radicals and in which one or two cysteine radicals which are to be linked are protected by a mercapto-protective group R_1, which is an aralkyl radical containing at least two cyclic residues, whose aliphatic part, which is bonded to the sulphur of the mercapto group, is lower alkyl or cycloalkyl with at most 7 carbon atoms and whose arylic part is at least one phenyl group which is unsubstituted or substituted by one or more members of the group consisting of lower alkyl, lower alkoxy and halogen, and two other cysteine radicals which are to be linked are protected by an acylaminomethyl group R_2, of the formula $-CH_2-NH-COR$, wherein $-COR$ represents the acyl radical of a carboxylic acid, the improvement which comprises removing the protective group R_1 by reacting the peptide with iodine in the presence of polyhalogenated lower alkanol or a polyhalogenated di-lower alkyl ketone, at the same time forming the disulphide bond between the cysteine radicals which were protected by R_1 and forming the second disulphide bridge after removal of the polyhalogenated compound.

B 473,039

CRYSTALLINE SESQUIHYDRATE OF 7-[D-α-AMINO-α-(P-HYDROXYPHENYL)ACETAMIDO]-3-(1,2,3-TRIAZOL-5-YLTHIOMETHYL)-3-CEPHEM-4-CARBOXYLIC ACID

Murray Arthur Kaplan, Syracuse, and Alphonse Peter Granatek, Baldwinsville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed May 24, 1974, Ser. No. 473,039
Int. Cl.^{2} C07D *501/20*
U.S. Cl. 260—243 C **1 Claim**

References Cited
UNITED STATES PATENTS

3,641,021	2/1972	Ryan	260/243 C
3,674,776	7/1972	Long et al.	260/243 C
3,759,904	9/1973	Crast	260/243 C
3,855,213	12/1974	Dunn et al.	260/243 C

1. Crystalline 7-[D-α-amino-α-(p-hydroxyphenyl)-acetamido]-3-(1,2,3-triazol-5-ylthiomethyl)-3-cephem-4-carboxylic acid sesquihydrate exhibiting essentially the following X-ray powder diffraction properties:

Line	Spacing (A)	Relative Intensity
1	9.31	45
2	6.77	93
3	6.17	32
4	5.56	14
5	4.42	100
6	3.97	76
7	3.78	95
8	3.55	55
9	3.41	53
10	3.10	26
11	3.01	19
12	2.94	9
13	2.83	17
14	2.77	23
15	2.55	19
16	2.32	10
17	2.23	12
18	2.05	10
19	1.97	6
20	1.88	7.

B 473,040

7-(D-α-HYDROXY-2-ARYLACETAMIDO)-3-(TETRAZOLO-[4,5-b]PYRIDAZIN-6-YLTHIOMETHYL)-3-CEPHEM-4-CARBOXYLIC ACIDS

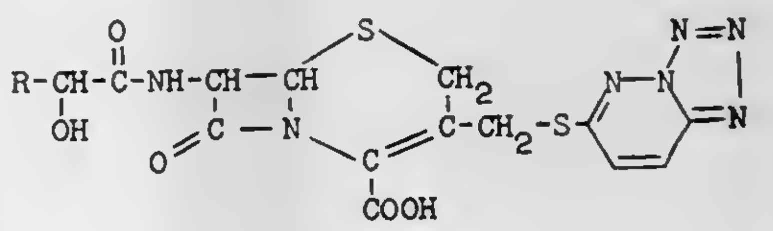
Takayuki Naito, Tokyo; Jun Okumura, and Hajime Kamachi, both of Yokohama, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed May 24, 1974, Ser. No. 473,040
Int. Cl.^{2} C07D *501/20*
U.S. Cl. 260—243 C **54 Claims**

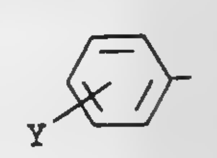
References Cited
UNITED STATES PATENTS

3,814,755	6/1974	Naito et al.	260/243 C
3,855,213	12/1974	Dunn et al.	260/243 C

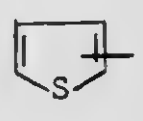
1. An acid having the D configuration in the 7-sidechain and the formula



wherein R is



or



and Y is hydrogen, chlorine, bromine, fluorine, trifluoromethyl, amino, nitro, hydroxy, lower alkyl of 1–4 carbon atoms or lower alkoxy of 1–4 carbon atoms.

B 480,452
4-(3,5-DIALKYL-4-HYDROXYPHENYL)-1,2-DITHIOLE-3-THIONES

John Grey Dingwall, Brooklands Sale; Peter Miles, and Donald Richard Randell, both of Stockport, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 18, 1974, Ser. No. 480,452

Claims priority, application United Kingdom, June 20, 1973, 29334/73

Int. Cl.² C07D *339/04*

U.S. Cl. 260—327 C **26 Claims**

References Cited

UNITED STATES PATENTS

2,653,910	9/1953	Airs et al.	252/45

FOREIGN PATENTS OR APPLICATIONS

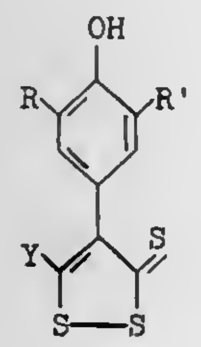
808,064	1/1959	United Kingdom	252/45

OTHER PUBLICATIONS

Voronkov, et al., Chem. Abst. 73:77104b (1970).

Reid, Org. Chem. of Bivalent Sulfur, Vol. II (1960, Chem. Pub. Co., N. Y.) p. 26.

1. A compound of the formula



(I)

in which R and R^1 are the same or different and each is an alkyl radical having from 1 to 12 carbon atoms, a cycloalkyl radical having from 5 to 12 carbon atoms which may be substituted with alkyl groups having from 1 to 4 carbon atoms or an aralkyl radical having from 7 to 14 carbon atoms, and Y is hydrogen, mercapto or SR^2 where R^2 is an alkyl radical having from 1 to 20 carbon atoms, cycloalkyl having from 5 to 12 carbon atoms, alkenyl from 3 to 20 carbon atoms, or aralkyl having from 7 to 14 carbon atoms.

B 482,660
AMYLASE INHIBITOR

Werner Frommer; Walter Puls, and Delf Schmidt, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 336,687, Feb. 28, 1973, Pat. No. 3,855,066. This application June 24, 1974, Ser. No. 482,660

Claims priority, application Germany, Mar. 1, 1972, 2209833

Int. Cl.² A61K *35/00*

U.S. Cl. 424—115 **1 Claim**

1. A pharmaceutical composition comprising an admixture of a pharmaceutical carrier and an effective amylase inhibiting amount of an amylase inhibitor active ingredient prepared in accordance with a process which comprises culturing the microorganism Actinoplanaceae CBS 614.71 in a nutrient medium until a sufficient quantity of amylase inhibitor has been produced, and recovering the said amylase inhibitor from the resultant culture.

B 483,256
WHITE GOLD ALLOY

Joseph J. Tuccillo, Norwalk, Conn., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 370,496, June 15, 1973, abandoned, Continuation-in-part of Ser. No. 190,686, Oct. 19, 1971, abandoned. This application June 26, 1974, Ser. No. 483,256

Int. Cl.² C22C *5/02*

U.S. Cl. 75—165 **9 Claims**

References Cited

UNITED STATES PATENTS

1,283,264	10/1918	Mowrey	75/165
1,296,938	3/1919	Fahrenwald	75/165
1,987,451	1/1935	Taylor	75/165 X
2,980,998	4/1961	Coleman et al.	32/12
3,413,723	12/1968	Wagner et al.	32/8
3,667,936	6/1972	Katz	75/134 N
3,679,402	7/1972	Hirschhorn	75/165
3,767,391	10/1973	Tuccillo	75/134 C

1. A white gold alloy for dental castings which is characterized by having, after heat treatment by heating to 1900°F. at a rate of 75° to 100°F. per minute and maintaining at 1900°F. for about 10 minutes and cooling, an ultimate tensile strength of at least about 90,000 psi., a yield strength of at least about 70,000 psi., and a Brinell hardness number of at least about 170, consisting essentially, in percent by weight, of 50 to 54% gold; 27 to 31% palladium; 11 to 16% silver; about 0.05 to about 0.25% of iridium or ruthenium, and a total of 4.5 to 8% of indium and tin, provided there is at least 2% indium and no more than 4.5% tin, and further provided that if there is less than about 6% indium, there must be at least 0.25% tin.

B 483,762
POLY(URETHANE-ISOCYANURATE) FOAMS CONTAINING HOLLOW GLASS SPHERES

James N. Wells, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 27, 1974, Ser. No. 483,762

Int. Cl.² C08G *18/14;* **B32B** *27/40;* **C09K** *3/00*

U.S. Cl. 260—2.5 AW **12 Claims**

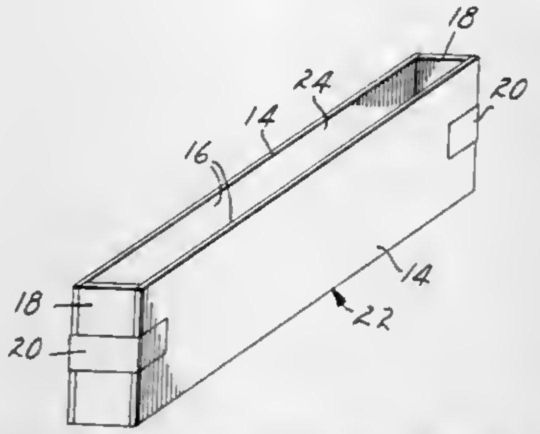
References Cited

UNITED STATES PATENTS

3,365,315	1/1968	Beck et al.	260/2.5 AK
3,510,392	5/1970	D'Eustachio et al.	260/2.5 AK
3,524,794	8/1970	Jonnes et al.	260/2.5 AK
3,585,157	6/1971	Beck	260/2.5 AK
3,644,168	2/1972	Bonk et al.	260/2.5 AW
3,801,421	4/1974	Allen et al.	260/2.5 AW
3,814,659	6/1974	Nadeau	260/2.5 AW

FOREIGN PATENTS OR APPLICATIONS

843,841	8/1960	United Kingdom	260/2.5 AW
1,223,415	2/1971	United Kingdom	260/2.5 AW
2,034,171	1/1971	Germany	260/2.5 AW



1. A poly(urethane-isocyanurate) foam comprising a continuous matrix of a reaction product and, within said matrix, a discontinuous phase of hollow glass spheres having an average diameter of 5 to 500 microns, said reaction product being formed by the reaction of organic polyisocyanate and organic polyol in the presence of foam stabilizer, isocyanate trimerization catalyst and blowing agent, the NCO/OH equivalent ratio being 1.2/1 to 2.5/1, and the average molecular weight of the polyol being in the range of 600 to 1500, said foam stabilizer comprising a fluorochemical having the formula $(R_f)_mQ_z(H)_n$ wherein R_f is a fluorinated, monovalent, aliphatic radical, H is an active hydrogen atom, Q is a linkage free of active hydrogen atoms having a valence equal to *m*+n, *m* is an integer of at least 1, *n* is an integer of at least 2, and *z* is an integer of from 1 to 3, said polymeric reaction product having isocyanate-derived linkages consisting essentially of isocyanurate and urethane linkages; wherein the crosslink density of said reaction product is in the range of about one crosslink per 400 to 800 atomic weight units; wherein said glass spheres are 2 to 20 percent by volume of said foam; and wherein said foam has a density in the range of 10 to 20 pounds per cubic foot; and wherein said foam exhibits a beam flexural modulus at least as great as that calculated from the formula $Log_{10}F=(0.05229)$-D+4.9542 wherein F is the beam flexural modulus in pounds per square inch and D is the density of the foam in pounds per cubic foot.

B 484,269
PREPARATION OF N,N-DISUBSTITUTED THIOAMIDES

Lacey E. Scoggins, and Donald H. Kubicek, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 28, 1974, Ser. No. 484,269

Int. Cl.² C07C *153/057;* **C07D** *207/26*

U.S. Cl. 260—326.5 FN **8 Claims**

References Cited

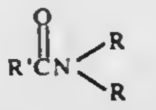
UNITED STATES PATENTS

2,368,515	1/1945	Blake	260/551 S UX
2,531,283	11/1950	Levesque	260/551 S
2,539,325	1/1951	Prochazka	260/239.3 R
2,560,296	7/1951	Levesque	260/551 S
3,192,210	6/1965	Lansford et al.	260/326.45 X

OTHER PUBLICATIONS

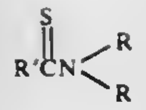
Hurd et al., Chem. Rev. 61, 45, (1961), pp. 46–49.

1. A method for preparing N,N-disubstituted thioamides consisting essentially of contacting at an elevated temperature in a range of 200°C to 350°C a sulfide selected from carbon disulfide or carbon oxysulfide with an N,N-disubstituted amide represented by the formula



$$R'\overset{\overset{O}{\|}}{C}N\begin{matrix}R\\R\end{matrix}$$

wherein each R is a hydrocarbyl radical selected from alkyl, cycloalkyl, aryl, and combinations thereof such as alkaryl, aralkyl, and the like, the number of carbon atoms in each R being within the range 1 to about 20, R' is selected from R and hydrogen, and the total number of carbon atoms in each of said amide or thioamide is within the range of 3 to about 30, with the proviso that R' and one R together can be - $(CR''_2)_n$ -, wherein R'' is selected from hydrogen, alkyl, cycloalkyl, and aryl, and combinations thereof such as alkaryl, aralkyl, and the like, n is an integer of 2 to about 12, and the total number of carbon atoms in - $(CR''_2)_n$ - is within the range of 2 to about 20, to produce a thioamide product represented by the formula



$$R'\overset{\overset{S}{\|}}{C}N\begin{matrix}R\\R\end{matrix}$$

wherein R, R', and R'' are the same as described above.

B 491,032
POLYCYCLIC LACTONES AS ODOUR- AND TASTE-MODIFYING AGENTS

Werner Skorianetz, Geneva, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

Filed July 23, 1974, Ser. No. 491,032

Claims priority, application Switzerland, Aug. 1, 1973, 11267/73

Int. Cl.² C07D *493/00*

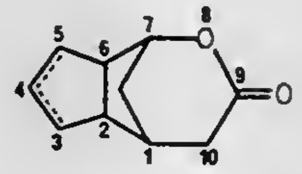
U.S. Cl. 260—343.2 R **4 Claims**

References Cited

OTHER PUBLICATIONS

House Modern Synthetic Reactions, 2nd Ed. (1972), pp. 321–327.

1. A tricyclic lactone of formula



I

wherein one of the rings contains a single or a double bond in one of the positions indicated by the dotted lines.

B 496,430
O-ETHYL-S-(N)-PROPYL-S-CARBAMOYLALKYL DITHIOPHOSPHATES

Ernst Beriger, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 315,973, Dec. 18, 1972, Pat. No. 3,845,171. This application Aug. 9, 1974, Ser. No. 496,430

Claims priority, application Switzerland, Dec. 24, 1971, 18909/71; Nov. 3, 1972, 16041/72

Int. Cl.² C07C *9/165;* **A01N** *9/36*

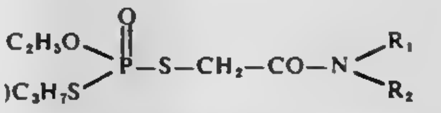
U.S. Cl. 260—940 **3 Claims**

References Cited

UNITED STATES PATENTS

3,033,744	5/1962	Losco et al.	260/940 X

1. A compound of the formula



$$\begin{matrix}C_2H_5O\\(n)C_3H_7S\end{matrix}\overset{\overset{O}{\|}}{P}—S—CH_2—CO—N\begin{matrix}R_1\\R_2\end{matrix}$$

wherein R_1 represents hydrogen or methyl and R_2 represents $—CH_2CN$, $—C_2H_4CN$.

B 498,205

RADIATION TREATMENT OF POLYMERS CONTAINING ISOBUTYLENE

Anton Shurpik, Hauppauge, N.Y., assignor to The Firestone Tire & Rubber Co., Akron, Ohio

Division of Ser. No. 321,814, Jan. 8, 1973. This application Aug. 16, 1974, Ser. No. 498,205

Int. Cl.^{2} C08F *2/46*; C08K *5/02*

U.S. Cl. 204—159.18 **5 Claims**

References Cited

UNITED STATES PATENTS

2,814,609	11/1957	Borunsky	204/159.18
2,945,792	7/1960	Miller	204/159.18
2,962,479	11/1960	Aldridge et al.	260/85.3 C
3,737,421	6/1973	Halasa	260/85.3 C

OTHER PUBLICATIONS

Turner, D. T., Radiation Crosslinking of Rubber–Effect of Additives Journal of Polymer Science, Vol. XXVII, pp. 503–514 (1958).

1. A process which comprises subjecting compositions containing polymers of isobutylene and copolymers thereof with isoprene, the isoprene content of the copolymers being from 0.6 to 3 mole percent, the average molecular weight of the polymers and copolymers being from 225,000 to 6,000,000 together with from about 1 to 10 percent by weight based on the total weight of polymer or copolymer of a halogenated hydrocarbon radiation catalyst to high energy ionizing radiation at a total dose of from 0.5 to 15 megarads.

B 503,579

3,3-DIALKYL-1-(SUBSTITUTED-PHENYL) TRIAZENE-1-XIDES

John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sept. 6, 1974, Ser. No. 503,579

Int. Cl.^{2} C07C *107/04*

U.S. Cl. 260—140 R **12 Claims**

References Cited

UNITED STATES PATENTS

3,138,521	6/1964	Jelinek et al.	260/140 X
3,206,357	9/1965	Cannon et al.	260/140 X
3,714,351	1/1973	Gubler	424/226

FOREIGN PATENTS OR APPLICATIONS

1,130,469	10/1968	United Kingdom	260/140
2,147,259	3/1972	Germany	424/226
791,322	5/1973	Belgium	260/140

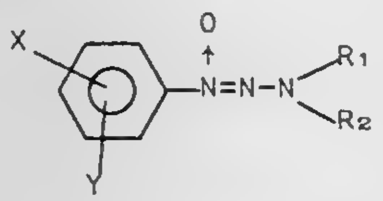
OTHER PUBLICATIONS

Behera et al., Spectrochim. Acta, Part A, 1971, 27(10), pp. 2273–2275.

Chakrauorty et al., Chemical Abstracts, Vol. 75 (1971).

Behera et al., Chemical Abstracts, Vol. 75 (1971).

1. A compound of the formula:



wherein R_1 and R_2 taken separately are C_1-C_3 alkyl or R_1 and R_2 taken together with the nitrogen to which they are attached form a heterocyclic group selected from the class consisting of piperidino, C_1-C_3 alkylpiperidino, di-(C_1-C_3 alkyl)piperidino, morpholino, and 3-(2-oxo-oxazolidino);

X is hydrogen, halo, nitro, C_1-C_3 lower alkoxy, C_1-C_3 lower dialkylamino, trifluoromethyl or C_1-C_3 lower alkyl, and Y is hydrogen, C_1-C_3 lower alkyl, halo or C_1-C_3 lower alkoxy.

B 505,126

REGENERATIVE FUEL CELL

James K. Stedman, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sept. 11, 1974, Ser. No. 505,126

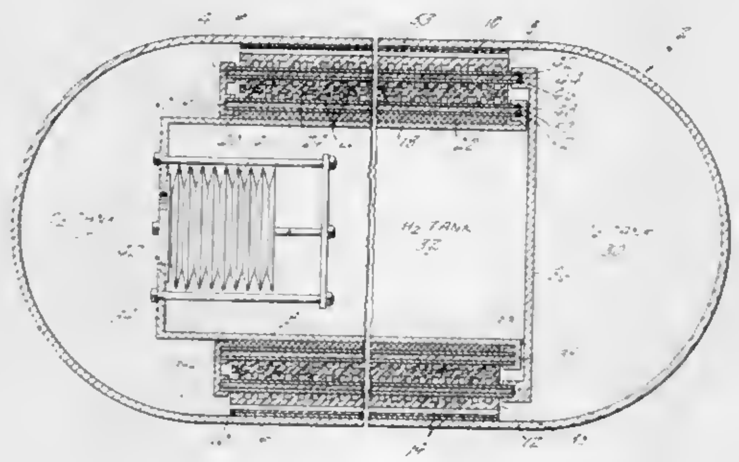
Int. Cl.^{2} H01M *33/00*

U.S. Cl. 136—86 R **1 Claim**

References Cited

UNITED STATES PATENTS

3,489,670	1/1970	Maget	204/129
3,839,091	10/1974	Bloomfield et al.	136/86 R



1. A regenerative fuel cell system which operates on hydrogen and oxygen, comprising:

a housing:

a first assembly disposed in said housing including a fuel cell having a hydrogen electrode, a first oxygen electrode and an electrolyte matrix disposed therebetween, and including a first oxygen passage in fluid communication with said first oxygen electrode, said first oxygen electrode being composed of a first material;

a second assembly disposed in said housing including an electrolysis cell having a hydrogen electrode, a second oxygen electrode and an electrolyte matrix disposed therebetween, and including a second oxygen passage in fluid communication with said second oxygen electrode, said second oxygen electrode being composed of a second material different from said first material, said fuel cell hydrogen electrode and said electrolysis cell hydrogen electrode being spaced apart and in facing relationship;

a water matrix disposed in the space between and in contact with said fuel cell hydrogen electrode and said electrolysis cell hydrogen electrode and including portions bridging said hydrogen electrodes for transporting water produced by said fuel cell during fuel cell operation to said electrolysis cell for use during electrolysis cell operation, said water matrix shaped to define hydrogen passages in communication with said fuel cell hydrogen electrode and said electrolysis cell hydrogen electrode, said first assembly having a water storage matrix associated with one of said fuel cell electrodes for storing water produced by said fuel cell during fuel cell operation, said water storage matrix being adjacent said first oxygen electrode of said fuel cell and in fluid communication with said water matrix;

fluid connecting means in communication with said hydrogen passages and said oxygen passages for providing hydrogen to said hydrogen passages and oxygen to said oxygen passages, and including seal means preventing said hydrogen passages from communicating with said oxygen passages; and means for operating said first assembly always as a fuel cell and said second assembly always as an electrolysis cell, said means being in electrical communication with said assemblies.

-6

B 506,144

PROCESS FOR MOLDING FOAMED PLASTICS FROM REACTION MIXTURES INVOLVING CLOSED MOLD FILLING WITH THE AVOIDANCE OF GAS BUBBLE ENTRAINMENT

Ulrich Knipp, Schildgen-Nittum, and Heinrich Boden, Opladen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 16, 1974, Ser. No. 506,144

Claims priority, application Germany, Sept. 27, 1973, 2348658

Int. Cl.^{2} B29D *27/00*

U.S. Cl. 264—51 **6 Claims**

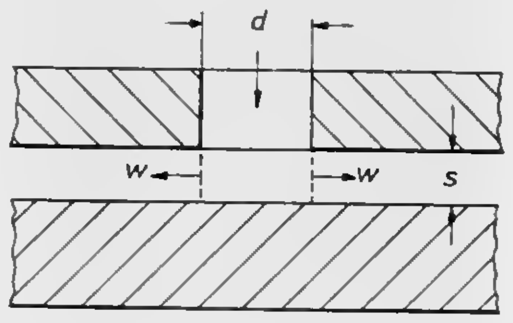
References Cited

UNITED STATES PATENTS

3,660,548	5/1972	Komada et al.	264/54 X
3,745,203	7/1973	Harper	264/DIG. 83
3,846,524	11/1924	Elmore et al.	161/161 X

OTHER PUBLICATIONS

Mobay Bulletins, "The Rolling Showcase For Engineering Plastics," Pittsburgh, Pa., Mobay Chemical Co., (1968), pp. 1–8.



1. A process for filling molds with reaction mixtures having viscosities in the range from 100 cP to 2500 cP, the reaction mixture flowing through a feed passage into a closed mold cavity onto that wall of the mold opposite the feed opening and being distributed around the mold cavity by flowing radially downwards, wherein the wall thickness *s* of the molding in the vicinity of the inlet opening and at the point in time at which the mixture is introduced amounts to between 0.5 and 15 mm, this wall thickness *s* in mm, the radial distribution rate w_{radial} of the reaction mixture in m/second between the feed opening and the opposite wall of the mold and the viscosity η of the reaction mixture in cP satisfying the following relation:

$$\frac{w_{radial}\ (\text{m/sec.}) \cdot s\ (\text{mm})}{\eta\ (\text{cP})} \leqslant 0.5$$

B 507,476

TEXTILE PRINT PASTES CONTAINING DISPERSE DYES

Richard Mueller; Rolf Fikentscher; Guenter Meyer, and Knut Oppenlaender, all of Ludwigshafen, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sept. 19, 1974, Ser. No. 507,476

Claims priority, application Germany, Oct. 1, 1973, 2349229

Int. Cl.^{2} D06P *1/16*

U.S. Cl. 8—62 **4 Claims**

References Cited

UNITED STATES PATENTS

3,223,471	12/1965	Kuth et al.	8/87
3,844,710	10/1974	Reinhandt et al.	8/62

1. A print paste for textile material consisting essentially of a polyester, cellulose acetate, cellulose triacetate and mixtures of the same which contains, in 1000 parts by weight of paste:

a. from 20 to 80 parts by weight of a disperse dye;
b. from 3 to 10 parts by weight of a twofold to sixfold oxyethylated phenol selected from the group consisting of mononuclear and binuclear phenols and bisphenols having a molecular weight of up to 250;
c. from 5 to 30 parts by weight of an ethanolamide of a carboxylic acid of twelve to twenty-four carbon atoms;
d. from 500 to 800 parts by weight of a thickening agent; and
e. water to make up the paste to 1,000 parts by weight.

B 510,458

RADIAL BLOCK COPOLYMERS STABILIZED BY A UREA COMPOUND

Lawrence M. Fodor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 342,531, March 19, 1973, Pat. No. 3,859,250. This application Sept. 30, 1974, Ser. No. 510,458

Int. Cl.^{2} C08K *5/52*

U.S. Cl. 260—880 B **4 Claims**

References Cited

UNITED STATES PATENTS

2,766,219	10/1956	Beaver	260/45.9 NC
2,781,330	2/1957	Downey	260/45.9 NC
3,355,419	11/1967	Cook	260/45.9 NC
3,355,421	11/1967	Cook	260/45.95 H
3,535,277	10/1970	Miller	260/45.95 H
3,629,372	12/1971	Drake	260/880 B
3,658,743	4/1972	Bevilacqua	260/45.9 NC

1. A composition stabilized against melt flow drop off comprising: a resinous radial block copolymer of a monovinyl-substituted aromatic compound and a conjugated diene having incorporated therein an effective stabilizing amount of a stabilizer system consisting essentially of (a) a sterically hindered phenol, (b) an organic phosphite, and (c) urea.

B 510,998

SHAPED ARTICLE FOR CONDITIONING HAIR FABRICATED FROM QUATERNARY NITROGEN-CONTAINING CELLULOSE ETHER

Joseph A. Faucher, Pleasantville, and Meyer R. Rosen, Spring Valley, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 1, 1974, Ser. No. 510,998

Int. Cl.^{2} A45D *24/00;* A61K *7/06;* C08L *1/28*

U.S. Cl. 260—17 R **7 Claims**

References Cited

UNITED STATES PATENTS

2,577,921	12/1951	Samel et al.	132/163
3,346,457	10/1967	Dasher	424/80
3,472,840	10/1969	Stone et al.	260/231
3,715,428	2/1973	Quasius et al.	132/7

FOREIGN PATENTS OR APPLICATI IS

1,144,878	3/1963	Germany	132/7

1. Shaped article for conditioning hair selected from the group consisting of combs, hair brushes and hair curlers which comprises a blend of a normally solid, water soluble organic polymer with a normally solid water insoluble organic polymer in which said polymers are present in an interpenetrating network and in which the ratio of water soluble organic polymer to water insoluble organic polymer is in the range of 99:1 to 1:99.

B 512,373

HINDERED PHENOLIC MONOCYCLIC PHOSPHONATES

John D. Spivack, Spring Valley, and Martin Dexter, Briarcliff, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 421,173, Dec. 3, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,373

Int. Cl.^{2} C07F *9/15;* C08K *5/53*

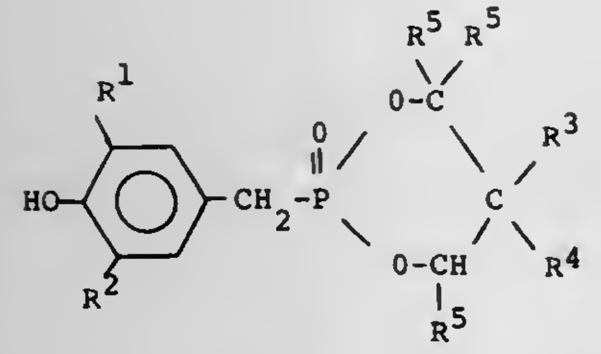
U.S. Cl. 260—937 **8 Claims**

Refereoces Cited

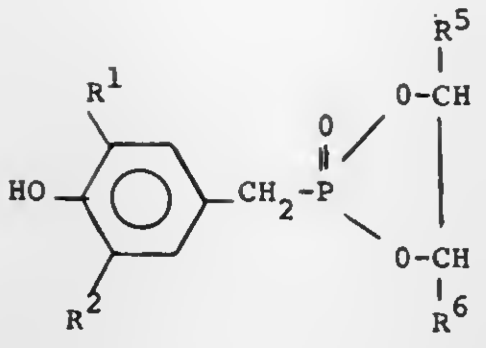
FOREIGN PATENTS OR APPLICATIONS

1,503,429	11/1967	France	260/937

1. A compound having the formula



or



wherein

R^1 is alkyl of 1 to 8 carbon atoms,

R^2 is tert-alkyl of 4 to 8 carbon atoms,

R^3 and R^4 are independently hydrogen or alkyl of 1 to 12 carbons, and

R^5 and R^6 are independently hydrogen, alkyl of 1 to 8 carbon atoms or phenyl, and providing that each R^5 does not have to be the same, or R^5 and R^6 together represent tetramethylene.

B 513,014

2-ALKOXY-3-OXIMINOCYCLOALKENES AND PRODUCTION THEREOF

Milorad M. Rogic, Whippany, and Robert Fuhrmann, Morris Plains, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 372,456, June 21, 1973, abandoned. This application Oct. 8, 1974, Ser. No. 513,014

Int. Cl.^{2} C07C *131/08*

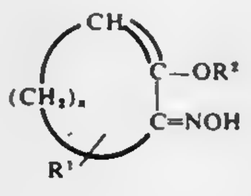
U.S. Cl. 260—566 A **6 Claims**

References Cited

UNITED STATES PATENTS

3,857,510	12/1974	Rogic et al.	260/566 A

1. 2-Alkoxy-3-oximinocycloalkenes of the formula:



wherein n is an integer 2–9, and R^1 is a member of the group consisting of hydrogen, aliphatic C_1–C_{10} saturated hydrocarbon radicals and R^2 is an aliphatic C_1–C_{10} saturated hydrocarbon radical or a cyclic aliphatic C_5–C_6 saturated hydrocarbon radical.

B 516,047

PRODUCTION OF P-HYDROXYCEPHALEXIN

Leonard Bruce Crast, Jr., Clay, and William Joseph Gottstein, Fayetteville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 289,703, Sept. 15, 1972, abandoned. This application Oct. 18, 1974, Ser. No. 516,047

Int. Cl.^{2} C07D *501/12*

U.S. Cl. 260—243 C **2 Claims**

References Cited

UNITED STATES PATENTS

3,708,478	1/1973	Chapman et al.	260/243 C
3,867,380	2/1975	Dunn et al.	260/243 C

1. The process of purifying a crude form of 7-(D-α-amino-4-hydroxyphenylacetamido)-3-cephem-4-carboxylic acid which comprises converting said crude acid to its solid, crystalline dimethylformamide solvate containing 1.5 moles dimethylformamide per mole of said acid, isolating said solid solvate, slurrying it in nearly boiling methanol, preferably at about 50° C., until the solvate dissociates, cooling the suspension and then collecting therefrom substantially pure, solid 7-(D-α-amino-4hydroxyphenylacetamido)-3-cephem-4-carboxylic acid.

2. Substantially pure, crystalline dimethylformamide solvate of 7-(D-α-amino-4-hydroxyphenylacetamido)-3-cephem-4-carboxylic acid containing 1.5 moles dimethylformamide per mole of said acid.

B 518,226

SEMICONDUCTOR DEVICE MANUFACTURE

Gordon Kenneth McGinty, Norley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1974, Ser. No. 518,226

Claims priority, application United Kingdom, Nov. 7, 1973, 51619/73

Int. Cl.^{2} H01L *21/263*

U.S. Cl. 148—1.5 **10 Claims**

References Cited

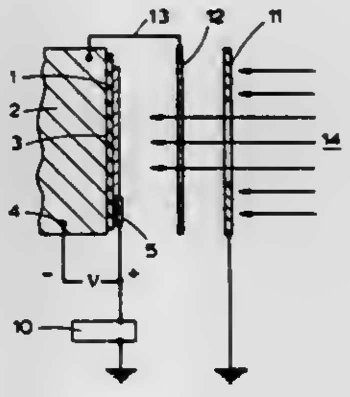
UNITED STATES PATENTS

3,383,567	5/1968	King et al.	148/1.5 X
3,413,531	11/1968	Leith	148/1.5 X
3,547,074	12/1970	Hirschfeld	148/1.5 X
3,717,785	2/1973	Guernet	250/492 A
3,750,083	7/1973	Fayling	335/290

1. A method of holding a semiconductor wafer against a support while effecting a processing step at the surface of the wafer remote from the support, comprising the steps of:

positioning a solid dielectric layer between facing surfaces of a support and a semiconductor wafer, said support and wafer being conductive, at least adjacent to said facing surfaces thereof, said dielectric layer preventing physical and electrical contact between said facing surfaces; and

applying a potential difference between said facing surfaces,



thereby clamping said wafer against said support by electrostatic force across said dielectric layer.

B 519,485

FIRE RETARDANT THERMOPLASTIC POLYMER COMPOSITIONS

Paul Kraft, Spring Valley, and Siegfried Altscher, Monsey, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 333,595, Feb. 20, 1973, Pat. No. 3,857,906, which is a division of Ser. No. 49,204, June 23, 1970, Pat. No. 3,725,509. This application Oct. 31, 1974, Ser. No. 519,485

Int. Cl.^{2} C08L *27/08, 75/04*

U.S. Cl. 260—859 R **8 Claims**

References Cited

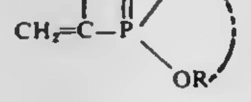
UNITED STATES PATENTS

3,759,851	9/1973	Carl et al.	260/859 PV X
3,780,141	12/1973	Jin et al.	260/859 PV X

1. A fire retardant, thermoplastic polymer composition comprising an intimate admixture of a polyurethane resin formed by reacting a bi- or polyfunctional hydroxyl containing compound with a di- or polysiocyanate and an effective concentration to render said polymer composition flame retardant of a copolymer of:

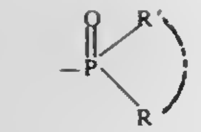
2. at least one halogen containing, ethylenically unsaturated monomer selected from the group consisting of vinyl halides, vinylidene halides, chlorinated styrenes, halogenated C_1–C_{12} alkyl acrylates and methacrylates, and halo-substituted nitriles of ethylenically unsaturated carboxylic acids; and

2. from about 2.5 to 99%, by weight of at least one bis(hydrocarbyl) vinylphosphonate having the structure:



$$CH_2{=}C(X){-}P(=O)(OR')(OR')$$

wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, C_1–C_{18} alkyl and



wherein R and R' are hydrocarbyl and substituted hydrocarbyl groups which can be the same, different or conjoint.

B 521,125
FLAME-RESISTANT FIBRES OF LINEAR, THERMOPLASTIC POLYESTERS

Jürgen Habermeier, Pfeffingen, and Hans Batzer, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 5, 1974, Ser. No. 521,125

Claims priority, application Switzerland, Nov. 13, 1973, 15957/73

Int. Cl.² C08G *63/68*

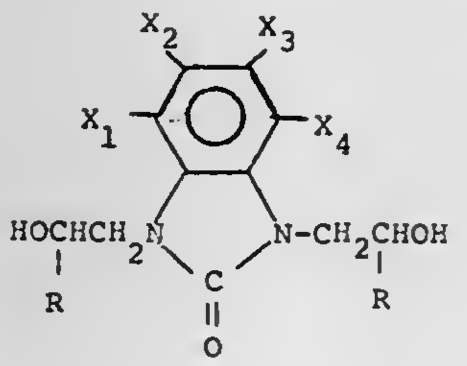
U.S. Cl. 260—75 N **12 Claims**

References Cited
UNITED STATES PATENTS

3,860,564	1/1975	Habermeier et al.	260/75 N

1. An improved process for preparing flame-resistant polyester fibers by melt spinning wherein the improvement comprises

melt spinning a copolyester of relative viscosity 1.1–2.0 dl/g, measured at 30°C on a 1% strength solution in equal parts of phenol and tetrachloroethane, consisting essentially in the total condensed diacid component of at least 50 mol % terephthalic acid and from 0 to 50 mol % of isophthalic acid, 2,5-dibromoterephthalic acid or 2,5-dichloroterephthalic acid; and in the total condensed diol component of at least 50 mol % of ethylene glycol or 1,4-butanediol, from 2 to 30 mol % of a diol of formula I



(I)

wherein R is hydrogen, methyl, ethyl or phenyl and X_1, X_2, X_3 and X_4 are independently of one another chlorine or bromine, and from 0 to 48 mol % of an aliphatic diol of 3 to 10 carbon atoms other than 1,4-butanediol; 1,4-cyclohexanediol or 1,4-cyclohexanedimethanol.

B 521,126
FLAME-RESISTANT, THERMOPLASTIC POLYESTERS

Jurgen Habermeier, Pfeffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 5, 1974, Ser. No. 521,126

Claims priority, application Switzerland, Nov. 13, 1973, 15956/73

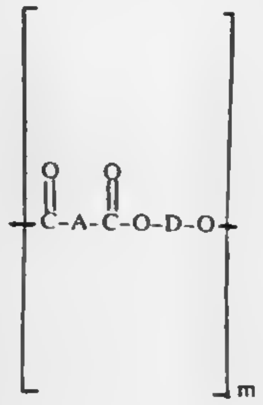
Int. Cl.² C08G *63/68*

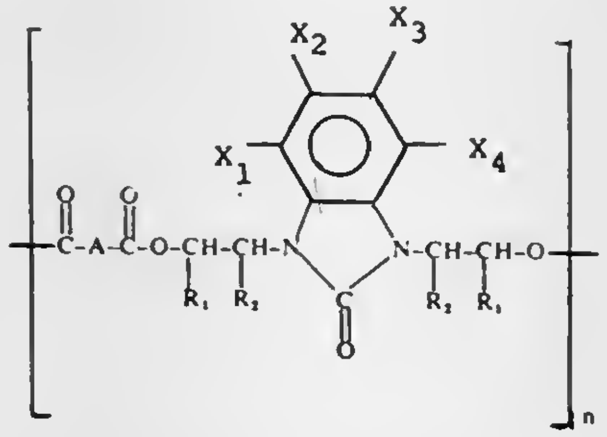
U.S. Cl. 260—75 N **13 Claims**

References Cited
UNITED STATES PATENTS

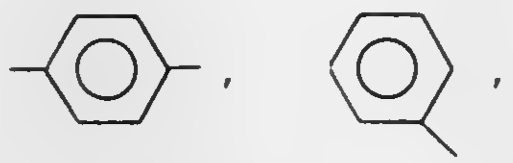
3,763,269	10/1973	Formaini	260/75 N
3,860,564	1/1975	Habermeier et al.	260/75 N

1. A flame-resistant, linear, thermoplastic polyester having a relative viscosity of 1.10 to 4.0 dl/g, measured at 30°C on a 1% strength solution consisting of equal parts of phenol and tetrachloroethane, and characterised by the general formula I





wherein A denotes a radical of the formulae



$-(CH_2)_2-$ or $-(CH_2)_4-$, or a mixture of the above mentioned A radicals; D represents an aliphatic alkylene radical with 2 to 12 carbon atoms or the 1,4-dimethylenecyclohexane radical, or a mixture of the aforementioned D radicals; R_1 each denote a hydrogen atom, or the methyl, ethyl or phenyl group and R_2 denotes a hydrogen atom or together with R_1 denotes the tetramethylene radical, X_1 and X_4 independently of one another represent chlorine, a hydrogen atom or a bromine atom and X_2 and X_3 independently represent a chlorine or a bromine atom, *m* represents 0 or integers and n represents integers, and the molar fraction $n/(n + m)$ determined by *n* and *m* can assume values

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B 521,128
UNSATURATED LINEAR POLYESTERS

Hans Batzer, Arlesheim, and Jürgen Habermeier, Pfeffingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 5, 1974, Ser. No. 521,128

Claims priority, application Switzerland, Nov. 13, 1973, 15954/73; Aug. 6, 1974, 10736/74

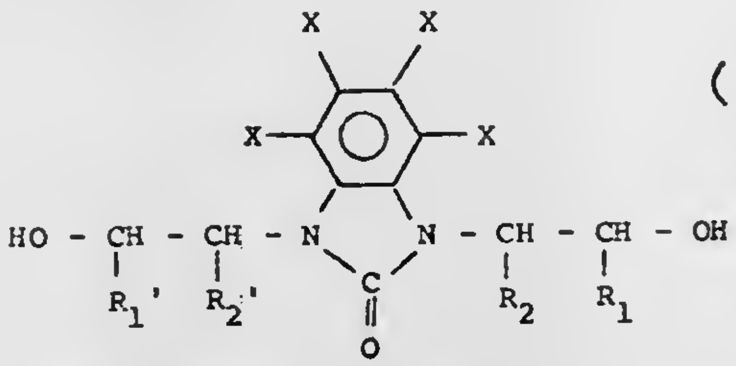
Int. Cl.² C08G *63/68*

U.S. Cl. 260—75 N **4 Claims**

References Cited
UNITED STATES PATENTS

3,763,269	10/1973	Formaini	260/75 UA
3,860,564	1/1975	Habermeier et al.	260/75 N

1. An unsaturated, flame-retardant, linear polyester consisting essentially in the total condensed acid component of at least 20 mol % of an unsaturated dicarboxylic acid selected from the group consisting of maleic, fumaric, itaconic, citraconic and dimethylmaleic acids and up to 80 mol % of a saturated aromatic or aliphatic dicarboxylic acid selected from the group consisting of phthalic, terephthalic, isophthalic, 2,5-dibromoterephthalic, succinic, glutaric, adipic, pimelic, suberic, azelaic and sebacic acids; and in the total condensed diol component of at least 18 mol % of a brominated or of at least 47 mol % of a chlorinated benzimidazolone diol of formula I



(I)

wherein X independently denotes bromine or chlorine, R_1 and R_1' each denotes hydrogen, methyl, ethyl or phenyl, and R_2 and R_2' each denotes hydrogen or R_1 together with R_2 and R_1' together with R_2' each denote trimethylene or tetramethylene; the amount of diol of formula I incorporated in said polyester being that required to bring the bromine content of said polyester to at least 15 weight % or the chlorine content to at least 20 weight %; and with the remaining condensed diol component selected from the group consisting of ethylene glycol, diethylene glycol, polyethylene glycol of up to 24 carbon atoms, propylene glycol, dipropylene glycol, polypropylene glycol of up to 24 carhon atoms, 1,4-butanediol, 1,12-dodecanediol, neopentyl glycol and 1,4-cyclohexanediol.

B 521,711
METHOD OF USING 6-SUBSTITUTED AMINO PHENYL-,3,5,6-TETRA-HYDRO[2,1-B]THIAZOLES FOR CONTROLLING GASTROINTESTINAL NEMATODES

Larry Dean Spicer, Princeton, and John James Hand, Trenton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 416,464, Nov. 16, 1973, Pat. No. 3,899,583, which is a division of Ser. No. 289,016, Sept. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 174,939, Aug. 25, 1971, abandoned, which is a continuation-in-part of Ser. No. 22,701, March 25, 1970, Pat. No. 3,673,205. This application Nov. 7, 1974, Ser. No. 521,711

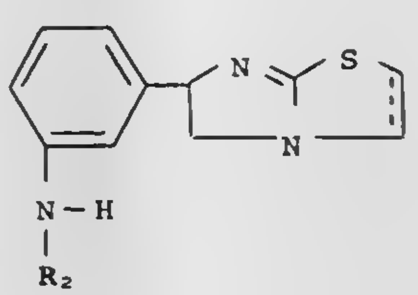
Int. Cl.² A61K *31/425*

U.S. Cl. 424—270 **4 Claims**

References Cited
UNITED STATES PATENTS

3,505,346	4/1970	Berkelhammer et al.	424/270

1. A method for controlling gastrointestinal nematodes in warm-blooded animals comprising administering to said animals, a nematocidally effective amount of a compound of the formula:



wherein R_2 is selected from the group consisting of naphthoyl, furoyl and adamantyl carbonyl, and ⩦ is a single or double bond and the pharmaceutically acceptable salts thereof.

B 524,026
METHOD OF MAKING LENTICULAR SURFACES

Robert L. Lamberts, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 290,938, Sept. 21, 1972, abandoned, which is a continuation-in-part of Ser. No. 186,130, Oct. 4, 1971, abandoned. This application Nov. 15, 1974, Ser. No. 524,026

Int. Cl.² G03C *5/00, 5/04*

U.S. Cl. 96—35 **19 Claims**

References Cited
UNITED STATES PATENTS

2,794,739	6/1957	Gretener	96/81
3,425,770	2/1969	Mueller et al.	350/162 R
3,582,329	6/1971	Ivanov et al.	96/35
3,592,529	7/1971	Juhlin et al.	350/162 R
3,775,110	11/1973	Bestenreiner et al.	96/81

OTHER PUBLICATIONS

R. L. Lamberts, "Characterization of a Bleached Photographic Material", Jan. '72, Applied Optics, Vol. 11, No. 1.

1. A method of producing an array of cylindrical, lenticular elements on the emulsion surface of a photographic material having operating and frequency response curves in accordance with the photographic characteristics of the emulsion, each of the elements having the same predetermined profile, comprising the steps of:

forming a light modulating target having a cyclical, one-dimensional, profile pattern of the lenticular elements, the profile pattern being mathematically related to the cross section of the predetermined profile and the operating and frequency response curves of the emulsion;

establishing an exposure for the photographic material in accordance with the sensitometric characteristics thereof;

positioning the light modulating target in the object plane of an optical system including a cylindrical lens, the optical system sharply imaging the target profile so as to produce an extending pattern of parallel equal exposure levels normal to the target profile, as represented by spaced parallel lines, in a plane including the emulsion surface of the photographic material;

exposing the photographic material in accordance with the established exposure to a source of light modulated by the target pattern; and processing the photographic material so as to produce on the emulsion surface a relief image comprising the array of cylindrical lenticular elements having the same predetermined profile.

4. A method of producing an array of lenticules on the emulsion surface of a photographic material having operating and frequency response curves in accordance with the photographic characteristics of the emulsion, each of the elements having the same predetermined cross section, comprising the steps of:

forming a first light modulating target having a first cyclical pattern of predetermined profile for the lenticule cross section in one direction, the pattern being mathematically related to the cross section and the operating and frequency response curves of the emulsion;

forming a second light modulating target having a second cyclical pattern of predetermined profile for the lenticule cross section in an other direction perpendicular to the one direction, the pattern being related to the cross section in the other direction and the operating and frequency response curves of the emulsion;

establishing an exposure for a first and a second photographic material on which the first and second targets are to be exposed, respectively;

positioning successively the first and second targets in the object plane of an optical system including a cylindrical lens, the optical system sharply imaging the targets so as to produce with respect to each cyclical pattern an extending pattern of parallel, equal exposure levels normal to the profile patterns, as represented by spaced parallel lines, in a plane including the emulsion surface of the first and second photographic materials, respectively;

exposing successively the first and second photographic materials in accordance with the established exposure to a source of light modulated, respectively, by the first and second cyclical patterns;

processing the first and second photographic materials to produce respective first and second images comprising parallel regions of equal density corresponding, respectively, to the first and second cyclical patterns;

superimposing the first and second photographic materials in the object plane of a second optical system such that the parallel regions of equal density are oriented relative to one another at an angle greater than zero;

exposing the photographic material positioned in the image plane of the second optical system to the superimposed and oriented images on the first and second photographic materials; and

processing the photographic material so as to produce on the emulsion surface thereof a relief image comprising the array of lenticules having the same predetermined cross section.

B 524,464
WETTABLE POLYOLEFIN BATTERY SEPARATOR

Joseph Cogliano, Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,464

Int. Cl.² H01M ***2/14***

U.S. Cl. 136—148 **4 Claims**

References Cited

UNITED STATES PATENTS

2,653,985	9/1953	Philipps	136/148
3,351,495	11/1967	Larsen	136/146
3,696,061	10/1972	Selsor et al.	136/146
3,702,267	11/1972	Grot	136/146
3,847,676	11/1974	Palmer et al.	136/148

1. In a process for preparing a porous compacted, selfsupporting, nonwoven mat of polyolefin fiber useful as a battery separator comprising extruding a heated polyolefin through multiple die openings into a gas stream to attenuate the polyolefin into fibers having a diameter of about 1–10 microns, collecting the fibers as a selfsupporting nonwoven mat having a thickness of 20–100 mils, contacting the selfsupporting nonwoven mat with an aqueous system comprising of water and an amount of a surfactant effective for making the selfsupporting nonwoven mat wettable, drying the resulting wettable, selfsupporting, nonwoven mat, and compacting the dried, wettable, selfsupporting, nonwoven mat to form the porous compacted, wettable, selfsupporting, nonwoven mat of polyolefin fiber useful as a battery separator, said compacted mat having a thickness of about 10–40 mils and pores having a pore size of about 10–40 microns, the improvement comprising the presence in the aqueous system of an amount of colloidal silica effective for causing the compacted, wettable, selfsupporting, nonwoven mat to remain wettable after being washed with running water for about 16 hours.

B 528,303
POLYURETHANES WHEREIN THE CHAIN-LENGTHENING AGENTS ARE BENZOIC ESTER DIAMINES

Johannes Blahak, Cologne; Erwin Müller; Uwe Döbereiner, both of Leverkusen; Wolfgang Ebner, Opladen, and Helmut Kleimann, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 307,739, Nov. 17, 1972, abandoned. This application Nov. 29, 1974, Ser. No. 528,303

Claims priority, application Germany, Dec. 7, 1971, 2160589

Int. Cl.² C07C ***101/68;*** **C08G** ***18/32***

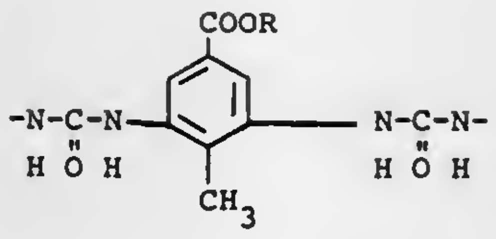
U.S. Cl. 260—18 TN **2 Claims**

References Cited

UNITED STATES PATENTS

3,681,290	8/1972	Meckel et al.	260/77.5 AM
3,794,621	2/1974	Meckel et al.	260/77.5 AM

1. Polyurethane resins containing structural units of the formula:



wherein R is a linear or branched C_1 to C_{20} alkyl radical which may contain oxygen or sulphur.

B 531,096
1-NITROPHENYLPYRIDO [2,3-D] PYRIMIDINE-2,4(1H,3H)-DIONES

Kanji Noda, Chikushino; Akira Nakagawa; Toshiharu Motomura, both of Tosu, and Hiroyuki Ide, Fukuoka, all of Japan, assignors to Hisamitsu Pharmaceutical Co., Inc., Tosu, Japan

Filed Dec. 9, 1974, Ser. No. 531,096

Claims priority, application Japan, Dec. 18, 1973, 48-142771

Int. Cl.² C07D ***239/00***

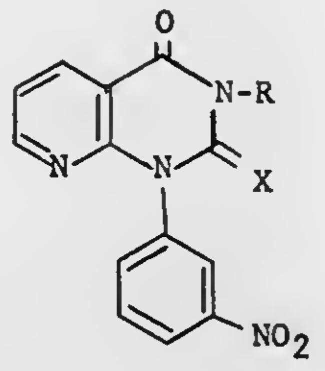
U.S. Cl. 260—256.5 R **3 Claims**

References Cited

UNITED STATES PATENTS

3,235,554	2/1966	Papesch	260/256.4

1. A compound of the formula:



wherein R is selected from the group consisting of hydrogen, lower alkyl having from one to 6 carbon atoms, lower alkenyl having from 3 to 5 carbon atoms, propargyl, cyclopropylmethyl, lower haloalkyl having from one to 3 carbon atoms, lower trihaloalkyl having from one to 3 carbon atoms, vinyloxyethyl, acetoxyethyl, lower hydroxyalkyl having from 2 to 3 carbon atoms, lower alkoxyalkyl having from 2 to 4 carbon atoms, haloallyl, hydroxyethoxyethyl, ethoxycarbonylmethyl, carboxymethyl, 2,3-epoxypropyl, diethylaminoethyl, 4-methylpiperazinoethyl, benzyl, phenethyl and cinnamyl; x is selected from the group consisting of O and S.

B 534,314
ECM AND EDM TOOLING FOR PRODUCING HOLES IN AIRFOIL TRAILING EDGES

Laurance R. Andrews, Agawam, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 19, 1974, Ser. No. 534,314

Int. Cl.² C25F ***7/00;*** **B23K** ***9/24***

U.S. Cl. 204—224 M **10 Claims**

References Cited

UNITED STATES PATENTS

3,801,489	4/1974	Samson	204/224 M X
3,803,015	4/1974	Andrews	204/224 M
3,842,480	10/1974	Milulski	204/224 M X

1. A device for supporting a plurality of electrode tubes for drilling a row of holes in a workpiece, said device including:

a base,

a locating fixture for a workpiece,

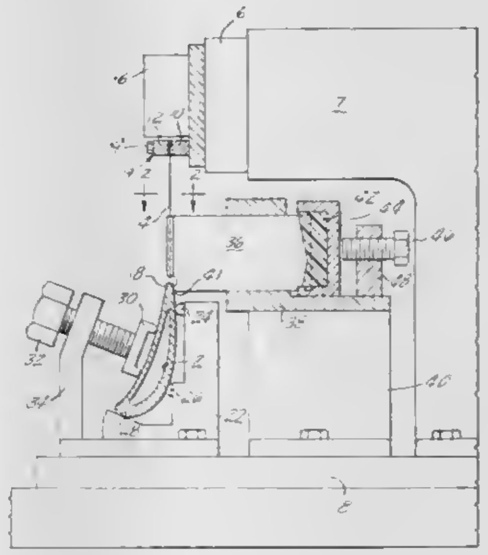
a plurality of electrodes,

a support for the electrodes movable toward and away from the fixture,

a plurality of guides for the electrodes adjacent to the fixture,

a plurality of movable slides in parallel arrangement, one for each guide and on which the respective guides are mounted,

locating means on each slide having a surface engageable with a portion of the workpiece adjacent to the desired location of the hole therein, and



resilient means acting on each slide in a direction substantially at right angles to the movement of the support for holding it against the workpiece with the electrode properly located relative to the workpiece.

B 538,753
PENICILLINS

Wilfried Schröck; Karl-Georg Metzger, and Hans-Bodo König, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 461,227, April 15, 1974. This application Jan. 6, 1975, Ser. No. 538,753

Claims priority, application Germany, Apr. 19, 1973, 2320039

Int. Cl.² C07D ***499/68, 499/70***

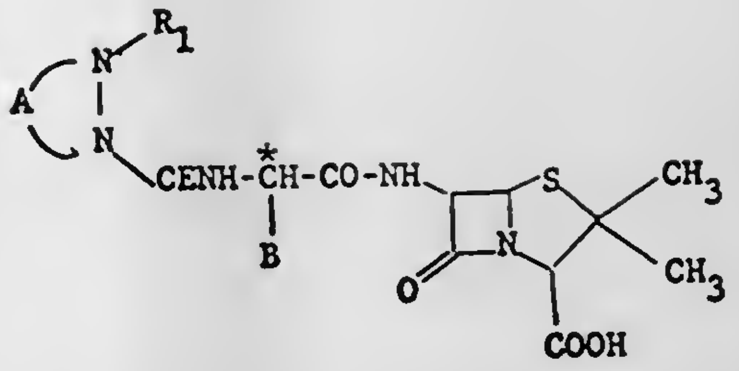
U.S. Cl. 260—239.1 **43 Claims**

References Cited

UNITED STATES PATENTS

3,268,513	8/1966	Grant et al.	260/239.1
3,433,784	3/1969	Long et al.	260/239.1
3,518,253	6/1970	Fosker	260/239.1

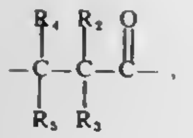
1. A compound of the formula:



or a pharmaceutically acceptable nontoxic salt thereof wherein

R_1 is hydrogen, straight or branched chain alkyl of 1 to 5 carbon atoms, monoaralkyl of up to 8 carbon atoms, monoaryl, or thienyl;

A is a moiety of the formula:

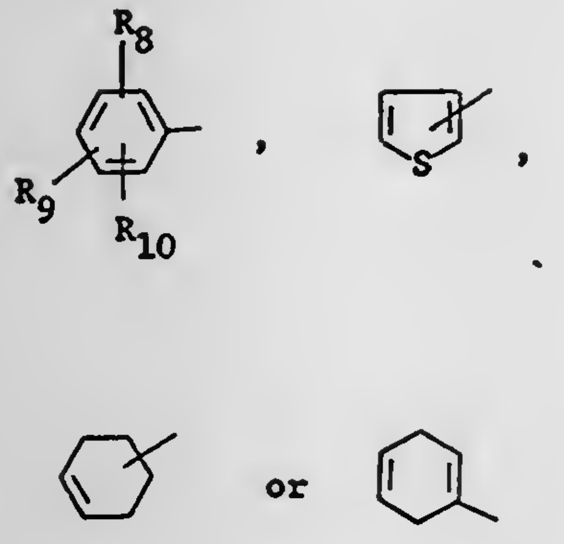


$$-\overset{R_4}{\underset{R_5}{C}}-\overset{R_2}{\underset{R_3}{C}}-\overset{O}{\overset{\|}{C}}-,$$

wherein

R_2, R_3, R_4 and R_5 are the same or different and each is hydrogen, straight or branched chain alkyl of 1 to 5 carbon atoms, monoaralkyl of up to 8 carbon atoms, monoaryl, or thienyl;

B is a moiety of the formula:



wherein

R_8, R_9 and R_{10} are the same or different and each is hydrogen, fluorine, chlorine, bromine, iodine, lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulphonyl, sulphamyl, nitro, cyano, di(lower alkyl)amino, lower alkanoylamino, lower alkanoyloxy, lower alkylsulphonylamino, trifluoromethyl or hydroxy;

E is oxygen or sulphur; and

C is a carbon atom constituting a center of chirality.

B 542,135

METHOD FOR ENHANCING THE BONDABILITY OF METALLIZED THIN FILM SUBSTRATES

Arthur L. Prest, Watertown, Mass., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 17, 1975, Ser. No. 542,135

Int. Cl.² C25D *5/02, 5/24*

U.S. Cl. 204—15 **6 Claims**

References Cited

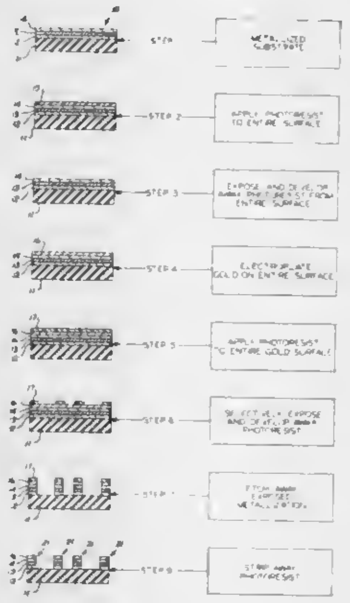
UNITED STATES PATENTS

3,467,540	9/1969	Schick	204/29
3,745,094	7/1973	Greene	204/15
3,862,875	1/1975	Uchytil	204/15

1. A method for enhancing the bondability of a metallized substrate having a conductive material electroplated thereon, the method comprises the steps of:

coating the entire metallized substrate with a positive liquid photoresist;

exposing and developing away the entire coating of the positive liquid photoresist; and


METALLIZED SUBSTRATE
STEP 2
APPLY PHOTORESIST TO ENTIRE SURFACE
STEP 3
ENTIRE SURFACE
STEP 4
ELECTROPLATE GOLD ON ENTIRE SURFACE
STEP 5
APPLY PHOTORESIST TO ENTIRE GOLD SURFACE
PHOTORESIST

electroplating the conductive material on the metallized substrate.

B 545,464

OCTAHYDROPYRINDINE PHOSPHORYLACYLAMINES

Elmar Sturm, Aesch, Switzerland, and Hans Jörg Cellarius, deceased, late of Riehen, Switzerland (by Herta Cellarius-Haigermoser, legal representative), assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 324,469, Jan. 17, 1973, Pat. No. 3,876,643. This application Jan. 30, 1975, Ser. No. 545,464

Claims priority, application Switzerland, Jan. 20, 1972, 910/72

Int. Cl.² C07F *9/165, 9/40*

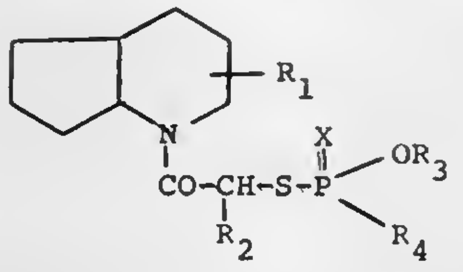
U.S. Cl. 260—293.54 **9 Claims**

References Cited

UNITED STATES PATENTS

3,134,801	5/1964	Sehring et al.	260/293.85
3,772,312	11/1973	Sturm et al.	260/293.54
3,806,560	4/1974	Kishino et al.	260/293.85

1. A phosphorylacylamine compound of the formula



wherein each of R_1 and R_2 is hydrogen or methyl; R_3 is alkyl of from 1 to 4 carbon atoms; R_4 is alkyl, alkoxy or alkylthio of from 1 to 4 carbon atoms; and X is oxygen or sulphur.

B 552,489

LINEAR, THERMOPLASTIC POLYESTERS

Lothar Buxbaum, Lindenfels, Germany; Jurgen Habermeier, Pfeffingen, and Hans Batzer, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 488,625, July 15, 1974. This application Feb. 24, 1975, Ser. No. 552,489

Claims priority, application Switzerland, July 30, 1973, 11054/73

Int. Cl.² C08G *63/68*

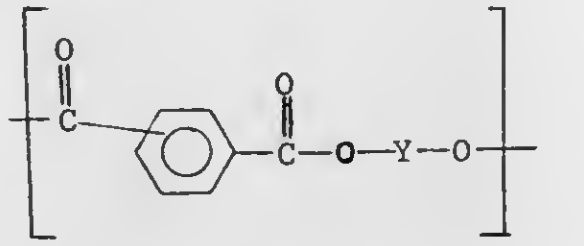
U.S. Cl. 260—75 N **6 Claims**

References Cited

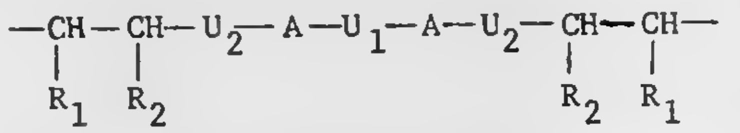
UNITED STATES PATENTS

3,856,754	12/1974	Habermeier et al.	260/75 N
3,860,564	1/1975	Habermeier et al.	260/75 N

1. A linear, thermoplastic polyester or random copolyester having a relative viscosity of 0.5 – 4.0, measured at 30°C on a 1% strength solution consisting of equal parts of phenol and tetrachloroethane, characterised by a repeating unit of the general formula I

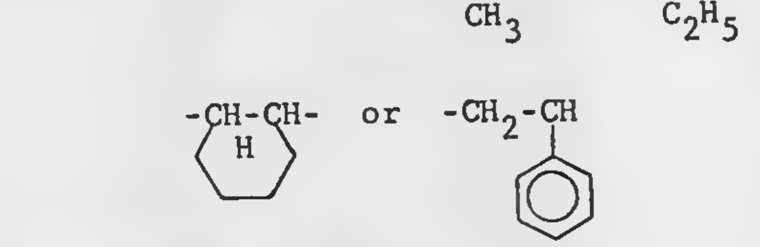

(I)

wherein the carbonyl groups can be linked to the aromatic rings in the meta- and/or para-position, Y represents *m* moles of E and *n* moles of



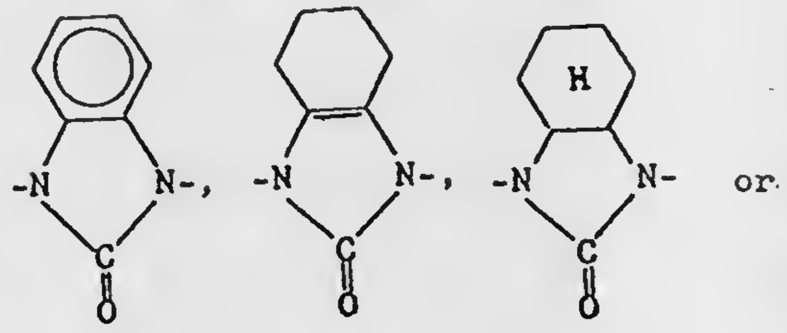
$$-\underset{R_1}{CH}-\underset{R_2}{CH}-U_2-A-U_1-A-U_2-\underset{R_2}{CH}-\underset{R_1}{CH}-$$

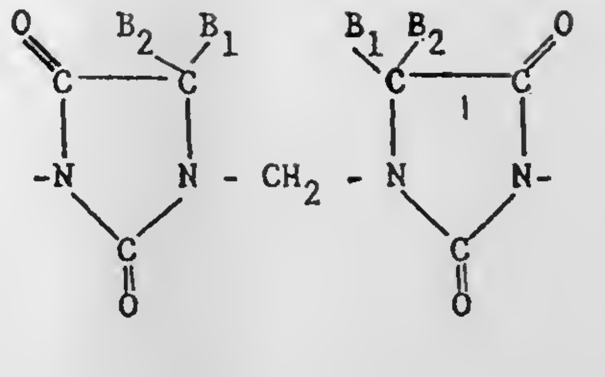
in a mixture so general formula I represents a random copolymer except when *m* is zero and only one acid component is used, E represents an aliphatic radical with 2 to 10 carbon atoms which is linear or is branched by means of a methyl or ethyl group, or the 1,4-dimethylenecyclohexane radical, R_1 in each case denotes a hydrogen atom, or a methyl, ethyl or phenyl group, and R_2 denotes a hydrogen atom or, conjointly with R_1, denotes the tetramethylene radical, A denotes a radical of the formulae



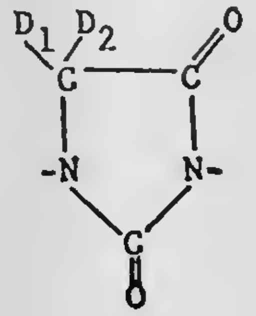
$$-CH_2-,\ -CH_2-CH_2-,\ -CH_2-\underset{CH_3}{CH}-,\ -CH_2-\underset{C_2H_5}{CH}-,$$

U_1 denotes a radical of the following formulae





wherein B_1 and B_2 independently of one another each denote a hydrogen atom or an alkyl radical with 1 to 4 carbon atoms, and U_2 has the same meaning as U_1 or denotes a radical of the formula



wherein D_1 and D_2 independently of one another each denote a hydrogen atom, an alkyl radical with 1 to 4 carbon atoms or the phenyl group or, conjointly, denote the pentamethylene radical, *m* represents 0 or integers and *n* represents integers, it being possible for the mol fraction $n/(n+m)$ derived from *n* and *m* to assume values from 0.02 to 1.

B 557,856

PROCESS FOR FORMING A FLAME RETARDANT ARTICLE AND ARTICLE THEREOF

Kyung S. Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 460,399, April 12, 1974, Pat. No. 3,887,656. This application Mar. 12, 1976, Ser. No. 557,856

Int. Cl.² C08G *18/14*; B05D *1/02, 1/28*

U.S. Cl. 260—2.5 AJ **13 Claims**

References Cited

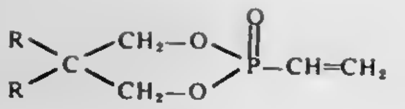
UNITED STATES PATENTS

3,033,887	5/1962	Wadsworth et al.	260/937
3,033,888	5/1962	Wadsworth et al.	260/937
3,257,480	6/1966	Hechenbleikner et al.	260/937
3,382,301	5/1968	Hechenbleikner et al.	260/2.5 AJ

OTHER PUBLICATIONS

Pudovik et al., Chem. Abs., Vol. 64 (1965) 159166.

8. A flame retardant article comprising a substrate and an effective amount of flame retarding of a compound having the formula:



wherein R is selected from the group consisting of the straight and branched C_1–C_{12} alkyl groups, the phenyl group, the bromo and chloro substituted C_1–C_{12} alkyl groups, and the bromo and chloro substituted phenyl groups.

B 560,717
FLAVORING WITH 2,4,6-TRIMETHYL-S-TRITHIANE

Richard Arnold Wilson, Edison; Ira Katz, Elberon; Manfred H. Vock, Locust, all of N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 166,683, July 28, 1971, abandoned. This application Mar. 21, 1975, Ser. No. 560,717

Int. Cl.² A23L *1/231, 1/235, 1/226*

U.S. Cl. 426—535 **1 Claim**

References Cited

UNITED STATES PATENTS

2,213,804	9/1940	Lincoln et al.	260/327 UX
2,594,379	4/1952	Barch	426/533

OTHER PUBLICATIONS

Chem. Abstracts, Vol. 44, 1950, 16952c, Abstracting Food Research, pp. 15322–15325, (1950).

Pippen et al., Hydrogen Sulfide, A Direct and Potentially Indirect Contributor to Cooked Chicken Aroma, J. Food Science, 34, 1969, pp. 443–446.

1. A process for altering, modifying or enhancing the black currant flavor of a foodstuff having a black currant taste which comprises adding thereto from about 0.02 up to 100 parts per million by weight of a substantially pure form of 2,4,6-trimethyl-S-trithiane.

B 561,387
SMOKE-RETARDANT FOR CHLORINATED POLYETHYLENE AND VINYL CHLORIDE POLYMERS

Edward L. Kay, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 24, 1975, Ser. No. 561,387

Int. Cl.² C08J *3/20*

U.S. Cl. 260—45.75 W **5 Claims**

References Cited

UNITED STATES PATENTS

3,524,761	8/1970	Humphrey	260/45.75 W
3,869,420	3/1975	Mathis et al.	260/45.7 R

OTHER PUBLICATIONS

Fire and Flammability Series – Vol. 7 – Flammability of Solid Plastics (1974), pp. 251–275.

1. A polymer composition of the class consisting of chlorinated polyethylene and polyvinyl chloride which polymer has a chlorine content of 10 to 75 per cent and is compounded with 1 to 25 parts of zinc borate ($2ZnO.3B_2O_3$. 3.5 H_2O) and 6 to 150 parts of $Al_2O_3.3H_2O$ which act synergistically as a smoke suppressant when the polymer composition is burned.

B 575,851
HYDROGENATED BLOCK COPOLYMERS OF BUTADIENE AND ISOPRENE

Shingo Futamura, Seville, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 484,486, July 1, 1974. This application May 8, 1975, Ser. No. 575,851

Int. Cl.² C08F *15/04, 15/40*

U.S. Cl. 260—876 B **11 Claims**

References Cited

UNITED STATES PATENTS

3,452,118	6/1969	Winkler et al.	260/879
3,465,063	9/1969	Hassell et al.	260/876

1. A hydrogenated block copolymer of improved permanent set and related properties comprising essentially at least 5–15 alternating blocks of hydrogenated butadiene and hydrogenated isoprene, which hydrogenated isoprene block may contain up to 50 percent by weight of hydrogenated butadiene, the hydrogenated butadiene portions representing 5–70 percent by weight and the hydrogenated isoprene portions representing 30–95 percent by weight, based on the total copolymer weight, each block of said copolymer being equivalent to a molecular weight of 1,000–100,000.

B 583,712
METHOD AND APPARATUS FOR FORMING CHEWING GUM BASE AND PRODUCT

Charles W. Ehrgott, Katonah, N.Y., and Raymond L. Roy, Danbury, Conn., assignors to Life Savers, Inc., New York, N.Y.

Filed June 4, 1975, Ser. No. 583,712

Int. Cl.² A23G *3/30, 3/00*

U.S. Cl. 426—3 **14 Claims**

References Cited

UNITED STATES PATENTS

2,489,147	11/1949	Lougovoy	426/3
2,635,964	4/1953	Hewitt	426/3
3,666,492	5/1972	Teng	426/3

1. A process for preparing a chewing gum base, which comprises mixing chewing gum elastomer and elastomer solvent under high shear conditions to form a first dry solids mixture, mixing the first dry solids mixture with hydrophobic plasticizer and hydrophilic plasticizer under reduced shear conditions and increased folding action to form a second mixture and mixing the second mixture with oleaginous plasticizer and emulsifier under rapid folding action and substantially no shear to form a chewing gum base.

ELECTRICAL APPLICATIONS

B 78,315
MINIPOWERED OPTIONAL SELF CHECKING ELECTRONIC TIMER FOR ORDNANCE

John E. Newton, East Aurora, N.Y.; Maxine Bohacz, Denville, and Jerry H. Lyon, Stanhope, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 3, 1970, Ser. No. 78,315

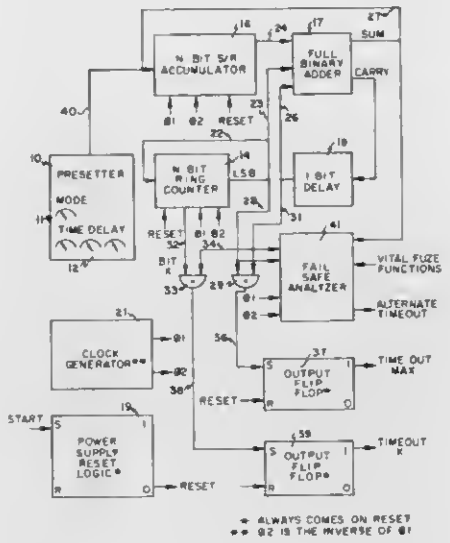
Int. Cl.² H03K *5/13, 5/159*

U.S. Cl. 328—129 **9 Claims**

References Cited

UNITED STATES PATENTS

3,108,228	10/1963	Clapper	328/43
3,371,579	3/1968	Kinzelman	236/92 T



1. A time delay circuit including:

a first shift register having an input and an output;

a second shift register having an input and an output;

means for connecting said input of said first shift register to said output thereof;

a full binary adder having first, second and third inputs, a sum output and a carry output;

means for connecting said output of said second shift register to said first input of said full binary adder;

means for connecting said sum output to said input of said second shift register;

means for connecting said output of said first shift register to said second input of said full binary adder;

delay means for connecting said carry output to said third input of said binary full adder;

an "And" gate having first and second inputs;

means for connecting said output of said first shift register to said first input of said "And" gate; and

means for connecting said third input of said binary full adder to said second input of said "And" gate.

B 403,507
RESPIRATORY HUMIDIFIER

Thomas C. Robinson, Berkeley, Calif., assignor to Searle Cardio-Pulmonary Systems Inc., Emeryville, Calif.

Filed Oct. 4, 1973, Ser. No. 403,507

Int. Cl.² H05B *1/00;* **A61M** *15/00;* **B01F** *3/04*

U.S. Cl. 219—273 **8 Claims**

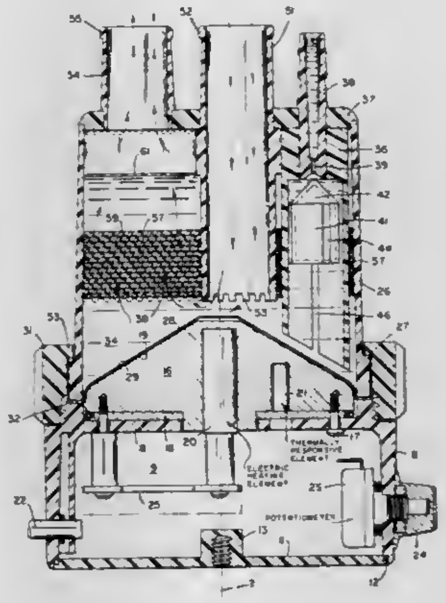
References Cited

UNITED STATES PATENTS

1,116,931	11/1914	Schutt	137/202
1,373,072	3/1921	Holmberg	137/202 X
1,664,333	3/1928	Taylor	261/122 X
2,082,363	6/1937	Stone	261/123
2,164,881	7/1939	Meyerson	128/192
3,659,604	5/1972	Melville et al.	219/272 UX
3,757,082	9/1973	Goicoechea	219/271
3,804,280	4/1974	Van Amerongen et al.	128/194 X
3,806,102	4/1974	Valemta et al.	261/122 X
3,864,440	2/1975	Goicoechea	219/271 X

FOREIGN PATENTS OR APPLICATIONS

487,396	12/1938	United Kingdom	261/122
269,045	11/1929	Italy	219/438



1. A respiratory humidifier comprising a base, a heater mounted on said base and having a first heat transfer surface, a container having a second heat transfer surface complementary to said first heat transfer surface, means associated with said base and said container for urging said first heat transfer surface and said second heat transfer surface substantially into abutment, means on said container for admitting liquid to the interior thereof at a lower location near said second heat transfer surface, means for establishing a predetermined liquid level in said container, means on said container for admitting gas to the interior thereof at a location near said second heat transfer surface and below said liquid level, means on said container for releasing gas therefrom at an upper location remote from said second heat transfer surface and above said liquid level, and a pad in and extending substantially completely across said container and disposed between said lower location and said upper location, said pad being permeable throughout to said liquid and to said gas and providing an extended surface for wetting by said liquid and said pad having an upper surface substantially coincident with said liquid level.

B 463,388
ELECTRICALLY HEATED PARTING TOOL FOR REMOVING WINDSHIELDS

Hans Kraus, 5156 Banna Ave., Covina, Calif. 91724, and Wesley R. Willhite, Jr., 1345 N. Birchnall Ave., San Dimas, Calif. 91773

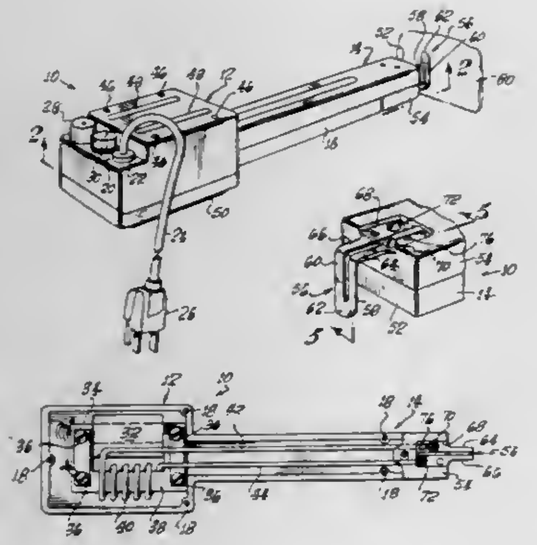
Filed Apr. 23, 1974, Ser. No. 463,388
Int. Cl.^{2} H05B *1/00;* B26B *3/08*
U.S. Cl. 219—233 **3 Claims**

References Cited
UNITED STATES PATENTS

1,834,555	12/1931	Tittle	219/233 UX
2,012,938	9/1935	Beuoy	219/233
2,200,322	5/1940	Armesen	219/233 UX
2,421,125	5/1947	Krebs	30/140
2,501,192	3/1950	Scholler	219/233
2,701,835	2/1955	Amton	30/140
2,709,743	5/1955	Mitchell	219/235 X
2,978,565	4/1961	Sullivan et al.	219/221 X
3,263,540	8/1966	Lefevre et al.	83/171
3,448,517	6/1969	Cothery	30/140
3,558,854	1/1971	Siegel et al.	219/233

FOREIGN PATENTS OR APPLICATIONS

832,358	6/1938	France	128/303.14
1,315,489	12/1962	France	219/233



1. A parting tool comprising:

an elongate blade-like element constructed of relatively thin flat sheet metal and having base and tip ends, said element having a longitudinal slot opening at one end through the base end of said element and terminating at its other end a distance from the tip end of said element, whereby said element has a generally U-shape including a pair of thin flat leg portions disposed in spaced side by side coplanar relation and a thin flat connecting portion joining said leg portions at the tip end of said element, said leg portions having opposite free ends,

a realtively long and slender holder having at one end a high temperature heat resistive ceramic-like thermal insulating support member recessed into one side of said holder,

means securing said free ends of said element leg portions to said insulating support member with said free ends recessed into said support member and with the blade-like element extending longitudinally from said one end of the holder, whereby said holder supports said element for application to work material,

said element having a right angle bend between said holder end and said connecting portion whereby said element base and tip ends lie at opposite sides of said bend and are disposed in mutually transverse relationship, the tip end of said element extending laterally of and toward the opposite side of said holder in spaced relation to said holder end, and

electrical circuit means carried by said holder and connected to said free ends of said element leg for providing an electrical current flow to said element leg and connecting portions to heat said element.

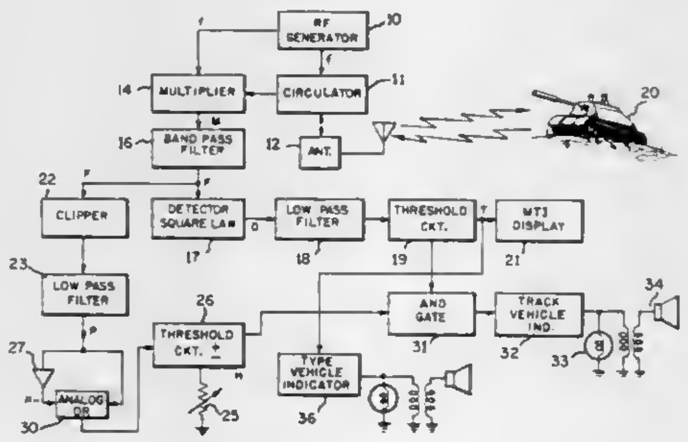
B 484,029
MOVING TARGET INDICATING (MTI) RADAR SYSTEMS EMPLOYING VEHICLE DISCRIMINATOR APPARATUS

Otto E. Rittenbach, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 28, 1974, Ser. No. 484,029
Int. Cl.^{2} G01S *9/42;* G08B *13/22*
U.S. Cl. 343—7.7 **13 Claims**

References Cited
UNITED STATES PATENTS

3,098,971	7/1963	Richardson	343/6.8 R X
3,150,363	9/1964	Finvold	343/5 SA
3,181,150	4/1965	Ruppersberg et al.	340/258 A
3,383,678	5/1968	Palmer	343/7.7 X
3,431,405	3/1969	Dawson	343/5 SA
3,631,489	12/1971	Cooper	343/7.7
3,636,562	1/1972	Wehner	343/5 SA
3,719,945	3/1973	Sletten et al.	343/5 SA
3,725,917	4/1973	Sletten et al.	343/5 SA



3. In a moving target indicator radar system of the type including a receiver capable of responding to a return or echo signal reflected from a target within the range of a radar transmitter, which generates a signal free of harmonics, wherein said returned signal includes a Doppler frequency component containing information relative to the nature or type of target, in combination therewith apparatus for identifying the type of target, comprising:

a. first means included in said receiver and responsive to the reception of said returned signal for detecting the magnitude of an even harmonic component of said Doppler component at an output thereof, and

b. means coupled to the output of said first means for providing a control signal when said magnitude of said even harmonic component exceeds a predetermined level indicative of the presence of a moving target of a given nature.

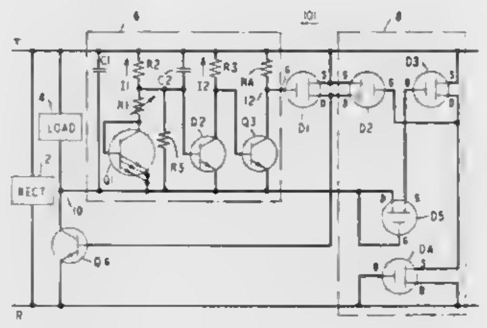
B 501,181
LINE POWERED VOLTAGE REGULATOR

John Edward Edington, Holmdel, N.J., and Richard Cecil Fitch, Indianapolis, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 28, 1974, Ser. No. 501,181
Int. Cl.^{2} G05F *1/58*
U.S. Cl. 323—22 T **16 Claims**

References Cited
UNITED STATES PATENTS

3,508,084	4/1970	Warner, Jr.	307/304
3,617,859	11/1971	Dobkin et al.	323/4
3,626,278	12/1971	Matsumura et al.	323/22 T
3,761,801	9/1973	Sheng	323/22 T
3,828,240	8/1974	Keller et al.	323/22 T



2. An electrical regulator circuit comprising, in combination:

first and second line terminals;

a load terminal;

an output terminal;

a drive transistor having base, emitter and collector electrodes connected to said second line terminal and said load terminal, respectively, said drive transistor being adapted to supply a load current to said load terminal to develop a reference voltage between said load terminal and said first line terminal;

a starting circuit connected between said first and second line terminals, said starting circuit comprising second, third, fourth and fifth transistors each having gate, source and drain electrodes;

said second transistor having said gate, source and drain electrodes respectively connected to said drain electrode of said third transistor, said first line terminal, and said base electrode of said drive transistor;

said third transistor having said gate, source and drain electrodes respectively connected to said source electrode of said fifth transistor said first line terminal and said source electrode of said fourth transistor;

said fourth transistor having said gate and drain electrodes connected to said second line terminal; and

said fifth transistor having said gate and said drain electrodes connected to said load terminal, whereby said starting circuit, in response to the application of a voltage between said first and second line terminals, supplies a drive current to said base electrode of said drive transistor when said reference voltage is less than a preselected threshold so that said drive transistor is activated to supply said load current, and whereby said starting circuit ceases to provide said drive current when said reference voltage exceeds said preselected threshold;

voltage sensing means connected between said load terminal and said first line terminal for sensing said reference voltage and producing a control voltage at said output terminal proportional to said reference voltage; and

a current source responsive to said control voltage when said reference voltage exceeds said preselected threshold for supplying said drive current to said base electrode of said drive transistor, whereby said reference voltage can be regulated at a preselected level.

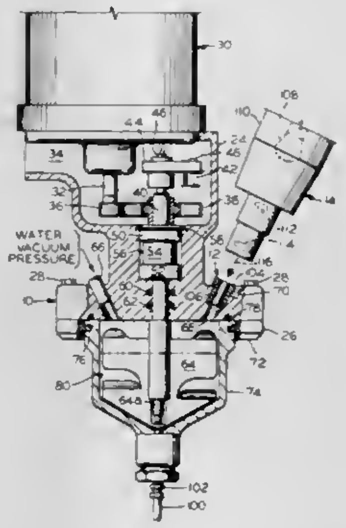
B 507,396
FIBEROPTIC FLUID LEVEL SENSING MECHANISM

Frank M. Kulig, Bloomfield, Conn., assignor to The J.M. Ney Company, Bloomfield, Conn.

Filed Sept. 19, 1974, Ser. No. 507,396
Int. Cl.^{2} G01N *21/26*
U.S. Cl. 250—577 **10 Claims**

References Cited
UNITED STATES PATENTS

3,068,739	12/1962	Hicks et al.	250/227
3,384,885	5/1968	Forbush	250/227
3,458,705	7/1969	Elmore	250/227
3,518,437	6/1970	Riggs	250/227
3,553,666	1/1971	Melone	250/577
3,619,068	11/1971	Broerman	350/96 B
3,683,196	8/1972	Obenhaus	350/96 R
3,702,625	11/1972	Schmidt	250/577



1. In a piece of process equipment, operable for performing process operations on various fluid materials including liquids, slurries and powders, including a housing, a chamber formed in the housing, a shaft having at least a portion of the length thereof disposed in the chamber, motor means supported in the housing and operatively connected to the shaft for imparting rotation to the shaft, inlet means formed in the housing communicating with the chamber operable for supplying fluid material thereto, outlet means formed in the housing communicating with the chamber operable for dispensing fluid material therefrom, the improvement consisting of a fluid level sensing mechanism operable for sensing the level of the fluid material in the chamber, said mechanism comprising:

a. light projecting means mounted in the housing providing communication between the exterior of the housing and the interior of the chamber, said light projecting means being positionable in juxtaposed relation to an external light source for receiving light rays therefrom and operable to direct the light rays received thereby into the interior of the housing to light the chamber provided therewithin;

b. light transmitting means mounted within the housing and having at least a portion thereof positioned in the path of the light rays being directed into the interior of the housing through the operation of said light projecting means, said light transmitting means comprising a fiberoptic bundle supported within the shaft so as to be rotatable therewith and having one end thereof located within the chamber, said one end of said fiberoptic bundle projecting outwardly of the shaft so as to thereby be exposed, said one end of said fiberoptic bundle being struck by the light rays being directed within the chamber when the level of the fluid material therein falls to a level sufficient to render visible said one end of said fiberoptic bundle, said fiberoptic bundle during the rotation thereof being operable to transmit the light rays striking said one end thereof the length of said fiberoptic bundle;

c. photoelectric means mounted in the housing in juxtaposed relation to the other end of said fiberoptic bundle, said photoelectric means including a photoelectric receiver located in the path of the light rays being transmitted the length of said fiberoptic bundle, said photoelectric receiver being actuated in response to being struck by light rays transmitted thereto from said fiberoptic bundle; and

d. electrical circuit means including a control relay and operable to connect said control relay and said photoelectric receiver in circuit relation, said control relay being operated in response to actuation of said photoelectric receiver to perform a control function effecting the operation of the piece of process equipment.

B 512,964
LIQUID JET RECORDER

Siegfried Wiesmuller, Nurnberg, and Helmut Kraus, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Oct. 7, 1974, Ser. No. 512,964

Claims priority, application Germany, Oct. 10, 1973, 2350870

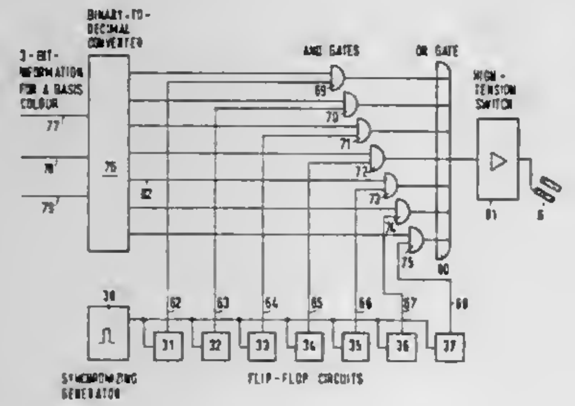
Int. Cl.² G01D *15/18;* **B41J** *3/04*

U.S. Cl. 346—75 **5 Claims**

References Cited

UNITED STATES PATENTS

1,709,926	4/1929	Weaver	358/75
2,573,143	10/1951	Jacob	358/75
3,404,221	10/1968	Loughren	358/75
3,416,153	12/1968	Hertz et al.	346/75
3,564,120	2/1971	Taylor	358/75



1. In a liquid jet recorder having at least one jet nozzle; a pressure means conduit connected to said jet nozzle for causing the latter to propel a jet of an electrically-conductive recording liquid onto a recording carrier; and at least one control electrode connected to a signal source for modulating said liquid jet in the sense of effecting a point wise recording, the improvement comprising: a plurality of impulse generators in said signal source in conformance with the number of desired color increments for each image point on said recording carrier, said impulse generators having synchronous impulse sequences, equal impulse amplitudes and differentiated from each other with respect to the sensing ratios of said color increments; and means for connecting the impulse generator required for recording the desired color increment on an image point to the electrode associated with said image point for a recording time period equal for all image points.

B 515,452
FAULT DETECTION INDICATOR

Floyd Leonard Malmborg, Brookfield Center, Conn., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 17, 1974, Ser. No. 515,452

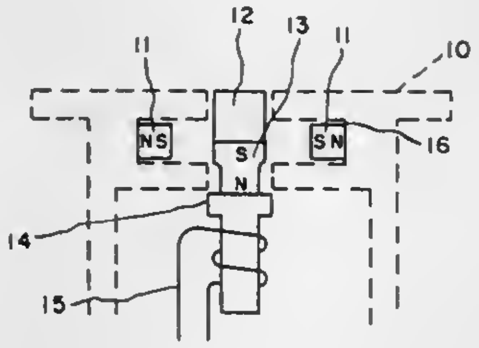
Int. Cl.² H01F *7/08*

U.S. Cl. 335—253 **12 Claims**

References Cited

UNITED STATES PATENTS

2,919,324	12/1959	Schuessler	335/182
3,132,290	5/1964	Kumpf	335/254
3,543,202	11/1970	Naybor	335/229
3,683,239	8/1972	Sturman	335/179
3,755,766	8/1973	Read, Jr.	335/229
3,783,423	1/1974	Mater et al.	335/229



1. A fault indication device adapted to being excited by an electrical voltage for indicating a fault condition comprising;

a housing;

an indicating element including an indicating element permanent magnet having first and second end portions of opposite magnetic polarity, said indicating element being free to move in a first predetermined direction within said housing;

a ferromagnetic core and coil assembly, the coil being a conductive wire wound about said, said coil having input terminals for application of an electrical voltage, said permanent magnet indicating element having its first end portion being disposed on the end surface of said core when said coil is not excited by an electrical voltage;

and at least one latching permanent magnet having first and second end portions of opposite magnetic polarity and being free to move within said housing in a direction at right angles to said first predetermined direction, said latching permanent magnet being oriented so that during said unexcited condition of said coil said latching permanent magnet is repelled by the second end portion of the indicating element permanent magent, said input terminals being adapted to receiving an excitation voltage which causes a magnetic polarity to appear on said core and which is repelling to said first end portion of said indicating element permanent magnet thereby forcing said indicating element to move in said first predetermined direction, whereby said second end portion of said indicating element permanent magnet is juxtaposed proximate to said latching permanent magnet thereby attracting said latching permanent magnet to said indicating element permanent magnet.

B 528,761
CONTACT SPRING FOR VARIABLE RESISTANCE DEVICE

Ronald Eugene Smith, Riverside, Calif., assignor to Bourns, Inc., Riverside, Calif.

Filed Dec. 2, 1974, Ser. No. 528,761

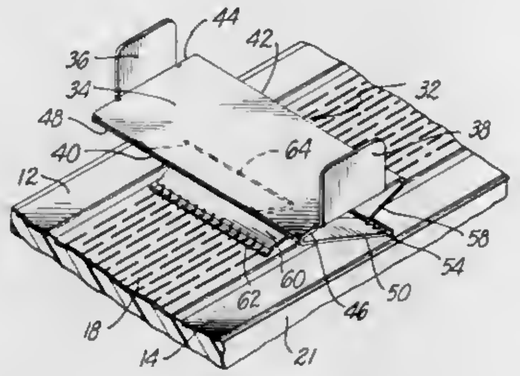
Int. Cl.² H01C *1/12*

U.S. Cl. 338—202 **15 Claims**

References Cited

UNITED STATES PATENTS

3,201,737	8/1965	Mathison	338/202
3,371,305	2/1968	Delong et al.	338/202



1. A contact spring, suitable for use in a variable resistance device having a resistance strip, a collector strip adjacent said resistance strip, electrical terminals associated with said resistance and collector strips, and means to move a contact spring across the surfaces of said resistance and collector strips, said contact spring comprising:

a base member adapted for attachment to said spring moving means,

electrically conductive contact means depending from said base member, said contact means comprising a cantilever spring means adapted for sliding electrical contact with said resistance and collector strips so as to effect a short circuit therebetween, and

a stiffly flexible, resilient back-up means depending from said base member toward said contact means, said back-up means being disposed in the flexing path of said contact means to retard flexing thereof toward said base member,

whereby a substantially greater contact force is established between said contact means and said resistance and collector strips when said contact means flexes into said back-up means than would be established by the spring force of said contact means alone.

B 540,218
APPARATUS AND METHOD FOR MEASURING CAPACITANCE

Edwin Paul Thomas, Brick Town, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 10, 1975, Ser. No. 540,218

Int. Cl.² G01R *27/26*

U.S. Cl. 324—60 C **3 Claims**

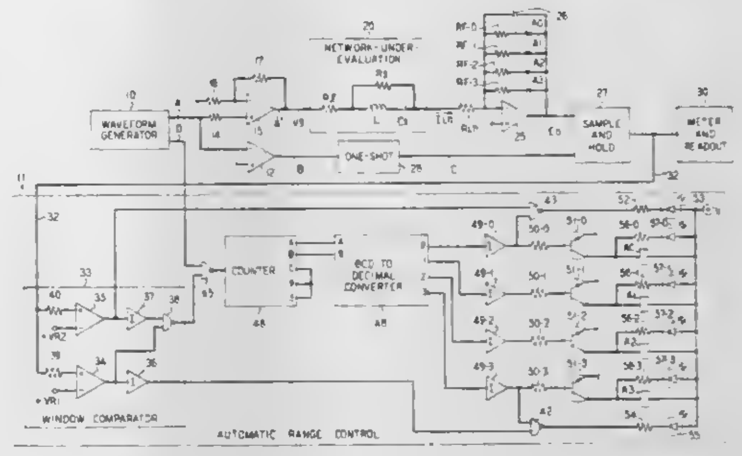
References Cited

UNITED STATES PATENTS

3,530,379	9/1970	Demerliac	324/60 R
3,668,523	6/1972	Kuhn	324/60 C X
3,761,805	9/1973	Dornbeger	324/60 C
3,761,812	9/1973	Plake	324/57 R X

1. In apparatus for measuring the capacitance value of a network-under-evaluation of the type employing a periodic ramp signal which is applied to the network and means for sampling and holding the value of current developed in the network at the instant that the ramp signal passes through a prescribed amplitude value, apparatus for obtaining range control of a signal representative of the capacitance value comprising,

controllable means in circuit relationship with the network-under-evaluation and said sampling and holding means for generating an output signal proportional to the amplitude of the current developed in the network-under-evaluation, said controllable means including means for adjusting the amplitude of said output signal to be within a predetermined voltage range and means for generating signals to control said adjusting means to effect range control.



B 554,939
LAST LINE VELOCITY COMPENSATION

Maurice G. Lemoine, and Leonard A. Pasdera, both of Redwood City, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Mar. 3, 1975, Ser. No. 554,939

Int. Cl.² H04N *5/795*

U.S. Cl. 358—8 **17 Claims**

References Cited

UNITED STATES PATENTS

3,428,745	2/1969	Coleman	360/36
3,659,040	4/1972	Fujita	358/8
3,716,663	2/1973	Bolger	358/8
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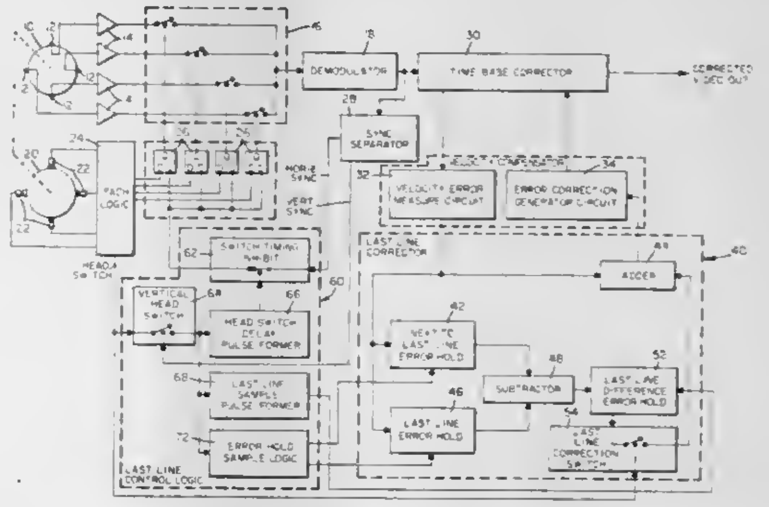


1. A method of determining last line velocity error in a time varying signal including time base information reproduced from a record medium by a plurality of transducers between which reproduction of the signal is switched comprising the steps of determining the last line velocity error occurring during a certain last determined period of said signal before transducer switchings, and adjusting each of the last line velocity errors occurring during other last determined periods of said signal before transducer switchings in accordance with said determined last line velocity error.

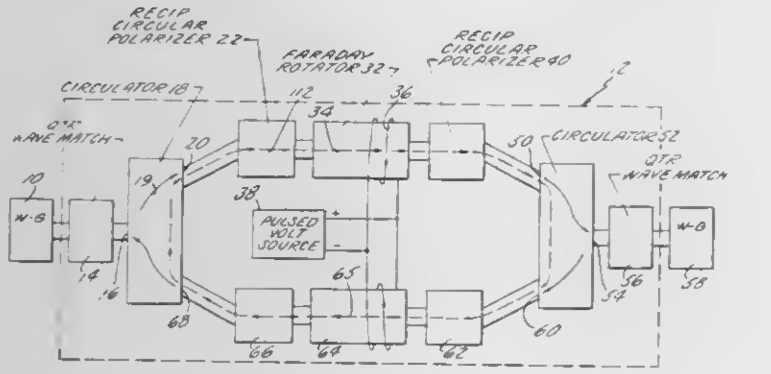
B 568,770
MONOLITHIC RECIPROCAL LATCHING FERRITE PHASE SHIFTER

Peter W. Smith, and An-Hwa Soong, both of Westport, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 16, 1975, Ser. No. 568,770
Int. Cl.^{2} H01P *1/18*
U.S. Cl. 333—31 A **5 Claims**

References Cited
UNITED STATES PATENTS

3,626,335	12/1971	Hord et al.	333/31 A
3,698,008	10/1972	Roberts et al.	333/24.1 X
3,753,160	8/1973	Safran	333/31 AX
3,760,300	9/1973	Leahy	333/31 A
3,845,421	10/1974	Charlton et al.	333/31 AX



1. A reciprocal, latching ferrite phase shifter for providing selectable phase delays to linearly polarized microwaves of electromagnetic radiation propagating between wave transmission waveguides in opposite directions, comprising:

a plurality of electrical coil windings;

a plurality of permanent magnets; and

a geometrically symmetrical, monolithic, solid ferrite structure of generally rectangular shape, having a pair of ends of rectangular cross-section and adapted to interface with a related waveguide, said structure having a centrally disposed slot extending transversely entirely through said structure and extending longitudinally along a substantial portion of said structure providing a pair of similar, independent wave transmission paths, one of said windings being disposed around each of said paths and operable in response to voltage pulses applied thereto for latching said paths in a magnetic state, each configuration of winding and path thereby comprising first means for providing a phase shift to waves of circular polarization being transmitted therethrough, each of said paths having portions, at opposite ends of each of said windings, shaped to provide second means for converting waves between plane polarization and circular polarization in a reciprocal fashion, each of said second means of said paths being contiguous to a related one of two further portions, each of said further portions having a pair of said permanent magnets disposed on opposite surfaces thereof to provide a magnetic field transverse to the longitudinal axis of said structure and each further portion being shaped to provide, in combination with said pair of magnets, third means for providing selective, directional propagation of waves such that waves propagating into the respective end of said structure from the related waveguide pass into one of said paths but not into the other of said paths and waves propagating from the other of said paths pass through the respective end of said structure into the related waveguide but not into the other one of said paths.

DESIGN APPLICATIONS

PUBLISHED FEBRUARY 10, 1976
UNDER THE SECOND TRIAL VOLUNTARY PROTEST PROGRAM

NOTE.—A copy of the notice setting forth the details of the Second Trial Voluntary Protest Program may be found in the Patent and Trademark Notices section of this issue.

Any protests relating to the patentability of these published design applications must be filed in writing before May 10, 1976. These applications are available for inspection in the Allowed Files Branch, Crystal Plaza, Room 2-10C28. All correspondence should be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

Printed copies of the published design applications may be purchased from the Patent and Trademark Office at 20 cents each.

An "Index of Design Applicants and Assignees of Design Applications" and a concordance entitled "Classification of Published Design Patent Applications" are located in the back of this issue.

B 414,971
POWER UNIT FOR A BLENDER OR THE LIKE

Alfred W. Madl, Glendale, and Charles J. Kirschling, Milwaukee, Wis., assignors to Oster Corporation, Milwaukee, Wis.

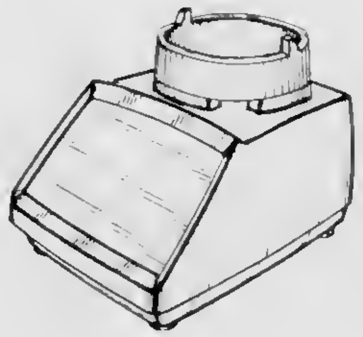
Filed Nov. 12, 1973, Ser. No. 414,971
Int. Cl. D7—*04*
U.S. Cl. D7—154

References Cited
UNITED STATES PATENTS

D. 193,063	6/1962	Oatley	D7—160
D. 217,522	5/1970	Madl	D7—154
D. 225,787	1/1973	Levin	D7—154
3,774,338	11/1973	Waak	D7—60 X

OTHER REFERENCES

1972 Evans catalog, No. 1720, p. 334, Osterizer 8-speed blender, bottom right panel.



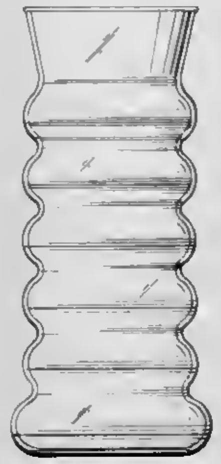
B 424,354
BEVERAGE GLASS OR SIMILAR ARTICLE

Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 13, 1973, Ser. No. 424,354
Int. Cl. D7—*01*
U.S. Cl. D7—15

References Cited
UNITED STATES PATENTS

D. 65,527	9/1924	Graham	D7—15
D. 73,031	7/1927	Heisey	D7—15
D. 120,135	4/1940	Morrison	D7—15
D. 176,091	11/1955	Ziskin et al.	D7—78



B 430,287

MOUTHPIECE FOR BREATH TESTING DEVICES OR THE LIKE

James E. Burroughs, Mount Prospect, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Jan. 2, 1974, Ser. No. 430,287
Int. Cl. D24—*02*
U.S. Cl. D83—1 N

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D. 231,307	4/1974	Wolfman	D7—68
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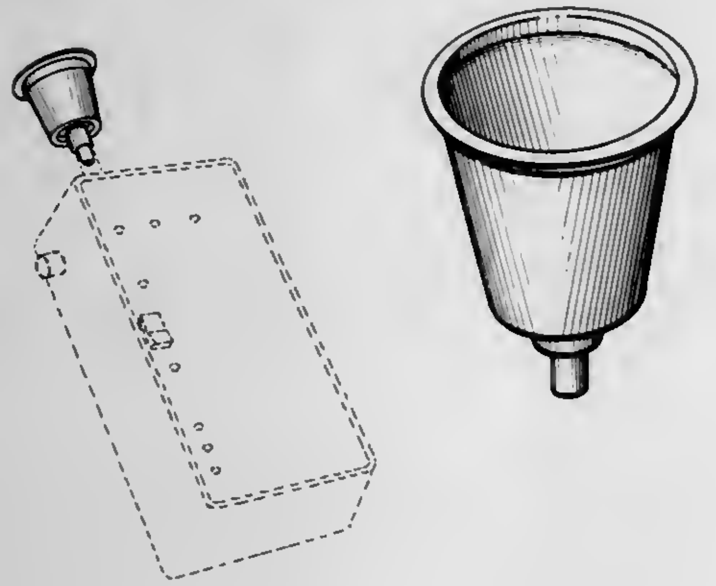
2,510,909	6/1950	Schuelein	128—231
3,245,437	4/1966	Holz	D7—68
3,796,210	3/1974	Hoeg	128—2 C
3,809,067	5/1974	Hoppesch	128—2 C



B 487,062

ELECTRONIC CALCULATOR

Lawrence Glen McCain, Beverly Hills, and Edward William Scott, Culver City, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed July 10, 1974, Ser. No. 487,062
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

References Cited

UNITED STATES PATENTS

D. 228,291	9/1973	Maeda et al.	D26—5 C
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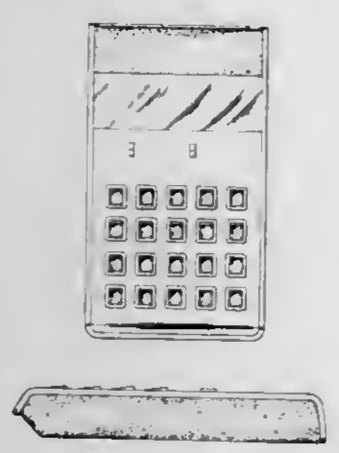
Office Products, February 1972, p. 62, Royal calculator—lower left corner.

Office Products, March 1972, p. 66, Facit-Odhner Inc. calculator—middle bottom row.



B 491,906

JAR

George W. Welker III, Downingtown, Pa., assignor to American Home Products Corp., New York, N.Y.
Filed July 25, 1974, Ser. No. 491,906
Int. Cl. D9—*01*
U.S. Cl. D9—71

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D. 102,758	1/1937	Manoha	D9—168
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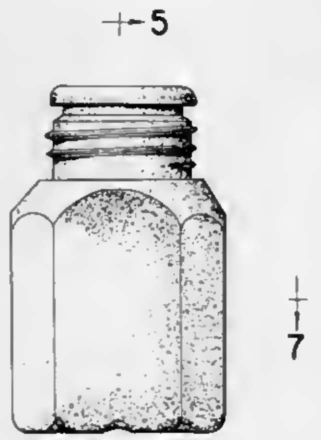


B 510,346

POPCORN POPPER COVER

Gary L. Vandeberg, Fox Lake, Wis., assignor to Dart Industries Inc., Los Angeles, Calif.
Continuation of abandoned design application Ser. No. 280,327, Aug. 14, 1972. This application Sept. 30, 1974, Ser. No. 510,346
Int. Cl. D7—*02*
U.S. Cl. D7—131

References Cited

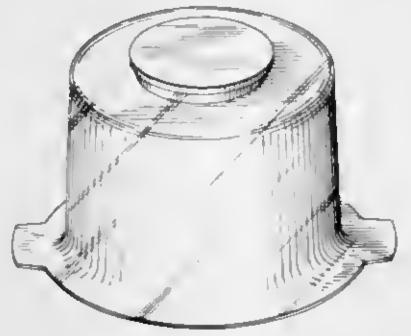
UNITED STATES PATENTS

D. 170,561	10/1953	Tupper	D7—83
3,722,399	3/1973	Cole	D7—94 X
3,307,602	3/1967	Boster	D7—17 X

OTHER REFERENCES

Merchandising Week, vol. 103, July 12, 1971, p. 46, Hamilton Beach corn popper at top right.

Housewares, June 1971, p. 22, Regal Ware popcorn popper at bottom left.



B 527,788

COUNTERWEIGHT FOR A LIFT TRUCK

Donald J. De Priester and Darrell C. Fuller, Niles, and Jack E. Loomis, Kalamazoo, Mich., assignors to Clark Equipment Company, Buchanan, Mich.
Filed Nov. 27, 1974, Ser. No. 527,788
Int. Cl. D12—*05*
U.S. Cl. D12—60

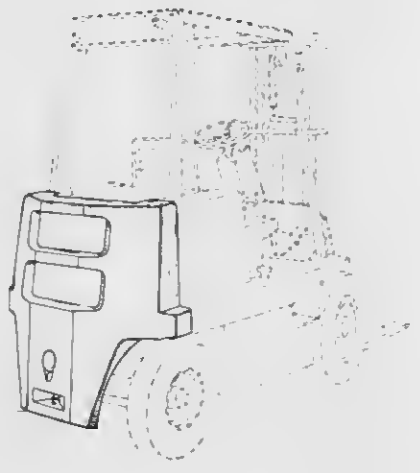
References Cited

UNITED STATES PATENTS

D. 198,365	6/1964	Simovich	D12—57
D. 175,804	10/1955	Squier et al.	D12—57

OTHER REFERENCES

Modern Materials Handling, October 1973, p. 105, counterweight lift truck at bottom right side of page.



B 532,424

FOOT BATH

Scott W. Miller, Stratford, James Bartlett Wyatt, Stamford, and Kenneth Van Dyck, Westport, Conn., assignors to Clairol Incorporated, New York, N.Y.
Filed Dec. 13, 1974, Ser. No. 532,424
Int. Cl. D24—*04*
U.S. Cl. D83—1 C

References Cited

UNITED STATES PATENTS

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3,026,540	3/1962	Barker	D83—1 C X
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3,283,756	11/1966	Turley	128—66
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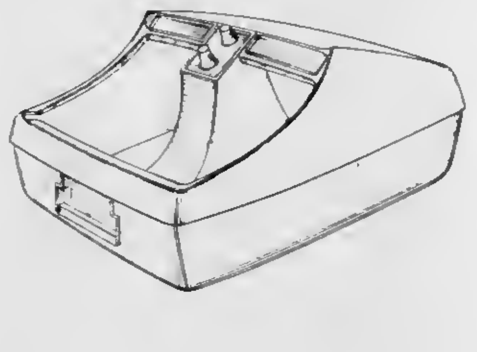


B 548,462

PAIR OF SPECTACLES

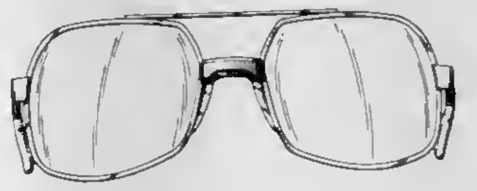
Richard Canavan III, South Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.
Filed Feb. 10, 1975, Ser. No. 548,462
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

References Cited

Optician, Mar. 9, 1973, p. 9, "Solamatic" frames.

Optometric Weekly, Apr. 27, 1972, p. 123, "Pilote" frames #X08.

Optometric Weekly, Apr. 19, 1973, p. 23, Style-Rite Optics Inc. cat., insert p. 4, Dorado frames.



B 561,062

COMBINED VARIABLE POWER SUPPLY AND CIRCUIT TESTER

Joseph Don Jack, 314 Warren St., Harrison, N.J. 07029
Continuation-in-part of abandoned design applications Ser. Nos. 485,427, 485,428, and 485,429, all filed July 3, 1974. This application Mar. 24, 1975, Ser. No. 561,062
Int. Cl. D19—*07*
U.S. Cl. D19—62

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UNITED STATES PATENTS

D. 225,531	12/1972	Flynn et al.	D19—62
D. 229,563	12/1973	Sirkin et al.	D19—62
D. 235,440	6/1975	Valentine	D19—62
2,826,628	3/1958	Kruse	35—19 A
3,008,245	11/1961	Meuche	35—19 A
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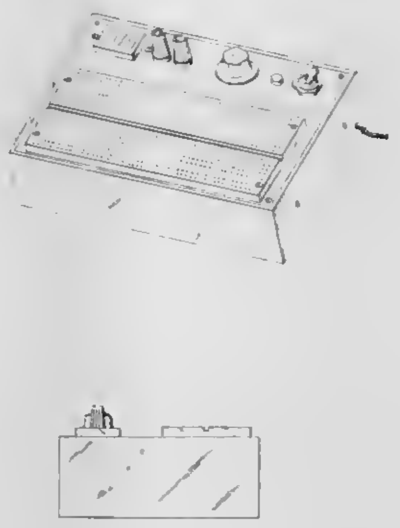


REISSUES

FEBRUARY 10, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification: matter printed in italics indicates additions made by reissue.

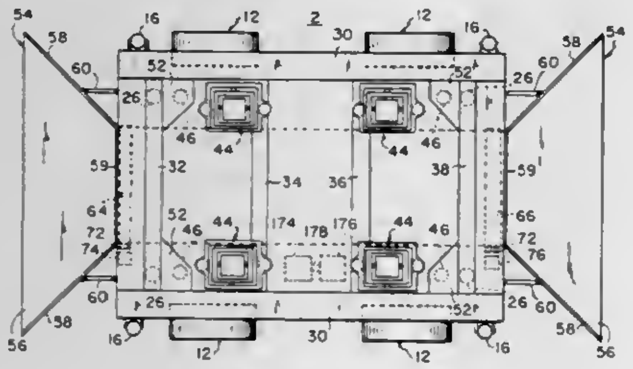
Re. 28,707
MULTI-PURPOSE VEHICLE FOR USE UNDERGROUND

Jon R. Swoager, Imperial, Pa., assignor to Automation Equipment, Inc., Imperial, Pa.

Original No. 3,851,481, dated Dec. 3, 1974, Ser. No. 406,971, Oct. 16, 1973. Division of Ser. No. 299,354, Oct. 20, 1972, Pat. No. 3,811,290, which is a continuation-in-part of Ser. No. 241,975, April 7, 1972, Pat. No. 3,793,966. Application for reissue Mar. 27, 1975, Ser. No. 562,504

Int. Cl.² E21D *15/44*

U.S. Cl. 61—45 D **1 Claim**



1. A self-propelled vehicle for use in underground excavations having a floor and a ceiling, said vehicle comprising:
a frame;
wheel assemblies supporting said frame, said wheel assemblies being independently suspended and steerable;
a body supported on said frame;
first lifting means supported by said frame for raising said body above said frame;
a plurality of rotatable chuck assemblies disposed within said body and adapted to engage a workpiece for insertion into said ceiling;
second lifting means supported by said body and engaging said chuck assemblies for raising said chuck assemblies above said body;
a pair of movable scoop containers mounted on said frame at opposite ends thereof;
a reversible conveyor supported by said frame and positioned to transport material from one of said containers to the other; and
means mounted on said frame for contacting said ceiling above said vehicle and said floor below to support said ceiling against collapse.

Re. 28,708
POULTRY LOADING APPARATUS AND METHOD

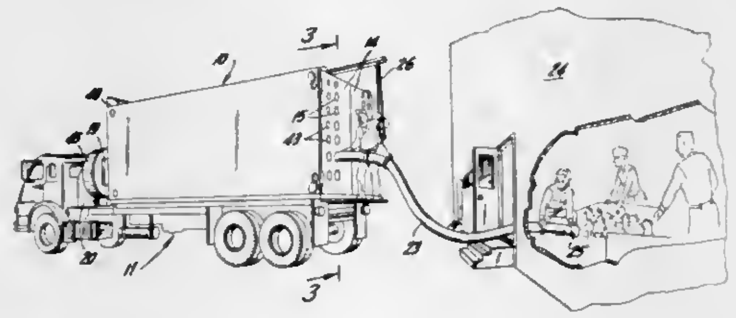
Frank N. Reynolds, Auburn, Maine, assignor to Poultry Transaire Systems, Inc., Lewiston, Maine

Original No. 3,683,862, dated Aug. 15, 1972, Ser. No. 107,334, Jan. 18, 1971. Application for reissue Sept. 10, 1973, Ser. No. 395,651

Int. Cl.² A01K *29/00, 1/00*

U.S. Cl. 119—82 **52 Claims**

1. A method for loading and carrying a plurality of poultry comprising the step of applying a sucking force to a mobile compartment having a generally air tight body, extending a hose into a first opening into one portion of such compartment to the presence of a bird, causing a vacuum through another opening removed from said first opening in said compartment, sucking said bird into said compartment through said hose, and repeating the step of sucking birds into different portions of said compartment until a selected number of birds have been sucked into said compartment.



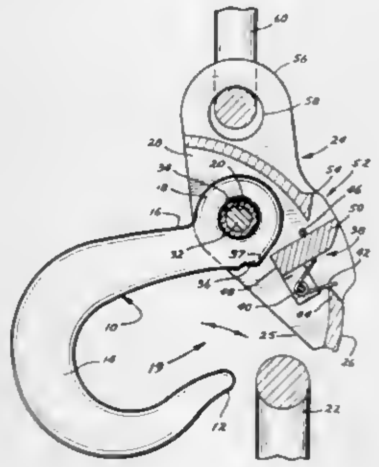
Re. 28,709
SAFETY HOOK

Edward J. Crook, Jr., Tulsa, Okla., assignor to American Hoist & Derrick Company, St. Paul, Minn.

Original No. 3,741,600, dated June 26, 1973, Ser. No. 167,371, July 30, 1971. Application for reissue Jan. 16, 1975, Ser. No. 541,389

Int. Cl.² B66C *1/36*

U.S. Cl. 294—82 R **3 Claims**



1. In a safety hook, the combination with:
a hoisting hook having a curved, load engaging, uniplanar, body portion extending to a tip at a first end thereof and through a relatively straight shank segment to a hook eye at a second end thereof, said hook having an open throat between said tip and said eye;
a one piece safety gate having parallel side plates removably pivotally mounted through said hook eye, said gate including a connecting arm and a gate arm, each integral with and extending outwardly from said side plates in obtuse angular relation to each other;
said gate being rotatable concentric with *hook eye* [eye opening] between a first position wherein said gate arm is positioned across said throat and in contact with said tip and a second position wherein said gate arm lies in clearing relation to *provide* access to said hook throat, an edge of said gate arm adjacent the hook throat when the gate is in said first position being in approximate alignment with an interior edge of said shank segment when said gate is in said second position [.] *;*
said connecting arm being provided with an eye for receiving a hoisting line, and the curved body portion of the hoisting hook being adapted to receive a load bearing line, the relationship of the parts being such that when the safety hook is supported on a hoisting line and supports a load line and the gate is in said first position, the axis of the hook eye will lie in offset relation to a load bearing axis extending between said lines, said offset being in direction toward said hook tip; [and]
releasable latch means operative when said safety gate reaches said first position to lock it in said *first* position [.] *;*
said hook eye being provided with integral latch engaging means;
said gate arm being provided with a latch receiving cavity extending transversely therethrough but lying in the plane of the hook; and
said latch means including a latch resiliently urged by resilient means into contacting, locking relation with said latch engaging means when said gate reaches said first position, said latch including a latch actuating arm lying entirely within said gate arm when in latching position and accessible through said latch receiving cavity for manual actuation against said resilient means to move said latch into spaced relation with respect to said latch engaging means.

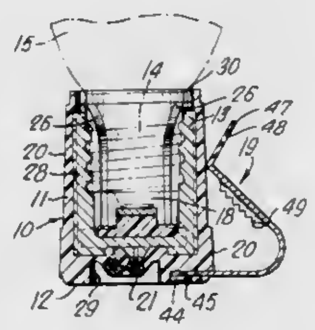
Re. 28,710
ELECTRICAL HARNESS WITH MOLDED SOCKETS

Laurence Stephen Finkelstein, 42 Lyncroft Road, Montreal, Quebec, Canada

Original No. 3,716,818, dated Feb. 13, 1973, Ser. No. 100,342, Dec. 21, 1970. Application for reissue Mar. 18, 1974, Ser. No. 452,115

Int. Cl.² H01R *9/08*

U.S. Cl. 339—97 L **5 Claims**



4. An electrical lamp socket for lamp bulbs having a screw base, said lamp socket comprising a hollow cylindrical body having an open end and closed at the opposite end by a socket base integrally moulded with said cylindrical body, an electrical cable having two insulated conductor wires, said cable being moulded within said socket base, a center metallic contact having a contacting portion disposed substantially at the center of the inner face of said socket base, a retaining base portion integrally formed with said contact surface and moulded within said base to rigidly secure said center contact in said lamp socket and a point in the lower edge of said retaining base portion and penetrating said cable to contact one of said two wires, a metallic side contact of generally U-shape configuration having two opposed vertical sides and a connecting base, said side contact being partly embedded within said hollow cylindrical body and having undulations in the inner edge of each of said opposed vertical sides to engage and retain the screw base of a lamp bulb in said hollow cylindrical body spaced from the inner face of said body, a point integrally formed in the lower edge of said connecting base of said side contact and also penetrating said cable to contact said other one of said two wires, said socket base having at least two ventilating holes extending therethrough to provide ventilation about said screw base from said cylindrical body open end and through said base portion, said two ventilating holes being positioned one on a respective side of said metallic side contact.

Re. 28,711
PROCESS FOR PRODUCING BORON NITRIDE FELT

Theodore B. Selover, Shaker Heights; Robert A. Rightmire, Northfield, and Philip R. Regan, Mayfield Heights, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Original No. 3,816,242, dated June 11, 1974, Ser. No. 244,869, Apr. 17, 1972. Application for reissue Oct. 30, 1974, Ser. No. 519,078

Int. Cl.² D21H *5/18*

U.S. Cl. 162—157 R **4 Claims**

1. A process for producing a thin, flexible, integral boron nitride felt comprising the following steps:
A. purifying boron nitride fiber by washing with water and subsequently extracting with an aliphatic alcohol containing from one to three carbon atoms;
B. forming a mat from the fibers in step (A) and incorporating therein an aqueous solution of a binder [in an amount such that the final concentration of the said binder in the mat ranges from about 2×10^{-2} to about 5.5×10^{-2} g/cm²], said binder being an inorganic salt selected from the group consisting of water soluble halides, nitrates, nitrites and carbonates of the alkali metals, the alkaline earth metals, the Group III A metals, and their mixtures; and
C. drying the resulting binder-containing mat obtained from step (B) at a temperature below the melting point of the salt.

PLANT PATENTS

GRANTED FEBRUARY 10, 1976

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,830
PHILODENDRON PLANT
Robert H. McColley, P.O. Box 17126,
Orlando, Fla. 32810
Filed Nov. 1, 1974, Ser. No. 520,105
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 **1 Claim**

There is disclosed a philodendron plant characterized by its resistance to wilting in low moisture and high temperature conditions form retention and slow growth indoors, thick, rubbery, generally extremely small lanceolate shaped leaves which are dark grayish green, and the petioles and stems dark red.

PATENTS

GRANTED FEBRUARY 10, 1976

ERRATA

For CLASS	See PATENT NO.
303-021 BE	3,936,841
036-032 R	3,936,956
073-003	3,937,048
073-006	3,937,049
073-425.4 R	3,937,091
014-077	3,937,165
214-152	3,937,167
015-042	3,937,174
124-011 R	3,937,191
144-028.5	3,937,239
162-212	3,937,273
339-097	3,937,403
172-059	3,937,460
180-033 R	3,937,484
298-011	3,937,502
312-204	3,937,537
075-134 F	3,937,628
340-146.3 Z	3,938,186
340-172.5	3,938,187
340-347 AD	3,938,188

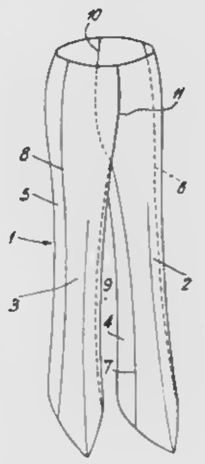
PATENTS

GRANTED FEBRUARY 10, 1976

GENERAL AND MECHANICAL

3,936,886
TROUSERS

Raymond Zaoui, 17 rue Le Vau, Paris, France
Filed June 3, 1974, Ser. No. 475,989
Claims priority, application France, Oct. 19, 1973, 73/37371
Int. Cl.² A41D *1/06*
U.S. Cl. 2—227 4 Claims



1. Trousers adapted to prevent twisting of the trouser legs and prevent bulges near the lower point of the fly, comprising:

a. front panels and back panels, each of said front and back panels formed by an inside longitudinal edge, a waist edge, an outside longitudinal edge, and a panel base at the bottom of the trouser leg;

b. said front panel inside edge having a fly slit below the waist edge and a lower point of said fly slit;

c. said front panel outside edge having a convexity below said waist edge;

d. said back panel inside edge having a bottom point below said waist edge;

e. said back panel outside edge having a convexity below said waist edge;

f. a relationship between the inside and outside longitudinal edges of said front and back panels such that when superimposed upon one another, said front and back panel bases exactly superimpose, the inside edge of the back panel between the bottom point and panel base exactly superimposes with the inside edge of the front panel between the lower point and panel base, the outside edge of the back panel between the back panel convexity and panel base, exactly superimposes with the outside edge of the front panel between the front panel convexity and panel base, and the back panel convexity projects beyond the front panel convexity; and

g. inside lateral seam lines being formed by a connection of said front and back panel inside edges, and outside lateral seam lines being formed by a connection of said front and back panel outside edges.

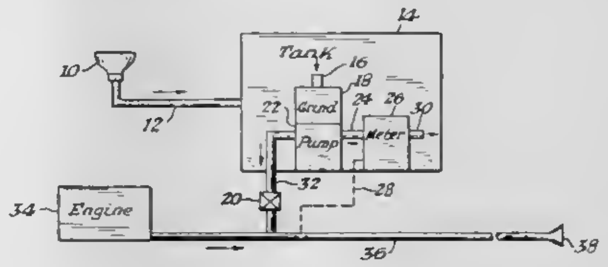
3,936,887
ARTIFICIAL IMPLANT AND METHOD OF MAKING SAME

Milton Hodosh, 145 Whitmarsh St., Providence, R.I. 02907
Filed Dec. 10, 1973, Ser. No. 423,585
Int. Cl.² A61C *13/08* **; A61F** *1/00;* **C08K** *3/04*
U.S. Cl. 3—1 6 Claims

1. An artificial implant comprising a composition consisting essentially of vitreous carbon and polymethylmethacrylate, said vitreous carbon comprising between ¼ of 1% and 50% of the composition by weight, said vitreous carbon being in the form of microballoons.

3,936,888
EFFLUENT DISPOSAL SYSTEM

Paul A. Sturtevant, 3880 W. Riverside Drive, Fort Myers, Fla. 33901
Filed June 19, 1974, Ser. No. 480,836
Int. Cl.² E03D *11/02*
U.S. Cl. 4—10 1 Claim



1. An effluent waste disposal system utilized in combination with a conventional internal combustion engine having an exhaust manifold communicating with said engine by exhaust conduits an exhaust pipe connected to said manifold, an intake manifold, a carburetor, a mixing chamber disposed between said intake manifold and said carburetor, comprising:

effluent collection tank, said tank having an input and an output;

means connected to said tank for macerating said effluent within said tank;

a pressure sensing means having an input and an output, said input connected to said mixing chamber of said internal combustion engine;

effluent flow, pressure activated metering means connected to the output of said collection tank for regulating the quantitative volume flow of effluent from said tank as a function of pressure, the output of said pressure sensing means connected to said metering means; and

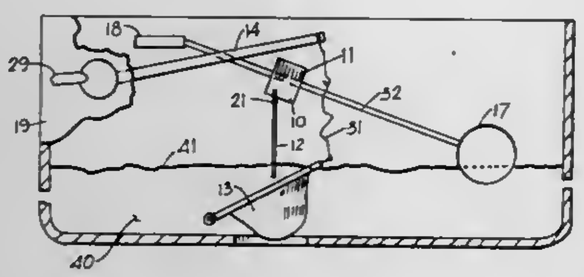
a thermally conductive effluent discharge conduit disposed within said exhaust manifold in the direction of the longitudinal axis of said exhaust manifold, positioned adjacent the exhaust conduits of said engine and having a discharge opening within said exhaust manifold, the input of said discharge conduit connected to the output of said effluent flow metering means whereby the meter flow discharge volume varies as a function of the pressure of said mixing chamber such that the maximum volume output of said effluent tank is achieved at the lowest absolute pressure in said mixing chamber.

3,936,889
TOILET FLUSH MECHANISM

Tab Wibroe, Sunnyvale, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Aug. 13, 1974, Ser. No. 496,980
Int. Cl.² E03D *1/14*
U.S. Cl. 4—37 1 Claim

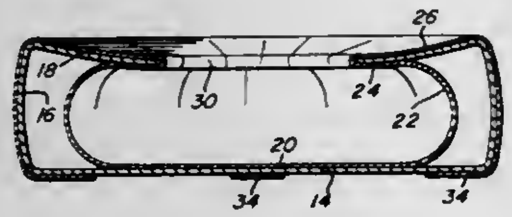
1. A toilet flush tank mechanism which alternately provides means to permit a limited flush of the attached toilet or a full tank flush of an attached toilet, upon actuation of the mechanism, said tank fitted with a water supply valve controlled by a pivotable arm on which a float is fastened, which pivotable means is attached to the said pivotable float arm, which pivotable means in a first position serves to engage the outlet valve of the toilet tank mechanism, when the outlet valve is in the open position and the float arm has descended from its initial

position, with further descent of the float arm serving to force said means to push the outlet valve into the closed position, in which the pivotable means may be rotated to a second position away from engagement with the outlet valve so as to permit the outlet valve to operate independently of the position of the pivotable float arm.



3,936,890
BIO-DISPOSABLE BAG-TYPE LINER FOR BEDPANS AND THE LIKE

Nathan Oberstein, 55 Knolls Crescent, Bronx, N.Y. 10463
Filed May 6, 1974, Ser. No. 467,609
Int. Cl.² A61G *9/00*; A47K *11/02*
U.S. Cl. 4—112 **5 Claims**

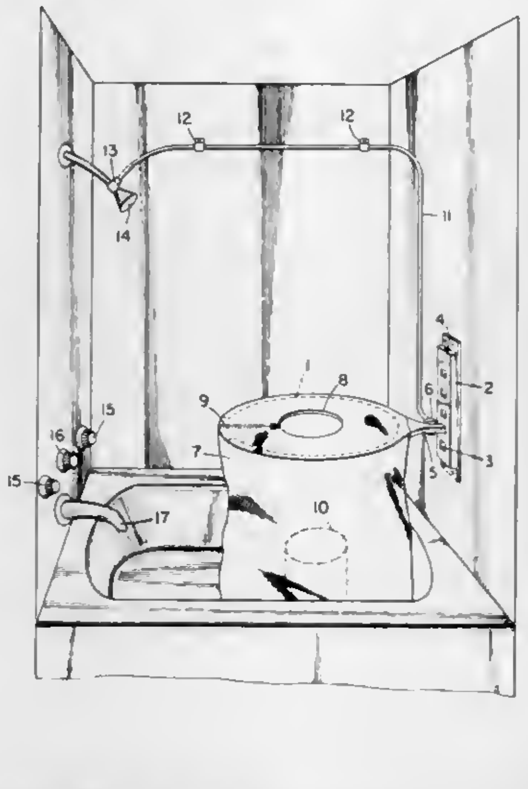


1. A bag-type liner for bedpans comprising a body adapted to be positioned within a bedpan and covering the interior thereof, said body including an outwardly extending edge portion adapted to overlie and cover the inwardly extending flange on a bedpan, and anchoring means on the outwardly extending edge portion for engaging the bedpan for securing the liner thereto, said body including the outwardly extending edge portion and the anchoring means thereon being constructed of bio-degradable material to enable the liner and its contents to be flushed into a sewage system without clogging, said body and outwardly extending edge portion being folded into a generally planar condition for storage and for initial insertion into the interior of a bedpan with the body being folded by the provision of a plurality of radially extending overlapping creases defining an accordian fold structure which facilitates peripheral enlargement of the body into conformity with the interior of a bedpan when extended.

3,936,891
SHOWER SPRAY MASSAGE-SAUNA

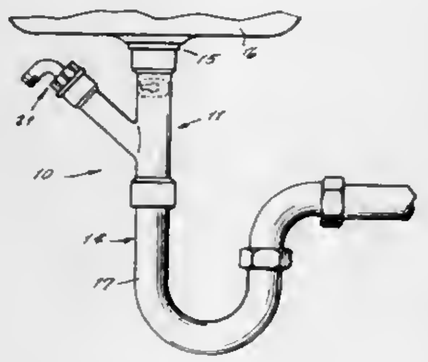
Harry H. Kulde, 21851 Newland St. No. 248, Huntington Beach, Calif. 92646
Filed Oct. 11, 1973, Ser. No. 405,685
Int. Cl.² A47K *3/22*; A61H *33/06*
U.S. Cl. 4—145 **5 Claims**

1. In a shower spray massage sauna for use in a bathroom comprising, in combination, a diverter valve installed between a shower head and a shower arm pipe, means introducing hot water from the shower arm pipe to the diverter valve by manipulating shower water control valves associated therewith, means directing hot water through the diverter valve and the connecting hose to said spray arm pipe means, said hose connects the diverter valve to the spray arm pipe means, said spray arm pipe means supports a body enclosing cover and is located inside said cover, means introducing the hot water spray under the cover, means combining inside the cover the force from the water for massage and the hot water spray for sauna, said cover adapted to assume a use or a non-use position, said spray arm pipe means supported and held in either position by a mounting mechanism attached to the wall, and in the use position a seat is placed inside the body enclosing cover.



3,936,892
MULTI PURPOSE CLEAN-OUT ATTACHMENT

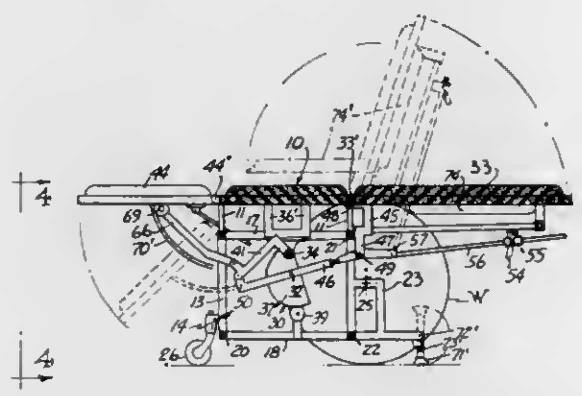
Fredrick A. Miller, 2400 El Camino Real, Mountain View, Calif. 94040
Filed Sept. 26, 1974, Ser. No. 509,414
Int. Cl.² E03D *11/00*
U.S. Cl. 4—255 **2 Claims**



1. A multi purpose clean-out attachment for a drain system comprising a fitting having a length of pipe with means at opposite ends thereof for connection to the drain system and a branch line pipe composite therewith and angularly disposed one end thereof to said length of pipe at an acute angle with one end of said length of pipe and having means at the free end of said branch pipe remote from said length of pipe for connection to a garden hose, a first integrally mounted manually controllable valve cock with the valve portion mounted within said one end of said length of pipe, and a second integrally mounted manually controllable valve cock with the valve portion mounted within said free end of said branch pipe whereby a drain system in which said clean-out attachment is connected can be cleaned out by closing said first valve cock, opening said second valve cock and directing water through said branch pipe from a garden hose into the length of pipe.

3,936,893
ELEVATOR MEANS FOR THE CHAIR SEAT OF A CONVERTIBLE WHEEL CHAIR AND BED

Martha A. Anderson, and Robert M. Anderson, both of 443 Century Drive, Campbell, Calif. 95008
Filed July 22, 1974, Ser. No. 490,396
Int. Cl.² A61G *01/02*
U.S. Cl. 5—81 R **7 Claims**

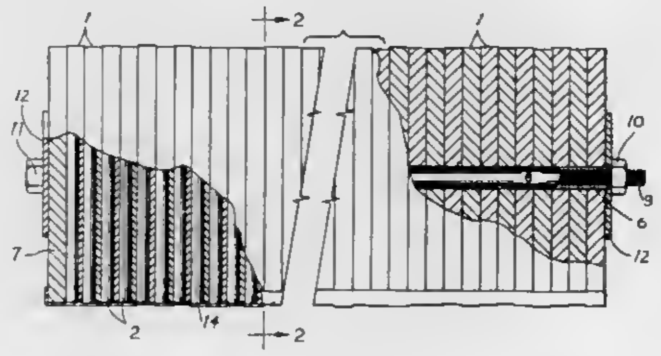


1. An invalid transferring apparatus comprising in combination:

a. a wheeled frame having sides with fore and aft corner posts providing tubular guideways;
b. a chair seat having leg-like rods at each of its four corners disposed in a respective corner post of said frame for guided up and down movement relative to the latter;
c. a cam shaft journaled transversally of said frame on the underside and in spaced relation to said chair seat;
d. support rollers mounted on said frame and adjacent each side wall thereof;
e. a cam wheel secured to each end of said camshaft and having their cam edges supported on said support rollers; and
f. lever means on said cam shaft for turning the latter to thereby change the position of said cam wheels, relative to said support rollers and effect a raising and lowering of said chair seat relative to said frame.

3,936,894
ARTIFICIAL NEST FOR HATCHING BEES

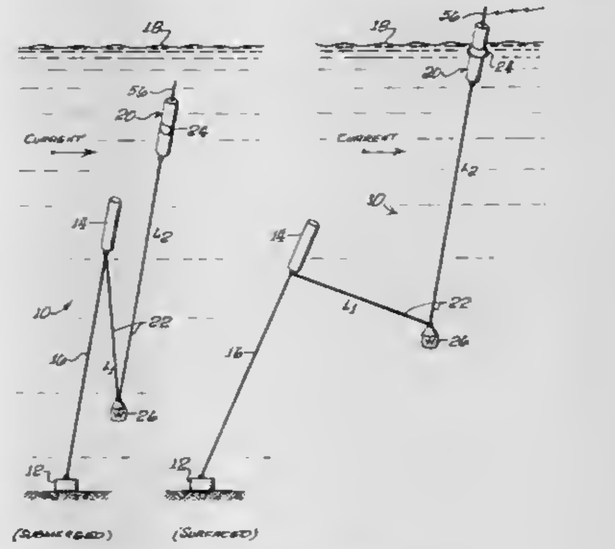
Theodore C. Barber, P.O. Box 5, Orovada, Nev. 89425
Filed Nov. 7, 1974, Ser. No. 521,653
Int. Cl.² A01K *47/04*
U.S. Cl. 6—11 **4 Claims**



1. A nesting structure for wild bees, comprising:
a plurality of parallel engaging wooden boards forming a stack;
a plurality of parallel grooves formed in one side surface of each board running from one side edge of the board to an opposite side edge in the direction of the wood grain;
wherein the remaining side surface of each board is planar and ungrooved with each grooved surface resting against a planar side of an adjacent board to form a plurality of closed channels opening at opposite ends of the stacked boards;
an aperture formed through each board from the grooved surface to the planar surface forming an open bore extending through the stack;
a supporting rod received through the open bore with ends protruding from the stack;
spring clamp bars at the rod ends for engaging the stack at opposite ends thereof; and
means on the rod for deflecting the spring clamp bars against the stack ends to secure the boards therein.

3,936,895
BENTHIC BOBBING BUOY

Howard R. Talkington, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 14, 1975, Ser. No. 540,781
Int. Cl.² B63B *21/52*; G01F *23/10*
U.S. Cl. 9—8 R **6 Claims**



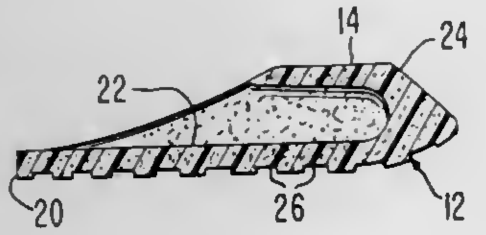
1. A benthic bobbing buoy system comprising:
an anchor;
a buoy;
an anchor line connecting the buoy to the anchor;
said anchor line being of a length to establish the buoy in a submerged position;
another buoy for bobbing between the surface of the water and a submerged position;
a bobbing line connecting the bobbing buoy to the submerged buoy;
a weight connected to the bobbing line intermediate its ends for limiting the descent of the bobbing for cooperating with said bobbing buoy for forming a bobbing buoy-weight system buoy when the bobbing buoy-weight system is negatively buoyant;
means for selectively changing the buoyancy of the bobbing buoy-weight system between a positively buoyant condition to a negatively buoyant condition;
the length of the bobbing line between the submerged buoy and the weight means being represented by L_1, and the length of the bobbing line between the weight means and the bobbing buoy being represented by L_2; and
L_2 being greater in length than L_1 so that during all positions of the bobbing buoy tension is maintained on all of the lines to prevent entanglement thereof.

3,936,896
BUOYANT SHOE

Adelene Creamer, 137 Palmer Ave., Mountain View, Calif. 94040
Continuation of Ser. No. 877,351, Nov. 17, 1969, abandoned.
This application June 5, 1972, Ser. No. 260,006
Int. Cl.² A63C *15/00*
U.S. Cl. 9—310 D **1 Claim**

1. An article of footwear to be loosely worn directly on the foot in a body of water comprising: a backless, strapless shoe

having an upper and a sole integral with each other, the rear margin of the sole defining the rearmost structure of the shoe, said upper being spaced forwardly of said rear margin, said upper and said sole defining a space for receiving the front part of the foot, said upper and sole being formed from a lightweight, buoyant, expanded plastic material in sufficient amount to increase the buoyancy of the wearer in a body of water and to permit the wearer, when wearing a second, identical shoe to floatingly walk in the water and to bob up and down in the water while walking therethrough and while the shoe remains below the upper level of the water said shoe being easily releasable from the foot in case of the wearer's emergency.



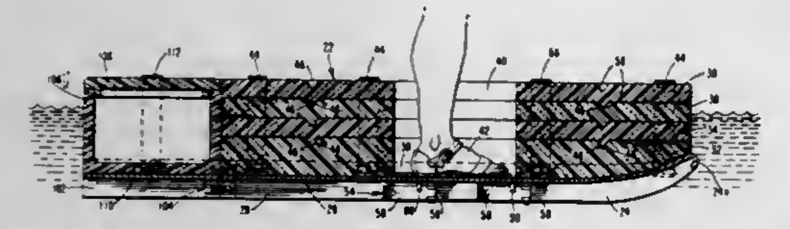
3,936,897
BUOYANT WATER-WALKING APPARATUS

Peter H. Schaumann, 15 Jasmine Lane, Spanish Lakes, Fort Pierce, Fla. 33450

Filed Sept. 21, 1973, Ser. No. 400,193

Int. Cl.^{2} A63C *15/00*

U.S. Cl. 9—310 D **19 Claims**



1. Buoyant water-walking apparatus including a pair of elongated buoyant water-walker assemblies adapted for attachment to the feet of a user, each of said assemblies comprising:

a rigid, elongated base member comprising a longitudinally extending central web section having lateral edges and a pair of longitudinally extending flange sections attached respectively to a corresponding edge of the web section and extending generally normally away from the latter in the same direction to present laterally spaced keels;

at least one buoyant flotation member carried by said web section on the opposite side thereof from the direction of extension of the flange sections, said flotation member being generally coextensive in length and width with said web section and having an opening extending therethrough in a direction which is generally normal to the major plane of the web section, said opening being adapted for receiving the foot of a user of the apparatus therein;

said base member has a generally H-shaped transverse cross-sectional configuration presenting said web section and said keels, and also presenting a pair of wall sections extending in the opposite direction from said keels, said flotation member being disposed between said wall sections; and,

means detachably securing said flotation member and said base member together to present said assembly.

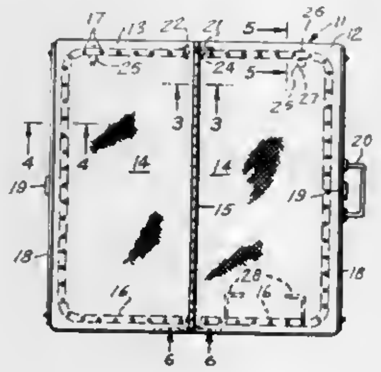
3,936,898
PORTABLE RAMP FOR WHEEL CHAIRS

Alice Poe, 10330 Outlook Drive, Leawood, Kans. 66207

Filed May 5, 1975, Ser. No. 574,303

Int. Cl.^{2} E01D *15/12*

U.S. Cl. 14—72 R **3 Claims**



1. A portable ramp for wheelchairs, comprising a pair of hinged together and rectangular configurated plates with flange means so as to prevent said wheelchair from rolling off the side edges of said ramp, a pair of U-shaped tubular members secured to one side of said plates, a pair of spaced apart leg members secured one each to said tubular members, a pivotable latch strap member secured to one of said tubular members, handle grip means secured to one of said flanges and snap latch means secured one portion each to said flange members, a pair of rotatable hook members secured to said platform providing depending means for said portable ramp from the rear of said wheelchair.

3,936,899
AUTOMATIC SWIMMING POOL CLEANER

Melvyn L. Henkin, 19640 Greenbriar Drive, Tarzana, Calif. 91356, and Jordan M. Laby, 3940 Davana Road, Sherman Oaks, Calif. 91403

Division of Ser. No. 275,173, July 26, 1972, abandoned. This application Mar. 7, 1974, Ser. No. 448,817

Int. Cl.^{2} F04H *3/20*

U.S. Cl. 15—1.7 **24 Claims**

1. A swimming pool cleaner including a car adapted to travel underwater on the surface of a pool vessel;

said car including a frame supported on traction means for engaging said pool vessel surface;

water supply means carried by said car having an inlet and at least one outlet;

turbine means carried by said car coupled to said water supply means outlet;

drive means coupling said turbine means to said traction means for drivingly rotating said traction means in response to water supplied to said turbine means for propelling said car along said vessel surface;

thrust means carried by said car for producing a water flow having a component directed to produce a reaction force on said car acting to thrust said traction means against said pool vessel surface;

debris container means and debris suction means carried by said car;

said debris container means including an entrance opening;

said debris suction means including a suction entrance located on said car in close proximity to said vessel surface and a suction exit coupled to said debris container means entrance opening.

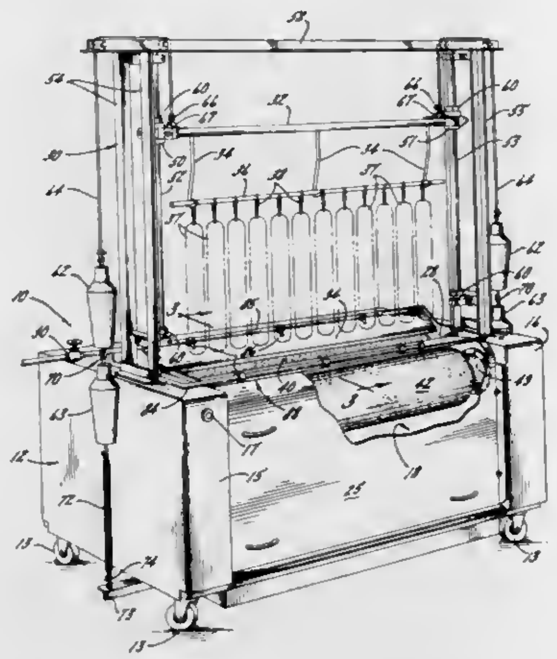
3,936,900
SAUSAGE BRUSHING APPARATUS

Miklos Bende, 17 Fairview Court, Clarendon Hills, Ill. 60514

Filed Mar. 12, 1975, Ser. No. 557,636

Int. Cl.^{2} A46B *13/04*

U.S. Cl. 15—3.12 **9 Claims**



1. Apparatus for brushing encased sausages and the like to remove encrusted materials therefrom comprising, in combination, an enclosed housing having a chamber therein, means defining an elongated opening on the upper surface of the housing leading to the chamber, upright support means disposed above said housing including a vertically movable transverse member means for suspending a plurality of said encased sausages above said housing opening adapted to move said suspended sausages into the housing through said opening, means including a pair of elongated brushes disposed within the housing chamber and beneath the housing opening, the axes of said brushes being generally parallel and skewed with respect to one another, and means for counter-rotating said brushes at predetermined speeds and directions so that encased sausages suspended from said vertically movable transverse member means upon downward movement thereof pass between the rotating brushes and the sausages are rotated about their own axes by and during the brushing action thereon.

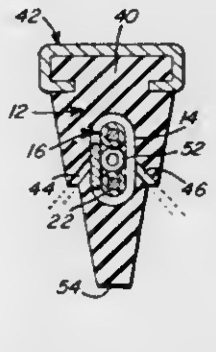
3,936,901
WIPER BLADE WITH EMBEDDED HEATING ELEMENT

Dana L. Theckston, 16440 15th Ave. S.W., Seattle, Wash. 98166

Filed Sept. 17, 1974, Ser. No. 506,895

Int. Cl.^{2} B60S *1/46*

U.S. Cl. 15—250.04 **9 Claims**



1. A heated windshield wiper assembly, comprising, in combination:

a. a heat resistant flexible blade element having an internal cavity arranged for receiving water; and

b. electrical heating means encased in the blade element for uniformly distributing heat throughout the blade element and heating water in the cavity, the heating means including:

i. a resistance element;

ii. coupling means for establishing a grounded electrical connection to the resistance element, the heating means further including a heat distributing element in the form of a flexible, tubular member encased in the blade element and constructed from a non-conductive material, the tubular member arranged extending in a folded condition along the length of the blade element for flexing therewith, the heating means still further including a nonconductive coil means encircling the tubular member in folded condition for holding the tubular member in its folded condition and assuring uniform distribution of heat transferred from the resistance wire throughout the blade element, the coil means being completely encased in the blade element; and

c. a plurality of holes provided in the blade element, the holes being arranged communicating with the cavity along coextensive sides of the blade element, water being fed from the tube into the cavity in the blade element for exiting through the holes.

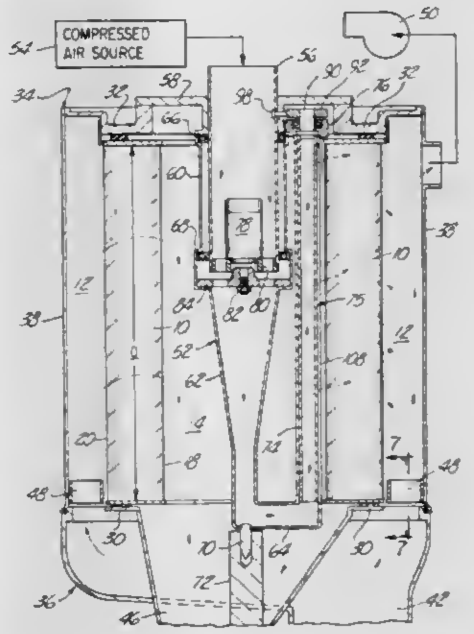
3,936,902
AUTOMATIC CLEANING APPARATUS FOR FLUID FILTERS

Michael Allen Shackleton, Edina, and Roy Earl Anderson, Burnsville, both of Minn., assignors to The United States Government as represented by the Secretary of the Army, Washington, D.C.

Filed July 11, 1974, Ser. No. 487,835

Int. Cl.^{2} A47L *5/38*

U.S. Cl. 15—304 **3 Claims**

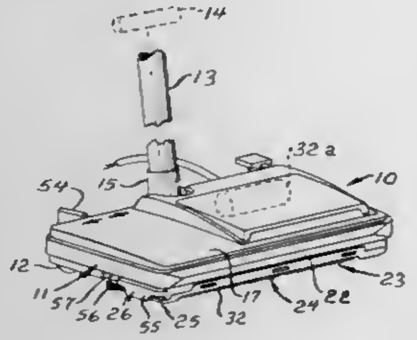


1. In a dust removal apparatus comprising an annular filter element having an axial length "l"; a tubular air flow nozzle structure extending along and closely adjacent to a perimeter surface of the filter element for the full axial length l; said nozzle structure comprising a port forming means facing the perimeter surface of the filter element, said port forming means having an axial dimension substantially less than the filter element length l; means to move flushing air through the nozzle structure so that the port forming means removes dust build-ups from the filter element; first means to move the port forming means in a direction parallel to the filter element axis; and second means to move the port forming means circumferentially around the filter element surface:

the improvement wherein the second moving means operates continuously to produce a relatively slow uninterrupted circumferential motion of the port forming means, and the first moving means operates only at the end of each complete revolution of the port forming means to produce a relatively quick step-like axial indexing of said port forming means.

3,936,903
VACUUM CLEANER SUCTION TOOL

Robert Edward Johnson, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed June 3, 1974, Ser. No. 475,972
Int. Cl.² A47L *9/00*
U.S. Cl. 15—331 **13 Claims**



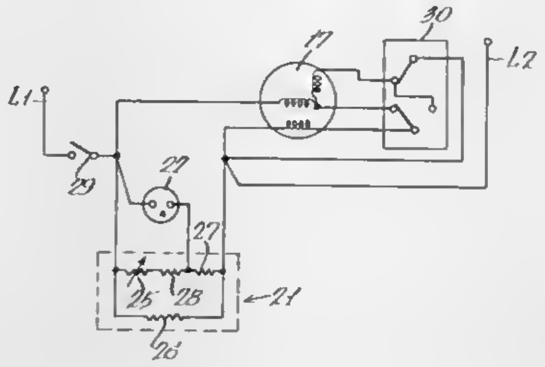
1. In a vacuum cleaner having a nozzle defining a suction passage having an inlet and an outlet, and means for sucking dirt laden air through said inlet to said outlet, said inlet of the nozzle defining a mid-portion and an edge portion, an improved means for controlling the suction of the dirt laden air through said inlet portions comprising: duct means extending from said edge portion of the nozzle inlet to said outlet; valve means at said outlet selectively movable between a first position and a second position, said valve means in said first position restricting air flow through said duct to said outlet while permitting unrestricted air flow from said mid-portion of the nozzle inlet to said outlet; means cooperating with said valve means for causing said valve means in said second position to permit unrestricted air flow through said duct while concurrently providing a preselected reduced air flow from said mid-portion of the nozzle inlet to said outlet and preventing full shutoff of said air flow from said mid-portion of the nozzle inlet to said outlet, said reduced air flow being substantially less than said unrestricted air flow through said duct; and means for selectively moving said valve means to said first and second positions.

5. The vacuum cleaner suction control means of claim 1 further including comb means adjacent said inlet edge portion.

3,936,904
VACUUM CLEANER CLOGGED CONDITION INDICATOR

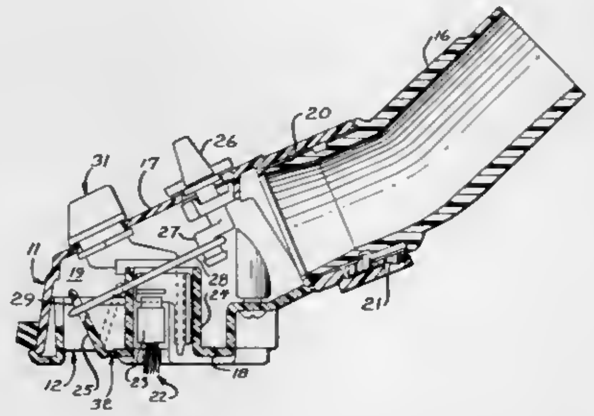
Larry Thomas Bashark, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed June 3, 1974, Ser. No. 475,974
Int. Cl.² A47L *9/28*
U.S. Cl. 15—339 **11 Claims**

1. In a vacuum cleaner having an air suction means including drive means, collecting means for removing entrained material from air flowed therethrough by said suction means, and means for conducting said air in heat transfer association with the drive means for cooling the drive means, means for indicating an undesirable clogging of the collecting means comprising: electrically operable indicator means carried by said vacuum cleaner; thermally responsive means for operating said indicating means when the thermally responsive means is heated to above a preselected temperature including a positive temperature coefficient resistor electrically connected to said indicator means for varying the effective voltage applied thereto; heater means having a preselected heating capacity for heating said thermally responsive means to above said preselected temperature; and thermally conductive means mounting said heater means and thermally responsive means in heat transfer association, at least one of said heater means and said thermally responsive means being in heat transfer association with the sucked air subsequent to its conduction in heat transfer association with said drive means for maintaining the thermally responsive means at a temperature below said preselected temperature when the collecting means is substantially unclogged whereby said indicating means is precluded from operating and thereby indicate the substantially unclogged condition of said collecting means, and permitting the heater means to heat said thermally responsive means to above said preselected temperature when the collecting means is substantially clogged whereby said indicating means is caused to operate and thereby indicate the substantially clogged condition of said collecting means.



3,936,905
VACUUM CLEANER SUCTION TOOL

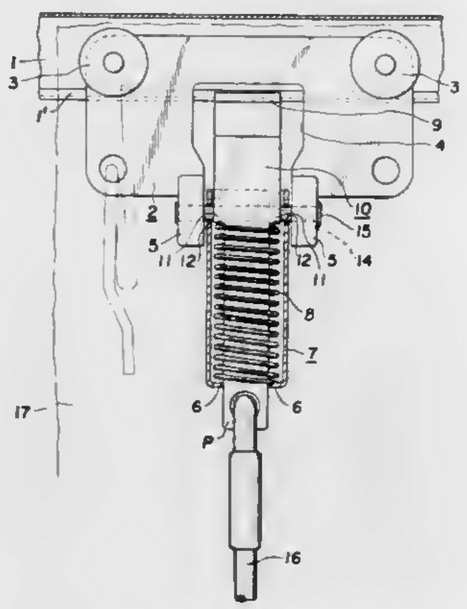
Bruce E. Stewart, St. Paul, Minn., and Keith E. Carr, Stevensville, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed June 3, 1974, Ser. No. 475,971
Int. Cl.² A47L *9/00*
U.S. Cl. 15—416 **13 Claims**



1. A vacuum cleaner suction tool comprising: a nozzle defining a suction inlet opening including a midportion and an edge portion, a suction outlet opening, and a flow passage for conducting dirt laden air drawn through said suction inlet opening mid-portion and edge portion to said outlet opening; and blocking means for selectively substantially blocking air flow through said suction inlet opening mid-portion to provide high suction force at said suction inlet edge portion, said blocking means being incapable of restricting air flow through said suction inlet edge portion.

3,936,906
CURTAIN STOPPING DEVICE

Ietsugu Takazawa, Baocho-Chidorigabu-chl Habitation 901, 3 Sanban-cho, Chiyoda, Tokyo, Japan
Filed May 21, 1974, Ser. No. 471,918
Claims priority, application Japan, May 25, 1973, 48-59196
Int. Cl.² A47H *5/032*
U.S. Cl. 16—87.4 R **2 Claims**



1. A curtain positioning assembly comprising in combination:

an elongated tubular rail for suspending draw curtains or the like,

said rail including spaced longitudinal track portions flanking a longitudinal slot;

curtain hanger means mounted on said rail and movable therealong for opening or closing the curtains, the improvement in which said curtain hanger means comprises:

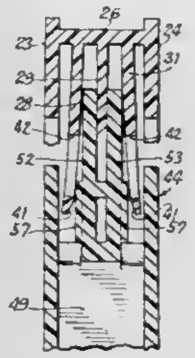
a plate member having upper roller means disposed within said rail and engaged on inner surface portions of said longitudinal track portion, said plate member having a portion depending through said longitudinal slot of said rail and means for suspending a curtain therefrom; and

a brake assembly mounted on said plate portion depending through said rail slot, said brake assembly comprising a tubular sleeve anchored on said depending plate portion beneath said rail tracks, said tracks having lower surface portions for engagement with braking means, a braking member reciprocatingly disposed in said sleeve anchored on said plate member, said braking member being displacable relative to said rail and sleeve, spring means disposed in said sleeve in engagement with said braking member and constantly urging the braking member toward said rail, said braking member having braking portions constantly urged toward and engageable with the respective, spaced lower surfaces of said rail track, said braking member having a portion depending through said sleeve for connection to a tension-applying means for overcoming said spring means to permit the curtain hanger means to be readily moved longitudinally along said rail.

3,936,907
MOLDED HINGE CONSTRUCTION

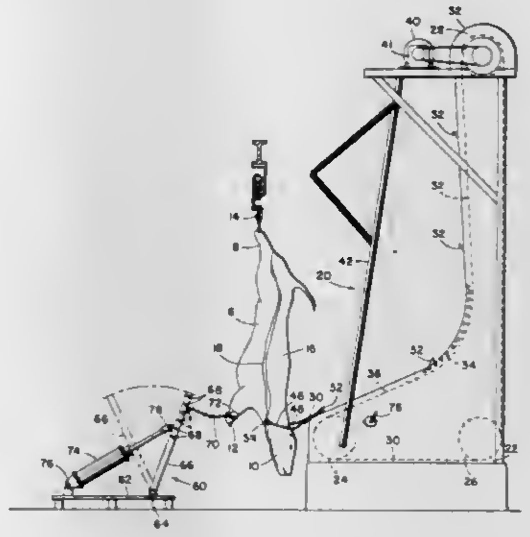
Eric G. Jansons, Schaumburg, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.
Filed Mar. 19, 1975, Ser. No. 559,840
Int. Cl.² E05D *1/06, 15/50, 5/02*
U.S. Cl. 16—171 **6 Claims**

1. A molded hinge construction comprising first and second cooperating components molded from a plastic composition material, the first component including a pair of spaced parallel ribs integral with a transversely extending web, an intermediate rib integral with said web and disposed intermediate and in spaced relation to said parallel ribs, each of said parallel ribs having a circular opening with said openings being in coaxial registration, the second component including a pair of spaced ears, each having on its outer surface a circular boss with said bosses being in coaxial registration and journalled in respective circular openings, said ears being received in respective spaces between said parallel and intermediate ribs with the intermediate rib being received between said ears.



3,936,908
HIDE PULLING METHOD AND APPARATUS

Frank M. Cook, San Mateo, Calif., assignor to The Cincinnati Butchers' Supply Company, Cincinnati, Ohio
Division of Ser. No. 304,386, Nov. 2, 1972. This application Apr. 2, 1975, Ser. No. 564,202
Int. Cl.² A22B *5/16*
U.S. Cl. 17—21 **7 Claims**



1. Apparatus for removing the hide from a meat carcass having the hide slitted lengthwise of the belly, the hide being partially detached from the carcass to provide side flaps disposed along opposite sides of the carcass, said apparatus comprising: a conveyor suspending the prepared carcass from at least one hind leg with the head and forelegs lowermost; a primary hide puller including means to grip the side flaps at opposite sides of the suspended carcass and forcibly pull the side flaps in a common direction toward and beyond the spine of the suspended carcass; and a secondary puller including means to grip the forelegs and forcibly pull said forelegs in a direction substantially opposite to the direction of pull applied to the side flaps by said primary hide puller.

3,936,909

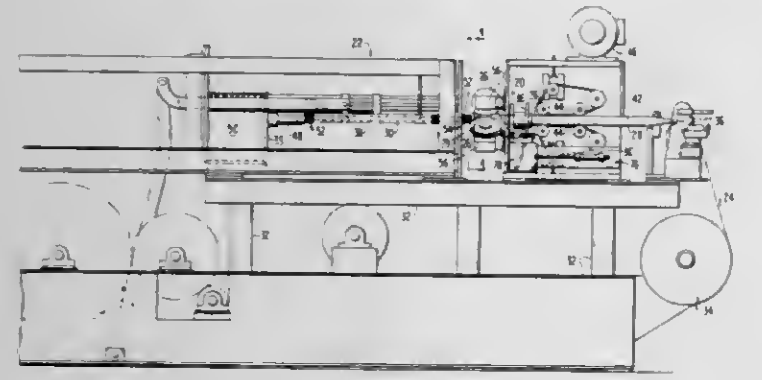
APPARATUS FOR SEVERING THIN TUBING MEMBERS

Clarence F. Carter, Danville, Ill., assignor to Carter Engineering Company, Danville, Ill.

Filed Jan. 23, 1974, Ser. No. 435,772

Int. Cl.² A22C *11/02*

U.S. Cl. 17—42 **32 Claims**



26. An apparatus for severing a length of shirred casing for prepared meat from unshirred casing, said apparatus comprising:

mandrel means for receiving the shirred casing therearound;

inflation means for introducing a pressurized fluid into an interior of said casing disposed around said mandrel means to inflate and maintain a portion of said casing out of contact with said mandrel means;

penetrating means for at least partially penetrating a portion of said casing inflated by said inflation means to weaken said casing, said penetrating means being movable from a condition out of contact with said casing radially inwardly to a condition spaced apart from said mandrel but in contact with said unshirred casing;

limiting means operably connected to said arcuate penetrating means for limiting said radial movement thereof so that said arcuate penetrating means together form an essentially circular enclosure for said unshirred casing of a diameter;

greater than that of said mandrel, but

less than the diameter to which said contacted circumference is being urged by said pressurized fluid so as to maintain said penetrating means in spaced apart relation to said mandrel and in constricting relation to said unshirred casing;

first engaging means for engaging a portion of said shirred casing;

second engaging means for engaging a portion of said unshirred casing; and

displacing means cooperating with said penetrating means for displacing said first engaging means relative to said second engaging means to exert longitudinal tensioning forces on said unshirred casing to:

maintain said unshirred casing substantially out of contact with said mandrel,

force said unshirred casing against said penetrating means while said unshirred casing remains in substantially continuously spaced apart relation to said mandrel, and

overstress said weakened portion of said casing to sever a length of shirred casing from said unshirred casing.

3,936,910

CARDING METHOD AND MACHINE

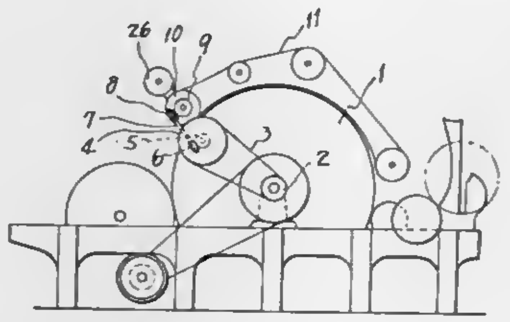
Toyozo Tanaka; Shigeyoshi Kubota, and Masao Kunieda, all of Yamatotakada, Japan, assignors to Unitika Limited, Osaka, Japan

Filed Apr. 29, 1974, Ser. No. 464,958

Claims priority, application Japan, Apr. 28, 1973, 48-194

Int. Cl.² D01G *15/08*

U.S. Cl. 19—102 **12 Claims**



1. A carding method using a carding machine having a cylinder and a loop of rotary flats, a portion of which loop is opposed to the cylinder, comprising intermittently driving the flats with repetitive drive and stop intervals, and feeding a unit length of flats on each drive interval less than the length of said portion of the loop of flats.

3,936,911

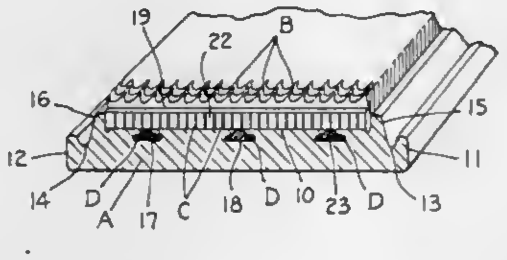
METALLIC FLAT CLOTHING

Marion Winifred Roberts, Greenville, S.C., assignor to John D. Hollingsworth on Wheels, Inc., Greenville, S.C.

Filed Oct. 7, 1974, Ser. No. 512,451

Int. Cl.² D01G *15/24*

U.S. Cl. 19—113 **2 Claims**



1. A flat strip having metallic card clothing for use on a flat top card comprising:

an elongated base strip having a longitudinal channel therein extending the length thereof for receiving metallic card clothing transversely therein;

said metallic card clothing including a plurality of segments of wire each having a base carrying upstanding teeth adjacent one edge thereof;

a plurality of spaced substantially vertical passageways extending entirely across a vertical side surface of said base of each of said segments;

said segments being stacked in aligned relation transversely of said channel with each base abutting a next succeeding base forming aligned rows of teeth extending transversely across and projecting above said base strip;

an adhesive substantially filling said vertical passageways affixing each strip to the next succeeding strip and to the base strip; and

at least one open longitudinal slot in a base of said channel forming a reservoir for receiving adhesive having been poured over said segments and flowing through said vertical passageways attaching said segments to said base strip.

3,936,912

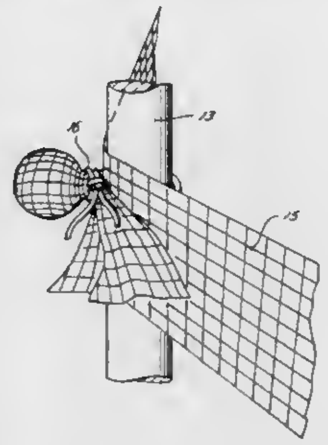
DEVICE AND SYSTEM FOR TIE-DOWN

Bill Flanagan, Jr., Houston, Tex., assignor to Griffolyn Company, Inc., Houston, Tex.

Filed May 28, 1974, Ser. No. 473,563

Int. Cl.² A44B *21/00*; A45F *1/16*

U.S. Cl. 24—73 CF **5 Claims**



1. A system for covering articles or openings comprising, in combination, a flexible sheet material, said sheet material being adapted to be held in protecting position by a binding means secured thereto, said binding means having two end portions connected by a flexible link such that the end portions can be brought together by flexing the link causing the latter to form a loop, the end portions each being substantially larger than the part of the link adjacent thereto, said sheet material enveloping the end portions with the latter being brought-together as aforesaid, and securing means engaging the sheet material at the juncture between the brought-together end portions and the link to hold the sheet material in enveloping position around said end portions, said link being flexible throughout its length and resiliently stretchable lengthwise.

3,936,913

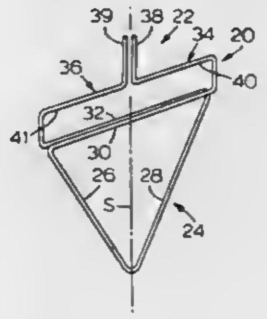
CLIP FOR T-BAR CEILING STRUCTURES

Sydney Joseph Weissman, 49 Apollo Drive, Don Mills, Ontario, Canada

Filed Apr. 7, 1975, Ser. No. 565,504

Int. Cl.² A44B *21/00*; E04G *17/18*

U.S. Cl. 24—73 C **5 Claims**



1. A clip for use in suspending an article from a T-bar ceiling structure which includes a plurality of T-bars each having an upright stem and a bottom limb defining oppositely directed lateral portions, wherein the clip is symmetrical about a longitudinal line of symmetry and is made of a single length of rigid wire shaped to define an upper portion for engagement with one of said T-bars in use, and a lower portion for engagement by an article to be suspended from the T-bar, wherein the lower portion of the clip defines the general shape of an inverted isosceles triangle arranged with its base transverse to said line of symmetry and includes: two inclined sections angularly disposed with respect to said line of symmetry and extending along the inclined sides of said triangle; and two transverse sections extending generally parallel to one another generally along the base of the triangle and each joined at one end to a respective one of said inclined sections: and wherein the upper portion of the clip defines two angled sections each joined at one end to the opposite end of a respective one of said transverse sections, said angled sections including: respective portions at the ends of said length of wire, said end portions being positioned generally parallel to and closely adjacent said line of symmetry and projecting outwardly of the clip; and respective rectilinear portions which extend outwardly from said end portions transverse to said line of symmetry, whereby when the clip is fitted to a T-bar in use, said end portions lie against respectively opposite sides of the stem of the T-bar and said rectilinear portions extend across the upper surfaces of said lateral portions of the bottom limb of the T-bar.

3,936,914

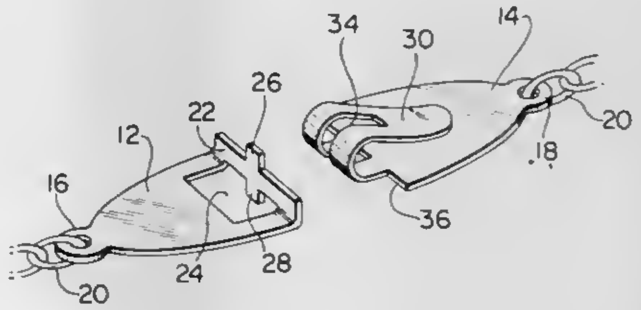
SEPARABLE FASTENER

William A. Mancini, 49 Galileo Ave., Providence, R.I. 02908

Filed Apr. 7, 1975, Ser. No. 565,759

Int. Cl.² A44B *17/00*, *13/00*

U.S. Cl. 24—201 BN **6 Claims**



1. A separable fastener adapted to releasably interconnect spaced ends of a flexible chain or the like, comprising a first plate-like body member having means at one end for receiving an end of the flexible chain, an upstanding flange extending laterally across its other end, there being a centrally positioned opening in said body adjacent said other end, said opening being bridged by said flange, said flange having centrally positioned upwardly and downwardly extending lugs thereon, and a second plate-like body member having means at one end for receiving the other end of the flexible chain, said second body member at its other end having an integral tongue extending away from said other end and then gently curving upwardly, rearwardly and downwardly and terminating in closely spaced relation to the upper surface of said second body member, said tongue being of lesser width than said opening, whereby when said first and second body members are releasably connected to each other, said tongue extends beneath said flange, upwardly through said opening, and then rearwardly over said flange, said tongue having an elongated slot extending from adjacent the beginning thereof and terminating intermediate said rearwardly and downwardly extending portion, said slot receiving therethrough the aforesaid oppositely extending lugs.

3,936,915

CLOTH FEEDING DEVICE FOR TENTERING MACHINES

Arno Becker, Freudenstadt, Germany, assignor to Bruckner-Trockentechnik KG, Leonberg, Germany

Continuation-in-part of Ser. No. 328,606, Feb. 1, 1973, abandoned. This application Dec. 11, 1974, Ser. No. 531,680

Claims priority, application Germany, Feb. 24, 1972, 2208756; July 27, 1972, 2237014

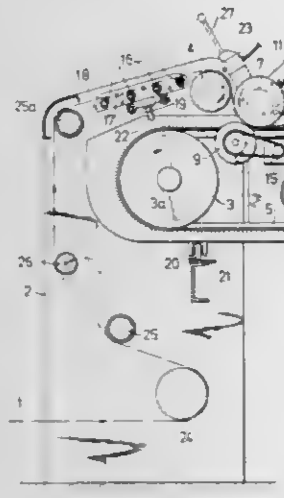
Int. Cl.² D06C *3/02*

U.S. Cl. 26—57 A **10 Claims**

1. A tentering machine for a cloth web, comprising a pair of endless needle chains, each having a driven needling roller cooperating therewith for impaling an edge of the web on an associated needle chain, the two needling rollers being substantially coaxial, and means for adjusting the lateral positions

of the needling chains and needling rollers associated therewith, wherein the improvement comprises

a. driven feed roller means arranged ahead of and substantially tangent to the needling rollers, and having a web-driving periphery extending substantially continuously across the width of the web, for delivering the web downwardly onto the needling rollers with substantially no intervening gap in which lateral sagging of the web can occur,



b. members for spreading the web edges located immediately ahead of the feed roller means, and

c. edge-sensing means directed against the periphery of the feed roller means, for sensing the web edges immediately after they have been spread, while the web is supported across its entire width by the feed roller means, and for controlling the means for adjusting the lateral positions of the needling chains and needling rollers associated therewith.

3,936,916

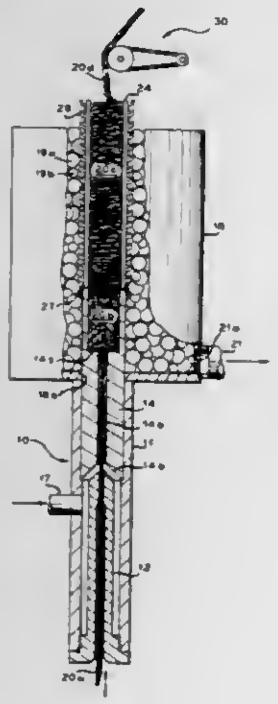
METHOD AND APPARATUS FOR THE PRODUCTION OF TEXTURED YARN

David E. Borenstein, and Charles S. Hatcher, both of Greenville, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 9, 1974, Ser. No. 468,489

Int. Cl.² D02G *1/12*

U.S. Cl. 28—1.6 **13 Claims**



1. A method comprising:

passing a yarn to be textured to a yarn texturing zone; and

passing the yarn directly to a restraining zone in which a yarn wad forms, said restraining zone containing a rigid sleeve, a plurality of individual stacked members and a flexible sleeve through which the yarn wad passes, said rigid sleeve being positioned intermediate the yarn wad and the stacked members to assist in guiding the yarn wad through the restraining zone, said flexible sleeve being of substantially uniform diameter and being positioned intermediate the yarn wad and the stacked members so as to prevent said stacked members from being removed from said restraining zone by becoming entrained in the yarn wad as the stacked members confine and restrain the yarn wad.

6. Apparatus for restraining a yarn wad comprising:

a yarn texturing means having an inlet and an outlet;

a chamber having an inlet and an outlet and an inner and outer surface, said inlet attached to the outlet of the texturing means;

a flexible sleeve having a substantially uniform diameter and having an inlet and an outlet and an inner and an outer surface, said inlet of said sleeve being attached to the outlet of said texturing means and said sleeve being positioned in and extending through said chamber;

a plurality of individual stacked members positioned in said chamber between the inner surface thereof and the outer surface of said flexible sleeve; and

a rigid sleeve disposed in said chamber adjacent the inlet thereof and extending therethrough to form an extension of said inlet, said rigid sleeve constructed so as to permit the stacked members to pass therethrough.

3,936,917

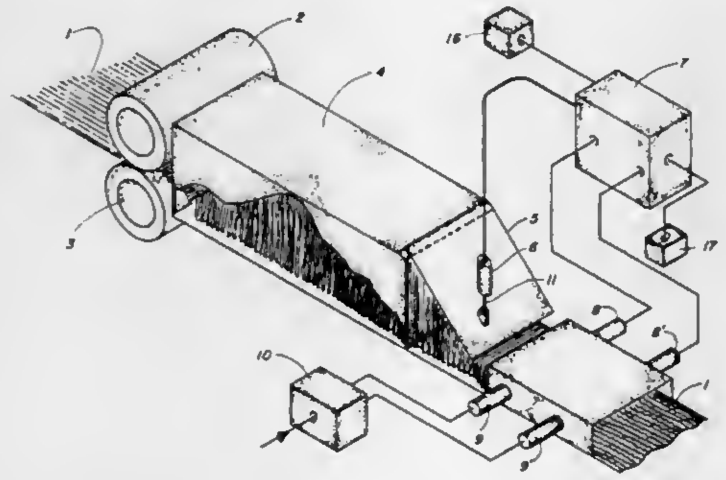
AUTOMATIC GATE LOADING CONTROL FOR STUFFER BOX TEXTURING MACHINE

Dick Charles Vermeer, Chester, and Raymond Joseph Biron, Colonial Heights, both of Va., assignors to Allied Chemical Corporation, Petersburg, Va.

Filed May 19, 1975, Ser. No. 578,588

Int. Cl.² D02G *1/12*

U.S. Cl. 28—1.7 **20 Claims**



1. In a stuffer box crimping process for synthetic yarn comprising

forcing said yarn into a crimping chamber to form a wad of said yarn in said crimping chamber, said chamber having a pressure regulated discharge means at the outlet thereof, and

discharging said yarn from said crimping chamber, and

controlling said discharge of said yarn from said chamber by regulating said pressure on said discharge means, said regulating pressure being varied in response to sensing position of said wad of said yarn at the exit of said crimping chamber and regulating said pressure with a pressure sensor controller,

the improvement comprising

sensing said position of said wad of said yarn in said crimping chamber by

issuing at least one jet of fluid, said jet aligned to issue across the exit of said crimping chamber, and

receiving said jet of fluid in an enlarged orifice communicating with said pressure sensor controller,

so that the presence of said wad of said yarn is sensed by interrupting said jet of fluid by said wad, thereby changing pressure in said enlarged orifice to regulate said discharge means through said pressure sensor controller.

3,936,918

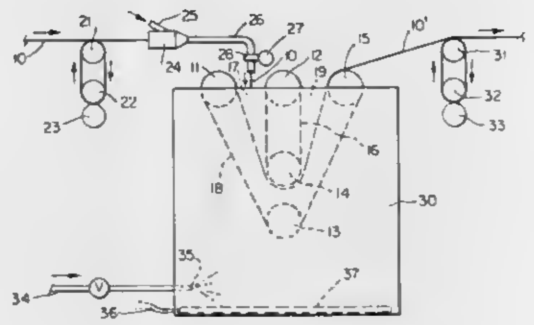
STRAND TREATMENT APPARATUS

Ralph W. List, East Lansdowne; Malcolm F. Irwin, West Chester, and Robert K. Stanley, Media, all of Pa., assignors to Textured Yarn Co., Inc., Kennett Square, Pa.

Division of Ser. No. 461,976, April 18, 1974. This application Jan. 20, 1975, Ser. No. 542,443

Int. Cl.² D06C *1/06*

U.S. Cl. 28—59 **11 Claims**



1. In apparatus for setting crimped textile strands, the improvement comprising a relatively coarse conveyor screen, a relatively fine conveyor screen, rotative means constraining the respective screens for travel adjacent one another over a part of their paths, the constraining means including a yieldable arrangement for permitting accumulation of strand between the respective screens to force them apart from one another at a locus of support thereof and means for injecting setting fluid at the side of the coarse screen opposite the strand-contacting surface thereof.

3,936,919

PLURAL RANGE PRESSURE REGULATOR CONSTRUCTION OR THE LIKE AND THE METHOD OF MAKING THE SAME OR THE LIKE

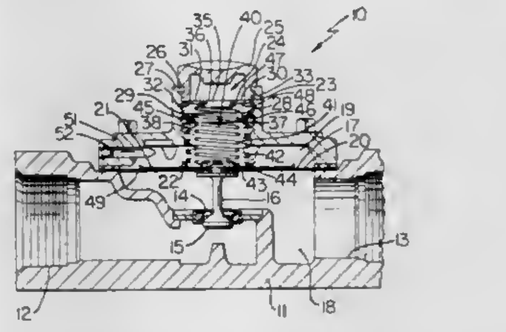
Francis S. Genbauffe, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 320,520, Jan. 2, 1973, Pat. No. 3,825,029. This application May 16, 1974, Ser. No. 470,435

Int. Cl.² B23P *15/00;* F16K *31/12*

U.S. Cl. 29—157.1 R **5 Claims**

1. A method for making a plural range pressure regulator construction comprising the steps of providing a housing means with an inlet and an outlet separated by a valve seat and with a valve member for controlling said valve seat and being interconnected to a flexible wall carried by said housing means and controlling the movement thereof relative to said valve seat, disposing biasing means in said housing means for acting on one side of said wall to tend to move said wall in one direction relative to said housing means, said biasing means comprising a plurality of separate spring means, causing each spring means to act on said wall to provide one pressure range for said regulator construction, storing one of said spring means completely in a storage space of said housing means so that the same will not act on said wall whereby the remaining spring means acting on said wall will provide another pressure range for said regulator construction, forming said one spring means and said remaining spring means from coiled compression springs, causing said springs to be concentrically disposed and each having one end thereof operatively engaging said wall to provide said one pressure range for said regulator construction, and forming said storage space for said one spring means to be located in aligned relation with said remaining spring means and adjacent the other end thereof so as to be completely spaced from said wall a distance at least equal to the length of said remaining spring means whereby said one spring means is out of operative engagement with said wall and completely spaced therefrom a distance at least equal to the length of said remaining spring means when said other pressure range is being provided.



3,936,920

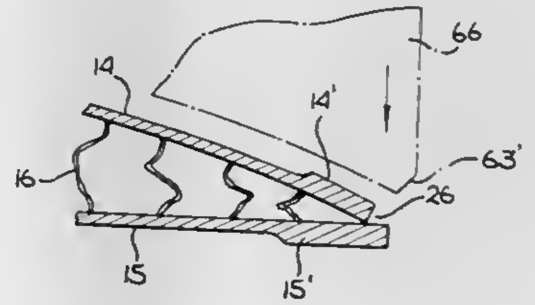
AERODYNAMIC SHELL STRUCTURE WITH FITTINGS AND METHOD FOR FABRICATING SAME

Charles E. Conn, Jr., Santa Ana, Calif., assignor to TRE Corporation, Beverly Hills, Calif.

Continuation-in-part of Ser. No. 280,645, Aug. 14, 1972. This application May 4, 1973, Ser. No. 357,359

Int. Cl.² B23P *15/04;* B23K *31/00*

U.S. Cl. 29—156.8 B **43 Claims**



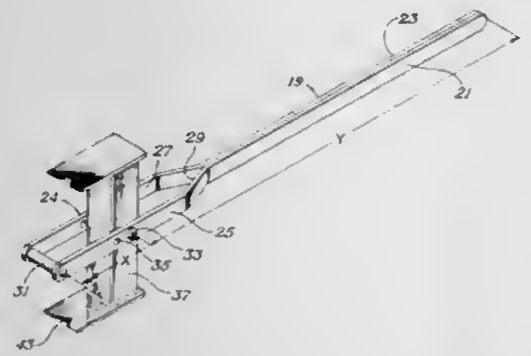
1. A method for fabricating a thin skin, internally stiffened, aerodynamic shaped shell structure having homogeneous leading and trailing edges with parent material properties comprising the steps of:

a. fabricating a panel blank comprised of metallic stiffening material disposed between and joined to first and second planar metallic face sheets, said face sheets each having a thickness dimension substantially less than its surface dimensions, the edges of each of said face sheets having in their longitudinal direction a sufficient volume of flow material thereon to achieve the required solidity of said leading and trailing edges, said volume of flow material being about 5–10 percent oversized, and said stiffening material giving to said structure the required strength and stiffness to weight ratios;

b. forming said panel blank into a basic aerodynamic shape by imparting thereto aerodynamic contours;

- c. providing a die assembly including a die ram, said die assembly being installed within means for applying pressure and said die ram being configured to achieve the desired contours for said aerodynamic structure;
- d. disposing said panel blank in said die assembly; and
- e. applying a forming and joining force to said panel blank by the action of said die ram in said die assembly as pressure is applied to said die assembly in an inert atmosphere at a temperature below the transformation temperature of the metal of said panel blank for a sufficient duration to form said aerodynamic structure and to acheive solid state diffusion bonding of said edges of said face sheets into said leading and trailing edges, said forming and joining force being determined from the volumes of said flow material and the plastic flow and creep characteristics of said metal whereby said oversized flow material on said face sheet edges allows said edges to fit within said die assembly with a positive fill, thereby substantially eliminating the necessity of very close tolerances.

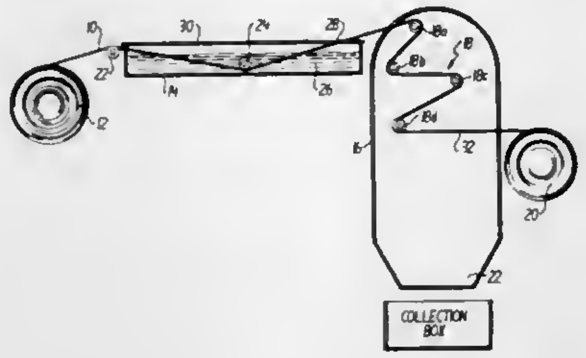
3,936,921
APPARATUS FOR INSTALLING COIL SPRINGS
Joseph Kenneth Ross, Rte. 2 Box 124D, Rockwall, Tex. 75087
Filed May 19, 1975, Ser. No. 578,515
Int. Cl.^{2} B23P *19/04*
U.S. Cl. 29—227 5 Claims



1. An for installing or removing a compressed coil spring encircling a shaft, comprising:
- a lever arm;
- a fork having two tines formed at the forward end of the lever arm;
- coupling means for coupling the forward ends of the tines with the shaft to form a fulcrum point;
- a shank pivotally attached between the tines and having a portion extending transverse to the longitudinal axis of the lever arm;
- a first shoe affixed to a first end of the shank, projecting forwardly for applying compression to the coil spring, the engaging surface of the shoe being inclined an angle α with respect to the longitudinal axis of the coupling means for mating evenly with the coils of the spring.

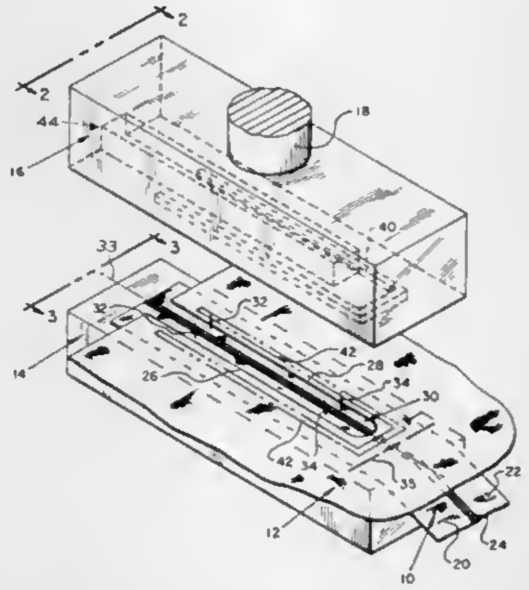
3,936,922
METHOD AND APPARATUS FOR RECOVERING INSULATION AND CONDUCTOR FROM SCRAP INSULATED WIRE
Michael Blackstone, Atlanta; Bryant K. Maddox, Carrollton; Bobby A. Rowland, Carrollton, and Stanley L. Tate, Carrollton, all of Ga., assignors to Southwire Company, Carrollton, Ga.
Division of Ser. No. 334,972, Feb. 22, 1973, Pat. No. 3,858,776. This application May 16, 1974, Ser. No. 470,474
Int. Cl.^{2} B23P *19/04*
U.S. Cl. 29—234 9 Claims

1. Apparatus for continuously removing the insulating covering from the entire surface of insulated wire without damaging the wire comprising:
- means for continuously feeding wire covered with a fragmentable insulation from a supply source to a recovery station;
- means for continuously bending said wire and insulation along the length thereof and inducing stresses in said insulation in an amount sufficient to fracture said insulation;



- means for contacting said insulation covered wire with a refrigerant capable of rendering said insulation brittle positioned between said continuous feeding means and said continuous bending means; and
- means for recovering the resulting bare wire and fragmented insulation in an undamaged condition.

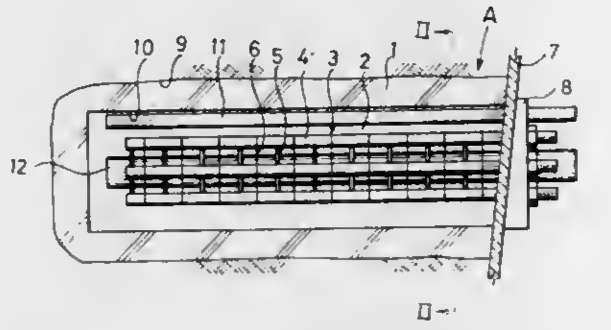
3,936,923
APPARATUS AND METHOD FOR INSTALLING A SLIDE FASTENER
Charles E. Cantor, Englewood, N.J., assignor to Textron Inc., Providence, R.I.
Filed Nov. 5, 1974, Ser. No. 521,112
Int. Cl.^{2} B29D *5/00*
U.S. Cl. 29—408 19 Claims



1. An apparatus for installing a slide fastener to material, the slide fastener having a pair of carrier tapes and opposed interengaged fastening elements with each one of the elements being secured to its respective one of the adjacent edges of the pair of carriage tapes, said apparatus comprising
- a support block means,
- a first pair of laterally spaced pins disposed at one end of said block means,
- a second pair of laterally spaced pins disposed at the opposed end of said block means and spaced at a longitudinal distance less than the length of the slide fastener from said first pair of pins,
- each pin of said first or second pair being laterally spaced relative to the other pin of its respective pair at a distance greater than the overall width of the interengaged elements of the slide fastener, and
- said first and second pairs of pins adapted for piercing certain opposed and spaced end portions of the adjacent edges of the carrier tapes of the slide fastener so as to effect securing of the slide fastener to said first and second pairs of pins while at the same time to effect substantially flat nesting engagement of the secured slide fastener on said block means prior to attachment of the material to the slide fastener.

14. The method as set forth in claim 11 wherein an additional step includes stretching the slide fastener between its ends on the order of one-eighth of an inch per length of the slide fastener between its ends prior to piercing certain opposed and spaced end portions of the adjacent edges of the carrier tapes of the slide fastener with the first and second pairs of pins.

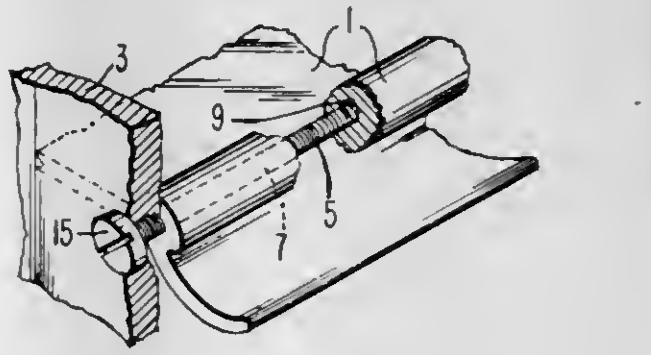
3,936,924
RELEASEABLE STEEL CABLE ANCHOR AND METHOD FOR WITHDRAWING THE SAME
Yoshio Ichise, 20-6 Kitazawa 1-chome, Satagaya, Tokyo, and Kinichiro Sato, 2-47 Nakamachi 1-chome, Kaganei, Tokyo, both of Japan
Filed Jan. 25, 1974, Ser. No. 436,547
Claims priority, application Japan, Sept. 21, 1973, 48-106601; Dec. 14, 1973, 48-140462
Int. Cl.^{2} B23P *19/02*
U.S. Cl. 29—427 14 Claims



1. A method of withdrawing steel cables having terminal end portions from a cable anchor which includes at least one steel cable encased in a thermally fusible, combustible thermoplastic resin bonding material, having a fusing temperature and a combustion temperature, and embedded within a hardenable material, said method comprising the steps of: heating said thermally fusible bonding material within said hardenable material to at least said fusing temperature wherein said cable is debonded from said bonding material, and applying a tensional force longitudinally along said cable, thereby withdrawing said cable from said anchor.

3,936,925
METHOD FOR ATTACHING EXTRUSIONS AND THE LIKE TO FRAME MEMBERS
Dewey M. Simms, Jr., Westland, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Division of Ser. No. 356,394, May 2, 1973, abandoned. This application Dec. 19, 1974, Ser. No. 534,453
Int. Cl.^{2} B23P *11/02*
U.S. Cl. 29—446 4 Claims

1. A method of attaching an extrusion or the like to a frame member or the like, said method being effective for providing a secure connection therebetween irrespective of the weight of the extrusion or the displacement forces applicable to the extrusion or to the frame member that would tend to effectuate their inadvertent disconnection, said method comprising the steps of:
- a. forming a cylindrical channel in said extrusion in an edge thereof that is to be connected to said frame member,
- b. forming an aperture of equal or slightly greater diameter than the diameter of said cylindrical channel in said frame member in an area thereof to which said extrusion is to be attached,
- c. selecting or forming a self-locking pin of predetermined configuration and of a diameter slightly less than the diameter of said cylindrical channel, said predetermined configuration of said pin providing a shank portion defining the diameter of said pin, a head portion, a nose portion opposite said head portion and including inclined conical slopes leading in an increasing order of diameter from a leading edge thereof, a conical recess contiguous to and sloping inversely relative to said conically sloping nose portion, and a compressible and expandable C-shaped spring translatably carried in said conical recess and having an outer diameter slightly greater than the diameter of said shank portion when said spring is disposed in a relaxed state in a discrete position corresponding to the smallest diameter of said recess,
- d. installing a resilient concave washer on the shank portion of said pin adjacent the head portion thereof,



- e. inserting said self-locking pin through said aperture formed in said frame member and into said cylindrical channel formed in said extrusion, said insertion being accompanied, nearing the completion thereof, by the application of sufficient force to overcome the resiliency of said washer between said head portion of said pin and said frame member, and
- f. releasing said pin to the expelling force applied by said resilient concave washer thereto, said expelling force being effective to translate said pin slightly outwardly of said channel and to thereby expandably translate said C-shaped spring carried in said conical recess to a discrete position therein corresponding to an increased diameter thereof wherein said spring is grippably impinged against the walls of said cylindrical channel formed in said extrusion to rigorously resist withdrawal of said pin therefrom and separation of said extrusion from said frame member.

3,936,926
METHOD OF COUPLING COMPRESSOR IMPELLERS AND SHAFTS
Hanns Hornschuch, Easton, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Continuation of Ser. No. 444,740, Feb. 22, 1974, abandoned, which is a division of Ser. No. 349,656, April 10, 1973, Pat. No. 3,826,587. This application June 11, 1975, Ser. No. 585,999
Int. Cl.^{2} B23P *19/02*
U.S. Cl. 29—525 1 Claim

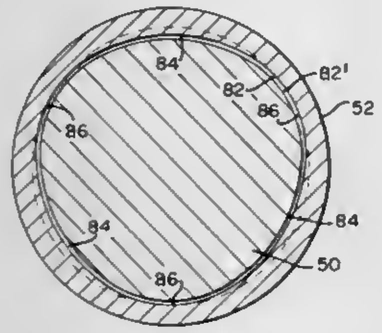
1. A method of coupling first and second members, comprising the steps of:
- forming said members with surfaces which, upon the latter being interjoined in a first engagement mode, effect a mutual, slidable engagement therebetween, and upon said surfaces being interjoined in a second engagement mode, defined by only a rotation of the surface of one said members relative to the surface of the other of said members, effect a torqued, interference fit therebetween;

slidably engaging said members in said first engagement mode; and

rotating said surface of said one member relative to the surface of said other member; wherein

said forming step comprises forming said surface of said first member with at least three equidistant and arcuate lobes, spacing said lobes apart from each other with intervening portions of said surface, and forming said intervening portions with only a convex shape, and forming said surface of said second member with at least three, equidistant, lobe-accommodating arcuate recesses, spacing said recesses apart from each other with intervening, concave-shaped portions of said second member surface; and

said first member comprises a compressor impeller shaft, and said second member comprises a compressor impeller.



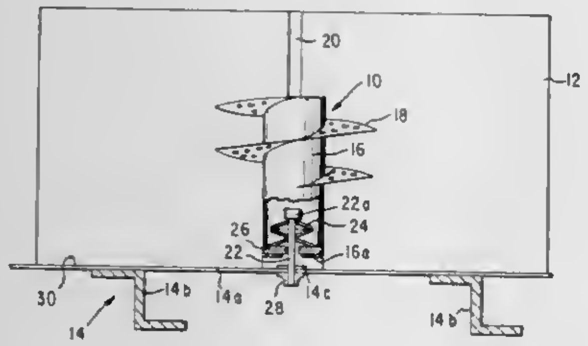
3,936,927
AUGER ATTACHMENT METHOD FOR INSULATION

William C. Schneider, Houston, Tex., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed July 24, 1974, Ser. No. 491,417

Int. Cl.² B23P *19/00*

U.S. Cl. 29—526 **1 Claim**



1. A method of attaching a rigidized surface insulation to a spacecraft comprising the steps of:

a. drilling a clearance hole in one side of said insulation, said clearance hole extending for only a portion of the thickness of said insulation;

b. drilling a tool hole on the opposite side of said insulation, coaxial and in communication with said clearance hole, said tool hole being located on the side of said insulation which will be exposed to an extreme temperature environment;

c. installing a blind-end fastener in a selected location on said spacecraft;

d. inserting an auger attachment means in said insulation through said clearance hole in said insulation, said auger having an attachment screw integral therewith, and connected to said auger by preloaded spring means;

e. aligning said attachment screw with said blind-end fastener; and

f. securing said insulation in place by tightening said attachment screw by means of a tool inserted through said tool hole and communicating with said attachment screw.

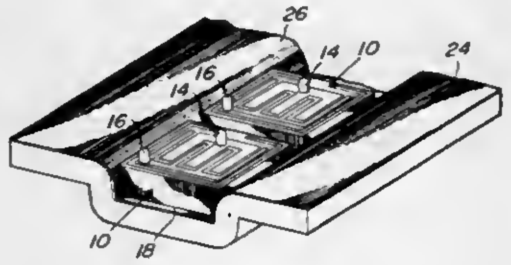
3,936,928
METHOD FOR PROVIDING MOUNTING ASSEMBLIES FOR A PLURALITY OF TRANSISTOR INTEGRATED CIRCUIT CHIPS

Gene P. Hopp, Wheeling, Ill., assignor to Motorola, Inc., Chicago, Ill.

Continuation of Ser. No. 403,370, Oct. 4, 1973, abandoned. This application Apr. 21, 1975, Ser. No. 570,297

Int. Cl.² B01J *17/00*

U.S. Cl. 29—577 **6 Claims**



1. The method of providing a plurality of individual mounting assemblies, each assembly supporting a semiconductor component, each said component having at least a first electrode on one surface thereof and a second electrode on the opposite surface thereof, comprising the steps of:

forming one continuous electrically conductive strip having an upper surface and one continuous central cavity formed therein extending the length thereof, said cavity being of a depth substantially equal to the height of said semiconductor components including said electrodes, said strip having a pair of arms extending the length thereof and protruding outwardly therefrom, one on each side of said cavity,

first tinning said arms and central cavity portions of said upper surface of said strip with solder,

then placing said semiconductor components in said cavity in spaced relation so that a first one of said electrodes of each said components is in contacting engagement with said strip in said cavity,

reheating said strip to a temperature whereby said solder flows to attach said semiconductor components to said strip at said first electrodes, and

severing said strip as provided in the heating step transversely between adjacent semiconductor components to provide said plurality of individual mounting assemblies with an individual semiconductor component supported on each mounting assembly.

3,936,929
FET AND BIPOLAR DEVICE AND CIRCUIT PROCESS WITH MAXIMUM JUNCTION CONTROL

Kenneth E. Bean, and William W. Lloyd, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 275,116, July 26, 1972. This application June 26, 1974, Ser. No. 483,264

Int. Cl.² B01J *17/00*

U.S. Cl. 29—580 **8 Claims**

1. A method for producing dielectrically isolated electronic devices on a supporting electrically isolated substrate comprising the steps of:

a. forming a plurality of orientation-dependent-etched grooves of precisely-known, different depths in a low-resistivity monocrystalline semiconductor body of one conductivity type,

b. forming an insulation layer on said body and in said grooves,

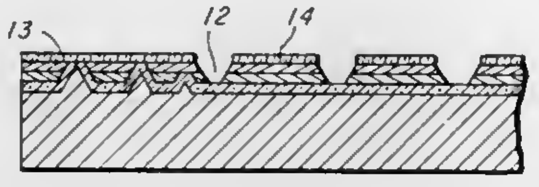
c. depositing a polycrystalline semiconductor support layer on said insulation layer,

d. removing monocrystalline semiconductor material from the backside of said body, until a first layer having the desired thickness is achieved, as indicated by exposure of said insulation layer in the bottom of a selective groove,

e. forming a second monocrystalline semiconductor layer of the other conductivity type overlying said first layer, to a desired thickness as indicated by said grooves,

f. forming isolation moats circumscribing said first and second layers at a location spaced from said grooves, said moats extending to said substrate and providing a single crystalline mesa comprising said first and second layers, and

g. forming semiconductor pockets of said other conductivity type selectively spaced within the surface of said second layer to provide active device regions.



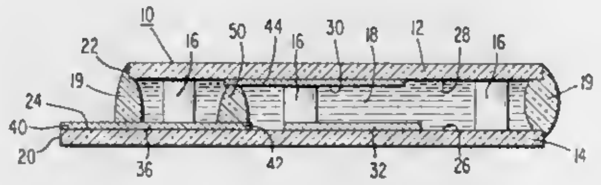
3,936,930
METHOD OF MAKING ELECTRICAL CONNECTIONS FOR LIQUID CRYSTAL CELLS

Herman Abraham Stern, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 270,245, July 10, 1972, abandoned. This application May 6, 1974, Ser. No. 467,150

Int. Cl.² H01S *4/00*

U.S. Cl. 29—592 **4 Claims**



1. In a method of fabricating a liquid crystal cell, the improvement comprising:

providing on a surface of a first glass substrate first and second spaced apart conductive layers,

adhering to a portion of said first layer a slurry of glass in the form of a bump, said slurry having conductive particles therewithin,

providing on a surface of a second glass substrate a third conductive layer,

disposing said two substrates in face-to-face spaced apart relation with said second and third layers disposed in overlapped relation and with said bump disposed in alignment with a portion of said third layer, and

simultaneously fusion bonding said bump to said first and third layers while maintaining a space between said substrates, said bump providing an electrical connection between said first and third layers and spanning the space between said substrates.

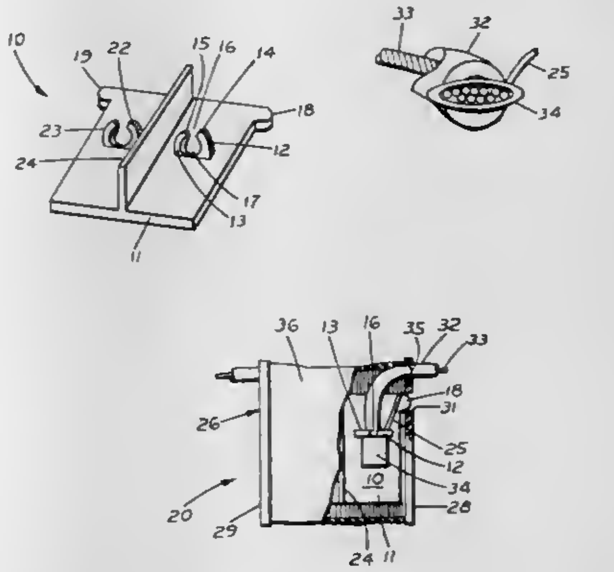
3,936,931
METHOD EMPLOYING A LEAD HOLDER TO RETAIN A LEAD CONNECTION ON AN ELECTRICAL COIL

Donald S. Hubbartt, Winnebago, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed June 5, 1974, Ser. No. 476,421

Int. Cl.² H01F *41/10, 5/04*

U.S. Cl. 29—605 **3 Claims**



1. A method for retaining a connection between insulated magnet and lead wires in fixed position on a coil and insulating the connected wires from magnet wire wound on the coil comprising the steps of positioning the wires side-by-side and with adjacent ends, joining the adjacent ends in an electrical connection having a transverse dimension larger than the diameter of the insulated lead wire, squeezing the insulated parallel wires transversely through a gap into a snugly confining space between projections from the surface of an insulating base, and affixing said base to the coil.

3,936,932
METHOD AND APPARATUS FOR MAKING FILTER ELECTRODES

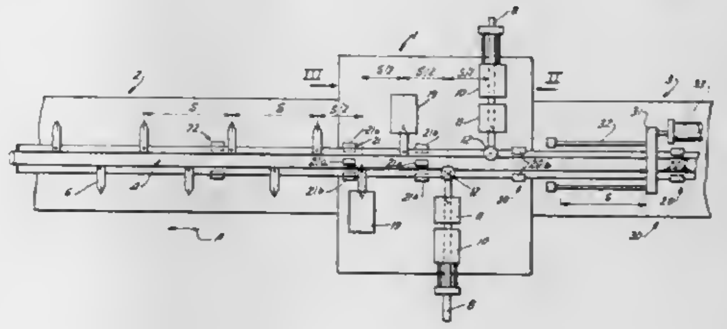
Rudolf Gerber, 8134 Adliswil, Birkenweg 11, Switzerland

Filed Feb. 5, 1975, Ser. No. 547,400

Claims priority, application Switzerland, July 9, 1974, 9408/74

Int. Cl.² H01R *43/00*

U.S. Cl. 29—628 **10 Claims**



1. An apparatus for making a filter electrode, said apparatus comprising:

core feed means for longitudinally advancing in a transport direction toward a work station and in a succession of steps each having a length equal to an even multiple of a predetermined distance a pair of Ω-section metallic channels having coextensively contacting flat flanges and forming a straight hollow core;

a pair of supplies of metallic strip at said station;

a pair of strip feed means at said station on opposite lateral sides of said core and spaced apart in said transport direction by said distance for advancing said strips by an increment from said supplies incrementally in opposite directions toward said core on each stepwise advance of said core;

a pair of spot-welding means at said station on opposite lateral sides of said core and each between the respective strip feed means and said core for spot welding the ends of said strips to the respective coextensively contacting flanges of said core after each incremental advance of said strips and between step advances of said core;

a pair of stamping means at said station on opposite lateral sides of said core and each between a respective spot-welding means and a respective strip feed means for cutting an end section off the respective strip on each incremental strip advance and for forming in the end of the cut-off end section turned away from said core a split extending transverse to said core; and

a pair of bending means at said station on opposite lateral sides of said core and each spaced downstream from the respective spot-welding means by a spacing equal to a whole multiple of said distance for bending the split ends of each cut-off end section in opposite direction on opposite sides of the respective split.

3,936,933

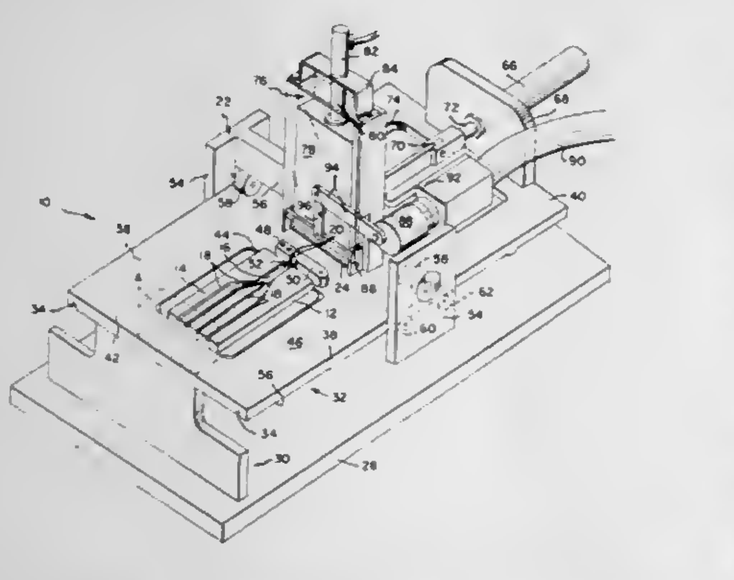
METHOD FOR POSITIONING LEADING PORTIONS OF INDIVIDUAL WIRES OF A PLURALITY OF WIRES IN SPACED APART RELATIONSHIPS WITH RESPECT TO EACH OTHER AND A TEMPLATE UTILIZED IN ACCOMPLISHING THE SAME

Kenneth Foster Folk; Milton Dean Ross, and Walter Clifton Shatto, Jr., all of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 389,924, Aug. 20, 1973, Pat. No. 3,891,013. This application Apr. 2, 1975, Ser. No. 564,523

Int. Cl.² H01R *43/00*

U.S. Cl. 29—628 **11 Claims**



1. A method of positioning leading portions of individual wires of a plurality of wires in spaced apart relationships with respect to each other, comprising the steps of:

providing first and second surfaces, said first surface having a primary groove capable of substantially accommodating therein a trailing portion of each of said wires in a bunched together condition and a plurality of secondary grooves which emanate from said primary groove along separate, spaced apart paths, each of said secondary grooves capable of substantially accommodating therein said leading portion of only one of said wires;

positioning said trailing portions of said wires in said bunched together condition in said primary groove of said first surface;

introducing an application of compressive forces on said wires at said trailing portions thereof by bringing said second surface and said primary groove of said first surface into close proximity to each other while said trailing portions are so positioned in said primary groove of said first surface; and

continuing said application of said compressive forces simultaneously along said wires by moving at least one of said first and second surfaces relative to the other such that said application of said compressive forces simultaneously progresses along each of said wires from said trailing portion toward said leading portion of each of said wires whereby said leading portions of said wires are forced individually into respective secondary grooves and thereby positioned in spaced apart relationships with respect to each other.

3,936,934

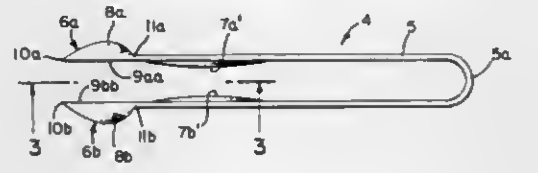
CULINARY CORING DEVICE

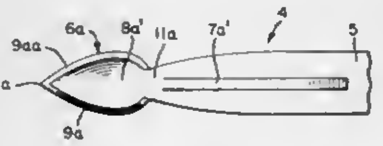
Nancy Bowden, 40 E. Clinton Ave., Tenafly, N.J. 07670

Filed Jan. 23, 1975, Ser. No. 540,890

Int. Cl.² A47J *23/00, 25/00*

U.S. Cl. 30—113.2 **2 Claims**





1. A culinary device comprising in combination: a handle element having opposite distal ends thereof projecting in a common direction, said handle element being tong-shaped with the opposite distal ends thereof extending in said common direction and having two separate and spaced-apart spoon bowls mounted unitarily one from one of the distal ends and the other from the remaining other distal end as a unitary single stamped-strip of material with the handle element being bent into substantially a U-shape, said spoon bowls being of substantially shallow oval shapes positioned one relative to the other with their concavities in opposing relationship to one another and with the distal ends of the respective spoon bowls pointed both in said common direction, peripheral edges of each of said spoon bowls being substantially sharpened as cutting edges, a ridge-projection being formed in each of the legs of the handle element of the U-shape strip at respective positions adjacent the spoon bowls respectively, with each rigid projection extending in a direction parallel to a longitudinal axis of the handle element whereby each leg of the U-shape strip is strengthened adjacent the respective spoon bowl.

3,936,935

MITERING APPARATUS

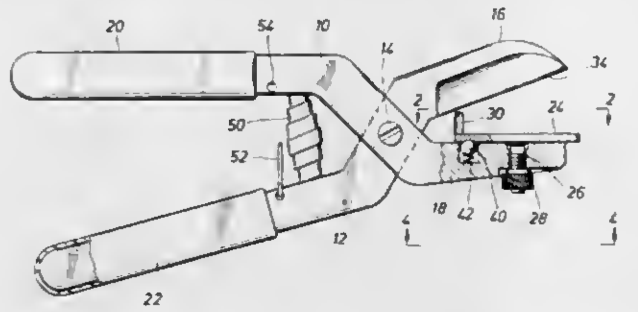
Walter J. Gregory, c/o 303 S. Doty, Stillwater, Okla. 74074

Filed Mar. 12, 1975, Ser. No. 557,773

Int. Cl.² B26B *17/00*

U.S. Cl. 30—179 **4 Claims**

1. Apparatus for cutting elongated material, such as molding, at a selected angle to its longitudinal axis for miter joints and the like, comprising first and second members, means connecting the members intermediate their ends for relative pivotal scissor type movement so that the portions of the members on one side of the connecting means provide jaws and the portions of the members on the other side provide handles for moving the jaws toward and away from each other, a cutting edge carried by the jaw of the second member for cutting the material at the desired angle when the jaws are moved together by the handles to force the cutting edge on the jaw of the second member through the material positioned on the jaw of the first member, means for positioning the material on the jaw of the first member for cutting at a selected angle to its longitudinal axis, said means including a base plate and stop means carried by the base plate to engage the material to be cut and position the material in a preselected position on the base plate, means mounting the base plate between the jaws and on the jaw of the first member for rotation around an axis parallel to the direction of movement of said jaws for locating the stop means to position the material to be cut at the desired angle to the jaws and for holding the base plate in the desired position, said mounting means including a threaded mounting member connected to the base plate and extending through the jaw to allow pivotal movement of the plate around the longitudinal axis of the mounting member and a nut in threaded engagement with the mounting member to engage the lower side of the jaw and clamp the plate in the desired position when rotated in one direction and to move out of engagement with the jaw when rotated in the other direction to allow the plate to be positioned for the stop means to hold the material at the desired angle to be cut, said stop means comprising two spaced stop plates having aligned surfaces to engage the material to be cut, said stop plates being spaced apart and of a length to allow the cutting edge on the jaw of the first member to pass therebetween when the plate is positioned to make a cut of 90° to the longitudinal axis of the material and to allow the cutting blade to clear the stop plates when the plate is positioned to make a cut of 45° to the longitudinal axis of the material.



3,936,936

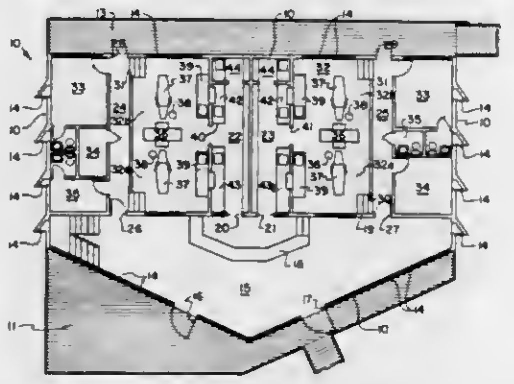
DENTAL CLINIC

William Lewis Knudson, 105 E. Skyline Drive, Brigham City, Utah 84302

Filed June 23, 1969, Ser. No. 835,454

Int. Cl.² A61C *19/00*

U.S. Cl. 32—1 **5 Claims**



1. A dental clinic comprising

a building having an entrance and reception area;

at least one corridor extending from the entrance and reception area;

an operatory adjacent to each said corridor;

a wall cabinet containing dentist's equipment extensible out from each side thereof, extending partially across each operatory centrally thereof and dividing the operatory into sections;

a doorway from each said corridor opening into each section of the operatory; and

a patient's chair in each section arranged such that a patient sitting therein is facing away from the wall cabinet.

3,936,937

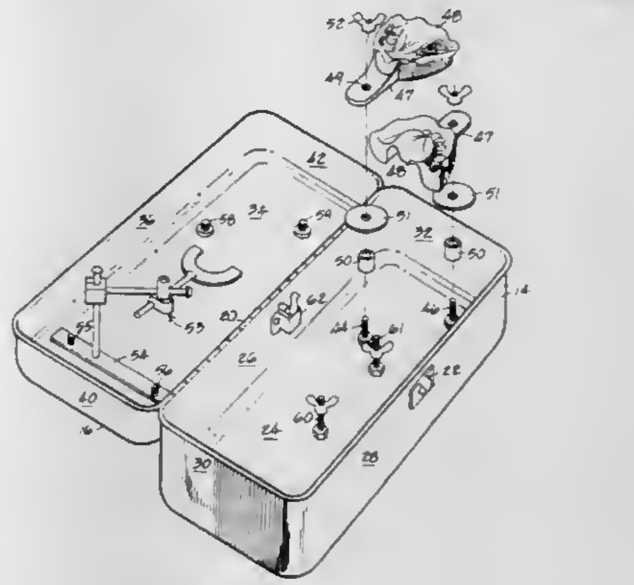
TRANSPORT CASE FOR GNATHOLOGICAL APPARATUS AND GNATHOSTOMATIC APPLIANCES

Woodford W. Gordon, 121 Miraloma Drive, San Francisco, Calif. 94127

Filed Nov. 19, 1973, Ser. No. 417,073

Int. Cl.² A61C *19/00*

U.S. Cl. 32—1 **8 Claims**



1. A transport case for gnathological apparatus comprising a rigid case having side walls, a top wall, and a bottom wall, said side walls defining a parting line and a hinge at the parting line on one of the side walls to afford access to the interior of the case, a plurality of threaded studs secured rigid with at least one of said case walls and projecting interior of the case, at least one impression tray with an impression thereon and having therein a hole remote from the impression suitable for positioning on a stud, a face bow with a base bar attached thereto having at least one hole therein suitable for positioning on a stud, means for securing said impression tray and face bow onto said studs, a rigid cross bar mounted within said case in spanning relation between two opposite side walls thereof, a set-up model having a threaded hole in the bottom thereof, an articulator having a first element and a second element with an aperture in each of said elements, and means for securing said set-up model and said articulator onto said rigid cross bar whereby said apparatus can be safely transported between orthodontist and laboratory.

3,936,938

ORTHODONTIC SPRING APPLIANCE AND SPRING CLIP THEREFOR

Michael E. Northcutt, Mountain View, Calif., assignor to Aledyne Corporation, Los Altos, Calif.

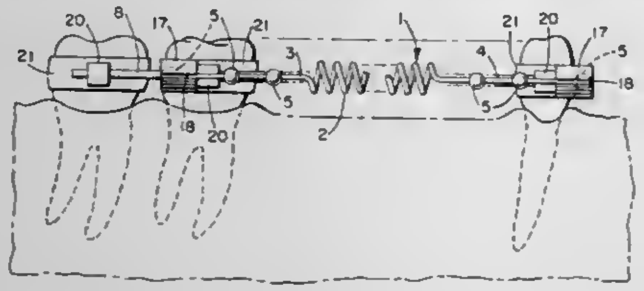
Filed May 17, 1974, Ser. No. 471,175

Int. Cl.² A61C *7/00*

U.S. Cl. 32—14 A **17 Claims**

1. An orthodontic treatment assembly for applying repositioning forces to teeth in a patient's mouth comprising, in combination, means suitable for insertion in the mouth to produce a tension force, said tension producing means comprising a resilient element that produces a stable and predictable force upon elongation of said element, said resilient element having a first end and a second end opposite to said first end, wherein both of said ends are capable of being retained when force is applied thereto, at least one of said ends comprising a force determining element consisting essentially

of a substantially straight wire having a plurality of positioning elements thereon, said positioning elements being located on said substantially straight wire at predetermined intervals spaced from each other whereby the amount of elongation of said tension producing means and the force generated thereby is dependent upon which of said positioning elements is inserted in and retained by a retention device, and means for retaining both ends of said resilient element, at least one of said retaining means comprising a retention device, said retention device adapted to be mounted on a stable support and having a slot therein constructed and arranged to permit a substantially straight wire shaped end of said force determining element to be inserted therein and constructed and arranged to retain said straight wire shaped end therein when said resilient element is under tension by retaining said positioning element.



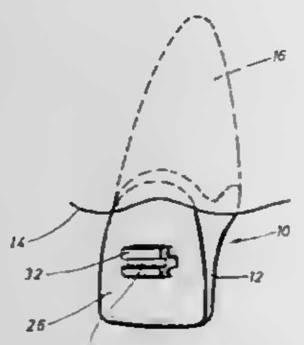
3,936,939
VENEER SUPPORTED ORTHODONTIC APPLIANCE

Frank R. Faunce, 1307 Wilcrest Drive - Apt. 237, Houston, Tex. 77042

Filed June 28, 1974, Ser. No. 493,973

Int. Cl.² A61C *7/00*

U.S. Cl. 32—14 A **13 Claims**



1. An orthodontic appliance assembly for attachment to the tooth structure of a patient, said orthodontic appliance assembly comprising:

- a fully cured pre-formed thin veneer body of plastic material, said veneer body defining a concave interior surface that is shaped to conform to a portion of the exterior surface area of at least one of the patients teeth and defining an exterior surface that conforms to the natural configuration of the teeth of the patient; and
- an orthodontic appliance, said appliance having a base portion and an active portion, said base portion being formed to define plastic interlocking means, said base portion being molded within said thin veneer body and said plastic material being interconnected with said base portion and firmly supporting said base portion, said active portion of said appliance protruding from said veneer body and having an orthodontic connector portion formed thereon, said connector portion being of generally T-shaped crosssection defining an arch wire slot and defining opposed wire retaining flanges for receiving ligature wires, said connector portion of said orthodontic appliance being spaced from the exterior surface of said thin veneer body.

3,936,940
DENTAL HANDTOOL

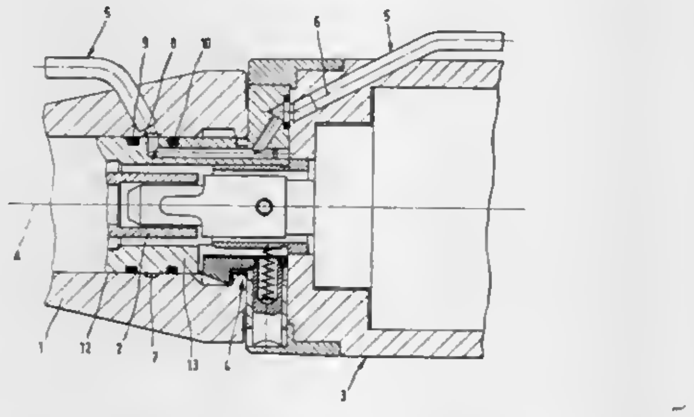
Hans Loge, Biberach an der Riss, Germany, assignor to Kaltenbach & Voight, Germany

Filed July 3, 1974, Ser. No. 485,758

Claims priority, application Germany, July 6, 1973, 2334448

Int. Cl.² A61C *1/08*

U.S. Cl. 32—26 **8 Claims**



1. A dental handtool comprising, in combination, an extended hand sleeve; a driving shaft located at the center of said sleeve for rotary movement of a tool for dental treatment, said tool being at one end of said sleeve, a freely rotating driving part disconnectably attached to the handtool at the opposite end of said sleeve; a coolant pipe for feeding coolant to the region of said dental tool, said coolant pipe having a first coolant section inside said driving part and having a second section inside said sleeve; a ring channel; said coolant sections being disconnectably coupled by said ring channel when in the connected state; sealing elements on two sides of said ring channel, the coolant section inside said driving part entering said ring channel radially from said driving part.

3,936,941
WHEEL SLIDE PROTECTION SYSTEM

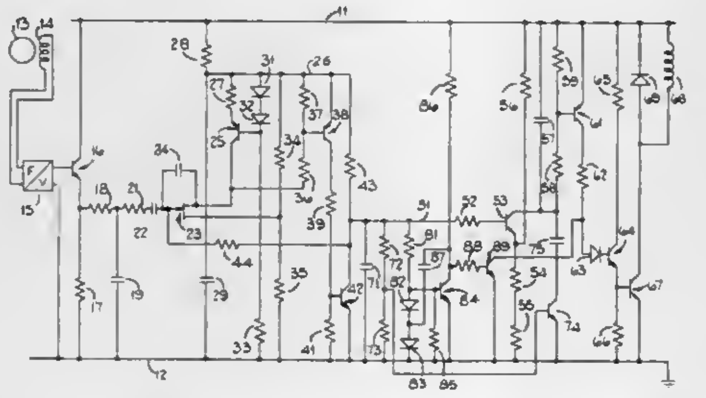
Leonard Ramsay Hiscox, Birmingham, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Jan. 11, 1974, Ser. No. 432,653

Claims priority, application United Kingdom, Jan. 19, 1973, 2820/73

Int. Cl.² B60T *8/08*

U.S. Cl. 303—21 BE **5 Claims**



1. A wheel slide protection circuit comprising in combination first switch means driven from a first state to a second state when the deceleration of the wheel exceeds a predetermined value and driven back to its first state when the wheel accelerates, control means coupled to the first switch means and normally occupying a first state, the control means being driven to a second state when the first switch means is in its second state and then effecting release of the brakes from the wheel, the maximum time for which the control means is in its

second state after the first switch means reverts to its first state being restricted, and circuit means operable when the first switch means reverts to its first state to maintain the control means in its second state for a period of time inversely related to the rate of acceleration of the wheel, said circuit means including second switch means driven from a first state to a second state at an acceleration level greater than the acceleration level at which the first switch means reverts to its first state, the control means reverting to its first state when the second switch means is driven to its second state, and in which the circuit means includes a capacitor which is held discharged while the first switch means is in its second state but when the first switch means reverts to its first state charges by way of the second switch means, the charging current of the capacitor holding the control means in its second state, whereby the control means remains in its second state until either the capacitor is charged or the second switch means is driven to its second state.

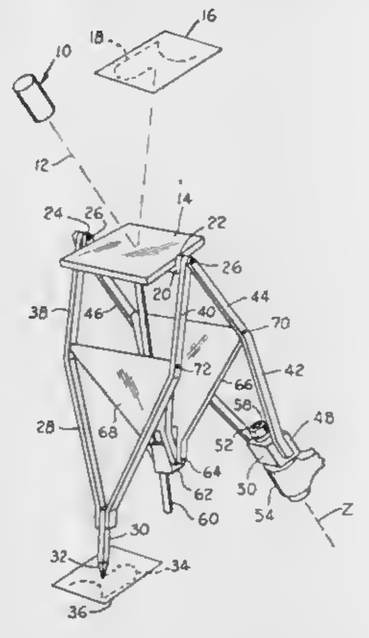
3,936,942
OPTICAL PANTOGRAPH

Robert R. Belew, Huntsville, Ala., and Donald E. Davis, Upton, Mass., assignors to National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Dec. 11, 1974, Ser. No. 531,573

Int. Cl.² B43L *13/10;* G02B *5/08*

U.S. Cl. 33—24 R **2 Claims**



1. An optical pantograph for directing light beams and the like from a source to a receiver according to a predetermined pattern, said pantograph comprising:

- a first downwardly extending leg;
- a mirror;
- means for pivotally attaching an upper end of said first downwardly extending leg to said mirror with said first leg extending downwardly along a first longitudinal axis;
- a pointer carried on the lower end of said first leg;
- a second downwardly extending leg;
- means for pivotally attaching an upper end of said second downwardly extending leg to said mirror with said second leg extending downwardly along a second longitudinal axis at an angle to said first axis;
- means for focusing collimated light beams along one of said axes to said mirror for reflection from said mirror;
- means for receiving said light beams reflected from said mirror, said receiving means being located on the other of said axes;
- a third downwardly extending leg centrally disposed between said first and second legs and having an upper end attached to said mirror;
- a slidable joint;
- a lower portion of said third leg extending through said slidable joint;
- a pivotal brace means carried between said first and second legs and said slidable joint for maintaining the distance between said first leg and said third leg equal to the distance between said second leg and said third leg;
- means for rotatably securing said second leg on a horizontal plane for rotation only about said second axis so that said first leg moves relative to said second leg as said pointer is moved about said pattern;
- whereby a light beam reflected from said mirror to said receiver is angularly reflected according to the angular movement of said first leg relative to said second leg.

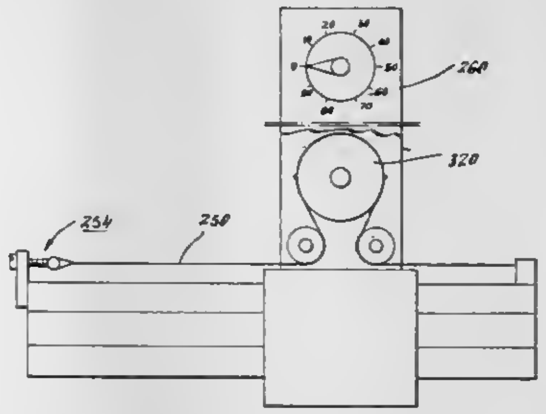
3,936,943
MEASURING SYSTEM

Edward P. Bullard, III, MTD Building, 171 Spring Hill Road, Trumbull, Conn. 06611

Filed Apr. 15, 1974, Ser. No. 460,720

Int. Cl.² G01B *5/02*

U.S. Cl. 33—125 R **8 Claims**

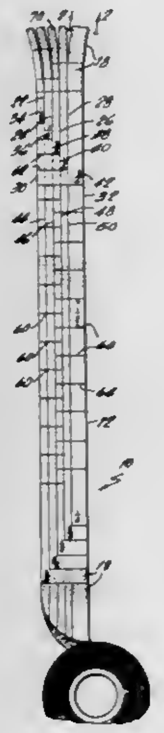


8. In a measuring device having a fixed part and a movable part, the combination comprising

- A. a tape having a plurality of spaced openings along a line parallel to the longitudinal center line of said tape;
  - 1. the centers of said openings being spaced a distance of S from one another;
- B. a cylinder having a circumference slightly less than NS and rotatably mounted on one of the fixed or movable part of said device, and around which said tape is closely engaged on an arc of said cylinder of more than 180° and less than 360°, N being a small whole number,
  - 1. said tape being held in such engagement by idlers adjacent said cylinder,
  - 2. said cylinder wheel axis being perpendicular to the plane of the tape longitudinal center line,
  - 3. and having N projections extending from the periphery of said cylinder,
    - a. with the centers of said projections being spaced around said cylinder at angles of $2\pi/N$ radians,
    - b. each of said projections closely interfitting into said tape openings;
- C. securing assemblies at each end of said tape on the part of said device other than that on which said cylinder is mounted,
  - 1. said tape being held under tension by said securing assemblies,
  - 2. said securing assemblies and idlers being aligned to hold the longitudinal center line of said tape in a single plane along the operative length of said tape; and
- D. means for translating and displaying the rotative movement of said cylinder into units of measurement.

3,936,944
LINEAR CUT SEWING TAPE

Zachary Paul Byne, 140 Eighth Ave., Brooklyn, N.Y. 11215
Continuation-in-part of Ser. No. 244,562, April 7, 1972, Pat. No. 3,797,120. This application Mar. 18, 1974, Ser. No. 452,142. The portion of the term of this patent subsequent to Mar. 19, 1991, has been disclaimed.
Int. Cl.² G01B *3/10*
U.S. Cl. 33—137 R **2 Claims**

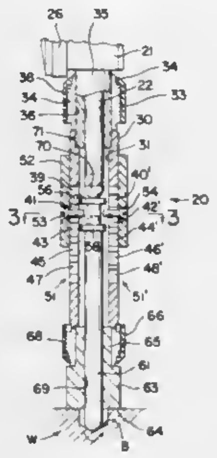


1. A sewing tape comprising an elongated strip of flexible material having an upper face and a lower face, a pressure sensitive adhesive coating on said lower face, and fully cut through cuts in said strip extending longitudinally the length of said strip completely dividing said strip into ribbons of predetermined width, said strip having a plurality of imperforate depressions in the lower face and projecting upwardly of said upper face causing some of said pressure sensitive adhesive coating to extend across said cuts holding said ribbons together, a plurality of longitudinally extending lines on said upper face closely coinciding with at least some of said cuts, said lines extending parallel to each other, indicia on said upper face indicating the distance each of said lines is from an edge of said strip, a plurality of transverse lines on said tape extending normally to said strip and marking at least some of said ribbons into sections of predetermined length, some of said transverse lines extending from one edge of said strip to one of said cuts, and others of said transverse lines extending from another edge of said strip to another of said cuts.

3,936,945
DIAL GAUGE MEASURING DEVICE

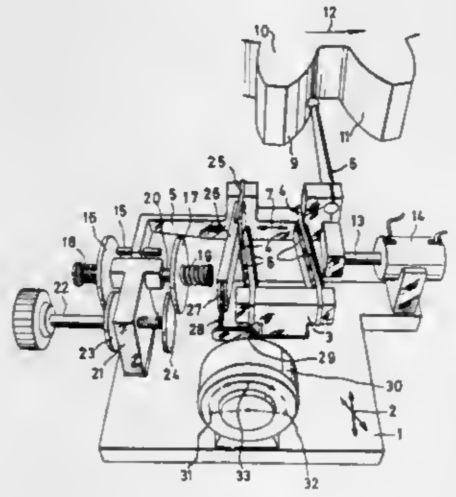
Milan P. Jevremov, 2515 Lawnshire Drive, Copley, Ohio 44321
Filed June 6, 1974, Ser. No. 476,926
Int. Cl.² G01B *3/28*
U.S. Cl. 33—172 R **14 Claims**

1. A device for use with measuring instruments including dial gauge indicators and the like which have a movable plunger for determining dimensions of a workpiece, comprising:
- a body member having a bore therethrough receiving the plunger and further having an adjustment slot extending through at least one wall thereof and communicating with said bore;
- means for mounting said body member to the measuring instrument;
- a sliding member carried on said body member over said adjustment slot; and,
- shoulder means, engagable with said sliding member for supporting the plunger whereby movement of the plunger is limited to a fixed distance as determined by the position of said sliding member on said body member.



3,936,946
GEAR TESTER FOR PITCH MEASURING

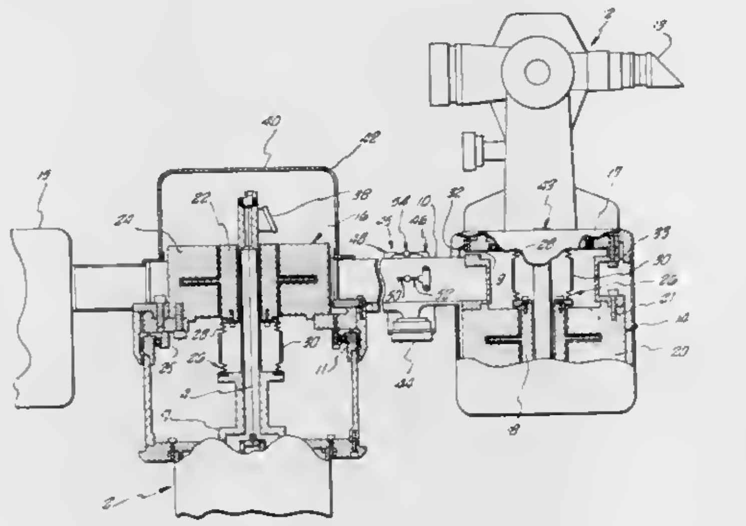
Heinz E. Ruffner, Langnau, and Meinrad Donner, Nuolen, both of Switzerland, assignors to Maag Gear-Wheel & Machine Co., Ltd, Switzerland
Filed Sept. 13, 1974, Ser. No. 505,910
Claims priority, application Switzerland, Sept. 14, 1973, 13254/73
Int. Cl.² G01B *7/28*
U.S. Cl. 33—179.5 R **7 Claims**



1. Feeler apparatus for gear testing comprising, in combination, a support, carrier means mounted on said support, a probe element held by said carrier means for engagement with a tooth flank of a gear to be tested, displacement means for adjusting the position of the element on the support between at least two alternative positions, said carrier means permitting movement of said element relative to the support in each of said positions, said displacement means comprising a motive power device for effecting the adjustment of said element between the alternative positions, and biassing means acting on said element to retain it in either position after each adjustment whereby the motive power device is operative only for the displacement of the element to each alternative setting.

3,936,947
ROTATING ARM AIMING DEVICE SYSTEM

Ralph E. Knapp, Canoga Park, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Oct. 24, 1972, Ser. No. 299,865
Int. Cl. G01c *19/38*
U.S. Cl. 33—275 G **28 Claims**

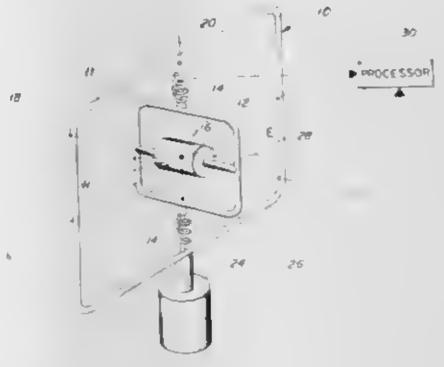


1. In a north seeking gyro system for establishing an azimuth position of a remote object including establishing an azimuth position of a remote object including a north seeking gyro having a directional reference output and a reference axis, the improvement comprising:
- a transfer arm;
- mounting means connected to the transfer arm and the gyro for permitting movement of the transfer arm relative to the gyro;
- an alignment device capable of focusing a line of sight at the remote object and rotatably mounted on the transfer arm at an offset radial position relative to the reference axis of the gyro;
- first means operatively connected with the alignment device for providing an indication of the angular position of the line of sight of the alignment device relative to the reference axis of the gyro;
- second means operatively connected with the gyro for providing an indication of the angular radial position of the alignment device relative to the directional reference output established by the gyro, the azimuth of the remote object being determined from the indication outputs of the first and second means.

3,936,948
METHOD FOR DETERMINING AZIMUTHAL DIRECTION RELATIVE TO TRUE NORTH

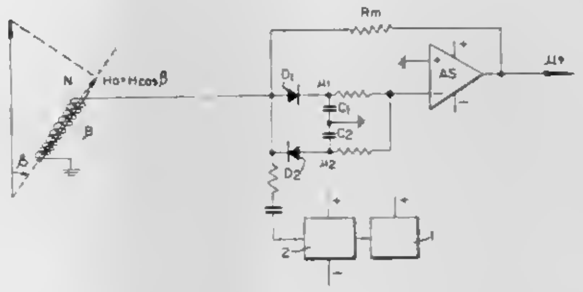
George P. Maselli, Chelmsford, Mass., assignor to Raytheon Company, Lexington, Mass.
Continuation of Ser. No. 175,854, Aug. 30, 1971. This application Sept. 14, 1973, Ser. No. 397,558
Int. Cl. G01c *19/38*
U.S. Cl. 33—301 **10 Claims**

1. A method for determining the difference in direction between a reference direction and a direction related to the earth's rotational axis using gyroscopic apparatus, such apparatus having an input axis, a spin axis and an output axis, each one of such axes being orthogonal to the other two of such axes, comprising the steps of:
- a. continuously rotating, at a substantially constant rate, the input axis about the earth's vertical axis;
- b. measuring, as the input axis is rotated, the precessional rates and accompanying restraint torques at the output axis during successive periods of time in which the input axis is rotated through a predetermined angle after having been aligned with the reference direction; and
- c. determining the difference between the measured precessional rates and accompanying restraint torques at the output axis in successive ones of such periods of time, each such difference being indicative of the then existing difference in direction between the reference direction and the direction relative to the earth's rotational axis.



3,936,949
STATIC NON-SWINGING COURSE DETERMINING DEVICE ON A VEHICLE

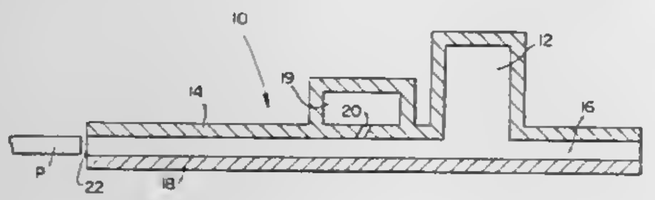
Jacques Devaud, Chabeuil, France, assignor to Grouzet, Paris, France
Filed Dec. 27, 1973, Ser. No. 428,774
Claims priority, application France, Jan. 2, 1973, 73.00084
Int. Cl.² G01C *21/08 , 17/30*
U.S. Cl. 33—352 **4 Claims**



1. In a static non-swinging device for determining on board the course of a vehicle, comprising a magnetometer with three axes for determining the components of the earth's magnetic field along three axes fixed with respect to the vehicle, a vertical gyroscope for determining the attitude of the vehicle, and a computer for calculating the direction with respect to the vehicle of the horizontal component of the earth's magnetic field from signals produced by the magnetometer and the gyroscope, the improvement wherein the magnetometer comprises on each said axis of said magnetometer a single coil having a saturable core and further comprising means for supplying high frequency squarewave signals to each said coil, a plurality of adder amplifiers, each being associated with one of said coils, a plurality of coupling circuits, each connecting one end of one of said coils with an input of one of said amplifiers, each said circuit having a branch connected between said one end and said input, said branch having a diode their having one end thereof connected to said one end of said coil and a capacitor connected between the other end of said diode and common potential, said branch coupling peak signals due to the component of the earth's magnetic field from said coil along each said axis to said input of said adder-amplifier, and a supply resistor for said coil connected between the output terminal of said adder-amplifier and said one end of said coil wherein the output signal of said adder-amplifier is applied to said supply resistor.

3,936,950
METHOD OF INERTING THE ATMOSPHERE ABOVE A MOVING PRODUCT

Harden Henry Troue, Plainfield, Ind., assignor to Union Carbide Corporation, New York, N.Y.
Filed Apr. 16, 1974, Ser. No. 461,398
Int. Cl.² B01K *5/00*
U.S. Cl. 34—4 10 Claims



1. A method of maintaining a substantially inert atmosphere over the treatable surface of a product which is to be subjected to irradiation while moving at a given speed of up to about 1000 feet per minute through the interior of an enclosure having a treating chamber and a first and second tunnel with the first tunnel located upstream of said chamber relative to said moving product and the second tunnel located downstream of said chamber; said method comprising the steps of:

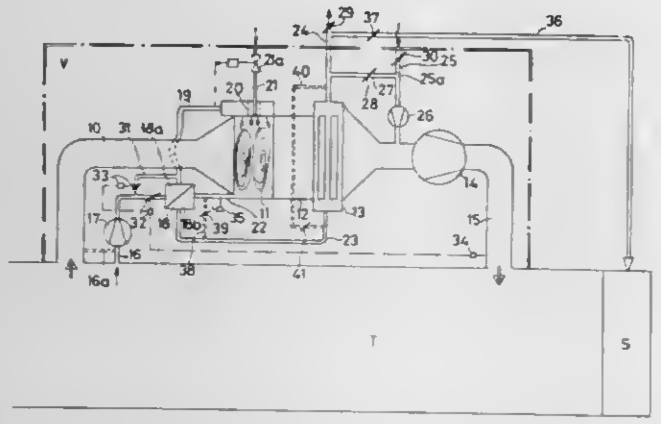
a. forming a unidirectional stream of inert gas having a width at least about equal to the width of said moving product;

b. passing said unidirectional stream of inert so that the entire flow of inert gas supplied into said enclosure enters said treatable surface and forms an acute angle with respect thereto within a range of from above about 45° to below about 85°; and

c. selecting said acute angle such that a major portion of said gas stream is caused to flow in a direction opposed to the advancing product and with a magnitude above the velocity of the moving and having a minor portion caused to flow in the direction with the moving product whereby said major portion of said gas stream, sweeps over the treatable surface of the advancing product so as to prevent air from being drawn into either end of the enclosure.

3,936,951
METHOD OF AND APPARATUS FOR HEATING CIRCULATING AIR IN DRYING EQUIPMENT

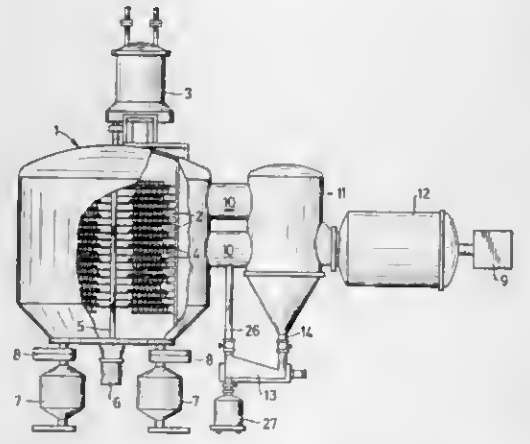
Rolf-Richard Haueise, Bietigheim, and Klaus Gäfgen, Hemmingen, both of Germany, assignors to Otto Dürr KG, Stuttgart, Germany
Filed Aug. 22, 1974, Ser. No. 499,584
Claims priority, application United Kingdom, Aug. 24, 1973, 40255/73
Int. Cl.² F26B *3/00*
U.S. Cl. 34—35 16 Claims



1. In an apparatus for heating air, particularly circulation air in drying equipment or the like, a combination comprising a drying chamber containing circulation air; a combustion chamber separate from said drying chamber; first passage path means for circulation of a portion of the air from said drying chamber in a first path and into said combustion chamber; second passage path means including a heat-exchanger for circulating incinerated gases from said combustion chamber in a second path to said heat-exchanger in which said incinerated gases exchange heat with said air in said first path, so as to preheat said air in said first path prior to entry thereof into said combustion chamber; and third passage path means for circulating said incinerated gases from said heat-exchanger in a third path, so as to heat said remaining circulating air in said drying chamber, said third passage path means comprising means defining a conduit, pumping means, and a flow control means, said means defining a conduit forming a portion of said third path and conveying a portion of said incinerated gases to said drying chamber by operation of said flow control means cooperating with said pumping means.

3,936,952
APPARATUS FOR FREEZE-DRYING

Jorg Schimpfle, Rua Rio De Janeiro, Brazil, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany
Filed Oct. 17, 1974, Ser. No. 515,559
Claims priority, application Germany, Oct. 17, 1973, 2352101
Int. Cl.² F26B *13/30*
U.S. Cl. 34—92 10 Claims



1. An apparatus for the freeze-drying of a product comprising, in combination:

a main dryer adapted to receive a frozen product and provided with means for heating said frozen product in vacuo to release vapor from said product and form a freeze-dried granulate therefrom;

a dust separator communicating with said dryer for separating dust from the vapor emerging therefrom;

a condenser connected to said dust separator for condensing the vapor upon separation of dust therefrom;

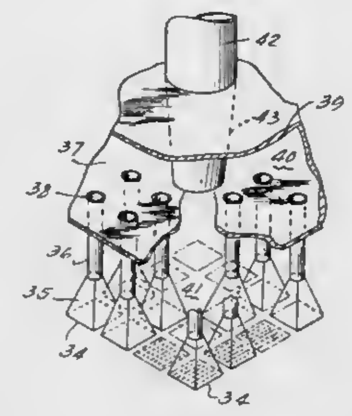
an after-dryer connected to said dust separator for receiving separated dust therefrom and drying said separated dust independently of said granulate; and

discharge means connected to said after-dryer and operable independently of the main dryer for discharging the dry dust from the apparatus as a product separate from said granulate.

3,936,953
AIR IMPINGEMENT SYSTEM

James L. Chance, Rockford, and Shu Tang Han, South Beloit, both of Ill., assignors to Beloit Corporation, Beloit, Wis.
Continuation of Ser. No. 405,142, Oct. 10, 1973, abandoned. This application Feb. 19, 1975, Ser. No. 550,971
Int. Cl.² F26B *13/00*
U.S. Cl. 34—160 10 Claims

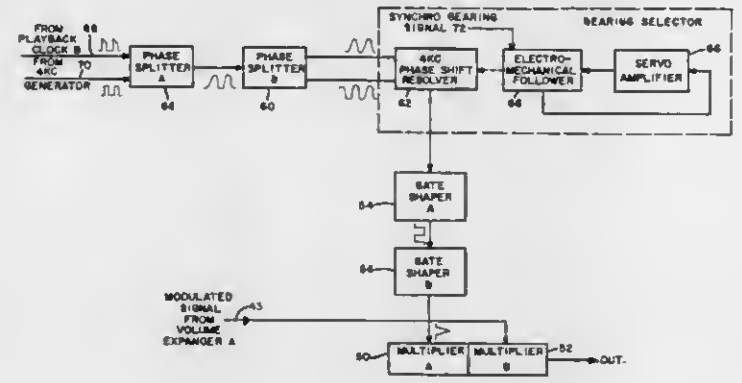
1. An apparatus for drying a moving web comprising at least one air cap having a width corresponding to the width of the web to be dried, each air cap including at least one apertured plate, hollow support means for positioning the plate in relatively close proximity to the web, a high pressure plenum connected to said support means for delivering high pressure air through the apertures in said plate to impinge against said web, said support means having a throat of lesser cross-sectional area than said plate between said plate and said plenum, thereby providing an exhaust region of extended area behind each plate into which the impinging air streams are directed at a relatively low velocity and without an excessive pressure drop, the open area of the apertures in said plate constituting no more than about 3% of the area of said plate, the ratio of the distance of the apertures from the surface of the web to the diameter of the apertures being in accordance with the following table:



Open area	Ratio of distance/ diameter
up to 1%	3 – 6
greater than 1% · up to 2%	2 – 5
greater than 2% up to 3%	2 – 4.

3,936,954
ELECTRONIC BEARING SELECTOR FOR OMNI-DIRECTIONAL SIGNALS

Warren A. Anderson, Tiverton, R.I.; Lawrence Rosenberg, Fairlawn, and Melvin H. Damon, Jr., Wayne, both of N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 27, 1964, Ser. No. 370,736
Int. Cl.² G09B *9/00*
U.S. Cl. 35—10.4 2 Claims



1. An electronic circuit for use with apparatus having timing signal generating clock means and means for combining waveform information from a plurality of input channels into a single pulse train signal wherein time displacements of particular recurrent pulses along the pulse train signal time base, as established by said clock means, are indicative of the channels from which the particular pulses were derived, said electronic circuit comprising:

phase-splitter means responsive to said timing signal to provide two, timed, sine wave signals of equal magnitude but having a predetermined phase difference;

phase-shift resolver means connected to said phase-splitter means and having a stator and a rotor, said resolver being responsive to said timed sine wave signals and to the position of said rotor to provide a resolver ouput signal which is phase-shifted with respect to said time base in accordance with the position of said rotor;

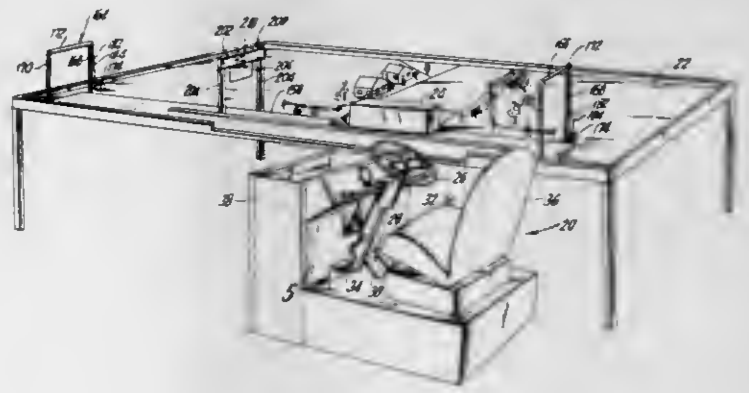
gate shaping means connected to said phase-shift resolver means and responsive to said resolver ouput signal to provide a sliding gate signal which is positioned along said time base in accordance with the position of said rotor;

multiplier means for receiving said pulse train signal and connected to said gate shaping means and responsive to said sliding gate signal so as to provide an output corresponding to coincidence of said sliding gate signal and pulses of said pulse train signal, whereby positioning of said rotor can be utilized to select from said pulse train signal those pulses derived from particular ones of said plurality of input channels;

said multiplier means comprising means for forming said gate signal into a plurality of gate signals of differing widths and signal levels for passing coincident pulses within those widths, and summing means for summing the pulses so passed to provide smooth transition between different outputs resulting from changes in said rotor position.

3,936,955
DRIVER TRAINING SIMULATOR

Herbert Gruen, Brooklyn; Kenneth R. Wisner, New York, and Tony Karp, Briarwood, all of N.Y., assignors to Driver Training Institute, Brooklyn, N.Y.
Filed Dec. 17, 1974, Ser. No. 533,519
Int. Cl.² G09B *9/04*
U.S. Cl. 35—11 40 Claims



1. In a driver training simulator including simulated controls of a vehicle including a steering wheel, an accelerator pedal, and a brake pedal, and a reduced-size vehicle the movements of which are controlled by the operation by a student driver of one or more of said controls, the improvement which comprises: means for sensing whether the reduced-size vehicle is at rest or in motion, and means for producing a first resistance to the rotation of said steering wheel of a first magnitude when the reduced-size vehicle is at rest and for producing a second resistance to the rotation of said steering wheel of a second magnitude less than that of said first magnitude when the reduced-size vehicle is in motion.

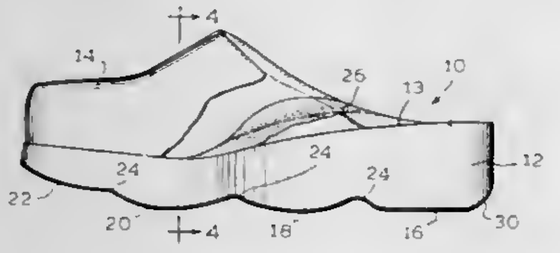
3,936,956
REFLEX ACTION SOLE FOR SHOES HAVING SINUOUS CONTOURED BOTTOM SURFACE

Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.

Filed Aug. 22, 1974, Ser. No. 499,493

Int. Cl.^{2} A43B *13/04*

U.S. Cl. 36—32 R **19 Claims**



1. A reflex action one-piece sole for shoes, which comprises
- a. a longitudinally extending thick body of resilient, shnock absorbing material;
- b. said body including generally horizontal upper surfaces, an edge wall having front, side, and rear portions, and a bottom surface;
- c. said bottom surface comprised of alternating crests and troughs extending completely thereacross and being generally perpendicular to the longitudinal axis of said body;
- d. said crests including spaced, lowermost ground contacting portions;
- e. said alternating crests constituting in succession, a forwardmost toe crest, an intermediate ball crest, an intermediate shank portion crest, and a heel crest, the lowermost ground contacting surfaces of the latter three crests lying in a substantially common plane;
- f. said forwardmost toe crest being elevated with respect to the remainder of said crests and extending forwardly toward and terminating at front edge portions of said sole to provide a rolling, thrusting action as the sole is progressively engaged with a ground surface in walking; and
- g. said heel crest extending upwardly and rearwardly toward and terminating in said rear edge portions of said sole to provide an initial rolling action as the sole is progressively engaged with a ground surface in walking;
- h. said sole thereby providing a gentle rocking motion as it progressively contacts a ground surface.

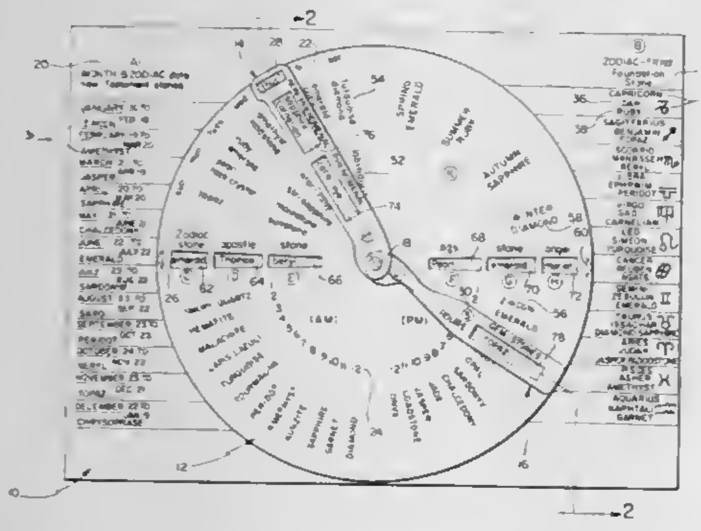
3,936,957
DEMOTIC GEMSTONE INDICATING DEVICE

Robert B. Nordbye, 14297 - 102nd Ave., N., Largo, Fla. 33540

Filed July 17, 1974, Ser. No. 489,445

Int. Cl.^{2} G09B *19/00*

U.S. Cl. 35—74 **8 Claims**



1. A gemstone indicating device comprising:
- a base having a first set of input data designating specific birth information and a first set of symbolic output data related to said birth information;
- a disc rotatably mounted on said base above said output data, said disc having an indicator thereon whereby said disc may be adjustable to input settings selecting one of said first input data;
- a plurality of apertures in said disc overlying said first set of output data on said base, whereby said apertures will designate certain of said output data which are related to said selected input data;
- said disc further having a second set of input data designating additional birth information and a second set of symbolic output data related to said additional birth information;
- and a pair of adjustable arms pivotally mounted on said base above said disc, each of said arms having a plurality of first and second apertures therein, said first apertures selecting certain of said second input data and said second apertures designating certain of said second output data which is related to said selected second input data.

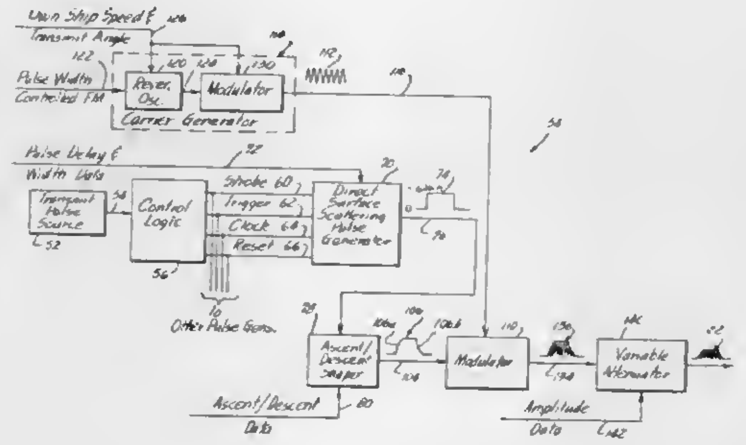
3,936,958
SONAR REVERBERATION SIMULATION

Arthur B. Clapsaddle, Cockeysville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 18, 1968, Ser. No. 740,815

Int. Cl.^{2} G09B *9/00*

U.S. Cl. 35—10.4 **7 Claims**



1. A sonar reverberation signal generator for generating reverberation signal components comprised of a doppler-shifted carrier having an envelope characterized by predetermined ascent and descent curves, said generator comprising:
- a source of transmit pulses;
- logic means responsive to said transmit pulses and operative to provide timing signals;
- pulse generator means responsive to said timing signals to provide squared voltage pulses of predetermined duration;
- shaper means connected to receive said squared voltage pulses and to shape said pulses to provide shaped pulses having said predetermined ascent and descent curves;
- carrier generator means for generating a simulated doppler shifted carrier signal;
- modulator means connected to receive said carrier signal and said shaped pulses and operative to modulate the former with the latter to provide pulse modulated carrier signals having an envelope characterized by said ascent and descent curves; and
- attenuator means connected to receive said pulse modulated carrier signals and operative to reduce the amplitude thereof to provide said simulated reverberation signal components.

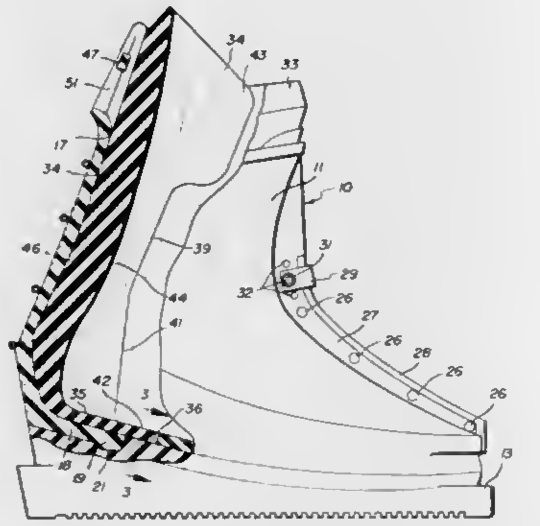
3,936,959
SKI BOOT WITH REPLACEABLE LINER

Alden B. Hanson, and Chris A. Hanson, both of Boulder, Colo., assignors to Hanson Industries Inc., Boulder, Colo.

Filed Feb. 12, 1975, Ser. No. 549,203

Int. Cl.^{2} A43B *00/00*

U.S. Cl. 36—2.5 AL **7 Claims**



1. A ski boot comprising:
- a semi-rigid shell comprising a vamp having a rear opening,
- a semi-rigid tongue member pivotally attached to said vamp near the lowermost portion of said rear opening, said tongue member being adapted to close said rear opening;
- securing means for securing said tongue member in the closed position;
- a first resilient liner member disposed in the forward section of said shell, said first liner member having an inner surface conforming substantially to the outer surface of a wearer's foot forward of the heel and Achille's tendon area thereof and an outer surface contoured to fit into the forward section of said shell;
- a second resilient liner member disposed within the rearward portion of said shell, said second liner having an inner surface conforming to the outer surface of the heel and Achille's tendon area of the wearer's foot, and an outer surface contoured to fit the rearward section of said shell and abut the inner surface of said tongue member;
- the edges of said first and second liner members abutting each other within said shell and cooperating to cover the entirety of the wearer's foot, at least said second liner member being readily removable from said shell.

3,936,960
METHOD AND APPARATUS FOR ROOTED PLANT EXCAVATING AND PLANT PACKAGE PRODUCED THEREBY

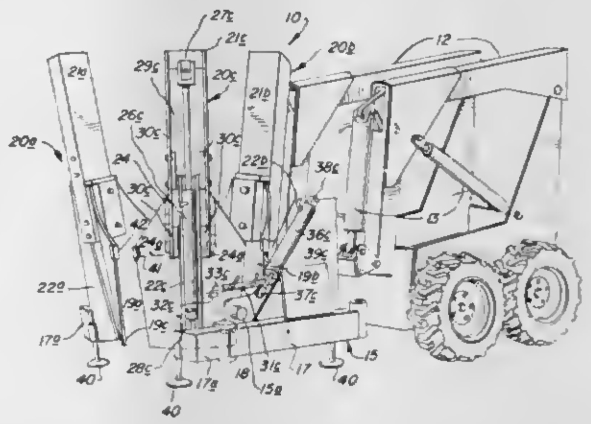
Samuel E. Clegg, P.O. Box 252, Plainfield, Ill. 60544

Filed June 10, 1974, Ser. No. 477,854

Int. Cl.^{2} A01G *23/04*

U.S. Cl. 37—2 R **13 Claims**

1. An apparatus comprising: a U-shaped support attached to a vehicle for vertical movement relative to the earth including a bight connecting a pair of horizontally extending legs, each of said legs being hinged at a point between said bight and its end for horizontal arcuate motion of said ends; a plurality of spades, each defining a frusto-conical segment, and means mounting each of said spades to said U-shaped support spaced from and surrounding a vertical central digging axis, each of said spades being mounted for independent receiprocal movement of said spades in a generally downward direction convergent toward said axis and upward divergent from said axis; power means connected to each of said hinged legs for pivoting said ends from a first position in line with said legs to a second position pointed away from each other; whereby a generally frusto-conical tapering hollow enclosure having a slightly larger opening at the top than the bottom and being open at both ends is formed by said spades when said ends are in said first position and said spades are moved to the bottom of their vertical travel, said enclosure opening along the side nearest the mouth of said U-shaped support when said ends are in said second position and said U-shaped support is moved to the top of its vertical travel; a severing member including a pair of arms, each having one end pivotally connected to one side of said U-shaped support and a blade connected between the opposite ends of said arms for swinging movement about a horizontal axis and beneath the lower opening of said enclosure, and the central portion of said blade being bowed outwardly with respect to said horizontal axis, whereby a frusto-conical tapering ball of earth with a convex bottom may be severed from the earth by the apparatus.



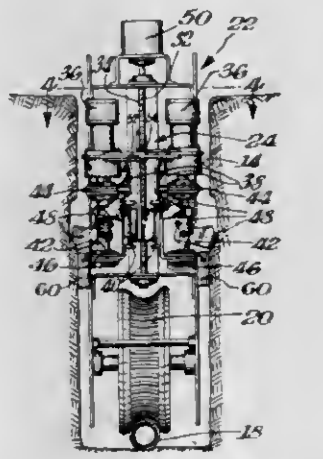
3,936,961
APPARATUS FOR COVERING DRAINAGE TUBING WITH FINE TEXTURED SOIL GRANULES

Lester Gahler, Canby, Oreg., assignor to Advanced Drainage Systems, Inc., Columbus, Ohio

Filed Apr. 25, 1974, Ser. No. 463,995

Int. Cl.^{2} E02F *5/22*

U.S. Cl. 37—142.5 **3 Claims**

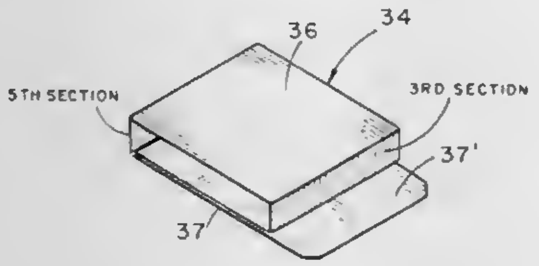


1. A device for covering drainage tubing with fine textured soil granules comprising a main framework, a pair of secondary frames mounted for swinging movement toward and away from one another about at least one vertically oriented axis, an adjustable connection between the main framework and the secondary frames including a motivator for varying the elevation of the secondary frames relative to the main framework, tiller means connected to the secondary frames including a pair of vertically oriented shafts, one journaled to each secondary frame, tines secured to and extending outwardly from each shaft, motivating means connected to rotate each shaft whereby the tines penetrate the side walls of a trench in which tubing has been positioned to thereby break away fine textured soil granules therefrom and shower them over the tubing, and a guide shoe connected to each secondary frame

for engaging the side walls of the trench to thereby limit the penetration of the tines.

3,936,962
BOX CLIP

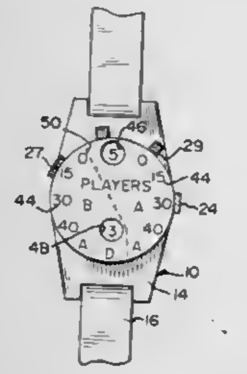
Olin B. Sparks, 8834 Birdwood Road, Houston, Tex. 77036
Division of Ser. No. 379,282, July 16, 1973, Pat. No. 379,282.
This application Sept. 5, 1974, Ser. No. 503,233
Int. Cl.^{2} G09F *3/16*
U.S. Cl. 40—23 A **2 Claims**



1. A tray box clip comprising:
a pliable rectangular shaped shell having a top horizontal wall, a first bottom horizontal wall, and two vertical walls interconnected with said horizontal walls, to form a hollow open-ended shell adapted to receive a tray therewithin,
a second bottom horizontal and external wall integral with one of the vertical walls and extending in a plane substantially parallel to said first bottom horizontal wall said second bottom horizontal and external wall consisting of two planar members having securing means therebetween,
a wire spring having an open ended curved configuration with one free leg of said spring being sandwiched between said planar members and the other free leg of said spring being elastically urged onto the exposed inner surface of the first bottom horizontal wall, thereby forming an integral and hollow shell with a rectangular cross-section, and
a slide tray adapted to be inserted in said shell.

3,936,963
TENNIS SCORING DEVICE

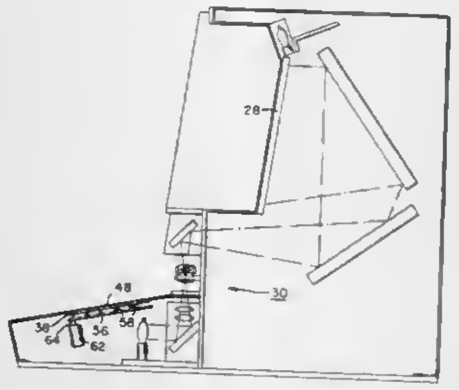
Kingsley Chan, Saratoga, Calif., assignor to Kingsley Chan, Saratoga, Calif.
Filed Aug. 12, 1974, Ser. No. 496,713
Int. Cl.^{2} G09F *11/04*
U.S. Cl. 40—70 R **7 Claims**



1. A score recording device comprising:
a back member having a face and a pivot post projecting from the face;
a first disc rotatably mounted on the pivot post and having a first tab projecting radially outwardly from its periphery;
a second disc rotatably mounted on the pivot post and having a second tab projecting radially outwardly from its periphery;
a third disc rotatably mounted on the pivot post and having a first circle of scoring characters on its surface facing away from the face of the back member;
a fourth disc rotatably mounted on the pivot post, the surface of the fourth disc facing away from the third disc having both a second circle of scoring characters arranged concentrically with the first circle of scoring characters and an annular transparent portion radially aligned with the first circle of scoring characters, the first, second, third and fourth discs being arranged on the pivot post such that the first circle of scoring characters is otherwise visible through the transparent portion of the fourth disc and the first and second circles of scoring characters are otherwise visible when looking toward the face of the back member; and
a fifth, cover disc fixedly mounted on the pivot post and having two sets of scoring characters arranged in separate hemicircles on its surface facing away from the face of the back member, the first and second tabs being visible beyond the periphery of the cover disc and being rotatably alignable with the individual scoring characters of the respective hemicircles on the face of the cover disc by rotation of the first and second discs, respectively, the cover disc further having a first window in alignment with the first circle of scoring characters and a second window in alignment with the second circle of scoring characters such that selected ones of the scoring characters of the first and second circles of scoring characters can be made to appear in the first and second windows, respectively, by rotation of the third and fourth discs, respectively.

3,936,964
MICROFICHE SUPPORT

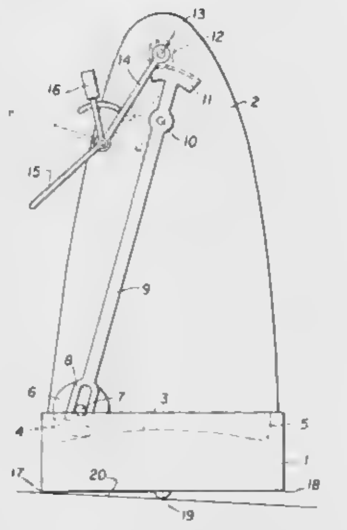
Augustus W. Griswold, Rush, and Boris W. Haritonoff, Geneseo, both of N.Y., assignors to Arcata Microfilm Corporation, Long Beach, Calif.
Division of Ser. No. 268,792, July 3, 1972, Pat. No. 3,802,979.
This application Oct. 4, 1973, Ser. No. 403,567
Int. Cl.^{2} G09F *1/10*
U.S. Cl. 40—104.18 **12 Claims**



1. An article comprising a microfiche including a transparent base and a plurality of microfilm frames removably mounted on said base in a plurality of parallel, equally spaced-apart rows, with all of any updatable frames being pre-cut and separate from all adjacent frames, whereby each one of said updatable frames can be removed from said base without first having to cut it away from any adjacent frame, and with all of any permanent frames being not all pre-cut and separate from all adjacent frames.

3,936,965
SUPPORT FOR FIGURE HAVING MOVABLE MEMBERS AND MEANS FOR MOVING SAME IN RESPONSE TO ACCELERATION OR DECELERATION

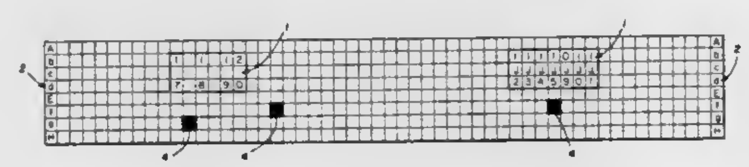
Borge Andreas Ravn, Rolighedsvej 10, DK-1958 Copenhagen, and Erik Froyr, Adelgade 16, DK-5600 Faborg, both of Denmark
Filed Nov. 14, 1973, Ser. No. 415,663
Claims priority, application Denmark, Nov. 15, 1972, 5671/72
Int. Cl.^{2} G09F *19/08*
U.S. Cl. 40—106.35 **3 Claims**



1. A moveable device for supporting a moveable figure comprising a base having an upwardly-directed surface, means on said base including edges for supporting said base on a horizontal surface with said upwardly-directed surface in generally horizontal position and the device in operative position, means defining a longitudinal supporting path on said upwardly-directed surface, means including a roller supported on said path having an axis extending transversely thereto and freely moveable along said path under the influence of acceleration and deceleration of said device, said path having at each end means for limiting the movement of said roller, means including a superstructure mounted on said base for carrying a moveable figure on said device, said superstructure having moveable members pivotally mounted thereon, and mechanical transmission means connecting said roller to said moveable members, for transmitting the movement of said roller thereto said supporting path having a slightly upwardly convex curvature so that both ends thereof are disposed at a slightly lower level than the center portion of the path in the operative position of the device.

3,936,966
PERPETUAL CALENDARS

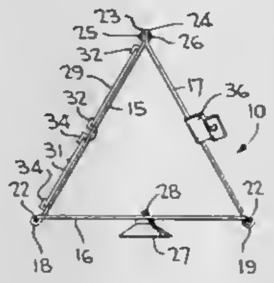
Arnold Ernst Zeiske, 6151 Palo Pinto Ave., Dallas, Tex. 75214
Filed Nov. 18, 1974, Ser. No. 524,954
Int. Cl.^{2} G09D *3/00*
U.S. Cl. 40—109 **4 Claims**



1. A perpetual calendar comprising, in combination:
means for exhibiting a first viewing area;
means for selectively displaying, at such first viewing area, indicia designating a numeral consisting of at least one digit representative of a century;
means for the positioning, responsively to such selectively displayed century-designating indicia, of a second viewing area;
means for selectively displaying, at such second viewing area, indicia designating a numeral consisting of one digit representative of a decade;
means for the positioning, responsively to such selectively displayed decade-designating indicia, of a third viewing area;
means for selectively displaying, at such third viewing area, indicia designating a numeral consisting of one digit representative of a year;
means for the positioning, responsively to such selectively displayed year-designating indicia, of a fourth viewing area;
means for selectively displaying, at such fourth viewing area, indicia specifying a designation representative of a calendar period of time constituting a part of a year consisting of at least one month;
means for exhibiting a fifth viewing area;
means for resultingly displaying, at such fifth viewing area, and responsively to such selectively displayed partial-year-specifying indicia, indicia constituting, in correlation vis-a-vis the days of the week, the corresponding dates of the calendric period designated by the thus successively, selectively displayed century-representing, decade-representing, year-representing, and partial-year-period-representing indicia.

3,936,967
EMERGENCY SIGN DEVICE

Charles H. Davis, 302 Rollins Ave., Dothan, Ala. 36301
Continuation of Ser. No. 352,685, April 19, 1973, abandoned.
This application July 18, 1974, Ser. No. 489,766
Int. Cl.^{2} G09F *21/04*
U.S. Cl. 40—129 C **2 Claims**

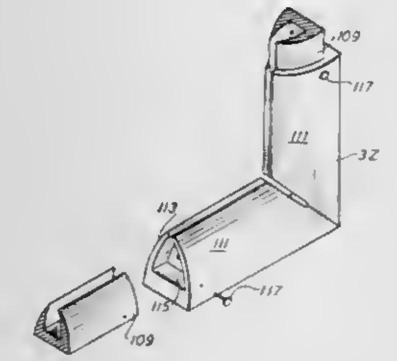


1. A device capable of being mounted on a horizontal surface of a motor vehicle for exhibiting emergency signs, comprising first, second and third plate sections of equal size, first hinge means interconnecting one side edge of said second plate section with one side edge of said first plate section, second hinge means interconnecting the other side edge of said second plate section with one side edge of said third plate section, flanges extending outwardly from the other side edges of said first and said third plate sections and being rigidly connected thereto, said flanges forming an angle greater than 90° with the outer surfaces of said first and said third plate sections, detachable fasteners provided on said flanges for detachably securing said first and third plate sections together in an assembled triangular-shaped support in which said flanges are in face-to-face contact with one another, means on one of said plate sections for detachably mounting said support to the horizontal motor vehicle surface, at least one pair of spaced, parallel channel-forming elements on another of said plate sections extending parallel to said side edges and opening toward one another for the reception of interchangeable emergency signs, and fastener means on said one plate section and on the remaining one of said plate sections for securing all of said plate sections together in a collapsed condition lying substantially parallel to one another, said fastener means including straps extending outwardly of opposite end edges of said one and said remaining plate sections and overlapping with opposite end edges of said another plate section in the collapsed condition of said support, said straps being

located on said one and said remaining plate sections so as to lie between said channel-forming elements when overlapping said another plate section, whereby the emergency signs are completely prevented from moving outwardly of said elements while in said collapsed condition.

3,936,968
ADJUSTABLE FRAME

Howard E. Gilbert, P.O. Box 294 Deering St., East Setauket, Long Island, Suffolk County, N.Y. 11733
Division of Ser. No. 46,638, June 16, 1970, Pat. No. 3,823,499. This application July 18, 1973, Ser. No. 380,505
Int. Cl.² G09F *1/12*
U.S. Cl. 40—155 **3 Claims**



1. A frame comprising corner members mounted to support the corner portions of a picture, said corner members having a first inwardly curved upstanding side and a second upstanding side spaced apart from the first side by a flat section, said first and second sides being connected to opposite edges of said flat section and said first side being biased toward said second side to releasably grasp the picture and straight members having a first inwardly curved upstanding side by a flat section, said sides and said flat section having substantially the same cross-sectional configuration as said corner members and being insertable therein and mounted to support the side portions of an article being positionable between two adjacent corner members and being mounted to releasably grasp the sides of the article to form a supporting frame with said corner members, and wherein the corner members contain a slot at the corner sections to permit the parts of the corner sections to pivot.

3,936,969
INFLATABLE BLIND

Wilton Richard, 2230 South David Drive, Abbeville, La. 70510
Filed July 3, 1974, Ser. No. 485,525
Int. Cl.² A01M *31/00*
U.S. Cl. 43—1 **17 Claims**

8. A unitary inflatable blind adapted for use on land and on water which comprises

1. an inflatable seat-forming cushion having a pouch aligned on one face thereof;
2. a flexible inflatable body comprising an elongate inflatable tubular base member and a plurality of inflatable pleated wall portions extending from one side of said base member and being disposed along substantially the entire length of said base member, said body being adapted:
   - a. when deflated to be foldable upon itself into compact form to fit within said pouch, and
   - b. when inflated to be bendable so that its two ends can be brought together with the wall portions extending upwardly from said base member to circumscribe a zone of concealment;
3. means connecting and supporting said cushion across the lower interior of the inflated body; and
4. means detachably connecting together said two ends of said body to maintain said zone of concealment;

said cushion having a permanent connection to said body so that the device is an essentially one-piece structure.

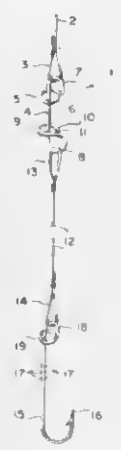
3,936,970
FISHING LURE AND METHOD OF FISHING

John A. Hodges, 1014 Uluopihi Loop, Kailua, Hawaii 96734
Filed May 10, 1971, Ser. No. 142,082
Int. Cl.² A01K *85/00*
U.S. Cl. 43—17.6 **2 Claims**

1. A method of fishing comprising attracting fish with light having a peak wave length in the range of from 4500 A to 5000 A and catching said fish with a catching means, said light being emitted from a luminescent material comprising a phosphor, an extender capable of extending the emitting life of the phosphor and a suspending agent capable of suspending the phosphor in a plastic material, the weight ratio of the extender to the phosphor being in the ratio of from about 1:1 to about 4:1 and the ratio of the suspending agent to the phosphor being in the range of about 1:10 to 1:4.

3,936,971
FLY FISHING APPARATUS AND QUICK CONNECTOR THEREFOR

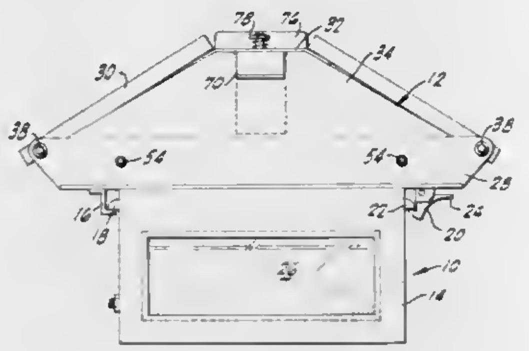
Welbourne D. McGahee, Melbourne, Fla., assignor to Loop-A-Line, Inc., Melbourne, Fla.
Filed Feb. 19, 1974, Ser. No. 443,872
Int. Cl.² A01K *91/04*
U.S. Cl. 43—44.83 **7 Claims**



1. Fly fishing apparatus comprising a double-ended special connector, said connector including a central shank, a lower vertical eye connected to said central shank, a lower horizontal eye closing upon itself connected to said lower vertical eye and encircling said central shank, a first means on the upper end of said central shank for receiving a fly fishing line, a leader, an upper enlarged loop on said leader for engagement with said lower vertical eye, a lower enlarged loop on said leader, and a second fishing implement means connected to said leader lower enlarged loop, said lower horizontal eye having substantial diameter relative to said central shank so as to provide sufficient space to pass said upper enlarged loop on said leader.

3,936,972
RODENT TRAP

Daniel B. Meyers, 164 Rome St., San Francisco, Calif. 94112, and Gary C. Yerby, 78 Lausanne St., No. 2, Daly City, Calif. 94104
Filed Nov. 20, 1974, Ser. No. 525,657
Int. Cl.² A01M *23/04, 23/12*
U.S. Cl. 43—69 **11 Claims**

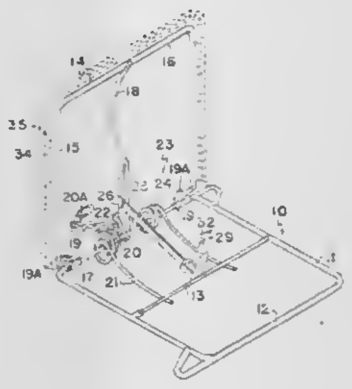


1. An animal trap for rodents and the like comprising: an enclosure having an open top; and, a bait compartment adapted to be coupled to, and arranged over, the open top of said enclosure, said bait compartment comprising a support structure for supporting said bait compartment over said enclosure; at least one tilting bottom panel having pivot means pivotally connected to said support structure for pivoting said panel from a first horizontal preoperative position over said enclosure to a second tilted operative position directed into said enclosure, said panel having a first end proximate to said pivot means and a second end distal to said pivot means, said panel having further mounted to said first end of said panel adjacent said pivot means first magnetic means and counterweight means for substantially balancing said panel at said pivot means, said panel and a substantial portion of said counterweight means being arranged above said pivot means when said panel is in said preoperative position; and, second magnetic means mounted to said support structure cooperatively arranged with said first magnetic means for retaining said panel in said preoperative position with a predetermined magnetic force; wherein said panel is displaced from said horizontal preoperative position to said tilted operative position by the moment of the rodent's weight on said panel, overcoming the retentive force of said two cooperating magnetic means, said counterweight means having an effective moment, opposite to the moment of a rodent's weight, which effective moment is substantially reduced when said panel is displaced from said preoperative position to said operative position.

3,936,973
ANIMAL TRAP

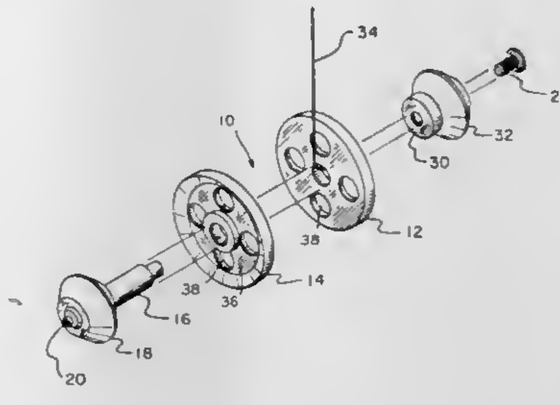
Walter Larocque, General Delivery, Swan River, Manitoba, Canada
Filed Nov. 18, 1974, Ser. No. 524,463
Int. Cl.² A01M *23/30*
U.S. Cl. 43—81 **4 Claims**

1. An animal trap comprising in combination a base frame section and a movable section hingedly secured by one side thereof to one side of said base section, spring means cooperating between said sections normally urging said sections towards one another to a trap sprung position and a combination trigger and bait holding assembly operatively connected between said sections to releasably hold said movable section at an angle from said base section in a trap set position against the pressure of said spring means, said trigger and bait holding assembly including a first member pivotally secured by one end thereof to one of said sections and being detachably engageable with the other of said sections to hold said sections in the trap set position, and a second member pivotally secured by adjacent one end thereof to adjacent the other end of said first member and engaging said other of said sections by said one end thereof whereby said other end of said second member extends within the angle formed by said sections when in the trap set position and bait holding means on said other end of said second member, said second member cooperating with said first member and said other section to release said first member from said other section when said other end of said second member is moved a pre-determined amount.



3,936,974
COMBINED TOP AND YO-YO

Eugene R. House, Box 189, Road No. 1, Emporium, Pa. 15834
Filed Aug. 29, 1974, Ser. No. 501,612
Int. Cl.² A63H *1/30*
U.S. Cl. 46—61 **10 Claims**

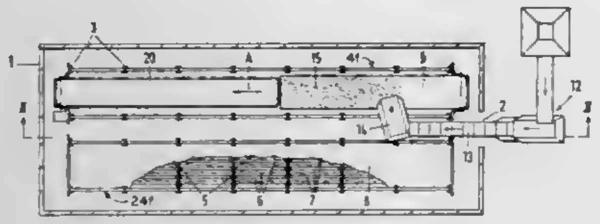


1. A combined top and yo-yo comprising
shaft means having opposed ends and a longitudinal axis between the opposed ends,
a pair of discs, each one of said pair of discs being concentrically and securely mounted to and between the ends of said shaft means and being disposed transversely of said shaft means in opposed and spaced relation to each other,
a string secured to and wound about said shaft means between said pair of discs,
opposed hub means disposed at the opposed ends of said shaft means and the pair of discs being interposed between said opposed hub means, and
one of said hub means being rotatably mounted about one end of said shaft means and being graspable to a user to support and control the position of said shaft means upon pulling said string means to effect rotation of said shaft means about its longitudinal axis.

3,936,975

BED FOR GROWING MUSHROOMS AND THE LIKE

Jan Gerrit de Winter, Enschede, Netherlands, assignor to Nicolon B.V., Enschede, Netherlands
Filed June 27, 1974, Ser. No. 483,542
Int. Cl.^{2} A01G *1/04*
U.S. Cl. 47—1.1 **9 Claims**

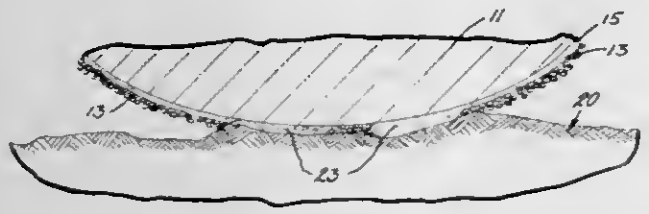


1. A cultivation bed for growing mushrooms and other crops, comprising: an air permeable, supporting floor; a first, permeable, lower web of a woven fabric supported on said floor; a second, permeable, superimposed, upper web of a woven fabric supported by said lower web; and a layer of growing medium supported by said upper web, there being means comprising the weaves of the fabrics from which said upper and lower webs are fabricated for making said upper web readily slidable relative to said lower web and thereby facilitating the application of growing medium to said second web and the removal of the growing medium therefrom, said webs being biochemically inert with respect to the growing medium and the crops grown therein and resistant to temperatures at least as high as 70°C., the upper of said two webs being substantially impermeable to the growing medium thereon, the top surface of the lower of said two webs being smoother than the bottom surface thereof so that, during relative displacement of the upper web relative to the lower web, the friction between the lower web and the supporting floor will be greater than the friction between the lower and upper webs, and the fabric of said lower web being of a more open weave than the fabric of said upper web.

3,936,976

ANTI-EROSION COATING OF SEEDS

Frederic E. Porter, Minneapolis, and Howard E. Kaerwer, Jr., Eden Prairie, both of Minn., assignors to Northrup, King & Company, Minneapolis, Minn.
Continuation-in-part of Ser. No. 322,013, Jan. 8, 1973, abandoned. This application Feb. 6, 1975, Ser. No. 547,633
Int. Cl.^{2} A01C *1/04*
U.S. Cl. 47—57.6 **10 Claims**



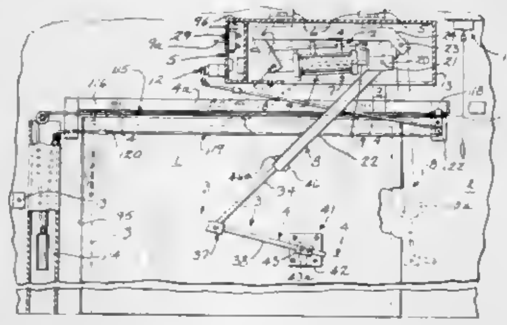
1. A process for preparing plant seeds for planting comprising the steps of:

a. coating the seeds with a substantially water-free tacky film which will not activate a water-activatable adhesive,
b. contacting said tacky film with a dry, solid, particulate water-activatable adhesive which is not activated by said tacky film, said adhesive being capable of forming pseudoplastic, viscoelastic, pituitous water solutions in 1 weight percent concentration in water, at least 98% by weight of the particles of said adhesive being small enough to pass a 10 mesh screen; said contacting step being continued until (1) said seeds are covered with an adherent outer layer of discrete granules of said adhesive as the outermost layer of the coating on said seeds, and (2) said seeds are a dry, free flowing mass of discrete seeds.

3,936,977

FLUID ACTIVATED LOAD OPERATOR

Arthur J. Runft, Mequon, and Walter E. Meyer, Saukville, both of Wis., assignors to Kelley Company, Inc., Milwaukee, Wis.
Filed Dec. 27, 1973, Ser. No. 428,924
Int. Cl.^{2} E05F *15/02*
U.S. Cl. 49—137 **20 Claims**



7. An automatic fluid activated operating apparatus for controlling a fluid motor means driven from a fluid supply means and a fluid exhaust means and having a pair of operating port means for supplying and exhausting of fluid from the motor means, comprising metering valve means connected to said port means to exhaust fluid from the motor means, said metering valve means including a plurality of passageway means between the port means and the exhaust means, at least a first of said passageway means including closure means for varying the effective size of said first passageway means, and said closure means being coupled to the motor means and selectively positioned in accordance with the relative position of said motor means after selected movement of the motor means to change the effective operation of said first passageway means to control the rate of change movement of the output of the motor means, said metering valve means includes a body portion including a first, second and third parallel passageway between a motor connection means and a supply-exhaust connection means, said body portion having mounting means for connection to the motor means, said first passageway means being adjustable and providing a first restricted flow passageway controlled by said closure means, said first passageway means being located between said second and third passageway means and including a cross-opening therethrough, said closure means being a piston-like element mounted in said cross-opening and coupled to the motor means for selectively positioning in accordance with the relative position of said motor means, the third of said passageways constituting a one-way flow passageway means permitting full transfer of fluid pressure from the supply-exhaust connection means to the motor connection means and restricting reverse flow, and the second of said passageways providing a continuous restricted flow passageway.

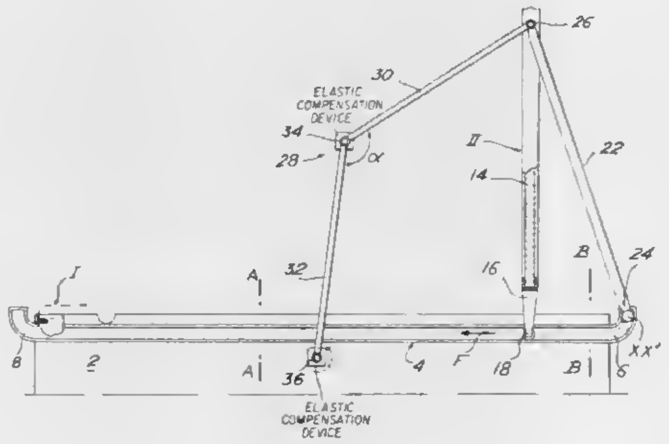
3,936,978

WINDOW HAVING A BELLOWS-TYPE OPENING MOVEMENT AND PERMITTING COMPLETE REVERSAL OF THE WINDOW-LEAF

Gerard Barras, Aubervilliers, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France
Filed June 17, 1974, Ser. No. 479,787
Claims priority, application France, June 22, 1973, 73.22974; Feb. 26, 1974, 74.06505
Int. Cl.^{2} E05D *15/42*
U.S. Cl. 49—252 **11 Claims**

1. A window having a fixed rectangular windowcasing and a rectangular window-leaf movable in bellowslike manner between open and closed positions and also being completely reversible relative to said window casing comprising:

- leaf pivot means for forming a first axis of pivotal motion of said window-leaf with respect to said fixed window casing, said leaf pivot means being formed along a first side of said window-leaf, said first axis of pivotal motion being parallel to said first side and being movable in a direction parallel to itself;
- a first arm pivotally secured by a first pivot means to a second side of said window-leaf which side is perpendicular to said first side;
- a second arm pivotally secured by a second pivot means to a third side of said window-leaf which side is perpendicular to said first side;
- said first and second pivot means defining a second axis of pivotal motion which permits complete reversal of said window-leaf;



- said first and second arms being pivotally secured by third and fourth pivot means, respectively to opposite sides of said window casing near one end thereof;
- said third and fourth pivot means defining a third axis of pivotal motion;
- said second and third axes of pivotal motion being substantially parallel to said first axis of pivotal motion;
- said third axis of pivotal motion substantially coinciding with said first axis of pivotal motion when the window is operated in bellows-like manner between open and closed positions;
- said second and third axes of pivotal motion being maintained spaced apart by said first and second arms for a distance at least equal to one-half the length of the sides perpendicular to the first side; whereby complete reversal of said window-leaf may be achieved by rotation about said second axis of pivotal motion.

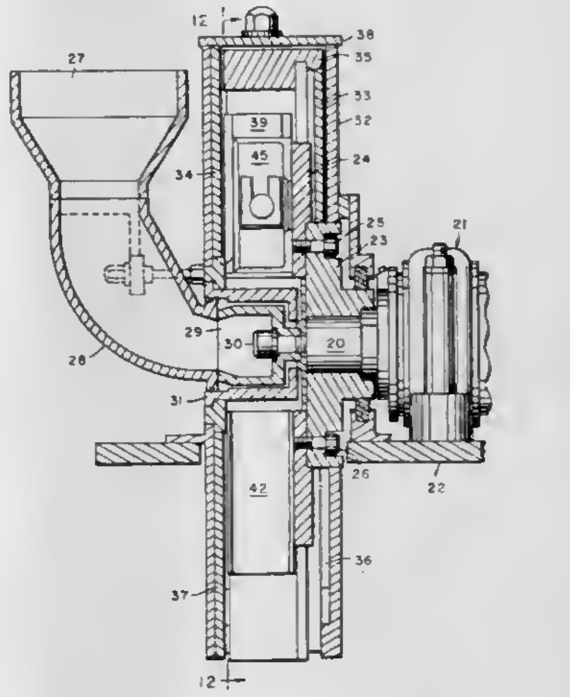
3,936,979

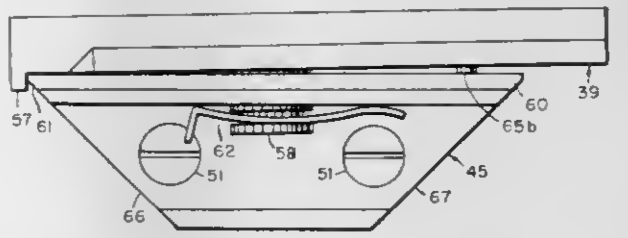
PARTICLE-RELEASING MOUNTING SYSTEM FOR THE BLADES OF BLASTING MACHINES

Bernard Fuerst, Grand Rapids, Mich., assignor to Benfur Engineering Company, Grand Rapids, Mich.
Filed Oct. 10, 1974, Ser. No. 513,758
Int. Cl.^{2} B24C *5/06*
U.S. Cl. 51—9 R **4 Claims**

1. A blasting machine having a rotor including a rotatable shaft and a plate mounted on said shaft in a plane normal to the axis of rotation of said shaft, and also including at least one bracket secured to said plate and a blade detachably secured to said bracket in a position adjacent a radial plane containing said axis, said machine also including feeding means adapted to supply abrasive material to the central portion of said rotor for engagement with said blade, wherein the improvement comprises:

projection means on at least one of said bracket and said blade extending from the face of said one of said bracket and blade opposite the other thereof and establishing a space between said opposite faces.

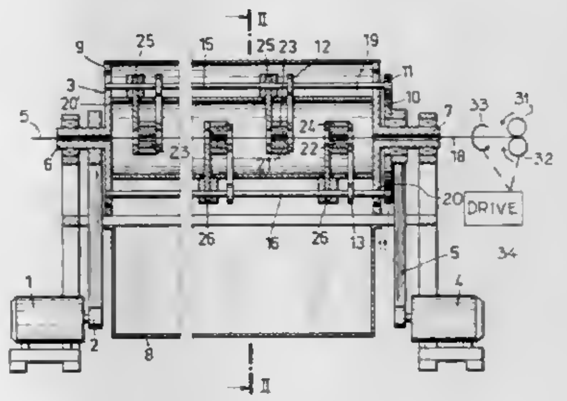




3,936,980

METHOD OF AND APPARATUS FOR GRINDING WIRE

Harald Linnepe, Ludenscheid, Germany, assignor to Vereinigte Deutsche Metallwerke AG, Frankfurt am Main, Germany
Filed Aug. 15, 1974, Ser. No. 497,641
Claims priority, application Germany, Aug. 16, 1973, 2341437; Mar. 18, 1974, 2412842
Int. Cl.^{2} B24B *5/38, 1/00*
U.S. Cl. 51—73 R **4 Claims**



1. An apparatus for grinding wire comprising:

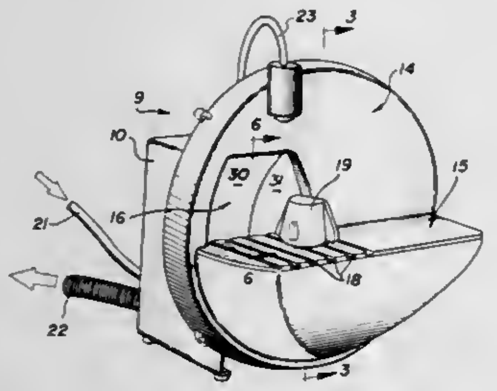
- means for displacing said wire along a straight path;
- a frame journaled for rotation about an axis lying along said path;
- an arm swingably mounted on said frame about a pivot offset from said axis;
- a grinding body formed with a bore traversed by said wire and having an abrasive wall, said grinding body being rotatably mounted on said arm;

first driving means operatively connected with said frame for rotating same about said axis; and

second driving means operatively connected with said grinding body for rotating same to abrade the exterior surface of said wire against said wall.

3,936,981
DENTAL MODEL TRIMMER

Velton C. White, c/o V.C. Labs, Inc., 17 N. Broadway, Des Plaines, Ill. 60016
Filed May 6, 1974, Ser. No. 467,060
Int. Cl.² B24B *27/00, 55/04*
U.S. Cl. 51—125 **4 Claims**

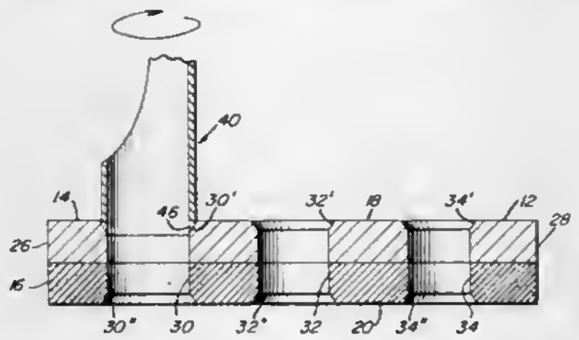


1. A dental model trimmer machine comprising a rotatable wheel, a first abrasive disk, a temporary bonding material temporarily bonding the first disk to the wheel during model trimmer use and permitting the disk to be peeled from the wheel after model trimmer use, a loadable, removable grinding material of first abrasive quality, a grit bonding material bonding the first grinding material to the disk and permitting controlled removal of some first grinding material during model trimmer use, a second abrasive disk, a temporary bonding material temporarily bonding the second disk to the wheel concentrically with the first disk during model trimmer use and permitting the disk to be peeled from the wheel after model trimmer use, a loadable, removable grinding material of second abrasive quality different from the first grinding material, a grit bonding material permanently bonding the second grinding material to the disk and permitting controlled removal of some second grinding material during model trimmer use, a wheel housing providing a single grinding access extending past all the abrasive disks, an elongated fluid distributing pipe extending over the face of the wheel-mounted disks to distribute a grinding fluid to all the disks, coupling means permitting the pipe to be swung out of its disk overlying position to permit a disk to be peeled from the wheel and to permit a fresh disk to be installed on the wheel without interference by the pipe, motor means for rotating the wheel in the housing at a model trimming speed, shaft means extending through a housing aperture and connecting the motor means to the wheel, and shroud means surrounding the housing aperture and shaft means and extending from the housing means toward the wheel sufficiently closely to discourage the passage of liquid between the wheel and the shroud means.

3,936,982
SHARPENING STONE FOR DEHORNERS

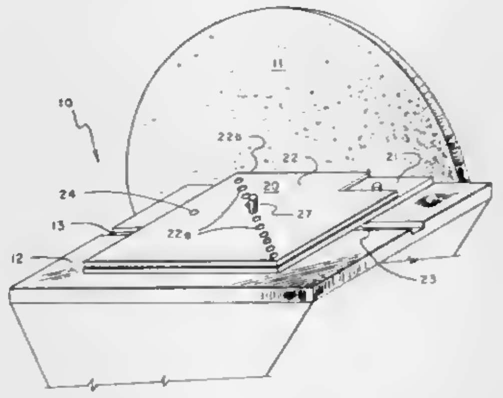
Delbert M. Crabtree, Stanford, Mont., assignor to Margaret Sisson, Lewistown, Mont., a part interest
Filed Nov. 21, 1974, Ser. No. 526,047
Int. Cl.² B24D *15/00*
U.S. Cl. 51—211 R **2 Claims**

1. A sharpening stone for sharpening dehorners, said stone comprising an elongated body defined by a pair of elongated superposed plies of rigid abrasive materials graded as fine and coarse abrasives, the remote surfaces of said plies being substantially planar and parallel, said body having a plurality of longitudinally spaced bores of different diameters formed therethrough with the opposite ends of said bores opening through said remote surfaces, said opposite ends of said bores including inwardly tapering counterbores.



3,936,983
SANDING FIXTURE FOR PRODUCING CIRCULAR PARTS

Donald M. Taylor, 2400 Mardel Court, Hamilton, Ohio 45014
Filed Mar. 19, 1975, Ser. No. 559,927
Int. Cl.² B24B *41/06*
U.S. Cl. 51—216 T **4 Claims**



1. A fixture for producing circular parts for use in conjunction with an abrasive wheel or the like; said fixture consisting essentially of; a base including means for positioning said fixture a fixed distance from said abrasive wheel, a pivot pin joining said base and a platen for pivotal movement, said platen having a plurality of work-mounting pin locations with a work-mounting pin positioned in one of said locations for mounting a workpiece center for rotation thereupon, and positive stop means which limits the degree of pivotal movement of the platen with respect to the base.

3,936,984
INSULATED AIR INFLATED STRUCTURES

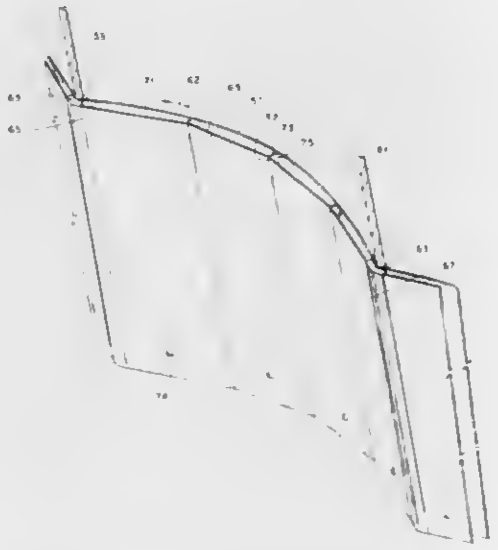
Stephen Yando, 315 W. 57th St., Apt. 16A, New York, N.Y. 10019
Filed Oct. 28, 1971, Ser. No. 193,273
Int. Cl.² E04B *1/345*
U.S. Cl. 52—2 **16 Claims**

1. An air inflated shell-like structure for enclosing a volume of space therein, said structure having insulated walls which curtail heat flow from or into said enclosed volume, comprising:

a flexible outer skin defining the exterior shell of said structure;

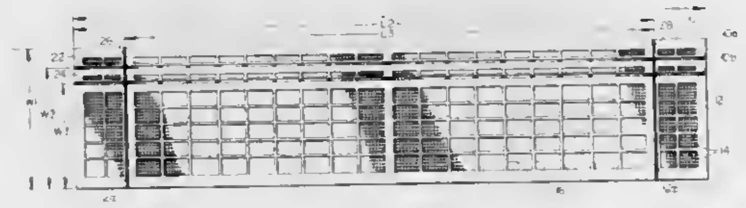
means for providing positive air pressure within said enclosed volume of said structure for maintaining said skin in a fully expanded condition, the geometry of said skin being such that in said expanded condition, concavities are formed by said skin defining said shell wall; and

a thin plastic film secured at the outer surface boundaries of said concavity, and secured to the shell wall within said boundary, said thin film being continuous across said boundary and the surface area of the film being less than surface of said concavity within said boundary, the space between said outer skin and thin plastic film communicating by openings in said plastic film with the said enclosed volume of said structure and being at the pressure of said enclosed volume, whereby said flexible outer skin is expanded by said positive pressure in said enclosed volume, whereby in the inflated structure, the said film is extended in taut fashion across the concavity to define an insulating air space between wall and film.



3,936,985
PANEL FOR ELECTROPLATING BARREL SIDEWALL

Allred N. Marulli, Bristol, Conn., assignor to National Plastics & Plating Supply Co., Inc., Terryville, Conn.
Filed Feb. 20, 1975, Ser. No. 551,099
Int. Cl.² E04C *2/42*
U.S. Cl. 52—98 **9 Claims**

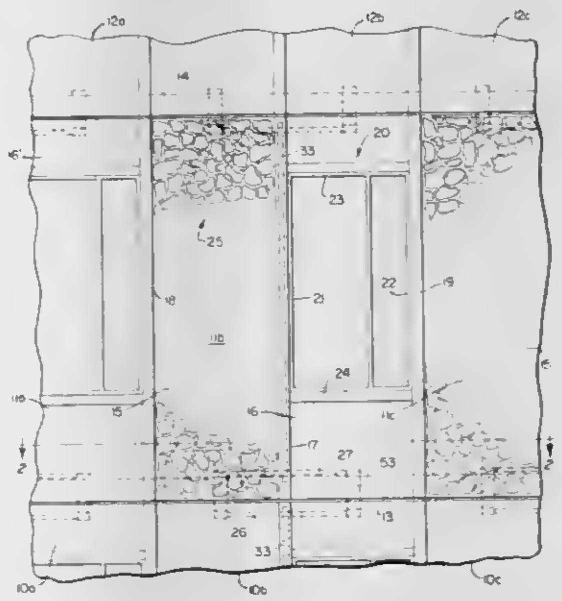


1. A panel for use in constructing polygon shaped barrels of differing sizes, said panel comprising:

a. an integrally molded rectangular frame portion defining the periphery of said panel and having marginally extending sides of generally square cross section,
b. an outer grid portion within said frame portion and integrally molded thereto, said outer portion including longitudinally extending ribs and intersecting cross ribs defining relatively large rectangular openings therebetween,
c. an inner grid portion within said frame portion and integrally molded to said outer portion and to said frame, said inner portion including longitudinally extending ribs and intersecting cross ribs corresponding in thickness and in location to said ribs defining said outer grid portion, and each rectangular opening defined between said inner grid openings being further divided by longitudinally and laterally extending partitions defining relatively small rectangular openings, said partitions integrally molded to said ribs defining said large openings,
d. at least one integrally molded brace oriented parallel one of said marginal sides and spaced therefrom, said brace having a cross sectional configuration similar said frame side and a predetermined line defined adjacent said brace and in the space between said brace and said parallel side to provide a slightly smaller size panel when said panel is severed along said line.

3,936,986
STRUCTURE AND METHOD FOR MOUNTING CURTAIN WALLS

John F. Steel, 1469 N. Ocean Blvd., Palm Beach, Fla. 33480
Filed Sept. 23, 1974, Ser. No. 508,643
Int. Cl.² E04B *2/8 8*
U.S. Cl. 52—235 **17 Claims**



1. A curtain wall for mounting between spaced floor slabs of a building each carrying upper and lower anchor elements to hangingly support said curtain wall to form a portion of the building outer shell, said curtain wall comprising:

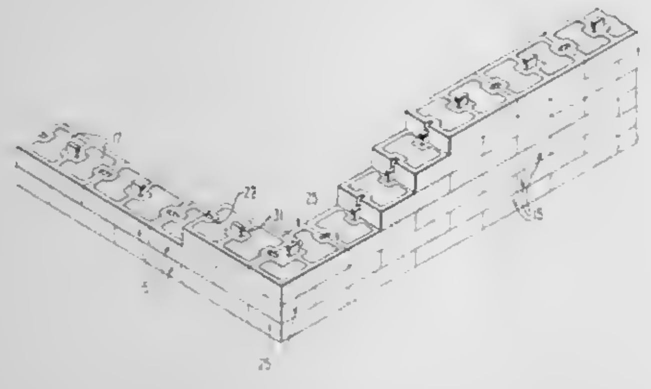
a. a rectangular body having an inner face and an outer face spaced therefrom;
b. at least two anchor boxes each having a pocket and a wall including an entrance to said pocket; and
c. frame means disposed between said faces of said body providing both structural stability to said body and a fixed mounting for said anchor boxes, at least one of said anchor boxes being disposed near the top of said body and at least one of said anchor boxes being disposed near the bottom of said body with each said anchor box disposed in cooperative relation with a respective one of said upper and one lower anchor elements on adjacent floor slabs, each said anchor box supported by said frame means with said entrance to said pocket substantially in the plane of said inner face, and each said anchor element adapted to be received through a respective one of said entrances to cooperate in said pocket for hanging mounting of said curtain wall on said anchor elements.

3,936,987
INTERLOCKING BRICK OR BUILDING BLOCK AND WALLS CONSTRUCTED THEREFROM

Edward L Calvin, 181 Country Club Drive, Rock Hill, S.C. 29730
Filed Jan. 13, 1975, Ser. No. 540,339
Int. Cl.² E04C *1/10*
U.S. Cl. 52—309 **3 Claims**

1. In a wall construction including a plurality of courses of blocks, and the blocks in each course being in end-to-end abutting relationship, the improvement which comprises each block in each course being rectangular and dimensioned to simulate a brick, each block having forward and rear webs and end webs joined in right angular relationship and a center front-to-back web parallel with the end webs and joined with said forward and rear webs, said center web having an enlargement substantially midway between the forward and rear webs, said end webs having interior side enlargements spaced from and opposing said enlargement of the center web, all of said webs and said enlargements being continuous in a vertical direction and extending from the top face to the bottom face of the block, the exterior faces of said end webs provided midway between the forward and rear webs with narrow con-

stant width grooves which extend vertically and continuously between the top and bottom faces of said block and opening through said top and bottom faces, said center web enlargement having a centrally located rectangular cross section slot formed therein vertically and being aligned laterally with said grooves and being of substantially equal width with the grooves in the front-to-back direction, said slot having a bottom wall substantially at the center of vertical thickness of the block, said slot elongated in the direction between said end webs and grooves, said webs of the block forming a pair of equal size and substantially identically shaped large core openings extending entirely through the block from top-to-bottom thereof, foam insulation material substantially completely filling said core openings and being flush with the flat top and bottom faces of the block, and slender rectangular cross section key elements having symmetrically arranged tapering wedge-like end portions and full thickness intermediate portions engaging snugly in said slots and grooves of all of the blocks and all of the courses to thereby firmly mechanically interlock the courses in properly registering relationship while interlocking the blocks of the courses in properly aligned relationship, said key elements having a length in the vertical direction during use to bottom in said slots with substantially half of their lengths projecting above the tops of the slots for entry into opposing registering pairs of said end web grooves of adjacent blocks in the courses, thin layers of epoxy cement bonding together the courses of blocks in the wall construction, and each block being chamfered on its upper horizontal corners and both end vertical corners at its forward and rear sides, said chamfers simulating brick wall mortar joints in said wall construction and said chamfers rendering the blocks reversible in the front-to-back direction.



3,936,988

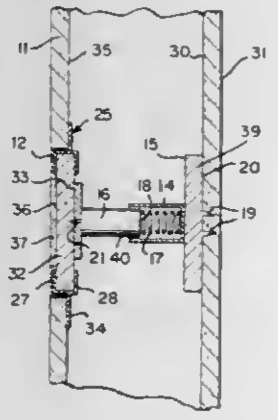
REPAIR DEVICE FOR RESTORING A DAMAGE DRY WALL BOARD

Nicholas M. Miceli, Woodside, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Dec. 16, 1974, Ser. No. 532,991

Int. Cl.^{2} E02D *37/00*

U.S. Cl. 52—514 2 Claims



1. A repair device for repairing a damaged dry wallboard having a hole therein, which comprises:

a. a wallboard support member consisting of:
   1. a circular bottom base plate,
   2. a cylindrically shaped sleeve affixed perpendicularly onto a top center face of said circular bottom base plate,
   3. a cylindrically shaped rod slidably contained in said sleeve and extending outwardly from an open end of said sleeve,
   4. a coil tension spring contained within said sleeve and secured to said rod,
   5. a plurality of first spike members extending perpendicularly outward from a bottom face of said circular plate, said spike members adapted to engage into a rear dry wallboard,
   6. a second spike member extending perpendicularly outward from a top center face of said cylindrically shaped rod,
   7. a circularly shaped disc element having a central hole therethrough, said disc element mounted onto said top base of said cylindrically shaped rod with said second spike extending through said central opening, said spike member adapted to engage into a cutout wallboard piece; and

b. a plurality of clip members, each said clip member adapted to engage said cutout wallboard piece and adapted to engage an inside surface of said damaged dry wallboard.

3,936,989

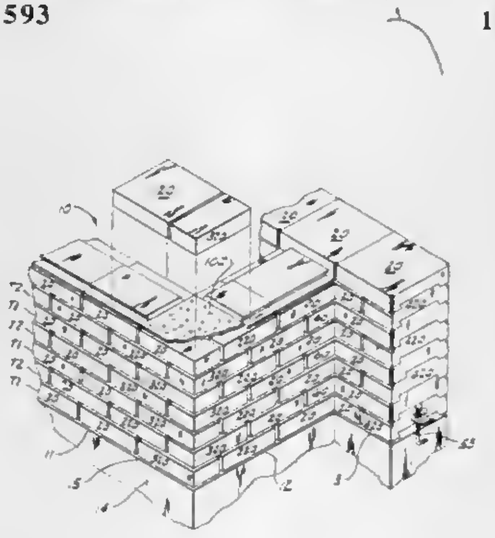
INTERLOCKING BUILDING BLOCK

Norman Lee Hancock, 10439 Garibaldi St., St. Louis, Mo. 63122

Filed Feb. 10, 1975, Ser. No. 548,882

Int. Cl.^{2} E04B *2/56*; E04C *1/04*

U.S. Cl. 52—593 14 Claims



1. A building block comprising:

a. an upper side including a longitudinally extending rib having laterally spaced first and second inclined faces and a transverse face extending therebetween, the intersection between said transverse face and said first inclined face defining an acute included angle and the intersection between said transverse face and said second inclined face defining an obtuse included angle,

b. a lower side including a longitudinally extending groove having laterally spaced first and second inclined faces and a transverse face extending therebetween, the intersection between said transverse face and said first inclined face defining an acute included angle and the intersecion between said transverse face and said second inclined face defining an obtuse included angle said groove receiving the rib of a compatible block in interfitting relation, and

c. opposed front and rear sides and opposed ends.

3,936,990

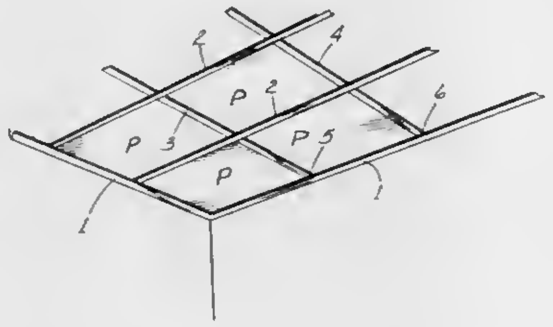
CEILING PANEL TRIM MOUNTING MEANS

David H. Garrison, Jr., deceased, late of Boco Raton, Fla., and by Richard J. Alfieri, executor, 930 N. Federal Highway, Pompano Beach, Fla. 33062

Filed Apr. 1, 1975, Ser. No. 564,161

Int. Cl.^{2} E04B *5/52*

U.S. Cl. 52—717 6 Claims



1. In suspended ceiling construction of the class described, in combination, grid members for supporting ceiling panels, said members having a normally exposed surface and at least one generally horizontal flange to support ceiling panels thereon, a trim body to cover said exposed surface, said body having a recess therein including spaced sides, and trim body mounting means comprising a series of clips, each having a portion extending over the said flange and a section seated in the recess whereby to engage at least one side thereof to maintain the trim body in juxtaposition with said normally exposed surface to cover the same.

3,936,991

BOTTLE STOPPERING APPARATUS

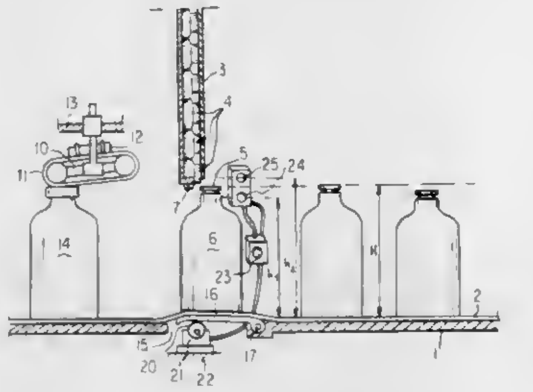
Jean Deix, Chalon-sur-Saone, France, assignor to Le Bouchage Mecanique, Paris, France

Filed Feb. 14, 1974, Ser. No. 442,620

Claims priority, application France, Feb. 22, 1973, 73.06260

Int. Cl.^{2} B65B *57/02, 7/28*

U.S. Cl. 53—76 3 Claims



1. Bottle stoppering apparatus including stopper delivery means, stopper driving means, means to carry bottles in a substantially horizontal direction beneath said delivery and driving means in succession, means including three photoelectric detectors to measure the height of bottles on said carrying means upstream of said delivery means, one of said detectors detecting the approach of a bottle, another detecting insufficient height for the bottle and a third detecting excess height for the bottle, and means to adjust the vertical separation of said delivery and carrying means as a direct function of bottle height measured, said adjusting means comprising a servo-mechanism coupled to adjust the vertical position of said carrying means at a location beneath said delivery means.

3,936,992

MACHINE FOR FILLING CARRYING TRAYS WITH OBJECTS DISPOSED IN GROUPS

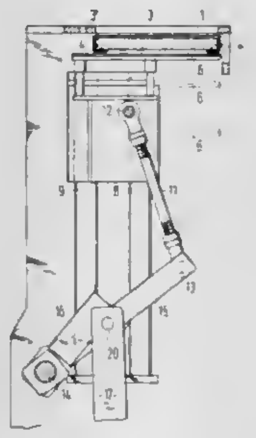
Everhard Bauer, Oberer Frankfurter Weg 21, 479 Paderborn, Germany

Filed May 8, 1974, Ser. No. 468,169

Claims priority, application Germany, May 10, 1973, 2323728

Int. Cl.^{2} B65B *35/30*

U.S. Cl. 53—162 9 Claims



1. A machine for loading an assembly of articles such as cans or the like onto trays, comprising in combination, a receptacle having a removable base and a side wall therefor for receiving said assembly of articles, means associated with said receptacle for guiding said assembly of articles into said receptacle in supported relationship on said base, means for supporting a tray in underlying relationship with said base, means for moving a tray onto said tray supporting means into said underlying relationship with said base whereby said assembly of articles is deposited in said tray upon removal of said base, vertically movable tray support means movable into an upper position beneath said receptacle for supportedly receiving a tray loaded with said assembly of articles upon removal of said base and into two vertically spaced lower positions and drive means for moving said support means reciprocally between said upper position and selectively into either one of said lower positions for removal of a single loaded tray from said support means in a single-stage operation or into both of said two lower positions successively for receiving a second loaded tray in stacked relationship with the first loaded tray and for removal of said stacked trays from said support means in a two-stage operation.

3,936,993

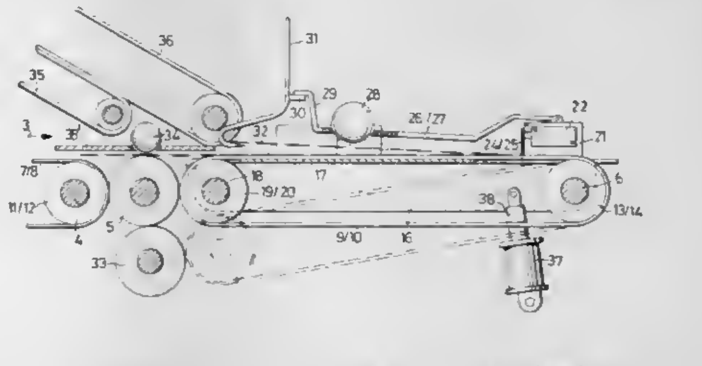
ENVELOPE FILLING MACHINE

Wilfried Dorer, Rebberg, Germany, assignor to Mathias Bauerle GmbH, St. Georgen, Black Forest, Germany

Filed July 5, 1974, Ser. No. 485,944

Int. Cl.^{2} B65B *7/20*; B65G *47/52*

U.S. Cl. 53—266 A 13 Claims



11. An apparatus for advancing sheet material between a feed and a filling station defining a first pair of work stations and between the filling and a discharge station defining a second pair of work stations in a processing machine wherein

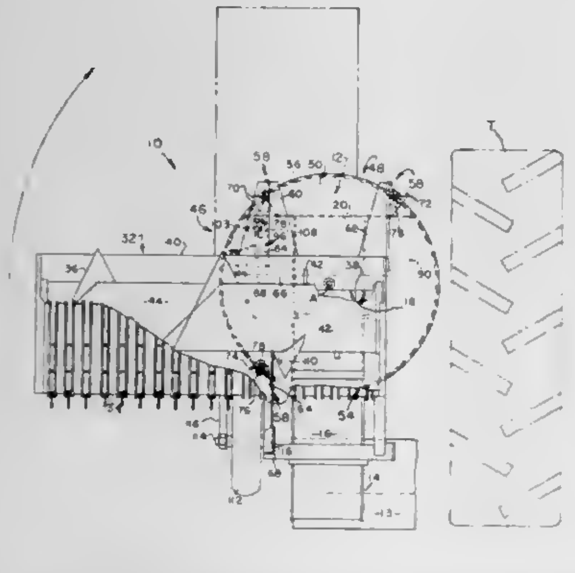
the first and second pairs of work stations are at separate locations, comprising:

a support plate linking said first pair of the work stations, said support plate being an integrated unit and adapted to pivot about one end thereof at one of the work stations;
conveyor means including an endless belt having an upper run thereof overlying the support plate for advancing sheet material;
means for pivoting the support plate to link the second pair of work stations;
retainer means pivotally mounted on the support plate and movable therewith for holding the sheet material against the conveyor means when the support plate links-up the second pair of work stations; and
drive means for driving the conveyor means in one direction when the support plate links-up the first pair of work stations and for reversing the drive when the support plate links up the second pair of work stations.

3,936,994
MEANS FOR CONVERTING A PICKUP ON A CROP TREATING MACHINE BETWEEN FIELD AND TRANSPORT POSITIONS

Frans Henri Mortier, Maldegem; Willy Rene Evarist Dekeyser, Vladslo, both of Belgium, and Loren Gage Sadler, Stevens, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Mar. 28, 1974, Ser. No. 455,699
Int. Cl.^{2} A01D *75/22*
U.S. Cl. 56—228 15 Claims



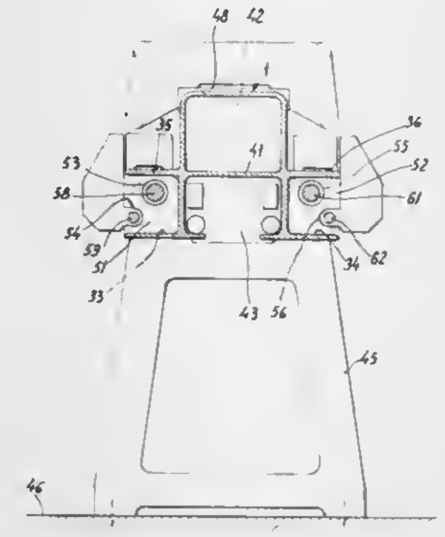
1. In machine for treating crop material during movement across a field and being of the type which includes a frame, crop material receiving and treating means mounted on said frame and means for delivering said crop material from the field to said receiving and treating means, an improved means for converting said machine between field and transport positions which comprises:

means supporting said delivering means on said receiving and treating means in an operating field position, in a non-operating transport position and for pivotal movement relative thereto between said positions, said pivotal movement of said delivering means being within a plane extending in a generally transverse relationship to the direction of machine movement across the field and about a pivotal axis from which said supporting means is disposed at a spaced location, said supporting means including a first support member being fixedly mounted to one of said delivering means and said receiving and treating means and a plurality of second, spaced apart support elements mounted to the other of said delivering means and said receiving and treating means and movably coupled to said first support member at locations radially spaced from said pivotal axis for supporting said delivering means on said receiving and treating means and for allowing relative movement between said first support member and said plurality of second support elements in pivotally moving said delivering means relative to said receiving and treating means between said field and transport positions.

3,936,995
TEXTILE MACHINE FRAMES

Regis Laflaquiere; Radovan Janousek, both of Mulhouse, and Albert Wettel, Brunstatt, all of France, assignors to Societe Alsacienoe de Constructions Mecaniques de Mulhouse, Mulhouse Cedex, France

Filed Nov. 8, 1973, Ser. No. 413,948
Claims priority, application France, Nov. 10, 1972, 72.39862
Int. Cl.^{2} D01H *1/16*
U.S. Cl. 57—1 R 2 Claims



1. A frame for a textile machine such as a spinning frame, a twisting machine or rewinding machine which includes a series of similar stations, said frame comprising a central longitudinally extending body solely defined by lateral, upper and lower walls providing a hollow girder of rectangular cross section, first wings constituting extensions of the lower wall extending normal to the lateral walls, second wings located between said first wings and the upper wall extending normal to the lateral walls in parallel relationship to the first wings, said first and second wings having plane upper surfaces for supporting machine parts, longitudinally spaced webs integral with the lateral walls and extending between the first wings and second wings providing reinforcing means for the lateral walls and support means for bearings, respectively, with the bearings being adapted to receive machine shafts extending axially of the girder, an internal wall constituting an extension of said second wings extending normal to the lateral walls providing a first conduit between the internal wall, the lateral walls and the upper wall and a second conduit between the internal wall, the lateral walls and the lower wall, and support legs for the girder.

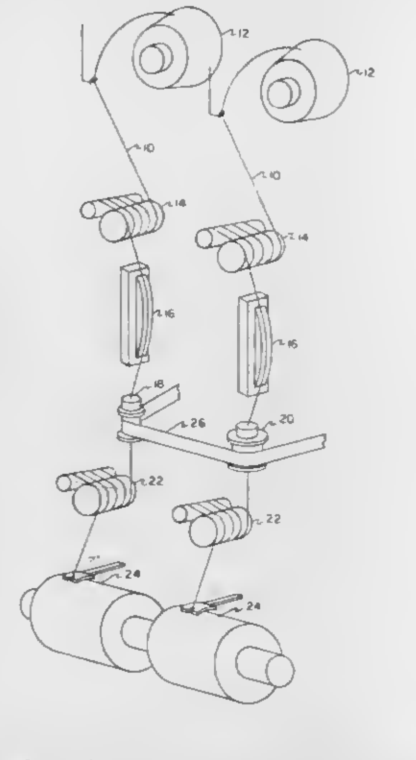
3,936,996
METHOD AND APPARATUS FOR PRODUCTION OF FALSE TWIST TEXTURED COMPOSITE YARN

Heinz Schiffer, Brussels, Belgium, assignor to Amcel Europe, S.A., Brussels, Belgium

Continuation of Ser. No. 186,785, Oct. 5, 1971, abandoned. This application Nov. 8, 1973, Ser. No. 414,087
Int. Cl.^{2} D02G *1/04, 3/04*
U.S. Cl. 57—34 HS 11 Claims

4. A process for simultaneously and independently false twist texturing each yarn member forming pairs of multifilamentary thermoplastic yarns, each member of said pair being of a different chemical composition than the other, on a single multiposition false twist machine fitted with a multiplicity of twister means associated individually with said multipositions,

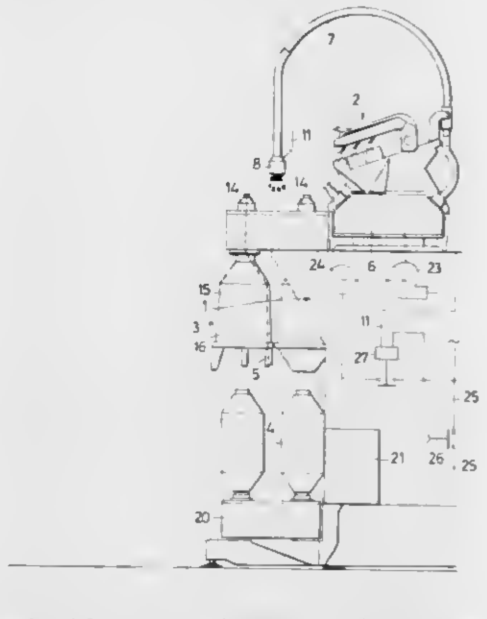
said twister means associated individually with said multipositions, said twister means being driven by a common belt, said process comprising texturing said yarn members of respective pairs of yarns at differential twist levels for each of the differently chemically composed yarn members, by running each of said member of said pairs of yarns through individual twister means at adjacent texturing stations, the twister members of said individual adjacent twister means having modified belt contacting surfaces constituted by circular cross sections of different diameter.



3,936,997
DEVICE FOR TAKING UP THE THREAD IN TEXTILE MACHINES

Angelo Marzoli, Bergamo, Italy, assignor to F.LLI Marzoli & C. S.p.A., Palazzolo Sull'Oglio (Brescia), Italy

Filed Aug. 8, 1974, Ser. No. 495,840
Claims priority, application Italy, Aug. 10, 1973, 27778/73
Int. Cl.^{2} D01H *15/00*
U.S. Cl. 57—34.5 3 Claims

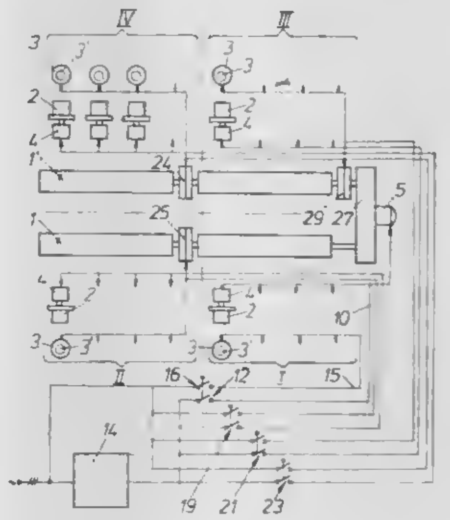


1. A thread taking-up device for textile machines comprising a drawing system, a wind-up unit and a conduit for transferring the thread from the drawing system to the wind-up unit, said device comprising a bell of electrically insulated material, a flexible tube connecting the bell to an aspiration unit, an electrically conductive spring housed within said bell and protruding outwardly therefrom and an electrical control for the aspiration unit, said control being electrically connected to said spring for starting operation of the aspiration unit when the spring is brought into contact with metallic means.

3,936,998
SPINNING OR TWISTING MACHINE

Horst Wolf, Albershausen, Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Germany

Filed May 22, 1974, Ser. No. 472,504
Claims priority, application Germany, May 22, 1973, 2325888
Int. Cl.^{2} D01H *1/20, 1/22, 1/24, 1/244*
U.S. Cl. 57—100 2 Claims



1. In a spinning, twisting or spooling machine, especially a draw-twisting machine, which includes a plurality of thread processing stations, each of which includes a thread feed roller and a thread draw roller, where said rollers are driven by a plurality of individual synchronous motors whose AC drive current is produced by a common frequency generator, the improvement comprising: switching means and associated connecting lines to permit the separate actuation of the electric drive motors within a selected sub-group of said plurality of thread processing stations.

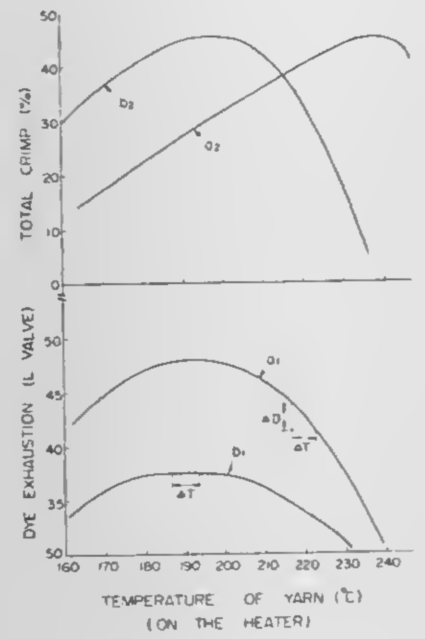
3,936,999
FALSE TWIST-CRIMPED POLYESTER YARNS PRODUCTION

Morio Ikeda, and Mamoru Tsumoto, both of Ibaraki, Japan, assignors to Teijin Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 131,242, April 5, 1971, Pat. No. 3,797,221. This application Dec. 19, 1973, Ser. No. 425,995. The portion of the term of this patent subsequent to Mar. 19, 1991, has been disclaimed.
Int. Cl.^{2} D02G *1/02*
U.S. Cl. 57—157 TS 3 Claims

1. A process for producing a false twist-crimped polyester yarn which comprises false twisting undrawn polyester multifilament yarn obtained by melt-spinning at a speed of 2500–5000m/min., having a birefrigence (Δn) of 0.030–0.145 and a density of not greater than 1.3720, while heat-setting said yarn in the twisted state at a first temperature of 160°–210°C, at a draft (*dr*) expressed by the equation:

$$-150(\Delta n) + 17 \leqq dr \leqq 0.9 \times 10^4(\Delta n^2) - 29 \times 10^2(\Delta n) + 248$$



and then subjecting the false twist-crimped yarn to a second heat-setting temperature.

3,937,000

CONTINUOUS BI-COMPOUND ACRYLIC BULKY YARN AND THE METHOD OF THE PRODUCTION OF SAME

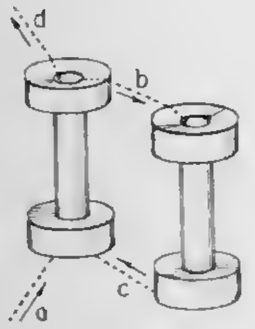
Franco Cognigni, Cesano Maderno, and Silvano Cesca, San Donato Milanese, both of Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed Sept. 15, 1972, Ser. No. 289,230

Claims priority, application Italy, Sept. 16, 1971, 23708/71; July 7, 1972, 26731/72

Int. Cl.² D02G *1/02*

U.S. Cl. 57—157 TS **5 Claims**



1. Method for the production of a bulky acrylic bi-compound, continuous yarn consisting of a pair of acrylic polymeric components differing from each other in some of their properties, characterized by from 4 to 15 waves per centimeter and a crimping rate ranging from 5% to 20%, wherein the yarn is drawn, the drawn yarn is passed through a first oven heated to a temperature in the range from 130°C to 230°C, is then subjected to a false twist by means of a rotating spindle, is then passed into a second oven, heated to a temperature of from 120°C to 200°C, and is then wound on a holder.

3,937,001

WATCH MOVEMENT DRIVEN BY A SPRING AND REGULATED BY AN ELECTRONIC CIRCUIT

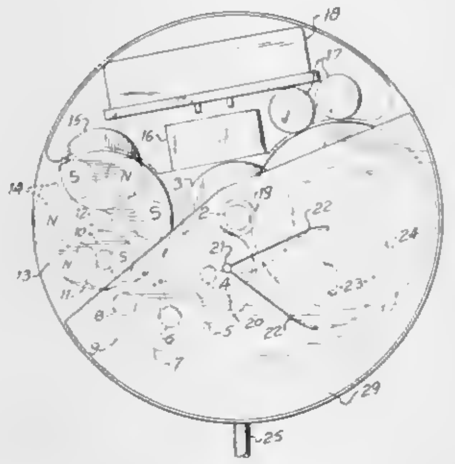
Jean-Claude Berney, Chemin de Fontadel 15, Prilly, Vaud, Switzerland

Filed Nov. 20, 1973, Ser. No. 417,588

Claims priority, application Switzerland, Nov. 21, 1972, 16918/72

Int. Cl.² G04C *3/04;* **F16H** *57/10;* **H02P** *5/00*

U.S. Cl. 58—23 D **10 Claims**



1. A watch movement comprising a drive means, a time-wheel mechanism driven by said drive means, a generator coupled to said drive means via at least a portion of said time-wheel mechanism and with substantial gear reduction, said generator including means for producing a.c. voltage at a frequency of operation F_G, and an electronic regulating circuit connected to said generator, said circuit comprising an oscillator means for producing a precise reference frequency FR, a comparator having inputs receiving frequencies F_R and F_G to compare the same, and a charging means connected to the comparator and the generator to supply current to the generator when $F_G > F_R$ to brake the generator until $F_G = F_R$ and thereby provide a regulated operation of said time-wheel mechanism.

3,937,002

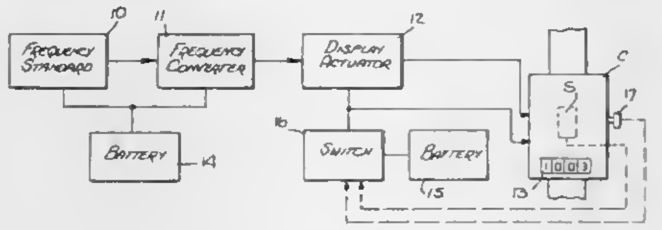
SOLID STATE, BATTERY OPERATED ELECTRONIC WATCH HAVING ARM-ACTUATED SWITCH

Egbert Van Haaften, Closter, N.J., assignor to Bulova Watch Company, Inc., New York, N.Y.

Filed Aug. 20, 1974, Ser. No. 499,015

Int. Cl.² G04C *3/00;* **G04B** *19/30;* **H01H** *35/02*

U.S. Cl. 58—23 BA **11 Claims**



1. An arm-actuated switch for an electronic device which is borne on the wrist of a wearer, said switch acting to close a circuit in said device to activate same only when the wearer's arm is made to undergo a predetermined sequence of motions, said switch comprising:

A. a pair of spaced contacts which when interconnected close said circuit;
B. a conductive shorting bridge having a pair of flexible tines symmetrically disposed with respect to said contacts, each tine in its neutral position being adjacent to but out of engagement with a respective contact, and
C. a pair of swingable mallets pivoted on an axis normal to the axis of symmetry of said tines and so disposed with respect to said tines that the mallets are capable of being retracted and then swung to strike the tines simultaneously with sufficient force to bend the tines to cause them to engage the contacts and close the circuit only when the wearer moves his arm so that it undergoes said predetermined sequence of motions.

3. A switch as set forth in claim 2, wherein said device is a solid-state electronic watch having an electro-optical display having a control circuit which is connected to a battery for powering said display, and said switch is included in said control circuit whereby said display is provided with power only when said switch is closed.

3,937,003

ELECTRIC CLOCK

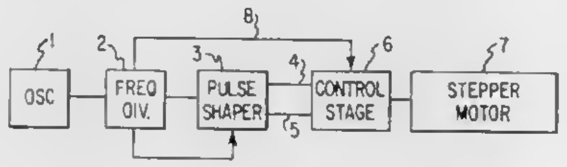
Dieter Busch, Wollstadt, and Roland Sudler, Frankfurt, both of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Germany

Filed Nov. 18, 1974, Ser. No. 524,878

Claims priority, application Germany, Nov. 28, 1973, 2359142

Int. Cl.² H02K *59/02;* **G04C** *3/00*

U.S. Cl. 58—23 D **8 Claims**



1. In an electric clock comprising:

A. oscillator means (1) for providing a substantially fixed frequency oscillating electrical signal,
B. frequency-divider means (2) responsive to the fixed frequency oscillating electrical signal for providing a reduced frequency oscillating electrical signal,
C. a stepper motor (7) for driving hands of the clock, and
D. control means responsive to the reduced frequency oscillating electrical signal for driving the stepper motor,

the improvement wherein the control means comprises:

E. pulse generating means responsive to the reduced frequency signal for generating a train of pulses at said reduced frequency, and
F. decay-time means (20, 21, 31) for lengthening the decay-time of the trailing edge of each pulse in said train of pulses.

3,937,004

PORTABLE MINIATURE TYPE INFORMATION TREATING DEVICE

Minoru Natori, Hidaka; Yasushi Nomura, Tokorozawa; Fukuo Sekiya, Tokorozawa; Shigeru Morokawa, Tokorozawa, and Akira Nakai, Tokyo, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 24, 1974, Ser. No. 472,958

Claims priority, application Japan, May 28, 1973, 48-59593; June 21, 1973, 48-70066; Nov. 15, 1973, 48-128550

Int. Cl.² G04B *47/00*

U.S. Cl. 58—152 B **3 Claims**

1. In a portable electronic timepiece, in combination:

a crystal oscillator;
frequency-dividing means connected to said oscillator;
counting means stepped by said frequency-dividing means;
code-conversion means connected to said counting means for generating time-indicating signals;
electro-optical display means connected to said code-conversion means for energization by said time-indicating signals in a display recurrent cycle of at least 12 hours;
normally deactivated receiving means for external signals;
timing means controlled by said frequency-dividing means for periodically activating said receiving means several times during said display cycle for a limited time interval; and
sound-emitting means responsive to external call signals upon activation of said receiving means by said timing means.

3,937,005

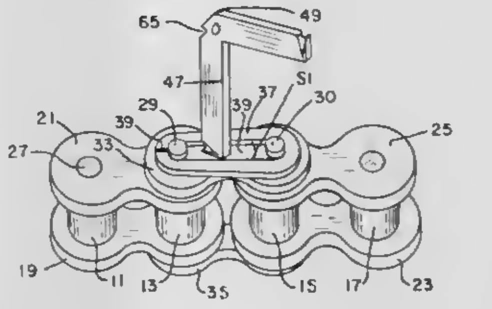
KEY FOR REMOVING LOCKING MEMBERS FROM DRIVE CHAINS OR THE LIKE

Raymond Becker, 3754 Ramsey Court, El Sobrante, Calif. 94803

Filed Feb. 18, 1975, Ser. No. 550,267

Int. Cl.² B21I *21/00*

U.S. Cl. 59—7 **4 Claims**



1. A key for removing locking members from drive chains or the like comprising

a rigid body having an elongated portion with a flat end of a size to fit within the central opening of the drive chain locking member,
at least one release groove formed in said body adjacent to and parallel the flat end of said elongated portion, said groove being tapered so as to form a wedge with said flat end whereby, when the flat end of said elongated portion of said body is placed within the central opening of said locking member and said flat end is held against the chain link underlying said locking member, the key can be rotated to permit both the release groove to engage one internal edge of the locking member within the central opening, and the side of the body opposite the release groove to engage the opposite internal edge of the central opening whereby the wedge formed by said release groove causes the side of the locking member engaged by the release groove to separate and lift from its locked position when the key is further rotated, and
a reset groove formed in said body such that when said locking member is loosely positioned over suitably spaced locking member sprocket shafts said reset groove can engage one of the internal edges of said locking member within its central opening permitting the key to force said locking member into locking engagement with said sprocket shafts by rotating said key within said central opening while the key is held firmly in contact with the surface of the underlying chain link.

3,937,006

METHOD AND MEANS FOR OBTAINING STAPLES OR THE LIKE

Rolf Erik Lindqvist, Pionjargat. 50, 582 65 Linkoping, Sweden

Filed Dec. 10, 1973, Ser. No. 423,306

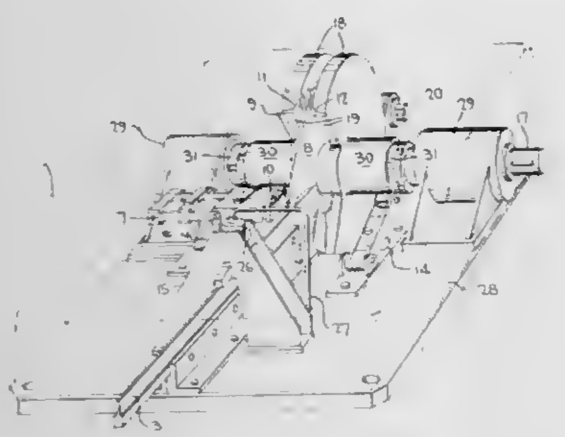
Claims priority, application Sweden, June 9, 1972, 7603/72

Int. Cl.² B21D *53/46*

U.S. Cl. 59—76 **8 Claims**

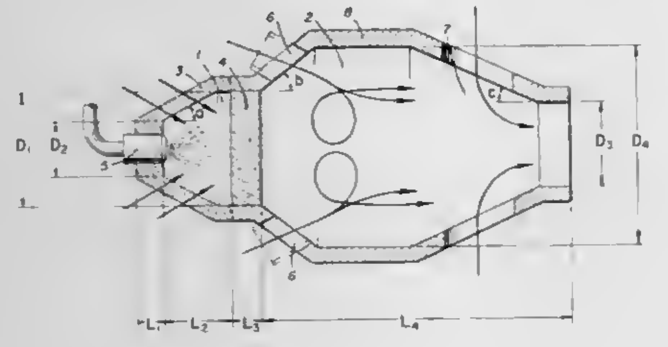
1. A method to produce staples with parallel legs comprising the following steps:

arranging a plurality of wires of desired cross section in a side-by-side relationship in a plane and adhering the wires to each other to form a mat or strip, moving the mat or strip which is obtained stepwise in the longitudinal direction of the wires, the length of the steps being chosen as desired, cutting off the portion of the mat which has been moved in this way from the rest of the mat while the central portion of said portion is kept fixed, and is given a somewhat concave, blunt V-shaped bending on the upper side, bending the side legs of the cut portion of the mat downwards, principally to mutual parallel positions, moving the cut and bent portion of the mat along a bar, pressing both ends of the central portion of the bent portion of the mat downwards over a ridge, shaped as a blunt V, to make its leg to converge towards their free ends, and interrupting the pressing when the legs have achieved a position, from which they will become parallel by the resilience of the material.



3,937,007
COMBUSTION CHAMBER AND PROCESS UTILIZING A PREMIX CHAMBER OF A POROUS CERAMIC MATERIAL

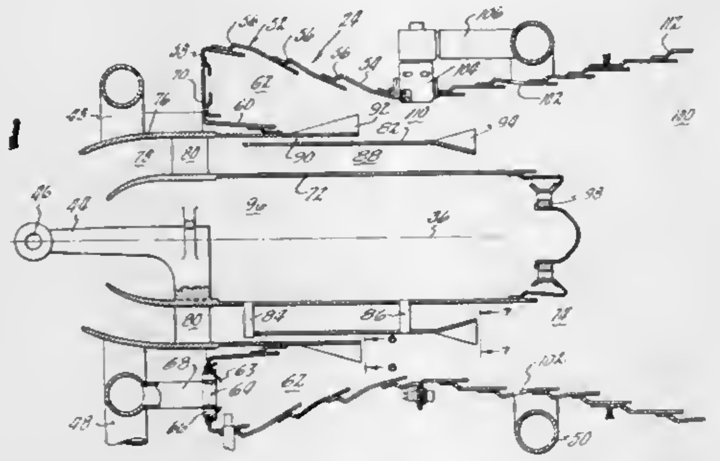
Gunter Kappler, Munich, Germany, assignor to Motoren- und Turbinen-Union Munchen GmbH, Germany
Filed May 28, 1974, Ser. No. 474,026
Claims priority, application Germany, May 25, 1973, 2326680
Int. Cl.^{2} F02C *7/22*
U.S. Cl. 60—39.06 **5 Claims**



1. Combustion chamber for use in gas turbines, comprising a flame tube, a premix chamber located at the upstream end of the flame tube, and fuel injector means for injecting fuel directly into said premix chamber, wherein the premix chamber comprises an entirely permeably walled chamber which includes an intervening diaphragm attached to the upstream end of the flame tube, wherein combustion occurs, immediately after the mixture issues from the premix chamber, in a combustion zone beginning directly at the intervening diaphragm.

3,937,008
LOW EMISSION COMBUSTION CHAMBER

Stanley J. Markowski, and Richard S. Reilly, both of East Hartford, Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 18, 1974, Ser. No. 534,018
Int. Cl.^{2} F02C *3/24;* **F02M** *23/00, 31/00*
U.S. Cl. 60—39.06 **25 Claims**



1. A low NOx combustion chamber comprising:

A. means to produce hot, fully combusted, pilot exhaust gases of reduced oxygen content,

B. means to mix a selected quantity of cool, swirling air with the pilot exhaust gases to produce a first swirling mixture having a selected temperature lower than the pilot exhaust gases but above the vaporization temperature of the fuel to be utilized in the combustion chamber, and of reduced oxygen content so that the first swirling mixture has an ER less than 1,

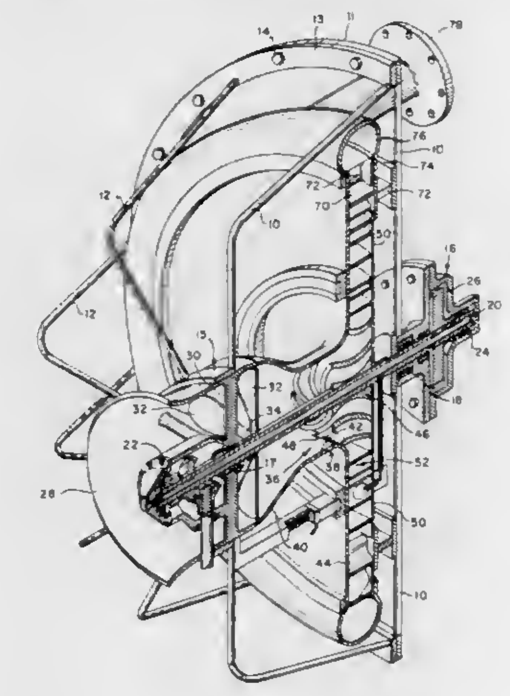
C. means to inject atomized fuel into the first swirling mixture in selected quantity to produce a second swirling mixture of fuel and air of reduced oxygen content so that the second swirling mixture has a first ignition delay time to prevent autoignition of the atomized fuel droplets, said second swirling mixture also having a selected temperature to vaporize the fuel so that said second swirling mixture is a vaporized, swirling fuel-air mixture having a reduced oxygen content to produce autoignition at the culmination of the first time delay, and

D. means to mix a selected quantity of swirling combustion air with the second swirling mixture to effect molecular mixing between the fuel and air since both the second mixture and combustion air are swirling, and in selected quantity to produce a third swirling, vaporized fuel-air mixture of oxygen level greater than that of said second mixture to effect a new and reduced ignition delay time so as to autoignite the third mixture at an ER less than 1 and at a time sooner than the expiration of the first ignition delay time to thereby reduce the dwell time of the engine air at NOx creating temperature.

3,937,009
TORQUE-JET ENGINE

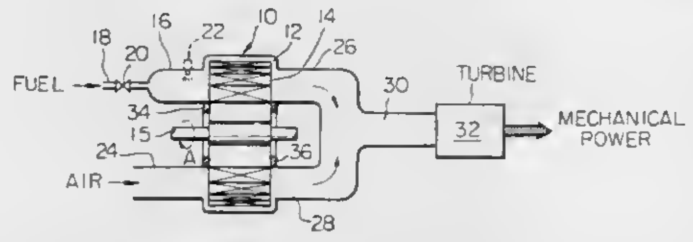
Howard Coleman, 1312 Briarcliff, Austin, Tex. 78723
Filed Sept. 24, 1974, Ser. No. 508,849
Int. Cl.^{2} F02C *3/16*
U.S. Cl. 60—39.35 **15 Claims**

1. A rotary internal combustion reaction engine having air inlet, fuel injection means and an exhaust outlet for the products of combustion produced in the engine comprising a rotating air compressing means for receiving air from said inlet, said compressing means having a passage extending around at least 360° in the direction of its rotation, a rotating combustion chamber integral with and concentrically disposed with respect to said compressing means, said combustion chamber having an infeed throat at its inner end to receive compressed air from said compressor, said combustion chamber extending outwardly, from said throat, fuel injection means at said throat to feed fuel into the combustion chamber, igniter means at said throat to initiate combustion of the fuel and air at said throat, a common wall means for defining a portion of said compressing means and said combustion chamber to provide for a heat exchange between the infeeding compressed air and heat from the combustion chamber, reaction nozzle means near the outer end of the combustion chamber and rotating therewith forming an exhaust means for allowing the products of combustion to issue from the combustion chamber whereby to drive said compressing and combustion chamber means to rotate about a common axis, fixed frame means for supporting said air compressing and combustion means, fixed deflector blades carried on said frame concentrically with respect to said axis and said reaction nozzle means to redirect the flow of exhaust gases issuing from said nozzle means, turbine means disposed concentrically outside of said deflector blades to be driven by the exhaust gas flowing from said combustion chamber, and rotating driven means operatively connected to said reaction nozzle means and said turbine means to deliver power from the engine.



3,937,010
FUEL OXIDIZER

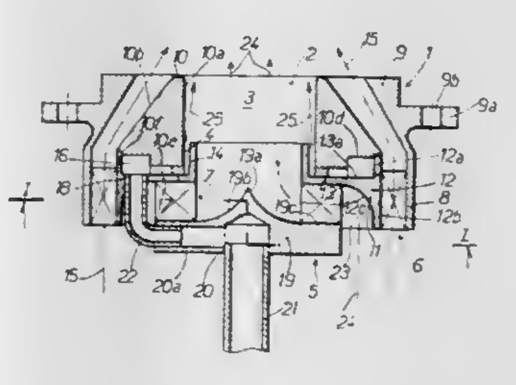
Katuaki Kosaka, Tokyo; Zene Ueno, Fuchu, and Tadahiko Nagaoka, Tokorozawa, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Oct. 25, 1973, Ser. No. 409,678
Claims priority, application Japan, Nov. 27, 1972, 47-11873
Int. Cl.^{2} F02C *3/20*
U.S. Cl. 60—39.46 R **14 Claims**



1. A fuel oxidizer comprising a housing defining therein a chamber; an oxygen absorbable porous wheel rotatable within said chamber, said wheel being made of an oxygen absorbable material which alternately absorbs and releases oxygen in dependence on certain factors; a fuel inlet opening into said chamber adjacent to an end face of said wheel; an air inlet opening into said chamber adjacent to said end face of said wheel, said air inlet being spaced apart from said fuel inlet; an oxidized gas outlet opening into said chamber adjacent to an opposite end face of said wheel, said oxidized gas outlet being substantially axially aligned with said fuel inlet, said oxidized gas outlet feeding into means which produce mechanical power by being supplied with oxidized gas from said oxidized gas outlet; a residual gas outlet opening into said chamber adjacent to said opposite end face of said wheel, said residual gas outlet being substantially axially aligned with said air inlet; said wheel being operative to absorb oxygen, in a portion thereof which lies between said air inlet and said residual gas outlet opening, from air introduced into said chamber through said air inlet and allow residual gas to pass out of said chamber through said residual gas outlet; and said wheel being operable to allow fuel introduced into said chamber through said fuel inlet to be oxidized by said absorbed oxygen therewithin when said portion of said wheel is rotated to a position between said fuel inlet and said oxidized gas outlet opening and allow said oxidized fuel to pass out of said chamber through said oxidized gas outlet.

3,937,011
FUEL INJECTOR FOR ATOMIZING AND VAPORIZING FUEL

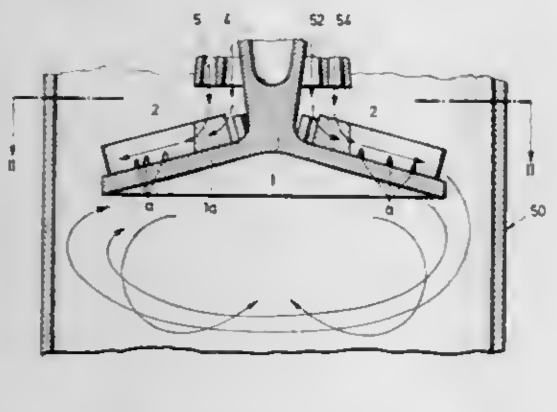
Jacques Emile Jules Caruel, Dammarie-les-Lys; Jean Robert Bedue, Creteil, and Bernard Andre Cantaloube, Chennevieres, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France
Filed Nov. 12, 1973, Ser. No. 414,945
Claims priority, application France, Nov. 13, 1972, 72.40166; Oct. 26, 1973, 73.38253
Int. Cl.^{2} F02G *3/00;* **B05B** *7/10*
U.S. Cl. 60—39.71 **14 Claims**



1. A fuel injector for atomizing and vaporizing fuel into an airflow, comprising a jacket (10) with a generally cylindrical inner surface (10*a*) having its axis generally parallel to the airflow direction, means (11) structurally associated with said jacket to form a generally cylindrical shield (14) extending coaxially with and over a substantially smaller axial extent than said cylindrical inner surface (10*a*), said axially smaller cylindrical shield (14) being spaced internally of an upstream section only of said cylindrical inner surface (10*a*) and ending short of a downstream section of said cylindrical inner surface (10*a*) thus leaving said downstream section unshielded, whereby said shield (14) defines with said cylindrical surface (10*a*) both a stepped tubular duct (3) and an annular duct (4) bounded by said shield (14) and said upstream section of said inner surface (10*a*), plugging means (5) fitted at the upstream end of said tubular duct (3) to bottom the same, a centripetal air swirler (7) leading into said tubular duct (3) and fitted upstream of said shield (14), means (23) tapping air from said airflow to feed said centripetal air swirler (7) thereby producing an inner whirl of air (24) through said tubular duct (3) towards the downstream end of said jacket (10), means (6) for producing an outer whirl of air (15) around said jacket (10) towards the downstream end of said jacket (10), and piping means (21, 20*a*, 22, 16, 17) for supplying fuel to said annular duct (4).

3,937,012
ARRANGEMENT FOR THE PRODUCTION OF ROTATIONAL ENERGY IN ROCKET COMBUSTION ENGINES

Willi Zeh, Neuenstadt, Kocher; Werner Beck, Weinsberg, and German Munding, Bad Friedrichshall, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Germany
Continuation of Ser. No. 203,115, Nov. 26, 1971, abandoned.
This application Dec. 10, 1973, Ser. No. 423,127
Claims priority, application Germany, Nov. 28, 1970, 2058583
Int. Cl.^{2} F02G *1/00*
U.S. Cl. 60—39.74 A **6 Claims**

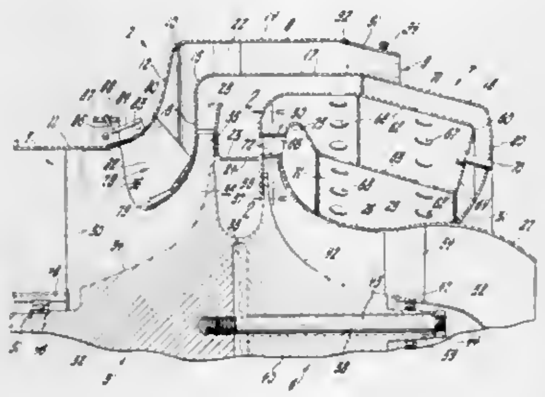


1. An arrangement for the production of rotational energy for rocket combustion chambers which are activated only by hypergolically reacting propellant components, comprising wall means defining a rocket combustion chamber having a closed rear end and a gas discharge front end, an impeller comprising a mushroom shaped body of revolution having an outwardly and forwardly facing surface facing the rear end, said impeller being mounted adjacent said closed rear end and having a plurality of spaced radially extending upstanding curved vanes on said surface, said vanes having front inwardly curved sides and rear outwardly curved sides and the curvature of said vanes being such that on their rear sides flow between said blades produces an area of reduced pressure, said vanes defining flow ducts therebetween having radially outer discharge openings directed tangentially, a plurality of passages extending through said blades, and means for directing the reacting propellant components including an oxygen carrier together with other components at the same time but in separate streams and concentrically of said impeller and into the radial inner ends of said flow ducts for interaction with each other in said ducts and for flow along said ducts to the outer circumference of said impeller and substantially tangentially into the combustion chamber with the oxygen carrier being directed radially inwardly of said impeller from the other of said components.

3,937,013
BY-PASS JET ENGINE WITH CENTRIFUGAL FLOW COMPRESSOR

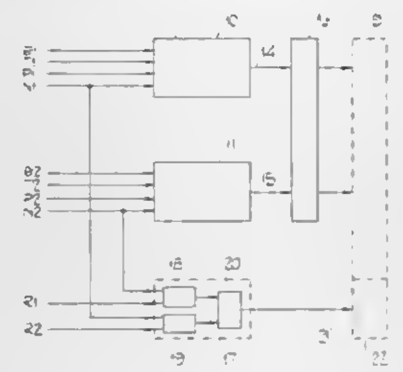
Robert H. Aspiowall, Zionsville, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed June 27, 1974, Ser. No. 483,878
Int. Cl.^{2} F02K *3/06*
U.S. Cl. 60—226 R **5 Claims**

1. A by-pass type single-shaft gas turbine jet propulsion engine comprising, in combination, an engine casing; a centrifugal compressor rotor and a centripetal turbine rotor rigidly connected coaxially back-to-back; bearing means for the rotor supported by the engine casing at the front end of the rotor and at the rear end of the rotor; combustion apparatus including combustion liner means disposed radially outward of the turbine; a diffuser connecting the compressor rotor to the combustion apparatus; and a turbine nozzle providing an outlet from the combustion liner means into the turbine rotor; the engine including an annular cascade of fan blades extending radially from the upstream end of the compressor rotor and an annular fan duct terminating in a jet nozzle disposed around the combustion apparatus, the fan blades discharging only through the fan duct; and means operable to throttle only the fan duct for starting the engine.



3,937,014
ELECTRIC CONTROL CIRCUIT ARRANGEMENTS FOR GAS TURBINE ENGINES

Anthony Brian Plant, Birmingham, England, assignor to Joseph Lucas Industries Limited, Birmingham, England
Filed Oct. 30, 1974, Ser. No. 519,272
Claims priority, application United Kingdom, Nov. 7, 1973, 51604/73
Int. Cl.^{2} F02K *3/08*
U.S. Cl. 60—243 **6 Claims**

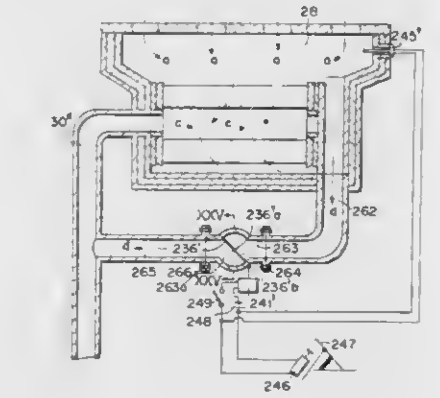


1. An electric control circuit arrangement for a gas turbine engine, comprising a first control circuit responsive to a plurality of first input signals to provide first output control signals, a second control circuit responsive to a plurality of second input signals to provide second output control signals which are nominally identical with said first output control signals, corresponding ones of said first and second input signals being nominally indentical, a third control circuit responsive to at least one of said input signals to provide a third output control signal, and selector means for rendering either said first or said second control circuit operative, said selector means being responsive to malfunction of either one of said first and second control circuits to render the malfunctioning one of said circuits inoperative and to render the other of said circuits operative.

3,937,015
PLEATED FILTER IN THE EXHAUST MANIFOLD

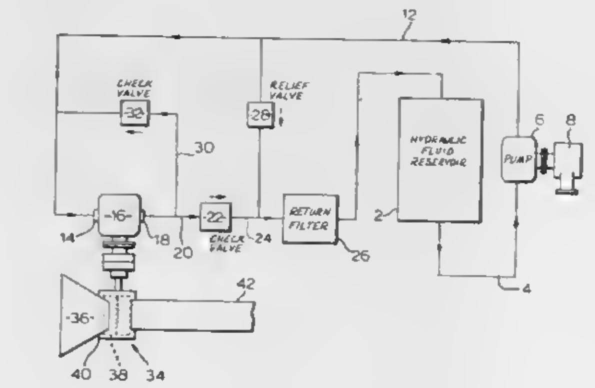
Hajime Akado, Kariya; Yutaka Kawashima, Okazaki; Akihide Yamaguchi, and Hideki Matsuura, both of Kariya, all of Japan, assignors to Nippondeoso Co., Ltd., Kariya, Japan
Filed Apr. 30, 1974, Ser. No. 465,625
Claims priority, application Japan, May 3, 1973, 48-50130; June 1, 1973, 48-62402; June 8, 1973, 48-65231
Int. Cl.^{2} F01N *3/00;* F02M *25/06;* F01N *3/02*
U.S. Cl. 60—288 **5 Claims**

1. An exhaust gas cleaning device for an internal combustion engine, comprising a casing adapted to be directly attached to the engine and having inlet ports corresponding in number to the number of cylinders of the engine from which exhaust gas is coupled to said device, said device including at least two outlets, said inlet ports each being adapted to be directly connected to a corresponding exhaust port of said cylinder; a tubular filtering element disposed in said casing to divide the space within said casing into two spaces, said filtering element being pleated circumferentially, one of said two spaces being communicated with one of said two outlets and with said inlet ports, the other of said two spaces being communicated with the other of said two outlets and being communicated through said filtering element with said one of the two spaces; and means connected to said one of the two outlets for controlling the amount of gas passing through said one of the two outlets.



3,937,016
HYDRAULIC SAFETY CIRCUIT

Gerald N. Stan, 1157 Shamir Crescent, Mississauga; Leslie Toth, 41 Longhope Place, Willowdale, and John E. Rollinson, 7 Durban Road, Toronto 18, all of Ontario, Canada
Filed Oct. 8, 1974, Ser. No. 513,010
Int. Cl.^{2} F15B *15/18*
U.S. Cl. 60—325 **5 Claims**



1. A hydraulic safety circuit for a hydraulic motor adapted to be driven from a source of pressurized hydraulic fluid, said circuit comprising:

a inlet means associated with said motor for admitting said fluid to said motor to drive said motor, said fluid entering said motor being at a first pressure,

b outlet means associated with said motor for removing said fluid from said motor, said fluid leaving said motor at said outlet means being at a second pressure, said first pressure being higher than said second pressure when said fluid is driving said motor, said second pressure being higher than said first pressure when said source is shut off and said motor is coasting,

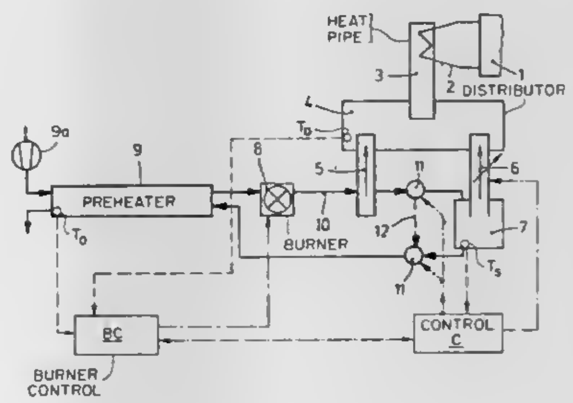
c first conduit means for conducting spent fluid from said outlet means,

d second conduit means connecting said inlet means and said outlet means,

e and check valve means associated with said first and second conduit means and responsive to said first and second pressures for directing fluid from said outlet means through said first conduit means when said fluid is driving said motor and said first pressure is higher than said second pressure and for directing fluid from said motor through said second conduit means and hence back to said inlet means of said motor when said second pressure is higher than said first pressure, whereby when said source is shut off to shut said motor off, and when said motor is coasting so that said second pressure is higher than said first pressure, said fluid may circulate through said motor, through said outlet means, through said check valve means, through said second conduit means back to said inlet means, and again through said motor, whereby to supply said motor with fluid during coasting and hence to reduce the likelihood of motor burnout during coasting.

3,937,017
EXTERNAL COMBUSTION HOT GAS ENGINE SYSTEM

Franz Beschorner, Neusass; Burkart Feurer, and Hans Aupor, both of Augsburg, all of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Augsburg and Firma Motoren-Werke Mannheim Aktiengesellschaft, Vormals Benz Abtielung Stationarer Motorenbau, Mannheim, both of, Germany
Filed Aug. 5, 1974, Ser. No. 495,009
Claims priority, application Germany, Aug. 9, 1973, 2340269
Int. Cl.^{2} F01B *29/08*
U.S. Cl. 60—516 **24 Claims**



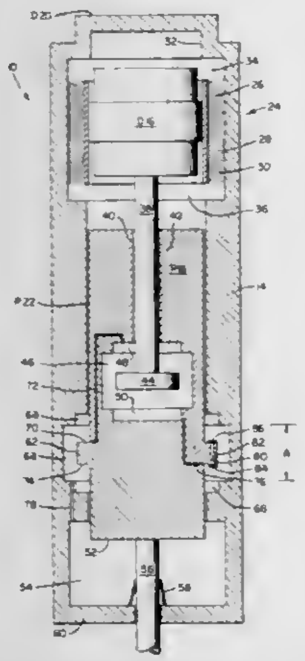
1. External combustion hot gas engine system having a hot gas engine (1), an engine heat exchanger (2), burner means (8, 13, 22, 26) providing hot combustion gases, and heat supply and distribution means (3, 4, 5, 6), including heat storage means (7) deriving heat from said hot combustion gases and supplying heat to the engine heat exchanger (2),

the improvement wherein

the heat storage device (7) is connected to receive hot combustion gases from the burner (8) and includes a heat storage substance, a heat pipe (6) extending into the heat storage device in a predetermined direction and in heat exchange relation with the substance, and duct means (32, 43) separate from said heat pipe (6), connected to receive the hot combustion gases from the burner, located in heat exchange relation to the heat storage substance and extending parallel to the heat pipe (6) to permit sequential or simultaneous withdrawal of heat energy by the heat pipe (6) and recharging of the storage device by energy from the burner.

3,937,018
POWER PISTON ACTUATED DISPLACER PISTON DRIVING MEANS FOR FREE-PISTON STIRLING CYCLE TYPE ENGINE

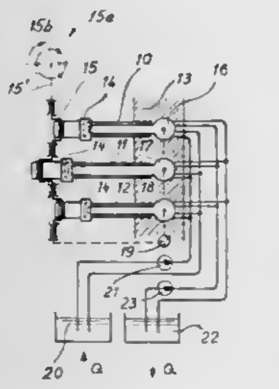
William Taylor Beale, Athens, Ohio, assignor to Research Corporation, New York, N.Y.
Filed June 7, 1974, Ser. No. 477,359
Int. Cl.^{2} F03G *7/06*
U.S. Cl. 60—520 6 Claims



1. A free-piston Stirling cycle type engine including a displacer piston and a power piston, each mounted for reciprocation in respective displacer piston and power piston cylinder zones, means for adding heat to and withdrawing heat from opposite ends of the displacer cylinder zone and phasing means for the displacer piston comprising a rod, means connecting one end of the rod to one end of the displacer piston, a small piston on the other end of said rod, a cylinder for said small piston, and a pair of gas passages connecting opposite sides of the small piston to alternating sources of compressed gas initiated by the power piston to thereby initiate movement of the small piston and its rod connected displacer piston at an appropriate point in the power piston travel.

3,937,019
THERMAL ENGINE

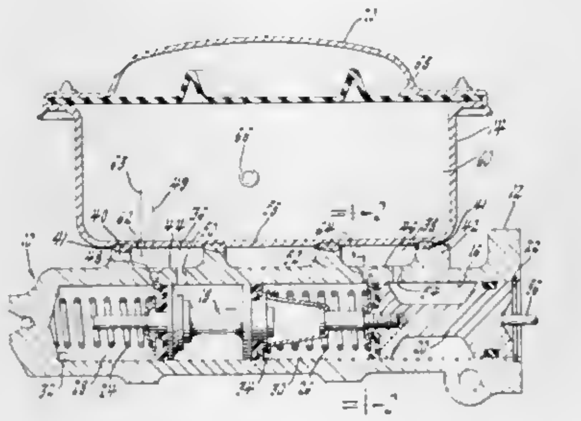
Eckhard Renner, Achim, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany
Filed Oct. 25, 1974, Ser. No. 517,883
Claims priority, application Germany, Nov. 2, 1973, 2354722
Int. Cl.^{2} F03G *7/06*
U.S. Cl. 60—527 15 Claims



1. Thermo-engine in which thermal energy is converted into mechanical, rotational energy by an output member, comprising:
- a plurality of elongated elements which change their length extension under development of a relative high force, when changing temperature beyond a transition temperature or temperature range while permitting length changes in the opposite direction under exertion of relatively little force, when at a temperature oppositely beyond said transition temperature or temperature range;
- means including resilient means for coupling said elements to said output member, so that the length changes of the elements are translated into rotational movement imparted upon the output member when at least one element changes length under development of said high force, while causing the opposite length change under exertion of force in one other of the elements as at least the one element changes length under development of force; and
- means for cyclically and alternatingly exposing said elements to heating and cooling fluids to obtain temperature changes thereof under rapid traversal of said transition temperature or range in each instance to obtain said length changes in each of said directions.

3,937,020
MASTER CYLINDER

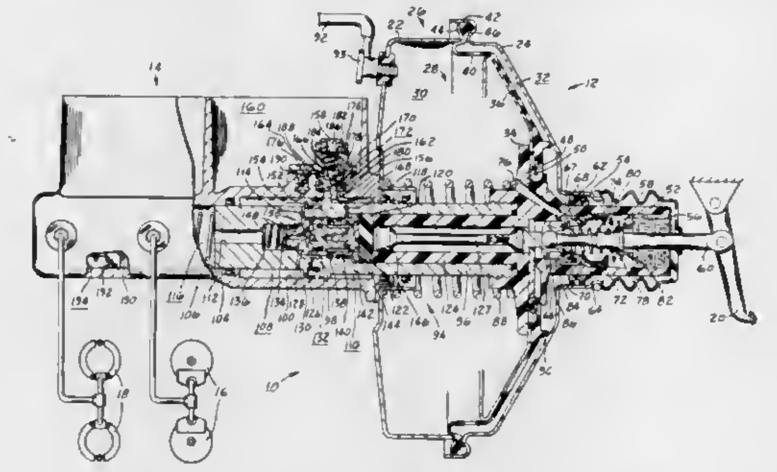
Carl A. Bierlein, Kettering, and Ernest D. Schaefer, Xenia, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Continuation of Ser. No. 379,349, July 16, 1973, abandoned. This application Oct. 23, 1973, Ser. No. 408,461
Int. Cl.^{2} B60T *17/22*
U.S. Cl. 60—534 7 Claims



1. A multiple circuit master cylinder assembly having a pressurizing chamber for each circuit and an individual fluid reservoir for each pressurizing chamber and a single primary fluid reservoir for all of said individual fluid reservoirs,
- a body defining said pressurizing chambers and said individual fluid reservoirs with open individual reservoir tops defining a lip in a substantially regular surface,
- a second body secured to said one body and of mating conformation at said surface and closing said individual reservoir tops so as to define a bottom surface that bears against the entirety of the lip, the second body further having fluid transfer ports of small cross section in relation to the reservoirs therethrough providing continuous fluid communication between said primary reservoir and said individual reservoirs,
- and a fluid level sensor sensing at least a decrease in fluid level below a predetermined level in said primary fluid reservoir.

3,937,021
HOLD OFF VALVE FOR A TWO STAGE SERVOMOTOR

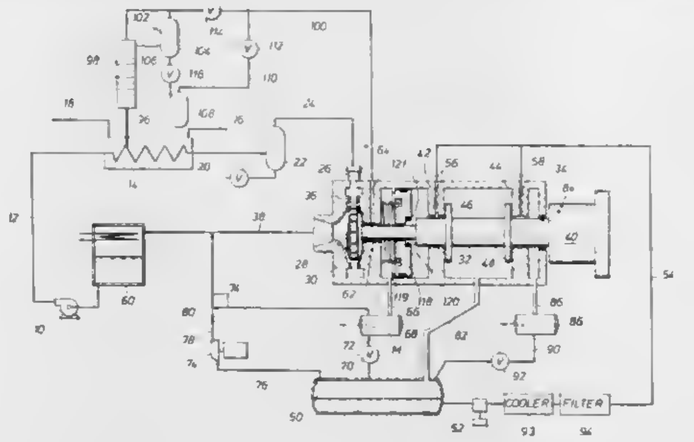
William C. Sisco, and Frederick G. Grabb, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.
Filed July 1, 1974, Ser. No. 484,381
Int. Cl.^{2} B60T *11/08* ; F15B *7/04*
U.S. Cl. 60—575 9 Claims



1. In a power braking system having piston means for sequentially producing a first fluid force in a first mode of operation and a second fluid force in a second mode of operation upon actuation of valve means responding to an input force, control means for permitting a volume of fluid to be transmitted to an outlet chamber to establish said first mode of operation when the valve means is actuated by an input force to optimize the development of the second fluid force, said control means comprising:
- a housing having a bore therein for retaining said piston means, said piston means dividing said bore into a pressurizing chamber and a relief chamber, said pressurizing chamber communicating fluid to the relief chamber upon actuation of the valve means, said relief chamber being connected to a reservoir through a flow path, said pressurizing chamber being connected to said reservoir through a first port in the housing to allow compensatory fluid to freely flow from the reservoir to said pressurizing chamber; and
- hold off means for delaying the communication of fluid in the relief chamber to the reservoir upon actuation of the valve means to allow said piston means to move in the pressurizing chamber past said first port in the housing and supply a volume of fluid to the outlet chamber to assure that said first operational fluid force is developed.

3,937,022
SEALED ROTARY SYSTEM AND METHOD

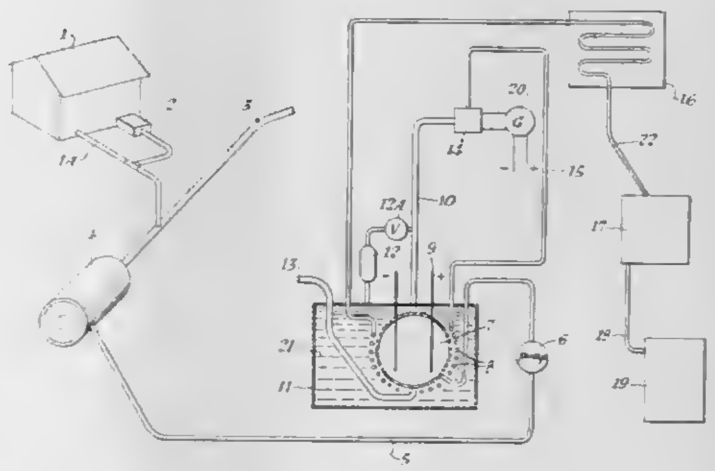
Judson S. Swearingen, 2235 Carmelina Ave., Los Angeles, Calif. 90064
Continuation-in-part of Ser. No. 356,580, May 2, 1973, Pat. No. 3,831,381. This application May 17, 1974, Ser. No. 470,998. The portion of the term of this patent subsequent to Aug. 27, 1991, has been disclaimed.
Int. Cl.^{2} F01M *9/00*
U.S. Cl. 60—657 24 Claims



1. In a system of the type wherein a working fluid is passed through a rotary machine, wherein said machine comprises a rotor housing, a rotor within said rotor housing integrally connected to and, in operation, rotating with a shaft on a common axis of rotation, wherein said shaft extends from said rotor housing and is supported by a first bearing assembly externally of the rotor housing, and wherein a lubricant is injected under pressure into said first bearing assembly and caused to flow through the first bearing assembly around said shaft and therefrom axially toward said rotor: the improvement which comprises seal means in said rotor housing surrounding a portion of said shaft adjacent said rotor for sealing said rotor housing around said shaft, means for separating seal fluid from said working fluid, means for injecting said separated seal fluid into said seal means around said shaft intermediate the axial extremities of the seal means, said seal fluid being non-reactive with said working fluid and said lubricant, the interior of said rotor housing defining a process zone on one side of said seal means containing said working fluid under a working pressure lower than said seal fluid as injected, a shaft housing enclosing said shaft adjacent said seal means and defining a lubricant zone on the other side of said seal means, said lubricant zone including a contact area between said seal means and said first bearing assembly and maintained under pressure lower than the pressure of said seal fluid as injected, whereby said seal fluid will leak into both said process zone and said contact area and will prevent intermingling of said working fluid and said lubricant.

3,937,023
WASTE AND ORGANIC GARBAGE DISPOSAL SYSTEM WITHOUT OUT-FALL LINE OR SMOKE STACK

James T. Williamson, 217 N.W. 20th St., Fort Lauderdale, Fla. 33311
Filed Apr. 11, 1974, Ser. No. 460,091
Int. Cl.^{2} F01K *27/00*
U.S. Cl. 60—670 1 Claim

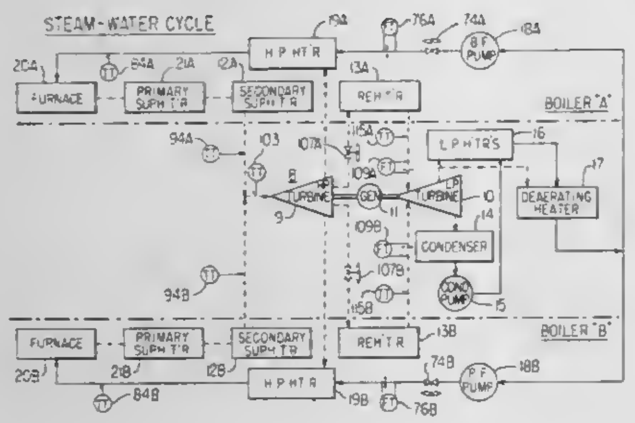


1. An improved waste disposal system comprising:
- an emulsifier means for changing waste such as organic trash, garbage and sewage into a slurry mixture;
- a feeder pump means;
- a collection tank means connected to said emulsifier means for receiving the output slurry of said emulsifier means;
- a reaction chamber means for receiving said slurry mixture connected to said collection tank means by said feeder pump means;
- means for heating and pressurizing the reaction chamber means to a high temperature and high pressure connected to said reaction chamber means;
- steam discharge line connected to said reaction chamber means;
- residue disposal line connected to said reaction chamber means;
- a turbine means connected to said steam discharge line;
- an electrical generating means connected to said turbine means;
- a condensate exhaust line connected from said turbine;
- a reservoir connected to said turbine by said condensate discharge line;
- said heating means including an electrical current heating means connected to said generator and said reactor chamber means, the residual output of said generator disposed to an outside load;

an outer chamber;
an inner chamber for receiving said slurry mixture disposed within said outer chamber;
a fluid insulating means within the outer chamber wherein the inner chamber is totally immersed within said insulating fluid means; and
preheating coil means surrounding said inner chamber also immersed in the fluid insulating means, said coil means connected to said condensate discharge line from said turbine.

3,937,024
CONTROL SYSTEM FOR A TWO BOILER, SINGLE TURBINE GENERATOR POWER PRODUCING UNIT

Oliver W. Durrant, Bath Township, and John William Smith, Massillon, both of Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.
Division of Ser. No. 367,775, June 7, 1973. This application Aug. 7, 1974, Ser. No. 495,314
Int. Cl.^{2} F01K *13/00*
U.S. Cl. 60—676 6 Claims

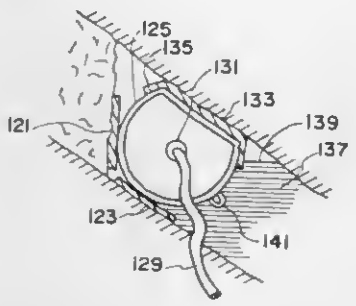


1. In a feedwater control system for a steam generator, the combination comprising, means generating a feedwater demand signal, means responsive to said signal maintaining the rate of feed water flow in proportion to the magnitude of said demand signal, a function generator responsive to said demand signal generating a first signal varying in functional relationship with said demand signal and corresponding to the expected feedwater temperature, means generating a second signal corresponding to the actual feedwater temperature, a difference unit generating a third signal proportional to the difference between said first and second signals and means responsive to said third signal generating a modified feedwater demand signal to thereby adjust the feedwater flow in accordance with the difference between the expected and actual feedwater temperatures.

3,937,025
INFLATABLE ENVELOPE SYSTEMS FOR USE IN EXCAVATIONS

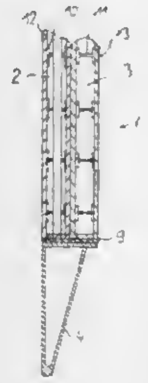
Alberto M. Alvarez-Calderon F., 512 E. Central St., Santa Maria, Calif. 93454
Filed May 2, 1973, Ser. No. 356,591
Int. Cl.^{2} E02D *5/00*
U.S. Cl. 61—35 25 Claims

1. A method for extracting substances containing mineral values from a region which defines a mineralized face adjacent a chamber in an excavation site, comprising the steps of disposing an inflatable envelope within said chamber with a first side of the envelope contiguous to said face, inflating said envelope with a charge of fluid under pressure, disposing fluid substance containing a mixture of liquid and solids into the chamber contiguous to a second side of said envelope whereby said fluid substance exercises an external pressure on said envelope which is transmitted at least partially by the pressure of the fluid charge within the envelope to be resisted by said face, said fluid substance being at least partially drained to become solidified within said chamber and substantially outside said envelope whereby the boundary of said solidified fluid substance is substantially defined by said second side of the envelope and whereby an accessway is defined between said mineralized face and said solidified fluid substance.



3,937,026
LINING APPARATUS FOR THE PROTECTION OF TRENCHES

Josef Krings, Hans-Boeckler-Str. 23, D 5138 Heinsberg, Oberbruch, Germany
Filed Sept. 24, 1974, Ser. No. 508,829
Claims priority, application Germany, Oct. 4, 1973, 2349802
Int. Cl.^{2} E21D *5/12*
U.S. Cl. 61—41 A 6 Claims



1. Lining apparatus for the protection of trenches comprising vertical sliding carriers and lining plates which are insertable in pairs in said vertical sliding carriers on the side of a trench and capable of being pressed against walls of a trench by expanding devices, each said lining plate comprising two component plates assembled together loosely and detachably, said component plates being guided together in said sliding carriers, and one of said component plates has a bracket along its lower edge which engages under the lower edge of the other of said plates to generally maintain a vertically adjacent relationship between said two component plates.

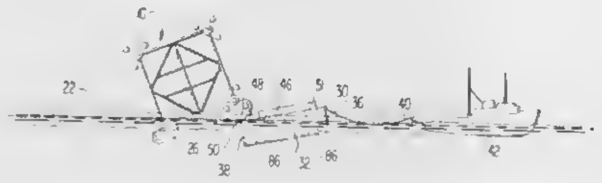
3,937,027
METHOD AND APPARATUS FOR TRANSPORTING AND LAUNCHING AN OFFSHORE TOWER

Albert M. Koehler, and Stanley J. Hruska, both of Houston, Tex., assignors to Brown and Root, Inc., Houston, Tex.
Filed Jan. 22, 1975, Ser. No. 542,948
Int. Cl.^{2} B63B *27/00*; E02B *17/02*
U.S. Cl. 61—46.5 9 Claims

1. A method of transporting and erecting an offshore tower, upright on the floor of a body of water, comprising the steps of:

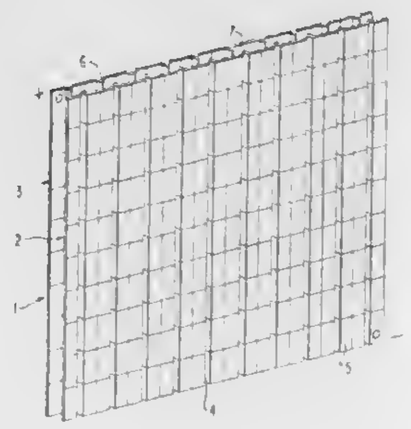
supporting the tower on a barge with one lateral edge thereof being supported on pivotable skid means located along the overhanging one side of said barge and having a pivot axis extending longitudinally of said barge and tower and another lateral edge thereof being supported on fixed skid means;

floating the tower and the barge to a desired offshore location;
rotating the barge about a longitudinal axis to lower said one side thereof and, laterally incline said pivotable skid means and fixed skid means of the barge upon which the tower rests relative to the surface of the surrounding body of water transversely of the longitudinal axis;
translating the tower laterally of said barge and slidably across said laterally inclined pivotable skid means and away from said fixed skid means;
pivoting said tower about the pivot axis of said pivotable skid means to effect entry of said tower into said water free of said barge with said tower undergoing lateral sliding and downward pivotal movement relative to said barge across said overhanging pivotable skid means;
submerging the intended lower portion of the tower to turn the tower upright in the body of water; and
locating the base of the tower at a desired location on the floor of the body of water.



3,937,028
MODULE FOR CONDITIONING AIR BY THE PELTIER EFFECT AND AIR CONDITIONING INSTALLATIONS COMPRISING SUCH MODULES

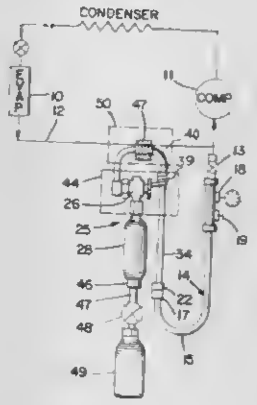
Michel Alais, Orsay, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, France
Filed Sept. 18, 1974, Ser. No. 507,206
Claims priority, application France, Sept. 18, 1973, 73.33429
Int. Cl.^{2} F25B *21/02*
U.S. Cl. 62—3 21 Claims



1. Module for air conditioning by the Peltier effect comprising a conductor constituted by an alternate sequence of P and N thermoelements connected in series and provided at its ends with two direct current feed terminals characterized in that said module comprises, moreover, a hot conductive plate provided with parallel hollow ribs, and a cold conductive plate also provided with parallel hollow ribs, said cold conductive plate arranged in separated facing relationship to said hot plate, wherein said parallel hollow ribs of each of said two plates project between the space comprised between the planes of the two plates, each of the thermoelements being in direct contact with the crest of one rib of said hot plate and with the crest of one rib of the cold plate, the hot plate and the cold plate being divided into strip plates, each of the strip plates establishing an electrical contact between a thermoelement of the P type and a neighbouring thermoelement of the N type so as to form said continuous conductor.

3,937,029
METHOD AND APPARATUS FOR CHARGING AIR CONDITIONERS WITH REFRIGERANT FLUID

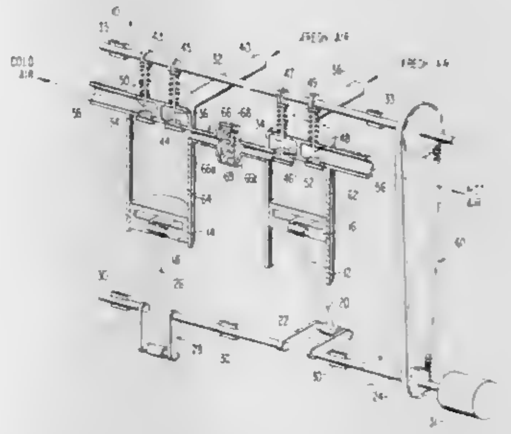
Darwin R. Grahl, and Gary L. Garcia, both of Newark, N.Y., assignors to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Aug. 28, 1974, Ser. No. 501,222
Int. Cl.^{2} F25B *45/00*
U.S. Cl. 62—77 14 Claims



1. A charging device for filling a receiving device with refrigerant fluid, said charging device comprising an expansion valve having an inlet to which a supply of refrigerant fluid may be connected, an outlet, a valve element for controlling flow of refrigerant fluid from said inlet to said outlet, and a pressure sensitive element controlling opening and closing of said valve element, one side of said pressure sensitive element being exposed to pressure of fluid in said outlet, the other side being exposed to fluid in a sensing tube, a charging tube having one end connected to said outlet, the other end of the charging tube having means for connection to the receiving device, said sensing tube being in temperature sensing relation to said charging tube for sensing the temperature thereof, and fluid in said sensing tube responsive to temperature changes in said sensing tube for actuating said pressure sensitive element for opening and closing said valve, and said sensing tube having a portion thereof exposed for contact with a portion of the receiving device.

3,937,030
METHOD AND DEVICE FOR GAS REFRIGERATION

Hendrik Alphons Jaspers, 9 Liberty St., Ossining, N.Y. 10562
Filed June 19, 1974, Ser. No. 480,906
Int. Cl.^{2} F25B *9/00*
U.S. Cl. 62—86 10 Claims



1. An open cycle system for taking ambient air and removing heat from one portion thereof and adding said heat to the remaining portion thereof to thus obtain an output of relatively cool air and an output of relatively hot air comprising:
a first cylinder,
a first piston, reciprocally received in said first cylinder and forming a first variable volume chamber therewith,

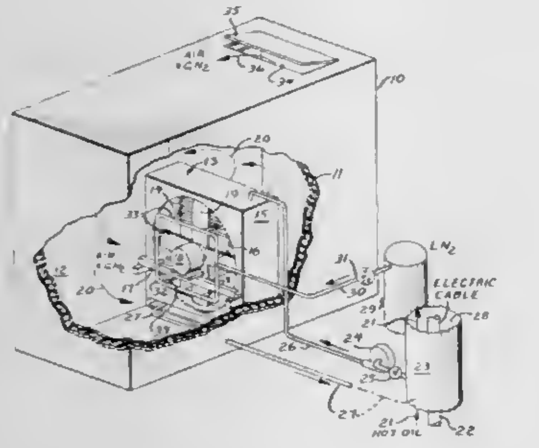
a second cylinder,
a second piston reciprocally received in said second cylinder and forming a second variable chamber therewith,
a first duct communicating said first and second chambers.
a heat capacitor means disposed intermediate the length of said duct,
power means to reciprocate said pistons in an out-of-phase relationship with respect to one another,
a first air intake duct communicated with said first chamber via a first valve seat opening,
a second air intake duct communicated with said second chamber via a second valve seat opening,
a hot air exit duct communicated with said first chamber via a third valve seat opening,
a cold air exit duct communicated with said second chamber via a fourth valve seat opening,
first, second, third and fourth valves, respectively, opening and closing said first, second, third and fourth valve seat opening,
timing means sequentially opening and closing said valves to cause air compressed and heated in said first chamber to pass through said capacitor, where a portion of the heat is stored, and then into an expanding second chamber and to exhaust this relatively cooler air to said cold air exit duct, and
said timing means sequentially opening and closing said valves to cause fresh air to mix with said relatively cooler and expanded air in said second chamber and to pass through said capacitor in the direction toward said first chamber and removing the compression heat stored therein and then into said first chamber and to exhaust whereby the relatively hot air is exited through said hot air exit duct.

3,937,031

COOLING SYSTEM AND METHOD OF COOLING

Neal A. Cook, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Filed Oct. 25, 1974, Ser. No. 517,936
Int. Cl.^{2} F25D *17/02*
U.S. Cl. 62—98 **12 Claims**



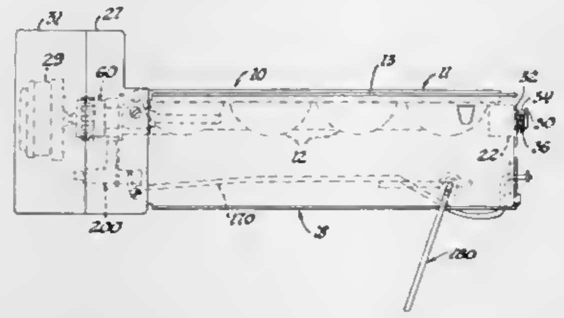
1. A cooling system for cooling a hot material, comprising: a cooling chamber; a heat exchanger in said chamber occupying only a fraction of a cross sectional space in said chamber; gas circulating means for forcing a cooling gas within said chamber in a closed circuit within said space in said chamber that includes cooling contact with said heat exchanger; a source of hot material externally of said chamber; means for passing said hot material from said source through said heat exchanger and back to said source; and means for selectively providing an additional cryogenic gaseous cooling medium to the cooling gas in said closed cooling gas circuit.

3,937,032

TRAY ICE MAKER TEMPERATURE CONTROL ICE CLUTCH

James A. Bright, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1974, Ser. No. 527,957
Int. Cl.^{2} F25C *1/10*; F16D *11/00*
U.S. Cl. 62—135 **8 Claims**



1. An automatic ice maker for a refrigerator including a support for an ice piece mold mounted for rotational movement on said support, means for supplying water to said mold, means for freezing water in said mold, drive means including a drive shaft having an axially movable extension thereon, a portion of said extension having an external helical thread, means for harvesting ice from said mold, a separate rotary part on said support adapted to be driven by said drive means to initiate the ice harvesting operation, connecting means controlled by a temperature responsive ice clutch adapted to connect said rotary part to said extension when the water in said mold is frozen, said ice clutch including a sensing tube fixedly positioned to said mold, said tube having a cavity of a predetermined size whereby said threaded extension being rotatable and axially movable therein, the inner surface of said cavity having groove means, means for connecting said drive means to a source of power whereby said extension is constantly rotated in said cavity, the space between adjacent turns of said thread and said cavity inner surface being filled with a liquid charge, means for sealing the liquid charge within said cavity, upon completion of the freezing of the water in said mold the liquid charge being frozen solid and locked to said cavity inner surface by said groove means, internal threads being formed by the frozen liquid charge mating with said external threads whereby axial threaded travel of said extension is produced relative to said tube, said connecting means operable upon the travel of said extension connecting said drive shaft to said rotary part to harvest ice from said mold, and whereby upon the charge returning to its liquid state said extension being again free to rotate within said cavity.

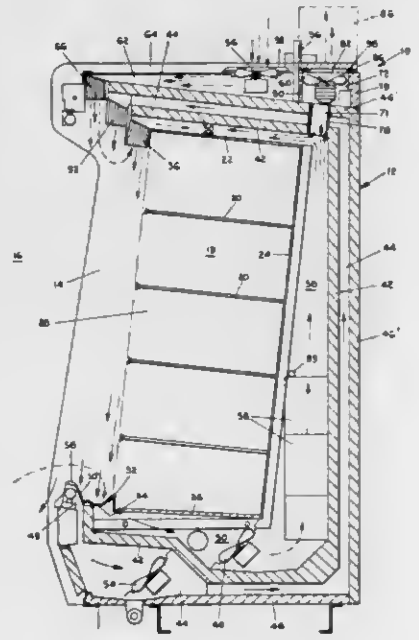
3,937,033

AIR DEFROST DISPLAY CASE

Sterling Beckwith, Menlo Park, Calif.; Robert E. Vogel, and William Goyman, both of Marshall, Mich., assignors to Kysor Industrial Corporation, Cadillac, Mich.

Filed Feb. 7, 1975, Ser. No. 547,817
Int. Cl.^{2} F25D *21/06*
U.S. Cl. 62—155 **4 Claims**

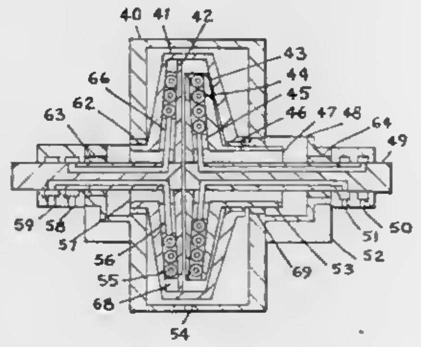
1. In an upright refrigerated display cabinet having a top, a bottom, a rear, a front side, and an access opening in said front side communicating a storage and display space within the cabinet with the ambient atmosphere, at least two outlets, an inner one and an adjacent one, extending across one edge of said access opening; and corresponding inner and adjacent inlets extending across the opposite edge of said access opening; an inner conduit extending from said inner inlet, around the bottom, back and top of said cabinet, to said inner outlet; an adjacent conduit extending from said adjacent inlet around said cabinet to said adjacent outlet; refrigeration coil means in said inner conduit; a plurality of refrigerated air circulating fans in said inner conduit to propel air from said inner inlet, across said coil means, to said inner outlet, and across said access opening; a plurality of guard air circulating fans in said adjacent conduit; the improvement comprising: exhaust plenum means at the upper rear of said cabinet; exhaust passages extending from said refrigerated air duct, downstream of said coil means, to said exhaust plenum means; ports extending from said exhaust plenum means through said cabinet top; exhaust fan means in said exhaust plenum means oriented to withdraw air from said refrigerated air duct and discharge it out said ports; doors over said ports shiftable between a port-closing position and a port-opening position; power means for shifting said doors to said port opening position; control means operably associated with said guard curtain fans, said exhaust fan means and said power door shifting means, said control means being operable between one condition, for refrigeration, at which said guard curtain fans are actuated, said exhaust fan means is deactuated, and said power door shifting means is not actuated; and a second condition, for defrost, at which said guard curtain fans are deactuated, said exhaust fan means are actuated, and said power door shifting means is actuated to open said ports.



3,937,034

GAS COMPRESSOR-EXPANDER

Michael Eskeli, 7994-41 Locke Lee, Houston, Tex. 77042
Continuation-in-part of Ser. Nos. 399,199, Sept. 20, 1973, abandoned, and Ser. No. 405,584, Oct. 11, 1973. This application Mar. 7, 1974, Ser. No. 448,818
Int. Cl.^{2} F25B *3/00*
U.S. Cl. 62—401 **1 Claim**



1. In a compressor-expander having two rotating rotors with a fluid to be compressed being the first fluid, with a first rotor having an entry for said first fluid near the center of rotation with said first fluid then being accelerated and compressed in outward extending first rotor passages and said first fluid then being passed into a second rotor for deceleration and expansion, and to exit near the center of rotation of said second rotor, with heat being removed from said first fluid in a heat removal heat exchanger within said first rotor outward passages by circulating a second fluid in heat exchange relationship with said first fluid, the improvement comprising:

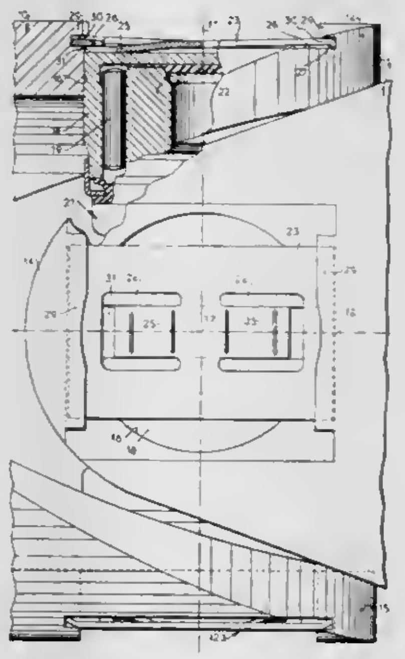
a. a heat addition heat exchanger within said inward extending second rotor first fluid passages for adding heat to said first fluid during said expansion and deceleration, by circulating a third fluid in heat exchange relationship with said first fluid,'with a third fluid being supplied and discharged via passages carried by said second rotor.

3,937,035

UNIVERSAL JOINT

Leslie George Fisher, Birmingham, and Bertram Joseph Palmer, Barton-under-Needwood, Near Burlon-on-Trent, both of England, assignors to GKN Transmissions Limited. Birmingham, England

Filed Nov. 8, 1974, Ser. No. 522,151
Claims priority, application United Kingdom, Nov. 9, 1973, 52110/73
Int. Cl.^{2} F16D *3/26*
U.S. Cl. 64—17 A **7 Claims**



1. In a Hooke's joint comprising two yoke elements, each having first and second arms, four bearing cups disposed within respective openings formed one in each of said arms, a connecting member having four trunnions, each trunnion received within a respective one of the bearing cups and retaining means provided on the yoke arms for retaining respective ones of the bearing cups within respective ones of said openings, the improvement wherein:
the retaining means provided on said first arm of each yoke element comprises a first retaining element,
an anchorage portion of said first retaining element is engaged with said first arm and is held in a fixed position with respect to said first arm,
a constraining portion only of said first retaining element is engaged with the respective bearing cup,
said constraining portion is spaced from said anchorage portion and is resiliently-displaceable relative thereto,
the retaining means provided on said second arm of each yoke element comprises a second retaining element,
an anchorage portion of said second retaining element is engaged with said second arm and is held in a fixed position with respect to said second arm,
a respective one of said bearing cups is engaged with a constraining portion of said second retaining element, and

said constraining portion of the second retaining element adjoins the anchorage portion thereof and is substantially immovable relative to said anchorage portion,

whereby said first retaining element is adapted to bias the associated bearing cup in a direction inwardly of the cup and said second retaining element is adapted to function as a rigid stop positively to limit movement of the associated bearing cup in a direction outwardly of the joint but not to bias the bearing cup inwardly of the joint.

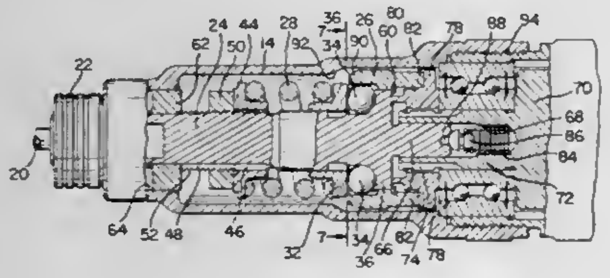
3,937,036
ROTARY DRIVING TOOL HAVING A TORQUE RESPONSIVE CLUTCH

William Douglas Sauerwein, Joppa, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed May 8, 1974, Ser. No. 468,027

Int. Cl.^{2} F16D *3/56*

U.S. Cl. 64—29 **13 Claims**



1. In a rotary power driven portable hand tool having drive means and adapted to receive driven output means, the combination therewith of a torque responsive clutch comprising:

a clutch carrier and a rotatable spindle interconnected with said drive means and the driven output means, respectively, said clutch carrier being journalled about said spindle for independent rotational movement;

first radial face means formed integrally on said spindle, second radial face means confronting said first radial face means, one of said face means being provided with a cam surface having spaced apart recess means, and at least said one face means being rotatable with said spindle;

a plurality of clutch elements rotatable with said clutch carrier, said clutch elements being disposed between said confronting face means;

compression spring means disposed about said spindle, one end of the compression spring means being operable to bias one of said face means axially toward the other face means whereby said clutch elements are normally forced into said spaced apart recess means; and

spring retaining means mounted upon said spindle and operative to engage the other end of a compression spring means to hold said compression spring means in compression;

the parts being so arranged and constructed that when overload torque conditions are encountered by the driven output means the clutch elements will move out of said spaced apart recess means to temporarily interrupt the drive between said first and second members, said clutch elements automatically moving back into said spaced apart recess means to reengage the drive between said first and second members when said overload torque conditions are removed, and the forces exerted by said spring at all times being transmitted to the spindle by the spring retaining means and said first face means being independent of thrust bearing means.

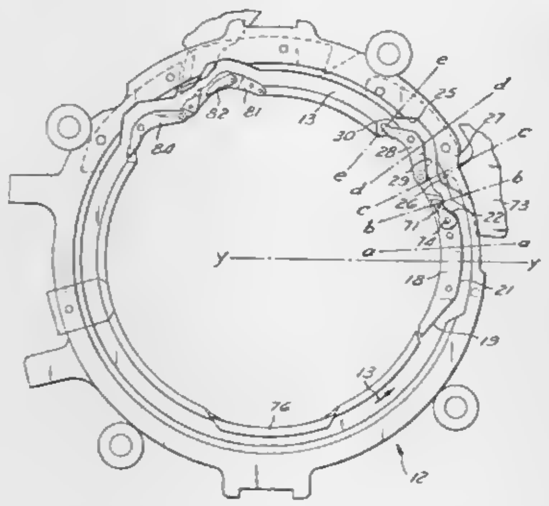
3,937,037
METHOD AND APPARATUS FOR KNITTING TERRY FABRIC

Robert J. Moody, Franklin, N.H., assignor to Scott & Williams, Inc., N.H.

Filed Jan. 9, 1974, Ser. No. 431,686

Int. Cl.^{2} D04B *9/12, 15/24*

U.S. Cl. 66—93 **8 Claims**



1. In a circular knitting machine having needles and sinkers, means for controlling the motion of the needles including a stitch cam for drawing the needles to form stitches, cam means for raising the needles to clear height subsequent to being drawn by said stitch cam, said sinkers having first and second yarn drawing ledges adapted to form regular and elongated loops respectively, a yarn feeding station having first and second yarn feeding means for feeding separate yarns to said first and second sinker ledges respectively, first sinker cam means for withdrawing said sinkers in preparation for feeding yarn at said feed station, first sinker cam means for advancing the sinkers in a zone between the feed station and stitch drawing station to a position where the yarns of the first and second feeding means are laid over the first and second sinker ledges respectively, second sinker cam means for withdrawing the sinkers substantially immediately after said yarns have been fully drawn into stitches at said stitch cam to permit said second yarn to be transferred from the second ledge to the throats of said sinkers, and second sinker cam means for advancing said sinkers before the needles are raised substantially above knockover height whereby the loops formed by said second yarn are restrained in said throats when said needles are raised to clear height by said cam means to assure reliable clearing of the loops of both of said yarns.

3,937,038
DEVICE FOR THE CONTINUOUS MONITORING OF THE CONDITION OF THE NEEDLE HEADS ON A CIRCULAR KNITTING MACHINE

Erwin Sick, Icking, Germany, assignor to Firma Erwin Sick Optik-Elektronik, Waldkirch, Germany

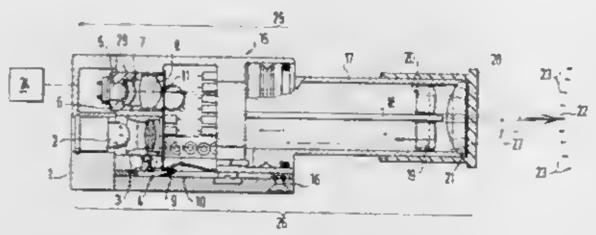
Filed June 1, 1973, Ser. No. 366,022

Claims priority, application Germany, June 15, 1972, 2229232

Int. Cl.^{2} D04B *35/10*

U.S. Cl. 66—157 **11 Claims**

1. Apparatus for the continuous monitoring of the condition of the needle heads of a circular knitting machine which move past a predetermined point one after the other at a definite frequency, comprising a housing having a tube, an illuminating component and a receiving component disposed side by side in said housing, said illuminating component comprising: a light source, a condensing lens, a slit and focusing lenses for producing a light spot in the form of a line situated in the plane of an illuminated needle head, without light projecting laterally beyond it, said focusing lenses being disposed in the tube and consisting of a semicircular lens occupying substantially half the cross-section of the tube and a round aspherical lens occupying the entire cross-section of the tube disposed behind the semi-circular lens, the focal point of the semi-circular lens lying in said slit, said light spot being projected into an aperture substantially the size of the image of the light spot, a photo-receiver disposed behind said aperture and adapted to emit an electrical pulse signal in proportion to the luminous flux passing through the aperture, and a threshold value electronic device for receiving said signal, which when said signal undergoes a predetermined change is adapted to deliver a warning signal.



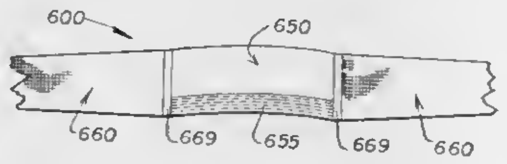
3,937,039
ONE-PIECE PANTY AND STOCKINGS

Ronald W. Anderson, Bentonville, Ark., assignor to Prenihan A.G., Zurich, Switzerland

Filed Oct. 22, 1968, Ser. No. 769,480

Int. Cl.^{2} A41B *11/02*

U.S. Cl. 66—177 **7 Claims**



2. A seamless, circular knit lower body covering type garment comprising

- a. a seamless curved panty portion having integrally formed downwardly depending leg portions defining a crotch area therebetween,
- b. said seamless curved panty portion having an upper waist opening and an elastic band attached to the waist opening,
- c. the size of the stitch loops in courses of at least said curved panty portion being reduced from large stitch loops positioned in a wale extending along opposite sides of said panty portion to small stitch loops inner sides of said leg portions and through the center of said crotch area, the curvature in the panty portion being produced solely by reducing the size of the stitches.

3,937,040
METHOD OF KNITTING PANTY HOSE

Ettore Negri, Florence, Italy, assignor to Billi S.p.A., Florence, Italy

Filed Apr. 4, 1974, Ser. No. 458,024

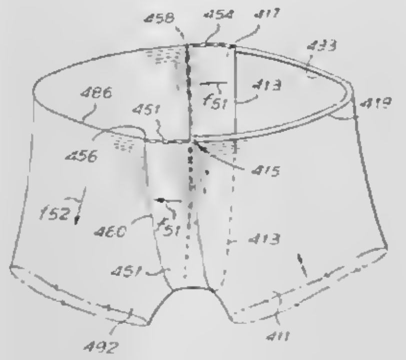
Claims priority, application Italy, Apr. 5, 1973, 9405/73

Int. Cl.^{2} A41B *9/02*

U.S. Cl. 66—177 **2 Claims**

1. A method of knitting the body portion of a panty or panty hose of one piece construction on a circular knitting machine, said panty or panty hose having first and second leg portions and waist portions, said method comprising:

- a. knitting a first tubular knit leg portion by circular knitting,
- b. supporting the tubular knit portion on the knitting needles while inactivating the needles along a first arc,
- c. knitting by reciprocal motion on a second arc of needles to form a first waist panel,
- d. casting off the fabric from the second arc of needles,
- e. activating the needles along said first arc of needles and knitting by reciprocal motion along said first arc of needles to form a crotch panel,
- f. inactivating said first arc of needles while supporting the crotch panel thereon,



- g. knitting a second waist panel on said second arc of needles, and
- h. knitting on all the needles in a circular motion to form the second tubular knit leg portion.

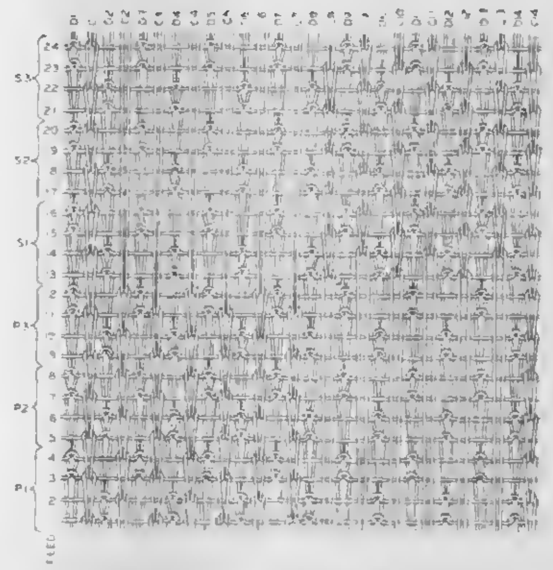
3,937,041
HIGH RELIEF DOUBLE KNIT FABRIC

Bobby L. Balcombe, Greenville, S.C., assignor to Phillips Fibers Corporation, Greenville, S.C..

Filed Oct. 21, 1974, Ser. No. 516,476

Int. Cl.^{2} D04B *9/06*

U.S. Cl. 66—197 **10 Claims**



1. A double knit fabric comprising a first set of alternating wales forming the face of said fabric, and a second set of alternating wales forming the reverse side of said fabric, each interior wale of said first set of alternating wales being positioned between two wales of said second set of alternating wales;

said fabric having a repeat pattern of at least one primary set of consecutive courses followed by at least one secondary set of consecutive courses and a first group of consecutive wales followed by a second group of consecutive wales, each said first group of consecutive wales containing at least four wales in said first set of alternating wales and at least four wales in said second set of alternating wales, each said second group of consecutive wales containing at least four wales in said first set of alternating wales and at least four wales in said second set of alternating wales;

each said primary set of consecutive courses comprising, consecutively, first, second, third and fourth courses;

the first course of each said primary set of consecutive courses having knit stitches in a first series of wales of said second set of alternating wales, welt stitches in a second series of wales of said second set of alternating wales, said wales of said second series generally alternating with said wales of said first series, knit stitches in an alpha series of wales of said first set of alternating wales in said first group of consecutive wales, and welt stitches in a beta series of wales of said first set of alternating wales in said first group of consecutive wales and in at least substantially all of the wales of said first set of alternating wales in said second group of consecutive wales, said wales of said beta series generally alternating with the wales of said alpha series;

the second course of each said primary set of consecutive courses having knit stitches in said first series of wales of said second set of alternating wales, welt stitches in said second series of wales of said second set of alternating wales, knit stitches in said beta series of wales of said first set of alternating wales in said first group of consecutive wales, and welt stitches in said alpha series of wales of said first set of alternating wales in said first group of consecutive wales and in at least substantially all of the wales of said first set of alternating wales in said second group of consecutive wales;

the third course of each said primary set of consecutive courses having knit stitches in said second series of wales .of said second set of alternating wales, welt stitches in said first series of wales of said second set of alternating wales, knit stitches in said alpha series of wales of said first set of alternating wales in said first group of consecutive wales and welt stitches in said beta series of wales of said first set of alternating wales in said first group of consecutive wales and in at least substantially all of the wales of said first set of alternating wales in said second group of consecutive wales;

the fourth course of each said primary set of consecutive courses having knit stitches in said second series of wales of said second set of alternating wales, welt stitches in said first series of wales of said second set of alternating wales, knit stitches in said beta series of wales of said first set of alternating wales in said first group of consecutive wales, and.welt stitches in said alpha series of wales of said first set of alternating wales in said first group of consecutive wales and in at least substantially all of the wales of said first set of alternating wales in said second group of consecutive wales;

each said secondary set of consecutive courses comprising, consecutively, first, second, third and fourth courses;

the first course of each said secondary set of consecutive courses having knit stitches in said first series of wales of said second set of alternating wales, welt stitches in said second series of wales of said second set of alternating wales, knit stitches in said beta series of wales of said first set of alternating wales in said second group of consecutive wales, and welt stitches in said alpha series of wales of said first set of alternating wales in said second group of consecutive wales and in at least substantially all of the wales of said first set of alternating wales in said first group of consecutive wales;

the second course of each said secondary set of consecutive courses having knit stitches in said first series of wales of said second set of alternating wales, welt stitches in said second series of wales of said second set of alternating wales, knit stitches in said alpha series of wales of said first set of alternating wales in said second group of consecutive wales, and welt stitches in said beta series of wales of said first set of alternating wales in said second group of consecutive wales and in at least substantially all of the wales of said first set of alternating wales in said first group of consecutive wales;

the third course of each said secondary set of consecutive courses having knit stitches in said second series of wales of said second set of alternating wales, welt stitches in said first series of wales of said second set of alternating wales, knit stitches in said beta series of wales of said first set of alternating wales in said second group of consecutive wales, and welt stitches in said alpha series of wales of said first set of alternating wales in said second group of consecutive wales and in at least substantially all of the wales of said first set of alternating wales in said first group of consecutive wales; and

the fourth course of each said secondary set of consecutive courses having knit stitches in said second series of wales of said second set of alternating wales, welt stitches in said first series of wales of said second set of alternating wales, knit stitches in said alpha series of wales of said first set of alternating wales in said second group of consecutive wales, and welt stitches in said beta series of wales of said first set of alternating wales in said second group of consecutive wales and in at least substantially all of the wales of said first set of alternating wales in said first group of consecutive wales.

3,937,042

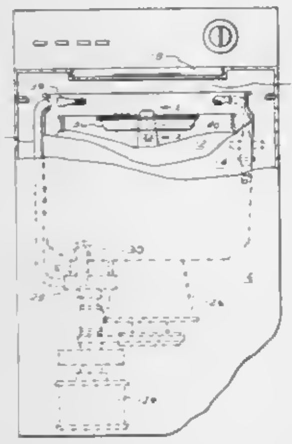
REUSABLE WATER SOFTENER SYSTEM FOR CLOTHES WASHER

Leopold Loeb, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 19, 1973, Ser. No. 417,364

Int. Cl.^{2} D06F *39/00*

U.S. Cl. 68—13 A **4 Claims**



1. In a clothes washer having a tub, an agitator, a pump to draw liquid from the tub, and a conduit connected to the pump for selectively returning liquid to the tub, a water softening system utilizing a reusable, self-contained, water softener device comprising:

a package of cation exchange resin, the package being permeable to water and arranged to be disposed within the tub and removably placed around the agitator such that water will be circulated through the resin by means of said pump and conduit for removing calcium and magnesium ions from the water to effect a reduction of hardness of the water,

the resin being capable of regeneration by treatment with a salt solution.

3,937,043

VAPOR SAVING AMBIENT AIR INTAKE SYSTEM FOR A DRY CLEANER

John D. Hughes, Murrysville, Pa., and Al W. Klingensmith, Mansfield, Ohio, assignors to White-Westinghouse Corporation, Cleveland, Ohio

Filed Feb. 25, 1974, Ser. No. 445,501

Int. Cl.^{2} D06F *43/02, 43/08*

U.S. Cl. 68—18 R **4 Claims**

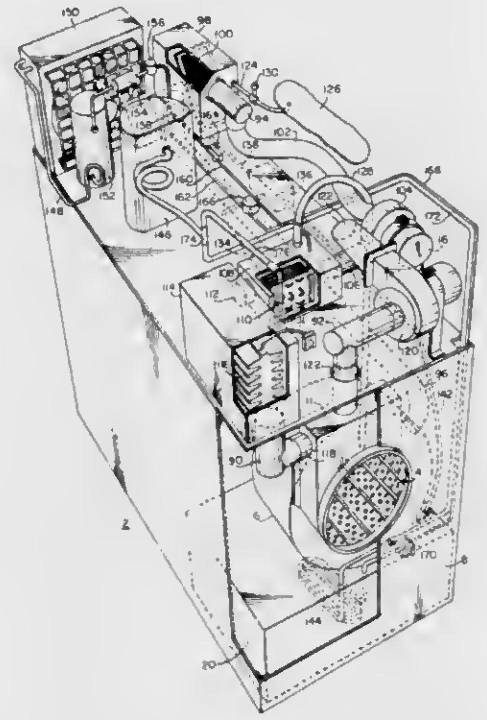
1. An automatic dry cleaning machine having:

a cabinet housing a stationary outer tub and a rotatable inner tub, said housing defining an opening for access to the interior of said tubs through their common open end and door means hingedly attached to said cabinet for movement between an open and closed position for effectively sealing said opening when in said closed position;

a solvent circulating system for delivering solvent to said tubs and draining solvent from said tubs;

an air circulating system for passing air through said tubs; and,

an intake air system for drawing ambient room air through said opening when said door means is in said open position and directing said air to an outlet, and wherein the improvement comprises:



an intake fan in said intake system;

duct means in air flow communication with said tubs at their common open ends;

valve means between said duct means and said intake fan to control a flow of air through said duct means to said fan, said valve means being normally closed and said fan being normally off; and, means responsive to movement of said door from said closed position to energize said fan and open said valve, whereby room air enters said opening and flows directly into said duct means for maintaining the inner volume of said tubs out of the normal flowpath of said room air.

3,937,044

APPARATUS FOR DYEING PILE FABRICS

Trevor Balmforth, Clitheroe, England, assignor to Stalwart Dyeing Company Limited, England

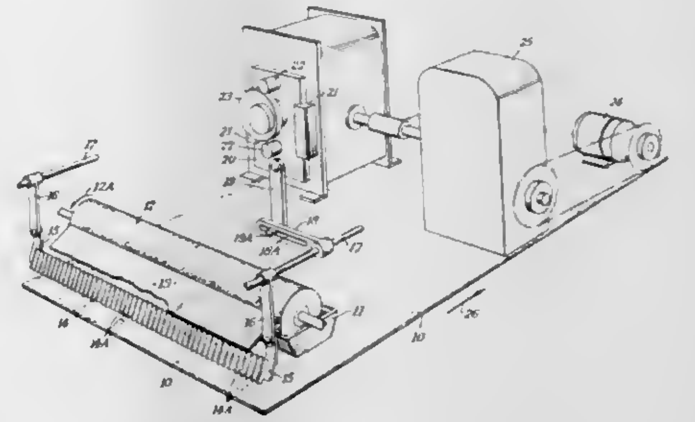
Filed July 9, 1974, Ser. No. 486,846

Claims priority, application United Kingdom, July 17, 1973, 33988/73

Int. Cl.^{2} D06B *1/06*

U.S. Cl. 68—205 R **3 Claims**

1. Apparatus for dyeing a length of pile fabric moving continuously with its pile surface uppermost, comprising a trough to contain dye liquor, a rotatable lick roller mounted in the trough with its axis extending transversely to the direction of travel of the fabric, a doctor blade extending parallel to the lick roller with its upper edge in contact with the lick roller, to pick up a film of dye liquor from the lick roller, the doctor blade having a smooth, uninterrupted upper surface, a corrugated sheet extending transversely to the direction of travel of the fabric and disposed beneath the lower edge of the doctor blade, the corrugated sheet collecting in its channels by gravity from the doctor blade a number of parallel streams of drops of dye liquor from which the drops fall directly on to the fabric, and means for imparting oscillation to the corrugated sheet in a direction transverse to the direction of travel of the fabric.



3,937,045

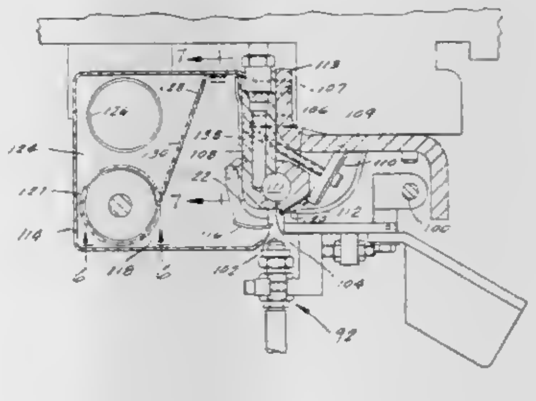
DYEING AND PRINTING OF MATERIALS

Norman E. Klein, Inman, and William H. Stewart, Jr., Spartanburg, both of S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 3, 1974, Ser. No. 430,524

Int. Cl.^{2} D06B *1/02*

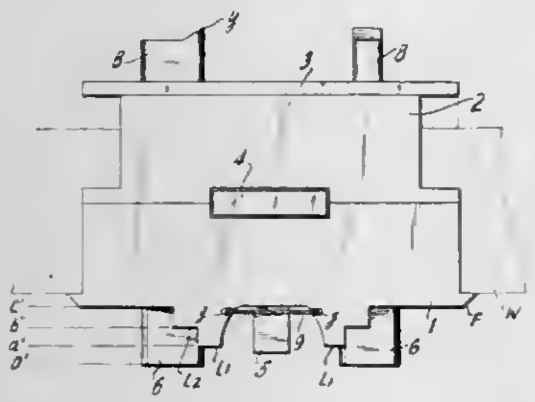
U.S. Cl. 68—205 R **6 Claims**



2. Apparatus to apply liquid dyestuff to moving material comprising a dye jet gun bar having a plurality of dye-emitting orifices, means to convey the material adjacent said orifices, means to supply liquid dyestuff to said gun bar and orifices to direct the dye in plural streams toward the moving material to be dyed, means to supply a gaseous fluid under pressure against the dye streams issuing from said orifices to divert the streams in a path of collection away from said means to convey, a dye accumulation chamber having an entrance positioned adjacent said orifices and in said collection path to collect the diverted dye, a wall adjacent said entrance and said path having a curved surface diverging from said collection path to facilitate separation of the gaseous fluid from the liquid dye due to a surface attachment effect, and a deflector plate located across the entance of said accumulation chamber from said curved wall surface and having a facing surface diverging from the curved wall surface inwardly of the entrance to create a venturi effect in the path of collection and facilitate movement of the dye into the accumulation chamber.

3,937,046
MULTI-COMBINATION PUSH BUTTON LOCK

Hong Wen Wang, 2 Te Seng St., Kaohsiung, Taiwan, China /Taiwan
Filed Nov. 6, 1974, Ser. No. 521,469
Claims priority, application China /Taiwan, Mar. 25, 1974, 6310584
Int. Cl.² E05B ***37/16***
U.S. Cl. 70—81 **9 Claims**



1. A multi-combination push-button lock, with a plurality of preset positions, comprising, in combination, a front casing formed with a plurality of push-button bores therethrough each having a narrow chordal aperture adjacent the front surface of said front casing, the rear surface of said front casing being formed with a first rectangular recess having a first elongated semi-circular groove extending centrally thereof; a rear casing, fixed to said front casing, having a plurality of push-button assembly bores formed therethrough in alignment with said push-button bores of said front casing, and the surface of said rear casing facing said front casing being formed with a second rectangular recess having a second semi-circular groove extending centrally thereof, said first and second rectangular recesses defining a slot for a lock plate and said first and second semi-circular grooves defining a cylindrical recess for a return coil spring; a rear cover plate engaged with the outer surface of said rear casing and formed with circular apertures therethrough each aligned with a respective push-button assembly bore in said rear casing, said circular apertures providing access to code changers; a lock plate slidably mounted between said front and rear casing in said first and second rectangular recesses; a return coil spring disposed in said first and second semi-circular grooves and engaged with said lock plate and biasing said lock plate to its locking position; and a plurality of push-button assemblies each including a push-button, having an elongated chordal portion extending from a circular flange at its inner end, each push-button being mounted in a respective push-button bore, a cylindrical interlock block formed with four axially spaced chordal grooves in its outer periphery to provide four selective preset positions including shallow push, medium push, deep push and no push for the associated push button, each interlock block extending in a respective push-button bore and a respective push-button assembly bore aligned with the respective push-button bore, a code changer engaged with said interlock block and each disposed in a respective push-button assembly bore and having four angular setting positions corresponding to said four selective preset positions of the associated interlock block, for unlocking, and a respective coil spring engaged between each code changer and the associated interlock block and biasing the respective code changer toward the rear side and the respective interlock block and push-button conjointly toward the front side.

6. A multi-combination push-button lock comprising, in combination, lock casing means constructed for installation in a door, a drawer, and the like; a lock plate slidably mounted in said casing means for movement between a projected locking position and a retracted unlocking position; manually actuable operating means secured to said lock plate; a plurality of push-button assemblies mounted in said casing means and each including a push-button, an interlock block and a code changer; said interlock blocks being interengageable with said lock plate to prevent movement thereof by said operating means and being displaceable longitudinally, to release said lock plate, by simultaneous operation of said push-buttons in accordance with a preset combination code; said interlock blocks being angularly adjustable by said code changers to preset the combination code; said interlock blocks having equal numbers of longitudinally and angularly spaced formations each of which, when aligned with said lock plate, releases the interengagement of the associated interlock block and said lock plate; the longitudinal edges of said lock plate, considered in the direction of movement of said lock plate, being formed with arcuate recesses therein; said interlock blocks having a cylindrical cross-section and each interlock block extending through a respective arcuate recess; said formations comprising chordal slots in said interlock blocks having depths equal to those of said arcuate recesses; each interlock block having four longitudinally spaced chordal slots at angular spacings of 90°; said code changers being operable selectively to align a selected chordal slot to extend parallel to a longitudinal edge of said lock plate; said chordal slots being movable longitudinally into alignment with the longitudinal edges of said lock plate by simultaneous operation of said push-buttons in accordance with said preset combination code; said casing means comprising a front casing, a rear casing, and a rear cover plate; the facing surfaces of said front and rear casings being formed with aligned recesses conjointly defining an elongated slot in which said lock plate is slidably mounted; said front casing being formed with a narrow rectangular slot therein extending centrally of the recess therein; said operating means comprising a lever secured to said lock plate and engaged in said narrow rectangular slot through said front casing; said front and rear casings being formed with aligned bores therethrough each receiving a respective push-button assembly, with the respective push-buttons projecting forwardly of the outer surface of said front casing; said rear cover plate being formed with circular apertures therethrough each aligned with a respective push-button assembly receiving bore and providing access to said code changers; first spring means biasing said lock plate to its projected locking position; and second spring means each biasing a respective push-button to project outwardly of the front surface of said front casing, each push-button being formed with means limiting its outward projection; the outer surface of said front casing being formed with ribs projecting therefrom different distances and, together with the outer surface of said front casing, defining respective operated positions of said push-buttons.

3,937,047
STRUCTURE AND METHOD FACILITATING STRIPPING OF SEAMLESS CAN BODY FROM IRONING MANDREL

William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.
Filed Mar. 17, 1975, Ser. No. 559,056
Int. Cl.² B21D ***45/00***
U.S. Cl. 72—344 **8 Claims**

1. Structure for use in an ironing process in which the sidewall sheet metal of a seamless, unitary, cup-shaped article is reduced in thickness and elongated by passage of the cup-shaped article, while mounted on a mandrel through a plurality of female, circular, ironing rings of progressively smaller internal diameter, during which passage an intimate surface contact is normally established causing an undesirably tight adherence between the elongated sidewall of the cup-shaped article and the punch,

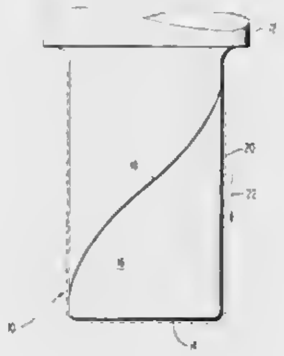
such structure facilitating removal of an ironed sidewall cup-shaped article from the mandrel after ironing comprising

an elongated, generally-cylindrical configuration ironing mandrel having a
work input end,
a central longitudinal axis,
a sidewall radially spaced from the central longitudinal axis, and
a work output end longitudinally opposite to the work input end,

the mandrel sidewall including indention means and remaining peripheral surface means, the latter being uniformly spaced radially from the central longitudinal axis of the mandrel,

the indention means comprising a narrow-width, linearly-extended indentation subsurface of the remaining peripheral surface of the mandrel sidewall which is uniformly spaced radially from the central longitudinal axis,

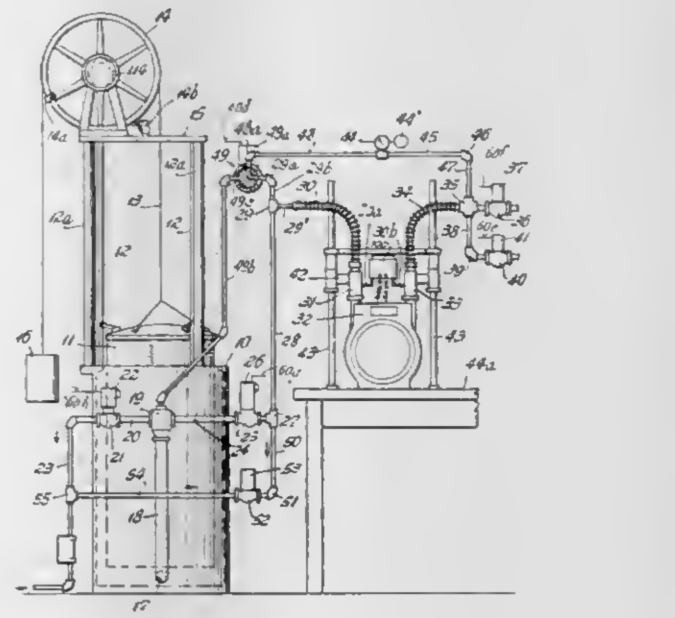
such indentation extending over a major portion of the mandrel sidewall which is contacted by sheet metal of the cup-shaped article sidewall providing for movement of sidewall sheet metal into such indentation to form a protrusion on the interior surface of the sidewall of the cup-shaped article during passage through an ironing ring and for movement of such protrusion metal along the sidewall of the mandrel during passage through a subsequent ironing ring so as to reduce intimate surface contact between the interior surface of the cup-shaped article and the ironing mandrel to facilitate removal of such cup-shaped article after ironing.



3,937,048
METHODS AND APPARATUS FOR PROVING GAS METERS

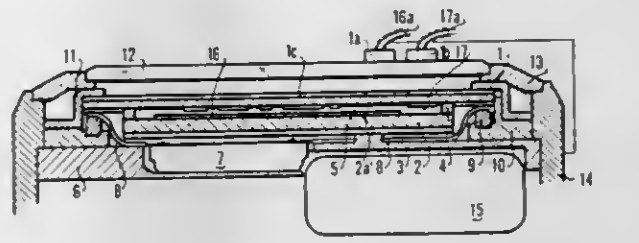
Theodore A. St. Clair, Fairfield; Richard K. Weltz, Southbury, and Henry T. Yaglowski, Bridgeport, all of Conn., assignors to Textron Inc., Providence, R.I.
Filed Dec. 5, 1974, Ser. No. 529,947
Int. Cl.² G01F ***25/00***
U.S. Cl. 73—3 **33 Claims**

1. The herein described method of proving a positive displacement, diaphragm-operated gas meter having metering mechanism and a prover bell which comprises the steps of causing test gas to flow through said meter and in said prover bell; causing said metering mechanism to operate through a predetermined number of cycles of operation and during such operation sensing resultant internal pressure fluctuations of said test gas in the meter which fluctuations are manifested as a family of pressure waves, which reoccurs during each cycle of operations of the metering mechanism; converting said pressure waves into a train of electrical signals of varying voltages; amplifying said signals; detecting and holding peak signals occurring during each cycle of operation of said metering mechanism; counting the number of said peak signals until a predetermined number of said peak signals has been received; and simultaneously signaling an encoder on said prover bell to record the volume of test gas which has passed through said meter during said predetermined number of cycles of operation to determine the proof of the meter.



3,937,049
MONITORING SYSTEM FOR DIGITAL ELECTRONIC TIMEPIECE

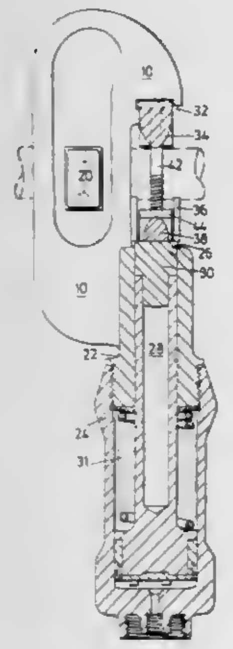
Tomomi Murakami, Tokyo, and Hideyuki Kawashima, Higashikurume, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Mar. 6, 1974, Ser. No. 448,738
Claims priority, application Japan, Mar. 12, 1973, 48-28732; Apr. 11, 1973, 48-41117
Int. Cl.² G04B ***17/00;*** **G04D** ***7/12***
U.S. Cl. 73—6 **8 Claims**



1. In an electronic timepiece provided with a metallic casing, display means including electrode segments arrayed in digital patterns to be displayed in a recurrent cycle, and an electronic clockwork for selectively exciting said segments to establish said patterns, the combination therewith of a transparent cover on said casing overlying said display means and enabling said patterns to be observed, a transparent shield electrode within said casing electrically connected thereto and extending over the major part of said display means while leaving free at least one window offset from said segments, at least one monitoring conductor in said casing electronically disconnected therefrom and aligned with said window, circuit means linking said monitoring conductor with said electronic clockwork for periodic pulsing thereby, at least one detecting electrode on said cover aligned with said window for picking up pulses from said monitoring conductor, and evaluation means connected to said detecting electrode for measuring the recurrence rate of said pulses.

3,937,050
APPARATUS FOR CONSTRICTING OR CLOSING CONDUITS

James Nicholson, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Oct. 31, 1974, Ser. No. 519,658
Claims priority, application United Kingdom, Nov. 6, 1973, 51429/73
Int. Cl.^{2} B21D *7/00*
U.S. Cl. 72—453 1 Claim

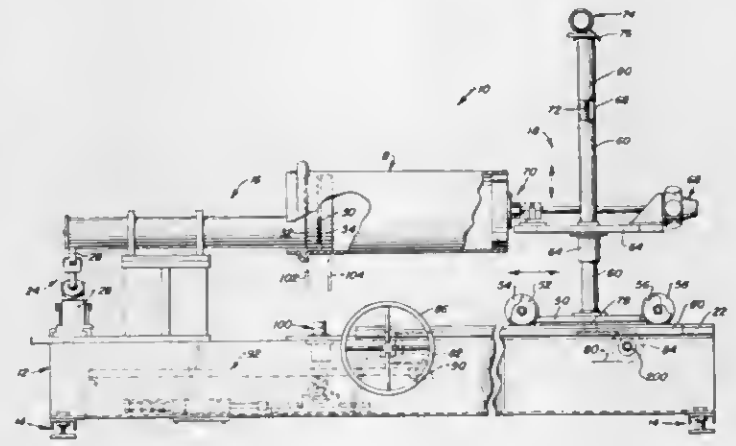


1. An apparatus for constricting or closing a conduit which comprises a framework comprising a pair of generally parallel clamp frames opening in the same direction, a fixed bridging means on one side of the clamp openings locating the clamp frames at a mutual separation such as to accommodate the conduit between them, a fluid-operated ram mounted so as to be movable from one side towards the further side of the clamp openings, the barrel of the ram being secured to the fixed bridging means, means formed in the further side of the clamp frames for detachably locating a stationary clamp member, a stationary clamp member detachably located by such locating means and bridging the clamp members at the further side, a movable clamp member detachably connected to the ram and actuable by the ram towards the stationary clamp member, means effective to guide the movable clamp member towards the stationary clamp member, and bolt means effective as additional guide means for the movable clamp member during the constricting or closing operation and tightenable after the said operation to hold the clamp members together after release of the pressure on the ram.

3,937,051
BELLOWS FORMING METHOD AND APPARATUS

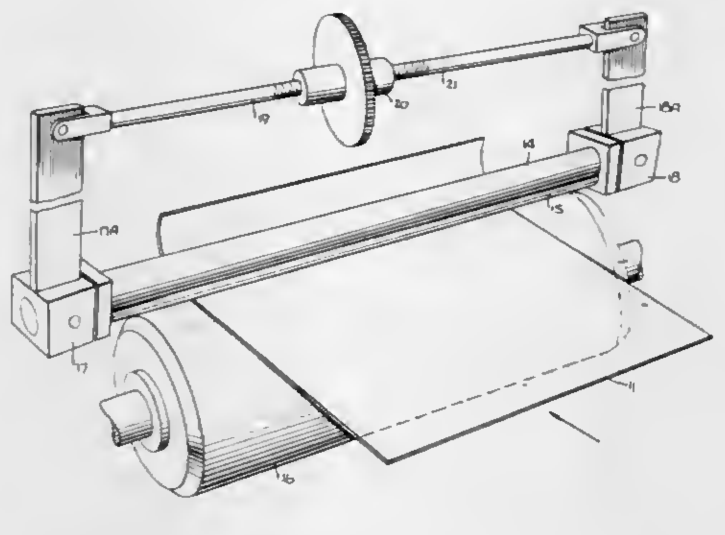
James W. Banks, Bozman, Md., assignor to Chemetron Corporation, Chicago, Ill.
Filed May 30, 1974, Ser. No. 474,726
Int. Cl.^{2} B21D *15/06*
U.S. Cl. 72—110 7 Claims

1. In a bellows forming machine of the type including a frame, a rotatable chuck adapted to hold a blank having an elongated tubular wall and a longitudinal central axis to be formed into a bellows having circumferential convolutions, support means for movably mounting said chuck on said frame, rotating means for rotating said chuck and the blank about the axis of the blank, forming means including an interior forming roll and an exterior forming roll positionable on opposite sides of the wall and relatively movable toward and away from each other and thus toward and away from the wall for forming a circumferential convolution in the wall upon relative motion of the rolls toward the wall as said chuck and the blank are rotated conjointly about the axis of the blank, biasing means for biasing said support means toward said interior forming roll and indexing means for indexing said chuck and the blank along the axis to allow successive convolutions to be formed similarly in the wall, the improvement wherein said indexing means comprises means selectively engageable with said support means and movable by said biasing means, as said interior and exterior rolls clear the convolution, between a first engaged position to a second engaged position, for corresponding movement of said chuck and the blank for forming of a successive convolution.



3,937,052
MACHINE FOR ROLLING AND CURVING PRINTING PLATES

Rolf Hoexter, and Thomas M. Morris, both of Fort Lee, N.J., assignors to Mosstype Corporation, Waldwick, N.J.
Filed Jan. 29, 1975, Ser. No. 545,210
Int. Cl.^{2} B21D *5/14*
U.S. Cl. 72—166 11 Claims



1. A machine for rolling and curving a metallized printing plate to conform it to the circumference of a printing cylinder, said machine comprising:

A. a deflection bar having a longitudinal groove therein which accommodates and partly recesses a forming roller of small diameter fabricated of a relatively unyieldable material, said deflection bar reinforcing said forming roller,

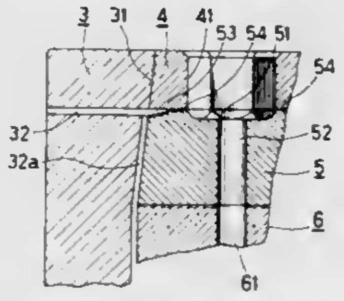
B. a driving roller of relatively large diameter cooperatively disposed with respect to said forming roller and covered by a yieldable elastomeric material,

C. means to adjust the position of said driving roller relative to said forming roller to vary the pressure applied to a printing plate admitted into the nip between said rollers, and

D. power means to rotate said driving roller whereby the plate advancing through said nip is forced by the working surface of the driving roller to wrap against the unyieldable forming roller under high pressure, thereby curving the plate.

3,937,053
FORMING DIE STRUCTURE

Mototsugu Akamatsu, 2-36 Nishi-Tamiyacho, Hirakata, Osaka, Japan
Filed Aug. 27, 1974, Ser. No. 500,955
Int. Cl.^{2} B21J *13/02*
U.S. Cl. 72—352 6 Claims



1. A forming die having an upwardly open die cavity therein, comprising:

an upper die member of hard material having the upper portion of said die cavity extending therethrough;

a lower die member of hard material abutting a lower surface of said upper die member and having the lower portion of said die cavity formed therein, including an upwardly facing bottom surface of said cavity;

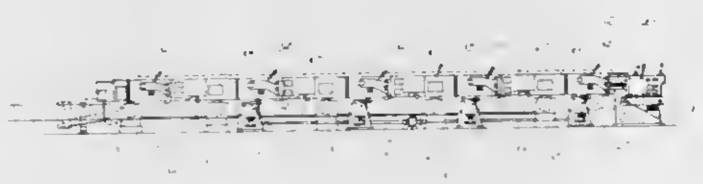
a stock die member underlying and abutting said lower die member and being of softer and more resilient material than said upper and lower die members;

an air vent passage extending from the exterior of said die to the interface between said upper and lower die members adjacent but spaced outwardly from said die cavity, said passage opening slightly upon the downward movement of said lower die as said stock die compresses, and said passage immediately closing thereafter whereby metal cannot enter said passage; and

a reinforcing ring member tightly surrounding said upper, lower and stock die members and holding the same in said described relationship.

3,937,054
HEAVY DUTY PIPE SPREADER

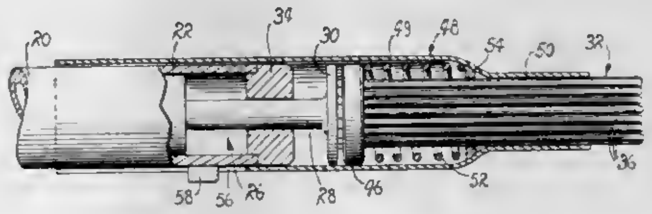
Douglas R. Hortvet, and Norman C. Bennett, both of Houston, Tex., assignors to Armco Steel Corporation, Middletown, Ohio
Filed Sept. 10, 1974, Ser. No. 504,737
Int. Cl.^{2} B21D *41/02*
U.S. Cl. 72—393 14 Claims



1. A heavy duty pipe spreader comprising: a base support; a boom pivotally connected to said base support; a plurality of like sets of spreader means connected to said boom and spaced there along, each of said sets comprised of a pair of pivoted spreader arms having pipe engaging means thereon; a pull rod disposed on said boom; means to reciprocate said pull rod along its axis relative to said boom; and like wedge means spaced along said pull rod for each set of spreader means, each said wedge means engaging a pair of said spreader arms, said wedge means being fastened to said pull rod; whereby when said pull rod is actuated to draw said wedge means towards said spreader arms said pipe engaging means are simultaneously brought into contact with the interior wall of a pipe telescoped onto said boom so as to effect the desired spreading of said pipe along its full length.

3,937,055
METHOD OF PEENING AND PORTABLE PEENING GUN

Vincent P. Caruso, Huntsville, and Elbert J. Minter, Decatur, both of Ala., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.
Filed Nov. 6, 1974, Ser. No. 521,602
Int. Cl.^{2} B21D *41/00;* **B21J** *7/16*
U.S. Cl. 72—399 2 Claims



1. In a portable peening gun of the type having a hammer supported for axial reciprocation along a rectilinear path and a pneumatic motor for driving the hammer in a first direction along the rectilinear path, the improvement comprising:

A. an axially reciprocable rod bundle including a plurality of peening rods, each being characterized by an anvil defined at one end thereof for receiving the hammer in impacting engagement as the hammer is driven in said first direction;

B. means supporting said rod bundle within the path of said hammer including a barrel of a substantially tubular configuration supported in coaxial alignment with the hammer and concentrically related to the rod bundle;

C. a retainer for confining the plurality of peening rods in closely spaced relation within the bundle, including a retainer of a disk-shaped configuration and characterized by a plurality of uniformly spaced bores extended therethrough for receiving the peening rods;

D. means for driving said hammer in a second direction, opposite to said first direction, including a helical spring disposed within the barrel in concentric relation with the rod bundle seated against the retainer for continuously urging said bundle in displacement toward said hammer; and

E. means defining a peening surface of a substantially hemispheric configuration at the end of each of said peening rods, opposite said one end, characterized by a radius substantially equal to one-half the thickness of the rod at the end of which the surface is defined.

2. In a method of peening the surface of a metallic body for inducing therein residual compressive stresses, the step of:

simultaneously impacting against a selected surface of a metallic body to be peened, a closely spaced plurality of peening surfaces of hemispheric configurations defined at the ends of a plurality of axially reciprocating, closely spaced peening rods for thus forming in said selected surface a plurality of closely spaced indentations of substantially hemispheric configurations, whereby residual compressive stresses are imparted to the surface of said body.

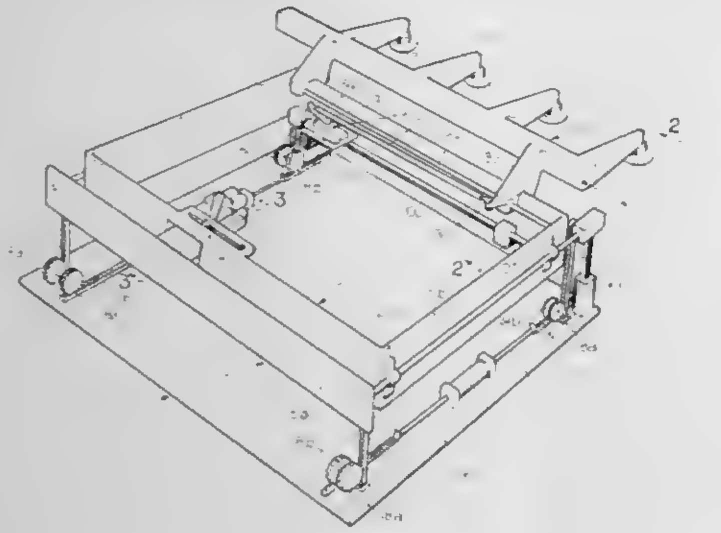
3,937,056
WORKPIECE TRANSLATION MECHANISM FOR TRANSFER DIE PRESS

William G. Henzler, Sylvania, and Robert A. Parker, Toledo, both of Ohio, assignors to Henzler Mfg. Corporation, Toledo, Ohio
Filed Mar. 25, 1975, Ser. No. 561,864
Int. Cl.^{2} B21D *43/05*
U.S. Cl. 72—405 2 Claims

1. A workpiece transfer mechanism for a multistation die of a transfer press comprising, in combination:

1. A main frame structure disposed adjacent said transfer press and fixedly secured relative thereto;

2. A first subframe disposed in overlying relationship to said main frane, first power means for vertically reciprocating said first frame relative to said main frame, the extent of said vertical movement corresponding to the vertical movement required to lift a workpiece out of a die station:
3. A second subframe slidably mounted on said first subframe for horizontal reciprocating movement in a direction transferse to the progressive movement of the workpieces through the successive stations of said die, second power means for reciprocating said second subframe, said second power means including linkage means for accelerating and decelerating said second subframe so that said second subframe approaches each end of its stroke with essentially zero velocity; and

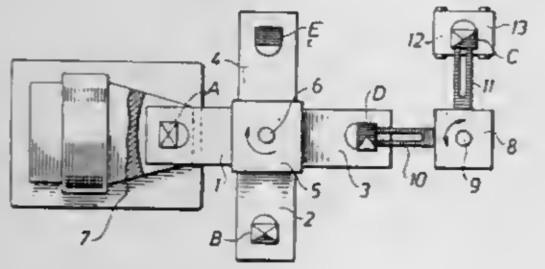


4. A third subframe slidably mounted on said second subframe for horizontal reciprocating movement in a direction parallel to the progressive movement of the workpieces through the successive stations of said die, a plurality of workpiece holders mounted on said third subframe and projecting toward said die, the stroke of said movement of said third subframe being equal to the spacing of the stations of said die, third power means for reciprocating said third subframe through said stroke, said third power means including linkage means for accelerating and decelerating said third subframe so that said third subframe approaches each end of its stroke with essentially zero velocity.

3,937,057
MANIPULATOR SYSTEM

Sten Trolle, Ystad, Sweden, assignor to AB Carbox, Ystad, Sweden

Filed Aug. 29, 1974, Ser. No. 501,685
Claims priority, application Sweden, Sept. 3, 1973, 7311956
Int. Cl.^{2} B21D *43/10*
U.S. Cl. 72—422 **5 Claims**

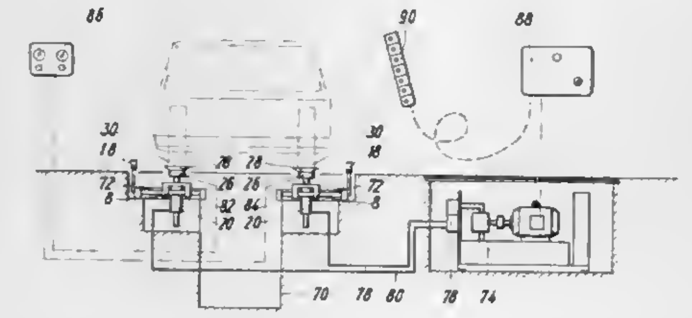


1. In combination with a press (7) a manipulator system adapted automatically to supply to the press workpieces to be treated by the press in several consecutive steps, and automatically to remove treated articles from the press, comprising a revolver table (5) rotatable around a vertical axis (6) and having a number of arms (1–4) corresponding to the number of workings steps to be performed by the press, each revolver arm (1–4) having a tool set movable through the gap of the press;

and, a robot (8) having at least two arms (10, 11) movable in a horizontal plane between a first position for picking up an untreated workpiece, a second position for placement of a workpiece between the tool set of a revolver table arm, located adjacent the second position of the respective robot arm, and a third position for delivery of a finished workpiece.

3,937,058
METHOD OF DETERMINING THE BEHAVIOUR OF A SHOCK ABSORBER IN THE SPRUNG MASS SYSTEM OF A VEHICLE AND A JIG FOR PERFORMING THE METHOD

Jan Willem Hilbrands, Hattingen, Ruhr, Germany, assignor to Maschinenfabrik Koeppern & Co. KG, Germany
Continuation of Ser. No. 268,452, July 3, 1972, abandoned.
This application Nov. 6, 1974, Ser. No. 521,409
Claims priority, application Germany, July 3, 1971, 2133234
Int. Cl.^{2} G01M *17/04*
U.S. Cl. 73--11 **23 Claims**



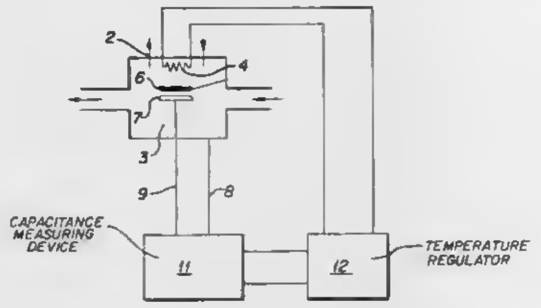
18. A method for determining the behavior of a shock absorber arranged in a wheel suspension unit within the sprung mass system of a vehicle, comprising the steps of causing the wheel to vibrate by applying forces to the wheel in a cycle according to a predetermined relationship of amplitude to frequency, measuring the magnitude value of the vertical contact force applied by the wheel to a support surface while subjecting the whcel to such applied forces, and determining whether the measured vertical contact force exceeds a predetermined minimum contact force when the wheel is subjected to such applied forces as an indication of the useability of the shock absorber.

3,937,059
DEVICE FOR MEASURING THE CONDENSATION TEMPERATURE OF A GAS OR A VAPOR

René Nisolle, Braine-Le-Compte, Belgium, assignor to Solvay & Cie., Brussels, Belgium
Filed May 17, 1974, Ser. No. 471,174
Claims priority, application France, May 23, 1973, 73.18828
Int. Cl.^{2} G01N *25/68*
U.S. Cl. 73—17 A **6 Claims**

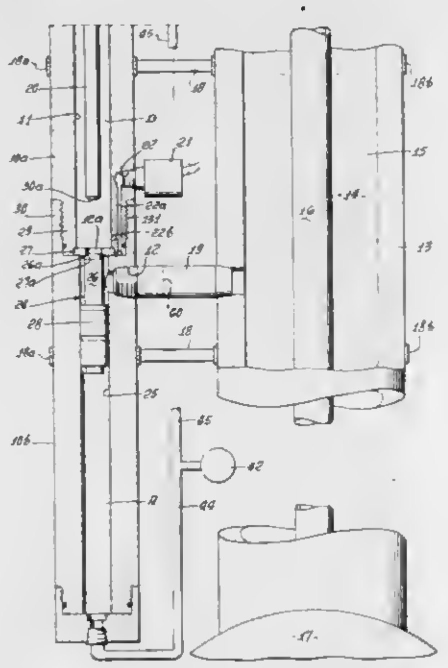
1. Device for measuring the condensation temperature of an organic or inorganic vapor or gas, comprising two electrically conductive plates insulated electrically from one another and spatially separated from one another by a space free of any solid material and arranged to contain such gas or vapor, one of said plates presenting a surface on which a condensate of such gas or vapor is deposited under appropriate conditions; cooling means operatively associated for cooling said surface through a temperature range containing the temperature at which such gas or vapor will begin to condense; a temperature measuring device positioned as close as possible to said surface for providing an indication of the temperature of said

surface; said insulated plates forming an electric capacitor of a given capacitance when the space which separates them is occupied by a vapor or gas and of a markedly different capacitance when a condensate is deposited on said one of said plates; and a device for measuring the capacitance of said capacitor and detecting a predetermined variation in this capacitance, the temperature to be measured being that given by said temperature measuring device at the instant when this variation is detected.



3,937,060
MUD GAS CONTENT SAMPLING DEVICE

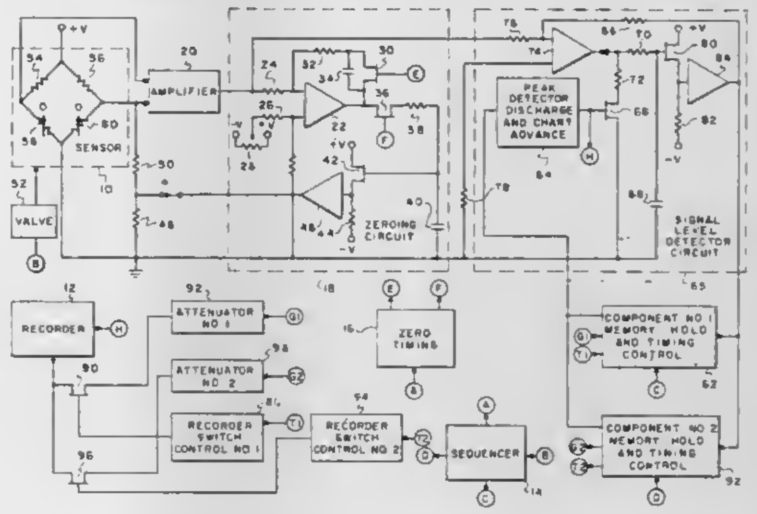
George E. Lewis, Arcadia, and Charles P. Peterman, South Laguna, both of Calif., assignors to Hydril Company, Los Angeles, Calif.
Filed Feb. 6, 1974, Ser. No. 439,892
Int. Cl.^{2} G01N *7/14*; E21B *47/00*
U.S. Cl. 73—19 **14 Claims**



1. In a drilling mud gas content detector, the combination comprising
  a. a housing defining a mud sample chamber, and having a first bore and a port communicable with well piping containing pressurized mud,
  b. a first plunger movable in the first bore in one direction to return a mud sample in the chamber out said port to said piping, and movable in the opposite direction in the first bore to ingest a pressurized mud sample into said chamber via said port, and
  c. valve means controlling said port and responsive to plunger movement in said opposite direction to block flow of mud to the sample chamber prior to subsequent completion of said plunger movement in said opposite direction which effects a predetermined volume increase producing a reduction of pressure exerted by the sample in the chamber, said pressure reduction being indicative of the mud gas content.
  d. whereby the fluid pressure of the sample in the chamber may be sensed by a sensor in communication with said chamber both prior to and subsequent to said pressure reduction,
  e. said valve means including a second plunger movable in a second bore defined by said housing in response to first plunger movement, said first plunger disengaging the second plunger upon closing of said port and prior to said completion of opposite direction movement of the first plunger,
  f. the first plunger having a primary piston surface to receive fluid pressure application in a third bore defined by the housing and tending to urge the first plunger in said opposite direction.

3,937,061
DETECTOR FOR A CHROMTOGRAPH

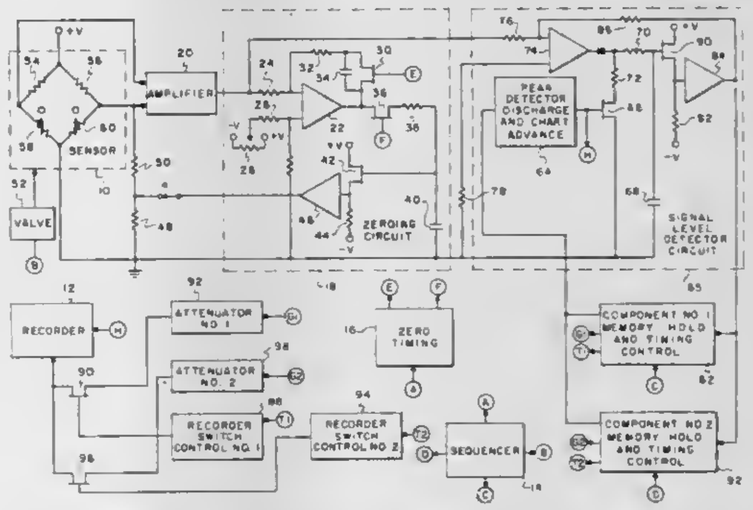
Charles F. Rhodes, Jr., Richardson, Tex., assignor to Sun Oil Company (Delaware), Dallas, Tex.
Filed Aug. 2, 1974, Ser. No. 494,248
Int. Cl.^{2} G01N *31/00*
U.S. Cl. 73—27 R **11 Claims**


+V
AMPLIFIER
SENSOR
VALVE
ZEROING CIRCUIT
PEAK DETECTOR DISCHARGE AND CHART ADVANCE
SIGNAL LEVEL DETECTOR CIRCUIT
RECORDER
ATTENUATOR NO 1
ATTENUATOR NO 2
ZERO TIMING
RECORDER SWITCH CONTROL NO 1
RECORDER SWITCH CONTROL NO 2
SEQUENCER
COMPONENT NO 1 MEMORY HOLD AND TIMING CONTROL
COMPONENT NO 2 MEMORY HOLD AND TIMING CONTROL

1. A gas chromotography circuit for detecting a parameter of a component of a gas, comprising: sensor means that produces signals indicative of parameters of the gas component; means connected to the sensor means for providing a signal whose level bears a relationship to the signals produced by the sensor means; means for amplifying the signal produced by the providing means; means for storing the amplified signal; and means for feeding back a portion of the stored signal into the amplifying means.

3,937,062
ZEROING CIRCUIT

Charles F. Rhodes, Jr., Richardson, Tex., assignor to Sun Oil Company (Delaware), Dallas, Tex.
Filed Aug. 2, 1974, Ser. No. 494,249
Int. Cl.^{2} G01N *31/00*
U.S. Cl. 73—27 R **8 Claims**


+V
AMPLIFIER
SENSOR
VALVE
ZEROING CIRCUIT
PEAK DETECTOR DISCHARGE AND CHART ADVANCE
SIGNAL LEVEL DETECTOR CIRCUIT
RECORDER
ATTENUATOR NO 1
ATTENUATOR NO. 2
ZERO TIMING
RECORDER SWITCH CONTROL NO 1
RECORDER SWITCH CONTROL NO 2
SEQUENCER
COMPONENT NO 1 MEMORY HOLD AND TIMING CONTROL
COMPONENT NO 2 MEMORY HOLD AND TIMING CONTROL

1. In a circuit for detecting a parameter of a component of a gas in a gas chromotography, sensing means comprising: means for producing a signal having a predetermined level when a component of the gas is not present; means for generating a signal indicative of a variance of the signal from the

predetermined level; first feedback means between the variance signal generating means and the signal producing means, said first feedback means having first electronic switch means and means for storing the variance signal; second feedback means around the variance signal generating means, said second feedback means having second electronic switch means; and means for operating the first and second electronic switch means in a timed relationship with the introduction of gas into the chromotograph.

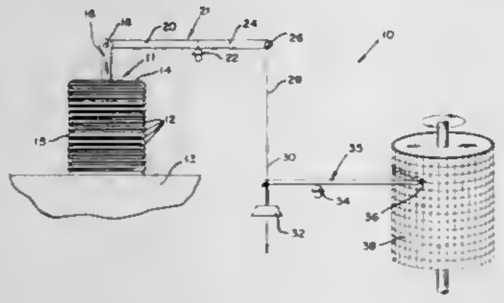
3,937,063
VAPOR PRESSURE METERING APPARATUS AND METHOD

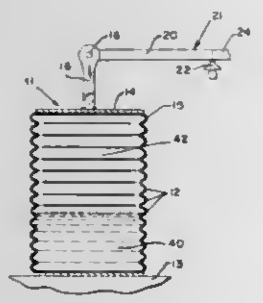
Lancelot I. Kethley, 1454 36th Ave. Apt. 6, Oakland, Calif. 94601

Continuation-in-part of Ser. No. 369,838, June 14, 1973, abandoned. This application June 28, 1974, Ser. No. 484,128

Int. Cl.^{2} G01W *1/06*

U.S. Cl. 73—29 **9 Claims**





1. A device for continuously measuring the vapor pressure of the vapor phase of a material within a gaseous mixture comprising:

- a. saturation vapor pressure sensor including a closed container of at least two phases of the material, one of which is the vapor phase in the predetermined gaseous mixture, a linear dimension of said container being changeable with respect to changes in the saturation vapor pressure of the material;
- b. relative humidity sensor within the predetermined gaseous mixture, a linear dimension of said sensor changeable with respect to changes in the relative humidity of said gaseous mixture; and
- c. means to contrast the linear dimension of one of said sensors to the linear dimension of said other sensor, the resultant value representing the vapor pressure of the material.

3,937,064
MEMBRANE LEAK CHECKING TECHNIQUE

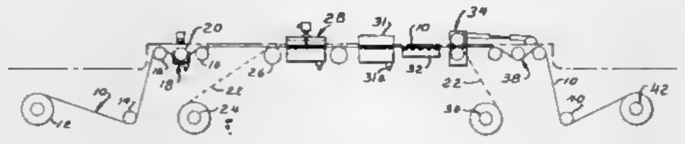
Ludwig Wolf, Jr., Barrington, and David G. Dominguez, Fox Lake, both of Ill., assignors to Baxter Laboratories, Inc., Deerfield, Ill.

Filed Jan. 17, 1975, Ser. No. 541,815

Int. Cl.^{2} G01M *3/04*

U.S. Cl. 73—40 **10 Claims**

1. In a method for testing a membrane strip for leaks due to pin holes in said strip by applying a detector fluid to one face of said strip while bringing a detection medium into proximity with the other face of said strip, and producing a pressure difference between opposite faces of the strip in a sense to cause flow of the detector fluid through any open holes in said strip and into contact with the detection medium, the improvement comprising: applying to said membrane strip a membrane-compatible, volatile liquid medium to fill said pin holes and to be retained therein by capillary attraction, to prevent the flow of detector fluid through pin holes which are less than a predetermined size.



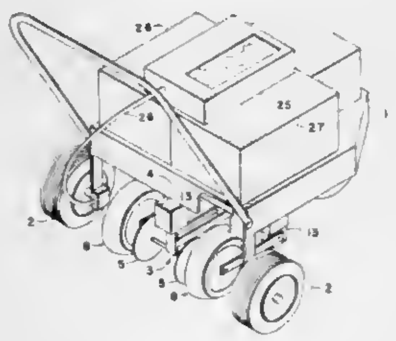
3,937,065
DELAMINATION DETECTOR

Lionel J. Milberger; Gilbert Swift, both of Bryan, and William M. Moore, College Station, all of Tex., assignors to William Moore and G. Swift, both of College Station, Tex.

Division of Ser. No. 176,906, Sept. 1, 1971, Pat. No. 3,762,496. This application June 12, 1973, Ser. No. 369,187

Int. Cl.^{2} G01N *29/04*

U.S. Cl. 73—67 **9 Claims**



1. The method of detecting sub-surface flaws in a material comprising:

Applying a repetitive tapping force to the surface of the material at selected locations,

detecting on said surface at a point removed from the point of application of said force, an acoustic response related to said force and related to the acoustic characteristics of the flaw to be detected,

producing, by time gating and frequency filtering of said detected response, an indication which is related to the distinguishing characteristics of the flaws to be detected, and whereby extraneous effects are diminshed, said time gating admitting only the initial portion of the acoustic response produced by each individual application of the repetitive tapping force.

3,937,066
ULTRASONIC CAMERA SYSTEM AND METHOD

Philip S. Green, Redwood City; Hugh F. Frohbach, Sunnyvale; Louis F. Schaefer, Palo Alto, and Joe R. Suarez, Fremont, all of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Nov. 1, 1973, Ser. No. 411,729

Int. Cl.^{2} G01N *29/04*

U.S. Cl. 73—67.5 R **33 Claims**

26. In a method of producing an electrical signal representative of an acoustic image field traveling in a fluid medium comprising:

generating ultrasonic waves to insonify an object under observation;

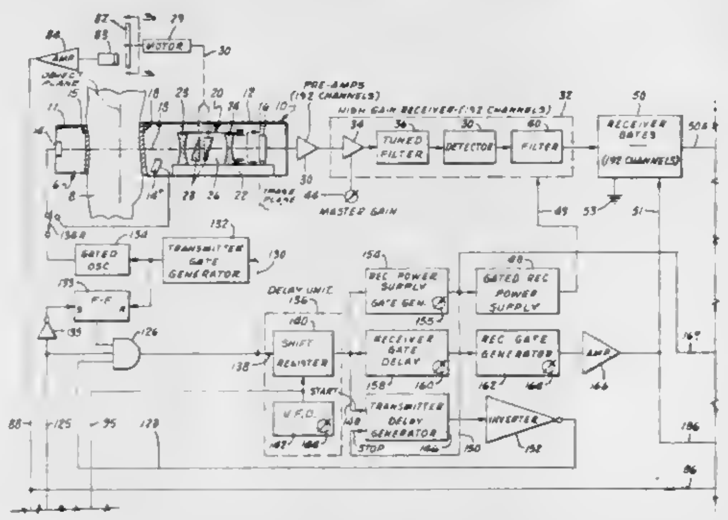
receiving at a plurality of acoustic transducer elements at least a portion of an acoustic image field from the object and focused at the transducer elements;

relatively sweeping said acoustic image field and acoustic transducer elements to expose the transducer elements to a full focused acoustic image field;

substantially simultaneously recurrently gating for short time intervals signals produced by the transducer elements to associated individual storage elements for recurrently simultaneously storing in the storage elements the instantaneous value of signals related to the signals produced by the associated transducer elements;

sequentially sampling the stored instantaneous value of signals to obtain a composite signal representative of at least a portion of the acoustic image field in a plane normal to the line of propagation of the acoustic image field from the object to the acoustic transducer elements, and

repeating the generating, receiving, gating, and sampling steps without affecting focusing of the acoustic image field at the transducer elements.



3,937,067
MEASUREMENT OF ANGLES

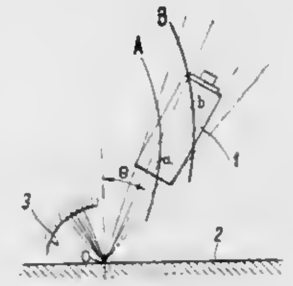
Christian Flambard, Gagny; Alain Lambert, Creil, and Miguel Sancho Pavon, Gouvieux, all of France, assignors to Centre Technique des Industries Mechaniques, Senlis, France

Filed Sept. 27, 1974, Ser. No. 510,022

Claims priority, application France, Mar. 19, 1974, 74.09182

Int. Cl.^{2} G01N *29/04*

U.S. Cl. 73—67.7 **15 Claims**



1. A method of measuring the angular position of an ultrasonic beam comprising the steps of: projecting the ultrasonic beam by a transmitting probe onto a fixed point of a surface. receiving the beam from said point by a receiving probe. varying the length of the path traversed by the ultrasonic beam from said transmitting probe to said receiving probe in accordance with a relationship determined as a function of the angular displacement of the transmitted beam with respect to said surface, and detecting the time taken by the ultrasonic beam for traversing said path.

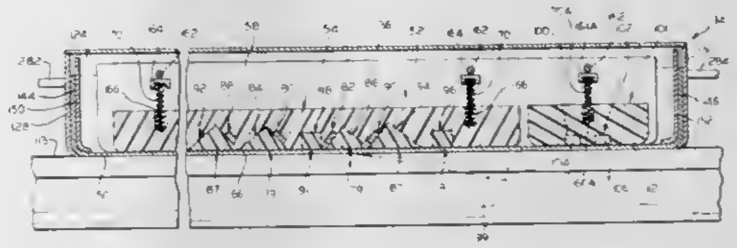
3,937,068
TRANSDUCER ARRANGEMENT FOR ULTRASONIC RAIL TESTER COUPLING CARRIAGES

Ivan L. Joy, 415 Delaware Drive, Ozawkie, Kans. 66070

Filed Feb. 25, 1974, Ser. No. 445,080

Int. Cl.^{2} G01N *29/04*

U.S. Cl. 73—67.7 **2 Claims**



1. In an ultrasonic apparatus for progressive railroad track rail flaw testing for detecting flaws in railroad track rails including a multi-element ultrasonic signal pulse emitting and echo receiving assembly riding on the rail head in its operative position and comprising a plurality of separate ultrasonic transducer devices mounted in a carriage adapted to be coupled to the rail head in the operative position of the assembly by means for damping out surface waves on the rail head, through which means the ultrasonic signals are to act, the improvement wherein:

- said transducer devices comprise:
  - a pair of transducer devices,
  - one of said pair of transducer devices being positioned to emit ultrasonic test signal pulses canted at an angle of approximately 80° with respect to the centerline of the rail and in the direction of the rail gauge edge, in the operative position of the assembly,
- said devices of said pair of devices being spaced longitudinally of the rail in the operative position of the assembly for permitting the signal pulses of said one device of said pair of devices to make a zig-zag path across the rail head
- said pair of transducer devices being located in the assembly to be disposed, in the operative position of the assembly, at the center of, and on top of, the top surface of the rail head and to act at an angle of incidence relative to the rail head top surface to produce in the rail as a result of their signal impulses ultrasonic waves travelling at flat angles on the order of 80° to 85° relative to the level of the rail head top surface.

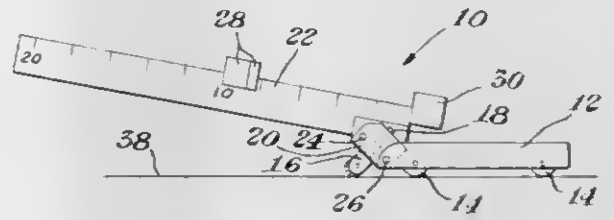
3,937,069
HARDNESS TESTER

Frank L. Saunders, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 28, 1975, Ser. No. 563,038

Int. Cl.^{2} G01N *3/42*

U.S. Cl. 73—81 **3 Claims**



1. In a hardness tester comprising a four wheeled carriage having a scale arm pivotally mounted from one end thereof and supporting a pressure application member in a fixed position with respect to said scale arm whereby said pressure application member contacts a surface to be tested when said wheeled carriage is rolled along said surface, the improvement wherein:

said pressure application member comprises a ball-like fluted member mounted to rotate along a line which is parallel to any forward movement of said wheeled carriage.

3,937,070

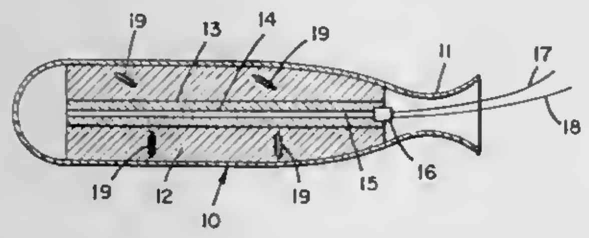
METHOD AND SENSORS FOR PREDETERMINING DYNAMIC MODULI IN SITU OF CASTABLE-TYPE MATERIAL

Herman P. Briar, Rancho Cordova, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed Apr. 29, 1974, Ser. No. 465,206

Int. Cl.^{2} G01L *1/16*

U.S. Cl. 73—88 R **13 Claims**



3. A sensor for determining the dynamic properties of a castable material within which it is embedded comprising:

an electrically conductive spacing member of a material insoluble in said castable material and having a pair of opposed planar faces;

a first piezoelectric crystal having a modulus of elasticity between approximately one-half and one-third that of said spacing member secured to one of said planar faces of said spacing member in an air-tight manner and having a conductive layer on the other of its planar faces; and

a second piezoelectric crystal having a modulus of elasticity between approximately one-half and one-third that of said spacing member secured to the other planar face of said spacing member in an air-tight manner and having a conductive layer on the other of its planar faces, the mean modulus of elasticity of said combined crystals and spacing member being substantially greater than the modulus of elasticity of said castable-type material.

3,937,071

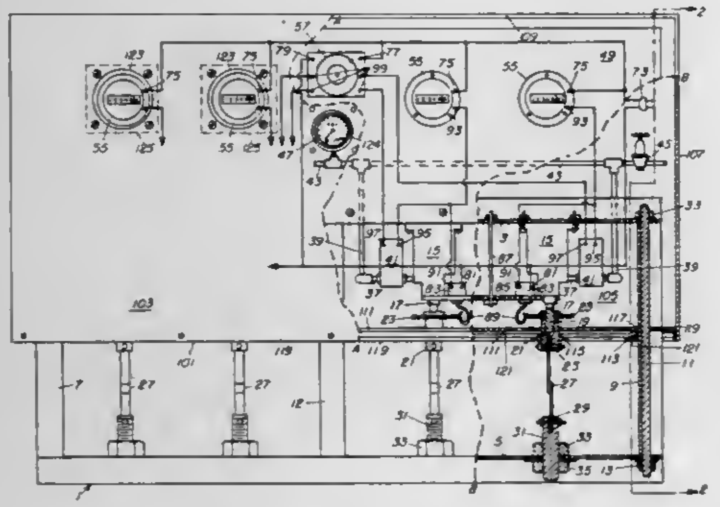
FATIGUE TEST APPARATUS

Stanley A. Slota, Sparta, and Raymond F. Wegman, Ledgewood, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 11, 1975, Ser. No. 595,256

Int. Cl.^{2} G01N *3/32*

U.S. Cl. 73—91 **6 Claims**



1. Fatigue testing apparatus comprising: a rigid support frame, a plurality of test stations mounted on said support frame; a source of air pressure and a manifold for conducting air from said source to said stations; a voltage source; and a program timer switch comprising a plurality of switch contacts, one for each of said test stations, and means for connecting one side of said voltage source to each of said contacts in a predetermined sequence; each of said test stations including:

first and second spaced specimen holders adapted to be attached to opposite ends of a specimen to be tested, said first specimen holder being attached to said support frame;

an air cylinder attached to said support frame and having a piston to which said second specimen holder is attached;

a solenoid valve having an air inlet connected to said manifold, an air outlet connected to said air cylinder, and two electrical terminals;

a test terminate switch having two electrical terminals and an actuating lever engageable with an actuating member carried by said piston and second specimen holder and adapted to open the switch when the specimen fails, one of said terminal being connected to the other side of said voltage source, and the other terminal being connected to one terminal of said solenoid valve; and

means connecting the other terminal of said solenoid valve to one of said plurality of switch contacts of said timer switch, to complete the circuit from said voltage source to said solenoid valve;

whereby the failure of one specimen during the testing of a plurality of specimens interrupts the voltage circuit of its station only.

3,937,072

SYSTEM FOR MEASURING PLASTIC DEFORMATION CREATED BY A BENDING PRESS

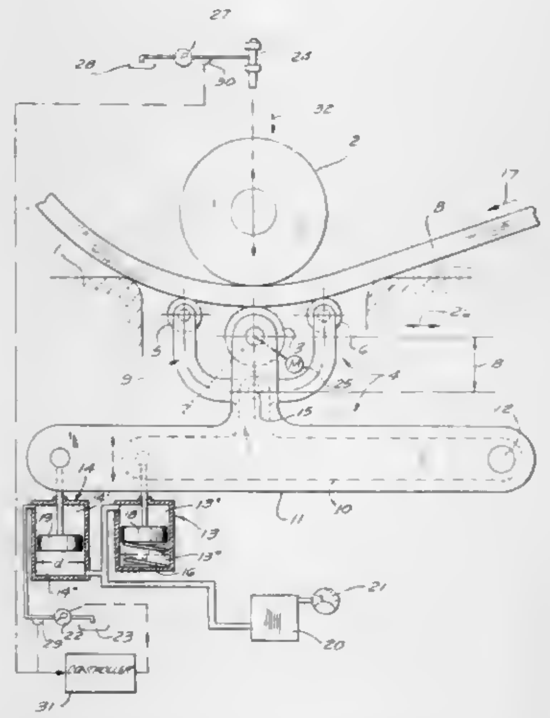
Eduard J. C. Huydts, Dusseldorf; Alfons Klassen, Krefeld, and Erich Nacke, Sevelen, all of Germany, assignors to G. Siempelkamp & Co., Krefeld, Germany

Filed June 5, 1974, Ser. No. 476,402

Claims priority, application Germany, June 6, 1973, 2328695

Int. Cl.^{2} G01N *2/20*

U.S. Cl. 73—100 **6 Claims**



1. A method of measuring the permanent bend in a workpiece clamped in a bending press with its one side lying on a pair of beams spaced apart in a transport direction and with a bending roller pressing in a bending direction transverse to said transport direction against the other side of the workpiece and between said beams, said method comprising the steps of:

pressing a first feeler against said one side of said workpiece at a first location opposite said bending roller with a force sufficient to move said workpiece and relieve substantially all of the elastic deformation in said workpiece;

contacting said workpiece on said one side with second and third feelers at respective second and third locations spaced from said first location in said transport direction; and

measuring the distance between said first feeler and said second and third feelers in said bending direction, said distance being proportional to the permanent bend in said workpiece.

3,937,073

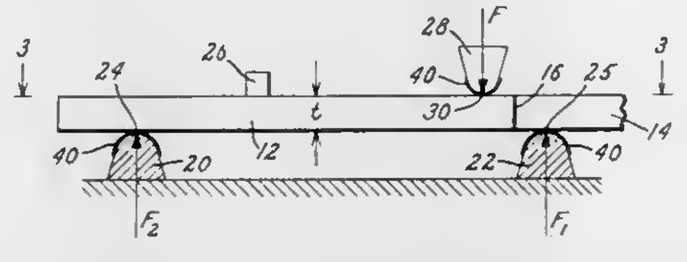
METHOD OF NON-DESTRUCTIVELY TESTING ALUMINUM-TO-COPPER WELDS

Robert B. Steel, Glen Mills, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Feb. 20, 1975, Ser. No. 551,556

Int. Cl.^{2} G01N *3/24*

U.S. Cl. 73—101 **12 Claims**



1. A method of non-destructively testing an aluminum-to-copper butt weld in a bar comprising an aluminum section and a copper section joined together by said weld, said weld extending transversely of said bar, said method comprising:

a. applying first and second forces to the bar at spaced locations disposed relative to the bar on opposite sides of said transversely extending weld, with the weld being located closely adjacent the location at which one of said forces is applied to the aluminum section of the bar,

b. applying to said copper section in a location adjacent said weld a third force that cooperates with said first and second forces to non-destructively load said weld primarily in shear, and said forces being sufficiently high to produce shear stresses at said weld of at least several thousand pounds per square inch, and

c. sensing the acoustic emission signal resulting from the loading of said weld by said forces.

3,937,074

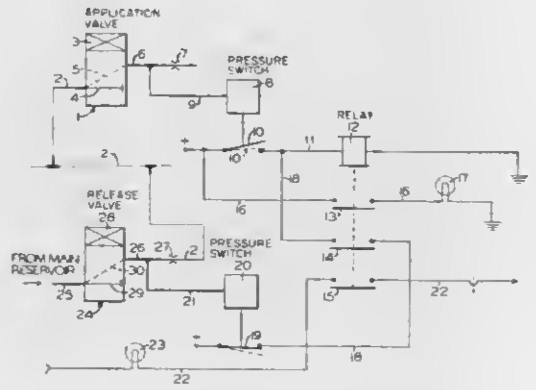
APPARATUS FOR CHECKING INTEGRITY OF MAGNET VALVES IN ELECTRO-PNEUMATIC BRAKE SYSTEMS

Richard O. Burkett, Apollo, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Aug. 26, 1974, Ser. No. 500,412

Int. Cl.^{2} G01L *5/28*

U.S. Cl. 73—121 **7 Claims**



1. Testing apparatus for checking the integrity of the electrical portion of an electro-pneumatic brake system for a railway train vehicle, the pneumatic portion of which comprises a brake pipe from which fluid pressure is released for effecting a brake application and to which fluid pressure is supplied for releasing the application, and the electrical portion of which comprises an application magnet valve device effective, when energized, for venting the brake pipe to atmosphere and, when deenergized for cutting off such venting, and a release magnet valve device effective, when energized, for causing recharging of said brake pipe with fluid pressure and, when deenergized, for cutting off such recharging, and a trainline release wire, said testing apparatus comprising:

a. means responsive to energization of the application magnet valve device for providing a continuous signal indicating energization of the application magnet valve device; and

b. means responsive to energization of the release magnet valve device for terminating said signal.

3,937,075

TRANSDUCER COMPRISING STRAIN GAUGES

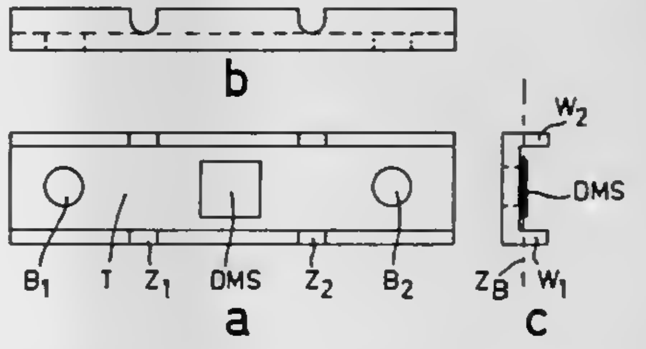
Gunther Friedrich Landvogt, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 10, 1974, Ser. No. 513,710

Claims priority, application Germany, Oct. 16, 1973, 2351810

Int. Cl.^{2} G01L *5/00*

U.S. Cl. 73—141 A **9 Claims**



1. A force-measuring transducer comprising, an elongate support member having a neutral zone in an area intermediate the ends of the support member at which substantially no tensile or compression forces occur when the support member is subjected to a bending force, at least one strain gage engaging a surface portion of the support member at said intermediate area of the support member, means located at both ends of the support member and outside said intermediate area for securing the support member to an object to be measured, said support member including first and second zones of lower bending rigidity than exists at said intermediate area and provided without a substantial reduction of the support member cross-section, said first and second zones being located respectively between the securing ends of the support member and said intermediate area at which the strain gage is positioned.

3,937,076

DEVICE FOR TESTING TYRES FOR VEHICLES

Olivier Pommellet, St-Cloud, and Guy Drioton, Rueil-Malmaison, both of France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Filed June 6, 1974, Ser. No. 477,002

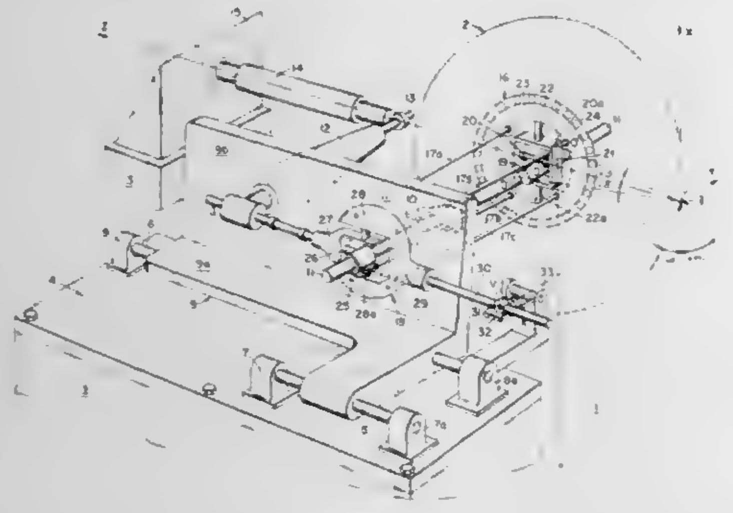
Claims priority, application France, June 6, 1973, 73.20621

Int. Cl.^{2} G01M *17/02*

U.S. Cl. 73—146 **23 Claims**

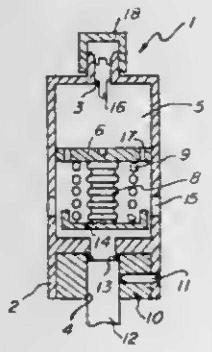
1. A device for testing vehicle tyres comprising frame means, means supported by said frame means and defining a track, means for driving said track for movement along a given direction relative to said frame means, carriage means supported by said frame means, means slidably interconnecting

said carriage means and said frame means for movement of said carriage means along a direction transverse to said given direction and extending towards and away from said track. means for driving said carriage for sliding movement along said transverse direction towards and away from said track, means for freely rotatably supporting a wheel and tyre combination on said carriage with said tyre in rolling contact with said track. said wheel supporting means including a wheel hub. and means for pivoting said wheel hub about two directions extending perpendicular to the axis of symmetry of said hub for orienting the wheel at an angle of lock α and a camber angle β relative to said track, said means for pivoting said wheel hub including an alignment hub spaced from said wheel hub, means for tilting the alignment hub about two further perpendicular axes each perpendicular to the axis of said alignment hub, push rods extending parallel to one another between said alignment hub and said wheel hub, and means articulating said push rods to said alignment hub on the one hand and to the wheel hub on the other hand.



3,937,077
TIRE PRESSURE INDICATORS AND METHODS OF MAKING AND USING THE SAME

Robert L. Klamm, 230 Spring Drive, St. Charles, Mo. 63301
Continuation-in-part of Ser. No. 182,365, Sept. 21, 1971. This application Nov. 12, 1973, Ser. No. 414,673
Int. Cl.^{2} B60C *23/04*
U.S. Cl. 73—146.8 **3 Claims**



1. An air pressure indication device for use on conventional automobile tires, said tires provided with a valve stem containing a Schrader valve or similar valve, comprising,

housing means. said housing means provided with an elongated chamber therein and said housing means provided with an inlet port and an outlet port, said inlet and outlet ports operably coupled to said chamber, and said outlet port communicating with the air in said tire,

a support member operably mounted in said chamber.

said inlet port threaded to mount on a conventional valve stem,

air pressure measuring means operably mounted in said chamber. said air pressure measuring means comprising an aneroid bellows pressure measuring means and indicating means operably mounted thereon, wherein said aneroid bellows pressure measuring means comprises,

a bellows operably mounted within said chamber, said bellows provided with a bellows chamber therein. said bellows being evacuated and air sealed, a first end of said bellows being attached to said support members,

indicating means operably mounted on the second end of said bellows,

a calibration spring operably mounted between said support member and said indicating means and disposed about said bellows,

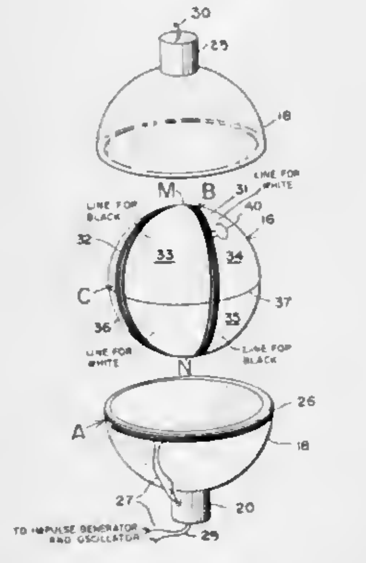
window means operably mounted in said chamber wall, said window means disposed such that when the air pressure in said tire varies, a particular portion of said indicating means is visible through said window,

valve means (conventional Schrader valve or similar valve) operably mounted in said outlet port.

said air pressure indication means provided with through ports. said through ports adapted to allow the tire to be filled while the device is installed on a tire.

3,937,078
SENSING APPARATUS FOR INCLINOMETERS

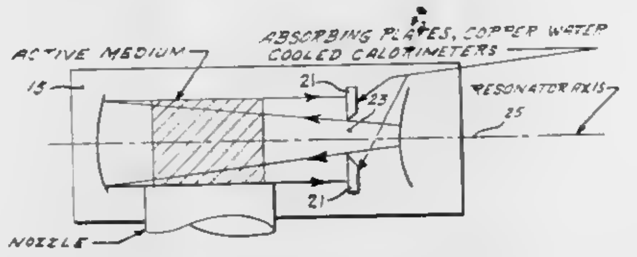
Gerald J. Williams, Miami, Fla., assignor to General Oceanus, Inc., Miami, Fla.
Filed Apr. 10, 1974, Ser. No. 459,658
Int. Cl.^{2} G01P *5/06*
U.S. Cl. 73—189 **4 Claims**



1. Apparatus for sensing the direction and amplitude of tilt of an inclinometer for measuring the force velocity and direction of a current of a body of water movement comprising a cylindrical housing having end caps thereon, a spherical housing contained within said cylindrical housing, said spherical housing attached to an end cap a movable sphere within said spherical housing, a fluid contained within said spherical housing maintaining said sphere in spaced relation to said spherical housing, means for tethering said cylindrical housing in a body of water, a bar magnet mounted within said sphere below the center of gravity of said sphere, the center of gravity of the sphere and the center of gravity of the magnet defining a line which is perpendicular to the magnet for maintaining said sphere in a vertical position and oriented toward the magnetic north pole, the combination comprising a plurality of tuned circuits of different resonant frequencies mounted in great circles about said sphere and at substantially right angles to each other, each of said tuned circuits consisting of a plurality of coil windings connected in series with a capacitor, one of said tuned circuits lying in a common plane with said magnet, a drive coil mounted on said spherical housing at right angles to each of said tuned circuits and lying in a plane substantially parallel to that of said magnet when said cylindrical housing is positioned in an upright position, means for applying an impulse of electric current to said drive coil whereby a voltage impulse is induced in said tuned circuits causing said tuned circuits to oscillate inducing signals in said drive coil that indicate the amount of tilt of said cylindrical housing with relation to said sphere and further means for distinguishing the directions of tilt of said cylindrical housing.

3,937,079
CALORIMETER FOR AN UNSTABLE LASER RESONATOR

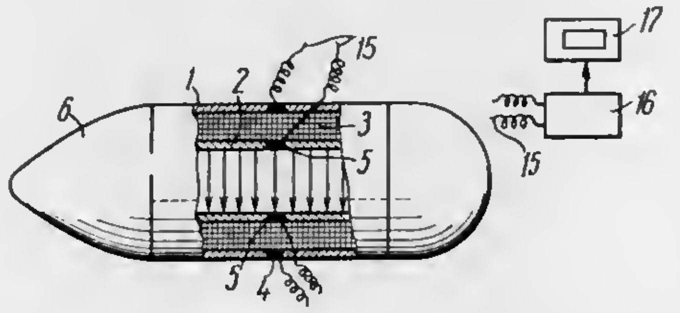
Richard A. Chodzko, Palos Verdes Peninsula, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Dec. 11, 1974, Ser. No. 531,645
Int. Cl.^{2} G01K *17/00*
U.S. Cl. 73—190 EW **4 Claims**



1. An internal cavity calorimeter for measuring the output power from an edge coupled unstable laser resonator comprising, an absorbing metal plate positioned orthogonal to the cavity axis between the active medium and an output coupling mirror, said plate having an aperture in the central portion thereof, means for varying the size and shape of the aperture in said absorbing metal plate including four separate leaves in perpendicular relationship to one another, each of said leaves being independently movable to produce a corresponding variation of the unstable cavity geometric mode independently for a fixed cavity magnification, and means for independently measuring the power absorbed by each leaf, thereby indicating the lasing intensity distribution pattern for the unstable laser resonator while containing the radiation within the cavity.

3,937,080
ELECTROMAGNETIC APPARATUS FOR MEASURING THE FLOW VELOCITY OF AN ELECTRICALLY CONDUCTIVE FLUID AND METHOD OF CALIBRATION THEREOF

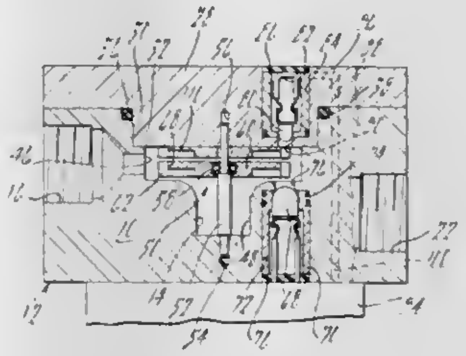
Izrail Grigorievich Fix, ulitsa Artema, 108, kv. 61; Alexei Sergeevich Morokhovsky, ulitsa Cheljuskintsev, 184, kv. 6, both of Donetsk; Mikhail Yakovlevich Gammerman, Gustamyae Lee, 137, kv. 8, Tallin; Benno Abramovich Khaitin, Tammsaare Lee, 100, kv. 81, Tallin; Tynis Eduardovich Laar, Khaigru, 5, kv. 6, Tallin, and Volf Iolevich Mezhburd, Bulvar Karla Marxa, 78, kv. 26, Tallin, all of U.S.S.R.
Filed Aug. 31, 1973, Ser. No. 393,678
Int. Cl.^{2} G01F *1/58*
U.S. Cl. 73—194 EM **16 Claims**



1. Electromagnetic apparatus for measuring the flow velocity of an electrically conductive fluid, the apparatus being positioned within the fluid flow and comprising a pair of pipe portions of different diameters, one pipe portion being placed within the other; means for producing a magnetic field in the fluid, said means being mounted between said pipe portions; means for sensing the electric potential developed in the fluid flow as a consequence of the produced magnetic field, said means being mounted at right angles both to the direction of the flow and to the direction of the produced magnetic field and consisting of two groups of electrodes of which the first one is mounted on the external surface of said outer pipe portion and serves for sensing the electric potential corresponding to the velocity of the fluid flow, and the second one is mounted on the inner surface of said internal pipe portion and serves for sensing the electric potential corresponding to the velocity of the fluid passing through this pipe portion, an indicator whereto one of said groups of electrodes is connected and which reads the measured fluid flow velocity.

3,937,081
VORTEX FLOWMETER

Karnig H. Dabanian, Farmington; Lawrence F. Rapp, Southfield, and Dale C. Good, Plymouth, all of Mich., assignors to Cox Instrument Division, Lynch Corporation, Detroit, Mich.
Filed Oct. 1, 1973, Ser. No. 402,075
Int. Cl.^{2} G01F *1/06, 1/32*
U.S. Cl. 73—194 C **16 Claims**



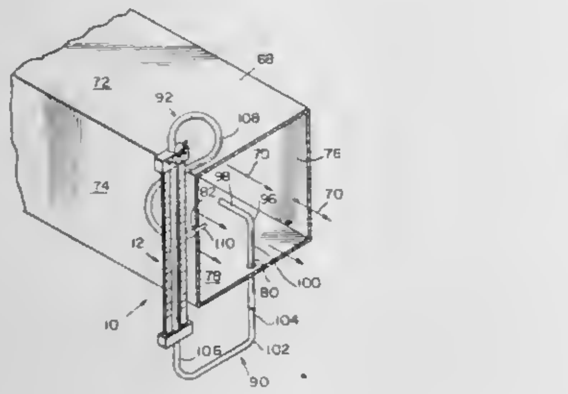
1. A vortex flowmeter comprising a body structure having a cavity formed therein, said cavity having a varying diameter from a large diameter section to a small diameter section, an inlet port positioned generally tangential to said large diameter portion and an outlet port positioned adjacent said small diameter portion for permitting the flow of fluid through said cavity in a generally swirling manner, a rotor positioned in said cavity having a plurality of teeth formed thereon, spoiler means positioned adjacent said rotor and in fluid coupling therewith, said coupling creating a shear drag on said rotor to improve the down side response time of said rotor, and a pickup system positioned to sense the passage of said teeth in response to the flow of fluid in said cavity.

3,937,082
GAUGE SYSTEM FOR MEASURING AIR FLOW IN DUCTS

John E. Schilling, Indianapolis, Ind., assignor to Schilling Chilling Manufacturing Corporation, Indianapolis, Ind.
Filed Sept. 6, 1974, Ser. No. 503,862
Int. Cl.^{2} G01G *1/34*
U.S. Cl. 73—208 **13 Claims**

1. For use in measuring air velocity pressure in a duct, the velocity pressure corresponding to air velocity, a gauging system comprising a gauge including a vertically upwardly extending transparent gauge tube having an open lower end and an open upper end, said tube having a plurality of vertically spaced apart venting apertures in the side wall thereof, a vertically extending transparent shell enclosing said tube, said shell having an upper end extending above the upper end of said tube. said shell being closed at its lower end to the lower end of said tube, a light-weight ball movable in said tube to a vertical position corresponding to the pressure therein above and below said ball, and means providing an air velocity

scale extending alongside said tube and increasing from said lower end to said upper end, and in which the improvement comprises first tube means for connecting the lower end of said gauge tube to the interior of the duct, said first tube means having a distal end portion with an open end pointed upstream opposite to the direction of flow of air through the duct to read total pressure including velocity pressure and

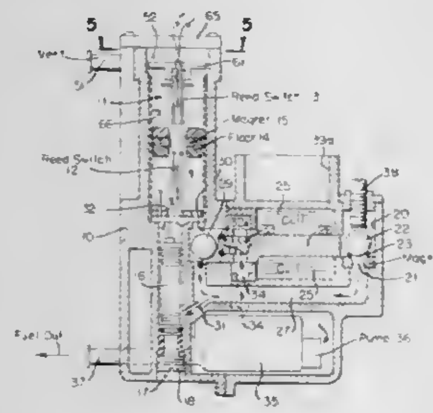


static pressure, and second tube means for connecting the upper end of said shell to the interior of said duct, said second tube means having a distal end portion with an open end pointed to read the static pressure within said duct through an opening in the duct wall, whereby, the total pressure pushes upwardly on said ball while the static pressure pushes downwardly on said ball automatically to subtract the static pressure from the total pressure to provide velocity pressure.

3,937,083
TEMPERATURE-COMPENSATING LIQUID METER

Daniel D. Sabatino, Paramus, and Henry W. Wilkens, Little Ferry, both of N.J., assignors to Flowtron Industries Inc., Little Ferry, N.J.

Filed Jan. 16, 1975, Ser. No. 541,478
Int. Cl.² G01F *11/00*
U.S. Cl. 73—224 16 Claims

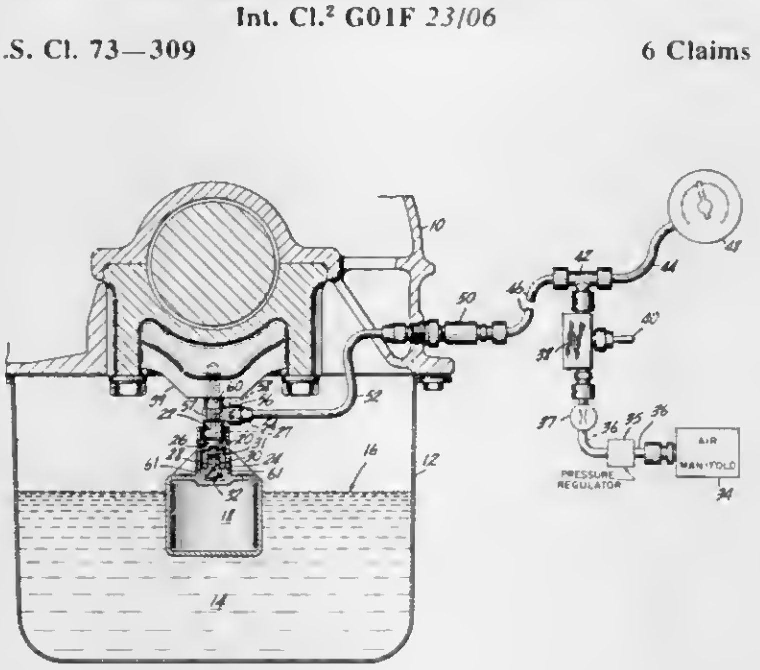


14. An automatically operable, temperature-compensated, liquid metering device comprising a measuring chamber having a pair of liquid-level sensors therein disposed in vertically spaced relation to one another, means responsive to the absence of liquid in said chamber at a first level determined by the lower one of said sensors for supplying a liquid to be measured to said chamber, means subsequently responsive to the presence of liquid in said chamber at a second level determined by the upper one of said sensors for terminating the supply of liquid to said second chamber, means for initiating a withdrawal of liquid from said chamber substantially simultaneous with the termination of the supply of liquid to said chamber to drain liquid from said chamber until the liquid level in said chamber falls below said first level so as to cause termination of said withdrawal operation and to reinitiate the supply of liquid to said chamber, whereby fixed increments of liquid each of which is volumetrically dependent upon the vertical spacing between said sensors are repetitively and automatically supplied to and thereafter withdrawn from said chamber, counter means controlled by at least one of said sensors for counting the number of said increments, and means responsive to the temperature of the liquid being measured for selectively varying the relative spacing between said sensors thereby to vary the volumes of said increments with variations in the temperature of said liquid.

3,937,084
LIQUID LEVEL INDICATOR

Walter M. May, Bethlehem, Pa., assignor to Mack Trucks, Inc., Allentown, Pa.

Filed Apr. 26, 1974, Ser. No. 464,679
Int. Cl.² G01F *23/06*
U.S. Cl. 73—309 6 Claims



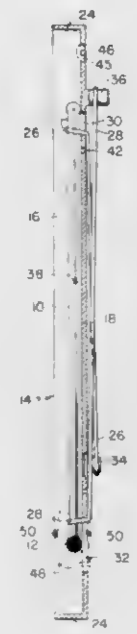
1. A liquid level indicator for a container adapted to contain a liquid comprising:
- a. a source of fluid under pressure;
- b. a fluid conduit system coupled to and communicating with the fluid source;
- c. means defining a restriction orifice in the conduit system;
- d. fluid pressure responsive gage means coupled to the conduit system downstream of the restriction orifice; and
- e. valve means coupled to the conduit system downstream of the restriction orifice, the valve means including
  - i. a valve seat defining an orifice that communicates with the conduit system and is an outlet for fluid in the system;
  - ii. a valve body movable toward and away from the valve seat so as to vary the cross-sectional flow area of the orifice, the pressure of the fluid in the conduit system between the restriction orifice and the outlet orifice exerting a force on the valve body in a first direction; and
  - iii. a float member operatively coupled to the valve body and being mounted within the container for limited vertical movement, so that a buoyancy force acting upwardly on the float member causes the float member to exert a force on the valve body in a second direction, the second direction being opposite to the first direction;

so that when liquid in the container is at any level within a predetermined range of levels, the liquid exerts a corresponding buoyancy force on the float member, which in turn exerts the force on the valve body in the second direction, which force is opposed and balanced by the force exerted by the pressurized fluid on the valve body in the first direction, the pressure of the fluid in the conduit system between the restriction orifice and the outlet orifice being indicative of the level of liquid in the container.

3,937,085
THERMOMETER

Burton H. Harrison, Weston, Mass., assignor to Selective Educational Equipment, Inc., Newton, Mass.

Filed Feb. 3, 1972, Ser. No. 223,103
Int. Cl.² G01K *1/14*
U.S. Cl. 73—338.6 12 Claims



1. A temperature responsive measuring device preferably for use by students and having an elongated thermometer tube that is readily replaceable, said device comprising:

an elongated backing having a front surface of concave configuration along its length, said front surface being defined by a pair of sidewalls diverging from an apex;

a temperature scale disposed on said forward surface of at least one of said sidewalls;

and means for mounting the thermometer tube within and along the concave apex of said backing, said sidewalls extending forwardly of and substantially beyond said thermometer tube to protect said tube;

said means for mounting said thermometer tube comprising;
- a first hole formed in the upper portion of said backing.
- a second hole formed in the lower portion of said backing,
- first and second posts extending rearwardly from and spaced along the rear surface of said backing and each disposed adjacent but spaced from respective first and second holes,
- and at least one continuous and endless elastic band having a first segment extending through the first hole and being looped about the upper end of said thermometer tube, and a second segment that is stretched downwardly to extend and wrap about said rearwardly extending second post,
- whereby said thermometer tube may be readily replaced by removing the second segment from the post so as to loosen the first segment and permit easy withdrawal of the tube from the backing.

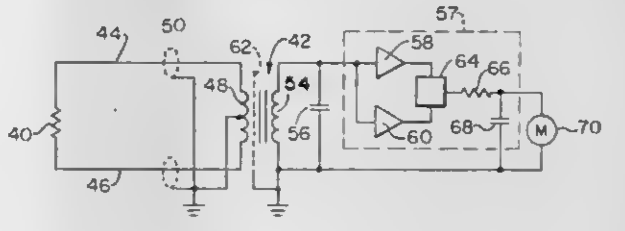
3,937,086
NOISE THERMOMETER

Peter C. von Thuna, Lexington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Nov. 8, 1974, Ser. No. 522,121
Int. Cl.² G01K *7/30*
U.S. Cl. 73—359 7 Claims

1. A thermometer which measures spontaneous thermal noise in the form of voltage fluctuations across a sensor resistor, said thermometer comprising in combination:

an electrical circuit inductively coupled to said resistor and being tuned so that the losses in said circuit are substantially caused by said sensor resistor, the parameters of said circuit being so matched to the sensor resistor and the inductive coupling that the thermal noise power generated by said resistor is concentrated in a selected frequency band, said inductive coupling being a transformer, the primary of which is connected across said resistor, said electrical circuit including the secondary winding of said transformer and a precision capacitor connected across said secondary winding; and

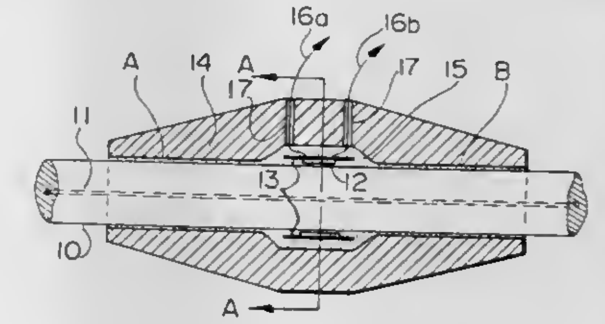


means connected in said electrical circuit for measuring the absolute mean square value of said voltage fluctuations.

3,937,087
TRANSDUCER FOR ENGINE FUEL INJECTION MONITORING

William S. Heggie, Ottawa, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Filed July 5, 1974, Ser. No. 486,189
Int. Cl.² G01L *9/04*
U.S. Cl. 73—398 AR 5 Claims



1. A fuel injection pressure monitoring transducer for mounting on the fuel injection lines of diesel engines comprising at least one strain detector mounted on the circumference of the fuel line tube such that expansion and contraction of the tube cause variations of the output of the detector, a plastic sleeve covering the resistance element at least in some part, a torpedo-shaped housing made of strong metal encompassing the tube and the resistance element mounted thereon and rigidly attached to the tube circumferentially at outer positions away from the resistance element, the housing defining an annular space between the housing and the tube and containing the resistance element and the sleeve, a strong adhesive material filing the said space, and electrical leads from the resistance element passing to the exterior through openings in the housing.

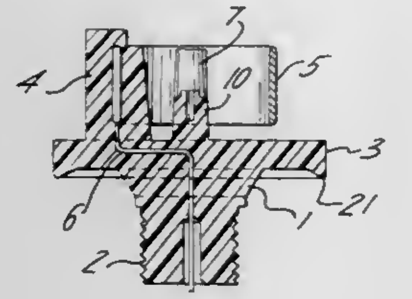
3,937,088
DRIVE MECHANISM FOR PRESSURE-GAGES, COMPRISING A MOLDED PLASTICS MAIN BODY WITH EMBEDDED BOURDON TUBE

Giuseppe Stradella, and Umberto Stradella, both of 13 Via Roma, Recco (Genoa), Italy

Filed Feb. 21, 1974, Ser. No. 444,484
Claims priority, application Italy, Feb. 27, 1973, 12479/73; July 13, 1973, 12734/73; July 17, 1973, 12737/73
Int. Cl.² G01L *7/04*
U.S. Cl. 73—418 9 Claims

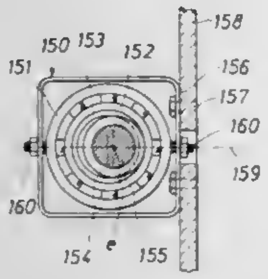
1. A drive mechanism for pressure-gages, which comprises a support main body; a Bourdon tubular spring having a movable end and a fixed end embedded in said main body, and a

small tube embedded in said main body connected at one end to said Bourdon tubular spring; said main body being formed, in a single molding operation, with an integral circular platform, at least one upright support projecting from said platform, and a depending axial stem for connection to a source of pressure, said stem having an axial conduit therein providing communication between the other end of said small tube and said source of pressure, said fixed end of said Bourdon tubular spring being embedded in a first said upright support and said small tube being embedded in said main body during said molding operation.



3,937,089
SCREW DRIVE

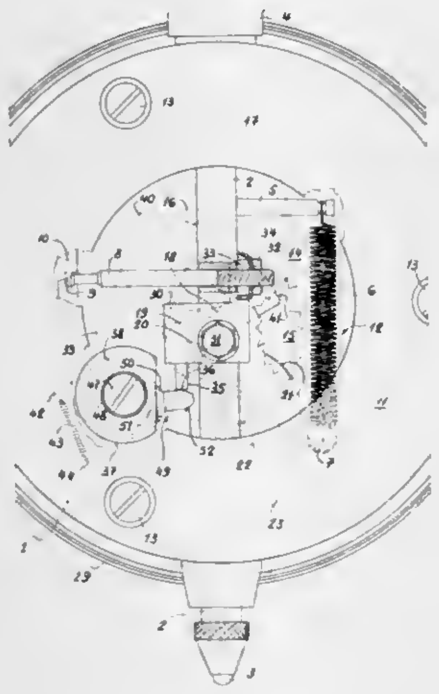
Robert Gärtner, Freiherr vom Stein Str. 8, 6038 Butzsbach, Hessen, Germany
Filed Dec. 18, 1973, Ser. No. 425,924
Claims priority, application Germany, Dec. 19, 1972, 2262062
Int. Cl.² F16H *21/16*
U.S. Cl. 74—25 **10 Claims**

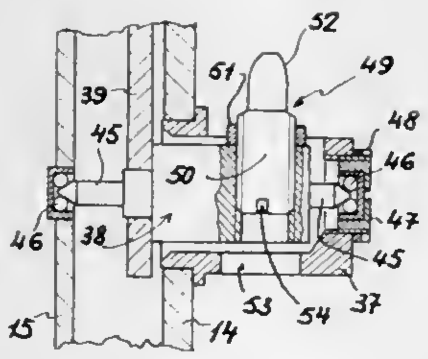


1. A screw drive which includes in combination: a threaded spindle having threads and a spindle axis, frame means extending around said threaded spindle, anti-friction bearing means extending around said threaded spindle and interposed between said frame means and said threaded spindle, said anti-friction bearing means comprising an inner ring having an axis and meshing with said threaded spindle and having a central axis inclined and eccentrically arranged relative to the longitudinal axis of said threaded spindle, said anti-friction bearing means also having an outer ring pivotally supported by said frame means for avoiding binding by pivoting about a rigid pivot axis extending in the direction of the eccentricity of the axis of said inner ring with regard to said spindle axis thereby to utilize said threaded spindle for pivoting said outer ring about said rigid axis and avoiding binding as a consequence thereof and making possible lifting of greater loads.

3,937,090
MEASURING INSTRUMENT

Jean-Claude Risse, Prangins, and Bruno Hardegger, Monaltorf, both of Switzerland, assignors to Tesa S.A., Renens, Switzerland
Filed May 15, 1974, Ser. No. 470,067
Claims priority, application Switzerland, June 13, 1973, 8518/73
Int. Cl.² F16H *25/08*
U.S. Cl. 74—55 **4 Claims**

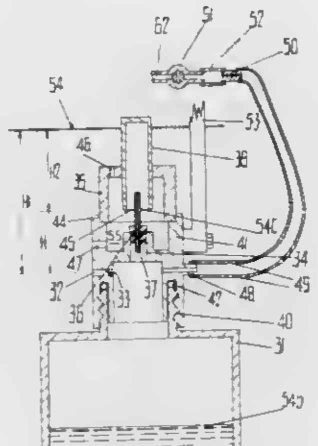




1. A measuring instrument in which the rectilinear displacement of a feeler rod is transmitted to a geared multiplier mechanism by means of a rotating element such as an arm carrying a toothed sector meshing with a first toothed wheel of the multiplier mechanism, the transmission of movement between the feeler rod and the rotating element being effected by an abutment carried by the feeler rod and in contact with the profile of a cam carried by the element the cam profile being an involute of the circle, said cam having a base which can slide in a support coaxial with said rotating element and fixed to it, and wherein the abutment comprises a bearing surface always perpendicular to the axis of the feeler rod this abutment being held against a cam of revolution the longitudinal profile of which is an involute of the circle and the longitudinal axis of which is perpendicular to the axis of rotation of the rotating element, the cam of revolution being axially movable, so that the angle of engagement between the cam and the abutment surface is always equal to zero for all axial positions of the cam.

3,937,091
APPARATUS FOR SAMPLING A LIQUID

Richard W. Jones, 56 Trent Lane, Kings Newton, Derbyshire, England
Filed July 26, 1972, Ser. No. 275,403
Int. Cl.² G01N *01/14*
U.S. Cl. 73—425.4 R **1 Claim**



1. Apparatus for sampling a liquid comprising:

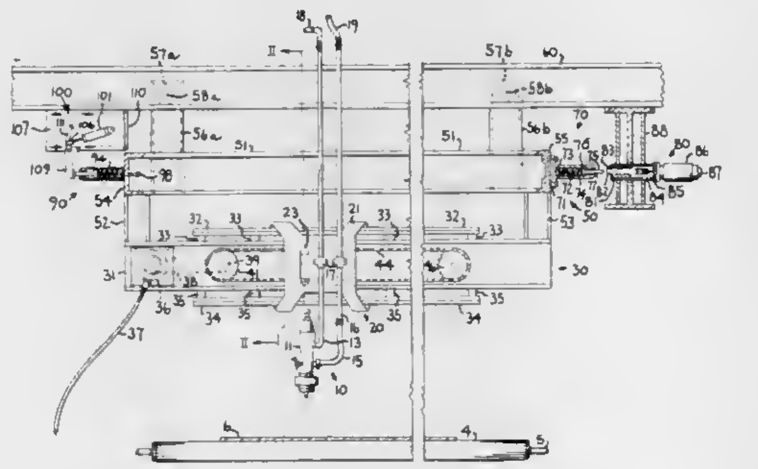
a container for immersion in the liquid to a selected depth, the container including a closure means having a liquid intake means comprised of an elongated horizontal bore opening into the upper portion of the container through said closure means, said bore having a diameter at the point where it opens into said container of a size whereby a meniscus is formed by the surface tension of the liquid thereby preventing gas from exiting the container through said liquid inlet means when said meniscus is formed;

a gas exit passage means for selectively providing restricted flow of gas from the top of said container; and

an elongated adjustable venting tube surrounding a vertical capillary tube in the closure means in communication with said bore opening for controlling the liquid flow rate into the container.

3,937,092
RECIPROCATING DEVICE HAVING VIBRATION REDUCING MEANS

Charles T. Hawkins, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 229,385, Feb. 25, 1972, Pat. No. 3,796,184. This application Nov. 1, 1973, Ser. No. 411,952
Int. Cl.² F16H *21/02*
U.S. Cl. 74—27 **7 Claims**



1. An apparatus for reciprocating a movable device along a given axis of reciprocation, comprising:

a movable device;

means connected to said movable device for imparting accelerating and decelerating forces to said device and a reciprocating motion to said device along the given axis of reciprocation;

carriage means;

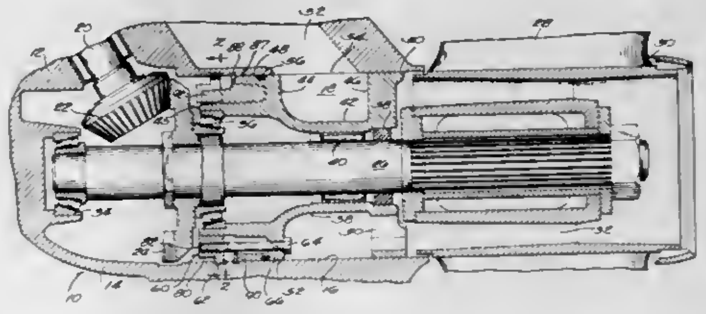
means for mounting said carriage means for movement along a path substantially parallel to the given axis of reciprocation;

means operatively connected to said carriage means and to said reciprocating motion imparting means for transferring substantially all of the accelerating and decelerating forces associated with the reciprocation of said movable device to said carriage means to oscillate said carriage means along the path substantially parallel to the given axis of reciprocation of said movable device and substantially opposite to the motion of said device; and

shock absorbing means for countering the motion of said carriage means produced by the accelerating and decelerating forces associated with the reciprocation of said movable device.

3,937,093
MARINE PROPULSION DEVICE WITH ANCHORING MEANS FOR PROPELLER SHAFT BEARING CARRIER

Ronald G. Johnson, Kenosha, Wis., and Gerald E. Kashmerick, Waukegan, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Sept. 5, 1974, Ser. No. 503,344
Int. Cl.² F16H *1/14;* **B63H** *5/13*
U.S. Cl. 74—417 **12 Claims**



1. A lower unit for a marine propulsion device comprising a drive shaft housing having a lower end, a gearcase housing connected to said lower end of said drive shaft housing and having an interior wall defining an elongated cavity, a propeller shaft located in and extending axially through said gearcase housing cavity, means for rotatably supporting said propeller shaft inside said gearcase housing including a hollow bearing carrier member which is in encircling relation with said propeller shaft, is supported from said interior wall of said gearcase housing, and carries a bearing rotatably engaging said propeller shaft, and means for anchoring said bearing carrier member to said interior wall of said gearcase housing including an annular, internal groove in said gearcase housing, a resilient, annular anchoring element which is located in said groove and which is capable of being compressed in the plane of said anchoring element for insertion into said groove and thereafter expanded to thereby retain said anchoring element in said groove and against axial displacement relative to said gearcase housing, and means for fastening said bearing carrier member to said anchoring element when the anchoring element is in said groove.

3,937,094
TOOTHED BELT

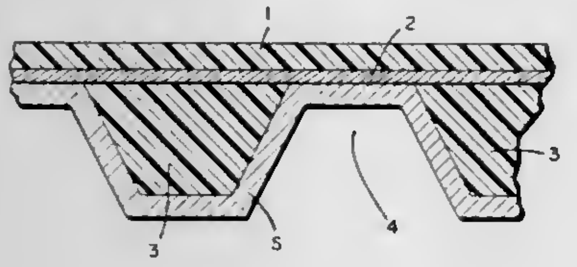
Mario Cicognani, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Jan. 2, 1974, Ser. No. 429,812

Claims priority, application Italy, Dec. 29, 1972, 33879/72; Jan. 26, 1973, 19643/73

Int. Cl.² F16G *1/28*

U.S. Cl. 74—231 C **8 Claims**



1. A toothed belt comprising an elastomeric or plastic continuous band, a reinforcing structure embedded in said band, a toothing on at least one face of the band and a covering for the toothing, characterized in that said covering is constituted by at least two layers of fabric doubled together with a layer of elastomeric or plastic material interposed therebetween, whereby said covering is an extremely rigid layer which is substantially non-deformable by flexion stresses in comparison with the elastomeric or plastic material forming the toothing.

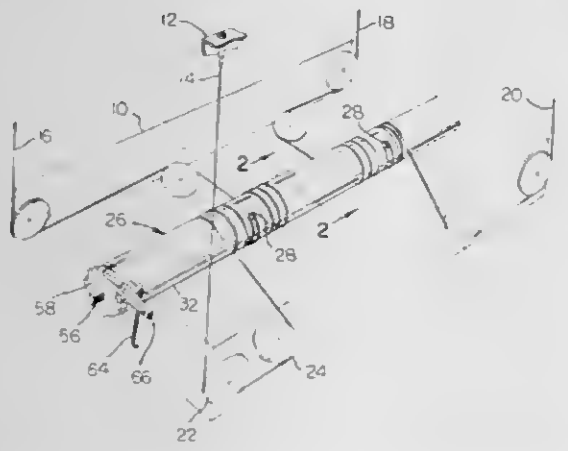
3,937,095
SELF ADJUSTING ELEVATOR

Joseph D. Clymer, deceased, late of Fort Wayne, Ind., by Bonita E. Clymer, special administratrix, Fort Wayne, Ind., assignors to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.

Filed Oct. 24, 1974, Ser. No. 517,505

Int. Cl.² F16H *7/00;* **B66B** *9/00;* **B65D** *25/10*

U.S. Cl. 74—224 **5 Claims**



1. A weight responsive elevator frame for a storage cabinet having a vertical recess in which the frame is horizontally disposed, the frame being moveable upwardly in the recess as the weight thereon is reduced and vice versa, the frame having a cable extending substantially vertically upwardly from near each corner thereof and each connected at the upper end to a stationary anchor point in the cabinet near the upper end of the recess, a wind up cylinder carried by the frame and about which cylinder the cables are entrained in one and the same circumferential direction and to which the other ends of the cables are connected, a shaft in the frame on which the cylinder is rotatably supported, a torsion spring in the cylinder having one end connected to the shaft and the other end connected to the cylinder, the shaft having means on at least one end engageable from outside the frame for adjusting the angular position of the shaft in the frame, a ratchet wheel on the shaft, pawl means on the frame engaging said ratchet wheel to hold the shaft against the bias of the biasing spring, means biasing said pawl means toward operative engagement with said ratchet wheel, a lever element fixed to said pawl means for selectively disengaging said pawl means from said ratchet wheel, and means for connecting said lever element to the frame when the pawl means is in shaft holding engagement with said ratchet wheel.

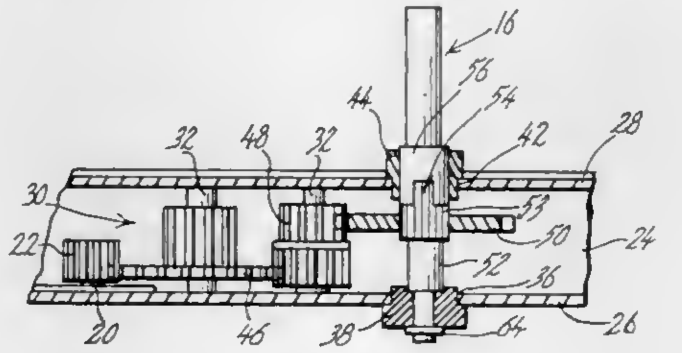
3,937,096
MOTOR SYSTEM WITH REPLACEABLE OUTPUT SHAFT

Robert S. Lundin, Northfield, and Richard K. Keutzer, Thomaston, both of Conn., assignors to General Time Corporation, Thomaston, Conn.

Filed Dec. 30, 1974, Ser. No. 537,552

Int. Cl.² F16H *1/12, 57/00*

U.S. Cl. 74—421 A **13 Claims**



1. In combination:
a. a prime mover including
 1. an output pinion,
b. means for connecting a source of power to said prime mover for driving said output pinion;
c. a drive train including at least
 1. an output gear and
 2. an input gear, said input drive train gear connected to said output pinion to be driven by said output pinion;
d. an output shaft including
 1. an elongated shank and
 2. means within one end region of said shank adapted to cooperate with complementary means on a member to drive said member by said output shaft; and
e. connector means for releasably supporting said output shaft and coupling said output shaft to said output drive train gear.

3,937,097
BALL-EQUIPPED SCREW AND NUT MECHANISMS

Jean Claude Fund, Bourdeau, and Jacques Detraz, Chambery, both of France, assignors to La Technique Integrale S.A., Chambery, France

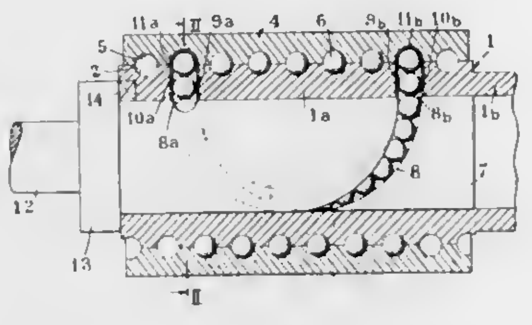
Filed Oct. 21, 1974, Ser. No. 516,502

Claims priority, application France, Oct. 30, 1973, 73.38614

Int. Cl.² F16H *4/18*

U.S. Cl. 74—424.8 R **7 Claims**

1. In a screw and nut mechanism equipped with balls and including mating screw and nut members with at least one ball circulation channel defined by corresponding helical grooves in the adjacent surfaces of said screw and nut members, where rotation or translation of one of said members causes translation or rotation respectively of the other, the improvement in combination therewith wherein said screw member comprises a tubular cylinder with an axial bore defined through the cylinder wall and two axially spaced-apart holes extending radially through said wall, the mechanism further comprising within said bore a cylindrical core having an outer surface corresponding to said bore and having defined in said surface at least one helical recirculation channel with an axial length less than that of the nut and the core and a width slightly greater than the diameter of said balls, the recirculation channel having its ends in communication via said radial holes with the bottom of at least one of said helical grooves of the screw, said mechanism further comprising guide means adjacent said radial holes for guiding said balls between said circulation and recirculation channels.



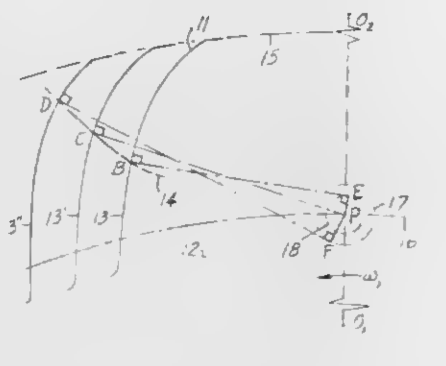
3,937,098
HIGH TORQUE GEARING

William S. Rouverol, P.O. Box 9122, Berkeley, Calif. 94709

Continuation-in-part of Ser. No. 524,419, Nov. 18, 1974, abandoned. This application Dec. 4, 1974, Ser. No. 529,298

Int. Cl.² F16H *55/06*

U.S. Cl. 74—462 **15 Claims**



1. In a pair of toothed gears,
mating teeth formed to have active profiles perpendicular to the pitch line of said pair which have at least one culmination point substantially removed from said pitch line,
said profiles of at least one of said pair having a portion with curvature that increases with distance from the pitch surface of said one of said pair.

3,937,099
DEVICE FOR THE FINE ADJUSTMENT OF AN INSTRUMENT TABLE SUPPORTING AN OPTICAL EQUIPMENT

Kurt Koehler, Koenigsbronn, Germany, assignor to Carl Zeiss-Stiftung, Oberkochen, Germany

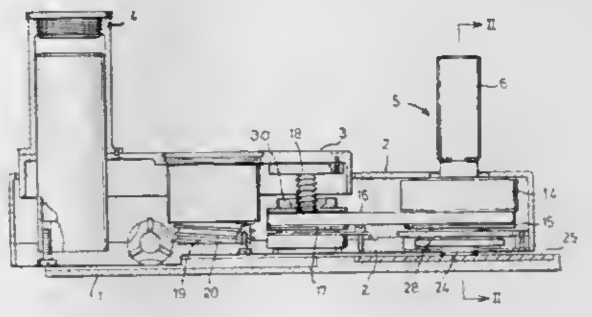
Filed Feb. 7, 1975, Ser. No. 547,807

Claims priority, application Germany, Mar. 19, 1975, 2407174

Int. Cl.² G05G *9/00*

U.S. Cl. 74—471 XY **4 Claims**

1. A device for the fine adjustment of an optical instrument, comprising a base plate, an instrument table including an instrument support plate for supporting said optical instrument, an intermediate plate resting upon said base plate, a control lever, said control lever comprising a hollow sleeve and a rod extending into said sleeve and engaging said sleeve without lost motion, said sleeve being rotatable about its longitudinal axis, a universal joint mounted on the lower end of said sleeve on which said control lever swivels in all directions about a pivot point defined by said universal joint, a gearwheel mounted on said universal joint and rotatable with said sleeve and universal joint, and means connected with said gearwheel and operable on rotation of said sleeve to raise and lower said instrument support plate, said rod being pivotally connected to said intermediate plate at its lower end and being pivotally connected to said instrument table at a point below said pivot point of said universal joint to produce horizontal displacement of said instrument table when said control lever is swivelled.



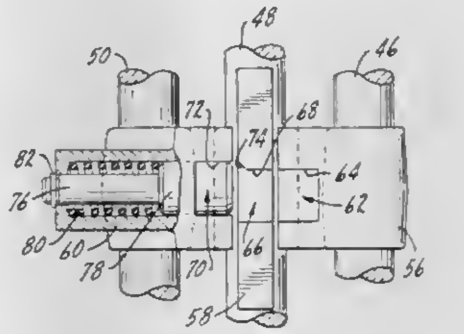
3,937,100
TRANSMISSION SHIFT CONTROL

Dale F. Hullman, Muncie, and Charles E. Zeh, Chesterfield, both of Ind., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 15, 1974, Ser. No. 497,815

Int. Cl.² G05G *5/02, 9/14*

U.S. Cl. 74—476 **6 Claims**



1. In a multiple speed ratio power transmission mechanism having gear elements selectively engagable for defining torque delivery paths between a driving member and a driven member, shift elements movable for selectively engaging said gear elements, and a shift member movable for selectively engaging and moving said shift elements, the improvement wherein said shift member is movable in a first plane into at least one engaging position and in a second plane into another engaging position, said shift elements defining gates, one of said shift elements defining a gate offset from the remainder thereof, said one shift element blocking movement of said shift member in said first plane into its gate and allowing movement of said shift member in said second plane into its gate to establish said other engaging position, another of said shift elements defining a gate having a portion thereof enlarged adjacent said offset gate, thereby facilitating movement of said shift member between said planes.

3,937,101
STEERING WHEEL WITH PAD CONTAINER

Henry M. Wade, 33040 Roberts St., Elsinore, Calif. 92330

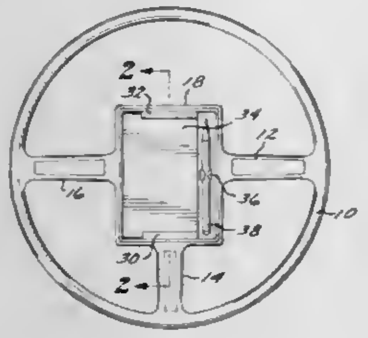
Filed May 28, 1974, Ser. No. 473,371

Int. Cl.² B62D *1/04, 1/08*

U.S. Cl. 74—552 **7 Claims**

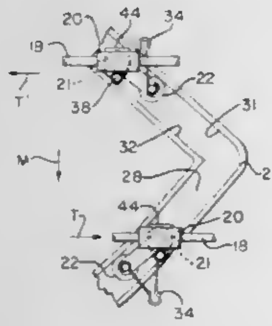
1. A steering wheel adapted to be mounted on a steering post including an outer ring, an inner hub, elements interconnecting said outer ring and said hub substantially centrally within said outer ring wherein the upper portion of said hub is formed as a recessed receptacle adapted to receive a mating

writing pad container, said container engaged with and releasably mounted in said receptacle by means of resiliently movable tabs locking in mating grooves and a writing pad carried in said container.



3,937,102
NOISE SUPPRESSION

Clayton H. Allen, 651 Concord Ave., Cambridge, Mass. 02138
Filed July 22, 1974, Ser. No. 490,311
Int. Cl.² F16H *53/06*
U.S. Cl. 74—569 **10 Claims**



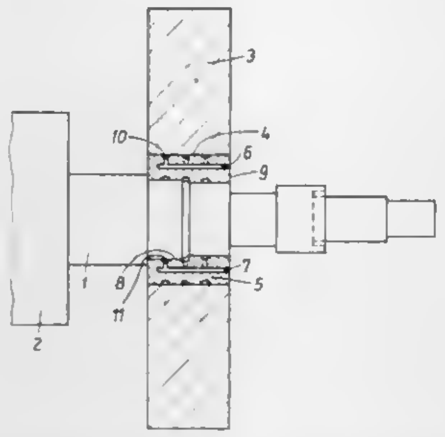
1. In a cam and cam follower assembly employing a cam surface having opposing first and second walls that guide a reciprocating cam follower means having a leading portion, the improvement comprising,

means for establishing one of said walls as a leading wall in contact with said leading portion for most of the path followed by said cam follower means during a traversal of said path and the other as a trailing wall normally free from contact with said leading portion for shifting the cam follower means leading portion from the then leading and next trailing wall to the then trailing and next leading wall prior to the reciprocating motion reversal.

3,937,103
FLYWHEEL ARRANGEMENT FOR AN ELECTRICAL MACHINE

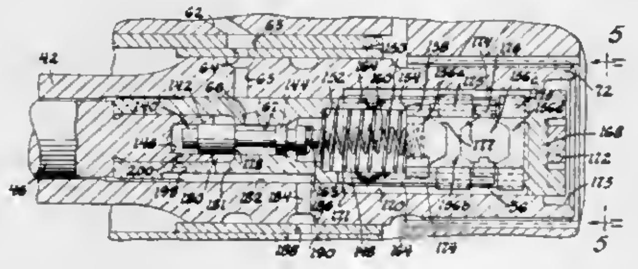
Siegfried Kleinhans, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Jan. 28, 1974, Ser. No. 437,226
Claims priority, application Germany, Feb. 9, 1973, 2306915
Int. Cl. F16c *15/00*
U.S. Cl. 74—572 **12 Claims**

1. A flywheel arrangement for an electrical machine having a shaft comprising: an annular solid flywheel devoid of any cavities therein; a flange-like structure on the shaft for defining a seating surface to accommodate said flywheel; said flywheel tightly engaging said seating surface thereby causing undesired stress peaks to develop in said flywheel; and, passage means formed in said structure for directing oil under pressure directly to said seating surface for expanding said flywheel to remove said stress peaks and, if required, for facilitating the subsequent removal of said flywheel from said seating surface.



3,937,104
POWER TRAIN INCLUDING A TORQUE-PRESSURE TRANSDUCER

Jack H. Van Gorder, Chelsea, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 11, 1974, Ser. No. 487,775
Int. Cl.² F16H *47/00;* **F16D** *23/00, 33/00;* **F16K** *31/44*
U.S. Cl. 74—732 **4 Claims**

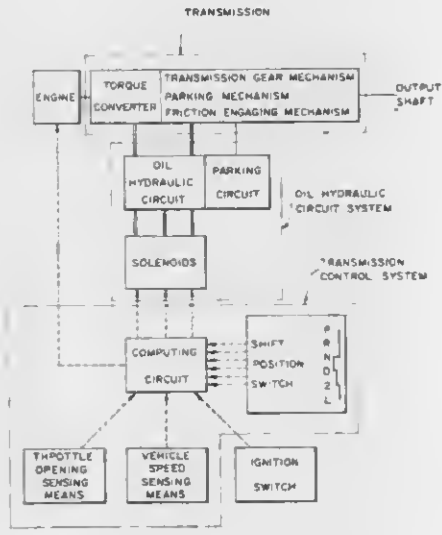


1. A torque-pressure transducer for use with a power train including a torque converter, a clutch, a shift valve, a source of fluid under pressure, a mainshaft, and a hollow turbine shaft operatively connected between said torque converter and said clutch for driving said mainshaft when said clutch is engaged, said torque-pressure transducer comprising a transducer shaft mounted in said hollow turbine shaft and fixedly secured to one end thereof, a chamber formed in the free end of said transducer shaft, an inlet into said chamber for said fluid under pressure, a plurality of axially aligned cam members having alternate cooperating, oppositely contoured cam surfaces formed thereon, each cam member being operatively connected to said transducer shaft and alternate cam members being operatively connected to said turbine shaft so as to be axially spreadable to a variable overall length in said chamber in response to sliding action between adjacent cam surfaces in proportion to the relative torque-responsive twist between said shafts, spring-biased regulating valve means mounted in said chamber and responsive movement of said axially spreadable cam members for regulating said fluid under pressure, and conduitry means communicating said regulated fluid from said regulating valve means to said shift valve.

4. A torque-pressure transducer for use with a power train including a torque converter, a clutch, a shift valve, a source of fluid under pressure, a mainshaft, and a hollow turbine shaft operatively connected between said torque converter and said clutch for driving said mainshaft when said clutch is engaged, said torque-pressure transducer comprising a transducer shaft mounted in said hollow turbine shaft and fixedly secured to one end thereof, a chamber formed in the free end of said transducer shaft, a passage for communicating said fluid under pressure from said source to said chamber, a pair of oppositely disposed openings formed in the wall of said transducer shaft, a pair of wider oppositely disposed openings formed in the wall of said turbine shaft, a plurality of axially aligned cam members with adjacent cam member mounted in an abutting, camming relationship in said chamber, each having oppositely disposed tabs formed thereon and extending into said openings formed in said transducer shaft, with said tabs on alternate cam members extending additionally into said openings formed in said turbine shaft so as to be axially spreadable in said chamber as a result of camming action of adjacent cam members in proportion to the relative torque-responsive twist between said shafts as transmitted to said cam members by the edges of said relatively moving turbine and transducer shaft openings, a closed-loop regulating valve mounted in said chamber, a ground spring mounted between the end cam member and a shoulder formed in said transducer shaft for maintaining a predetermined load on said cam members, a valve spring mounted between said end cam member and an end of said closed-loop regulating valve, said regulating valve being responsive through said valve spring to movement of said axially spreadable cam members for regulating said fluid under pressure, an external closed-loop modulator valve, first conduitry means communicating regulated fluid from said regulating valve to said modulator valve, and second conduitry means communicating modulated fluid from said modulator valve to said shift valve.

3,937,105
AUTOMATIC TRANSMISSION SYSTEM FOR USE WITH AUTOMOBILES

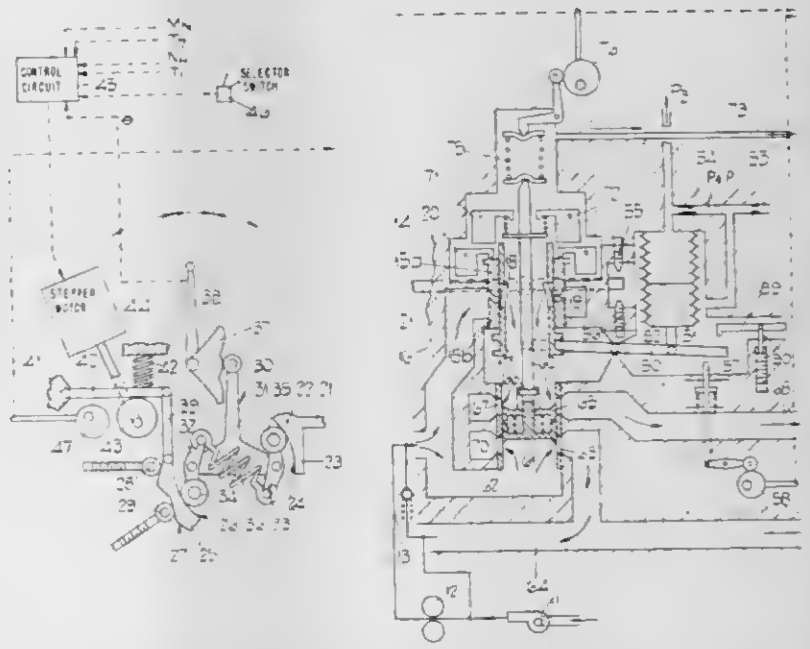
Hiroshi Arai, and Yutaka Taga, both of Toyota, Japan, assignors to Toyoto Jidosha Kogyo Kabushiki Kaisha, Japan
Filed Aug. 8, 1974, Ser. No. 495,915
Claims priority, application Japan, Aug. 29, 1973, 48-96931
Int. Cl. B60k *21/00;* **F16h** *3/74*
U.S. Cl. 74—846 **5 Claims**



1. An automatic transmission system for use with automobiles comprising a gear wheel transmission mechanism, a plurality of hydraulically operable engaging means to accomplish transmission meshings in said gear wheel transmission mechanism, a parking mechanism, a hydraulically operable parking actuating means to actuate said parking mechanism, hydraulic pressure shift valve means operated by a plurality of solenoids to control the supply of hydraulic pressure to said engaging means and said parking actuating means, electric switches to be manually operated, means to generate signals regarding the vehicle running condition, and a computing circuit to control energization of said solenoids of said hydraulic pressure shift valve means in response to electric signals despatched from said electric switches and said signal generating means.

3,937,106
SPEED RESPONSIVE GOVERNOR ARRANGEMENTS

Trevor Stanley Smith, Sutton Coldfield, England, assignor to Lucas Aerospace Limited, Birmingham, England
Filed July 18, 1974, Ser. No. 489,576
Claims priority, application United Kingdom, July 18, 1973, 34133/73
Int. Cl.² B60K *41/04*
U.S. Cl. 74—857 **9 Claims**



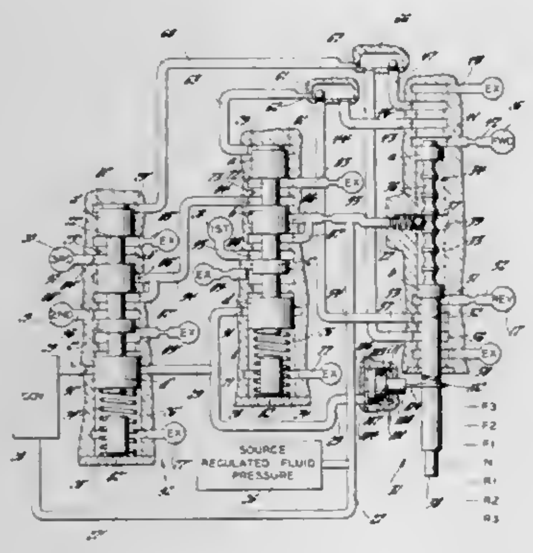
1. A speed responsive governor arrangement, comprising a body, a governor device rotatable within the body and including an output member, said output member being movable in response to the speed of rotation of said governor device, a lever pivotally mounted on the body and movable by said output member in response to changes in the speed of said governor device, a cam element having a pair of oppositely-directed cam faces, a plurality of rollers mounted on said body and supportingly engaging one of said cam faces, a transmission device including a pair of bearing elements biased into respective engagement with an arm of said lever and with the other of said cam faces, means for moving said transmission device so as simultaneously to vary the points of engagement of said bearing elements with said lever arm and said other cam surface, and means for moving said cam element so that said one cam face moves over all of said rollers simultaneously.

3,937,107
DOWNSHIFT INHIBITOR FOR A POWERSHIFT TRANSMISSION

Carl A. Lentz, Mooresville, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 23, 1974, Ser. No. 535,347
Int. Cl.² B60K *41/04*
U.S. Cl. 74—861 **4 Claims**

1. In a transmission; an input; an output; a forward and reverse gear unit driven by said input and having a forward and a reverse drive fluid operated device for selectively establishing forward and reverse drive and a three speed gear unit having first, second and third speed drive fluid operated devices for selectively establishing first, second and third speed drive connected in series to provide first, second and third speed drive to said output in either forward or reverse; a source of fluid pressure; governor means driven by said output providing a governor pressure proportional to speed of said output; a one-two and a two-three shift relay valve means each having biasing means, a valve element normally biased by said biasing means to a downshift position and signal responsive actuator means operative to upshift said valve element to upshift position and downshift inhibitor means connected to said governor means and responsive to governor pressure only in said upshift position to prevent a downshift by said biasing means above a predetermined speed and a high exhaust port, a high feed port, supply port means, a low feed port and a low

exhaust port operative in downshift position to connect said supply port means to said low feed port and said high feed port to said high exhaust and in upshift position to connect said supply port means to said high feed port and said low feed port to said low exhaust port; said supply port means of said one-two relay valve means connected to said source; a two-three feed line connecting said high feed port of said one-two relay valve means to said supply port means of said two-three relay valve means; said low feed port of said one-two relay valve means connected to said first device, said low and high feed port of said two-three relay valve means respectively connected to said second and third device; manual selector valve means connected to said source and having first forward and first reverse speed lines respectively connected to said forward and reverse devices, a forward and reverse second speed line and a forward and reverse third speed line operative in neutral position to block said source and connect all said speed lines to exhaust and operative in first, second and third speed forward positions to respectively connect said source to said first forward speed line, to said first and second forward speed lines and said first, second and third forward speed lines and in first, second and third speed reverse positions to connect said source respectively to said first reverse speed line, to said first and second reverse speed lines and to said first and second and third speed reverse lines; a second speed shuttle valve connecting the one of said second forward speed line or second reverse speed line under pressure to said actuator means of said one-two relay valve means and blocking the other and a third speed shuttle valve connecting the one of said third forward speed line and third reverse speed line under pressure to said actuator means of said two-three relay valve means and blocking the other.



3,937,108
ELECTRONIC AND HYDRAULIC CONTROL SYSTEM FOR AUTOMOTIVE, AUTOMATIC GEAR CHANGE TRANSMISSIONS

Gerhard Will, Beutelsbach, Germany, assignor to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed Oct. 21, 1974, Ser. No. 516,662

Claims priority, application Germany, Oct. 23, 1973, 2352939

Int. Cl.^{2} B60K *41/18*

U.S. Cl. 74—866 **10 Claims**

1. Hydraulic control system for an automotive automatic gear change transmission having three forward gear ranges (**1, 2, 3**) and a reverse (**R**) range, and a system of clutch (**46, 53**) and brake (**39, 44, 49**) means to control selective engagement of the gears of the transmission comprising

a pressure pump (**11**) and a pressure regulator means (**14**) to supply pressurized hydraulic fluid under predetermined pressure to operate the clutch and brake means;

a manual selector means (**15′**) and a selector valve (**15**) controlled thereby to command a predetermined gear range position;

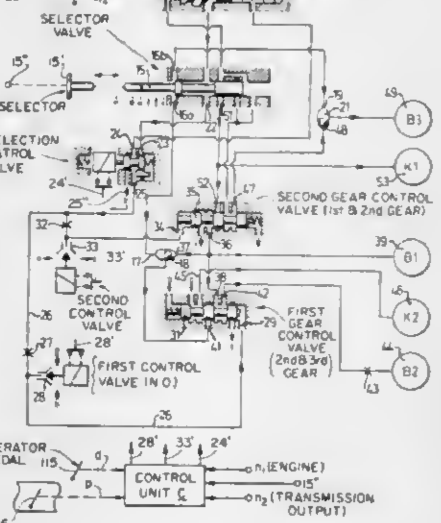
a control unit (**C**) having input signals applied thereto representative of engine and vehicle operating parameters and providing output signals to select the proper gears for operation of the vehicle as determined by said engine vehicle operation parameters;

a first gear control valve (**31**) having first and second inputs (**29, 41**) controlling engagement of the respective clutch and brake means of the second and third gear ranges and normally in a position to connect hydraulic pressure fluid to the respective clutch and brake means commanding the transmission to be in third gear;

a second gear control valve (**35**) controlling engagement of the respective clutch and brake means of the first and second gear range;

a pressure line (**26, 26***a*) in fluid communication with said pump (**11**) and pressure regulator (**14**) and including a hydraulic choke (**27**);

a first control valve (**28**) connected to and controlled by said control unit (**C**) and hydraulically connected in said pressure line (**26**) between the choke (**27**) and the first input (**29**) of the first gear control valve (**31**);



the first control valve (**28**) being normally open to bleed pressure fluid from said line whereby the first gear control valve (**31**) will command engagement of the third gear and, upon energization from the control unit (**C**) upon sensing that the operation parameters require the second gear, said first control valve (**28**) being energized to thereby prevent bleeding of pressurized fluid and cause change-over of said first gear control valve (**31**);

said system being characterized by

a three-way check valve (**18**) having a first input (**17**) connected to an output (**16**) of the selector valve (**15**) and a second input (**37**) connected to an output (**36**) of the second gear control valve (**35**) and having its output connected to the second control input (**41**) of the first gear control valve (**31**), said check valve thereby providing pressure through its output to the first gear control valve (**31**) under control of the second gear control valve (**37**) for operation under normal operating conditions and additionally providing output to the first gear control valve (**31**) and manual selection of the selector means (**15′**) operating said selector valve (**15**) even if said control unit (**C**) is disabled and does not provide operating signals to said control valve (**28**).

3,937,109
METHOD OF MANUFACTURING CUTTING AND/OR CREASING DIE

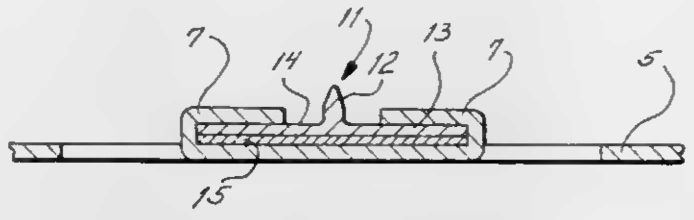
Siegfried Korner; Wolfgang Meurer; Harald Knofel; Dieter Prochazka, and Rudi Hirche, all of Dresden, Germany, assignors to VEB Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen, Leipzig, Germany

Filed Dec. 18, 1974, Ser. No. 534,350

Claims priority, application Germany, Jan. 2, 1974, 2617576

Int. Cl.^{2} B21K *5/20*

U.S. Cl. 76—107 C **5 Claims**



1. A method of manufacturing a die, comprising the steps of providing a planar sheet with a plurality of tongues extending substantially normal to a major surface of said sheet; positioning a plurality of blades between respective ones of said tongues so that central projections thereof extend normal to said major surface; and bending said tongues around other portions of said blades so as to attach said blades to said sheet.

3,937,110
LATHE FOR MACHINING HOLLOW PARTS

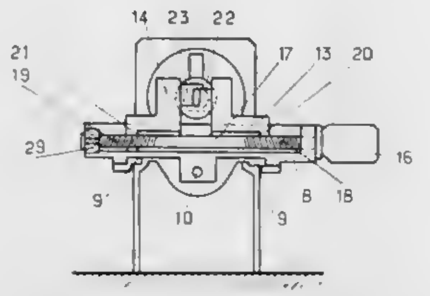
Pierre E. Renoux, Colombes, France, assignor to CRI-DAN, Paris, France

Filed Apr. 1, 1075, Ser. No. 563,957

Claims priority, application France, Apr. 8, 1974, 74.12281

Int. Cl.^{2} B23B *21/00, 5/30*

U.S. Cl. 82—25 **3 Claims**



1. In a lathe having a head-stock for supporting a work piece on a rotational axis concentric with an interior surface of revolution in the work piece to be machined, cutting tool supporting means comprising:

a pair of carriages arranged symmetrically with respect to the rotational axis and movable longitudinally and transversely in parallel with a common plane passing through said axis, at least one tool holder bar supported by each of said carriages and projecting generally parallel to said rotational axis, the cross-sectional configuration of at least one of said tool holder bars defining a surface parallel to said common plane for supporting the other of said tool holder bars.

3,937,111
ADJUSTABLE LIVE CENTER ADAPTER

Raymond L. Holloway, 15624 South Brentwood, Channelview, Tex. 77530

Filed Oct. 24, 1974, Ser. No. 517,493

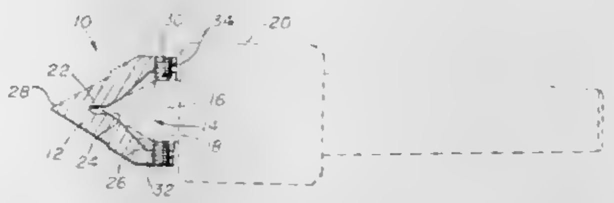
Int. Cl.^{2} B23B *23/02, 23/04*

U.S. Cl. 82—33 A **10 Claims**

1. A center adjustment adapter for rendering a live center for machines adjustable for controlled positioning of work pieces relative to the work rotating axis of such machines, said adapter comprising:

a body having a generally conical recess formed therein, said recess being adapted to receive the conical extremity of a rotatable live center element in non-rotatable relation therein;

conical surface means being formed on the exterior of said body and being located for receiving contact within the center hole of a work piece to be rotatably supported by such machines;



fixed pivot means being fixedly located within said body and being positioned for pivotal contact with the conical surface of said rotatable live center element near the pointed extremity thereof; and

a plurality of adjustment screws being carried by said body and being located for engagement with said rotatable live center element at a position remote from said conical surface thereof, said adjustment screws, upon being controllably moved, imparting pivotal movement to said body relative to said rotatable live center element, said pivotal movement being about said fixed pivot means.

3,937,112
WEB FEEDING APPARATUS

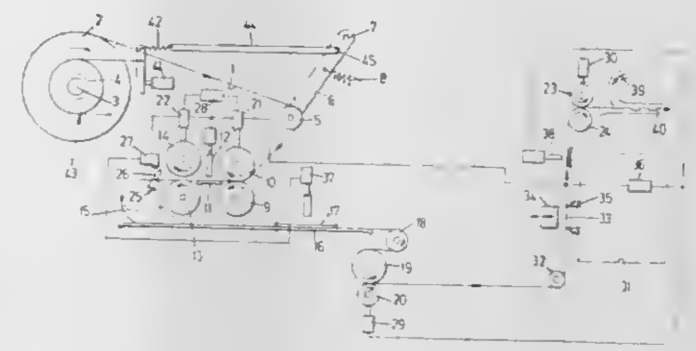
Robert Ernest Geeson, Pinner, England, assignor to Metal Box Limited, Reading, England

Filed July 26, 1974, Ser. No. 492,232

Claims priority, application United Kingdom, Aug. 8, 1973, 37642/73

Int. Cl.^{2} B26D *5/00*

U.S. Cl. 83—57 **11 Claims**



1. Web feeding apparatus comprising a first feed roll, a second feed roll downstream of the first feed roll, said first and second feed rolls each being rotatable at a predetermined constant peripheral velocity, said first and second feed roll velocities being different, a third feed roll downstream of the second feed roll, a fourth feed roll downstream of the third feed roll, said third and fourth feed rolls being synchronously intermittently rotated with accurate angular displacements of predetermined extent followed by simultaneous periods of dwell of predetermined duration, first, second, third and fourth pressure rolls cooperative with said first, second, third and fourth feed rolls, and pressure roll positioning cooperable with each pressure roll and selectively operable to individually move the pressure rolls into and out of cooperative relation with the respective feed rolls, the arrangement being such that during normal web feeding operation of the apparatus one or other of the first and second pressure rolls co-operates with its respective feed roll to feed into a loop between the second and third feed rolls a portion of web the length of which approximates to that of the length of web fed by the third and fourth

feed rolls in co-operation with their respective pressure rolls during one period of angular displacement of the third and fourth feed rolls.

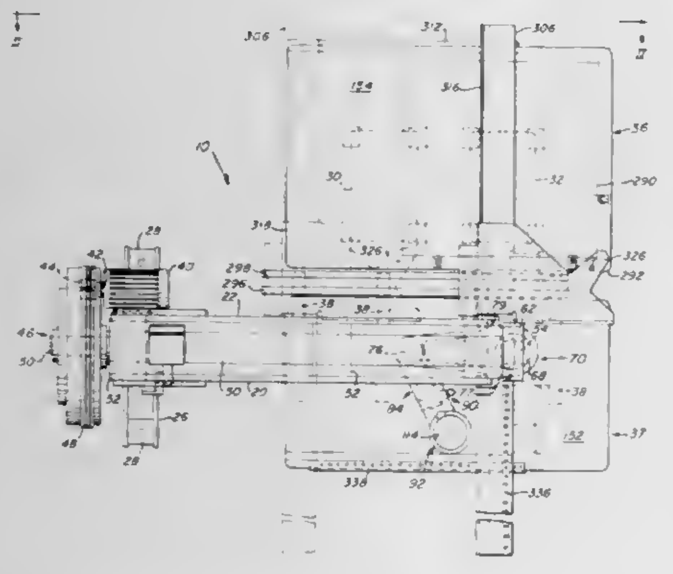
3,937,113
PUNCHING APPARATUS

James J. Pancook, Tonawanda, and Ralph L. Weisbeck, Williamsville, both of N.Y., assignors to Unipunch Products, Inc., Buffalo, N.Y.

Filed Mar. 5, 1974, Ser. No. 448,334

Int. Cl.^{2} B26D *5/16*

U.S. Cl. 83—400 **41 Claims**



1. Punching apparatus comprising,
a press frame,
an elongated table horizontally mounted on said frame for supporting a workpiece,
said press frame having an arm member positioned above the upper surface of said table and extending thereacross, said arm member spaced from said table forming an elongated recess therebetween for receiving the workpiece supported on said table, said arm member having a front end portion,
a ram supported for relative vertical movement by said arm front end portion,
power means for vertically reciprocating said ram toward and away from said table,
means for supporting a die in vertical alignment with said ram,
a tool support arm having a rear end portion and a front end portion,
a tool holder secured to said tool support arm front end portion,
connecting means for pivotally connecting said tool support arm rear end portion to said press frame arm member rearwardly of said press frame arm member front end portion between said press frame arm member and said table,
said tool support arm and said tool holder laterally movable in a horizontal plane relative to said press frame arm member from a first position vertically aligned with said ram and said die supporting means to a second position displaced laterally from said ram and said frame arm member front end portion to permit replacement of said tool holder and tools in said tool holder,
means for interchangeably locking said tool holder to said tool support arm,
fluid actuated means for rigidly engaging said tool support arm and said tool holder to said press frame arm member and disengaging said tool support arm and said tool holder from said press frame arm member.

3,937,114
APPARATUS FOR CUTTING LOGS

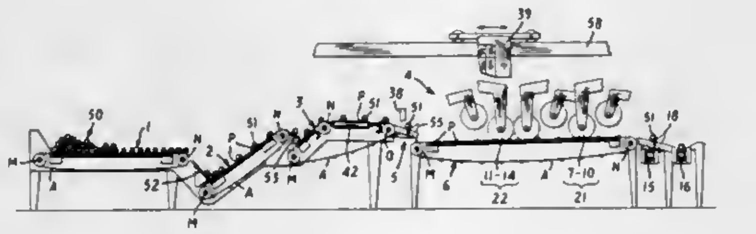
Karl-Erik Joensson, Pierre Fond, Canada, Hakan, Nordquist, Decatur, Ga., assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Nov. 19, 1974, Ser. No. 525,127

Claims priority, application Sweden, Nov. 22, 1973, 7315844

Int. Cl.^{2} B27B *5/04*

U.S. Cl. 83—425.2 **12 Claims**



1. An apparatus for cutting lengths of trees or logs into shorter pieces, comprising in combination, a conveyor for carrying lengths of trees or logs sideways to and through a cutter; a cutter extending across the conveyor and comprising a plurality of cutting means movable between inactive noncutting and active cutting positions and between limiting positions along the length of a tree or log for cross-cutting the length at a selected position, the cutting means being arranged in groups, and spaced lengthwise in such groups along the length of the conveyor a distance such that only one cutting means in a group is in cutting engagement with a given length of tree or log at one time; means for arranging selected cutting means across the conveyor according to the selected cuts to be made in a length of tree or log; and means for collecting and delivering cut log pieces according to the desired end use.

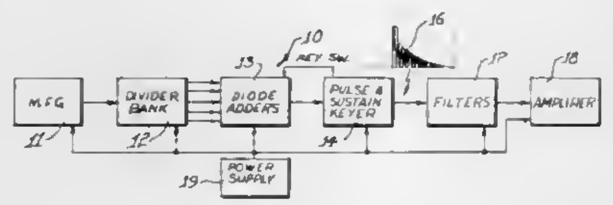
3,937,115
ELECTRONIC PIANO CIRCUIT ARRANGEMENT

James G. Staley, Batavia, N.Y., assignor to The Wurlitzer Company, Chicago, Ill.

Filed Aug. 1, 1974, Ser. No. 493,690

Int. Cl.^{2} G01H *1/06, 5/02*

U.S. Cl. 84—1.23 **7 Claims**



1. In an electronic piano circuit the combination comprising: multifrequency generator means for providing the fundamental and harmonic frequencies for each of the notes of a piano keyboard, a matrix array having a first group of lines to receive each of the fundamental and harmonic frequencies of the notes and said piano keyboard, said matrix array having a second group of lines, key switch means associated with a piano keyboard and coupled to said second group of lines, said second group of lines including means to transfer said fundamental frequency and a predetermined number of harmonic frequencies by the actuation of a single key switch of said key switch means, and resistor-diode coupling means between selected ones of said first and second groups of lines, the resistance value of each of said resistor-diode coupling means being selected to transfer different amplitude values of said fundamental and harmonic frequencies, whereby combining of the different values of the fundamental and harmonic frequencies will produce an apparent authentic piano sound.

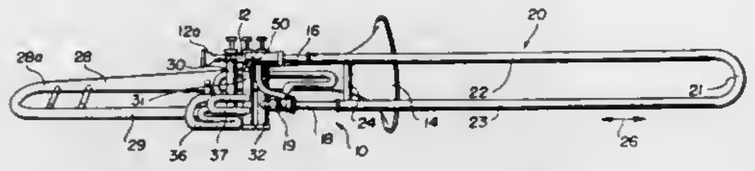
3,937,116
TENOR TROMBONE CONSTRUCTION

Lawrence Ramirez, Kenosha, Wis., assignor to G. Leblanc Corporation, Kenosha, Wis.

Filed Oct. 21, 1974, Ser. No. 516,530

Int. Cl.^{2} G10D *7/10*

U.S. Cl. 84—395 **4 Claims**



1. A trombone comprising: tubular members having an initial straight portion beginning at a mouthpiece receiving end and terminating in a sound-emanating bell portion, said tubular member including first and second spaced apart tubes, said first tube being held in a pivotal relation to the trombone and said second tube readily pivoted about an axis of said first tube, said second tube having a terminating end extending in a direction opposite that of said mouthpiece receiving end portion and in axial alignment therewith, a slide member having a U-shaped end portion leading into a pair of straight parallel spaced apart portions having open ends telescoping with the terminating ends of said pair of spaced apart tube members to slide therealong for the playing of different musical notes, a plurality of uniformly spaced apart, parallel piston valves positioned in direct communication with said tubular members adjacent said mouthpiece receiving end portion to be manipulated for the playing of different musical notes which can be the same as or different than the musical notes produced by said slide member, and including post means secured to one of said plurality of uniformly spaced apart parallel piston valves and extending in a direction of said mouthpiece receiving end portion, holding means secured to said post and adapted to engage said mouthpiece receiving end portion for holding the same to prevent pivotal movement of said second tube member about the longitudinal axis of said first tube member.

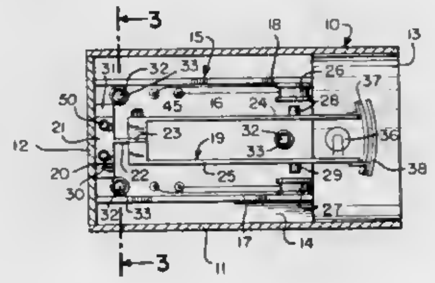
3,937,117
COMPOSITE TUNING FORK AND METHOD OF MAKING SAME

Boris F. Grib, Huntington, N.Y., assignor to Philamon Incorporated, Farmingdale, N.Y.

Division of Ser. No. 839,928, July 8, 1969, Pat. No. 3,632,192. This application Dec. 29, 1971, Ser. No. 213,662

Int. Cl.^{2} G10G *7/02*

U.S. Cl. 84—454 **10 Claims**



1. A method of forming the tines and tine junction portion of a tuning fork structure, comprising the steps of forming a unitary member of generally L-shaped cross section in one plane with a relatively thick part and a relatively thin sheet-like part, separating similar portions of said elongated member bounded by equally spaced planes parallel to said one plane, each said portion comprising one of said tines and a tine-junction portion, and securing a pair of said similar portions in relatively immovable symmetrical relationship at the relatively thick parts thereof to form a rigid tine junction portion of said thick parts with said thin parts forming precisely similar tuning fork tines.

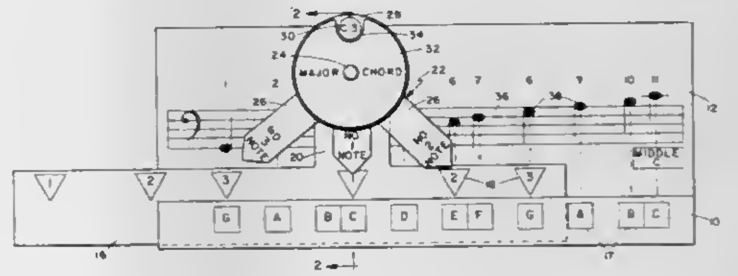
3,937,118
INVERSION SLIDERULE

Verna M. Leonard, 8701 Highway 41, Fresno, Calif.

Filed Apr. 17, 1975, Ser. No. 568,995

Int. Cl.^{2} G09B *15/02*

U.S. Cl. 84—471 SR **7 Claims**



1. An aid for selecting chord inversions comprising:
a. a panel having displayed thereon the names of the scale tones of a given key signature, the relative spacing between said scale tone names being proportional to the spacing of the counterpart keys of a piano keyboard;
b. a generally planar slide member;
c. means to slideably engage said slide member with said panel;
d. a plurality of indicator strips pivoted to said slide member and pivotal into a position in which said strips register with a plurality of said named scale tones, whereby upon sliding said sliding member relative to said panel and the selective pivoting of said strips into said registering position, a root triad or an inversion thereof may be alternatively selected on said panel sequentially for a plurality of different root tones.

3,937,119
MASONRY ANCHOR DEVICE

Richard John Ernst, Elk Grove Village, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Dec. 23, 1974, Ser. No. 535,536

Int. Cl.^{2} F16B *25/00*

U.S. Cl. 85—47 **10 Claims**

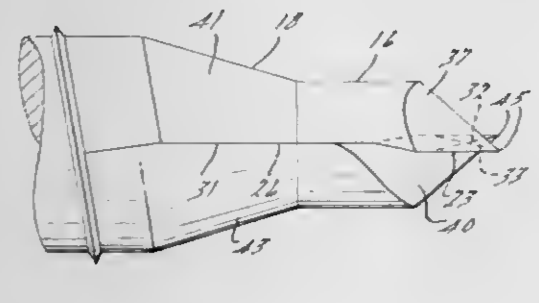
1. An anchor device for insertion and retention in a bore of a predetermined diameter formed in a masonry type support surface, the device comprising an axially extending shank with an enlarged head portion at a trailing extremity, the head portion including rotation inducing surfaces, a helical thread with a sharp crest formed on the shank and extending substantially the entire length of the shank providing a first plurality of convolutions extending along the shank, helical guide means formed on the shank extending substantially the entire length of the shank and providing a second plurality of convolutions extending along the shank, the guide means being of substantially uniform predetermined crest diameter along the length of the shank, the second plurality of convolutions being

positioned between adjacent first plurality of convolutions along the shank, the helical thread having a predetermined crest diameter which is greater than the predetermined crest diameter of the helical guide means, and which uniformly decreases from the trailing extremity of the shank to the entering extremity, notch means formed in the crests of the helical thread on at least a plurality of the first convolutions adjacent the entering extremity of the shank, the notch means thereby enabling the sharp crests of the helical thread to become firmly embedded in the side walls of the bore as the device is rotated about its longitudinal axis by chipping the side wall of the bore to an increasing depth as the helical thread progresses into the bore, the diameter of the helical guide means being substantially equal to the predetermined diameter of the bore so that the device is centered in the bore and the embedment of the crest portions of the helical thread is substantially uniform about the periphery of the shank, the adjacent first and second convolutions being spaced from each other along the shank thereby providing a reservoir to receive and retain the masonry material removed from the side walls of the bore due to the embedment of the crest portions of the helical thread therein.

3,937,120
DRILL SCREW

Robert A. Munse, Troy, Mich., assignor to Microdot Inc., Greenwich, Conn.

Filed Jan. 28, 1975, Ser. No. 544,744
Int. Cl.² F16B *25/00*
U.S. Cl. 85—47 **5 Claims**



1. A drill screw having a driving head and a threaded, threading shank, characterized by a drilling tip having flutes bounded on one side by generally flat longitudinal front wall portions axially spaced from the free end of said drilling tip and located substantially on a common diametric plane, the radially outer margins of said wall portions defining longitudinal side cutting edges extending parallel to the axis of the screw, and flat extension wall portions joined to said front wall portions and extending axially therefrom to the free end of said tip and inclined forwardly in the direction of rotation and having end margins defining end cutting edges which throughout their entire length are displaced angularly forwardly from said diametric plane in the direction of rotation and lie on a plane parallel to such axis.

3,937,121
DOUBLE BREAK-OFF SCREW

Keith E. Schubert, Rowayton, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

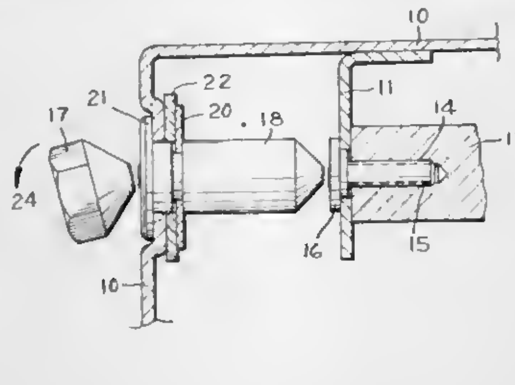
Filed Apr. 14, 1975, Ser. No. 567,731
Int. Cl.² F16B *31/02*
U.S. Cl. 85—61 **9 Claims**

1. A double break-off screw for use with a security cover plate and an inner retaining member disposed within said cover plate, said double break-off screw having three sections and comprising:

a fastening section having screw threads and fastening to said inner retaining member by torsional means;

an intermediate section disposed between said security cover and said inner retaining member, said intermediate section connected to said fastening section on one end thereof by means of a narrowed torsional break-off section, and connected to said security cover plate on an opposite end thereof; and

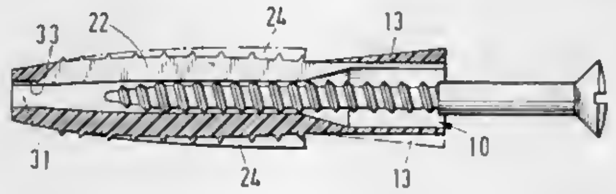
a rotatable installation section connected to said intermediate section by means of a narrowed break-off section, said installation section being disposed externally of said security cover plate, and being rotatable to drive said fastening section into said inner retaining member until seated, whereby said intermediate section will shear from said fastening section about said torsional break-off section as said installation section is further rotated, said installation section then being removable from said intermediate section about the narrowed break-off section disposed therebetween.



3,937,122
EXPANDING MASONRY ATTACHMENT PLUG

Josef Riedel, Sipplingen (Bodensee), Germany, assignor to Tox-Dubel-Werk, Richard W. Heckhausen KG, Germany

Filed Jan. 7, 1974, Ser. No. 431,346
Int. Cl.² F16B *13/10*
U.S. Cl. 85—71 **10 Claims**



1. In combination a one-piece expanding masonry attachment plug and a threaded tightening screw:

said masonry plug extending longitudinally and comprising, along its longitudinal length, a circumferentially continuous head at one end, a circumferentially continuous foot at the other end and a shank joining said head and said foot;

said head having a wide insertion hole extending through it to said shank; said shank having a substantially cylindrical exterior having a through guide hole therein extending continuously from said insertion hole to said plug foot;

said shank having a plurality of longitudinally extending slits arrayed about it and extending through said shank from its exterior into said through guide hole, thereby dividing said shank into flexibly expandable segments; all said segments being rejoined at and by said head and said foot, the exterior surfaces of said segments being provided with protuberance means for engaging the walls of a hole;

said foot having a through passage hole therethrough aligned with and of greater diameter than said shank through guide hole and smaller in diameter than the screw to be tightened into said through passage hole; an inside wall in said foot defining said through passage hole; said plug foot being sufficiently thick and strong so as not to expand upon a screw being tightened into said through passage hole;

said screw having a tapered lead-in portion and a cylindrical engaging portion with the major diameter of the cylindrical portion being less than the diameter of the insertion hole; said major diameter of said screw being greater than the diameter of said shank through guide hole at the part of said screw which seats inside said shank through guide hole; the shank of said screw having a length excluding said tapered lead-in portion which is greater than the distance from said one end of said plug to and including at least a portion of said foot through passage hole while said shank is not axially compressed; said major diameter of said screw also being greater than said foot through passage hole such that said screw is adapted to cut a thread into said foot inside wall;

said shank through guide hole along the portion of its length extending past said slits being defined by said shank segments to be narrower than said insertion hole and narrower than said major diameter of said screw;

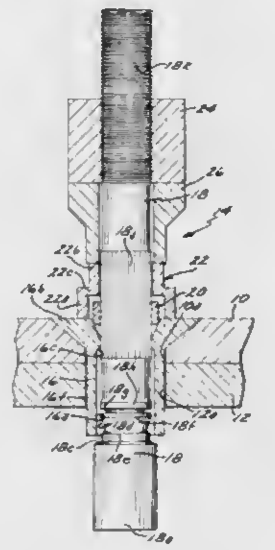
said shank segments being outwardly bendable with respect to said through guide hole upon axial compression of said shank;

whereby a tension thread is cut in said foot as said screw is tightened through said foot, and further tightening of said screw draws said foot toward said head and axially compresses said shank.

3,937,123
BLIND FASTENER WITH SHEAR WASHER

Josip Matuschek, Newport Beach, and Johan August Louw, Orange, both of Calif., assignors to Textron Inc., Santa Ana, Calif.

Filed Apr. 8, 1974, Ser. No. 458,710
Int. Cl.² F16B *13/06, 33/02*
U.S. Cl. 85—72 **8 Claims**



1. A blind fastener for tening together at least two members comprising in comb tion,

a sleeve adapted for in tion in aligned holes in said members and having a th gh opening and an enlarged head incapable of passing through said holes,

a stem slidable within said through opening of said sleeve and having an enlarged end portion at the end of said sleeve opposite said head,

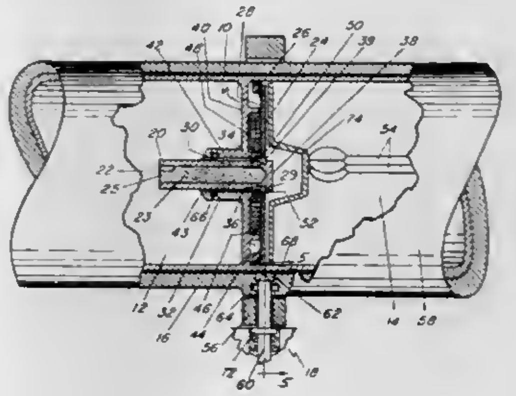
a one-piece washer slidably received upon the stem and including a radially outer element of such size as to be engagable with the head of said sleeve and a radially inner element axially offset from said radially outer element in a direction away from said head and being joined thereto by a breakaway portion, said washer adapted to exert force on said head as a unitary structure with said breakaway portion adapted to fracture in response to a predetermined maximum force to separate the two elements,

and a locking member initially separate from both elements of said washer and from said sleeve underlying the radially inner element and being engagable by said radially inner element as a result of and upon said breakaway portion responding to said maximum force to be forced by said radially inner element into cooperating means on said stem and sleeve to lock said stem and sleeve in their relative positions.

3,937,124
SETTABLE WARHEAD BURST RANGE SELECTOR

Rolf Krumes, Anaheim, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 20, 1974, Ser. No. 507,834
Int. Cl.² F42C *17/00*
U.S. Cl. 89—6.5 **4 Claims**



1. A settable warhead burst range selector for a flechette dispersing round which comprises:

a gun barrel having a chamber wall with a transversely positioned pin bore therein, said pin bore having a first gas seal therein;

a bulkhead section transversely positioned in the wall of said round intermediate a propellant chamber and a payload chamber, an axially positioned slide boss which protrudes from the rear side of said bulkhead into said propellant chamber, said boss having an axial bore and a second gas seal therein, an annularly shaped charge cavity positioned in the front side of said bulkhead, and at least one bore intermediate said charge cavity and said axial bore and communicating therewith;

an expulsion charge positioned in said charge cavity;

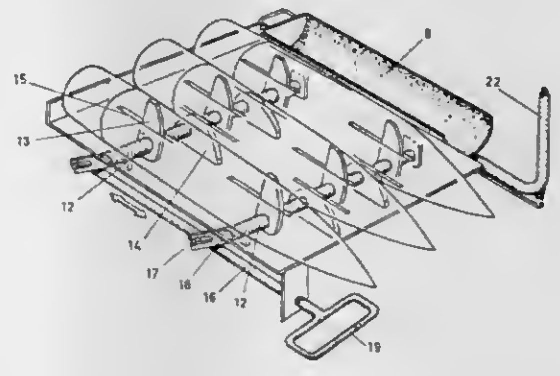
delay means for igniting said expulsion charge; and

detent means for setting said delay so that said round is set in an extended-range mode or in a muzzle-burst mode.

3,937,125
DEVICE FOR LOADING AN ARTILLERY PIECE

Carl-Erik Eriksson, Karlskoga, Sweden, assignor to AB Bofors, Bofors, Sweden

Filed Mar. 25, 1974, Ser. No. 454,498
Claims priority, application Sweden, Apr. 2, 1973, 73045882
Int. Cl.² F41F *9/02*
U.S. Cl. 89—45 **7 Claims**



1. A device for loading an artillery piece, particularly a heavy artillery piece, comprising a loading tray connected to the elevating mass of the artillery piece and mounted at the

rear end of said artillery piece directly adjacent one side of said elevating mass for selective displacement between a loading position and a ramming position, an elongated loading trough separate from said loading tray mounted along the side of said loading tray which is positioned outwards of said elevating mass, a separate generally horizontal loading table mounted along the side of said loading trough which is positioned outwards of said loading tray, the forward ends of said trough, tray, and table being generally in alignment with one another, the rearward ends of said trough and table also being generally in alignment with one another, said loading tray being significantly longer than said trough and table whereby said tray defines a forward portion for receiving a shell and an integral rearward portion extending rearwardly of the aligned rearward loads of said trough and table for receiving a cartridge case, said loading table having selectively releasable latching means for maintaining and supporting a plurality of shells in side-by-side relation to one another in a generally horizontal plane, said generally horizontal table being slightly inclined toward said trough, means for supporting said trough coaxially on the elevating trunnions of the artillery piece for selectively pivotal motion about an axis extending in a direction transverse to the direction of elongation of said trough and located forward of the generally aligned forward ends of said trough, tray, and table, said trough supporting means including a balancing device which is operative, when the trough is empty, to hold the trough at a starting position wherein the side of the trough outwards of said loading tray and adjacent to the loading table is substantially level with the lowermost edge of said inclined table, said trough support means being arranged, when a shell is placed in said tray, to cause the weight of the shell to counteract the balancing device and to effect a pivotal motion of said trough about said axis in the lateral region between said table and the forward portion of said tray thereby to cause the trough to assume an inclination in its direction of elongation which corresponds to the inclination of said loading tray, means for selectively releasing said latching means to cause a shell to roll along said generally horizontal plane downwardly from said table into said trough when said trough is empty thereby to effect said pivotal motion of said trough, means for laterally tilting said trough about its axis of elongation when a shell is in said trough thereby to roll said shell laterally out of the side of said trough which is adjacent to said tray and onto said forward portion of said loading tray when said tray is in its loading position, and means for thereafter moving said loading tray from its loading position to its ramming position.

3,937,126
REACTION HOLD-OFF MEANS FOR A TWO STAGE SERVOMOTOR

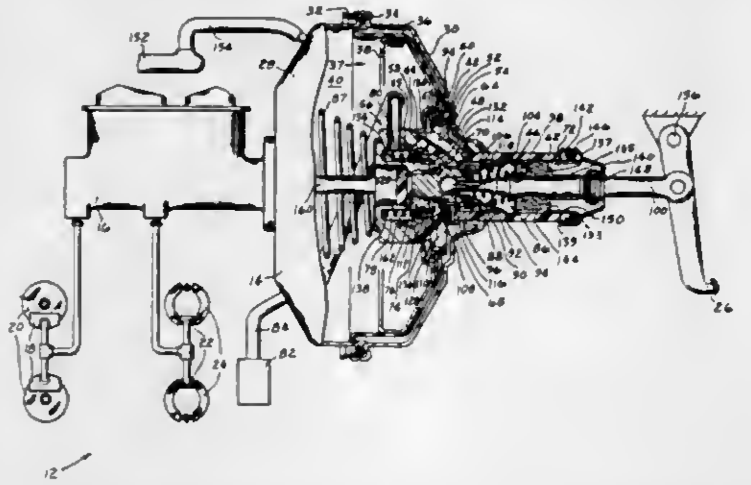
Frederick G. Grabb; Carl D. Owens, and Delbert J. Gardner, all of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Mar. 29, 1974, Ser. No. 456,347
Int. Cl.² F01B *25/02;* **F15B** *9/00*
U.S. Cl. 91—6 7 Claims

1. In a servomotor having a pressure responsive wall means for separating a front chamber from a rear chamber with a control means for sequentially presenting air at atmospheric pressure and air above atmospheric pressure from a source to the pressure responsive wall means to establish a pressure differential between the front chamber and the rear chamber for moving the pressure responsive wall means to produce an output force, and for delaying the communication of said air above atmospheric pressure to the pressure responsive wall means until a predetermined output force is developed from said air at atmospheric pressure, said control means comprising:

first hub means connected to said wall means having a rearward axial projection which extends through the rear chamber into the atmosphere, said rearward axial projection having a first axial bore with a first passage, a second passage and a third passage, said first passage being in communication with said front chamber, said second passage being in communication with the rear chamber and a third passage in communication with air at atmospheric pressure, said first axial bore having a first shoulder which separates the first passage from the second passage, said first shoulder having a first face adjacent the first passage and a second face adjacent the end of the first hub means, said first hub means having an annular horizontal projection extending from adjacent the first shoulder;

second hub means attached to said first hub means for holding the wall means in a fixed relationship with said first hub means, said second hub means having a second axial bore concentric to said first axial bore, said second hub means having a third axial bore concentric to and separated from said second axial bore by a second shoulder, said third axial bore having a fourth passage in communication with air above atmospheric pressure;



plunger means having a cylindrical body with first surface located in said second axial bore, a second surface having a peripheral surface substantially equal to the first axial bore and a third surface having a peripheral surface smaller than said first shoulder in the first axial bore, said cylindrical body having a spherical recess for retaining an input rod from an actuator, said plunger means having a third shoulder between the first and second surfaces on the cylindrical body;

first valve means located in said axial bore for regulating the communication between the first passage and the first axial bore;

first resilient means for urging said first valve means into contact with said third surface of the plunger means to permit vacuum present in the front chamber to be communicated to the rear chamber through the first and second passages;

second valve means located in said third axial bore for regulating the communication between the fourth passage and the first axial bore;

second resilient means for urging said second valve means into contact with said annular horizontal projection to prevent communication of air above atmospheric pressure into the first bore;

third resilient means for urging said push rod and attached plunger means toward said first valve means and for positioning said second surface of the plunger means on the second face of the first shoulder of the first hub means;

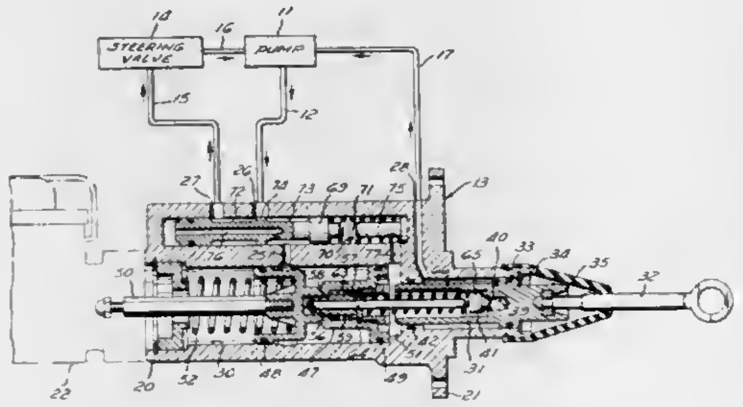
check valve means associated with the first axial bore to prevent communication of air above atmospheric pressure to the atmosphere through the third passage; and

deformable means connected to said plunger means and normally disengaged from said second valve means for radially expanding and axially compressing as a function of input force to output force to proportionally engage and actuate said second valve means to allow air above atmospheric pressure to be presented to said pressure responsive wall means.

3,937,127
HYDRAULIC BRAKE BOOSTER WITH SHUT-OFF MEANS

James P. Baker, Portland, Oreg., and Richard J. Silagy, Parma, Ohio, assignors to The Weatherhead Company, Cleveland, Ohio

Filed Feb. 1, 1974, Ser. No. 438,624
Int. Cl.² F15B *9/10*
U.S. Cl. 91—372 10 Claims



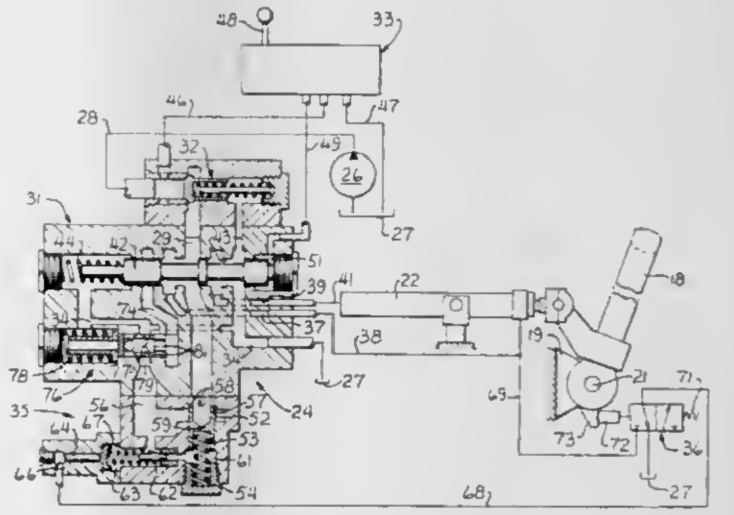
1. A motor vehicle fluid power circuit comprising a pump, a steering valve, and a brake booster, said pump having an inlet and an outlet and a relief valve hydraulically connecting said inlet to said outlet at a predetermined relief pressure, said brake booster having a power chamber, means hydraulically connecting said pump outlet and inlet to said steering valve and further means hydraulically connecting said pump outlet and inlet to said power chamber, said further means including an inlet passage in said brake booster hydraulically connecting said pump outlet to said power chamber and an outlet passage in said brake booster hydraulically connecting said pump inlet to said power chamber, a first valve surface in said brake booster movable in said outlet passage relative to said power piston between an open position and a closed position for opening and closing said outlet passage, a second valve surface in said brake booster movable in said inlet passage relative to said power piston between an open position and a closed position for opening and closing said inlet passage, shut-off means for moving said second valve surface relative to said power piston from said open position to said closed position to close said inlet passage and completely block said inlet passage to hydraulically isolate said pump outlet from said power chamber in response to the fluid pressure in said power chamber reaching a predetermined shut-off pressure, said shut-off means including a member movable relative to said first valve surface and having a fluid pressure surface exposed to fluid pressure in said power chamber and means communicating said fluid pressure in said power chamber with said fluid pressure surface, said member being operatively connected to said second valve surface to move said second valve surface relative to said power piston to said closed position when said fluid pressure in said power chamber reaches said shut-off pressure, said first valve surface being in said closed position to close said outlet passage and completely block said outlet passage to hydraulically isolate said fluid power chamber from said pump inlet when said member fluid pressure surface operates to close said second valve surface in response to said shut-off pressure, whereby said first and second valve surfaces prevent fluid flow through said power chamber from said inlet passage to said outlet passage when said shut-off pressure is reached, and said shut-off pressure being less than said relief pressure of said pump relief valve.

7. A motor vehicle fluid power circuit comprising a pump, a steering valve, and a brake booster, said pump having an inlet and an outlet and a relief valve hydraulically connecting said inlet to said outlet at a predetermined relief pressure, said brake booster having a power chamber, means hydraulically connecting said pump outlet to said steering valve and further means hydraulically connecting said pump outlet to said power chamber, valve means in said further means movable between an open position establishing fluid pressure communication between said pump outlet and said power chamber and a closed position hydraulically isolating said pump outlet from said power chamber, and rod means slidably disposed in said power chamber, said rod means having a first lateral cross-sectional area exposed to the pressure in said power chamber and a second lateral cross-sectional area exposed to the pressure in said pump inlet, said rod means being mechanically connected to said valve means in said further means, said rod means being responsive to a predetermined shut-off pressure in said power chamber acting against said first lateral cross-sectional area to move said valve means from said open position to said closed position to prevent the pressure in said power chamber from exceeding said predetermined shut-off pressure, and said shut-off pressure being less than said relief pressure of said pump relief valve.

3,937,128
HYDRAULIC CONTROL CIRCUIT WITH REMOTELY CONTROLLED DUAL PRESSURE RELIEF VALVE

Leon E. Hicks, Joliet; John W. Grant, Pekin; Loyal O. Watts, Mapleton, and Wayne A. Peterson, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 412,452, Nov. 2, 1973, Pat. No. 3,847,416. This application June 24, 1974, Ser. No. 482,316
Int. Cl.² F15B *15/20, 11/08, 13/042*
U.S. Cl. 91—392 3 Claims



1. A hydraulic control circuit for operating a double-acting hydraulic jack and for providing fluid to the jack at a relatively high pressure when the jack is being operated in a selected direction, the circuit providing fluid to the jack at a relatively low pressure when the jack is being operated in the opposite direction, comprising

a source of fluid,

a control valve having an inlet passage in communication with the source and a movable spool means for selectively communicating opposite ends of the jack with the inlet passage and a fluid drain respectively, the jack being operated in the selected direction by fluid pressure directed to a first end of the jack from the inlet passage,

a pilot operated dual pressure relief valve communicating the inlet passage to drain, the relief valve normally establishing the relatively low fluid pressure in the inlet passage, and

pilot control means operatively responsive to the jack and in communication with the dual pressure relief valve to condition the relief valve for establishing the relatively high fluid pressure in the inlet passage when the spool means of the control valve is positioned to operate the jack in the selected direction,

the dual pressure relief valve including means responsive to a hydraulic pilot signal for establishing the relatively high pressure, the pilot control means comprising a pilot valve for establishing the pilot signal communicated to the hydraulically responsive means, the pilot valve being operatively coupled with the jack to interrupt the pilot signal as the jack approaches a predetermined limit of travel in the selected direction.

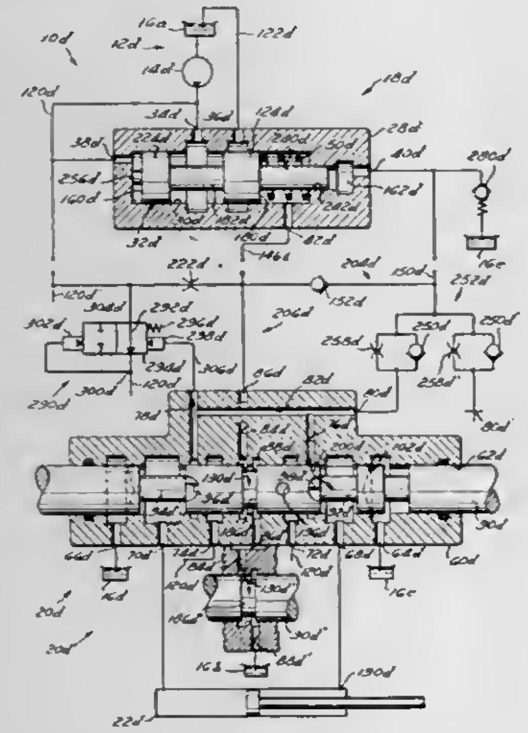
3,937,129
LOAD RESPONSIVE SYSTEM WITH AREA CHANGE FLOW EXTENDER

Wendell E. Miller, Warsaw, Ind., assignor to The Scott & Fetzer Company, Cleveland, Ohio

Filed Oct. 23, 1974, Ser. No. 517,244

Int. Cl.² F16B *13/08*

U.S. Cl. 91—412 43 Claims



1. A load-responsive hydraulic system of the type which includes a source of fluid having a pump that delivers pressurized fluid at the fluid pressure thereof and a sump that receives fluid at the fluid pressure thereof, a fluid-actuated device, a directional control valve having a body that is connected to said source to receive fluid therefrom at said pump pressure and to deliver fluid thereto at said sump pressure and having a movable valving element that is movable to a standby position wherein said fluid-actuated device is isolated from said pump and to an operating position wherein pressurized fluid is supplied from said pump to said device at the load-actuating pressure thereof, and a differential pressure actuated bypass valve having a housing that is connected to said source for bypassing of fluid from said pump to said sump and having a valve spool that includes both a first fluid-responsive area connected to said pump for actuating said valve spool to a bypassing mode by said pump pressure wherein said pump fluid is bypassed to said sump and a second fluid-responsive area for actuating said valve spool to an operating mode wherein said bypassing is occluded, the improvement which comprises:

a third fluid-responsive area in said bypass valve, being operably connected to said valve spool, and being effective to actuate said valve spool to one of said modes by a force that is proportional to the fluid pressure applied thereto and by a distance proportional to the movement thereof;

second area signal means, including a signal port in said control valve that is connected to said second fluid-responsive area and including said valving element, for establishing a fluid flow path in said control valve between said signal port and said fluid-actuated device to sense said load-actuating pressure thereby, for applying said load-actuating pressure and the changes thereof to said second area when said control valve is in said operating position, and for attenuating said load-actuating pressure that is applied to said second area when said control valve is in said standby position; and

third area signal means, being connected to said third fluid-responsive area and to said source, and being responsive to said pump pressure, for applying said pump pressure to said third area, and for applying another of said pressures to said third area.

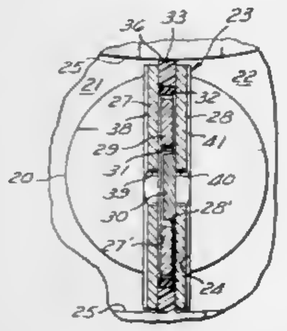
3,937,130
LOW FRICTION SEAL ASSEMBLY

Cecil E. Adams, and Ellis H. Born, both of Columbus, Ohio, assignors to Abex Corporation, New York, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,318

Int. Cl.² F01C *9/00;* F01B *3/00*

U.S. Cl. 92—125 8 Claims



1. A fluid energy translating device comprising a housing, a member movably mounted in the housing and dividing the housing into first and second fluid-receiving chambers, fluid supply means for selectively supplying high pressure fluid to the first and second chambers, a seal assembly carried by the member to seal the first and second chambers from one another, the seal assembly having a pair of back-up plates positioned within the member and slidable with respect thereto, a spacer positioned between the back-up plates, an elastic member mounted on the perimeter of the spacer, and a seal member which engages the walls of the housing and has an opening in which the elastic member is positioned, the elastic member being mechanically squeezed radially between the spacer and seal member to bias the seal member against the housing walls and squeezed laterally between the back-up plates.

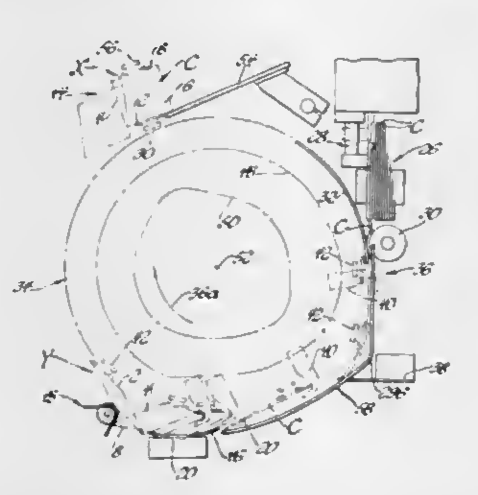
3,937,131
CARTON FEEDING APPARATUS

Robert C. Kellogg, Milford, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed July 19, 1974, Ser. No. 489,880

Int. Cl.² B31B *1/76*

U.S. Cl. 93—53 SD 32 Claims



1. Carton feeding and erecting apparatus for transferring flattened cartons from one location to another while simultaneously unfolding the cartons to an erect condition, said apparatus comprising: means defining a carton receiving station at one location; means defining a carton delivery station at another location; carton carrying means operable to engage a flattened carton at the receiving station and carry the carton to the delivery station; carton unfolding means operatively associated with said carrying means operable to unfold a carton to its erect condition as the carton is carried by the carrying means from the receiving station to the delivery station; clamping means having a clamping position in which it is operable to engage a flattened carton at said receiving station and hold it in a position to be engaged by said carrying means to be carried from the receiving station to the delivery station, said clamping means being operable to move out of engagement with a carton engaged by said carrying means to a retracted position as the carton moves from the receiving station to the delivery station; said receiving station extending from an inlet end thereof to an outlet end thereof, said outlet end being locating nearest the delivery station in the direction of travel of a carton to said delivery station, said clamping means and carrying means being operable to sequentially engage a carton when the carton is located between the inlet and outlet ends of said receiving station; a supply container for containing a plurality of flattened cartons; unloading means operable to transfer cartons one at a time from said supply container to the inlet end of said receiving station; carton driving means for moving a carton from the inlet end of said receiving station to a position to be engaged by said clamping means; and, carton orienting means operable to engage and orient a carton being moved by said driving means in a position to be engaged by said clamping means.

3,937,132
AIR OUTLET APPARATUS

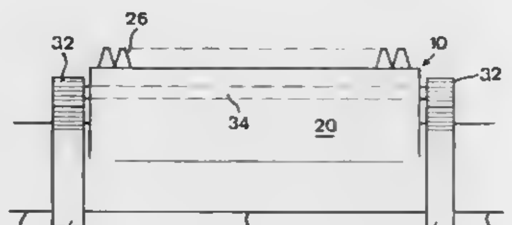
Josef Bruhlmeier, Wettingen, and Andreas Gasser, Zurich, both of Switzerland, assignors to Luwa AG, Zurich, Switzerland

Filed June 17, 1974, Ser. No. 480,020

Claims priority, application Switzerland, June 19, 1973, 8859/73

Int. Cl.² F24F *13/08*

U.S. Cl. 98—40 N 17 Claims



1. An air outlet apparatus comprising a housing, at least one infeed conduit for operatively communicating the housing with an air preparation installation, said housing possessing an elongate substantially tubular-like body bounded by an outer surface, said tubular-like body being provided with throughpassage openings extending in the lengthwise direction thereof and at least over a portion of the outer surface, a mounting carried by said tubular-like body, said mounting having an outer wall, said outer wall enclosing a compartment between the mounting and the outer surface provided with said throughpassage openings of said tubular-like body, said throughpassage openings flow communicating the interior of said tubular-like body with said compartment, said mounting possessing a multiplicity of outlet openings distributively arranged in the axial direction of the tubular-like body, a portion of the tubular-like body being located internally of the mounting and said internally located portion of the tubular-like body being equipped with said throughpassage openings, a thin-foil throttle slide member positioned at said tubular-like body for coaction with said throughpassage openings thereof in order to regulate the flow of air between the interior of the tubular-like body into said compartment of the mounting and then through the outlet openings thereof, said thin-foil throttle slide member extending axially of the tubular-like body, and rotatable ring means cooperating with opposed ends of said thin-foil throttle slide member, means for operatively interconnecting said ring means at said opposed ends of said thin-foil throttle slide member with one another, rotation of any one of said ring means bringing about substantially equal circumferential movement of said thin-foil throttle slide member relative to the outer surface of said tubular-shaped body for selectively opening and closing said throughpassage openings.

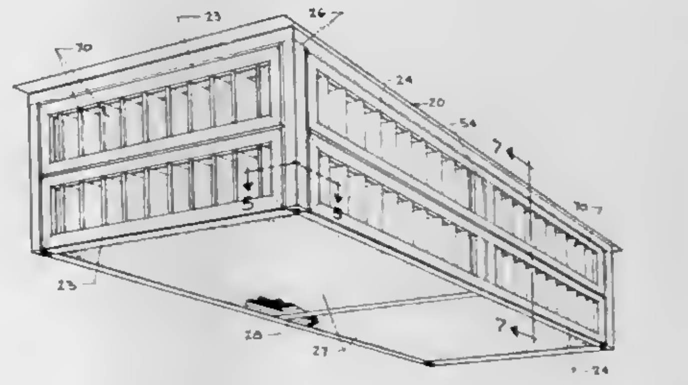
3,937,133
OUTLETS FOR CONDITIONED AIR AND MOUNTING FRAMES THEREFOR

Mannie Bertin, 47 Linron Drive, Danbury, Conn. 06810, and Ira L. Bertin, Box 25, Limington, Maine 04049

Filed Sept. 27, 1974, Ser. No. 510,001

Int. Cl.² F24F *13/14*

U.S. Cl. 98—40 D 15 Claims



1. A module for use as a part of an outlet for conditioned air and to support, be supported by, or connected to another part of said outlet, said other part having a spline, said module comprising a frame including upper and lower side members and end members, said members having their ends mitered and abutting, means interconnecting said ends, air affecting means supported by the frame side members, each member an appropriate length of an extrusion including a side wall and a supporting wall extending at right angles thereto adjacent the edge thereof that is the inner edge of the frame, said extrusion also having a splineway the entrance of which extends lengthwise of the outer surface of the side wall adjacent its other edge, the splineway extending inwardly towards the supporting wall with its inner end substantially at a right angle relative to the entrance, the outer surface of the splineway having at the entrance a bearing and the inner surface thereof a shoulder, the entrance and the shoulder at least partly in a plane parallel to said side wall whereby with the spline of said other part of a cross sectional shape generally similar to that of the splineway and dimensioned to be freely slidable lengthwise therein, said other part and said frame are connectable with one angularly displaced relative to the other, with the spline entered in a splineway entrance and the one turned relative to the other with the bearing as the pivot to bring said part and said frame into their desired relationship and to seat the spline fully in said splineway.

8. An outlet for a port in a duct for conditioned air, said outlet including a mounting frame and an air diffuser, means connecting said diffuser to said frame, said diffuser including walls and means interconnecting said walls in a predetermined angular relationship and establishing the corners of the diffuser, each of said walls including at least one module, each module comprising a frame including upper and lower side members and end members, said members having their ends mitered and interconnected in an abutting relationship, each member an appropriate length of an extrusion including a side wall and a supporting wall extending at right angles thereto adjacent an edge thereof and constituting the inner margin of

the frame, means interconnecting the abutting ends of said members, air affecting means supported by at least one frame, said extrusion also having a splineway with an entrance extending lengthwise of its outer surface adjacent its other edge and extending inwardly towards the supporting wall with its inner end substantially at right angles to the entrance, the outer surface of the splineway defining a bearing at the entrance and the inner surface thereof defining a shoulder, the bearing and the shoulder at least partly in a plane parallel to said side wall, each corner establishing means including a predetermined length of an extrusion having sides disposed to establish said predetermined angular relationship, each side including a marginal spline portion extending from end-to-end thereof and approximately of the shape of said splineways and a fit therein and dimensioned for entry therein through the ends thereof, said spline portions entered in the splineways of the proximate end frame members and extending from end-to-end thereof, means holding the module connectors from escaping from the splineways in which their spline portions have been entered, and said frame including depending spline portions that are substantially identical to the first named spline portions, said last named spline portions entered within the splineways of the appropriate ones of the frame establishing members of the modules and thereby connect the diffuser to the mounting frame.

13. An outlet for a port in a duct for conditioned air, said outlet including a mounting frame and an air diffuser in the form of a register, said diffuser including at least one module comprising a frame including upper and lower side members and end members, said members having their ends mitered and interconnected in an abutting relationship, each member an appropriate length of an extrusion including a side wall and a supporting wall extending at right angles thereto adjacent an edge thereof and constituting the inner margin of the frame, means interconnecting the abutting ends of said members, air affecting means supported by each frame, said extrusion also having a splineway with an entrance extending lengthwise of its outer surface adjacent its other edge and extending inwardly towards the supporting wall with its inner end substantially at right angles to the entrance, the outer surface of the splineway defining a bearing at the entrance and the inner surface thereof defining a shoulder, the bearing and the shoulder at least partly in a plane parallel to to said wall, and means connecting the margins of the diffuser to the mounting frame and including spline portions of substantially the size and shape of the splineways of the frame members that define the margins of the diffuser and entered therein.

3,937,134
COFFEE FILTERING

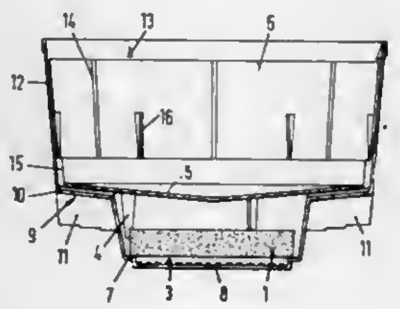
Albert Meijlom Molenaar, Terkaple, and Melle Veenstra, Appelhoflaan, Joure, both of Netherlands, assignors to Douwe Egberts Tabaksfabriek-Koffiebranderijen-Theehandel B.V., Utrecht, Netherlands

Continuation-in-part of Ser. No. 208,098, Dec. 15, 1971, Pat. No. 3,800,690. This application Jan. 11, 1974, Ser. No. 432,522. The portion of the term of this patent subsequent to Apr. 2, 1991, has been disclaimed.

Int. Cl.^{2} A47J *31/02, 31/10*

U.S. Cl. 99—295 **3 Claims**

1. An apparatus for making coffee by oncethrough percolation of preheated water, comprising a reservoir for receiving the water, an extraction chamber for ground coffee separated from said reservoir by a wall which is perforated in such a way that when the apparatus is used the water flows or trickles from said reservoir to said chamber through gravity, a coffee tablet disposed in said chamber, and furthermore the extraction chamber comprises a support for a filter, said support leaving the greater part of the filter surface clear, and wherein the extraction chamber comprises a continuous annular collar means for supporting said tablet of roasted and ground coffee thereon above said filter and so constructed and arranged that the bottom of the coffee tablet is approximately parallel to said filter and located at a distance within the range of approximately 0.5 to 4mm. from said filter, and including means for retaining the tablet against the said collar.



3,937,135
APPARATUS FOR THE FAST COOKING, IN HOT WATER, OF DOSED QUANTITIES OF FOODSTUFFS IN GENERAL

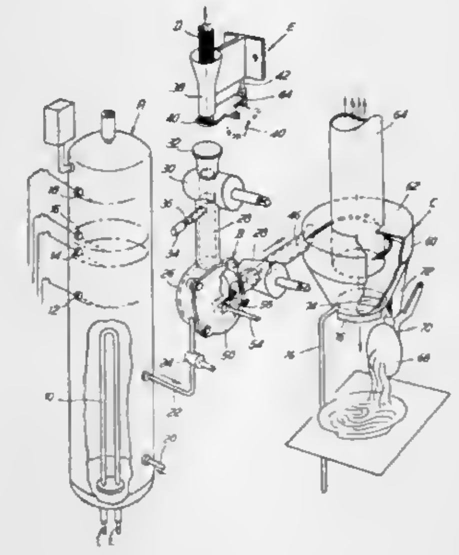
Modesto Pratolongo, Milan, Italy, assignor to Santa Martha Bay Shipping and Trading Co., Ltd., Curacaco, Netherlands Antilles

Division of Ser. No. 289,941, Sept. 18, 1972, Pat. No. 3,827,344. This application May 13, 1974, Ser. No. 469,602

Claims priority, application Italy, Oct. 9, 1971, 29724/71; Oct. 9, 1971, 29725/71; Oct. 9, 1971, 29726/71. The portion of the term of this patent subsequent to Aug. 6, 1991, has been disclaimed.

Int. Cl.^{2} A47J *19/00, 43/04*

U.S. Cl. 99—352 **11 Claims**



1. Apparatus for cooking, in hot water, metered quantities of foodstuffs such as rice, noodles and the like, including a pressurized cooking chamber provided with means to maintain, in said chamber, pre-selected water pressures and temperatures, said chamber having a first opening for the introduction of raw foodstuff and a second opening for the extraction of cooked food characterized by metering means for introducing raw foodstuffs to the cooking chamber, a hot water generator for boiling water to temperatures over 100° C. the generator being connected to said cooking chamber, to maintain food metered into the chamber submerged in hot water during a cooking operation, and further characterized by separating means connected to the extraction opening of the cooking chamber to receive cooked food from the chamber, and separate cooking water therefrom.

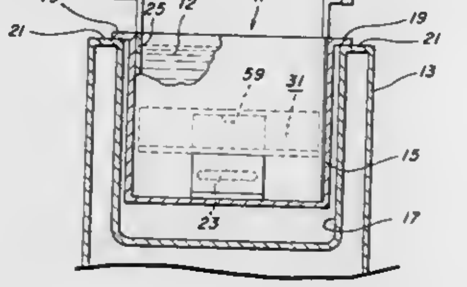
3,937,136
FILTER DEVICE FOR DEEP FAT FRYER

Elton D. Cox, 2875 Bannockburn, Memphis, Tenn. 38138

Continuation-in-part of Ser. No. 431,934, Jan. 9, 1974, abandoned. This application Nov. 15, 1974, Ser. No. 524,191

Int. Cl.^{2} A47J *37/12*

U.S. Cl. 99—408 **21 Claims**



1. In combination with a deep fat fryer having a deep fat container for holding a quantity of liquid fat used in the frying process, of a submergible filtering device, for filtering foreign particles from the liquid fat, said submergible filter device comprising a pan for accomplishing the cooking process therein, said pan being provided with at least one opening disposed adjacent the lowermost portion thereof, means for facilitating submergence and emergence of said pan into and out of the liquid fat, the liquid fat being caused to pass through said opening to fill said pan with the fat as said pan is being submerged therein and to empty said pan as it is being emerged therefrom, a unit removably engaging said pan and cooperating with said opening thereof for directing the outwardly flowing liquid fat along a predetermined course, said unit having at least one substantially horizontally disposed plate-like member positioned a spaced distance from the bottom of said pan and establishing at least one channel defined in part by said pan and said unit, said unit being provided with a passageway leading into said channel with said passageway being disposed remote from said opening; said channel communicating said passageway with said opening whereby the liquid fat contained within said pan is directed to pass through said opening, said passageway, and along said channel in a predetermined sequence as said pan is emerged from the liquid fat; and filter means disposed within said channel for capturing and separating foreign particles from the liquid fat as said pan is caused to be emerged therefrom.

3,937,137
PANCAKE MAKING MACHINE

Paul Marrie, Dijon, France, assignor to S.A.R.L. "ETUD", Quetigny, France

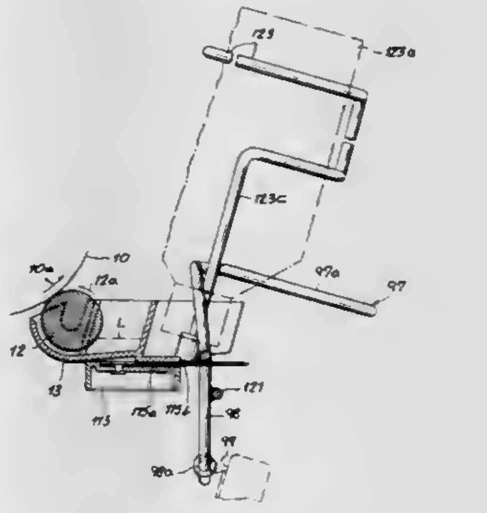
Division of Ser. No. 241,309, April 5, 1972, Pat. No. 3,853,045. This application Apr. 15, 1974, Ser. No. 461,108

Claims priority, application France, Apr. 7, 1971, 71.12242; July 5, 1971, 71.24434; Feb. 25, 1972, 72.06409. The portion of the term of this patent subsequent to Dec. 10, 1991, has been disclaimed.

Int. Cl.^{2} A21B *1/48*

U.S. Cl. 99—423 **6 Claims**

1. In a pancake making machine comprising a trough adapted to receive a supply of batter, a drum rotatable adjacent said trough and formed with a continuous cylindrical peripheral surface except for an axially extending recess, a rotatable transfer roller with access to the batter in said trough closely juxtaposed with said drum, means for rotating said roller and said drum for transferring batter from said trough to said drum, means for heating said drum and baking the batter thereon. and scraper means downstream from said roller in the direction of drum rotation for removing the baked batter from said drum, the improvement comprising means including a vertically and pivotally displaceable handle for displacing said trough and said roller toward and away from said drum and latching means for holding said roller in a position immediately adjacent said drum, said latching means being vertically displaceable by vertical displacement of said handle from an upper position retaining said roller immediately adjacent said drum and a lower position wherein said roller may be retracted from said drum, said means for rotating including a drive motor and a switch controlling said drive motor, said switch being engaged by said means including said handle during vertical movement of said handle such that in the up position of said handle said switch is held closed to operate said drive motor and in the down position of said handle said switch is open to stop operation of said drive motor.



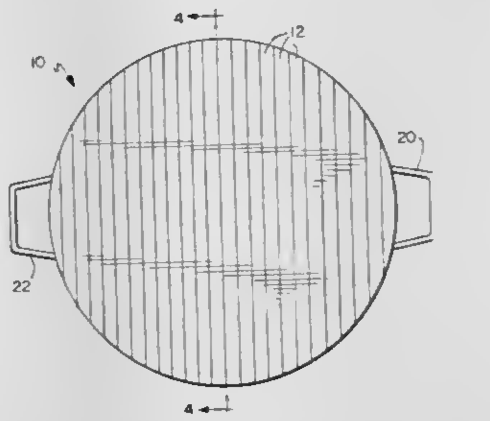
3,937,138
BARBECUE GRILL

Felix M. Tidwell, Suite 207 Lexington Bldg., 3319 Maguire Blvd., Orlando, Fla. 32803

Filed Jan. 28, 1974, Ser. No. 436,835

Int. Cl.^{2} A47J *37/06*

U.S. Cl. 99—450 **6 Claims**

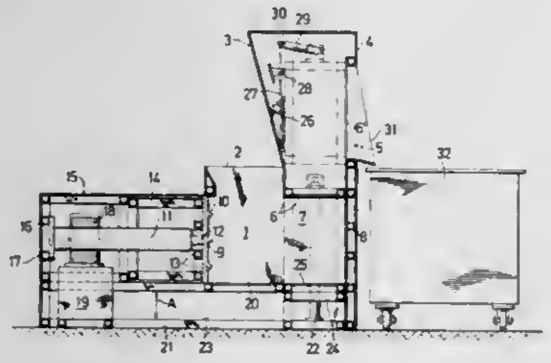


1. A grate for a barbecue grill, this grate to be positioned above a radiant heat source and to support food to be cooked by the heat therefrom, the food having a frying substance associated therewith, comprising:
  metal support assembly means for supporting the food and for supporting a substantial portion of the frying substance in a position contiguous to the food,
  said support assembly means including
    a plurality of parallel, spaced apart slats defining a plurality of minute slots between adjacent edges thereof,
    a continuous ring rigidly coupled to the bottom surface of each of said slats adjacent the ends of each of said slats, and
    a plurality of spaced apart parallel support rods rigidly coupled to the bottom surface of each of said slats extending perpendicular to said slats and rigidly coupled at their ends to the inside periphery of said ring;

said slats each having a substantially flat top surface; and
said minute slots each having a width much less than one-half the width of each of said slats, thereby allowing smoke from the radiant heat source to pass upwards into contact with the food on said support assembly means and allowing only a small portion of the frying substance to pass downwards through said support assembly means where it contacts the radiant heat source and forms the smoke,
said width of said minute slots being fixed in dimension by the rigid coupling of said slats to said ring and said rods.

3,937,139
COMPRESSING REFUSE

Ulrich Lendi, Stafa, Switzerland, assignor to Mageba S.A., Bulach, Switzerland
Filed Sept. 3, 1974, Ser. No. 501,924
Claims priority, application Germany, Sept. 5, 1973, 2344698
Int. Cl.² B30B *15/30, 15/32*
U.S. Cl. 100—215 **5 Claims**

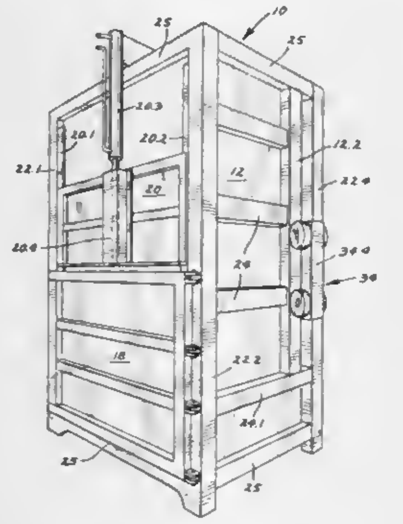


1. Apparatus for compressing refuse and discharging the compressed refuse downwardly into a separate container comprising the combination of: a refuse receiving chamber, a pressure plate adapted to reciprocate within said chamber between two closed ends thereof, a movable four walled cage which rests in one position adjacent one of said closed ends and being adapted to hold refuse compressed therein between said plate and said one closed end, a refuse feeding opening in one sidewall of said chamber and being positioned so that refuse moves therethrough into said chamber at one side of said cage, a discharge housing mounted above and in communication with said chamber and being adapted to receive said cage in a second position therefrof, one sidewall of said housing being directly above said one end of said chamber and having a discharge opening therein, means adjacent an opposite sidewall of said housing to eject compacted refuse from said cage through said opening so it may pass into said separate container and means to raise and lower said cage, said cage forming with said pressure plate and said one end wall a compression space closed on all sides.

3,937,140
BALER WITH EXTERIOR PLATEN GUIDE

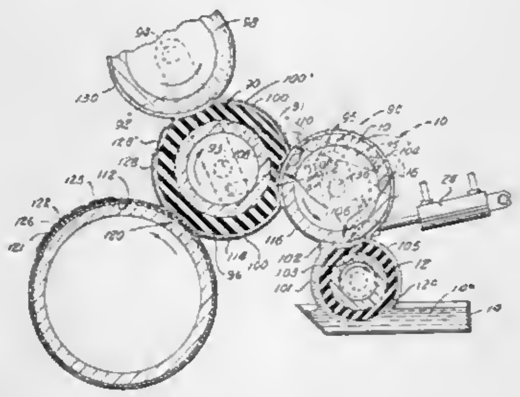
Dennis E. Swanson, St. Cloud, Minn., assignor to Muncher Corporation, St. Cloud, Minn.
Filed Oct. 3, 1974, Ser. No. 511,751
Int. Cl.² B30B *1/16*
U.S. Cl. 100—245 **9 Claims**

1. In a baler for baling refuse and the like and including a pressing box, a platen movable axially in the pressing box to compress refuse into a bale, and hydraulic means to move the platen between a withdrawn position and a refuse compressing position,
the improvement comprising platen guide means including sets of rollers bearing inwardly against respective opposed sides of the baler with the roller axes substantially parallel to the respective side walls, and brackets attached to the platen and extending externally of the pressing box for mounting the rollers in rolling engagement inwardly against opposed sides of the pressing box to roll in a direction parallel to the axis of the box, each roller set including at least two rollers spaced axially of the box a significant distance to continuously maintain the orientation of the platen with respect to the axis of the pressing box.



3,937,141
DAMPENER FOR LITHOGRAPHIC PRINTING PLATES

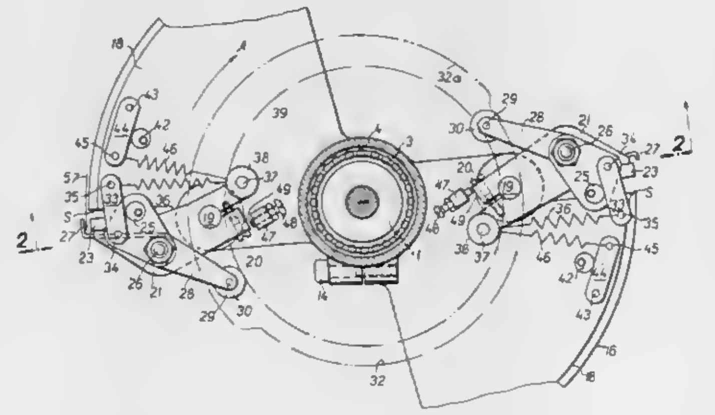
Harold P. Dahlgren, 726 Regal Row, Dallas, Tex. 75247
Filed June 17, 1974, Ser. No. 480,080
Int. Cl.² B41L *25/02;* **B41F** *7/26*
U.S. Cl. 101—148 **10 Claims**



1. Apparatus for applying dampening fluid over a roller having an ink-coated liquid receptive surface to a printing plate in a lithographic printing system, said ink-coated liquid receptive surface moving at a surface speed substantially equal to the surface speed of the printing plate, comprising: a dampening fluid transfer roller having a hydrophilic surface thereon; a metering roller having a smooth, resilient surface thereon; means to support the metering and transfer rollers in pressure indented surface relation to form a metering nip; support means arranged to urge a film of dampening fluid on the transfer roller into pressure relation with the ink-coated liquid receptive surface to form an interface between the ink and the dampening fluid; means to apply an abundant supply of dampening fluid to the surface of said metering roller; means to rotate said metering roller at a surface speed to maintain an abundant supply of dampening fluid adjacent said metering nip, said means to rotate said metering roller being adapted to rotate said metering roller at a surface speed substantially less than the surface speed of the ink-coated liquid receptive surface, said means to apply an abundant supply of dampening fluid to the surface of said metering roller being adapted to prevent application of an abundant supply of dampening fluid to the surface of the transfer roller except adjacent said metering nip, said transfer roller being driven by said ink-coated liquid receptive surface by frictional force transferred through said interface.

3,937,142
SHEET TRANSFER APPARATUS

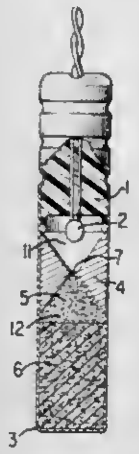
Arnost Cerny, Blansko, and Jiri Svoboda, Svitavka, both of Czechoslovakia, assignors to Adamovske strojirny, narodni podnik, Adamov, Czechoslovakia
Filed May 10, 1973, Ser. No. 359,183
Claims priority, application Czechoslovakia, May 15, 1972, 3254-72
Int. Cl.² B41F *21/04*
U.S. Cl. 101—409 **4 Claims**



1. In a sheet transfer device for a printing press having a pair of frame sides, and a cylinder comprising a rotatable shaft journalled within said frame sides, and, a plurality of segment members fixed to said shaft, said segment members being spaced axially of each other and arranged in a pair of sets to have a common peripheral surface and leading and trailing edges, each of said segment sets having mechanical gripper means mounted for seizing the leading edge of said sheet, and apparatus for seizing the trailing edge of said sheet comprising, a first rod axially extending through the segments of said cylinder and journalled for rotation about its longitudinal axis, brackets fixed to said rod and extending outwardly adjacent the trailing edge of said peripheral surface, a second axially extending rod journalled within said brackets exterior of the segments of said cylinder to rotate about its longitudinal axis, gripper elements carried by said second rod, a bar mounted at the end of said brackets forming a ledge adapted to cooperate with said gripper elements, means for rotating said second rod to cause said gripper elements to seize the trailing edge of a paper sheet and means for rotating said first rod comprising an eccentric circular cam mounted on one of said sides, a first cam follower mounted on the one bracket adjacent said one side and engaging said cam to thereby cause said one bracket to pivot said first rod, an eccentric pin mounted on said cylinder adjacent said one bracket, a pull rod pivotally mounted on said cylinder adjacent said pin, and spring means connecting said pull rod and said first cam follower to adjustably urge said first cam follower against the first cam, said means being operable during the seizing of the leading edge of the sheet to move said brackets away from the adjacent trailing edge of said peripheral surface to thereby stretch said sheet over the peripheral surface of said segment set.

3,937,143
DEVICE FOR POINT IGNITION OF A CHARGE

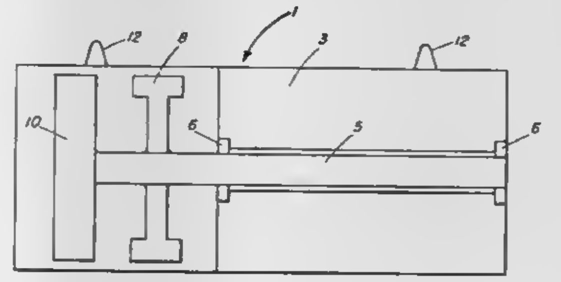
Heinz Schlueter, Merfeld near Duelmen, Germany, assignor to Wasag-Che-mie GmbH, Munich, Germany
Continuation of Ser. No. 847,565, Aug. 5, 1969, abandoned. This application Jan. 2, 1974, Ser. No. 429,884
Claims priority, application Germany, Aug. 28, 1968, 1796082
Int. Cl.² F42B *3/12*
U.S. Cl. 102—28 M **7 Claims**



1. Device for point-ignition of a charge comprising a shell; a priming pellet at the top of said shell; a secondary explosive charge at the bottom of said shell; an initiating charge above and completely abutting said secondary explosive charge and a structural member within said shell interposed between said priming pellet and said initiating charge; said structural member including upper and lower chambers having sloping walls sloping outwardly substantially to the inner wall of said shell and an opening lying on the vertical axis of said structural member providing communication between said chambers, said upper chamber serving to convey the sparks produced by said priming pellet to said opening and said lower chamber being completely packed with said initiating charge and being symmetrical with respect to the vertical axis; the inner walls of said structural member forming said chambers converging towards said opening.

3,937,144
INTERNAL STABILIZING DEVICE FOR AIR AND WATER MISSILES

Peter Daniels, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed July 3, 1972, Ser. No. 268,346
Int. Cl.² F42B *25/00*
U.S. Cl. 102—2 **1 Claim**



1. A nonself-propelling finless bomb adapted to be carried on and launched from aircraft at supersonic speeds comprising:
a casing having suspension means thereon for mounting the bomb on the aircraft;
an explosive warhead disposed within said casing;
a flywheel fixed to a shaft mounted for rotation within said casing on the longitudinal axis thereof; and
means for imparting rotation to said flywheel prior to launch whereby the angular momentum of the bomb is

substantially increased, and its maximum angle of attack due to an angular rate correspondingly reduced, to minimize launch disturbances when the bomb separates from the aircraft.

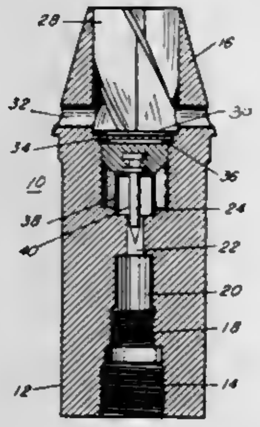
3,937,145
HELICAL BAFFLE FOR THE DENSITY INTEGRATING FUZE HEAD

Wilhelm J. Lohninger, Rockaway, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 10, 1974, Ser. No. 468,723

Int. Cl.² F42C *1/00*

U.S. Cl. 102—73 R **1 Claim**



1. An improved impact sensitive fuze for explosive missiles comprising:

a truncated conically shaped body having a longitudinal axis and an axial bore;

said body having a plurality of apertures in its base extending transversely of said axial bore and communicating with said bore;

means for detonating said missile mounted in said bore; and

barrier means, mounted in said bore intermediate the front end of said bore and said detonating means, adapted to provide an effective cover for said detonating means, thereby preventing axially moving objects from striking said detonating means, while permitting small objects, such as droplets of water, to pass through said barrier means in directions inclined to the longitudinal axis, wherein said barier means is in the form of a twisted cruciform having a twist angle of at least 90°.

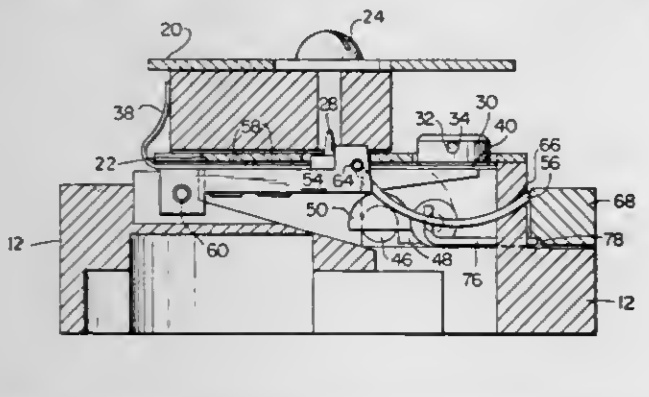
3,937,146
DUAL SIGNATURE SAFETY AND ARMING MECHANISM

Harry J. Davis, Wheaton, Md., and Leo P. Rongus, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 22, 1974, Ser. No. 472,247

Int. Cl.² F42C *1/04, 15/24*

U.S. Cl. 102—78 **9 Claims**



6. In a combination of an arming mechanism, a firing pin and a detonator, said arming mechanism comprises:

first means responsive to the acceleration force of said arming mechanism for biasing said detonator to move from a first position to an armed position;

second means adjacent said detonator for initially detaining said detonator from moving to said armed position;

third means including a pyrotechnic wire connected to said second means for maintaining said second means adjacent said detonator; and

fourth means for actuating said pyrotechnic wire to release said second means and allow said first means to move said detonator to said armed position.

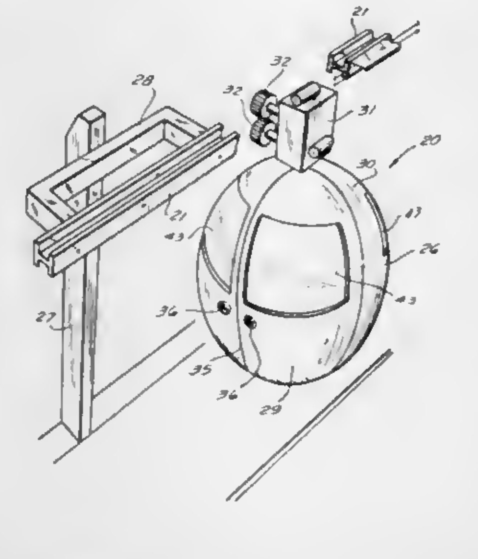
3,937,147
PERSONALIZED RAPID TRANSIT SYSTEM

Balint Szent-Miklosy, Jr., 150 Haven Ave., Terrace 3, New York, N.Y. 10032

Filed Aug. 13, 1973, Ser. No. 388,058

Int. Cl.² B61D *11/00*; B61B *3/00*

U.S. Cl. 104—93 **7 Claims**



1. A personalized rapid transit system comprising; an interconnected network of rails, support means to locate the rails in a predetermined three-dimensional pattern, a plurality of vehicles with each vehicle adapted to carry at least one person therein and having a configuration which facilitates the removable nesting of vehicles when not in use, each vehicle having a substantially hemispherical portion tapering from an enlarged open end to a rear end of lesser diameter than the opening in the open end, door means on the vehicle shiftable between a position closing the open end to a position exposing the open end and permitting at least the tapered rear end of another vehicle to be placed within the vehicle thereby permitting the vehicles to be stored partially within one another when not in use, and connector and drive means on each vehicle and connected to the network of rails so that the vehicle is suspended from the rail network and is guided and supported thereby during travel and storage.

3,937,148
VIRTUALLY ZERO POWER LINEAR MAGNETIC BEARING

Paul A. Simpson, Woburn, Mass., assignor to Cambridge Thermionic Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 320,430, Jan. 2, 1973, abandoned. This application Aug. 5, 1974, Ser. No. 494,943

Int. Cl.² B61B *13/08*

U.S. Cl. 104—148 MS **15 Claims**

1. A magnetic levitation vehicle, which vehicle comprises:

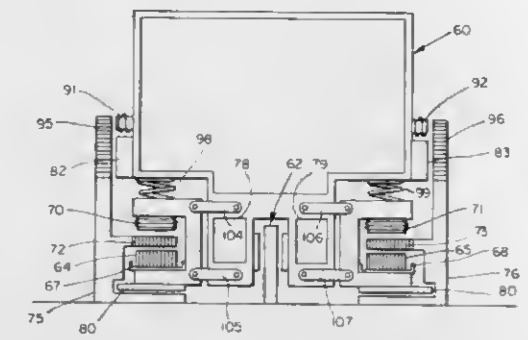
linear magnetic bearing means for suspending said vehicle; and

means for propelling said vehicle along a guideway;

wherein said linear magnetic bearing means comprises a frame for the linear magnetic bearing which frame is connected to the magnetic levitation vehicle to permit limited movement of the frame indepdent of said vehicle, said bearing frame at least partially surrounding a stationary element of said guideway;

at least one permanent magnet attached to the bearing frame for suspending the bearing frame relative to said stationary element in a neutral force position in which the bearing frame is suspended entirely by the permanent magnet;

means for sensing displacement of the suspended bearing frame relative to the stationary element away from the neutral force position; and



electromagnet means attached to the bearing frame activated by said sensing means for counteracting forces causing displacement of the suspended bearing frame, for restoring the bearing frame to a new neutral force position and for deenergizing the electromagnet means when said bearing frame has been restored to said new neutral force position.

3,937,149
RAIL SYSTEM FOR MAGNETIC-SUSPENSION VEHICLES

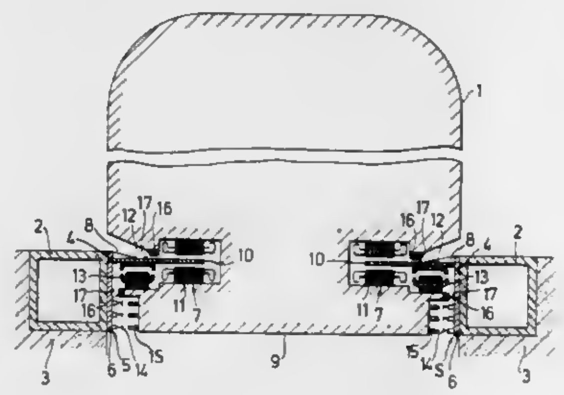
Günther Winkle, Munich; Peter Schwärzler, Furstenfeldbruck; Peter H. Otto, Munich; Peter Mölzer, Hebertshausen, and Christian Walkner, Dachau, all of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Division of Ser. No. 378,966, July 13, 1973, Pat. No. 3,882,790. This application Aug. 26, 1974, Ser. No. 500,339

Claims priority, application Germany, July 17, 1972, 2235036; Jan. 25, 1973, 2303552

Int. Cl.² B61B *13/08*

U.S. Cl. 104—148 LM **13 Claims**



1. In a levitation-type vehicle system comprising a track and a vehicle displaceable along a path on said track, said vehicle including at least two of the elements (a) to (e), said elements being (a) electromotor means for propelling said vehicle along said track, (b) electromagnetic suspension means for magnetically supporting said vehicle on said track, (c) electromagnetic guide means for laterally positioning said vehicle relative to said track, (d) contact-shoe means for effecting an electrical connection between said track and said vehicle and (e) emergency support means engageable with said track upon failure of said electromagnetic suspension means, said track comprising a support extending generally continuously along the vehicle path and at least two generally continuous rail members respectively cooperating with said two elements of said vehicle, the improvement which comprises mounting members common to said at least two rail members and anchored to said support at spaced-apart locations along said track, said mounting members comprising combination brackets formed with means for affixing said brackets to said support and means for mounting said rail members on said brackets.

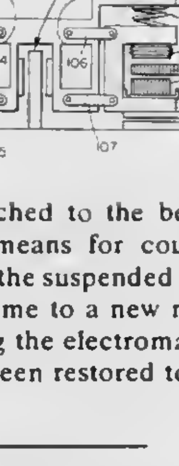
3,937,150
MAGNET SYSTEM FOR USE IN ELECTRODYNAMICLY SUSPENDED VEHICLES

Jürgen Mierícke, Nurnberg, and Laxmikant Urankar, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 30, 1975, Ser. No. 545,594

Int. Cl.² B61B *13/08*

U.S. Cl. 104—148 SS **11 Claims**



1. In a magnet system for the contactless guidance of a vehicle moved along a track in which a plurality of magnets are attached to the vehicle and arranged one behind the other in the direction of travel, the magnet system cooperating with nonferromagnetic conductor loops on the track to generate forces according to the electrodynamic principle, the improvement comprising means to change the polarity of an adjacent magnet from a condition where two adjacent magnets have opposite polarities to one where they both have the same polarity.

3,937,151
MINERAL MINING EQUIPMENT

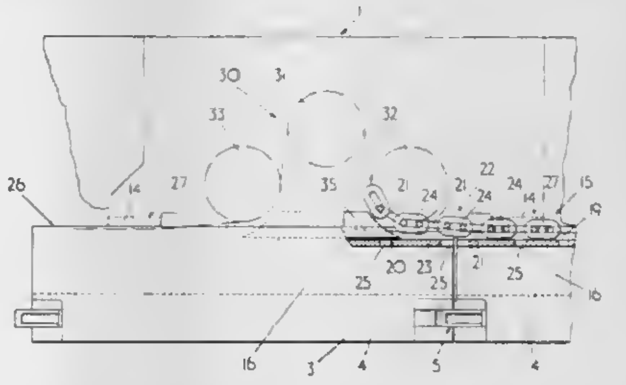
Harry Monks, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, England

Filed Sept. 17, 1974, Ser. No. 506,682

Claims priority, application United Kingdom, Oct. 19, 1973, 48747/73

Int. Cl.² B61B *13/00*

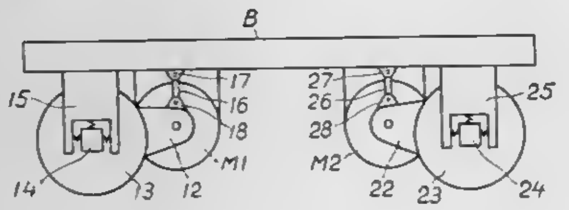
U.S. Cl. 104—172 R **5 Claims**



1. A track member adapted to form part of a track assembly for a mineral mining machine which in use traverses to and fro along a path adjacent to an armoured face conveyor arranged along a mineral face and which has a driven sprocket assembly including a flexible round link chain having adjacent links arranged in two perpendicular planes, comprising an elongated component defining a number of pockets for fixedly engaging those links of the chain lying in one perpendicular plane, the elongated component further defining a continuous groove interconnecting the pockets for accommodating those

links of the chain lying in the other plane perpendicular to the said one plane.

3,937,152
OSCILLATION SENSITIVE VEHICLE MOTOR CONTROL
Lars-Olof Nilsson; Bo Soderberg, and Fredrik Schmiterlow, all of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Oct. 18, 1973, Ser. No. 407,508
Claims priority, application Sweden, Mar. 9, 1973, 7303307
Int. Cl.² G08B *21/00*
U.S. Cl. 105—61 **9 Claims**



1. In a motor-driven vehicle having at least one drive system which comprises a drive motor and drive wheels;

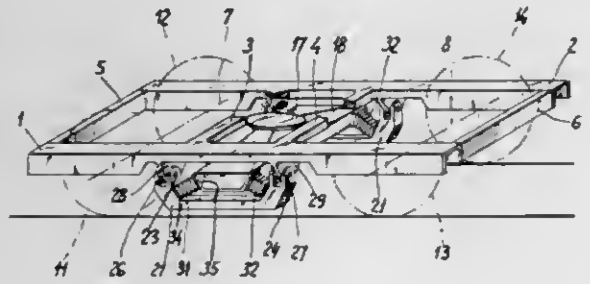
in which system the tractive force varies with the difference Δv between the peripheral speed of the drive wheel and the speed of the vehicle, in which the tractive force reaches a maximum at a value Δv_2 of said difference and decreases when said difference increases above said value, and in which, when said difference increases above said value, mechanical oscillations occur in the drive system within a certain natural frequency range;

an oscillation sensing member which includes a means to sense mechanical oscillations in the system within such range and to form a signal corresponding to the amplitude of such oscillations;

an arrangement for influencing the torque of the motor; and means to transmit such signal to said arrangement;

said arrangement including means to reduce partially the torque of the motor in response to oscillations within such natural frequency range.

3,937,153
SWINGING RAILWAY BOGIE BOLSTER
Jean Durocher, Crespin, France, assignor to A.N.F. - Frangeco, Crespin, France
Filed Apr. 24, 1974, Ser. No. 463,600
Claims priority, application France, Apr. 27, 1973, 73.15306
Int. Cl.² B61F *3/08, 5/06, 5/08, 5/12*
U.S. Cl. 105—190 R **7 Claims**



1. A railroad bogie comprising:

a bogie frame having a longitudinal axis and a transverse vertical mid plane;

wheels connected to said frame;

cradles pivotally suspended from said frame with each cradle having a long dimension that is positioned in a longitudinal direction with respect to said frame and each cradle having its long dimension positioned symmetrically with respect to said mid plane;

a bolster rocker beam supported within said cradles with the rocker beam in its rest position in substantial alignment with said mid plane;

said rocker beam having diverging side surfaces with each side surface making a uniform angle with said mid plane when the beam is in its rest position;

each of said cradles having a pair of diverging support surfaces with the support surfaces being substantially parallel to said side surfaces with the beam in its rest position;

spring means positioned between each support surface and each of said side surfaces;

each of said spring means having an end in contact with a support surface and another end in contact with a side surface;

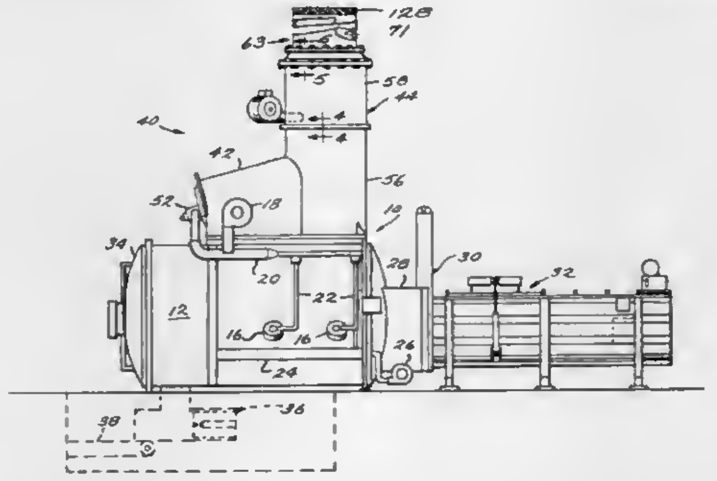
each of said spring means having an axis which is inclined inwardly toward said mid plane from the support surface in contact with the spring means;

each cradle supporting a pair of spring means, and

the axes of each pair of spring means supported by each cradle being in substantial longitudinal alignment,

whereby each spring means undergoes cooperative movement with the other spring means in each pair of spring means in absorbing compressive stress, shear stress of torsional stress resulting from movement of the bolster beam away from its rest position.

3,937,154
AFTERBURNER APPARATUS FOR INCINERATORS OR THE LIKE
Carroll T. Hughes, Jr., Richmond, Va., assignor to Consumat Systems, Inc., Richmond, Va.
Filed Aug. 28, 1974, Ser. No. 501,444
Int. Cl.² F23G *5/12*
U.S. Cl. 110—8 A **20 Claims**



1. An incinerator for disposing of waste material comprising:

a main combustion chamber for receiving and burning of waste material;

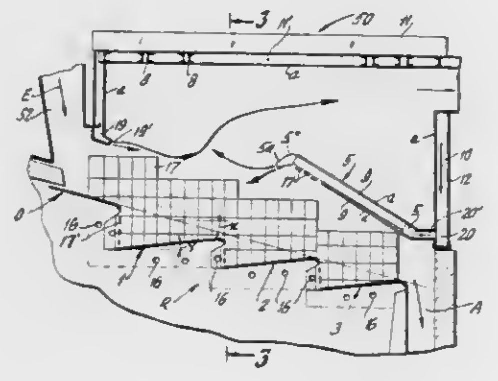
a secondary combustion chamber operatively connected to said main combustion chamber for receiving exhaust gases therefrom and burning waste products in the exhaust gases to produce substantially pollution-free flue gases, said secondary combustion chamber having a pressure burner therefor with a burner nozzle therein at least for assisting in the starting of the burning of waste products in the exhaust gases;

stack means operatively connected to said secondary combustion chamber for receiving flue gases therefrom and discharging the same to atmosphere;

and means for supplying air under pressure into said secondary combustion chamber to assist in the support of combustion therein, said last-mentioned means including means for at least heating the air by heat transferred from flue gases downstream of said secondary combustion chamber prior to entry of the air into said secondary combustion chamber, said air supply means including a blower and said means for heating said air including a passageway in said stack means operatively connected to said blower and discharging into said secondary combustion chamber at discrete openings;

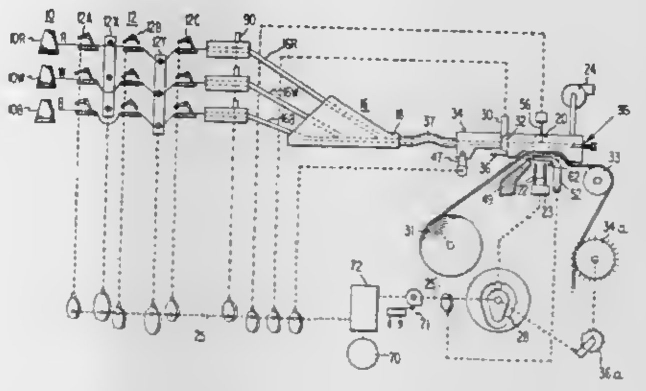
at least a first portion of said stack means adjacent said secondary combustion chamber being refractory lined, said secondary combustion chamber being refractory lined, and at least another portion of said stack means downstream of said first portion including three annular walls comprising an outer wall member, an intermediate wall member, and an inner wall member, the intermediate wall member and the inner wall member being heat transfer members and the three wall members defining a portion of said passageway for air under pressure, the other portion of said passageway being defined by individual passages through said refractory lined first portion of said stack means terminating in said discrete openings in said secondary combustion chamber.

3,937,155
COMBUSTION FURNACE PARTICULARLY FOR BURNING REFUSE
Hans Kunstler, Eulenweg 25, 8048 Zurich, Switzerland
Filed Oct. 8, 1974, Ser. No. 513,073
Claims priority, application Switzerland, Oct. 8, 1973, 14295/73
Int. Cl.² F23G *5/00*; F23B *1/22*
U.S. Cl. 110—18 R **9 Claims**



4. A combustion furnace particularly for burning refuse, comprising a furnace housing having an inlet adjacent one end for the infeed of material to be burned and a discharge spaced from said inlet, and a grate extending between said inlet and said discharge and having an overall sloping angle sloping downwardly to said discharge, said grate including a plurality of separate individual grate step portions arranged one after the other between said inlet and said discharge and each sloping downwardly in a direction opposite to said overall slope of said grate, said housing including spaced inner and outer walls and an intermediate partition arranged in substantially parallel relationship and defining an inflow passage for air between the intermediate wall and the inner wall from the top of said furnace along each side, said inflow passage having openings into said furnace in the vicinity of said grate and the space between said partition wall and the outer wall defining a return conduit communicating with the end of said inflow conduit for the outflow of the air which is in excess of that required for combustion.

3,937,156
METHOD AND MEANS OF TUFTING
Abram N. Spanel, 344 Stockton St., Princeton, N.J. 08540
Continuation of Ser. No. 239,931, March 31, 1972. This application Nov. 27, 1973, Ser. No. 419,417
Int. Cl.² D05C *15/16*
U.S. Cl. 112—79 FF **29 Claims**



1. In a tufting machine having at least one bit-applying element, pneumatic means including at least one passageway for flow of gas therethrough to deliver a strand of yarn to said bit-applying element, said passageway having a first part shiftable relative to a second part, the method of tufting, comprising the steps of:

applying a flow of gas to said yarn strand to move said strand through said passageway;

shifting said first part of said passageway relative to said second part of said passageway to provide an access opening;

applying a yarn-severing means through said access opening to cut said strand; and

closing said access opening by relative shifting of said first part of said passageway relative to said second part of said passageway to render effective said flow of gas.

16. In a tufting machine having bit-applying elements, pneumatic means including passageways for flow of gas therethrough to deliver strands of yarn to said bit-applying elements, said passageways extending to said bit-applying elements respectively, said passageways having a first part shiftable relative to a second part, the method of tufting comprising the steps of:

transporting yarn strands by pneumatic means through passageways to a loading position with respect to bit-applying elements;

shifting a first part of each of said passageways relative to a second part of that passageway to provide an access to the passageway;

operating a yarn-severing means through each said access to sever said strand to leave a bit in a loading position relative to a bit-applying element;

tufting by moving the bits of yarn into tufting relationship with a backing layer with said bit-applying elements; and

clearing tufts from the paths of said bit-applying elements in their next tufting operation.

3,937,157
METHOD AND MEANS OF TUFTING
Abram Nathaniel Spanel, Princeton, N.J., and David R. Jacobs, New Canaan, Conn., assignors to Abram N. Spanel, Princeton, N.J.
Filed May 29, 1974, Ser. No. 474,264
Int. Cl.² D05C *15/16*
U.S. Cl. 112—79 FF **25 Claims**

1. Tufting apparatus including bit-applying means for applying tufts to a backing layer wherein the improvement comprises:

metering means utilizing rotatable yarn feed means to provide predetermined lengths of yarn;

- driving means engageable with a surface of said rotatable yarn feed means;
- braking means engageable with a surface of said rotatable yarn feed means wherein said rotatable yarn feed means is always in engagement with either said driving means or said braking means; and
- pneumatic means to transport the yarn to a tufting station.

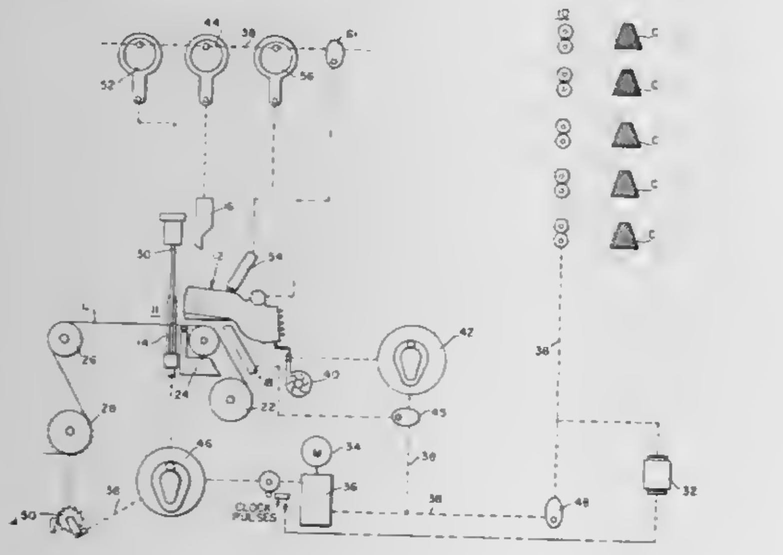
3,937,158
METHOD AND MEANS OF TUFTING

Abram N. Spanel, 344 Stockton St., Princeton, N.J. 08540

Filed May 29, 1974, Ser. No. 474,265

Int. Cl.² D05C *15/16*

U.S. Cl. 112—79 FF **23 Claims**



20. A tufting machine for forming tufts with respect to a backing comprising:
- tufting-needle means reciprocable between a threading position and a tufting position;
- threader tube assembly means for each tufting needle means, each threader tube assembly means including a plurality of yarn passageways through each of which may be transported a yarn strand;
- mechanism for reciprocating said threader tube assembly means relative to said needle means;
- pneumatic means associated with said threader tube assembly means for transporting yarn strands via said threader tube assembly means into said tufting-needle means when in said threading position;
- control means for said threader tube assembly means to select a desired passageway through which to transport a yarn strand into said tufting needle means;
- strand severing means;
- means operating said strand severing means to sever said yarn strands; and
- means for reciprocating said tufting-needle means for applying said severed yarn strands to the backing to form tufts.

3,937,159
YARN CLAMPING MEANS FOR TUFTING APPARATUS

Abram N. Spanel, 344 Stockton St., Princeton, N.J. 08540

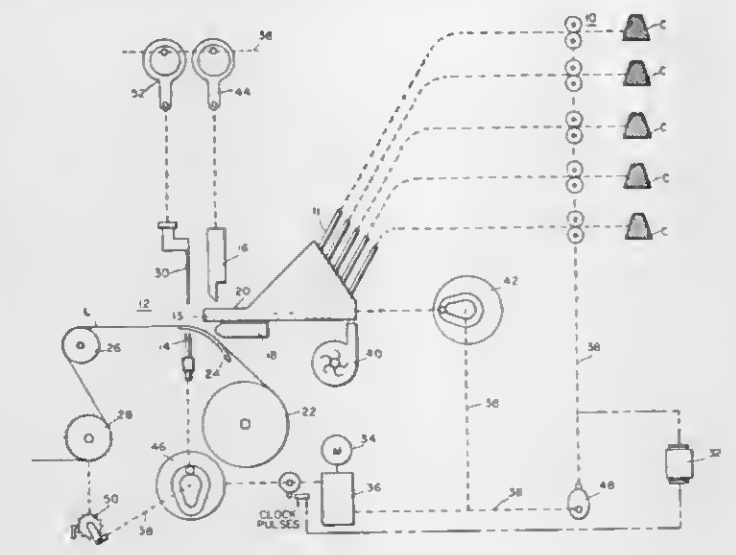
Filed May 29, 1974, Ser. No. 474,266

Int. Cl.² D05C *15/16*

U.S. Cl. 112—79 R **20 Claims**

1. Tufting apparatus for the production of tufted products comprising:
- bit-applying elements for applying yarn to a backing layer to form tufts;
- means for advancing yarn to said bit-applying elements;
- clamping means, including a yarn engaging surface for preventing any substantial longitudinal movement prior to tufting of the yarn relative to said bit-applying elements whenever said clamping means engages said yarn, said clamping means further including resilient means disposed as a part of said clamp means; and
- means for disengaging said clamping means at desired times during the tufting cycle.

10. Tufting apparatus having tufting stations at which pairs of needles are utilized to apply yarn to a backing layer, including yarn clamping means comprising:



- a bit clamp for each individual tufting station, each said bit clamp being aligned between the two needles of each pair and operable to clamp yarn against said backing layer;
- a clamping bar including a cantilever portion, said clamping bar being positioned adjacent said bit clamps with said upper cantilever portion extending over said bit clamps;
- resilient means extending between said bit clamps and said cantilever structure of said carrier bar; and
- lifter bar means to overcome the bias of said resilient means and disengage said bit clamps.

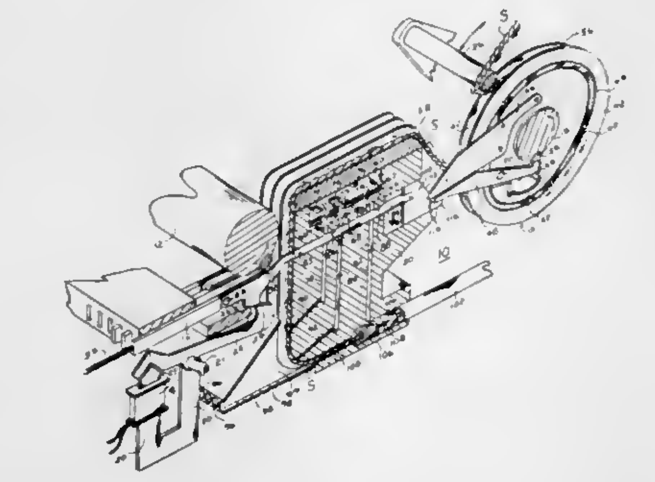
3,937,160
YARN CONTROL AND FEEDING APPARATUS

Abram N. Spanel, Princeton, N.J.; David R. Jacobs, and David N. Buell, both of New Canaan, Conn., assignors to Abram N. Spanel, Princeton, N.J.

Filed May 16, 1975, Ser. No. 578,209

Int. Cl.² D05C *15/18*

U.S. Cl. 112—79 FF **24 Claims**



1. Tufting apparatus including bit-applying means for applying tufts to a backing layer at a tufting station comprising:
- a metering means utilizing a controlled yarn feed means for advancing a yarn strand;
- means including pulsed control means for controlling the yarn feed means to feed a predetermined length of the yarn strand; and
- pneumatic yarn transporting means to advance the yarn strand to the tufting station.

17. A tufting machine comprising:
- a yarn source;
- a yarn metering and feeding means;
- a yarn pullback means which enables yarn previously fed to be returned to a standby position, said pullback means being pneumatically actuated;
- a pneumatic yarn transport means;
- control means for actuating said yarn metering and feeding means, said yarn pullback means, and said pneumatic transport means;
- yarn severing means; and
- tufting elements to tuft said severed yarn.

3,937,161
EMBROIDERY MACHINE

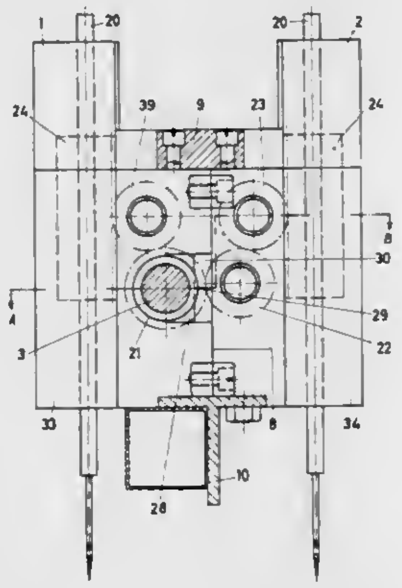
Rudolf Reich, An der Ringstr. 6, 545, Neuwied, Germany

Filed July 3, 1974, Ser. No. 485,463

Claims priority, application Germany, July 5, 1973, 2334134; Jan. 23, 1974, 2403167

Int. Cl.² D05C *3/04*

U.S. Cl. 112—83 **33 Claims**



1. An embroidery machine including at least one embroidery station, each such station having at least one universal embroidery head, each universal head accommodates on the needle side thereof a plurality of embroidery station elements including needles, piercers, fabric pressures, yarn catchers and front yarn knives;
- means coupled to said elements for adjusting said elements vertically and horizontally over an embroidery field;
- a basic guide;
- each universal head comprises two individual heads (1,2) associated with said elements;
- means for selectively arranging said individual heads, together with their corresponding elements, on said guide side by side, staggered, or steplessly relative to each other, whereby said elements are adapted to become selectively coupled and decoupled individually, in groups, or all together; and
- driving means including mechanical means for driving at least some of said elements in said embroidery station.

3,937,162
DEVICE FOR USE IN DEMOLISHING A CONSOLIDATED AND HARDENED SLURRY BODY REMAINING IN THE HOLD OF AN IRON-ORE CARRIER

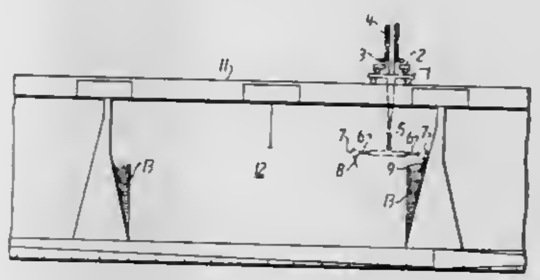
Mitsuo Fukutani, Nagasaki, Japan, assignor to Kobe Steel Ltd., Kobe and Mitsubishi Heavy Industries, Ltd., Tokyo, both of, Japan

Filed Apr. 12, 1973, Ser. No. 350,591

Claims priority, application Japan, Apr. 12, 1972, 47-36631

Int. Cl. B63b *35/00*

U.S. Cl. 114—0.5 R **7 Claims**



1. For use in the wet-loading and dry-unloading of an iron-ore carrier which is loaded with iron-ore in a slurry state in its hold, a device for demolishing, by using reciprocal movement, a consolidated and hardened slurry body remaining in the form of a wall along the side walls of said hold comprising:
- a first platform mounted on the opposing edges of a hatch opening of said hold capable of moving longitudinally of said carrier;
- a second platform mounted on said first platform being movable laterally of said carrier;
- a turning means mounted on said second platform and being turnable about an axis perpendicular to said platforms through a given angle;
- an outer cylinder mounted on said turning means in parallel relation with said axis of turning and turnable therewith and having an inner cylinder extensible therefrom vertically downward into said hold and retractable relative to said outer cylinder; and
- arm members being extensible from and retractable toward said inner cylinder solely in a horizontal plane and attached to the lower end thereof extending in horizontally opposite directions therefrom, and provided with a pair of demolishing edges disposed substantially perpendicular thereto at opposite ends thereof, respectively, one of said edges having a configuration corresponding to the corners of said hold while the other one of said edges has a configuration corresponding to the flat sidewalls of said hold whereby said edges may be utilized alternatively in demolishing portions of said slurry body remaining within said corners of said hold and along said sidewalls of said hold as a result of selective rotation of said turning means.

3,937,163
LAUNCH AND RECOVERY VESSEL

Edgar N. Rosenberg, 6914 Mission Gorge Road, San Diego, Calif. 92120

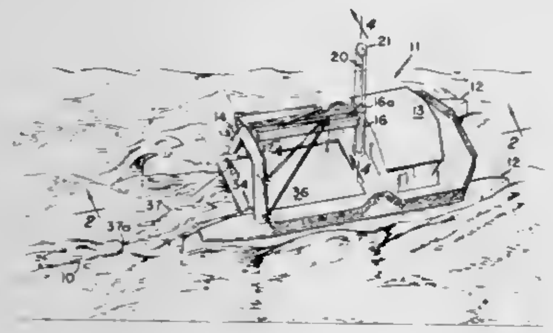
Filed Jan. 31, 1975, Ser. No. 545,947

Int. Cl.² B63C *1/12;* **B63B** *35/40*

U.S. Cl. 114—43.5 UC **13 Claims**

1. A method of docking and recovering a submersible by a surface vessel comprising:
- positioning the submersible within a downward projection of a well provided in the surface vessel;
- securing the distal end of a cable to the submersible;
- connecting the bitter end of the cable to a two-for-one hydraulic-ratchet purchase;

lifting the submersible through the water-air interface by the cable as the submersible responds to surface wave action; and



hoisting the submersible on board the surface vessel.

3,937,164

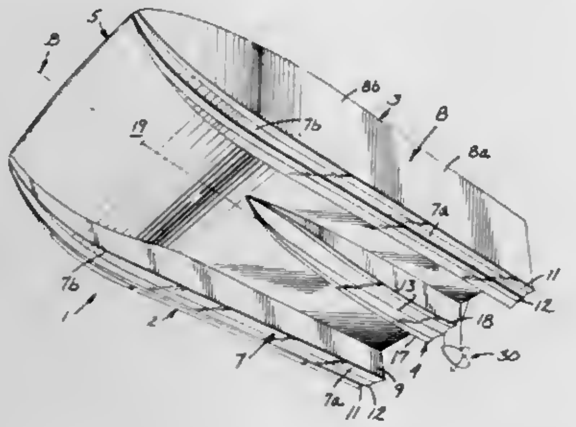
HIGH SPEED WATER CRAFT APPARATUS

Thomas M. Austin, Fargo, N. Dak., assignor to Austin Aeromarine, Inc., Fargo, N. Dak.

Filed Nov. 20, 1974, Ser. No. 525,406

Int. Cl.² B63B *1/20, 1/38*

U.S. Cl. 114—66.5 R **6 Claims**



1. A high-speed water craft, said craft being generally symmetrical about a longitudinal vertical plane extending along the craft centerline, said craft comprising:

a. two symmetrically disposed hulls for supporting the craft on the water without the need for submerged hydrofoils, each of said hulls including a streamlined front portion, exterior and interior side surfaces, and a bottom running surface, said running surfaces having a planar aft portion upon which the craft rides and an upwardly curving streamlined front portion, said aft portions bounded by an outside lateral edge defining a base plane which is generally parallel to and adjacent the water surface when the craft is moving forward;

b. a body structure having a bottom surface carried between said hulls for supporting a superstructure and passenger compartment; and

c. said body structure bottom surface having a curved longitudinal profile, each point on said bottom surface being spaced apart from said base plane to form a tunnel-like opening beneath said body structure; said curved surface defining a venturi chamber in the tunnel beneath the craft for creating aerodynamic forces on the craft when it is propelled forward in the water to elevate and stabilize the craft without the need for submerged hydrofoils, said venturi chamber partially enclosed by the interior surfaces of said hulls and the water surface upon which the craft rides; said bottom surface having a generally unbroken forward surface portion which essentially spans the entire distance between said hull interior side surfaces to form a frontal opening into said venturi tunnel, said forward portion being inclined rearwardly and downwardly toward said base plane to form a constricted throat-like opening in said venturi tunnel, said frontal portion adjoining a rearwardly disposed intermediate surface portion which slopes rearwardly and upwardly away from said base plane to form an enlarged expansiontype opening in said venturi tunnel; said intermediate portion adjoining a rearwardly disposed aft surface portion which slopes rearwardly and downwardly toward said base plane; said aft surface portion having an aft edge generally adjoining said hull interior surfaces to form at least one exit opening from said venturi tunnel; said aft edge being positioned above said base plane a distance at least equal to 60% of the distance between said base plane and said forward surface portion at the constricted opening; said venturi tunnel tending to form a cushion of moving air beneath the craft as it is propelled forward for partially elevating it above the water surface and for providing stability to the craft without the need for submerged hydrofoils.

3,937,165

CONSTRUCTION OF BRIDGE DECKING AND LIKE STRUCTURES

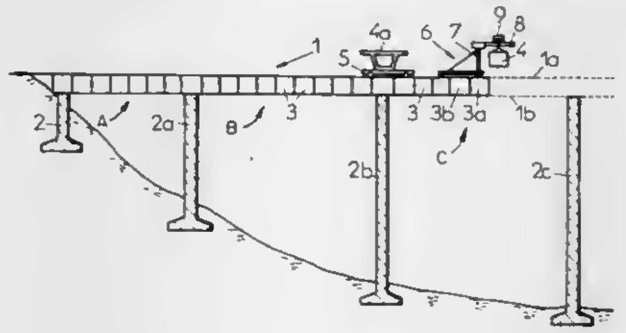
Pierre Armand Maurice Thivans, Chevreuse, France, assignor to Campenon Bernard Europe, Paris, France

Filed Sept. 20, 1974, Ser. No. 507,950

Claims priority, application France, Sept. 21, 1973, 73.33961

Int. Cl.² E01D *19/02*

U.S. Cl. 14—77 **8 Claims**



1. In a "step-by-step" method for the construction of a segmental span structure, in which a plurality of modules having a transverse dimension equal to the width of the span structure and a length substantially less than said transverse dimension, are mounted in succession at the end of a cantilever span section disposed between successive supporting pillars, the improvement comprising the steps of (a) displacing a module along the cantilever span section with said transverse dimension of the module parallel to said span section, up to a stand-by position adjacent an end edge of the cantilever span section; (b) lifting the module; (c) pivoting the module by a quarter of a turn over said end edge about a substantially vertical axis located between a side edge of the cantilever span section and the module in said stand-by position, to bring the module in outboard position with the transverse dimension of the module parallel to said end edge; and (d) lowering the module from said outboard position to an erection position engaging said end edge.

3,937,166

FLOAT CONNECTION ASSEMBLIES FOR MULTI-HULLED BOATS

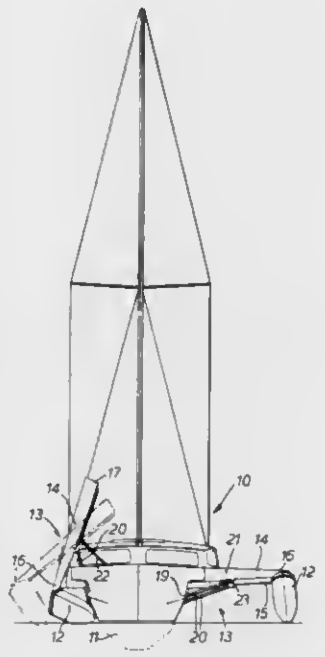
Ian Lindsay, 122 Barton Road, Hawthorne, Queensland, Australia

Filed Oct. 7, 1974, Ser. No. 512,246

Claims priority, application Australia, Oct. 9, 1973, 5154/73

Int. Cl.² B63B *43/14*

U.S. Cl. 114—123 **9 Claims**



1. A variable beam multi-hulled boat including a main float, a retractable stabilising float in spaced apart side-by-side relationship and an above-water float connection assembly adapted to maintain said floats in parallel side-by-side relationship, said assembly including a support beam fixed to said stabilising float and a pivot assembly connecting said support beam to said main float for pivotal movement with respect to said main float about a longitudinal axis to enable said stabilising float to be retracted towards said main float, and said pivot assembly including a pair of spaced guide frame assemblies each connected pivotally at opposite ends to said main float and to said support beam respectively for pivotal movement about respective spaced longitudinal axes and said guide frame assemblies being adapted to restrain said support beam for pivotal movement guiding said stabilising float for movement in a substantially horizontal direction towards said main float, to maintain a stabilising relationship with said main float at all times, and there being provided releasable locking means associated with said float connection assembly and operable to maintain said stabilizing float in its extended position.

3,937,167

METHOD FOR UNLOADING AND TRANSFERRING EGGS

William H. Warren, Omaha, Nebr., assignor to Henningsen Foods, Inc., White Plains, N.Y.

Filed Feb. 25, 1974, Ser. No. 445,577

Int. Cl.² B66C *23/00*

U.S. Cl. 214—152 **8 Claims**

1. A method of unloading eggs from a series of successively oncoming trays and transferring said eggs to a conveyor comprising the steps of:

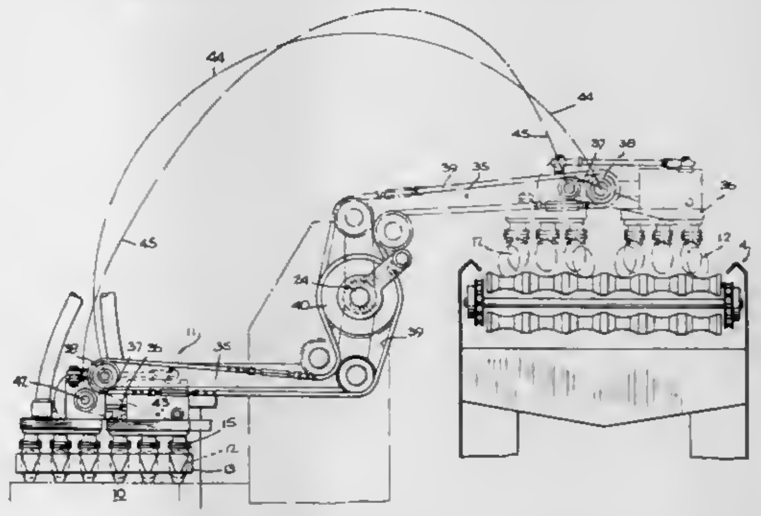
manually moving a tray to a horizontally fixed egg transfer pick-up position;

applying egg carrying means to the eggs in said tray;

operating said means to move said eggs from said tray onto a conveyor while said tray remains in said pick-up position;

then superposing a second tray of eggs on said empty first tray;

applying said egg carrying means to the eggs in said second tray; and



operating said means to move said last named eggs onto said conveyor while said second tray remains superposed on said first tray.

3,937,168

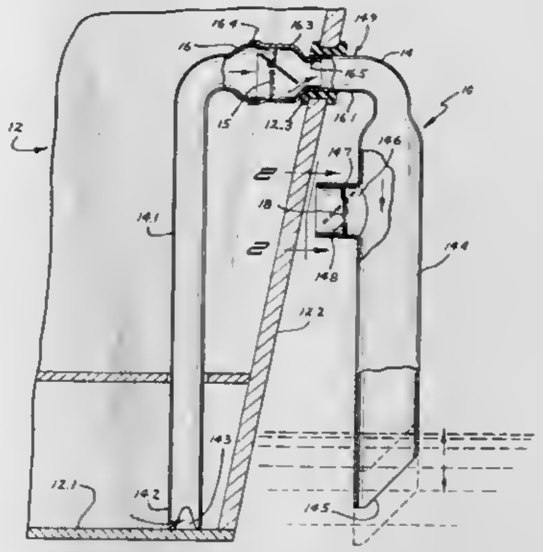
BILGE PUMP

Lyle E. Doak, 30 E. Golden Lake Road, Circle Pines, Minn. 55014

Filed Mar. 17, 1975, Ser. No. 558,914

Int. Cl.² B63B *13/00, 29/16, 37/00;* **F04F** *11/00*

U.S. Cl. 114—183 A **8 Claims**



1. A bilge pump for pumping bilge gases from a boat and comprising a generally inverted U-shaped length of tubing providing a first leg having an open end for receiving bilge gases from a boat and a second leg having a lower, open end immersable in the water outside the boat, the tubing including an exhaust port spaced above the immersed tubing end, and freely-opening check valve means permitting the flow of bilge gases in the first leg only away from the gas-receiving end when water is receding from the second leg and also permitting the flow of bilge gases through the exhaust port outwardly of the tubing to the atmosphere when water is entering the second leg.

3,937,169

ARRANGEMENT IN CARGO HATCHES ON SHIP WEATHER DECKS

Carl Erik Ingemar Dahlin, Partille, Sweden, assignor to von Tell Trading Co. AB, Molndal, Sweden

Filed Aug. 19, 1974, Ser. No. 498,378

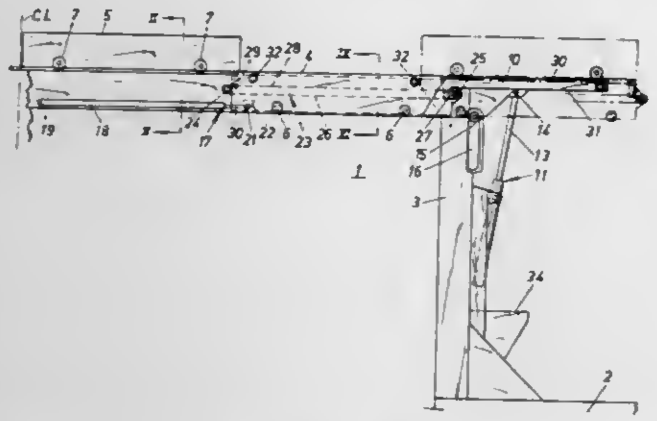
Claims priority, application Sweden, Aug. 20, 1973, 7311290

Int. Cl.² B63B *19/12*

U.S. Cl. 114—202 **13 Claims**

1. An improvement in cargo hatches for ship weather decks including a frame surrounding the hatchway and extending

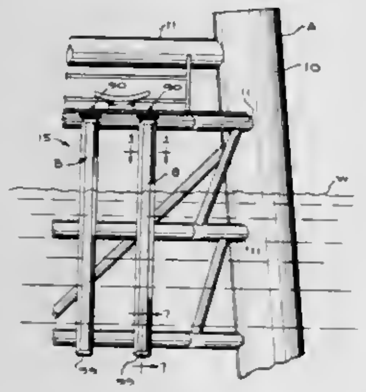
above the deck, the improvement comprising a ramp juxtaposed to one side of said frame, means for laterally moving a cargo hatch section onto said ramp, and means for displacing



said ramp together with said cargo hatch section for storing said cargo hatch section in a vertical position adjacent said one side of said frame and below the upper level of said frame.

3,937,170
BUMPER GUARD AND ARRANGEMENT FOR WATER COVERED AREAS

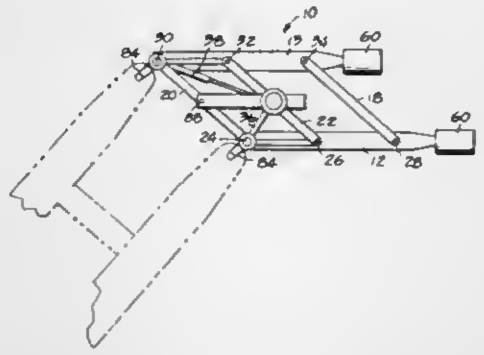
Glen E. Drewett, P. O. Drawer 52627, Lafayette, La. 70501
Filed Oct. 29, 1974, Ser. No. 518,354
Int. Cl.^{2} B63B *69/02;* **F16F** *7/12*
U.S. Cl. 114—219 **30 Claims**



1. An elongated elastomer body for use as a bumper guard in water covered areas and for attachment to a partially submerged structure from above the surface of the water, the body comprising:
- a. a base member including:
  - 1. a bottom surface;
  - 2. a pair of side surfaces;
  - 3. a pair of top surfaces extending inwardly toward each other in the same general plane, but terminating at their ends in spaced relation with the combined length of said pair of top surfaces being less than the length of said bottom surface;
- b. an upper member including:
  - 1. an upwardly extending surface at the end of each pair of top surfaces of said base member, and terminating at their upper ends in a plane above the plane in which said top surfaces of said base member extend;
  - 2. a surface extending outwardly from the upper ends of each of said upwardly extending surfaces and extending in the same general plane in spaced relation to and overlying said top surfaces of said base member to thereby form a pair of longitudinally extending grooves along each edge of said elongated elastomer body;
- c. reinforcing means in said base member, said reinforcing means including a member which is rigid along the entire extent thereof, said rigid member being disposed between said bottom surface of said base member and said longitudinally extending grooves, the dimension of said rigid member in a direction transverse to said longitudinally extending grooves being greater than the space between said ends of said top surfaces of said base member so that said rigid member overlaps the space between the grooves and extends outwardly of both upwardly extending surfaces defining said grooves.

3,937,171
MULTIHULL TUGBOAT

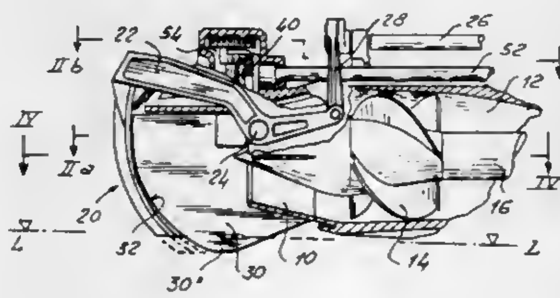
John K. Seaborn, 6638 Colton Blvd., Alameda, Calif. 94501
Filed July 12, 1974, Ser. No. 488,193
Int. Cl.^{2} B63B *21/56*
U.S. Cl. 114—235 R **13 Claims**



1. A multihull tugboat of the kind used for moving and steering barges and other floating objects, said tugboat comprising:
- two laterally spaced individual hulls;
- connecting means connecting the hulls for relative longitudinal movement while retaining the hulls parallel;
- shifting means associated with said connecting means for shifting the hulls longitudinally to selectively move the prow of one hull ahead of the other hull; propulsion means on each said hull;
- an engine in each said hull for driving said propulsion means associated with that hull;
- and fender means at the forward end of each hull for engagement with the barge or other object to be moved.

3,937,172
WATER JET PROPELLING APPARATUS FOR BOATS

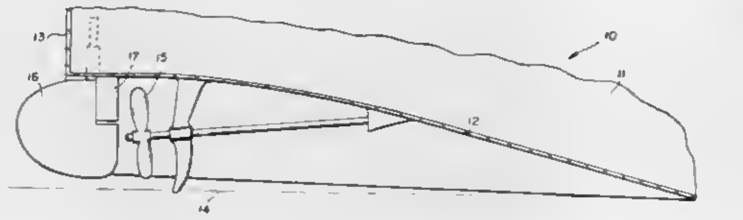
Luigi Castoldi, 161 Viale Mazzini, 20081 Abbiategrasso, Italy
Filed May 22, 1974, Ser. No. 472,379
Claims priority, application Italy, May 25, 1973, 24624/73
Int. Cl.^{2} B63H *11/00*
U.S. Cl. 115—12 R **8 Claims**



1. In a boat having a bow and a stern and provided with water propelling means including a nozzle adapted to direct a water jet astern of the boat and motor-driven pump means for delivering a stream of pressurized water through said nozzle, a combination comprising steering means including a pair of steerable rudder blades located astern of said nozzle and respectively at opposite lateral sides of the water jet issuing from said nozzle, said blades being pivotable supported in substantial parallel relationship with a given distance therebetween for pivoting movement about substantially vertical axes to either side from a rest position in which said blades extend substantially parallel to a longitudinal plane of symmetry of said nozzle, said blades having trailing and bottom edges defining openings through which the water jet may pass into the surrounding body of water; reversing gate means having a jet-deflecting surface positioned to face the bow and located astern of said nozzle and being movable about an axis transverse to the lengthwise elongation of the boat, said jet-deflecting surface extending over a wider transversal distance than said given distance and being curved downwardly and forwardly, said jet-deflecting surface comprising a central portion having two adjacent arcuate concave sections extending together substantially over said given distance, each of said arcuate sections having their respective centers of curvature in said vertical axes of said blades and defining clearances with said trailing edges of said blades when the latter are in said rest position, and channel-shaped side portions located symmetrically laterally outwardly of said control portion and forming respective channels of generally U-shaped configuration having curved side edges extending forwardly towards said bow; and means for moving said reversing gate means closely adjacent to said trailing edges of said blades between an upper position in which said jet-deflecting surface does not intercept said jet, a plurality of intermediate positions in which said jet-deflecting surface moves to an increasing extent over the opening defined between said trailing edges of said blades so as to force said jet of water to flow at least in part in downward direction through the opening defined between said bottom edges of said blades, and a lower end position in which said jet-deflecting surface forces substantially the entire amount of said jet of water to flow through the opening defined between said bottom edges of said blades, whereby in said lower end position, when said blades are in said rest position, any water escaping laterally through said clearances is directed forwardly in said channels to enhance the reverse thrust and, when said blades are pivoted, the steering action is not attenuated by any water escaping laterally from the clearance at the side of the boat opposite the desired steering direction.

3,937,173
DEEP-V TUNNEL STERN BOAT

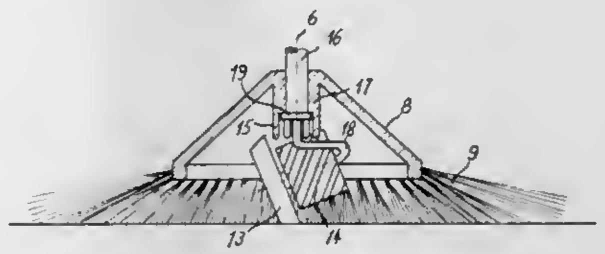
Robert B. Stuart, Penn Yan, N.Y., assignor to Penn Yan Boats, Incorporated, Penn Yan, N.Y.
Continuation-in-part of Ser. No. 408,675, Oct. 23, 1973, abandoned. This application Sept. 11, 1974, Ser. No. 504,874
Int. Cl.^{2} B63H *5/16*
U.S. Cl. 115—39 **11 Claims**



1. A boat having a deep-V planing hull with port and starboard sides of the hull bottom inclined upward from the keel line and having a propeller substantially housed in a stern tunnel recessed into said hull bottom to a depth progressively increasing with distance aft from the forward end of said tunnel, said boat comprising:
- a. the tops of port and starboard halves of a forward region of said tunnel being generally flat and obtusely angled relative to each other at approximately the angle of said deep-V to meet at said deep-V angle above said keel line;
- b. said tops of each of said halves of said forward region of said tunnel each having a constant width of slightly more than the radius of said propeller from the forward end of said tunnel to the region of said propeller so that both the cross-sectional area of said tunnel and the wetted surface area of said tunnel substantially increase gradually with distance aft from said forward end of said tunnel;
- c. said tops of said halves of said forward region of said tunnel being inclined upward relative to said sides of said hull bottom with increasing distance aft from said forward end of said tunnel; and
- d. said tops of said tunnel halves in a region just forward of said propeller being gradually shaped into a semi-cylinder fitting around the upper half of said propeller.

3,937,174
SWEEPER HAVING AT LEAST ONE SIDE BRUSH

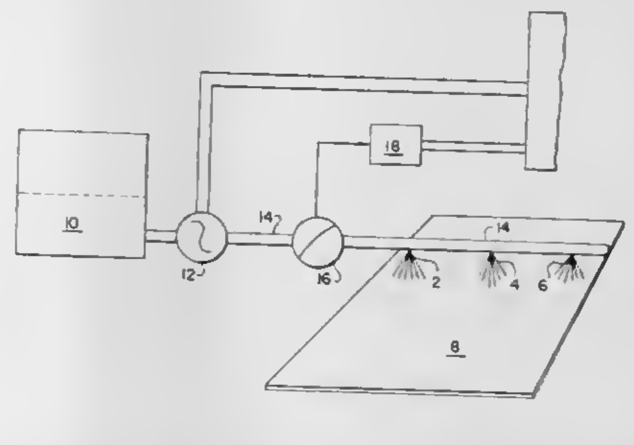
Hermann Haaga, Im Dinkelacker 2, 7000 Stuttgart-Oberturkheim, Germany
Filed Dec. 21, 1973, Ser. No. 427,302
Claims priority, application Germany, Dec. 21, 1972, 2262648
Int. Cl.^{2} A47L *11/32*
U.S. Cl. 15—42 **8 Claims**



1. Sweeper comprising at least one laterally arranged side brush rotatably mounted about a rotational axis inclined with respect to the vertical axis of the sweeper, said side brush including a base member having bristles arranged in a pattern about the rotational axis and extending downwardly and outwardly from said base member, and drive means responsive to the lateral displacement of the sweeper over the surface being swept for rotating said side brush in a predetermined direction of rotation about the rotational axis independently of the direction of lateral displacement of the sweeper, said bristles of said side brush being arranged in a circular pattern and said drive means including roll means for frictionally engaging the surface being swept, said roll means being disposed within the bristle crown and mounted for pivotal movement about the rotational axis, said roll means operatively engaging gear means concentrically disposed about the rotational axis of said side brush.

3,937,175
PULSED SPRAY OF FLUIDS

Ellwood J. Horner, Armonk, N.Y., assignor to American Hoechst Corporation, Bridgewater, N.J.
Filed Dec. 26, 1973, Ser. No. 427,673
Int. Cl.^{2} B05C *11/00;* **B05B** *1/08*
U.S. Cl. 118—7 **15 Claims**



1. Apparatus for automatically spraying a liquid on the surface of a moving object comprising, transport means for transporting said object, spray means mounted adjacent the path of travel of said object for spraying an impinging spray of said liquid onto a predetermined area of said surface of said

object as said object passes said spray means, distribution line means operatively coupled to said spray means, supply means operatively coupled to said distribution line for continuously supplying said liquid to said distribution line and pulsing means operatively coupled to said distribution line for repetitively and alternately passing said liquid through said spray means for a sufficiently short, first, predetermined period of time to maintain an essentially constant, predetermined pressure on said liquid issuing through said spray means and interrupting the passage of said liquid through said means for a sufficiently long, second, predetermined period of time to build up said predetermined pressure and for repetitively passing said liquid through said spray means at a rate sufficient to deposit a continuous coating of said liquid on said predetermined area of said object.

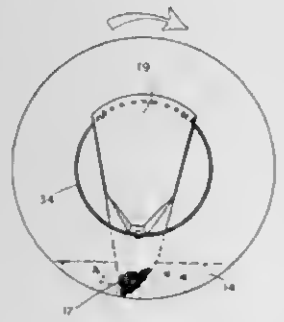
3,937,176
TABLET COATING APPARATUS WITH UNLOADER

David W. Nicholson, Indianapolis, and Gerrit J. Diepering, Franklin, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 19, 1975, Ser. No. 551,191

Int. Cl.^{2} B05C *3/08*

U.S. Cl. 118—19 **4 Claims**



1. In a tablet coating pan having an opening and a removable gravity discharge unloader chute with an inlet associated with the interior of said pan the outlet of said chute being removably attached to the edge of said pan opening and an outlet exterior of said pan, for rotation therewith, the improvement comprising a substantially truncated conical bottom wall extending between said chute's inlet and outlet for gravity feeding tablets therebetween and having a progressively increasing width toward said outlet and a top surface cooperating with said bottom wall and a pair of side walls to define said chute's opening.

3,937,177
ELECTROSTATIC PRINTING MACHINE WITH IMPROVED TONER FOUNTAIN AND RECOVERY SYSTEM

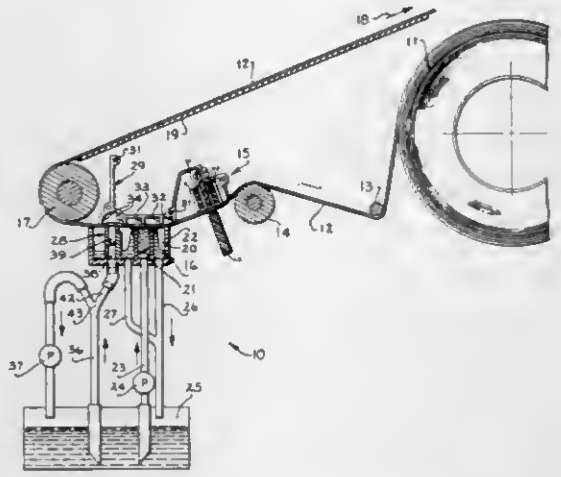
William A. Lloyd, San Jose, Calif., assignor to Versatec, Inc., Cupertino, Calif.

Filed Mar. 7, 1974, Ser. No. 449,057

Int. Cl.^{2} C23C *13/08*

U.S. Cl. 118—50 **13 Claims**

1. In a printing machine of a type having an elongate web of material to be moved in a predetermined path for printing thereon by charging discrete portions thereof and then developing said portions in response to application of toner material, means for developing said portions comprising a supply reservoir of liquid toner material, a first elongate tray extending across the path of said web and lying adjacent same, a second elongate tray containing said first tray and acting as a catch basin for recovering toner overflowing from said first tray, a pump and connections for recirculating liquid toner material along a path defined from said reservoir to said first tray then overflowing said toner material from said first tray into said second tray and returning said toner to said reservoir, said first tray being disposed at a level serving to carry the overflowing toner material into wetting contact with said web portions to develop same, and recovery means downstream of said first tray for removing toner from said web comprising an elongate, hollow, open top channel member formed to include upwardly extending side walls defining the upstream and downstream side walls of said channel member, the upper end edges of said side walls providing a relatively sharp scraping edge disposed to extend across the path of said web for engaging the undersurface of said web, the edge of the upstream side wall serving to physically remove the main portion of the unadhered liquid toner from the web, the edge of the downstream side wall of said channel member serving to physically remove substantially all the remaining toner carried by said web, said channel member including a drain opening therein for withdrawing toner material removed from said web, and vacuum means coupled to said drain opening for recovery of toner from said channel member, said vacuum means including fluid connections between said pump and said drain for applying a suction to said channel member in response to operation of said pump.



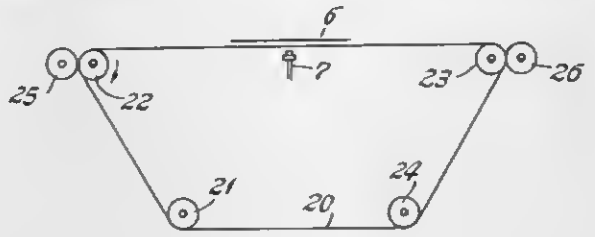
3,937,178
FILM INKING SYSTEM

Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,188

Int. Cl.^{2} B05C *1/06*

U.S. Cl. 118—109 **7 Claims**



7. System for providing a continuous supply of liquid ink for transfer to a copy sheet under the effects of imaging pressure comprising a supply of a thin plastic film having an originally ink-free, oleophilic surface and adapted for movement to a transfer position relative to a copy sheet and an imaging element, inking means in advance of said position for applying a continuous thin film consisting essentially of liquid non-drying ink to the oleophilic surface of the plastic film for pressure-transfer from said oleophilic surface to the copy sheet, means for continuously bringing the oleophilic surface of said plastic film into contact with said inking means to provide the oleophilic surface of said plastic film with a continuous thin film of said liquid non-drying ink in advance of the movement of the plastic film into said transfer position, and porous, ink-absorbent de-inking means for removing a substantial portion of the unused ink remaining on said plastic film after said film passes said transfer position and prior to the recontact of the

plastic film with the inking means to receive a new continuous film of liquid non-drying ink.

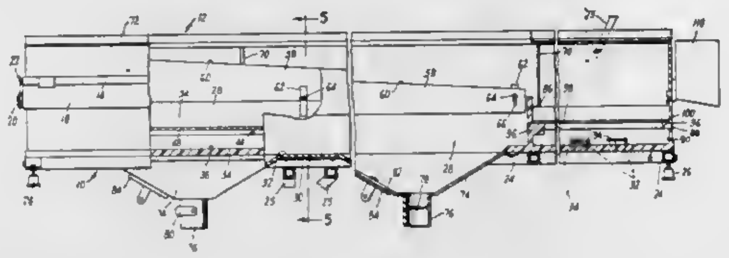
3,937,179
PARTICLE CLOUD COATING METHOD AND APPARATUS

William C. Goodridge, Branford, Conn., assignor to Electrostatic Equipment Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 254,472, May 18, 1972, Pat. No. 3,828,729. This application Mar. 25, 1974, Ser. No. 454,566. The portion of the term of this patent subsequent to Aug. 13, 1991, has been disclaimed.

Int. Cl.^{2} B05B *15/04;* B05C *11/06*

U.S. Cl. 118—301 **17 Claims**



1. In apparatus for coating an object, the combination comprising:

a. fluidized bed means for producing a cloud of particles;

b. means for conveying at least the portion of an object to be coated along a travel path, which travel path is laterally adjacent said fluidized bed means; and

c. mechanical barrier means effectively interposed between said fluidized bed means and said travel path, and including at least a first upstanding baffle spaced laterally to one side of said travel path and extending along at least a portion thereof, said baffle having an elongated edge portion across which particles may readily pass from said cloud to said travel path, said conveyor means and baffle being so disposed relative to one another that said travel path traverses the imaginery, laterally-extending projection surface of said edge portion at a non-perpendicular angle thereto,

so that particles from said cloud may deposit on the object, so as to develop a coating thereon along an axis that is angularly displaced from the axis of said travel path as progressively lower verticle portions of the object horizontally register with said edge portion and thereby become exposed behind said baffle during passage of the object thereby.

3,937,180
APPARATUS FOR ELECTROSTATICALLY CHARGING WORKPIECES FOR SPRAY COATING APPLICATION

Richard F. Wiggins, Fairfield, Conn., assignor to The Gyromat Corporation, Stratford, Conn.

Filed Apr. 10, 1974, Ser. No. 459,470

Int. Cl.^{2} B05B *5/02*

U.S. Cl. 118—635 **4 Claims**

1. Apparatus for transporting workpieces along a predetermined path through a coating zone of uncharged coating particles, including a conveyor structure having

a. a plurality of conductive work supporting elements adapted to support a workpiece and to convey said workpiece along said path;

b. isolating means adapted to provide a nonconductive barrier between selected ones of said supporting means and the remainder of said conveyor structure;

c. charging means adapted to apply a high electrical potential to said selected ones of said supporting means in said coating zone;

d. said charging means including contact means engageable with said support means and forming a progressive charging zone, a high voltage zone, and a discharging zone,

e. said charging zone including a plurality of successively arranged charging contact elements engageable in sequence with work supporting elements being advanced by said conveyor structure,

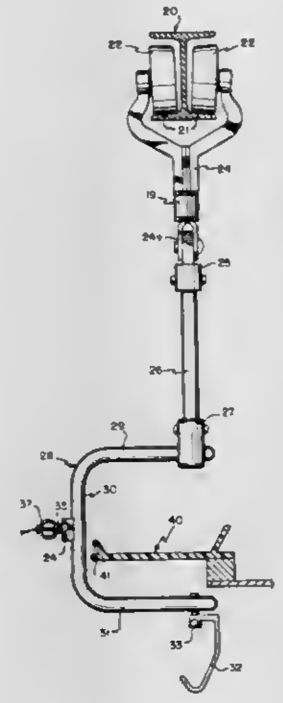
f. a high voltage charging source,

g. a multiple step voltage divider system connected to said high voltage source and to said charging contact elements, whereby successive such elements are charged at progressively higher voltages for progressive charging of a workpiece being conveyed along said charging zone,

h. said high voltage zone comprising contact means connected to said high voltage charging source and adapted for charging a workpiece to a predetermined high voltage,

i. said high voltage zone being located downstream of the progressive charging zone in the direction of movement of a workpiece carried by the conveyor structure,

j. said discharge zone comprising discharge contact means for grounding workpieces upon exit thereof from said high voltage zone.



3,937,181
MAGNETIC BRUSH TYPE DEVELOPING MECHANISM IN ELECTROPHOTOGRAPHIC COPYING MACHINE

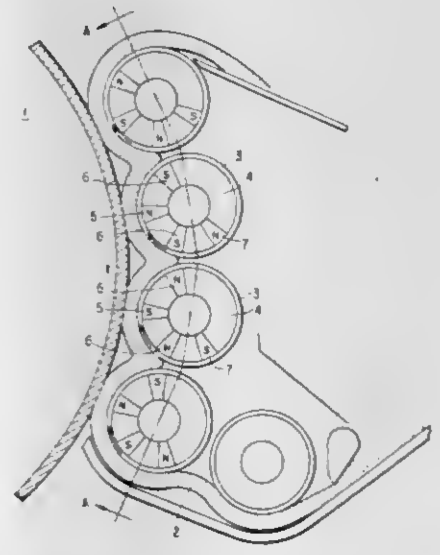
Kenichi Handa, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 22, 1974, Ser. No. 472,375

Claims priority, application Japan, May 23, 1973, 48-56866

Int. Cl.^{2} B05B *5/02*

U.S. Cl. 118—637 **1 Claim**



1. A magnetic brush developing apparatus for developing a latent image on a light sensitive member with toner, said apparatus comprising

a plurality of rotatable developing rolls successively disposed adjacent said light sensitive member, all said rolls being rotated in the same direction;

a plurality of fixed cylindrical magnets respectively disposed within said rolls to effect movement of said toner between said light sensitive member and said developing rolls;

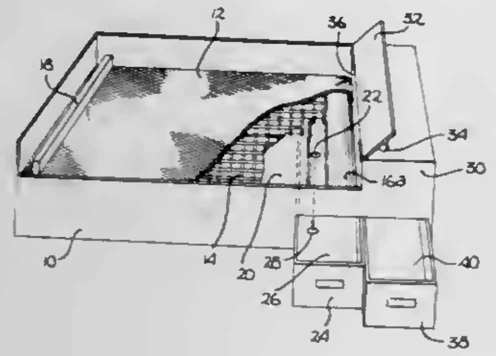
each said magnet having a first pole directly opposed to the surface of said light sensitive member where the polarity of each first pole is opposite to that of adjacent first poles so that the development of said latent image is emphasized;

each said magnet having two second poles of a polarity opposite to that of its first pole to improve the transportability of said toner, said second poles being disposed on opposite sides of said first pole and within a developing region defined between the surface of the light sensitive member and an imaginery line approximately extending through the centers of said cylindrical magnets, the angle between said first pole and said second poles being maximized to improve the development effected by each said first pole, at least some of said second poles of each magnet being substantially adjacent second poles of opposite polarity disposed on adjacent magnets, only said first and second poles being disposed with said developing region for each magnet;

each said magnet having a third pole of a polarity opposite to that of its second poles so disposed outside of said developing region with respect to one of its second poles that the tendency of adjacent second poles of adjacent cylindrical magnets to undesirably affect the transportability of the toner is minimized

whereby the combination of said first, second and third poles of said cylindrical magnets tends to maximize both development of the latent image and transportability of the toner.

3,937,182
PET TOILET
Mioako Kamimura, 8-19-5 Minami-Koiwa, Edogawa, Tokyo, Japan
Filed Apr. 5, 1974, Ser. No. 458,174
Int. Cl.² A01K *29/00*
U.S. Cl. 119—1 **3 Claims**



1. An indoor pet toilet for liquid and solid waste comprising:

a belt-like member including a filter belt portion which is mounted for relative movement, said filter belt having a grip to manually move said belt;

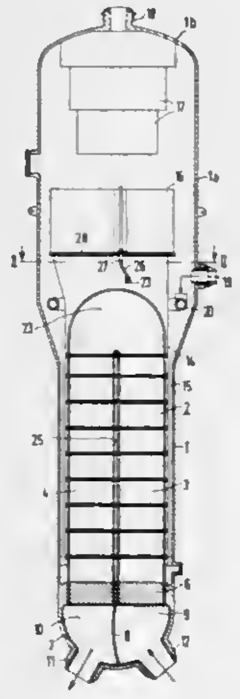
a tray which is positioned below said filter belt and which is so sloped as to guide said liquid from said filter belt toward at least one hole therein;

at least one removable receptacle for said liquid waste which is so arranged that said liquid from said tray pours into said receptacle;

at least one removable receptacle for said solid waste which is positioned adjacent one wall of said toilet, said receptacle for said solid waste having an opening disposed thereabove so that said solid waste falls into the inside thereof by manually moving said belt-like member, said receptacle for said solid waste and said receptacle for said liquid waste disposed in said toilet such that said receptacles can be selectively removed and replaced; and

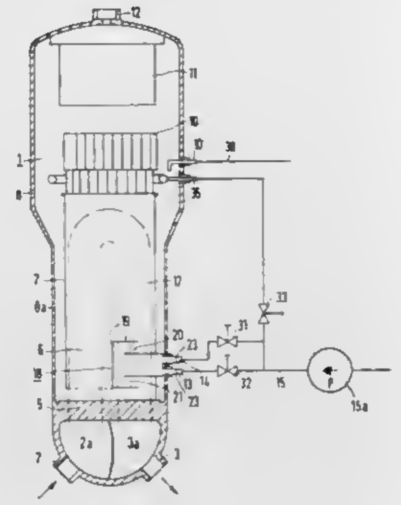
a lid member arranged and configured on said toilet adjacent said opening above said receptacle for said solid waste whereby odors are retarded from escaping from said solid waste receptacle.

3,937,183
STEAM GENERATOR
Raimund Reisacher, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany
Filed Nov. 19, 1974, Ser. No. 525,083
Claims priority, application Germany, Nov. 21, 1973, 2358106
Int. Cl.² F22B *1/06, 37/26*
U.S. Cl. 122—34 **6 Claims**



1. A steam generator comprising a vertical casing having a feed-water inlet and an upper portion forming a steam dome having a steam outlet, said casing forming a portion below said dome, having a tube plate forming a closure and a U-tube bundle having upwardly extending hot and cold legs mounted in said tube plate and a primary header below said tube plate and having primary fluid hot and cold nozzles and a partition for directing primary fluid from said hot nozzle through said hot leg and from said cold leg through said cold nozzle, said tube bundle being circumferentially enclosed by a shroud on top of which a group of water separators extends horizontally above at least substantially the horizontal extent of said tube bundle including both of said legs, said separators being under said steam dome, receiving steam-water mixtures rising from both of said legs inside of said shroud, the shroud and the inside of said casing forming a feed-water descent space to which said separators discharge separated water, said casing containing means for diverting part of the steam-water mixture rising from said hot leg to at least a portion of said separators above said cold leg.

3,937,184
HIGH-PRESSURE STEAM GENERATOR FEED WATER INPUT ARRANGEMENT
Gerhard Frei, and Heinz-Jürgen Schröder, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Dec. 4, 1973, Ser. No. 421,682
Claims priority, application Germany, Dec. 19, 1972, 2262149
Int. Cl. F22b *1/06;* **F22d** *7/04*
U.S. Cl. 122—32 **4 Claims**



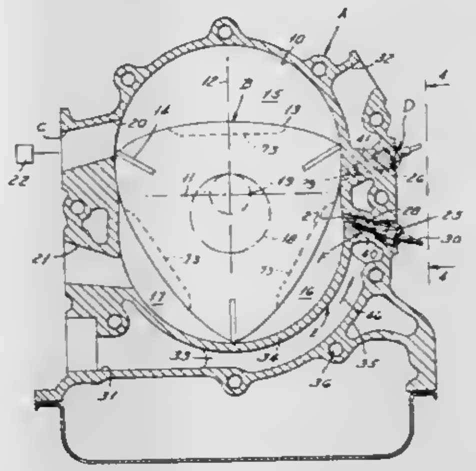
1. A steam generator having a housing provided with a steam output outlet and at least one feed-water input connection, a heat exchanger in said housing converting water therein to high-pressure steam, a source of feed water under a higher pressure than said steam pressure, and a pipe line connecting said source to said feed water input connection; wherein the improvement comprises a flow restricting choke inserted in said feed water input connection, said choke comprising an orifice dimensioned to offer a small flow resistance to the normal input flow through said connection and a comparatively much larger flow resistance to reverse water flow occurring through said connection under said steam pressure in the event said pipe line accidentally opens to the atmosphere, said generator housing containing a feed water preheater formed by walls and to which said connection feeds, said walls being subject to damage by a water flow at a velocity substantially in excess of the normal feed water input flow.

3,937,185
STAGGERED CONFIGURATION FOR WANKEL ENGINE SPARK PLUGS
James R. Dixon, Plymouth, and Charles M. Jones, Detroit, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sept. 5, 1974, Ser. No. 503,534
Int. Cl.² F02B *55/10, 53/12*
U.S. Cl. 123—8.01 **11 Claims**

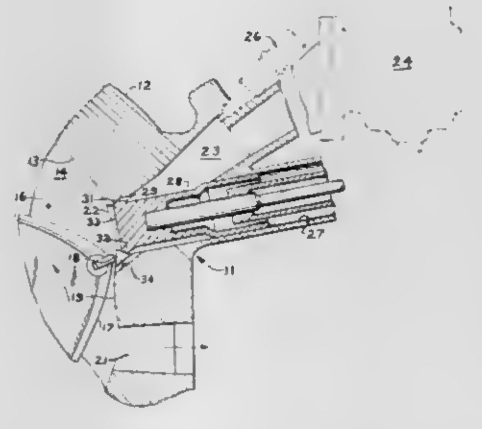
1. In a rotary internal combustion engine having housing walls defining a trochoidally shaped chamber, an eccentrically mounted rotor for planetary movement in said chamber and cooperating with said housing walls to define a plurality of variable volume chambers into which is introduced a combustible mixture, said engine having spark plugs interposed in said housings walls and having spark terminals for igniting said mixture at a predetermined sequence, the combination comprising:

a. housing means defining a cooling passage along at least one of said housing walls and containing a flowing coolant, that portion of said one housing wall separating said variable volume chambers from said passage having a predetermined section thickness to promote an improved heat transfer rate, said one wall having a gas side and a coolant side, said cooling passage and coolant therein being effective to extract heat from said one wall portion to prevent detrimental housing distortion, and

b. a plurality of bosses extending into said passage for containing said spark plugs and each boss having an axis transverse to the direction of coolant flow, each boss having an upstream side and a downstream side taken with respect to the direction of said coolant flow, the axes of said bosses being non-aligned with respect to a centerline of coolant flow through said passage and non-aligned with respect to any transverse section of said flow adjacent said bosses, said bosses positioning said terminals in a staggered pattern or approaching an aligned pattern with respect to a centerline of the gas side of said one wall.



3,937,186
ROTARY COMBUSTION ENGINE WITH IMPROVED FUEL CONTROL
Dieter Stock, Frankenbach, and Johannes Steinwart, Bad Friedrichshall, both of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm and Wankel G.m.b.H., Lindau, both of, Germany
Filed May 23, 1974, Ser. No. 473,091
Claims priority, application Germany, July 5, 1973, 2334183
Int. Cl.² F02B *53/06*
U.S. Cl. 123—8.45 **5 Claims**



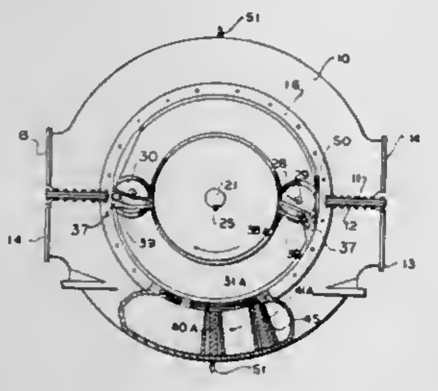
1. A rotary internal combustion engine having a housing comprising a peripheral shell with a multilobed inner surface of substantially trochoidal profile and a pair of side walls defining therein an engine cavity, a generally polygonal rotor having a plurality of apex portions rotatably mounted within the engine cavity and defining with the housing a plurality of operating chambers of variable volume, the rotor apex portions sweeping the inner trochoidal surface in sealing relation thereto, the housing having an exhaust port in the region of a cusp of the trochoid and disposed upstream therefrom in the direction of rotor rotation and an intake port in the peripheral shell in the region of the cusp and disposed downstream there-

from, intake passage means in communication with the intake port and serving to provide fuel-air mixture thereto, wherein the improvement comprises:

a. throttling means comprising an elongated valve member extending into said intake passage means and having its longitudinal axis disposed substantially perpendicular to the inner trochoidal surface at the intake port and being slidable along its axis, said intake passage means having a generally annular chamber close to the intake port and outward therefrom surrounding the inner end of the valve member, said annular chamber being in communication with the engine operating chamber through the intake port when the valve member is in its open position;
b. the valve member having a slide portion and at its inner end a closure head portion integral with said slide portion and having an annular sealing surface thereon;
c. the intake port having therein an annular sealing valve seat formed in the intake port for cooperation with the sealing surface of said valve member head portion and with said valve seat being disposed close to the inner trochoidal surface and being coaxial with said valve member; and
d. said valve member being axially slidable to move its integral head portion axially toward and away from said valve seat so that the intake port is closed when said head portion is in its innermost position against said valve seat and so that a symmetrical annular intake port opening is provided between said head portion and valve seat when the valve member head portion is positioned away from said valve seat.

3,937,187
TOROIDAL CYLINDER ORBITING PISTON ENGINE

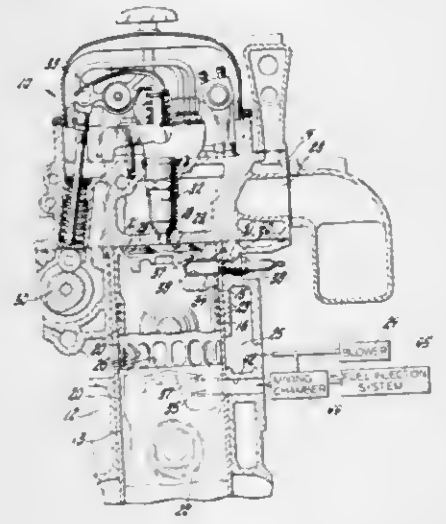
Henry Bergen, P.O. Dowa, Dowa, Malawi
Filed Mar. 15, 1974, Ser. No. 451,577
Int. Cl.² F02B *55/14*
U.S. Cl. 123—8.47 **4 Claims**



1. An internal combustion engine which includes inlet and exhaust means, fuel supply means and means to ignite said fuel within said engine; comprising in combination a toroidal cylinder having an annular slot formed in the inner circumference thereof, a drive shaft supported for rotation axially of said cylinder, a pair of piston carrying components surrounding said axle, a set of pistons set substantially equidistantly around the perimeters of each of said piston carrying components and mounted for annular movement within said cylinder, said piston carrying components having means sealably engaging within said annular slot, and means co-acting between said shaft and said piston carrying components to control relative movement of each of said piston carrying components with the other and hence the relative position of pistons on one of said piston carrying components and pistons on the other of said piston carrying components, said means coacting between said shaft and said piston carrying components including a sunwheel keyed to said shaft, a ring gear secured around said cylinder adjacent said slot and substantially in the same plane as said sun gear, a plurality of planetary gears meshed with said sun gear and said ring gear, and means to support said planetary gears for rotation, said piston carrying means comprising a pair of rings engaging in said slot, annular sealing means between said rings and further annular sealing means between said rings and the walls of said cylinder defining said slot, said pistons being secured to the outer perimeter of said rings, and means to center said rings concentrically around said shaft and to center said pistons within said torodial cylinder, said last mentioned means comprising an annular recess formed around the walls defining said slot, annular seal pads secured within said recess and an inner annular shoulder formed on each of said rings engageable with said seal pads to center said rings and hence said pistons secured to said rings, said annular sealing means between said rings including an inner annular triangular shaped recess formed on the interfacial faces of each of said rings, and an inner contractually stressed triangular cross sectioned sealing ring engaged within said inner recesses and spanning between said rings, said inner recesses and said inner triangular ring being positioned whereby gas passing under pressure from said cylinder acts upon said inner triangular ring, to force same into further sealing engagement with the walls of said inner recesses with a wedging action.

3,937,188
TWO-CYCLE JET IGNITION ENGINE WITH PRECHAMBER IN PISTON

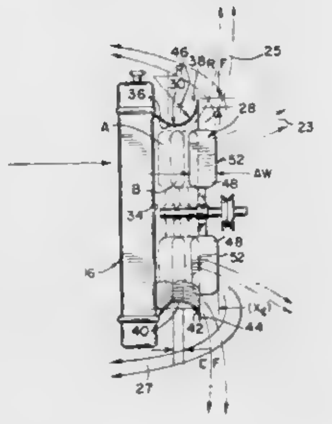
Clifford C. Wrigley, Grosse Pointe Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 13, 1975, Ser. No. 540,672
Int. Cl.² F02B *19/10, 19/18, 3/00*
U.S. Cl. 123—32 SP **7 Claims**



1. A two-cycle internal combustion engine including means defining a closed end cylinder, a piston reciprocably movable in said cylinder and defining therewith a combustion chamber adjacent said cylinder closed end and variable in volume from a minimum to a maximum upon movement of said piston from top dead center to bottom dead center positions, respectively, a prechamber formed within said piston and connected to said combustion chamber by a restricted passage through the end of said piston, said prechamber being open on one side through a cylinder engaging wall of said piston, exhaust means through said cylinder and open to said combustion chamber near its maximum volume to permit removal of exhaust products from said chamber, first inlet means through said cylinder and open to said combustion chamber near its maximum volume to admit a fresh gas charge directly to said combustion chamber, second inlet means through said cylinder and positioned such that upon movement of said piston to its bottom dead center position, said prechamber communicates through its open side with said second inlet means for supplying a rich charge of air-fuel mixture to said prechamber, and ignition means mounted in said cylinder and positioned such that upon movement of said piston to its top dead center position, said prechamber communicates with said ignition means, for ignition of said prechamber charge, combustion of which causes expulsion of burning gases through said restricted passage to said combustion chamber and consequent ignition and burning of the gas charge in said combustion chamber.

3,937,189
FAN SHROUD EXIT STRUCTURE

Harold D. Beck, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Jan. 28, 1974, Ser. No. 437,127
Int. Cl.² F01P *11/10*
U.S. Cl. 123—41.49 **5 Claims**

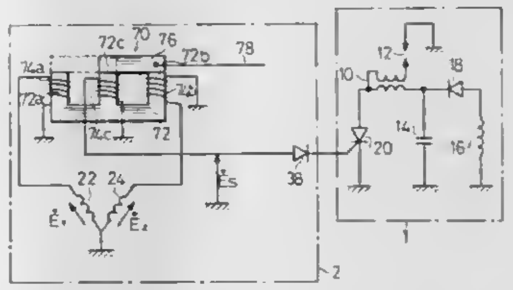


1. A heat exchange apparatus comprising:
a heat exchange means having front and rear faces;
shroud means operatively connected to said heat exchange means about its rear face, said shroud means including a rearwardly extending exit shroud means comprising a radially outwardly and axially rearwardly extending curved shroud section and a flat portion extending radially outwardly from one end of said curved section;
an axial flow, suction-type fan having a plurality of fan blades, each of said fan blades having a trailing edge and a leading edge, said leading edges lying generally in a first radial plane and said trailing edges lying generally in a second radial plane axially spaced rearwardly from said first radial plane a distance AW and wherein the following relationship within plus or minus 12 percent of AW exists: RF= AW/3 where RF is the radial length of said radially extending shroud flat portion and R = 2AW/3 where R is the radius of curvature of said curved shroud section; and said second radial plane being axially spaced rearwardly from the radial plane containing said radially extending shroud flat portion a predetermined distance (X_E) having a value of more than 50 but less than 100 percent of said axial distance AW.

3,937,190
IGNITION TIMING CONTROLLER FOR A BREAKERLESS IGNITION SYSTEM

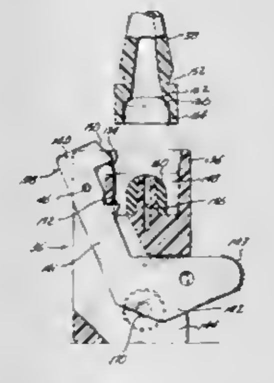
Mitsuo Katsumata, Numazu, Japan, assignor to Kokusan Denki Co., Ltd., Tokyo, Japan
Filed Oct. 10, 1973, Ser. No. 404,870
Claims priority, application Japan, Oct. 12, 1972, 47-101549; Oct. 19, 1972, 47-120042[U]
Int. Cl.² F02P *5/04*
U.S. Cl. 123—117 R **3 Claims**

1. An ignition timing controller for use in a breakerless ignition system for an internal combustion engine having a flywheel magneto, said controller comprising a semiconductor switching means to control a primary current through an ignition coil and a signal source to supply a control signal to said semiconductor switching means, characterized by that said signal source includes a plurality of signal generators to generate respective signal voltages having different phase angles, a voltage composing means comprising a variable dividing resistor having a dividing terminal, said signal generators at one end thereof being commonly grounded and at the other end thereof connected to the ends of said variable dividing resistor whereby the output voltages of said signal generators may be selectively combined at any ratio of one to another, a signal transformer having a primary side connected to said dividing terminal of said variable dividing resistor and a secondary side commonly grounded with said primary side and generating said control signal and a diode for applying said control signal to said semiconductor switching means.



3,937,191
ROCKET LAUNCHER INCLUDING REMOTELY RELEASABLE PIN LATCH

Charles J. Green, Vashon Island, Wash., assignor to Estes Industries Inc., Penrose, Colo.
Division of Ser. No. 223,452, Feb. 4, 1972, Pat. No. 3,820,275. This application Mar. 25, 1974, Ser. No. 454,087
Int. Cl.² F41F *3/04*
U.S. Cl. 12.4—11 R **1 Claim**



1. A toy rocket launcher adapted for refueling a rocket positioned thereon and for remotely triggering the launch of a rocket, said launcher comprising:
a body having a recessed platform on the top thereof and a male member in the recess of said recessed platform for receiving the end of the nozzle of a rocket in said recess and around said male member, said body having a channel communicating between the exterior of said body and the surface of said male member:
a resilient, hemispherical seal member positioned on said male member and having an opening communicating with said channel in said body, said seal member being adapted to sealingly engage the nozzle of a rocket;
means for retentively engaging a rocket nozzle when a nozzle is in sealing engagement with said seal member and for releasing a nozzle in response to movement thereof away from said seal member, said means including a remotely releasable latch pivotally mounted in said body;
said latch and said body having holes positioned to be in alignment when said latch is in retentive engagement with a nozzle;
a pin adapted for engaging the aligned holes in said latch and said body, and;
means for extracting said pin from a point remote from said launcher, to release said latch and enable a rocket seated on said launcher to be launched.

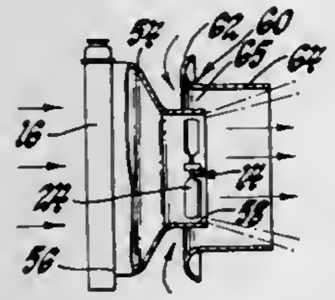
3,937,192
EJECTOR FAN SHROUD ARRANGEMENT

Richard E. Longhouse, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 3, 1974, Ser. No. 502,276

Int. Cl.^{2} F01P *7/10*

U.S. Cl. 123—41.49 **5 Claims**



2. An automotive engine cooling means for use intermediate a radiator and an engine, said cooling means comprising a fan having a plurality of fan blades and being operatively connected to and driven by said engine, and concentric inner and outer fan shrouds, each mounted so as to have a portion thereof positioned radially outwardly of said fan with said outer shroud extending a predetermined distance past said fan toward said engine, said outer shroud having a rectangular-shaped face formed on one end thereof and secured to said radiator with the other end thereof being circular-shaped, and said inner shroud having a diffuser formed at the engine end thereof and being secured to said fan blades at the outer tips thereof, the air drawn through said fan and the air entrained through the clearance between said shrouds terminating in an ejector action extending from the engine end of said inner shroud to the engine end of said outer shroud, said ejector action serving to substantially diminish air-flow recirculation around the outer tips of said fan blades to the low-pressure area intermediate the fan and the radiator.

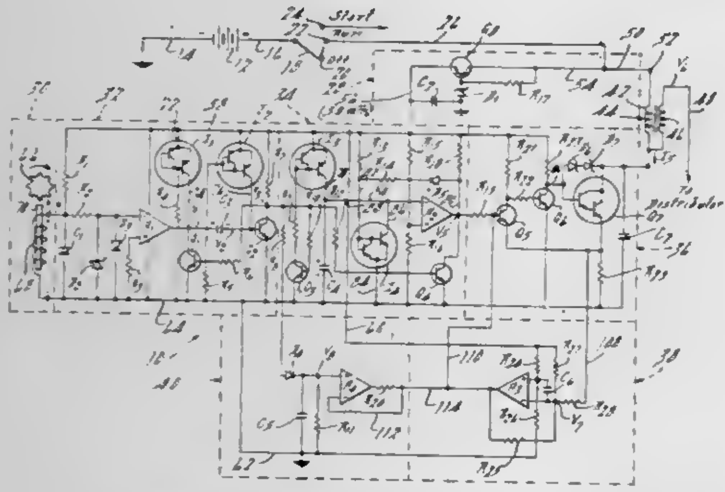
3,937,193
ELECTRONIC IGNITION SYSTEM

Soo Nam Kim, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 19, 1973, Ser. No. 417,443

Int. Cl.^{2} F02P *5/04*

U.S. Cl. 123—117 R **12 Claims**



11. An ignition system for a spark-ignition internal combustion engine having a direct current potential source and an ignition coil having at least a primary winding coupled to said direct current potential source, said ignition system comprising:

a solid-state switching device connected in series with said ignition coil primary winding, said solid-state switching device having a conductive state permitting current flow through said ignition coil primary winding and having a nonconductive state preventing current flow through said ignition coil primary winding;

means for generating a periodic electrical signal in timed relation to operation of said engine, said electrical signal having a period equal to the ignition cycle of said engine;

a first capacitor for storing electrical charge;

a first constant current source coupled to said first capacitor;

a constant current drain coupled to said first capacitor;

circuit means for supplying electrical charge at a constant rate to said first capacitor from said constant current source for a predetermined fractional portion of said electrical signal, said circuit means for charging said first capacitor being coupled to said circuit means for generating said electrical signal;

circuit means for discharging said first capacitor through said constant current drain during each period of said electrical signal and after the end of said predetermined fractional portion of said electrical signal during which said first capacitor is charged, said first capacitor being discharged through said constant current drain until the charge on said first capacitor has decreased to a predetermined level;

circuit means for placing said solid-state switching device in its conductive state when said first capacitor has discharged to said predetermined level; and

circuit means for placing said solid-state switching device in its nonconductive state at a predetermined point in said electrical signal.

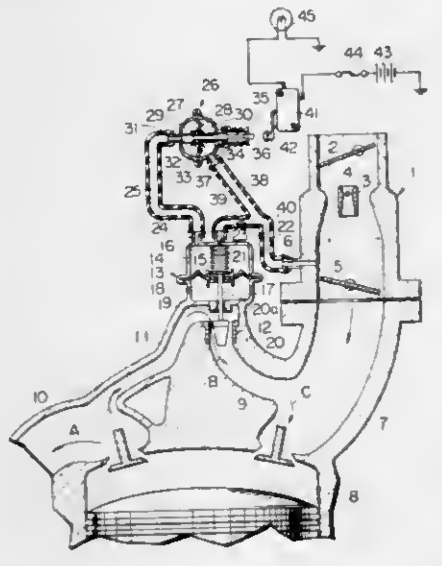
3,937,194
ALARM APPARATUS FOR CIRCULATING EXHAUST GAS FLOW CONTROL DEVICE

Sigeo Tamaki, and Tomoo Itoh, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 25, 1974, Ser. No. 445,280

Int. Cl.^{2} F02M *25/06*

U.S. Cl. 123—119 A **9 Claims**



1. An alarm apparatus for a recirculating exhaust gas flow control device, which device is employed in a combustion engine and has an expansible chamber responsive to the intake combustion air pressure and drivingly connected to a recirculation exhaust gas flow control valve for changing the quantity of exhaust gas recirculated in accordance with the intake combustion air pressure of the engine, which alarm apparatus comprises: a housing; a movable member disposed in said housing for dividing said housing into separate opposed first and second alarm expansible chambers; means fluid communicating each of said first and second alarm expansible chambers with said device expansible chamber; means for producing an alarm signal in response to a predetermined movement of said movable member as produced by a predetermined pressure difference between said alarm expansible chambers.

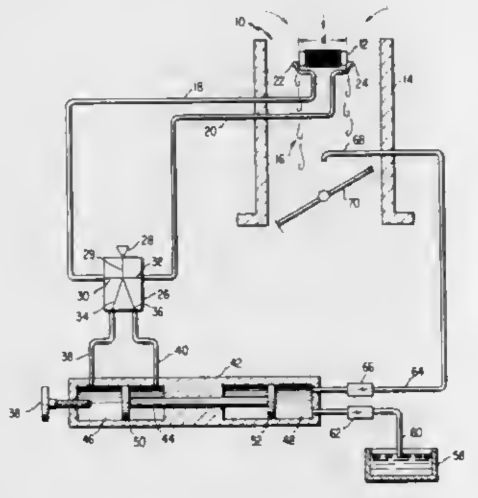
3,937,195
CONSTANT MASS AIR-FUEL RATIO FLUIDIC FUEL-INJECTION SYSTEM

Robert L. Woods, Kensington, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 26, 1974, Ser. No. 500,838

Int. Cl.^{2} F02M *59/10;* **G01F** *1/32*

U.S. Cl. 123—119 R **9 Claims**



1. In an internal combustion engine having an intake port, the improvement which comprises a constant mass air-fuel ratio fuel-injection system which comprises:

fluidic mass air flow sensor means for producing pressure oscillations in direct proportion to the mass air flow to said engine;

a source of fuel; and

means responsive to said pressure oscillations for delivering a constant amount of fuel from said source to said engine per oscillation cycle.

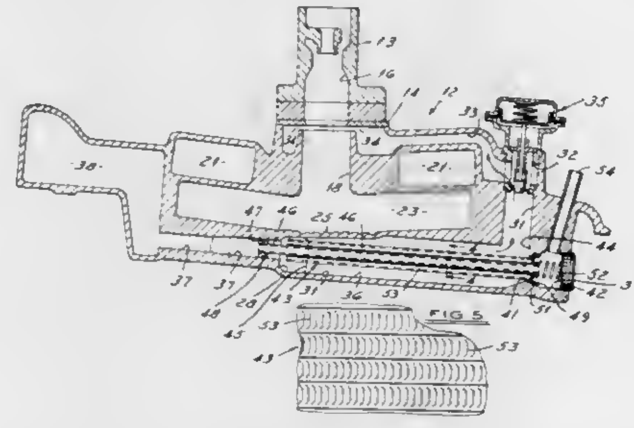
3,937,196
INTAKE MANIFOLD FOR AN INTERNAL COMBUSTION ENGINE HAVING AN INTERNALLY CONTAINED EXHAUST GAS RECIRCULATION COOLER

Robert R. Cook, Dearborn, and Roy E. Diehl, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 5, 1975, Ser. No. 547,423

Int. Cl.^{2} F02B *27/00*

U.S. Cl. 123—119 A **16 Claims**



1. An intake manifold for supplying fuel, air and exhaust gases to a V-type multicylinder internal combustion engine having combustion chambers disposed along opposite sides of a longitudinal centerline,

said manifold comprising a casting having an upwardly opening riser passage, a generally horizontal plenum chamber in communication with said riser passage, a set of runner passages extending generally transversely from said plenum chamber, a transversely extending exhaust gas crossover passage,

an exhaust gas recirculation passage extending longitudinally from said exhaust gas crossover passage to means for receiving an exhaust gas recirculation control valve constructed to meter the flow of exhaust gas through said exhaust gas recirculation passage, and a metered exhaust gas passage extending from said valve receiving means to said riser passages,

a coolant passage to conduct engine coolant through the manifold,

a heat exchanger positioned in said exhaust gas recirculation passage comprising a longitudinally extending liquid conduit and finned elements disposed about said conduit,

said liquid conduit forming a portion of said coolant passage,

seals means separating said conduit from saidi exhaust gas recirculation.

3,937,197
HEATING MEANS FOR THE INTAKE SYSTEM OF A WATER-COOLED COMBUSTION ENGINE

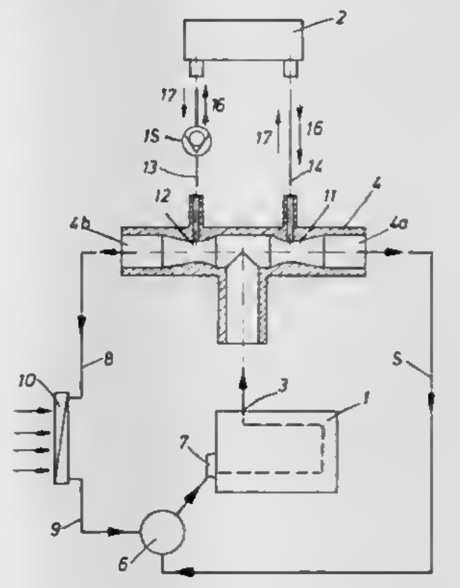
Wolfgang Bihler, Bad Friedrichshall, Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm, Germany

Filed Mar. 18, 1974, Ser. No. 451,774

Claims priority, application Germany, Mar. 22, 1973, 2314250

Int. Cl.^{2} F02M *31/00*

U.S. Cl. 123—122 H **3 Claims**



1. A water-cooled combustion engine having a cooling water inlet and a cooling water outlet, a cooling water pump, a first cooling water circuit comprising a first line from said outlet to said inlet and a second cooling water circuit comprising a second line from said outlet to said inlet, a cooler in said first line, a thermostatic valve for closing said first circuit and opening said section circuit when the engine is cold, and vice versa when the engine is warm, the engine having an intake system with a heating means which comprises a cooling water flow chamber having a supply line connected to said first line upstream of the cooler and a return line connected to said second line and a non-return valve to prevent flow of cooling water from said return line through said flow chamber and supply line.

3,937,198
ROLL-OVER VALVE AND VAPOR SEPARATOR

Gopinath Sudhir, Dearborn, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

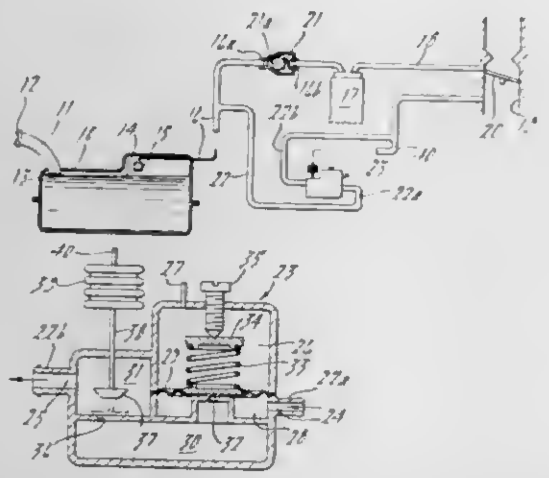
Filed Jan. 24, 1974, Ser. No. 436,287

Int. Cl.^{2} F02D *19/00*

U.S. Cl. 123—136 **10 Claims**

1. In an automobile engine having a fuel tank and an intake manifold for supplying fuel and air to said engine, the combination of vapor storage means, vent conduit means for venting

fuel vapors to said storage means from said tank, said vent conduit means including bypass conduit means for providing a restricted vapor flow path bypassing said storage means, control means for controlling vapor flow through said vent conduit means from said tank comprising valve means in said bypass conduit means movable between open and closed positions, means for normally moving said valve means to said closed position to close said bypass conduit means, and pressure actuated means responsive only to a predetermined, sub-atmospheric pressure in said intake manifold and a simultaneous vapor pressure in said tank greater than a predetermined comparatively low pressure above atmospheric for moving said valve means to open said bypass conduit means to establish communication therethrough between said tank and intake manifold.



3,937,199
FUEL INJECTION PUMP

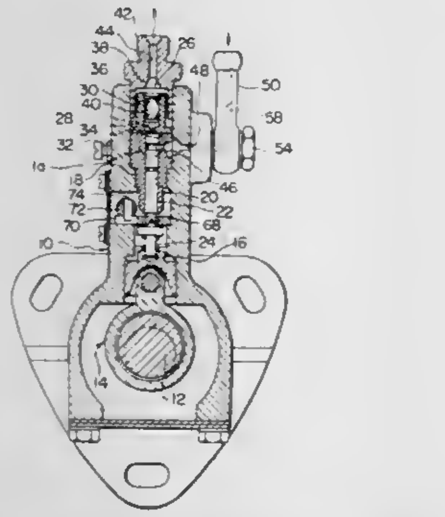
Koichi Takahashi, Yokohama, and Manabu Tsunematsu, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed July 29, 1974, Ser. No. 492,910

Claims priority, application Japan, Aug. 20, 1973, 48-92405

Int. Cl.² F02D *1/04*

U.S. Cl. 123—140 MC **6 Claims**



1. A fuel injection pump of a fuel injection system of an automotive vehicle, comprising a pump shaft rotatable about its axis, a fuel metering unit having a plunger which is axially reciprocally movable in cycles synchronized with the revolution of the pump shaft for discharging fuel in each of the cycles and which is rotatable about its axis for regulating timings, durations and quantities of the discharge of the fuel in said cycles, an elongated control member which is in driving engagement with the plunger and which is axially movable in both directions for driving the plunger to rotate in either direction about its axis, resilient biasing means supported on the elongated control member for biasing the control member in one of said directions, a centrifugal governor responsive to a centrifugal force developed by the revolution of the pump shaft, linkage means engaging the elongated control member and the centrifugal governor for axially moving the elongated control member in the other of said directions against a force of said resilient biasing means, and a vacuum-operated actuator responsive to vacuum in an air intake unit of the engine for bodily moving a one-piece assembly comprising the elongated control member, the resilient biasing means, the centrifugal governor and the linkage means in a direction parallel to the directions of axial movement of the elongated control member in accordance with the vacuum directed from the air intake unit to the vacuum-operated actuator.

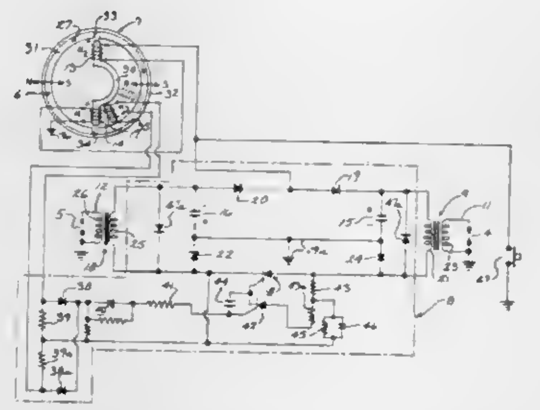
3,937,200
BREAKERLESS AND DISTRIBUTORLESS MULTIPLE CYLINDER IGNITION SYSTEM

Richard L. Sleder, and Arthur O. Fitzner, both of Fond du Lac, Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed July 18, 1973, Ser. No. 380,384

Int. Cl.² F02P *3/06*

U.S. Cl. 123—148 CC **12 Claims**



1. A capacitor discharge ignition system for a multiple cylinder internal combustion engine comprising a charging circuit connection means providing time spaced opposite polarity signals between a pair of terminal means, a first capacitor means selectively connected to the charging circuit connection means across said terminal means and charged in response to a first polarity signal, a second capacitor means connected to the charging circuit connection means across said terminal means and charged in response to an opposite polarity signal, first and second individual discharge circuit means connected across each of said capacitor means, and a common discharge control switch means connected as a common conducting part of both of said discharge circuit means for discharge of the corresponding capacitors and including diode network means connected between opposite sides of the control switch means and capacitor means and establishing individually operable discharge circuits for each of said capacitor means in series with said switch means, and maintaining isolation of the charging circuit means and of the discharging circuit means.

3,937,201
CYLINDER FOR RECIPROCABLE PISTON INTERNAL COMBUSTION ENGINES

Hans-Ulrich Howe, Bensberg-Frankenforst, Germany, assignor to Klockner-Humboldt-Deutz AG, Cologne, Germany

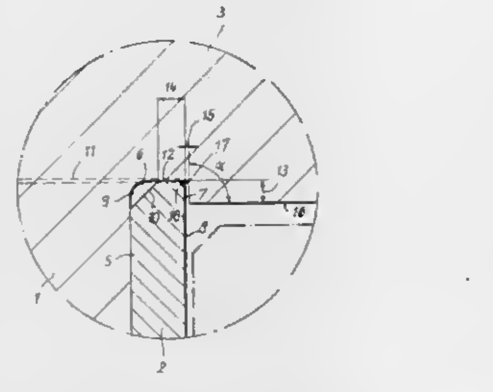
Filed Nov. 2, 1973, Ser. No. 412,442

Claims priority, application Germany, Nov. 4, 1972, 2254053

Int. Cl.² F16J *11/04;* **F02F** *1/08*

U.S. Cl. 123—193 CH **1 Claim**

1. A thin wall cylinder for reciprocable piston internal combustion engines, which includes in combination: a top section fixedly connected to said cylinder and provided with a relatively flat annular groove open in the direction toward said cylinder, a cylinder bushing installed dry into said cylinder without seal and extending in substantially continuous contact with the wall of said cylinder and directly into said annular groove, the inner circumferential surface of said groove defining with that surface of said top section which faces toward the interior of said cylinder an angle in excess of 70° with said inner surface spaced from said bushing an amount less than the expansion of said top section in said bushing to close said gap, said top section being connected to said cylinder along a plane through the bottom of said groove along an electron beam weld seam which also includes the end of said bushing in said groove.



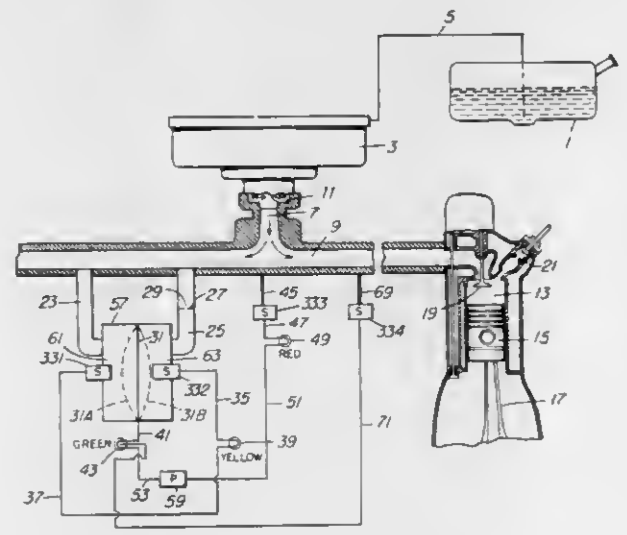
3,937,202
ECONOMY DRIVING AID

Donald P. Heath, Union, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 21, 1974, Ser. No. 435,403

Int. Cl.² F02B *33/00*

U.S. Cl. 123—198 R **16 Claims**



1. In an internal combustion engine system comprising means for mixing air and a hydrocarbon fuel in combustible proportions, an internal combustion engine wherein said air-fuel mixture is burned thereby producing power, and an inlet manifold means connecting said air-fuel mixing means and said internal combutsion engine, said manifold thus allowing for the passage of said air-fuel mixture into said engine, the improvement which comprises: inlet manifold pressure sensing means comprising a chamber divided into two sections by a moveable partition, means connecting each section to said inlet manifold in pressure responsive relation, and restrictive orifice means in one of said connecting means delaying the pressure responsiveness of one of said sections thereby causing said partition to move responsive to a sudden inlet manifold pressure change of at least about 2 to 10 inches of mercury within not more than about 1 second.

3,937,203
SPRING TYPE CLAY PIGEON PROJECTING DEVICE

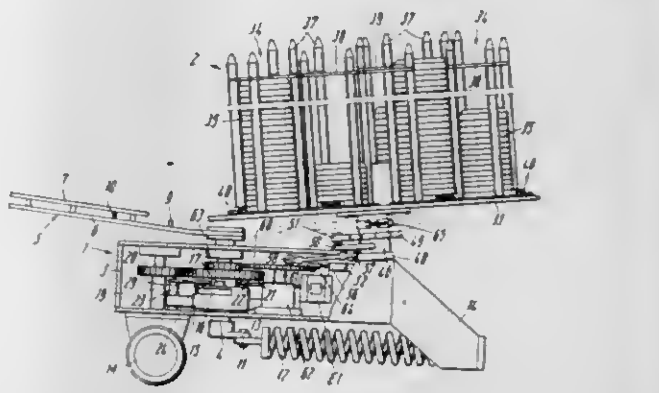
Eberhard Riedmueller, Blaubeuren, and Horst Klawitter, Sontheim, both of Germany, assignors to Ernst K. Spieth, Sontheim, Germany

Filed Dec. 26, 1973, Ser. No. 428,307

Claims priority, application Germany, Sept. 4, 1973, 2344483

Int. Cl.² F41B *3/04*

U.S. Cl. 124—8 **3 Claims**



3. A trap for clay pigeons comprising a support, a shaft rotatably mounted on the support, a hurling plate attached to the shaft, a crank arm a hurling spring having one of its ends anchored on the support and the other of its ends anchored on the crank arm attached to the shaft, motor-driven means for rotating the shaft in order to move the hurling plate into cocked position while cocking the hurling spring, a triggerable stop arrangement retaining the hurling plate in cocked position, a magazine having a plurality of magazine chambers and being rotatably mounted on the support above the hurling plate, each of the magazine chambers being adapted to receive a stack of clay pigeons, a ratchet wheel connected for common rotation with the magazine, a swivel plate connected to the ratchet wheel and to the motor-driven means and mounted for reciprocal rotational movement about the axis of rotation of the ratchet wheel, a pawl mounted on the swivel plate and adapted to engage the ratchet wheel, a crank mechanism interconnecting the motor-driven means and the swivel plate so that during each cocking operation the swivel plate is put in a reciprocal movement between two end positions and through the ratchet and pawl mechanism rotates the magazine in a step-wise manner so as to bring the magazine chambers successively into a charge position in which each magazine chamber is above the hurling plate in its cocked position, a triggerable mechanism for releasing the lowest clay pigeon of a stack of clay pigeons in the magazine chamber in its charge position, a pressure rod means pivotally mounted on the swivel plate and pivotally against the bias of a spring in response to movement of the swivel plate (so as to extend) to a cocked position to cause a clay pigeon placed on the hurling plate to be moved stop members on the hurling plate prior to projection, and to be out of the path of the clay pigeon dropping from the magazine chamber onto the hurling plate upon triggering of the release mechanism, and means for triggering the release mechanism in timed relation to the reciprocal movement of the swivel plate.

3,937,204
OSCILLATING TARGET THROWING DEVICE WITH ROTARY MAGAZINE ASSEMBLY

James Marion Alday, Williamson, and Kenneth Charles Rowlands, Utica, both of N.Y., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

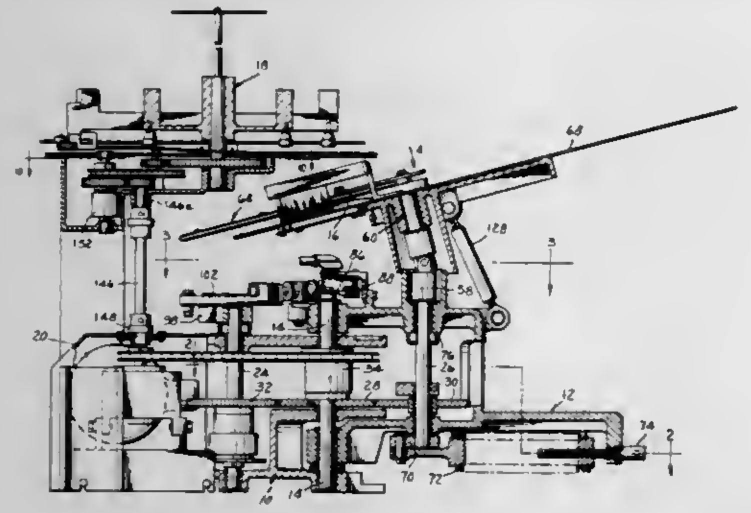
Filed Nov. 19, 1973, Ser. No. 417,185

Int. Cl.² F41B *3/04*

U.S. Cl. 124—9 **22 Claims**

17. A target throwing apparatus comprising a stationary base member and a main housing member, means pivotally

connecting said housing member to said base member, means oscillating said main housing relative to said base member, a main shaft rotatably mounted on said housing member, crank means secured at one end of said shaft and a main spring connected thereto, a throwing arm secured to the other end of said shaft for throwing targets, means for cocking and throwing said throwing arm by rotating said shaft and crank means secured thereto and utilizing tension of said mainspring, a launching platform mounted on said housing member for supporting a target in the appropriate position until the throwing arm picks it up and projects it in the proper direction, a magazine attachment mounted on said stationary base member so as to be positioned above said stationary base member and said launching platform, and means for discharging a single target from the magazine to a specific drop point on the launching platform at the desired interval, said drop point being located directly above said pivoting means which connects the pivotal housing member to the stationary base member, said location of the drop point permitting the magazine to remain in a fixed position while the housing and target throwing mechanism are free to oscillate to various positions.



3,937,205
BOW STRING FINGER GUARD

Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Co., Columbus, Nebr.
Filed Jan. 24, 1974, Ser. No. 436,158
Int. Cl.^{2} F41B *5/00*
U.S. Cl. 124—30 A 4 Claims

1. A finger guard assembly adapted for attachment to a bow string for protectively cushioning bow-drawing fingers of an archer against objectionable localized finger pressures produced during gripping and pulling of a bow string in drawing a bow, said finger guard assembly including;

two separate flexible and resilient spool-like sleeves each formed with a through longitudinally extending axial bore sized to receive therethrough and thereby frictionally to grip a bow string threaded through said sleeves,

when positioned on a bow string said sleeves being frictionally secured longitudinally of one another on a bow string as upper and lower sleeves, adjacent spaced ends of respective said sleeves generally demarcating an arrow nocking zone therebetween,

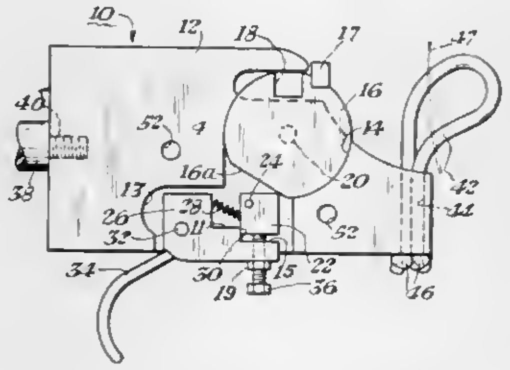
said sleeves each being substantially tubular in form with opposite ends of each being radially enlarged annularly to define finger stops, thereby to ensure correct longitudinal positioning of fingers gripping said sleeves and to enhance retention of proper finger positions during drawing of the bow string,

arrow nock abutment means for bracketing and confining an arrow therebetween upon insertion of the arrow nock into the nocking zone between said sleeves, and spacer means interposed between said arrow nock abutment means and said finger stops, adjacent said spaced ends of respective said sleeves to separate said abutment means from said finger stops,

said arrow nock abutment means and said spacer means constituting integral longitudinally coaxial extensions of said sleeves disposed at adjacent said spaced ends thereof to delineate the arrow nocking zone therebetween.

3,937,206
BOWSTRING RELEASE MECHANISM

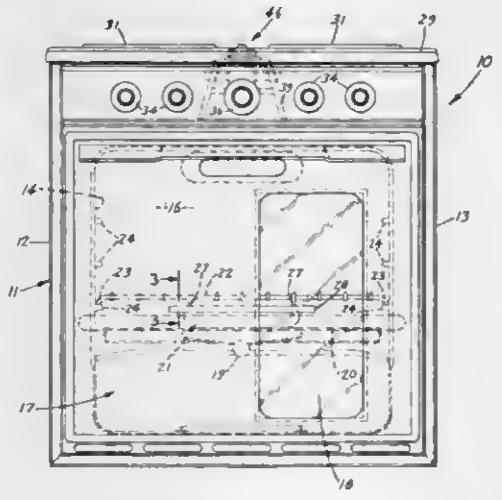
Hugh R. Wilson, 10840 SW. 120th St., Miami, Fla. 33176
Filed Jan. 9, 1975, Ser. No. 539,709
Int. Cl.^{2} A41B *5/00*
U.S. Cl. 124—35 A 5 Claims



1. A bowstring release device comprising a housing, a bowstring release member rotatably mounted in said housing, a trigger block pivotally mounted in said housing in spaced relation to said release member, a lever secured to said trigger block for manually pivoting said trigger block, a sear pivotally mounted in a space between said release member and said trigger block, shoulder means mounted on said trigger block for engagement by said sear when said trigger block is in a cocked position, spring means connecting said sear and said trigger block and yieldingly urging said sear into substantially constant contact with said release member when the trigger block is in an uncocked position to act against the rotational movement of said release member when said trigger block is in an uncocked position, upon pivotal movement of said trigger block to its uncocked position said shoulder means swings out of contact with said sear to permit the rotational movement of said release member under force of a released bowstring.

3,937,207
RANGE TOP HOLD-DOWN AND PILOT LIGHT FLASH TUBE

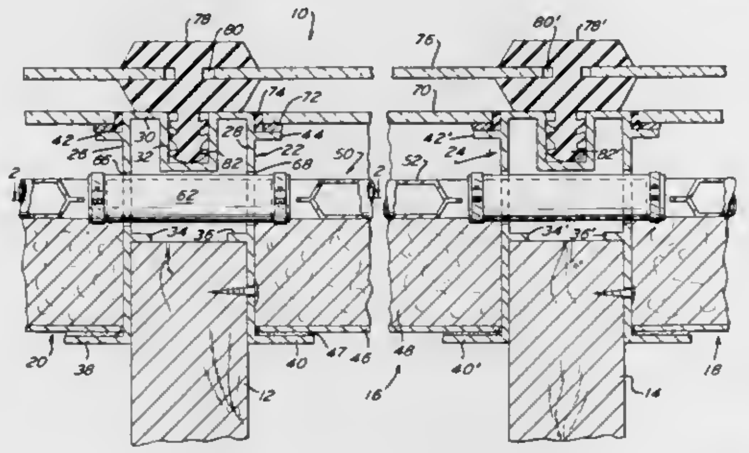
Willard E. Kendall, Elgin, Ill., assignor to Winnebago Industries, Inc., Forest City, Iowa
Filed Sept. 30, 1974, Ser. No. 510,509
Int. Cl.^{2} F24C *3/00*
U.S. Cl. 126—39 B 21 Claims



1. An apparatus for holding a top of a gas range having a pilot light burner comprising: a stationary frame located adjacent to the pilot burner, a releasable holding apparatus connecting the top to the frame, said holding apparatus having a passage open above the top and open adjacent to the pilot burner whereby the pilot burner can be lit with a flame from above the top.

3,937,208
SOLAR COLLECTOR SYSTEM

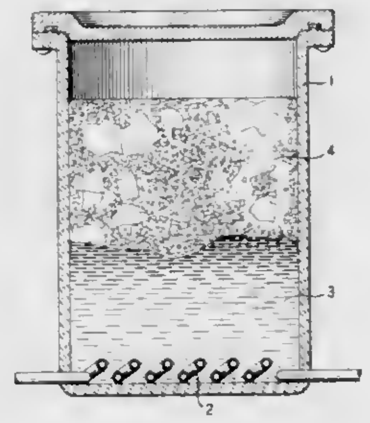
Howard S. Katz, Green Lane, and P. Richard Rittelmann, Butler, both of Pa., assignors to Sunearth Construction Company, Inc., Milford Square, Pa.
Filed Jan. 20, 1975, Ser. No. 542,535
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—271 13 Claims



1. A solar collector system comprising a rigid mounting member having a recess on one side for receiving a substructure, first and second solar collectors, said collectors being on opposite sides of said member and partially supported by said member, each collector having an inlet header and an outlet header interconnected by fluid passages, a conduit coupled at one end to a header of said first collector and coupled at its other end to a header of said second collector, said mounting member having openings at a location above said recess, said conduit extending through said openings, and at least one layer of transparent material above each collector partially supported by and sealed with respect to the end portion of said mounting member which is remote from said recess.

3,937,209
HEAT STORAGE DEVICE

James Alden Van Vechten, Basking Ridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 12, 1974, Ser. No. 487,874
Int. Cl.^{2} F24H *7/00*
U.S. Cl. 126—375 10 Claims

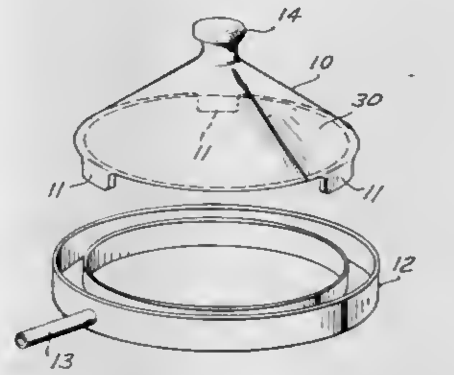


1. Heat storage device comprising a reservoir containing a heat storage medium, means for inserting and extracting heat from said medium, characterized in that

1. said medium is a material whose density in its liquid phase exceeds that in its solid phase,
2. said material has a range of melting temperatures above 100° C and
3. said means for inserting and extracting heat are placed in proximity of the lower end of said reservoir.

3,937,210
CONDENSER LID

John Kachaylo, Los Angeles, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Sept. 3, 1974, Ser. No. 502,514
Int. Cl.^{2} A47J *27/00*
U.S. Cl. 126—384 3 Claims



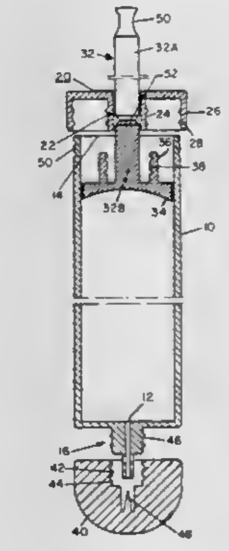
1. A condenser lid assembly for condensing and collecting distilled water when placed on top of a pot containing boiling water comprising

a lid, and

a circular collection rim unit, which may be rested upon the top of an open pot, said rim unit shaped with a pair of concentric walls joined to a common circular bottom section so as to form a circular groove open to the top, with the outer wall of the rim unit fitted with a spout that extends beyond the periphery of the rim unit for the purpose of draining collected condensed water, draining from the lid into the groove, out of said groove and away from a pot of boiling water upon which the assembly is rested.

3,937,211
MULTI-PURPOSE SYRINGE

Utz P. Merten, Cologne, Germany, assignor to Fa. Walter Sarstedt Kunststoff-Spritzgusswerk, Numbrecht, Rommelsdorf, Germany
Filed Oct. 23, 1973, Ser. No. 408,568
Claims priority, application Germany, Oct. 27, 1972, 39445
Int. Cl.^{2} A61B *5/00;* **A61M** *5/00*
U.S. Cl. 128—2 F 8 Claims



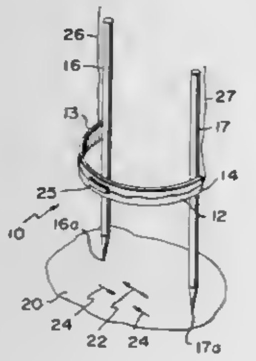
1. Multi-purpose syringe for extracting a specimen, storing and shipping same and adapted to be employed as a test vial for centrifugation, comprising in combination:

a vial having a wall defining a tubular configuration and a forward and a rearward opening in communication with the interior of the vial;
a nozzle enclosing the forward opening and providing a passageway therefrom adapted for receiving a hypodermic needle;
a cap detachably mounted on said nozzle for sealingly covering said nozzle and the passageway thereof;
an end closure detachably secured to the rearward end of the vial sealingly enclosing the rear opening, and connecting means on said closure extending forwardly into the vial radially spaced from said wall;
and longitudinally extending piston means projecting a rod through said end closure into the vial and terminating therein with a piston head, said piston head including rearwardly extending connecting means radially spaced from the vial wall, with the connecting means of said end closure when said piston head is in a rearward position whereby unintentional axial movement of the piston head in a forward direction is generally precluded.

3,937,212
MINIATURE MUSCLE DISPLACEMENT TRANSDUCER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Cyril Feldstein, Sierra Madre, Calif.; Jules V. Osher, Los Angeles, Calif.; Gilbert W. Lewis, Arcadia, Calif.; Robert H. Silver, Van Nuys, Calif., and Edward N. Duran, Costa Mesa, Calif.

Filed Dec. 27, 1974, Ser. No. 536,761
Int. Cl.^{2} A61B *5/00*
U.S. Cl. 128—2 S **7 Claims**

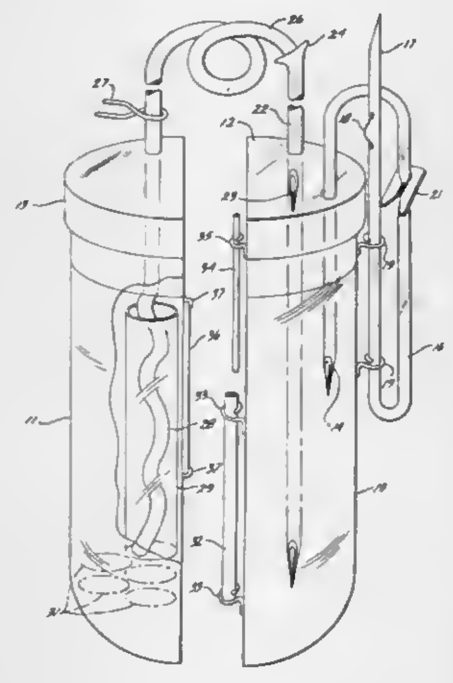


1. A transducer for sensing muscle displacement comprising:
a curved beam having first and second spaced apart ends and being of a material having a relatively high degree of elastic compliance;
first and second elongated prongs, physically attached to the first and second ends of said beam respectively, whereby said prongs are substantially parallel to one another and are disposed in a plane which is substantially perpendicular to a plane in which said beam is disposed, said prongs having sharpened ends to facilitate the attachment of said prongs to a muscle by inserting their sharpened ends thereinto, with the beam being in a plane above said muscle; and
a strain gauge in physical contact with said beam for sensing the deformation of the latter as a result of changes in the linear spacing between said substantially parallel prongs due to muscle displacement.

3,937,213
BODY FLUID COLLECTION DEVICE

Bernard McDonald, 7700 Seville Ave., Huntington Park, Calif. 90255

Filed June 29, 1973, Ser. No. 375,012
Int. Cl.^{2} A61B *5/14*
U.S. Cl. 128—2 F **25 Claims**

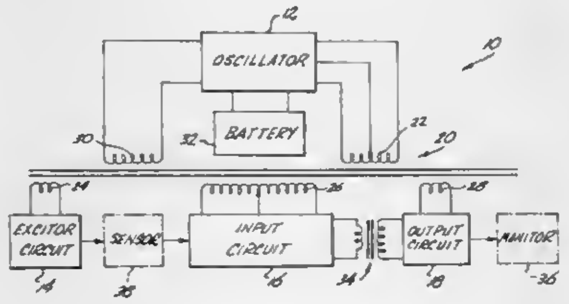


1. A body fluid sampling device comprising:
a rigid collection chamber for initially receiving a complete sample of a body fluid from a patient;
a rigid sample chamber temporarily connected to the collection chamber;
a plurality of evacuated sample tubes in the sample chamber; and
means connected to each sample tube for establishing a selective fluid flow interconnection between the collection chamber and each of the sample tubes, respectively, after collection of the complete sample of body fluid in the collection chamber for dividing body fluid therein into selected aliquots.

3,937,214
ELECTROMEDICAL PATIENT MONITORING SYSTEM

Thomas B. Hutchins, IV, 310 Brynwood Lane, Portland, Oreg. 97229

Filed July 7, 1972, Ser. No. 269,747
Int. Cl.^{2} A61B *5/04*
U.S. Cl. 128—2.1 A **2 Claims**

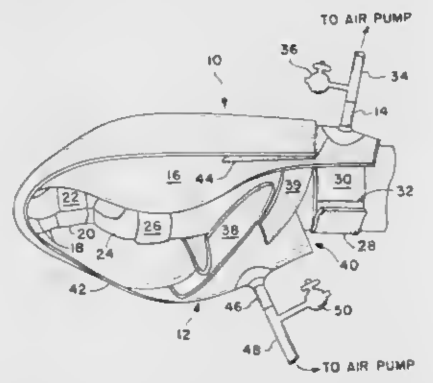


1. In a system comprising a body-contacting-type electromedical sensor for providing body-condition-related information, said sensor having power input means requiring AC excitation, and an electrical monitor for displaying or recording the information, improved apparatus for transmitting said information unidirectionally between said sensor and said monitor, comprising
a battery powerable oscillator,
excitor circuit means inductively coupled to said oscillator for supplying electrical AC excitation to said sensor's power input means,
an amplifier operatively connected to said sensor for receiving information therefrom and for unidirectionally transmitting such information,
powering circuit means inductively coupled to said oscillator for supplying operating power to said amplifier,
a synchronous detector inductively coupled to said amplifier for processing information received from said amplifier, and for supplying it to said monitor,
detector energizing means inductively coupled to said oscillator for energizing said detector in synchronization with the AC excitation supplied to said sensor,
first inductive coupling means inductively coupling said excitor circuit means, powering circuit means, and detector energizing means with said oscillator, and
second inductive coupling means coupling said amplifier with said synchronous detector,
said first and second inductive coupling means providing the sole electrical couplings between said oscillator, amplifier, and synchronous detector.

3,937,215
THERAPEUTIC HAND EXERCISER

Donald E. Barthlome, Hampton, Va., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed June 3, 1975, Ser. No. 583,487
Int. Cl.^{2} A61H *1/02*
U.S. Cl. 128—26 **11 Claims**

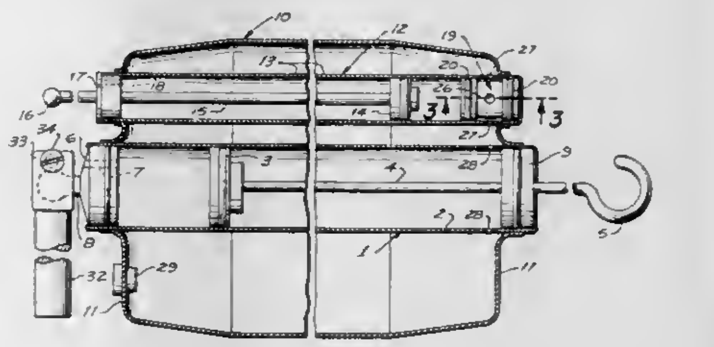


1. A therapeutic hand exerciser comprising:
upper inflatable pouch means which when attached to the fingertips and arm of a disabled individual and inflated has sufficient rigidity to straighten the fingers of the individual, and when deflated is sufficiently pliable to permit the fingers to bend;
first inflation means attached to said upper inflatable pouch means and permitting inflation of said upper inflatable pouch means;
first deflation means attached to said first inflation means and permitting deflation of said upper inflatable pouch means;
fingertip attachment means connected to the underside of said upper inflatable pouch means suitable for holding the fingertips of the individual;
thumb attachment means connected to the underside of the upper inflatable pouch means suitable for holding the thumb of the individual;
arm attachment means connected to said upper inflatable pouch means at the end opposite from said fingertip attachement means and permitting attachment of said upper inflatable pouch means to the arm of said individual;
lower inflatable pouch means which when attached to the wrist of said individual and inflated extends from the palm of the hand of the individual to the wrist portion of the arm of the individual and when deflated is capable of folding such that both ends are approximately at the palm of the hand;
wrist attachment means attached to said lower inflatable pouch means and capable of holding said lower inflatable pouch means onto the wrist of said individual and allowing folding of said lower inflatable pouch means when deflated;
second inflation means attached to said lower inflatable pouch means and permitting inflation of said lower inflatable pouch means;
second deflation means attached to said second inflation means and permitting deflation of said lower inflatable pouch means;
flap means attached to and extending from the end of said lower inflatable pouch means nearest the wrist, with sufficient length for wrapping under the palm, around the extended fingertips, over the knuckles and to the top of the wrist;
flap attachment means attached to and anchoring one end of said flap means in the region of the top surface of the wrist; and
flap length adjustment means attached to said flap means to yield a length which permits the fingers to be straightened when said lower inflatable pouch means is deflated and forces the fingers to bend when said lower inflatable pouch means is inflated.

3,937,216
PNEUMATIC TRACTION MEANS FOR MEDICAL PATIENTS

Edmund J. Brown, Topanga, Calif., assignor to Pneumatic Traction Company, Van Nuys, Calif.

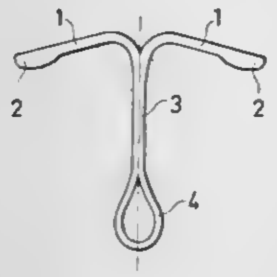
Filed Sept. 9, 1974, Ser. No. 504,182
Int. Cl.^{2} A61H *1/02*
U.S. Cl. 128—75 **7 Claims**



1. A pneumatic means attachable to a mounting means fixed to a bed or other means supporting a patient for applying a traction force to the patient said traction applying means comprising:
a. a traction unit including a cylinder, piston and stem extending through one end of the cylinder, the traction unit forming a pressure chamber between the piston and end of the cylinder through which the stem emerges;
b. means for attaching the traction unit cylinder to said mounting means;
c. means for attaching the stem to the patient;
d. and means for pressurizing the pressure chamber to apply a traction force urging the stem inwardly to apply tension through the stem to the patient.

3,937,217
INTRAUTERINE CONTRACEPTIVE DEVICE

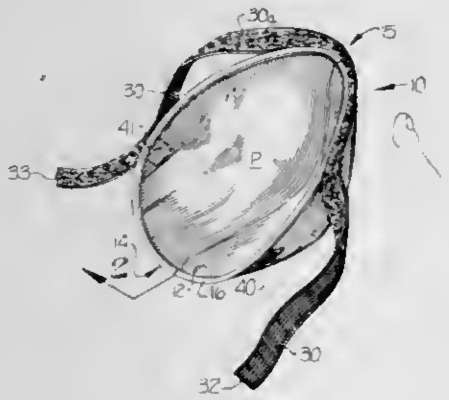
Ahti A. Kosonen, Pori, Finland, assignor to Outokumpu Oy, Helsinki, Finland
Filed Mar. 8, 1974, Ser. No. 449,245
Claims priority, application Finland, Mar. 19, 1973, 847/73
Int. Cl.^{2} A61F *5/46*
U.S. Cl. 128—130 5 Claims



1. An intrauterine contraceptive device for placement within the uterine cavity having a normally generally T-shaped configuration with a stem having two outwardly extending arms joined to the stem along a smoothly bent curved portion, said curved portion being flexible, said arms normally extending at acute angles with respect to said stem, said smoothly bent curved portion being bent on a sufficient radius of curvature for prevention of plastic deformation when said arms are bent into general alignment with said stem during loading of the device into an inserter tube, and having a compressible loop at an end of said stem axially remote from said arms for supporting the device on the upper edges of the cervical os, a portion of said stem adjacent said compressible loop being of reduced thickness.

3,937,218
DECUBITUS PAD

John F. Gaylord, Jr., Matthews, N.C., assignor to Medical Specialties, Inc., Charlotte, N.C.
Filed July 29, 1974, Ser. No. 492,890
Int. Cl.^{2} A61B *19/00*
U.S. Cl. 128—149 8 Claims

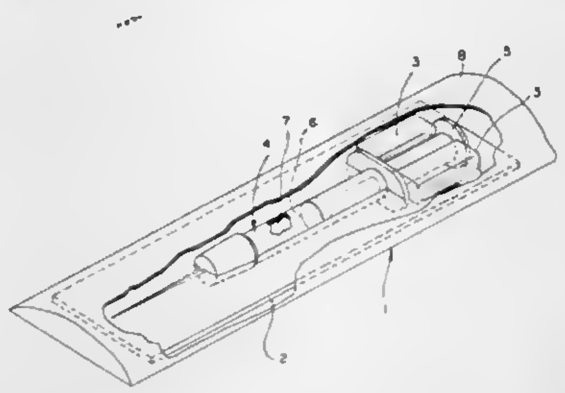


1. A protective pad adapted to be positioned on an elbow or heel of a patient and characterized by providing freedom of movement of the limb of the patient and avoiding restricting circulation in the limb, said pad comprising

- a core of resilient foam material having a generally circular peripheral outline and generally converging concavo-convex cross-sectional configuration such that the concave inner surface defines a smoothly curved elbow or heel receiving pocket having a depth approximating one-half the overall diameter of the core to substantially fully surround and enclose the elbow or heel of the patient therein,
- a sheet of fabric smoothly overlying and bonded to each of the concave and convex surfaces of said core,
- a pair of spaced apart straps attached to said pad and extending tangentially and in opposite directions from a rear portion of the periphery of said core and with each strap being of a length sufficient to permit positioning of the strap across the core and over the limb of the patient, and
- a pair of fastener elements attached to said pad on a front portion of the periphery thereof for releasably securing the end portion of each strap to the front portion of said core, said pair of fastener elements being positioned in spaced apart relation such that the straps may be secured in overlapping crossed relation over the limb of the patient, said straps being thereby adapted to facilitate maintaining the pad in conforming relation on the limb of the patient while allowing free movement of the limb and avoiding constriction of the limb as would reduce circulation therein.

3,937,219
STERILE SYRINGE ASSEMBLY AND METHOD OF MAKING SAME

Nubar A. Karakashian, 539 E. Allegheny Ave., Philadelphia, Pa. 19134
Filed Jan. 14, 1974, Ser. No. 433,118
Int. Cl.^{2} A61M *5/18, 5/31*
U.S. Cl. 128—184 13 Claims



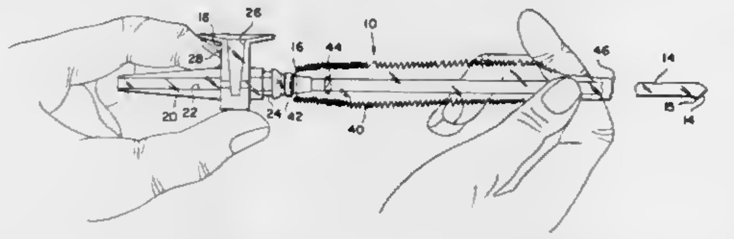
1. A method for injecting sterile air into a patient including the steps of:

- a. providing a syringe having an internal chamber with a predetermined volume containing non-sterilized air by initially displacing a syringe plunger through a predetermined linear distance to provide said predetermined volume quantity of said non-sterilized air within said internal chamber;
- b. packaging said syringe in a gas sterilizing enclosure;
- c. maintaining said predetermined internal chamber volume when said syringe is packaged in said gas sterilized enclosure by constraining said syringe plunger a predetermined distance from a flange section of a barrel portion of said syringe;
- d. sterilizing said enclosure, said syringe, and said predetermined volume through gas sterilization;
- e. removing said sterilizing gas from within said enclosure, said predetermined volume quantity of said air remaining within said internal chamber being sterile;
- f. taking said syringe from said sterilized enclosure; and,
- g. injecting said predetermined volume quantity of said sterilized air contained within said internal chamber into said patient.

3,937,220
STERILE ASPIRATION CATHETER

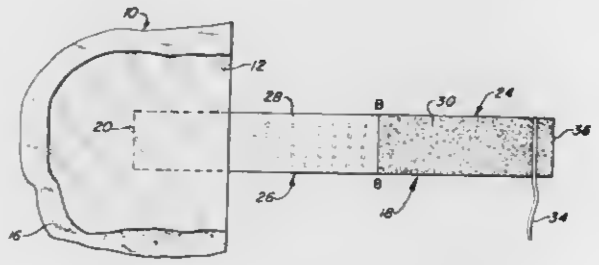
Nancy Coyne, Jamaica Plain, Mass., assignor to International Paper Company, New York, N.Y.
Filed Mar. 4, 1974, Ser. No. 447,869
Int. Cl.^{2} A61M *1/00*
U.S. Cl. 128—276 1 Claim

1. A sterile catheter comprising a flexible tube having a fluid flow passageway therethrough and a port at one end thereof, a fluid flow regulator in flow communication with said passageway, means to receive a fluid pump to effect fluid flow through said regulator and said passageway, said fluid flow being variable by operation of said regulator, a pliable envelope being attached at its end adjacent to said regulator to one of said one end of said tube and said regulator, the other end of the said envelope extending beyond said one end of said tube and having an opening through which said tube can be ejected, said envelope being freely, slidably retractable along the length of the tube toward said regulator to enable exposure of said tube to an environment outside of said envelope, said envelope having at least one vent hole adjacent to said regulator to enable air within said envelope to escape during retraction of said envelope.



3,937,221
DISPOSABLE DIAPER WITH PERMANENTLY ATTACHED CLOSURE SYSTEM WITH A STRING GRIPPER

Ludwig Tritsch, Wilmette, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed July 18, 1974, Ser. No. 489,643
Int. Cl.^{2} A61F *13/16*
U.S. Cl. 128—287 6 Claims

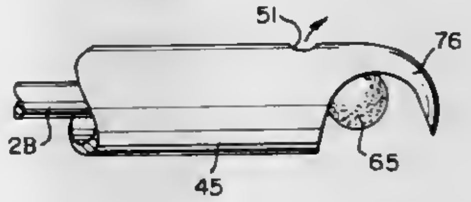


1. An adhesive tab means for a disposable diaper having an absorbent layer and a moisture-impervious backing sheet at one side thereof which comprises an elongated tape segment permanently attached at one end to said backing sheet at a marginal location thereon and providing a central portion and a free end; a release coating on a surface of said central portion which faces in the same direction as said absorbent layer; an adhesive coating on said free end contiguous to said release coating; and an elongated separator means attached to said free end and extending substantially transversely across and beyond the perimetric limits of said free end; said free end being folded over upon said central portion and being releasably adhered to said release coating, and a portion of said elongated separator means protruding beyond said free end and being adapted for gripping to peel said free end away from said central portion for fastening said diaper about a baby.

3,937,222
SURGICAL INSTRUMENT EMPLOYING CUTTER MEANS

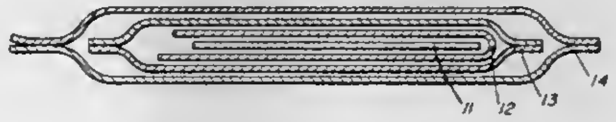
Anton Banko, Bronx, N.Y., assignor to Surgical Design Corporation, Long Island City, N.Y.
Filed Nov. 9, 1973, Ser. No. 414,221
Int. Cl.^{2} A61B *17/32*
U.S. Cl. 128—305 20 Claims

1. A surgical instrument for abrasively removing at least a part of a body organ comprising a shaft having abrasive cutting means at one end thereof, means for rotating said shaft, tubular means surrounding a portion of said shaft and having an end portion for shielding a portion of said abrasive cutting means while leaving a portion thereof exposed to engage the organ, means for adjusting the position of said tubular means longitudinally of the instrument shaft to control the amount of exposure of the abrasive cutting means with respect to the organ and the space surrounding the organ, said abrasive cutting means being spaced from said tubular means, and means communicating with the interior of said tubular means to remove material which is separated from the organ by said abrasive cutting means.



3,937,223
COMPACTED SURGICAL HEMOSTATIC FELT

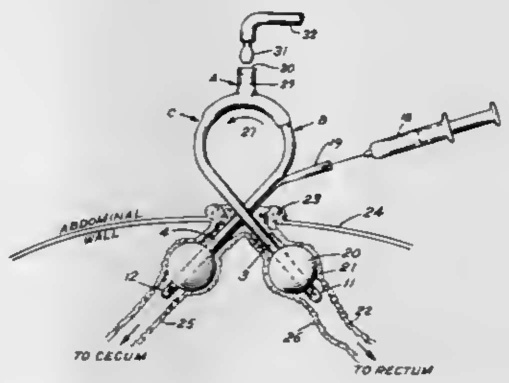
Roy William Roth, New Canaan, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Filed Apr. 19, 1974, Ser. No. 462,559
Int. Cl.^{2} A61L *15/04*
U.S. Cl. 128—325 8 Claims



1. A hemostatic surgical felt comprising a sterile felt of fibers of 0.5 to 12 denier and ¼ inch to 3 inch length of a tissue absorbable polymer subject to hydrolytic degradation to non-toxic tissue compatible absorbable components, and which polymer has glycolic acid ester linkages, which felt has a weight of 0.5 ounce to 12 ounces per square yard and textured and partially compressed heat embossed surfaces, whereby the rate of penetration of blood is reduced, and the adhesion to bleeding surfaces enhanced, and which is completely absorbed when enclosed in a living tissue.

3,937,224
COLOSTOMY CATHETER

Ronald L. Uecker, 915 Grant St., Wausau, Wis. 54401
Filed Apr. 11, 1974, Ser. No. 459,892
Int. Cl.^{2} A61M *25/00*
U.S. Cl. 128—348 12 Claims



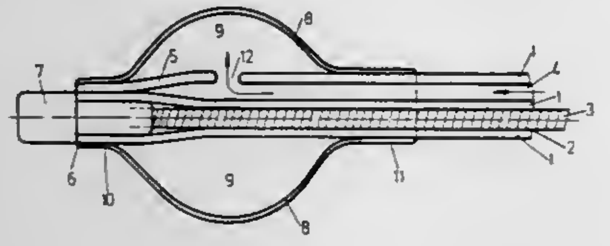
1. An improved diagnostic catheter assembly for use in colostomies comprising:

- a. an elongated, generally cylindrical body portion having generally annular walls and a central passage extending from end to end of said body and communicating with openings in said ends;

b. a plurality of sealing balloon members, at least one of which is disposed on said body adjacent each end thereof, and defining a medial portion therebetween;
c. an inflation lumen disposed in association with said body wall communicating with a sealing balloon member, and having means for permitting inflation of said balloon therethrough disposed medially of said balloon;
d. said medial portion includes a side arm member having a passage communicating with said central passage;
e. said sealing balloon members being adapted to provide sealing of a colostomy opening when inflated into contact with walls of the intestine;
f. said side arm member is adapted for connection to fluid conduit means external of a patient's body, and
g. means for selectively forming the medial portion of said catheter into a curved shape and to retain said shape after forming.

3,937,225
ELECTRODE ADAPTED FOR IMPLANTATION

Georg Schramm, Cologne, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany
Filed Feb. 4, 1974, Ser. No. 439,607
Claims priority, application Germany, Feb. 2, 1973, 2305262
Int. Cl.² A61N *1/04*
U.S. Cl. 128—418 14 Claims

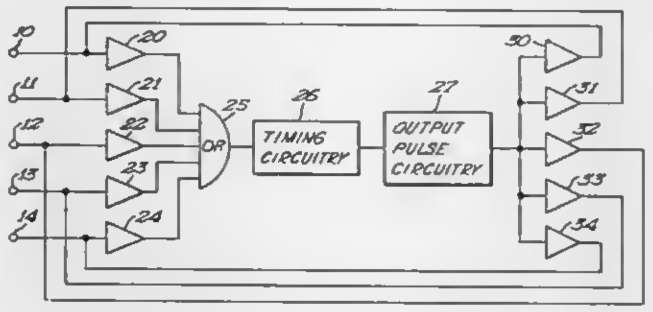


1. In an electrode for use in effecting the intracardial stimulation of a heart through an implanted heart pacemaker, said electrode comprising an elongate electrical conductor; an electrical insulation encompassing said conductor, an uninsulated generally cylindrical electrode head being connected to said conductor at one end thereof for transmission of stimulating impulses to the heart from the electrode and being mounted on the proximal end of said insulation, means on said electrode for anchoring said electrode head in the heart, and electrical connector means at the distal end of the conductor adapted for connection to a pacemaker, the improvement comprising; said electrode including a continuous elongate hose forming said electrical insulation for said conductor, said hose having first and second parallel longitudinal passageways, said electrical conductor being positioned in the first of said passageways; said electrode head anchoring means including a volumetrically variable receptacle having at least partly elastic wall portions, said receptacle being connected to said electrode in a region adjacent to said electrode head, and said second passageway forming a closable connecting conduit means communicating with said receptacle for filling the latter with a receptacle-expanding medium.

3,937,226
ARRHYTHMIA PREVENTION APPARATUS

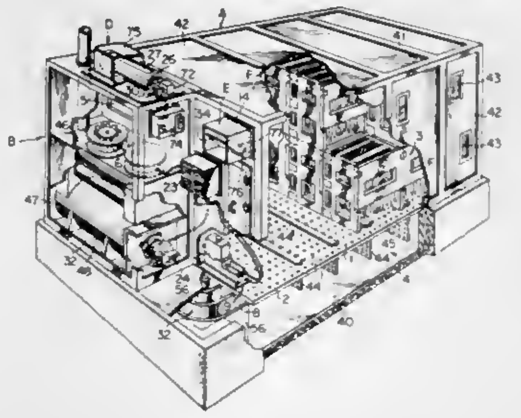
Herman D. Funke, Bonn, Germany, assignor to Medtronic, Inc., Minneapolis, Minn.
Filed July 10, 1974, Ser. No. 487,241
Int. Cl.² A61N *1/36*
U.S. Cl. 128—419 D 15 Claims

1. Cardiac electrical stimulation apparatus comprising: first means for sensing depolarization at any one of a plurality of areas on a heart; second means for providing cardiac stimulation signals to a plurality of areas on the heart in rapid response to any sensed depolarization by the first means; and means connecting the first means to the second means.



3,937,227
TOBACCO LEAF CURING SYSTEM

Hideyuki Azumano, Kagoshima, Japan, assignor to Sansyu Sangyo Co., Ltd., Kagoshima, Japan
Filed Feb. 28, 1974, Ser. No. 446,766
Int. Cl.² A24B *1/02*
U.S. Cl. 131—134 16 Claims



1. A tobacco leaf curing plant for processing tobacco leaves which comprises a substantially air-tight curing barn divided by a porous floor plate into an upper drying chamber adapted to house the tobacco leaves and a lower air chamber, a circulation duct passageway containing fan means and the heating means, an air circulation port means providing communication between one end of the circulation duct passageway and the drying chamber for drawing air from the drying chamber, and a distribution chamber disposed at the other end of the circulation duct passageway, said distribution chamber providing communicatin between said other end of the circulation duct passageway and the lower air chamber for introducing air compressed by said fan means and heated by said heating means into said lower air chamber, an ambient air inlet port provided with an automatic for controlling the amount of ambient air drawn from the atmosphere through the inlet port and introduced into the air circulation duct passageway so as to change the mixing ratio of the ambient air to the circulating air being supplied to the lower air chamber, an automatic temperature regulator connected to the fan means and the heating means and a wet bulb temperature sensor connected to the automatic temperature regulator, said temperature regulator adjusting the heating means according to variations appearing on the wet bulb temperature sensor, thereby regulating and maintaining the temperature and humidity of the air sent to the lower air chamber at a fixed, predetermined level, and an outlet port means disposed in the wall of the drying chamber for exhausting a portion of the air from the drying chamber to the atmosphere, said outlet port means being provided with a control plate associated therewith, and means for opening or closing the outlet port means depending upon the presure differential between the circulating air inside the drying chamber and the atmospheric air.

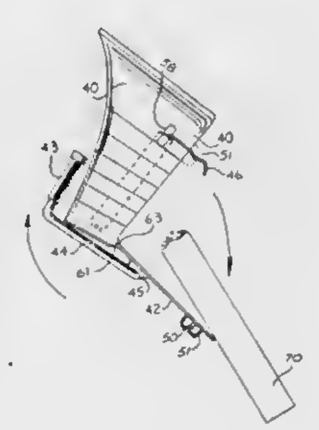
3,937,228
AROMATIC COMPOSITIONS

Edouard P. Demole, Geneva, Switzerland, assignor to Firmenich SA, Geneva, Switzerland
Division of Ser. No. 482,776, June 24, 1974. This application June 12, 1975, Ser. No. 586,385
Claims priority, application Switzerland, Jan. 19, 1971, 773/71; June 23, 1971, 9156/71; Jan. 11, 1972, 380/72
Int. Cl.² A24B *3/14, 13/00, 15/08*
U.S. Cl. 131—17 R 6 Claims

1. A process for improving, enhancing or modifying the organoleptic properties of a tobacco product, which comprises adding thereto about 1 to about 1000 parts per million based on the weight of tobacco of at least one compound selected from the group consisting essentially of:
a. epoxy-β-ionone
b. 6-methyl-hepta-3,5-dien-2-one
c. 3-isopropyl-cyclopent-2-en-1-one
d. octa-3,5-dien-2-one
e. nonane-2,5,8-trione
f. 2-methyl-5-(α-methyl-α-hydroxyethyl)-cyclohex-2-en-1-one
g. 4-methylthiobutan-2-one.

3,937,229
METHOD FOR EXTINGUISHING CIGARETTES AND APPARATUS

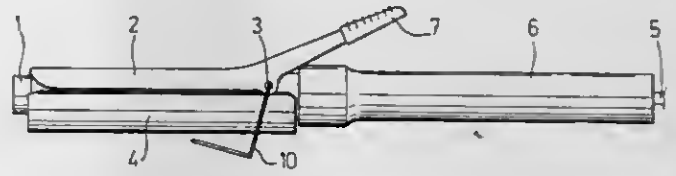
Carl Ervine Wickstrom, P.O. Box 83, Emigrant Gap, Calif. 95715
Continuation-in-part of Ser. No. 348,849, April 6, 1973, abandoned. This application Mar. 15, 1974, Ser. No. 451,582
Int. Cl.² A24F *13/18*
U.S. Cl. 131—256 10 Claims



8. Apparatus for extinguishing and disposing of cigarettes comprising: chamber means open on one end and having a door on one side, said chamber means being capable of holding a cigarette in substantially a vertical position, means extending through the wall of said chamber means holding said door normally closed, a bi-metallic strip fastened on the interior of one side of said chamber and extending downward in the proximity of the base of said chamber and upward along the other side, and fastened at its other end to said door holding means in such manner so that upon heat being applied to said bi-metallic strip it will lift the door holding means in an upward direction; means on said door movable with relation thereto and in contact with said door holding means and moveable in accordance with upward movement of said door holding means; friction means associated with said means on said door contacting said door holding means such that when there is pressure applied to said door said means holding said door holding means will remain in an upward position when the said door holding means is removed therefrom, in order to allow said door to open; and means to return said door to closed position when it is in the opened position with no other object holding it in the open position.

3,937,230
ELECTRIC HAIRDRESSING IRON

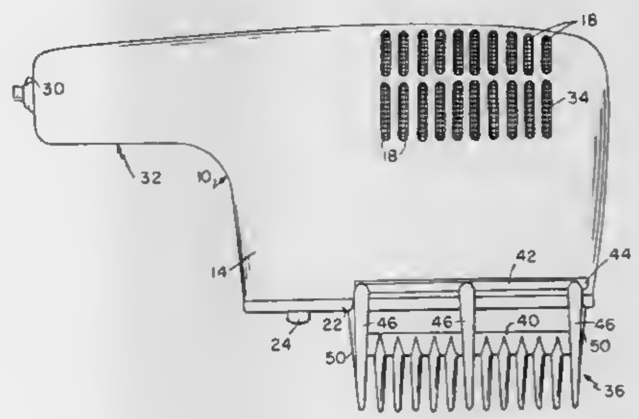
James Edward Kenny, 28 Wolvengracht, Brussels, Belgium
Filed Oct. 4, 1974, Ser. No. 512,221
Claims priority, application Belgium, July 19, 1974, 146764
Int. Cl.² A45D *2/24*
U.S. Cl. 132—37 R 5 Claims



1. A hairdressing iron comprising:
a. an elongated rod of a circular cross-section,
b. a first elongated channel of arcuate cross-section coaxial with the rod, said first channel being adjacent said rod and having its inner curved surface facing said rod and its outer curved surface facing away from said rod,
c. means pivotally connecting the first channel to the rod intermediate the ends of the rod, the axis of rotation of the pivotal means being transverse to the longitudinal axis of the rod so that the first channel can swivel from a position adjacent the rod to a position spaced from the rod,
d. means providing a longitudinal groove on the outer surface of the rod on the side of the rod opposed to said first channel,
e. a second channel of arcuate cross-section, said second channel being on the side of the rod opposite to said first channel and overlying the longitudinal groove, and
f. means detachably securing the second channel to the rod, said means comprising an elastic member fixed to the surface of the second channel and dimensioned to be removably captive in said longitudinal groove,
g. said second channel progressively increasing in thickness from both longitudinal edges towards its longitudinal center so that when the second channel is secured to the rod the rod and second channel will have a combined cross-sectional area greater than when the second channel is removed, whereby the hairdressing iron can form wide or narrow waves at the option of the user.

3,937,231
HAIR DRYER

James E. Tucker, and Jay Doblin, both of Chicago, Ill., assignors to The Gillette Company, Boston, Mass.
Continuation of Ser. No. 166,550, July 27, 1971, abandoned. This application Oct. 9, 1973, Ser. No. 404,194
Int. Cl.² A45D *24/00*
U.S. Cl. 132—11 A 3 Claims

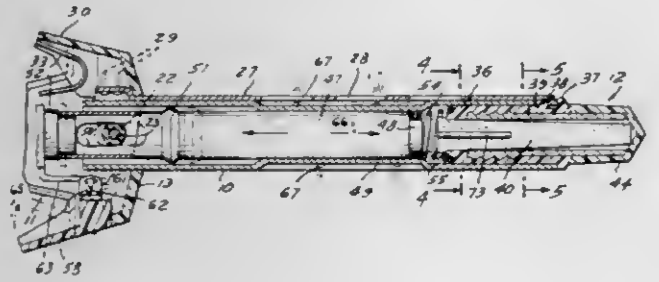


1. A portable hair dryer comprising in combination a dryer housing, said housing defining an air inlet and defining a single air outlet of generally rectilinear shape and of greater length than width, said housing including therein blower means disposed within the housing for drawing a stream of air into the

air inlet, through said dryer housing and out of said outlet, said blower means being aligned with said outlet to cause said stream of air to pass directly from said blower means through said outlet without change of direction; a comb of generally rectilinear shape having a length substantially equal to the length of said outlet and a thickness substantially less than the width of said outlet and being provided with a back and spaced teeth projecting in one direction from said back; and cooperative means on said comb and said housing for demountably attaching said comb to said housing with the teeth of said comb facing away from the housing generally parallel to the direction of air flow from said outlet, with the back of said comb spaced beyond the mouth of said outlet and exposed thereto, and with said comb located within the air stream from said outlet, said cooperative means including bars resiliently supported on said comb and spaced apart both longitudinally and vertically beyond opposite sides of said comb back and extending parallel with said back, and retainer means on said housing at opposite sides of the mouth of said outlet for detachably engaging said bars at the sides thereof toward said comb back.

3,937,232
LIQUID FEEDING MEANS FOR STEAM-PRODUCING APPLIANCE

Patrick M. Tomaro, Maplewood, N.J., assignor to Continental Hair Products, Inc., Edison, N.J.
Filed Jan. 29, 1975, Ser. No. 545,059
Int. Cl.^{2} A45D *2/24*
U.S. Cl. 132—37 R **6 Claims**



1. A liquid feeding means for a steam-producing appliance, comprising:

a. a reservoir for containing liquid,

b. a wick of absorbent material communicating with the interior of said reservoir, a portion of said wick being exposed exteriorly of said reservoir for engagement by a heated element to produce steam, and

c. means extending to the exposed portion of said wick for transmitting air through said wick into said reservoir as liquid is evaporated from the exposed portion of said wick to replace liquid drawn out of said reservoir through said wick.

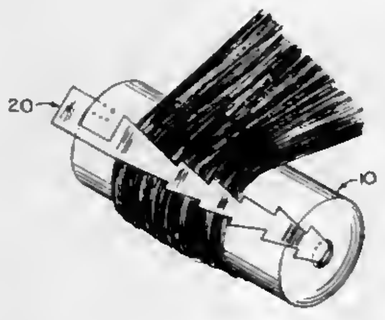
3,937,233
HAIR CURLER ASSEMBLY

John W. Hook, 3880 State, Abilene, Tex. 79603
Filed Mar. 10, 1975, Ser. No. 557,076
Int. Cl.^{2} A45D *2/00*
U.S. Cl. 132—40 **10 Claims**

1. A hair curler assembly comprising

a generally cylindrical, hollow roller body having one end wall and one open end; said end wall having a small central opening; said body open end being defined by a generally smooth lip disposed in a transverse plane;

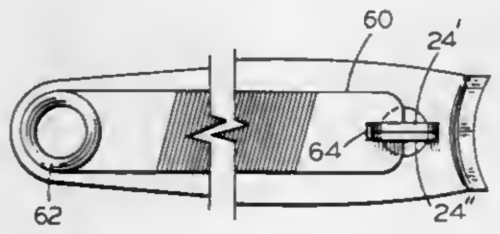
an elongated non-elastic fastener having head means at one end, comprising longitudinally spaced enlargements, dimensioned to be forced through said wall opening and to be retained by said end wall, and having hook means



at its other end for engagement with said body lip at its open end.

3,937,234
NAIL CLIPPER

Paul P. Loda, Ansonia, Conn., assignor to The H. C. Cook Company, Ansonia, Conn.
Filed June 20, 1974, Ser. No. 481,032
Int. Cl.^{2} A45D *29/02*
U.S. Cl. 132—75.6 **7 Claims**

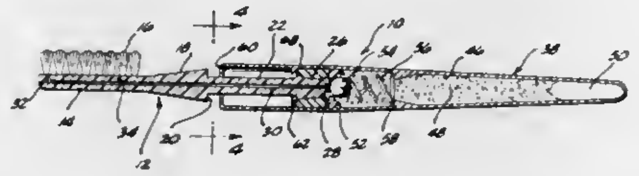


1. A nail clipper implement comprising a pair of superposed elongated jaw elements having cooperating cutter jaws at one end thereof and aligned cooperating apertures adjacent said one end; means fastening the other end of said jaw elements, said cutter jaws being spaced apart in one position thereof and said jaw elements being fabricated from resiliently deflectable material to provide yieldable spacing between said cutter jaws; a pivot member seated in said cooperating apertures of said jaw elements and dimensioned and configured for rotation therein; and an elongated operating lever for said jaw elements pivotably mounted at one end on said pivot member adjacent one end thereof and overlying one of said jaw elements, said pivot member being comprised of at least two similarly configured and dimensioned elements of sheet metal stock positioned in side-by-side relationship, the composite pivot member formed by said elements being of generally rectangular cross section and of uniform thickness throughout, said pivot member having an elongated head portion at the other end thereof of greater length than the width of said apertures and disposed outwardly of the other jaw element, said pivot member having a notch extending inwardly adjacent said one end thereof disposed at least in part outwardly of said one jaw element, said operating lever having an aperture adjacent its pivoted end through which said one end of said pivot member extends in the closed position of said operating lever and a pivot portion at its pivoted end engaged in said notch, said operating lever being pivotable in said notch over said pivot member and said pivot member and operating lever being rotatable 180° in said pair of apertures to the operative position of said lever; said implement including means for releasably locking said lever and pivot member against inadvertent rotation relative to said jaw element in at least the closed position thereof, said releasable locking means including a recess in the outer surface of said other jaw element dimensioned and configured to seat the head portion of said pivot member therein, said head portion being disengageable from said recess by compression of the spacing between said jaw elements.

5. A nail clipper implement comprising a pair of superposed elongated jaw elements having cooperating cutter jaws at one end thereof and aligned cooperating apertures adjacent said one end; means fastening the other end of said jaw elements, said cutter jaws being spaced apart in one position thereof and said jaw elements being fabricated from resiliently deflectable material to provide yieldable spacing between said cutter jaws; a pivot member seated in said cooperating apertures of said jaw elements and dimensioned and configured for rotation therein; and an elongated operating lever for said jaw elements pivotably mounted at one end on said pivot member adjacent one end thereof and overlying one of said jaw elements, said pivot member being of generally rectangular cross section and of uniform thickness throughout, said pivot member having an elongated head portion at the other end thereof of greater length than the width of said apertures and disposed outwardly of the other jaw element, said pivot member having a notch extending inwardly adjacent said one end thereof disposed at least in part outwardly of said one jaw element, said operating lever having an aperture adjacent its pivoted end through which said one end of said pivot member extends in the closed position of said operating lever and a pivot portion at its pivoted end engaged in said notch, said operating lever being pivotable in said notch over said pivot member and said pivot member and operating lever being rotatable 180° in said pair of apertures to the operative position of said lever; said pivot member being fabricated from sheet metal stock and having substantially parallel side surfaces; and an elongated blade member on the outer surface of the other of said jaw elements and pivotably mounted at one end on said jaw elements adjacent the other end thereof, said blade member having a notch at its other end seating the head portion of said pivot member to prevent rotation thereof.

3,937,235
TOOTHBRUSH WITH PASTE CARTRIDGE

John B. Broughton, 7082 Goodview, Riverside, Calif. 92506
Filed Dec. 5, 1974, Ser. No. 529,849
Int. Cl.^{2} A45D *44/18*
U.S. Cl. 132—84 B **8 Claims**

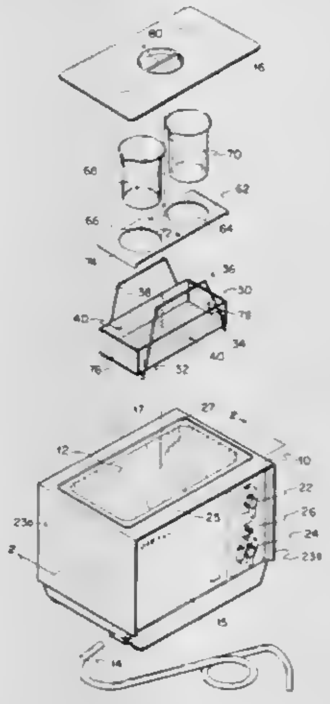


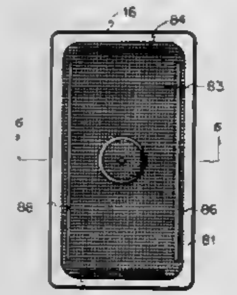
1. A toothbrush with paste cartridge comprising:

a reservoir for containing toothpaste and a vaporizing-material-pressurized closed resilient bag in said reservoir for pressurizing toothpaste in said reservoir, an outlet from said reservoir, a brush mounted on and connected to the outlet of said reservoir so that said brush is axially movably mounted with respect to said reservoir, a valve at the outlet of said reservoir for controlling flow of paste from said reservoir to said brush said brush occupying a first axial position in a first direction when said valve is closed and said brush having a shank which engages said valve and opens said valve when said brush is in a second axial position with respect to said reservoir for permitting pressurized paste to flow from said reservoir to said brush.

3,937,236
ULTRASONIC CLEANING DEVICE

Robert R. Runnells, Kaysville, Utah, assignor to MDT Chemical Company, Gardena, Calif.
Filed Oct. 7, 1974, Ser. No. 512,734
Int. Cl.^{2} B08B *3/12*
U.S. Cl. 134—184 **14 Claims**





1. An ultrasonic cleaning device comprising:

a housing and an inner container both having side walls and a bottom wall, said inner container being suspended within the housing and separated from the housing by an acoustical energy-absorbing material positioned therebetween;

a means for transferring ultrasonic vibrations through the container; and

a cover for said container, said cover containing a plurality of concave indentations on its inner surface for absorbing and/or reflecting ultrasonic radiation.

3,937,237
UNIVALVE IRRIGATION SYSTEM

Ralph D. Boone, and Charles Griffin, both of Clovis, N. Mex., assignors to Lockwood Corporation, Gering, Nebr.
Filed Feb. 3, 1975, Ser. No. 546,211
Int. Cl.^{2} A01G *25/02*
U.S. Cl. 137—1 **9 Claims**

1. In an agricultural irrigation system having

a. an elongated pipe adapted to carry a plurality of sprinklers and adapted to carry water under pressure,

b. a plurality of vehicles movingly supporting said pipe,

c. alignment means attached to each vehicle for detecting misalignment of each vehicle,

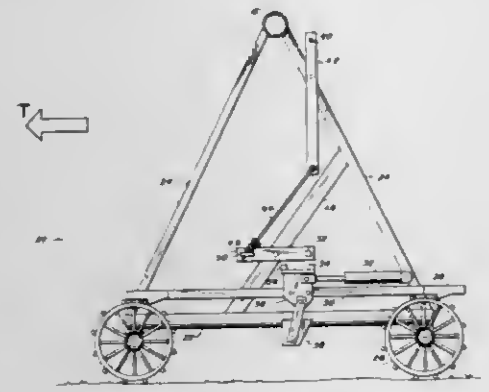
d. a fluid power cylinder on each vehicle,

e. drive means on each vehicle for driving the vehicle responsive to movement of the power cylinder,

f. the improvement in combination with the above comprising:

g. a power tube connected to all the cylinders,
h. a retract means connected to all the cylinders for retracting same after they have been extended,
j. reversing means connected to the power tube for alternately supplying pressurized fluid to the power tube, and
k. blocking means on each vehicle for blocking the movement of the cylinder on that vehicle responsive to detected misalignment of that vehicle.

8. In an agricultural irrigation system having
a. an elongated pipe adapted to carry a plurality of sprinklers and adapted to carry water under pressure,
b. a plurality of vehicles movingly supporting said pipe,
c. alignment means attached to each vehicle for detecting misalignment of each vehicle,



d. a fluid power cylinder on each vehicle, each cylinder having two sides,
e. drive means on each vehicle for driving the vehicle responsive to movement of the power cylinder,
f. the improved method comprising:
g. supplying fluid under pressure to one side of all of the cylinders until all the cylinders have moved as far as permitted, then
h. reversing the fluid and
j. supplying fluid under pressure to the other side of all the cylinders until all the cylinders have moved as far as permitted, and
k. blocking the movement of the cylinder on any vehicle which is forward of alignment.

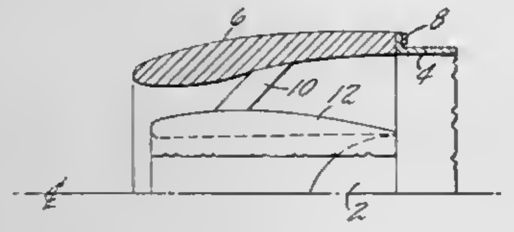
3,937,238
VARIABLE AREA ENGINE INLET

Donald J. Stewart, Enfield, and Richard A. Streib, Rockville, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 25, 1975, Ser. No. 552,911

Int. Cl.² F02C *7/04*

U.S. Cl. 137—15.1 **9 Claims**



1. An inlet for a gas turbine power plant including
an outer ring forming the outer wall of the inlet,
an inner nose cone defining the inner wall of the inlet,
an annular ring positioned between the outer ring and the nose cone and having a trailing edge positioned substantially in engagement with the nose cone, and
means for moving said annular ring axially to position it such that the trailing edge is movable out from the nose cone.

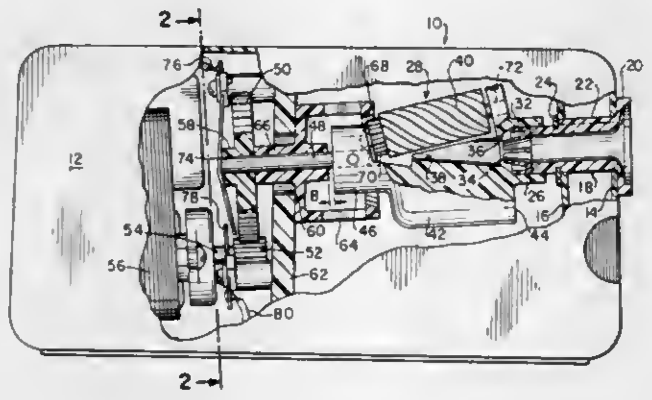
3,937,239
TIME DELAY MECHANISM FOR PENCIL SHARPENER

James M. Bosland, Wayne, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.

Filed Mar. 19, 1975, Ser. No. 559,908

Int. Cl.² B43L *23/02*

U.S. Cl. 144—28.5 **10 Claims**



1. Apparatus for automatically sharpening a pencil comprising:
a sharpener housing having an outer end corresponding to the entry point of the pencil to be sharpened and an inner end,
an electric motor being positioned within said housing adjacent said housing inner end,
means for cutting the pencil, said cutting means being positioned within said sharpener housing between said electric motor and said sharpener housing inner end,
a first electrical contact bein electrically connected to said motor and being positioned between said motor and said cutting means,
a second electrical contact being adjacent to and spaced from said first electrical contact and being positioned between said motor and said cutting means, said cutting means being axially movable into engagement with said second electrical contact,
means positioned adjacent the outer end of said housing for frictionally engaging the pencil to be sharpened, said frictionally engaging means being axially movable within said housing into engagement with said cutting means
whereby insertion of the pencil into said frictionally engaging means causes axial movement of said engaging means, said cutting means and said second electrical contact thereby closing said normally separated electrical contacts and actuating said electrical motor.

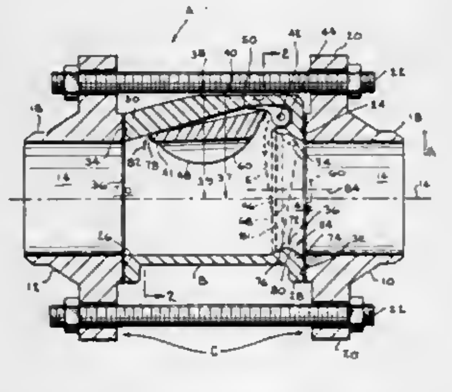
3,937,240
CHECK VALVE

Walter C. Nanny, 5811 Valkeith, Houston, Tex. 77035

Filed Mar. 22, 1974, Ser. No. 453,595

Int. Cl.² F16K *15/03*

U.S. Cl. 137—527.8 **6 Claims**



1. A check valve adapted for mounting between the faces of a pair of pipe flanges having flow passages of substantially

equal diameters, equal radii of curvature, and joined by bolts circumferentially spaced about the flanges, comprising:
a valve body having a flow passage of substantially uniform diameter therethrough;
a clapper mounted with said valve body for closing off said flow passage through said body;
pivotal mounting means for mounting said clapper for movement between a closed position completely blocking said flow passage through said valve body and an open position substantially within a chamber and withdrawn from said flow passage through said valve body;
said valve body including:
upstream and downstream end sections, each of which has a cylindrical flow passage therethrough equal in diameter to the diameter of said pipe flange flow passages and alignable with said pipe flange flow passages;
a chamber section between said end sections having a chamber therein, said chamber communicating with and being adjacent to said flow passage through said valve body and being formed to receive said valve clapper with said valve clapper in its open position;
seating means immediately downstream of said upstream end section and substantially perpendicular to said valve body flow passage for seating said clapper with said clapper in its closed position, said seating means including an annular section having a flow passage therethrough equal in diameter to said end section flow passages and parallel to said end section flow passages, but eccentric with respect to said end section flow passages; and
a downstream section immediately adjoining the downstream side of said seating means and extending to said downstream end section, said downstream section having a partial cylindrical flow passage therethrough with a radius of curvature substantially equal to the radius of curvature of said pipe flange flow passages; and
skirt means mounted on one side of said clapper for forming a complementary partial cylindrical flow passage downstream of said seating means with said clapper in its open position so that said downstream section partial cylindrical flow passage and said complementary partial cylindrical flow passage jointly form a cylindrical flow passage downstream of said seating means which cylindrical flow passage is equal in diameter to said end section flow passages, whereby with said clapper in its open position said valve body has a flow passage of substantially uniform diameter therethrough so that changes in the pressure of fluid flowing through said valve body are minimized.

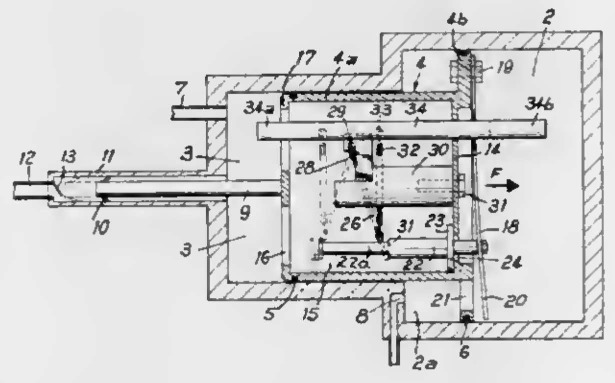
3,937,241
DEVICE FOR INJECTING AN ADJUVANT INTO A LIQUID

Philippe Cloup, 33360 Latresne, France

Filed Nov. 29, 1973, Ser. No. 420,318

Int. Cl.² G05D *11/03*

U.S. Cl. 137—99 **6 Claims**



1. A device for injecting an adjuvant into a liquid, comprising a body having first and second cylinder portions of different cross-sections with end walls at the ends of the body, one end wall forming a closed end of the first cylinder portion and the opposite end wall forming a closed end of the second cylinder portion, a tubular member connected to said opposite end wall of the body having a bore which forms a chamber communicating with the space within said second cylinder portion, stepped piston means slidingly mounted in said body and having first and second piston portions of different cross-sections corresponding to those of the first and second cylinder portions respectively, a plunger connected to the piston means and slidably disposed in said bore, the cross-section of the plunger being less than the cross-section of the bore to provide for flow of fluid thereabout, means for introducing a first liquid under pressure into said body to one side of said piston means, an outlet conduit from said body, means for introducing a second liquid into said chamber comprising a conduit, a pressure responsive valve closing the conduit against flow of liquid from the chamber, a pressure responsive seal about the plunger which prevents flow of fluid around the plunger into the space within the second cylinder portion when the plunger moves with the piston means toward the space within the first cylinder portion and permits flow of fluid around the plunger as the plunger moves toward said pressure responsive valve, and means responsive to the position of said piston for controlling escape of a metered quantity of liquid and adjuvant through said outlet conduit.

3,937,242
PRESSURE CONTROL DEVICE FOR CONTROLLING THE FLOW OF A FLUID MEDIUM

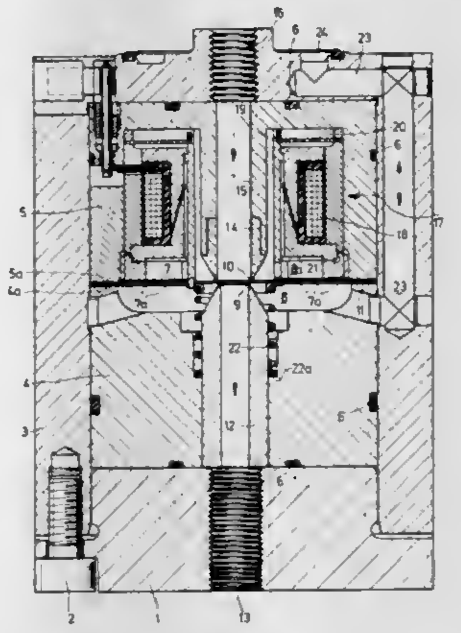
Konrad Eckert, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Sept. 12, 1973, Ser. No. 396,527

Claims priority, application Germany, Sept. 22, 1972, 2246476

Int. Cl.² F16K *31/04*

U.S. Cl. 137—102 **12 Claims**



1. A pressure control device adapted for controlling the flow of a fluid medium and comprising:
a housing;
fluid inlet conduit means in said housing;
fluid return conduit means in said housing, each of which conduit means comprises a valve seat;
connecting means for link-up with a fluid consuming device;
a movable valve member having two operating sides
means mounting said movable valve member to said housing between the valve seats of said inlet and return conduit means so that one operating side of the movable valve member is associated with said inlet conduit means and the other operating side of the movable valve member is associated with said return conduit means;

an inlet cavity operatively associated with said inlet conduit means and defined on said one operative side of said movable valve member;

a return cavity, operatively associated with said return conduit means and said connecting means and defined on said other operative side of said movable valve member,

said movable valve member being displaceable for controlling the cross sectional areas of flow through said inlet and said return conduit means, respectively, in an opposite sense; and

biassing means for applying a resetting force to said movable valve member to reduce fluid influx,

a solenoid including a magnetic core and an armature between which an excitor winding is disposed, said magnetic core and armature having opposite faces of frustoconical shape which extend substantially parallel to each other, said solenoid being disposed within the inlet cavity and about the inlet conduit sleeve

means connected to the armature and the movable valve member for transmitting a force to the movable valve member generated by the solenoid, said force serving to adjust the resetting force to the hydraulic pressures prevailing in the device, said last mentioned means comprising an annular sleeve located coaxially within the magnetic core, said sleeve being resiliently supported by an annular membrane connected to the housing

wherein said fluid inlet conduit means comprises a sleeve which projects into the inlet cavity and which bears one of the valve seats at its free end,

wherein said fluid return conduit means comprises a sleeve which projects into the return cavity and which bears the other of the valve seats at its free end

wherein the valve seat cross sectional area of said return conduit sleeve is smaller than that of said inlet conduit sleeve, whereby a force resulting from the inlet fluid pressure in said inlet cavity and the cross sectional flow area of said inlet conduit sleeve and acting on said one operative side of said movable valve member is opposed by said resetting force as well as by a force resulting from the fluid pressure in said return cavity and said connecting means and from the area difference between the valve seat cross sectional areas of said inlet and said return conduit sleeves and acting on said other operative side of said movable valve member thereby achieving a hydraulic resetting effect.

3,937,243
PRESSURE CONTROL VALVE

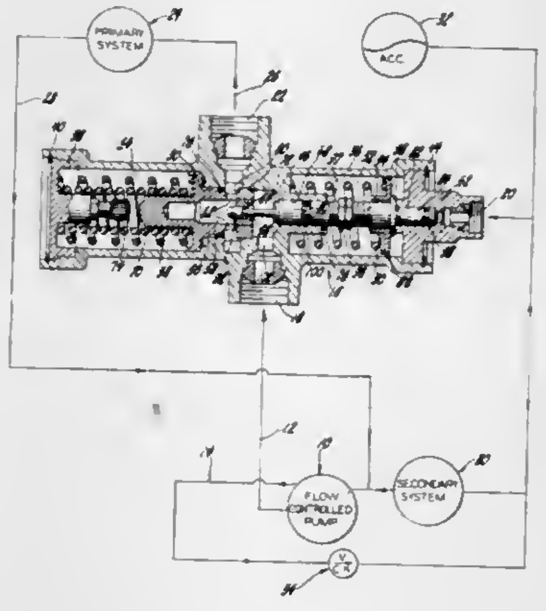
Ronald L. Harkrader, Saginaw, and Dan R. Kimberlin, Frankenmuth, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 25, 1974, Ser. No. 509,247

Int. Cl.² G05D *11/03*

U.S. Cl. 137—115 **2 Claims**

1. A control valve for controlling the output pressure of a pump which supplies fluid to a primary system having a continuous flow requirement and variable pressure requirements, and to a secondary system including an accumulator having a pressure requirement range, the control valve comprising; axially movable first pressure responsive valve means in fluid communication with said pump for controlling the output pressure at a level within the accumulator pressure requirement range and having an axially movable valve element with a valve seat thereon and a central axial opening in said valve seat for directing the flow requirement to the primary system downstream of said first pressure responsive valve means at the pressure level required by the primary system; and second pressure responsive valve means coaxially aligned with said first pressure responsive valve means and being in fluid communication with and responsive to the accumulator pressure to move axially relative to the first pressure responsive valve means and having an axially extending portion in nesting relation with said central axial opening in said valve seat for bypassing the primary system flow requirement through said central axial opening in said first pressure responsive valve means to said primary system thereby establishing the output pressure of the pump equal to the primary system pressure requirement when the accumulator pressure is equal to the maximum level of the accumulator pressure requirement range, and for preventing bypassing through said first pressure responsive valve means when the accumulator pressure is equal to the minimum level of the accumulator pressure requirement range thereby returning control of the output pressure to said first pressure responsive valve means.



3,937,244
CONDITION RESPONSIVE VALVE CONSTRUCTION

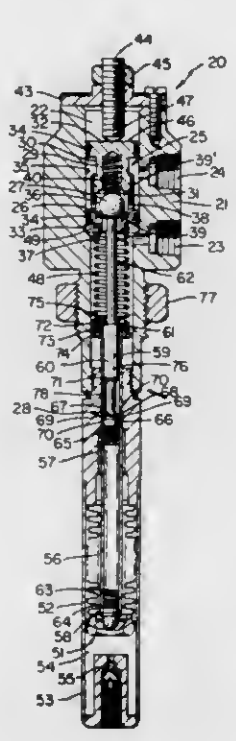
Harley V. Bible, Maryville, and William T. Moon, Jr., Knoxville, both of Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

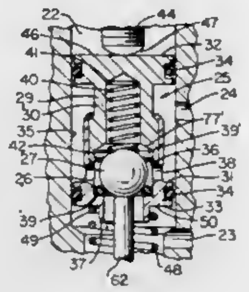
Filed Oct. 21, 1974, Ser. No. 516,429

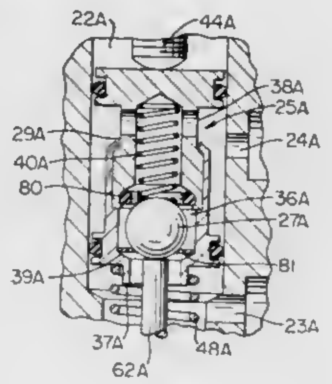
Int. Cl.² F16K *31/00*

U.S. Cl. 137—269 **9 Claims**

1. A condition responsive valve construction comprising a housing means having a chamber therein and an inlet and an outlet leading to and from said chamber, a self-contained valve seat and movable valve member unit removably disposed in said chamber to control the interconnection between said inlet and said outlet, said self-contained unit comprising a retainer having a part thereof sealingly disposed in said chamber between said inlet and said outlet and having passage means therethrough spanning said part thereof and being in communication with said inlet and said outlet, said retainer having a valve seat in said passage means, said retainer having a movable valve member disposed in said passage means and being retained therein by said retainer whereby said self-contained unit of said retainer and valve seat and valve member can be removed as a unit from said chamber, and condition responsive means carried by said housing means and being operably associated with said valve member while being separate therefrom for controlling movement of said valve member relative to said valve seat in relation to the condition sensed by said condition responsive means, said self-contained unit being either a direct acting unit or a reverse acting unit while still being operated by the same condition responsive means whereby said condition responsive valve construction can be either direct acting or reverse acting depending upon the self-contained unit being removably disposed in said chamber thereof.







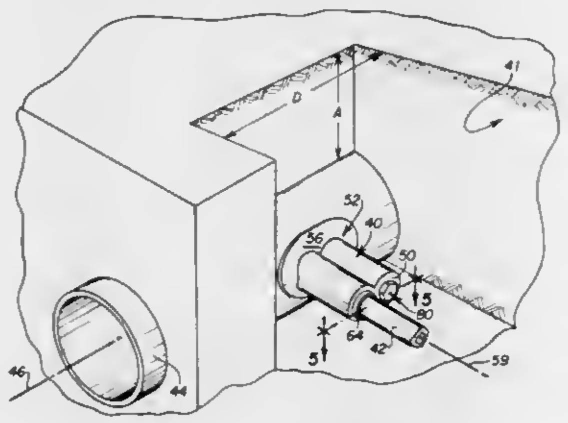
3,937,245
METHOD AND APPARATUS FOR CONNECTING A RIGHT ANGLE SERVICE LINE TO A MAIN

Joe William Christie, Box 386, Frisco, Tex. 75034

Filed May 13, 1974, Ser. No. 469,529

Int. Cl.² F14L *41/04*

U.S. Cl. 137—318 **12 Claims**



1. An apparatus for connecting a service line at a right angle to a cylindrical main, comprising a fitting having a concave mounting surface formed on one end thereof, said mounting surface conforming with the exterior surface of said main, first and second parallel spaced through bores extending from said mounting surface through the length of said fitting to the opposite end thereof, said first and second bores having their center lines in a plane with the center line of said concave surface and with the center lines of said bores extending at right angles to the center line of said concave surface; means in said fitting interconnecting said first and second bores, means for connecting a service line in said first bore to extend axially from said first bore, and means in said second bore for receiving a means for forming a port in said main.

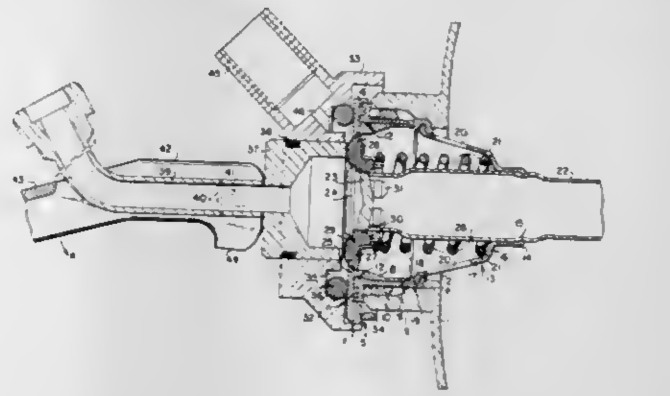
3,937,246
VALVE MECHANISM

Klass Schots, Tilburg, Netherlands, assignor to Hopfma Anstalt, Schaan, Liechtenstein

Filed Mar. 26, 1974, Ser. No. 454,821

Int. Cl.² F16K *43/00, 51/00*

U.S. Cl. 137—322 **12 Claims**



1. A valve mechanism, for mounting in an opening of a container, for draining liquid from the container with the aid of a pressurized gas, said valve mechanism operating in conjunction with a connecting piece having a movable gland provided with a bore, an inlet means for inlet of pressurized gas to the container, and an outlet means for outlet of the liquid from the container, said valve mechanism comprising:

a. pipe means extending into the container, being open at the lower end thereof and closed at the top end, for conveying liquid from the container, said pipe means having apertures formed in the upper portion thereof for the flow of liquid from the interior of said pipe means to the outlet means, and further having a connecting groove formed therein;

b. a connecting member for insertion into the opening of the container to permit said pipe means to be mounted into the container, said connecting member being movable between a secured position with respect to the container and a released position with respect to the container;

c. socket means for releasably connecting said pipe means to said connecting member, said socket means having a lower position mounted with said connecting groove of said pipe means to releasably connect said pipe means to said connecting member when said connecting member is in the said secured position, said socket means also having openings therein for permitting the flow of gas into the container;

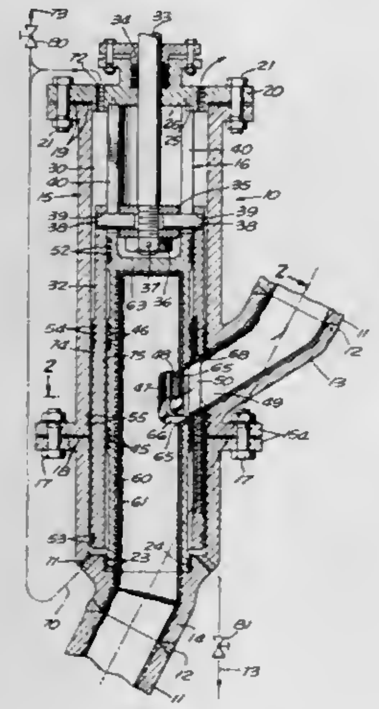
d. closing means movable in response to the movement of the movable gland in the connecting piece between a closed position blocking entry of the gas into the container and flow of liquid from the container through said apertures in said pipe means, and an open position permitting entry of gas into the container and flow of liquid from the container through said apertures in said pipe means; and

e. said closing means in said open position establishing communication between the interior of said pipe means and the bore in the movable gland for the passage of liquid from the container, and further forming a separate passageway, having walls formed by said closing means. the movable gland, and said connecting member for entry of gas through said openings formed in said socket means into the container.

3,937,247

VALVE FOR FLUIDS CONTAINING ABRASIVE PARTICLES

Jurjen Van der Wal, 1832 Newport Hills Drive, East, Newport Beach, Calif. 92660
Filed Jan. 23, 1974, Ser. No. 435,688
Int. Cl.² F16K *39/02*
U.S. Cl. 137—375 **19 Claims**



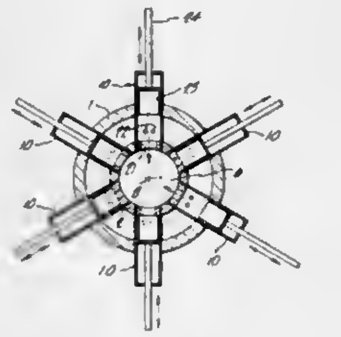
1. A seatless cut-off valve for controlling flow of fluent material at temperatures of the order of 1,000°F to 17,000°F. and pressures of the order of 1,000 psi, said cut-off valve having a main body formed by long inner and outer concentric tubes forming an annular chamber therebetween movably housing an open-ended sleeve valve, said sleeve valve having a flow port through its sidewall, said sleeve valve and flow port being movable into and out of registry with aligned flow ports in said first and second tubes, inlet passage means in communication with said aligned flow ports and outlet passage means opening into one end of said inner tube, closure means for said inner tube on the end thereof remote from said outlet passage means, closure means for the opposite ends of said annular chamber between said inner and outer tubes, means connected to said sleeve valve for shifting said sleeve valve between the open and closed positions of said flow ports, fluid seal means to either axial side of said flow ports and between said sleeve valve and the juxtaposed surfaces of said inner and outer tubes which seal means are so positioned and arranged as never to move in contact with a surface of said cut-off valve which is ever in the path of fluent material flowing between said inlet and outlet passage means.

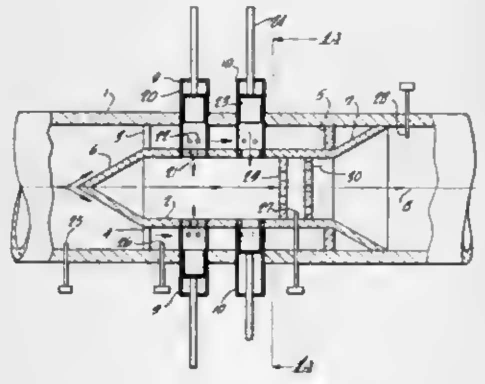
10. A pressure-balanced seatless cut-off valve comprising a main body having inner and outer concentric tubes, closure means crosswise of one set of adjacent ends of said tubes and crosswise of said inner tube in an area remote from said one set of ends, outlet passage means from the other end of said inner tube and including means closing the adjacent end of said annular chamber, a sleeve valve open at both ends movably supported in said annular chamber, the midlength portions of said tubes and of said sleeve valve having flow ports which are in or out of alignment depending on the adjusted position of said sleeve valve in said annular chamber, said main body having inlet passage means opposite the flow ports in said inner and outer tubes, fluid seal means permanently disposed to either axial side of said flow ports providing fluid seals between the juxtaposed surfaces of said sleeve valve and said inner and outer tubes, fluid passage means interconnecting the opposite ends of said annular chamber and cooperating with said fluid seals to neutralize the pressure differential between the opposite ends of said annular chamber and along the interior and exterior surfaces of said sleeve valve.

3,937,248

FLUID FLOW CONTROL SYSTEM EMPLOYING A PLURALITY OF DIGITAL VALVE ELEMENTS

Roger S. Hutton, Minneapolis, Minn., assignor to Process Systems, Inc., Salt Lake City, Utah
Continuation of Ser. No. 703,468, Feb. 6, 1968, abandoned.
This application Aug. 3, 1970, Ser. No. 64,142
Int. Cl.² F16G *47/10;* **G05D** *7/03*
U.S. Cl. 137—487.5 **15 Claims**





1. An automatic fluid flow control system comprising:

a cylindrical upstream conduit adapted for fluid flow in a given direction;

a cylindrical downstream conduit adapted for fluid flow in the given direction, the downstream conduit being coaxial with and smaller in cross-sectional area than the upstream conduit;

a plurality of individually actuatable digital valve elements interconnecting the upstream conduit and the downstream conduit, the valve elements being disposed between the upstream and downstream conduits in a plane substantially transverse to the given direction such that fluid converges radially through the valve elements transverse to the given direction so as to form two substantially 90° bends in the flow path from the upstream chamber to the downstream chamber, each valve element having a flow determining orifice, a plug, and means responsive to a binary signal for controlling the movement of the plug so it assumes one of only two stable positions corresponding to the values of the binary signal, the plug closing the orifice in the one stable position and lying outside the fluid stream in the other stable position;

means for generating a signal representative of the dynamic fluid conditions of the system;

means for producing a plurality of binary signals equal to the number of valve elements, the binary signals representing the valve states required to make the dynamic fluid conditions satisfy a predetermined criterion;

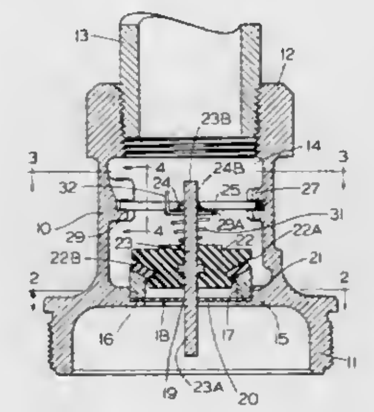
means for coupling to the binary signal producing means the signal representative of the dynamic fluid conditions; and

means for coupling the binary signals to the respective valve elements to place their plugs in the positions corresponding to the values of the binary signals.

3,937,249

CHECK VALVE

David P. Suey, St. Louis County, Mo., assignor to Valley Steel Products Company, St. Louis, Mo.
Filed Sept. 18, 1974, Ser. No. 506,955
Int. Cl.² F16K *15/06*
U.S. Cl. 137—543.13 **7 Claims**

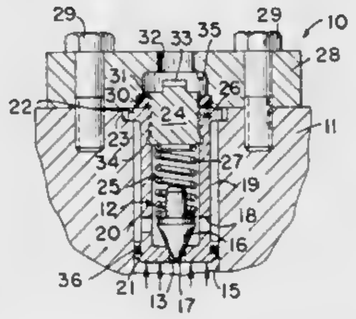


1. A fluid flow check valve comprising: a housing having an inlet end and a discharge end and a chamber therebetween; a valve seat in said housing adjacent said inlet end; a valve member engageable with said valve seat; and means to direct the movement of said valve member into and out of engagement with said valve seat consisting of an elongated guide means on said valve member, a first support for said guide means carried by said housing in a portion between said valve member and said discharge end of said housing, said first support including a collar formed with a body having a flared end and an oppositely directed neck opening slidably engaged about said guide means, and a conical spring element having a large end seated in said flared end of said collar and the small end engaged on said valve member, said spring element acting to close said valve member upon said valve seat, and a second support for and engaged by said guide means carried by said housing adjacent said inlet end of said housing, said first and second supports permitting said valve member and guide means to move laterally for seating of said valve member on said valve seat.

3,937,250

PRESSURE RELIEF ADJUSTMENT MEANS FOR CHECK VALVE

Kenneth F. Golan, Pekin, and Larry W. Oetzel, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 19, 1974, Ser. No. 498,722
Int. Cl.² F16K *15/02*
U.S. Cl. 137—543.17 **25 Claims**



1. A valve defining an inlet and an outlet therein comprising a housing,

a valve element mounted for axial movement in said housing,

spring means mounted in said housing to urge said valve element into closing relationship with respect to said inlet,

externally threaded adjustment means threadably mounted for axial movement in said housing to selectively vary the load on said spring means to thus vary the pressure of said valve element,

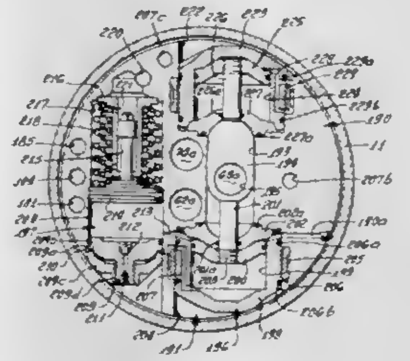
a clamping member releasably clamped on said housing and having an access opening formed therethrough to overlie and expose said adjustment means, and

an annular deformable elastomeric locking means compressed axially and radially inwardly under a pre-set clamping force by said clamping member and circumferentially into the external threads of said adjustment means for locking said adjustment means in a predetermined axial position whereby axial adjustment of said adjustment means may be effected by projecting a work tool through said access opening to engage and rotate said adjustment means.

3,937,251

FLUID PRESSURE OPERATED SHUT OFF VALVE APPARATUS

Arthur G. Ahlstone, Ventura, and Josef A. Bartos, Villa Park, both of Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.
Division of Ser. No. 194,187, Nov. 1, 1971, Pat. No. 3,850,237.
This application July 29, 1974, Ser. No. 492,402
Int. Cl.² F16K *31/143*
U.S. Cl. 137—594 **9 Claims**

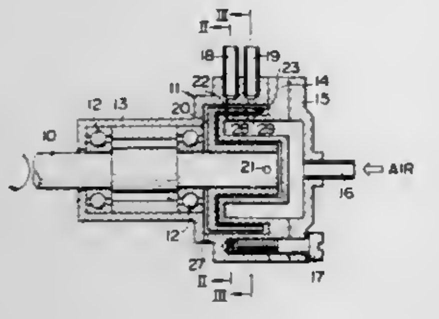


4. In fluid pressure operated control valve apparatus, valve body means providing a flow passage, shutoff valve means for said passage including a valve member shiftable between a first position at which said passage is open and a second position at which said passage is closed, control fluid pressure operated means for holding said valve member in said first position, and means for moving said valve member to said second position, said shutoff valve means comprising a valve chamber intersected by said passage, a valve gate slidable in said chamber between said first and second positions, said control fluid pressure operated means comprising an actuator piston connected with said valve gate, a piston chamber in which said actuator piston is reciprocable, said means for moving said valve gate to said second position including a power piston, a piston chamber in which said power piston is reciprocable, energy storing means normally urging said power piston in one direction, passage means leading between the respective piston chambers at one side of each of said pistons, hydraulic fluid filling said piston chambers and said passage means between said pistons, whereby when said actuator piston is moved by control fluid pressure to move said valve gate from said second position to said first position, said power piston is moved in the other direction to store energy in said energy storing means for moving said power piston in said one direction and said valve gate to said first position when control fluid pressure is reduced, and fluid pressure actuated supplemental means for actuating said valve gate to said second position.

3,937,252
IMPULSE SIGNAL PRODUCING DEVICE OF THE PNEUMATIC PRESSURE TYPE

Takashi Ishida, Ohi, Japan, assignor to Mikuni Kogyo Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1974, Ser. No. 528,624
Int. Cl.^{2} F15C *3/16*
U.S. Cl. 137—624.13 3 Claims



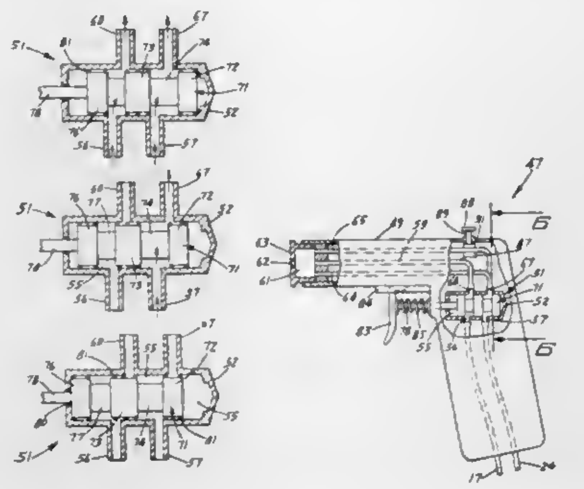
1. An impulse signal producing device of the pneumatic pressure type comprising:
a receiving cover,
a pressure cover having an air supply port at its central part and mounted opposite to said receiving cover,
a shaft rotatably supported in said receiving cover and having an end,
a rotatable sleeve mounted on said shaft and shaped so as to define an open end,
a supply body interposed between said receiving cover and said pressure cover and having at least two openings on its circumference, said supply body having a section in the shape of a hat and with a concave central part thereof and mounted on said end of said shaft with a small diameter portion covering the end of said shaft, and said body having said openings in the circumferential surface of a large diameter portion,
a small hole provided in said sleeve in correspondence with one of said openings,
a slot provided in said sleeve in correspondence with the other of said openings in said body and extended in the circumferential direction of said sleeve from on the same generating line of said sleeve as passes through said small hole, and output ports formed in said receiving cover in alignment with rotating paths of said small hole and said slot.

3,937,253
MULTIPLE FLUID DISPENSING APPARATUS

Duane F. Lilja, 2410 Central Ave. NE., Minneapolis, Minn. 55418

Continuation-in-part of Ser. No. 413,768, Nov. 8, 1973, Pat. No. 3,841,555, which is a continuation-in-part of Ser. No. 280,476, Aug. 14, 1972, Pat. No. 3,780,943. This application Oct. 11, 1974, Ser. No. 514,001
Int. Cl.^{2} A16R *11/07*
U.S. Cl. 137—625.18 12 Claims

1. A multiple fluid dispensing apparatus comprising:
a casing having interior walls defining a longitudinal chamber having a closed interior end;
a plurality of longitudinally spaced fluid inlets to said chamber adapted to receive a plurality of separate fluids from separate fluid sources;
a plurality of longitudinally spaced fluid outlets from said chamber, a fluid outlet corresponding to each fluid inlet forming a plurality of fluid inlet-outlet pairs;
a linear plunger movably located in said chamber;
said plunger having a plurality of longitudinally spaced heads with portions in sealing engagement with said interior walls operable to block fluid flow between the inlet and outlet of each fluid inlet-outlet pair;
said plunger having a plurality of isolated fluid conduits located between said heads to permit fluid flow through said chamber, one fluid conduit corresponding to each fluid inlet-outlet pair;
said plunger being linerly movable in said chamber between a first position with said heads positioned in said chamber to block fluid flow between the inlet and outlet of each fluid inlet-outlet pair, and a second position with one of said fluid conduits located to permit fluid flow through said chamber between the fluid inlet and outlet of one fluid inlet-outlet pair, and a third position with said fluid conduits located in said chamber to permit fluid flow through said chamber between the fluid inlets and outlets of at least two inlet-outlet pairs to provide coordinated discharge of the fluids from the apparatus;
said plunger being longitudinally movable in said chamber from said first position toward the other positions in a direction toward said closed interior end whereby pneumatic pressure developed in said interior end biases said plunger back toward said first position; and
actuator means to actuate movement of the plunger in the chamber.

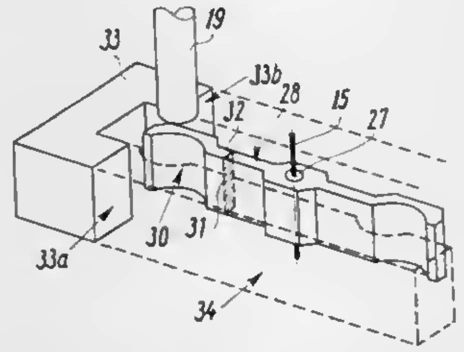


3,937,254
DEVICE FOR MONITORING CONTROL ELEMENTS

Kurt Stähle, Neuhausen-Steinegg, Germany, assignor to Concordia Fluidtechnik GmbH Steuergerate, Germany

Filed Mar. 4, 1974, Ser. No. 447,832

Claims priority, application Germany, Mar. 9, 1973, 2311698
Int. Cl.^{2} F15B *20/00*
U.S. Cl. 137—637 15 Claims



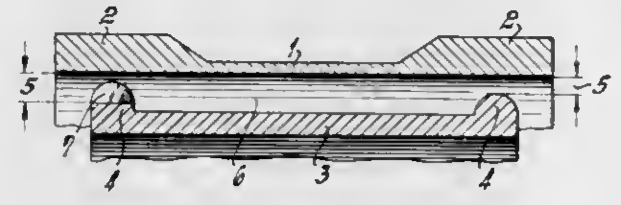
1. A device for monitoring the relative position of synchronously moved control elements, especially for monitoring the movement in a predetermined direction of movement of two valve cases in safety valves controlling a pneumatic or hydraulic drive, comprising a first member of magnetic material fixedly disposed at each of the valve cases, each first member being disposed proximate to a corresponding free end of a pivotally mounted magnetic bar whose basic position is aligned with said valve cases, said magnetic bar having an axis of rotation which is disposed parallel to said direction of movement, and means for magnetically influencing said magnetic bar responsive to asynchronous movement of said valve cases such that a signal is triggered for making said drive inoperative when said magnetic bar is swivelled out of said basic position.

3,937,255
SAFETY EQUIPMENT FOR INSTALLATIONS UNDER PRESSURE

Heiko Barnert, Julich, Germany, assignor to Kernforschungsanlage Julich Gesellschaft, Julich, Germany

Filed Oct. 4, 1973, Ser. No. 403,417

Claims priority, application Germany, Oct. 11, 1972, 2249690
Int. Cl. F16l *9/18, 57/00*
U.S. Cl. 138—148 2 Claims

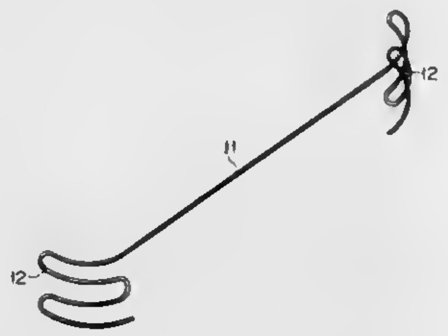


1. Safety equipment for installations containing a medium under pressure, including a wall of the installation the thickness of which is reduced in a predetermined region relative to the remaining region of the wall, and an element disposed within the installation which extends over and beyond said reduced thickness region, said element having bulges formed at its ends which define along with the inner surface of the installation wall a reduced flow cross section through which the pressurized medium flows in the event of damage to the installation wall at the reduced thickness region thereof, said reduced flow cross section being chosen so that the pressure prevailing during normal operation in the space defined by the inner surface of the installation wall and that portion of said element between said bulges is the same as the pressure prevailing in the installation.

3,937,256
APPARATUS FOR MANUFACTURING CORNER SPRINGS

Yoshiharu Hamaguchi, Fussa, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan

Filed June 9, 1975, Ser. No. 585,033
Int. Cl.^{2} B21F *35/00*
U.S. Cl. 140—71 R 11 Claims

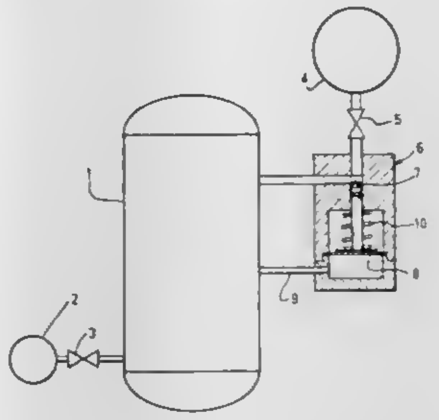


1. A corner spring-manufacturing apparatus which comprises a pair of spring leg-forming mechanisms for folding both ends of a wire several times to provide spring legs at said ends; a pair of heat treatment devices for heat-treating the wire now having spring legs formed at both ends; and a pair of spring leg-bending mechanisms for bending the heat-treated spring legs.

3,937,257
METHOD AND APPARATUS FOR PRESSURIZING RESERVOIRS OF FIRE-FIGHTING EQUIPMENT

Guy Dion Biro, Vincennes, France, assignor to Biro Fils, Paris, France

Filed Dec. 13, 1974, Ser. No. 532,483
Int. Cl.^{2} B65B *1/04, 3/04*
U.S. Cl. 141—3 4 Claims

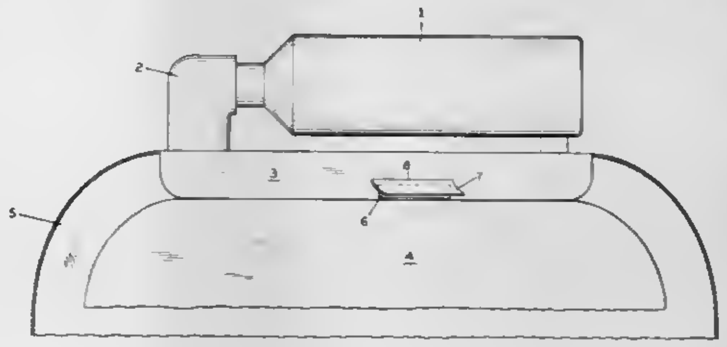


1. A method for pressurizing an operative reservoir with a gas comprising
a. opening communication from an auxiliary source containing a determined quantity of gas under pressure and the reservoir to supply said reservoir with the quantity of gas which when expanded pressurizes the reservoir to a predetermined pressure,
b. actuating via the pressurizing gas in said reservoir regulation device connecting a main source of service gas under high pressure with said reservoir;
c. opening communication between said main source of gas under high pressure and said regulation device for permitting gas under high pressure to flow into said reservoir and supply the same with expanded gas under the action of said predetermined pressure; and
d. automatically balancing the regulation device to effect automatic regulation of the flow of gas under high pressure from said main source to feed said reservoir with expanded gas.

3,937,258
FLEXIBLE FLAPPER

Yogendra S. Loomba, Roseville, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 132,861, April 9, 1971, abandoned. This application Dec. 1, 1972, Ser. No. 311,061
Int. Cl.^{2} B65B *3/04*
U.S. Cl. 141—67 5 Claims



1. A safety restraint system for protection of an occupant in a vehicle in which the system is mounted, said system comprising: a gas source, a manifold, an inflatable bag assembly surrounding an outer surface of said manifold, an opening in said manifold communicating with at least a portion of said bag assembly for passing gas from the gas source into the bag assembly, said bag assembly including a smaller inflatable restraint within a larger inflatable primary restraint, said first-

mentioned restraint only in receipt of gas passed through said opening, said manifold being apertured in locations in addition to said opening in order to feed gas therethrough to the primary restraint, and an unapertured, substantially flat, unitary, flexible flapper valve cover attached to said outer surface of said manifold so as to alternately be in a position to completely cover said opening and block passage of gas without protruding thereinto and to uncover said opening to allow passage of gas into said smaller restraint dependent on gas pressure therein, said valve cover opening under pressure differential and closing when pressure balance is substantially achieved, and said valve cover having movement, to open or close, in a direction approximately perpcndicular to the outer surface of said manifold.

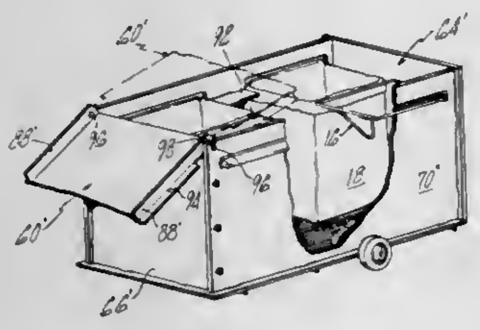
3,937,259
COLLECTION DEVICE

Philip E. Sullivan, 37 Valley View Drive, Farmington, Conn. 06032

Filed Oct. 15, 1974, Ser. No. 514,734

Int. Cl.^{2} B65B *1/04*

U.S. Cl. 141—98 14 Claims



1. Apparatus for facilitating the collection of debris, such as a pile of leaves, comprising, in combination, a ramp for the transfer of debris thereacross from a receiving end to a discharge end; a support for said ramp to operatively position said receiving end adjacent said debris and relatively elevate said discharge end for the transfer of debris upwardly across said ramp to said discharge end in response to a raking motion; and a container supported by said support and positioned below said discharge end of said ramp during said operative positioning of said ramp for the transfer of debris thereacross for receiving debris discharged therefrom.

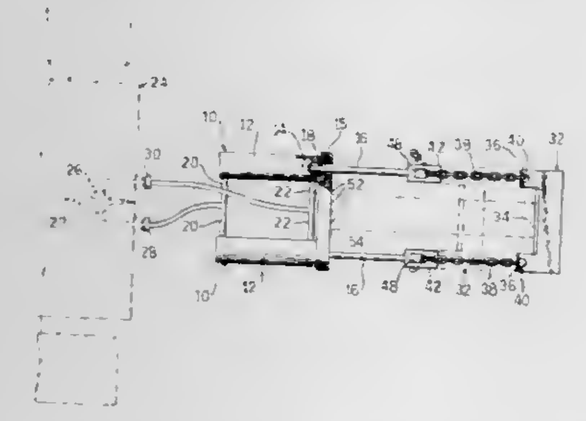
3,937,260
LOG SPLITTER

Max F. Anderson, Stewardson, Ill. 62463

Filed Dec. 13, 1973, Ser. No. 424,441

Int. Cl.^{2} B27L *7/00;* A47J *49/02*

U.S. Cl. 144—193 A 11 Claims



1. A portable log splitter for splitting generally horizontally positioned logs lying on the ground comprising,
a pair of spaced fluid operators in generally parallel extending position,
a butt plate extending between said fluid operators and adapted to abut one end of a log to be split,
a splitting blade, and
means for connecting said blade to said operators,
said blade and butt plate being relatively movable together for splitting operation of a log extending therebetween upon actuation of the fluid operators in a direction to draw the blade toward the butt plate.

3,937,261
APPARATUS FOR COMMINUTING TREE STUMPS

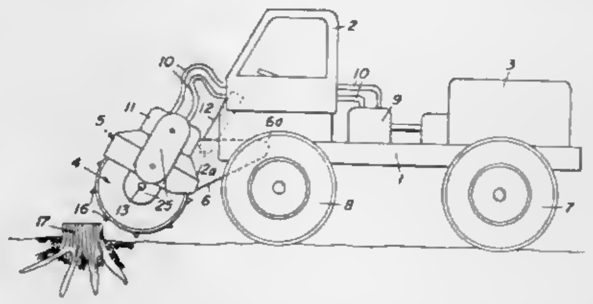
Hans Blum, Siegfriedstrasse 14, 6814 Bobstadt, Germany

Division of Ser. No. 313,067, Dec. 7, 1972, Pat. No. 3,868,980. This application Aug. 9, 1974, Ser. No. 496,436

Claims priority, application Germany, Mar. 21, 1972, 2213667

Int. Cl.^{2} B27G *13/04;* A01G *23/08;* B27C *9/01;* B27M *1/00*

U.S. Cl. 144—218 16 Claims



1. A cutting roller for chipping objects, such as rooted tree stumps upon rotation against the stump, the roller having a cylindrical surface and a parallity of knives projecting therefrom with cutting edges on their extremities, one half section of the roller from one end to the center thereof having knives extending outwardly towards said one end at an angle to a diametrical plane of the roller, the other half section of said roller from said other end of the roller to the center thereof having knives extending outwardly towards said other end at the same, but oppositely directed angle.

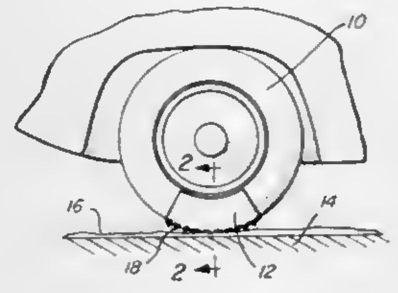
3,937,262
SURE GRIP WINTER TIRE TRACTION DEVICE

Poy Lee, 52 Tennyson St., Somerville, Mass. 02145

Filed Feb. 6, 1975, Ser. No. 547,624

Int. Cl.^{2} B60C *7/22*

U.S. Cl. 152—179 7 Claims



1. A device for attachment to a vehicle tire to improve traction of the tire with a surface upon which the tire rests, said device comprising an arcuate segment of a tire which is slightly larger than the vehicle tire so that the segment can be attached to the vehicle tire, a plurality of studs each having opposite ends, said segment having means for receiving the stud with one end of the stud extending radially outwardly of the vehicle tire and means for holding the stud in fixed position in the segment with the other end of the stud extending radially inwardly of the inner surface of the tire segment for mating with the vehicle tire tread.

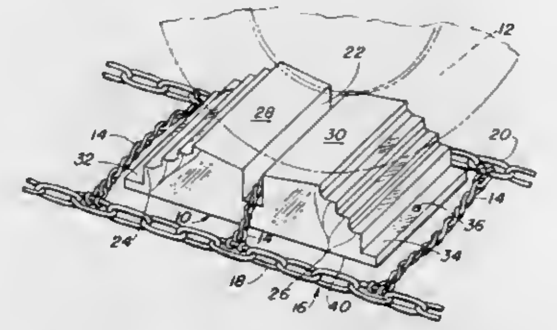
3,937,263
TIRE CHAIN CONTAINER AND MOUNTING AID

Milburn L. Hill, 4645 Cambio Court, and Ken M. Sawyer, 35464 Cabral Drive, both of Fremont, Calif. 94536

Filed Feb. 28, 1974, Ser. No. 446,609

Int. Cl.^{2} B60C *27/00*

U.S. Cl. 152—213 R 1 Claim



1. A tire chain container and mounting aid comprising a pair of shells, each shell being capable of bearing the weight of a motor vehicle when one of the wheels of the motor vehicle is disposed thereon, each shell having a flat face through which a pair of pockets open, each pocket registering with a pocket in the other shell when said flat faces are brought together in registration, thus forming a pair of separate chambers, each chamber being adapted to contain a tire chain, the pair of pockets in at least one of said shells being separated by a common wall containing a third pocket of such size as to be capable of containing spare tire chain hardware, such as spare links, tire chain clips, or the like, and the common wall between the tire chain receiving pockets of each shell containing a channel open to the side of the shell opposite its said flat face and extending to and through each wall of the shell which is perpendicular to said common wall.

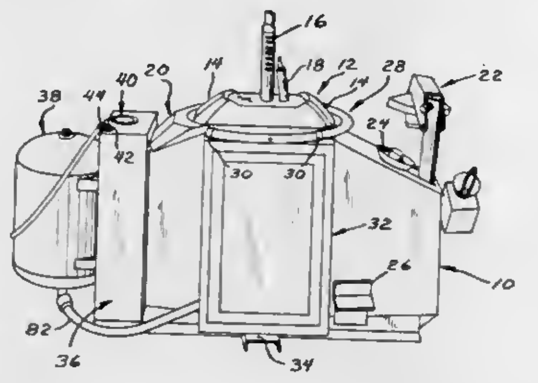
3,937,264
BEAD SEATING AND INFLATION APPARATUS FOR A TIRE CHANGING STAND

John L. Mikovits; Elmer J. Strang; Ray A. Scott, and Billy L. Sorenson, all of Fort Dodge, Iowa, assignors to The Coats Company, Inc., La Vergne, Tenn.

Filed Mar. 3, 1972, Ser. No. 231,647

Int. Cl.^{2} B60C *25/12*

U.S. Cl. 157—1.1 4 Claims



1. A kit for converting a tire changing stand to a combination tire changing stand and a tire bead seating and inflating apparatus comprising: an arcuate tube having a plurality of inwardly directed air nozzles and adapted to be affixed to a tire changing stand in a relation generally concentric to a table top and spindle thereon; a first conduit in fluid communication with said tube and said air nozzles thereon and adapted to be connected to a source of air under pressure; first valve means in said conduit for controlling the flow of air from said source to said air nozzles; an air chuck adapted to be connected to a valve stem on a wheel rim received on said table top, a second conduit having one end connected to said air chuck and another end adapted to be connected to a source of air under pressure; second valve means in said second conduit for controlling the flow of air therethrough; means defining a common actuator for said first and second valves, said common actuator being movable between three positions, one of which causing both said valve means to be closed, another of which causing both said valve means to be open, and the last of which causing said first valve means to be closed and said second valve means to be open; and means for securing said arcuate tube, said valves and said actuator to a tire changing stand.

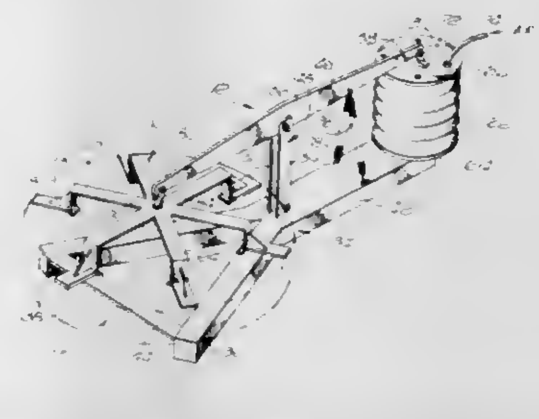
3,937,265
APPARATUS FOR MOUNTING AND REMOVING TIRES FROM WHEELS HAVING SEPARABLE WHEEL RIMS

Fred C. Wilson, 4611 Dockweiler St., Los Angeles, Calif. 90019

Filed June 12, 1974, Ser. No. 478,472

Int. Cl.^{2} B60C *25/06*

U.S. Cl. 157—1.2 1 Claim



1. Apparatus for use in conjunction with the removing and mounting of truck tires on wheels having separable rims comprising:
- A. a Y-shaped support member including a base and a pair of legs extending outwardly from one end of said base, said pair of legs being separated sufficiently to receive at least a portion of said wheel therebetween;
- B. a lever having first and second ends;
- C. a fulcrum affixed to and extending from said base adjacent said one end thereof;
- D. means pivotally attaching said lever intermediate the ends thereof to said fulcrum;
- E. tire engaging means including a hub and a plurality of L-shaped arms each including a portion extending radially from said hub in a plane parallel to the tire and support member, said arms being symetrically distributed about the circumference of said hub;
- F. means pivotally connecting said hub to said first end of said lever;
- G. fluid actuated power assist means affixed to said base at the other end thereof; and
- H. means pivotally connecting said second end of said lever to said power assist means, thereby to reciprocate said tire engaging means with variable force against a tire on a wheel supported on said Y-shaped legs.

3,937,266
METHOD FOR APPLICATION OF WEAR-RESISTANT COATING

Leonard G. Cordone, Allen Park; William A. Donakowski, and John R. Morgan, both of Dearborn Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

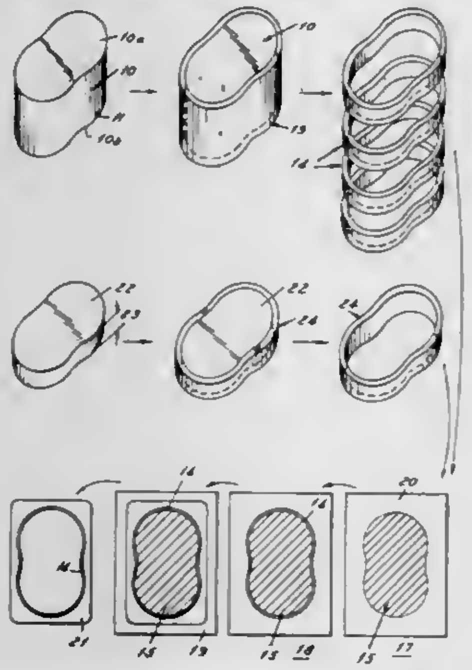
Filed Aug. 20, 1973, Ser. No. 390,131

Int. Cl.^{2} B22D *19/00, 27/02*

U.S. Cl. 164—9 11 Claims

1. A method of producing a coated rotor housing for a rotary internal combustion engine, comprising:
- a. defining first and second mandrels each having an outer surface complimentary to the resultant internal surface for the rotor housing,
- b. electrolytically depositing a thin coating of a composite particle wear-resistant material on said first mandrel,
- c. separating said first mandrel from said coating leaving said coating as an independent unsupported liner, and

d. placing said liner about said second mandrel and casting a molten metallic material thereabout whereby the liner and metallic material are both alloyed and mechanically locked together.



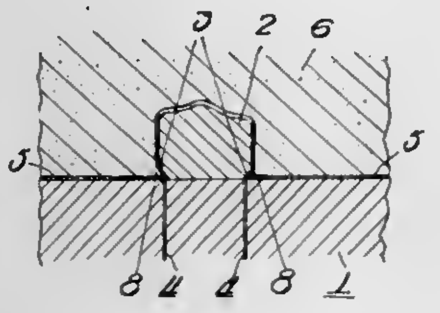
3,937,267
METHOD OF PREVENTING FIN OCCURRENCE DURING METAL CASTING

Ichiya Maeda, Nagano, and Tsuneyoshi Kuroiwa, Suzaka, both of Japan, assignors to Kabushiki Kaisha Akita, Japan

Filed Jan. 3, 1974, Ser. No. 430,553

Int. Cl.^{2} B22C *3/00*

U.S. Cl. 164—47 **1 Claim**



1. A method for preventing a fin from occurring during metal casting comprising: providing a mold having a recess therein with a protuberance extending completely around the periphery of the recess and outwardly beyond the parting line of the mold and a film of soft plastic covering the mold including the protuberance; pressing the mold against another mold to form a cavity and squash the protuberance, the protuberance being held by the plastic film; preparing a melt of a metal; and casting the melt into the cavity.

3,937,268
METHOD FOR BONDING A BRONZE BUSHING ON A METALLIC MEMBER

Richard G. Loebs, Peoria, and Richard C. Ostrowski, Dunlap, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 5, 1974, Ser. No. 494,970

Int. Cl.^{2} B22D *21/02, 23/06, 19/08*

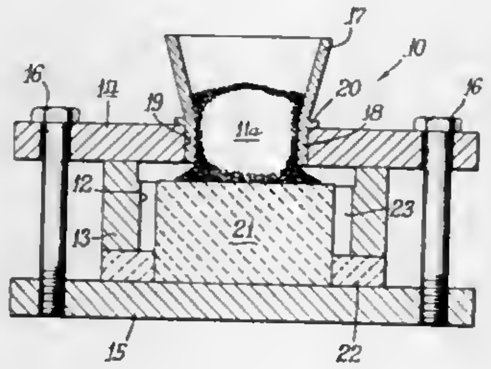
U.S. Cl. 164—66 **8 Claims**

1. A method for bonding an annular bearing on a cylindrical surface of a metallic member comprising the steps of

positioning said metallic member in a fixture to define an annular chamber closed at a first end and open at a second end thereof,

placing a charge of a metallic bearing alloy in particle form adjacent to and in communication with the open end of said annular chamber in a predetermined quantity sufficient to at least substantially fill said chamber,

melting said bearing alloy and at least substantially filling said annular chamber therewith by gravity flow, and cooling said metallic member and said melted bearing alloy to ambient temperature to form a solidified annular bearing, conforming to the shape of said annular chamber, bonded to said metallic member.



3,937,269
MOLD POWDER COMPOSITION AND METHOD FOR CONTINUOUSLY CASTING EMPLOYING THE SAME

Eugene A. Salvadore, Coraopolis, Pa., and Paul J. Zimmerman, Grosse Ile, Mich., assignors to Crucible Inc, Pittsburgh, Pa.

Filed Apr. 8, 1974, Ser. No. 458,745

Int. Cl.^{2} B22D *11/08*

U.S. Cl. 164—73 **1 Claim**

1. In the continuous casting of stainless steel wherein said steel is teemed from a tundish to a flow-through continuous-casting mold via a submerged refractory nozzle from which a continuous, embryo casting is withdrawn, the improvement comprising the introduction to said mold during the teeming operation of a mold powder of the composition consisting essentially of, in percent by weight, 30 to 60 fly ash, 10 to 25 calcium fluoride, up to 15 sodium carbonate, up to 15 calcium carbonate, up to 10 cryolite, up to 10 sodium borate, 2 to 8 graphite, 4 to 12 manganese oxide, up to 15 powdered glass, up to 5 iron oxide.

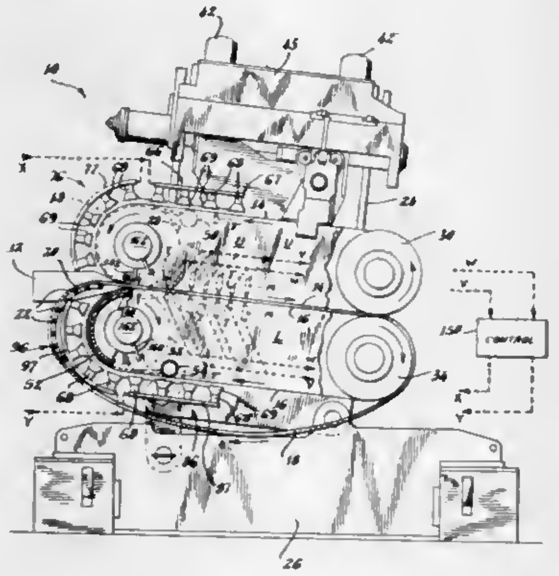
3,937,270
TWIN-BELT CONTINUOUS CASTING METHOD PROVIDING CONTROL OF THE TEMPERATURE OPERATING CONDITIONS AT THE CASTING BELTS

Robert William Hazelett, Winooski, and John Frederick Barry Wood, Burlington, both of Vt., assignors to Hazelett Strip-Casting Corporation, Winooski, Vt.

Filed Nov. 9, 1973, Ser. No. 414,237

Int. Cl.^{2} B22D *11/06*

U.S. Cl. 164—50 **17 Claims**



8. The method of casting molten metal in a casting region defined between opposed portions of a pair of revolving endless flexible metal casting belts wherein the molten metals is introduced into the casting region and is carried downstream through the casting region by the moving belts while the metal is solidifying, comprising the steps of:

elevating the temperature of the main central portion of at least one of said metal casting belts before the main central portion of said belt encounters the molten metal in the casting region, and

elevating the temperature of the two edge portions of said metal belt to higher temperature levels than said main central portion before said two edge portions pass adjacent to the casting region,

said two edge portions being elevated to temperature levels at least as great as the mean temperature level of the main central portion of the metal belt in the casting region.

9. The method of casting molten metal in a casting region defined between opposed portions of a pair of endless flexible casting belts wherein the molten metal is introduced at an entrance to the casting region and thereafter the molten metal travels downstream from the entrance while solidifying between the front faces of the two casting belts and wherein the heat from the solidifying molten metal is withdrawn by applying liquid coolant to the reverse surfaces of the two casting belts, comprising the steps of:

directing intensive radiant heat energy onto the front faces of the respective revolving casting belts for elevating their temperature before the respective casting belts reach the entrance to the casting region, and

controlling the application of the liquid coolant to the reverse surfaces of the respective casting belts for initially applying the coolant to the reverse surfaces of the belts only a small distance from the position where the molten metal initially comes into contact with the front face of the respective casting belt.

3,937,271
MEASURING MEANS FOR MEASURING SECONDARY COOLING ZONE ROLLER GAPS IN CONTINUOUS CASTING MACHINE

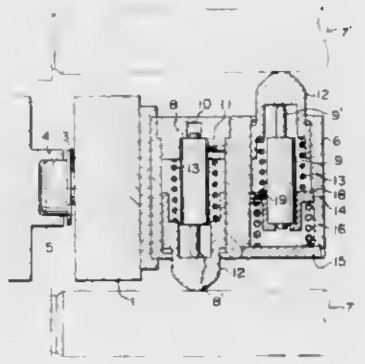
Toyoaki Akiba, Tokyo; Takero Sato, Niihama; Makoto Tokuda, and Hiroshi Tomono, both of Wakayama, all of Japan, assignors to Sumitomo Shipbuilding and Machinery Co. Ltd., Tokyo and Sumitomo Metal Industries Limited, Osaka, both of, Japan

Filed June 10, 1974, Ser. No. 478,159

Claims priority, application Japan, June 11, 1973, 48-66129

Int. Cl.^{2} B22D *1/02*

U.S. Cl. 164—150 **9 Claims**



1. A measuring device for measuring the separation distance between conveying rollers in the secondary cooling zone of continuous casting machines comprising transport means adapted to be guided through said cooling zone between said rollers, said transport means having a maximum dimension parallel to said separation distance which is less than said distance and at least one distance detecting means mounted on said transport means for movement therewith, said distance detecting means including at least one probe projecting beyond the limits of said transport means for engagement with a roller, said probe being displacably supported on said transport means and providing an output signal corresponding in magnitude to the extent of said displacement whereby upon movement of said transport means through said zone, said signal provides an indication of variations in said separation distance along said zone.

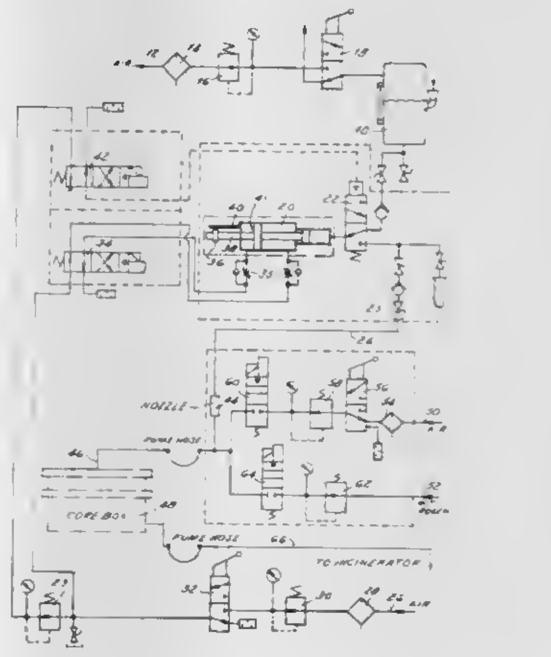
3,937,272
COLD SET CATALYST SUPPLY AND FUME INCINERATOR FOR A FOUNDRY CORE MAKING MACHINE

Lawrence E. Flora, Bloomfield Hills, and Billy G. DuBois, Linden, both of Mich., assignors to Sutter Products Company, Holly, Mich.

Filed Oct. 29, 1973, Ser. No. 410,777

Int. Cl.^{2} B22C *9/12;* **B22D** *27/14;* **F23G** *3/00*

U.S. Cl. 164—159 **18 Claims**



1. Production apparatus for making cold set foundry cores or articles comprising a pattern box adapted to receive fully enclosed cold set resin coated sand cores or articles, high super atmospheric pressure accurately adjustable liquid catalyst injection means adapted to repeatedly supply predetermined quantities of atomized liquid catalyst to said box, said injection means including controls adapted to actuate cyclically in coordination with the curing cycle of said apparatus, purging means adapted to purge fumes in coordination with said curing cycle from said box, and incineration means adapted to continuously draw fumes from said box and oxidize said fumes to inert substances.

3,937,273
FORMING NON-WOVEN FIBROUS MATERIAL

Bronislaw Radvan, Flackwell Heath, and Kieron Philip Green, Thame, both of England, assignors to Wiggins Teape Limited, London, England

Filed Nov. 18, 1974, Ser. No. 524,814

Claims priority, application United Kingdom, Nov. 26, 1973, 54694/73

Int. Cl.^{2} D21F *1/02*

U.S. Cl. 162—212 **17 Claims**

1. A method of making non-woven fibrous material such as paper comprising the steps of:

confining and directing a flow of stock through a slot toward a foraminous support;

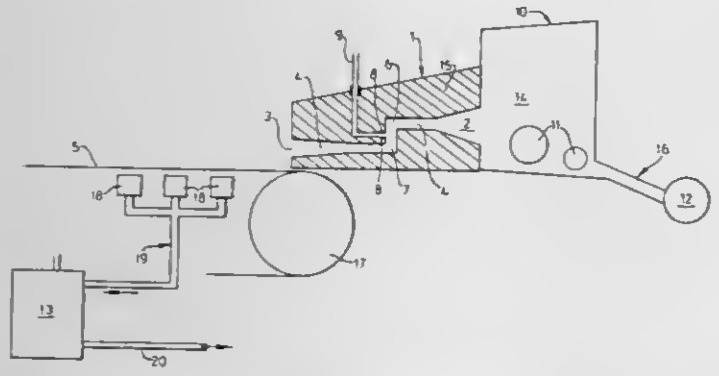
breaking up and dispersing fibre flocs by imparting turbulence to the confined flow in the slot;

effecting foaming of the confined stock by introducing gas under pressure into the confined flow of stock in the slot;

dispersing gas contained in the foamed stock as very small bubbles by imparting turbulence to the confined flow of

foamed stock at a slot location downstream from the introduction of the gas;
delivering the confined foamed stock having the broken up and dispersed fibre flocs and the dispersed very small bubbles from the slot onto the foraminous support; and
draining the stock on the foraminous support.

6. A slice for the headbox of a papermaking machine, comprising:
a body including a slot to confine and direct a flow of stock from a headbox chamber toward the papermaking wire of the machine;



said slot being shaped to impart sufficient turbulence to the confined flow therein as to break up and disperse fibre flocs;
a gas supply passage communicating with said slot and operable to introduce gas under pressure into the confined flow of stock in the slot so as to effect foaming of the confined stock;
said slot being shaped, at a slot location downstream from the slot location communicating with said gas supply passage, to impart sufficient turbulence to the confined flow of foamed stock to disperse gas contained therein as very small bubbles.

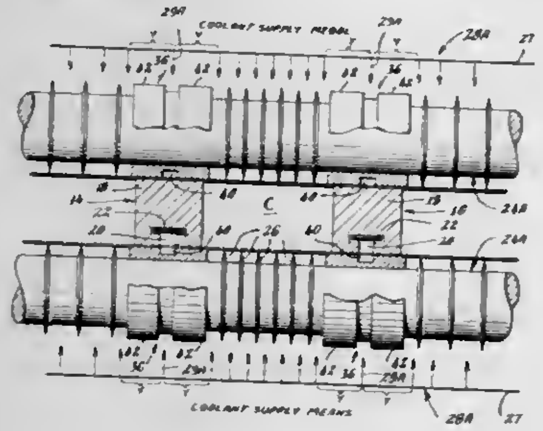
3,937,274
BELT BACK-UP APPARATUS AND COOLANT APPLICATION MEANS FOR TWIN-BELT CASTING MACHINES

John M. A. Dompas, Olen, Belgium, assignor to Hazelett Strip-Casting Corporation, Winooski, Vt.

Filed May 15, 1974, Ser. No. 470,214

Int. Cl.² B22D *11/06*

U.S. Cl. 164—278 **11 Claims**



1. In a twin-belt casting machine for continuously casting molten metal wherein the molten metal is confined in a casting zone defined between the front faces of a pair of revolving flexible casting belts moving along in spaced opposed face-toward-face relationship with a pair of laterally spaced revolving side dams moving between the casting belts and each being spaced inwardly from the respective edges of the belts for defining the side edges of the casting region and wherein the reverse surfaces of the respective casting belts are supported and guided by a plurality of back-up rollers extending transversely across the full width of the casting belts and having multiple narrow fins engaging the reverse surfaces for permitting liquid coolant to travel along these reverse surfaces and in which there are coolant supply means with multiple nozzles for providing liquid coolant to travel along the reverse surfaces of the casting belt, the invention characterized by said back-up rollers each having a pair of cylindrical collars thereon said collars each being spaced inwardly from the respective ends of said rollers and engaging the reverse surfaces of the casting belts directly opposite the respective side dams, said pairs of cylindrical collars being spaced apart on the respective back-up rollers by a distance no greater than the lateral spacing between said side dams and being positioned in alignment with the respective side dams for holding the front faces of the casting belts firmly against the side dams and in which said coolant nozzles are absent from positions adjacent to and aligned with the regions where the said cylindrical collars engage the reverse surfaces of the casting belts.

3,937,275
SYSTEM FOR THERMAL EXCHANGERS

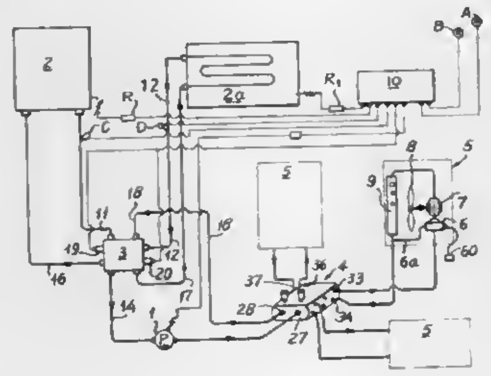
Bernard Boisseau, 20 rue de l'Oisillonnette, 49 Cholet, France

Filed May 21, 1973, Ser. No. 362,271

Claims priority, application France, May 24, 1972, 72.19609

Int. Cl.² F24H *3/02*

U.S. Cl. 165—85 **6 Claims**



1. In a heat exchange system utilizing hot or cold fluid as a medium, said system including means for changing the temperature of said fluid medium, a plurality of thermal exchangers each including an air ventilator driven by a turbine, pump means for propelling said fluid medium through said thermal exchangers and returning it to said temperature changing means, feed conduit means connecting said pump means with said thermal exchangers, and return conduit means connecting said thermal exchangers with said temperature changing means, the improvement comprising: a single degasifying box connected with said feed conduit means for distributing hot or cold fluid medium to all of said heat exchangers, and connected with said return conduit means to collect the fluid medium from all of said heat exchangers for return to said temperature changing means, said degasifying box functioning to remove gases entrained in said fluid medium before said fluid medium reaches each of said turbines through said feed conduit means.

3,937,276
AFTERCOOLER FOR AIR COMPRESSOR

Richard Ostwald, Bowling Green, Ky., assignor to Gordon Smith & Co., Inc., Bowling Green, Ky.

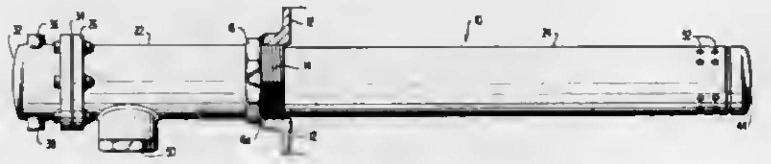
Filed May 21, 1974, Ser. No. 472,024

Int. Cl.² F28D *1/06;* **F28F** *1/00*

U.S. Cl. 165—135 **10 Claims**

1. An aftercooler for cooling compressed gas such as compressed air, the aftercooler including a tubular casing having a plurality of internal ducts for conveying coolant fluid therethrough with spaces between the ducts, said casing having a first inlet port for introducing coolant fluid into the casing to

pass through certain of said cooling ducts, an outlet port for discharging spent cooling fluid from the casing, said casing having a second inlet port for introducing a compressed gas to be cooled such as compressed air into the casing to pass in the spaces between the cooling ducts, said casing having outlet means adjacent one end thereof for exiting the cooled compressed gas from the casing and into a receiving tank, and said casing having means for fixing a portion of said casing to a wall of a receiving tank with said outlet means for the compressed gas located within a receiving tank, and with said inlet and outlet ports for the cooling fluid located externally of a receiving tank, and wherein said inlet and outlet ports for the coolant fluid are situated adjacent the end of the casing opposite said one end where said outlet means for the compressed gas is located, and wherein the outlet means for exiting the compressed gas includes a first set of a plurality of small apertures angularly spaced around the periphery of the casing for reducing noise associated with the discharge of the compressed gas.



3,937,277
TUBULAR APPARATUS, IN PARTICULAR A STEAM GENERATOR

Siegfried Krolmann, Dinslaken-Hiesfeld, and Bruno Heinen, Oberhausen, both of Germany, assignors to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Germany

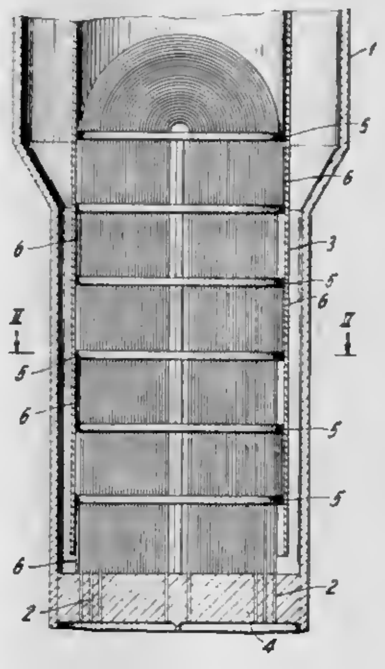
Filed Mar. 18, 1974, Ser. No. 452,251

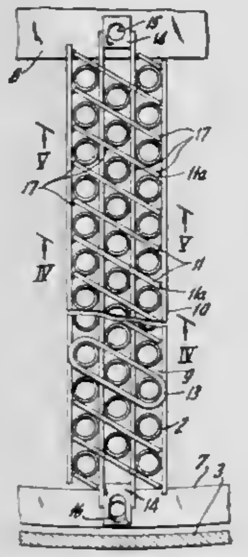
Claims priority, application Germany, Mar. 17, 1973, 2313438

Int. Cl.² F28F *9/00*

U.S. Cl. 165—162 **10 Claims**

1. In a tubular apparatus, in particular a steam generator, comprising a casing, a shell within said casing, a tube bundle having a plurality of tubes mounted within said shell, and a number of grating means in said shell for maintaining said tubes at a certain distance from each other, the improvement comprising each of said grating means comprising one ring-shaped frame, and a plurality of longitudinally parallel grating elements secured on said frame, each of said grating elements having a plurality of parallel grating bars, a plurality of cross-bars, each of said cross-bars spanning transversely and at an angle across said plurality of parallel grating bars, and contacting each of said plurality of parallel grating bars, each of said cross-bars comprising means for securing said grating bars to each of said cross-bars, and mounting means at both ends of each of said grating elements for mounting said grating element to said frame, said mounting means being carried by at least one of said plurality of grating bars.





3,937,278
SELF-PROPELLING APPARATUS FOR WELL LOGGING TOOLS

Adel El Sheshtawy, 300 W. Grauwyler Road, Irving, Tex. 75061

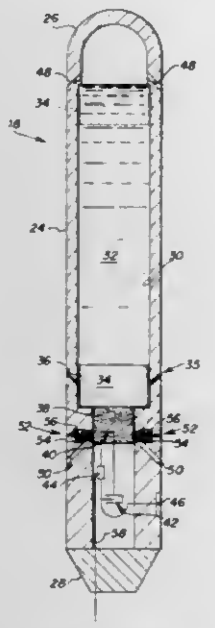
Filed Sept. 12, 1974, Ser. No. 505,239

Int. Cl.² E21B *47/00*

U.S. Cl. 166—63 **20 Claims**

1. A self-propelling apparatus for well logging tools for use within a well bore having a well fluid therein comprising:
a housing defining a cylinder therein and including means for attachment to an end of an elongated well logging tool;
vent means communicating between the cylinder in the housing and the exterior thereof wherein said vent means are outwardly directed;
a piston initially received in one end of the cylinder;
said cylinder for initially receiving a quantity of liquid to establish an overall negative buoyancy in the well fluid for the self-propelling apparatus and the well logging tool connected thereto; and
means responsive to a predetermined signal for driving the piston from its initial position to the opposite end of the

cylinder to expel the liquid from the cylinder through said vent means and thereby establish an overall positive buoyancy for the self-propelling apparatus and the well logging tool connected thereto.



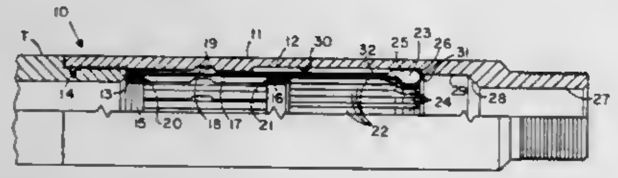
3,937,279
RETRACTABLE LANDING SHOULDER FOR DOWNHOLE DEVICES

George M. Raulins, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 23, 1974, Ser. No. 535,958

Int. Cl.^{2} E21B *23/00*

U.S. Cl. 166—214 **11 Claims**



11. In a tubular housing threadedly connectable to a pipe string, internal shoulder means on resilient collet arm extensions from a sleeve member movable radially inwardly and outwardly between inward restrictive bore opening and outward full-bore opening positions; and collet arm extension shoulder positioning cam means in said tubular housing for camming said collet arm extensions between the radially outward and inward positions, using primarily straight longitudinal movement of the sleeve member, with the resilient collet arm extensions, through a camming range of movement.

3,937,280
ARTIFICIAL LIFT WELL APPARATUS

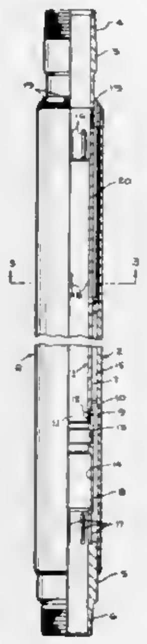
Robert W. Dinning, Houston, Tex., assignor to Macco Oil Tool Company, Inc., New York, N.Y.

Filed Feb. 3, 1975, Ser. No. 546,440

Int. Cl.^{2} E21B *43/00, 17/14*

U.S. Cl. 166—224 R **25 Claims**

1. Apparatus for use in a well having an outer pipe string for flow of a first fluid and an inner pipe string for flow of a second fluid, comprising in combination: receiver means adapted for connection in said inner pipe string and having port means providing communication between said inner and outer pipe strings; and a well tool adapted for movement through said inner pipe string into sealing engagement with said receiver means, said well tool having valve means for controlling fluid flow between said inner and outer pipe strings through said port means; said receiver means including first tubular means adapted for reception of said well tool and through which said fluid communication between said inner and outer pipe string is established, and second tubular means concentrically surrounding said first tubular means and laterally spaced therefrom to define an annular passageway therebetween that communicates with said first tubular means above and below the sealing engagement of said well tool with said receiver means and through which at least a portion of said second fluid flow may by-pass said well tool.



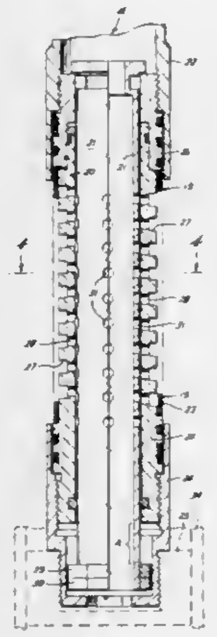
3,937,281
HIGH LOAD SELF-CLEANING HELICAL SPRING FILTERS

Bobby G. Harnsberger, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed June 27, 1974, Ser. No. 483,504

Int. Cl.^{2} E03B *3/18;* **B01D** *25/34*

U.S. Cl. 166—233 **13 Claims**



1. A self-cleaning helical spring filter in combination with a tubing string comprising,

a. a vertically actuatable tubing string having an upper end and a lower end extending down into a well to a liquid-containing sand strata,

b. helical spring means connected to said lower end of said tubing string having a plurality of coaxial convolutions,

c. helical grooved hollow elongated mandrel means in frictional contact with the internal surface of said spring means convolutions and connected to a lower end of said helical spring means,

d. the pitch of said mandrel means grooves being opposite to the pitch of said spring means convolutions,

e. said helical spring means having an upper end connected to said tubing string lower end for expanding the helical spring means, and

f. holes formed in said mandrel means grooves for providing, when said spring means is expanded, increased cleaning action, increased flow of production liquids through the helical spring filter, and increase resistance to lateral forces on the spring.

3,937,282
METHOD FOR CEMENTING WELLS IN LOW TEMPERATURE FORMATIONS

Stanley H. Shryock, Brea, Calif.; Charles R. George, and Willis C. Cunningham, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 374,609, June 28, 1973, Pat. No. 3,891,454, which is a continuation of Ser. No. 129,983, March 31, 1971, abandoned, which is a continuation-in-part of Ser. No. 821,946, May 5, 1969, abandoned. This application Mar. 24, 1975, Ser. No. 561,570

Int. Cl.^{2} E21B *33/13*

U.S. Cl. 166—293 **14 Claims**

1. A process for cementing pipe in a well which penetrates a low temperature formation comprising depositing in the space between said pipe and said formation an aqueous slurry of a hydraulic cement composition and thereafter allowing said slurry to harden, wherein said slurry consists essentially of:

a hydraulic cement, gypsum, a monovalent chloride salt, a setting time retarding agent and water;

wherein said hydraulic cement is present in said composition in the range of about 15 to about 35 pounds per 75 pounds of dry solids, the weight ratio of said gypsum to said hydraulic cement in said composition is in the range of about 1:1 to about 3:1, said monovalent chloride salt is present in said composition in the range of about 1 to about 3.5 pounds per 75 pounds of dry solids, said setting time retarding agent is present in said composition in the range of about 0.01 to about 0.525 pounds per 75 pounds of dry solids, and said water is present in said composition in the range of about 3 to about 5 gallons per 75 pounds of dry solids.

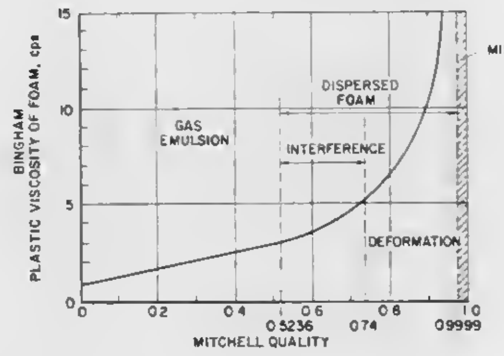
3,937,283
FORMATION FRACTURING WITH STABLE FOAM

Roland E. Blauer, Golden, and Clarence J. Durborow, Englewood, both of Colo., assignors to The Dow Chemical Company, Midland, Mich. and Minerals Management, Inc., Denver, Colo.

Filed Oct. 17, 1974, Ser. No. 515,557

Int. Cl.^{2} E21B *43/26, 43/27*

U.S. Cl. 166—307 **20 Claims**



1. A method of extending an initially fractured subterranean formation penetrated by a well bore with a stable foam, said foam comprising a mixed dispersion of a liquid base, a surfactant, a propping agent and a gas such that the Mitchell quality of said foam at the temperature and fracture extension pressure of the formation, as derived from the formula:

$$\Gamma\, tp = \frac{V_{sg}}{V_f}$$

where

$\Gamma\, tp$ = the Mitchell derived quality

V_{sg} = the volume of saturated gas (excluding gas in solution if any)

V_f = the volume of foam

is between the range of 0.5236 to 0.9999;

injecting said foam into said well bore and increasing the pressure of said foam against said formation to reopen and/or extend said initial fracture of said formation.

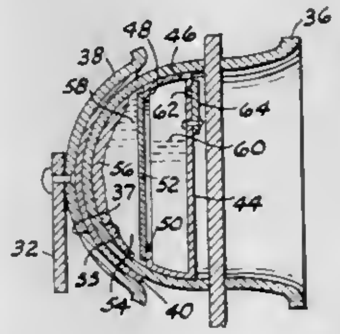
3,937,284
EXOTHERMIC CHEMICAL REACTIVE SPRINKLER RELEASE

Richard J. Young, 2131 SW. 42, Oklahoma City, Okla. 73119

Filed Sept. 30, 1974, Ser. No. 510,687

Int. Cl.^{2} A62C *37/18*

U.S. Cl. 169—37 **6 Claims**



1. An exothermic release for a thermally sensitive sprinkler head having a fusible element normally maintaining the sprinkler head inactive, the improvement comprising:

a thermally sensitive heat generating capsule disposed adjacent said fusible element,

said capsule confining a heat expansible medium with a quantity of sodium and containing water; and,

partition means capable of being ruptured by the expansion of said expansible medium beyond a predetermined limit for commingling said sodium and water and fusing said fusible element, normally separating said sodium and expansible medium from said water.

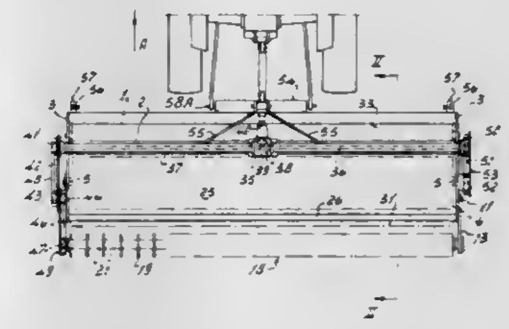
3,937,285
CULTIVATORS

Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Filed Apr. 16, 1974, Ser. No. 461,376

Int. Cl.^{2} A01B *33/00*

U.S. Cl. 172—52 **17 Claims**

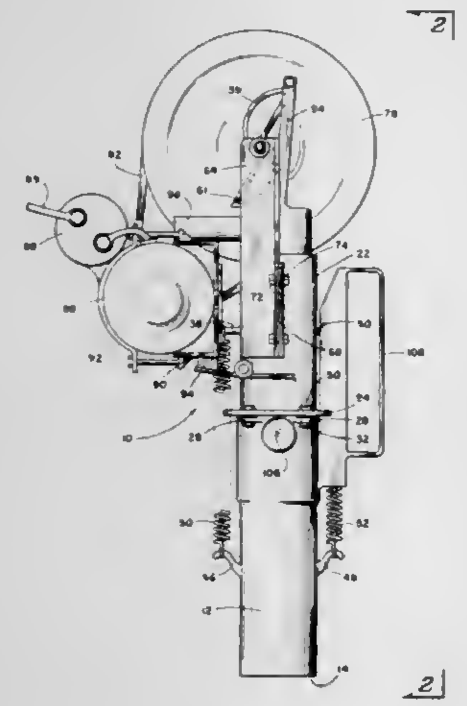


1. A cultivator comprising a frame and a first soil-working rotor of bar-like configuration rotatably mounted on said

frame with driving means connected to said first rotor, a second soil-working rotor rotatably mounted on said cultivator in driving connection with said driving means, said first rotor having a polygonal periphery, said rotors being located one behind the other and rigid means for fixing the relative positions of said rotors on said frame to work soil at different depths and for positioning said first rotor substantially entirely below the surface of the ground to work sub-soil said first rotor having an effective diameter that is substantially smaller than that of said second rotor.

3,937,286
FENCE POST DRIVER

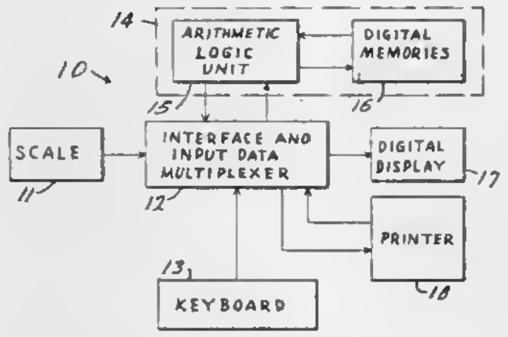
Carl F. Wagner, Rte. 3 Box 79, Cushing, Okla. 74023
Filed May 13, 1974, Ser. No. 469,375
Int. Cl.² B25D *11/00*
U.S. Cl. 173—119 2 Claims



1. A fence post driving tool comprising sleeve means having one end thereof open for receiving one end of a fence post therein, hammer means slidably disposed in said sleeve means and movable through the opposite end thereof, yieldable means secured between the sleeve means and the hammer means for constantly urging the hammer means in one direction with respect to the sleeve means, cam means journalled in the proximity of one end of the hammer means and intermittently engagable therewith for moving the hammer means in a direction against the force of the yieldable means, power means carried by the sleeve means, drive means operably connected between the power means and cam means for actuating of the cam means, and said cam means and yieldable means cooperating to reciprocate the hammer means within the sleeve means for transmitting intermittent driving force to the fence post, and wherein the hammer means comprises an elongated hammer element slidably disposed within said sleeve means, U-strap means secured to the outer extremity of said hammer element and extending longitudinally outwardly therefrom, said U-strap means being intermittently engagable by said cam means for imparting movement to the hammer element in one direction against the force of the yieldable means.

3,937,287
DATA FILTERING CIRCUITRY

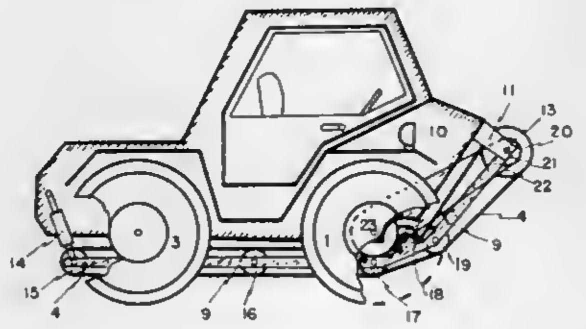
Edward G. Pryor, Toledo, Ohio, and Richard C. Loshbough, Temperance, Mich., assignors to Reliance Electric Company, Cleveland, Ohio
Filed Apr. 17, 1974, Ser. No. 461,518
Int. Cl.² G01G *19/04*
U.S. Cl. 177—25 4 Claims



1. A digital weighing scale comprising, in combination, means for generating a digital weight signal corresponding to the weight of an article, memory means for storing a filtered weight, a counter, means for periodically comparing the generated weight signal with the stored filtered weight, means responsive to a comparison between the generated weight signal and the stored filtered weight for clearing said counter, means responsive to the generated weight signal deviating from the stored filtered weight by a weight less than a predetermined amount for incrementing said counter, and means responsive to a predetermined count in said counter for storing the generated weight signal in said filtered weight memory means.

3,937,288
ALL TERRAIN VEHICLE

Paul Kehler, South Bend, Ind., assignor to Applied Inventions Corporation, North Tonawanda, N.Y.
Filed Mar. 6, 1974, Ser. No. 448,533
Int. Cl.² B62D *21/14*
U.S. Cl. 180—9.3 2 Claims

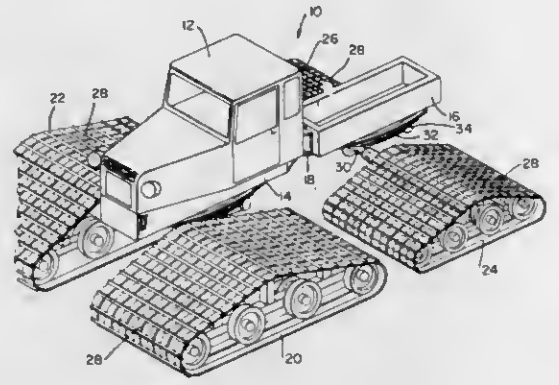


1. A vehicle comprising a main body, a set of wheels on each side of said main body, a track assembly mounted between the two sets of wheels and under said main body, with said track assembly comprising amultiplicity of powered tracks that cover substantially the whole underside of said vehicle and that do not extend as far down as the wheels of said two sets of wheels,

said vehicle further comprising drive means for individually driving said two sets of wheels in the same or in opposite directions at the same or at different speeds, driven means for driving each of said powered tracks, and differential drive means for transmitting power from said sets of wheels to said driven means of said tracks for causing each track to move with a ground speed that is intermediate the ground speeds of its two adjacent tracks or intermediate the ground speeds of its adjacent track and its adjacent set of wheels.

3,937,289
SNOW CAT

Lawrence Chapman Dickinson, 2255 Eva Adams, Reno, Nev. 89504
Filed Jan. 16, 1974, Ser. No. 433,940
Int. Cl.² B62D *11/00*
U.S. Cl. 180—9.44 8 Claims

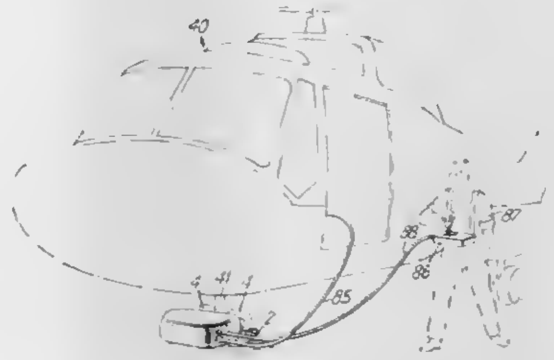


1. A snow cat comprising:
fore and aft substantially rigid body frame members;
an articulating joint joining the fore and aft body frame members, said articulating joint permitting relative rolling motion and relative yawing motion between said fore and aft body frame members;
four endless track assemblies, two of said track assemblies located on each side of the fore body frame member and the other two of said track assemblies located on each side of the aft body frame member, each said track assembly including a relatively wide endless track having a moving flat base portion adapted to ride over snow and means for maintaining said base portion in its substantially flat configuration;
a first axle interconnecting the two track assemblies located on each side of the fore body frame member and a second axle interconnecting the two track assemblies on each side of the aft body frame member; fore
spring means mounting the first axle to the fore body frame member and the second axle to the aft body frame member; and
forward and aft stabilizer means, said forward stabilizer means comprising a first torsion bar interconnecting the track assemblies on each side of the fore body frame member to restrict relative vertical motion therebetween, said aft stabilizer means comprising a second torsion bar interconnecting the track assemblies on each side of the aft body frame member to restrict relative vertical motion therebetween.

3,937,290
APPARATUS FOR MANOEUVRING AIRCRAFT

Vernon A. Benning, Maidenhead, England, assignor to M. L. Aviation Company Limited, England
Filed July 12, 1974, Ser. No. 488,812
Claims priority, application United Kingdom, Sept. 17, 1973, 43499/73
Int. Cl.² B60D *1/00*
U.S. Cl. 180—14 C 2 Claims

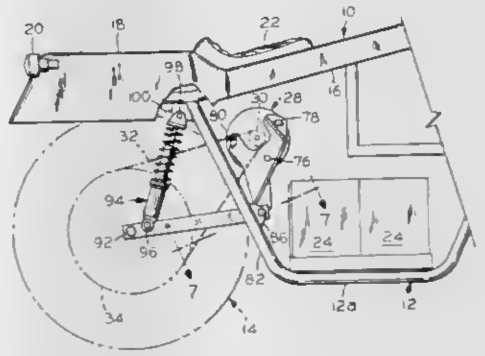
1. Apparatus for manoeuvring twin nose-wheeled aircraft, said apparatus comprising a frame, at least one pair of ground wheels supporting said frame, means for fitting said frame to the wheel-supporting structure of an aircraft, a pair of driving drums, means mounting said drums to turn in said frame, said mounting means comprising means whereby said drums are slidable between a first position in frictional engagement with respective wheels of said aircraft and a second position in frictional engagement with said at least one pair of ground wheels, a source of power providing independent drive to said two drums, a separate control unit and a flexible connection



connecting said unit to said frame, whereby said two drums may be controlled.

3,937,291
MOTOR MOUNT FOR ELECTRIC POWERED MOTORCYCLE

Michael W. Hanagan, Somers, Conn., assignor to Corbin Gentry, Inc., Somerville, Conn.
Filed Oct. 7, 1974, Ser. No. 512,418
Int. Cl.² B62D *61/02*
U.S. Cl. 180—33 A 5 Claims



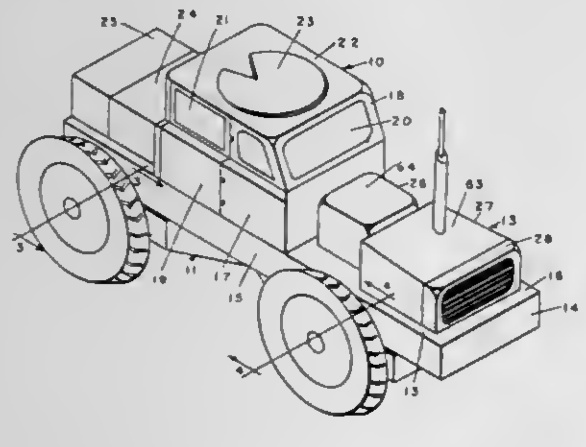
1. In an electric powered motorcycle having a frame including a pair of spaced frame members, storage batteries supported on the frame operable for powering the motorcycle, a front wheel, a rear wheel supported on a rear axle, and shock absorber means having one end connected to the frame and the other end operatively connected to the rear wheel and operable for enabling the rear wheel to move relative to the frame in passing over an obstruction in the path of movement thereof, the improvement comprising a motor mount assembly operable for mounting the electric motor of the electric powered motorcycle thereon for movement relative to the frame while the electric motor remains connected in electrical circuit relation with the storage batteries from which the electric motor receives its power and also remains operatively connected to the rear wheel for imparting drive thereto and thereby to the motorcycle, said motor mount assembly comprising:
a. a motor mount having one end thereof pivotably mounted on the frame of the motorcycle and the other end thereof supported on the rear axle of the motorcycle, said motor mount including a pair of side rails, a planar member and connecting means operable for interconnecting said side rails and said planar member for movement together as a unit, said pair of side rails comprising a pair of elongated members having one end thereof rigidly affixed to said connecting means in spaced relation relative to each other with said pair of elongated members extending in parallel relation to each other and with the major axis of each of said pair of elongated members extending at right angles to the major axis of said connecting means, each of said pair of elongated members being tubular in config-

uration and having a rectangular cross section, each of said pair of elongated members further including means formed thereon intermediate the ends thereof for attaching one end of the shock absorber means thereto, said connecting means comprising a piece of pipe having a length substantially equal to the spacing between the pair of frame members, said planar member including means for mounting the electric motor thereon, said planar member having one end thereof rigidly affixed to said connecting means intermediate and spaced from the point of attachment of said pair of elongated members to said connecting means with the major axis of said planar member extending at right angles to the major axis of said connecting means, said planar member consisting of a planar portion and a flange portion supported on one side of said planar portion, said planar portion and said flange portion each having one end thereof rigidly affixed to said piece of piping; and

b. means securing said motor mount on the motorcycle to cause said motor mount whenever the rear wheel moves relative to the frame to move correspondingly, said securing means including a first member having said connecting means supported thereon, said first member comprising a solid rod positioned in said piece of pipe and having threads formed at each end thereof, means fastening one end of said first member to one of the pair of frame members and the other end of said first member to the other of the pair of frame members, and bushing means supported on said pair of elongated members adjacent the other end thereof operable for receiving the rear axle therewithin for movement relative thereto.

3,937,292
DIESEL-ELECTRIC WHEEL TRACTOR WITH STEERABLE TRUCKS

Elmo Kincaid, Jr., 1660 Ashley Drive, Clarkston, Wash. 99403
Filed May 2, 1974, Ser. No. 466,211
Int. Cl.^{2} B60K *17/30*
U.S. Cl. 180—45 1 Claim



1. A wheel type electric powered tractor comprising, in combination:

a principal frame having an operator's cab containing operational controls and supporting an engine powering an electric generator;

forward and rearward trucks articulatively supporting the principal frame, each truck having at least one set of paired opposed wheels irrotatably carried on individual axles journaled therein for support of the vehicle on a supporting surface;

steering means associated with each truck;

plural electric drive motors, powered by the electrical output of the electric generator, carried on the trucks one associated with each wheel on each truck through mechanical linkage to drive the associated wheel;

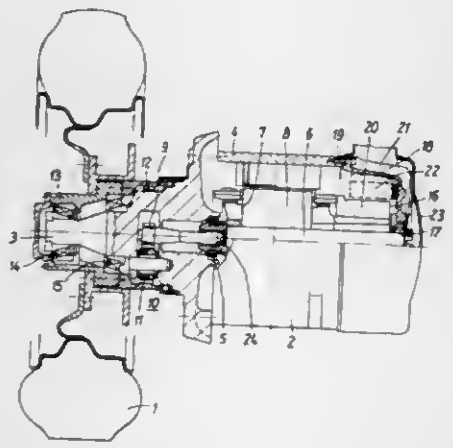
control means activated by the operational controls to operate the steering means;

wherein the articulative support of the principal frame on at least one truck comprises ball and socket joinder means to allow relative motion between the principal frame and the truck in two mutually perpendicular planes;

torus-like air cushion springs with metallic bearing plates operatively separating the trucks and principal frame about the ball and socket joinder means.

3,937,293
DRIVE ARRANGEMENT FOR A TRACK-BOUND ELECTRIC SELF-PROPELLED VEHICLE

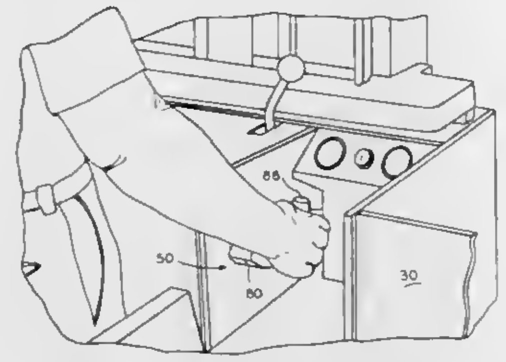
Roman Susdorf, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Oct. 3, 1974, Ser. No. 511,718
Claims priority, application Germany, Oct. 26, 1973, 2354301
Int. Cl.^{2} B60K *7/00*
U.S. Cl. 180—65 F 4 Claims



1. A drive arrangement for a track bound electric self-propelled vehicle having drive wheels comprising: a separate, high-speed electric motor for each of the drive wheels; a planetary gear assembly for transferring the energy developed by the motor to the drive wheel corresponding to said motor; a pinion constituting the sun gear of said planetary gear assembly; said motor including: a stator assembly incorporating a housing, and a rotor rotatably mounted in said housing for driving said pinion; said planetary gear assembly including: a stationary structure connectable to said housing, said stationary structure being the axle of the drive wheel as well as the planet carrier of said gear assembly, a plurality of planet gears each rotatably mounted on said structure and engaging said sun gear, and a ring gear also engaging said planet gears so as to be rotatable with respect to said structure; a hub for supporting thereon the drive wheel corresponding to said motor, said hub being fixedly attached to said ring gear; and, bearing means for bearing said hub on said stationary structure; said rotor having a rotor shaft for driving said pinion; said housing having a removable bearing shield at the end-face thereof facing away from said planetary gear assembly; said motor further including: a first bearing disposed in said bearing shield for accommodating a first end of said rotor shaft, said first bearing being configured as a fixed bearing; a second bearing supporting a second end of said rotor on said stationary structure, said second bearing being a loose bearing having an outer race fixedly connected to said stationary structure and an inner race fixed on said rotor shaft so as to be removable from said outer race when the rotor is axially withdrawn from said housing; and, a pluggable coupling removably interconnecting said pinion and said rotor shaft.

3,937,294
OPERATOR HAND CONTROL FOR INDUSTRIAL LIFT TRUCKS

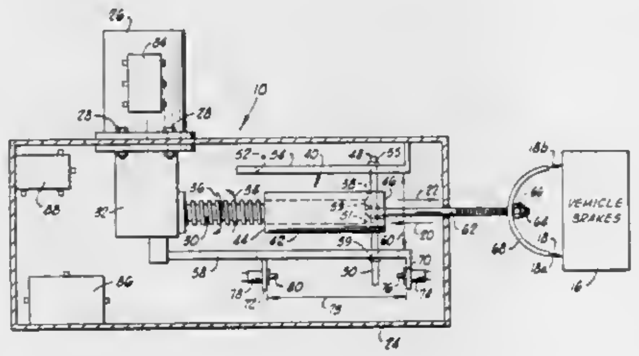
Louis A. Haddock, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.
Filed Sept. 26, 1974, Ser. No. 509,583
Int. Cl.^{2} B60K *26/02*
U.S. Cl. 180—77 R 17 Claims



1. In an industrial truck having an operator's station of the stand-up type formed in a body portion of the truck, an operator's control handle mounted pivotally from its one end portion and extending from its said one end portion longitudinally of the truck, a rotatable operator's control member connected to one side of the end of the control handle which is remote from said pivoted end portion, said control member being rotatable in a plane substantially parallel to the vertical plane of the control handle on an axis substantially transverse of the truck, the operator's forearm being in a plurality of operator control positions in relation to the control handle functionally in or adjacent the vertical plane thereof, and the operator's hand palm being located generally in a vertical plane in facing relation to the control member.

3,937,295
BRAKE CONTROL APPARATUS FOR AUTOMATICALLY ENGAGING AND DISENGAGING THE PARK BRAKES OF A VEHICLE

Virgil Wright, Rte. 3, Huntsville, Ark. 72740
Filed Mar. 11, 1974, Ser. No. 449,630
Int. Cl.^{2} B60T *7/12*
U.S. Cl. 180—103 BF 9 Claims



1. A brake control apparatus for automatically engaging and disengaging the vehicle brakes in response to the positioning of the vehicle ignition switch in the on and the off positions, respectively, the brake control apparatus comprising:

a slide member connected to the vehicle brakes, including:

a tube, having a threaded opening extending a distance therethrough intersecting one end thereof forming an open end, the vehicle brakes being connected to a portion of the tube; and

a pair of guide arms, one end of each guide arm being connected to the tube and each guide arm extending a distance from the tube;

means for slidingly supporting the slide member for sliding movement in a brake engaging direction engaging the vehicle brakes and in a brake disengaging direction disengaging the vehicle brakes, including:

a pair of guide rails, each guide rail being disposed near the tube, the guide rails being disposed on opposite sides of the tube and each guide rail having an elongated guide slot extending therethrough, the end of each of the guide arms, opposite the ends connected to the tube, being slidingly disposed through the guide slot of one of the guide rails, the guide rails slidingly supporting the tube for sliding movement in the brake engaging direction and the brake disengaging direction;

forward switch means, actuated by the slide member in the disengaged position of the vehicle brakes, to switch the means moving the slide member from the actuated forward condition to the off condition;

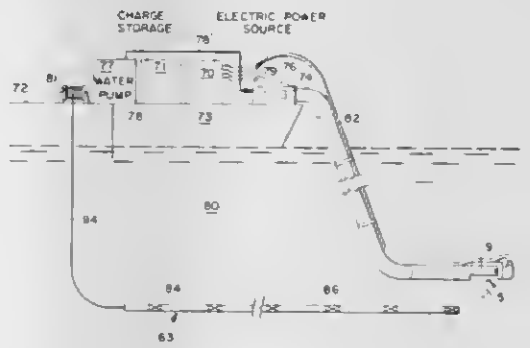
reverse switch means, actuated by the slide member in the engaged position of the vehicle brakes, to switch the means moving the slide member from the actuated reverse condition to the off condition;

a power supply connectable to the means moving the slide member; and,

means connected to the ignition switch, the means moving the slide member, the forward switch means, the reverse switch means and power supply, for connecting the power supply to the means moving the slide member and positioning the means moving the slide member in the actuated forward condition in the closed position of the vehicle ignition switch, and connecting the power supply to the means moving the slide member and positioning the means moving the slide member in the actuated reverse condition in the off position of the vehicle ignition switch.

3,937,296
FIRING DEVICE, EXPLOSIVE CHARGE, METHOD, AND SYSTEM, FOR SEISMIC EXPLORATION

Richard R. Larson, Ulster Park, N.Y., assignor to Hercules Incorporated, Wilmington, Del.
Continuation-in-part of Ser. No. 818,475, April 21, 1969, Pat. No. 3,574,298. This application Feb. 26, 1970, Ser. No. 14,321
Int. Cl.^{2} G01V *1/38;* **F42D** *3/06*
U.S. Cl. 181—118 22 Claims



1. A firing device for initiating electrically initiatable seismic charges assemblies having a delay period intermediate initiation and detonation of same, and then delivering the initiated charge assemblies for detonation outside the system, which comprises means for sequentially directing said charge assemblies along a path of continuous forward travel for electrical initiation of same; contact means, at a forward point on said path of travel, for receiving electric current for electrically initiating said charge assemblies and disposed in a stationary position for intercepting contact with said charge assemblies as they travel along said path to transfer said current to said assemblies for initiation of same; and means in response to contact of said charge assemblies with said contact means for directing the thus initiated charge assemblies from said firing device during said delay period.

3,937,297

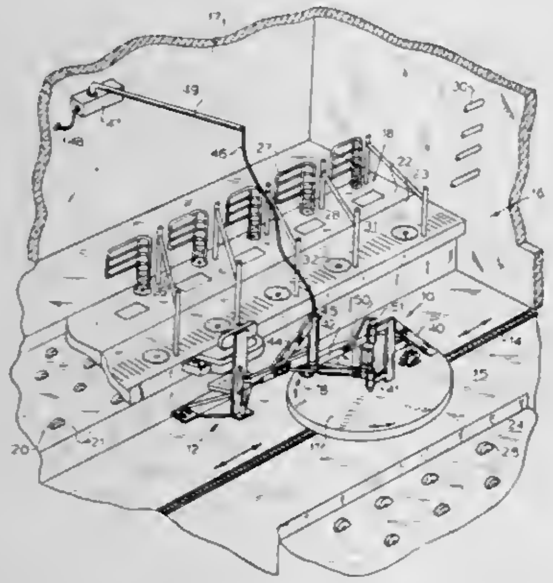
MILKING CHAIR APPARATUS

Hubert Hudson Jacobs, and Virginia Michael Jacobs, both of 1035 N. Hill Ave., DeLand, Fla. 32720

Filed Apr. 8, 1974, Ser. No. 458,906

Int. Cl.^{2} A01K *1/12*

U.S. Cl. 182—13 9 Claims



1. A mobile milking chair comprising in combination:

a. a wheeled frame having a platform supported by wheels attached thereto;
b. drive means for propelling said frame upon actuation by an operator;
c. operator seat means including at least one seat movably attached to said wheeled frame;
d. operator seat support frame attached between said seat means and a center support member and being movably supported on at least one other point on said platform whereby said chair can be shifted around said platform for positioning said seat, said seat support frame having a movable connection between portions thereof for moving one portion and said seat relative to another portion of said seat support frame;
e. drive means for moving said operator's seat relative to said wheeled frame upon actuation by an operator;
f. control means connected to said operator's seat means operatively coupled to said drive means for propelling said frame and to said drive means for moving said operator's seat whereby an operator can position the operator's seat means for connecting and disconnecting cows in a milking parlor; and
g. guide means for guiding said wheeled frame over a predetermined path in a milking parlor when said wheeled frame is propelled by said drive means.

3,937,298

LEVELLING ATTACHMENT FOR LADDERS

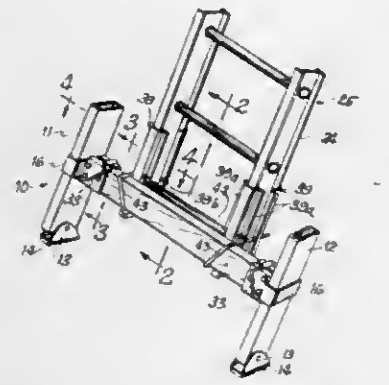
Mathew Hurwitz, 63 Oakland Ave., Auburndale, Mass. 02166

Filed Apr. 16, 1975, Ser. No. 568,552

Int. Cl.^{2} E06C *7/44*

U.S. Cl. 182—200 2 Claims

1. An apparatus for supporting a ladder on an irregularly contoured surface comprising, a transverse member having end portions extending outboard of the side rails of said ladder, means for securing said transverse member to said side rails, a pair of legs, each being generally rectangular in cross section, a knuckle mounted on each end of said transverse member, each knuckle including an open ended socket portion generally rectangular in cross section and shaped to slidably receive one of said legs, each knuckle including a pair of channel ears integral with a socket portion and disposed in confronting relation to each other so as to embrace one end of said transverse member, each of said channel ears extending vertically beyond at least one horizontal edge of said socket portion with the extending portion of the channel ear providing a pair of vertical abutment edges in spaced confronting relation to a respective leg, latching means associated with each knuckle, each latching means including a camming bight portion disposed between a pair of vertical abutment edges and a respective leg, said bight portion being manually rotatable to engage said abutment edges and a respective leg so as to cant said leg within said socket portion to frictionally bind said leg within said socket portion in an infinite number of adjusted positions.



3,937,299

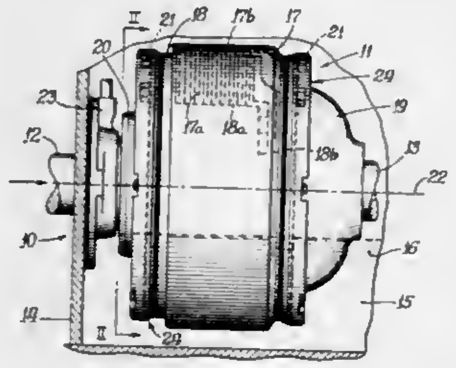
BOLT HEAD SHROUD

Gerald D. Hardy, East Peoria; Eugene A. Plouzek, Washington, and James G. Starling, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 2, 1974, Ser. No. 494,310

Int. Cl.^{2} F16N *7/00*

U.S. Cl. 184—1 R 23 Claims



1. In a drive assembly having means defining a cavity, heat transfer lubricant fluid in a lower portion of the cavity, and a rotating clutch assembly in the cavity supported for rotation to have a substantial portion thereof extending downwardly into said fluid for lubrication and cooling of the clutch assembly by said fluid, said clutch assembly including outwardly projecting securing means for securing clutch drums to mounting flanges, means for effectively minimizing frictional drag of said securing means in moving through the fluid, said means for effectively minimizing fluid frictional drag comprising shroud means covering said securing means and rotatable therewith and providing a low fluid friction drag covering for said securing means.

3,937,300

REPLACEABLE LUBRICATING CARTRIDGE FOR SPLINE CONNECTIONS

Bennett W. Avery, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 390,877, Aug. 23, 1973, Pat. No. 3,847,248. This application June 26, 1974, Ser. No. 483,163

Int. Cl.^{2} F16N *9/02*

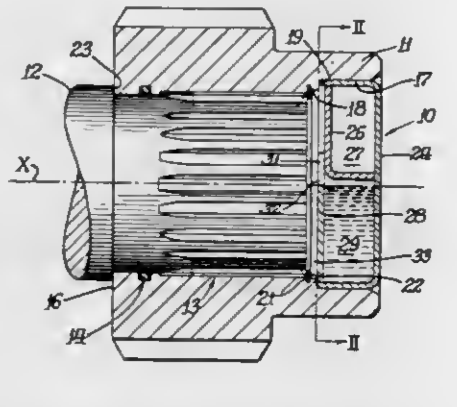
U.S. Cl. 184—70 3 Claims

1. A replaceable self discharging lubricating cartridge adapted for installation in the hollow end of a rotatable shaft or the like comprising

a housing having an annular outer wall and an end wall secured to one end of said outer wall to define a chamber therein,

first and second parition means secured to the other end of the annular outer wall of said housing to respectively separate said chamber into a closed first chamber portion and a substantially closed second chamber portion with said second chamber portion adapted to be at least partially filled with a liquid lubricant, and

means defining an opening through said second partition means between said second chamber portion and the exterior of said housing through which the lubricant may pass, said first partition means comprising a crescent-shaped member, having an L-shaped cross section, secured to said housing and defining therewith said closed first chamber portion therein and said second partition means comprising a crescent-shaped plate secured to said housing and defining therewith said second chamber, said opening defined through said plate.



3,937,301

TRAILER HAVING A SELF-LIFTING PLATFORM

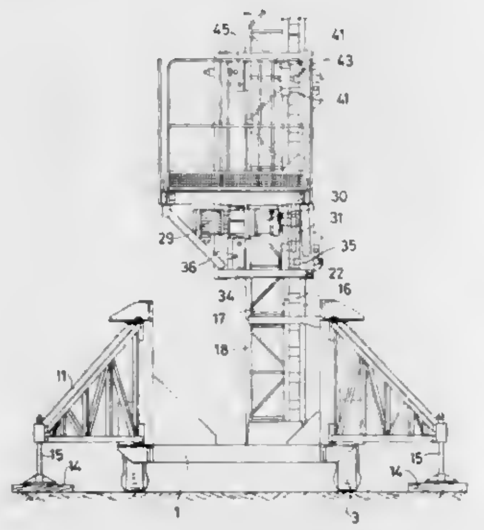
Philippe Bertail, 13, Avenue Rhin et Danube, 92350 La Garenne Colombes, France

Filed Mar. 18, 1974, Ser. No. 452,777

Claims priority, application France, Mar. 20, 1973, 73.09884

Int. Cl.^{2} B66B *11/04*

U.S. Cl. 187—19 7 Claims



1. In a trailer having a self-lifting platform supported by a rack mechanism and guided along a vertical mast consisting of superimposable elements and supported by the trailer, the improvement comprising: two vertical lifting supports which are part of the mast, said lifting supports being spaced in the longitudinal direction of the trailer, a plurality of struts spanning the space between the two vertical lifting supports to join said lifting supports together in the mast, said struts being arranged in regular, vertically spaced intervals along substantially the entire length of the mast, each lifting support including two, spaced, vertical uprights, a toothed rack associated with each lifting support, each toothed rack including a plurality of flat rack teeth, one end of each rack tooth being coupled with one vertical upright of the associated lifting support, the other end of each rack tooth being coupled with the other upright of the associated lifting support, each rack tooth thereby spanning the space between two uprights of each lifting support, the rack teeth of each toothed rack being vertically spaced along the associated lifting support, said platform being provided with two, symmetric, independent lifting mechanisms including two roller stars which are in engagement with the two toothed racks.

3,937,302

OSCILLATING MOVEMENT DAMPING MEANS INTENDED FOR PIVOTALLY SUSPENDED HOISTING GEAR

Jan Birger Palmcrantz, Harmanger, Sweden, assignor to Hiab-Foco Aktiebolag, Hudiksvall, Sweden

Filed Dec. 18, 1974, Ser. No. 533,796

Claims priority, application Sweden, Dec. 19, 1973, 7317130

Int. Cl.^{2} F16F *7/08*

U.S. Cl. 188—1 B 11 Claims

1. An improved oscillating movement damping means for a pivotally suspended hoisting device, comprising a link supporting said hoisting device, a first horizontal shaft pivotally mounting the upper end of said link to the outer end of a lifting means, such as crane jib, a second horizontal shaft pivotally mounting said hoisting device to the lower end of said link, the vertical longitudinal medium plane of said second shaft forming an angle, preferably a right angle, to the vertical medium plane of said first shaft, the improvement in which one of the pivoted members is provided with a sector-shaped brake disc at the pivot point of one shaft, said brake disc having its centre approximately in the centre of said one shaft, and the second pivoted member being provided with at least one brake shoe, and a spring arranged to press said brake shoe against said brake disc at a distance from said one shaft.

3,937,303

FRICTION PLATES

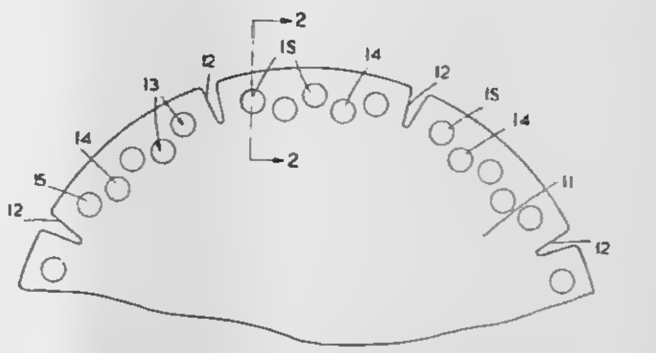
Brian Robert Allen, and Anthony William Harrison, both of Birmingham, England, assignors to Girling Limited, Birmingham, England

Filed May 17, 1974, Ser. No. 470,922

Claims priority, application United Kingdom, May 19, 1973, 23965/73

Int. Cl.^{2} F16D *69/04*

U.S. Cl. 188—73.2 4 Claims



1. A friction plate including a metal backing plate and a plurality of friction pads carried by the backing plate on one surface thereof, all the friction pads on said one surface of the backing plate being contained in first and second, circular rows which extend around said one surface of the backing plate and which bound respectively first and second concentric, circular annuli, the external diameter of the first annulus

being less than the external diameter of the second annulus but greater than the internal diameter of the second annulus so that the annuli overlap, and the friction pads in each of said first and second rows having their centers disposed at a constant radial distance from the center of the backing plate, but the number of said friction pads in the second row exceeding the number of said friction pads in the first row.

3,937,304
DISC BRAKE CALIPERS

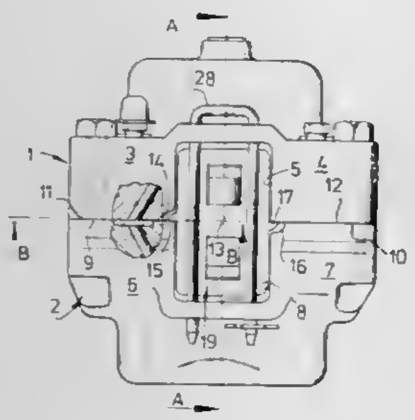
Hermann Brix, Koblenz, Germany, assignor to Girling Limited, Birmingham, England

Division of Ser. No. 348,472, April 6, 1973, abandoned. This application Aug. 16, 1974, Ser. No. 498,179

Claims priority, application United Kingdom, Apr. 11, 1972, 16715/72

Int. Cl.^{2} F16D *55/228, 65/00*

U.S. Cl. 188—73.5 **8 Claims**



1. An opposed piston disc brake caliper of the fixed type comprising two caliper halves, a machined surface being provided on each caliper half, a pad recess being formed in each machined surface, the caliper halves being clamped together with their machined surfaces engaging each other, the pad recesses together forming a friction pad locating aperture, and part of at least one of said machined surfaces being exposed at least at one side of the friction pad locating aperture whereby the exposed part of the at least one machined surface provides a datum surface for accurate measurement relative thereto, and a spring of generally rectangular configuration, a window aperture in said spring, and a laterally projecting tag being arranged on at least one side of the spring to engage against said datum surface of the caliper to correctly locate the spring in the pad locating aperture enabling accurate inspection of brake pad wear.

3,937,305
DISC BRAKE SHOE DAMPENER, METHOD OF MAKING SAME

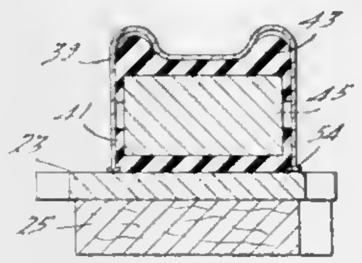
Daniel Julius Vanden Bossche, Frazer, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 3, 1974, Ser. No. 511,839

Int. Cl.^{2} F16D *55/00, 65/00*

U.S. Cl. 188—73.5 **3 Claims**

1. Disc brake vibration inhibiting apparatus for a disc brake shoe of the type comprising a pad and a backing plate, said vibration inhibiting apparatus including a cup-shaped metallic member having the lip thereof inertia-welded directly to the backing plate, weight means within said cup-shaped metallic member, resilient means surrounding said weight means and insulating the same from the walls and bottom of said cup-shaped member, the bottom of said cup-shaped metallic member being deformed inwardly towards said backing plate to cause said resilient means to be in a compressed condition.



3,937,306
AUTOMATIC BRAKE ACTUATOR FOR A CHAIN SAW

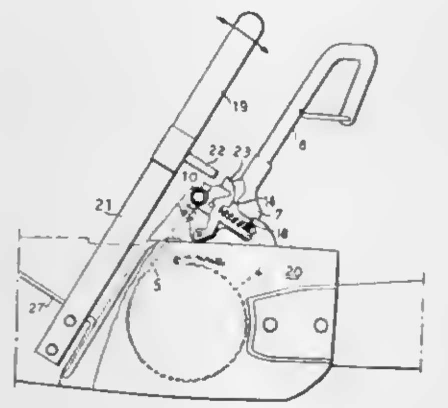
Ulf Vilheim Näslund, and Egil Skog, both of Huskvarna, Sweden, assignors to Husqvarna AB, Huskvarna, Sweden

Filed Aug. 27, 1974, Ser. No. 501,082

Claims priority, application Sweden, Aug. 29, 1973, 7311717

Int. Cl.^{2} B60T *13/04*

U.S. Cl. 188—166 **4 Claims**



1. A motor saw of the kind having a driven drum; a band brake around the drum; a pre-tensioned elastic means for supplying a tensioning force to the band; a resilient, fixed carrying handle insulated by elastic elements against vibration; a collapsible arm pivotably connected to a part of the saw which is not insulated against vibrations and arranged adjacent said handle; a latching mechanism actuatable by said collapsible arm which, when released by actuation of the collapsible arm, is arranged to release the brake so that the said band is brought into operation by means of said pre-tensioned elastic means, the improvement which comprises a projection means extending between the carrying handle and the collapsible arm for transmitting a force occurring upon a throw movement of the saw to release said latching mechanism without the operator's hands leaving said carrying handle.

3,937,307
ARRANGEMENT FOR ADJUSTING THE DAMPING FORCE OF A SHOCK ABSORBER

Cornelis de Kock, Oud-Beijerland, Netherlands, assignor to ITT Industries, Inc., New York, N.Y.

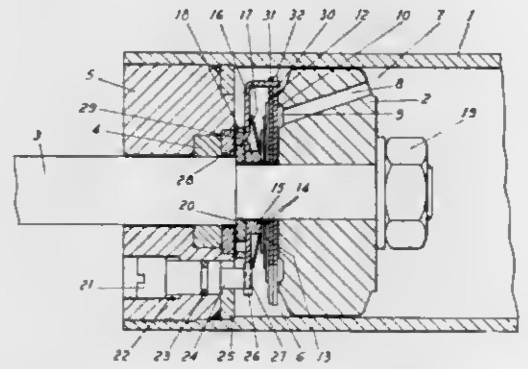
Filed Oct. 11, 1974, Ser. No. 514,172

Claims priority, application Netherlands, Oct. 12, 1973, 7314047

Int. Cl.^{2} F16F *9/34*

U.S. Cl. 188—319 **11 Claims**

1. An arrangement for adjusting the damping force on the piston of a hydraulic telescopic shock absorber, comprising a closed cylinder, a piston within said cylinder, a piston rod connected to the piston and extending outside the cylinder, a closure member and valve operable together to restrict a passage through the piston, an adjusting member to control the closure member and thereby regulate the restriction of said passage, a stop member installed to extend through one end of the cylinder and axially movable between two end positions in the cylinder end, said stop member in one of the end positions engaging a recess of the adjusting member to enable adjustment of the adjusting member, said stop member in the other end position being withdrawn from possible engagement with the adjusting member, said adjusting member supporting an axially directed part which is in engagement with a recess in the closure member to enable variation of restriction in the passage through the piston and thereby regulation of the damping force.



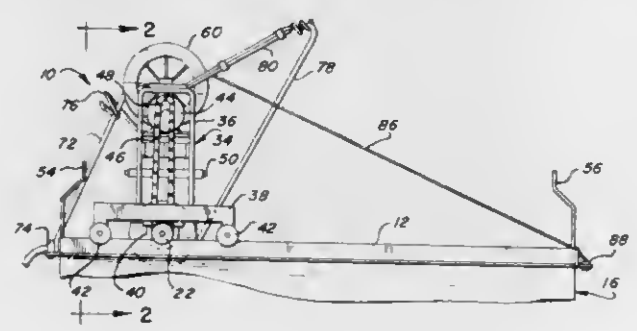
3,937,308
CABLE TAKE UP FOR TRAVERSING MECHANISMS

Eugene G. Sukup, Dougherty, Iowa 50433

Filed Feb. 23, 1973, Ser. No. 335,376

Int. Cl.^{2} H02G *11/00*

U.S. Cl. 191—12.2 R **4 Claims**



1. Apparatus comprising a power unit which is movable back and forth along a predetermined path extending between first and second end positions; said power unit including a motor; a rotatable idler take-up reel supported on said power unit for movement therewith along said path; an elongated flexible power supply member having a first section secured adjacent said first end position, a second section fixed relative to said reel, and a further section between said first and second sections of a length to span said path, said further section extending directly from said first section to said power unit and in one direction around said reel to said second section; means on said power unit for connecting said second section of said power supply member and said motor; and a second elongated flexible member having a first section secured adjacent said second end position, and a further section of a length to span said path, said further section of said second member extending from said first section thereof directly to said power unit and in an opposite direction around said reel relative to said power supply member and being in drive engagement with said reel; whereby upon traversing movement of said power unit in either direction along said path, paying out of one of said flexible members from said reel will cause rotation of said reel and taking up of the other of said flexible members on said reel.

3,937,309
MULTIPLE SPEED HUB FOR A BICYCLE AND LIKE VEHICLE

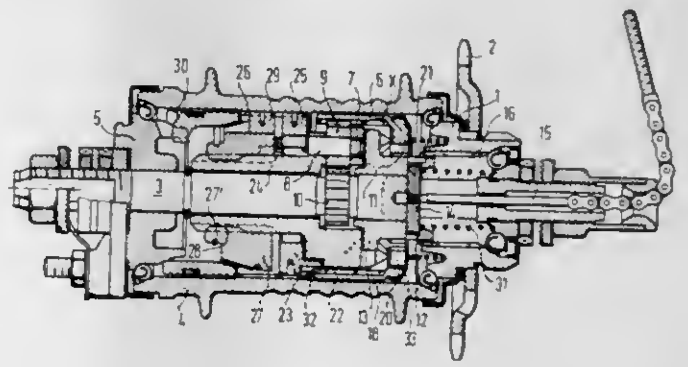
Horst Schulz, Friedrichshafen; Erich Hild, Schweinfurt; Werner Steuer, Oerlenbach; Karl-Heinz Schmidt, Schweinfurt; Ewald Eisend, Grafenrheinfeld; Karlheinz Löffler, Hassfurt; Josef Flösser, Schweinfurt, and Reinhard Kessler, Schwebheim, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed July 10, 1974, Ser. No. 487,151

Claims priority, application Germany, July 25, 1973, 2337725

Int. Cl.^{2} B06L *1/00;* **F16H** *3/44*

U.S. Cl. 192—6 A **5 Claims**



1. In a multiple speed vehicle hub including a driver member, a hub shell, and transmission means in said hub shell for rotating said hub shell at a plurality of alternative speeds when said driver member is rotated at a predetermined speed, the improvement in said transmission means which comprises:

a. first, second, and third transmission members mounted for rotation about a common axis and carrying respective first, second, and third coupling elements;

b. motion transmitting means connecting said second and third members for simultaneous rotation about said common axis at different speeds in axially spaced relationship,

  (1) each of said elements having a circumferentially directed engagement face;

c. shifting means for axially shifting said first member between two terminal positions in which the engagement face of said first element circumferentially abuts against the engagement faces of said second element and of said third element respectively during said rotation;

d. yieldably resilient means axially biasing one of said second and third members toward a normal relative position of said one member adjacent the other one of said second and third members,

  1. the axial spacing of said second and third elements in said normal position of said second and third members being smaller than the axial length of said first element; and

e. cam means on said first element and on said second element cooperating for axially moving said first member into one of said terminal positions thereof in response to relative angular displacement of said first and second members while said first member is in an axial position spacedly intermediate said terminal positions thereof.

3,937,310
SPRAG CLUTCHES

Benjamin Duncan Oldfield, Cheadle, England, assignor to Renold Limited, Manchester, England

Filed Sept. 23, 1974, Ser. No. 508,708

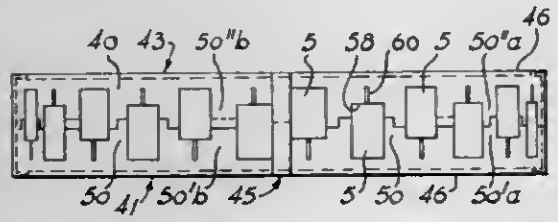
Claims priority, application United Kingdom, Sept. 29, 1973, 45640/73

Int. Cl.^{2} F16D *41/07*

U.S. Cl. 192—41 A **21 Claims**

1. A sprag-retainer assemblage for use in an annular gap defined between confronting cylindrical surfaces of inner and outer races of a sprag clutch to transmit uni-directional drive between the clutch driving and driven race, the assemblage

comprising an annular sprag retainer, a ring of sprags in the retainer, and, for each sprag an energising spring individual to the sprag for biasing the sprag into substantially line contact with the inner race of the clutch, by tilting the sprag about substantially a line of contact with the outer race of the clutch, with a component of spring force directed radially inwardly of the assemblage, whereby the centrifugal force acting on the spring during overrunning of the outer race of the clutch, in use of the asemblage, relieves the spring force on the sprag, the centre of gravity of each sprag being disposed close to or in the radial axial plane of the assemblage containing said line of contact between said sprag and the outer race during overrunning of the outer race of the clutch such that the centrifugal force acting on the sprag during overrunning of the outer race of the clutch acts in conjunction with the spring force on the sprag so as to maintain a small load between the sprag and the inner race on overrun of the outer race, at least within a predetermined limit of outer race overrunning speed, in which the sprags and the energising springs are staggered whereby each pair of adjacent sprags of said ring of sprags are offset relative to one another axially of the assemblage, and likewise the pair of springs associated with them, the sprags being shaped and arranged to interengage with one another between the springs to limit the tilt of the sprags in the driving phase of the clutch.



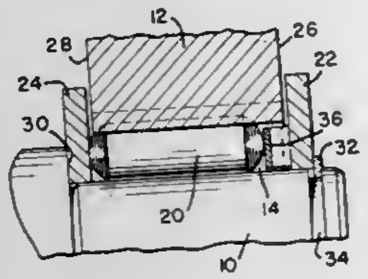
3,937,311
OVERRUNNING CLUTCH

Gerard William Gehrke, Litchfield, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed May 20, 1974, Ser. No. 471,204

Int. Cl.^{2} F16D *15/00*

U.S. Cl. 192—45 **6 Claims**



1. In an overrunning clutch with an inner member and an outer member, the outside diameter of the inner member being less than the inside diameter of the outer member to provide an annular space between said members, one of said members having a roller member race and the other of said members having a cam surface, the improvement comprising: a pair of axially separated stops on said roller member race; a plurality of rolling members located between the pairs of stops and within the annular space between the inner member and the outer member; said rolling members filling said annular space and adapted to contact one another; and a spring axially located between one of the stops and the rolling members, said spring being in direct contact with at least one of the rolling members and adapted to urge said at least one of the rolling members in an axial direction against the other stop whereby the rolling members urged by the spring will be carried along with the roller member race and will be circumferentially moved by relative rotation of the inner member and outer member to move the rolling members along the cam surface.

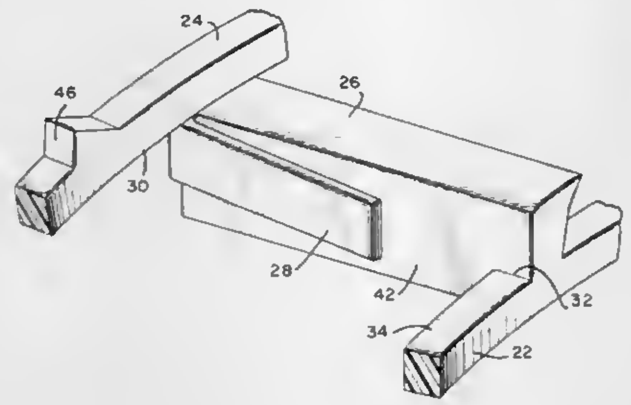
3,937,312
RETAINER FOR ROLLER CLUTCH

Gerard William Gehrke, Litchfield, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Oct. 4, 1974, Ser. No. 512,345

Int. Cl.^{2} F16D *3/34*

U.S. Cl. 192—45 **6 Claims**



1. A retainer for an overrunning clutch comprising: a first molded plastic rim; a second molded plastic rim axially spaced from the first rim and having an inside diameter at least equal to the outside diameter of the first rim; a plurality of circumferentially spaced molded plastic bars interconnecting the two rims forming roller pockets; and a molded plastic spring connected to each of a plurality of the bars at a point adjacent the second rim and extending angularly from the second rim toward the first rim; the rims, bars, and springs being one integral member with each spring being adapted to be pressed toward its corresponding bar when a roller is placed in the corresponding pocket of the retainer so that each spring exerts a force against the corresponding roller.

3,937,313
CONTROL MEANS

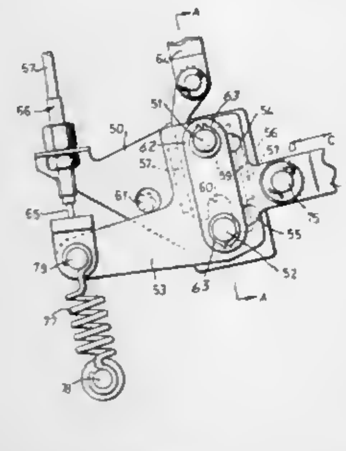
Randle Leslie Abbott, Tamworth, England, assignor to GKN Transmissions Limited, Birmingham, England

Filed Dec. 20, 1974, Ser. No. 535,091

Claims priority, application United Kingdom, Dec. 22, 1973, 59673/73

Int. Cl.^{2} F16D *21/06, 19/00;* **G05G** *1/04*

U.S. Cl. 192—48.91 **10 Claims**



1. A control means comprising a fixed first member, two pivots fixed relative to the first member in spaced-apart relation, a second member movable relative to the first member, a third member movable relative to the second member by a first manually operated control between first and second positions in which respectively the third member engages the first and second pivots and thus mounts the second member for pivoting movement about the first and second pivots respectively, spring means acting on the second member and a linkage connected to the second member in such a location that when the third member is in its first position the spring force urges the linkage in one direction and when the third member is in its second position the spring force urges the linkage in the opposite direction.

5. A clutch assembly comprising two clutches operated by a control means according to claim 1, the linkage being connected with the two clutches so that movement of the linkage in one direction engages one clutch and disengages the other clutch and movement of the linkage in the opposite direction engages the other clutch and disengages said one clutch.

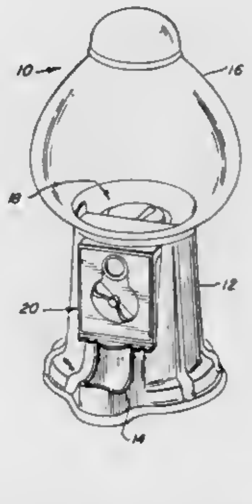
3,937,314
GUMBALL BANK DISPENSING MECHANISM

Phillip I. Rosenberg, 285 Linden Park Place, and Mervyn L. Keces, 505 Groveland, both of Highland Park, Ill. 60035

Filed Sept. 5, 1974, Ser. No. 503,353

Int. Cl.^{2} G07F *11/00*

U.S. Cl. 194—63 **12 Claims**



1. A coin-operated article-dispensing machine, having a coin-receiving mechanism that permits operation of the mechanism when a coin is in the mechanism, and prevents operation of the mechanism when no coin is present, said coin-receiving mechanism including: front-plate means having a coin-receiving aperture; rotatable coin-receiving disc means adjacent said front-plate means and having pocket means therein for receiving coins inserted into said mechanism through said aperture; actuator means cooperatively associated with said disc for rotating said disc; means for preventing reverse rotation of said disc beyond a predetermined position; and means for selectively preventing forward rotation when no coin is in said pocket but permitting forward rotation when a coin is in said pocket, the improvement comprising said disc including integral peripheral finger means for cooperation in preventing reverse rotation of said disc, and having a terminal end portion which defines on axially-extending, abutment-shoulder means, said finger means being adapted to flex in the axial direction; and fixedly positioned shoulder defining means in axial relation to said disc and arranged for engagement by said abutment-shoulder means when said disc is rotated in the reverse direction, thereby preventing reverse rotation of said disc.

3,937,315
APPARATUS FOR HANDLING WORKPIECES

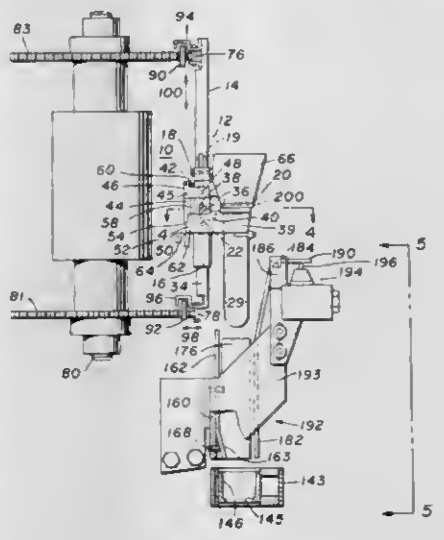
Joseph R. Reilly, Naugatuck, Conn., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 480,604, June 19, 1974, abandoned, which is a division of Ser. No. 424,866, Dec. 14, 1973, Pat. No. 3,880,301. This application Dec. 26, 1974, Ser. No. 536,416

Int. Cl.^{2} B65G *47/38*

U.S. Cl. 198—131 **14 Claims**

1. Workpiece handling apparatus comprising:
- A. a plurality of carrier assemblies, each including:
  - a. a holder for supporting a workpiece; and
  - b. a trip mechanism for abruptly shifting said holder to a workpiece-release position;
- B. means supporting said carrier assemblies for sequential movement along a longitudinal path through loading and discharge stations;
- C. an actuating assembly for simultaneously triggering the trip mechanisms of a group of said plurality of carrier assemblies at the discharge station while in said longitudinal path; and
- D. trip mechanism reset means between the discharge and loading stations for returning the trip mechanisms to workpiece-engaging positions.



3,937,316
METHOD OF AND MEANS FOR COOLING SUPPORT TRAYS FOR HOT-PRESSED BOARDS

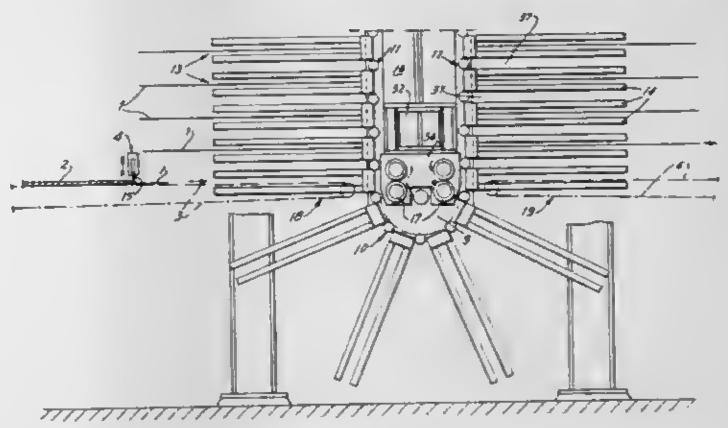
Klaus Gerhardt, Rheurdt, Germany, assignor to G. Siempelkamp & Co., Krefeld, Germany

Filed Mar. 10, 1975, Ser. No. 556,965

Claims priority, application Germany, Mar. 12, 1974, 2411660

Int. Cl.^{2} B65G *17/12*

U.S. Cl. 198—156 **10 Claims**

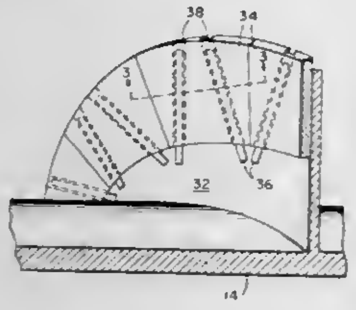


1. A method of unloading and cooling a series of trays carrying flat, hot workpieces, comprising the steps of:
- serially feeding hot trays loaded with workpieces on an input conveyor to the ascending side of a vertical transporter forming a multiplicity of peripherally separated tray-receiving stages moving in an endless path around an upper and a lower vertex;
- upon the approach of a tray to said transporter, stripping the workpiece therefrom and temporarily retaining same on the input conveyor while advancing the tray into a confronting stage of the transporter;
- after a movement of the transporter sufficient to align the input conveyor with a clearance between stages on the ascending side and a similar clearance on the descending side of the transporter, releasing the retained workpiece and passing same from the input conveyor through the aligned clearances onto an output conveyor on the descending side of the transporter; and

discharging the tray from its stage on the descending side after a travel around the upper vertex of the transporter.

3,937,317
COMPONENTS FOR WEAR-RESISTANT SURFACING HELICAL METAL CONVEYOR BLADES AND THE SO SURFACED BLADES

Leo W. Fleury, Jr., Wooosocket, R.I., assignor to Bird Machine Company, Inc., South Walpole, Mass.
Filed Jan. 2, 1975, Ser. No. 538,126
Int. Cl.² B65G *33/00*
U.S. Cl. 198—213 **7 Claims**



1. Components for wear-resistant surfacing helical metal conveyor blades comprising:

a segment of wear-resistant surfacing material adapted for attachment in side-by-side relation with other like segments to a face of said blade to form a conveying portion thereof, said segment having a widthwise and radially outer end curvature conforming to that of the helix and diminishing in width from its outer end toward its inner end;

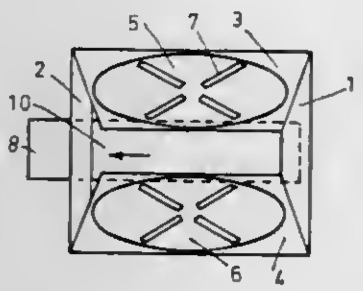
said segment having therein at least one groove extending through the inner end thereof and diagonally across the segment toward the outer end thereof;

and a bar of weldable metal for each said groove slidably fitting in the groove and of sufficient length to provide an end portion protruding from the inner end of said segment for welding to a face of said stub blade;

each said groove and bar having a complementary shape such as to prevent relative movement thereof in directions other than axially of said groove.

3,937,318
BILLET ORIENTATION SYSTEM

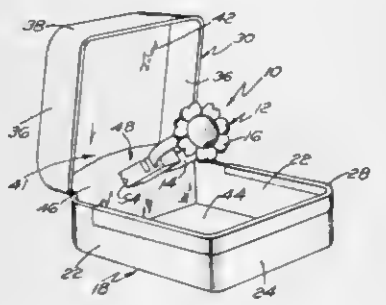
Ronald William Alexander Luxford, Queensland, Australia, assignor to CSR Limited, Sydney, Australia
Filed Apr. 18, 1974, Ser. No. 461,910
Claims priority, application Australia, Apr. 26, 1973, 3084/73
Int. Cl.² B65G *47/14*
U.S. Cl. 198—287 **4 Claims**



1. Apparatus for urging into a first orientation plane elongated billets having lengths within a predetermined range of lengths and falling under the influence of gravity in a randomly orientated stream of billets into the apparatus, said apparatus comprising a hopper having an open top, an open bottom, two side walls and two shorter end walls with at least said side walls converging toward said open bottom, the shortest distance between said side walls and the shortest distance between said end walls being respectively less than the shortest billet and longer than the longest billet in said predetermined range of billet lengths; a primary orientating means comprising two rotatable discs located between said hopper top and bottom, one in each side wall and generally co-planar therewith; at least one billet orientating vane on each said disc projecting into said hopper; and driving means to rotate the discs in opposite directions.

3,937,319
JEWELRY DISPLAY BOX

Armand W. Roy, Plainville, Mass., assignor to Royal Hinge & Die Company, Inc., Plainville, Mass.
Filed Sept. 17, 1973, Ser. No. 398,237
Int. Cl.² B65D *79/00*
U.S. Cl. 206—45.13 **6 Claims**

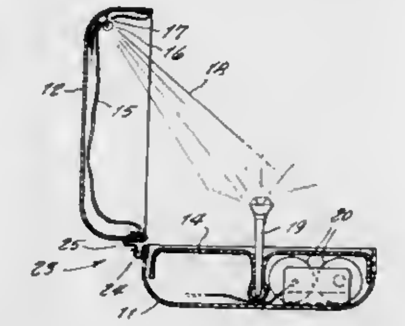


1. A display box for an ornamental article, comprising a bottom member having a bottom wall, a top member hingedly interconnected to said bottom member for movement to an open or closed position relative thereto and having a top wall, a hinge joined to said top and bottom members, a mounting member for receiving said article thereon and located in said box adjacent to the axis of said hinge, means secured to said mounting member and responsive to movement of said top member for locating said article as received on said mounting member in a storage position within said top and bottom members when the box is closed, or in an upper exposed display position between said top and bottom members when the box is open, said mounting member including an elongated body portion, the longitudinal axis of which is perpendicular to the hinge axis of said top and bottom members, an extension of the longitudinal axis of said mounting member substantially bisecting the hinge axis of said top and bottom members, said locating means including a flexible insert covering at least the hinge that interconnects said members, said mounting member being secured to said flexible insert and projecting therefrom at substantially right angles thereto, and an opening formed in said flexible insert, said mounting member being received in said opening having a flange formed thereon that is located on the underside of said flexible member for preventing withdrawal of said mounting member through said opening.

3,937,320
LIGHTED JEWELRY BOX

Albert L. Chao, and Ethel Chao, both of 407 Glendale Road, Northvale, N.J. 07647
Filed Aug. 12, 1974, Ser. No. 496,511
Int. Cl.² B65D *1/34;* **F21V** *33/00*
U.S. Cl. 206—75 **1 Claim**

1. A lighted box comprising a case, a cover pivotally attached to said case, said case having a rear wall and said cover having a rear wall; hinge means connecting the top of said rear wall of said case with the bottom of said rear wall of said cover with respect to said case; an insert fitted within said case for supporting an item; a fabric lining within an inner side of said cover; and means for illuminating said cover and case, said means comprising an electric circuit having a miniaturized lamp located within said cover, dry cell batteries contained in said case under said insert, and a switch, said switch comprising a first clip having a U-shaped portion of a contact portion, and a second clip having a U-shaped portion and a contact portion, said top edge of said rear wall of said case having a notch formed therein for receiving said U-shaped portion of said first clip, said notch being situated to one side of said hinge means, and said bottom edge of said rear wall of said cover having a notch formed therein for receiving said U-shaped portion of said second clip, said notch of said cover being situated opposite said notch of said case when the cover is pivoted to an open position, said contact portion of said first clip extending rearwardly of said case and said contact portion of said second clip extending rearwardly of said cover, whereby when the cover is pivoted to an open position to allow access to the inside of the box said contacts of said first and second clip abut against each other to close said electric circuit and light said lamp, and when the cover is pivoted to a closed position, the contacts of said first and second clips are moved out of abutting contact to open said electric circuit.



3,937,321
TOOTHPASTE

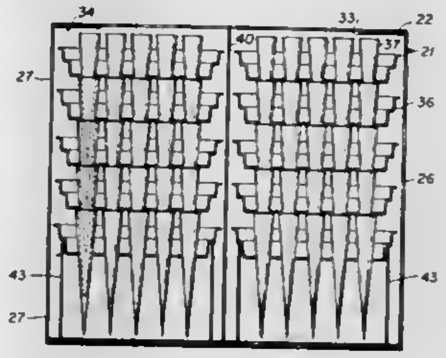
Thomas James Delaney, Piscataway, and William Grant Pierson, Flanders, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Continuation-in-part of Ser. No. 295,094, Oct. 4, 1972, abandoned, and a continuation-in-part of Ser. No. 389,827, Aug. 20, 1973, abandoned. This application Nov. 28, 1973, Ser. No. 419,741
Int. Cl.² A61K *7/16;* **A45D** *40/00*
U.S. Cl. 206—84 **18 Claims**

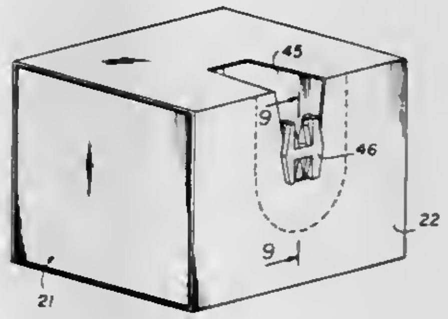
1. A dental cream in an unlined aluminum tube, said dental cream containing an abrasive content comprising at least about 20% sodium bicarbonate in a vehicle containing sufficient liquids, said vehicle consisting essentially of about 5 to 35% water and sufficient viscous water miscible polyol humectant or mixtures thereof, and a sufficient amount of gelling or thickening agent to impart to the dental cream the pasty consistency, body and non-tacky nature which is characteristic of conventional dental creams or toothpastes, and over 1% silica dissolved or dispersed therein, said sodium bicarbonate being primarily in the undissolved solid state, said dental cream having a granular textured appearance comprising a substantially dispersed non-crystalline appearing granulate of macroscopic crystalline bicarbonate granules in an otherwise smooth continuous matrix.

3,937,322
PACKAGE FOR DISPOSABLE PIPETTE TIPS

Jules Barry Cohen, Brooklyn, N.Y., assignor to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.
Filed June 17, 1971, Ser. No. 154,143
Int. Cl.² B65D *79/00, 85/62*
U.S. Cl. 206—216 **3 Claims**

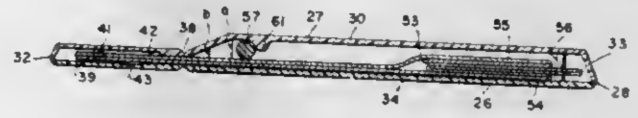
1. A package of pipette tips comprising a first tray having a plurality of apertures through which pipette tips can project, a first group of tapered pipette tips projecting through the apertures of said first tray, each tip having abutment means projecting outwardly from the outer surface thereof to support the tip on said first tray so that a part of said tip projects through its associated aperture, a second tray having a plurality of apertures through which pipette tips can project, said second tray being supported above said first tray by said first group of pipette tips, a second group of tapered pipette tips projecting through the apertures of said second tray, each tip having abutment means projecting outwardly from the outer surface thereof to support the tip on said second tray so that a part of said tip projects through its associated aperture, the location of said abutment means and the taper of said pipette tips being such that the tips carried by said second tray project into but do not touch the internal walls of the tips carried by said first tray, carton means containing said stacked trays of pipette tips, said carton means having means to accommodate a member for removing pipette tips from frictional engagement with a pipette, and a tip removal member mounted on said carton means, said tip removal member having means mounting said member on said carton means and a rectangularly shaped open-ended slot for receiving the end of a pipette with a removable tip thereon, the thickness of said member at the bottom of said slot being greater than at the top of said slot.





3,937,323
PROTECTIVE FRANGIBLE DISPENSING ENCLOSURE FOR ARTICLE

Zsigmond L. Sagi, Parsippany; Robert A. Lang, East Hanover; Jimmie D. Scott, Parsippany; Berel Weinstein, Fort Lee, and Charles G. Pickett, Andover, all of N.J., assignors to Bio-Medical Sciences, Inc., Fairfield, N.J.
Continuation of Ser. No. 402,006, Sept. 1, 1973, abaodoned. This application Jan. 28, 1974, Ser. No. 437,035
Int. Cl.² B65D *17/24, 85/16;* **B32B** *35/00*
U.S. Cl. 206—306 **14 Claims**



1. A package for the complete and protective enclosure of the components of a partially assembled laminated product and the dispensing of the fully assembled product, said components including at least two elongated coextensive strips joined along first portions in face-to-face relationship and intervened along their remaining second face portions by a

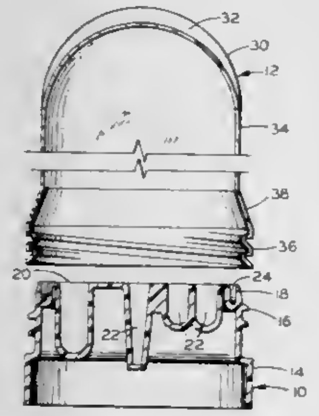
peelably separable shield operable to prevent face-to-face contact of said second portions prior to dispensing, said package comprising

- A. a hollow housing of rigid or semi-rigid material, said housing
  - 1. having opposed spaced apart main side walls and end walls defining a continuous surface fully enclosing said components and
  - 2. being divided into two segments by a band intermediate to said end walls, said band being defined in said side walls by a section of sufficiently reduced thickness to permit the frangible separation of said housing into two segments upon the application of a levering force,
- B. product engaging stop means disposed on the inside surface of the housing corresponding to the first of said housing segments, said means being operable to engage and stop the joined portions of said product from complete withdrawal from said first of said housing segments.
- C. shield engaging means disposed on the inside portion of the housing corresponding to the second of said housing segments, said means being operable to engage said shield for peelable separation from said strips upon removal of said second strip portions from said second housing segment following frangible separation of said housing, and
- D. pressing means disposed in that portion of the housing corresponding to the second of said housing segments, said means being operable to urge said unjoined strip portions into face-to-face registry and adhesive contact following unshielding in the course of removal of said second strip portions from said second segment.

3,937,324

CONTAINER FOR MARINE STORAGE OF TOOLS

Carlton L. Whiteford, Westport, Conn., assignor to Creative Tools, Inc., Beonington, Vt.
Filed Feb. 4, 1974, Ser. No. 439,290
Int. Cl.^{2} B65D *85/54*
U.S. Cl. 206—349 **8 Claims**



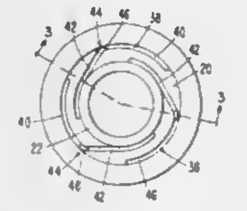
1. In a container for waterproof storage of tools and the like, the combination comprising:

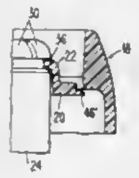
- A. an integral base having a substantially rigid platform disposed centrally at the upper end thereof, an externally threaded circular portion adjacent the upper end thereof, and a resiliently deflectable upstanding annular lip thereabove extending axially upwardly in spaced relationship outwardly of said platform portion thereof with an annular upwardly opening channel being defined therebetween; and
- B. an elongated cover open at the lower end thereof and having an internally threaded circular lower end portion threadably engaged on the externally threaded portions of said base, said cover also having an interior annular shoulder surface above the threaded portion thereof bearing upon, and deflecting said lip of said base inwardly into said channel and providing sealing contact therewith.

3,937,325

CARTRIDGE WITH LOCK STABILIZATION

Thomas W. Dodge, Boulder; Helfried O. Rinkleib, and William J. Rueger, both of Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 5, 1974, Ser. No. 494,939
Int. Cl.^{2} B65D *85/67*
U.S. Cl. 206—387 **11 Claims**





1. In a cartridge for storing and handling a flexible wound web, said cartridge including in combination:

- a base member, a cover member and locking means for releasably locking said members in a closed position;
- said base member comprising a hub having a first and second end and adapted for winding a web thereon;
- said cover member being generally cupshaped with a disk end portion extending radially around a central annular opening, said cover defining a web-receiving chamber around said hub when said base and cover members are in a closed position;
- said locking means including a locking shoulder integral with the annular opening in the disk portion of said cover member and a plurality of flexible locking fingers integral with the second end of said hub, said fingers and said shoulder normally cooperating in locking engagement to secure said base and cover together in a closed position, said locking shoulder and locking fingers being disengageable to permit separation of said base member from said cover member, wherein the improvement comprises:
- at least one non-radial aperture generally around said disk portion of said cover member to provide stabilization to the locking means to substantially prevent unintentional disengagement due to kinetic shocks.

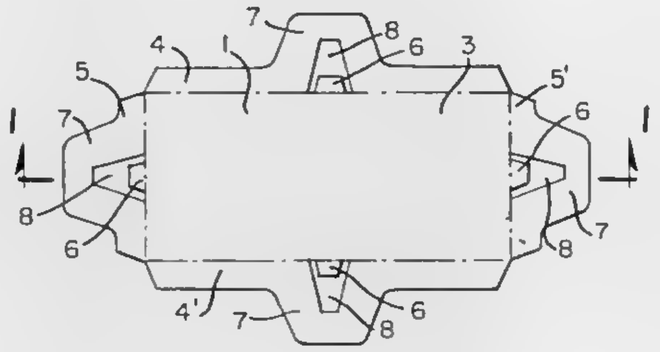
11. In a cartridge for storing a wound web, said cartridge including in combination a cover member, a base member, and locking means for releasably locking said members together to form a web-receiving enclosure, the improvement wherein the locking means comprises:

- an annular locking shoulder carried by a disk in said cover member;
- a plurality of flexible latching fingers secured to said base member; and
- at least one non-radial aperture generally around said disk in said cover member.

3,937,326

PRODUCT DISPLAY CARTON

Andre Schick, Chemin du Martinet 5 bis, 1016 Lausanne (Vaud), Switzerland
Filed July 5, 1974, Ser. No. 486,061
Claims priority, application Switzerland, July 18, 1973, 10611/73
Int. Cl.^{2} B65D *73/00*
U.S. Cl. 206—465 **3 Claims**

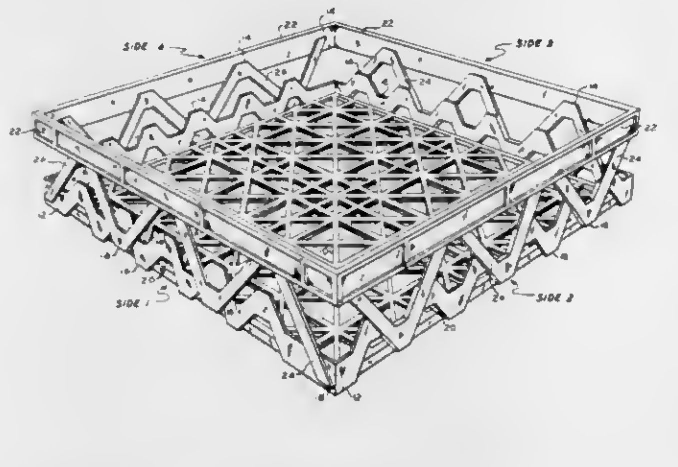


1. A product display carton comprising in combination a cardboard base sheet of oblong configuration including fold lines to facilitate folding the edges of the sheet upwardly to define a central rectangular article receiving portion, each side of said central portion provided with a projection and a turned up edge, the median part of each of said sides including a trapezoidal shaped tab provided with a central slot, a blister of transparent heat molded plastic including a top wall, side walls and an open bottom, a tongue extending outwardly from each of said side walls and fitted into a related central slot in one of said tabs, said tongue being of generally conical shape and forming an external cup-shaped protuberance, the opening of the cup being located on a level with the edge of contact of said blister with the cardboard base sheet, the edge of said opening provided with a flange for reinforcement thereof, said flange being in contact with the projection on the cardboard base sheet.

3,937,327

NESTING AND STACKING CONTAINERS

James C. Carroll, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed July 29, 1974, Ser. No. 492,834
Int. Cl.^{2} B65D *21/04*
U.S. Cl. 206—507 **10 Claims**



1. A symmetrical nesting and stacking container comprising:

- a generally horizontally disposed bottom; and
- a plurality of adjacent dissimilar wall structures extending upwardly to essentially the same height from adjacent essentially equal length peripheral segments of said bottom located around the periphery of said bottom; with each of said wall structures comprising:
- a sinuously shaped border flange extending along said peripheral segment of said bottom in a first vertical plane located adjacent said peripheral segment;
- said border flange comprising a series of upstanding alternating peaks and valleys along its upper surface and a series of inverted alternating peaks and valleys along its lower surface, with the apex areas of said inverted peaks comprising a first plurality of spaced apart stacking feet located in said first plane, and the apex areas of said upstanding peaks comprising a first plurality of spaced apart stacking saddles located in said first plane;
- an upper rim disposed generally vertically above said border flange and in a third vertical plane which is adjacent but outside a second vertical plane described hereinafter;
- a plurality of spaced apart bar members, disposed in said second vertical plane which is adjacent but outside said first vertical plane, and extending in an upwardly inclined direction between the outer surface of said border flange and the inner surface of said upper rim;
- the bottom of each of said bar members comprising a stacking foot in a second plurality of spaced apart stacking feet located in said second plane, and the top of each of said bar members comprising a stacking saddle in a second plurality of spaced apart stacking saddles located in said second plane;
- the location, arrangement, and lateral spacing of said first feet and said first saddles with respect to each other and to said second feet and said second saddles, together with the location, arrangement, and lateral spacing of said second feet and said second saddles with respect to each other and to said first feet and said first saddles being such that an upper said container will nest within a like lower container when said containers are in like positions of orientation;
- said second feet and said second saddles in at least two opposed said wall structures being adapted to register and to support an upper said container in a first stacked relationship on a like lower container when said upper container is rotated from said position of like orientation to a first station of rotation; and
- said first feet and said first saddles in at least two opposed said wall structures being adapted to register and to support an upper said container in a second stacked relationship on a like lower container at a lower elevation than that of said first stacked relationship when said upper container is further rotated to a second succeeding station of rotation.

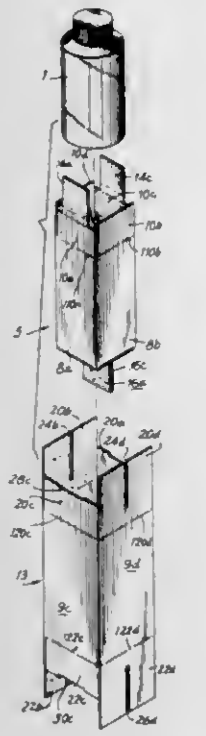
3,937,328

SUSPENDED CARTON WITHIN A CARTON

Robert Louis Gordon, Monroe, N.Y., assignor to International Paper Company, New York, N.Y.
Filed Sept. 23, 1974, Ser. No. 508,550
Int. Cl.^{2} B65D *81/02, 85/30*
U.S. Cl. 206—521 **3 Claims**

1. A package which comprises a sealed first carton of foldable material and having side walls and end flaps foldably connected thereto, a sealed second carton surrounding said first carton, said second carton of foldable material and having side walls and end flaps foldably connected thereto, connecting tabs foldably connected to opposite end flaps of said first carton, portions of said connecting tabs congruently abutting each other, said second carton having aligned slotted portions in the end flaps thereof, said portions of connecting tabs

congruently abutting each other extending through said aligned slotted portions and the terminal portions of said connecting tabs folded to lay within a parallel plane to the end flaps of said second carton and attached thereto.



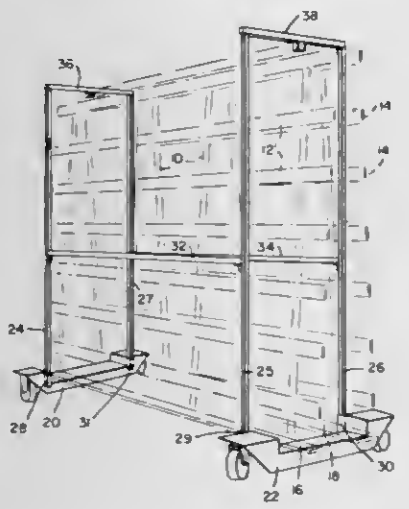
3,937,329
SHEET GLASS SUPPORTING RACK

James T. Hammerel, Emeryville, Calif., assignor to Cobbledick-Kibbe Glass Company, Oakland, Calif.

Filed Aug. 12, 1974, Ser. No. 496,499

Int. Cl.^{2} A47G *19/08*

U.S. Cl. 211—41 **5 Claims**



1. A rack for supporting rectangular sections of sheet products comprising:

an A-frame defining opposite downwardly divergent inclined sides;

means located adjacent the base extremities of each inclined side for engaging the bottom edges of and supporting the primary weight of sheet products stacked thereon, said stacked sheet products adapted to normally lean toward and against an adjacent inclined side of said A-frame;

at least one substantially vertical columnar member disposed to each side of said A-frame and spaced laterally from the sheet products on said frame; and

laterally projecting support means provided on each side of said A-frame for supporting each said columnar member at its base in a location spaced laterally outwardly from the base extremities of its adjacent inclined side, whereby sheet products supported on said A-frame can be successively tilted from their leaning position toward and against an adjacent inclined side to a leaning and substantially upright position toward and against an adjacent columnar support.

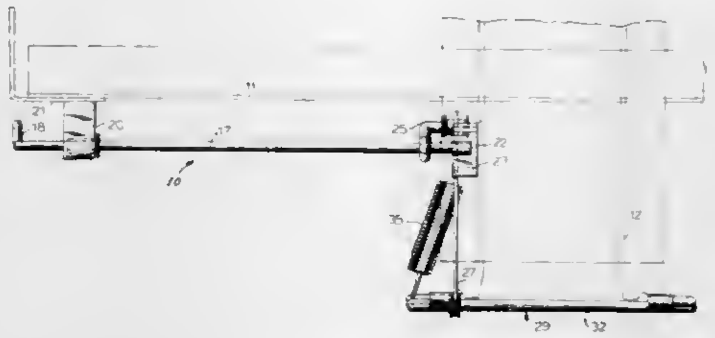
3,937,330
UNCOUPLING DEVICE FOR ROTARY COUPLERS ON FREIGHT CARS

Leonard A. McLean, Jacksonville, Fla., assignor to Seaboard Coast Line Railroad Company, Jacksonville, Fla.

Filed Aug. 8, 1974, Ser. No. 496,019

Int. Cl.^{2} B61G *1/08*

U.S. Cl. 213—166 **6 Claims**



1. In a railway car having a coupler mounted for rotation relative to the car and having a locklift assembly linkage which, when turned, causes the knuckle of the coupler to be unlocked, a rotor element depending from the locklift assembly linkage beneath the head of the coupler, a bail having side arms and a connecting arm portion, the upper ends of the side arms being rotatably received in bearing member on opposite side faces of the center sill of the car and with the connecting arm adjacent the rotor element, the bail being urgable through a manually operated leverage arrangement, to swing from a rest position to a position where the arm portion contacts and turns the rotor element so as to turn the locklift assembly linkage and cause the knuckle to be unlocked, the improvement in the manually operated leverage arrangement which comprises:

A. An operating rod having a handle portion for manual grasping, said operating rod being rotatably mounted between spaced bearings lying adjacent a corner of the car and on said center sill thereof, said operating rod as so mounted extending inwardly from its handle portion at the car corner and lying in a plane between the bail and an end sill of the car; and

B. A mechanical linkage intergrally connected at one end to said operating rod and extending generally transversely to the plane of said operating rod and being pivotally connected to said connecting arm portion of said bail at its other end, whereby when said handle portion is manually turned said connecting arm portion of said bail is urged from a rest position into contact with said rotor element and with a force greater than that applied to the handle portion due to the mechanical advantage obtained through the mechanical linkage.

3,937,331
BAR STOCK LOADER AND FEED MECHANISMS

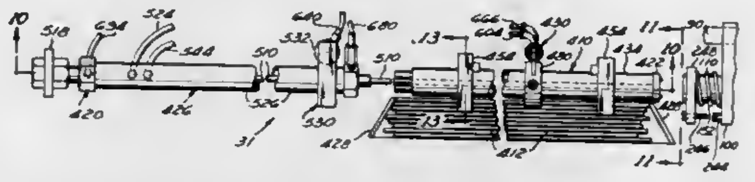
Robert J. Spercel, c/o Sperco Inc., 7810 Lake Ave., Clevelend, Ohio 44102

Continuation-in-part of Ser. No. 262,544, June 14, 1972, Pat. No. 3,814,299. This application Aug. 20, 1973, Ser. No. 389,731. The portion of the term of this patent subsequent to June 4, 1991, has been disclaimed.

Int. Cl.^{2} B23Q *5/22*

U.S. Cl. 214—1 PB **19 Claims**

1. An apparatus comprising a chuck operable between an open condition and a closed condition in which said chuck is effective to grip bar stock, chuck actuator means for effecting operation of said chuck between the open and closed conditions, feed means for feeding bar stock to said chuck, said feed means including gripper means operable between a closed condition in which said gripper means securely grips the bar stock and an open condition in which said gripper means is ineffective to grip the bar stock, gripper actuator means for effecting operation of said gripper means between the open and closed conditions, means for moving said gripper means through a feed stroke with said gripper means in its closed condition and said chuck in its open condition and for moving said gripper means through a return stroke with said gripper means in its open condition and said chuck in its closed condition, loader means for moving a piece of bar stock into said feed means, and control means for effecting operation of said loader means to move a piece of bar stock into said feed means when said gripper means is in the open condition and for rendering said loader means ineffective to move a piece of bar stock into said gripper means when said gripper means is in the closed condition.



3,937,332
DEVICE FOR MOVING LONG AND THIN BODIES INTO NARROW SPACES, ESPECIALLY FOR CONTROL TURN-OFF BARS OR THE LIKE OF CORE REACTORS

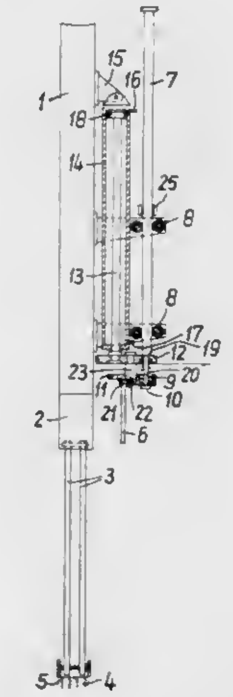
Hinrich Flessner, and Ulfert Paeserack, both of Wilhelmshaven, Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Germany

Filed Feb. 21, 1974, Ser. No. 444,462

Claims priority, application Germany, Feb. 21, 1973, 2308533

Int. Cl.^{2} B66C *19/00*

U.S. Cl. 214—1 P **6 Claims**



1. A device for moving long and thin bodies into narrow spaces, comprising

vertically displaceable gripper means to which the upper ends of long and thin bodies can be coupled holder means guided to be displaceable along said gripper means downwards and upwards,

power operable means attached to said gripper means and associated with said holder means for lowering and lifting it,

guiding means at the lower end of said holder means attached to said holder means in such a manner that it can be moved from an ineffective first position into a second position in which it supports in lateral direction the lower ends of said long and thin bodies when the latter are coupled to said gripper means but allowing upward and downward movement of said bodies relative to it,

actuating means connected to said power operable means and associated with said guiding means for moving it from said first position into said second position and vice versa.

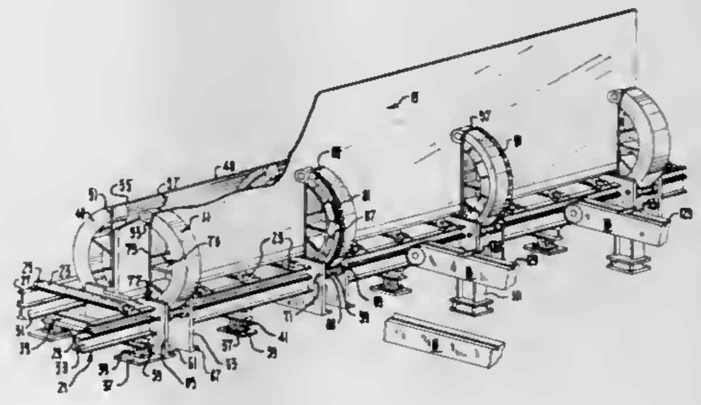
3,937,333
APPARATUS FOR LAYING DOWN STRUCTURAL MEMBERS

Roy G. Tucker, Whitman; Ernest G. Fruzzetti, North Abington; Charles R. Ribak, Stoughton, and Russell C. Bricknell, South Braintree, all of Mass., assignors to General Dynamics Corporation, St. Louis, Mo.

Filed Sept. 9, 1974, Ser. No. 504,049

Int. Cl.^{2} B21B *39/30*

U.S. Cl. 214—1 Q **6 Claims**



1. Apparatus for laying down structural members having cross sections of substantial depth, comprising, means defining at least one recess having an open top side for receiving and supporting a member in an upright position, a first conveyor for moving the structural members into said recess, said recess being of a depth less than the depth of the member's cross section to leave a portion of the member projecting from the recess through the open top side, said recess defining means including a bottom plate and a pair of substantially parallel side plates supported spaced a fixed distance from each other, a second conveyor for moving the member in a direction away from said recess defining means substantially normal to the direction of movement of said first conveyor, and means for rotating said recess defining means about a substantially horizontal axis which lies substantially parallel with the direction of movement of said first conveyor and in a plane normal to the direction of movement of said second conveyor to move the projecting portion of the member in said recess into engagement with said conveyor to be moved out of said recess on said conveyor, said second conveyor being positioned at an elevation with respect to said recess defining means such that, after rotation of said recess defining means, the one of said side plates closest to said second conveyor is inclined with respect thereto to allow the member to slide out of said recess and onto said second conveyor.

3,937,334
PIPE HANDLING DEVICE

Donald Louis Bleyl, and John Dowe Irons, both of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed Feb. 3, 1975, Ser. No. 546,775

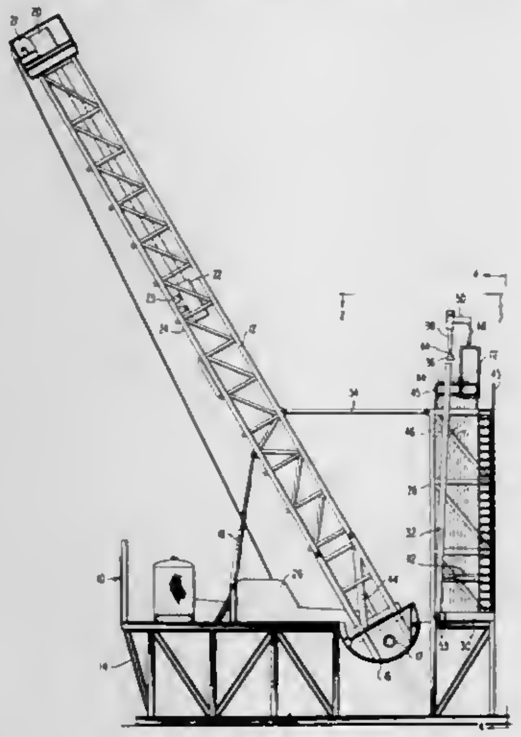
Int. Cl.^{2} E21B *19/14*

U.S. Cl. 214—2.5 **16 Claims**

1. In a slant-type drilling rig assembly having a base, a generally vertical conduit storage means, drawworks, drilling mast positioning means, and an inclinable drilling mast with a crown block, travelling block, and guide means therefor, an improved conduit transfer apparatus for moving conduit sections between the inclinable drilling mast and generally up-

right storage positions in the conduit storage means, comprising:

- frame means being pivotally mounted to the drilling rig assembly and operable to move between a position adjacent the conduit storage means and another position adjacent the drilling position adjacent the drilling mast;
- conduit holding means having a grappling means suspended therefrom, being pivotally attached to the frame means on a horizontal axis, and being operable to engage an upper portion of a conduit section during transfer between the conduit storage means and the drilling mast whereby the conduit holding means and an associated conduit section are free swinging with a generally vertical orientation during conduit transfer; and
- operator control station means suspended from the frame means for trapeze-like movement relative thereto about a horizontal axis, being operable to support and carry an operator for the conduit transfer apparatus and having a generally vertical orientation during conduit transfer.



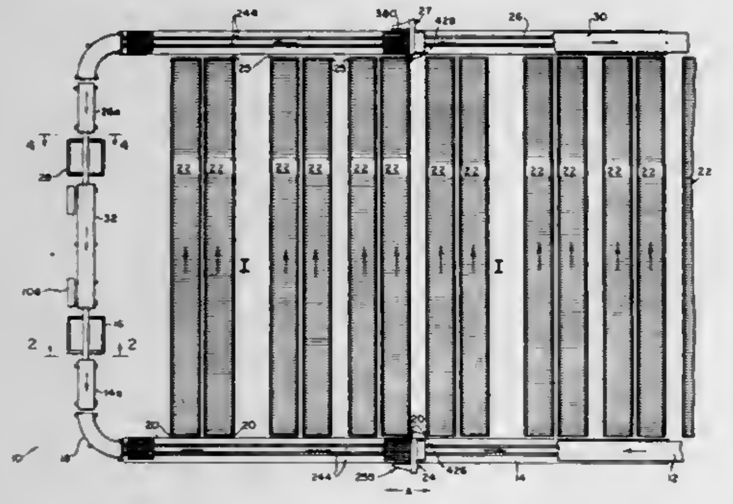
3,937,335
AUTOMATIC BREAD PAN CONTROL SYSTEM

William E. Lanham; William E. Lanham, Jr., and Gene C. Miller, all of Decatur, Ga., assignors to Lanham Machinery Company, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 243,074, April 11, 1972, abandoned. This application Jan. 19, 1973, Ser. No. 325,108

Int. Cl.² B65G *60/00*

U.S. Cl. 214—6 DS **29 Claims**



1. A pan handling apparatus comprising an infeed conveyor for supplying individual pans to the apparatus, a storage station at which stacks of pans may be stored, pan stacker means for receiving said individual pans from the infeed conveyor and placing said pans in a stack, stack conveyor means for transporting the formed stack from said stacker means to said storage station, means for selectively removing stacks of pans from said storage station and supplying the stacks to an unstacking station, pan unstacker means at said unstacking station for receiving said stacks of pans and sequentially removing individual pans therefrom, and feed conveyor means for transporting individual pans away from said unstacker for use;

- said storage station including at least one storage conveyor and said apparatus including storage dolly means for transferring a stack of pans from said stack conveyor to said storage conveyors; said storage dolly means including means for raising a stack of pans off of said stack conveyor and means for pushing said stack transversely of said stack conveyor onto to said storage conveyor; said pushing means including a rigid arm mounted on said storage dolly for reciprocating movement across said stack conveyor, towards and away from said storage conveyor, means for reciprocating said arm and means on said storage dolly for determining movement of said arm into a predetermined position adjacent said storage conveyor and for reversing said reciprocating means to return said arm to a predetermined position remote from said storage conveyor.

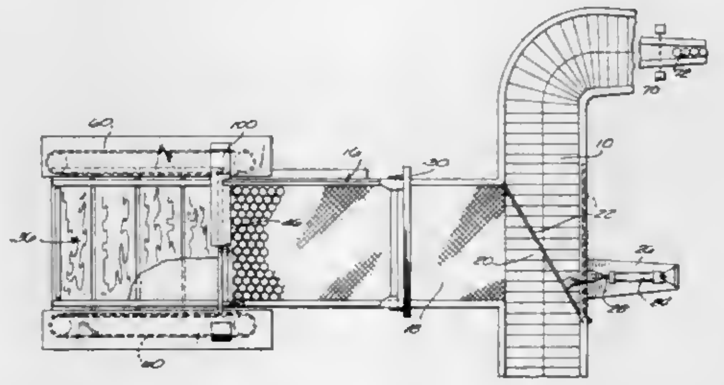
3,937,336
PALLETIZING AND DEPALLETIZING APPARATUS FOR SUPPLEMENTAL FEED

Kenneth G. Carlson, 11350 N. Valley Drive, 18 W., Mequon, Wis. 53092

Filed Oct. 23, 1974, Ser. No. 517,263

Int. Cl.² B65G *60/00*

U.S. Cl. 214—6 P **4 Claims**



1. In conveying apparatus including a first conveyor for conveying containers between first and second stations, the improvement comprising second conveyor means in communication with said first conveyor at a communication zone, means selectively operable for diverting the containers coming from said first station on said first conveyor from said first conveyor to said second conveyor, a sweep bar and pattern-forming means associated with said second conveyor, a pallet elevator for carrying pallets for receiving containers from said second conveyor means, said second conveyor means being operable in first and second modes with said conveyor means in said first mode being operable with said pattern-forming means to form patterned container complements and convey the patterned complements to said pallet elevator for palletizing of the complements, and being operable in a second mode to convey containers from pallets in said elevator to said first conveyor in a conveying direction counter to the conveyor direction of said second conveyor in said first mode to supply containers to the second station, and wherein said pattern-forming means includes a pattern forming bar, and including means for reciprocating said sweep bar and pattern forming bar in the flow path of containers between said second conveyor and said pallet elevator in concert for movement from a position over said second conveyor to a position over said pallet elevator, means for detachably connecting said sweep bar and said pattern-forming bar for independent reciprocating movement of said sweep bar for depalletizing cans from pallets carried in said pallet elevator, and means for elevating the detached pattern forming bar during the depalletizing operation above the flow path of cans moved by said sweep bar onto said second conveyor from said pallet elevator.

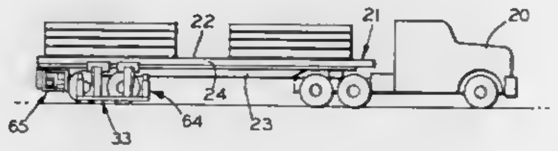
3,937,337
VEHICLE MOUNTED LOADER AND UNLOADER

Joseph F. Irving, Rte. 2, Continental, Ohio 45831

Filed May 14, 1974, Ser. No. 469,797

Int. Cl.² B60P *1/48*

U.S. Cl. 214—80 **28 Claims**



1. Load transfer mechanism adapted for mounting on the side of a vehicle having a width limit and adapted for the transfer of load articles between the vehicle bed and a location adjacent the vehicle comprising:

- a base attached to the side of the vehicle;
- a sub-base;
- an inner boom having first and second ends;
- a first pivotal coupling between said inner boom first end and said sub-base;
- means mounting said sub-base for movement relative to said base over a range of motion which includes a first position in which said first pivotal coupling and said inner boom first end are within said vehicle width limit and beneath the vehicle bed and a second position in which said first pivotal coupling and said inner boom first end are located beyond the width limit of said vehicle;
- first operating means for driving said inner boom around said first pivotal coupling;
- an outer boom having first and second ends;
- a second pivotal coupling between said inner boom second end and said outer boom first end, said second pivotal coupling being spaced from said outer boom second end a distance within the width limit of the vehicle when said sub-base is in said first position and being spaced from said inner boom first end a distance less than the height of said first coupling above ground level when said sub-base is in said second position;
- means attached to said outer boom second end for engaging load articles to be transferred; and
- second operating means connected to said outer boom and adapted to drive said outer boom second end in an arc around said second pivotal coupling.

3,937,338
MULTI-PURPOSE VEHICLE FOR HAULING BULK MATERIAL OR DISCRETE PACKAGES

Joe L. Cox, 1096 E. First St., Pomona, Calif. 91766

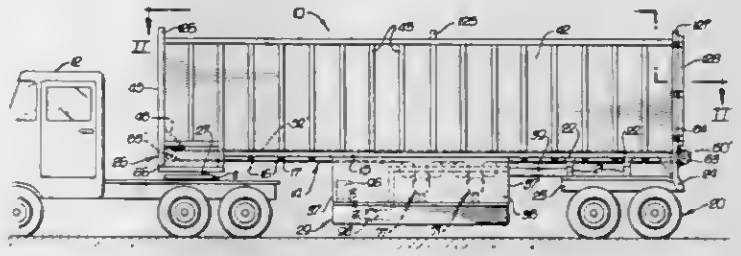
Filed June 25, 1973, Ser. No. 373,368

Int. Cl.² B60P *1/38*

U.S. Cl. 214—83.36 **4 Claims**

1. In a vehicle for hauling trash and solid waste material, the combination of:

- a vehicle body including a body frame structure, an uninterrupted floor on said structure, and upstanding side walls;
- a continuous uninterrupted sheet of anti-friction material secured to and substantially completely covering said floor and presenting a smooth top surface from side wall to side wall;
- said anti-friction material being non-reactive to trash and waste material to be hauled;
- an endless belt means of reinforced neoprene material having a top lay slidably movable along and supported on the major portion of the top surface of said anti-friction material and having a bottom lay movable beneath said floor;
- idle rollers at opposite ends of the floor for supporting said endless belt means in non-driving engagement;
- said body frame structure including depending frame means centrally between ends of said body frame structure for supporting belt drive means;
- and drive means for said belt means supported by said depending central frame means below said floor and including
- a pair of spaced drive rollers having surfaces frictionally engaging said bottom lay and with their axes lying in the same plane and parallel to the plane of the bottom lay,
- a third drive roller below and between said pair of drive rollers and over which said bottom lay has frictional contact for more than 180° about the axis thereof,
- a motor means carried by said depending frame means for said drive means,
- means for driving each of said drive rollers,
- and reduction gear means carried by said depending frame means connecting said motor means and said means for driving said drive rollers.



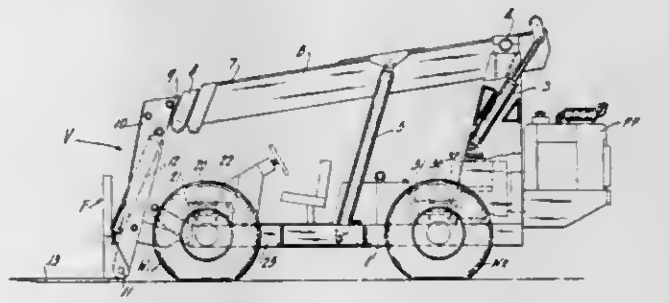
3,937,339
VEHICLE HAVING TRANSVERSE LEVELING MEANS

Warren P. Geis, and Reinald D. Liegel, both of Port Washington, Wis., assignors to Koehring Company, Milwaukee, Wis.

Continuation of Ser. No. 193,807, Oct. 29, 1971. This application Nov. 5, 1973, Ser. No. 412,916

Int. Cl.² E02F *3/36*

U.S. Cl. 214—140 **22 Claims**



1. A self-propelled loading vehicle having means for vertically positioning a load with respect to the vehicle body, said means comprising an extensible boom pivotally mounted about a horizontal axis on said body, ground engaging means for supporting the vehicle body for movement over undulating terrain, power means between the ground engaging means and the vehicle body for tilting the vehicle body in a transverse direction relative to the ground engaging means and thereby maintaining the body in a substantially level transverse position regardless of the attitude of the ground engaging means in respect thereto, and automatic level sensing means for sensing deviation of the body from a transverse level position and for actuating said power means to maintain said body in a substantially level transverse position, said level sensing means including an electric circuit having an electrical power source, a fluid flow control valve, first level sensing switch means operatively responsive to a tilting of the vehicle body

in a transverse direction a first predetermined amount, second level sensing switch means operatively responsive to a tilting of the vehicle body in a transverse direction a second predetermined amount, said second amount being significantly smaller than said first amount, a first system control switch for selectively completing and interrupting a circuit including said first level sensing switching means, said electric power source and said valve, a second system control switch independent of said first system control switch for selectively completing and interrupting a circuit including said second level sensing switch means, said electric power source and said valve, circuit means ensuring the operating effectiveness of said second level sensing switch means when both first and second level sensing switch means are in circuit with said electric power source and said valve.

3,937,340

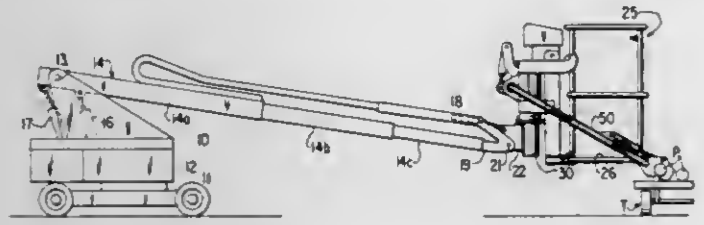
AERIAL PLATFORM HAVING BOOM MOUNTED PIPE HOLDER

John L. Grove, Greencastle, Pa., assignor to Fulton Industries, Inc., McConnellsburg, Pa.

Filed June 14, 1974, Ser. No. 479,438

Int. Cl.² B66F *11/04*

U.S. Cl. 214—147 G 21 Claims



15. Aerial platform apparatus comprising:

a base and a boom mounted on said base for luffing movement in a vertical plane,

means for luffing said boom,

a platform comprising a floor and having the rear portion thereof adjacent the outer end of said boom,

means for connecting said platform to said boom for pivotal movement about a horizontal axis,

material holding means, and

means carried from said boom for supporting said material holding means and for selectively moving said material holding means between a first material pick up position below or adjacent the platform floor and a second working position remote from the platform floor and in which second position a workman on said platform has access to material held by said material holding means.

3,937,341

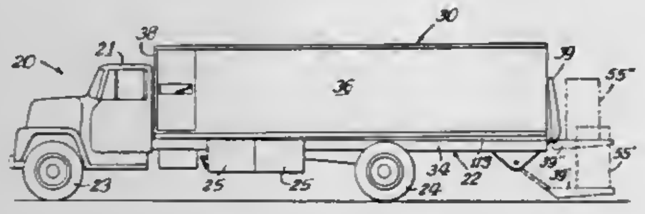
METHOD OF LOADING, HANDLING AND UNLOADING CARGO FROM A TRANSPORTING VEHICLE

James D. Mahoney, 4 Ivy Lane, Oak Brook, Ill. 60521

Division of Ser. No. 302,477, Oct. 30, 1972, which is a continuation-in-part of Ser. No. 132,319, April 8, 1971, abandoned. This application Feb. 22, 1974, Ser. No. 445,283

Int. Cl.² B60P *1/00*

U.S. Cl. 214—152 3 Claims



1. A method of unloading cargo elements from a supporting surface on a transporting vehicle and loading cargo elements onto said surface as said vehicle proceeds along a drop-off and pick-up route having a plurality of stops, said supporting surface having front and rear ends and longitudinally extending laterally spaced sides, said method comprising the steps of providing at least one path on said surface for guiding the direction of movement of cargo elements moving on said surface, said path extending lengthwise of said vehicle and having a receiving end at the rear end of said supporting surface and a discharge end in one of said sides and adjacent to the front end of said supporting surface, unloading cargo elements from the discharge end of said path as said vehicle makes its respective stops, loading cargo elements onto said path at the receiving end thereof as said vehicle makes its respective stops, and inertially moving cargo elements on said path from the receiving end toward the discharge end of said path until a predetermined number of cargo elements have been dropped off and picked up.

3,937,342

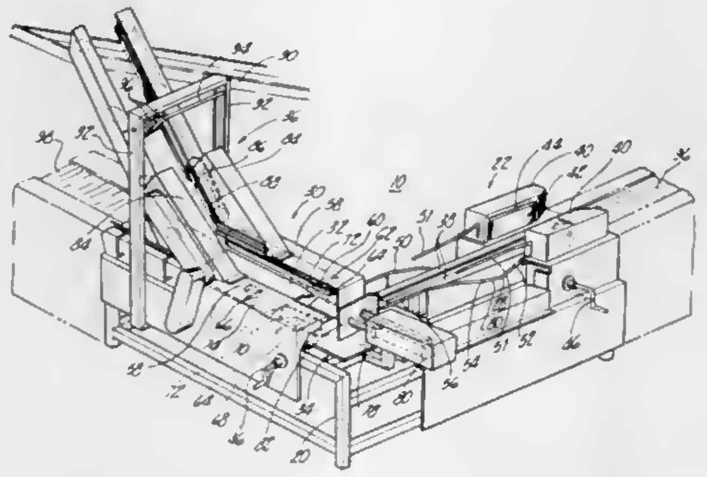
APPARATUS FOR OPENING AND UNLOADING CARTONS

Delbert J. Ittner, Saginaw, and Robert W. Hofstetter, Fenton, both of Mich., assignors to I and H Conveying and Machine Company, Clio, Mich.

Filed July 22, 1974, Ser. No. 490,681

Int. Cl.² B65G *65/04*

U.S. Cl. 214—304 11 Claims



1. An apparatus for opening the flaps of a carton filled with articles and for unloading the articles from the cartons comprising:

first conveyor means for moving the cartons in a first direction;

carton outer flap folding means associated with said first conveyor means for folding the outer flaps of the carton from a closed position over the opening to the carton to a folded position away from their closed position as the cartons move in said first direction;

second conveyor means for moving the cartons in a second direction disposed at a predetermined angle to said first conveyor means;

carton inner flap engaging and folding means associated with said second conveyor means for folding the inner flaps of the carton from a closed position over the opening to the carton to a folded position as the cartons move in said second direction;

transfer means disposed between said first conveyor means and said second conveyor means for transferring said cartons from said first conveyor means to said second conveyor means; and

third conveyor means disposed adjacent the end of said second conveyor means and extending upwardly away therefrom whereby to remove the cartons from said second conveyor, the articles remaining on said second conveyor means; and

said second conveyor means comprises a pair of spaced apart second drive means disposed on opposite sides of said carton inner flap engaging and folding means to move the cartons in said second direction; said inner flap engaging and folding means comprising a pair of parallel spaced apart downwardly and inwardly inclined support plates which permit the inner flaps to partially open a predetermined amount by folding downwardly under the influence of the weight of the articles in the carton; an elongated horizontal plate having its leading corners inclined downwardly and outwardly to engage the inner flaps as the carton moves from said support plates onto said horizontal plate and to support the articles in the carton as the carton moves in said second direction; and a generally V-shaped inner flap folding plate disposed beneath said horizontal plate having its apex facing against said second direction of movement and having its sloping edges extending toward opposite longitudinal sides of said horizontal plate.

3,937,343

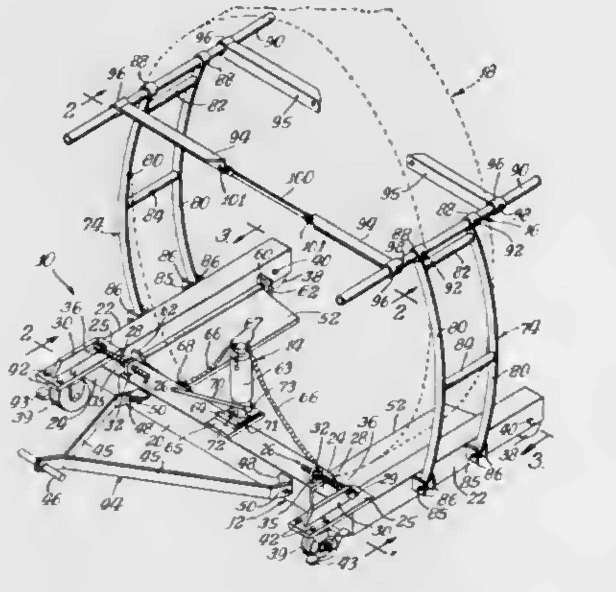
ADJUSTABLE TIRE CART

Reynold Spulak, NW. on U.S. 81 - Box 948, Columbus, Nebr. 68601

Filed Nov. 9, 1973, Ser. No. 414,265

Int. Cl.² B65G *7/00*

U.S. Cl. 214—332 7 Claims



1. An adjustable tire cart for handling various size and type tires, comprising a frame having a center section and two lateral sections, said lateral sections being spaced apart and extending perpendicularly from the ends of said center section, each of said lateral sections having a perpendicular extension at one end thereof, said perpendicular extensions telescopically engaging said center section to permit adjustment of the spacing between said lateral sections for accommodating various tires, tire lifting means on said frame for engaging and raising or lowering a tire, said tire lifting means including an actuating member mounted on said frame, a pair of pivotable flap members mounted on said lateral sections, and adjustable length linkage connecting said actuating member to said flap members, said adjustable linkage including two lengths of chain, each of said lengths of chain having a first connection connected to one of said flap members and a second connection connected to said acutating member, and at least one of said first and second connections including means for engaging a selected link of the length of chain extending between said connections.

3,937,344

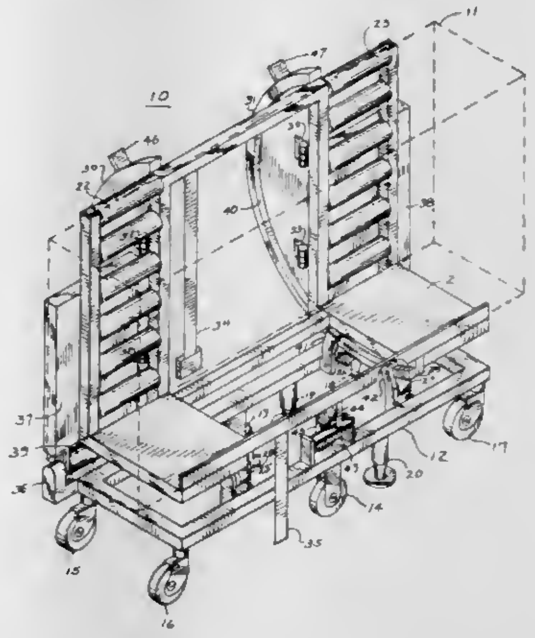
APPARATUS FOR TRANSPORTING AND HANDLING LARGE LOADS OF BUILDING MATERIALS

Thurman Rex Montgomery, deceased, late of Hurst, Tex., and by Billie Jo Montgomery, executrix, 2017 Hurstview Drive, Hurst, Tex. 76053

Filed Oct. 31, 1974, Ser. No. 519,439

Int. Cl.² B60P *1/28*

U.S. Cl. 214—505 6 Claims



1. An apparatus for transporting a load through narrow passageways and unloading the load at a desired location, comprising:

a base frame,

wheel means connected to said base frame for allowing said base frame to be moved,

an upper frame positioned above said base frame, said upper frame having a lower load receiving portion normally positioned substantially parallel to said base frame and an unloading section projecting substantially perpendicular upward from said load receiving portion,

said upper frame having curved members extending convexly away from said unloading section of said upper frame,

hinge means between said curved members and said unloading section,

means between said base frame and said curved members for allowing said upper frame to move relative to said base frame, and

lock means for selectively preventing said upper frame from moving relative to said base frame and for selectively allowing said upper frame to move relative to said base frame and unload said load.

3,937,345

SHOVEL LOADER WITH EJECTOR BUCKET

Donald L. Countryman, Gresham, Oreg., assignor to Wagner Mining Equipment, Inc., Portland, Oreg.

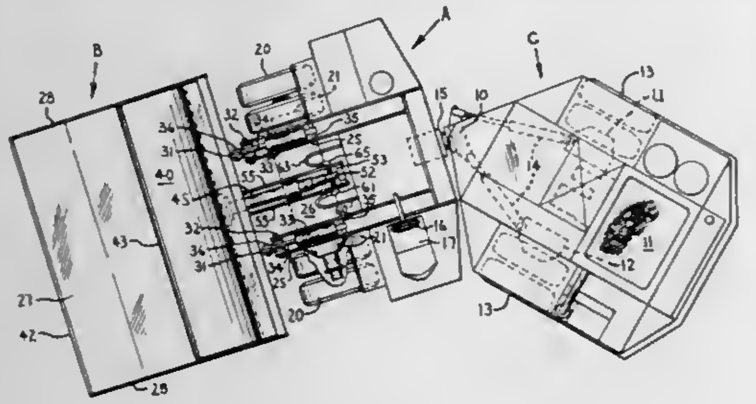
Filed Nov. 15, 1974, Ser. No. 524,067

Int. Cl.² B60P *1/04*

U.S. Cl. 214—510 5 Claims

1. A shovel loader comprising a vehicle frame supported by wheels on its opposite sides, drive means for said wheels providing an open space between said wheels free of an interconnecting axle, a loader bucket in front of said wheels having bottom, side and back walls and a scooping lip on the front end of said bottom wall, hinge pins pivotally mounting said bucket on said frame adjacent the lower portion of said back wall at the back end of said bottom wall, hydraulic cylinder and piston means connected between said frame and the upper portion of said back wall for pivoting said bucket to move said scooping lip between a depressed digging position

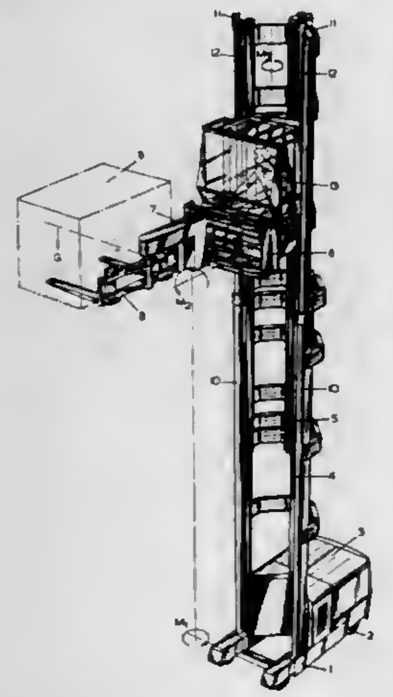
and an elevated dumping position, said bottom wall being inclined upward toward its front end in said dumping position, a transverse ejector plate in said bucket, a stirrup bracket extending rearward from said back wall and hinge pins into said open space between said wheels, a hydraulic cylinder mounted on the rear side of said ejector plate and extending



through an opening in said back wall, and a piston rod in said cylinder connected to a pin in the rear end of said stirrup bracket for reciprocating said ejector plate in said bucket, said stirrup bracket and piston rod swinging down between lower portions of said wheels in said elevated position of said bucket.

3,937,346
MOVABLE STACKING DEVICE

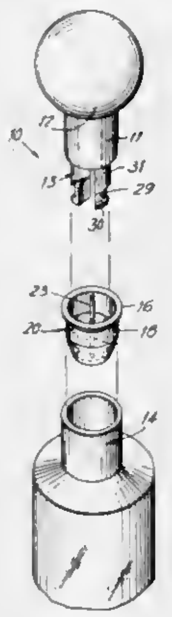
Hans Robert van der Laan, Kamerik, Netherlands, assignor to Cubic Handling Systems N.V., Belgium
Filed Sept. 4, 1974, Ser. No. 503,103
Claims priority, application Netherlands, Sept. 7, 1973, 7312385
Int. Cl.² B66F *9/14*
U.S. Cl. 214—730 **10 Claims**



1. A movable stacking device comprising a substructure, a vertical mast vertically arranged thereon and composed of a fixed outer frame and an inner frame vertically guided by the outer frame, an operating platform vertically guided by the inner frame and comprising a base frame extending transversely to the substructure, a rotation head horizontally guided by the base frame and a fork means adapted to carry a load and being supported by the rotation head for rotation about a vertical shaft, the outer frame and the inner frame of the mast each consisting of two spaced channel or I-beam sections extending transversely to the substructure, the webs of said sections extending in longitudinal direction of the substructure, rollers or similar means being mounted on the sections of one frame which act on flanges of the adjacent sections of the other frame of the mast and further rollers or similar means being mounted on the operating platform which act on the flanges of the inner frame, characterized in that the outer frame and the inner frame each comprise in addition a vertical box girder, said box girders being arranged on behind the other on the longitudinal axis of the substructure, the box girder of the inner frame being vertically movable relative to the box girder of the outer frame by means of a guide means, but being unable to move transversely thereto, that the sections are each connected to the corresponding box girder by rigid transverse beams and that the side of the operating platform remote from the base frame comprises additional rollers or similar means cooperating with a vertically extending guide rail on the box girder of the inner frame.

3,937,347
APOTHECARY SAFETY CLOSURE

Hugh Cottingham, Orange, N.J., assignor to Black Hole Nebula Incorporated, Orange, N.J.
Filed Mar. 27, 1975, Ser. No. 562,515
Int. Cl.² B65D *55/02, 55/56;* **A61J** *1/00*
U.S. Cl. 215—213 **7 Claims**



1. An apothecary safety closure adapted to be inserted in a bottle neck comprising in combination a liner adapted to be inserted in said bottle neck and be frictionally engaged thereby to effect a closure of the bottle neck, said liner defining a recess therein, said recess including first operative means disposed on said liner for effecting removal of said liner from said neck, and a stopper including an elongated cylindrical wall portion adapted to be inserted into said liner recess and be rotatable with respect thereto, said cylindrical wall including second operative means adapted to be selectively aligned with said first operative means disposed on said liner in response to selective rotation of said stopper to effect a removal of the liner from said bottleneck by said stopper.

3,937,348
SECURITY BOTTLE CLOSURE DEVICE

Piergiacomo Guala, Alessandria, Italy, assignor to Angelo Guala S.p.A., Alessandria, Italy
Filed Mar. 5, 1975, Ser. No. 555,902
Claims priority, application Italy, Mar. 7, 1974, 67627/74
Int. Cl.² B65D *41/34, 41/36, 41/38*
U.S. Cl. 215—252 **2 Claims**

1. In a closure device for bottles of the type having a screw thread at or adjacent the end of the neck thereof and means forming a radial shoulder facing away from the mouth of the bottle, said closure device comprising

a cap having an elongate skirt,

an internal screw thread on said skirt of said cap, said internal screw thread cooperating with the screw thread on the neck of a bottle when said cap is screwed thereon, and

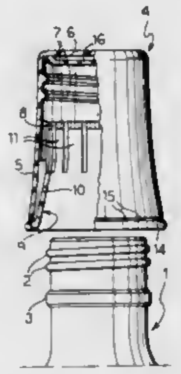
a tubular anchoring member fitted within said skirt of said cap below said internal screw thread thereof, said tubular anchoring member having an inner diameter greater than the outer diameter of the radial shoulder on the neck of a bottle on which the closure device is to be fixed,

means forming a frangible connection between said tubular anchoring member and said skirt of said cap, and

a plurality of resilient tongues on said tubular anchoring member, said resilient tongues extending away from said rim of said skirt of said cap and being shaped such that their free ends lie in a circle the diameter of which is less than the outer diameter of the radial shoulder on the bottle to which the cap is to be fixed, so as to engage there against,

the improvement wherein:

said tubular anchoring member is formed at the end thereof opposite that from which project said resilient



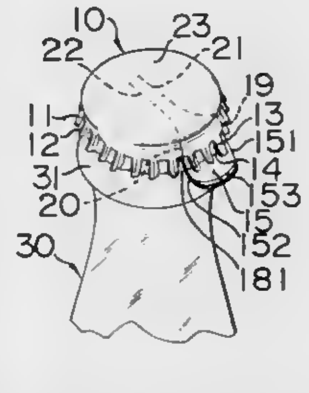
tongues with a radially outwardly projecting flange which is joined to said rim of said skirt of said cap by said means forming said frangible connection of said cap to said tubular anchoring member,

the radially outer faces of said resilient tongues of said tubular anchoring member have longitudinal ribs extending therealong,

a portion of the inner face of said skirt of said cap is provided with a plurality of axial ribs for cooperation with said ribs on said radially outer faces of said tongues of said tubular anchoring member when said tongues are displaced radially outwardly as the said closure device is screwed for the first time onto the neck of the bottle onto which it is to be fixed, until the ends of said tongues engage against said radial shoulder, whereby to transmit to said anchoring member the torque applied to said cap upon screwing said closure device onto said neck of said bottle.

3,937,349
SELF-OPENING CROWN CAP

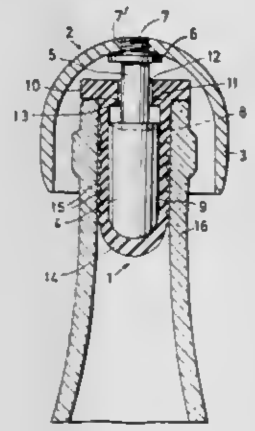
Shih Hsu, No. 34, Tien Suei Road, Taipei, China /Taiwan
Filed Sept. 11, 1974, Ser. No. 504,920
Int. Cl.² B65D *41/32*
U.S. Cl. 215—254 **6 Claims**



1. An easy-opening crown cap for closing the open end of bottles and the like, wherein the crown cap is of the type having a substantially flat top and a depending annular skirt of crimped configuration having alternate raised and depressed portions, a downwardly and outwardly inclined tongue on the cap projecting below a bottom edge portion of the skirt, said tongue having a plurality of longitudinally extending reinforcing ribs of a length slightly greater than the crimps in the skirt, and a lower end edge portion of the tongue being warped to reinforce the tongue, said cap having a pair of circumferentially spaced apart notches extending upwardly from a lower edge of the skirt in registry with opposite edges of the tongue, and a pair of weakened score lines extending upwardly from the notches across the skirt and across the flat top of the cap a distance greater than the radius of the cap but less than the diameter thereof, whereby the tongue may be grasped by hand and lifted to fracture the score lines and remove the cap from the bottle and the like.

3,937,350
STOPPER FOR BOTTLES

Hans Völker, Wolfsgruhengasse 2/c, 854 Schwabach, Germany
Filed Mar. 27, 1975, Ser. No. 562,564
Claims priority, application Germany, Mar. 27, 1974, 2414667
Int. Cl.² B65D *39/12*
U.S. Cl. 215—361 **15 Claims**



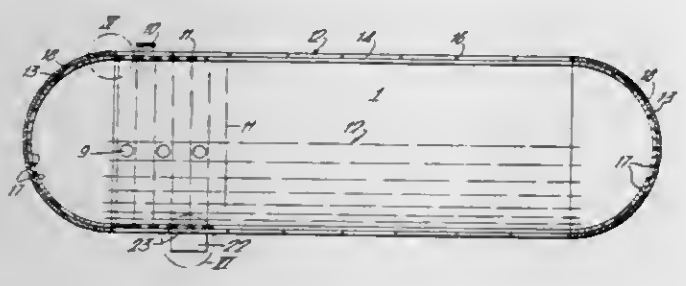
1. A stopper for bottles, especially for closing uncorked wine and champagne bottles, which includes: an elastic deformable sleeve member having a mantle section and a closed bottom section and an open top section, said top section of said sleeve member comprising a radially outwardly extending flange for placement onto the neck end face of the bottle to be closed and also comprising a radially inwardly extending flange, and a handle member coaxially arranged with regard to said sleeve member and comprising a cap and an inner member including a rigid longitudinally extending cylindrical piston and a connecting rod rigidly connecting said piston to said cap, the outer diameter of said piston being slightly less than the inner diameter of the bottle neck portion to be closed by said stopper, and the wall thickness of said sleeve mantle section in non-deformed condition of said sleeve member being greater than the thickness of the annular gap between the outer periphery of said piston and the bottle neck section of the bottle to be closed by said stopper.

3,937,351
PRESSURE VESSELS

Shepherd Rigg, Warrington, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed Oct. 19, 1973, Ser. No. 407,957
Claims priority, application United Kingdom, Oct. 25, 1972, 49221/72
Int. Cl.² B65D *7/44*
U.S. Cl. 220—3 **2 Claims**

1. A cylindrical pressure vessel comprising a central barrel portion and two part spherical end portions, the vessel being provided with means for preventing dispersal of vessel fragments in the event of the vessel being breached, said means comprising a first group of circumferential chains lying side by

side along the barrel portion and a second group of axially extending chains on top of said first group of chains, each said chain comprising a plurality of plates which are pivotably interconnected to each other but are unconnected to the vessel surface, said means further comprising end enclosures overlying the part spherical end portions and retained in position by the second group of chains.



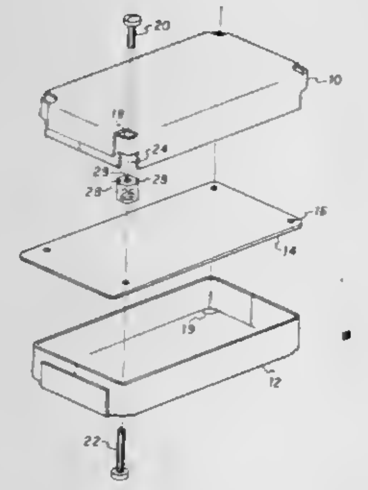
3,937,352
PLURAL COVER MOUNTING ARRANGEMENT

Leo R. Kalous, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed July 24, 1975, Ser. No. 598,903

Int. Cl.² H02G *3/08*

U.S. Cl. 220—3.94 **4 Claims**



1. An arrangement for mounting two covers on opposite surfaces of a plane, comprising:

a first cover having a top and a side wall for defining a completely enclosed space when mounted on one of the surfaces of the plane, said top having at least two apertures adjacent said wall which align with apertures in the plane when mounted;

at least two elongated fastening nuts, each having a threaded shaft and a pair of grooves along its long axis;

at least two bolts for affixing said first cover to the plane by engaging the threaded shafts of said fastening nuts via the aligned apertures of said top and the plane;

a second cover having a top and a side wall for defining a completely enclosed space when mounted on the other surface of the plane, its top having at least two apertures adjacent its wall which align with the apertures in the plane when mounted and its wall containing at least two notches below the apertures for mating with said fastening nuts by slideably engaging the grooves, and

at least two more bolts for affixing said second cover to the plane by engaging the threaded shafts of said fastening nuts via the apertures in the top of said second cover.

3,937,353
SYSTEM FOR THE TRANSPORTATION OF LOW-TEMPERATURE FLUIDS

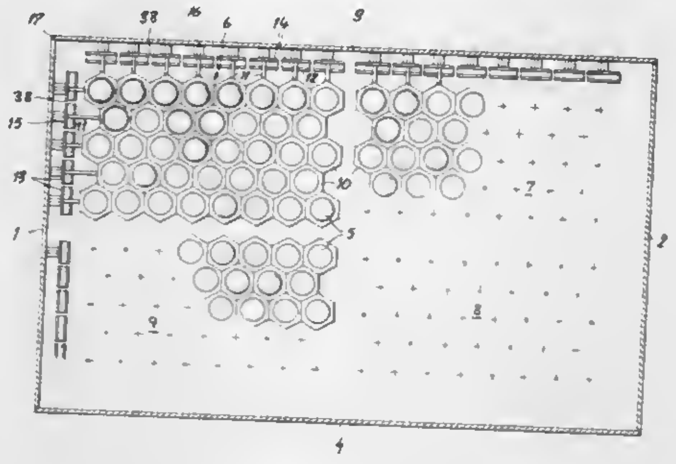
Rudolf Becker, Munich, and Max Bráutigam, Tacherting, Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Sept. 26, 1973, Ser. No. 400,806

Claims priority, application Germany, Sept. 27, 1972, 2247220; Apr. 3, 1973, 2316607

Int. Cl.² B65D *87/24;* **B63B** *25/08*

U.S. Cl. 220—9 LG **23 Claims**



1. A conveyance for the transport of a low-temperature fluid, especially a liquefied gas, comprising:

a thermally-insulated cargo compartment having a plurality of lateral vertical walls including two mutually angularly adjoining walls;

at least one fluid container received in said compartment, said fluid container comprising a multiplicity of generally similar neighboring receptacles secured together and defining a pair of flanks each juxtaposed with one of said mutually angularly adjoining walls; and

respective assemblies anchoring said container to said mutually angularly adjoining walls at each said flank with freedom of movement of the respective flank parallel to the juxtaposed wall but rigidly connecting the respective flank to said juxtaposed wall against displacement of said flank perpendicularly thereto, said fluid container being free from attachment to the vertical walls of said compartment other than said two mutually angularly adjoining walls.

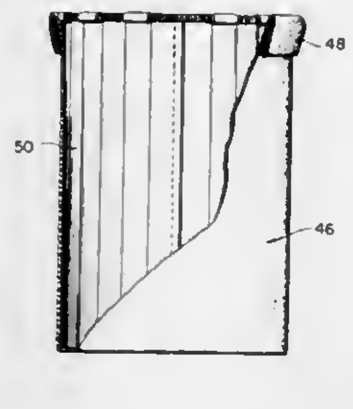
3,937,354
APPARATUS FOR THE COMPACTION OF REFUSE MATERIAL AND THE LIKE

Milton Clar, 9408 Linden Ave., Bethesda, Md. 20014

Division of Ser. No. 261,325, June 9, 1972, Pat. No. 3,861,296. This application Jan. 14, 1974, Ser. No. 433,042

Int. Cl.² B65D *25/14;* **B30B** *15/06*

U.S. Cl. 220—63 R **5 Claims**



1. Apparatus for lining a bag comprising a cylindrically tubular member having a top and a bottom, said member being split longitudinally from top to bottom into separate overlapping parts, said parts being connected at said top only, by flexible connecting means.

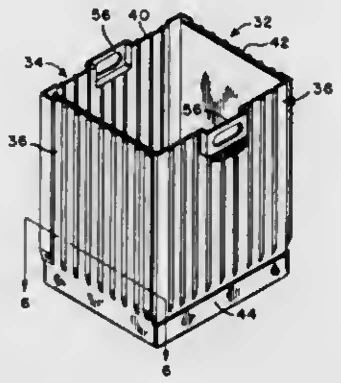
3,937,355
REMOVABLE LINER FOR TRASH COMPACTORS

Einar O. Engebretsen, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Division ol Ser. No. 184,038, Sept. 27, 1971, Pat. No. 3,807,299. This application Mar. 6, 1974, Ser. No. 448,620

Int. Cl.² B65D *25/14*

U.S. Cl. 220—63 R **5 Claims**



1. A composite liner adapted to be positioned within an open-top receptacle of a trash compactor for the receipt and downward compaction of trash therein:

a. a pair of separate liner sections,

b. each of said liner sections being open-topped and lidless and including a bottom wall and first and second upstanding walls,

c. said first walls of each section being substantially higher than said second walls of each section,

d. said bottom and upstanding walls of said liner sections being formed integrally with each other and providing substantially liquid proof containers adapted to hold liquid therein up to the level of the tops of said second walls thereof,

e. one of said liner sections being smaller than the other of said liner sections,

f. the smaller of said liner sections being positioned in nested but unattached relationship with the other of said liner sections with said bottom wall of said smaller section overlying and being in contact with said bottom wall of said other section, said second wall of said smaller section underlying a lower portion of said first wall of said other section and edge portions of said first wall of said other section overlapping edge portions of said first wall of said smaller section, and

g. said liner sections being readily separable manually by relative tilting movement thereof to facilitate removal of trash therefrom and complete separation of each of said liner sections from the other for cleaning purposes.

3,937,356
SANITARY RAIL STRUCTURE FOR FOOD PRODUCTS VESSEL

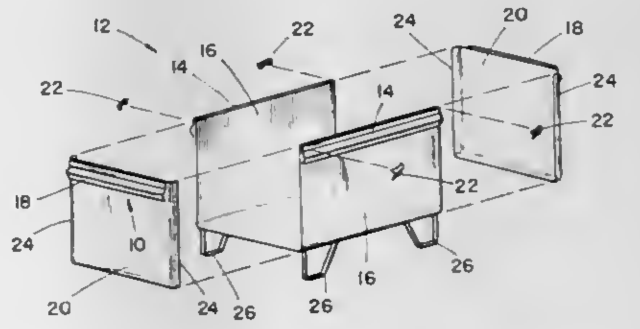
Jacob Schmidt, Sr., and Jacob Schmidt, Jr., both of R.D. No. 1, Harleysville, Pa. 19438

Filed Apr. 10, 1975, Ser. No. 566,741

Int. Cl.² B65D *7/42*

U.S. Cl. 220—73 **1 Claim**

1. A longitudinal sheet metal food vessel comprised of a U-shaped first member having a planar bottom and a pair of laterally disposed vertically extending planar side panels of similar height wherein each of said side panels is integrally formed from the material of said bottom respectively through the curvature of a relatively short radius 90° bend made at the respective lateral limits of said bottom and having also as second members a respective pair of non-integral generally planar end panels of said similar height and otherwise corresponding in complementary geometrical configuration to the opposite longitudinal ends of said U-shaped first member by each of said end panels having respectively integral thereto a flush plurality of flange edges comprised of an inwardly bent bottom flange and a corresponding pair of respective inwardly bent side flanges integrally joined to said bottom flange thereof by respectively formed quarter-hemisphere end panel bottom corner flanges wherein the curvature of all of said end panel bends are complementary to said relatively short radius 90° bend and wherein also each of said second member panels are thereafter weldably connected along said flush plurality of flange edges thereof to the respective longitudinal side, bottom, and corner ends of said U-shaped first member to form an open top container having corners which are curved upon said relatively short radius 90° bend in cross section, in combination with reinforcing means integral to the upper edges of said side and end panels comprising the upper edge portions of said side and end panels being of uniform width and bent to provide an outermost relatively narrow strip integrally connected along one edge by a substantially right angle bend to one edge of an intermediate strip and the opposite edge of said intermediate strip being connected integrally by a bend in excess of a right angle to one edge of a connection strip integrally connected to the upper edges of said side and end panels at the other edge thereof by a reverse bend to dispose said connecting strip in flatly overlying relationship with the exterior surface of the upper edge portions of said side and end panels, continuous weldment affixing means fixedly attaching the outermost edge of said outermost narrow strips of said reinforcing means to said exterior surface of each of said side and end panels, means enclosably connecting the corner ends of said reinforcing means, said corner enclosing connected means being comprised of respective unitary complementary configured sheet metal corner members having the lateral upper and lower connecting edge portions thereof configured in complementary shape to the exterior curvature of said relatively short radius 90° bend of said corners of said vessel and the longitudinal end connecting edge portions thereof configured in complementary shape to the respective terminal corner ends of said reinforcing means and respectively affixed to the exterior surfaces of said corners and the respective terminal ends of said reinforcing means by continuous weldments, thereby providing an enclosed rail-like reinforcing configuration having a substantially triangular shape in cross-section extending longitudinally along all side and end panels of said vessel in limited spaced relation to the upper edges thereof to provide readily inspected and repairable surfaces which are easy to clean.



3,937,357
PRESSURE-VACUUM RELIEF FUEL FILLER CAP

Ronald R. Burgess, Corunna, Mich., assignor to Tom McGuane Industries, Inc., Farmington, Mich.

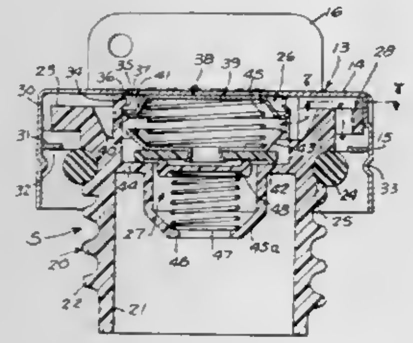
Filed Sept. 20, 1973, Ser. No. 399,120

Int. Cl.² B65D *51/16, 41/18*

U.S. Cl. 220—203 **43 Claims**

1. A pressure-vacuum relief fuel filler cap comprising

a cover,
said cover comprising a base and a peripheral flange,
a body of synthetic plastic material mounted at least partially within said cover with said peripheral flange surrounding a portion of said body,
said body including an outer threaded end adapted to engage a threaded filler opening,
said body having the other end thereof opposite said threaded end thereof engaging the base of said cover,
a pressure relief valve and associated valve seat within said body,
a vacuum relief valve and associated valve seat within said body,
and torque limiting means between said body and said cover for limiting the torque applied to said cover during application to a filler opening,
said torque limiting means comprising a plurality of circumferentially spaced radially inwardly extending portions on the inner surface of said peripheral flange of said cover,



and a plurality of integral radially yieldable teeth on the periphery of said body adjacent said portions on said cover,
said teeth including a ramp surface and a notch surface such that when the cover is rotated in one direction in applying the cap to a filler opening and a predetermined torque is reached, the cover can be rotated relative to said body with said radially inwardly extending portions moving along said ramp surfaces to succeeding notches, and when the cap is rotated in the opposite direction, said radially inwardly extending portions on the cover are engaged with the notches so that there can be no relative movement between the cover and the body,
said body including radially extending circumferentially spaced integral projections extending outwardly into contact with the inner surface of the peripheral flange of the cover.

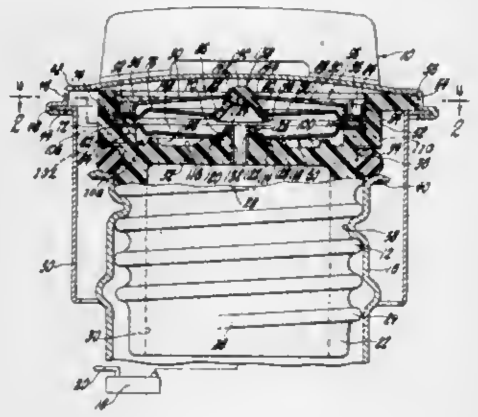
3,937,358

PRESSURE VACUUM RELIEF VALVE ASSEMBLY

Claude A. Smith, Sandusky, and Donald L. Williams, Port Clinton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 373,085, June 25, 1973, abandoned. This application Sept. 9, 1974, Ser. No. 504,138
Int. Cl.^{2} B65D *51/16*
U.S. Cl. 220—203 5 Claims

1. A pressure-vacuum relief valve assembly for a semi-closed liquid vapor system having a container for liquid which evaporates to build-up pressure in the container to a positive value and which can be withdrawn from the container to reduce the pressure therein to a negative value comprising a housing having an outer flange thereon and a wall portion thereon formed transversely of said outer flange, said housing further including an internal flange located radially inwardly of the outer flange in spaced relationship therewith, a first apertured spring diaphragm having an outer periphery thereon supported by said internal flange, said first diaphragm and wall portion defining a vacuum relief chamber, passage means in said housing communicating said vacuum relief chamber with atmosphere, a second apertured spring diaphragm having a peripheral portion thereon supported in sealing relationship with the outer periphery of said first diaphragm and being spaced with respect to said first diaphragm to form a pressurizable control chamber therebetween, passage means for directly communicating the interior of said pressurizable control chamber with the interior of a container, a vacuum relief seal member on said wall portion interposed within said first apertured diaphragm to control flow from said vacuum relief chamber through the passage means between said pressurizable control chamber and said container for vacuum relief at a predetermined negative pressure range, a pressure relief seal member interposed within said second apertured diaphragm between said control chamber and atmosphere, said second diaphragm operative in response to a predetermined build-up of pressure within said control chamber to open communication between the interior of said housing and atmosphere thereby to relieve a predetermined positive pressure range within the control chamber.

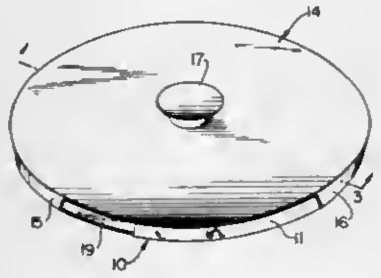


3,937,359

VARIABLE VENT COVER FOR COOKING VESSELS

Archibald Dicks Stockton, Jr., 3868 S. Lake Drive, Roanoke, Va. 24018

Continuation-in-part of Ser. No. 334,662, Feb. 21, 1973, abandoned. This application May 6, 1975, Ser. No. 574,978
Int. Cl.^{2} A47J *27/34*
U.S. Cl. 220—369 5 Claims



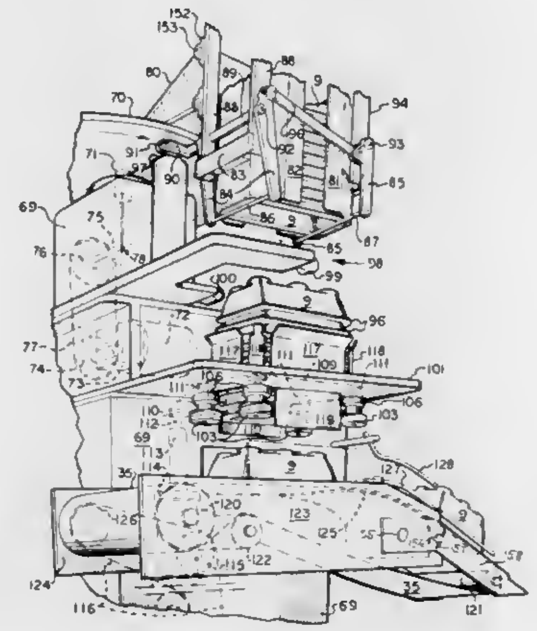
1. For use with a cooking vessel, a variable vent cover for said vessel comprising:
a. a first cover member having an opening therethrough,
b. at least two upstanding flanges spaced circumferentially about said cover and upstanding therefrom,
c. a second cover member,
d. at least two depending flanges spaced circumferentially about said second cover member,
e. said upstanding flanges of said first cover engageable with said depending flanges of said second cover member and being circumferentially rotatable relative thereto to define a variable area vent between said upstanding and depending flanges to regulate and vent to atmosphere from within a cooking vessel through the opening in said first cover member.

3,937,360

TURRET DEVICE FOR SUPPLYING ARTICLES FROM PLURAL MAGAZINES

Eugene F. Doucette, Burlington, Mass., assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 416,733, Nov. 19, 1973, Pat. No. 3,867,807. This application Aug. 28, 1974, Ser. No. 501,144
Int. Cl.^{2} B65H *7/14*
U.S. Cl. 221—11 2 Claims



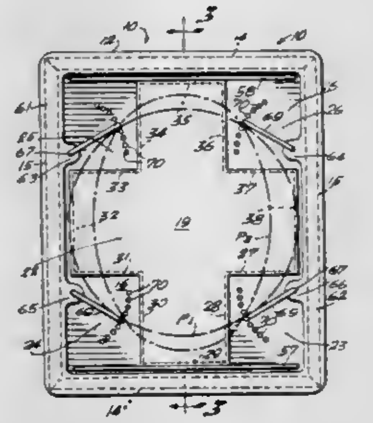
1. A feed device for supplying bottle carriers or the like having a lower peripheral flange to an assembly machine comprising
a vertical frame member,
a horizontal turret means mounted on said vertical frame for rotary indexing movement in a closed path past a carrier feeding station,
indexing drive means connected to rotate the turret intermittently,
plural radial arms at equal increments about said turret,
a hollow carrier magazine mounted on each of said radial arms, comprising a vertical chute defining a vertical passage for a stack of nested carriers with their said flanges closely spaced vertically therein, said chute having a lower end opening for gravity flow of the carriers,
a shiftable gate means supported at the lower end of each said magazine chute for shifting movement between a closed position supporting the stack of carriers and preventing their vertical flow in said chute and an open position releasing said stack for vertical flow through the chute and out of the lower end opening comprising
a first pair of rocker arms,
a rock shaft pivotally connecting said first rocker arms on one side of the chute,
a second pair of rocker arms,
pivot means connecting said second rocker arms on an opposite side of the chute from said first rocker arms,
one end of each said first and second rocker arms extending below said lower end opening of the chute,
support bar means connected between the lower ends of each pair of rocker arms,
linkage means interconnected to said first rocker arms above the rock shaft and to said second rocker arms below the pivot means therefor for counter rocking movement respectively of said first and second rocker arms in unison, the support bars being normally positioned across said lower end opening of the chute for supporting a stack of carriers thereby,
a crank arm connected at one end to said rock shaft and connected at the other end to a cam follower,
a stationary cam supported on said frame for engaging each said cam follower of the magazines upon indexing movement of the magazine into the feeding station, said cam driving the rock shaft for moving the support bars of the gate means away from the lower opening of the chute permitting flow of the stack of carriers therethrough,
a hopper and feed assembly,
means connected to said frame for supporting said hopper assembly in stationary position at said feeding station in underlying registered relationship to a magazine indexed to said feeding station, said hopper assembly comprising
a vertical perimeter wall defining a rectilinear chute for receiving carriers from the magazine,
plural rotatable feed worms on said assembly and having helical means engageable with the flange of said carriers for controlling movement of the carriers through said chute, and
means connected to said feed worms for rotating them in unison in one direction, whereby the helical means engages the flange of each of the carriers in the stack and advances each of the carriers singly to separate them from the stack and thereafter release them below the chute at the feeding station.

3,937,361

ADJUSTABLE SELF-LEVELING PLATE DISPENSER

Bruce F. House, Miami, Fla., assignor to Shelley Manufacturing Company, Miami, Fla.

Filed July 17, 1974, Ser. No. 489,384
Int. Cl.^{2} A47F *1/06*
U.S. Cl. 221—242 8 Claims



1. In a self-leveling plate dispenser of the type having a vertically-extending, open-top tank for receiving stacked plates, dishes or platters to be dispensed and including mechanism resiliently constraining the stacked plates, dishes or platters therein in the upward direction from underneath for dispensing from the top of the tank, the improvement comprising, mechanism within the tank adapting it for vertically guiding any one, selectively, of an incremently increasing range of peripheral sizes of such stacked plates, dishes or platters, said vertically guiding mechanism comprising a vertically disposed guide rod member within each of four corner zones of the tank and means for independently stepwisely adjusting each of said guide rod members incremently along a range of distances extending outwardly of the central longitudinal axis of the tank, said guide rod members serving as abutment slide means for guiding peripheral edge portions of any selected one of a wide range of incremently increasing sizes and peripheral shapes of stacked plates, dishes or platters placed in the tank for dispensing.

3,937,362

LIQUID DOSAGE DEVICE HAVING ROTARY FEELER

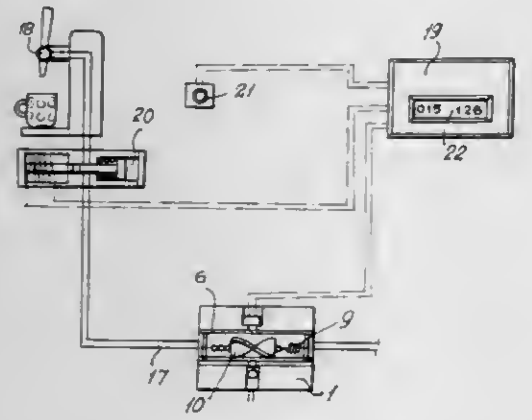
Erich Salmijak, Solna, and Eric Göransson, Stockholm, both of Sweden, assignors to Aktiebolaget Demektor, Hagersten, Sweden

Filed Sept. 13, 1973, Ser. No. 396,740

Claims priority, application Sweden, Sept. 15, 1972, 9294/72

Int. Cl.² B67D *5/30*

U.S. Cl. 222—20 **7 Claims**



1. A device for the dosage of liquids and more particularly for the measurement of beer, comprising a casing having first and second through channels therein, said channels being arranged at right-angles to and crossing each other, said first channel being of uniform cross-section throughout the length thereof, a fixing means adjacent each end of the first channel, an axle extending centrally of the first channel and secured to the fixing means, means providing a flow of liquid through the first channel, a feeler element positioned in the first channel and arranged on the axle for free rotary movement and driven by the liquid flow through the first channel, a light source located in the second channel on one side of the first channel, a light sensitive element of semi-conductor type located in the second channel on the other side of the first channel in line with the light source, the feeler element serving to alternately break a beam of light from the light source, and the axis of the light source and the axis of the feeler element being in correspondence, so that the number of light impluses emitted on rotation of the feeler element constitutes a measurement of the volume of light having passed the feeler element.

3,937,363

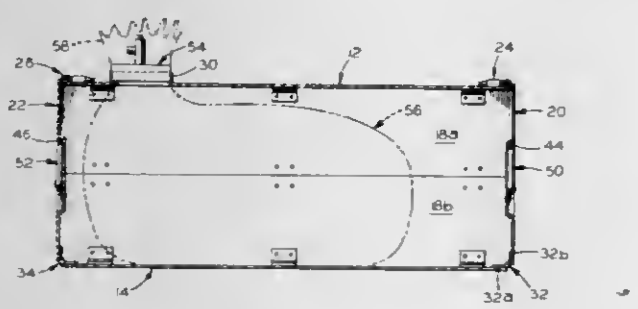
COLLAPSIBLE LIQUID CONTAINER FOR USE WITH PLASTIC LINERS

Alfred F. Anderson, 73 Grier Road, Vernon, Conn. 06066

Continuation-in-part of Ser. No. 412,905, Nov. 5, 1973, abandoned. This application Oct. 16, 1974, Ser. No. 515,257

Int. Cl.² B65D *35/56;* **B67D** *3/00*

U.S. Cl. 222—105 **8 Claims**



1. A collapsible container particularly adapted to be employed when in an uncollapsed condition for purposes of supporting therewithin a liner having contents located therein comprising:

a. housing means having an uncollapsed condition and a collapsed condition including a first pair of uncollapsible side walls and a second pair of collapsible side walls;

b. hinge means connecting each of said first pair of side walls and each of said second pair of side walls together for movement relative to each other between a first position corresponding to the uncollapsed condition of said housing means wherein said second pair of side walls are uncollapsed relative to said first pair of side walls and a second position corresponding to the collapsed condition of said housing means wherein said second pair of side walls are collapsed relative to said first pair of side walls;

c. a pair of uncollapsible end walls pivotally mounted at the opposite ends of one of said first pair of side walls for movement between a closed position relative to the other of said first pair of side walls corresponding to the uncollapsed condition of said housing means and an open position relative to the other of said first pair of side walls corresponding to the collapsed condition of said housing means;

d. cooperative securing means mounted on the free end of each of said pair of end walls and on the opposite ends of said other of said first pair of side walls operable for securing said pair of end walls in the closed position thereof;

e. one of said uncollapsible walls of the container having an opening formed therethrough, said opening being surrounded by an upstanding flange portion, said upstanding flange portion being internally threaded;

f. a liner having an opening provided therein through which the contents of said liner are capable of flowing, said liner being positioned within said housing means with said opening in said liner being aligned with said opening in said one of said uncollapsible walls; and

g. means mounted in said opening in said one of said uncollapsible walls operable to selectively control the flow of contents between the interior of said liner and the exterior of said housing means through said opening in said liner and said opening in said one of said uncollapsible walls by controlling the flow of the contents through said means, said means mounted in said opening in said one of said uncollapsible walls comprising a spigot including a tubular member having a through passage formed therein and a spigot portion having a handle formed integrally therewith, said spigot portion being mounted on said tubular member at one end thereof for rotation relative thereto between a dispensing position and a nondispensing position, said tubular member including a multiplicity of threads formed externally at the other end thereof threadedly engageable with said internal threads formed in said upstanding flange portion for mounting said spigot in said opening in said one of said uncollapsible walls, said through passage in said tubular member having an outwardly projecting circumferential rib formed therein inwardly of said other end of said through passage and a bushing formed of resilient material having one end thereof corresponding in diameter to the diameter of said through passage in said tubular member and the other end thereof having a diameter greater than the diameter of said through passage in said tubular member, said one end of said bushing being inserted into said through passage at said other end of said tubular member to capture said liner between said circumferential rib and said one end of said bushing so as to attach said liner to said spigot, said bushing having an opening formed therethrough to permit the contents of said liner to flow therethrough to said through passage in said spigot, said other end of said bushing being operable to close off said opening in said one of said uncollapsible walls when said spigot is removed from said opening in said one of said uncollapsible walls.

3,937,364

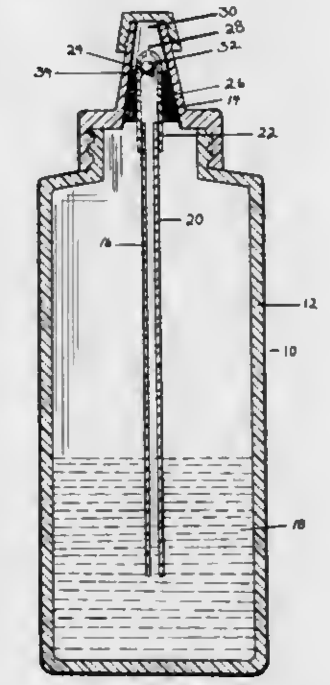
FOAM DISPENSING DEVICE

Hershel Earl Wright, 12 Eight Drive, Decatur, Ill. 62521

Filed Apr. 3, 1975, Ser. No. 564,701

Int. Cl.² B65D *37/00*

U.S. Cl. 222—190 **8 Claims**



1. A foam dispensing device comprising, in combination,

a a flexible container for holding a foamable liquid and air having a discharge port at its upper end,

b a porous member separating the area adjacent said discharge port and the inside portion of said container,

c a conduit means extending longitudinally at least substantially through said porous member said conduit means including an opening communicating with the inside portion of said container, an opening communicating with the porous member and an air re-entry, and

d a directional valve system associated with the air re-entry for substantially precluding outward fluid flow through the air re-entry and directing fluid from inside the container through the conduit means into the porous member through said opening communicating with said porous member when the container is pressurized.

3,937,365

AUGER LIFT MECHANISM FOR AUTOMATIC ICE DISPENSERS

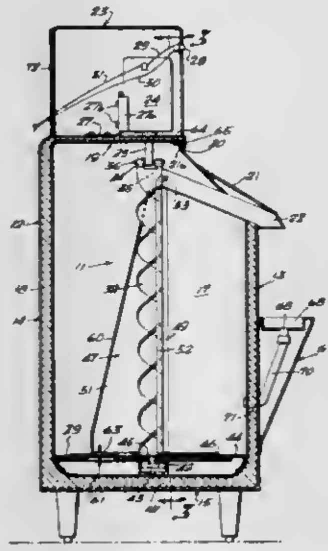
George R. Shelley; Robert J. Shelley, Jr., both of Miami; Arthur B. Dixon, Coral Gables, and Bruce F. House, North Miami Beach, all of Fla., assignors to Shelley Manufacturing Company, Miami, Fla.

Filed July 17, 1974, Ser. No. 489,385

Int. Cl.² G01F *11/00*

U.S. Cl. 222—241 **6 Claims**

1. An ice dispenser comprising, in combination, an ice receiving cabinet, rotative auger means for lifting ice from the interior of said ice receiving cabinet for dispensing at a position near the upper end of said ice receiving cabinet, said auger means comprising an elongated auger and an ice elevating abutment slide member partially surrounding said auger, to define a side opening co-extensive with said auger, an auger disc concentrically affixed to the lower end of said auger for rotation in unison therewith, an electric drive motor, means releasably interconnecting said electric drive motor with said auger for rotating said auger and said auger disc in unison within said ice receiving cabinet, and means on the upper surface of said auger disc for urging ice in said ice receiving cabinet in the direction of said side opening of said ice elevating abutment slide member, the upper end of said ice elevating abutment slide member having a discharge opening for the dispensing of ice, said ice elevating abutment slide member being substantially co-extensive with said auger and being formed with a pair of relatively right-angularly-bent side wall portions of substantially equal width, an angularly-bent side wall portion defining an angle of approximately 45° with one of said side wall portions and being directed opposite and outwardly of the other of said side wall portions, the vertically-extending outer edge of said angularly-bent side wall portion merging into an outwardly-bent side wall portion extending substantially parallel with respect to said other of said side wall portions.



3,937,366

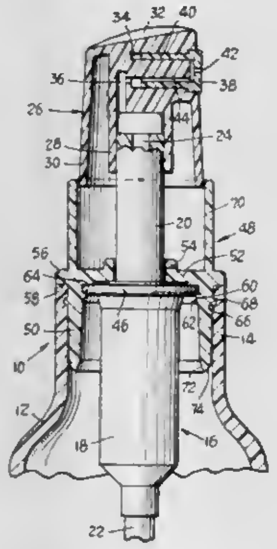
HAND-HELD PUMP TYPE DISPENSER

Wolf Steiman, Bridgeport, Conn., assignor to VCA Corporation, Greenwich, Conn.

Filed Apr. 5, 1974, Ser. No. 458,338

Int. Cl.² B67D *5/42*

U.S. Cl. 222—321 **1 Claim**



1. An atomizer pump dispenser, comprising in combination:

a. a container with a neck portion having a cylindrical inner wall that is provided with an annular groove adjacent the upper end of the neck portion;

b. a resilient adaptor having

  i. a transverse wall portion having a central opening therein,

  ii. a cylindrical skirt portion integral with and depending from the transverse wall portion, the skirt portion being received in the neck portion of the container and being provided with a first annular bead on its exterior wall that is received in the groove, and the inner wall of the skirt portion being provided with a second annular bead adjacent its upper end, the lower end of the skirt having an arcuate bevel on its outer surface and an angular bevel on its inner surface;

c. a dispensing pump assemblage including
i. a stationary tubular member having an outwardly extending flange at its upper end, the flange being sealingly received between the second annular bead and the bottom of the transverse wall,
ii. a reciprocable plunger member projecting through the opening in the transverse wall; and
d. said second annular bead having
i. a conical surface on its underside constituting a camming surface to facilitate by-pass of the bead and the flange when the adapter and dispensing pump assemblage are assembled together, and
ii. a sharp undercut surface adapted to receive the edge of the flange to enable by-pass of the flange and bead in one direction but prevent by-pass in the opposite direction.

3,937,367

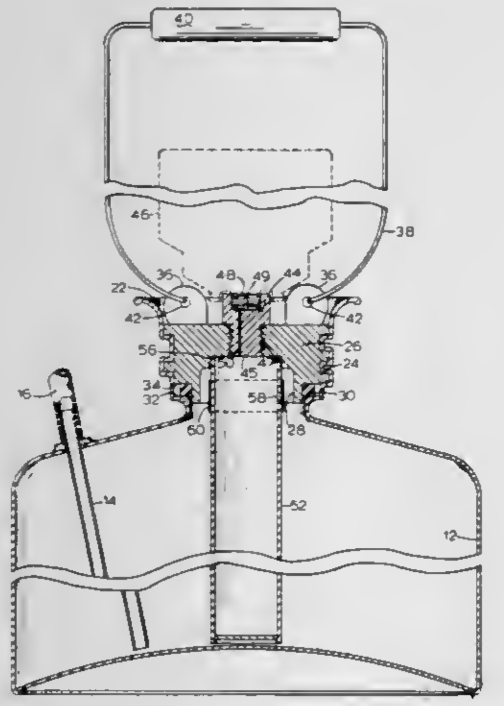
GAS CHARGED SPRAYER

Charles B. Hood, c/o Chardon Laboratories, Inc. P.O. Box 1004, Columbus, Ohio 43216

Filed May 27, 1975, Ser. No. 580,765

Int. Cl.^{2} B65D *83/06*

U.S. Cl. 222—399 **4 Claims**



1. In combination with a sprayer tank having a top wall and a valve-controlled outlet conduit communicating with the interior of the tank adjacent the bottom thereof; a gas pressurization adapter for said tank comprising:
a. a connector fitting carried in the top wall of said tank and arranged to sealingly receive and support an inverted, liquid propellant supply cartridge above the top wall of said tank, said fitting having a propellant-conducting passage extending therethrough; and
b. an elongated, propellant-receiving trap having an upper end communicating with the propellant-conducting passage of said fitting and a closed lower end portion extending downwardly into said tank for direct heat exchange contact with a spray liquid contained in said tank, said trap defining an elongated vaporization chamber into which a pressurized liquid propellant may be introduced by way of said fitting, and said trap being provided toward the upper end thereof with an outlet opening through which vaporized propellant may flow into the upper region of said tank.

3,937,368

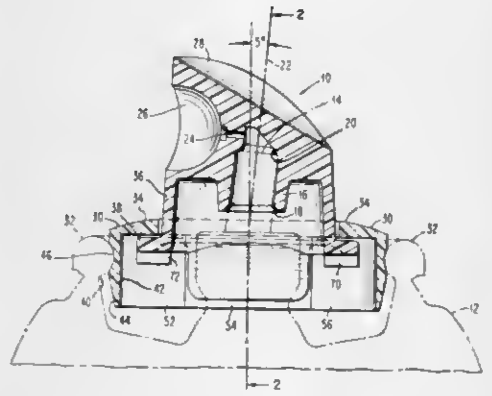
AEROSOL ACTUATOR NOZZLE

Harold G. Hoagland, Croton-on-Hudson, N.Y., assignor to Elmer Hoagland, North Bergen, N.J. and Curtis Ailes, Mt. Kisco, N.Y., part interest to each

Continuation-in-part of Ser. No. 459,697, March 10, 1974, and a continuation-in-part of Ser. No. 496,409, Aug. 12, 1974, which is a continuation of Ser. No. 274,195, July 24, 1972, abandoned. This application Feb. 28, 1975, Ser. No. 554,102

Int. Cl.^{2} F16K *35/04*

U.S. Cl. 222—402.11 **14 Claims**



1. An actuator nozzle assembly for an aerosol container of the type having a tubular valve stem protruding at the center of one axial end thereof, comprising
an actuator which is rotatable with respect to the valve stem when assembled therewith,
said actuator comprising a member defining a cylinder surface operable to telescopically interfit with the valve stem to have a sliding fit therewith,
said actuator including a skirt portion having a radially outwardly extending flange,
the upper surface of said flange generally defining a plane,
a locking ring arranged for assembly to the upper edge portion of the aerosol container,
said locking ring having a radially inwardly extending flange portion which interlocks with the upper surface of said radially outwardly extending flange of said skirt portion of said actuator to maintain said actuator in assembled relationship with the valve stem of the aerosol container,
said locking ring including at least two integral locking abutments extending radially inwardly from the inside walls thereof beneath said skirt portion and arranged to abut lower surfaces of said skirt portion to thereby lock said actuator against downward movement to prevent actuation of the associated aerosol container valve,
said lower surfaces of said skirt portion engaged by said locking abutments having reduced radius portions corresponding to each of said locking abutments,
said actuator being rotatable to position said reduced radius portions opposite to said abutments to thereby disengage said skirt portion from said locking abutments to unlock said actuator,
said skirt portion of said actuator including a plurality of cantilever spring members extending downwardly therefrom and arranged to exert spring forces radially outwardly against the inner surface of said locking ring;
said inner surface of said locking ring including discontinuities operable in cooperation with said cantilever spring members to provide a detent spring force for rotational indexing operation of said actuator between at least one locked rotational position in which said skirt portion is locked with said locking abutments and at least one unlocked rotational position in which said skirt portion is disengaged from said locking abutments,
said lower surfaces of said skirt portion engaged by said locking abutments comprising the lower ends of said cantilever spring members.

3,937,369

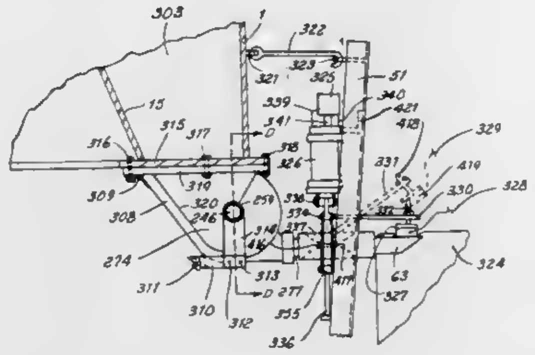
HOUSING FOR AN IMPELLER

Harold Seals, Aiken, S.C., assignor to Larry Harold Kline, Charleston, S.C.

Filed July 11, 1974, Ser. No. 487,818

Int. Cl.^{2} G01F *11/20*

U.S. Cl. 222—410 **15 Claims**



1. A housing, mounted on a bagging machine comprising many members, for an impeller, which is mounted on an impeller shaft and is capable of moving material, comprising:
a. an enclosure within which said impeller, mounted on an impeller shaft, may be placed;
b. a plurality of shaft openings in said enclosure through which said impeller shaft may extend;
c. material entrance means located in the top of said enclosure through which said material may be placed in said enclosure;
d. material exit means located in the front and bottom of said enclosure through which said material may leave said enclosure;
e. access means located in the back of said enclosure allowing access for maintenance purposes to said impeller and said impeller shaft within said enclosure without removal of said material exit means or said many members of said bagging machine.

3,937,370

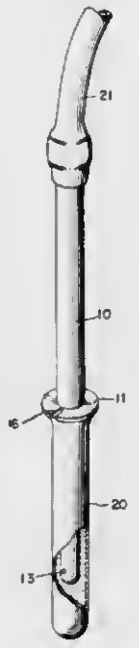
CONTROLLED DEPTH ASPIRATION CANNULA

Michael E. Witty, El Toro, Calif., assignor to Baxter Laboratories, Inc., Deerfield, Ill.

Filed Aug. 14, 1974, Ser. No. 497,421

Int. Cl.^{2} B67D *5/60*

U.S. Cl. 222—464 **3 Claims**



1. An aspiration cannula for aspirating fluids from an open mouthed elongated receptacle comprising:
a. an elongated tubular member terminating at one end portion with a wall;
b. said tubular member being constructed of a first part and a second part;
c. said first part including a radially extending flange for controlled depth aspiration of said receptacle and a centrally positioned socket axially disposed therein;
d. said second part having said end wall portion and being adapted and constructed to have a portion thereof located in said socket remote from said end wall portion;
e. said tubular member having a plurality of orifices circumferentially positioned substantially at the end portion of the tubular member having said end wall;
f. said first part terminating at the end remote from said radially extending flange with attachment means adapted and constructed to provide a sealing fitment for a flexible conduit;
g. means for preventing said radially extending flange from completely covering the mouth of said open mouthed elongated receptacle.

3,937,371

AUTOMATICALLY OPENING AND CLOSING CLOSURE DEVICE

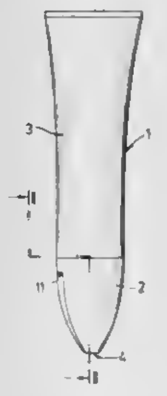
Franco Del Bon, 9, Henzmannstrasse, 4800 Zofingen, Switzerland

Continuation-in-part of Ser. No. 371,386, June 19, 1973, abandoned. This application Jan. 10, 1974, Ser. No. 432,241

Claims priority, application Switzerland, Mar. 2, 1973, 2907/73; France, May 11, 1973, 73.17182

Int. Cl.^{2} B65D *25/40*

U.S. Cl. 222—494 **7 Claims**



1. Automatically opening and closing closure device adapted for use with a container having a liquid, pasty or foamy filling, comprising a head body having a discharge duct extending therethrough, an orifice in the outside of the discharge duct, a recess and an opening at a side of the head body away from said discharge orifice and being destined for being joined to said container, said head body comprising a continuous integral circumferential wall portion about said discharge duct and orifice, said wall portion comprising an elastically flexible zone extending from part of the circumference of said orifice toward said opening, said flexible wall zone forming at least a part of the bottom of said recess, the remainder of said wall portion about said discharge duct and orifice being substantially rigid, where the wall of the discharge duct and the head body are formed as one piece; a spring member provided at the base of said flexible wall zone; and beak means mounted in the recess of said head body and comprising a two-armed lever, one arm of which engages the spring member and the other arm of which is formed as an elastically deflectable spring-loaded arm associated with said head body so that the free end of said arm is located on the side of said wall portion containing said flexible wall zone, said spring-loaded arm being biassed into engagement with said flexible wall zone near said orifice to hold the latter in sealing engagement with said rigid wall portion part and closing said orifice, the bias of said deflectable arm being so dimensioned as to yield to a determined excess pressure inside said discharge duct to cause

said elastic zone of said wall portion to urge the free arm end away from said rigid part thereof and thereby to open said orifice, while said excess pressure prevails in said duct.

3,937,372

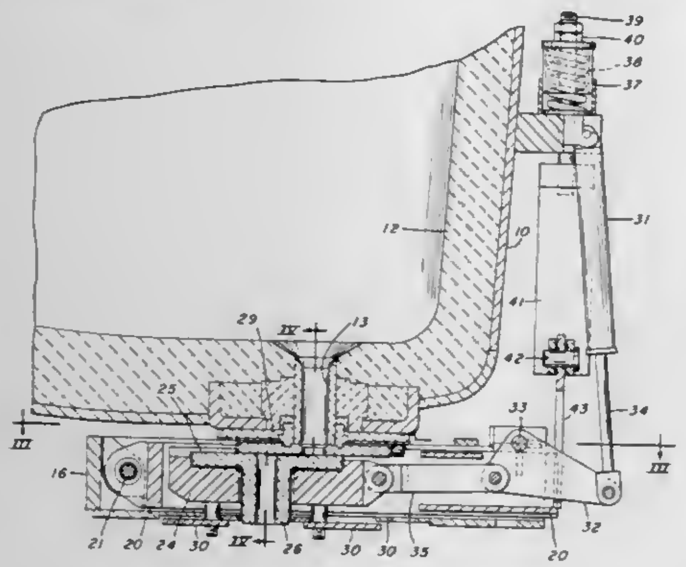
SLIDING GATE MECHANISM WITH SIDE WALL MOUNTED BIASING SPRINGS

Charles H. Bode, Jr., Bethel Park Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 25, 1974, Ser. No. 518,658

Int. Cl.^{2} B22D *37/00, 41/08*

U.S. Cl. 222—504 **8 Claims**



1. The combination of a bottom-pour vessel having an outlet in its bottom wall, a gate, means on the bottom wall slidably supporting said gate, whereby said gate may control flow of material through said outlet, and motive means for moving said gate back and forth to open and close said outlet, with a mechanism urging said gate upwardly with respect to said bottom wall, said mechanism comprising at least one spring, means on the side wall of the vessel supporting said spring on the side wall of the vessel at a location remote from said gate, and force-transmitting means connecting said spring with said gate.

3,937,373

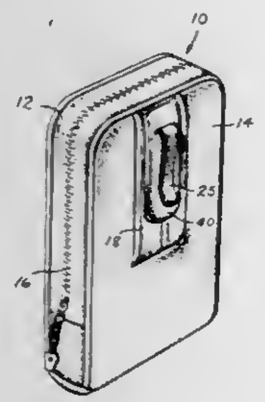
ARTICLE CARRIER WITH IMPROVED COMBINATION BELT LOOP AND CLIP

Kenneth W. Artz, Albuquerque, N. Mex., assignor to Koszegi Leather & Vinyl Products, Inc., South Bend, Ind.

Filed Dec. 11, 1974, Ser. No. 531,486

Int. Cl.^{2} A45C *11/00*

U.S. Cl. 224—26 R **1 Claim**



1. In an article carrier which includes a back having front and rear faces, the improvement comprising a loop member having upper and lower ends, said loop member having inner and outer sides, means attaching said upper and lower loop member ends to said carrier back with said loop member inner side spacedly confronting said back face to define a belt receiving passage between the back and loop member, clip means connected to said loop member at its outer side and including a downturned flexible part for engaging a belt, pocket or similar object to support said article carrier when no belt extends through said loop member defining passage, said clip means includes an inverted U-shaped holder having a pair of depending leg parts connected by a web part, a cover having a horizontal slot therein, means connecting said cover at its margins to the outer side of said loop member, said cover and loop member forming an envelope, said cover slot communicating with the interior of said envelope, one of said clip means leg parts extending through said slot and into the interior of said envelope, the other clip means leg part extending downwardly over said cover for engaging said belt, pocket or similar object, means associated with said one leg part for securing said one leg part within said envelope interior, said leg part securement means including jacket means covering at least a portion of said one leg part, said jacket means including oppositely extending tabs having an over-all transverse dimension exceeding the length of said cover slot, said tabs being located within said envelope interior.

3,937,374

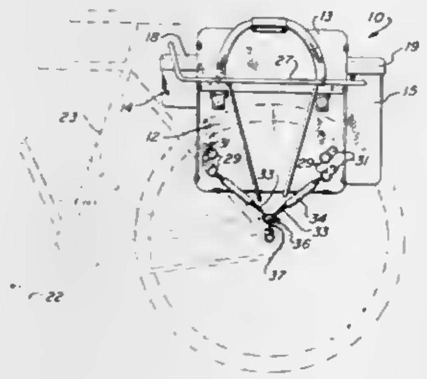
PANNIER BAG CONSTRUCTION AND METHOD OF ATTACHMENT

Edward K. Hine, Jr., Boulder, Colo., assignor to Hine-Snowbridge, Inc., Boulder, Colo.

Filed Oct. 21, 1974, Ser. No. 516,547

Int. Cl.^{2} B62J *9/00*

U.S. Cl. 224—32 A **13 Claims**



1. A pannier bag, comprising: a bag structure having a rigid back wall; at least one downwardly-oriented upper hook member secured to the rear portion of the bag at the rigid back wall; a plurality of attachment points secured to the rear portion of the bag at the rigid back wall; at least one resilient member having at each end releasable securing means engaging one attachment point, the two attachment points engaged by the securing means being adjacent opposed sidewalls; and lower attachment means adapted to be secured to a lower portion of a bicycle carrier assembly and carried by the resilient member intermediate the attachment points of the resilient member to the rigid back wall, whereby the upper hook member may be secured to the upper portion of a bicycle carrier assembly and, upon downward distension of the resilient member, the attachment means secured to the lower portion of the bicycle carrier assembly to provide a stabilized attachment of the pannier bag to the bicycle carrier assembly.

3,937,375

BUMPER SUPPORT FOR A BOAT LOADER

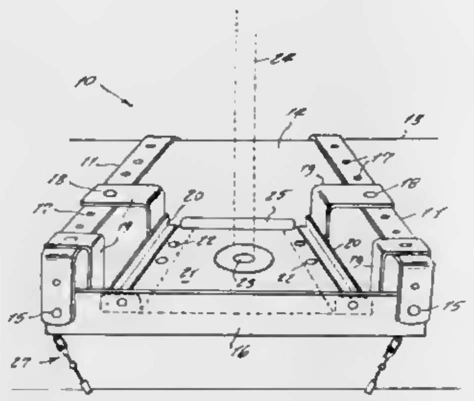
Everette E. Daniels, 221 Locust St., Des Moines, Iowa 50309

Filed Oct. 29, 1974, Ser. No. 518,454

Int. Cl.^{2} B60R *9/00*

U.S. Cl. 224—42.07 **3 Claims**

1. In a bumper support for a boat loader, the combination of a pair of spaced apart bumper traps, one end of each of said bumper straps having an acute hook formed therein for hooking over an upper edge of a car rear bumper, a rear opposite end of said strap being downwardly bent and riveted to a transversely extending rear end bar, means by means of a tension unit to rigidly secure said bumper support to a lower edge of said car bumper, and means for said bumper support to retain a boat loader loading rod, said means for securement of said unit to a lower edge of said car bumper comprising a paid of tension units each one of which at one end is secured to an angle bracket mounted at an end of said rear bar, said bracket being connected to an eye bolt attached to a turnbuckle which at its opposite end be means of an eye bolt is connected to a short length of chain attached at its opposite end to a bracket that hooks under said automobile bumper rear lower edge.



3,937,376

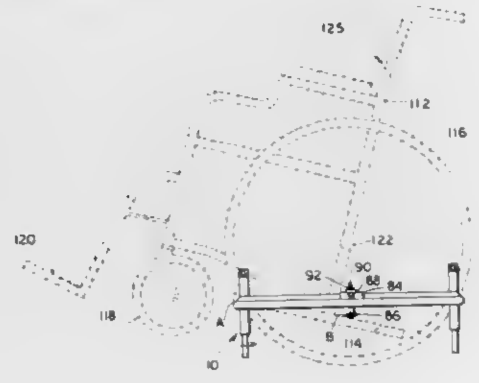
VEHICLE SUPPORT FOR WHEELED VEHICLES

Marlin B. Ewing, 259 S. Bayshore Drive, Valparaiso, Fla. 32580

Filed Sept. 16, 1974, Ser. No. 506,022

Int. Cl.^{2} B60M *9/00*

U.S. Cl. 224—42.08 **11 Claims**



1. In a wheelchair support for attachment to an automobile bumper or other surface for supporting a folded wheelchair of the type including large rear wheels and a bottom frame having a backward projecting portion:

a. a wheelchair carrying frame comprising opposed side frame members defining a space receiving therein the large, vertically disposed wheels of said folded wheelchair with the periphery of the wheels partly below said carrying frame resting in the space defined by and on the opposed side frame members and with the projecting portion of the wheelchair bottom frame within the confines of said carrying frame,

b. means on said carrying frame for attaching and supporting said carrying frame on the bumper or the surface in horizontally extended carrying position,

c. a retainer support member on said carrying frame and a retainer member on said retainer support member, said retainer member being engaged from beneath by the wheelchair bottom frame when said wheels are in said space and the projecting portion of the wheelchair frame is projected and rotated within said space thereby preventing the movement of the lower frame in vertical or rotational direction about the engagement of the rear wheels with the side members which define the space, whereby a person without the use of his legs may insert the wheelchair in place on the carrying frame and lock the wheelchair wheel to prevent relative rotation between wheelchair frame and wheel.

3,937,377

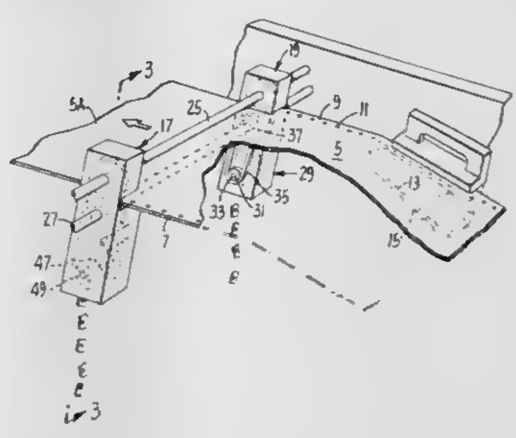
CHOPPER FOR MARGINS OF MULTI-FOLDED PAPER

Marlin A. Schueler, San Leandro, Calif., assignor to American/Durein Company, Oakland, Calif.

Filed Oct. 11, 1974, Ser. No. 514,007

Int. Cl.^{2} B26D *1/56;* **B26F** *3/02*

U.S. Cl. 225—94 **5 Claims**



1. A chopper for chopping tape and the like into small pieces, comprising: a stationary chopping blade having a series of angular teeth in line thereon defining grooves therebetween; a shaft supported for rotation parallel to the line of teeth; a series of pivoted support members supporting said shaft; a plurality of knives mounted on said shaft, each of said knives having at least one tooth element fitting into a groove of the chopper blade; means supporting said knives on said shaft in staggered relationship whereby one knife enters a groove at a time; and means connected for rotating said shaft.

3,937,378

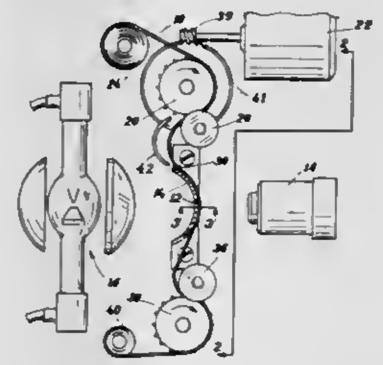
FILM FEED DEVICE

Jaroslav J. Kopernicky, Mississauga, Canada, assignor to Cinex Communications Inc., Toronto, Canada

Continuation-in-part of Ser. No. 358,882, May 10, 1973, abandoned. This application June 27, 1974, Ser. No. 483,771

Int. Cl.^{2} G03B *1/28*

U.S. Cl. 226—55 **4 Claims**



1. In a movie film apparatus, a device for intermittently feeding flexible perforated film past an optical system a unit length at a time comprising,

a film support for guiding a strip of perforated film for exposure to an optical system,

a rigid detent on said film support,

film feed means in advance of said dètent for continuously feeding film towards said detent, said front film sliding face of said detent being engageable by perforations of film as the film moves in the direction of film feed to temporarily stop forward motion of the film in advance of the detent and form it into a loop behind the detent which increases in size with continuing film feed and decreases the angle of attack of said film at said front film sliding face of said detent,

said device having a free space in advance of and extending to said detent for film to form in a loop to a predetermined size after initial engagement with said front film sliding face of said detent,

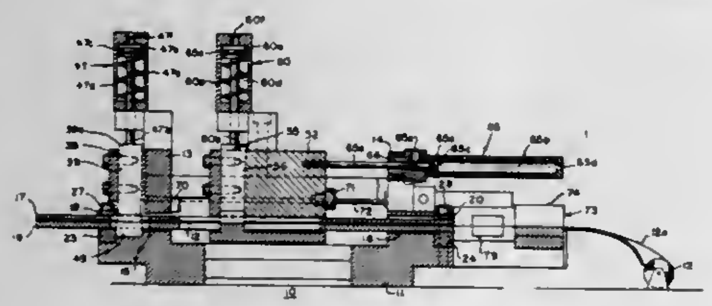
stop means at the edge of said free space with a reaction surface engageable by a loop as it achieves its maximum predetermined size in said free space to exert a reaction force on film with continuing film feed that has a substantial component in the direction of slope of said film sliding face of said detent to cause said film in said loop to reassert itself and make an intermittent advance past said detent prior to engagement of a following perforation of said film by said front film sliding face of said detent as aforesaid.

3,937,379

SHEET MATERIAL FEED APPARATUS

Bernard V. Narwid, 15 York Road, North Arlington, N.J. 07032, and Martin W. Fellers, 122 Hobart Ave., Short Hills, N.J. 07078

Filed Sept. 6, 1974, Ser. No. 503,753
Int. Cl.² B65H *17/36*
U.S. Cl. 226—150 11 Claims



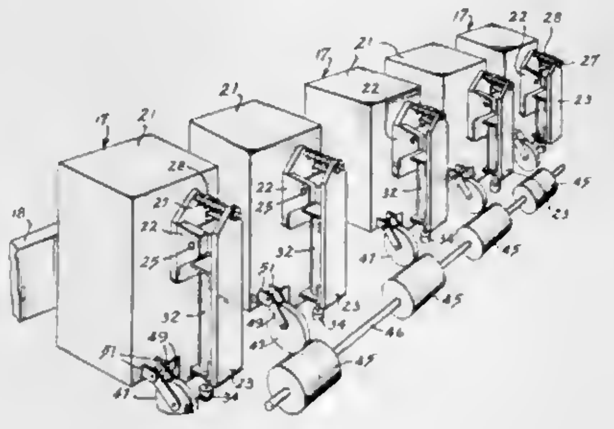
1. Apparatus for step-feeding sheet material, said apparatus including: guideway and first anvil means comprising a pair of opposed guide plate means for constraining sheet material against buckling of the latter when sheet material is disposed in a guide path between said pair of opposed guide plate means and is fed along said guide path, said pair of guide plate means each having a set of slots therein and said slots in said sets longitudinally leading along said guide in and being spaced apart from one another in said set laterally of said guide path, and first anvil means disposed along said guide path forwardly of said sets of slots and accessibly opposite apertured structure of one of said pair of opposed guide wall means; power-operated first clamp means comprising driven first presser means projecting through said apertured structure of said one of said pair of opposed guide plate means for clamping sheet material in said guide path against said first anvil means and for releasing sheet material from said presser anvil means; guide means; guide follower, second anvil and power-operated second clamp means comprising, second anvil means, power-operated second clamp means, and follower means on said guide means for carrying said second anvil means and said power-operated second clamp means forwardly toward said first anvil means and said first presser means, and rearwardly, said second anvil means having a set of projections extending through said set of slots in a first of said pair of opposed plate means slightly into said guide path, and said power-operated second clamp means including driven second presser means, said second presser means having a set of projections aligned with said set of slots in the other of said pair of opposed guide plate means for clamping sheet material in said guide path against said set of projections of said second anvil means and for releasing sheet material from said second anvil means, and said follower means carrying said second anvil means and said power-operated second clamp means for sheet material clamped against said second anvil means by said second presser means to be forwardly fed having said set of projections of said second anvil means and said set of projections of said second presser means follow said sets of slots in said pair of opposed guide plate means; power-operated drive means connected with said guide follower, second anvil and power-operated second clamp means for moving said follower means to and from forward and rearward positions along said guide means and to carry said second anvil means and said power-operated second clamp means; and means for controlling said power-operated drive means and said power-operated first and second clamp means to step-feed sheet material forwardly along said guide path.

3,937,380

APPARATUS FOR ATTACHING INSULATING MATERIAL TO SHEET METAL

J. Aodrew Craig, East Greenwich, R.I., assignor to Gripnail Corporation, East Providence, R.I.

Filed Jan. 15, 1975, Ser. No. 541,361
Int. Cl.² B27F *7/02*
U.S. Cl. 227—100 7 Claims



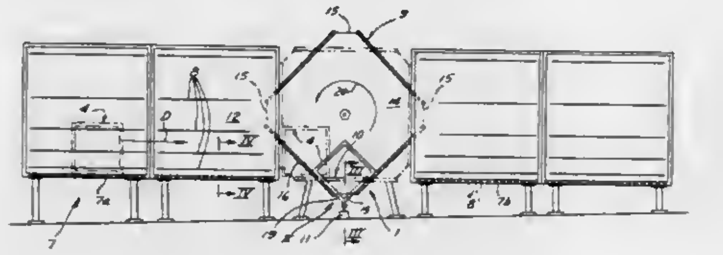
1. Apparatus for mounting insulating material onto sheet metal by means of clinch-type fasteners comprising a frame, at least one fastener applying machine mounted on said frame, said fastener applying machine including a housing, a support member swingably mounted on said housing, fluid cylinder means mounted on said support member and having a downwardly extending piston rod, a magnetic driving head fixed to the lower end of said piston rod, fastener chute means having a portion located adjacent to said driving head, means for transferring a fastener from said chute means to said driving head, a rotatable anvil mounted below said driving head, a hold-down roller located adjacent to said driving head and above said anvil, and means for driving said rotatable anvil, whereby a strip of sheet metal and an overlying strip of insulating material located between said anvil and said roller are driven in a direction normal to said fluid cylinder so that when said cylinder is energized a fastener carried by said magnetic head is caused to penetrate the insulating material and grippingly engage the sheet metal and penetration of said insulating material by said fastener causes said fluid cylinder to swing so that no relative motion between the fastener and the material occurs during the driving process.

3,937,381

APPARATUS FOR TREATING THE CORNERS OF PLANAR POLYGONAL WORKPIECES

Joseph Lang, Wurttemberg, Opf.; Helmut Meckenstock, Waltrop, and Hans-Joachim Nopper, Oberkoplitz, all of Germany, assignors to Flachglas Aktiengesellschaft Delog-Detag, Gelsenkirchen, Germany

Filed Oct. 1, 1973, Ser. No. 402,577
Claims priority, application Germany, Sept. 29, 1972, 2247806; May 19, 1973, 2325570
Int. Cl.² B23K *37/04*
U.S. Cl. 228—6 2 Claims



1. An apparatus for treating the corners of a planar workpiece of polygonal outline, said apparatus comprising:

a generally horizontal conveyor including support means for holding said workpiece in an upright condition standing on one edge during displacement by said conveyor;

treatment means at a location below said conveyor for treating a corner of said workpiece;

manipulator means at said conveyor adjacent said location and engageable with said workpiece for positioning a corner of said workpiece at said location for cooperation with said treatment means, said conveyor having an upstream transport stretch terminating adjacent said location and a downstream transport stretch in line with said upstream stretch and starting adjacent said location, said manipulator means including a support above said treatment means having four sides, a pivot defining a horizontal axis of rotation for said support and means for rotating said support about said axis, each of said sides being provided with a plurality of rollers; and

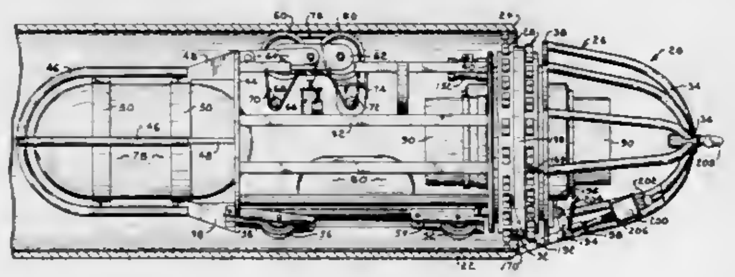
means for displacing said rollers on three of said sides parallel to said axis to clear and engage said workpiece.

3,937,382

INTERNAL PIPE CLAMP WITH WELD BACKUP

Joseph A. Cunningham, Tulsa, and Jimmy L. White, Broken Arrow, both of Okla., assignors to H. C. Price Co., Bartlesville, Okla.

Filed Jan. 2, 1975, Ser. No. 538,089
Int. Cl.² B23K *37/04*
U.S. Cl. 228—49 27 Claims



1. An internal pipe clamp comprising: a frame;

means mounted on the frame for supporting the latter for movement through the pipe;

a first housing section mounted on said frame and supporting a plurality of first clamping members adapted to be moved into clamping engagement with a first pipe joint;

a second housing section mounted on said frame and supporting a plurality of second clamping members in closely spaced relationship to said first clamping members and adapted to be moved into clamping engagement with a second pipe joint;

said first and second housing sections being axially aligned and movable relative to each other along said axis;

means for moving said first housing section relative to said second housing section;

means for moving said first and second clamping members into engagement with said first and second pipe joints;

weld backup means coupled with one of said housing sections intermediate said first and second clamping members and comprising first and second backup segments, each of said segments extending through an arc and terminating in a circumferentially extending wedge-shaped end complemental to the wedge-shaped end of an adjacent segment and adapted to be slidingly moved in a partially circumferential direction relative to an adjacent segment while being simultaneously moved in a radial direction; and

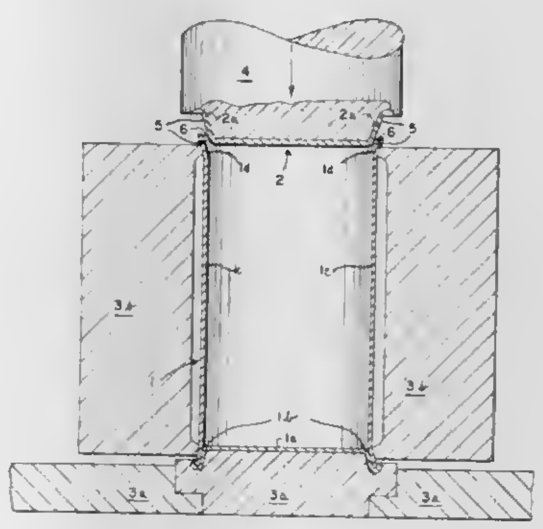
means for applying a radial force toward and away from said segments to move the segments from an extended position of a greater diameter wherein a weld backup is presented to a retracted position of a lesser diameter to accommodate movement of the framework along the pipe.

3,937,383

HIGH SPEED ROOM TEMPERATURE SEAM BONDING OF METAL SHEETS

Walter Sawert, LaGrange, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Mar. 24, 1975, Ser. No. 561,567
Int. Cl.² B23K *21/00*
U.S. Cl. 228—115 16 Claims



1. In a method of cold pressure welding a pair of cold pressure weldable metal members arranged with edges of superposed end portions of said members substantially in register with one another, comprising the steps of placing a metallic interlay between the faying surfaces to be bonded to form a weld assembly and compressing said weld assembly, thereby creating an intense interfacial flow conducive to bonding of said member in a solid phase welding bond, and wherein said interlay is of cross-section such as to deform at substantially different rates, as measured along mutually perpendicular axes, consequent to said compression of said assembly.

3,937,384

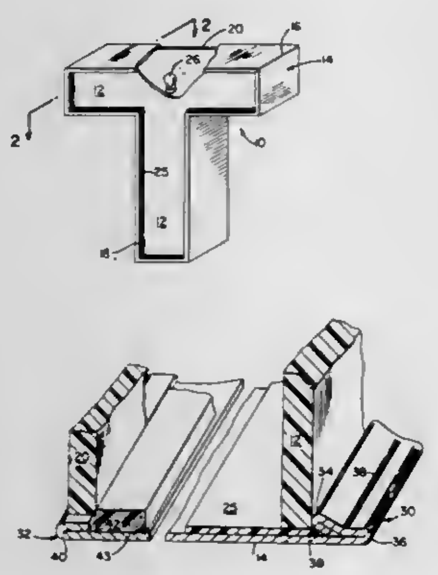
PROCESS FOR CONSTRUCTING THREE-DIMENSIONAL SIGN CHARACTER

Robert W. Minogue, Cupertino, and Lloyd E. Troyer, San Carlos, both of Calif., assignors to Let-R-Edge of Canada, Ltd., Laberta, Canada

Continuation-in-part of Ser. No. 356,983, May 3, 1973, abandoned. This application July 13, 1973, Ser. No. 379,012

Int. Cl.² G09F *7/12*

U.S. Cl. 228—120 **6 Claims**



1. A process for producing a surrounding sheet strip for the construction of a three-dimensional sign character having a plastic face, said process comprising the steps of: providing a continuous strip of metal sheet having first and second parallel lateral edges; continuously feeding said strip of metal sheet at a preselected rate past a working station; abrading a band on said metal adjacent one of said parallel lateral edges of said sheet; applying to said abraded edge a layer of plastic-to-metal adhesive on said abraded band at said working station, applying a plastic strip to cause said adhesive to occupy substantially the entire interstitial area between said abraded band and said plastic strip to said working station; curing said adhesive to bond said plastic strip to said abraded metal; and, convoluting the edge adjacent said abraded band at said working station with a first bent longitudinal edge of said sheet metal folded back in to contact with a first longitudinal area of said sheet metal adjacent said first bent longitudinal edge to form at least one first convolute and registering said plastic strip to said convoluted edge at said working station prior to said curing step to abut and not clamp said plastic strip at said convolute.

3,937,385

METHOD OF MANUFACTURING COMPOUND BILLETS FOR HYDROSTATIC EXTRUSION

Tsunesaburo Asada, Minoh; Takefumi Horiuchi; Kiyoshi Matsumoto, both of, Kobe; Yoshiyuki Monju, Nishinomiya; Yoshihiro Yamaguchi, Ashiya; Masataka Noguti, Nishinomiya; Masao Nishihara, Kyoto; Tatsu Fujita, Kobe, and Tomiharu Matsushita, Nishinomiya, all of Japan, assignors to Kobe Steel Ltd., Kobe, Japan

Continuation-in-part of Ser. No. 316,923, Dec. 20, 1972, abandoned. This application Feb. 28, 1975, Ser. No. 553,991

Int. Cl.² B23K *37/00*

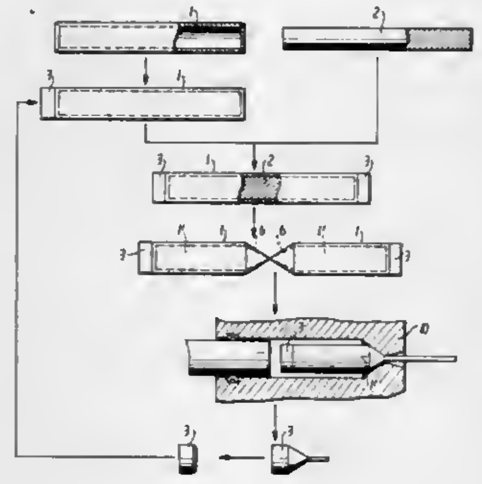
U.S. Cl. 228—131 **11 Claims**

1. A method of producing compound billets wherein a substantially cylindrical internal member of one metallic material is sealed within a substantially tubular external member of a different metallic material, comprising the steps of:

cleaning those surfaces of said internal member and said external member which are to be brought into contact with each other;

positioning said internal member within said external member, whereby the external and internal peripheral surfaces, respectively, thereof are brought into contact with each other so as to provide a compound billet blank;

sealing the interior of the external member while the interior is under vacuum conditions; and



performing a plastic forming process upon the external portion of said compound billet blank, while the interior space of said external member is maintained in said vacuum condition, so as to obtain a compound billet product which is provided with a conical shaped nose portion wherein said internal and external members are bonded together at the contacting surfaces due to said plastic forming, the cross-sectional configuration of said formed and bonded nose portion therefore presenting approximately the same surface areas for both of said external and internal members.

3,937,386

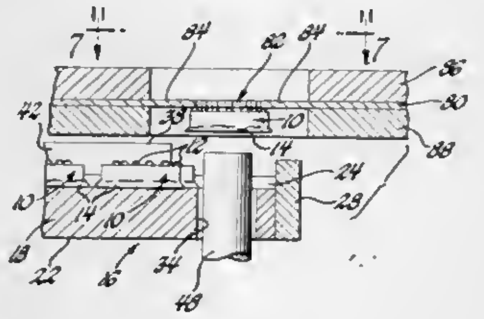
FLIP CHIP CARTRIDGE LOADER

Ronald J. Hartleroad, Twelve Mile, and James P. Grabowski, Carmel, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1973, Ser. No. 414,222

Int. Cl.² H05K *3/30*

U.S. Cl. 228—180 **3 Claims**



1. In a system for bonding integrally leaded semiconductor device chips to conductive lead frame structures including a transfer apparatus having a probe extending vertically therefrom, an apparatus for successively positioning onto said probe semiconductor device chips having opposite parallel smooth edges and protruding burrs on said opposite edges contiguous one face, said apparatus comprising a base member having an elongated groove in one surface thereof, said groove having a width slightly greater than the width of said semiconductor device chips inclusive of burrs, said groove having a constant depth along its length, said depth being less than the thickness of said chips and greater than the height of said burrs on said chip edges, a stop member extending transversely across one end of said groove, an opening located about a center line spaced approximately one-half the width of said chip inclusive of said burrs from said stop member, said opening extending from the groove bottom to an opposite surface of said base member, two spaced juxtapositioned guide rails on said one surface of said base member, said guide rails partially overlying said groove and extending substantially the length thereof, said guide rails spaced apart at a distance slightly greater than the width of burred semiconductor device chip noninclusive of said burrs and less than the width of said chip inclusive of said burrs for contact with only relatively smooth opposite scribed edges of said chip, wherein said chip is free to traverse said groove but closely maintains a predetermined orientation therein, adjacent ends of said guide rails being spaced from said stop member slightly greater than the width of the chip inclusive of said burrs, so that the probe of the transfer apparatus may extend through said opening and engage the back side of the chip thereover to align it with an overlying conductive lead frame structure.

3,937,387

METHOD OF FLUXLESS BRAZING AND DIFFUSION BONDING OF ALUMINUM CONTAINING COMPONENTS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Aleck B. Featherston, Fort Worth, and Kent P. O'Kelly, Arlington, both of Tex.

Filed Mar. 12, 1974, Ser. No. 450,500

Int. Cl.² B23K *1/20*

U.S. Cl. 228—193 **18 Claims**

1. A method for fluxless brazing of aluminum-containing parts wherein said method utilizes an aluminum alloy brazing material, comprising the steps of:

a. removing the aluminum oxide coating from the surfaces of said brazing alloy and said parts to be brazed;
b. coating said surfaces with a sealer containing a polymeric material, said polymeric material having the property of preventing significant permeation of oxygen to said surfaces and being thermally removable from said surfaces leaving essentially no residue;
c. disposing said brazing alloy between the surfaces of said parts to be brazed;
d. bringing said surfaces of said parts to be brazed into intimate contact with said brazing alloy;
e. subjecting said surfaces, in a substantially oxygen free environment, to a temperature sufficient to thermally remove all of said polymeric material from said surfaces;
f. heating said surfaces and said brazing alloy, in said substantially oxygen free environment, to a temperature sufficient to cause fusion of said brazing alloy and adherence of said surfaces; and
g. cooling said thus brazed parts.

3,937,388

METHOD FOR SEALING PACKAGES

Daniel D. Zimmerman, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Division of Ser. No. 180,774, Sept. 15, 1971, Pat. No. 3,756,490. This application May 24, 1973, Ser. No. 363,658

Int. Cl.² B23K *31/00*

U.S. Cl. 228—222 **3 Claims**

1. A method of sealing a pair of elements to each other to form a package, comprising the steps of:

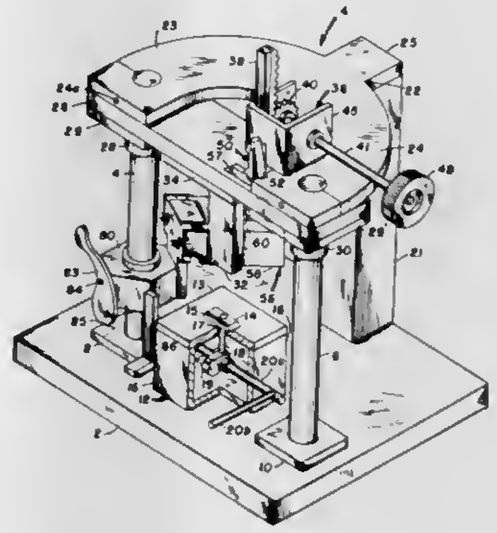
applying a meltable sealant to a portion of one of said elements;

positioning one of said elements on a first heat sink;

positioning the remaining element on the element positioned on the first heat sink;

applying a heat source to the elements for causing said sealant to melt and flow between portions of the elements for connecting said elements in sealed relation;

applying a second heat sink to the element not in contact with said first heat sink, thereby to remove heat from said elements during application to said elements of heat from the heat source and to cause a compressive force to be exerted on the elements to hold said elements together;



displacing the heat source from proximity to the elements, thereby to discontinue the application of heat to the elements; and,

continuously removing heat from the elements by means of the first and second heat sinks both during and after discontinuation of the application of heat to the elements.

3,937,389

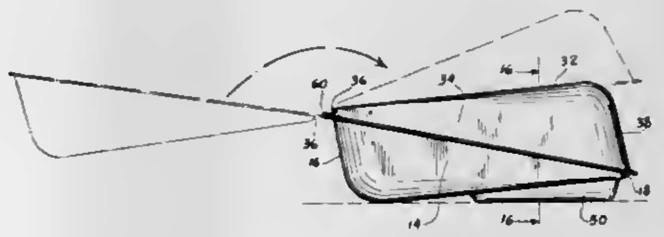
DISPOSABLE FOOD CONTAINER

Harold Wind, c/o F-J Packaging Development Corporation, 80-103 Surrey Place, Jamaica, N.Y. 11432

Continuation of Ser. No. 212,528, Dec. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 880,871, Nov. 28, 1969, abandoned. This application Oct. 9, 1973, Ser. No. 404,513

Int. Cl.² B65D *1/34*, *1/44*, *5/36*, *43/16*

U.S. Cl. 229—2.5 R **12 Claims**

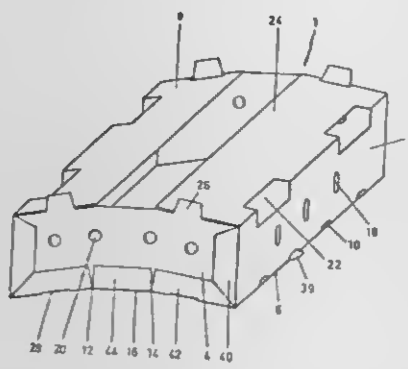


1. A food container comprising:

a. a tray having a tray bottom, a shallow end and a deep end opposite said shallow end; and a pair of opposed sides connecting between said ends; said ends and said sides being connected to and upstanding from said tray bottom; and
b. one or more troughs in said tray bottom, said troughs being below said tray bottom and having a bottom surface defining a plane angularly disposed with respect to the plane of said tray bottom the angle of said disposition opening in a direction toward said shallow end of said tray, said troughs being deeper at said shallow end than at said deep end of said tray, said troughs raising said shallow end with respect to said deep end when said tray is placed on a planar surface.

3,937,390
FISH BOX FOR STORING AND TRANSPORTING FISH

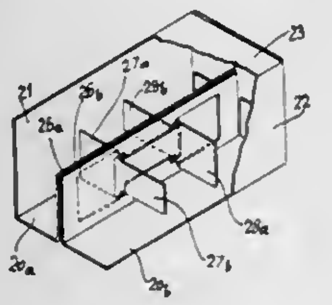
Klaus Winkler, Hattersheim, Germany, assignor to Ratio-Pack, Vienna, Austria
Filed Dec. 21, 1973, Ser. No. 427,272
Claims priority, application Germany, Dec. 21, 1972, 2262539
Int. Cl.² B65D *13/00*
U.S. Cl. 229—23 R **10 Claims**



1. Fish box for the storage and transportation of fish and similar products, comprising impregnated corrugated cardboard forming a top, a bottom and side walls, said side walls having lateral water drain holes which extend to said bottom, said bottom of the fish box being higher in the centre than at two opposite sides, said top being higher in the middle than at said two opposite sides to complement said bottom.

3,937,391
CARDBOARD CONTAINER FOR BOTTLES AND THE LIKE

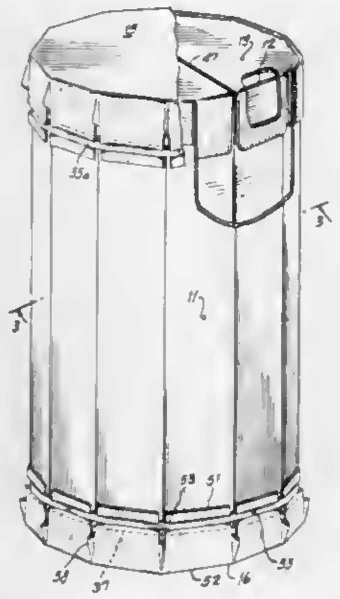
Heinz Focke, Moorstrasse, 309 Verden, Germany
Continuation-in-part of Ser. No. 83,581, Oct. 23, 1970, abandoned. This application Aug. 21, 1973, Ser. No. 390,263
Claims priority, application Germany, Oct. 23, 1969, 1953350
Int. Cl.² B65D *5/48*
U.S. Cl. 229—28 R **14 Claims**



1. A container formed of foldable material and adapted to hold a plurality of segregated articles, the container having a wall structure formed by a unitary blank, said wall structure including integral top, side, bottom and end walls, said bottom wall being formed from two portions of said blank on opposite sides thereof, a flap coextensive in length with each bottom wall portion along an edge thereof on each of two opposite sides of the blank, the blank being folded into a hollow rectilinear form with said flaps extending upwardly into said container perpendicular to the bottom wall midway between the side walls thereof to define a longitudinal partition, at least one of said flaps having at least one transverse partition means integral therewith folded out of the plane of said flap at right angles thereto, said transverse partition means extending on opposite sides of said longitudinal partition, the other flap including an opening formed therein through which a selected portion of said transverse partition means extends to provide a single thickness transverse partition on opposite sides of said longitudinal partition and at least one transverse partition means integral therewith folded out of the plane of said other flap at right angles thereto, said transverse partition means of said other flap extending on opposite sides of said longitudinal partition, the transverse partition means of said other flap being longitudinally offset relative to the transverse partition means of said one flap and extending through an opening of said one flap.

3,937,392
KNOCK-DOWN, COLLAPSIBLE, DRUM CONTAINER

Robert Allen Swisher, Long Valley, N.J., assignor to St. Regis Paper Company, New York, N.Y.
Filed Nov. 1, 1974, Ser. No. 520,125
Int. Cl.² B65D *5/36, 5/64*
U.S. Cl. 229—41 C **7 Claims**

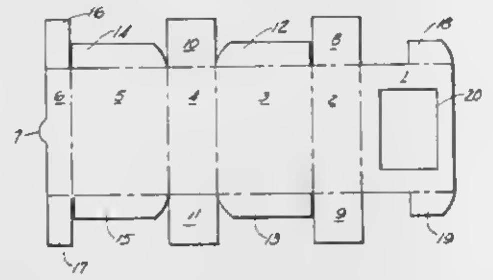


1. A knock-down, collapsible, drum container assembly, comprising in combination: a pair of polygonal, tubular members one adapted to fit within the other and comprising outer and inner tubular members of said container, each of said members being collapsible to a substantially flat state along oppositely disposed axially extending score lines thereof, end closures for said members comprising pairs of inner and outer closure caps, said inner closure caps being configured to fit within said outer tubular member at the opposite ends thereof and having integral therewith radially extending flaps bendable along score lines to bear against the inner wall of said outer tubular member, said inner tubular member being configured to fit within and bear against said flaps as so disposed, said outer closure caps being configured to span the ends of said outer tubular member and having integral therewith radially extending flaps bendable along score lines into engagement with the outer wall of said outer tubular member, whereby said flaps may be clamped against said outer wall by clamping rings bearing thereagainst.

3,937,393
TUBULAR HINGED LID CARTON

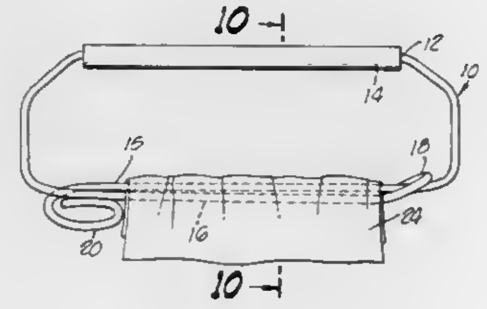
Robert W. Nerenberg, Middletown, Ohio, assignor to The Interstate Folding Box Company, Middletown, Ohio
Filed Sept. 30, 1974, Ser. No. 510,807
Int. Cl.² B65D *5/54*
U.S. Cl. 229—51 TC **5 Claims**

1. A tubular hinged lid carton having a body and an integral lid formed from a one-piece carton blank having at least a front wall panel, a bottom wall panel, a rear wall panel, a lid-forming top panel, and a front lid panel, hingedly connected together in the order named, full-depth end closure flaps hingedly connected to the opposite end edges of said front and rear wall panels, half-depth end closure flaps hingedly connected to the opposite end edges of said bottom wall panel, half-depth lid end panels hingedly connected to the opposite end edges of said lid-forming top panel, and half-depth attachment flaps hingedly connected to the opposite end edges of said front lid panel, the said wall panels being erected relative to each other with said full-depth end closure flaps infolded and said half-depth end closure flaps infolded and adhesively secured to the lower portions only of said full-depth closure flaps to define the end walls of the carton body, the lid-forming top panel being infolded with said front lid panel detachably secured to the said front wall panel, the half-depth lid end panels and the half-depth attachment flaps being infolded and secured together over the upper portions only of said full-depth end closure flaps to define a closed and sealed hinged lid carton.



3,937,394
HANDLE FOR PAPER BAG

Carl O. Netschert, 633 Tularosa Drive, Los Angeles, Calif. 90026
Filed Jan. 27, 1975, Ser. No. 544,408
Int. Cl.² B65D *33/06*
U.S. Cl. 229—54 R **9 Claims**



1. A handle device for releasable engagement with the upper end of a flexible object, for example a paper bag, comprising:

a resilient wire-like member bent to the form of a closed loop of generally rectangular configuration having substantially parallel upper and lower sides,

the upper side of the closed loop serving as a carrying handle,

the lower side of the closed loop being formed by substantially parallel and coextensive, oppositely directed overlapped ends of the wire-like member to cooperate with each other to clamp the upper end of the object,

one of the two oppositely directed ends being a flexible clamp arm, the other of the two oppositely directed ends being a cross rod that terminally loosely engages the base of the clamp arm to complete the closed loop while permitting relative adjustment between the clamp arm and cross rod to various thicknesses of the object,

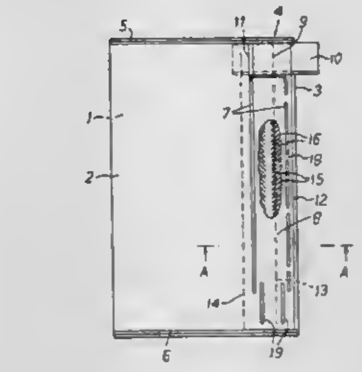
the outer end of the clamp arm being equipped with latch means for releasable engagement with the cross rod for clamping action on the object,

the clamp arm at its free position forming in cooperation with the cross rod a slot open at the free end of the clamp arm to permit the upper end of the object to be initially inserted edgewise into the slot into a position with the full width of the end of the object being folded over the clamp arm and extending back between the clamp arm and the cross rod, and

the clamp arm in its latched position being operative under the weight of the object to pull the clamp arm downward in a manner to press the object against the cross rod with increased clamping force, and to cause the cross rod to keep the object folded against itself for effective weight-bearing engagement of the object by the handle device.

3,937,395
VENTED BAGS

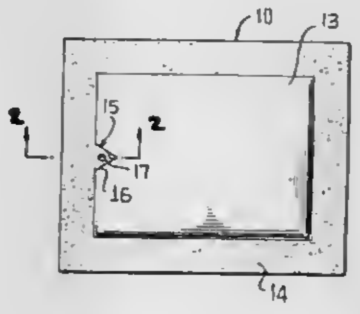
Norman Edward Lawes, Hutton Rudby, England, assignor to British Visqueen Limited, London, England
Filed July 22, 1974, Ser. No. 490,492
Claims priority, application United Kingdom, July 30, 1973, 36136/73
Int. Cl.² D65D *31/14*
U.S. Cl. 229—62.5 **6 Claims**



1. In a plastics-film bag having one wall formed by two longitudinally-overlapping panels joined one to the other by two spaced-apart longitudinal seals, the bag being provided with a vent comprising an interfacial air-channel between said overlapping panels and defined by said longitudinal seals, internal venting means comprising at least one aperture providing communication from inside the bag to said interfacial air-channel, and external venting means comprising at least one aperture providing communication from said air-channel to the atmosphere, the apertures of the internal and external venting means being laterally displaced relative to one another to provide an indirect path for air vented from inside the bag, the improvement comprising providing an uneven surface on at least one of the overlapping panels on its side facing said air-channel at least in an area adjacent to the internal venting means.

3,937,396
VALVE FOR VENTED PACKAGE

William S. Schneider, 10 Goodwill Road Extension, Weston, Conn. 06880
Filed Jan. 18, 1974, Ser. No. 434,611
Int. Cl.² B65D *31/14*
U.S. Cl. 229—62.5 **10 Claims**

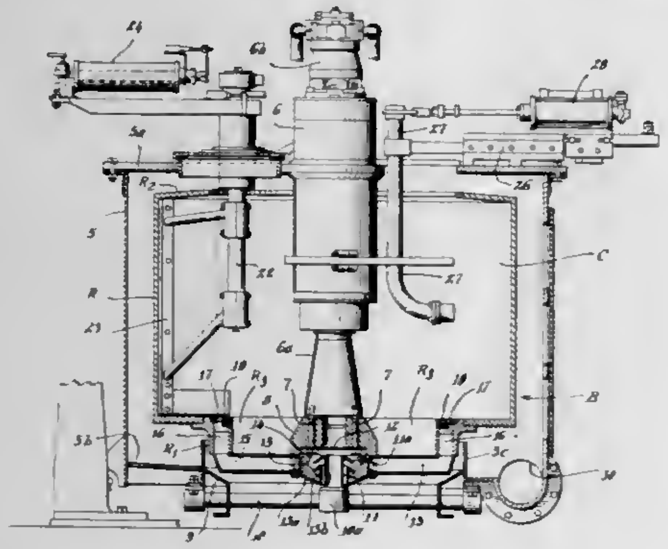


1. A vented package comprising two walls of flexible material joined together to define a sealed enclosure, said walls having an area wherein at least a portion of said walls are joined together in an inside face-to-inside face seal, said face seal including a sealed enclosure defining portion and an

extension projecting into said sealed enclosure, and valve means for venting excess gas pressure from within said sealed enclosure, said valve means including a perforation through at least one of said walls in said seal area, and a resistance path to said perforation from within said sealed enclosure through said seal extension, said resistance path being of the type openable in response to gaseous pressure within said sealed enclosure for venting gases through said perforation, said resistance path being normally closed by a portion of said seal extension.

3,937,397
BASKET CENTRIFUGE

Ernest John Zitke, Stoughton, Mass., and Donald Dickinson Horton, Montclair, N.J., assignors to The De Laval Separator Company, Poughkeepsie, N.Y.
Filed Aug. 28, 1974, Ser. No. 501,459
Int. Cl.² B04B *11/04*
U.S. Cl. 233—3 **5 Claims**



1. In a basket centrifuge for separating a feed mixture of liquid and solids, the combination of a basket mounted for rotation about a vertical axis and having an outer portion forming a separating chamber, the basket including a central nave at its lower portion and also including a plurality of spoke-like tubes secured at their inner ends to the nave and at their outer ends to said outer portion of the basket, the basket having bottom openings partly defined by said tubes, means including a stationary feed duct for delivering said mixture into said tubes at their inner ends, a discharger shoe movable relative to the basket for plowing accumulated solids from the outer portion of the separating chamber, whereby the plowed solids fall through said bottom openings, and means forming feed distribution passages leading from the outer ends of the tubes and opening upwardly into the separating chamber at regions offset laterally from the tubes and extending along the radially outer portions of said bottom openings.

3,937,398
CONDITIONED AIR DISTRIBUTION SYSTEM

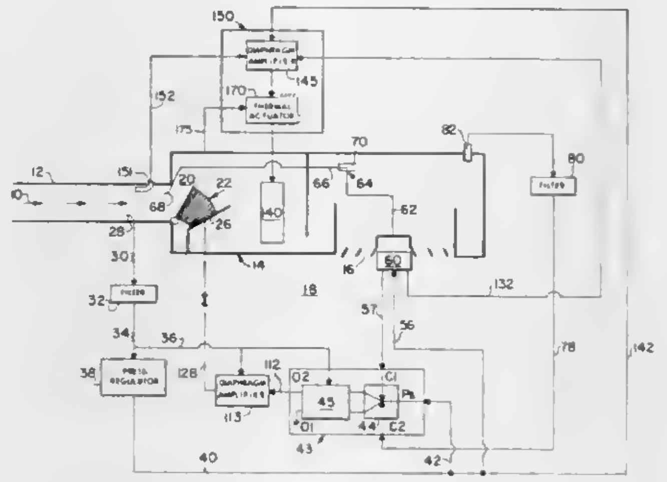
William J. Waeldner, Waverly, and William J. Harris, Tunkhannock, both of Pa., assignors to Dyoamics Corporation of America, New York City, N.Y.
Filed Sept. 6, 1974, Ser. No. 503,784
Int. Cl.² F24F *11/00;* F15C *4/00*
U.S. Cl. 236—38 **15 Claims**

1. In an air distribution system for supplying conditioned air to at least one zone to be conditioned, the combination of:

a supply duct connected with a source of conditioned air under pressure and having an air outlet communicating with the zone;

a valve in said duct movable in duct opening and closing directions;

a control for said valve including a fluidic signal comparison and amplifying means, a fluid power supply conduit for the fluidic amplifying means connected with said duct, a thermostat providing a temperature responsive fluidic signal to said comparison and amplifying means, means providing a duct pressure signal to said comparison means, a valve actuator connected to the valve in the duct and operated by the comparison and amplifying means, said actuator being connected with said valve for movement of the valve in said duct opening and closing directions;

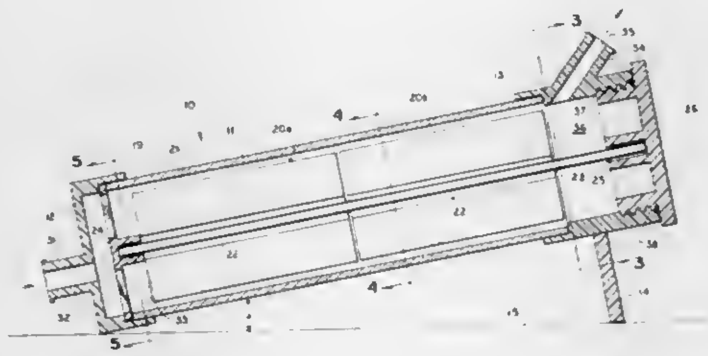


secondary conditioning means for further conditioning the air before it is introduced into the zone from the duct; and

secondary conditioning fluidic control means operable in conjunction with and under control of said thermostat for regulating said secondary conditioning means.

3,937,399
JET ACTION CHEMICAL FEEDING METHOD

James L. Halley, Mableton, Ga., assignor to Tesco Chemicals, Inc., Marietta, Ga.
Division of Ser. No. 566,833, April 10, 1975. This application Aug. 4, 1975, Ser. No. 601,260
Int. Cl.² E03C *1/046;* C02B *1/36;* E04H *3/20*
U.S. Cl. 239—1 **6 Claims**



1. The method of feeding a chemical into a liquid by directing a flow of liquid along a soluble chemical composition, comprising the steps of:

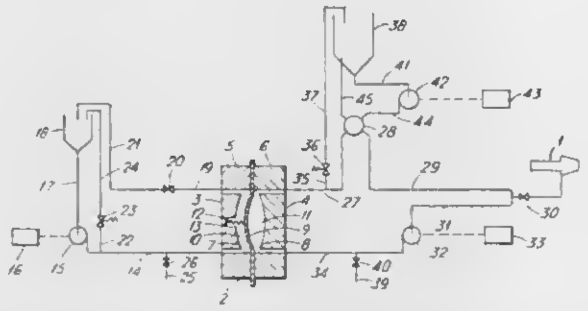
directing a flow of liquid upwardly along a confined path which is inclined with respect to horizontal;

passing said flow of liquid along at least one surface of a solid body of a soluble chemical composition which may produce a gaseous fluid in response to said liquid flow; and

removing said flow of liquid from an upper end of said confined path, so that said gaseous fluid is removed from said confined path along with said liquid flow.

3,937,400
APPARATUS FOR SPRAYING PAINT

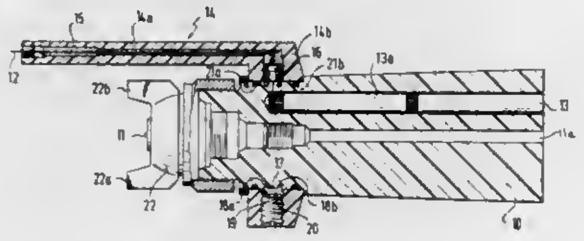
Janusz Josef Henryk Krause, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Nov. 7, 1974, Ser. No. 521,932
Claims priority, application United Kingdom, Nov. 26, 1973, 54754/73
Int. Cl.² B05B *17/04, 9/04, 5/02*
U.S. Cl. 239—11 **8 Claims**



1. In a method of coating a metal anode with electroconductive paint with an electrostatic spray gun while maintaining said gun at a high electrical potential and said anode at ground potential, the improvement which comprises: providing a diaphragm assembly having a flexible diaphragm separating a paint pumping chamber containing sufficient paint to coat the entire surface of the electrode and a pressurizing chamber; connecting the pumping chamber to the spray gun; introducing non-compressible fluid into the pressurizing chamber at a uniform continuous non-pulsating rate so that the diaphragm flexes and delivers the paint in the pumping chamber to the spray gun at said uniform continuous non-pulsating rate; and spraying the delivered electroconductive paint from the spray gun onto the surface of the anode at said uniform continuous non-pulsating rate.

3,937,401
ELECTROSTATIC COATING

Manfred Luderer, Weiler zum Stein; Roland Wiedmann, and Karl Rapp, both of Winnenden, all of Germany, assignors to Firma Ernst Mueller K. G., Winnenden, Germany
Filed Apr. 1, 1974, Ser. No. 456,827
Claims priority, application Germany, Apr. 6, 1973, 2317448; Jan. 17, 1974, 2402209
Int. Cl.² B05B *5/00*
U.S. Cl. 239—15 **11 Claims**



1. In an electrostatic coating gun suitable for coating objects with liquid or powdery coating material of relatively high electrical conductance, the gun having a housing with a coating material feed line disposed therein for connection to a coating material supply source, an atomizer nozzle located at a discharge end of said feed line, an electrode for statically charging atomized coating material particles, and means for connecting an electrical resistor means and high voltage cable to said electrode, the improvement comprising:

an elongated, electrode extension body of insulating material carrying said electrode forwardly of a discharge opening means of said nozzle; and

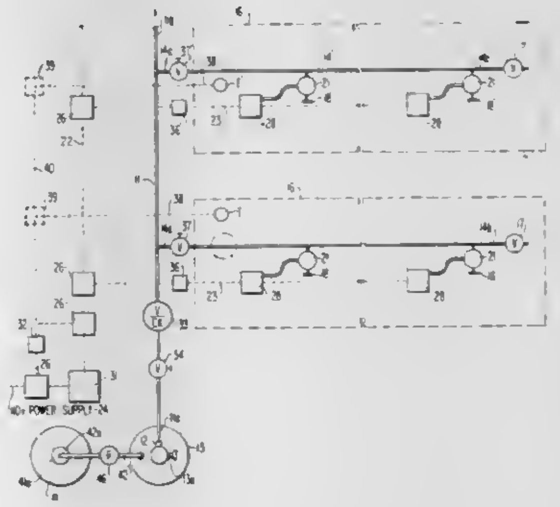
electrical conducting means disposed in said extension body and being electrically connected to an electrical contact on said housing; said electrical contact on said housing being electrically connectible to the high voltage cable;

said extension body being disposed to locate said electrode forwardly of said nozzle discharge opening means at a distance therefrom which is selected in accordance with the conductivity of said coating material so that the voltage drop at said electrical resistor means is below a predetermined minimal value such that an intensive charging of said highly conductive coating material particles is effected;

said extension body being mounted for rotation about a longitudinal axis extending through said housing in a manner maintaining said distance constant so that said electrode can be rotatably displaced relative to the spray of coating material without changing said distance between said electrode and said nozzle discharge opening means.

3,937,402
FLUID DISTRIBUTION SYSTEM

Grady W. Query, 3534 Central Ave., Charlotte, N.C. 28205
Continuation-in-part of Ser. No. 373,879, June 26, 1973, abandoned. This application Mar. 27, 1974, Ser. No. 455,079
Int. Cl.² B05B *12/02*
U.S. Cl. 239—70 **11 Claims**



1. A distribution system for a combination of liquid and gas comprising:

a. a main conduit through which said combination may flow;

b. a plurality of branch conduits through which said combination may flow connected to said main conduit at one end and closed at the other end;

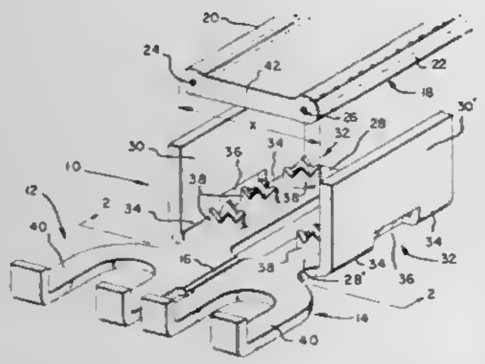
c. a plurality of spray nozzles connected on each of said plurality of branch conduits;

d. a plurality of valve means, one on each of said plurality of spray nozzles, operable to control flow of said combination through each of said plurality of spray nozzles;

e. flow control means for introducing said combination of a liquid and a gas into said main conduit and thereby to said plurality of branch conduits including a supply source, and for maintaining said combination of a liquid and gas in similar proportions in said main conduit and said plurality of branch conduits as it is in said supply source; and f. a booster source operative to compensate for pressure loss of said combination of liquid and gas throughout said distribution system.

3,937,403
ELECTRICAL TERMINALS FOR FLAT WIRE

Gustaf Rudolph Lawson, Willingboro, N.J., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of Ser. No. 404,086, Oct. 5, 1973, abandoned. This application June 3, 1974, Ser. No. 475,708
Int. Cl.^{2} H01R *11/20*
U.S. Cl. 339—97 C **5 Claims**

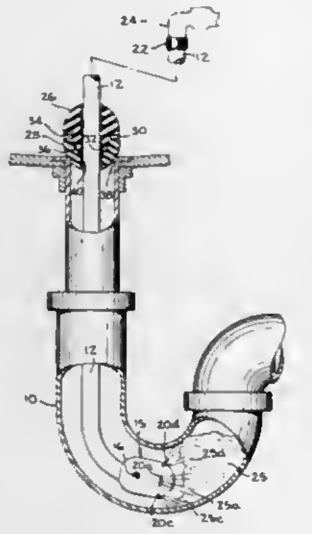


1. A pair of terminals capable of being secured to a television antenna wire or the like wherein said wire comprises a layer of substantially flat insulation of predetermined width having two spaced conductors therein so that each of said terminals is electrically connected to one of said conductors wherein, each of said terminals being substantially a mirror image of the other and comprising a pair of plate-like members, each of said pairs comprising first and second plate-like members, a deformable hinge disposed between said first and second members in each of said pairs for maintaining said members of each pair in fixed angular relation with respect to each other prior to deformation of said hinges, means for piercing the layer of insulation and contacting the conductors in the wire, said means comprising an array of insulation piercing, electrically conductive elements coupled to at least one of said members in each of said pairs and extending generally toward the other member in said pair, electrically conductive connecting means mechanically coupled to one of said members and said array of electrically conductive elements in each of said pairs for connection with external conductive members, means for releasably coupling said first and second pairs to each other so that said pairs define a generally U-shaped cross-section with one member in one of said pairs being coplanar with a corresponding member in the other pair, said members cooperating to form the base of said U and the other member in each of said pairs cooperating to form the legs of said U, the distance between said legs being slightly larger than the predetermined width of the wire, the two pairs of members thus cooperating to form a single locating area for receiving the antenna wire so that the wire can be received therebetween while its lateral movement is restricted thereby to maintain the conductors in alignment with their corresponding array of electrically conductive elements, said legs positioning said wire while the wire is pressed between said first and second members in each of said pairs and said arrays of electrically conductive elements pierce the layer of insulation comprising the wire to make electrical contact with their corresponding conductor while said terminals are coupled to each other.

3,937,404
DRAIN DECLOGGING DEVICE

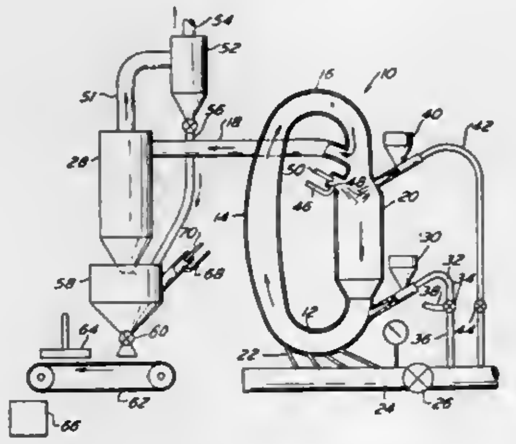
Arthur L. Johnson, 4921 3rd St., San Francisco, Calif. 94124
Filed June 9, 1975, Ser. No. 584,738
Int. Cl.^{2} B05B *1/14, 1/18;* **B08B** *9/06*
U.S. Cl. 239—567 **5 Claims**

1. A drain-declogging device comprising a length of flexible hose of a size to fit into a drain pipe, having at one end thereof means for attaching it to a source of water under pressure and at the other end a nozzle of elliptical contour having in one of its short sectors an entrance passage adapted to receive the respective end of said hose and reaching to a central area of said hose, and extending obliquely outwardly from said passage to the outer surface of the flank area of the opposite short sector of said nozzle a plurality of circumferentially spaced flat passages terminating in slot-shaped orifices, and slidably engaged over the center portion of said hose intermediately of its ends, means for blocking back flow of water in said drain around and exteriorly of said hose.



3,937,405
APPARATUS FOR MIXING PULVERIZING AND GRINDING BLACK POWDER

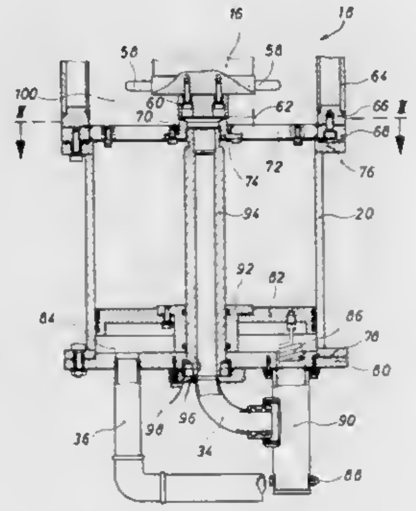
Nicholas N. Stephanoff, Haverford, Pa., assignor to Fluid Energy Processing and Equipment Company, Hatfield, Pa.
Division of Ser. No. 425,938, Dec. 18, 1973. This application Dec. 4, 1974, Ser. No. 529,373
Int. Cl.^{2} B02C *19/06*
U.S. Cl. 241—39 **6 Claims**



1. In a system for producing black powder from a mixture comprising potassium nitrate, carbon and sulfur, a mill of curvilinear shape having an inlet section, an upstack section leading from said inlet section, and a classifier section connecting said upstack section to a downstack section, said downstack section leading into said inlet section, all of said sections being in fluid connection with each other, a plurality of gaseous fluid nozzles connected to a source of high pressure gaseous fluid, said nozzles leading tangentially into said inlet section, feed means for said potassium nitrate, carbon and sulfur, said feed means leading into said mill adjacent said downstack, said downstack having at least a portion thereof expanded relative to the remainder of said mill, and an exhaust outlet from the inner peripheral wall of said mill between said classifier section and said downstack section, and a feed means for the carbon and sulfur, the feed means for the potassium nitrate being provided separately from the feed means for the carbon and sulfur, the feed means for the potassium nitrate being upstream from said expanded portion of said downstack section and the feed means for the carbon and sulfur being downstream from said expanded portion.

3,937,406
AGITATOR MILL

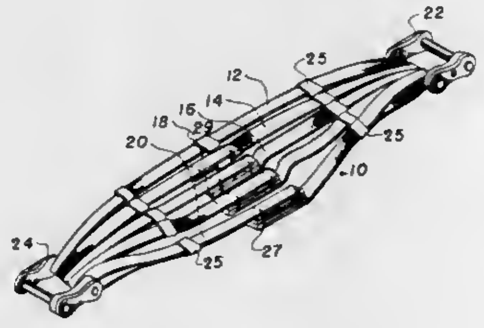
Norbert Klimaschka, Selb, Germany, assignor to Gebruder Netzsch Maschinenfabrik, Selb, Germany
Filed May 29, 1974, Ser. No. 474,183
Int. Cl.^{2} B02C *17/18*
U.S. Cl. 241—46.11 **8 Claims**



1. An agitator mill comprising
a grinding container,
an agitator shaft rotatable therein,
a charge of grinding elements contained in said grinding container,
a cylinder mounted at the lower portion of said grinding container and opening into said grinding container, containing,
piston means displaceable in said cylinder,
and hollow guide rod means attached in said cylinder for guiding said piston means and simultaneously forming the inlet for material to be ground in the agitator mill,
said cylinder receiving at least a portion of said charge of grinding elements, and thus reducing the packing density of said charge of grinding elements in said grinding container, when said piston means is in its lowermost position.

3,937,407
MULTIPLE STRAP SHOCK ABSORBER

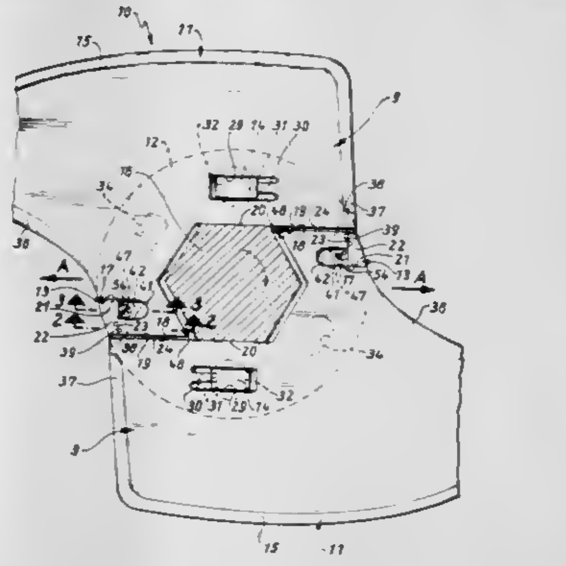
Jon T. Matsuo, El Centro, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 24, 1974, Ser. No. 473,252
Int. Cl.^{2} B64D *17/36*
U.S. Cl. 244—151 R **10 Claims**



1. A shock absorber comprising a pair of spaced load attaching fittings;
a plurality of elongate tear members extending between and having their ends operatively connected between said fittings;
all of said tear members being made of the same material having equal cross-sections and predetermined physical characteristics;
said tear members extending for a portion of their length substantially in a common plane, in lateral side-by-side relationships;
said tear members each being progressively longer in effective parting length;
the effective lengths of said tear members being constructed so that a tensile force between said fittings is applied to at least two adjacent tear members simultaneously causing the force to be transferred between the tear members smoothly and continuously as the tear members are successively parted.

3,937,408
BLADE ARRANGEMENT FOR A MEAT CUTTER

Immanuel Buck, Flurstrasse 15, 7012 Fellbach, Germany
Filed Nov. 29, 1974, Ser. No. 528,449
Claims priority, application Germany, Nov. 29, 1973, 2359539; July 25, 1975, 2435796; Oct. 23, 1974, 2450421
Int. Cl.^{2} B02C *18/18*
U.S. Cl. 241—282.2 **17 Claims**



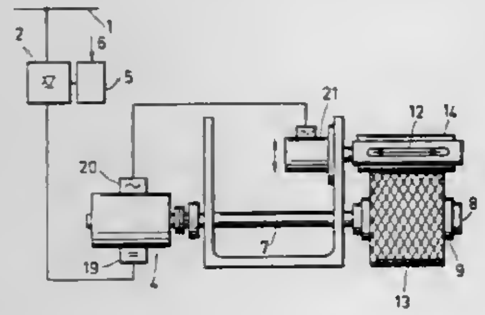
1. A blade arrangement for meat cutters comprising a driven shaft on which form-locking disks are disposed adjacent to each other, a blade group, preferably comprising two identical blades being disposed between adjacent disks, and the disks being braced together in the axial direction of the shaft and the flange head of each blade being guided in a radial direction on fixed guide surfaces on at least one of the adjacent disks, characterized in that the edges of the flange heads of each blade of at least one blade group which are guided by the guide surfaces consist of one or more outer edges of the flange head and one or more straight edge regions of at least one opening in the flange head and in that the guide means for the outer edge in question or the particular outer edges of the flange head is formed by at least one bar projecting beyond an adjacent disk and the guide means for the straight edge region or regions of the opening consists of at least one pin engaging in the opening.

3,937,409
ELECTRIC DRIVE FOR FIBER OR THREAD WINDING MACHINES AND METHOD OF OPERATING WINDING MACHINES

Artur Muller, Karlsruhe, Germany, assignor to Industrie Werke Karlsruhe Augsburg AG, Germany
Filed Apr. 10, 1974, Ser. No. 459,577
Claims priorily, application Germany, Apr. 16, 1973, 2319128
Int. Cl.^{2} B65H *54/02, 54/40*
U.S. Cl. 242—18 R **11 Claims**

1. An apparatus for driving winding devices, such as a device for winding thread on a bobbin using a thread traverse

system for moving the thread backwardly and forwardly as the bobbin is revolved, comprising a drive motor having a rotatable shaft with an armature winding, a commutator connected to said armature winding for connecting the winding to a source of direct current and a plurality of slip rings connected to said armature winding so that a symmetrical polyphase alternating current voltage is produced at the rings during rotation of said shaft, means on said shaft for driving the bobbin, and a synchronous motor having a rotatable synchronous motor shaft connected to rotate the thread traverse system and being connected to said slip rings for receiving a polyphase alternating current output voltage from said drive motor which, during operation of said drive motor, has a frequency directly proportional to the mechanical rotational speed of said drive motor shaft whereby the traverse system is driven at a speed constantly proportional to the speed of rotation of said drive motor shaft.



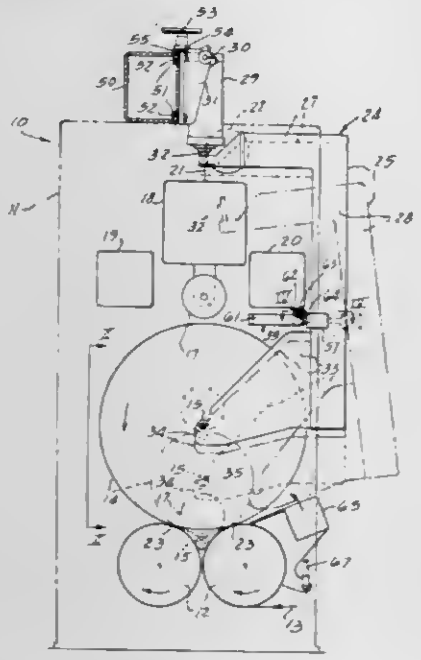
3,937,410
METHOD OF AND MEANS FOR CONTROLLING INTERNAL TENSION IN WEB ROLLS

Edgar J. Justus, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Jan. 16, 1975, Ser. No. 541,505

Int. Cl.^{2} B65H *17/08*

U.S. Cl. 242—66 20 Claims



1. A method of controlling internal lineal tension in web rolls during winding thereof about cores with the aid of winding drums, comprising:

partially winding the web rolls between nips at the winding drums and a rider roll which acts through the web rolls to provide controlled tensioning load to said nips until the weight of the web rolls themselves provides sufficient self-loading on the nips for lineal tensioning of the webs in the rolls;

then releasing the rider roll from the web rolls; and

during continuance of winding the web rolls to full desired diameter applying load relieving lift to the web rolls through their cores to maintain the web tensioning load at said nips at a substantially optimum value as web load weight increases.

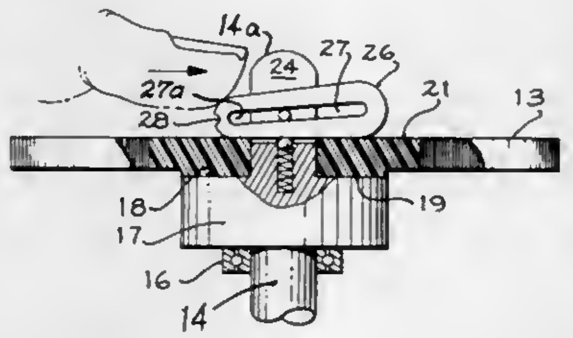
3,937,411
TAPE ROLL HOLD-DOWN DEVICE

Charles A. Vogel, and William T. Lombardi, both of San Jose, Calif., assignors to American Videonetics Corporation, Sunnyvale, Calif.

Filed May 23, 1974, Ser. No. 472,536

Int. Cl.^{2} B65H *17/02*

U.S. Cl. 242—68.3 7 Claims



1. A device for holding a roll of tape to a support surface comprising a mounting post disposed to extend away from said surface and adapted to receive thereon a roll of tape of a type including a hub having a mounting opening formed centrally thereof for receiving said post therethrough, an elongate toggle opening formed substantially in the plane of a diameter of said post, the axis of said post lying substantially in said plane, an elongate toggle member disposed within said toggle opening and formed with an elongate slot therein, pivot means cooperating with said slot for supporting said toggle member within said toggle opening, the displacement between one end of said slot and the adjacent peripheral extremity of said toggle member being less than the displacement between the axis of said pivot means and the nearest edge of said mounting opening to permit said toggle member to pivot to a position sufficiently aligned with said post to pass said hub thereover and onto said post to a position permitting said toggle member to lie crosswise of said post and against the outer side face surface of said hub on opposite sides of said post simultaneously.

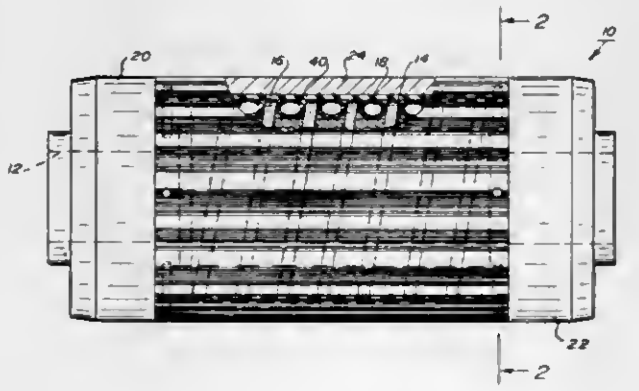
3,937,412
EXPANDING OUTER SLEEVE FOR A MANDREL OR CHUCK

Lawrence R. Damour, 16 Chesler Square, Succasunna, N.J. 07876

Filed Apr. 23, 1975, Ser. No. 570,562

Int. Cl.^{2} B65H *75/18*

U.S. Cl. 242—72 B 10 Claims



1. A circumferential sleeve assembly which is mounted in and on an expanding mandrel, spool shaft and the like and which provides a core support for said mandrel, and in which the expansion means for the sleeve assembly is at least one resilient tube carried by a body member and in which there is provided means for selectively feeding and releasing air, fluid and the like from said resilient tube, said mandrel and sleeve assembly including: (a) a body member; (b) at least one resilient tube carried in and by said body member; (c) end member means carried by said body member, said end member means providing confining limits for the tubing and also establishing the overall length of the body member; (d) a circumferential sleeve assembly carried by the body member and between the limits established by the confining end members, this sleeve assembly further including; (d1) a multiplicity of serially connected leaf members, each leaf member having one longitudinal edge formed as a tongue whose outer portion is enlarged to provide a greater thickness than the portion connecting the tongue to the leaf member, and with the other longitudinal edge of the leaf member formed with a retaining groove whose outer entryway is narrower than the enlarged outer portion of the tongue, said entryway freely passing said connecting portion of the tongue, the resulting assembly of a tongue of one leaf member into a retaining groove of an adjacent leaf member providing a retention of the tongue in the groove with the capturing of the enlarged portion preventing dislodgement while providing a determined amount of play, this assembled tongue in a groove permitting limited movement of adjacent leaf members toward and away from each other; each leaf member also having at least one undergroove formed therein and extending with the longitudinal extent of the leaf member, said undergroove disposed to extend inwardly from the undersurface of the leaf member when the leaf member is in an assembled condition, and (d2) a multiplicity of elastic tension member strips, each having a base portion and from this base portion there is integrally attached extending tab portions which are shaped and sized for retentive mounting in the undergrooves of the leaf members, said elastic strips in a mounted condition extending from one leaf member to an adjacent member with one of the tabs in the undergroove of one leaf member and the other tab in an undergroove of an adjacent leaf member, said elastic tension member when in mounted condition being slightly stretched so as to draw toward each other the leaf members to which they are secured, the connected leaf members of a sleeve assembly being positioned over the resilient tube so that when said tube is expanded the leaf members are urged outwardly by the expansion of the tube and with an outward diametrical limit being established by the play of the tongue in the groove, and when the pressure in the tube is decreased the stretched elastic tension members draw the leaf members toward and to the body member.

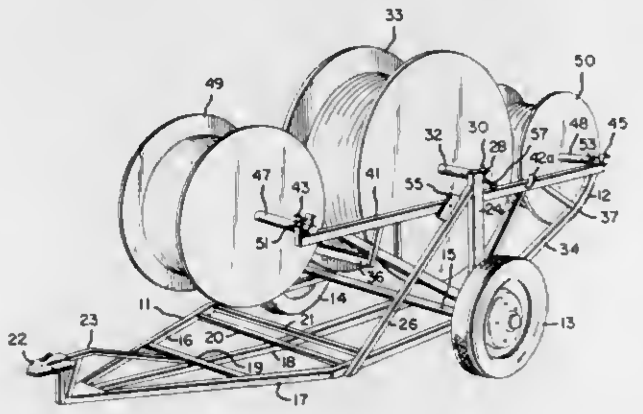
3,937,413
DUAL FRAME ROCKER TRAILER

Joseph C. Devine, R.D. No. 1, Box 206, Grantville, Pa. 17028

Filed June 13, 1974, Ser. No. 478,929

Int. Cl.^{2} B65H *75/00;* B60P *1/04*

U.S. Cl. 242—86.5 R 3 Claims



1. A dual frame rocker trailer for the carrying of cable reels supported by reel bars, of varying size and weight comprising:

A. a main frame having an attached set of wheels and comprising; (i) a yoke-shaped structure comprising two rails parallel at their rear extremities and converging and joined at their forward extremities and being in a substantially horizontal plane; (ii) stationary upright members depending upwardly from each of said rear extremities, each having (iii) a reel bar mounting means attached at each upper end of the stationary upright support member; and

B. a rocker frame comprising a pair of connected, substantially triangular-shaped rail frames lying in parallel vertical planes and opposing and parallel to one another; pin means pivotally connecting an angled portion of each of said triangular -shaped rail frames to said main frame at or near the locations where said stationary upright members depend upwardly from each of said extremities, and each of said substantially triangular-shaped rail frames having reel bar support means at opposing ends and further characterized in that each stationary upright support member of the main frame has an aperture at a point lower than the reel bar support, and the rail opposite said angled portion of pivotal attachment of each of the substantially triangularshaped rail frames further characterized as having a plurality of apertures; said dual frame rocker trailer further including pins for attaching said rocker frame to said main frame in a plurality of positions by passing said pin through each of the apertures of the upright support members and through an aperture of the rail opposite the angled portion of pivotal attachment of the substantially triangular-shaped rail frame, and said main frame further may be disconnected from said rocker frame and said rocker frame tipped forward or backward so that the reel bar mounting means at each upper end of said stationary upright support member becomes aligned in a level position with a respective rail opposite the angled portion of pivotal attachment of said rocker frame for the receiving of a cable reel bar in loading.

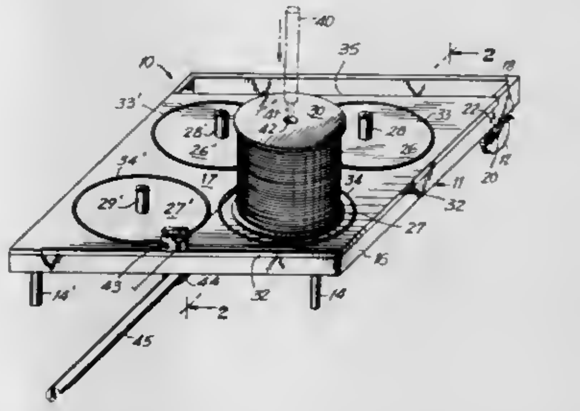
3,937,414
WIRE DOLLY

Morton L. Bank, 8 First St., Garden City, N.Y. 11530, and Ronald J. Spieler, 90 Calla Ave., Floral Park, N.Y. 11001

Filed Nov. 25, 1974, Ser. No. 527,091

Int. Cl.^{2} B65H *75/40*

U.S. Cl. 242—86.5 R 10 Claims

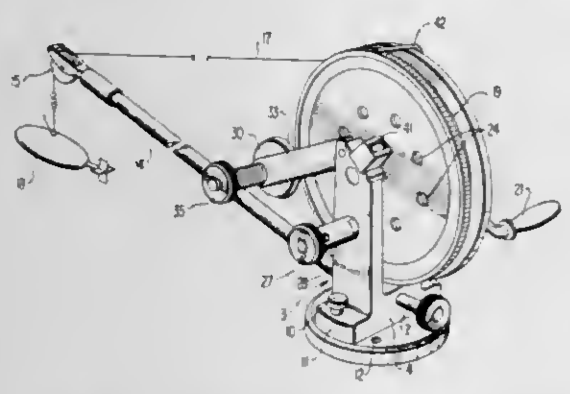


1. A dolly for carrying spools of wire to a construction site for on-site use thereof without removal thereof from the dolly comprises a carriage including a carriage bed, at least one turntable rotatably mounted on said carriage bed, means for releasably mounting a spool of coiled wire on said at least one turntable, an overfitted cover plate releasably overlying said carriage bed, said overfitted cover plate having at least one aperture therein in which said at least one turntable is registered, said overfitted cover plate being foreshortened relative to the length of said carriage, and an accessory bin being defined between said foreshortened end of said overfitted cover plate and a corresponding end of said carriage for storing installation equipment and the like.

3,937,415

DOWNRIGGER

John Prinz, 1303 W. Carmen, Chicago, Ill. 60640
Filed May 16, 1973, Ser. No. 360,818
Int. Cl.² A01K *89/00*
U.S. Cl. 242—106 **7 Claims**

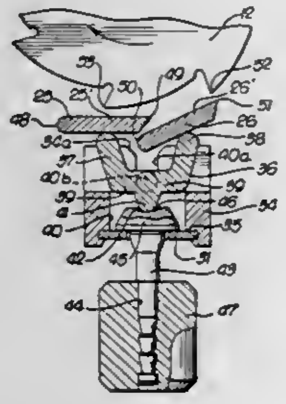


2. An outrigger type trolling equipment, comprising a pedestal, a reel adapted for winding a line thereon, means journaling the reel on the pedestal for turning movement about an axis, said reel having a rim, a drag wheel having a friction surface in position to bear upon the rim of the reel, an elongated arm supporting the drag wheel at one end thereof, and means pivotally mounting the opposite end of the arm on the pedestal for swinging movement of the arm about an axis spaced from the axis of the reel, said axis of swinging movement being operably positioned to cause the drag wheel to bear with increased pressure on the wheel when the wheel is rotated to unwind the line and to cause the drag wheel to release pressure on the wheel when the wheel is rotated to wind the line.

3,937,416

REEL FOR STORING BELTS OR THE LIKE

Cyril Henderson, Woodland Hills, Calif., assignor to American Safety Equipment Corporation, Encino, Calif.
Division of Ser. No. 353,211, April 20, 1973. This application Mar. 20, 1975, Ser. No. 560,371
Int. Cl.² B65H *75/48*
U.S. Cl. 242—107.4 A **3 Claims**

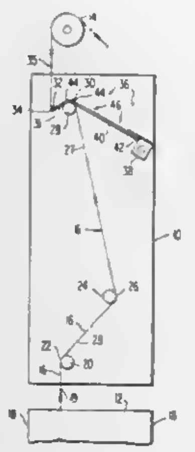


1. A reel for storing a belt or the like thereon comprising:
a frame having a shaft journalled for rotation thereon;
a belt having one end connected to said shaft and adapted to be wound about said shaft;
spring means associated with both said shaft and said frame to revolve said shaft in a direction retracting said belt about said shaft;
a ratchet tooth gear circumferentially mounted on said shaft and rotatable therewith, said ratchet tooth gear having a plurality of spaced teeth thereon extending in the direction opposite the direction of revolution of said shaft by said spring means; and
means mounted on said frame for stopping the rotation of said shaft in the direction opposite the direction of revolution of said shaft by said spring means, said means including a pair of lockbars mounted on said frame, each of said lockbars having a pawl tip movable from a first position out of engagement with said ratchet tooth gear in a direction generally normal to the axis of rotation of said gear to a second position in engagement therewith, said pawl tips in said second position being spaced such that when the pawl tip of one of said lockbars is generally radially aligned with one of the teeth of said ratchet tooth gear the other of said pawl tips of the other of said lockbars is aligned midway between a pair of adjacent gear teeth of said ratchet tooth gear, said means mounted in said frame including differential lever means operatively engaging said lockbars for moving said lockbars between said first and second positions, said lever means having first and second portions thereon engaging each of said lockbars and a third portion thereon, and means associated with said frame operatively engaging said third portion to actuate said lever means in a manner whereby said lever means moves said lockbars between said first and second positions, said last-mentioned means moving to a lever means actuating position in response to inertia acting on said lastmentioned means, and said differential lever means including a reversing lever having each of said lockbars fixedly mounted thereon, said third position being the underside of said lever, said inertia responsive means including a weighted member having an integral upper head portion, the upper surface of which bears against the underside of said lever for moving said lever when said weighted member is moved between positions actuating said lever means.

3,937,417

APPARATUS FOR TENSIONING YARN

Lloyd M. Guenther, Severna Park, Md., assignor to Chevron Research Company, San Francisco, Calif.
Filed Dec. 28, 1973, Ser. No. 429,055
Int. Cl.² B65H *59/10, 59/24, 59/26*
U.S. Cl. 242—147 R **2 Claims**



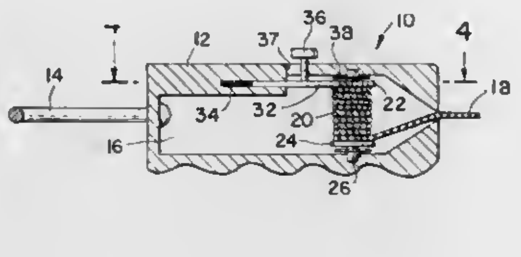
1. Yarn tension apparatus through which yarn from a reservoir where the yarn is in an essentially tension free condition may be drawn to release tangles and to establish a tension level sufficient for winding of the yarn onto a package, comprising
support means;
a stationary elongated friction member fixed to said support means and protruding outwardly therefrom, said member having an unobstructed free end over which a mid-portion of a length of yarn may be passed to dispose the yarn in contact with and leading transversely across a friction surface extending longitudinally of said member, said friction surface being curved transversely about the longitudinal axis of said member and having a longitudinal extent sufficient to permit substantial migrations of the yarn along the friction surface during tangle release events without the yarn passing off the unobstructed free end of the friction member; and

a control member mounted on said support means for swinging movement about an axis spaced from but parallel to the longitudinal axis of said friction member, said control member having an unobstructed free end opposite said support means and including
  a longitudinally elongated, transversely curved portion adapted to swing toward said curved friction surface of said friction member to press a yarn portion against such surface when tension is released, so as to engage said yarn portion between said curved portion and said friction surface to inhibit accidental unthreading of the yarn from between said friction member and said control member by yarn movement along the length of the yarn, and
  a yarn guide portion spaced from said curved portion on the side thereof opposite the pivot axis, said yarn guide portion including a longitudinally elongated guide surface about which the yarn may pass in a direction such that an increase in yarn tension tends to swing said control member away from said friction member to reduce the length of the arc of frictional contact between the yarn and said friction surface and thereby effect a tension reduction tending to compensate for said tension increase,
said curved portion of said control member and said yarn guide portion of said control member being fixed relative to each other so that any movement of said yarn guide portion results in movement of said curved portion.

3,937,418

RETRACTABLE DOG LEASH

Frank Critelli, Pompano Beach, Fla., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Jan. 13, 1975, Ser. No. 540,691
Int. Cl.² B65H *75/48*
U.S. Cl. 242—107.4 R **1 Claim**

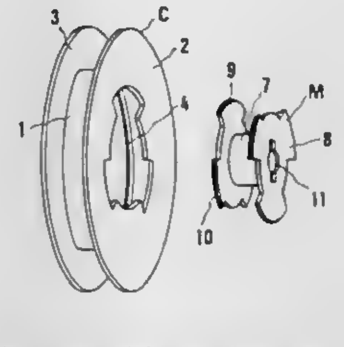


1. A retractable dog leash comprising a housing elongated in a longitudinal direction; an aperture at one end of said housing communicating from the interior to the exterior of said housing; a reel journalled within said housing for rotation about an axis generally perpendicular to said longitudinal direction; a cord wound about said reel and having a free end passing through said aperture; means on the free end of said cord for attaching said cord to a dog collar; first spring means coupled to said reel for torqueing said reel in a direction for winding said cord thereon; a ratchet wheel coupled fixedly to said reel coaxial therewith, said ratchet wheel having a plurality of recesses about its periphery; an elongated longitudinally directed member mounted slideably within said housing radially of said ratchet wheel, said elongated member having an end facing said ratchet wheel configured for engagement with one of said recesses for blocking rotation of said reel; second spring means for urging said elongated member into engagement with said ratchet wheel; a longitudinally elongated slot in a side of said housing; and a shaft projecting perpendicularly and fixedly from said elongated member and through said slot to enable moving said elongated member out of engagement with said ratchet wheel.

3,937,419

SPOOL FOR FISHLINE

Gerard Bon, Blois, France, assignor to La Soie, Blois, France
Filed Mar. 7, 1974, Ser. No. 449,002
Claims priority, application France, Mar. 9, 1973, 73.11704
Int. Cl.² B65H *75/14*
U.S. Cl. 242—118.4 **20 Claims**

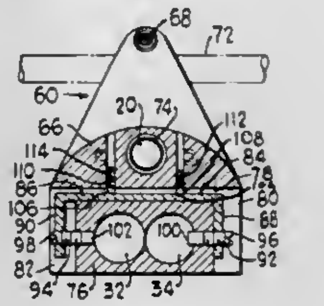


1. A spool for line comprising an annular member and a hub member, said annular member including a hollow core and a pair of axially spaced radially outwardly directed peripheral flanges between which line is adapted to be wound and unwound, said hub member being housed substantially entirely within said hollow core, and frangible means interlocking said annular member and said hub member together for simultaneous unified rotation about an axis of rotation of said hub member in an unbroken condition of said frangible interlocking means and providing free relative rotation between said annular member and said hub member in a broken condition of said frangible interlocking means.

3,937,420

LEVEL WIND DEVICE

Alex J. Galis, Heatherbrae Square, Apt. 101, Indiana, Pa. 15701
Filed Oct. 29, 1971, Ser. No. 193,642
Int. Cl.² B65H *54/30*
U.S. Cl. 242—158.4 A **2 Claims**



1. A level wind device for distributing a flexible strand along more than one length of traverse comprising,
a pair of spooling shafts, said spooling shafts positioned in substantially abutting relation,
means to support said shafts in parallel relation to each other,
means to rotate said spooling shafts in opposite directions,
each of said spooling shafts having a cylindrical outer surface with a thread formed therein having a preselected pitch, each said thread forming a spiral cam track in a respective shaft cylindrical outer surface,
strand distributing means including a yoke member positioned over both of said spooling shafts with depending end portions for transverse movement relative to said spooling shafts,
said yoke member depending end portions having pin members extending inwardly toward said spooling shafts and arranged to be alternately positioned in a respective one of said cam tracks so that upon rotation of said spooling shafts said strand distributing means with one of its pin members engaging a respective one of said cam tracks

moves longitudinally of one of said spooling shafts in a first direction to the end of said respective cam track and thereafter said yoke member moves transversely to said spooling shafts and positions said other pin member in the other of said cam tracks of the other of said spooling shafts and moves said strand distributing means longitudinally in the opposite direction to the end of said other cam track,

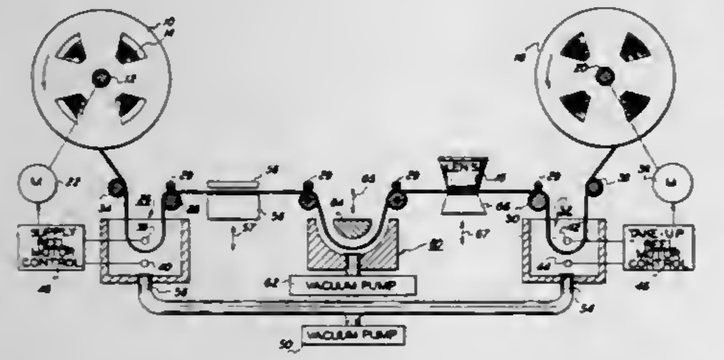
a rider block having a pair of longitudinal bores therethrough and a pair of transverse bores opening into said longitudinal bores,

said spooling shafts extending through said longitudinal bores,

said pin members slidably positioned in said transverse bores, and cam track means for moving said pin member positioned in one of said cam tracks out of said one cam track and said other pin member into the cam track of the other said spooling shafts.

3,937,421
ASYNCHRONOUS HIGH-SPEED PNEUMATIC FILM TRANSPORT MECHANISM

William D. Fender, Pasadena, and Gordon Sohl, Arcadia, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 1, 1971, Ser. No. 203,615
Int. Cl.^{2} G11B *15/58, 23/12*
U.S. Cl. 242—182 **6 Claims**



1. In an asynchronous high-speed film transport apparatus which includes supply and take-up reels about which opposite ends respectively of an elgonated film may be wound, a pair of drive motors one for each reel selectively operable to rotate the reels respectively to move film along a path from one reel to the other, a read/record station being positioned between said first and second reels, first and second film vacuum chambers associated respectively with said first and second reels, each chamber arranged to hold a loop of film, the chambers being positioned adjacent the film path between the reels, means connected to the drive motors for producing movement of the film and means for maintaining a predetermined loop of film in each of the chambers during film movement, the improvement comprising:

means for providing variable-width frames of film for predetermined film advance positioned between said first and second vacuum chambers along the film transport path,

first film clamp means located between the first vacuum chamber and said frame providing means,

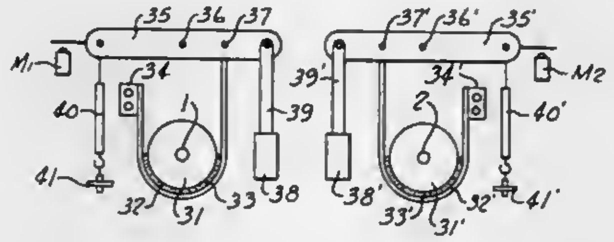
second film clamp means positioned at the opposite side of said frame providing means,

said first and second clamp means and said frame providing means being operated in a manner such that successive frame-by-frame movement of said film is provided relative to said read/record station,

said frame providing means includes a movable member which is positioned adjacent one surface of the film to vary the amount of film in said frame providing means in response to a signal which corresponds to a desired amount of film advance, and further includes means for applying a substantially uniform pressure on the other surface of the film in said frame providing means and said pressure-applying means cooperates with said movable member to define each predetermined frame width for film advance.

3,937,422
MAGNETIC TAPE RECORDING AND REPRODUCING MACHINES

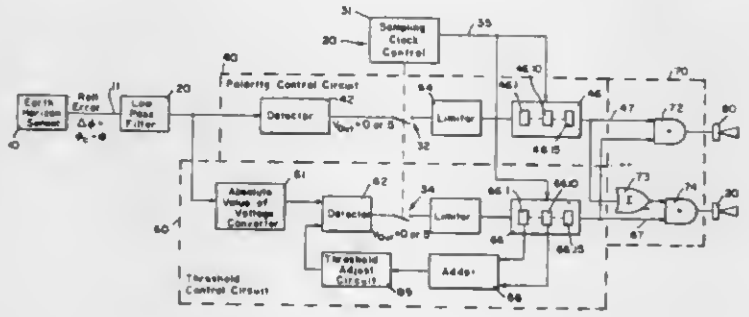
Tomomi Kato, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan
Filed Nov. 30, 1973, Ser. No. 420,518
Claims priority, application Japan, Dec. 1, 1972, 47-137576[U]
Int. Cl.^{2} G11B *15/22;* **B65H** *25/32*
U.S. Cl. 242—204 **7 Claims**



1. A brake mechanism for a rotatable shaft for carrying a tape reel in a magnetic tape recording and reproducing machine comprising AC electric motor means to drive said shaft, mechanical brake means operable to brake said rotatable shaft, DC electric current supply means, switch means adapted to detect displacement of said brake means caused by the braking friction between said brake means and said shaft while said shaft is rotating and thereby feed a DC current from said DC current supply means through the windings of said AC motor means to electromagnetically brake the same.

3,937,423
NUTATION AND ROLL ERROR ANGLE CORRECTION MEANS

Donald G. Johansen, Manhattan Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Jan. 25, 1974, Ser. No. 436,427
Int. Cl.^{2} B64C *15/00*
U.S. Cl. 244—3.22 **26 Claims**



1. An attitude control system for providing multiple axes control to a vehicle, comprising in combination:

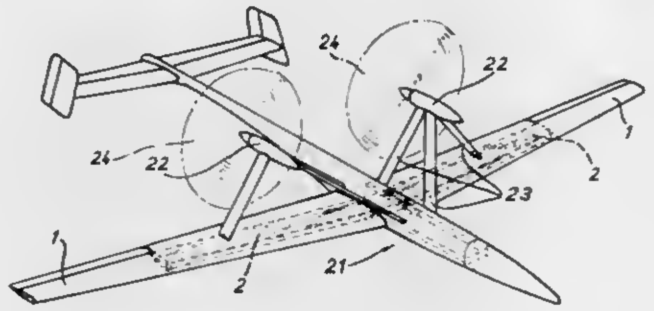
a plurality of jet thrustors spaced from each other at predetermined locations at the outer periphery of the vehicle;

an electronic control circuit including shift registers and a logic network connected to said jet thrustors for periodically imparting activation of any of the thrustors so as to correct offset of the vehicle attitude with respect to a predetermined direction; and

a rotatable momentum wheel within said vehicle having a single degree of freedom, said wheel being independent in its rotational action of the attitude of the vehicle, said electronic control circuit being non-responsive to rotational action of said wheel.

3,937,424
ELECTRICALLY POWERED AIRCRAFT

Hans Justus Meier; Herbert Sadowski, both of Bremen, and Ulrich Stampa, Bremen-Schonebeck, all of Germany, assignors to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany
Filed Nov. 1, 1974, Ser. No. 520,159
Claims priority, application Germany, Nov. 16, 1973, 2357286
Int. Cl.^{2} B64D *27/02*
U.S. Cl. 244—53 R **13 Claims**



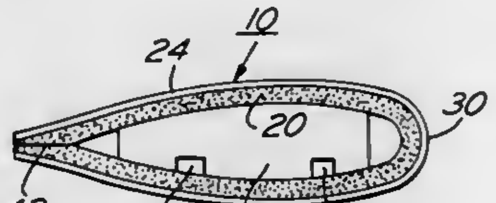
1. An electrically powered aircraft having wings and fuselage and at least one electric motor for driving a propeller or the like for obtaining propulsion for the craft and having battery means as an electrical power source, the improvement comprising, of load bearing central wing cases for each wing, having transverse walls extending over the entire height of a wing in each instance and spaced apart in the direction of flight, each case further having profiled top and bottom plates secured to the transverse walls in liquid tight sealing manner, and for reaction and transfer of forces between the top and bottom plates, and the walls of the respective case;

electrode plates in said central wing case which is filled with electrolytic liquid to draw electric power therefrom; and

leading and trailing edge defining wing cases respectively secured to said transverse walls to complete a wing profile together with outer surfaces of the top and bottom plates.

3,937,425
AIRPLANE WING AND METHOD OF FORMING SAME

William B. Harvey, 8932 Footed Ridge, Columbia, Md. 21045
Filed Apr. 19, 1974, Ser. No. 462,397
Int. Cl.^{2} B64C *3/26*
U.S. Cl. 244—123 **21 Claims**



1. A method of forming an airplane wing including the steps of:

a. providing a planar structural member composed of plastic foam between opposing paper sheets;

b. removing a substantial portion of one of said paper sheets from said plastic foam to form an inner surface of said airplane wing composed of said plastic foam and said paper sheet;

c. establishing a leading edge region of said wing extending a predetermined transverse distance with respect to a longitudinal extension of said structural member;

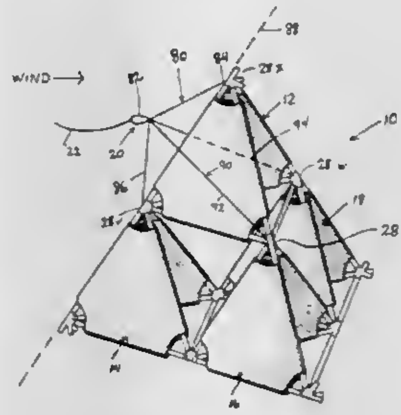
d. compressing said leading edge region throughout said longitudinal extension of said planar structural member;

e. shaping said structural member into a predetermined contour; and,

f. securing opposing ends of said structural member each to the other to form said airplane wing.

3,937,426
TETRAHEDRAL KITE STRUCTURE

Peter J. Pearce, Studio City, Calif., assignor to Synestructics, Inc., Chatsworth, Calif.
Filed Nov. 9, 1973, Ser. No. 414,531
Int. Cl.^{2} B64C *31/06*
U.S. Cl. 244—153 R **13 Claims**



1. A tetrahedral kite comprising:

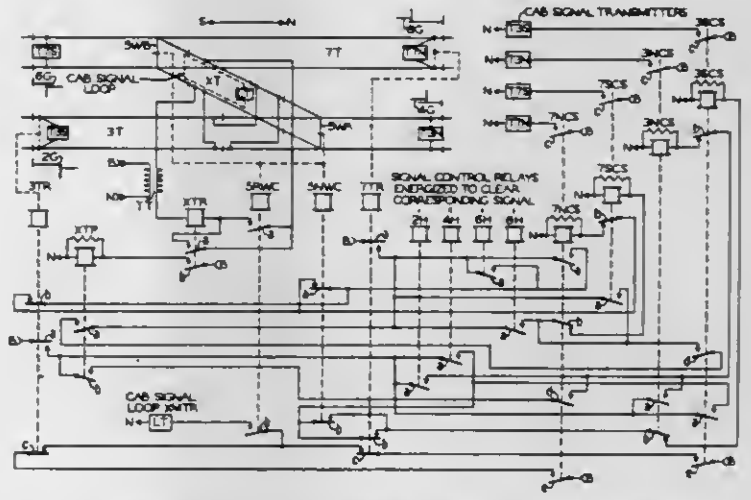
a frame having struts of a rigid material arranged along the edges of a tetrahedral geometric figure; and

a sail covering a pair of surfaces of said tetrahedral figure;

said sail having a substantially diamond shape, having four edges, with a middle portion folded about one of said struts and having first and second sail portions integral with the middle portion and lying on either side of said middle portion and over said pair of surfaces of the tetrahedral figure, said sail including two sheets positioned facewise against each other, substantially in contact over their entire surface and joined together along their edges, one of said struts extending between the sheets along an edge where the sheets are joined together.

3,937,427
CAB SIGNAL CONTROL CIRCUITS FOR RAILROAD INTERLOCKINGS

Kenneth J. Buzzard, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Jan. 24, 1975, Ser. No. 543,696
Int. Cl.^{2} B61L *21/06*
U.S. Cl. 246—34 CT **10 Claims**



1. A cab signal control arrangement for railroad interlockings comprising in combination,

a. an interlocking control system connected for establishing routes and authorizing train movements through said interlocking,

b. occupancy detection means connected to rails at selected points for individually detecting the train occupancy of prefixed track sections within said interlocking,

c. a plurality of cab signal transmitters coupled to the rails at selected locations within said interlocking and operable when activated for transmitting cab signal control energy through the rails of an associated track section, and

d. a control circuit means coupled to each cab signal transmitter and controlled by said interlocking control control system, by said occupancy detection means, and by other cab signal transmitter control means for selectively activating the associated transmitter only when a train is authorized to traverse an established route, any remaining advance section of the route is unoccupied, any preceding transmitters along the route have been activated, and the train has occupied the corresponding section.

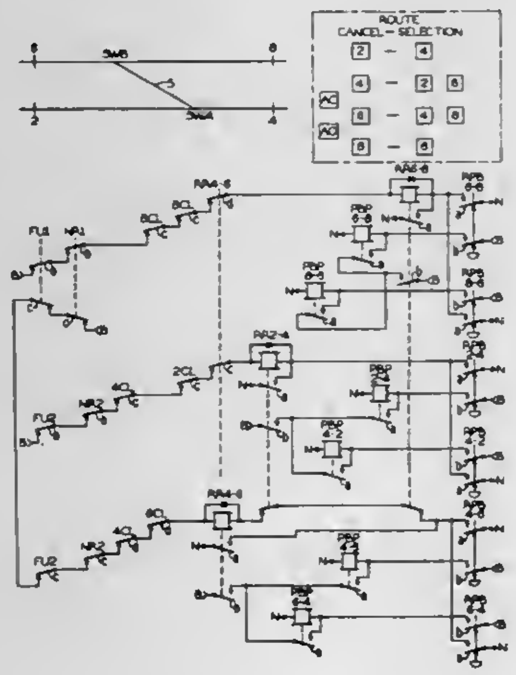
3,937,428
ROUTE INTERLOCKING CONTROL SYSTEM

J. Calvin Elder, Penn Hills, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Feb. 6, 1975, Ser. No. 547,702

Int. Cl.² B61L *19/16*

U.S. Cl. 246—34 R **14 Claims**



1. A route control system for a railroad interlocking, which interlocking comprises a plurality of track routes within prefixed outer limits selectable for train movements, each track route including one or more track sections each with a train occupancy detector, comprising in combination,

a. a single route request means for each track route operable for registering a traffic route request for either direction of traffic through the corresponding track route,

b. a control network for each route request means operable for selecting one or the other traffic direction through the associated track route and connected for operating the associated route request means to register the traffic route request,

c. a direction registry means for each track route controlled by said control network for operating to a first or a second condition as said one or the other traffic direction through the associated track route is requested,

d. a route locking means associated with each entry point of said interlocking and coupled for locking, when activated any requested traffic route originating at that point, and

e. an activating circuit network for each route locking means controlled by each associated route request means, the corresponding direction registry means, said occupany detectors, and opposing route locking means for activating the associated locking means when an originating traffic route request is registered, the corresponding track route sections are unoccupied, and no opposing traffic route is established.

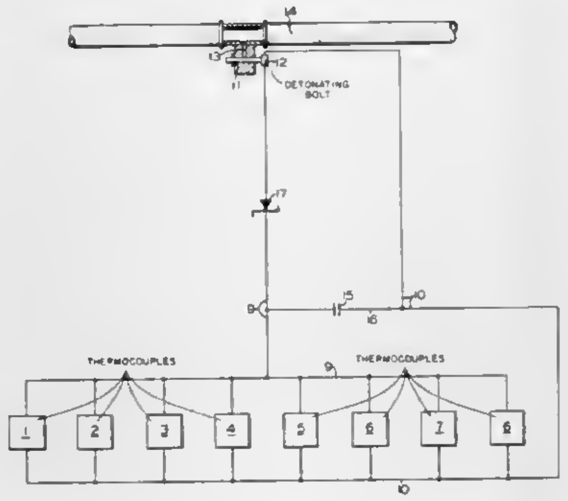
3,937,429
APPARATUS FOR DETECTING HOT JOURNAL BOXES

Jerome R. Pier, Bonita, Calif., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed May 20, 1974, Ser. No. 471,209

Int. Cl.² B61K *9/06*

U.S. Cl. 246—169 A **7 Claims**



1. Apparatus for detecting overheated axle journals on a railway car having a brake pipe, said apparatus comprising:

a. an explosive member interposed in and for normally blocking a passageway via which the brake pipe may be vented to atmosphere;

b. a detonating element carried by said explosive member and responsive to an energy charge for effecting explosion of the explosive member;

c. generating means carried by the axle journal and responsive to heat produced by said journal during rotation of the axle for generating an energy charge of a degree commensurate with the degree of prevailing journal heat; and

d. transmitting means for transmitting said energy charge to said detonating element when the energy charge so generated exceeds a certain preselected degree.

3,937,430
METHOD AND APPARATUS FOR CONTROLLING THE SPEED OF A VEHICLE

Thomas H. Engle, Cape Vincent, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Division of Ser. No. 337,990, March 5, 1973, Pat. No. 3,887,239. This application Jan. 23, 1975, Ser. No. 543,202

Int. Cl.² B61B *13/00*

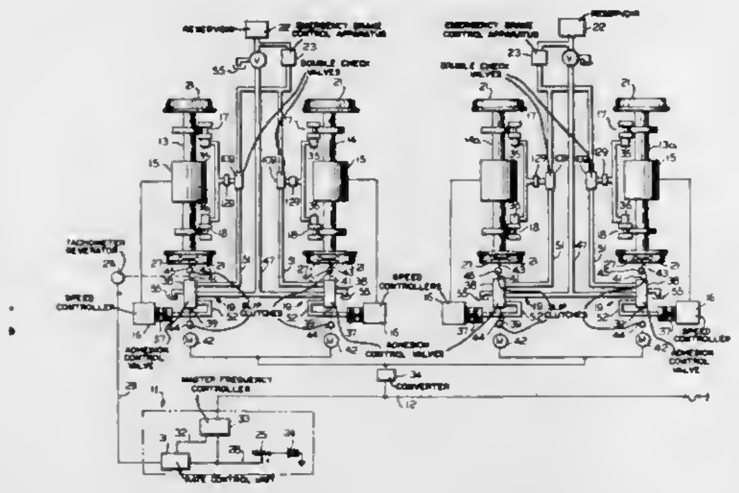
U.S. Cl. 246—182 B **5 Claims**

1. A vehicle control system having a motor and brakes for providing tractive power and braking selectively for at least one wheel of a vehicle and apparatus governing the motor and brakes in accordance with sensing desired and actual vehicle speeds wherein the improvement comprises;

a. adhesion control valve means having an input fluid supply port, a first output fluid pressure port for governing brakes of the wheel and a second output fluid pressure port for governing tractive power of the motor,

b. the adhesion control valve means having coaxial input shafts at opposite ends thereof rotated in the same direction in accordance with sensed actual and desired speeds respectively for the wheel of the vehicle,

c. the adhesion control valve means comprising differential sensing means for sensing whether rotation of the desired speed shaft is lagging or leading the actual speed shaft and in accordance therewith for selecting output fluid pressure to be applied to the first or second output ports respectively, and



d. the differential sensing means being operable to deliver an output fluid pressure proportional to the angular velocity difference in rotation of the two input shafts.

3,937,431
POSITIONING APPARATUS FOR TRACKED TRANSPORT VEHICLES WITH LINEAR MOTOR PROPULSION

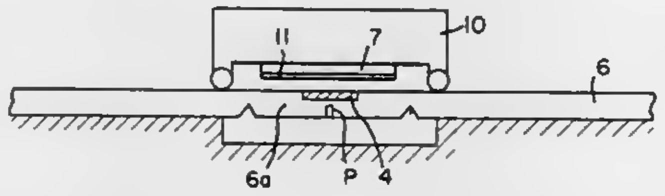
Herwig Güntner, Schwabach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 12, 1974, Ser. No. 505,258

Claims priority, application Germany, Sept. 14, 1973, 2346421

Int. Cl.² B61L *3/00*

U.S. Cl. 246—182 B **7 Claims**



1. Positioning apparatus for tracked transport vehicles having a primary alternating current linear motor windings and separate direct current windings located in the vehicle and stationary linear motor parts of a ferromagnetic bar within the position area having a position point therein, said bar having rows of conducting material placed in an orientation perpendicular to the track and spaced a distance from one another as the pole pitch spacing of the primary winding, comprising:

means for sensing the position of the vehicle as it approaches the positioning point from either direction on the track within the position area;

switching control means responsive to said position means for closing one or two switches depending on the position of the vehicle within the position area;

means for measuring the vehicle velocity while said vehicle is within said position area;

excitation control circuit means responsive to said velocity measurement and said switch positions for applying an accelerating, decelerating or zero strength excitation to said primary alternating current linear motor windings if either one or the other of said two switches are closed and for applying a direct current field excitation to said separate direct current windings regardless of said velocity measurement if both of said switches are closed simultaneously.

3,937,432
TRAIN CONTROL

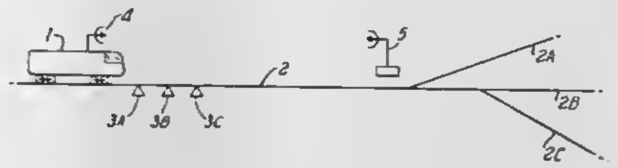
Michael S. Birkin, Derby, England, assignor to British Railways Board, London, England

Filed June 21, 1974, Ser. No. 481,937

Claims priority, application United Kingdom, June 21, 1973, 29572/73

Int. Cl.² B61L *3/02*

U.S. Cl. 246—187 B **9 Claims**



1. A vehicle control system, wherein said vehicle travels along a single, first trackway, defining a first route, which thereafter diverges to form a plurality of second trackways, defining a plurality of alternate routes, comprising; a plurality of transponders or beacons disposed adjacent said first trackway in advance of the point of divergence of said second trackways, equal in number to the number of said second trackways and each adapted to be triggered to emit a signal containing information peculiar to the operating characteristics along one of said second trackways; transmitter means disposed adjacent said second trackways and adapted to emit a plurality of individual signals equal in number to the number of said second trackways and each identifying a particular one of said second trackways; receiver means mounted on said vehicle and adapted to operatively communicate with said transmitter and receive said trackway identifying signals when said vehicle is at a location along said first trackway adjacent said transponders; control equipment mounted on said vehicle, operatively coupled to said receiver to receive the output signal thereof and adapted to operatively communicate with said transponders, when said vehicle is at said location along said first trackway adjacent said transponders, to receive an identifying signal, identifying the one of said second trackways said vehicle is to travel along, from said receiver, to send a triggering signal to the one of said transponders which emits a matching signal and a signal containing information peculiar to the operating characteristics along said identified one of said second trackways and to compare said identifying signal with said matching signal, and to utilize the information peculiar to the operating characteristics along said identified one of said second trackways received from said triggered transponder.

3,937,433
SUPPORT ARRANGEMENTS FOR TURBOMACHINES

Libero Portaleoni, Kollbrunn, Switzerland, assignor to Brown Boveri-Sulzer Turbomaschinen Aktiengesellschaft, Zurich, Switzerland

Filed Dec. 20, 1973, Ser. No. 426,480

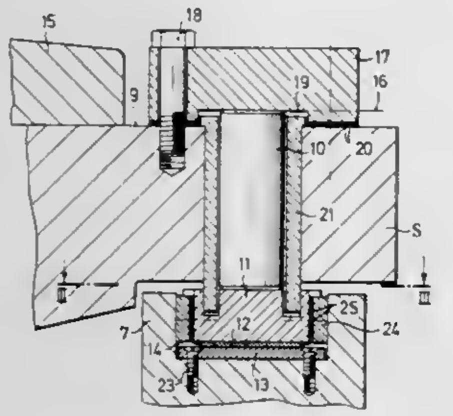
Claims priority, application Switzerland, Jan. 4, 1973, 66/73

Int. Cl.² F16M *13/00*

U.S. Cl. 248—19 **16 Claims**

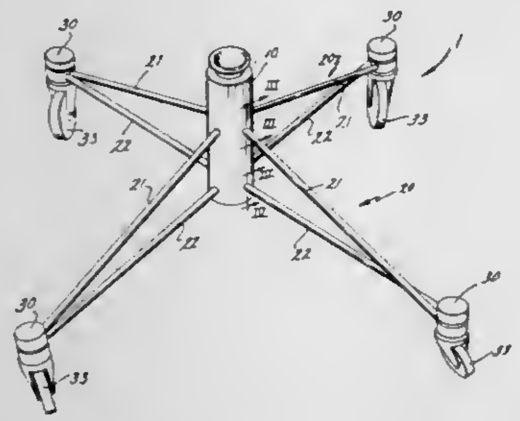
1. In combination with a turbomachine having a casing split along a horizontal median plane, a lower half of said casing having a plurality of lugs extending therefrom, each lug having an aperture therethrough; a support arrangement for defining the axial position of said lower casing half including vertically extending rods, each rod being disposed within an aperture of

a respective lug and having a coefficient of thermal expansion less than that of said casing and covers secured to an upper surface of said lugs and resting on said rods to transfer the weight of said turbomachine casing to said rods.



3,937,434
WIRE ROD CHAIR BASE

William H. Tacke, Wyoming, Mich., assignor to Curtis Products Lt., Cobourg, Canada
Filed June 20, 1974, Ser. No. 481,129
Int. Cl.² A47C *7/00*
U.S. Cl. 248—188.7 **10 Claims**

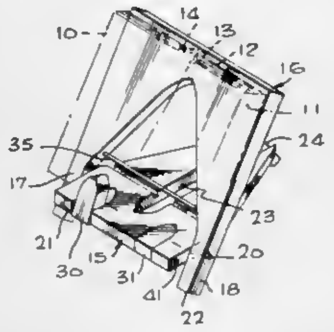


1. A wire rod pedestal type chair base comprising:
a hub assembly; and
a plurality of wire rod support sets supporting said hub assembly, each set including a first rod element attached at one end to and extending laterally and generally horizontally outward from said hub assembly and a second rod element attached at one end to a portion of said assembly above the point at which the first rod is attached and extending diagonally downward therefrom;
a caster socket assembly for each wire rod set secured to the other ends of said first and second wire rods for receiving casters whereby said base rests on the floor; said hub assembly including an inner tube and an outer tube which masks said inner tube, said first rod element extending through and being rigidly attached to said outer tube and said second rod element extending through and being secured to said outer tube, and abutting against said inner tube to provide support.

3,937,435
PAGE HOLDER AND BOOK SUPPORT

Raymond L. Roberts, 1521 Morningside Drive, Burbank, Calif. 91506
Filed Mar. 21, 1975, Ser. No. 560,706
Int. Cl.² A47B *97/04*
U.S. Cl. 248—464 **9 Claims**

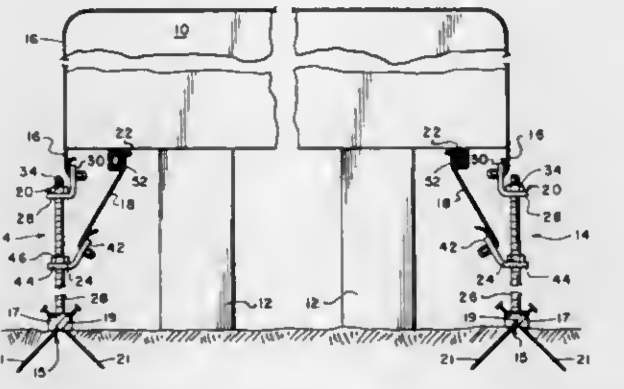
1. A book support and holder for supporting a book in its open condition to separate or divide the pages comprising the combination of:
a base having a predetermined configuration;
a U-shaped member having a cavity corresponding in shape to said base predetermined configuration and being pivotally carried adjacent a selected end of said base so as to rotate between a first position substantially angularly disposed with respect to said base and a second position substantially flat and coplanar with respect to said base;
a brace pivotally carried on said base for releasably engaging with said U-shaped member in said first position;



a pair of tab members pivotally carried along said selected base end and said base provided with a pair of cavities for receiving said tab members when said U-shaped member is in said second position; and
said tab members and said U-shaped member cooperating to support and hold the book and papers open when said U-shaped member is in said first position.

3,937,436
ANCHORING APPARATUS

Ned L. Stewart, 2816 Blue Ridge, Mesquite, Tex. 75149
Division of Ser. No. 298,861, Oct. 19, 1972, Pat. No. 3,830,457. This application Mar. 22, 1974, Ser. No. 454,004
Int. Cl.² E06B *3/54;* **E04B** *5/52*
U.S. Cl. 248—499 **11 Claims**



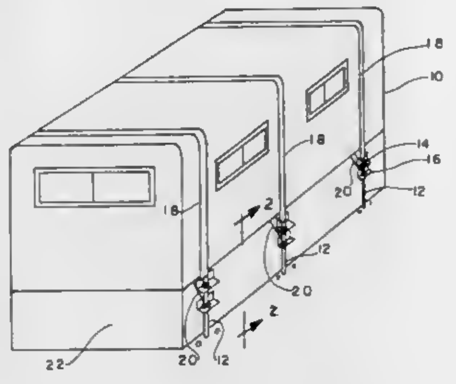
1. An apparatus for use in anchoring to the ground an object that is supported above the ground comprising:
two flexible straps engaging and extending from said object;
an anchor body positioned on the ground;
means for attaching said anchor to the ground;
an elongated shaft extending from said anchor body;
two anchorheads axially positioned on said shaft;
means on each of said anchorheads for releasably attaching each of said anchorheads to one of said straps; and
means on said shaft for releasably attaching each of said anchorheads to said shaft and for independently tensioning each of said straps.

3,937,437
FLUSH MOUNTING DRIVE ANCHOR

Ned L. Stewart, 2816 Blue Ridge, Mesquite, Tex. 75149
Continuation-in-part of Ser. No. 454,004, March 22, 1974. This application Nov. 21, 1974, Ser. No. 525,873
Int. Cl.² E06B *3/54;* **E04B** *5/52*
U.S. Cl. 248—499 **5 Claims**

1. An anchoring apparatus comprising:

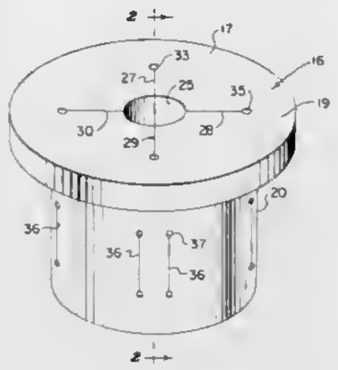
a body portion for embedding in the ground, said body portion comprising a pair of elongated hollow guides for receiving elongated drive anchors therein and a threaded socket provided on the upper portion of said body for positioning said socket flush with the ground surface,



wherein said hollow guides are attached at an angle with respect to each other;
an elongated threaded shaft for releasably engaging said threaded socket; and
anchorhead means for attaching a strap to said threaded shaft.

3,937,438
FLEXIBLE MOLD WITH HINGED SLITS

Robert H. Fox, Hoffman Estates; Robert J. Henning, Crystal Lake, and Robert F. Morgan, Jr., Winnetka, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 4, 1974, Ser. No. 529,333
Int. Cl.² B28B *7/06, 7/20*
U.S. Cl. 249—117 **6 Claims**

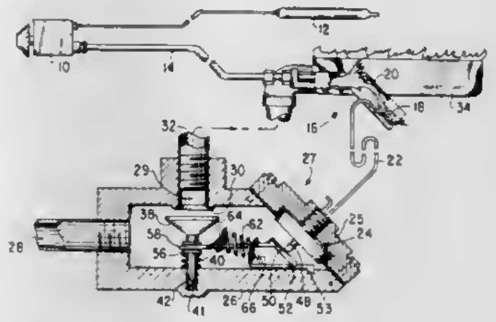


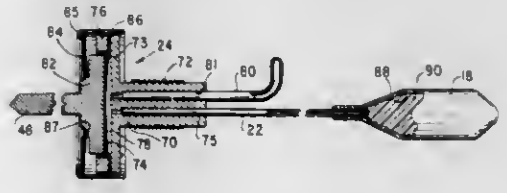
1. In an integral, flexible, distensible mold having a body portion including a wall defining a shaping cavity therein, the improvement comprising: a closed, openable first slit to said wall, said first slit extending from at least a portion of the wall from the shaping cavity and only partly through the wall portion of the mold; and a second slit in said wall, said second slit extending from at least a portion of the outer surface of body portion and inwardly only partly through the wall of the mold; said first and second slit defining a strip of flexible, distensible material therebetween, the slits including an enlarged marginal portion thereof at the inner edges thereof.

3,937,439
THERMALLY OPERATED VALVE UTILIZING GAS ADSORBENT MATERIAL

Hugh J. Tyler, and Denis G. Wolfe, both of Santa Ana, Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Nov. 14, 1973, Ser. No. 415,882
Int. Cl.² F16K *31/165, 17/38;* **G01K** *5/32*
U.S. Cl. 251—11 **16 Claims**

16. A flame responsive valve comprising
a valve seat,
a flame sensing bulb positioned in the path of a flame,
gas pressure responsive means for moving the valve member relative to the valve seat,
a tube connecting the pressure responsive means to the flame sensing bulb,
a quantity of granular adsorbent material in the flame sensing bulb,

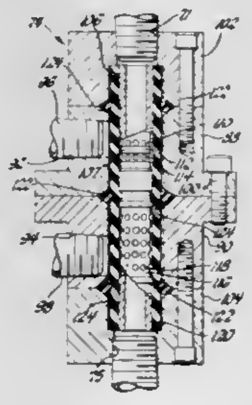




said adsorbent material formed by pyrolytic decomposition of polyvinylidene chloride to form a porous carbonaceous structure with cavities of sufficient size to receive and adsorb monatomic molecules of gas,
a charge of gas in the flame sensing bulb, tube and gas pressure responsive means, said charge of gas being selected from krypton and xenon.

3,937,440
METERING PUMP AND COMBINATION TWO-SECTION PINCH-OFF ASPIRATOR VALVE

Benjamin N. MacGregor, Flushing, and Arnold I. Wilson, Flint, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 19, 1973, Ser. No. 417,227
Int. Cl.² F16K *31/126*
U.S. Cl. 251—61.1 **3 Claims**

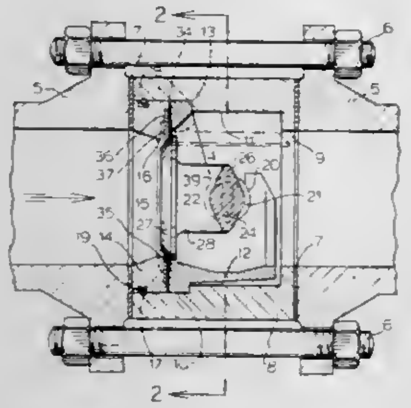


1. A combination two-section pinch-off aspirator valve for dispensing a measured amount of material, said valve comprising: a housing having inlet and outlet openings; a support tube within said housing extending between said inlet and outlet openings; said support tube having a closed section a distance below the inlet opening to divide the support tube into an upper and lower section; said support tube also having a first plurality of openings in spaced relation around said support tube above and below said closed section to connect the upper

and lower sections of the support tube; said support tube further including a second plurality of openings in the lower section thereof in spaced relation around said support tube a distance below said closed section; said support tube being smaller in diameter in the area of the first and second plurality of openings in said support tube; a resilient tube means positioned about said support tube and cooperating with said support tube defining a passage around the periphery of said support tube closed section and defining a chamber around the periphery of said support tube at said second plurality of openings; said housing having a first air inlet port that surrounds the resilient tube means adjacent the passage at said first plurality of openings in said support tube, and a second air inlet port that surrounds the resilient tube means adjacent the chamber at said second plurality of openings in said support tube, whereby the resilient tube means flexes out of said smaller diameter area in said support tube by air being exhausted from said first inlet port opening the passage around said closed section in the first plurality of openings in said support tube to dispense a measured amount of material to the lower section of the support tube while air is applied to the second air inlet port to force said resilient tube to close the chamber at said second plurality of openings in said support tube, air then being applied to said first inlet port to close the passage around said first plurality of openings in said support tube to stop the flow of material to the lower section of said support tube, and the at the same time air being vented from said second inlet port, whereby the resilient tube moves away from the second plurality of openings in said support tube opening said chamber creating a suction in the lower section of said support tube suctioning material out through said second plurality of openings into said chamber thereby preventing drip from said valve.

3,937,441
ROTARY VALVE

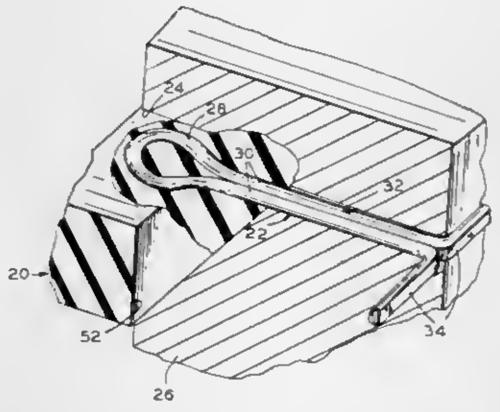
Hans D. Baumann, 29 Villa Drive, Foxboro, Mass. 02035
Filed Feb. 21, 1975, Ser. No. 551,519
Int. Cl.² F16K *1/18*
U.S. Cl. 251—298 **5 Claims**



1. A rotary valve comprising:
a. a tubular housing having a longitudinal central bore extending throughout its length;
b. an inlet and outlet end formed in said housing;
c. a counter bore formed in said housing and extending from the inlet end of said housing towards a stop shoulder, providing at that point a reduced cross-section;
d. a cradle shaped cage assembly removably placed within said housing bore and having a raised diameter portion slidingly engaging the counter bore of said housing and abutting the stop shoulder within said housing;
e. a bore or passage extending throughout the central length of the cradle shaped cage;
f. a ring member guiding closely and being retained by suitable means within said housing and having a central bore defining a valve orifice;
g. one or more sealing rings suitably retained between the terminating face of the raised diameter portion of said cage facing the valve inlet on one side and one terminating surface of the engaged ring member within said housing on the other side and having an inner diameter essentially equal to that of the valve orifice;
h. a pair of openings located perpendicularly to the longitudinal valve axis and within the walls of said cradle shaped cage, each consisting of a circular bore intersected by a vertical slot communicating with the upper open portion of the cage and having a width substantially less than the diameter of said circular bore;
i. a rotating plug tiltingly engaged within said cage and consisting of two circular bearing stubs which slidingly fit through said vertical slots of the cradle shaped cage, separated and connected with each other by a central hub and said plug having a spherical head portion suitably connected to the hub, said head portion engaging and cooperating with the inner bore of said sealingrings in the closed valve position;
j. a pair of guide bushings slidingly engaged over said bearing stubs and within said circular bores located perpendicularly to the longitudinal valve axis within said cage, thereby effectively retaining the rotating plug within the cage;
k. means to engage one of said bearing stubs and to tiltingly move the rotating plug.

3,937,442
GATE VALVE HAVING O-RING SEAL

Charles H. Martin, Portland, and Steven V. Brewer, Beaverton, both of Oreg., assignors to Dillingham Corporation, Honolulu, Hawaii
Filed Feb. 27, 1975, Ser. No. 553,586
Int. Cl.² F16K *3/02*
U.S. Cl. 251—328 **11 Claims**

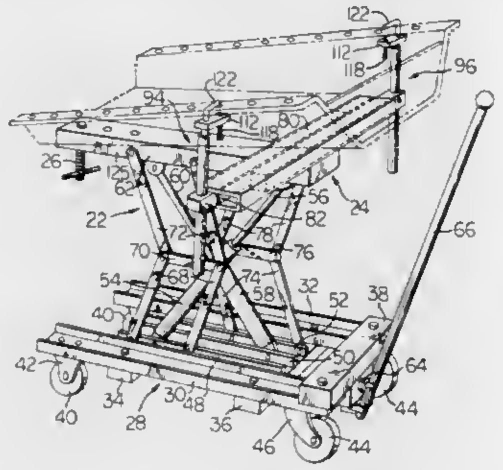


1. In a gate valve,
an annular seat member having a plurality of holes therein spaced therearound,
an O-ring,
and a plurality of fastener members having head portions embedded in the O-ring and also having shank portions extending into the holes and secured to the seat member.

3,937,443
CRANKCASE GUARD JACK UTILIZING DOUBLE PARALLELOGRAM

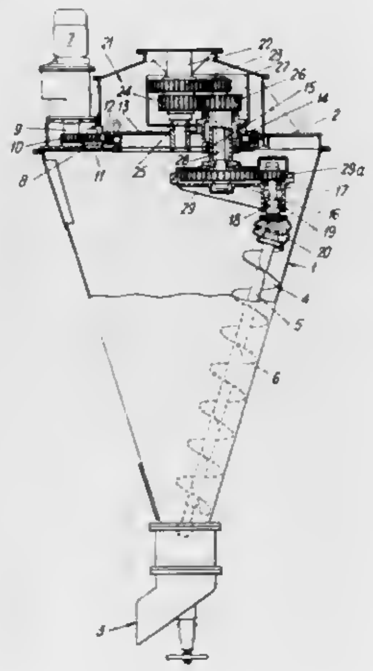
Virgil Richard Charles Durgan, Tremont, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed July 11, 1975, Ser. No. 594,975
Int. Cl.² B66F *5/04*
U.S. Cl. 254—10 B **10 Claims**

1. In a jack having a base, a lift head, a pair of parallelogram linkages pivotally mounted on said base and on said lift head, a pair of hydraulic actuators pivotally connected at one end to said base and at the other end to said lift head, said pivoted connections of said actuators to said base and to said lift head being at spaced apart locations, the axis of each ram lying parallel to the plane of the adjacent parallelogram linkage and crossing each other in spaced apart relationship, pump means for raising said lift head and valve means associated with said pump for lowering said lift head, in combination with a fixture having a box beam mounted at its midportion to one end portion of said lift head and extending perpendicular to the axis of said lift head, support bars projecting from the opposite ends of said box beam, vertically extending telescopic coupling members carried by the outer end portions of said support bars, means on each coupling member for gripping a work load, and a slope adjusting means on said lift head at the end of said head spaced from said fixture whereby said means for gripping the work load may be secured to the edges of the work load and the slope adjusting means is moved into contact with a remote point of said work load prior to lowering said work load.



3,937,444
MIXER

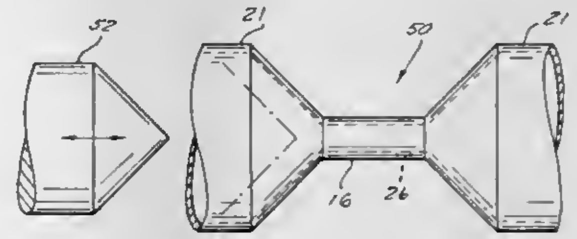
Arno Fritz Ottomar Kapp, Retford, England, assignor to Jenkins of Retford, Ltd., Retford, England
Filed June 17, 1974, Ser. No. 480,270
Claims priority, application United Kingdom, June 19, 1973, 29115/73
Int. Cl.² B01F *7/00*
U.S. Cl. 259—40 **5 Claims**



1. In combination with a mixer comprising a mixing receptacle having an axis of symmetry, a top at one end of the axis and an outlet end at an end of the axis opposite to the one end; a conveying screw in the receptacle, the conveying screw being rotatable about its axis and epicyclically, and having an end adjacent the one end of the axis and an opposite end adjacent the opposite axis end for conveying mixed material to the outlet end of the receptacle; and a universal joint coupling the opposite end of the conveying screw to the outlet end of the receptacle; a drive for the conveying screw mounted at the top of the receptacle, the drive including
1. a motor,
2. a first rotary member arranged to be driven by the motor about an axis of rotation,
3. a second rotary member mounted for rotation with an axis of rotation radially spaced from the axis of rotation of the first rotary member,
   a. the second rotary member supporting and rotating the end of the conveying screw adjacent the one axis end at a point radially spaced from the axis of rotation of the second rotary member; and
4. means coupling the second rotary member to the motor to be driven thereby, rotation of the first and second rotary members by the motor causing the conveying screw to be rotated about its axis and epicyclically.

3,937,445
PROCESS AND APPARATUS FOR OBTAINING THE EMULSIFICATION OF NONMISCIBLE LIQUIDS

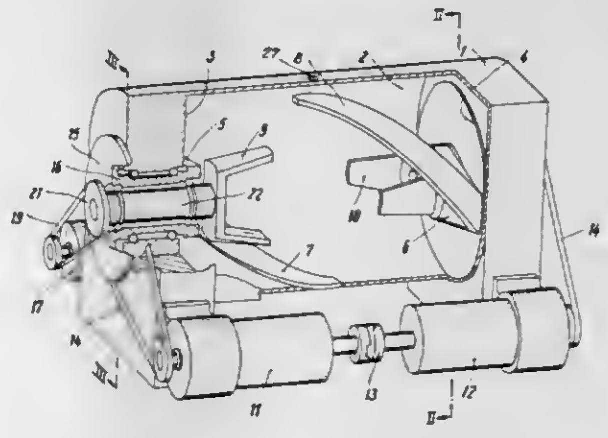
Vito Agosta, 42 Cherry Lane, Huntington, N.Y. 11743
Filed Feb. 11, 1974, Ser. No. 441,637
Int. Cl.² B01F *5/00, 3/08*
U.S. Cl. 259—4 R **12 Claims**



1. A process for obtaining the emulsification of two or more nonmiscible liquids comprising the steps of:
reducing the pressure of at least one of said liquids below its Clausius-Clapeyron pressure;
maintaining said liquid at said reduced pressure for a finite time period until bubbles form; and,
permitting said bubbles to violently contract and expand in the presence of said two or more nonmiscible liquids.

3,937,446
APPARATUS FOR MIXING OF BUILDING MATERIALS

Herbert Feger, Bruchhausen, and Paul Hanss, Reichenbach, both of Germany, assignors to Elba-Werk Maschinen-Gesellschaft mbH & Co., Ettlingen, Baden, Germany
Filed Sept. 30, 1974, Ser. No. 510,741
Int. Cl.² B01F *7/04*
U.S. Cl. 259—105 **6 Claims**



1. A concrete mixing apparatus for the mixing of materials including a cylindrical-mixing container having front and rear sides provided with mixing tools comprising:

two carrier arms extending radially outwards from said respective front and rear sides and displaced from each other by 180°;

two elongated helically-shaped mixing tools each supported by a respective one of said carrier arms at one end only of the tool and extending from said respective front and rear sides at an angle towards the center of said mixing container, said helically-shaped mixing tools each having a free unsupported end reaching toward the opposite side but terminating just beyond the center of said container and short of the opposite arm;

two shafts penetrating said respective front and rear sides; and

two rotatable mixing tools disposed ahead of said respective carrier arms on said respective shafts.

3,937,447
INJECTION MOLDING APPARATUS

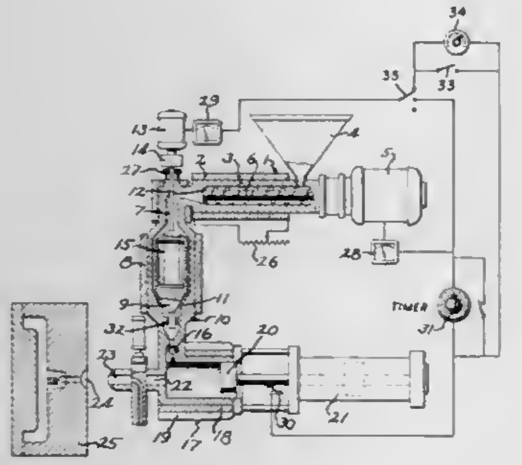
Dieter Alwes; Helmut Eckardt, both of Hilchenbach-Dahlbruch; Hans Peter Leiste, Kirchhundem, and Robert Albert Melcher, Wenden-Gerlingen, all of Germany, assignors to Siemag Siegener Maschinenbau GmbH, Hilchenbach-Dahlbruch, Germany

Filed Sept. 7, 1973, Ser. No. 395,124

Claims priority, application Germany, Dec. 27, 1972, 2263571; June 2, 1973, 2328222

Int. Cl.^{2} B29B *1/10*

U.S. Cl. 259—191 **28 Claims**



1. Injection molding apparatus, comprising

a. a screw-type extruder driven by a motor, the extruder having a housing containing heating elements,

b. an accumulator having a cylindrical chamber whose axis is spaced from the extruder, the accumulator having a loading piston lying in the chamber, the accumulator also having a wall containing heating elements,

c. an intermediate housing extending between the extruder and the accumulator, the walls of the housing defining a treatment chamber being provided with heating means, and

d. a treatment element lying in the treatment chamber to define a thin annular passage therebetween,

the end of the treatment chamber and the end of the treatment element adjacent the accumulator being provided with generally pointed surfaces, and the element being axially adjustable in the treatment chamber to accurately determine the thickness of the passage therebetween.

3,937,448
APPARATUS FOR HARDENING STEEL PIPES

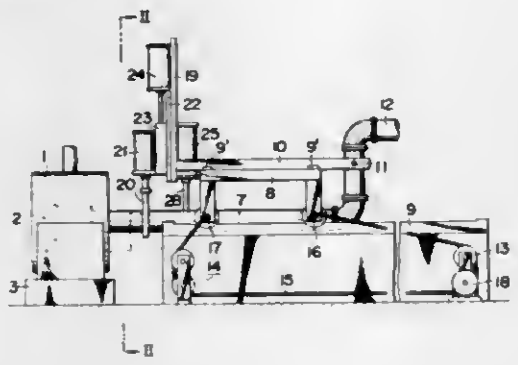
Yoshihisa Fujii, and Akio Fujiwara, both of Wakayama, Japan, assignors to Sumitomo Metal Industries Limited, Osaka, Japan

Filed May 20, 1974, Ser. No. 471,543

Claims priority, application Japan, May 21, 1973, 48-57585

Int. Cl.^{2} C21D *1/62, 9/14*

U.S. Cl. 266—6 S **4 Claims**



1. An apparatus for hardening steel pipes, comprising an inner quenching head mounted for movement in a longitudinal direction of the pipe, an outer quenching head fixedly mounted on a base member, said quenching heads having quenching water jetting orifices inclined at angles of 30° ± 10° to an advancing direction of the pipe axis, a water supply boom fixed to said inner quenching head, means for moving said boom in the longitudinal direction of the pipe, means for holding and centering said inner quenching head along the longitudinal axis of the pipe, said moving means comprising a movable stand and a carriage means for movement parallel to the longitudinal axis of the pipe, said boom being connected to said moving means, and said stand having means thereon for bearing against said boom for moving same in a direction at right angles to the pipe axis.

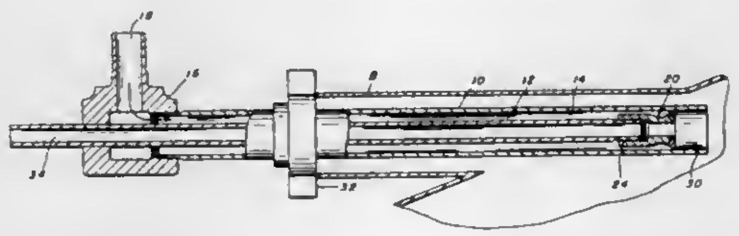
3,937,449
LIQUID-FUEL ATOMIZATION AND INJECTION DEVICE

William F. Copeland, Plum Borough; Charles M. Sciulli, Jr., Whitehall Borough, and Donald G. White, Plum Borough, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed June 26, 1974, Ser. No. 483,175

Int. Cl.^{2} F27B *1/16*

U.S. Cl. 266—29 **6 Claims**



1. A liquid fuel injector for atomizing liquid fuel prior to admixture with hot air introduced into a blast furnace through a hot blast pipe, said apparatus comprising:

a. a cylindrical outer tube penetrating said hot blast pipe with its discharge end in open communication with the interior of said pipe;

b. an inner tube concentrically disposed in said outer tube in spaced relation from the wall thereof;

c. said outer and inner tubes cooperating to define concentric axial and annular passages through said apparatus;

d. a spray nozzle attached to the discharge end of said inner tube and having an outer peripheral edge contiguous with the inner surface of said outer tube to separate said annular passage from said axial passage;

e. said spray nozzle being axially spaced from the discharge end of said outer tube to define a cylindrical atomization chamber adjacent thereto;

f. a cylindrical axial opening through said nozzle connecting said axial passage with said atomization chamber;

g. a plurality of circumferentially spaced atomizing openings through said nozzle in radially spaced relation to said axial opening, said atomizing openings connecting said annular passage with said atomization chamber;

h. means for supplying liquid fuel to said axial passage, and

i. means for supplying atomizing fluid to said annular passage.

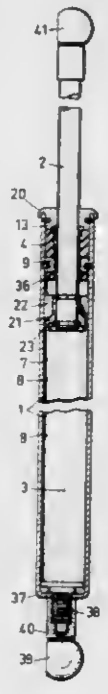
3,937,450
SLIDING PISTON GAS SPRING

Fritz Bauer, Schulstr. 14, 8503 Altdorf, near Nurnberg, Germany

Filed Dec. 2, 1974, Ser. No. 528,690

Int. Cl.^{2} F16F *5/00*

U.S. Cl. 267—113 **6 Claims**



1. In a gas spring having a housing formed by a cylindrical tube and a piston rod which acts on compressing piston and is mounted coaxially in said housing, said piston rod supporting a guide and damping piston means with asymmetric damping, said rod protruding from one end of the housing and being provided with a seal, said guide and damping piston means having at least one constantly open damping passageway and at least one passageway which is open when the piston rod travels in one direction and closed when the piston rod travels in the other direction, the improvement wherein:

said guide and damping piston means comprises a sliding piston coaxial with said piston rod and displaceable axially along said rod between two stops, said sliding piston resting in a guiding fashion on the internal wall of said housing, and

a valve body on said piston rod and maintained from coming off the end of said piston rod, said valve body facing the internal chamber of the housing and serving as one of said two stops for said sliding piston,

said valve body and said sliding piston having complementary corresponding valve seat surfaces, and said passageway open when said piston rod travels in one location and closed when said piston rod travels in said other direction being located in said sliding piston behind its complementary valve seat surface.

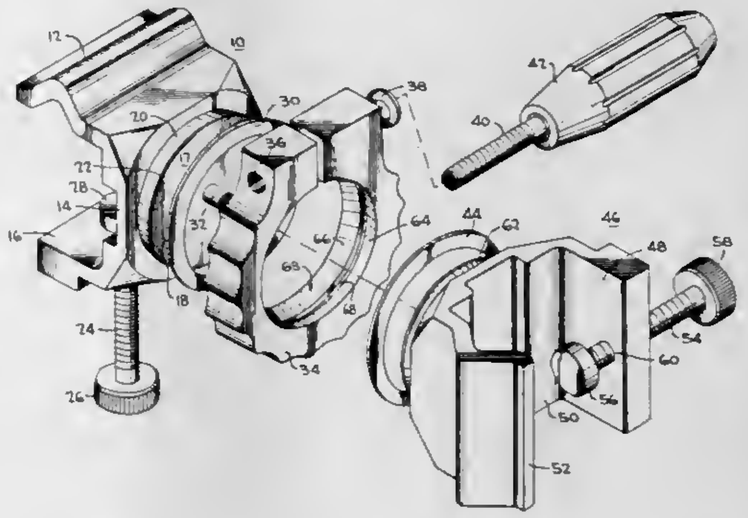
3,937,451
HOLDER

Philip J. DiPaola, 258 Wadsworth Ave., New York, N.Y. 10040, and Charles M. Boye, 300 W. 23rd St., New York, N.Y. 10011

Continuation of Ser. No. 390,346, Aug. 22, 1973, abandoned. This application Mar. 3, 1975, Ser. No. 554,449

Int. Cl.^{2} B25B *5/10*

U.S. Cl. 269—45 **9 Claims**



1. Holding means comprising:

a first clamp having a first extension means integrally formed therewith;

a second clamp having a second extension means integrally formed therewith;

variable sized means for rotatably gripping said first and second extension means whereby said first and second clamps are rotatably secured together so as to be angularly adjustable with respect to one another when said variable sized means is of a first size, and for fixedly gripping said first and second extension means whereby said first and second clamps are fixedly secured together at a selected angular position with respect to one another when said variable sized means is of a second size which is smaller than said first size;

said first and second extensions and said variable sized means being axially aligned;

said first and second extensions being spaced apart from each other by said variable sized means so as to define a gap therebetween when said variable-sized means is either of said first or second size;

a first washer interposed between said variable-sized means and said first clamp;

a second washer interposed between said variable-sized means and said second clamp; and

means for varying said size of said variable sized means whereby the adjustability of said holding means and said clamps relative to one another is facilitated by said washers and said gap defined between said extensions, yet said clamps are stably supported with respect to each other by said variable sized gripping means.

3,937,452
METHOD AND APPARATUS FOR MANUFACTURING CONTINUOUS FORM SETS

Karl Heinz Gäth, Weinbergstrasse 35, O-3221 Rollinghausen, Germany

Filed Nov. 26, 1973, Ser. No. 418,934

Claims priority, application Germany, Nov. 29, 1972, 2258431

Int. Cl.^{2} B41L *1/32*

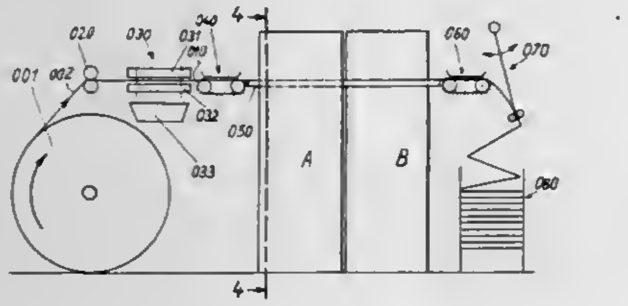
U.S. Cl. 270—39 **12 Claims**

1. A method for making continuous, linearly attached form sets including individual form sheets attached in overlying relationship to a continuous bottom form sheet at spaced intervals along the length of the bottom form sheet, the method comprising:

supplying and advancing a continuous, elongated raw web material to a bottom form sheet processing station with intermittent unidirectional movement, the web material being advanced through said processing station by indexing and advancing means through suitable increments of length corresponding to the desired lengthwise dimension of an individual form set, and being at rest between each intermittent movement;

processing said raw web material to form continuous, joined bottom form sheets, said processing operation being carried out synchronously with said raw web material advancing movement;

advancing said bottom form sheets contemporaneously with said raw web material advancing movement from said processing station sequentially to and through at least a pair of form set assembly stations;



supplying registered overlying pairs of individual form sheets periodically to each of said form set assembly stations;

assembling a first of said pair of individual form set sheets in overlying relationship with said bottom form sheets at a first assembly station while said bottom sheet is at rest at said first assembly station;

assembling a second of said pairs of individual form set sheets in overlying relationship with said first pair of individual form set sheets at a second assembly station while said bottom sheet is at rest at said second assembly station;

securing said assembled pairs of individual form set sheets to each other and to said bottom sheet to form continuous form sets linearly secured to each other through said joined bottom form sheets.

3,937,453

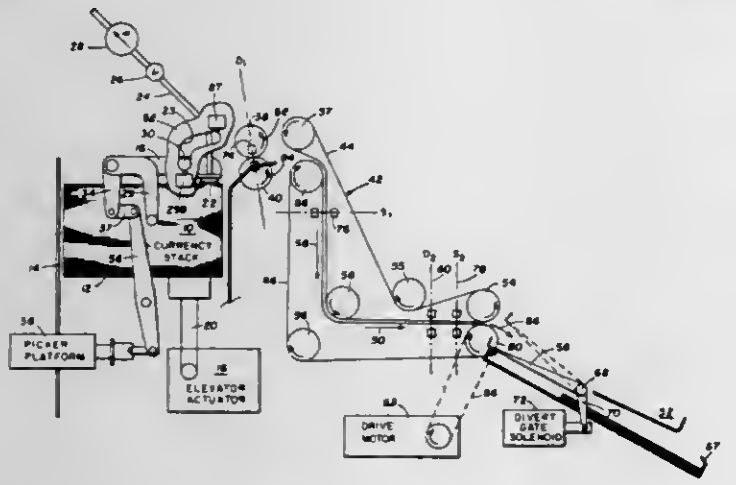
SINGLE DOCUMENT TRANSPORT

Richard C. Hickey, Plano; Jerry W. Swafford, Dallas; Robert F. Swartzendruber, Plano, and Thomas P. Barnes, Dallas, all of Tex., assignors to Docutel Corporation, Irving, Tex.

Filed Aug. 2, 1974, Ser. No. 494,331

Int. Cl.^{2} B65H *3/52, 7/14, 29/62*

U.S. Cl. 271—4 **19 Claims**



1. In a document transport system for transporting documents from a stack to a remote distribution station, comprising in combination:

a pair of separator rollers rotating to transport a document to the distribution station;

means for driving one of said rollers in a direction to transport a document to the distribution station;

means for mounting the second roller of said pair to normally rotate freely in the same direction as said other roller;

means for removing a document from the stack for delivery to said pair of separator rollers;

means at the separator rollers to detect when more than one document moves through said rollers and generate a double detection signal; and

means responsive to said signal to couple the second of said rollers to said means for driving to rotate the rollers of said pair in opposite directions.

3,937,454

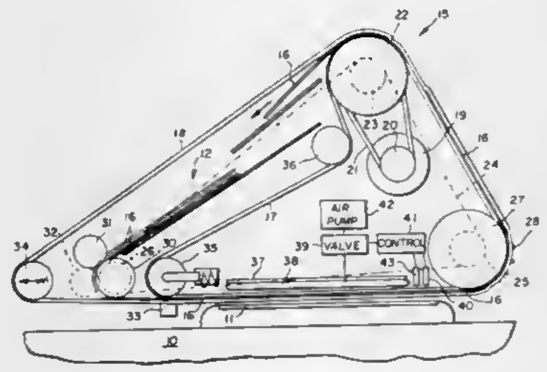
SHEET RECIRCULATOR

Richard H. Colwill, 2650 Turk Hill Road, Victor, N.Y. 14564

Filed May 16, 1975, Ser. No. 578,084

Int. Cl.^{2} B65H *3/06, 29/12*

U.S. Cl. 271—6 **11 Claims**



1. In apparatus for feeding document sheets in order from a supply stack to the viewing region of a copier and back to said supply stack, the improvement comprising:

a. means arranged above said viewing region for forming a circulation path for said sheets, said path being generally triangular in vertical cross section;

b. means for supporting said supply stack at an incline along a first side of said path;

c. a second side of said path being arranged to extend from the lower region of said first said of said path across said viewing region;

d. a third side of said path being arranged to extend from said second side of said path upward to the upper region of said supply stack;

e. means for successively removing the bottom sheet of said supply stack from said lower region of said supply stack;

f. means for advancing said removed sheets successively in order into said second side of said path;

g. means for synchronizing said advance of said removed sheets with operations of said copier for copying said sheets in said viewing region;

h. means for advancing said copied sheets successively in order from said second side of said path through said third side of said path;

i. means for advancing said copied sheets successively in order to superposed relation over the top sheet of said supply stack; and

j. said means for advancing said removed sheets and said copied sheets comprises a pair of endless belts, drive means for said endless belts, and outer one of said belts is substantially transparent, an inner one of said belts is substantially opaque, said inner belt passes under said supply stack, said outer belt passes over said supply stack, and said belts travel together through said second and third sides of said path.

3,937,455

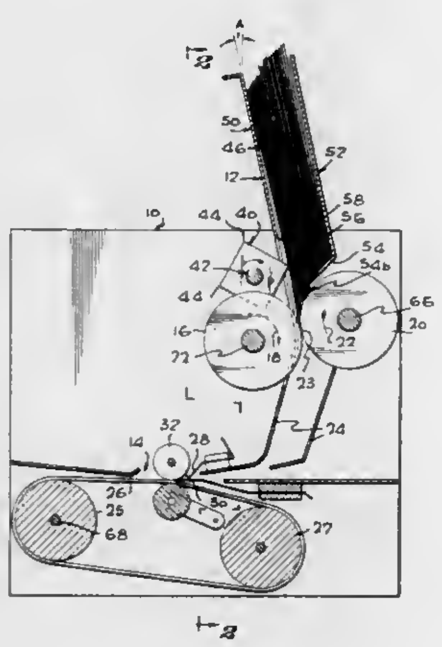
AUTOMATIC STACK FEED

Frank W. Hauser, Santa Monica, Calif., assignor to Telautograph Corporation, Los Angeles, Calif.

Filed Apr. 1, 1974, Ser. No. 456,789

Int. Cl.^{2} B65H *3/06*

U.S. Cl. 271—10 **2 Claims**



1. Apparatus for feeding individual sheets from a stack comprising:

a hopper having a lower side plate (50) extending at an angle of at least a few degrees and less than 45° from the vertical and having a slot near its lower end, said hopper having an upper plate with a lower end (54) which extends towards said lower plate but which has an end (54*b*) spaced therefrom to form a throat (56) at the bottom of the hopper through which only a portion of the sheets of a full hopper can pass;

feed roller means (16) positioned below said throat and activatable to move individual sheets along a predetermined feed path leading from said hopper means;

a prefeed member (40) with at least one projection, said prefeed member being rotatably mounted with its projection passing through said slot in said lower side plate to beat against a bottom sheet in the hopper;

said prefeed member located immediately above said throat (56) to lie substantially opposite said lower end (54) of the upper plate, whereby the prefeed member tends to bend primarily the few sheets that have passed through the throat rather than uniformly bending the entire stack of sheets.

3,937,456

ARTICLE STACKING APPARATUS

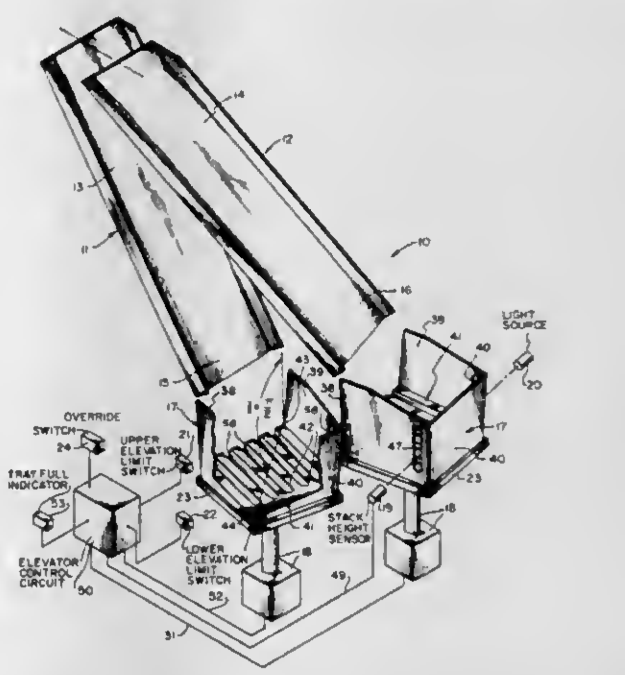
Romualdas K. Gruodis, Mt. Airy, Md., and Eugene D. Millbradt, Annandale, Va., assignors to Fairchild Industries, Inc., Germantown, Md.

Filed Sept. 26, 1974, Ser. No. 509,724

Int. Cl.^{2} B65H *29/26, 31/08*

U.S. Cl. 271—64 **4 Claims**

2. Article stacking apparatus comprising means for impacting with moving articles which are to be stacked, said impact means having an inclined surface with a lower end portion and means located adjacent to the lower end portion of said slide surface for receiving articles which have impacted with said impacting means, said article receiving means comprising a container with a bottom portion and an open top portion, said container having an inclined inner bottom surface inclined downward substantially toward one inner corner of said container and having at least two sides which slope in an outward direction from the bottom portion to the top portion of said container.



3,937,457

SHEET FEEDER APPARATUS

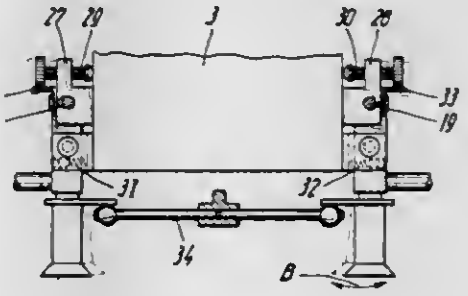
Adolf Schwebel, Offenbach am Main, Germany, assignor to Mabeg Maschinenbau GmbH and Nachfolger Hense & Pleines GmbH & Co., both of Offenbach, Germany

Filed Aug. 19, 1974, Ser. No. 498,597

Claims priority, application Germany, May 14, 1974, 2423349

Int. Cl.^{2} B65H *3/02*

U.S. Cl. 271—92 **14 Claims**



1. In a sheet feeder apparatus for transferring sheets in a transport direction, said feeder apparatus having a frame structure, sheet pick-up means including at least one pick-up head, means for adjustably securing said sheet pick-up means to said frame structure, and adjusting means operatively connected to said adjustable securing means, the improvement wherein said adjustable securing means comprise a support block, first means pivoting said support block to said frame structure for rotation about a first fixed horizontal axis extending transversely of the transport direction, further means pivoting said pick-up head intermediate its ends to said support block for rotation about a second axis extending in a plane normal to said first axis, said adjusting means comprising an adjusting rod having a threaded end and an opposite end, said opposite end being secured to an upper end of said pick-up head, guide means secured to said frame structure, said adjusting rod extending through said guide means with said threaded end extending out of said guide means, an adjusting nut on said threaded end of said adjusting rod, and spring means on said adjusting rod urging said upper end of said pick-up head away from said guide means and thus the adjusting nut against the guide means.

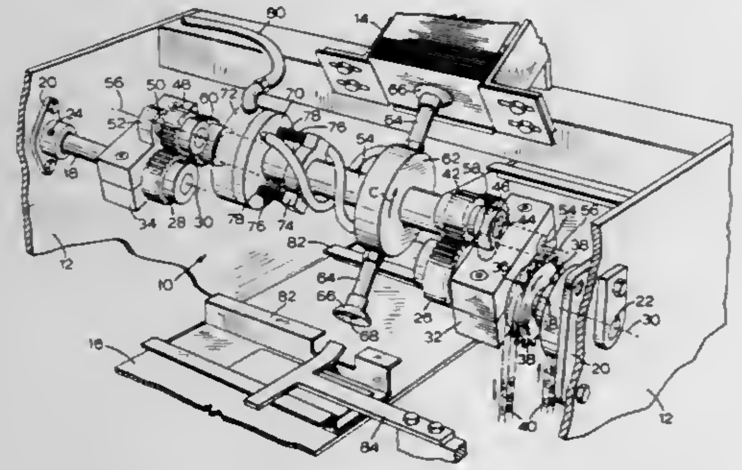
8. In a sheet feeder apparatus for transferring sheets in a transport direction, said sheet feeder apparatus having a frame

structure, sheet pick-up means including first and second pick-up heads, first and second means for adjustably securing said first and second sheet pick-up means respectively to said frame structure, and first and second adjusting means operatively connected to said first and second adjustable securing means respectively; the improvement wherein said first adjustable means comprises a first support block, first means pivoting said first support block to said frame structure for rotation about a first fixed horizontal axis, means affixing said first pick-up head to said first support block, said first adjusting means comprising an adjusting rod having one end secured to said first pick-up head, and means for moving said adjusting rod to tilt said first pick-up head about said first axis in a first plane extending substantially vertically and in said transport direction, said second adjustable securing means comprising a second support block, means mounting said second support block on said frame structure, means pivoting said second pick-up head intermediate its ends to said second support block for rotation about a second axis, whereby said second pick-up head is tiltable in a second plane extending substantially vertically and perpendicularly to said transport direction, and said second adjusting means comprising control means operatively coupled to said second pick-up head for tilting said second pick-up head in said second plane.

3,937,458
ROTARY TRANSFER MECHANISM

Marinus J. M. Langen, Rexdale, Canada, assignor to H. J. Langen & Sons Ltd., Rexdale, Canada

Filed June 3, 1974, Ser. No. 475,444
Int. Cl.² B65H *3/08, 3/05*
U.S. Cl. 271—95 1 Claim

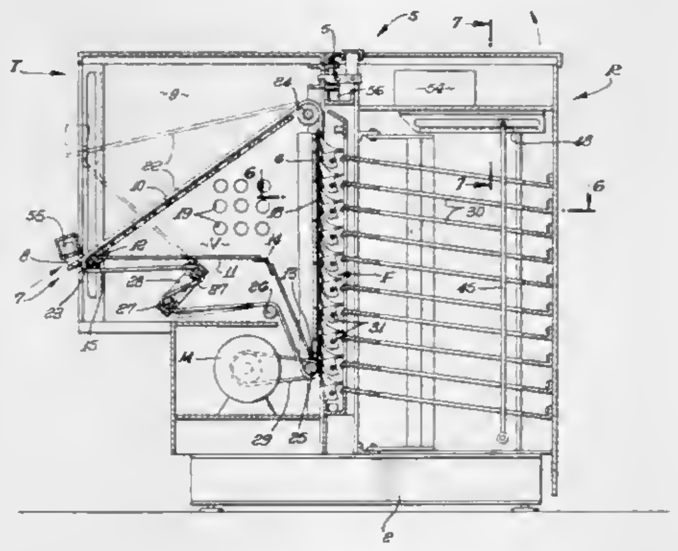


1. A rotary transfer mechanism for transferring items from a dispenser station to a receiver station which is circumferentially spaced 120° in a first angular direction from the dispenser station in an arc generated about a central axis, the transfer mechanism comprising; a frame having a carriage member mounted for rotation thereon about said central axis, a stationary gear mounted on the frame in axial alignment with said central axis and disposed adjacent said carriage, idler gear means mounted for free rotation on said carriage in meshed engagement with said stationary gear means for rotation about said stationary gear means in response to rotation of said carriage about said central axis, third gear means mounted on said carriage in meshed engagement with said idler gear means to be rotatably driven by said idler gear means about a second axis in response to rotation of said carriage about said central axis, a transfer head means mounted on said carriage for rotation about said second axis with said third gear means, said transfer head means including, a pair of diametrically opposed pick-off arms projecting radially from said second axis, each of said pick-off arms having a pick-off head at the radially outer end thereof, drive means for rotatably driving the carriage about said central axis in a direction opposite to said first angular direction, the radial distance from the pick-off heads to the second axis being twice the pitch center distance between the stationary gear and the third gear, whereby rotation of said carriage about said central axis as aforesaid in the direction opposite to said first angular direction causes movement of said pick-off head in said first angular direction along an arcuate path which extends between said dispenser station and said receiver station, said arcuate path having a concave curvature in the direction towards said second axis such that the article which is transferred is rotated upon itself through an arc of no more than 120°.

3,937,459
SORTING MACHINE

Frederick J. Lawrence, San Francisco, Calif., assignor to Keith B. Stewart, Irvine and Peter Shea, Newport Beach, both of, Calif.

Filed Sept. 16, 1974, Ser. No. 506,526
Int. Cl.² B65H *31/24*
U.S. Cl. 271—173 18 Claims



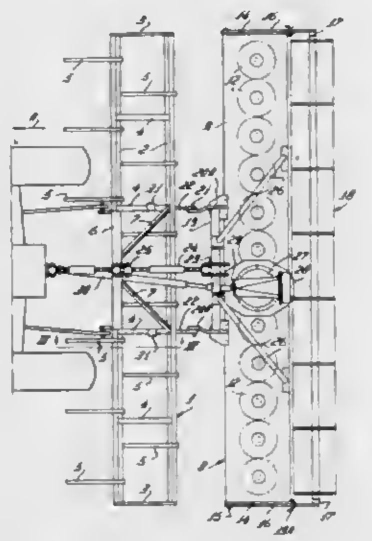
1. In a sorting machine having walls defining a vacuum chamber, sheet carrying belts movable about said chamber, and receiver means for successively receiving the sheets from said belts in sorted relation, the improvement wherein said walls and belts have portions pivotal about a horizontal axis and provide a vertically adjustable sheet input section about which said belts move, whereby said machine is adapted to receive sheets from a source of selected height.

3,937,460
COMBINATIONS OF TWO SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Filed Apr. 24, 1974, Ser. No. 463,590
Claims priority, application Netherlands, May 1, 1973, 7306002
Int. Cl.² A01B *33/00*
U.S. Cl. 172—59 13 Claims

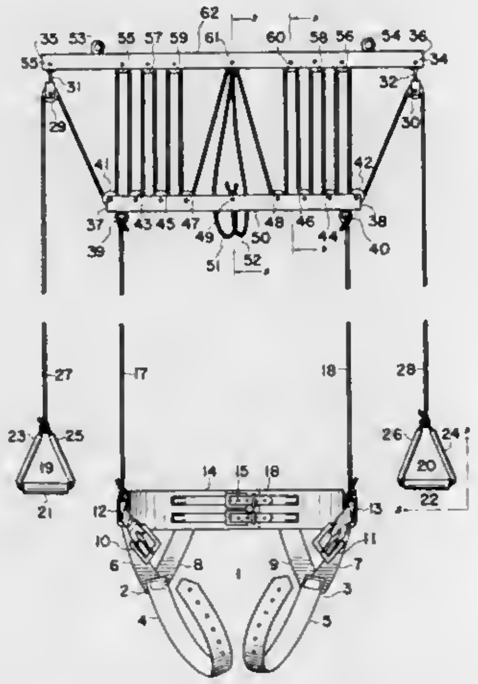
1. A soil-cultivating assembly comprising a combination of two cultivating implements positioned one behind the other, each of said implements having a frame and a coupling member for independent and alternative connection to one another and to a prime mover, a first implement being positioned as a leading implement and having tines rigidly fixed to a corresponding frame and a second implement having rotatable soil-working tined members that revolve about upwardly extending axes, driving means for revolving said soil-working members and said driving means being in driving engagement with a power take-off of the prime mover, the coupling members of said two implements being interconnected with a three-point lifting device of the prime mover, the front of the frame of said leading implement having its corresponding coupling member positioned for connection to the three-point lifting device of the prime mover, arm means being provided, between the rear of said coupling member and the coupling member of the said second implement for linking said respective coupling members, said arm means comprising upper arm means and lower arm means, stop means being positioned adjacent said lower arm means to limit movements of same.



3,937,461
EXERCISER FOR AERIAL CALISTHENICS

Hyok Sang Lew, 17776 W. 14th Ave., No. 2, Golden, Colo. 80401

Filed Dec. 26, 1973, Ser. No. 427,804
Int. Cl.² A63B *7/02*
U.S. Cl. 272—60 R 6 Claims



1. A hoist usable for lifting and suspending an exercising person in midair in doing aerial exercises, said hoist comprising:

a. a first elongated structural member having a cross section of a channel, said first structural member including:
  1. a first pulley suspended from one extremiety of said first structural member;
  2. a second pulley suspended from the other extremity of said first structural member; and
  3. a plurality of sheaves disposed within the channel of said first structural member in series and rotatably secured to said first structural member; whereby, said sheaves are rotatable about axis normal to the channel walls of said first structural member;

b. a second elongated structural member having a cross section of a channel, said second structural member having a length shorter than the length of said first structural member, said second structural member including;
  1. a plurality of sheaves disposed within the groove of said second structural member in series and rotatably secured to said second structural member; whereby, said sheaves are rotatable about axis normal to the channel walls of said second structural member;
  2. a first means of securing a first rope to one extremity of said second structural member; and
  3. a second means of securing a second rope to the other extremity of said second structural member;

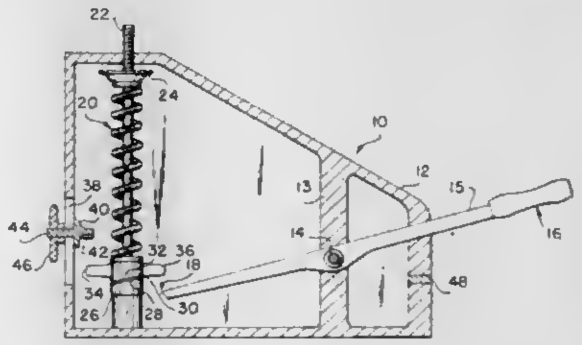
c. a third rope having a first handle attached to one end of said third rope and the other end secured to one of said structural members, said third rope engaging said first pulley and various pairs of said sheaves, each of said pairs of sheaves including a sheave belonging to said first structural member and another sheave belonging to said second structural member; whereby, pull of said first handle moves said pair of structural members toward one another with a force greater than said pull exerted on said first handle; and

d. a fourth rope having a second handle attached to one end of said fourth rope and the other end secured to one of said structural members, said fourth rope engaging said second pulley and various pairs of said sheaves, each of said pairs of sheaves including a sheave belonging to said first structural member and another sheave belonging to said second structural member; whereby, pull of said second handle moves said pair of structural members toward one another with a force greater than said pull exerted on said second handle.

3,937,462
EXERCISING DEVICE

Kasimir Kusmer, 1021 Cochran St., Aurora, Ill. 60506

Filed Aug. 15, 1974, Ser. No. 497,714
Int. Cl.² A63B *21/00*
U.S. Cl. 272—83 R 22 Claims



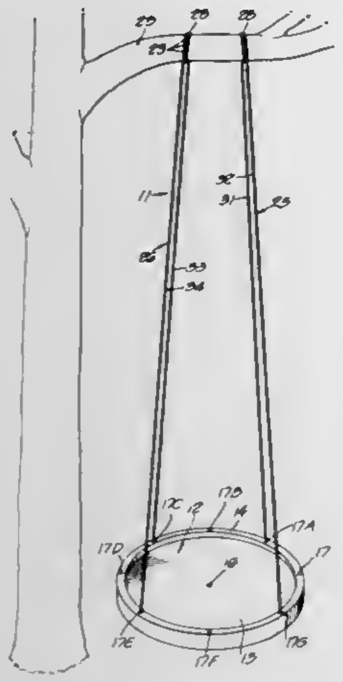
1. An exercising and development apparatus for use with the limbs of an operator employing the principle of isotonic exercise combined with the principle of isometric impact exercise, comprising:

a force resisting means
a lever for operating against said force resisting means, said force resisting means having a resistance selected such that the amount of force necessary to be applied to said lever by the operator thereof to overcome said resistance provides the limbs of the operator with isotonic exercise;
means for adjusting the force of said force resisting means;
means for releasing said lever from said force resisting means, and
a travel restricting means for impeding the travel of said lever upon release from said force resisting means, said travel restricting means being located with respect to said lever so as to permit said lever to travel rapidly upon release of said force resisting means therefrom and so as to apply to the limbs of the operator isometric impact exercise when said lever strikes said travel restricting means.

3,937,463

CONGRUENT SUSPENSION TWIST SWING

Donald R. Soisson, 1160 Bresee Ave., Pasadena, Calif. 91104
Filed Sept. 24, 1974, Ser. No. 508,816
Int. Cl.² A63G *9/00*
U.S. Cl. 272—85 **4 Claims**

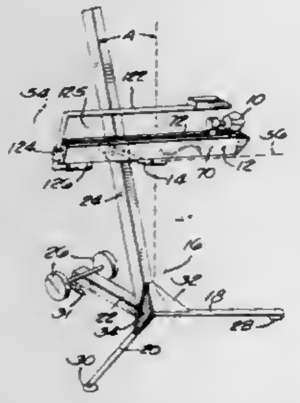


1. A swing to be supported from a horizontal support member for both arcuate and rotational motion and comprising a rider support disc, a peripheral rim on the disc, said rim having top and bottom walls, a plurality of substantially vertical apertures extending through said walls of said rim of said disc, a plurality of support strands, means for fixing the strands at spaced positions about the horizontal support member, a semi-spherical depression in said bottom wall of the disc adjacent each vertical aperture in said wall, a lock bar across the hollow defined by the semi-spherical depression, and a radially intruding boss on the disc containing said bar and said hollow, each semi-spherical depression and lock bar cooperating to adjustably secure each opposite end of a strand passing through a vertical aperture to said disc, the ends of said strands being congruently arranged with respect to the disc as the strands are arranged with respect to the horizontal support member.

3,937,464

BATTING PRACTICE APPARATUS

Casimir Zalewski, 19835 W. Pheasant Run Drive, New Berlin, Wis. 53151
Filed June 19, 1974, Ser. No. 480,778
Int. Cl.² A63B *69/40*
U.S. Cl. 273—26 R **15 Claims**

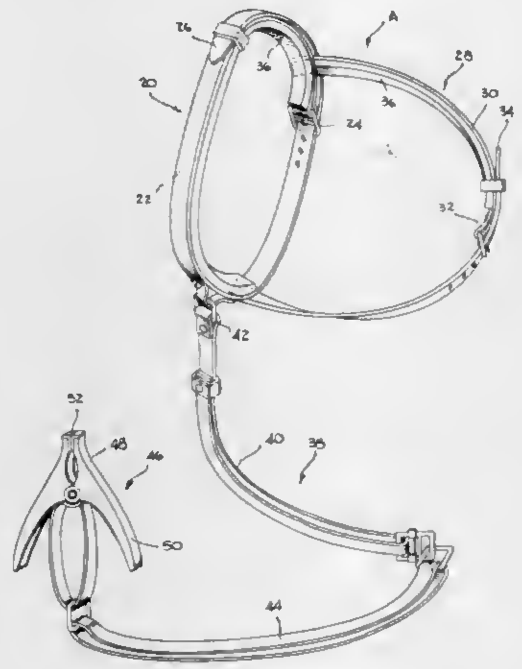


1. Batting practice apparatus comprising a linear track, means supporting said linear track, a rail spaced laterally of said track and extending parallel thereto, said track and rail comprising means forming a bat receiving guideway open at its front end through which a bat may be swung, a ball, means slidably supporting said ball for movement along said track within said guideway, means normally urging said ball toward the open front end of said guideway and means for limiting the movement of said ball toward said open front end of said guideway, said means supporting said linear track comprising a post, a support arm adjustably attached to said post and extending transversely therefrom, and means attaching said support arm to said track for supporting the same.

3,937,465

TENNIS STROKE TRAINING DEVICE

Bruce Roland, San Pedro, Calif., assignor to Rolson & Co., Rancho Palos Verdes, Calif.
Filed Sept. 13, 1974, Ser. No. 505,558
Int. Cl.² A63B *61/00*
U.S. Cl. 273—29 A **11 Claims**



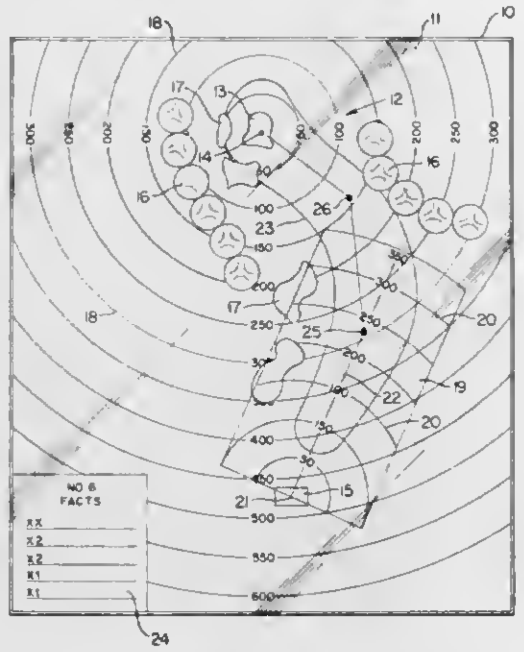
1. A tennis training device for assisting a trainee in stroking a tennis racquet having a head capable of engaging a ball and a handle capable of being grasped by a trainee; said training device comprising: a harness for securement to the body of a trainee, said harness comprising only first and second body loops, said second loop sized and shaped to extend across the chest, over the shoulder of the arm opposite the racket holding arm and across the back of the body of a trainee; said first loop being sized and shaped to extend around the shoulder of said racket holding arm of a trainee and said second loop being attached at its ends to said first loop at opposite points thereon; a cord extending from said first loop towards said racket, an attachment means on one end of said cord to secure said cord to a tennis racket at a point intermediate the portion of a head engaging a ball and the portion of the handle grasped by a trainee.

3,937,466

METHOD FOR PLAYING STRATEGY GOLF

James T. Candor, 5440 Cynthia Lane, Dayton, Ohio 45429
Continuation of Ser. No. 406,643, Oct. 15, 1973, abandoned, which is a continuation of Ser. No. 220,045, Jan. 24, 1972, abandoned. This application Feb. 18, 1975, Ser. No. 550,476. The portion of the term of this patent subsequent to June 28, 1991, has been disclaimed.
Int. Cl.² A63B *57/00, 69/36*
U.S. Cl. 273—32 R **5 Claims**

1. A method of playing strategy golf actually or vicariously comprising the steps of using a sheet member having uniformly spaced apart increments of distance thereon extending away from a readily discernible location thereon in sufficient directions from said discernible location that said sheet member can readily accommodate proportionally accurate layouts of the widely varying holes played by golfers, including holes having a dogleg to the right of the tee area and a dogleg to the left of the tee area with said increments of distance extending to said tee area, and laying out, on said sheet member and over said increments of distance thereon, the characteristics of a particular hole to be played actually or vicariously by the golfer by disposing means on said sheet member at said readily discernible location to represent the golf green of said hole, disposing means on said sheet member at the appropriate distance from said readily discernible location to represent the golf tee area of said hole, disposing means on said sheet member between said tee area representation and said green representation to represent the locations of the landmarks and hazards of said hole that could be encountered by the golfer in playing said hole, determining from said laid out sheet member or a copy thereof the first strategic shot path that the golfer could follow with his particular golf playing abilities or vicarious abilities to reach a first desired strategic location in attempting to reach the green of said hole in a minimum number of strokes for those said abilities, and playing a first golf ball shot actually or vicariously in an attempt to reach said first strategic location, whereby on reaching the area of said first played golf ball shot, said increments of distance and the relationship of said landmarks and any noted hazards yet to be encountered enable said golfer to readily predetermine any additional strategic golf ball shot paths that could be followed actually or vicariously to reach successive strategic locations from which subsequent actual or vicarious shots could be taken to reach the green of the hole being played with a minimum member of strokes for the golfer's actual or vicarious ability.

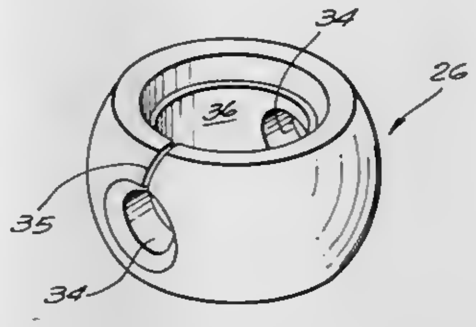


3,937,467

BILLIARD BALL

Richard W. Benson, Delmar; John R. Crnak, Mechanicville, and Richard G. Ingraham, Delmar, all of N.Y., assignors to Albany International Corporation, Albany, N.Y.
Continuation of Ser. No. 412,965, Nov. 5, 1973. This application Mar. 10, 1975, Ser. No. 556,621
Int. Cl.² A63B *37/00*
U.S. Cl. 273—59 R **5 Claims**

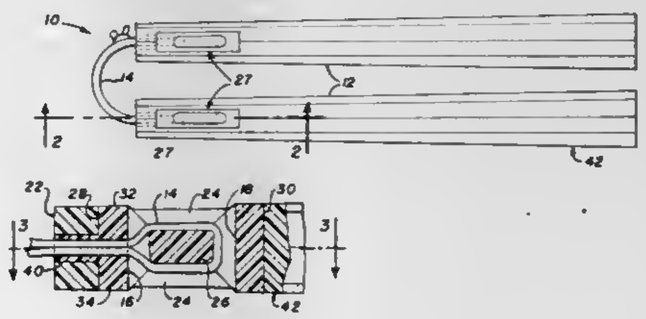
1. A billiard ball comprising: a major portion formed of a thermosetting plastic and a minor portion of thermosetting plastic together forming a solid spherical body; said minor portion comprising a bracelet having surfaces thereon defining a mechanical interlock adapted to cooperate with associated surfaces of said major portion in forming a mechanical bond between said major and minor portions, said bracelet having an outer surface, a substantially flat inner surface, a pair of opposed circular openings extending through the bracelet perpendicular to the bracelet axis, each of said openings extending on opposite sides of a diameter of said ball from said inner surface toward said outer surface to a first position and then flaring out at a taper from said first position to said outer surface, a pair of sides connecting said inner and outer surfaces, a pair of recesses intermediate said inner and outer surfaces formed by a pair of diametrically opposed surfaces extending toward each other from said sides, and said interlock comprises two surfaces extending between said opposed surfaces and said flat surface inclined toward each other and converging away from the center of the ball.



3,937,468

HANDLE FOR A NUNCHAKU DEVICE

Francis E. Conde, Sr., 435 Lancaster Ave., Lancaster, Pa. 17603
Filed Feb. 24, 1975, Ser. No. 552,661
Int. Cl.² A63B *59/00*
U.S. Cl. 273—84 **5 Claims**



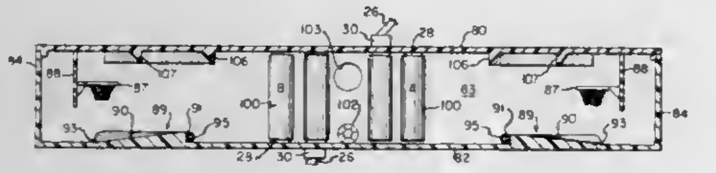
1. A handle member a nunchaku, said handle member comprising:

an insert having first and second end surfaces, opposed exterior sidewalls extending between said opposed end surfaces, opposed interior sidewalls extending between said opposed end surfaces and said opposed exterior sidewalls, and a tubular portion which extends away from said first end surface, said insert further being provided with a pair of generally parallel spaced apart apertures extending through said insert from one of the exterior sidewalls to the other exterior sidewall; and

an elongated generally cylindrical principal body portion molded about said insert and extending away from the second end surface of said insert, said principal body portion being formed of a plastic having a lower melt temperature than said insert, the parts being so arranged and constructed that the exterior sidewalls of said insert and the end of the tubular portion remote from the first end surface of the insert are exposed.

3,937,469
GAMES USING MAGNETICALLY ACTUATED MEMBERS

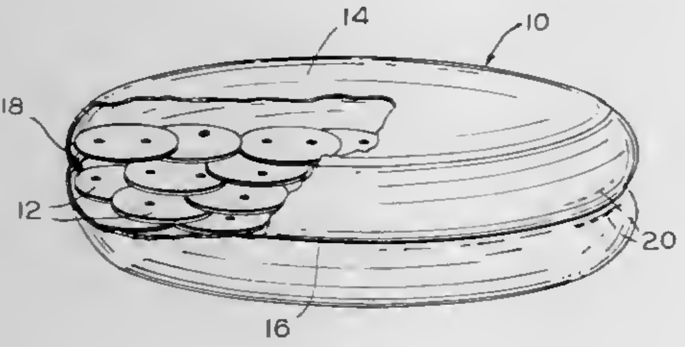
Samuel W. Cohen, 4001 Beach 44th St., Brooklyn, N.Y. 11224
Filed June 6, 1974, Ser. No. 476,773
Int. Cl.^{2} A63F *7/06*
U.S. Cl. 273—85 F **6 Claims**



1. A basketball game comprising
a game board formed of upper and lower plates, means for holding said plates in a spaced relationship to define a game area therebetween,
means in said game area defining a simulated basketball court, said means including a basket at each end of said court which is raised from the surface of the bottom plate,
a plurality of team members disposed within said game area,
actuator means disposed and movable over the outer surface of one of said plates, mutually magnetic attractive means on said actuator means and on said team members so that said team members are moved and carried along as the actuator means is moved,
a ball of resilient material,
a projection extending upwardly from said bottom plate in front of each basket for engagement by the ball as it is moved by being hit by a moving team member under the control of said actuator means, and resilient means adjacent said upwardly extending projection to further assist in projecting the ball upwardly toward the basket when it hits the projection.

3,937,470
GAME FOOTBAG

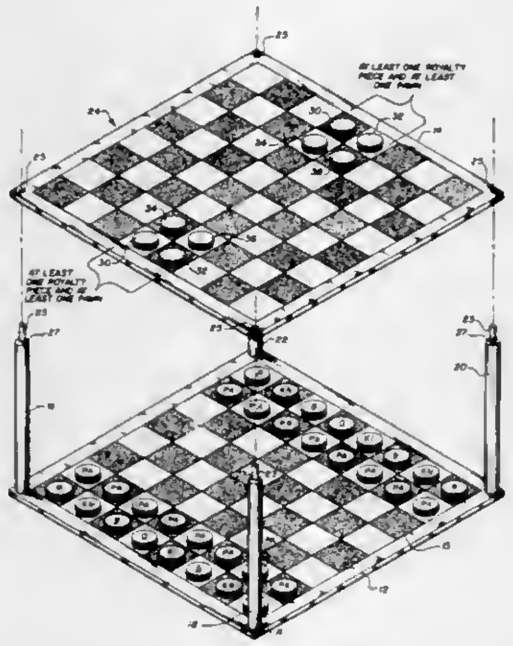
Robert John Stalberger, Jr., and Michael David Marshall, both of Oregon City, Oreg., assignors to Robert John Stalberger, Jr., Milwaukie; Michael David Marshall, Oregon City, both of Oreg. and Clark Schneider, Houston, Tex., part interest to each
Filed Dec. 4, 1974, Ser. No. 529,451
Int. Cl.^{2} A63B *67/00*
U.S. Cl. 273—106 R **10 Claims**



1. In a partially collapsible footbag,
a hollow, flexible cover normally in the general shape of a flattened sphere of a predetermined diameter,
and filler material at least primarily of a multitude of hard, smooth, small discs of a diameter or diameters no greater than a small fraction of the diameter of the flattened sphere and lying generally parallel to each other and parallel to the flat sides of the cover, the discs being slidable relative to each other and the cover and only partially filling the cover.

3,937,471
MULTIPLE-BOARD CHESS GAME WITH ADDITIONAL CHESSMEN

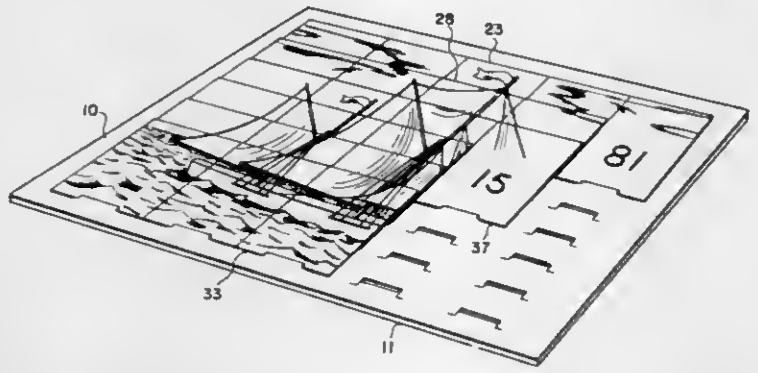
Gerald R. Brennan, 1012-112th SE., Seattle, Wash. 98004
Filed Aug. 5, 1974, Ser. No. 494,730
Int. Cl.^{2} A63F *3/02*
U.S. Cl. 273—131 AC **11 Claims**



1. A multi-level chess game for three-dimensional play, comprising:
first and second but no more than two chess boards;
means for spacing said chess boards vertically away from each other;
two conventional sets of standard chessmen, each of said conventional sets including a king, a queen, two knights, two bishops, two rooks, and eight pawns, each of said conventional sets being initially positioned in standard fashion on said first chess board; and
two additional sets of standard chessmen, each of said additional sets consisting of:
1. at least one additional royalty piece, chosen from the group consisting of: queen, bishop, rook and knight; and
2. a minimum of one additional pawn and at least as many additional pawns as there are queen and rook royalty pieces in each of said additional sets, each of said additional sets being initially positioned on said second chess board.

3,937,472
EDUCATIONAL AND AMUSEMENT PUZZLE

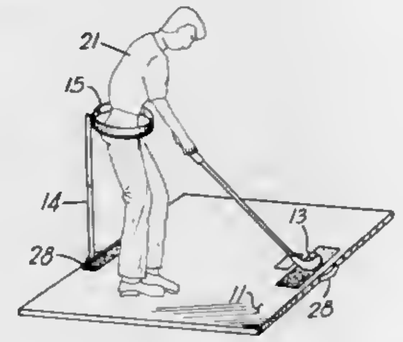
David W. Rice, 3728 Boomer Road, Cincinnati, Ohio 45239
Filed June 9, 1975, Ser. No. 584,896
Int. Cl.^{2} A63F *9/10*
U.S. Cl. 273—157 R **15 Claims**



1. A puzzle comprising a plurality of cards adapted to be arranged in a predetermined pattern in the completed form of a puzzle, location means on each of said cards providing for the disposition of said cards in said predetermined pattern in properly located positions of said cards, said cards being overlapped in said located positions thereof so that the combined exposed portions thereof form a picture, the non-exposed overlapped portions of the cards including information useable as a guide in the assembly of the puzzle.

3,937,473
GOLF SWING TRAINING DEVICE

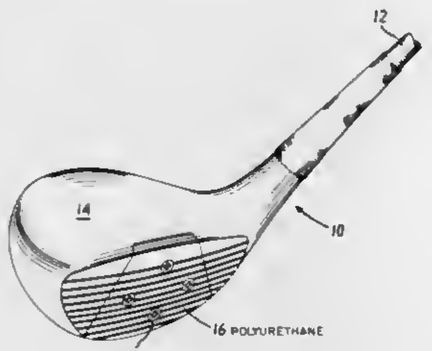
Alvi R. Blasi, Daly City, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Jan. 6, 1975, Ser. No. 539,009
Int. Cl.^{2} A63B *69/36*
U.S. Cl. 273—183 B **2 Claims**



1. A mechanism for teaching a golfer to swing properly comprising a horizontal platform containing a golf tee-off position near one edge of the platform and a vertical rod mounted near an opposed edge of the platform, said rod joining a circular belt of a size to fit about the waist of a golfer driving a ball from the tee-off position, without touching said golfer's waist said belt fitted with electrical switches one of which is turned ON when the belt contacts the golfer, said switches connected to an alarm signal that indicates the contact.

3,937,474
GOLF CLUB WITH POLYURETHANE INSERT

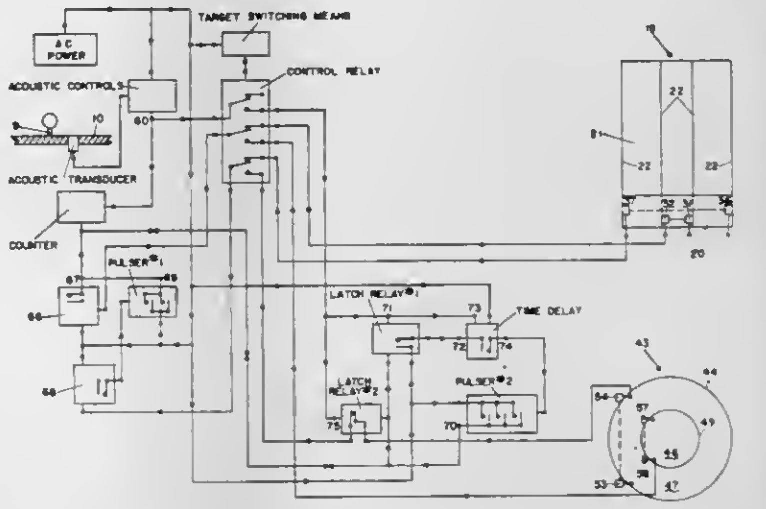
John W. Jepson, Marion, and Earle F. Allen, Jr., Dartmouth, both of Mass., assignors to Acushnet Company, New Bedford, Mass.
Continuation of Ser. No. 122,753, March 10, 1971, abandoned. This application Feb. 25, 1974, Ser. No. 445,462
Int. Cl.^{2} A63B *53/04*
U.S. Cl. 273—173 **1 Claim**



1. In a golf club comprising a shaft and a club head, the improvement which comprises a polyurethane striking plate of about ¼ inch thickness and a hardness of from about 40 to about 75 on the Shore Durometer D Scale according to ASTM Standard D 2240 affixed to the striking face of the club head, said polyurethane being a cured reaction product of components consisting essentially of a prepolymer consisting essentially of a polytetramethylene ether glycol combined with toluene diisocyanate and having about 9.5% free isocyanate, and a curing agent for the prepolymer selected from the group consisting of tetrafunctional polyols and 4,4′-methylene-bis-2-chloroaniline, and wherein the prepolymer and the curing agent are in an equivalent weight ratio of about 1:1 for the tetrafunctional polyols and about 1.2:1 for the 4,4′-methylene-bis-2-chloroaniline.

3,937,475
GOLF GAME

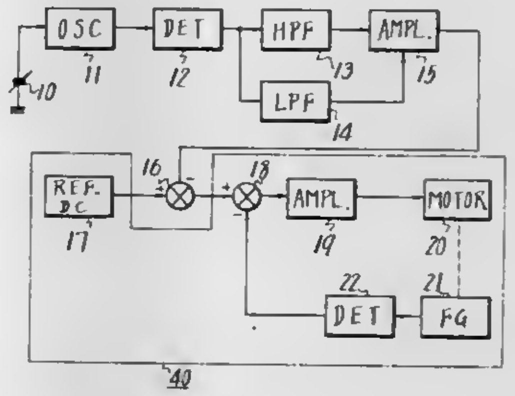
Joseph A. Gentiluomo, 1456 Belmont Ave., Schenectady, N.Y. 12308
Division of Ser. No. 204,890, Dec. 6, 1971, Pat. No. 3,784,207. This application Sept. 28, 1973, Ser. No. 401,638
Int. Cl.^{2} A63B *67/02, 69/36*
U.S. Cl. 273—176 FA **10 Claims**



1. A golf game apparatus, comprising a golfing lane having a golf ball tee disposed at one end from which golf balls are hit, ball halting means disposed at the opposite end for halting balls propelled from said tee, and accuracy determining and indicating means functionally associated with said tee and said ball halting means for automatically displaying a numerical accuracy representation for each ball hit from said tee; said accuracy determining and indicating means include pulsing means for providing a preset number of pulses representative of which area of said halting means is hit, and a remotely interconnected numeric indicating device operative in receiving and translating said pulses to provide a numeric display of said accuracy representation.

3,937,476
REPRODUCING APPARATUS FOR A DISC TYPE RECORD MEDIUM

Masaaki Sakai, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 17, 1973, Ser. No. 424,929
Claims priority, application Japan, Dec. 28, 1972, 48-1723
Int. Cl.^{2} G11B *17/00, 3/60;* **H02K** *27/20;* **H02P** *7/00*
U.S. Cl. 274—39 A **9 Claims**



1. In a reproducing apparatus for a disc type record medium having a pickup arm, a rotary shaft rotatably supported and said pickup arm mounted thereon, and a turntable having a

spindle adapted to rotate a disc type record medium which is scanned by a pickup on said pickup arm, comprising:

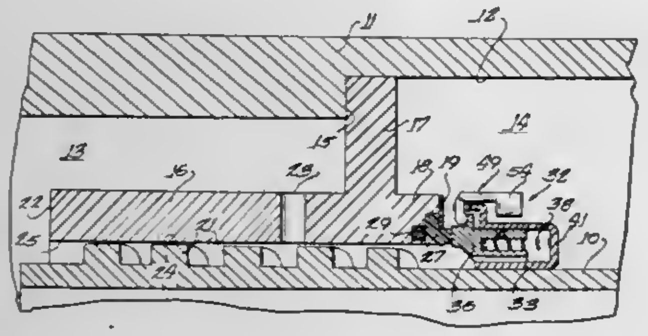
a. first means producing an output signal proportional to the instantaneous angular position of the pickup arm, the output signal including a component proportional to the eccentricity of the record medium or the spindle;

b. second means receiving the output of said first means and detecting said component proportional only to the eccentricity of the record medium or the spindle and producing an output signal proportional thereto;

c. third means for controlling the rotational speed of the turntable in response to the output signal of the second means, and wherein said first means comprises a variable capacitor associated with said rotary shaft, an oscillator whose oscillating frequency is controlled by the angular position of the variable capacitor, and a detector supplied with the output signal of said oscillator and producing a control signal having a component proportional to the eccentricity of the record medium or the spindle; and said second means comprises a filter circuit for detecting said component in the output signal of said detector, and a variable gain amplifier receiving the output of said filter means and increasing the amplitude of said component proportional to the angular position of the pickup arm.

3,937,477
MECHANICAL SEAL SYSTEM

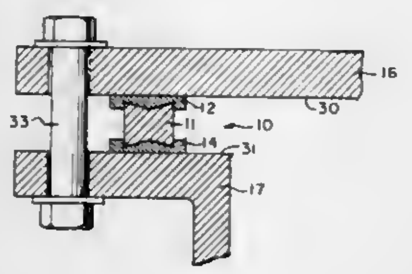
Emeric J. Gyory, Park Ridge, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Dec. 26, 1973, Ser. No. 428,164
Int. Cl.^{2} F16J *15/16*
U.S. Cl. 277—25 11 Claims



1. A sealing device for use between a pair of relatively rotating members, one of said members having an opening extending therethrough and receiving said other member therein, comprising a viscous shear pump defined between said members to provide a hydrodynamic seal therebetween, said hydrodynamic seal having dissimilar fluids on opposite sides thereof, an annular cylindrical sleeve positioned within said one member and encompassing said other member and having a radial flange sealingly engaging the interior wall of the one member and separating the dissimilar fluids, said hydrodynamic seal being formed between the other member and the sleeve, said sleeve having a plurality of radial openings therein communicating with the hydrodynamic seal and terminates in an annular rearward end, a stationary annular face ring supported by said rearward sleeve end to define a boundary between said dissimilar fluids, a rotary seal ring encompassing said other member to rotate therewith and reciprocable axially relative thereto toward and away from sealing contact with said face ring, resilient means yieldably urging said rotary seal ring against said face ring, and means operative upon relative rotation of said members to urge said rotary seal ring away from said stationary face ring.

3,937,478
COINING SEAL

Lloyd Mancebo, 856 Adams Ave., Livermore, Calif. 94550
Filed Nov. 18, 1974, Ser. No. 524,843
Int. Cl.^{2} F16J *9/00*
U.S. Cl. 277—171 6 Claims



1. A bakeable high pressure-vacuum seal to be compressed between two planar surfaces comprising

a first generally inductile sealing element having a first sealing surface defining a first pair of protruding sharp edges and a second sealing surface defining a second pair of protruding sharp edges,

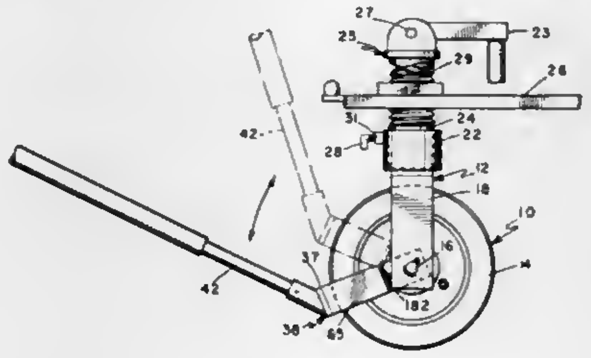
a second generally ductile sealing element adapted to match the shape of said first sealing element and be compressed against said first sealing surface engaging both sharp edges of said first pair of protruding sharp edges, and

a third generally ductile sealing element adapted to match the shape of said first sealing element and be compressed against said second sealing surface engaging both sharp edges of said second pair of protruding sharp edges,

a second and third sealing elements being disposed between said two planar surfaces and compressed together thereby.

3,937,479
DOLLY FOR MOVING AND POSITIONING VEHICLES

Virgil D. Dalton, 2311 Bergener, San Diego, Calif. 92110
Continuation-in-part of Ser. No. 239,557, March 30, 1972, abandoned. This application July 25, 1973, Ser. No. 382,509
Int. Cl.^{2} B60K *27/00*
U.S. Cl. 280—3 10 Claims



1. Apparatus for moving and positioning vehicles comprising:

frame means for attachment to a vehicle,

said frame means having an axle with a wheel rotatably mounted thereon,

a drive disc fixed to said wheel,

a U-shaped yoke with ends rotatably secured to said axle on opposite sides of said wheel, said yoke enclosing said wheel and drive disc,

handle means secured to said yoke at a connection located outside the circumference of said wheel for rotating said yoke,

drive pawl means on said yoke for selectively engaging said drive disc,

drive pawl selector means for resiliently positioning said drive pawl means to engage the said drive disc on alternate strokes of said yoke by said handle,

holding pawl means on said frame for selectively engaging said drive disc,

holding pawl selector means for positioning said holding pawl means to engage said drive disc and prevent rotation of said drive disc in one selected direction relative to said frame,

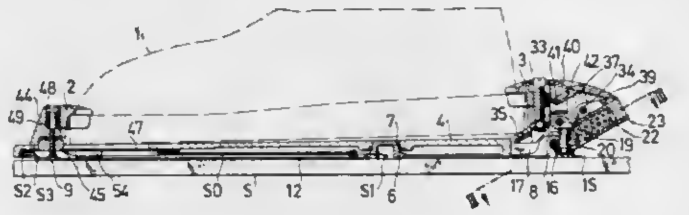
said drive and holding selector means respectively including means for positioning said drive and holding pawl means so that they do not engage said drive disc and thereby do not interfere with the free rotation of said wheel,

each of said pawl selector means including pawl biasing means for resiliently biasing said pawls into engagement with said drive disc,

and brake means for restricting movement of said wheel relative to said yoke.

3,937,480
SAFETY SKI BINDING

Heinz Korger, Munich, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany
Filed Feb. 21, 1974, Ser. No. 444,371
Claims priority, application Germany, Feb. 21, 1973, 2308602
Int. Cl.^{2} A63C *9/08*
U.S. Cl. 280—11.35 T 13 Claims



1. A safety ski binding for a ski comprising:

a soleplate adapted to be mounted on the ski for connecting a skiing boot to the ski;

a first sole holder in a forward position on the ski;

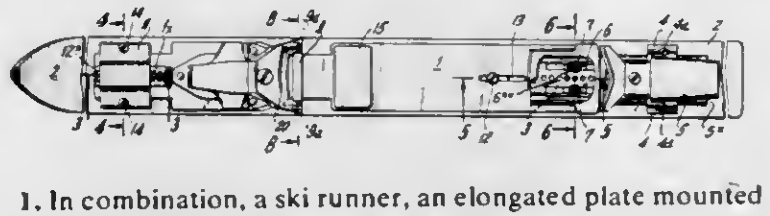
a second sole holder mounted in rear position on the ski;

a plate holder adapted to be attached to the ski;

releasing means on the second sole holder comprising detent means operative in response to an overload condition to release the soleplate from the ski comprising a female detent element mounted on said plate holder, a male detent element mounted on said soleplate and a detent spring means acting on said male detent element forcing said male element into engagement with said female element, said spring means being adjustable to change the force of engagement between said male and female elements thereby adjusting said releasing mean..

3,937,481
SKI CONSTRUCTION

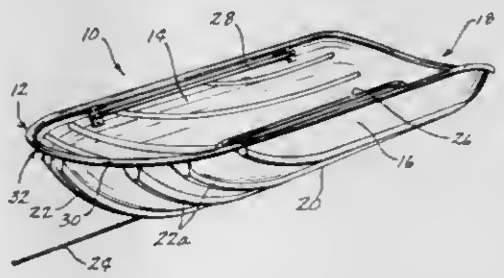
Michael T. Koleda, 15 Murray Ave., Port Washington, L.I., N.Y. 11050
Filed Nov. 27, 1974, Ser. No. 527,584
Int. Cl.^{2} A63C *9/08*
U.S. Cl. 280—11.35 C 2 Claims



1. In combination, a ski runner, an elongated plate mounted on the ski runner, and bodily movable thereon, toe and heel boot binding members carried by said elongated plate, means for adjusting one of said boot binding members forwardly or rearwardly on said elongated plate, teeth carried at the front of the elongated plate, a worm engaging said teeth and manually operable means for rotating said worm, whereby said elongated plate may be adjusted forwardly and rearwardly on the ski runner, and comprising a shaft carrying the worm, a casing affixed to the ski runner and in which the shaft and worm are mounted, one end of the shaft being exposed with a head adapted for manual rotation of the shaft and worm, and a spring member within the casing and engaged by the worm and abutting the front wall of.the casing, whereby, when the front end of the ski runner abuts an obstruction, the stress and shock imposed on the ankle area of the skier by its continued forward movement when held by the bindings is alievated by cushioned forward movement of the elongated plate, and without changing the distance between the toe and heel members, or releasing their boot holding action.

3,937,482
SELF-UPRIGHTING TOWABLE SLED FOR SNOWMOBILES AND THE LIKE

Merlin Johnson, 300 N. Fourth St., Clear Lake, Iowa 50428
Filed Oct. 1, 1973, Ser. No. 401,990
Int. Cl.^{2} B62B *13/08*
U.S. Cl. 280—18 1 Claim



1. A tow sled designed to upright itself after spills, said sled comprising,

a preformed hull having front and rear portions, oppositely disposed sides and a bottom, said hull having a length equal to approximately twice the width thereof,

said front portion being upwardly and laterally curved from said bottom to provide a generally rounded front portion having an upper forward edge which extends upwardly and forwardly,

said rear portion being upwardly and laterally curved from said bottom to provide a generally rounded rear portion, said rear portion having an upper rearward edge extending upwardly and forwardly and the forwardmost portion of which dwells in a horizontal plane no higher than the lowest horizontal plane in which the upper forward edge of said front portion dwells,

said sides being uniformly spaced apart from front to rear and transversely curved upwardly and outwardly from said bottom and having upper straight horizontal edges which merge with said upper rear and front edges,

a tow means positioned on said front portion below the center of gravity and closely adjacent said bottom whereby a towline may be connected to said tow means so that said towline is disposed substantially parallel to said bottom,

a roll bar means being secured to said upper edges of said front portion, said sides and said rear portion, said roll bar being substantially circular in cross section thereby preventing an edge catching on the ground when the sled is overturned,

a plurality of spaced apart runners being positioned on the outside surface of said hull, each of said runners having rearward and forward ends, the forward ends of said runners terminating at said upper edges, said runners comprising straight runners and curved runners, said straight runners being in a parallel relationship with respect to each other and positioned on opposite sides of said bottom along the longitudinal centerline of said sled, the forward ends of said straight runners terminating at said upper edge of said front portion, said curved runners being laterally outwardly positioned in spaced apart relationship from said straight runners, and said curved runners having straight portions merging into forwardly positioned outwardly curved portions terminating at the upper front and side edges, said hull inside surface includes elongated cavities opposite each runner, said opposing runners and cavities being of equal length, width and depth, and

elongated longitudinal extending grasping members being provided on the upper inside surface of the oppositely disposed side walls of said hull.

3,937,483

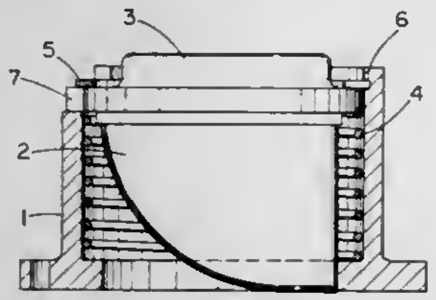
TOBOGGAN RUDDER

Charles J. Simmons, 200 Pleasant St., East Longmeadow, Mass. 01028

Filed Dec. 13, 1974, Ser. No. 532,499

Int. Cl.^{2} B62B *13/16*

U.S. Cl. 280—21 R **1 Claim**



1. A device used for steering toboggans and like vehicles, said device being contained in a protective shell or housing mounted on a toboggan or an extension thereof entirely above the surface of snow and consisting of means for extending a steering element from a retracted position within said housing into the snow at an angle to the direction of vehicle motion, said steering element having a surface against which the snow exerts a force to produce steering action, wherein said device contains means for relieving the torque produced on the steering element by the forward motion of the vehicle, said relieving means consisting of a projection or tab and a slot into which said projection fits, said projection and slot being in combination between the housing and the steering element such that when the steering element is in its active position, that is, at an angle to cause left or right hand turning action, the projection is within the slot and acts to relieve the torque thereby allowing reduced size and effort on a knob or handle of the steering element.

3,937,484

MOTORIZED TWO-WHEELED VEHICLE WITH NOVEL DISPOSITION OF FUEL TANK AND PARTS HOUSING

Minoru Morioka, Niiza, and Nagatoshi Katagiri, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

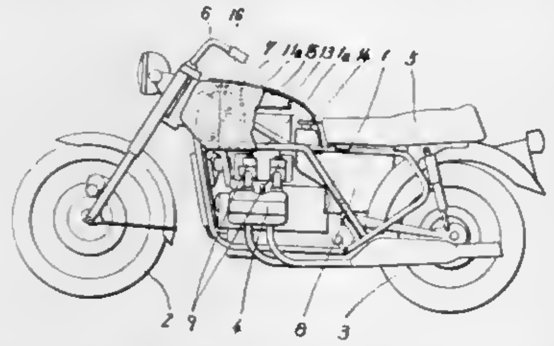
Filed Oct. 31, 1974, Ser. No. 519,700

Claims priority, application Japan, Nov. 2, 1973, 48-122717

Int. Cl. B62k *11/04*

U.S. Cl. 180—33 R **8 Claims**

1. In a motorized two-wheeled vehicle having a frame, a front wheel, a rear wheel, a driver's seat at the upper middle portion of the frame, a steering handle at the front portion of the frame, an internal combustion engine mounted on said frame, and a fuel tank mounted on said frame below said seat, an improvement comprising a housing secured to the frame between the seat and the steering handle at a location above the engine such that the engine is exposed therebeneath, said housing being adapted for enclosing various parts therein, said housing having at least one chamber with an upper surface, an upper cover pivotably mounted at said upper surface to be opened upwards, said housing being open at its bottom surface, said parts in said housing including an air cleaner connected to the internal combustion engine below said housing and introduced into the housing through the open bottom surface.



3,937,485

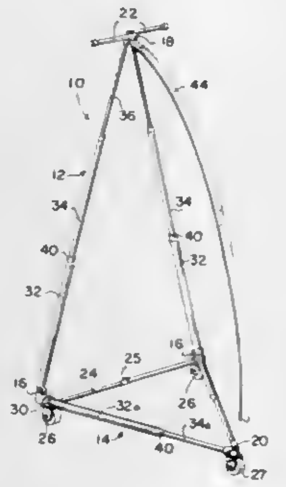
COLLAPSIBLE LUGGAGE CARRIER

Ruth W. Shourek, and John Edward Shourek, both of 17520 S. 70th Court, Tinley Park, Ill. 60477

Filed Aug. 1, 1974, Ser. No. 493,892

Int. Cl.^{2} B62B *3/04*

U.S. Cl. 280—35 **8 Claims**



1. A portable luggage carrier comprising:

wheel means;

a frame including both a collapsible triangular upright back section adapted to extend upright, and, an attached triangular base platform portion adapted to extend horizontally and receive luggage for transport;

handle means mounted atop said back section;

hinge means providing for pivotal movement of the back section into a position adjacent to the base portion;

said upright back section including a pair of collapsible leg sections;

pivotal means joining said leg sections and said leg sections constructed to diverge downwardly and outwardly of said pivotal means;

said base portion including a pair of side members and joint means pivotally connecting said sides and said sides constructed to diverge outwardly of each other from said joint means; and,

connecting means constructed for positioning and holding both the diverging leg sections of the upright back portion and the diverging side members of the base portion, wherein said luggage carrier is movable from a collapsed position to both a partially extended and fully extended position;

said luggage carrier includes means mounting said wheel means and also includes movement compensating means operatively attached to said carrier to compensate for relative rotation between the leg sections of the upright back section and the side members of the base platform for the transport of luggage when said carrier is in the partially extended and fully extended position.

3,937,486

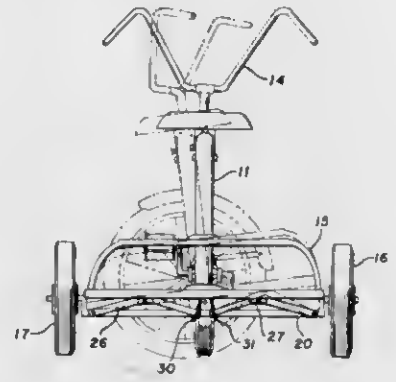
TIP OVER CONTROL FOR THREE WHEELED VEHICLES

Albert W. Weiters, 7438 Baker Ave., NE. Fridley Terrace, Minneapolis, Minn. 55432

Filed Aug. 22, 1974, Ser. No. 499,438

Int. Cl.^{2} B62K *5/04, 5/08*

U.S. Cl. 280—87 R **6 Claims**



1. A tip over control for three wheeled vehicles, which vehicles include a front, rotatable steering wheel assembly, a frame assembly including a rearwardly positioned laterally extending frame portion, said control including:

a. a rear axle pivotally connected, for movement about the longitudinal axis of the vehicle generally centrally to the lateral frame portion permitting the frame to shift relative to said axle;

b. wheels rotatably mounted on the respective ends of said axle;

c. linkage means including cable means having its ends operatively attached respectively to said axle on laterally spaced portions thereof and having its midsection wrapped about the steering assembly whereby the effective length of the cable means from said midsection to one of its axle connections will be lengthened when the steering assembly is rotated in one direction while the effective length of said cable means from its midsection to the other of its connections is shortened whereby the frame is shifted with respect to said axle upon rotation of the steering assembly said linkage means including;

  1. a pair of lever elements rotatably mounted at their midpoints to the laterally extending frame portion and spaced outwardly from said axle connection;
  2. the outer ends of said levers being attached to said axle; and,
  3. said cable means being connected to the inner ends of said levers.

3,937,487

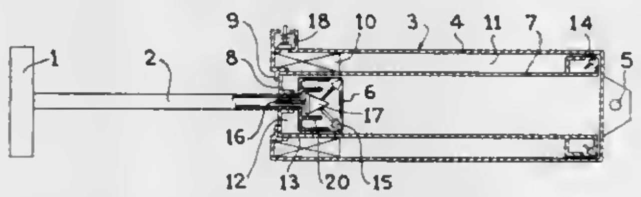
TENSIONING DEVICE FOR USE PARTICULARLY WITH VEHICLE SAFETY BELTS

Bernard M. Pech, Paris, France, assignor to Societe Nationale des Poudres et Explosifs, France

Filed Jan. 7, 1975, Ser. No. 539,049

Int. Cl.^{2} B60R *21/10*

U.S. Cl. 280—150 SB **10 Claims**



1. A tensioning device for use in tensioning an element, such as a vehicle safety belt, comprising a casing, a cylinder having front and rear ends defined within said casing, a first piston axially movable within said cylinder, a rod firmly fixed to said first piston and having means for attaching said element to be tensioned, an expansion chamber defined between said first piston and said front end of said cylinder, means for supplying gas at high pressure to said expansion chamber to move said first piston in a first direction along said cylinder and exert a tensioning force on the element attached to said rod, an auxiliary piston included in the first piston structure, a frangible element for holding said auxiliary piston in an initial position and adapted to fracture when the pressure in said expansion chamber reaches a predetermined level, permanently open passage means communicating the pressure in said expansion chamber to said auxiliary piston, and piston stopping means actuated in response to displacement of said auxiliary piston away from said initial position following fracture of said frangible element, to prevent movement of said first piston relative to said cylinder in the said first axial direction, but allow movement of said first piston relative to said cylinder in the opposite direction.

3,937,488

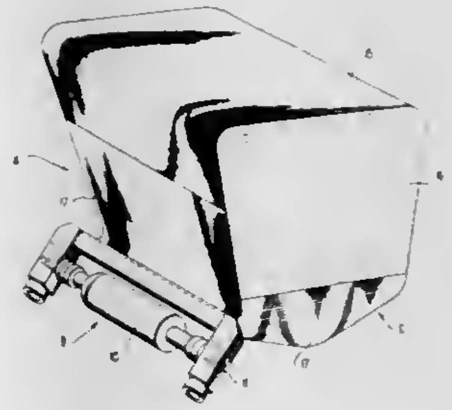
VEHICLE SAFETY DEVICE

Kenneth R. A. Wilson, Salem, Oreg., and Lorenz A. Palm, Fort Erie, Canada, assignors to Irvin Industries Canada Limited, Fort Erie, Canada

Continuation-in-part of Ser. No. 250,664, May 5, 1972. This application Feb. 22, 1974, Ser. No. 444,637

Int. Cl.^{2} B60R *21/08*

U.S. Cl. 280—150 AB **6 Claims**



1. A vehicle safety device adapted for attachment to a vehicle for protecting an occupant thereof during an accident, said vehicle safety device including impact bag means inflatable on crash impact by fluid flow thereinto, said impact bag means having a collapsed condition and an expanded operative condition for restraining movement of an occupant relative to the vehicle as the result of a crash impact, said impact bag means comprising in part a material from zero to low permeability with respect to the inflating fluid thereof and in part at least one other material having variable permeability which increases and decreases in relation to the fluid pressures within said impact bag means, certain areas of the bag being reinforced for added strength, and wherein the total flow rate of the inflating fluid through the material of the impact bag is within the range of 1800 $<\epsilon\lambda_i S_i<$ 2300 cubic feet per minute and wherein the area of the material of variable permeability is determined according to the formula:

$$\%S_1 = \frac{100}{S_{Tot.}} \cdot \frac{\Sigma\lambda_i S_i - \lambda_2 (S_{Tot} - S_2)}{\lambda_1 - \lambda_2}$$

wherein:

$\epsilon\lambda_i S_i$ is the desired summation of flow through all pieces of fabric (λS for each piece) and

λ_1 is the weighted average of the permeability of the material of variable permeability,

λ_2 is the weighted average of the permeability of the material of zero to low permeability,

S_1 is the total of the design area of the material of variable permeability,

S_2 is the total of the design area of material of zero to low permeability,

S_3 is the area made relatively impervious by installation of reinforcing,

S_{Tot} is the total bag design area,

all values of λ are in terms of cubic feet per minute per square foot at 1 p.s.i.g,

and all values of S are in terms of square feet.

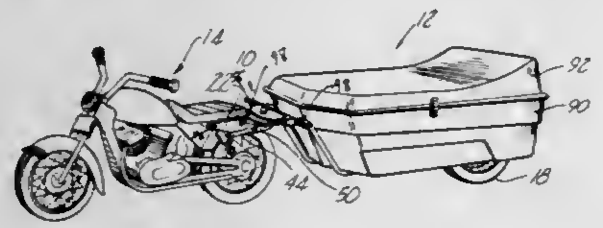
3,937,489
MOTORCYCLE TRAILER

Edward L. Hawes, 405 E. Goulson, Hazel Park, Mich. 48030; Allen R. Hawes, 453 E. Marshall, and Edward C. Hawes, 2129 Leitch, both of Ferndale, Mich. 48220

Filed May 16, 1973, Ser. No. 360,635

Int. Cl.^{2} B62K *27/00*

U.S. Cl. 280—204 9 Claims



1. A trailer adapted to be towed behind a motorcycle or the like, said trailer having a frame, a rotatably mounted road wheel, a hitch for removably attaching said trailer to said motorcycle, said hitch comprising:

a first plate having at least one hole disposed therein;

parallel, spaced apart second and third plates to slidably receive said first plate therebetween, each of said second and third plates having at least one hole disposed therein, said hole in said second plate being in line with said hole in said third plate, said first plate, said second plate and said third plate being disposed in a generally horizontal plane,

a pin extending through said hole in said second plate, said hole in said third plate and said hole in said first plate to form a hinge having a generally vertical axis about which said motorcycle and said trailer can pivot with respect to each other, so that when said motorcycle is tilted from the vertical said trailer will be tilted in the same direction and generally at the same angle by the coaction of said first, second and third plates so that said pin is free of forces applied to said hitch by the tilting of said motorcycle;

means to attach said hitch to said motorcycle;

means to attach said hitch to said trailer frame, said means comprising two elongated first members, means to attach each of said elongated first members at one of its ends to said first plate; two elongated second members, means to attach each of said second members at one of its ends to said motorcycle; means to attach the other end of each of said elongated first members to the other end of a different one of said elongated second members, said elongated first members being hollow tubes, said means to attach each of said elongated first members to said first plate comprising means defining at least one transversely disposed slot in said first plate, means attaching said elongated tubes to said first plate through said transversely disposed slots, said elongated second members being hollow tubes, each of said elongated second members being axially and slidably receivable in a different one of said elongated first members; and said means to attach each of said elongated first members to a different one of said elongated second members comprising a plurality of alignable holes in said first and second members and means insertable through said holes to lock said members together.

3,937,490
WHEELCHAIR

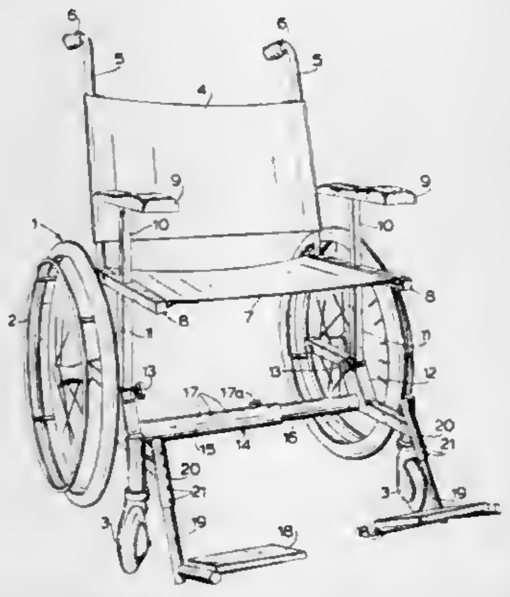
Ibrahim Abdelrahim Mohamed Nasr, 12, Evelyn Gardens, London, England (S.W.7)

Filed June 25, 1974, Ser. No. 482,829

Claims priority, application United Kingdom, June 27, 1973, 30460/73

Int. Cl.^{2} B62M *1/14*

U.S. Cl. 280—242 WC 14 Claims



1. A wheelchair including a chassis comprising spaced side frame means and adjustable interconnecting frame means extending between said side frame means; ground wheels mounted on said chassis; a flexible seat panel extending between said side frame means; means on said seat panel defining spaced attachment points for attaching said seat panel to both of said side frame means; a flexible back rest panel extending between and attached to the side frame means; means on said back rest panel defining spaced attachment points for attaching said back rest panel to both of said side frame means; and means for adjusting the length of said seat and back rest panels between their points of attachment to the side frames for varying the width of the seat of the chair to suit different widths of intended occupant.

3,937,491
NON-SKID RELEASABLE SHEET PAPER NOTE PAD

Anderson C. Hilding, 421 - 36th Ave. East, Duluth, Minn. 55807

Filed Dec. 12, 1974, Ser. No. 531,893

Int. Cl.^{2} B42D *1/00, 5/00*

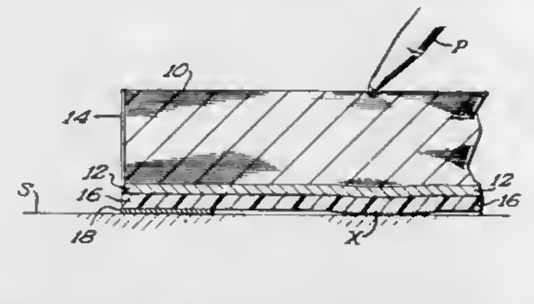
U.S. Cl. 281—15 B 2 Claims

1. A non-skid releasable paper note pad comprising in combination:

a. a sheef of sheets of paper for writing thereupon,

b. a flat deformable member secured to the bottom of the sheef of the paper, and having a relatively high coefficient of friction relative to

c. spaced support means of equal thickness carried by said flat deformable member on the under surface adjacent the ends and sides of the deformable member and extending therefrom to thereby support the pad for sliding movement upon the support means upon a supporting surface with the flat deformable member free of the supporting surface, said flat member deformed and in contact with a surface upon pressure of a writing instrument on the sheef of paper thereby preventing sliding movement of the pad upon a supporting surface during the act of writing thereon.



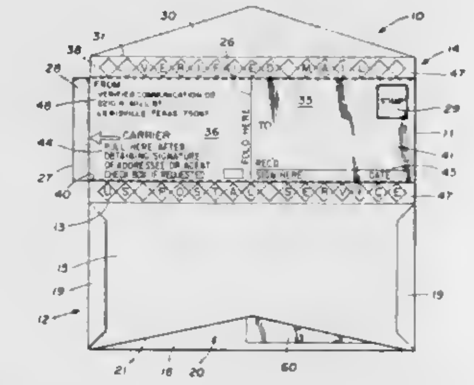
3,937,492
SYSTEM OF VERIFIED COMMUNICATION

Normand R. Biron, 2210 N. Mill St., Lewisville, Tex. 75067

Filed Mar. 7, 1973, Ser. No. 338,978

Int. Cl.^{2} B41L *1/20*

U.S. Cl. 282—25 5 Claims



1. A mailing instrument comprising:

a body formed of sheet material separated by parallel spaced fold lines into an envelope portion, a cover portion, and a sealing flap portion;

said envelope portion having a pocket for receiving a document therein and a pressure-sensitive reproducing means on the interior of said pocket whereby information markings made on the exterior of said envelope will be likewise formed on said document when said document is in said pocket;

adhesive on one side of said flap portion;

said cover portion being positioned between said envelope portion and said flap portions, said cover portion being of a size to fold adjacent to and over one side of said envelope portion whereby said flap can be folded along the other side of said envelope portion and adhesively attached thereto thereby sealing said pocket for mailing;

pressure sensitive reproducing means on one side of said cover portion positioned coextensive with said reproducing means on the inside of said pocket when said cover portion is folded to said mailing position whereby markings made on said cover portion will be likewise formed on said envelope portion when said cover portion is folded to said mailing position;

adhesive material on said one side of said cover portion adjacent to said fold lines for attachment to said one side of said envelope portion when said cover portion is in said mailing position; and

a pair of spaced weakened tear lines extending across said cover portion between the side edges of said cover portion and positioned between said adhesive portions whereby the part of said cover portion between said tear lines may be detached from said instrument, an informational spaces on said other side of said cover portion between said tear lines adapted for addressee information and endorsement by the recipient whereby said reproducing means on said cover transfers said information written in said informational spaces to the envelope portion and said reproducing means on said pocket transfers said information to said document in said envelope portion and an information space on said one side of said cover portion between said tear lines adapted for return address information so that said detached part may be mailed back to the sender.

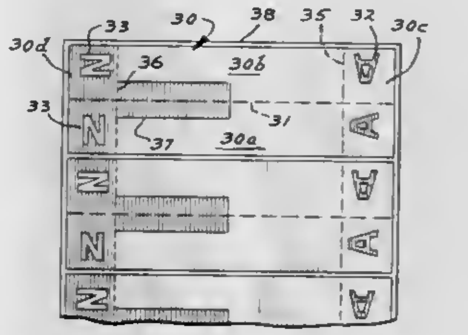
3,937,493
COLOR CODED LABELS AND FILE FOLDERS

David J. Fasbender, Hastings, Minn., assignor to The Smead Manufacturing Company, Hastings, Minn.

Filed Sept. 30, 1974, Ser. No. 510,288

Int. Cl. B41f *21/00*

U.S. Cl. 283—41 8 Claims



1. For use with either an end tab file folder or a top tab file folder, a file folder label in a flat horizontal condition having a central fold line, a first part on one transverse side of the fold line and a second part on the opposite transverse side of the fold line, said first part having a first character indicia thereon, and said second part having a first character indicia thereon that when the label is in a flat condition is oriented at right angles to the first character on the first part, the first and second part each having a first end portion, a central portion and second end portion, the first end portions being adjacent one another, the first end portions having the first character indicia thereon, the first part second end portion having a second character indicia thereon and the second part second end portion having a second character indicia thereon that is the same as the second character indicia on the first part second end portion and is oriented at right angles relative thereto.

3,937,494
BLEEDING PROTECTIVE CASING ASSEMBLY FOR BEARING SYSTEM

George E. Hicks, Fresno, Calif., assignor to Weather Tec Corporation, Fresno, Calif.

Filed Sept. 13, 1973, Ser. No. 396,836

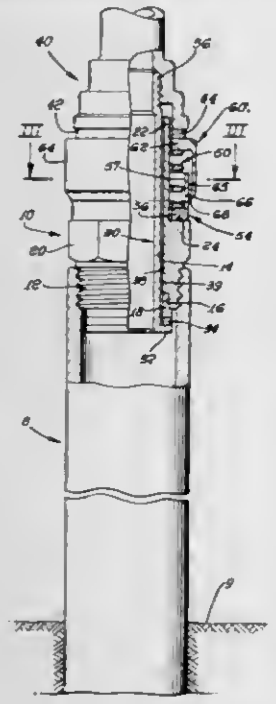
Int. Cl.^{2} F16L *27/08*

U.S. Cl. 285—13 6 Claims

1. A longitudinally expansible casing assembly for shielding internal operative members from the entrance of external dirt comprising:

outer wall means forming a vertically oriented annular chamber surrounding the operative members and subject to gradual leakage of liquid thereinto, said outer wall means including an annular cup-shaped case having a generally cylindrical outer sidewall and an open top, and

an annular cap covering the open top of the case, including a downwardly depending sidewall disposed concentrically outwardly of the case sidewall in longitudinally expansible telescoping relation therewith, and check valve means



for allowing liquid to bleed downwardly out of the chamber.

3,937,495

APPARATUS FOR CONNECTING AND SEALING TOGETHER TWO LENGTHS OF CYLINDER BARREL OF A WORM EXTRUDER

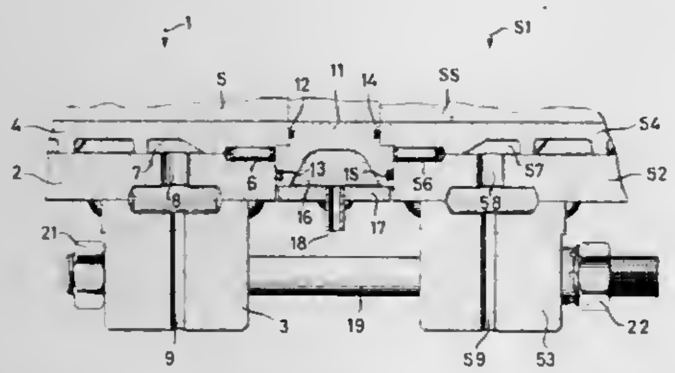
Dietmar Anders, Hannover-Kleefeld, Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover-Kleefeld, Germany

Filed Apr. 7, 1975, Ser. No. 565,952

Claims priority, application Germany, Apr. 18, 1974, 7413472[U]

Int. Cl.^{2} F16L *53/00*

U.S. Cl. 285—41 **2 Claims**



1. Apparatus for connecting and sealing together two lengths of a cylinder barrel of a worm extruder, each length of cylinder barrel comprising an inner cylindrical member and an outer cylindrical member disposed concentrically therearound with at least one duct for flow of temperature controlling fluid provided between said inner cylindrical member and said outer cylindrical member, said apparatus comprising a ring having end faces engaging between adjoining ends of said two lengths of cylinder barrel, said ring having an inner and outer periphery, said ring inner periphery having an inside diameter which corresponds to the inside diameter of said inner cylindrical members, said ring end faces abutting end faces of said outer and inner cylindrical members and sealing rings between the abutting faces, said ring being formed with a circumferential recess in its outer periphery, and means attached to the outer periphery of said ring covering said recess, means communicating with said recess which can be connected to a source of temperature controlling fluid, and clamping means at the ends of said outer cylindrical members clamping said ring sealingly between said outer and inner cylindrical members.

3,937,496

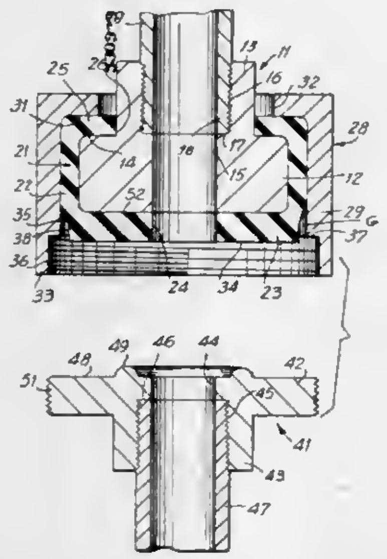
FLEXIBLE COUPLING

Abduz Zahid, Los Angeles, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed Dec. 9, 1974, Ser. No. 530,939

Int. Cl.^{2} F16L *19/02*

U.S. Cl. 285—52 **2 Claims**



1. A pipe coupling comprising a first fitting having a base portion with a reduced diameter stem extending outwardly from one surface thereof for receiving a pipe end, and defining an annular shoulder at the root end of said stem, said fitting having an axial bore therethrough, a second fitting having a circular base portion threaded on its outer periphery, said second fitting having an axial bore, said second fitting including on the base portion thereof an annular bead closely surrounding said bore, said bead projecting in the direction of the axis of said fitting beyond the surface of said base portion, a pipe receiver portion on said second fitting, a cylindrical connector sleeve encompassing said base portion of said first fitting and having an inwardly extending annular flange at one end defining an opening of diameter less than the diameter of said base portion of said first fitting, and through which said stem extends, internal thread means formed on said other end of said connector sleeve adapted to receive said threaded outer periphery of said second fitting axially, displaceably to connect said second fitting and said sleeve, and a resilient, deformable member encompassing said base portion of said first fitting and having an axial bore aligned with and forming a continuation of the axial bores of said first and second fittings, said member including a cylindrical floor engaging said base portion of said second fitting, said floor including an annular recessed bevel portion of lesser diameter than the diameter of the remainder of said floor, said bevel portion, in the unstressed condition of said deformable member, being of lesser diameter than the inner diameter of said connector sleeve, increments of said bevel portion being pressed into engagement with said inner diameter of said sleeve and said bead being embedded into the body of said floor when said deformable member is compressed between said fittings.

3,937,497

DRAIN JOINTING SYSTEM

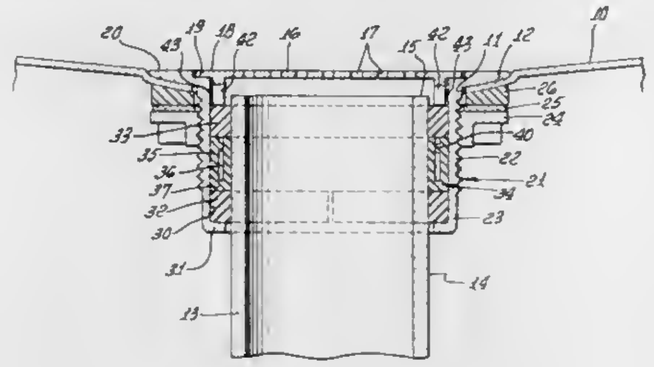
Altee C. Studer, 9818 Hawley Road, El Cajon, Calif. 92020

Filed May 15, 1974, Ser. No. 470,128

Int. Cl.^{2} F16L *17/02*

U.S. Cl. 285—111 **5 Claims**

1. A sealing joint assembly for joining a drain pan with a drain pipe through a drain hole in said pan and comprising a fitting having an inside wall larger in diameter of the outside of the drain pipe whereby with the fitting in place forming an annular cylindrical pocket between said inside wall and the outside of the drain pipe and said fitting having an annular radially inwardly extending rim at one end of the fitting forming a bottom for said pocket, the improvement comprising, a first ring of synthetic plastic resin material at the bottom of said pocket, said first ring having a substantially solid cross sectional form, a seal ring of synthetic plastic resin material of resilient consistency in said pocket at a location above said first ring and a second ring of synthetic plastic resin material in said pocket at a location above the seal ring, said second ring having a substantially solid cross sectional form, said seal ring comprising spaced inner and outer wall sections and a bottom wall joining said inner and outer wall sections, said inner wall section being in initial position tilted diametrically inwardly away from the outer wall section to a position wherein the innermost portion of said inner wall section initially has a diameter smaller than the diameter of the outside of said drain pipe, and an annular bead on one of said wall sections at a location facing the other wall section having when assembled a relatively narrow annular line of engagement with said other wall section whereby to increase the sealing effect between said inner wall section and said drain pipe.



3,937,498

HOSE COUPLING

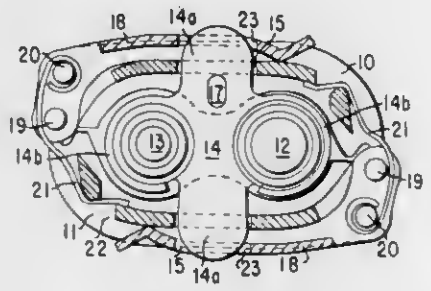
Karl Weinhold, IM Jagdfeld 43, 4040 Neuss, Germany

Filed June 22, 1973, Ser. No. 372,754

Claims priority, application Germany, June 22, 1972, 2230463

Int. Cl. F16l *39/02*

U.S. Cl. 285—243 **11 Claims**



1. A twin hose coupling, comprising a pair of elongated nozzles arranged side-by-side and having substantially parallel longitudinal axes; a casing including a pair of shell sections hingedly movable relative to one another between an open position and a closed position in which said nozzles are substantially coaxially accommodated in said casing, and each provided with a substantially centrally located recess; a mounting member in said casing extending normal to said axes and into said recesses and connecting said nozzles to one another; arcuate flanges provided on said shell sections and being coaxial with the respective nozzles when said shell sections are in said closed position, and to press a twin hose slipped over said nozzles against the same; and tension lever latch means provided at one circumferential end of said casing and having a tension lever which abuts one of said shell sections; and further comprising an additional tension lever latch provided at the opposite circumferential end of said casing and having an additional tension lever which abuts the other of said shell sections 9, means for drawing said shell sections together in said closed position so as to clamp the twin hose between said flanges and said nozzles.

3,937,499

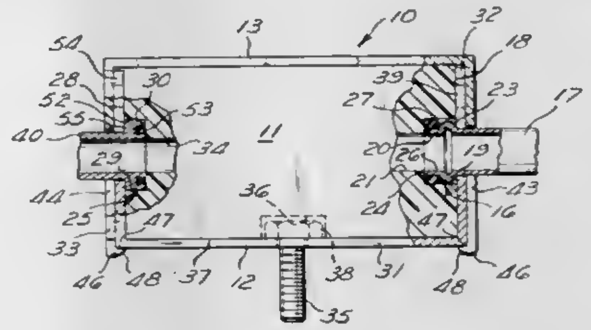
MOUNTING FOR NONMETALLIC VALVES

Louis B. Courtot, Euclid, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

Filed Sept. 23, 1974, Ser. No. 508,522

Int. Cl.^{2} F16L *39/00*

U.S. Cl. 285—319 **5 Claims**



1. An assembly for coupling a fluid line, comprising a nonmetallic body, said body having means for receiving and sealing the end of a fluid line, and bracket means in engagement with said body, said bracket means including means for resisting forces tending to separate the line from the body, said bracket means including means integral with said force resisting means for mounting said body to said bracket means, said bracket means including snap connecting means for releasably securing said body to said bracket means, said bracket means comprising a pair of interengaged bracket members, said interengaging bracket members having complementary U-shapes, the legs of one of said members being arranged to telescope over the legs of the other.

3,937,500

DEVICE FOR CONNECTING TELESCOPING PIPES

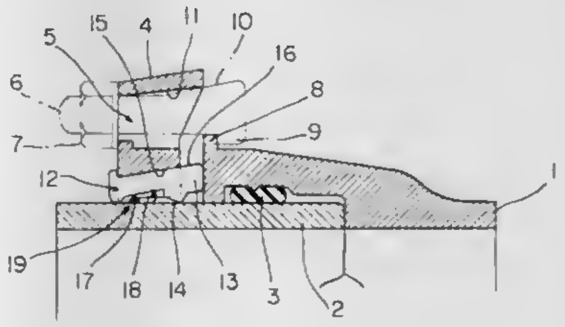
Toshiyuki Sato, 174-banchi, 569 Osaka, Takatsuki, Nobori, Japan

Filed June 18, 1974, Ser. No. 480,486

Claims priority, application Japan, June 19, 1973, 48-73015

Int. Cl.^{2} F16L *21/06*

U.S. Cl. 285—323 **3 Claims**

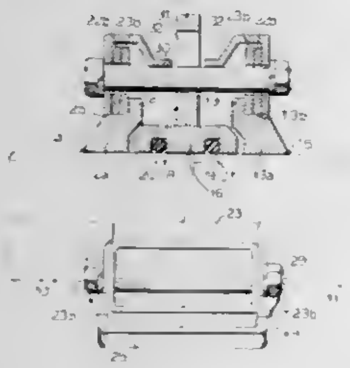


1. A device for interconnecting a large-diameter pipe and a small-diameter pipe inserted in one end thereof comprising a plurality of drawing means each having an engaging portion engageable with an outer peripheral projection on the large-diameter pipe, an annular member holding the drawing means and fittable around the small-diameter pipe, a plurality of pressing members interposed between the inner surface of the annular member and the outer surface of the small-diameter pipe and each having a wedge projection, said pressing members being inserted in recesses formed in the inner surface of said annular member, and a substantially circular ring-like

retaining member for preventing removal of the pressing members from the annular member when the device is not in use, said circular ring being fitted in grooves formed in the inner surface of the pressing members and in grooves formed in the inner surface of the circular member, at least one of the inner peripheral surfaces of the annular member and the outer peripheral surface of each of the pressing members being in the form of a slanting surface for causing the pressing member to move toward the outer peripheral surface of the small-diameter pipe and to thereby force the wedge projection against the outer peripheral surface of the small-diameter pipe by the movement of the annular member toward the large-diameter pipe when the annular member is drawn toward the large-diameter pipe by the drawing means, said grooves and the retaining member being dimensioned to permit relative movement between the annular member and the pressing members when the annular member is drawn toward the large-diameter pipe when the device is put to use.

3,937,501
PIPE COUPLING

Karl Weinhold, Im Jagdfeld 43, 404 Neuss, Germany
Filed May 9, 1974, Ser. No. 468,267
Claims priority, application Germany, May 26, 1973, 2327050
Int. Cl.² F16L *21/02, 21/06*
U.S. Cl. 285—365 **4 Claims**



1. A quick coupling for coupling two pipe ends comprising an annular flange secured on each of said pipe ends and spaced from the end faces of said pipe ends, a plurality of part shells, a clamping lever lock for connecting adjacent ends of a first and second of said part shells, engagement means on said part shells for engagement behind said annular flanges, means for hingedly connecting the remaining adjacent ends of said plurality of part shells, an intermediate coupling sleeve axially slidable on said pipe ends and between said annular flanges and having a pair of annular recesses therein, annular seals positioned in said annular recesses of said coupling sleeve and each adapted to engage one of said pipe ends to seal said one of said pipe ends to said coupling sleeve, said annular flanges each including an annular base portion spaced from said end face of said pipe end, a flange portion inclined from said base portion outwardly towards said end face of said pipe end, and a radial bearing surface for engagement by said engagement means of said part shells radially outwardly of said coupling sleeve.

3,937,502
DUMP BOX ASSEMBLY

James E. Gay, Fargo, N. Dak., assignor to Mobility, Inc., Fargo, N. Dak.
Filed Sept. 30, 1974, Ser. No. 510,454
Int. Cl.² B65G *67/50*
U.S. Cl. 298—11 **14 Claims**

1. A dump box assembly mountable on the bed of a vehicle for transfer of a bulk material to a remote receiver, said dump box assembly comprising:

a support frame mountable on said vehicle bed;

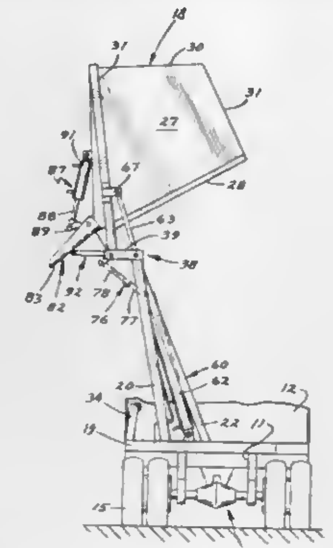
a dump box located above said vehicle bed and having a dumping side defining an upper dumping edge;

at least one link assembly including a link member having a fixed end pivotally assembled to said support frame, and a free end pivotally movable between a first downwardly extended position relative to said support frame and a second outwardly extended position;

means to limit pivotal movement of said free end of said link member beyond said second extended position;

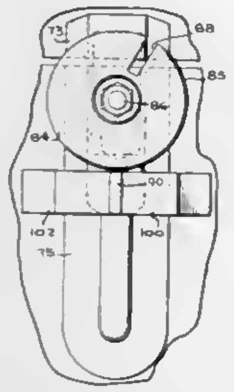
said free end of said link member being pivotally assembled to said dump box proximate the upper dumping edge thereof providing an axis for elevated rotation of said dump box about the free end of said link member, said dump box being located on said vehicle bed when said link member is in the first position, and movable to an elevated position about the vehicle bed when said link member is moved to the second position; and

elevating means operable to elevate said dump box and dump box axis to a position wherein the free end of said link member is in said second extended position, and then rotate said dump box about the free end of said link member in the second extended position.



3,937,503
ROTARY LATCH LOCK

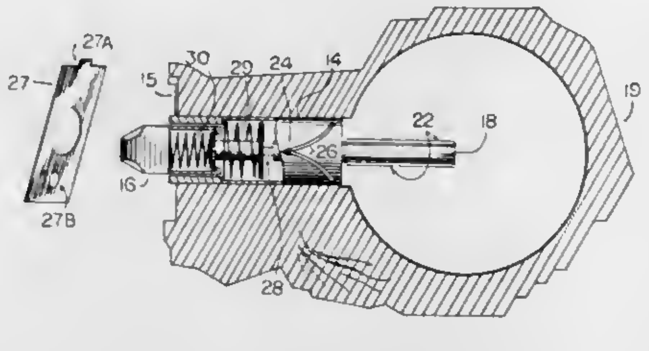
Carson E. Harris, 402 Whealton Road, Hampton, Va. 23666
Filed July 3, 1974, Ser. No. 485,738
Int. Cl.² E05C *1/04*
U.S. Cl. 292—153 **3 Claims**



1. A latching means resistant to accidental opening such as caused by vibration of the means on which the latching means is mounted, said latching means comprising a slide-bolt, actuator means extending outwardly from said slide-bolt, guide means supporting said slide-bolt for axial movement between an extended or locking position and a retracted or unlocked position, a rotary latch lock means mounted on said actuator means for movement along a path of movement therewith, means mounting said rotary latch lock on said actuator means for rotation about an axis perpendicular to the axis of said slide-bolt, a fixed stop lug mounted in the path of movement of said rotary latch lock, compressible vibration damping means clampingly engaged between said actuator means and said rotary latch lock for resisting rotation of said latch lock for holding said rotary latch lock in any rotary position of adjustment notwithstanding the vibrations of the means on which the latching means is mounted while permitting manual rotary adjustment of said rotary latch lock to another position of rotational adjustment, said rotary latch lock including a first peripheral surface comprising a portion of a cylinder and a second peripheral surface portion in a chordal plane with respect to said portion of a cylinder positioned radially inwardly from said first peripheral surface so that positioning of said second peripheral surface portion in facing relation to said stop lug enables said slide-bolt to move to its retracted position while positioning of said first peripheral surface in facing relation to said stop lug when said slide-bolt is in said locking position results in engagement of said first peripheral surface with said stop lug to prevent movement of said slide-bolt toward said unlocked position wherein said stop lug is mounted on support means comprising a U-shaped bracket plate fastened to and extending outwardly from means on which said guide means supporting said slide-bolt is mounted with said U-shaped bracket plate including a spanner portion extending transversely across and spaced outwardly from said slide-bolt, said stop lug extending outwardly from said spanner portion, said second peripheral surface of said rotary latch lock comprising the bottom of a generally rectangular slot extending inwardly from said first peripheral surface and dimensioned to matingly fit over said stop lug when aligned therewith.

3,937,504
PUSH AND PULL DOOR LATCH

Richard Lee McElroy, 6205 Ave. Juan Diaz, Riverside, Calif.
Filed Oct. 3, 1974, Ser. No. 511,506
Int. Cl.² E05C *1/14*
U.S. Cl. 292—164 **5 Claims**

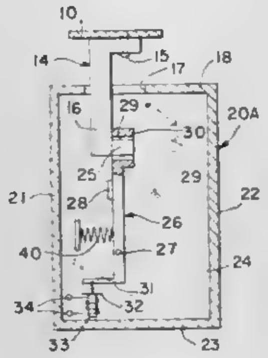


1. In a push and pull door latch, the combination of; a main housing, two sliding plates each with a recess in its outer face having a handle means disposed across said recess, each sliding plate being mounted within said main housing and being a separately constructed member having a peripheral wall extending in the direction of its insertion into the main housing, each being inserted from opposite sides, thereby the two being transversely opposed from one another, said sliding plates each acting as a plunger, a latch bolt operating gear rack disposed between said sliding plates, each said sliding plate being directly transversely connected to opposite ends of said rack and slidable together with said rack.

2. In a latch, the combination of a latch bolt housing, a latch bolt and a hollow pinion open at one end, the end of the latch bolt opposite the latch carrying end extending into the open end of the said pinion, the hollow pinion acting as a sleeve in a running fit to the latch bolt, the said latch bolt and pinion having a key and keyway association in their said connection providing means for said latch bolt to transversely slide in or out of said pinion while turning with said pinion, the latch bolt housing and latch bolt including cooperative cam means whereby turning of the pinion and thus the latch bolt results in retracting and projecting the latch bolt.

3,937,505
ELECTRIC HOOD LATCH FOR VEHICLES

Edward Dempsey, Bronx, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Mar. 13, 1974, Ser. No. 450,825
Int. Cl.² E05C *3/30*
U.S. Cl. 292—201 **6 Claims**



1. A locking device for a vehicle hood and the like, which comprises:

a. a main locking mechanism housing having a plurality of walls, a main chamber therein, and an entrance opening formed in one of said walls;

b. anchoring means for securing said housing to an interior of a hooded vehicle compartment;

c. a movable elongated latch bar member contained in said housing, said movable elongated latch bar member having an enlarged upper end making said bar member slightly top heavy, said latch bar member pivoted intermediate said enlarged upper end and a lower end;

d. a locking bar post securable at its upper end to said vehicle hood, said bar post of an EL shape to form a latching finger at its lower end, said locking bar post and said latching finger extensible through said entrance opening into said main chamber;

e. a latching means carried on said enlarged upper end of said latch bar member for releasably lockingly engaging with said latching finger of said locking bar post for holding the same against being unlocked when said latch bar member is moved into locking position; and

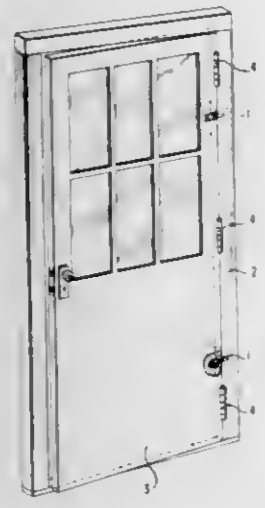
f. electromagnetic means contained in said housing beside said lower end of said bar member.

3,937,506
DOOR SECURITY PIN

Joe O. Dean, 5841 NE. 22nd Ave., Fort Lauderdale, Fla. 33308
Filed Sept. 19, 1974, Ser. No. 507,441
Int. Cl.² E05C *19/18*
U.S. Cl. 292—300 **6 Claims**

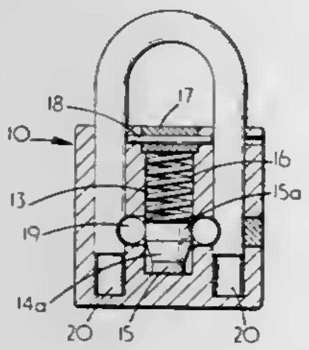
1. A security pin installed between the hinge side of a door jamb and a door edge, comprising a threaded portion inserted into the door jamb, a body portion integrally connected to the threaded portion, said threaded portion being of a reduced diameter to thereby form a shoulder between the body portion and the threaded portion for limiting the insertion of the pin into the door jamb, polygonal surfaces provided on said body portion adapted to be engaged by a suitable tool to facilitate the insertion of the threaded portion of the pin into the door jamb, and a pointed portion on the free end of the body portion for forming an indentation in the edge of the door to thereby facilitate the alignment of the longitudinal axis of the pin with a hole to be formed in the edge of the door at the point of indentation, a hole formed in the edge of the door,

said hole being positioned in alignment with the pointed end of the pin, whereby during the normal opening and closing of the door, the body portion of the pin is respectively removed from and inserted into the hole.



3,937,507
PADLOCK

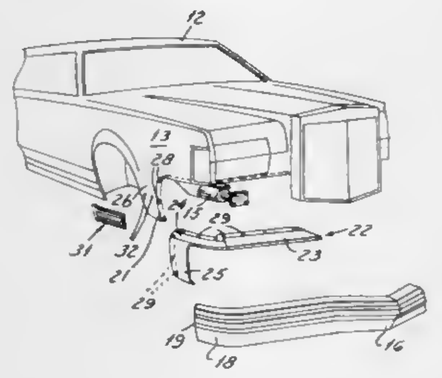
John McCoag, Glasgow, Scotland, assignor to Aardee Spring & Lock Company Limited, Glasgow, Scotland
Filed July 22, 1974, Ser. No. 490,842
Claims priority, application United Kingdom, Aug. 24, 1973, 40154/73
Int. Cl.^{2} B65D *27/30*
U.S. Cl. 292—319 **10 Claims**



1. A keyless disposable padlock comprising a body portion having two substantially parallel bores, a shackle having two limbs capable of insertion into the respective bores of the body portion, a cross-bore in the body portion partially intersecting with at least one of the bores and having its cross-section eccentric relative to the bore which it intersects, engaging means in the cross-bore, means biassing the engaging means to a position in the partial intersection of the cross-bore and at least one of said bores, at least one limb of the shackle for insertion into at least one intersected bore havingn a portion arranged to be engaged by the engaging means automatically when the limb is inserted into the bore so that the engaging means lies trapped in said partial intersection between the engaged limb of the shackle and the opposite wall of the cross-bore, the engagement by the engaging means preventing movement of at least one limb along at least one of said bores whereby the padlock cannot be opened without damaging at least one of the component parts of the padlock.

3,937,508
VEHICLE BODY AND BUMPER ASSEMBLY

Patrick M. Glance, Plymouth; James E. Moroney, Southfield, and Peter M. Ross, Jr., Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 26, 1974, Ser. No. 536,662
Int. Cl.^{2} B60R *19/02*
U.S. Cl. 293—63 **5 Claims**

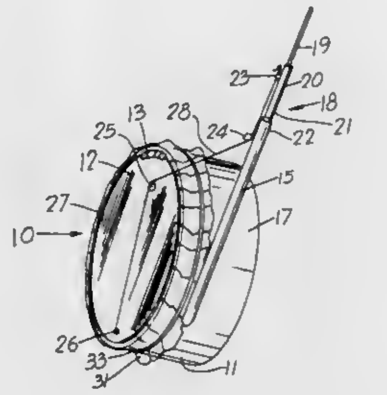


1. A vehicle body and bumper assembly comprising:
a vehicle body having rigid side panels,
a bumper,
and energy absorbing means extending between the vehicle body and the bumper supporting the latter in spaced relationship to the vehicle body for movement longitudinally of the latter upon impact,
the bumper extending across the width of the body and having curved end portions terminating substantially in alignment with the side panels,
each bumper curved end portion having its end spaced from the adjacent end of a side panel,
bridging means bridging the space between each bumper curved end portion and the side panel aligned with the latter,
each bumper curved end portion being movable during energy absorbing movement of the bumper into engagement with and along the inner side of the bridging means,
the bridging means comprising a flexible elastomeric panel adapted to flex outwardly as the bumper curved end portion moves along the inner side thereof,
and a molding means supported externally of the body side panel and extending toward the bumper curved end portion,
the molding means being constructed and arranged to accommodate outward flexing movement of the flexible panel.

3,937,509
ANIMAL FECES COLLECTING DEVICE

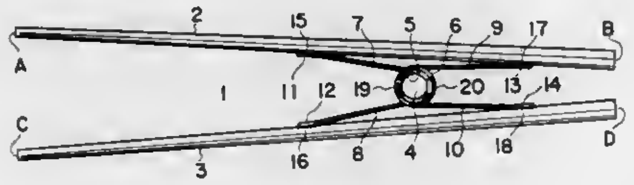
Frank W. Hufnagel, Pompano Beach, Fla., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Oct. 15, 1974, Ser. No. 514,636
Int. Cl.^{2} A10K *23/00;* **A01K** *29/00*
U.S. Cl. 294—1 R **2 Claims**

1. An animal feces collecting device adapted to scoop animal feces from the ground, which comprises:
a. a cylindrically shaped container having an open top end and an outside longitudinal surface;
b. a hollow tube affixed tangentially to said outside longitudinal surface;
c. a tube engaging section slidably mounted into said hollow tube;
d. a handle section telescopically communicating with said tube engaging section;
e. a flat circular disc top cover hingably mounted to an open top end of said container;
f. a first eye hook affixed to said tube engaging section;
g. a second eye hook affixed to said hollow tube;
h. Third and fourth aligned eye hooks affixed to a top surface of said cover;
g. a string tied to said fourth eye hook, threaded through said second and third eye hooks, and tied to said first eye hook, said tube engaging section sliding back and forth within said hollow tube causing said cover to open and close upon said container.



3,937,510
COUPLED CHOPSTICKS

Hyok Sang Lew, 17776 W. 14th Ave., No. 2, Golden, Colo. 80401
Filed May 29, 1973, Ser. No. 364,878
Int. Cl.^{2} A47G *21/10*
U.S. Cl. 294—16 **9 Claims**

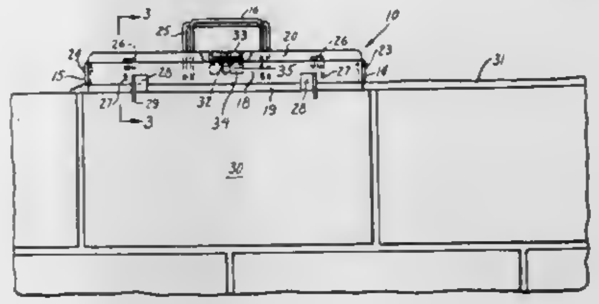


1. A food handling utensil for grasping food particles, said utensil comprising in combination:
a. a pair of elongated member;
b. a flexible coupling disposed intermediate said members for maintaining said members in essentially the same plane;
c. said coupling including:
1. a first coil spring having a first pair of arms extending therefrom;
2. a second coil spring having a second pair of arms extending therefrom; and
3. means for attaching said first and second coil springs to one another in axial alignment disposing said arms like quatrefoil.

3,937,511
MORTAR TOOL

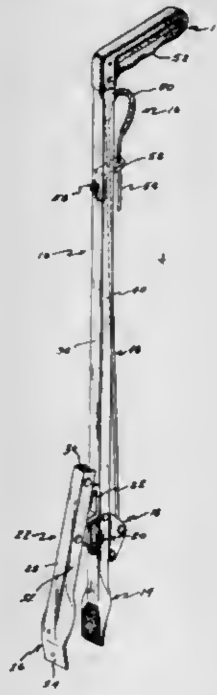
Andrew J. Inzerill, 24 Mill St., Tobyhanna, Pa. 18466
Filed Aug. 15, 1974, Ser. No. 497,664
Int. Cl.^{2} E04G *21/20*
U.S. Cl. 294—16 **5 Claims**

1. A mortar tool comprising a pair of elongated generally rectangularly shaped, accurately spaced apart jaws, mating hinge means at the remote ends of each of said rectangularly shaped jaws and at the center portions thereof, a pair of guides having integral depending guide fingers secured to one of said jaws, spring loaded means normally urging said jaws apart, and hand activated means for moving said jaws together to hold mortar.



3,937,512
GRAB-STICK FOR LITTER

Harold E. Baughman, P.O. Box 6506, Santa Rosa, Calif. 95406
Continuation of Ser. No. 413,195, Nov. 6, 1973, abandoned. This application Apr. 9, 1975, Ser. No. 566,346
Int. Cl.^{2} B25J *1/00*
U.S. Cl. 294—19 R **8 Claims**



1. A grab stick for picking up litter comprising in combination an elongated support column having a laterally projecting hand grip portion at its upper end and a gripper jaw portion at its lower end, an elongated swing leg pivotally connected at its upper end by a first pivot to said support column on that side thereof opposite to said hand grip portion and adjacent a lower end of said support column, said elongated swing leg having a gripper jaw portion at its lower end for swinging toward and away from the gripper jaw portion of said support column between respective closed and opened clamping positions, a control link member pivotally connected at one end thereof by a second pivot to said support column on that side of the support column from which said hand grip portion projects, a pull rod projecting through said support column and pivotally connected by a respective third and fourth pivots at its opposite ends to said swing leg and to said control link member, a trigger rod pivotally connected by a fifth pivot to said control link member between said second and fourth pivots and extending therefrom to terminate in a finger grip immediately below said hand grip portion, spring means for swinging said swing leg normally to its opened position to seat said control link member against said support rod, imaginary lines between said second and third pivots, said second and fourth pivots and said third and fourth pivots in said opened position of said gripper jaw setting-off a triangle of a predeter-

mined height as measured by an imaginary line from said second pivot normal to the imaginary line between said third and fourth pivots, and said predetermined height being appreciably lessened in said closed position of said gripper jaw whereby said second, third and fourth pivots are brought closer to linear alignment to produce high clamping force in response to trigger rod movement.

3,937,513

DUAL-PURPOSE REMOTE-CONTROL GRAB FOR FUEL ELEMENTS AND CONTROL RODS OF A NUCLEAR REACTOR

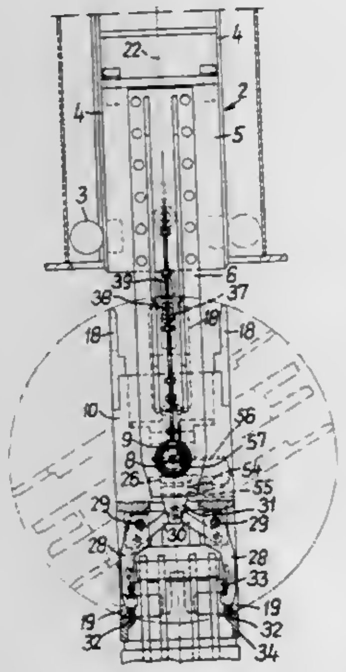
Bernhard Hoffmeister, Wilhelmshaven, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Oct. 29, 1974, Ser. No. 519,005

Claims priority, application Germany, Nov. 28, 1973, 2359163

Int. Cl.² G21C *19/10*

U.S. Cl. 294—86 A **12 Claims**



1. An apparatus for inserting differently shaped elongated objects into and withdrawing same from respective holes, said apparatus comprising:

- a vertically displaceable support;
- a head pivotally mounted on said support and having a pair of sides;
- grab means on one side of said head having a formation complementarily shaped for locking on an object of a predetermined shape;
- grab means on the other side of said head having a formation complementarily shaped for locking on an object of another different predetermined shape; and
- means for pivoting said head on said support between two positions each corresponding to alignment of a respective grab means with a respective object.

3,937,514

GUIDE HEAD FOR PIPE RACKERS

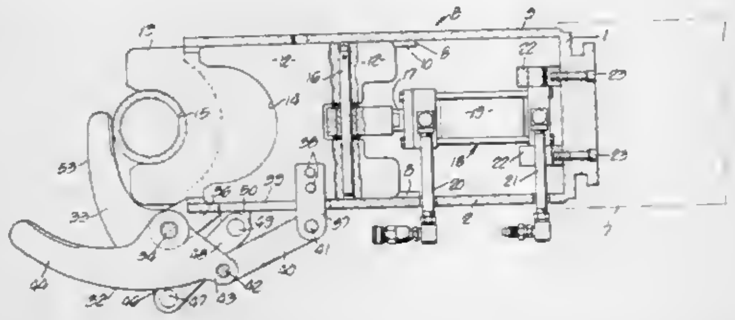
Faustyn C. Langowski, Houston, Tex., assignor to Byron Jackson Inc., Long Beach, Calif.

Filed Nov. 22, 1974, Ser. No. 526,208

Int. Cl.² E21B *19/00*

U.S. Cl. 294—88 **5 Claims**

1. A pipe guide head for well pipe racking apparatus comprising: a hollow body having means at one end for connection with a supporting and positioning structure, guide means at the other end of said body for receiving and guiding a length of pipe, said guide means including a slide plate, means reciprocably supporting said slide plate for extension and retraction with respect to said body, actuator means associated with said body and said slide plate for reciprocating said slide plate, said slide plate having a pipe receiving opening in its end, retainer means mounted on said body and movable between an open position and a closed position for retaining a pipe in said opening, and linkage means associated with said slide plate and said retainer means for moving said retainer means to said open position in response to retraction of said slide plate and for moving said retainer means to said closed position in response to extension of said slide plate.



3,937,515

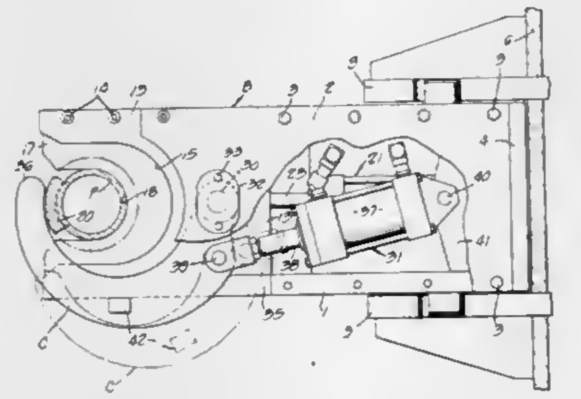
HEAD FOR PIPE RACKERS

Faustyn C. Langowski, Houston, Tex., assignor to Byron Jackson Inc., Long Beach, Calif.

Filed Nov. 22, 1974, Ser. No. 526,206

Int. Cl.² E21B *19/14*

U.S. Cl. 294—88 **6 Claims**



1. A pipe-supporting head for well pipe racking apparatus comprising: a body having side walls, means providing a pipe-receiving aperture between said side walls and open at one end of said body, arcuate, pipe-supporting means carried by said body at the inner end of said aperture, a claw member, first pivot means mounting said claw member on said body for pivotal movements between an open position, in which said claw member is retracted from said aperture to permit a pipe to enter said aperture and be supported by said pipe-supporting means, and a closed position, in which said claw member engages a pipe supported by said pipe-supporting means to retain the pipe within said aperture, a portion of said claw member projecting laterally outside of one only of said side walls, extensible and contractible actuator means for pivoting said claw member between said positions, said actuator means including second pivot means connecting one end of said actuator means to said body, and third pivot means connecting the other end of said actuator means to said claw member at a location offset from said first pivot means, said pipe-supporting means, said first pivot means and said second pivot means being aligned longitudinally of said body and centrally of said side walls, said claw member and said actuator means being selectively arrangeable in said body to enable said claw member to pivot on said first pivot means from said open position to said closed position in a given sense, and, optionally, in the opposite sense.

3,937,516

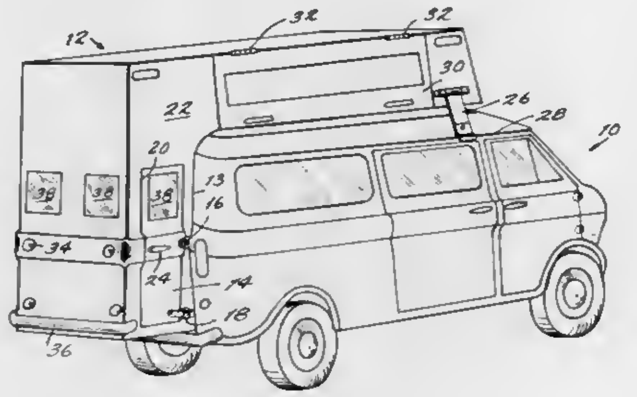
EXTENSION COMPARTMENT FOR MOTOR VEHICLE

Joe W. Chapman, 8364 Fairview Ridge Road, Lesage, W. Va. 25537

Filed Nov. 16, 1973, Ser. No. 416,459

Int. Cl.² B62C *1/06*

U.S. Cl. 296—26 **13 Claims**



1. For a wheeled vehicle having a door frame, a forwardly opening enclosure including a pair of spaced side walls, a top wall and a bottom wall, and means for releasably securing said enclosure to the vehicle with its forward open end opening into the vehicle through its door frame including a generally rectangular mounting frame having top, bottom and spaced side members connected one to the other, and means for releasably securing said mounting frame to the door frame with the mounting frame disposed substantially concentrically within the vehicle door frame and with the sides, top and bottom frame members adjacent corresponding margins of the door frame, a seal for sealing between said enclosure and the vehicle when the enclosure is secured to the vehicle, means carried by said frame and said enclosure for releasably securing said enclosure and said frame one to the other including cooperating fastening elements carried by said frame and said enclosure for displacing said enclosure toward said vehicle with the seal between said enclosure and the vehicle thereby sealing the enclosure to the vehicle, one of the side walls of said enclosure including a door frame adjacent the open end thereof, said enclosure being located relative to the vehicle such that the enclosure door frame receives a door of the vehicle when the vehicle door is opened to extend substantially parallel to and in substantially coplanar relationship with said one side wall.

3,937,517

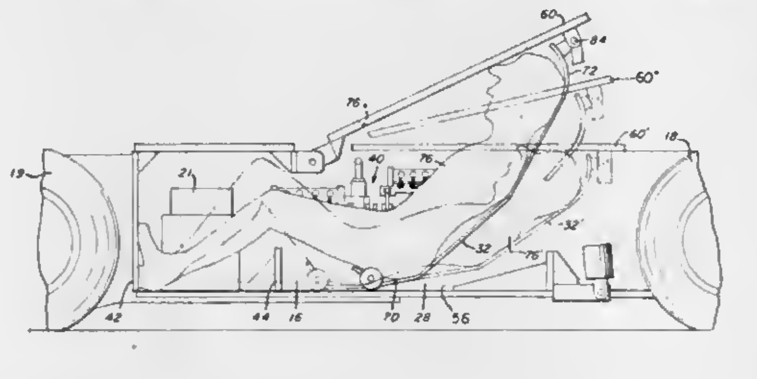
PROTECTIVE CANOPY

William J. Donovan, and G. Robert Frey, both of Franklin, Pa., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed May 13, 1974, Ser. No. 469,185

Int. Cl.² B60N *1/04*

U.S. Cl. 296—68 **8 Claims**



1. A mobile machine comprising: a chasis; a canopied occupant positioning assembly carried by said chassis; said positioning assembly including an occupant support portion and an overlying rigid canopy portion and being adapted to receive an occupant therewithin and to orient such occupant to face in a forward direction; said canopy portion being pivotally connected adjacent one peripheral portion thereof to said chassis and connected adjacent an opposite peripheral portion thereof with said support portion; said one peripheral portion being spaced from said opposite peripheral portion in said forward direction; and adjusting means communicating between said assembly and said chassis for selectively adjusting the overall height of said occupant positioning assembly.

3,937,518

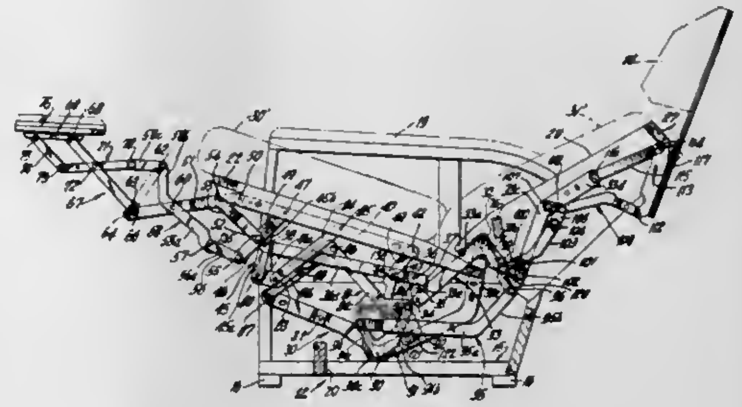
RECLINER LOUNGER T-CUSHION CHAIR WITH PROJECTIBLE HEADREST AND LEGREST, AND HARDWARE THEREFOR

Kenneth S. Harrison, Ridgefield Park, N.J., assignor to Mohasco Corporation, Amsterdam, N.Y.

Filed Jan. 9, 1975, Ser. No. 539,641

Int. Cl.² A47C *1/03*

U.S. Cl. 297—61 **16 Claims**



1. Hardware for a T-cushion chair comprising a seat link, an arm mounting link, a back mounting link pivoted to the arm mounting link and movable from upright position to T.V. and fully reclined positions, a toggle bar, a toggle bar connector link pivotally connected to said back mounting link and also pivoted to said toggle bar near the rear end of said toggle bar, a rear pivot link pivotally connected to said toggle bar, and to said seat link adjacent the rear end of said seat link, a front pivot link pivoted adjacent the front end of the toggle bar, a link pivoted to said front pivot link above the pivotal connection of said front pivot link to said toggle bar, to said seat link closer to the front end of the seat link than to the rear end of said seat link, said back mounting link having an arm projecting downwardly from its pivotal connection to said arm mounting link to its pivotal connection to said toggle bar connector link, said arm of said back mounting link swinging forwardly upon swinging the upper end of said back mounting link forward from upright to T.V. position, to move the toggle bar forwardly.

3,937,519

MOBILE CHAIR FOR PARAPLEGICS

Raymond Schoolden, 11043 NW. Flagler Terrace, Miami, Fla. 33172

Filed Mar. 25, 1974, Ser. No. 454,615

Int. Cl.² A47C *3/20*

U.S. Cl. 297—347 **2 Claims**

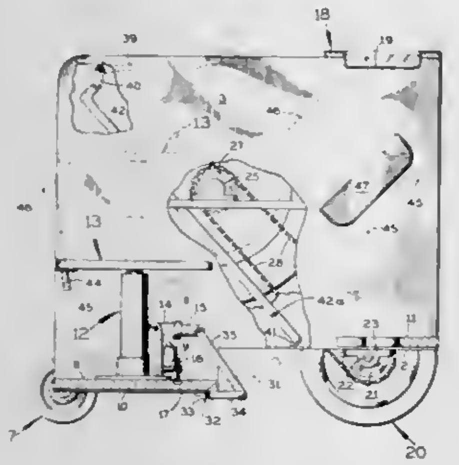
1. In a wheel chair having:

- a chair frame with spaced, opposite sides; means at the front of said frame extending between and rigidly interconnecting said sides;
- and front and back wheels operatively connected to the frame at each side to provide a rolling support for the frame;
- a rigid horizontal platform extending between said sides at the bottom of the frame;
- a seat jack mounted on said platform and extending upward therefrom between said sides of the frame, said jack

having an operating member movable between a retracted, lowered position and an extended, raised position; a horizontal seat operatively connected to said operating member of the jack to be vertically raised and lowered while being maintained horizontal;

said chair frame being open at the back between said sides above said platform for the entry and withdrawal of the user to and from the seat at the back of the chair frame;

and mechanical actuator means for the jack operatively coupled at the lower end thereof to said operating member of the jack to selectively control the latter's operation for raising and lowering the seat, said actuator means extending up from said jack and terminating at the upper end thereof in handle means located for operation by the occupant of said seat;



the improvement wherein said mechanical actuator means comprises:

- a first elongated rod-like member operable in one direction for operating said jack to raise the seat, a first handle on the upper end of said first rod-like member;
- and a second elongated rod-like member operable in one direction for actuating said jack to lower the seat, and a second handle on the upper end of said second rod-like member.

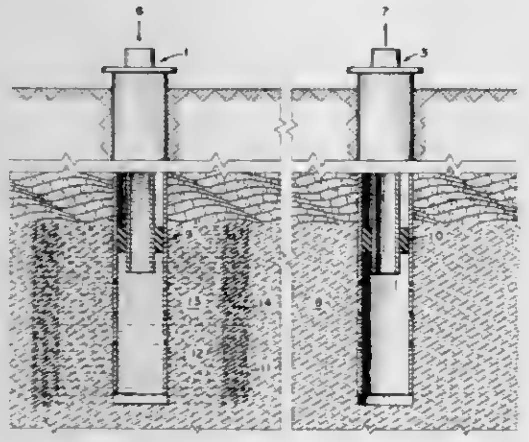
3,937,520
IN SITU MINING USING BACTERIA

John A. Sievert, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Feb. 22, 1974, Ser. No. 444,935

Int. Cl.² E21C *43/00*

U.S. Cl. 299—4 **6 Claims**



1. A process for recovering a mineral value from a stratum leachable by a fluid containing a leaching agent comprising:

- a. injecting into said stratum to contact said mineral value a medium capable of generating a leaching agent in said stratum, said medium consisting essentially of a carrier fluid, a surfactant and a biological agent;
- b. generating said leaching agent by action of said biological agent in situ in said stratum to produce a leaching agent concentration sufficient to leach the mineral value in said stratum;
- c. leaching said mineral value with said leaching agent; and
- d. displacing and recovering said fluid containing leached mineral value.

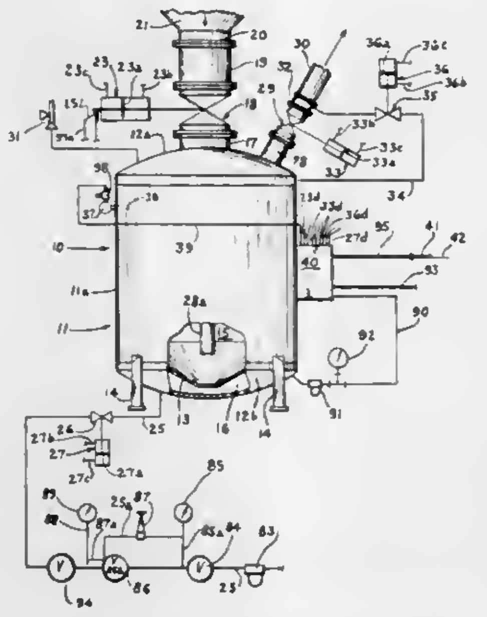
3,937,521
SELF-PURGING PNEUMATIC CONVEYING APPARATUS AND VARIED MEANS OF OPERATION

Brian R. Reuter, Houston, Tex., assignor to Consolidated Engineering Company, Houston, Tex.

Continuation-in-part of Ser. No. 98,567, Dec. 16, 1970, Pat. No. 3,776,599, which is a continuation-in-part of Ser. No. 822,126, May 6, 1969, Pat. No. 3,549,206, which is a continuation-in-part of Ser. No. 686,018, Nov. 28, 1967, abandoned, which is a continuation-in-part of Ser. No. 518,353, Jan. 3, 1966, Pat. No. 3,355,211. This application Dec. 3, 1973, Ser. No. 421,450

Int. Cl.² B65G *53/00*

U.S. Cl. 302—3 **9 Claims**



1. Material transporting apparatus comprising a pressure vessel including a gas permeable diaphragm bridging the lower part of said vessel above the bottom thereof and dividing it into a material plenum thereabove and a gas plenum therebelow, a fill valve controlled inlet conduit to admit flowable material through the top of said vessel into said material plenum to upstand from said diaphragm, vacuum valve means. controlling vacuum line communication between the pressure vessel below the diaphragm and the suction side of a vacuum pump, thus to apply vacuum pull through said diaphragm to draw in material from a supply source through an open fill valve in said pressure vessel into said material plenum, air valve means communicating into said pressure vessel below said diaphragm to break the vacuum most briefly at briefly spaced apart intervals, a valve controlled, pressurized gas conduit into said gas plenum, a discharge valve controlled discharge conduit from said plenum, a purge valve controlled by-pass conduit with purge valve disposed in communication with the upper part of said material plenum and to connect into said discharge conduit downstream of said discharge valve, automatically operable means including circuitry sequentially operable to open said fill valve, to open said vacuum valve means, interruptedly to open said air valve means, to close said fill valve means, and said purge valve, also said vacuum valve means, and said air valve means, to open said pressurized gas valve, to open said discharge valve whereby gas pressurized materials are discharged through said discharge conduit, then to start a following handling of a batch of material said circuitry being operable to close said discharge valve, and to open said purge valve, later to open said fill valve and said vacuum valve means and said air valve means.

3,937,522
APPARATUS FOR CONTINUOUS FEEDING OF GRANULAR MATERIAL WITH SHARP CORNERS TO A CONVEYER PIPE LINE

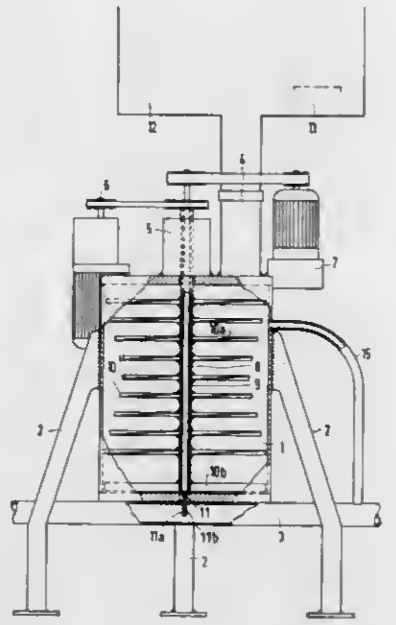
Roland Korn, Nuremberg; Gunter Seyd, and Uwe Paulsen, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 16, 1973, Ser. No. 416,344

Claims priority, application Germany, Nov. 20, 1972, 2256877

Int. Cl.² B65G *53/40*

U.S. Cl. 302—56 **2 Claims**



1. Apparatus for continuously feeding granular material having sharp corners to a conveyor pipe line through which a compressed gas stream carrier flows, said apparatus comprising a vertical cylindrical chamber with a bottom having a central discharge opening connecting with said pipe line and a top having a charging inlet for said material, and means in said chamber for at different levels therein alternately lifting and releasing successive portions of said material therein, the first-named means comprising rotative blades positioned at said different levels and having upper surfaces which are inclined with respect to the rotative direction of said blades, the apparatus including a bottom blade in the bottom of said chamber and which is rotative concentrically with respect to said discharge opening and having side surfaces shaped with respect to this bottom blade's rotative direction to feed said material to said discharge opening, said apparatus having means for stirring said material while it feeds through said discharge opening into said pipe line, said stirring means comprising a rotative vertical spindle having vertical ribs and extending through said discharge opening and into said pipe line, said spindle connecting with a vertical drive shaft extending upwardly and concentrically through said chamber and its top, and said blades being mounted by a tubular shaft encircling said drive shaft and also extending upwardly through said chamber and its top, said shafts extending above said chamber's top, for rotative driving thereof.

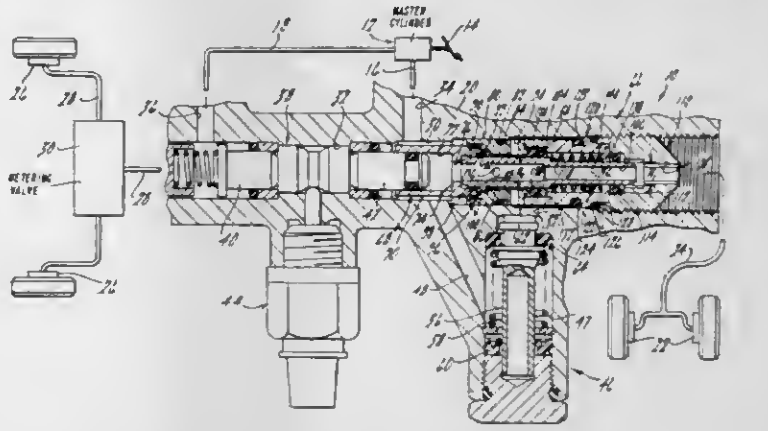
3,937,523
PROPORTIONING BRAKE CONTROL DEVICE WITH BYPASS

David T. Ayers, Jr., Birmingham; Roger E. Doerfler, Detroit, and William Stelzer, Milford, all of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Continuation of Ser. No. 393,132, Aug. 30, 1973, abandoned. This application Nov. 29, 1974, Ser. No. 528,475

Int. Cl.² B60T *13/00*

U.S. Cl. 303—6 C **31 Claims**



1. A device for a dual brake system including a master cylinder and front and rear brake actuators,

said device being located in said system between said master cylinder and said rear brake actuator and including,

a housing having a first bore, a fluid inlet adapted to receive fluid from said master cylinder and a fluid outlet through which fluid is adapted to be displaced to said rear brake actuator, said inlet being communicable with one portion of said first bore and said outlet being communicable with another portion of said first bore,

first valve means actuatable in response to fluid pressure at said inlet in excess of a first predetermined pressure for decreasing the transmission of fluid pressure from said inlet to said outlet,

said first valve means being disposed in a second bore different from said first bore,

second valve means having a first area exposed to the fluid pressure at said outlet and a second area different from said first area exposed to the fluid pressure at said inlet and actuatable in response to a predetermined pressure differential between said inlet and said outlet to provide a flow path circumventing said first valve means and permitting fluid to flow directly from said inlet to said outlet,

said second valve means being disposed in said first bore and movable longitudinally therein to provide said direct flow path, and

bypass means in said first bore for sensing a predetermined pressure condition in an ancillary brake system for providing a direct flow path from said inlet to said outlet and bypassing said first and second valve means.

3,937,524
PNEUMATIC BRAKING SYSTEMS FOR VEHICLES

Brian Ingram, Balsall Common, and Henry Jamieson Riddoch, Solihull, both of England, assignors to Girling Limited, Birmingham, England

Filed Dec. 8, 1972, Ser. No. 313,524

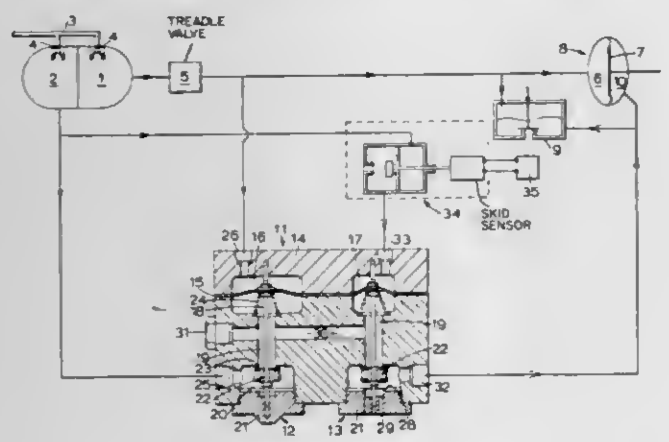
Claims priority, application United Kingdom, Dec. 11, 1971, 57687/71

Int. Cl.² B60T *8/02*

U.S. Cl. 303—21 F **14 Claims**

1. A pneumatic braking system for vehicles comprising a diaphragm brake actuator, a first reservoir for pressurized air connected through a brake applying valve to one side of the brake actuator for applying the brake, a second reservoir for pressurized air, a normally closed first valve having its inlet connected to said second reservoir, a normally closed second

valve having its inlet connected to the outlet of said first valve and its outlet connected to the second side of said actuator, means for opening the first valve in response to opening of the brake applying valve, skid sensing means, and means for opening the second valve in response to a signal from the skid sensing means, whereby pressurized air is supplied to the second side of the brake actuator from the second reservoir when the brake has been applied and a skid signal received.



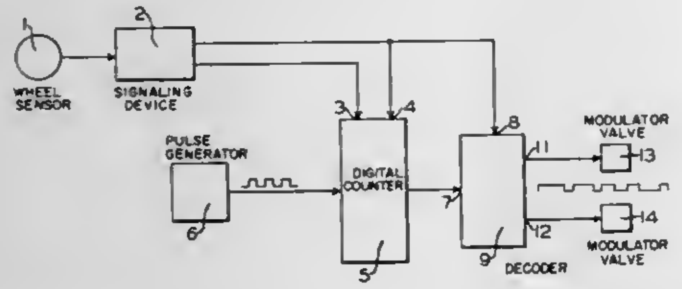
3,937,525

CONTROL SYSTEM PROVIDING A VARIABLE IMPULSE-LIKE BRAKE RELEASE AND/OR REAPPLICATION SIGNAL FOR WHEEL SLIP CONTROL

Dieter Luhdorff; Bernd Oehlerking, both of Hannover; Hugo Jaworsky, Altencelle; Gerhard Koth, Westercelle, and Klaus-P. Simon, Hannover, all of Germany, assignors to WABCO Westioghouse GmbH, Hannover, Germany

Filed Feb. 25, 1974, Ser. No. 445,234
Int. Cl.^{2} B60T *8/08*

U.S. Cl. 303—21 P **3 Claims**



1. An anti-wheel skid brake control system for a vehicle comprising:
  - a signaling means for evaluating the dynamic behavior of a wheel of said vehicle and providing brake pressure release and reapplication signals when certain chosen conditions of wheel rotation have been detected;
  - b valve means for controlling modulation of fluid brake pressure; and
  - c control circuit means for providing an impulselike control signal to effect intermittent operation of said valve means in response to either one of said release and reapplication signals being provided, said control circuit means comprising:
    - i a pulse generator for emitting a predetermined impulse frequency;
    - ii a digital counter driven in accordance with the impulse frequency of said pulse generator; and
    - iii decoding means for interrogating the output of said digital counter and emitting said impulse-like control signal so as to vary the duration of respective pulses of said control signal according to different pulse ranges of said impulse frequency, said control signal being characterized by a waveform displaying a predetermined irregular pulse pattern.

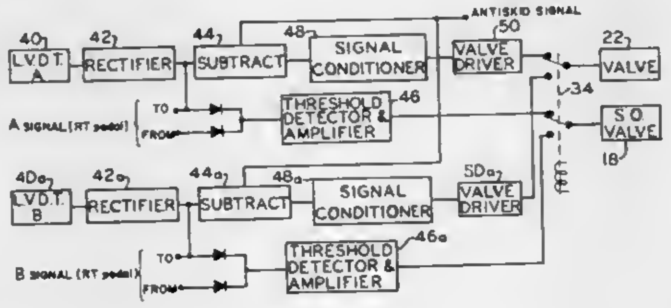
3,937,526

SINGLE VALVE BRAKING SYSTEM HAVING ANTI-SKID CONTROL

Edgar J. Ruof, Akron, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Dec. 16, 1974, Ser. No. 533,248
Int. Cl.^{2} B60T *8/00*

U.S. Cl. 303—21 A **6 Claims**



4. A brake control system for use on an aircraft having at least two wheels, one on each side of the aircraft, each wheel having an electrically controlled hydraulic valve connected to a brake for such wheel, all wheels on the same side of the aircraft being controllable by the same brake pedal and each wheel having anti-skid circuitry associated therewith to produce anti-skid signals indicative of skidding activity of the wheel comprising:
  - a brake pedal transducer connected to each pedal and producing a pedal signal corresponding to the degree of depression of said pedal;
  - first circuit means, including a differencing circuit, connected to said brake pedal transducers for receiving said pedal and anti-skid signals and producing a brake signal as a function thereof;
  - valve driver means connected to said first circuit means and to said hydraulic valves for controlling application and release of brake pressure to the brakes;
  - second circuit means connected to said transducers for opening shut-off valves in hydraulic lines between hydraulic pressure sources and the hydraulic valves to enable such hydraulic valves to regulate brake pressure when either brake pedal has been depressed a fixed amount; and
  - wherein a level shift circuit is provided for biasing the differencing circuit to superimpose the anti-skid signal on a DC level before the application thereof to the differencing circuit.

3,937,527

FLUID PRESSURE RELAY VALVE

Alfred Eckhart, Munich, Germany, assignor to Knorr-Bremse GmbH, Munich, Germany

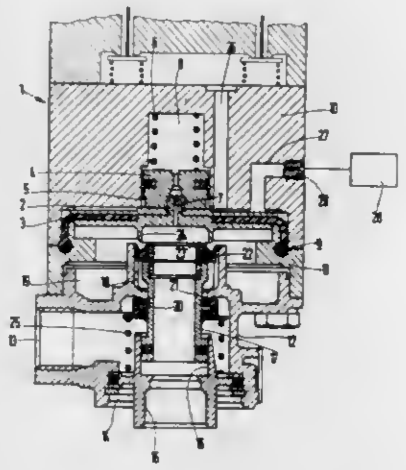
Filed Sept. 16, 1974, Ser. No. 505,959

Claims priority, application Germany, Apr. 22, 1974, 2419243; May 25, 1974, 2425449

Int. Cl.^{2} B60T *15/20*

U.S. Cl. 303—40 **8 Claims**

1. A fluid pressure relay valve for the electro-pneumatic control of vehicle brakes comprising a housing having a control chamber therein, inlet and outlet solenoid valve means connected to said control chamber for controlling the control pressure therein, a piston displaceable within said control chamber and defining one wall of said control chamber, there being a second chamber on the other side of said piston connected to a braking device, first and second valve means actuable by said piston for venting said second chamber and for connecting said second chamber to a source of pressure medium, and means defining an additional volume of pressure medium connected to said control chamber for increasing the pressure in said control chamber to a predetermined level by a lowering of the pressure in said additional volume means subsequently to a "hold the pressure" signal.



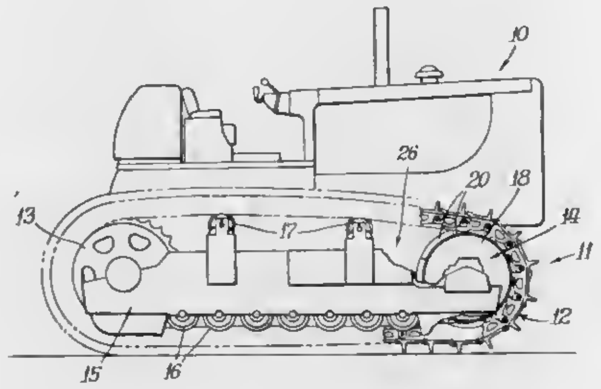
3,937,528

SEGMENTED AND CUSHIONED IDLER FOR TRACK-TYPE VEHICLES AND METHOD FOR REPAIRING SAME

Donald E. Clemens, Creve Coeur; Donald A. Piepho, Aurora, and Stephen W. Reiss, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 19, 1974, Ser. No. 507,527
Int. Cl.^{2} B60B *3/08*

U.S. Cl. 305—21 **35 Claims**



1. In a track-type vehicle of the type having a pair of endless tracks mounted on either side thereof and wherein a forward end of each of said tracks is entrained about an idler disposed for rotation about an axis thereof, the improvement wherein said idler comprises a hub having an annular flange on the periphery thereof, a plurality of arcuate segments circumferentially disposed on said flange about said axis to define a rim having substantially continuous annular bearing surfaces on the periphery thereof and fastening means releasably attaching each of said segments to said hub, said fastening means comprising a plurality of circumferentially spaced bolts extending radially inwardly towards said axis, through each of said segments and threadably attached to said hub.

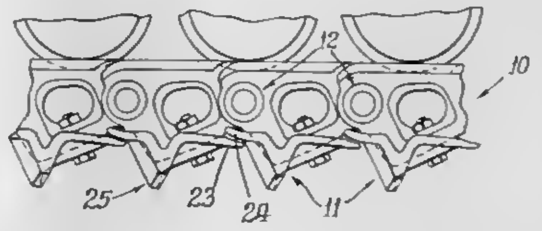
3,937,529

LOW GROUND PRESSURE TRACK SHOE

Danny J. Becker, Peoria; Roger L. Boggs, East Peoria; Kenneth E. Vaughn, Creve Coeur, and James Richard Shuler, Eureka, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 24, 1974, Ser. No. 517,495
Int. Cl.^{2} B62D *55/24*

U.S. Cl. 305—54 **23 Claims**



1. An endless track assembly for a track-type vehicle comprising a plurality of pivotally interconnected ground engaging track shoes,
  - each track shoe comprising a pair of downwardly converging sidewalls forming an open-ended, trough-like construction having a V-shaped cross section throughout the entire width thereof, end portions of said sidewalls extending laterally in converging relationships at each lateral end of said track shoe when viewed in top plan,
  - a common grouser portion formed at lower apex ends of said sidewalls to extend the entire width of said track shoe,
  - generally horizontally disposed first and second lugs each formed on an upper end of a respective one of said sidewalls to extend the entire width of said track shoe, the first lug of one track shoe overlapping the second lug of an adjacent track shoe in overlapping relationship therewith,
  - link means disposed intermediate the lateral ends of each of said track shoes and straddling said sidewalls between said first and second lugs,
  - pivot means pivotally connecting each end of each of said link means to an end of an adjacent link means, and
  - attachment means attaching each of said link means to a respective one of said track shoes.

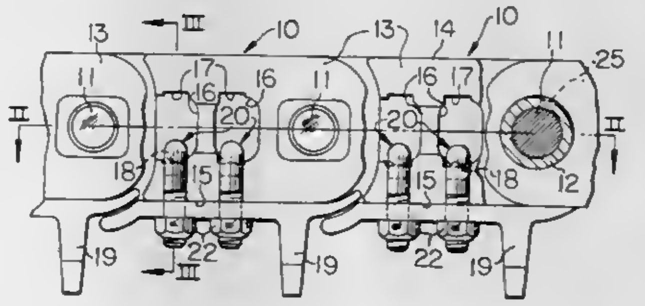
3,937,530

REVERSIBLE TRACK LINK WITH CLAMPED-ON SHOE

James R. Sturges, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 30, 1975, Ser. No. 545,449
Int. Cl.^{2} B62D *55/28*

U.S. Cl. 305—54 **8 Claims**



1. A track link assembly for an endless track assembly of a track type vehicle comprising
  - a track link defining upper and lower rail surfaces hereon,
  - means forming a clamping surface on said track link,
  - a track shoe disposed on said lower rail surface, and
  - clamping means engaging said clamping surface for releasably attaching said track shoe to said track link comprising

a bolt having a shank thereof extending upwardly through said track shoe and disposed on a side of said track link and an upper clamping end engaging said clamping surface and a nut threadably mounted on a lower end of the shank of said bolt and disposed in abutting relationship with a bottom surface of said track shoe.

3,937,531

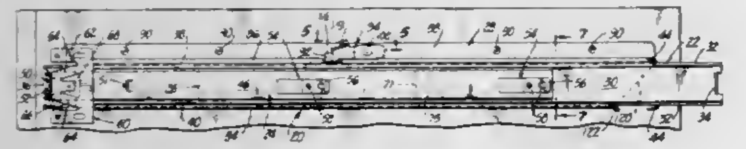
TELESCOPING DRAWER SLIDE SECTION FOR 2-MEMBER TELESCOPIC BALL BEARING SLIDES AFFORDING FULL EXTENSION

Magnus F. Hagen, 3713 Twilight Drive, Fullerton, Calif. 92632, and Fred A. Jordan, 14906 Lodosa, Whittier, Calif. 90605

Filed Mar. 3, 1975, Ser. No. 554,536

Int. Cl.^{2} F16C *21/00*

U.S. Cl. 308—3.8 **31 Claims**



1. A telescoping ball bearing slide mechanism, comprising:

an outer slide member of generally channel-shape and having a longitudinally extending bottom wall and oppositely arranged ball races along the side edges of said bottom wall, said ball races being concave in cross section and facing each other;

an inner channel-shape slide member having a longitudinally extending bottom wall and oppositely facing ball races along the side edges thereof, said ball races being concave in cross section and facing outwardly the inner slide member being operably disposed within the outer slide member, said inner slide member being attachable to a part defining a drawer opening;

ball bearings disposed in adjacent races of the respective outer and inner slide members;

a ball retainer operably disposed between the outer and inner slide members for retaining the ball bearings operably in the races;

means for limiting extension of said slide members relative to each other;

means for limiting telescoping of said slide members relative to each other;

a slide section of generally U-shape in cross section comprising a longitudinally extending bottom wall and edge portions along the side edges of said bottom wall, said edge portions being arcuate in cross section and curved about the outer side of the ball races of the outer slide member, said slide section being slidable on the outer slide member;

and stop means for limiting telescoping movement of the slide section relative to the outer slide member.

3,937,532

NOVEL RECIRCULATING BEARING

Jorg Fuhrmann, Herzogenaurach; Hartmut Koschmieder, Erlangen, and Georg Schaeffler, Herzogenaurach, all of Germany, assignors to Industriewerk Schaeffler OHG, Herzogenaurach, Germany

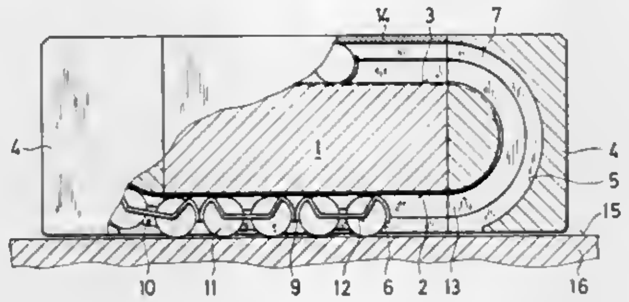
Filed Mar. 21, 1975, Ser. No. 560,952

Claims priority, application Germany, Apr. 3, 1974, 2416198

Int. Cl.^{2} F16C *29/00*

U.S. Cl. 308—6 C **9 Claims**

1. A recirculating roller bearing for the longitudinally moveable mounting of an element on a planar bearing surface comprising a bearing body with at least one straight race section, a return section parallel to the said race section, two preferably semi-cylindrical end deflecting sections connecting the ends of the parallel return section and race section to form a closed circulating track and a plurality of rollers in said circulating track secured by retaining elements between successive rollers, said retaining elements engaging circumferential grooves in the race shoulders or flanges, the improvement comprising successive pairs of rollers are arranged in a rigid retaining element to prevent the rollers from falling out and the successive retaining elements bear loosely on one another without a mutual connection.



3,937,533

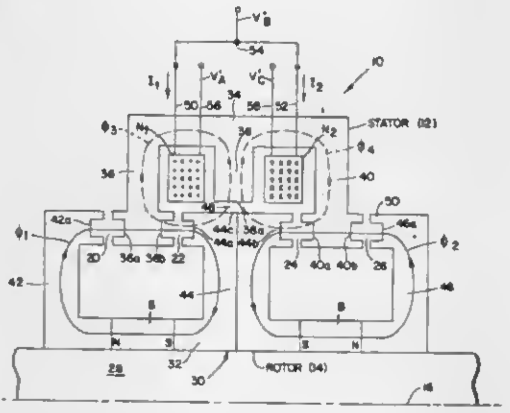
AXIALLY AND RADIALLY CONTROLLABLE MAGNETIC BEARING

Leo Veillette, Lanham, Md., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Feb. 8, 1974, Ser. No. 440,917

Int. Cl.^{2} F16C *39/00*

U.S. Cl. 308—10 **12 Claims**



1. An axially servoable magnetic bearing having a controllable radial stiffness comprising:

a bearing rotor having a pair of axially spaced, axially facing annular pole pieces;

a bearing stator generally coaxially disposed with respect to the rotor, said stator having a corresponding pair of axially spaced, axially facing, annular pole pieces, each stator pole piece facing an opposite corresponding one of the rotor pole pieces so as to define first and second axially spaced annular axial are gaps between the rotor and stator; and

controllable magnetic flux generating means for independently varying magnetic flux through each of the two airgaps.

3,937,534

THRUST BEARING RESONANCE CHANGER

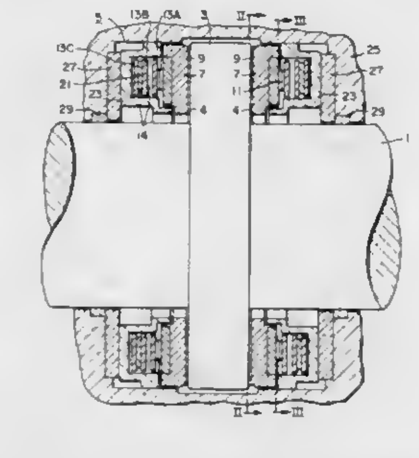
William P. Welch, Sunnyvale, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 9, 1975, Ser. No. 566,480

Int. Cl.^{2} F16C *17/04, 17/10, 19/04, 1/24*

U.S. Cl. 308—135 **9 Claims**

1. A tilting shoe type thrust bearing having a plurality of tiling shoes disposed in a circular array, each shoe having a load bearing portion, the improvement comprising a plurality of arcuate spring segments disposed to form an annular ring which provides axial support for said shoes, said annular ring having a plurality of surfaces cooperatively associated and aligned with said load bearing surfaces on the shoes, a plurality of spacers disposed adjacent said annular ring, said spacers being intermediately disposed with respect to said load bearing surfaces, and on the side opposite thereof thereby equally distributing the load over the array of shoes and reducing the stiffness of said bearing and thus reducing the frequency at which the bearing will resonate when subjected to periodic axial forces during operation.



3,937,535

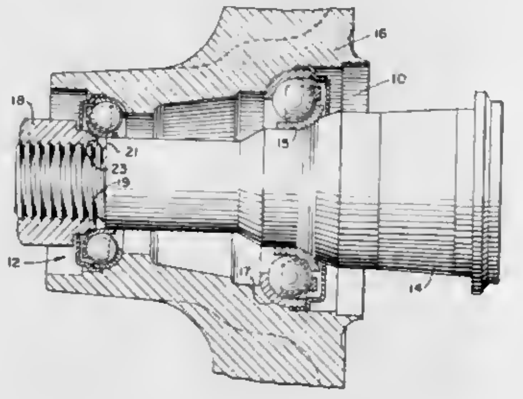
BEARING WHEEL ASSEMBLY

Eli M. Ladin, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Nov. 5, 1973, Ser. No. 412,712

Int. Cl.^{2} F16C *13/02*

U.S. Cl. 308—191 **7 Claims**



1. A bearing assembly comprising,

an inner race member, an outer race member, and a plurality of balls therebetween,

said race members each providing a central bore for receipt around a shaft and interior concave raceway surfaces facing one another for supporting in bearing contact the plurality of balls, said race members each being formed of steel of substantially uniform thickness and having a Rockwell "C" hardness of from about 50 to about 60, and providing exterior convex surfaces adapted for supporting said race members in juxtaposition to complementary concave surfaces on a hub, said shaft, and a preload nut mechanism, respectively, the thickness of each race member being in the order of not less than 10 percent nor more than 25 percent of the diameter of said balls,

an annular cage element including a plurality of equidistantly spaced pockets, one of each of said plurality of balls being received by each pocket, the dimension of said pockets and said balls being such that opposed surface portions of each ball extend outwardly and inwardly of its retaining pocket, said cage element being received between said race members in order to space said race members by bearing contact of said opposed surfaces of said balls and said raceways,

and a housing means received on one of said race members for retaining the race members, cage and balls as a single assembly.

3,937,536

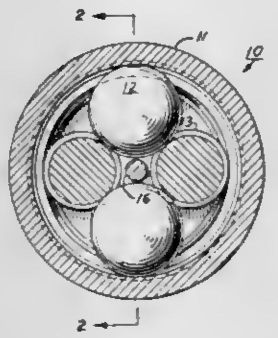
ROLLING CONTACT BEARING DEVICES

Earl W. Traut, P.O. Box 23776, Fort Lauderdale, Fla. 33307

Filed Nov. 9, 1973, Ser. No. 414,150

Int. Cl.^{2} F16C *23/08*

U.S. Cl. 308—206 **19 Claims**



1. A rooling device comprising:

a bearing race having at least one circularly oriented surface,

first rotating means,

said first rotating means including at least two rotating elements in rolling contact with said circularly oriented surface of said bearing race,

second rotating means for positioning said first rotating means relative to said circularly oriented surface of said first bearing race,

said second rotating means including at least two generally roller-shaped rotating elements alternately interposed between said rotating elements of said first rotating means to prevent their mutual contact and engaging the same in rolling contact,

and two circular retainer rings respectively engaging the opposite ends of said generally roller-shaped rotating elements in rolling contact and holding the same in position,

said retainer rings also functioning as the only bearing races for said second rotating means.

3,937,537

MOLDED PLASTIC REFRIGERATOR PAN AND WINDOW ASSEMBLY

Charles W. Dietterich, Columbus, Ohio, assignor to White-Westinghouse Corporation, Cleveland, Ohio

Filed Feb. 18, 1975, Ser. No. 550,699

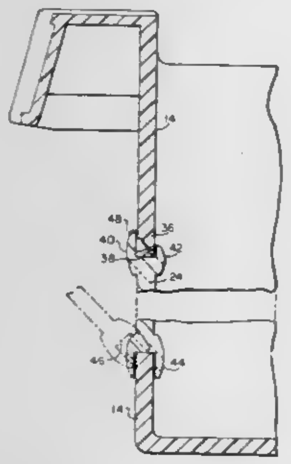
Int. Cl.^{2} A47B *88/00;* **E05C** *21/02;* **E06B** *1/60, 3/58*

U.S. Cl. 312—204 **5 Claims**

1. A plastic molded refrigerator pan and window assembly wherein said pan includes a generally planar front wall having an opening across a substantial area thereof and thereby bounded by opposed upper and lower horizontally extending framing flanges integral with opposed vertical side framing flanges, and a generally transparent molded plastic panel generally coextensive with said opening and including a forwardly facing peripheral bead generally overlapping the edge of said opening and first and second inwardly facing bead means;

said first inwardly facing bead means extending along at least a portion of the bottom of said panel in juxtaposition with opposite portions of said forwardly facing bead to define therebetween a channel at the lower edge of said panel for receipt therein of the edge of the lower framing flange;

said second inwardly facing bead means extending along at least a portion of the top of said panel in juxtaposition



with opposite portions of said forwardly facing bead to define therebetween a channel at the upper edge of said panel; and

tab means extending downwardly from the edge of said upper framing flange, at least in areas generally adjacent each side and generally midway therebetween, said tab means having a downwardly inwardly tapered surface and wherein said middle tab has a height greater than the other of said tab means to the extent that as said panel is inserted by effecting the lower channel and edge engagement and moving said panel to a vertical position by passing said second inwardly facing bead means through said opening, said bead means and said other of said tab means cooperate to cam said other of said tab means upwardly to permit engagement of said tabs in said upper channel whereas the greater height of said tab adjacent the midway position requires said upper flange to be somewhat manually twisted for sufficient alignment between the upper channel and said tab means for said tab means to be seated within said channel thereby with the release of said twisting force, locking said panel in position.

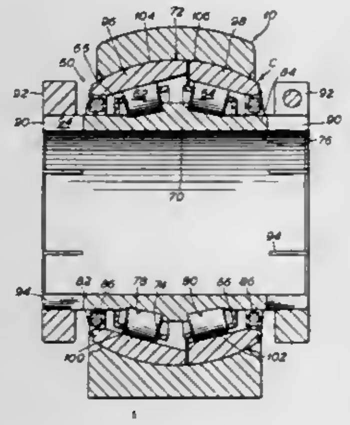
3,937,538
ROLLER BEARING ASSEMBLY

George A. Zimmer; William K. Weidman, and Charles M. Allaben, all of Ithaca, N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 393,084, Aug. 30, 1973, which is a division of Ser. No. 267,307, June 29, 1972, abandoned. This application Oct. 7, 1974, Ser. No. 512,644

Int. Cl.² F16C *13/00*

U.S. Cl. 308—207 R **2 Claims**



1. A self-aligning roller bearing assembly for use with a housing adapted to be fixed to a support and with a central opening therethrough to receive said assembly, which opening is defined by an arcuate surface, said roller bearing assembly comprising:

a pair of rows of rollers;

an inner race having a cylindrical opening for receiving and supporting a shaft;

the inner race having a pair of raceways, each having surfaces adapted to contact the rollers of a row; and

an outer race;

said outer race being formed of a pair of substantially like members united by an adhesive;

each member of said outer race having an interior raceway, each said raceway having surfaces adapted to contact the rollers of a row, and an outer arcuate surface adapted to engage the arcuate surface of said housing to permit relative arcuate movement therebetween when said assembly is inserted as a unit therein, said assembly being removable as a unit and being self-aligning to accommodate shaft misalignment with respect to said support when in use in said housing because of the relative movement between said outer race and said housing.

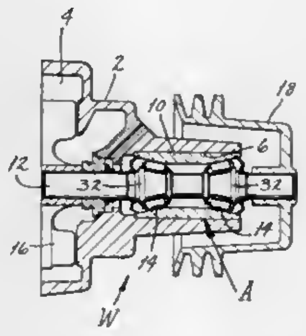
3,937,539
BEARING ASSEMBLY HAVING PRESS-FITTED THRUST RIBS

James Eddie Jones, Canton; William E. Harbottle, North Canton, and Dennis Lee Otto, Malvern, all of Ohio, assignors to The Timken Company, Canton, Ohio

Filed Dec. 19, 1973, Ser. No. 425,982

Int. Cl.² F16C *19/38*

U.S. Cl. 308—214 **15 Claims**



1. A bearing assembly comprising a cup having a tapered raceway; a shaft extended through the cup and having a tapered raceway located opposite to the cup raceway, the shaft also having a substantially cylindrical surface located adjacent to the large diameter end of the tapered raceway, the diameter of the cylindrical surface and the diameter of the large end of the tapered raceway being substantially equal; tapered rollers fitted between and contacting the raceways; and an annular thrust rib ring press-fitted over the cylindrical surface of the shaft and positioned opposite the large diameter ends of the rollers to maintain the rollers in the correct axial position with respect to the shaft.

3,937,540
DEVICE FOR GUIDING THE RELATIVE DISPLACEMENT OF TWO BODIES

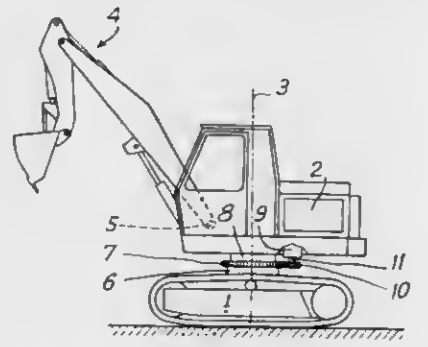
Jean-Yves Morizur, Compiegne, France, assignor to Societe Anonyme: Poclain, Le Plessis-Belleville, France

Filed Feb. 18, 1975, Ser. No. 550,724

Claims priority, application France, Feb. 26, 1974, 74.06509

Int. Cl.² F16C *19/00*

U.S. Cl. 308—222 **4 Claims**



1. A device for the guidance of two bodies relative to one another, comprising a slide with a female member and a male member contained within the said female member, being supported on the latter, a row of elements for fixing one of the members to one of the bodies and another row of elements for fixing the other member to the other body, whereby those rows are substantially parallel and spaced by a given distance limited by the assembly regulations which must be observed in order to obtain a satisfactory guidance, whereby the fixing elements of at least one of the said rows each comprises a threaded rod and at least one nut cooperating with the said rod, wherein at the position of each of the said threaded rods a recess is made in the body corresponding to the said row of threaded rods issuing, in order to permit the introduction of the nut or nuts into the recess, into one face of the said body which is perpendicular to the fixing face of the member fixed to the said body, is delimited by a volume of material wherein is provided an orifice issuing into the fixing face and containing the nut or nuts, the said orifice permits the introduction of the end of the threaded rod into the recess but prevents the removal of the nut or nuts from the recess via the fixing face.

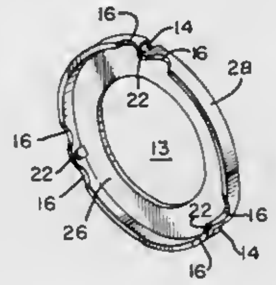
3,937,541
THRUST WASHER

Richard Lassen Alling, Winchester, and Richard John Woiten, Torrington, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Sept. 16, 1974, Ser. No. 506,239

Int. Cl.² F16C *33/64*

U.S. Cl. 308—235 **6 Claims**



1. A thrust race comprising: a member having a substantially circular outside periphery with an axially extending outer flange, said flange having circumferentially spaced projections with two cutouts for each projections one of said two cutouts located adjacent each side of each projection to facilitate the insertion of another member under the projections.

3,937,542
ELECTRICAL BRUSH CONTACT

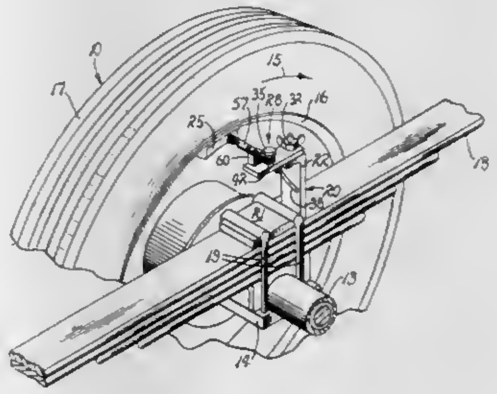
Hyrum J. Amundsen, Jr., P.O. Box 8411, Fountain Valley, Calif. 92708

Filed Jan. 15, 1975, Ser. No. 541,287

Int. Cl.² H01R *39/00*

U.S. Cl. 339—3 R **5 Claims**

5. In a tire pressure sensing apparatus for use on a vehicle having a wheel rotatably mounted on the vehicle with a contactor mounted on said wheel wherein the sensing device includes an electrical circuit having some components on the rotating wheel and non-rotating components elsewhere on the vehicle; an electrical brush contact adapted to make intermittent contact with the contactor including a plurality of elongated electrically conductive wire bristles disposed in substantially normal relation to the plane of the wheel; a clamp securing together a common end of the bristles; a mounting bracket mounted on said vehicle in spaced relationship to said wheel; a pin disposed on said mounting bracket in substantially parallel relation to the plane of the wheel; a spring circumscribing the pin with one end connected to and supporting the clamp and the other end connected to the non-rotating components disposed to enable the wire bristles to engage the contactor when opposite thereto; and a stop borne by the mounting bracket whereby the contactor makes periodic contact with the bristles as the wheel rotates, the spring allowing the bristles to be pivoted in the direction of the contactor motion and the stop serving to limit spring motion in the opposite direction.



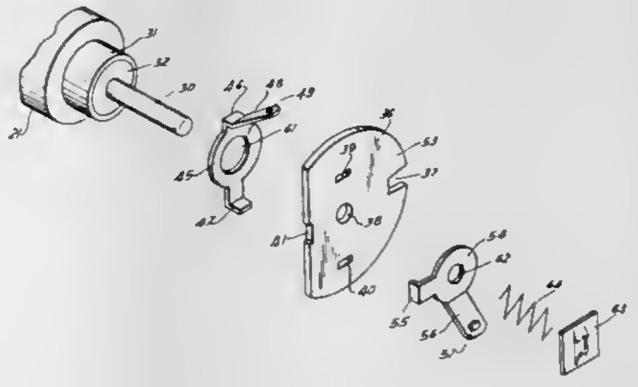
3,937,543
ELECTRICAL SWIVEL CONTACT ASSEMBLY

Patrick M. Tomaro, Maplewood, N.J., assignor to Continental Hair Products, Inc., Edison, N.J.

Filed Jan. 29, 1975, Ser. No. 545,055

Int. Cl.² H01R *39/00*

U.S. Cl. 339—6 R **10 Claims**



1. An electrical swivel contact assembly comprising:

a. a support plate having a hole,

b. two electrical contact members, one of said contact members being arranged against each face of said support plate, and each of said contact members having a hole aligned with the holes in said support plate and the other contact member,

c. a power cord terminal having an electrically-conductive pin surrounded by an electrically-conductive ring, said pin and ring being electrically insulated from each other, and said pin projecting beyond said ring and through the aligned holes in said support plate and contact members, and

d. resilient means for pressing said ring against one of said contact members and for electrically connecting said pin to the other of said contact members.

3,937,544

ELECTRIC CURRENT SUPPLY CONDUIT AND A METHOD AND A DEVICE FOR PROVIDING SAME

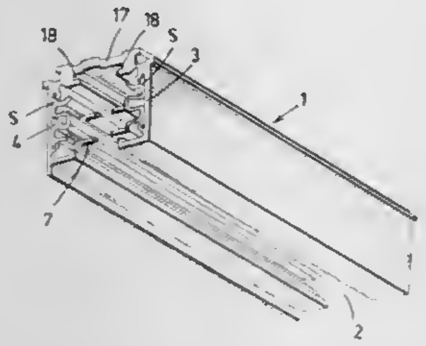
Rainer Ilkka Tapio Valtonen, Soukka, Espoo, Finland, assignor to Oy Nokia AB, Helsinki, Finland

Filed Feb. 22, 1973, Ser. No. 334,883

Claims priority, application Finland, Dec. 15, 1972, 3555/72. The portion of the term of this patent subsequent to Aug. 20, 1991, has been disclaimed.

Int. Cl.^{2} H01R *9/00*

U.S. Cl. 339—21 R **10 Claims**



1. An electric current supply arrangement comprising, in combination, a metal support rail forming an open longitudinal channel and longitudinally extending current conductors fixed in their longitudinal direction fastened at the support rail, and a coupling element removably inserted in the end of the support rail to make contact between contact fingers of the element and the ends of the current conductors, the ends of said current conductors being bent perpendicularly to the longitudinal direction of said conductors so as to extend parallelly towards each other.

3,937,545

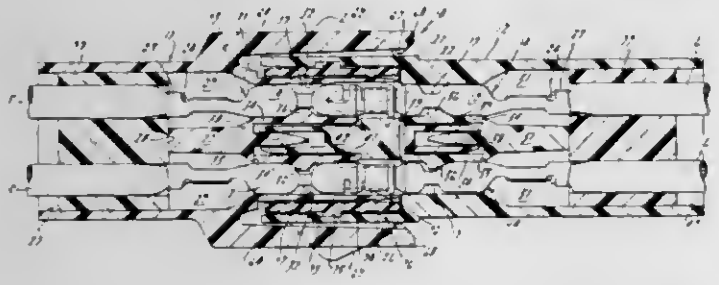
WATERPROOF ELECTRICAL CONNECTOR

Thomas M. Cairns, Birmingham, Mich., and Ronald F. Froats, Windsor, Canada, assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1974, Ser. No. 535,924

Int. Cl.^{2} H01R *13/52*

U.S. Cl. 339—60 R **5 Claims**



1. A separable waterproof electrical connector for a plurality of pairs of axially interconnectable cylindrical electrical terminals coupled to the ends of insulated wires,

each terminal having an annular external recess in its cylindrical peripheral surface,

the connector comprising:

a pair of elongated, rigid nonconductive elastomeric, tubular members having generally complementary end portions, fitted one into the other,

a soft elastomeric sealing sleeve concentrically interposed between the interengaged end portions to prevent the passage of moisture therebetween,

the soft elastomeric sleeve having an external retention ring engageable with a groove in one of the tubular members to hold the sleeve in place in the one member upon axial separation of the tubular members,

and a plurality of internal and external integral circumferential sealing rings on the sleeve compressible between the abutting tubular member surfaces,

releasable clamping means on the exterior of the tubular member end portions holding the latter in engagement,

each elastomeric tubular member having an interior partition wall extending laterally of its longitudinally axis in juxtaposition to the interengaged end portions thereof,

each partition wall having a plurality of axially extending apertures therethrough equally spaced around the longitudinal axis of the tubular members,

the electrical terminals being seated in the apertures,

a portion of the wall of each aperture comprising an axially extending cantilevered locking member hinged at one end to the partition wall and having a detent spaced from its hinged end engaged with the external recess on the terminal seated in the respective aperture to prevent axial displacement of the terminal,

each partition wall having an axially extending cavity communicating with the locking members,

displaceable plug means seated in the partition cavity in abutting relation to the locking members to hold the detents on the latter in the respective terminal recesses, and

grommet means seated in the tubular member outwardly of the partition wall through which the insulated wires extend,

the grommet means being in watertight engagement with the interior walls of the tubular members and the insulated wires.

3,937,546

MULTIWAY CONNECTOR FOR A PRINTED CIRCUIT BOARD

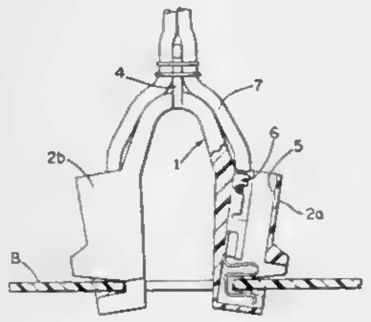
Antony Brasher Clewes, Sherwood, and Denis William Tuckwood, Beeston, both of England, assignors to TRW Inc., Cleveland, Ohio

Division of Ser. No. 291,020, Sept. 21, 1972, Pat. No. 3,850,493. This application Mar. 4, 1974, Ser. No. 447,755

Claims priority, application United Kingdom, Sept. 24, 1971, 44757/71

Int. Cl.^{2} H01R *13/62*

U.S. Cl. 339—61 R **20 Claims**



1. In combination, a printed circuit board having opposed edge portions and face portions and the face portions having conductors thereon; and a multiway connector comprising a body portion of an electrically insulative material having two board-engaging portions moveable relative to one another in a direction generally parallel to the plane of the printed circuit board, and receiving therein respective edge portions of the board, and a plurality of contact members mounted in the body portion of the connector and comprising contact making portions extending to the board-engaging portions and each contact making portion having opposed spaced apart limbs on each side of the board and at least one of the limbs in engagement with the conductors on at least one face portion of the board.

3,937,547

CONNECTOR PORTION HAVING RELEASABLE FASTENING MEANS

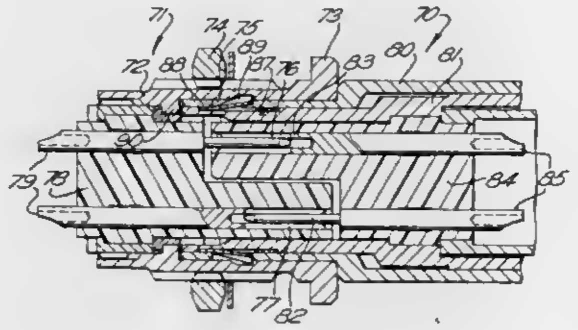
Kenneth William Lee-Kemp, Ragstones, The Vine, Sevenoaks, Kent, England

Filed May 3, 1974, Ser. No. 466,773

Claims priority, application United Kingdom, May 8, 1973, 21928/73; May 10, 1973, 53514/72

Int. Cl.^{2} H01R *13/54*

U.S. Cl. 339—74 R **6 Claims**



1. In a quick-release connector having interengageable male and female connector portions, said male connector portion including an outer shell having openings therethrough, an inner shell concentric with said outer shell and having external recesses therein, and a plurality of spring catches, each of said catches having a portion projecting through a respective one of said openings in said outer shell for locking engagement with said female portion, and said outer shell being axially slidable relative to said inner shell to deflect said portions of said catches to cause disengagement from said female connector portion, the improvement comprising the provision of a plurality of separately formed spring catches which are independent of each other and of said inner shell, each of said spring catches being located in a recess in said inner shell, each of said catches being in the form of a flat strip of resilient material, and each strip being freely supported at its ends in said recess in said inner shell whereby, when said portion of each catch is deflected, said strip thereof is deformed by bowing between said freely supported ends.

4. A male connector portion for a quick release connector of the type having interengageable male and female connector portions, said male connector portion comprising an outer shell having openings therethrough, an inner shell concentric with said outer shell and having a locating recess in the outer surface thereof, and a plurality of spring catches, said catches each being formed as a flat sheet of resilient material, each catch being defined by an uplifted detent portion bounded at least at opposite sides thereof by axially extending base portions, each detent portions projecting through a respective one of said openings for locking engagement with a female portion, and said outer shell being axially slidable relative to said inner shell for deflecting said detent portions of said catches inwardly to cause disengagement of said detent portions from a female connector portion, said base portion of each of said spring catches being transversely arcuately configured to accommodate the curvature of said locating recess in said inner shell, said detent portions also being transversely arcuately configured with a smaller radius of curvature than that of said base portions whereby said detent portions resist said deflection.

3,937,548

DEVICE FOR SPLICING WIRE

Larry Eugene Dittmann, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 26, 1975, Ser. No. 553,389

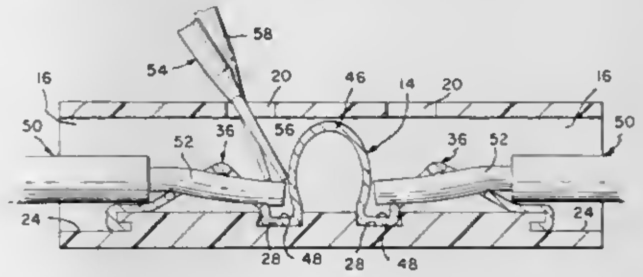
Int. Cl.^{2} H01R *11/04*

U.S. Cl. 339—95 D **1 Claim**

1. A device for electrically splicing two conductors together, which comprises:

a. a housing of insulating material and having an opened passageway throughout its length, said passageway floor having a pair of spaced apart slots;

b. a contact strip stamped and formed from a conductive material positioned in the passageway, said strip having a centrally disposed spring member and a pair of generally triangular shaped frames, one on either side of the spring member with a depressed step inbetween; and



c. apertures located in each wall defining said frames,

said contact strip adapted to receive a wire in each frame and upon forcing the steps into the slots with the spring member removably retaining such therein, the apertures are deformed with the edges thereof gripping the conductors thereby achieving an electrical splice between the two wires.

3,937,549

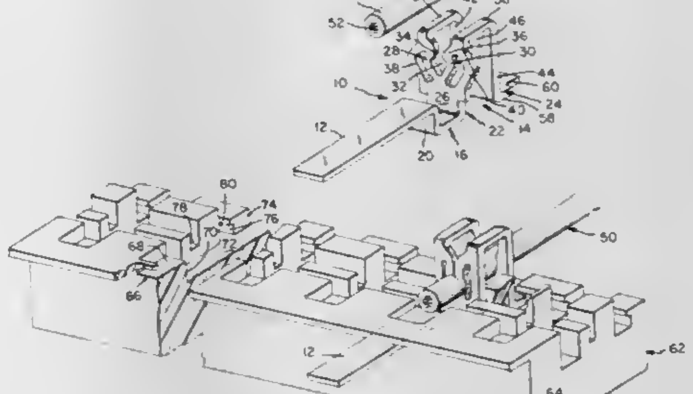
STRIMP

Donald Kent Hughes, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 18, 1974, Ser. No. 480,986

Int. Cl.^{2} H01R *13/38*

U.S. Cl. 339—97 C **17 Claims**



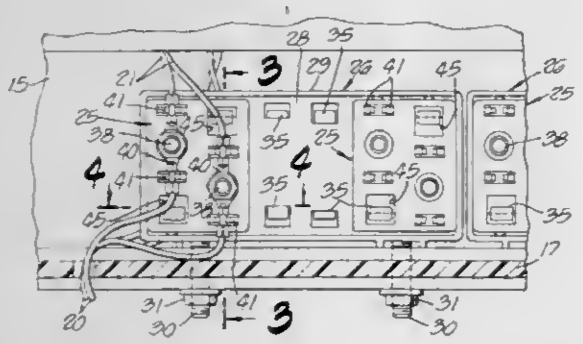
1. An electrical contact comprising:

a metallic member having a conductor engaging portion and a mateable contact engaging portion,

said conductor engaging portion comprising a base, a pair of spaced beam members extending from said base, a protrusion near the free end of each said beam member directed towards the protrusion on the opposite beam member, said protrusions and beam members defining therebetween an arrow head shaped slot, and a pair of arched legs, each leg connected between said base and the free end of one of said beam members to define therewith a quadrilateral whereby said beam members are held together against resilient deflection away from a conductor inserted into said slot by substantially straightening said arched legs to form a triangle with said base and beam members.

3,937,550
SNAP-IN, SNAP-OUT TERMINAL BLOCK AND MOUNTING MEMBER THEREFOR

George W. Gillemot, Santa Monica, Calif., assignor to John T. Thompson, Los Angeles, Calif., a part interest
Filed Apr. 29, 1974, Ser. No. 465,073
Int. Cl.^{2} H01R *9/00*
U.S. Cl. 339—198 G **3 Claims**



1. A terminal block having a foursided generally cubical main body of non-conductive material,

a pair of threaded studs fixed thereto and projecting from one face thereof adjacent a respective diagonally related first pair of corners of said main body,

a pair of openings through said main body positioned inwardly of the sides thereof and adjacent a diagonally related second pair of corners of said main body,

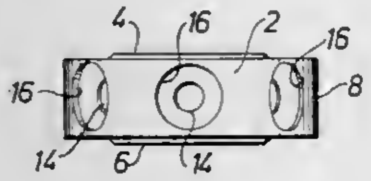
said openings each having a detent surface below said one face and facing outwardly and adapted to seat a latching tang entering the opening from the face opposite said one face to hold said terminal block detachably assembled with said oppposite face snugly against a mounting member for said terminal block, and

nut means on each of said threaded studs for holding a conductor assembled to each of said studs,

said pair of studs and said pair of openings being symmetrically positioned on said one face such that said terminal block has the same mounting configuration when upside down whereby said terminal block may be mounted on said mounting member in a first upright position and in a second reversed position.

3,937,551
CONNECTION BLOCK

Harry Persson, Färjemansgatan 15A, 831 00 Ostersund, Sweden
Filed Apr. 4, 1974, Ser. No. 457,703
Claims priority, application Sweden, Apr. 9, 1973, 73049397
Int. Cl.^{2} H01R *13/50*
U.S. Cl. 339—210 M **10 Claims**



1. A connection block comprising an insulating housing,

said housing defining a plurality of apertures around the peripheral edge portions thereof,

a plurality of mutually interconnected sleeve-shaped contact means enclosed by said housing and each positioned and adapted to receive a pin-shaped contact element through one of said plurality of apertures in said housing,

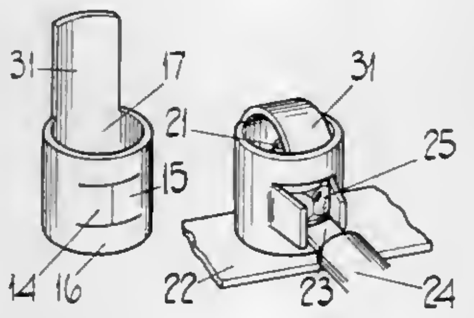
said plurality of interconnected contact means being integrally formed together by two abutting conductive sheets having respectively opposed grooves to define individual sleeveshaped contact means,

said housing comprising two cover-shaped parts,

said cover-shaped parts each including pressure means between the inside portion of each of said cover-shaped parts and the adjacent conductive sheet for maintaining said conductive sheets pressed against each other.

3,937,552
TERMINAL INSULATOR METHOD OF MANUFACTURING SAME, AND TERMINAL ASSEMBLY INCLUDING THE SAME

William Thomas Parsons, Hemel Hempstead, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Nov. 20, 1974, Ser. No. 525,635
Claims priority, application United Kingdom, Dec. 1, 1973, 55805/73
Int. Cl.^{2} H01R *13/44*; **H01B** *19/00*
U.S. Cl. 339—213 R **3 Claims**



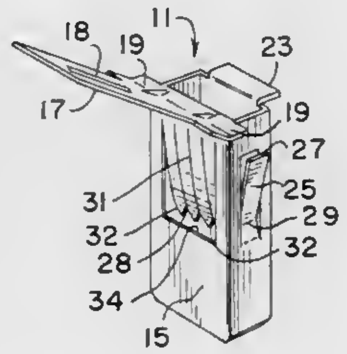
1. A terminal insulator comprising a tubular component formed from flexible insulating tube, the wall of one axial region of said tubular component being formed with slits which define therein a displaceable flap such that displacement of the flap relative to the remainder of the component produces in said axial region an aperture and the remainder of said region defines a shroud, said component including a further axial region which is unaffected by said slits and so defines an unbroken collar, and said component further including an integral flexible strip which extends axially from the axial end of the component remote from the unbroken collar, the strip being of a length and width such that it can be folded over relative to the component to substantially close said axial end of the component.

2. A method of manufacturing a terminal insulator comprising starting with a length of flexible, insulating tube, and forming in one axial region of the wall of the tube slits which define between them a displaceable flap, which, when displaced, leaves in the wall of the tube an aperture such that the remainder of said axial region defines a shroud, the slits being so positioned that a further axial region of the tube is unaffected by the slits, and so defines an unbroken collar, and, removing part of the wall of the tube at the axial end thereof remote from said unbroken collar so as to leave, extending axially from said axial end of the tube, a flexible strip the length and width of which are such that the strip can be folded to substantially close said axial end of the tube.

3. A terminal assembly including a base, a terminal post upstanding from the base, a connector engaged with the terminal post and extending generally at right angles to the terminal post, and an insulator comprising a tubular component formed from flexible insulating tube, the tubular component having one axial region of the wall thereof formed with slits which define a displaceable flap such that displacement of the flap relative to the remainder of the component produces in said axial region an aperture, and the remainder of said region defines a shroud, said component including a further axial region which is unaffected by said slits and so defines an unbroken collar, and said component having an integral strip extending axially from the axial end of the component remote from the unbroken collar, said flap being displaced to lie generally parallel with the connector, the connector extending through said aperture, and the collar encircling said terminal post and being trapped between the connector and the base so as to retain the insulator in position relative to the terminal post and connector, said shroud shrouding the periphery of the terminal post and the connector, and said strip being folded to overlie the top of the terminal post, the length and width of the strip being such that the strip, when so folded, substantially closes said axial end of the insulator component.

3,937,553
ELECTRICAL TERMINAL CONNECTOR

Paul A. Maximoff, Schaumberg, and Albert P. DeVito, Glenview, both of Ill., assignors to Palmer Industries Ltd., Chicago, Ill.
Filed Nov. 13, 1974, Ser. No. 523,318
Int. Cl.^{2} H01R *13/12*
U.S. Cl. 339—258 R **5 Claims**

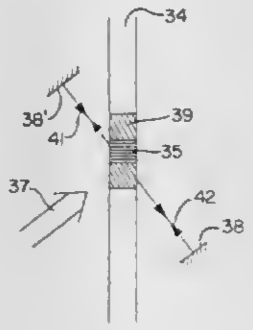


1. A terminal connector for securing electrical lead wires to a base board having opposite surfaces and having apertures extending through the body for accommodating the connector, the connector comprising, a hollow body substantially in rectangular tubular form having opposing sides and ends, the body being open at one end thereof for receiving wires and a substantially closed opposite end to provide a stop for wires, a plurality of gripping tines positioned substantially on a same plane extending from a side surface of the rectangular body and extending in converging cantilever relation toward the opposite side surface and away from the opening, the converging ends of the tines positioned adjacent the opposite side surface to firmly engage wires inserted into said body, flanges extending from the body arranged to engage one surface of the base board adjacent the aperture to position the terminal connector, resilient cantilever lugs each having an end affixed to said body and the opposite end extending outwardly from said body toward the flanges to engage with the opposite surface of the base, the lugs each having an elbow portion extending into the interior of the body, which elbow portion is capable of being pushed outwardly and upwardly from the interior of the body and thereby urge said outwardly and upwardly extending end of the lugs to firmly abut and engage base boards of varying thicknesses.

3,937,554
HOLOGRAMS IMPREGNATED WITH LASER ACTIVE MATERIAL

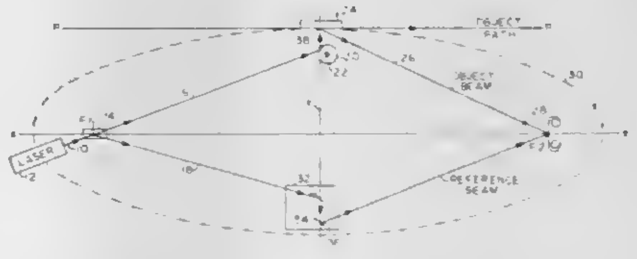
Yoshito Tsunoda, Tokyo, and Yasutsugu Takeda, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Japan
Filed Sept. 26, 1973, Ser. No. 400,725
Claims priority, application Japan, Sept. 29, 1972, 47-97057
Int. Cl.^{2} G03H *1/22*
U.S. Cl. 350—3.5 **21 Claims**

1. In a hologram recording apparatus, wherein an object beam spatially modulated with object information and a reference beam are directed upon a prescribed portion of a hologram recording medium to form a hologram of said information therein, said hologram being maintained within said hologram recording medium, the improvement wherein at least said prescribed portion of said hologram recording medium is impregnated with a laser active material which is different from the material of which said hologram recording medium is made.



3,937,555
HOLOGRAPHIC MOTION PICTURE CAMERA WITH DOPPLER SHIFT COMPENSATION

Robert L. Kurtz, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Sept. 17, 1974, Ser. No. 505,804
Int. Cl.^{2} G03H *1/14, 1/04*
U.S. Cl. 350—3.5 **2 Claims**



1. In a holographic motion picture camera wherein:

an elliptical optical system is employed to provide an object beam passing from a beam splitter at one focus point onto an object moving tangent to an ellipse and parallel to the major axis of the ellipse; the object beam is then reflected from the object onto a film positioned at the other focus point; a reference beam is projected from a beam splitter to a mirror positioned on the ellipse opposite the object, and then it is reflected onto the film, the improvement comprising:

motion compensation means for varying the path length of said object beam as a function of the speed of said object comprising a rotating reflective drum inserted in the object beam path between said beam splitter and an object, and

optical means positioned in the reference beam path between said beam splitter and said film for extending the optical distance of the reference beam path a distance equal to the extension of distance provided by said motion compensation means.

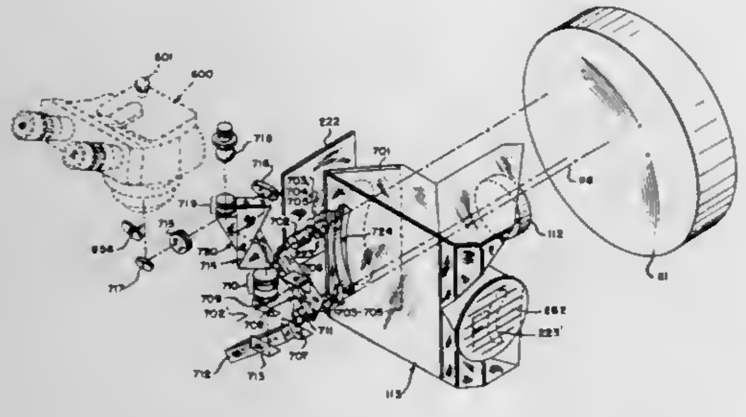
3,937,556
VIEWING FIELD SPLITTER

William H. Newell, Mount Vernon, N.Y., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Sept. 26, 1974, Ser. No. 509,587
Int. Cl.^{2} G02B *21/18*; **G01B** *11/24*
U.S. Cl. 350—30 **4 Claims**

1. Apparatus for simultaneously viewing two points located on an illuminated circular arcuate area of an object comprising:

a. first and second microscope objectives supported for viewing points on said arcuate area of the object

b. first and second periscopes coupled respectively to each of said first and second objectives and supported in position to deflect the light from said points passed through said objectives along an axis through the center of curvature and perpendicular to the plane of said arcuate area,



c. means mounting said objectives and periscopes for swinging each coupled objective, periscope pair independently of the other, about said axis while maintaining the periscopes in proper orientation to deflect said light along said axis, and

d. means to present in a common eyepiece one-half the field of each of said objectives.

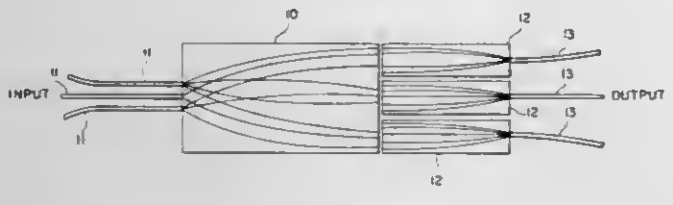
3,937,557
STAR COUPLER FOR SINGLE MODE FIBER COMMUNICATION SYSTEMS

A. Fenner Milton, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 29, 1974, Ser. No. 528,538

Int. Cl.^{2} G02B *5/16*

U.S. Cl. 350—96 C **1 Claim**



1. A coupler for a multiterminal fiber optic communication system which comprises:

a large constant diameter cylindrical, elongated, lens having a light focusing end and light collimating end,

a plurality of small constant diameter cylindrical, elongated, lenses each containing a light focusing end and a light collimating end each secured in end-to-end relationship in optical alignment with said large diameter lens in parallel relationship with each other with said collimating end of said small diameter lenses adjacent said collimating end of said large diameter lens for receiving collimated light therefrom,

whereby radiation from a plurality of fiber optic transmission lines incident on the focusing end of said large diameter lens is scrambled together along the length thereof and directed into collimated light at the collimated end thereof, and

each of said plurality of small diameter lenses receive a portion of the radiation scrambled by said large diameter lens on their light collimating end and focuses the received scrambled radiation along their length to a point at their focusing end for transmission over separate single optic fiber transmission lines connected to the focusing end thereof.

3,937,558
OPTICAL FIBER LIGHT PEN

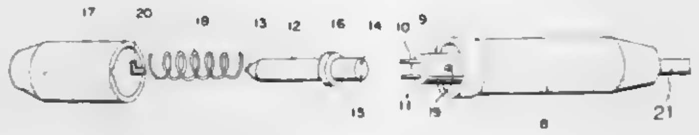
Kunihiko Mukai, and Kikuo Ikeda, both of Tsu, Japan, assignors to Nippon Glass Fiber Co., Ltd., Japan

Filed Dec. 4, 1973, Ser. No. 421,660

Claims priority, application Japan, Dec. 13, 1972, 47-125095

Int. Cl.^{2} G02B *5/14*

U.S. Cl. 350—96 B **8 Claims**



1. A light pen containing a photon-conductive fiber bundle, the bundle being bifurcated at one end and combined at the other end, comprising,

a. a cartridge body housing a portion of the photon-conductive fiber bundle including the combined end and a first bifurcated portion thereof, and

b. a pen holder body housing the remaining bifurcated portions of the fiber bundle, said cartridge body being detachably fixed to an end of said pen holder body, a plug end of each of said remaining portions projecting out from an end face of said pen holder body, the ends of said first bifurcated portion being positioned in corresponding holes opening at an end of said cartridge body opposite that of said cartridge body opposite that of said combined end, said plug ends being detachably received in said corresponding holes.

3,937,559
OPTICAL FIBER CABLE

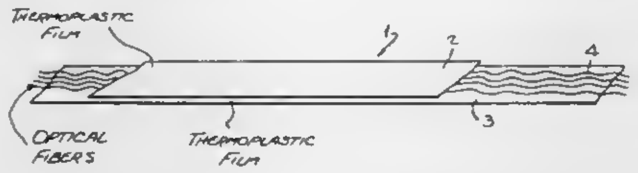
Antonio Ferrentino, and Germano Beretta, both of Monza (Milan), Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed May 1, 1974, Ser. No. 465,827

Claims priority, application Italy, May 23, 1973, 24442/73

Int. Cl.^{2} G02B *5/16*

U.S. Cl. 350—96 WG **9 Claims**



1. A composite optical fiber band comprising at least a pair of films of synthetic thermoplastic material which are sealed together and have a plurality of light transmitting optical fibers embedded therebetween, said fibers following undulate paths, the lengths of which do not exceed the lengths of the films in which the fibers are embedded by more than 10 percent so that the fibers are subjected to little stress when the films are subjected to tension and bending stresses within the elastic limits of the films.

3,937,560
SINGLE FIBER ACCESS COUPLER

A. Fenner Milton, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 29, 1974, Ser. No. 528,539

Int. Cl.^{2} G02B *5/16*

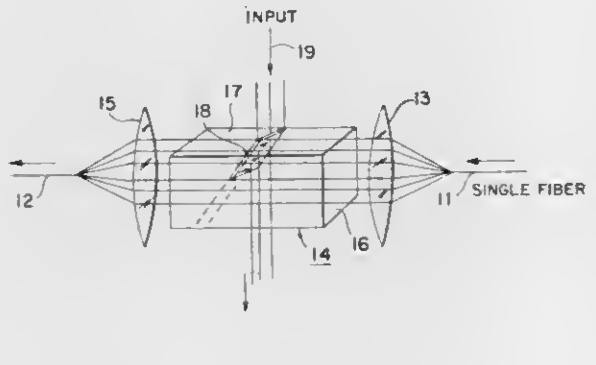
U.S. Cl. 350—96 C **2 Claims**

1. A system for coupling radiation on and off of a single optic fiber data transmission line while allowing a portion of the radiation to be transmitted into a single optic fiber for transmission, which comprises:

a first lens for expanding and collimating incident radiation from a single optic fiber transmission line;

a second lens for collimating and focusing collimated radiation into the end of an optic fiber data transmission line;

a rectangular block of optically transparent material positioned between said first and second lens in optical alignment therewith;



said rectangular block including a reflective surface therein at a 45° degree angle with respect to incident optical radiation;

whereby said reflective surface reflects a portion of the radiation incident on said reflective surface out of said rectangular block normal to incident radiation and said reflective surface reflects input radiation onto said second lens and into the end of said single optic fiber data transmission line.

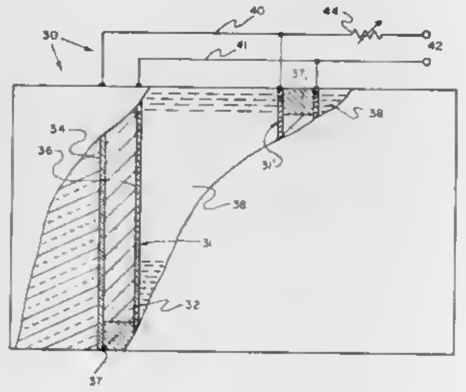
3,937,561
LIQUID CRYSTAL OPTICAL IMAGE ATTENUATOR

Donald W. Peterson, and Werner G. Hueber, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 2, 1974, Ser. No. 528,746

Int. Cl.^{2} G02B *5/17;* **G02F** *1/13*

U.S. Cl. 350—96 BC **7 Claims**



1. An electro-optical image attenuator device comprising:

A. a plurality of serially arranged nematic liquid crystal films of the type that exhibits dynamic scattering when an electric current is caused to flow therein;

B. conductive means associated with each said film for applying a current producing voltage in parallel to each said film; and

C. a coherent fiber optic plate adjacent to and following each said film and being composed of a plurality of closely spaced substantially parallel optic fibers orthogonal to said film.

3,937,562
THREE-COMPONENT VARIFOCAL OBJECTIVE

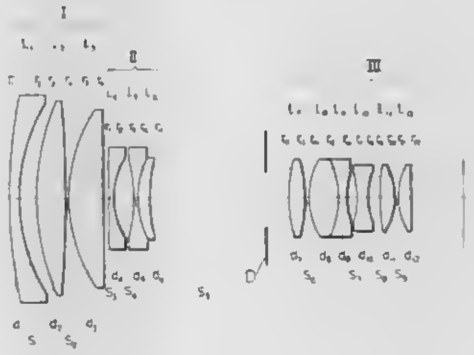
Trude Muszumanski, and Irmgard Wendisch, both of Vienna, Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Oct. 15, 1973, Ser. No. 406,291

Claims priority, application Austria, Oct. 16, 1972, 8859/72

Int. Cl.^{2} G02B *15/00, 9/60*

U.S. Cl. 350—184 **16 Claims**



1. A varifocal objective consisting of:

an axially shiftable positively refracting front component;

an axially shiftable negative refracting intermediate component; and

an axially fixed positively refracting rear component constituted by five closely air-spaced lens members, namely a positive first lens member, a positive second lens member, a negative third lens member, a positive fourth lens member and a positive fifth lens member, the spacing of said intermediate component from said rear component in a position of maximum overall focal length substantially exceeding any air space between said lens members while being substantially smaller than in a position of minimum overall focal length, said front component consisting of a forwardly convex negative meniscus L_1 followed by a biconvex lens L_2 and a substantially planoconvex lens L_3 with forwardly facing convexity, said second component consisting of a substantially planoconcave lens L_4 rearwardly facing concavity followed by a biconcave lens L_5 cemented onto a positive meniscus L_6, said first lens member of said rear component being a biconvex lens L_7, said second lens member consisting of a biconvex lens L_8 cemented to a biconcave lens L_9, said third lens member being a biconcave lens L_{10}, said fourth lens member being a biconvex lens L_{11}, and said fifth member being a substantially planoconvex lens L_{12} with forwardly facing convexity.

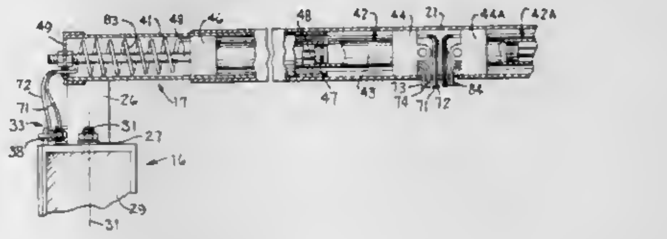
3,937,563
REMOTE CONTROLLED MIRROR ASSEMBLY FOR VEHICLE

Donald A. Frabe, 72nd St., Rte. 3, South Haven, Mich. 49090

Filed Mar. 21, 1974, Ser. No. 453,219

Int. Cl.^{2} G02B *5/08*

U.S. Cl. 350—289 **5 Claims**



4. A remote controlled mirror system for attachment to the roof of a vehicle, such as a truck, comprising:

frame means adapted to be fixedly connected to the roof of a vehicle;

first double-acting fluid pressure cylinder means including a first elongated cylinder housing fixedly mounted on said frame means and first elongated piston rod means slidably supported on and extending outwardly from one end of said first cylinder housing, said first piston rod means being positioned to project outwardly from one side of the vehicle and being slidably movable in a first direction which extends substantially horizontally;

a second double-acting fluid pressure cylinder means including a second elongated cylinder housing fixedly mounted on said frame means and second elongated piston rod means slidably supported on and projecting outwardly from one end of said second cylinder housing, said second piston rod means projecting outwardly in the direction opposite from said first piston rod means so as to project outwardly adjacent the other side of the vehicle, said second piston rod means being slidably movable in a second direction which extends substantially horizontally and is substantially parallel to said first direction;

said frame means including elongated tubular means having first and second tubular frame portions which are respectively elongated in said first and second directions and open outwardly towards the opposite sides of the vehicle, the first and second cylinder housings being respectively fixedly positioned within the first and second tubular frame portions;

first and second slide means fixedly connected respectively to said first and second piston rod means for slidable movement in said first and second directions, respectively;

said first slide means including a first tubular slide member which is elongated in said first direction and has an inner end portion thereof disposed in surrounding and slidable telescopic relationship to said first cylinder housing, the inner end portion of said first tubular slide member also being slidably telescoped within said first tubular frame portion, said first tubular slide member surrounding said first piston rod means, the outer end portions of said first tubular slide member and said first piston rod means being fixedly connected;

said second slide means including a second tubular slide member which is elongated in said second direction and has an inner end portion thereof disposed in surrounding and slidable telescopic relationship to said second cylinder housing, the inner end portion of said second tubular slide member also being slidably telescoped within the second tubular frame portion, said second tubular slide member surrounding said second piston rod means, the outer end portions of said second tubular slide member and said second piston rod means being fixedly connected,

first and second mirror assemblies respectively mounted on said first and second tubular slide members adjacent the outer ends thereof for angular movement about first and second substantially vertical axes, respectively;

a first fluid pressure cylinder assembly mounted adjacent and drivingly connected to said first mirror assembly for selectively angularly moving same relative to said first slide means about said first vertical axis;

a second fluid pressure cylinder assembly mounted adjacent and drivingly connected to said second mirror assembly for selectively angular moving same relative to said second slide means about said second vertical axis;

power means, including conduit means, for supplying pressurized fluid to each of said first and second cylinder means and said first and second cylinder assemblies;

said conduit means including first and second flexible conduits respectively connected to said first and second fluid pressure cylinder assemblies for supplying pressure fluid thereto, said first and second conduits being disposed within and extending along said first and second tubular slide members, respectively; and

control means operatively associated with said power means for permitting independent activation of each said cylinder means and each said cylinder assembly.

3,937,564
METHOD FOR TRIMMING OF A SPECIMEN FOR A MICROTOME

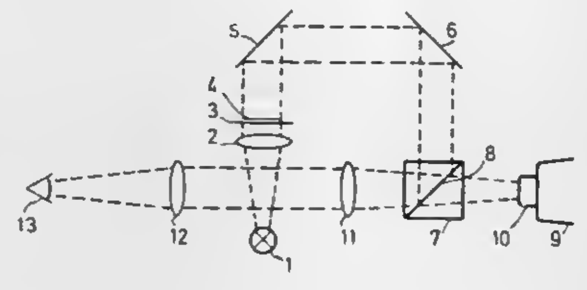
Karl Göran Algy Persson, Stockholm, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden

Continuation of Ser. No. 170,943, Aug. 11, 1971, abandoned. This application June 4, 1973, Ser. No. 366,663

Claims priority, application Sweden, Aug. 28, 1970, 11784/70

Int. Cl.^{2} G02B *21/18*

U.S. Cl. 350—320 **1 Claim**



1. Method of trimming a specimen for sectioning by a microtome comprising the steps of cutting a thin, partly transparent section from said specimen, removing said partly transparent section from said specimen, treating said partly transparent section to provide a contrasting image of a small specimen area of interest, illuminating said partly transparent section and the surface of the specimen from which said section has been cut, providing an optical path, one portion of which extends through said partly transparent section, for simultaneously viewing optically superimposed images of said illuminated partly transparent section and the surface of the specimen from which said section has been cut in a beam combining microscope to identify the location of the small specimen area of interest on the surface of said specimen by reference to the corresponding visible location on said partly transparent section, and further trimming said specimen by reference to said superimposed images.

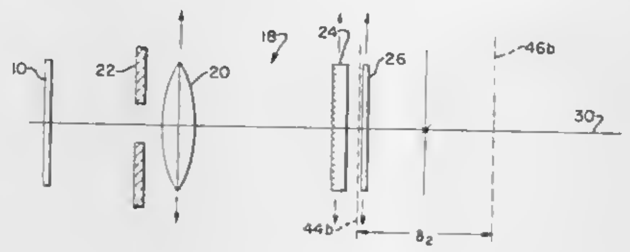
3,937,565
PROCESS OF CODING INDICIA AND PRODUCT PRODUCED THEREBY

Alfred V. Alasia, 146-07 Thirteenth Ave., Whitestone, N.Y. 11357

Filed June 3, 1974, Ser. No. 475,951

Int. Cl.^{2} G02B *27/00;* G03B *35/00*

U.S. Cl. 350—320 **14 Claims**



1. A process of producing with an autostereoscopic camera having a lens and a lenticular screen which are movable relative to one another in such manner as to form a parallax panoramagram in a combined image plane, a coded or unscrambled form from an original pattern, said process comprising the steps of:

forming an image of said original pattern in said combined image plane of said lens and screen;

spacing a photosensitive element away from said image plane but within the depth of focus provided by said screen and the effective lens aperture of said camera;

exposing the spaced photosensitive element to said image while in the course of said relative movement.

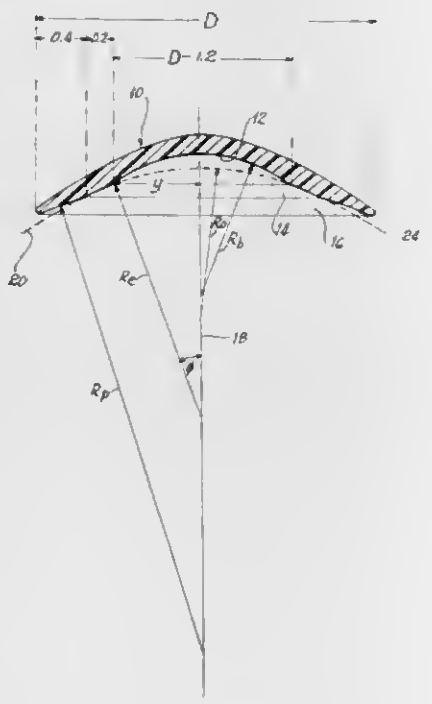
3,937,566
PROCESS FOR PRODUCING CONTACT LENSES

Malcolm G. Townsley, Park Ridge, Ill., assignor to Wesley-Jessen Inc., Chicago, Ill.

Continuation of Ser. No. 232,040, March 6, 1972, abandoned, which is a continuation of Ser. No. 3,945, Jan. 19, 1970, abandoned. This application Feb. 27, 1974, Ser. No. 446,399

Int. Cl.^{2} G02C *7/04*

U.S. Cl. 351—40 **3 Claims**



1. A method of making a contact lens for the eye of a patient, said lens defining an optical zone and a surrounding bearing zone, comprising the steps of; measuring the eye of said patient to obtain a base curve and the slope of the cornea of the eye at at least one point in the area to be covered by said bearing zone of said lens, forming a first concave curvature on the interior face of said lens, said first curvature conforming to a portion of a sphere having a radius equal to the radius of said base curve, and forming a second concave curvature on the interior face of said lens to provide a bearing zone, said second curvature corresponding to the annulus of a sphere having a chord equal to the diameter of said optical zone and having a slope at the point of intersection of said chord and said annulus conforming to said measured slope.

3,937,567
CONTINUOUS MOTION PICTURE PROJECTOR APPARATUS

Richard Thomas, deceased, late of Los Angeles, Calif., by Betty M. Thomas, executrix, Corona Del Mar, Calif., assignors to Betty Thomas, Santa Ana and Helen Hansen, Long Beach, both of, Calif.

Filed Mar. 29, 1974, Ser. No. 456,002

Int. Cl.^{2} G03B *31/02*

U.S. Cl. 352—27 **6 Claims**

1. A continuous motion picture projection apparatus comprising:

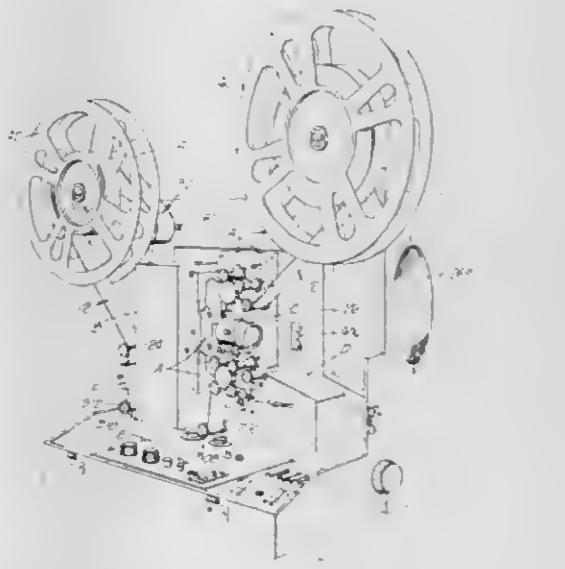
a. an elongated film strip having imprinted thereon first and second image tracks, each comprising a series of sequential photographic images;

b. a supporting structure having a base portion and a central mounting partition;

c. illumination means pivotally mounted on said mounting partition on one side of said film strip and movable from a first position to a second position, including a lamp and a cooperating condensor lens so constructed and arranged as to direct rays of light through the photographic images of said first image track when said illumination means is in its first position and through said second image track when said illumination means is in its second position;

d. a projection lens pivotally mounted on said partition on the other side of said film strip and movable from a first position of coaxial alignment with said condensor lens in its first position to a second position of coaxial alignment with said condensor lens in its second position;

e. drive means carried by said supporting structure for moving said film in a first and second direction between said condensor lens and said projection lens so that the light passing through said condensor lens will pass through the images imprinted on said film, said drive means comprising:



1. a rotatable drive shaft;
2. reversible motor means for rotatably driving said drive shaft; and
3. film feed means operably coupled with said drive shaft and adapted to engage said film to move it between said condensor lens and said projection lens;

f. a first friction clutch means carried by said drive shaft for moving said illumination means alternately from its first position to its second position upon change of direction of rotation of said drive shaft said first friction clutch means comprising:

1. a driven disc carried by said drive shaft and rotatable relative thereto;
2. a link element pivotally connected at one end to said driven disc and connected at its other end to said illumination means;
3. a driver disc carried by said drive shaft and rotatable therewith; and
4. a friction disc interposed between said driver and driven discs to transmit rotational forces to said driven disc upon the change of direction of rotation of said drive shaft;

g. a second friction clutch means carried by said drive shaft for moving said projection lens from its first position to its second position upon a change of direction of rotation of said drive shaft said second means comprising:

1. a clutch member carried by said drive shaft and rotatable with respect thereto;
2. a clutch shoe carried by said clutch member and movable radially into frictional engagement with said drive shaft whereby to impart rotational movement to said clutch member;
3. biasing means carried by said clutch member for normally urging said clutch shoe into frictional engagement with said shaft; and
4. a connecting bracket affixed at one end to said clutch member and at its other end to said projection lens; and

h. a reversing means operatively associated with said motor means and said film strip for sensing an indicating point on said film and thereupon reversing the direction of rotation of said motor means.

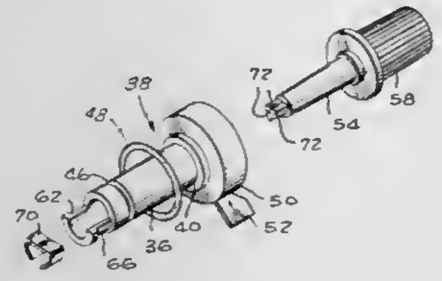
3,937,568
FILM STRIP ADVANCE MECHANISM

Hiroshi Kira, Oxnard, Calif., assignor to Norman Holtzman, Los Angeles, Calif.

Filed Feb. 21, 1974, Ser. No. 444,563

Int. Cl.² G03B *23/00*

U.S. Cl. 353—68 **6 Claims**



1. A film strip advance mechanism for a projector having a housing, comprising:

a framing shaft for rotatable positioning in said housing, said framing shaft having a longitudinal axis and being rotatable about said axis with respect to said housing, a resilient spring for interengaging between said framing shaft and said projector housing to provide resilient braking torque between said framing shaft and said projector housing, removable stop means on said framing shaft for interengaging between said framing shaft and the projector housing to stress said resilient braking torque spring to provide braking torque;

an advance shaft coaxially rotatably mounted within and with respect to said framing shaft, detent means interengaging between said advance shaft and said framing shaft to resiliently angularly detent said advance shaft with respect to said framing shaft, said detent means interengaging between said advance shaft and said framing shaft comprising a detent flat on said advance shaft and a detent spring at least partially embracing said framing shaft and said flat on said advance shaft so that rotation of said advance shaft with respect to said framing shaft causes resilient detent spring deflection; and

a sprocket wheel on said advance shaft for advancing a film strip when said framing shaft is rotated.

3,937,569
SLIDE PROJECTOR HAVING A PARTITIONED MAGAZINE

Kurt Henkelmann, Wissmar, Germany, assignor to Ernst Leitz G.m.b.H.

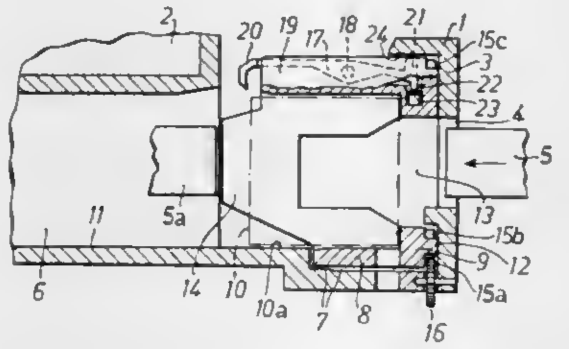
Filed Nov. 23, 1973, Ser. No. 418,257

Claims priority, application Germany, Dec. 13, 1972, 2260887

Int. Cl.² G03B *23/04*

U.S. Cl. 353—116 **10 Claims**

1. In combination a slide projector with a film aperture in a side thereof and a partitioned magazine adapted to accept a slide (10) of a given length, said magazine comprising an ejector side positioned at right angles to said film aperture, a top wall (19) with means (17) for retaining a slide in said magazine and a foreshortened bottom wall (8) having a length less than the given length of a slide and defining a foreshortened operative bearing on which a first portion of the length of the slide bears, said projector having a guide track with a bottom face (7) and a face (10a), and said film aperture having a horizontal continuous bearing surface integral with said guide track and configured to said foreshortened bottom wall, said continuous bearing surface and said face (10a) positioned at a higher level than said bottom face for supporting a second portion of the length of the slide in said magazine and for continuously receiving and transporting the slide through said film aperture.



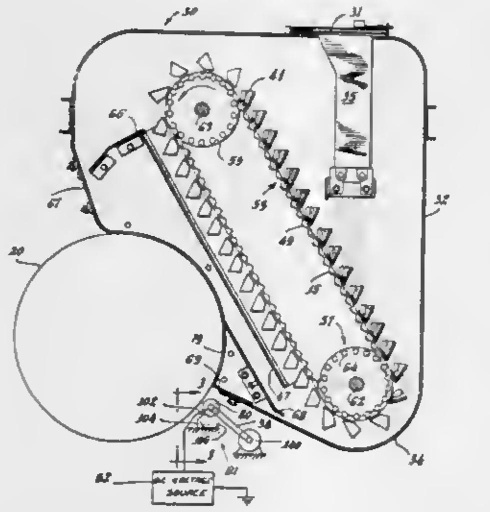
3,937,570
CLOUD SUPPRESSION IN AN ELECTROSTATIC COPYING APPARATUS

Frederick W. Hudson, West Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 149,674, June 3, 1971, abandoned. This application Nov. 5, 1973, Ser. No. 412,925

Int. Cl.² G03G *15/08*

U.S. Cl. 355—3 DD **5 Claims**



1. In an electrostatic processor including a movable member having a photosensitive surface for carrying latent electrostatic images and an electrically conductive backing for said surface, and a developer housing having means for delivering a developer containing carrier particles and toner particles to said surface to develop said images; said housing and surface being separated by an air-gap interface permitting free movement of said member but otherwise forming an enclosure for said toner delivery means; the improvement comprising precipitator means for suppressing electrically charged airborne toner particles proximate said interface; said precipitator means including

an electrode mounted adjacent said interface, means for electrically insulating said electrode from ground, means for applying an electrical potential to said electrode having a polarity opposite to the polarity of said image on said surface and for creating an electrostatic field between said electrode and said backing for urging toner particles of one polarity toward said surface and for attracting toner particles of the opposite polarity to said electrode, and means adjacent said electrode for continuously removing toner particles therefrom.

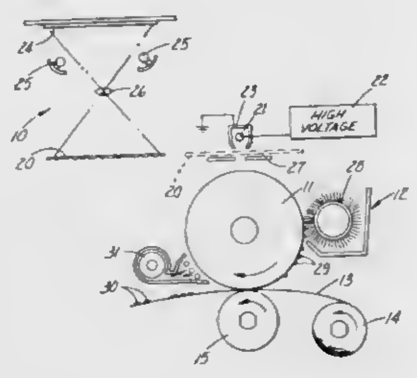
3,937,571
REPRODUCTION SYSTEM UTILIZING ION MODULAR AND DIELECTRIC IMAGING SURFACE

Gerald A. Krulik, Washington, W. Va., and Harvey J. Sable, Cleveland, Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Division of Ser. No. 467,391, May 6, 1974. This application Dec. 11, 1974, Ser. No. 531,462

Int. Cl.² G03G *15/00*

U.S. Cl. 355—3 R **4 Claims**



1. An electrophotographic reproduction apparatus which comprises

a photoconductive ion modulator,

means for imparting a uniform electrostatic charge to said modulator,

means for exposing said modulator to a pattern of light and shadow corresponding to an original image to be reproduced, thereby selectively discharging said modulator and producing a latent electrostatic image thereon,

means for causing an ion stream to impinge upon said modulator carrying said latent electrostatic image,

dielectric means to receive ions passed through said modulator in a pattern corresponding to said latent electrostatic image,

means for developing the resulting latent electrostatic image upon said dielectric means, and

means for simultaneously transferring the resulting developed image from said dielectric means to a receiving material and fixing said image thereon without destroying the latent electrostatic image upon said dielectric means,

said dielectric means comprising a duplex anodized aluminum dielectric surface comprising both barrier type aluminum oxide and porous type aluminum oxide on aluminum.

3,937,572
APPARATUS FOR INDUCTIVE ELECTROPHOTOGRAPHY

Joseph Gaynor, Arcadia; Terry G. Anderson, Pasadena; Walter Hines, Sierra Madre, and Len A. Tyler, Pasadena, all of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 215,873, Jan. 6, 1972, Pat. No. 3,820,985. This application Feb. 25, 1974, Ser. No. 445,377

Int. Cl.² G03G *15/00*

U.S. Cl. 355—16 **8 Claims**

1. Apparatus for electrostatic reproduction of multiple copies from a single exposure, comprising:

a member having a photoconductive surface adapted for bearing an electrostatic charge and for having an electrostatic image formed thereon as a result of selective radiative discharge by predetermined radiation;

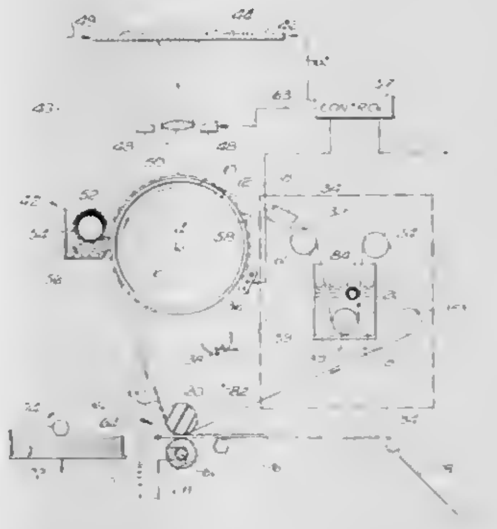
means for applying a substantially uniformly distributed electrostatic charge on said photoconductive surface;

a single thin insulative member having a thickness of from about 0.1 mil to about 3.0 mils, a resistivity of at least 10^{13} ohms/ of surface and sufficient transparency to said radiation for radiative discharge therethrough of said photoconductive surface;

means for applying said insulative member to said charge bearing photoconductive surface following application to said photoconductive surface of said substantially uniformly distributed electrostatic charge, with a first surface of said insulative member in direct contact with said charge bearing photoconductive surface;

means for exposing a predetermined region of said charge bearing photoconductive surface through said insulative member, to a pattern of said radiation to form an electrostatic charge image of said pattern on said photoconductive surface region, said image having a potential sufficient to effect toner-development thereof by induction through said thin insulative member but insufficient to discharge upon removal of said developed image;

means for applying toner to a second surface of said insulative member opposite to said first surface subsequent to formation of said electrostatic image and while said first surface is in said direct contact with said charge bearing surface at said region thereof to form a toner image of said pattern on said second surface adhered by attraction to the pattern of electrostatic charge on said charge bearing surface;



means for separating said insulative member from said photoconductive surface;

means for transferring said toner image from said thin insulative member to a support member; and

means for reapplying said insulative member in direct contact with said photoconductive surface subsequent to transfer of said toner image for application of further toner thereto while said insulative member is in said reapplied direct contact without further electrostatically charging, and without further exposing, said photoconductive surface region for subsequent toning of and transfer of toner from said reapplied insulative member.

3,937,573
EXPOSURE CONTROL APPARATUS FOR PHOTOGRAPHIC PRINTERS

Bradley D. Rising, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 12, 1974, Ser. No. 496,596

Int. Cl.² G03B *27/78*

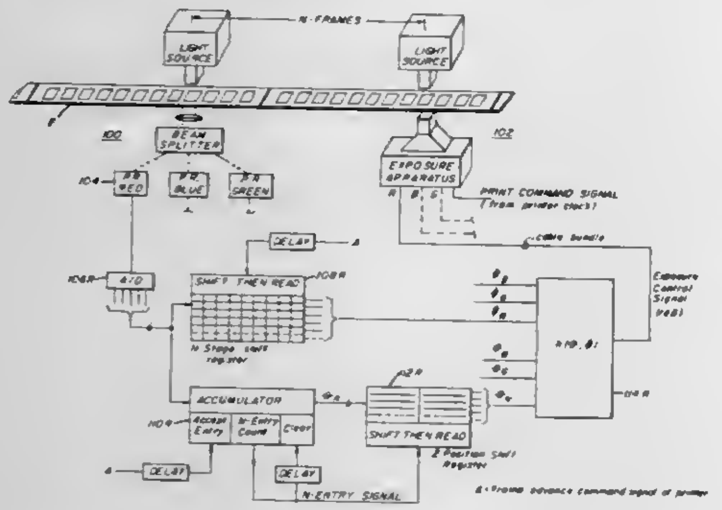
U.S. Cl. 355—83 **7 Claims**

1. In a photographic printer of the type adapted to receive batches of originals for photographic copying and wherein there is provided an exposure apparatus of a type which regulates printing exposures in response to a control signal, an apparatus for supplying such a control signal comprising:

means for examining originals from such a batch individually to produce individual-data signals representative of an optical density characteristic;

said examining means including means for assigning originals to individual sets;

means for processing individual-data signal information, according to set assignment, to produce at least one set-data signal representative of an overall characteristic of a set of the originals; and



signal processing means for receiving both individual-data signals and set-data signals, and for responding to such received signals in accordance with a preselected functional relationship to produce at least one control signal for regulating printing exposure, said signal processing means including means for transmitting the control signal to said exposure apparatus.

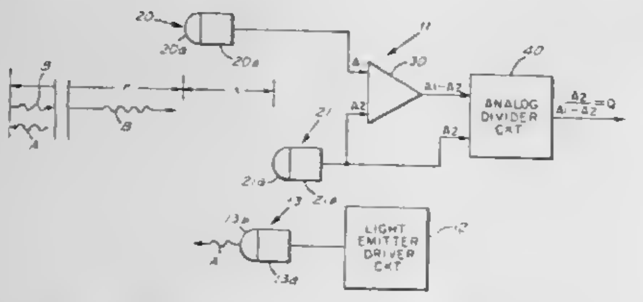
3,937,574
SYSTEM AND METHOD FOR MEASURING DISTANCE

Vernon D. Peckham; Charles E. Baker, Jr., and Donald H. Bryce, all of Colorado Springs, Colo., assignors to Kaman Sciences Corporation, Colorado Springs, Colo.

Filed Oct. 29, 1973, Ser. No. 410,346

Int. Cl.² G01C *3/08*

U.S. Cl. 356—4 25 Claims



1. A distance measuring system, comprising:

means for generating a beam of electromagnetic energy of selected characteristics and illuminating a target therewith so that at least a fraction of said beam is reflected from said target thereby to form a reflected beam;

first detector means for detecting the intensity of said electromagnetic energy, said first detector means being positioned to receive said reflected beam and being responsive thereto to generate a first signal the magnitude of which is directly proportional to the intensity of said reflected beam at said first detector means;

second detector means for detecting the intensity of said electromagnetic energy, said second detector means being spaced apart in target range from said first detector means, said second detector means being positioned substantially in colinear alignment with the point on said target from which said beam is reflected and said first detector means to also receive said reflected beam, said second detector means being responsive to said reflected beam to generate a second signal the magnitude of which is proportional to the intensity of said reflected beam at said second detector means;

means connected to receive said first and second signals for generating a difference signal the magnitude of which is a function of the difference between the magnitudes of said first and second signals; and

means connected to receive said first signal and said difference signal for generating a quotient signal the magnitude of which is proportional to the magnitude of said first signal divided by the magnitude of said difference signal whereby the magnitude of said quotient signal is a known function and hence a measure of target range.

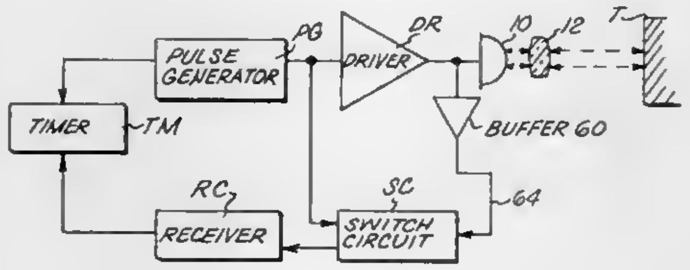
3,937,575
ELECTRO-OPTICAL RANGING MEANS

George H. Bateman, Winter Park, Fla., assignor to Martin Marietta Corporation, Orlando, Fla.

Filed Nov. 26, 1973, Ser. No. 419,171

Int. Cl.² H01L *9/00;* **G01C** *3/08*

U.S. Cl. 356—5 11 Claims



1. An electro-optical distance measuring system comprising:

electro-optical transducer means exhibiting the characteristic of emitting radiant energy within a given infrared wavelength range when driven into a conductive condition, and exhibiting a photo voltaic condition in response to receipt of radiant energy within said given infrared wavelength range,

transducer control means including means for periodically driving said transducer means into conduction so as to emit radiant energy,

optical directing means for directing said emitted energy from said transducer means along a given path toward a target, and for receiving radiant energy traveling in the opposite direction along said given path from said target toward said optical directing means, said directing means directing said received energy to said transducer means so that said transducer means is actuated to the photo voltaic condition upon receipt of radiant energy within said given infrared wavelength range, and

output circuit means for providing a first pulse each time said transducer means is driven into conduction and a second output pulse each time said transducer means is actuated into photo voltaic operation by said received radiant energy whereby the time duration from said first pulse to said second pulse is representative of the distance of said target from said transducer means.

3,937,576
ILLUMINATION SYSTEM FOR AN ATOMIC ABSORPTION SPECTRAL PHOTOMETER

Paul Schmider, Munich-Oberloehring, Germany, assignor to Beckman Instruments G.m.b.H., Munich, Germany

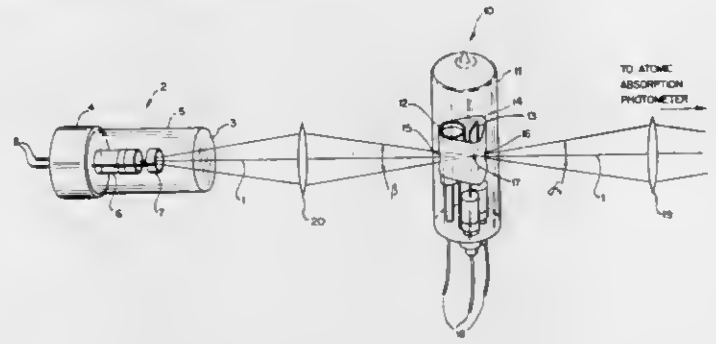
Filed Apr. 8, 1974, Ser. No. 458,973

Int. Cl.² G01J *3/10*

U.S. Cl. 356—74 7 Claims

1. An illumination system for an atomic absorption spectrophotometer having an optical input, the system comprising a primary radiation source for producing resonant radiation encompassing the resonant wavelength or wavelengths of the element or elements to be detected, an auxiliary radiation source which produces a continuum of radiation within a wavelength range which includes the resonance wavelength or wavelengths of the primary resonance radiation and is broad

in comparison with the band width of the resonance radiation of the primary source for compensation of a nonspecific absorption in the absorption spectral photometer and means for causing the radiation from the two sources to enter the optical input of the spectral photometer alternately, wherein the improvement comprises:



mounting the primary radiation source and the auxiliary radiation source in a common path, said auxiliary source having an area therethrough transparent to the radiation of the primary source and being mounted between said primary source and the optical input of the absorption spectral photometer.

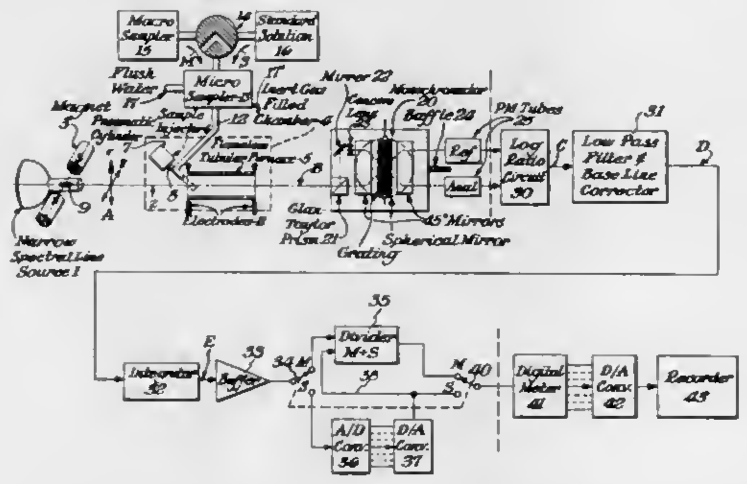
3,937,577
ZEEMAN EFFECT ATOMIC ABSORPTION SPECTROMETER

Robert R. Dorsch, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 15, 1974, Ser. No. 470,189

Int. Cl.² G01J *3/30, 3/42*

U.S. Cl. 356—85 8 Claims



1. Apparatus for acyclic spectrochemical trace analysis employing the Zeeman effect comprising, in optical train in the order recited,

a radiation emission source emitting the characteristic spectral line radiation of an element to be analyzed,

magnetic means applying a D-C magnetic field transverse the path of said characteristic radiation in the region of its emission maintaining a substantially steady D-C magnetic flux resolving said characteristic radiation into continuous linear orthogonally polarized radiation components a preselected one of which, the analytical beam, has a specific frequency characteristic of said element to be analyzed and a preselected other of which, the reference beam, has frequencies different from said analytical beam,

furnace means open to the passage of said analytical beam and said reference beam for atomizing a sample of a substance to be analyzed,

optical means segregating said analytical beam and said reference beam along separate courses according to their simultaneous linear orthogonal polarization directions and within preselected wavelength limits, each course being provided with electronic transducing means developing an electrical signal corresponding to the sensed radiation intensity of the respective beam viewed,

means deriving the logarithmic ratio of said electrical signals one to the other,

and means utilizing said logarithmic ratio in values specific to separate sample and standard analyses to give the concentration of said element to be analyzed in said sample.

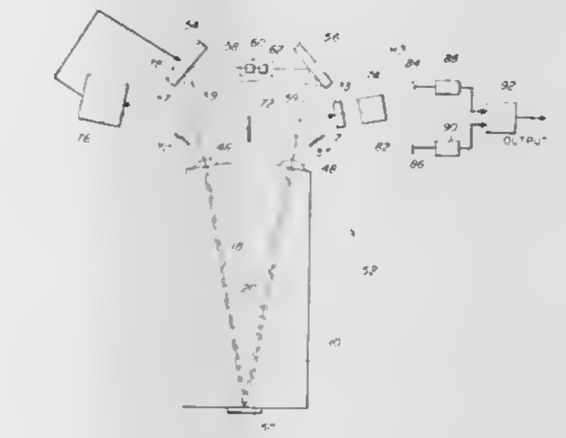
3,937,578
LASER GYROSCOPE

Keimpe Andringa, Sherborn, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 11, 1974, Ser. No. 441,086

Int. Cl. H01s *3/10, 3/22*

U.S. Cl. 356—106 LR 7 Claims



1. In combination:

a. a laser medium for providing amplification to radiant energy waves passing therethrough, the amplification of such medium being a function of the frequency of such waves and being maximum at a predetermined frequency;

b. means for directing two pairs of radiant energy waves to pass through the laser medium in opposite directions, each one of the waves in the two pairs thereof having a separate frequency, said frequencies being symmetrically disposed about a predetermined frequency;

c. means for combining a portion of each one of the radiant energy waves in at least one of the two pairs of waves passing through the laser medium into a single composite beam having two separate frequencies; and

d. means, responsive to the relative energy level in each one of the waves in such composite beam, for maintaining the separate frequencies of the two pairs of waves passing through the laser medium symmetrically disposed about the predetermined frequency.

3,937,579
PROCESS FOR THE DOUBLE-SIDED EXPOSURE OF A SEMICONDUCTOR OR SUBSTRATE PLATES, ESPECIALLY WAFERS, AS WELL AS APPARATUS FOR THE PURPOSE OF PARALLEL AND ROTATIONAL ALIGNMENT OF SUCH A PLATE

Jean Schmidt, Cluses, France, assignor to Karl Suss KG, Munich, Germany

Filed Nov. 15, 1973, Ser. No. 416,227

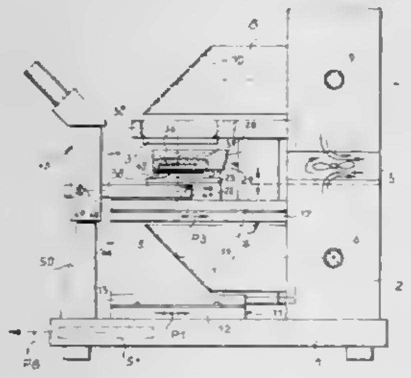
Claims priority, application Germany, Nov. 20, 1972, 2256759

Int. Cl.² B41M *3/08;* **G03B** *27/36, 27/60*

U.S. Cl. 356—144 10 Claims

2. Apparatus for parallel and rotational alignment of a substrate plate such as a semiconductor wafer, or the like, relative to first and second exposure masks adapted to be effective to one to either of the two opposed major surfaces of the wafer, for the purpose of double-sided exposure thereof, and comprising:

a. means for establishing an exposure beam path for said opposed surfaces of a wafer held by said apparatus;
b. an adjustable wedge-error correction head for supporting the wafer for plane parallel adjustment of one major surface of the wafer relative to the first of said exposure masks;
c. apparatus for moving the opposed surface of said wafer into contact with said second exposure mask;
d. first support means for arranging and supporting said first exposure mask and including a rotational compound slide table, and having means for the plane parallel position calibration of said first exposure mask relative to one major surface of said wafer relative to a microscopic viewing device;
e. a microscopic viewing device in viewing relationship with an exposure mask supported in said first support means;
f. an auxiliary rotational compound slide table having a second mask support means for receiving the second of said exposure masks; and
g. means coupling the drive slide of said first rotational compound slide table to the drive slide of said auxiliary rotational compound slide table, the arrangement being such that:



1. the first mask support means is connected to its associated rotational compound slide table through a support approachment guide means extending normal to the plane of travel of the first and second compound slide tables;
2. one of said mask supports being constructed as an adjustable wedge-error calibration frame in one of said compound slide tables; said wedge-error correction head being arranged to receive said wafer and being bearingly mounted to a swivel arm, with said swivel arm being pivotable in a rotational plane lying generally parallel to and intermediate the planes of displacement of said two rotational compound slide tables, said swivel arm being pivotally movable along an axis perpendicular to the planes of displacement of said first and second mask support means;
3. means on said swivel arm for moving said swivel arm together with a wafer disposed thereon toward the surface of a selected one of said exposure masks until contact is achieved between the surface of said wafer and the surface of said selected exposure mask; and
4. means on said swivel arm for releasably retaining said wafer for carrying said wafer to and from contact with said selected exposure mask.

3,937,580
ELECTRO-OPTICAL METHOD FOR MEASURING GAPS AND LINES

Harvey Lee Kasdan, Van Nuys, Calif., assignor to Recognition Systems, Inc., Van Nuys, Calif.

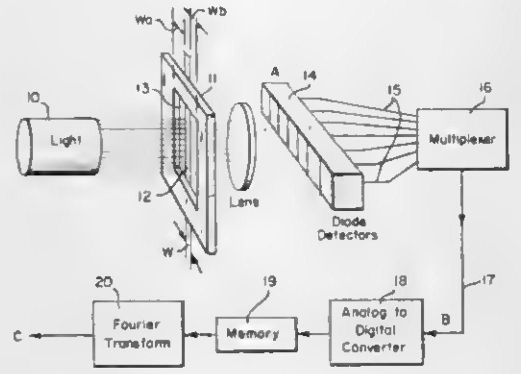
Filed July 11, 1974, Ser. No. 487,588

Int. Cl.^{2} G01B *11/02*

U.S. Cl. 356—156 **1 Claim**

1. A method of measuring a given width, W of a line in an aperture comprising the steps of:

a. radiating the aperture with coherent light to cause generation of a diffraction pattern by said given width;
b. detecting said diffraction pattern to provide an analog electrical function;
c. converting said function to a digital form;
d. computing the Fourier transform of said digital form to provide an autocorrelation wave form;
e. plotting the autocorrelation wave form on an orthagonal X-Y coordinate system; and
f. measuring at least one point position determined by a linear segment in the autocorrelation wave form on an axis of said coordinate system to thereby provide a precise measure of said given width, said line being spaced from the left side of said aperture as viewed from the light source ,by a distance W*a* and from the right side of the aperture by a distance W*b*, and wherein:



g. if $Wa>Wb>W$ then said linear segment constitutes the initial linear segment of said autocorrelation wave form and said point position corresponds to the first break point in said wave form occurring at the end of said initial linear segment;
h. if $Wb>W>Wa$ then said linear segment constitutes the second linear segment, and said point position corresponds to the second break point in said wave form occurring at the end of said second linear segment; and
i. if $W>Wa>Wb$ then said linear segment constitutes the third linear segment, and said point position corresponds to the third break point in said wave form occurring at the end of said third linear segment.

3,937,581
ANALYTIC CELL FOR USE IN HIGH-SPEED ULTRA CENTRIFUGES

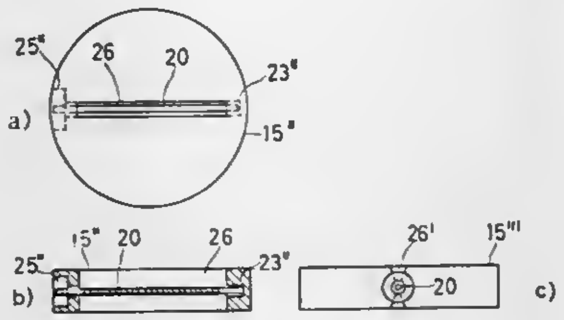
Egon Rodel, Osterode, and Volker Neuhoff, Goettingen, both of Germany, assignors to Heraeus-Christ GmbH, Osterode, Harz and Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Goettingen, both of, Germany

Filed May 13, 1974, Ser. No. 469,539

Claims priority, application Germany, May 17, 1973, 2324879

Int. Cl.^{2} G01N *1/10*

U.S. Cl. 356—246 **19 Claims**



1. Analytic cell for use in a centrifuge, particularly an ultra high-speed centrifuge comprising
a housing (10);
a disk-shaped central part (15, 30) located in the housing and formed with a radially extending light-transmissive slit across the part (24, 24', 26, 26', 29), the central part being further formed with a radially extending opening extending in alignment with the light-transmissive slit and of sufficient size to permit introduction of a capillary tube therein;
and a capillary tube of light-transmissive material located in said opening and for optical evaluation of test substances within the capillary tube located in alignment with said slit.

3,937,582
FOUNTAIN TOOTHBRUSH

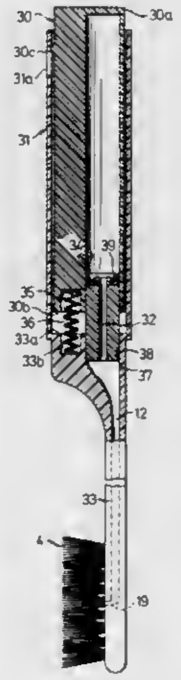
Franco Del Bon, Zofingen, Switzerland, assignor to Trisa Burstenfabrik AG

Filed Mar. 21, 1974, Ser. No. 453,391

Claims priority, application Switzerland, Mar. 21, 1973, 4004/73; Jan. 19, 1974, 875/74

Int. Cl. A46b *11/00*

U.S. Cl. 401—134 **9 Claims**



1. A fountain toothbrush compsiring:
a bristle carrier;
a set of bristles on said carrier near one end thereof;
a rigid handle connected to said bristle carrier at an end of the latter remote from said bristles, said handle being hollow and having an opening at the rear end thereof away from said bristle carrier;
a rigid-walled reservoir for liquid or pasty dentifrice and being connected to said handle axially displaceable relative thereto, and protruding with its closed rigid rear end from said rear end opening when in rest position, said bristle carrier having a duct therethrough leading from the end of said bristle carrier joined to said handle to an outlet near or between said bristles;
piston means rigidly mounted on said bristle carrier at the end thereof joined to said handle and having an axial bore therein being in free communication with said duct in said bristle carrier and opening out of the rear end of said piston means facing toward said reservoir; and
said reservoir having a hollow interior and an outlet passage from said interior at the end thereof toward said bristle carrier, said piston means being sealingly inserted at rest and in actuated position in said outlet passage and adapted for a short displacement in said outlet toward and away from said reservoir, said outlet passage being in free communication with said duct at all times, whereby by a short displacement of said piston in said outlet passage toward said reservoir, dentifrice is caused to flow freely from said reservoir through said duct towards said bristles, said duct having in said bristle carrier, over at least a short length thereof, a diameter small enough to exert a capillary action on the dentifrice in said reservoir, thereby preventing dentifrice from leaking through said outlet passage into said duct, when said piston means are not displaced towards said reservoir; and
spring means for returning said reservoir to its rest position relative to said piston after each short displacement of the former toward said bristle carrier.

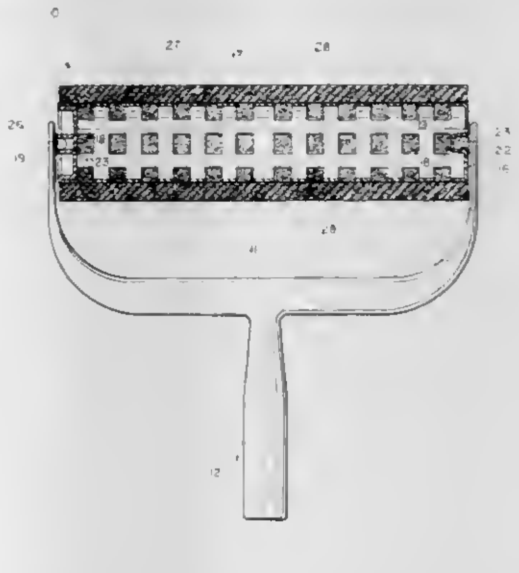
3,937,583
PAINT ROLLER

James D. Tyson, Carthage, and R. G. Harris, Lexington, both of N.C., assignors to Tyson Paint Roller Company, Inc., Carthage, N.C.

Continuation-in-part of Ser. No. 310,324, Nov. 29, 1972, abandoned. This application July 22, 1974, Ser. No. 490,579

Int. Cl. B44d *3/28*

U.S. Cl. 401—197 **3 Claims**



1. An improved painting device comprising: a generally Y-shaped bail and handle unit integrally formed from a molded plastic type material and wherein the bail portion of the bail and handle unit is generally U-shaped in cross section and contains a plurality of integral partitions extending across said U-shaped cross section whereby a strong lightweight unit is produced and wherein the outer ends of the bail portion of the bail and handle unit are toed inwardly toward each other in normal rest position whereby when moved outwardly apart, an inwardly biasing effect is obtained; an axial opening provided in the end of the handle opposite the bail whereby a handle extension can be retainingly inserted thereinto; inwardly projecting nipples fixedly secured one on each end of the bail portion of said unit; a perforate, generally cylindrical shaped reservoir-roller closed at one end and formed from a moldable, plastic type material; and end cap removably insertable in the open end of said cylinder; a dimple-like depression centrally formed in the exterior of the closed end of said reservoir-roller; a dimple-like depression centrally formed in the exterior of said end cap whereby each of said dimple-like depressions rotatably engage one of said dimples thereby rotatably supporting said reservoir-roller on said bail and handle unit; and an absorbent covering disposed around said cylindrical shaped reservoir-roller whereby paint contained therein can be applied to a surface to be painted.

3,937,584
APPARATUS FOR SECURING AN ELONGATED HANDLE TO THE BACK OF A BRUSH OR THE LIKE

Elven O. Freeman, 5824 N. Harvard Drive, Oklahoma City, Okla. 73122

Filed Mar. 7, 1975, Ser. No. 556,559

Int. Cl.^{2} B25G *3/24*

U.S. Cl. 403—256 **7 Claims**

4. A handle assembly alternately securable to and releasable from a brush or the like of the type having a back with a top,

bottom and opposite sides, with bristles or the like extending from the bottom thereof, comprising:

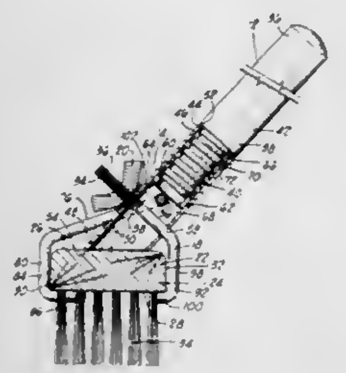
an elongated handle having first and second ends;

an elongated member having first and second ends with a first end face formed on the first end and a second end face formed on the second end with the second end face lying in a plane oblique to the longitudinal axis of said elongated member;

means for securing the second end of said elongated handle to the first end of said elongated member;

a first bore formed in said elongated member aligned along a line normal to the longitudinal axis of said elongated member and lying in a plane parallel to the plane of the second end face of said elongated member;

a second bore formed in said elongated member intermediate said first bore and the second end face thereof, said second bore being aligned along a line normal to the longitudinal axis of said elongated member;



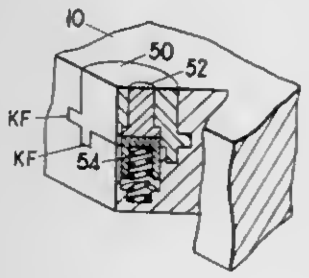
a rigid U-shaped member journaled at the medial portion thereof in siad first bore and having hook means formed on each of the opposite ends thereof for engaging one side and the bottom of the back of the brush;

a rigid hook member having a first end and a second end with hook means formed on the first end thereof for engaging the opposite side and the bottom of the back of the brush and with external threads formed on the second end thereof extending through said second bore;

internally threaded nut means for engaging the external threads of the second end of said rigid hook member for drawing the hook means thereof and the two hook means of said U-shaped member into secure engagement with the opposite sides and bottom of the back of the brush and mutually engaging the second end face of said elongated handle with the top of the back of the brush.

3,937,585
PARTIALLY ROTATED FASTENER

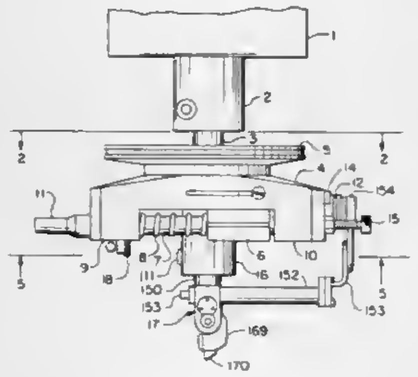
David Christopher Cattermole, Enfield, England, assignor to Elliott Brothers (London) Limited, Chelmsford, England
Filed Sept. 29, 1972, Ser. No. 293,342
Claims priority, application United Kingdom, Nov. 30, 1971, 55510/71
Int. Cl. F16b *5/00, 21/02*
U.S. Cl. 403—300 **5 Claims**



1. A fastening system comprising a pair of semi-cylindrical body parts which may be brought together in face to face relationship to form a cylindrical fastener which is symmetrical about a center axis of rotation, said cylinder having a predetermined height measured along said axis, first and second mutually perpendicular annular key flanges integrally formed on each body part adjacent one end thereof, each of said flanges having a thickness which is much less than said height, said first annular key flange extending away from said body perpendicularly with respect to said axis, said second annular key flange extending parallel to said axis, a plurality of object parts to be fastened together along predetermined surfaces thereof, each object part having an arcuate semi-cylindrical raceway formed therein with internal raceway contours which are exactly complementary to the external contours on said fastener body parts, and the raceways in said object parts fitting together to form a single composite cylindrical raceway when said object parts are brought together in a mating face to face relationship, whereby said two body parts of said fastener span and join said semi-circular raceways to securely interconnect said two object parts when said fastener is partially rotated.

3,937,586
HYDRAULICALLY ACTUATED MACHINE TOOL

Sanders Chapman Watson, 1358 Roller Coaster Road, Tucson, Ariz. 85704
Filed Dec. 13, 1973, Ser. No. 424,328
Int. Cl.² B23B *29/034*
U.S. Cl. 408—147 **11 Claims**



1. A hydraulically operated machine tool attachable to and supported solely by a rigid spindle machine for laterally displacing a cutting element at a predetermined rate commensurate with the rate of rotation of the rigid spindle machine; said machine tool comprising in combination:

a. a main body, said main body including an arbor extending therefrom for engagement with the collet of the rigid spindle machine to support said main body in relationship to a work piece;

b. A reservoir of hydraulic fluid disposed within said main body;

c. reciprocating means responsive to rotation of said main body and disposed within said main body for pumping the hydraulic fluid from said reservoir, said reciprocating means including:

i. a plunger and a further plunger disposed within a cylindrical cavity and a further cylindrical cavity, respectively, in said main body;

ii. a first passageway and a third passageway extending from said reservoir to said cylindrical cavity and to said further cylindrical cavity, respectively;

iii. a second passageway and a fourth passageway extending from said reservoir to said pressure chamber; and

iv. a check valve disposed within said first passageway to limit the flow of hydraulic fluid therethrough in one direction and a further check valve disposed within said third passageway to limit the flow of hydraulic fluid therethrough in one direction;

d. selectively actuatable means disposed within said main body for controlling the length of the stroke of said reciprocating means to selectively vary the volume of hydraulic fluid pumped per revolution of said main body, said controlling means including:

i. a swash plate for axially displacing said plunger;

ii. means for restraining the rotational movement of said swash plate induced by said main body; and

iii. said swash plate being of a non-uniform thickness; whereby, said swash plate induces reciprocating axial movement of said plunger in response to relative movement of said swash plate and said plunger;

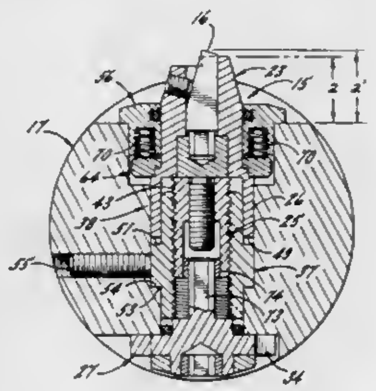
e. a pressure chamber disposed within said main body for receiving the hydraulic fluid pumped by said reciprocating means, including a pressure relief conduit for venting the hydraulic fluid back to said reservoir;

f. a movable carriage slidably attached to said main body, said carriage being positionable lateral to the axis of said arbor in response to the volume of hydraulic fluid received by said pressure chamber; and

g. means for attaching the cutting element to said carriage; whereby, said machine tool is self contained by including all operative elements necessary to rotate the cutting element at the rate of rotation of the rigid spindle machine while simultaneously selectively displacing the cutting element laterally at a rate determined by said controlling means.

3,937,587
ADJUSTABLE CUTTER TOOTH MOUNTING

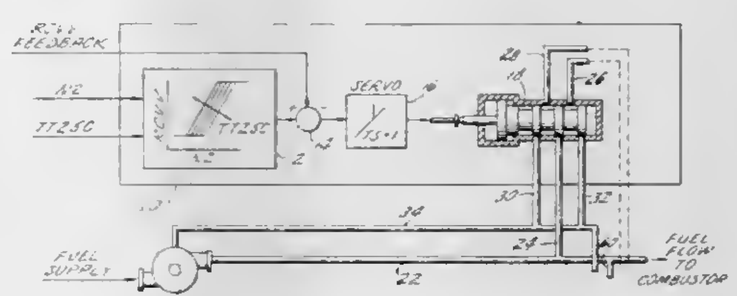
Thomas J. Lindem, and Jan Van Roojen, both of Rockford, Ill., assignors to The Ingersoll Milling Machine Company, Rockford, Ill.
Filed July 5, 1974, Ser. No. 485,802
Int. Cl.² B23B *51/00, 39/14*
U.S. Cl. 408—181 **12 Claims**



12. A mounting for supporting a cutter tooth for adjustment in fine increments having, in combination, a rotatable body with a hole extending therethrough, a cartridge telescoped into said hole from one end thereof and adapted for coarse adjustment of the cutter tooth prior to being inserted into the hole, said cartridge including a holder disposed within and slidably guided along said one end portion of said hole, said tooth being secured to the outer end of said holder and providing a tip for cutting engagement with a workpiece during rotation of said body, means securing said holder within said hole against rotation while permitting the holder to be slid axially in fine increments to adjust the position of said tooth, a nut mounted within said hole and being secured against movement within said hole and a differential screw including a first thread of predetermined pitch mated with said nut initially in a predetermined position within said nut during assembly of said cartridge and a second thread whose pitch is less than said predetermined pitch, said holder having an internally threaded recess formed in the inner end portion thereof and mating with said second thread, a driver recess formed in the inner end portion of said screw to receive a driver for turning said screw to adjust the holder in fine increments in an axial direction with respect to said hole, and abutting means on said nut and within said hole for locating said nut in a predetermined axial position within said hole, said cartridge being insertable into said hole only from the end of the hole from which the cutter projects.

3,937,588
EMERGENCY CONTROL SYSTEM FOR GAS TURBINE ENGINE VARIABLE COMPRESSOR VANES

John H. Kisslan, Jupiter, Fla., assignor to United Technologies Corporation, Hartford, Conn.
Filed July 24, 1974, Ser. No. 491,421
Int. Cl.² F01B *25/00*
U.S. Cl. 415—17 **6 Claims**



1. In a gas turbine engine, a control for varying the position of the rear compressor vanes comprising

fluid controlled actuator means connected with said compressor vanes and adapted to vary the position thereof,

a source of pressurized fluid,

a first fluid path connecting said fluid source with said actuator means,

a second fluid path connecting said fluid source with said actuator means,

a first slide valve connected in both said first and second fluid paths, said first slide valve having a first position which permits passage therethrough of the fluid in said first fluid path only, and having a second position which permits passage therethrough of the fluid in said second fluid path only, said first slide valve normally being in said first position,

means responsive to selected engine operating conditions for generating a first control signal indicative of desired compressor vane position,

servo valve means connected in said first fluid path and responsive to said first control signal for regulating the flow of fluid in said first fluid path to thereby vary the position of said compressor vanes when said first slide valve is in said first position,

means for generating a second control signal indicative of desired compressor vane position,

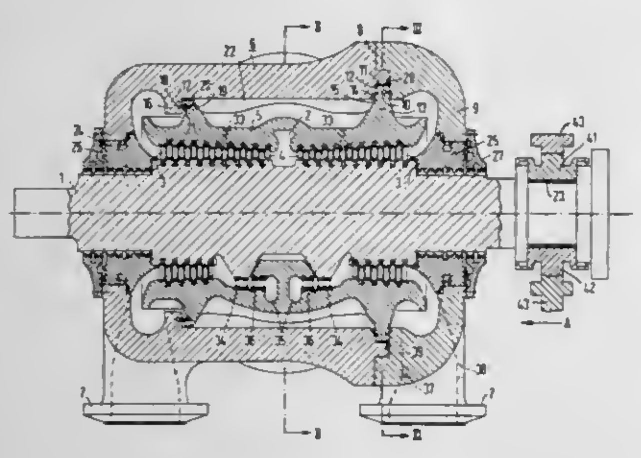
and means for connecting said second control signal to said actuator means, said second control signal being adapted to actuate said actuator means and regulate the position of said compressor vanes and regulate the position of said compressor vanes when said first slide valve is moved to said second position.

3,937,589
HIGH PRESSURE DOUBLE FLOW TURBINE CONSTRUCTION

Axel Remberg, Mulheim, Germany, assignor to Kraftwerkunion AG, Mulheim (Ruhr), Germany
Continuation of Ser. No. 363,124, May 23, 1973, abandoned. This application Nov. 4, 1974, Ser. No. 520,866
Int. Cl.² F01D *3/02, 25/24*
U.S. Cl. 415—101 **2 Claims**

2. Multi-shell turbine with double-flow construction, designed for high steam pressure and high steam temperatures, having an outer housing and an inner shell which is split only

in one axial plane, said inner shell carrying the vane rings of both flows and comprising the inlet channels for the fresh steam, wherein the outer housing is of generally cylindrical shape and has an open end, a closed end, and a cover segment with exhaust member, said cover segment closing said open end and defining therewith a normal-to-axis joint, the outer diameter of said outer housing being proportionally greater in the vicinity of said open end and cover segment than in the vicinity of said closed end, the inner shell in the vicinity of the normal-to-axis joint having radially outwardly extending extension studs projecting radially at the outer periphery of said extension, said studs fitting in axial grooves on a shoulder of said outer housing to engage the partitions which define the front surface of the outer housing, whereby the inner shell is radially held and axially mounted and fixed solely through the studs, after the housing segment has been mounted and bolted.



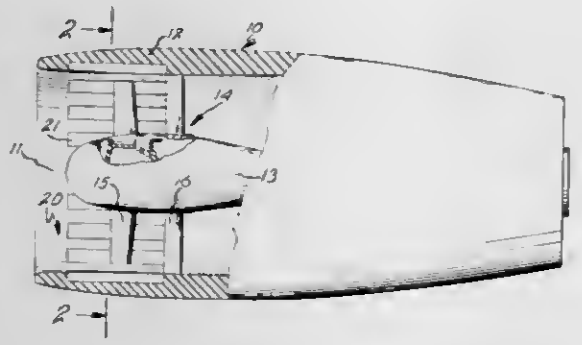
3,937,590
ACOUSTIC DUCT WITH PERIPHERALLY SEGMENTED ACOUSTIC TREATMENT

Ramani Mani, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 3, 1974, Ser. No. 503,031

Int. Cl.^{2} F04D *29/66*

U.S. Cl. 415—119 9 Claims



1. In a noise-suppressing duct having mounted therein rotating mechanical equipment with first stage rotor and stator blades which interact to generate spinning mode acoustic pressure fields with propagating and attenuating type modes, said duct being a rigid longitudinally extending duct with an acoustic lining attached to the inner surface thereof, the improvement in which said acoustic lining comprises

a first set of peripherally spaced, longitudinally extending strips of sound-absorbing material, said first set of strips being relatively narrow in the peripheral direction and in total number at least exceeding the number of first stage rotor blades,

a second set of peripherally spaced, longitudinally extending strips of sound-absorbing material mounted flush with said first set of strips and located between and alternating with said first set of strips,

said first and second set of strips being made of sound-absorbing materials having different acoustical impedances and in combination forming a continuous acoustic lining,

said first and second set of strips being effective to achieve scattering of said spinning mode acoustic pressure fields to increase the attenuating mode type content for improved noise suppression.

3,937,591
CONTROLLING A SLUDGE FLOW

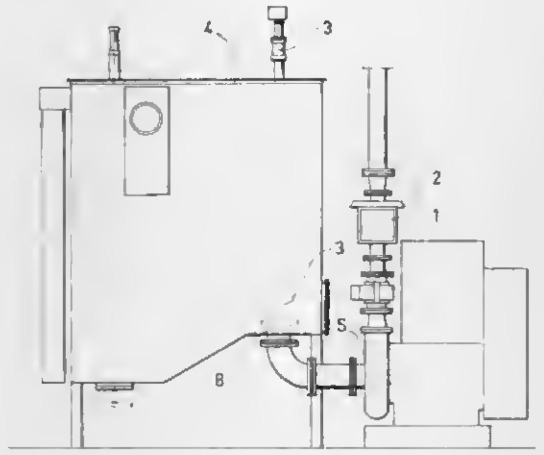
Vilho Viljo Jantunen, Pyhakumpu, Finland, assignor to Outokumpu Oy, Outokumpu, Finland

Filed Nov. 2, 1973, Ser. No. 412,166

Claims priority, application Finland, Nov. 6, 1972, 3089/72

Int. Cl.^{2} F04D *15/00*

U.S. Cl. 415—157 4 Claims



1. In combination, a sludge reservoir, a pump for pumping sludge from said reservoir, a channel leading from said reservoir to a suction side of said pump, and a valve submerged during operation in sludge in said reservoir, said valve having a pair of coaxially related members in relatively slidable interfitted relationship with each other, one of said members having an apertured wall for sliding against the other of said members, and means for effecting relative sliding movement between said members for controlling sludge flow through one or more apertures of said apertured wall, one of said members being connected to said channel.

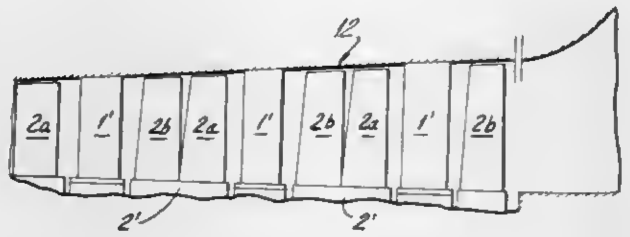
3,937,592
MULTI-STAGE AXIAL FLOW COMPRESSOR

Karl Bammert, Hannover, Germany, assignor to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 365,583, May 30, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,219

Int. Cl.^{2} F04D *19/00, 19/02*

U.S. Cl. 415—194 4 Claims



1. A multistage axial compressor comprising a rotatable shaft having a plurality of rings with blades defining moving blade rows interspersed with a plurality of guide blade rows, said rows being arranged in an initial and a final stage with a plurality of intermediate stages between said initial and said final stage, each intermediate stage including a moving ring with two rows of moving blades and a single guide blade row, said initial and final stages comprising an initial stage with a single guide blade row and a moving ring with two rows of blades and a final stage comprising a single guide blade row, said shaft being foreshortened by providing one row of said guide blades to take up the pressure of two rows of said moving blades at 100% reaction between said initial stage and said final stage.

3,937,593
ROTOR ASSEMBLIES

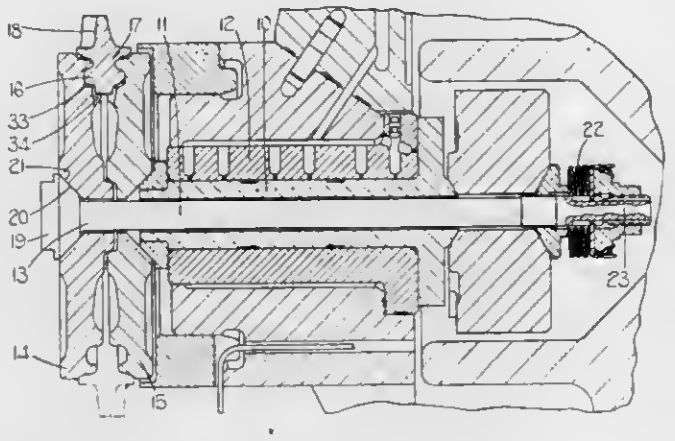
John Anthony Jeyes, and Ronald Edward Blakeley, both of Solihull, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 18, 1974, Ser. No. 452,463

Claims priority, application United Kingdom, Apr. 17, 1973, 18408/73

Int. Cl.^{2} F01D *5/30*

U.S. Cl. 416—214 A 8 Claims



1. A rotor assembly comprising a rotatable shaft, first and second annular discs axially spaced on the shaft and rotatable with the shaft, a plurality of rotor blades located between the discs and angularly spaced around the axis of the shaft, and means urging the discs against the blades so that a root portion of each blade is trapped between the discs with the remainder of the blade projecting from the discs, each root portion being shaped so as to be non-complementary with the portions of the disc between which it is trapped, and each disc being shaped so as to present to each root portion first and second surfaces which, when the shaft is rotated in use, engage first and second spaced regions respectively of the root portion so that the root portion is held respectively against movement radially outwardly relative to the axis of the shaft and against axial movement relative to the shaft, said first surface of each disc presented to a respective root portion being curved about the axis of the shaft and the associated first region of said respective root portion being defined by a further surface which is similarly curved about the axis of the shaft, but which has a radius less than the radius of the curve defined by said first surface so that there is point contact between the surfaces.

3,937,594
OBJECT DISPOSED IN A FLUID FLOW AND HAVING A SELECTED CONFIGURATION TO MINIMIZE GENERATION OF KARMAN'S VORTEX STREET

Hideo Ito; Mizuho Tanaka, and Harumasa Sato, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 23, 1974, Ser. No. 463,430

Claims priority, application Japan, Apr. 27, 1973, 48-47258

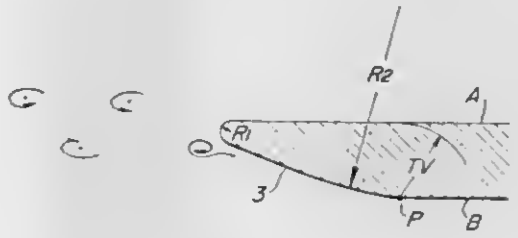
Int. Cl.^{2} B64C *3/14;* F01D *5/14*

U.S. Cl. 416—223 A 5 Claims

1. A fluid foil section having a selected configuration to minimize the generation of Karman's vortex street when disposed in a moving fluid and is defined by two surfaces, each extending along a stream line and one of said two surfaces forming a reference surface, said foil section being characterized by a selected configuration satisfying the following relations:

$R1/TV \leq 0.2$ and $R2/TV$ is in the range of 6–10

where, R1 is a radius of curvature of a trailing edge portion of the foil section's downstream end portion which is continuous with said reference surface, R2 is a radius of curvature of a second portion of the foil section's downstream end portion extending between said trailing edge portion and the other surface of the foil section, and TV is a minimum thickness of the foil section between said two surfaces measured from the joining point between said second portion and the other surface.



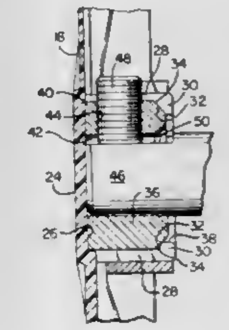
3,937,595
ROTARY FLUID MOVING DEVICE WITH IMPROVED HUB CONSTRUCTION AND METHOD OF MAKING SAME

George A. English, and Charles R. Marracino, both of Torrington, Conn., assignors to Torin Corporation, Torrington, Conn.

Filed July 5, 1974, Ser. No. 486,110

Int. Cl.^{2} F04D *29/32*

U.S. Cl. 416—244 R 10 Claims



1. A rotary fluid moving device of molded plastic construction and comprising a plurality of similar circumaxially arranged fluid moving blades and an associated central hub section, said hub section comprising a plurality of similar axially projecting flexible fingers formed integrally and arranged in a circumaxially spaced series to form a collet defining a cylindrical hub cavity, a cylindrical centrally apertured hub of metallic construction disposed in said cavity and adapted for positive connection with a drive shaft entered in its said central aperture, and an arcuate clamping member disposed about said fingers and extending at least through an angle of 180°, said clamping member engaging said fingers and exerting generally radial inward pressure thereon and indirectly on said hub for retention of the latter in said cavity.

3,937,596
FLUID PUMP DRIVING CONTROL

Robert O. Braidwood, Fort Lauderdale, Fla.

Continuation of Ser. No. 355,902, April 30, 1973, abandoned. This application Jan. 24, 1975, Ser. No. 544,019

Int. Cl.^{2} F04B *49/00*

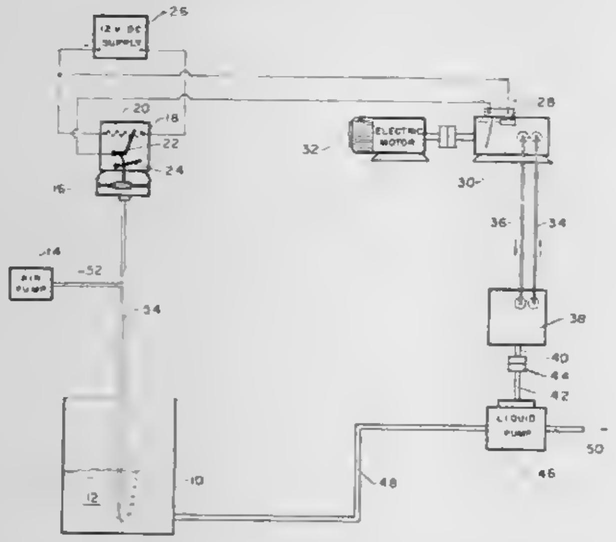
U.S. Cl. 417—36 4 Claims

1. A system for maintaining a predetermined fluid level in a fluid storage wet well to compensate for variable quantities of fluid received in said wet well comprising:

fluid storage wet well,

a fluid level sensing means connected within said storage wet well providing a variable output signal proportional to the level of the fluid contained therein;

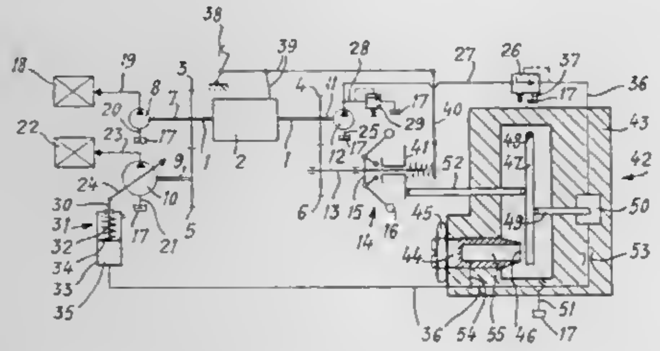
a variable output hydraulic pump, said pump including a means for varying the hydraulic output of said pump;
a constant speed electrical drive means connected to said variable hydraulic pump for driving said hydraulic pump;
a hydraulic motor in fluid communication with the output of said variable hydraulic pump, the hydraulic motor providing a mechanical drive output in response to fluid received from said variable hydraulic pump;



a variable volume fluid pump connected to the mechanical drive output of said hydraulic motor, said fluid pump having a fluid input connected into said storage wet well and a fluid output;
a variable volume fluid pump control means having an input circuit connected to said fluid level sensing means and an output circuit connected to said means for varying the output of said variable hydraulic pump, said control means output signal controlling the hydraulic output of said variable output hydraulic pump as a function of the output signal from said fluid level sensing means.

3,937,597
PRESSURIZED FLUID FEED APPARATUS

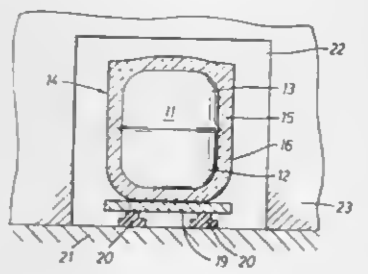
Sergė B. Bacquie, La Croix Saint Ouen, and Jean-Francois M. Cheylus, Compiegne, both of France, assignors to Poclain, Le Plessis Belleville, France
Filed Oct. 3, 1974, Ser. No. 511,822
Claims priority, application France, Oct. 3, 1973, 73.35395
Int. Cl.² F04B *49/00, 1/26*
U.S. Cl. 417—216 **14 Claims**

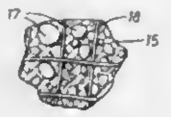


1. An apparatus for feeding pressurized fluid constituted by:
a fluid tank,
at least one variable c.c. pump having a pump output control member for varying its output,
at least one receiver member of which the power necessary for said receiver member to be driven is substantially constant,
a motor having an output shaft for driving the variable c.c. pump and the receiver member, the maximum power of said motor being less than the sum of the maximum drive powers of said pump and said receiver members,
and a regulation device for regulating the total drive of the pump and the receiver members to a value at the most equal sum to the maximum power of the motor, said regulation device itself being constituted by:
a governor having an input coupled to the output shaft of the motor and having a speed indicating output member positioned as a function of the speed of rotation of the motor,
a source of piloting fluid at constant pressure,
a piloting conduit connected to said source of piloting fluid,
a control motor having a motor output member coupled to the pump output control member for controlling the cubic capacity of said pump and which includes a drive chamber connected to the source of piloting fluid by said piloting conduit:
and a closure valve comprising a valve body, wherein said valve comprises in addition a nozzle having an inlet connected to said source of piloting fluid and an outlet aperture in said valve body, a movable closure member for selectively closing the outlet aperture of said nozzle, said movable closure member being mounted to move in the valve body and disposed opposite said outlet aperture to vary the area thereof, a return member for moving said movable closure member to effect the closure of the nozzle, and a return conduit connected to the interior of said valve body for receiving fluid from said nozzle for returning the fluid to the tank, the speed indicating output member of the governor being coupled to the movable closure member so that displacement of said speed indicating output member corresponding to a reduction in the speed of rotation of the motor causes a variation in the area of the passage between the movable closure member and the nozzle which brings about a variation in the pressure of the fluid feeding said control motor and a consequent displacement of the motor output member and the oump output control member which is connected thereto to effect a reduction in the corresponding cubic capacity of said variable c.c. pump.

3,937,598
ENCASED REFRIGERATING MACHINE

Jorgen Stannow, Sonderborg; Kjeld Kjeldsen, Nordborg; Bent Karll, and Ole Joker Nissen, both of Augustenborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Oct. 30, 1974, Ser. No. 519,353
Claims priority, application Germany, Nov. 2, 1973, 2354897
Int. Cl.² F16F *15/00*
U.S. Cl. 417—363 **15 Claims**

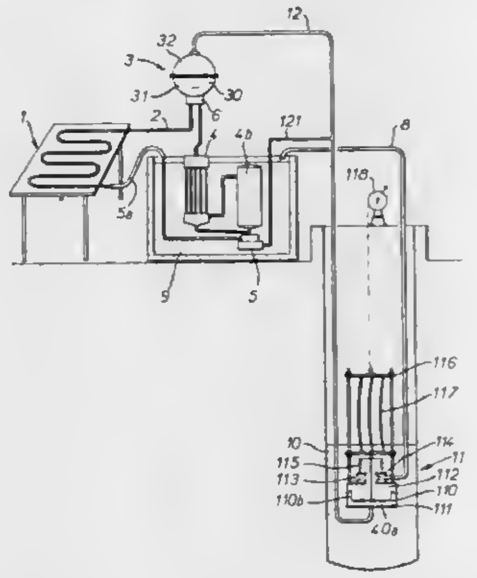




1. A refrigerating machine of the type having a casing for containing an electric motor and reciprocating compressor means, comprising a completely closed sheet metal casing, mass means in the form of a layer bonded to and substantially surrounding the exterior of said casing, said mass means being at least one-half as heavy as said casing.

3,937,599
PUMPING SYSTEM USING SOLAR ENERGY

Pierre Thureau, Cachan, and Michel Bremont, L'Hay-les-Roses, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France
Filed Oct. 11, 1974, Ser. No. 514,175
Claims priority, application France, Oct. 19, 1973, 73.37374; July 5, 1974, 74.23399; July 12, 1974, 74.24278
Int. Cl.² F04B *17/00, 9/08;* **F03G** *7/02;* **F03C** *5/00*
U.S. Cl. 417—389 **25 Claims**

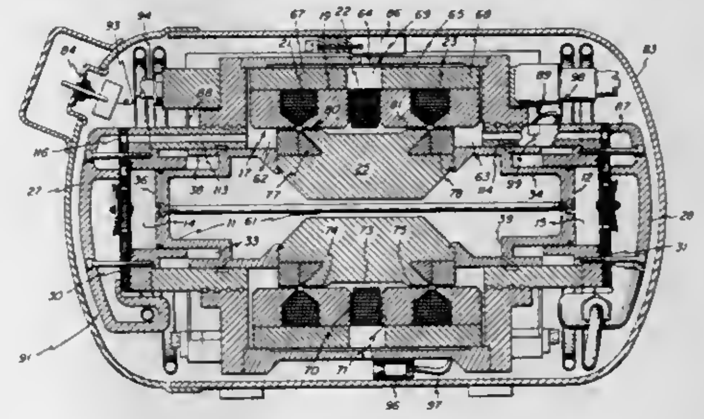


1. A pumping system comprising a pumping unit formed by a motor and a pump and adapted to raise a liquid from an underground level to a utilization level, a vaporizable fluid flowing in a closed circuit between a solar evaporator and a condenser, the said motor being disposed in the outgoing branch between the evaporator and the condenser and a circulator being disposed in the return branch to the said evaporator, and in which system the motor comprises a motor chamber which is connected by a bistable distributor either to the evaporator when said distributor is in an intake state, or to the condenser when said distributor is in an exhaust state, said motor chamber being partly defined by a flexible wall free to move between an intake stroke end position and an exhaust stroke end position, the flexible wall triggering the changes of state of the distributor by reaching its two end positions, the said pumping system being characterized in that the distributor is biased by a resilient means into one of its two stable states on either side of an unstable equilibrium state, and is urged into its stable exhaust state by a flexible band tensioned by said flexible wall in the intake stroke end position, and is pushed into its stable intake state by said flexible wall in its exhaust stroke end position, a transmission chamber separated from said motor chamber by the said flexible wall, and a pump unit having, on either side of a deformable diaphragm, a pump chamber provided with an intake valve drawing from the said underground water level, and a delivery valve for delivery to the said utilization level and a reception chamber communicating with the said transmission chamber via a two-way pipeline, an incompressible transmission liquid complementally filling the said transmission and reception chambers as it flows in the said two-way position.

3,937,600
CONTROLLED STROKE ELECTRODYNAMIC LINEAR COMPRESSOR

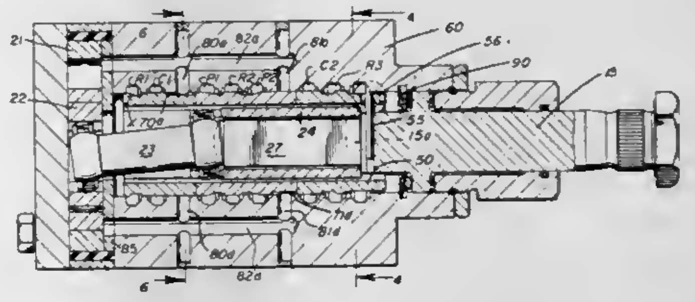
Harlan V. White, Scotia, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.
Filed May 8, 1974, Ser. No. 467,848
Int. Cl.² F04B *35/04*
U.S. Cl. 417—416 **5 Claims**

1. A compressor comprising:
a. an electrodynamic motor adapted to be driven cyclically by an AC power source;
b. a piston coupled to and adapted to be driven within a selectiively valved working cylinder by said motor substantially in synchronism with said power source;
c. enclosed volumes of gas acting as resilient means coacting with said piston and with said motor to form a mechanical resonant system having a resonant frequency approximately equal to the frequency of said AC power source; and
d. means responsive to the position of said piston for controlling the force output of said motor to provide stable operation over varying compressor load conditions by varying the resonant frequency of said resonant system, increasing said resonant frequency in response to increasing piston stroke, and decreasing said resonant frequency in response to decreasing piston stroke, said means including first means communicating said enclosed volumes of gas with each other at an intermediate stroke position of said piston through a volume whose pressure is determined by the pressure of said enclosed volumes of gas to equalize the gas pressures in said enclosed volumes during operation and second means communicating one of said enclosed volumes of gas with a reservoir of gas at higher pressure whenever said piston exceeds a prdetermined stroke position so that gas flows from said reservoir into said enclosed volume increasing the gas pressure therein and effecting an increase in the stiffness of the resilient means and thereby increasing the resonant frequency of said mechanical resonant system.



3,937,601
HYDROSTATIC CONTROLLER WHEREIN THE CONTROL VALVE SPOOL INCLUDES THE COMMUTATOR VALVE

Laurence Lockhart Miller, West Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio
Filed Mar. 22, 1974, Ser. No. 453,713
Int. Cl.² F01C *1/02;* **F04C** *1/02*
U.S. Cl. 418—61 B **8 Claims**



1. A hydrostatic controller for controlling fluid flow to a device, said controller comprising a housing, a gearset in said housing, said gearset having relatively rotatable and orbital internal and external meshing gears, the teeth of which define chambers which expand and contract upon relative orbital and rotational movement therebetween, said housing having

an inlet port and a pair of outlet ports for communication with said device, a valve spool located in said housing, said valve spool and said housing having fluid conducting passages comprising both a commutator valve means for directing fluid to said expanding pockets and for receiving fluid from said contracting pockets and a directional control valve means for directing fluid from said contracting pockets to a selected one of said outlets, said valve spool being mounted in said housing for axial and rotational movement relative thereto, an input means connected with said valve spool for effecting axial movement of said valve spool in opposite directions from a neutral position in response to rotational movement of said input means in a given direction and for thereafter effecting rotational movement of said valve spool with said input means, said commutator valve means and said directional control valve means including first and second sets of circumferentially spaced slots on the outer periphery of said valve spool, said first and second sets of said circumferentially spaced slots being axially spaced, said housing having two axially spaced sets of passages which communicate with the respective sets of slots in the valve spool and with said chambers, one set of said slots communicating fluid pressure to one set of passages in the housing and thereby communicating fluid to said expanding pockets on one direction of axial movement of said valve spool and subsequent rotation thereof, and said one set of slots receiving fluid from said one set of passages in said housing and having surfaces acting to direct fluid from said contracting pockets of said gearset on movement of said valve sleeve in the opposite direction for directing fluid to one of said outlets.

3,937,602
ENGINE HOUSINGS

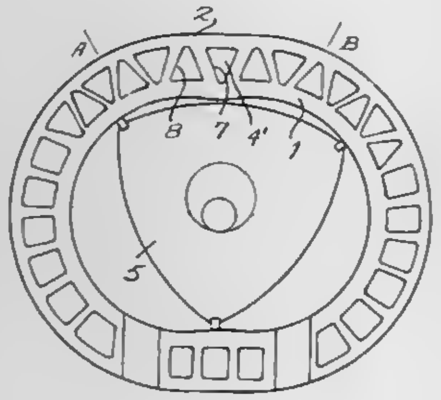
John Sharples, Sandbach, England, assignor to Rolls-Royce Motors Limited, Crewe, England

Filed Sept. 4, 1974, Ser. No. 503,083

Claims priority, application United Kingdom, Sept. 15, 1973, 43413/73

Int. Cl.^{2} F01C *21/06*

U.S. Cl. 418—83 **6 Claims**



2. In an engine housing defining a combustion chamber and having a curved internal wall surface, inner and outer walls with a plurality of coolant channels therebetween and webs separating adjacent channels, at least some of said webs extending in a non-radial direction relative to the local curved internal wall surface such that the coolant channels bounded by those webs are of a triangular section and transverse forces on the said some of said webs extending in a non-radial direction due to expansion of the inner wall are at least partly resolved in to tensile or compression components in the said some of said webs.

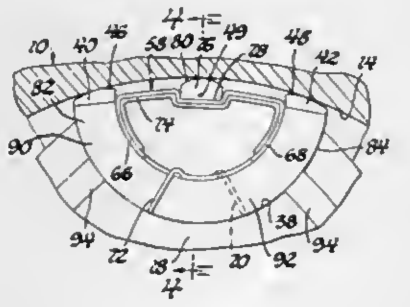
3,937,603
ROTARY MACHINE APEX SEAL

Leonard F. Kopich, Madison Heights, and Gino DiPace, Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 29, 1974, Ser. No. 501,792

Int. Cl.^{2} F01C *19/04*; F04C *27/00*

U.S. Cl. 418—117 **2 Claims**



1. In a rotary machine, a rotor housing having an internal peripheral wall and oppositely facing end walls, a rotor rotatable between said end walls relative to said peripheral wall, said rotor having apexes that remain adjacent said peripheral wall as said rotor rotates, and seal means for continuously providing sealing between said peripheral wall and each apex of said rotor as said rotor rotates comprising a pair of cylindrical main body segments mounted in a cylindrical slot at each apex of said rotor for pivotal movement in opposite directions about a centerline inside of and adjacent said peripheral wall, each said main body segment having an outer curved edge for engaging said peripheral wall and an inner edge opposite the corresponding edge of the other main body segment, an end segment at each end of each said main body segment and also having an inner edge and mounted in said cylindrical slot for pivotal movement about said centerline, said end segments and adjoining main body segments having mating interfaces angled so that pivotal movement of said end segments in the direction of said peripheral wall also causes movement of said end segments outward against the opposite end wall, and spring means retained in position at each apex on said rotor by said peripheral wall engaging the inner edges of both said main body segments and said end segments for biasing said main body segments in opposite pivotal directions to engage said outer edges with said peripheral wall and also biasing said end segments in opposite pivotal directions so that said mating interfaces wedge said end segments outward against the opposite end wall.

3,937,604
GEAR PUMP OR MOTOR WITH AXIALLY MOVABLE BEARING BLOCKS

John Sassons Taylor, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Continuation of Ser. No. 348,630, April 6, 1972, abandoned. This application Aug. 19, 1974, Ser. No. 498,841

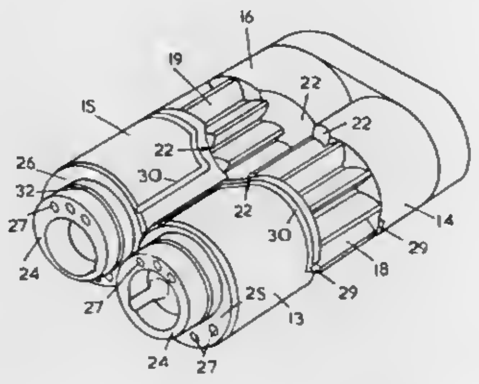
Claims priority, application United Kingdom, Apr. 15, 1972, 17491/72

Int. Cl.^{2} F01C *19/08*; F03C *3/00*; F04C *15/00*

U.S. Cl. 418—132 **4 Claims**

1. A gear pump or motor comprising a housing having a low pressure port and a high pressure port, two pairs of part cylindrical bearing blocks in the housing, said bearing blocks having axial end faces meshed gear elements having axial end faces said gear elements being journalled in the respective pairs of bearing blocks so that the axial end faces of the gear elements are engageable with adjacent end faces of the bearing blocks, one bearing block in each pair being axially movable in the housing, means for limiting the movement of the other bearing block in the pairs in response to pressure on the axial end faces of said movable bearing blocks remote from the gear elements, said blocks having recesses lying adjacent

the respective zones at which the low pressure and high pressure ports open to the inside of the housing, and further recesses in the cylindrical surfaces of the movable bearing blocks which, in conjunction with the housing alone, define passages



in communication with the high pressure recesses and extending around the cylindrical surfaces of the blocks to locations adjacent the low pressure port and thence axially of the movable bearing blocks to the remote axial end faces thereof.

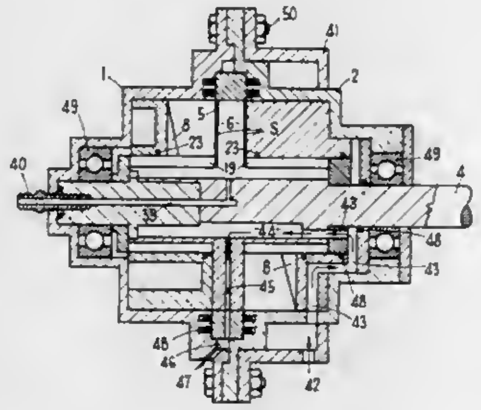
3,937,605
ROTARY PISTON MACHINE

Ladislav S. Karpisek, 121 Gannons Road, Caringbah, New South Wales, Australia

Filed Feb. 25, 1974, Ser. No. 445,348

Int. Cl.^{2} F01C *19/08*

U.S. Cl. 418—219 **12 Claims**



1. In an energy converter including a blade assembly rotatable in a substantially cylindrical chamber defined within a housing; said blade assembly comprising a shaft having a generally uniform diameter along the axial length thereof, a radially extending blade carrying disc having a diameter greater than the diameter of the substantially cylindrical chamber defined by the housing, said blade carrying disc being deposed intermediate the terminal ends of said shaft, a peripheral groove formed in the cylindrical chamber wall of the housing defining said generally cylindrical chamber, said peripheral groove being generally circumferential with respect to the blade carrying disc, said blade carrying disc extending radially into said peripheral groove, at least one slot being formed axially through said blade carrying disc and terminating radially inwardly of the periphery of said disc, a blade being slidably mounted in said slot, said blade including a generally uniform thickness and a generally rectangular configuration described by two sides, two edges and two ends, the length of said blade from one end to the other end being sized to exceed the thickness of said blade carrying disc, said generally cylindrical chamber being at least partially defined by a pair of opposed faced radially extending end walls which are complementarily profiled and formed with centrally disposed recesses for receiving the terminal ends of said shaft axially projecting from either side of said blade carrying disc, the profile of each of said chamber end walls being generally sinusoidal in configuration with equal numbers of peaks and valleys and with the distance between the chamber end walls substantially equal to the length of said blade, and the axial distance between said peaks on the respective chamber and walls being substantially equal to the thickness of said blade carrying disc, the ends of said blade being positioned at a right angle to the shaft axis and engaging the profiled surfaces of said chamber end walls, the inner edge of said blade being positioned to engage the cylindrical surface of said shaft and the outer edge of said blades engaging the cylindrical wall of the housing defining said generally cylindrical chamber, said blade being caused to reciprocate in the axial direction of the shaft in response to rotation of said shaft and the sliding engagement of said blade with the profiled chamber end walls, sealing means being provided for sealing the edges of said blade with respect to the circumferential surfaces of said shaft and of said cylindrical wall defining said generally cylindrical chamber, further sealing means being provided for sealing the sides of said blade with respect to the sides of said slot formed in said blade carrying disc, and an inlet port and an outlet port communicating with the chamber zones defined on either side of said blade carrying disc.

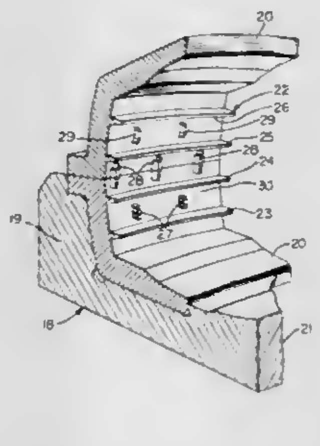
3,937,606
MOLD FOR FORMING TIRES

Marcel J. Morheng, Bertrange, Luxemburg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 3, 1971, Ser. No. 149,491

Int. Cl.^{2} B29H *5/02*

U.S. Cl. 425—28 D **2 Claims**



1. A mold in which tires are molded and vulcanized, comprising:

a. a tread ring, including configured projections integrally cast in the ring for forming correspondingly configured grooves in the tread of a tire being molded and vulcanized in the mold; and

b. a plurality of blades separately shaped apart from the ring and fastened to the ring during the process for forming the finished ring including the projections and blades, each of the blades having a uniform cross-section throughout its height measured from the ring, a non-uniform cross-section throughout the length thereof, and a shape and size sufficient to produce a correspondingly shaped recess in the tread of a vulcanized tire, each of the plurality of blades having opposing extremities which are smaller, in thickness, than a portion of the blade intermediate the extremities.

3,937,607
POST-TENSIONING ANCHORS ASSEMBLED IN COMBINATION WITH A SPACER STRIP

George W. Rodormer, Lighthouse Point, Fla., assignor to Reliable Electric Company, Franklin Park, Ill.

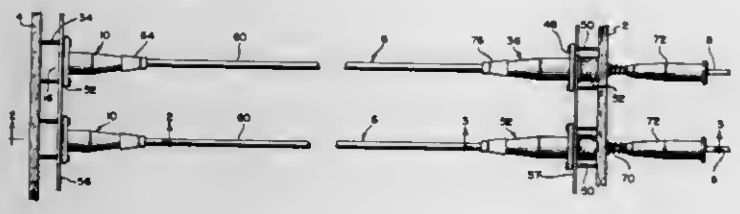
Filed July 3, 1972, Ser. No. 268,531

Int. Cl.^{2} B28B *23/04*

U.S. Cl. 425—111 **5 Claims**

1. Apparatus for casting an posttensioning concrete comprising opposed forms between which concrete is cast, a plu-

rality of tendon anchors adjacent to one of said forms, each anchor having a casing with a chuck therein for gripping a tendon, a flexible strip secured to the casings and positioning said casings at predetermined spacings and with the longitudinal axes of the respective casings being perpendicular to said strip, and means secured to said one form for positioning said strip and anchors in spaced relation to said one form and with the strip and said anchors being between said opposed forms,

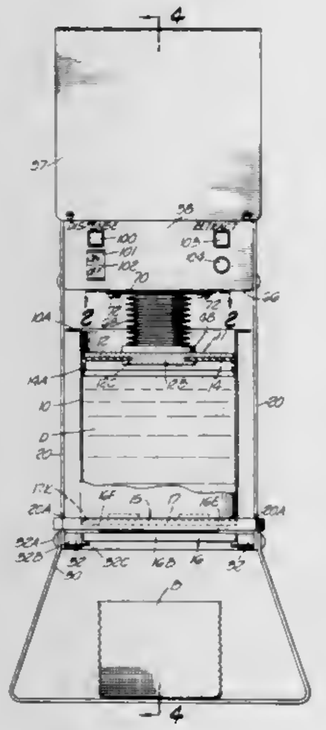


said means and said strip attaching said anchors as a group to said form to position automatically said anchors at said predetermined spacings, which predetermined spacings are substantially the same as the linear distances along said strip between said casings prior to securing said strip and casings to said form, and wherein said casing has an end flange, a thrust plate adjacent to said end flange, said strip is interposed between said thrust plate and end flange, and said securing means passes through said thrust plate and said strip.

3,937,608
MEANS AND TECHNIQUES USEFUL IN PREPARING FRENCH FRIES

David A. Farrant, and Robert Sirkin, both of Northridge, Calif., assignors to The Scionics Corporation, Culver City, Calif.

Filed Apr. 29, 1969, Ser. No. 820,091
Int. Cl.² A21C *11/16*
U.S. Cl. 425—159 **28 Claims**

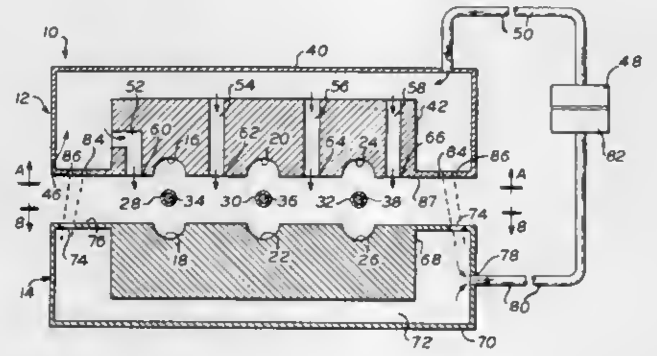


1. In an extruding machine of the character described; a supporting structure including a material storage unit for material to be dispensed; a plunger assembly movably mounted within said material storage unit for movement in a dispensing direction and also in a retract direction opposite to said dispensing direction under the influence of compressive forces developed in the material during prior movement in said dispensing direction; brake means normally maintaining said assembly in stationary condition; means for disabling said brake means; and power operated means for moving said plunger assembly and means for enabling said brake means after said assembly moves a predetermined distance in said retract direction sufficient to allow said compressive forces to be reduced to substantially zero.

3,937,609
METHOD AND APPARATUS FOR MOLDING MATERIALS

Leonard B. Ryder, 5 Sharon Drive, Whippany, N.J. 07981

Filed Aug. 20, 1974, Ser. No. 498,959
Int. Cl.² B29C *1/00*
U.S. Cl. 425—210 **12 Claims**



1. An apparatus for molding materials into a molded form comprising, in combination,

a. a first mold section and a second mold section, each section having a molding surface adapted to enclose and contact the material to be molded, said mold sections being in a normally spaced apart position when not cooperating to mold a material;

b. first casing means operatively connected to one of said mold sections and forming a hollow chamber surrounding said molding surface in said one mold section,

c. slot means in said first casing means surrounding said molding surface and communicating with said chamber,

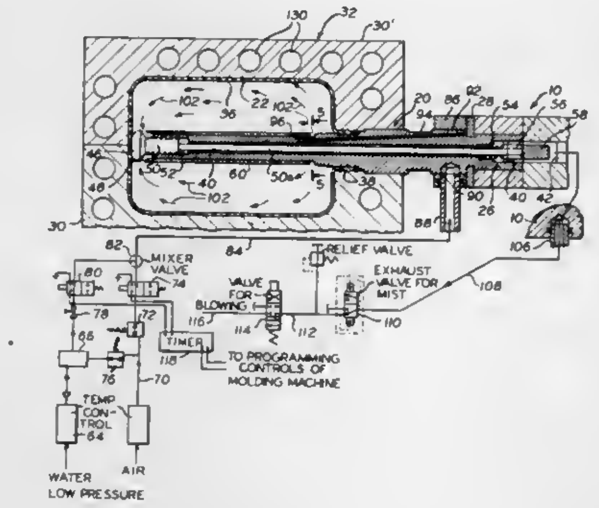
d. means to force dry air through said chamber and out of said slot means at a velocity sufficient to maintain dry air curtain around said mold surfaces, and

e. means to continuously direct dry air into the area of said molding surfaces whereby a dehumidified gas field is maintained in contact with said molding surfaces.

3,937,610
MIST COOLING OF INSIDE OF BLOWN PLASTIC ARTICLES

John J. Farrell, Green Brook, N.J., assignor to Farrell Patent Company, Green Brook, N.J.

Filed Dec. 21, 1973, Ser. No. 427,334
Int. Cl.² B29D *23/02, 23/03*
U.S. Cl. 425—242 B **14 Claims**



1. Blow molding apparatus for making plastic articles by blowing a parison on a core rod including in combination a blow mold having a cavity, a core rod that is coated with a parison and that extends into the cavity, a support for the core rod and with which the core rod has relative movement with respect to the blow mold to carry the plastic on the core rod to the blow mold, means for blowing the plastic to form a blown article comprising a blow air inlet passage in the core rod, means for circulating a mist of liquid globules carried by a gas stream through the core rod and into contact with the inside surface of the plastic that is blown in the blow mold cavity, and a source from which said mist is supplied, characterized by the means for circulating the mist including inlet and exhaust passages through the core rod having openings from the core rod into the space enclosed by the article blown in the blow mold, the respective openings of the inlet and exhaust passages being located near opposite ends of the cavity to cause circulation of the mist in the space enclosed by an article blown on the core rod, said mist exhaust passage further comprising the blow air inlet passage for blow molding.

3,937,611

PROCESS FOR THE LEVEL DYEING OF WOOL

Hermann Fuchs, and Hermann-Heinz Konrad, both of Kelkheim, Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

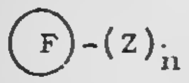
Filed Sept. 6, 1973, Ser. No. 394,800

Claims priority, application Germany, Sept. 8, 1972, 2244089

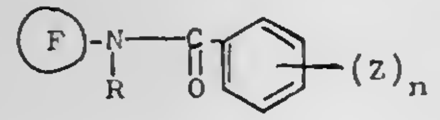
Int. Cl.² C09B *1/00, 5/62;* **D06P** *3/14*

U.S. Cl. 8—39 R **3 Claims**

1. A process for the level dyeing of wool, having an anti-felting finish consisting of a coating layer of polyimine or polyamine resin, with reactive dyestuffs, which process comprises carrying out the dyeing according to a graduated temperature exhaustion method from an aqueous liquor using one or several reactive dyestuffs of the formulae

(I) 

and/or

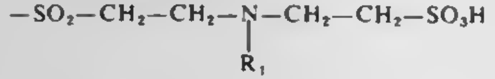
(II) 

in which F stands for an azo or anthraquinone dyestuff radical having at least 2 sulfonic acid groups linked to an aromatic radical of the chromophore, Z stands for a reactive group of the following constitution:

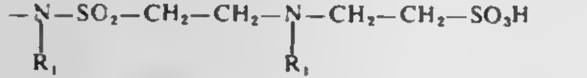
$-SO_2-CH_2-CH_2O-SO_3H$ (1)

$-SO_2-CH_2-CH_2-Cl$ (2)

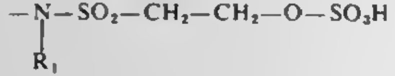
$-SO_2-CH=CH_2$ (3)



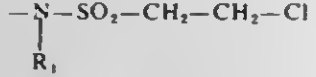
$-SO_2-CH_2-CH_2-N(R_1)-CH_2-CH_2-SO_3H$ (4)



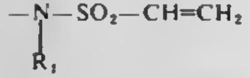
$-N(R_1)-SO_2-CH_2-CH_2-N(R_1)-CH_2-CH_2-SO_3H$ (5)



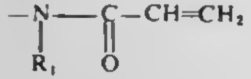
$-N(R_1)-SO_2-CH_2-CH_2-O-SO_3H$ (6)



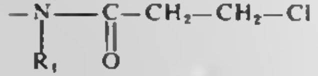
$-N(R_1)-SO_2-CH_2-CH_2-Cl$ (7)



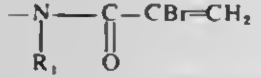
$-N(R_1)-SO_2-CH=CH_2$ (8)



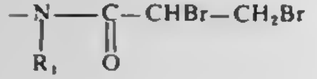
$-N(R_1)-C(=O)-CH=CH_2$ (9)



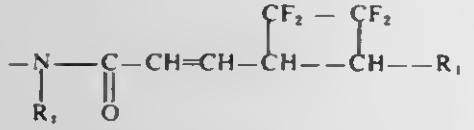
$-N(R_1)-C(=O)-CH_2-CH_2-Cl$ (10)



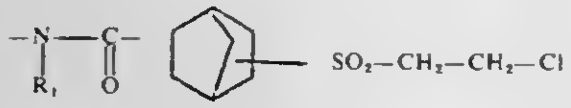
$-N(R_1)-C(=O)-CBr=CH_2$ (11)



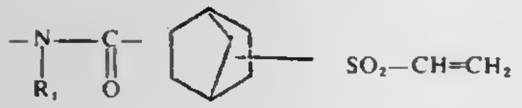
$-N(R_1)-C(=O)-CHBr-CH_2Br$ (12)



$-N(R_1)-C(=O)-CH=CH-\underset{}{CH}(CF_2-CF_2)CH-R_1$ (13)



(14)



(15)

n is 1 or 2, and R and R_1 each stands for hydrogen atoms or lower alkyl radicals, in the absence of adjuvants and/or without any pretreatment of the material to be dyed.

3,937,612

DIALKYLPHOSPHONOACETYLUREA COMPOUNDS AND PROCESSES FOR PREPARATION AND USE FOR FLAMEPROOFING

Johann Schwarzer, Augsburg; Peter Meins, Haan Rhineland, and Kurt Voparil, Leverkusen, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

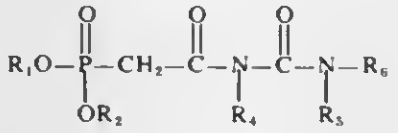
Filed Dec. 26, 1974, Ser. No. 536,305

Claims priority, application Germany, Jan. 5, 1974, 2400393

Int. Cl.² D06M *13/28*

U.S. Cl. 8—186 **8 Claims**

1. A compound having the formula



$$R_1O-\overset{O}{\overset{\|}{P}}(OR_2)-CH_2-\overset{O}{\overset{\|}{C}}-N(R_4)-\overset{O}{\overset{\|}{C}}-N(R_5)-R_6$$

wherein R_1 and R_2 are each the same alkyl having 1 to 4 carbon atoms,

R_4, R_5 and R_6 are each selected from the group consisting of alkyl having 1 to 4 carbon atoms, hydroxymethyl and alkoxymethyl having 2 to 5 carbon atoms,

with the proviso that at least one of R_4, R_5 and R_6 is selected from the group consisting of hydroxymethyl and alkoxymethyl having 2 to 5 carbon atoms, and

wherein R_4 and R_5 can together form an alkylene chain having 2 to 3 carbon atoms.

3,937,613

DEVICE FOR THE DETERMINATION OF CHLORINE IN THE WATER OF SWIMMING POOLS

Jan Rosicky, Lindfield, Australia, assignor to Alpha Chemicals (Australia) Pty. Limited, Australia

Filed Apr. 4, 1975, Ser. No. 565,297

Int. Cl.² G01N *31/22, 33/18*

U.S. Cl. 23—253 TP **9 Claims**

1. A device for the determination of chlorine in the water of swimming pools comprising a substrate suitably shaped for immersion into a sample of the water to be tested carrying on at least a portion of its surface a layer of a composition comprising an active reagent, selected from the group consisting of para-ethyl-oxyethylamino-aniline and the salts thereof, dissolved or dispersed in a polypropylene-glycol ethoxylate.

3,937,614

APPARATUS FOR MONITORING THE RATE OF A CHEMICAL REACTION

Lester A. Sodickson, Newton, Mass., and Franklin Lim, Richmond, Va., assignors to Damon Corporation, Needham Heights, Mass.

Division of Ser. No. 243,028, April 11, 1972, Pat. No. 3,844,717. This application Aug. 28, 1974, Ser. No. 501,133

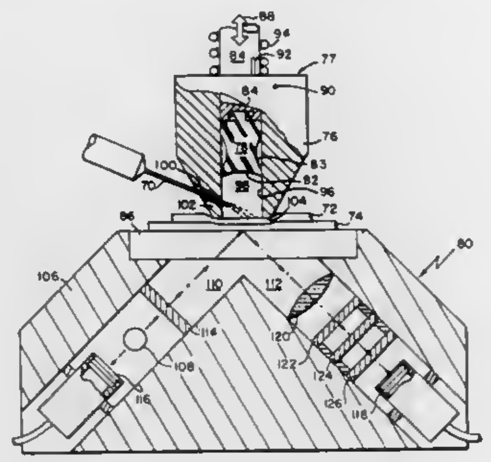
Int. Cl.² G01N *21/38, 21/48*

U.S. Cl. 23—253 R **3 Claims**

1. An instrument for analyzing liquid material carried in an absorbent article by monitoring a reactant formed from the liquid material in a reaction pad, said instrument comprising:

- A. a platen member of material transparent to selected radiation and having a first surface for supporting the pad during pressing.
- B. pressure means having a pressing surface disposed on a first side of said platen member for compressing the absorbent article between said pressing surface and said first surface of said platen member thereby to press the liquid material from the absorbent article to the reaction pad, and

- c. a fluorometer;
  1. disposed on the opposite, second side of said platen member,
  2. having an optical source for illuminating said first surface through said platen member with incident radiation, and



  3. having a fluorometric detector in optical alignment with said platen member first surface and said optical source for receiving, through said platen member, radiation emitted adjacent said first surface to response to said incident radiation, whereby analysis of the liquid material proceeds as reactant is developed on said reaction pad.

3,937,615

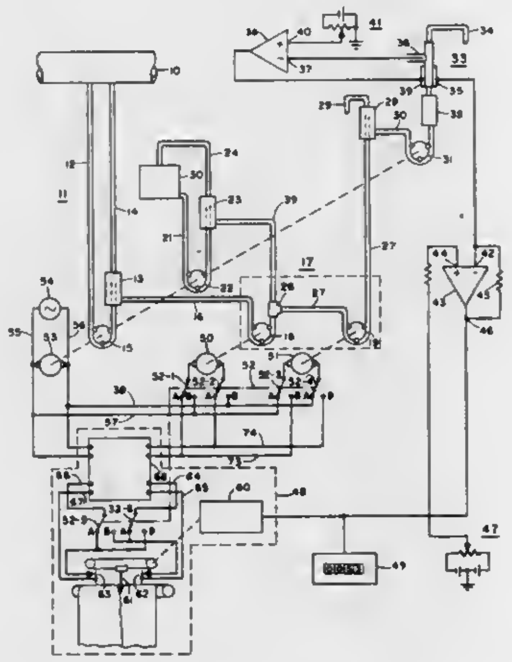
AUTO-RANGING GLUCOSE MEASURING SYSTEM

Peter J. Clack, Doylestown, and George R. Moreland, Green Lane, both of Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed Dec. 17, 1974, Ser. No. 533,553

Int. Cl.² G01N *27/52, 1/14*

U.S. Cl. 23—253 R **12 Claims**



1. A system for measuring a characteristic of a solution in which the relationship between a measured variable and the characteristic includes linear and non-linear portions and in which it is desired that the measurement occur in said linear portion comprising:

- a source of said solution the characteristic of which is to be measured,
- modifying means having an inlet to receive said solution for modifying the characteristic of said solution and an outlet,
- measuring means coupled to the output of said modifying means for producing an electric signal output responsive to the characteristic of said solution,
- a settable upper limit device for said electrical signal,
- a settable lower limit device for said electric signal, the difference between said upper and lower limits defining a usable span representing said linear portion of said relationship,
- means responsive to said upper and lower limit devices to vary said mdoifying means to maintain said electric signal representative of the characteristic of said solution within said linear portion of said relation, and
- indicating means associated with said responsive means for indicating the extent that said characteristic is modified by said modifying means whereby the magnitude of said characteristic of said solution may be determined jointly from said measuring means and said indicating means.

3,937,616

APPARATUS FOR THE MANUFACTURE OF PHOSPHOROUS ACID

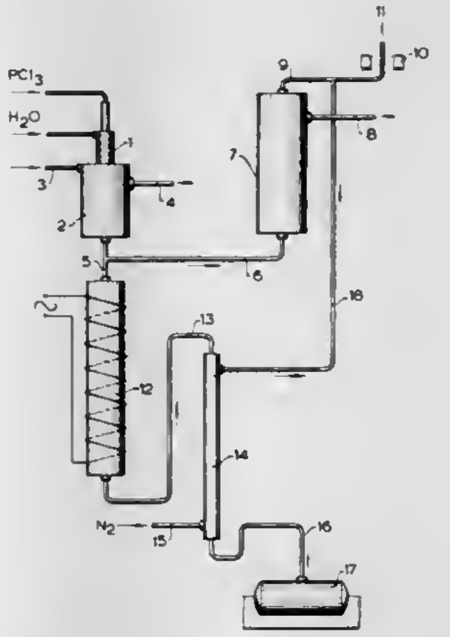
Joseph Cremer, Hermulheim, and Willi Martin, Bruhl, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 319,464, Dec. 29, 1972, Pat. No. 3,859,419. This application Oct. 29, 1974, Ser. No. 518,485

Claims priority, application Germany, Jan. 7, 1972, 2200653

Int. Cl.² C01B *25/163;* **B01J** *1/00*

U.S. Cl. 23—263 **2 Claims**



1. In an apparatus for producing phosphorous acid from PCl_3 and water including a reactor (2) having a two-opening nozzle (1) mounted thereon, of which the two openings are preferably arranged coaxially with respect to one another and having an orifice relief opening into the reactor (2) for atomizing the PCl_3 thereinto; a steam inlet (4) opening into the reactor (2) laterally with respect thereto for introducing steam thereinto; a conduit (5) connecting the downstream end of reactor (2) with an evaporator (12) and conveying liquid reaction product coming from reactor (2) to evaporator (12) for converting the liquid product to a melt, therein; a further conduit (6) running from the conduit (5) to a separator (7) and delivering escape gas loaded with unreacted, PCl_3 from evaporator (12) to separator (7) of which the upstream end terminates in an off-gas outlet (9) delivering off-gas to a HCl-absorption system; the improvement according to which nozzle (1) is provided with an H_2O-inlet permitting PCl_3 and H_2O to be stream-sprayed jointly into the reactor (2); reactor (2) is provided with an additional steam inlet (3) opening against the orifice relief of nozzle (1) for blowing steam into reactor (2) a stripping column (14) is provided; evaporator

(12) is provided with a conduit (13) running from, and connecting, its downstream end to the upstream end of the stripping column (14), for conveying the melt from evaporator (12) to the stripping column (14); the stripping column (14) is provided at its downstream end with a gas inlet (15) opening thereinto for blowing inert gas through the melt therein; and further provided at its downstream end with an effluent outlet (16) for conveying the melt to a crystallizer (17); and connected to off-gas outlet (11) by means of a conduit (18) running from the upstream end of column (14) to off-gas outlet (11) at a place between the separator (7) and a photoelectric safety device (10) monitoring and inspecting the clearness of the off-gas.

3,937,617
CATALYTIC CONVERTER FOR AUTOMOTIVE INTERNAL COMBUSTION ENGINE

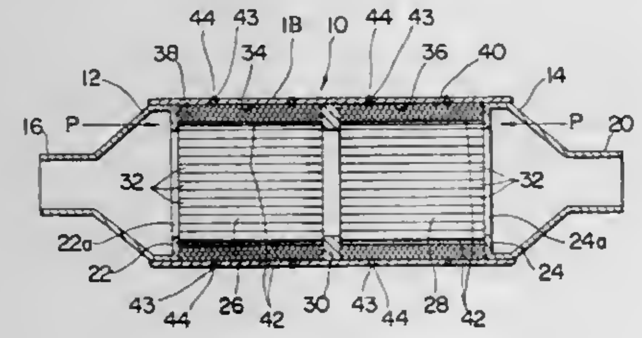
Hiroshi Yaguchi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed July 10, 1974, Ser. No. 487,367

Claims priority, application Japan, July 11, 1973, 48-82287[U]

Int. Cl.² B01J *8/00*; F01N *3/15*

U.S. Cl. 23—288 FC **6 Claims**



1. In a catalytic converter of the type having a metallic casing; a unitary, solid skeletal catalytic element disposed within said casing; and metallic resilient means disposed between said catalytic element and said metallic casing for positioning said catalytic element and for absorbing mechanical shocks; the improvement comprising:

means defining a plurality of openings through a lateral wall of said metallic casing; and

a plurality of plugs of weld metal, each of said plugs formed in a respective one of said openings and effective to bond said metallic resilient means with said metallic casing.

3,937,618
METHOD FOR PRODUCING BI-METAL OBJECT AND PRODUCT THEREOF

Kathleen E. Kirkham, Drexel Hill, Pa., assignor to Franklin Mint Corporation, Franklin Center, Pa.

Filed July 9, 1973, Ser. No. 377,378

Int. Cl.² B22F *1/00, 7/00*

U.S. Cl. 29—182.2 **17 Claims**

1. A method of making a bi-metal object having a base and at least one area raised in relief on said base, said relief being formed of a first metal and said base being formed of a second metal with a sharp border between the two metals, the steps comprising:

a. providing a first die cavity which is the negative of the relief to be formed;

b. filling said first die cavity with a powder of said first metal;

c. compacting said first metal powder in said first die cavity to form a cohesive relief compact and removing any excess metal from the edges of said compact;

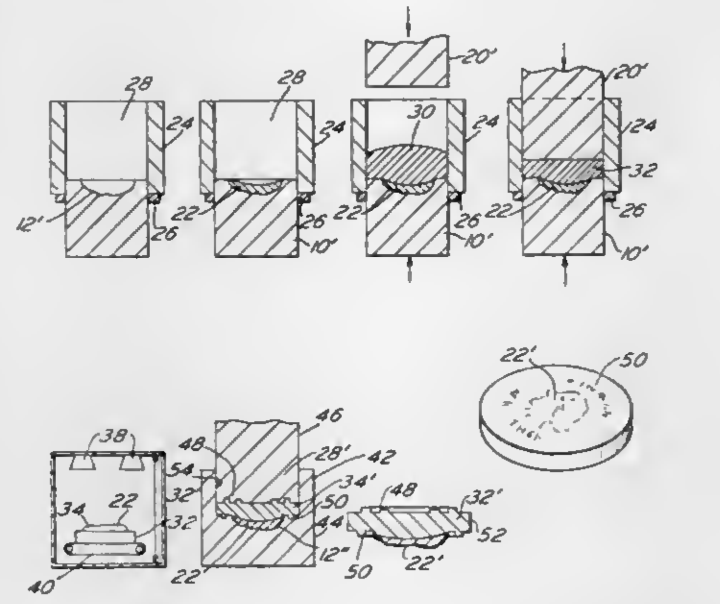
d. providing a phantom die area which is the negative of said base and having a second die cavity identical to said first die cavity, said second die cavity being positioned at the bottom of said phantom die area, and said relief compact being seated within said second die cavity;

e. filling the remainder of said second die cavity above said relief compact and partially filling said phantom die area with a powder of said second metal;

f. compacting said second metal powder to form a composite with said relief compact;

g. sintering said composite at a temperature and for a time sufficient to produce a durable bi-metal object, but insufficient to produce any significant dimensional change in said composite; and

h. striking the final design of said base in a coining press, the bottom die of said press having a coining die cavity identical in configuration and position to said second die cavity



3,937,619
TERNARY BORIDE PRODUCT AND PROCESS

Edward V. Clougherty, West Roxbury, Mass., assignor to Manlabs, Incorporated, Cambridge, Mass.

Filed Sept. 27, 1973, Ser. No. 401,291

Int. Cl.² B22F *3/14*; C22C *1/05*

U.S. Cl. 29—182.5 **9 Claims**

1. A tough, hard, hot pressed shaped body containing boron and at least two of the three elements, titanium, zirconium, hafnium, hot pressed from a mixture of powdered metal and a powdered diboride to form substantial quantities of a ternary monoboride of said elements and having a percentage composition corresponding to the formula

$$(M1, M2)_x B_2$$

where M1 is titanium, zirconium or hafnium and M2 is a different metal of the group of titanium, zirconium and hafnium, and where x is between about 1.25 and about 2.5.

3,937,620
PROCESS AND APPARATUS FOR GASIFYING COAL

Paul Rudolph, Bad Homburg; Hans Kupfer, Frankfurt am Main, and Werner Schmidt, Frankfurt am Main-Sud, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

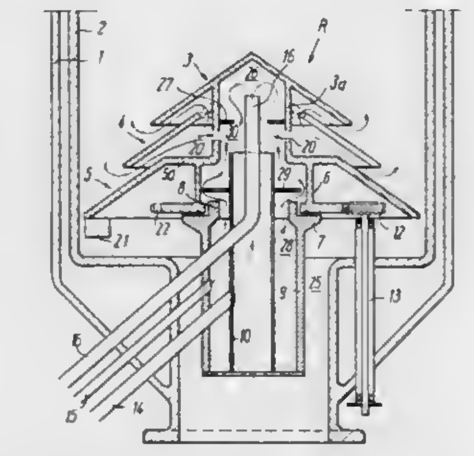
Filed Aug. 20, 1974, Ser. No. 499,095

Claims priority, application Germany, Sept. 18, 1973, 2346833

Int. Cl.² C10J *3/16, 3/42*

U.S. Cl. 48—63 **11 Claims**

1. Reactor for continuously gasifying coal under elevated pressures and temperatures with, as gasifying agents, oxygen and at least one oxygen-free gasifying agent such as water vapor or carbon dioxide, said reactor comprising a rotary grate rotatably mounted on bearing means, said grate distributing said gasifying agents into said reactor, said rotary grate containing a mixing chamber having openings to release a mixture of said gasifying agents into the coal charge to be gasified, conduit means for supplying a mixture of oxygen and an oxygen-free gasifying agent to said mixing chamber, a lower chamber in said grate below and communicating with said mixing chamber, said lower chamber being adjacent the bearing means for said rotary grate, and further conduit means for supplying an oxygen-free gasifying agent to said lower chamber.



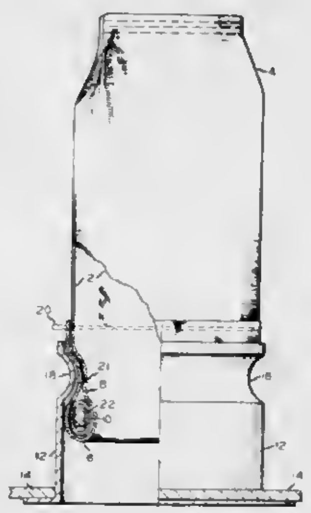
3,937,621
FILTER BAG CUFF

Mark L. Gravley, Oregon, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 25, 1974, Ser. No. 526,943

Int. Cl.² B01D *46/02*; D05B *97/00*

U.S. Cl. 55—377 **14 Claims**



12. A filter bag comprising an essentially tubular, elongated fabric body, said fabric body having a first and a second end, said first end being closed and said second end being open, said second end terminating in a cuff, said cuff having disposed therein a first ring member and a second ring member, said cuff having been formed by emplacing said first ring member around said bag and turning back the edge of said second end over said first ring member, thereby forming a cuff, emplacing said second ring member around said bag above said cuff-enclosed first ring member, turning back said cuff having said first ring member disposed therein over said second ring member, and stitiching said cuff to said bag between said first and second ring members.

3,937,622
AIR PURIFIER SYSTEM

William J. Hewitt, Monroeville; Frank W. Shirey, Irwin, and Mortimer D. Wilson, Turtle Creek, all of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Sept. 17, 1973, Ser. No. 397,703

Int. Cl. B01d *53/04*

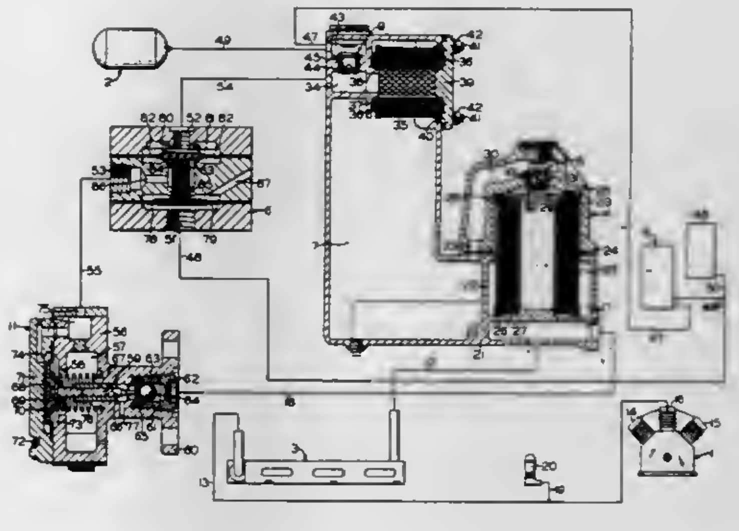
U.S. Cl. 55—163 **16 Claims**

1. Cleansing apparatus for a filter unit of the desiccant type disposed in a conduit connecting a fluid compressor to a storage reservoir, said cleansing apparatus comprising:

a. a purge reservoir charged with fluid under pressure delivered by the fluid compressor, wherein the improvement comprises:

b. a fluid pressure operated combined compressor unloading and backflow vent valve device operable by fluid under pressure from said purge reservoir to concurrently effect a release of fluid under pressure from the conduit and a supply of fluid under pressure from said purge reservoir through the filter unit to atmosphere in a direction opposite to the normal direction of flow of fluid under pressure therethrough to remove contaminants from and thus reactivate the desiccant in said filter unit until the pressure in the purge reservoir is reduced to a chosen low pressure, and

c. fluid pressure operated means effective upon the pressure in the storage reservoir reaching a chosen value to cause the flow of fluid under pressure from said purge reservoir to said fluid pressure operated combined compressor unloading and backflow vent valve device to effect operation thereof.



3,937,623
METHOD OF MAKING GLASS TUBES

Vasily Porfirovich Kononko, ulitsa Semashko, 21, kv. 43, Kiev; Konstantin Timofeevich Bondarev, ulitsa Nizhnyaya Pervomaiskaya, 33, kv. 171, Moscow; Alexandr Alexandrovich Krivokon, Bereznyakovksaya ulitsa, 14, kv. 83, Kiev; Nikolai Nikiforovich Kovshar, Steklozavodskaya ulitsa, 8, kv. 25, Kievskaya oblast, poselok Bucha; Ljudmila Mikhailovna Ivanova, Bereznyakovskaya ulitsa, 14, kv. 18, Kiev; Elena Gavrilovna Frolova, Leningradskoe shosse, 118, korpus 1, kv. 108, Moscow; Nikolai Antonovich Shestak, ulitsa Serafimovicha, 7, kv. 127, Kiev, and Nikolai Leontievich Shevchenko, Steklozavodskaya ulitsa, 6, kv. 17, Kievskaya oblast, poselok Bucha, all of U.S.S.R.

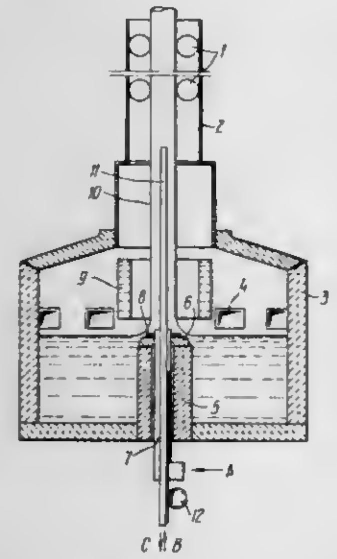
Filed July 25, 1973, Ser. No. 382,560

Int. Cl.² C03B *15/14*

U.S. Cl. 65—88 **6 Claims**

1. A method of making a glass tube comprising the following steps: the upright drawing of a melt from the free surface of the melt; supplying air to the inside of the tube being made; imparting geometric form to said tube under the effect of said air which is heated in a forming section; effecting a continuous vertical transfer of the tube being formed; annealing the tube being formed by causing a movement of cooling fluid in an annealing section spaced above the forming section for effect-

ing concurrent cooling of said tube from the inside in the annealing section and subsequent cooling of the tube to an ambient temperature in the course of continuous vertical movement of the said tube.



3,937,624

METHOD FOR PRODUCING A GLASS FLOW OF HIGH HOMOGENEITY IN A TANK FURNACE AND AN ARRANGEMENT FOR CARRYING OUT THE METHOD

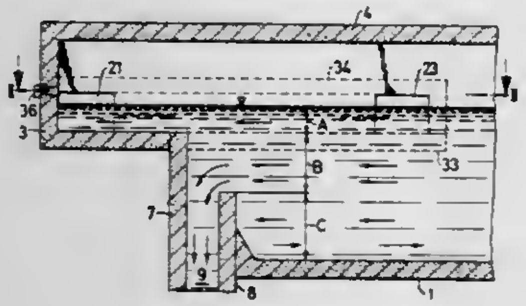
Xaver Heitzer, Porz, near Cologne, and Robert Bourggraff, Cologne, both of Germany, assignors to Erste Deutsche Floatglas GmbH. & Co. OHG, Germany

Filed Dec. 5, 1974, Ser. No. 529,845

Claims priority, application Germany, Dec. 17, 1973, 2362565

Int. Cl.^{2} C03B *5/26*

U.S. Cl. 65—135 **20 Claims**



1. A method for producing a glass flow of high homogeneity in a tank furnace in which the surface layer of the glass melt is separated from the glass flow intended for processing, characterized in that within the working part of the tank, which contains the refined glass, at a removal point spaced upstream from the downstream end wall of the tank, a selected layer of glass underneath the surface layers and above the bottom layers is drawn off, at least in part, and supplied to the processing station, while said surface layers above said selected layer are allowed to pass on downstream beyond said removal point and are returned from a point in the tank downstream of said removal point to a point upstream from said removal point, said bottom layers below said selected layer also being returned to a point upstream from said removal point.

14. A glass melt tank for effecting the selected separation of a layer of molten glass located intermediate the top and bottom surface layers of the melt tank, said melt tank comprising: an upstream end away from which glass is intended to flow and a downstream end towards which glass is intended to flow; an upper end wall at said downstream end, against which the upper layers of glass flow as they flow downstream in said tank; a pair of spaced side walls and a bottom; a removal duct leading out of the melt tank for conducting the flow of molten glass to a processing station, said removal duct leading out of the melt tank for conducting the flow of molten glass to a processing station, said removal duct including an opening into said tank whose cross-section in its vertical extent is substantially less than the vertical extent of the normal glass bath level for the tank and whose cross-section is arranged underneath the surface layers of the glass melt to be eliminated and above the bottom layers of the glass melt to be eliminated; and said removal duct opening into said tank being spaced at a horizontal distance upstream from said upper end wall of the glass melting tank such that the surface layer glass currents in the tank run substantially in the longitudinal flow direction of the melting tank as they pass over said opening of said duct.

3,937,625

RADIO FREQUENCY PREPARATION OF PURE GLASS

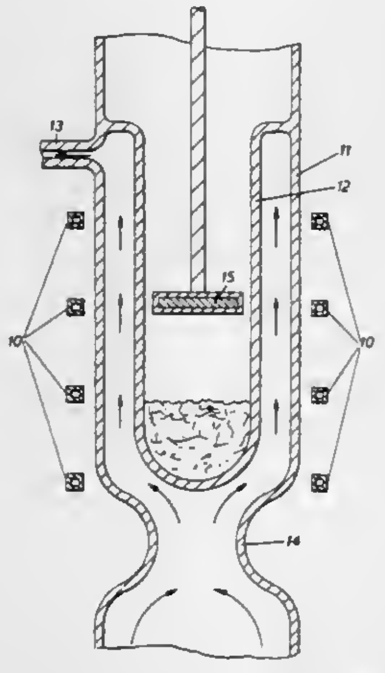
Clive Edward Ernest Stewart, Bishops Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 2, 1974, Ser. No. 494,155

Claims priority, application United Kingdom, Aug. 30, 1973, 40890/73

Int. Cl.^{2} C03B *5/16, 5/22, 5/02*

U.S. Cl. 65—136 **4 Claims**



1. A method of preparing glass including placing glass batch materials in a crucible, inserting an encapsulated contamination-free susceptor into the crucible, applying a radio frequency field to heat the susceptor to melt the glass, removing the susceptor and applying said radio frequency field to further heat the melt for fining and homogenizing the glass, and cooling the crucible with liquid to provide a lower temperature than the melt to prevent the melt from wetting the crucible.

3,937,626

AGENTS FOR REGULATING PLANT METABOLISM

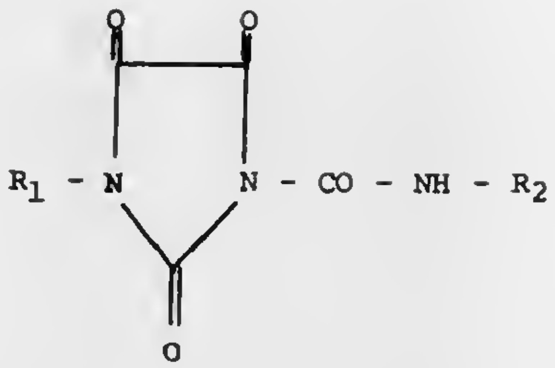
Toni Barlocher, Oberwil, Switzerland, and Edith Ebert, Lorrach-Stetten, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 288,640, Sept. 13, 1972, Pat. No. 3,818,034. This application Apr. 3, 1974, Ser. No. 457,523

Int. Cl.^{2} A01N *9/22*

U.S. Cl. 71—92 **6 Claims**

1. A composition for regulating plant metabolism in the nature of promoting fruit abscission comprising as active ingredient, an effective non-phytotoxic amount of a compound of the formula



wherein R_1 represents alkyl or alkenyl each of up to 4 carbon atoms or phenyl optionally substituted by chlorine, nitro or alkyl of 1 to 4 carbon atoms, and R_2 represents alkyl or alkenyl each of up to 4 carbon atoms, together with a suitable inert carrier therefor.

3,937,627

PERCHLORYLPHENYLUREA HERBICIDE

Kurt H. G. Pilgram, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 381,936, July 23, 1973, abandoned. This application Feb. 19, 1975, Ser. No. 551,172

Int. Cl.^{2} A01N *9/20*

U.S. Cl. 71—120 **4 Claims**

1. 1-methoxy-1-methyl-3-(3-perchlorylphenyl)-urea.

3,937,628

SOLID-SOLUTION STRENGTHENED AUSTENITIC ALLOYS

Rikizo Watanabe, and Yositaka Chiba, both of Yasugi, Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Apr. 3, 1974, Ser. No. 457,501

Claims priority, application Japan, May 30, 1973, 48-65766

Int. Cl.^{2} C22C *19/00*

U.S. Cl. 75—134 F **10 Claims**

1. A solid-solution strengthened austenitic alloy having excellent high-temperature strength consisting essentially of, in weight percent, no more than 0.1 % carbon, from 4 (%C) to 1 % titanium and/or niobium (alone or in combination), from 25 % to 55 % cobalt, from 10 % to 22 % chromium, from 13 % to 25 % tungsten, wherein the amount of 1/5 (%Co) + (%Cr) + (%W) is in the range from 40 % to 44 %, and the balance nickel except for impurities, the amount of carbon being sufficient to form MC type carbides with the titanium and niobium.

3,937,629

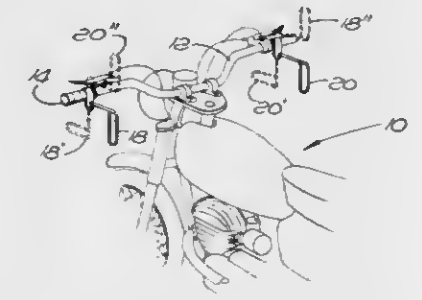
HANDLEBAR EXTENDER

Paul A. Hamasaka, 2322 Amherst Ave., Los Angeles, Calif. 90064

Filed Sept. 23, 1974, Ser. No. 508,382

Int. Cl.^{2} B62K *21/12*

U.S. Cl. 74—551.8 **4 Claims**



1. A handlebar extender, comprising as a single integral unit a bracket formed to rotatably encircle said handlebar at an end thereof to define a pivot plane thereabout, and an extension member comprising an elongate rod rigidly joined to said bracket, said rod being bent to form a first portion projecting outwardly from said bracket in said pivot plane and a return portion bent about 180° and continued as a substantially parallel portion to contact said first portion on one side thereof to form a hand grip, said extender further comprising means for securing said bracket against rotatable movement on said handlebar.

3,937,630

METHOD FOR PRODUCING IRON-BASE SINTERED ALLOYS WITH HIGH DENSITY

Takashi Kimura; Azusa Majima, and Hiroshi Hamamoto, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan

Continuation-in-part of Ser. No. 142,556, May 12, 1971, abandoned. This application June 11, 1973, Ser. No. 369,123

Claims priority, application Japan, May 12, 1970, 45-40820

Int. Cl.^{2} B22F *1/00*

U.S. Cl. 75—200 **7 Claims**

1. A method for producing a sintered product of iron-base alloy having a high density and high hardness consisting essentially of:

placing a mixture of a particulate material selected from the group consisting of mixed particles of iron and carbon, mixed particles of iron and other metal, mixed particles of iron, other metal and carbon, and particles of an iron-base alloy in a suitable mold, wherein said other metal is selected from the group consisting of manganese, tungsten, molybdenum, chromium, vanadium, niobium and tantalum,

heating said mixture to a temperature such that an alloy consisting of said particulate mixture will form a coexistent liquid and solid phase,

maintaining said temperature for a period sufficient to cause sintering,

cooling said sintered product in said mold, and thereafter removing said product in solid phase from the mold.

3,937,631

ELECTROPHOTOGRAPHIC MEMBERS INCLUDING POLYVINYLCARBAZOLES AND PLASTICIZERS THEREFORE

Wolfgang O. Eisenhut, Woodside, Calif., assignor to SCM Corporation, New York, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,440

Int. Cl.^{2} G03G *5/04, 5/06*

U.S. Cl. 96—1.5 **17 Claims**

1. In a multilayer electrophotographic member for producing an electrostatic latent charge image thereon:

a layer of photoconductive material;

a layer of organic polymeric material overlying said photoconductive layer and having the ability to transport electrical charge carriers therethrough, said layer of organic polymeric material having incorporated therein a plasticizer material selected from the group consisting of oligomers of phenylether, and derivatives of phenylether with at least one aryl substituent attached to the aromatic nuclei, the plasticizer being present in a concentration within the range of 1 to 100 parts of plasticizer per hundred parts of the organic polymeric material by weight.

3,937,632

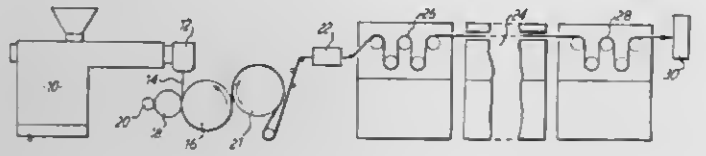
METHOD FOR BRIGHTENING AND WHITENING CLAYS UTILIZING SODIUM BOROHYDRIDE

Alan J. Nott, Tennille, Ga., assignor to Anglo-American Clays Corporation, Sandersville, Ga.

Filed June 11, 1974, Ser. No. 478,352

Int. Cl.^{2} C04B *33/13;* C01F *1/00*

U.S. Cl. 106—72 **5 Claims**



1. A method for brightening and whitening a kaolin clay comprising in sequence the steps of:

forming said clay into an aqueous slurry;

mixing said aqueous slurry with a solution of sodium borohydride and sodium hydroxide, while maintaining a pH of above 7.0 and up to about 10.0;

contacting said slurry with gaseous sulphur dioxide in sufficient quantities to bring said slurry to a pH of between 6.0 and 7.0; said sulphur dioxide reacting with said sodium borohydride and sodium hydroxide to yield sodium hydrosulfite, and the quantities of said sodium borohydride and said sodium hydroxide being sufficient to yield a reacted equivalent of between 2 and 12 lbs/ton of slurry, of sodium hydrosulfite;

adjusting the pH of the slurry to between 2.5 and 4.0, to facilitate said leach reaction;

the temperature of the system being maintained within the range of 25° to 45°C; and

washing the clay free of residual leaching agents and reaction products.

3,937,633

USE OF RADIATION-INDUCED POLYMERS IN CEMENT SLURRIES

Bruce L. Knight; John S. Rhudy, and William B. Gogarty, all of Littleton, Colo., assignors to Hercules, Incorporated, Wilmington, Del.

Division of Ser. No. 303,736, Nov. 6, 1972, Pat. No. 3,877,525. This application Nov. 21, 1973, Ser. No. 418,158

Int. Cl.^{2} C04B *7/02*

U.S. Cl. 106—90 **17 Claims**

1. A cement slurry comprised of a water phase containing a polymer obtained as a product of high energy ionization radiation polymerization of at least one monomer selected from the group consisting of acrylamide and methacrylamide and at least one monomer selected from the group consisting of acrylic acid, methacrylic acid, alkali metal acrylate, and alkali metal methacrylate in concentrations of about 10% to about 60% by weight dissolved monomer in an aqueous medium, the radiation intensity being about 250 to about 1,000,000 rads and the radiation dose being about 500 rads to about 300,000 rads.

3,937,634

OVEN CLEANING PROCESS

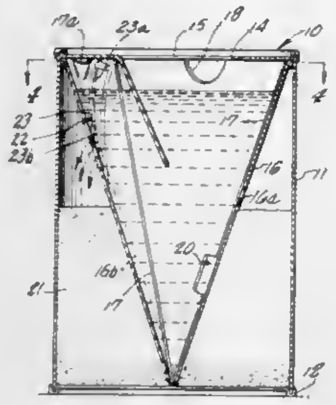
Alan D. Brite, 114 S. Canyon View Road, Los Angeles, Calif. 90049

Continuation-in-part of Ser. No. 297,720, Oct. 16, 1972, abandoned. This application May 3, 1974, Ser. No. 466,786

Int. Cl.^{2} B08B *9/00*

U.S. Cl. 134—2 **7 Claims**

1. A method for cleaning ovens and the like comprising the steps of adding water to a container of a substantially uniform mixture of calcium oxide and ammonium salt, permitting a small amount of the water to initially combine with the mixture to initiate an exothermic reaction, enclosing said container in an oven, combining the rest of the water with the mixture quickly but by a controlled rate to complete the reaction and generate steam and ammonia gas from the container to be condensed on the inner surfaces of said oven and removing said condensate from said oven surfaces, said mixture of calcium oxide having a sufficiently fine particle size whereby mix generation of steam and ammonia gas from the container occurs within a time period of about between 3–7 minutes.



3,937,635

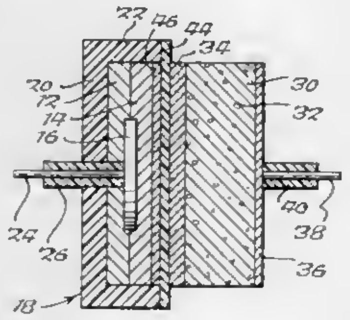
LITHIUM-IODINE BATTERY

Ralph T. Mead, Kenmore, and Wilson Greatbatch, Clarence, both of N.Y., assignors to Wilson Greatbatch, Clarence, N.Y.

Filed Jan. 9, 1975, Ser. No. 539,731

Int. Cl.^{2} H01M *4/36*

U.S. Cl. 136—83 R **13 Claims**



1. In a lithium-iodine cell including a lithium anode and a lithium iodide electrolyte, a cathode comprising:

a. an element of iodine having an additive of electrically conductive material;

b. a layer of material comprising a charge transfer complex of an organic donor component and iodine on a surface of said iodine element, said layer being operatively adjacent said lithium anode for supplying iodine to said electrolyte; and

c. barrier means penetrable by said charge transfer complex material and located between said layer and said lithium anode for preventing contact between said anode and said additive of electrically conductive material of said iodine element prior to formation of said electrolyte.

10. A method of making a lithium-iodine cell comprising the steps of:

a. providing an anode comprising a lithium element having an exposed surface portion, a current collector in operative contact with another surface portion of said lithium element and electrical conductor means connected to said current collector;

b. providing an element of iodine including an additive of electrically conductive material and having an operative surface, a current collector in operative contact with another surface of said iodine element and electrical conductor means connected to said current collector;

c. coating said operative surface of said iodine element with material comprising a charge transfer complex of an organic donor component and iodine; and

d. placing said anode and said iodine element into operative relationship so that said charge transfer complex material is in operative contact with said exposed surface portion of said lithium element while preventing contact between said electrically conductive additive material of said iodine element and said lithium element;

e. whereby a lithium iodide electrolyte forms at the interface of said lithium element and charge transfer complex material creating a potential difference between said conductors and whereby said iodine element serves as a source of iodine to sustain the reaction.

3,937,636

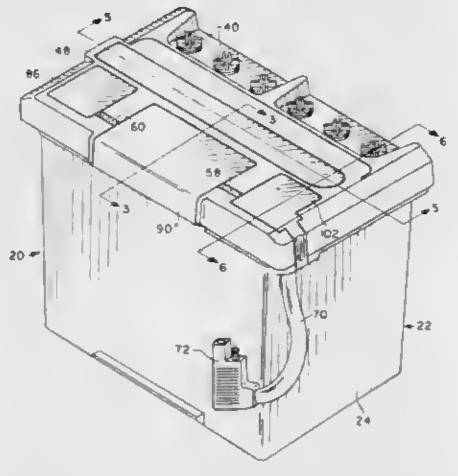
BATTERY WITH RECESSED TERMINALS AND FUSE

Robert C. Slautterback, Toledo, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Filed June 12, 1975, Ser. No. 586,432

Int. Cl.^{2} H01M *2/30*

U.S. Cl. 136—135 S **17 Claims**



1. A battery comprising a case, said case including recess means, first and second terminals extending into said recess means, first conductor means connected to said first terminal and extending out of said recess means, said first conductor means including a fuse disposed in said recess means, second conductor means connected to said second terminal and extending out of said recess means, and means for substantially covering said recess means.

3,937,637

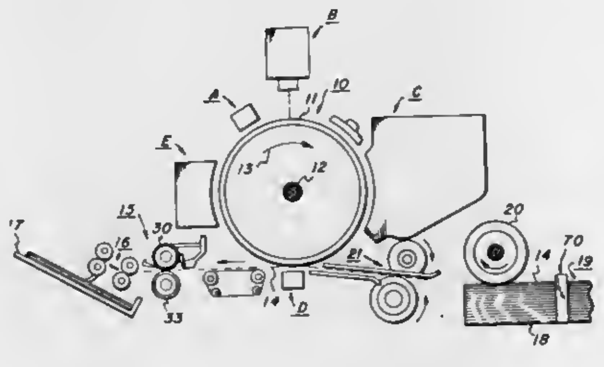
ROLL CONTACT FUSER

Rabin Moser, Fairport, and John G. Ruhland, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 27, 1973, Ser. No. 383,231

Int. Cl.^{2} B32B *15/04*

U.S. Cl. 148—6 **30 Claims**



1. Apparatus for contact fusing toner particles to a substrate, said apparatus comprising:

an internally heated structure comprising a rigid core of a high surface energy material selected from the group consisting of glass and metal and a coating of a polymer release material on said core, said polymer release material being the type which oxidizes and is capable of reacting with the core surface material, said coating comprising a first barrier coating portion in contact with said core surface, said first portion being formed during operation of the apparatus at the interface of the core surface and the polymer release material, the first portion having a greater affinity for the core surface material than the toner particles and thereby preventing toner particles from contacting the core, and a second replenishing release portion continuously applied, the release portion being the polymer release material and having a cohesive force which is less than the adhesive forces between the toner particles and the substrate and the cohesive forces of the toner particles, said coatings having a combined thickness of less than 1 micron; and

a backup member cooperating with said heated structure to form a nip through which said substrate passes with said toner particles contacting said heated structure.

3,937,638

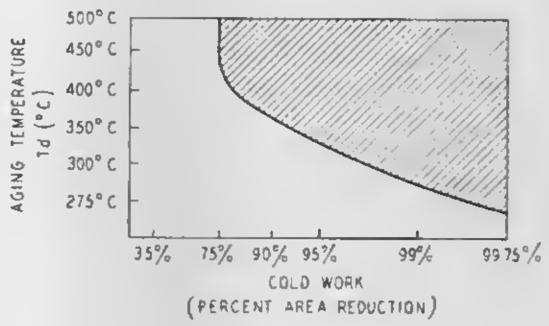
METHOD FOR TREATING COPPER-NICKEL-TIN ALLOY COMPOSITIONS AND PRODUCTS PRODUCED THEREFROM

John Travis Plewes, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 296,011, Oct. 10, 1972, abandoned. This application July 26, 1974, Ser. No. 492,007

Int. Cl.^{2} C22F *1/08*

U.S. Cl. 148—12.7 **10 Claims**



1. A method for producing a copper-nickel-tin alloy comprising cold working and aging characterized by

a. providing an alloy consisting essentially of a composition within the single phase α region of the equilibrium ternary phase diagram for copper, nickel and tin at temperatures approaching the melting point of the alloy but within the two-phase $\alpha + \theta$ region of the diagram at room temperature, in a supersaturated solid solution of α phase having medium to fine grain size,

b. cold working the alloy by an amount equivalent to an area reduction of at least 75 percent, and

c. aging the alloy at a temperature below the metastable boundary T_m of the alloy, T_m being defined as the temperature at which curves produced by isothermal resistivity changes as a function of time revert from a sigmoidal to an exponential character.

3,937,639

PROCESS FOR THE BRIGHT ANNEALING AND RECRYSTALLIZATION OF NON-FERROUS METALS

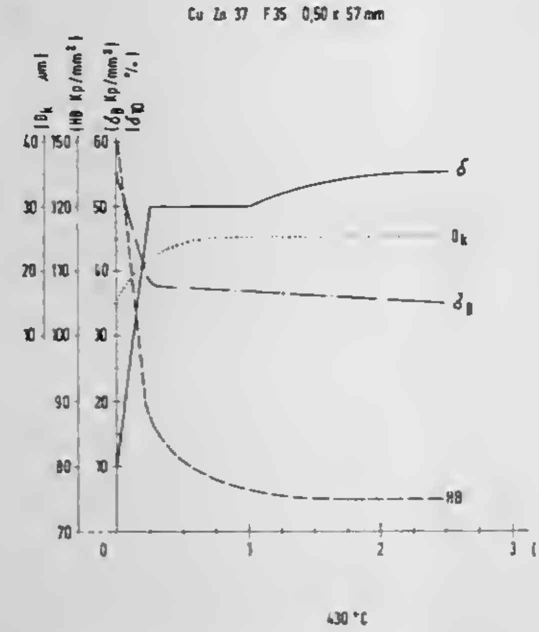
Werner Romer, Deilinghofen, and Rolf Orthey, Ludenscheid, both of Germany, assignors to Busch-Jaeger Ludenscheider Metallwerk GmbH, Ludenscheid, Germany

Filed Oct. 4, 1974, Ser. No. 512,326

Claims priority, application Germany, Oct. 9, 1973, 2350625

Int. Cl.^{2} C22F *1/08*

U.S. Cl. 148—13.2 **5 Claims**



1. In a process for the bright-annealing and recrystallization of copper-zinc alloy articles in the form of strip, wire and bar material, in which such articles are heated to recrystallization temperature in an air atmosphere in an annealing furnace, the improvement which comprises applying to such articles a coating of a liquefied synthetic resin dissolved in a solvent therefor and introducing the thus coated articles into the annealing furnace and subjecting the articles to recrystallization temperature therein.

3,937,640

PROCESS FOR MANUFACTURING A WATERPROOFING ASSEMBLY OF LAMINATED BITUMINOUS ROOFING MEMBRANES

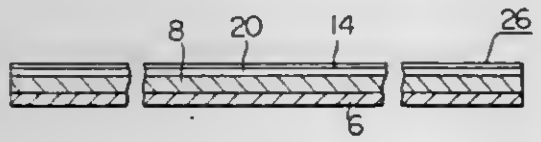
Eiichi Tajima; Kaname Yamamoto, and Takayoshi Imai, all of Tokyo, Japan, assignors to Tajima Roofing Co., Ltd., Tokyo, Japan

Division of Ser. No. 331,602, Feb. 12, 1973, abandoned. This application May 8, 1975, Ser. No. 575,538

Claims priority, application Japan, Feb. 19, 1972, 47-16906

Int. Cl.^{2} E04B *7/00*

U.S. Cl. 156—71 **3 Claims**



1. A process for manufacturing a built-up bituminous roofing or waterproofing assembly, utilizing a self-adhesive, multilayer, laminated, bituminous roofing membrane, comprising a flexible base sheet having on at least a portion of one surface thereof a first surface coating layer of uniform thickness applied in direct face-to-face mutually adhering contact therewith, said first surface coating layer consisting essentially of a substantially solid, waterproofing roofing bitumen; a second surface coating layer of uniform thickness superposed on said first layer and having its inner surface in direct, face-to-face, mutually cohering contact with the outer surface of said first surface coating layer, said second coating layer being of lesser thickness than said first coating layer and consisting essentially of a compound bitumen containing from about 5 to 95 percent by weight of substance selected from the group consisting of rubber, thermoplastic resin and mixtures thereof, said compound bitumen being of high tackiness at ambient temperature and being self-adhesive to the compound bitumen layer of another like roofing membrane; and a release sheet having a release surface in direct face-to-face releasably adhering contact with the outer surface of said second coating layer, comprising the steps of

a. laying a plurality of said roofing membranes over a substrate so that said membranes partially overlap,
b. removing the release sheets from the roofing membranes to expose the second layers thereof,
c. placing said second layers in direct face-to-face contact and pressing said second layers together to form a waterproof joint therebetween.

3,937,641

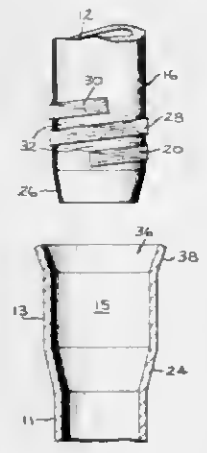
METHOD OF ASSEMBLING ADHESIVE JOINT

Gerald J. Kushner, and William D. Irish, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Aug. 30, 1974, Ser. No. 501,881

Int. Cl.^{2} B65H *81/00*

U.S. Cl. 156—87 **4 Claims**



1. A method of joining metallic tubing comprising:
providing a first tube having an end portion adapted to receive an end portion of a second tube with radial clearance between the contiguous surfaces of the two tubes;
helically winding a single thickness of heat curable adhesive film having a volume greater than said radial clearance to the end portion of said second tube to provide a space between said windings;
heating the end portion of said first tube to a temperature sufficient to plasticize said adhesive film;
telescoping the end portion of said second tube into the heated bore of the first tube and allowing the adhesive on said second tube to plasticize and spread into the radial clearance between the contiguous surfaces of the tubes while air entrapped during the spreading of said adhesive escapes between the helical winding and past the open end of said second tube; and
heating said telescoped joint to a temperature sufficient to cure said adhesive.

3,937,642

LABELING DEVICE WITH AN INSTALLATION FOR MARKING LABELS

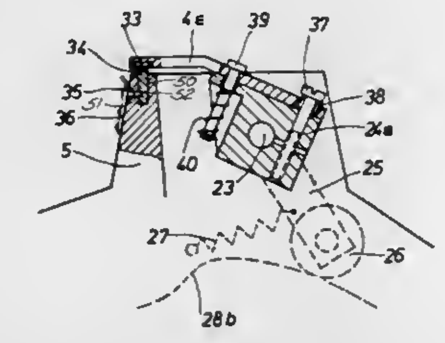
Hermann Kronseder, Neutraubling, and Franz Wetter, Regensburg, both of Germany, assignors to Hermann Kronseder, Neutraubling, Germany

Division of Ser. No. 381,184, July 20, 1973, Pat. No. 3,893,388, which is a continuation of Ser. No. 223,204, Feb. 3, 1972, abandoned. This application Dec. 23, 1974, Ser. No. 535,320

Claims priority, application Germany, Feb. 20, 1971, 2108256; Apr. 24, 1971, 2120241; July 17, 1971, 7127471

Int. Cl.^{2} B41L *21/06*

U.S. Cl. 156—384 **6 Claims**



1. In a label applying turret for picking labels from an extraction cylinder at one side of the turret and transferring the labels to objects to be labeled at another side of the turret, said turret having a series of outwardly facing label transfer and support pads and grip means to hold labels on the pads as the turret rotates between the extraction cylinder and the objects to be labeled, the improvement comprising a corresponding series of outwardly facing label markers mounted on the turret adjacent to and substantially flush with said pads, each label marker being associated with a corresponding pad whereby respective labels gripped by the grip means and carried by said pads also lie against associated adjacent markers, and inwardly pressing means for pressing the labels against the markers to cause marked impressions on the labels in the course of transfer of the labels from the extraction cylinder to the objects to be labeled, said pressing means and grip means together comprising a corresponding series of label gripping fingers aligned with the markers and means for biasing the fingers toward the markers whereby the fingers concurrently grip the labels and press them against the markers.

3,937,643

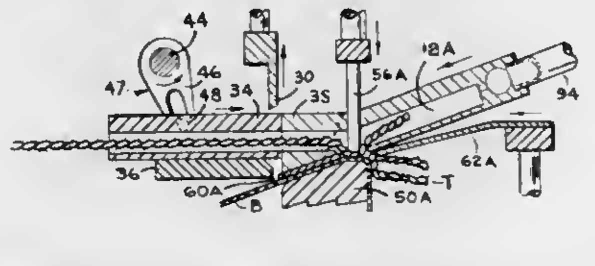
METHOD AND MEANS OF TUFTING

Abram N. Spanel, 344 Stockton St., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 419,417, Nov. 27, 1973, which is a continuation of Ser. No. 239,931, March 31, 1972, abandoned. This application Dec. 23, 1974, Ser. No. 535,804

Int. Cl.^{2} D04H *11/00*

U.S. Cl. 156—435 **6 Claims**



1. Apparatus for producing a product by adhesively securing yarn bits to an adhesive backing layer comprising pneumatic means for conveying yarn to a bit-applying station having a passageway extending from the source of yarn to said bit-applying station, means for supplying said adhesive backing to said bit-applying station, and means for severing yarn that extends longitudinally within the passageway, wherein the passageway comprises parts relatively movable to one another between a first relationship in which access is provided to the yarn for said severing means, and a second relationship in which the passageway is substantially continuous between its ends for conveying of said yarn, means to cause relative movement of said movable passageway parts to open and close said access; said bit-applying station further comprising a combination bit-applying and clamping means reciprocable to and from said backing layer between a position in which yarn is received from said passageway and a position in which said yarn is clamped against said backing layer, and wherein clearing means are provided to clear tufted yarn out of the path of the combination bit-applying and clamp means.

3,937,644

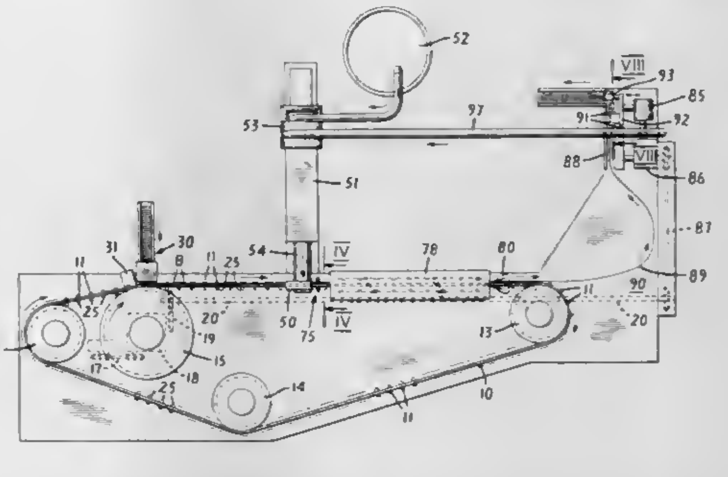
APPARATUS FOR APPLYING A BACKING OF PLASTIC MATERIAL TO A CUTTING BLADE

Claude A. Bergeron, and Hubert L. Smith, both of Staunton, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 31, 1974, Ser. No. 519,562

Int. Cl.^{2} B32B *31/18;* **B65G** *15/30*

U.S. Cl. 156—498 **7 Claims**



1. An apparatus for forming a backing of plastic material on an edge of cutting blades comprising a continuous conveyor belt, means for driving the belt, means for depositing blades seriatim on the belt, said belt having lugs on its surface forming spacers between adjacent blade ends on said belt, an extrusion die through which said belt with the blades is advanced with means for forming a continuous strip of the plastic material with the edge of the blades fully imbedded therein, and cooling means through which the strip is fed from the extrusion die.

3,937,645

HEAT SEALING APPARATUS

Fred Ascoli, Maryland Heights, and Robert R. Hermann, Ladue, both of Mo., assignors to Standard Container Company, St. Louis, Mo.

Filed Jan. 11, 1974, Ser. No. 432,682

Int. Cl.^{2} B32B *31/00;* **B65B** *7/28*

U.S. Cl. 156—522 **1 Claim**

1. In an apparatus for heat sealing a plastic film cover to an open container having laterally extending, opposed margin portions defining the container opening:

a. a base,
b. support means for the container, the support means including an upper seating portion receiving the container margin portions in seating relation,
c. mounting means for supporting a roll of film for withdrawal of the film across the container margin portions,
d. a lever pivotally mounted for swinging movement relative to the base,
e. a sealing head carried by the lever above the support means, in spaced relation to the pivotal mounting of the lever, for swinging movement of said head into clamping

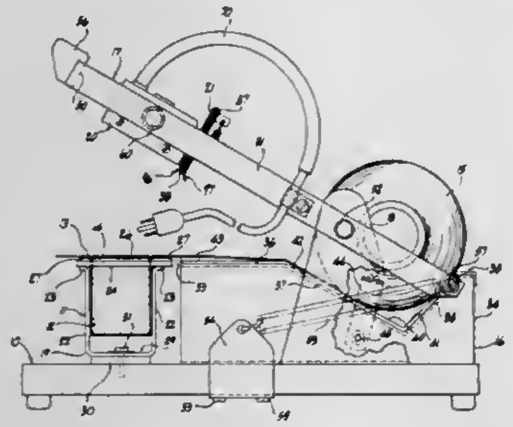
engagement with the film on the container margin portions, the sealing head including:

1. a heated platen having opposed margin portions substantially in register with the container margin portions when the film is clamped for heat sealing, each heated platen margin portion including a first groove portion located laterally outward of the container opening, the first groove portion being peripherally continuous to provide a complete seal inwardly thereof, and a second groove portion spaced outwardly of and substantially parallel to the said first groove protion to provide an elongate land therebetween, the land providing a seal between the first and second groove portions,

f. cutter means carried by the lever for severing the film drawn across the container from the roll,

g. the support means and the mounting means cooperating to provide spaced abutment portions rearwardly disposed of the container and engageable by the film, said abutment portions defining a gap therebetween and said film extending across said gap,

h. the cutter means including a blade carried by the sealing head and rigidly fixed relative to the sealing head and lever, the blade being movable into the gap to cut the film as the head is moved by the lever into engagement with the film, and spaced clamping elements mounted in movable relation to and on the blade, one clamping element being located adjacent each side of the blade, each clamping element having a lower clamping margin engageable with the film against an associated abutment portion to clamp the film across the gap as the head is moved by the lever into engagement with the film, and resilient means between the blade and clamping elements tending to urge the lower clamping margins below the blade so that the clamping margins will engage and clamp the film and then permit the blade to move below the lower clamping margins to cut the film, all under loading of the resilient means, in sequence by moving the head with the lever into engagement with the film,



i. the blade including a transversely projecting lug,

j. the clamping elements forming a substantially U-shaped blade, and the shield including a transversely projecting lug, and

k. the resilient means including a tension spring extending between said lugs to provide the resilient mounting of said shield to said blade.

3,937,646
EVAPORATION APPARATUS OF SPECIAL MATERIAL

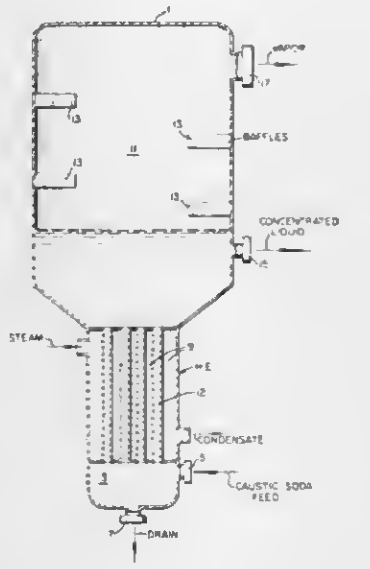
James E. Houston, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Nov. 29, 1973, Ser. No. 420,357

Int. Cl.^{2} B01D *1/00, 1/06;* **C22C** *38/16*

U.S. Cl. 159—23 **6 Claims**

1. In an evaporation apparatus for use in the evaporation concentration, and/or purification of solutions containing alkali metal hydroxides and alkali metal chlorides, which apparatus has a liquid receiving chamber for the solutions being processed, a flowthrough heating zone containing heat transfer elements, a separation chamber for forming a liquid-vapor mixture of the solution being processed, passageways connecting said chambers and said zones, and baffle and distribution means positioned within said chambers, zones and/or passageways, the improvement which comprises forming at least a portion of those surfaces of the said chambers, zones and passageways, baffle and distribution means of said apparatus which are in contact with the solution of and/or vapors of the solution of said alkali metal hydroxide-alkali metal chloride containing solution at temperatures in excess of about 50°C of a ferritic stainless steel having the following composition:



Carbon	Up to 0.01% by weight
Manganese	Up to 0.40% by weight
Phosphorus	Up to 0.02% by weight
Sulfur	Up to 0.02% by weight
Silicon	Up to 0.40% by weight
Nitrogen	Up to 0.015% by weight
Copper	Up to 0.20% by weight
Nickel + copper	Up to 0.50% by weight
Chromium	25.0 to 27.5% by weight
Molybdenum	0.75 to 1.50% by weight
Iron	Balance

3,937,647
METHOD OF INCREASING CELLULOSIC PULP YIELDS IN AN ALKALINE DIGESTION PROCESS

Inga L. Backström, Stockholm; Nils J. C. Hartler, Lidingo, and Knut P. Kringstad, Vallingby, all of Sweden, assignors to Svenska Traforskningsinstitutet, Stockholm, Sweden

Filed Nov. 12, 1973, Ser. No. 415,153

Claims priority, application Sweden, Dec. 11, 1972, 16130/72

Int. Cl.^{2} D21C *11/00*

U.S. Cl. 162—16 **6 Claims**

1. In a method of preparing pulp by alkaline digestion of cellulosic material, the improvement which comprises digesting said cellulosic material containing organic substances in an alkaline digestion liquid at a temperature of from 50°C to 200°C to give a pulp yield of not above 65 percent, lowering the pH of the digestion liquid to below 11 in the presence of the pulp to precipitate out at least 5 percent, based on said cellulosic material, of organic substances dissolved in the digestion liquid, and then continuing said digestion at a temperature of 50°C to 200°C until a large percentage of said precipitated organic substances have been absorbed by the pulp during an absorption period.

3,937,648
METHOD OF MAKING PAPER HAVING A HIGH RESIN FILL

Klaus Huebner, Ober-Ramstadt-Eiche; Helmut Neumann, Goddelau; Hans Ottofrickenstein, Darmstadt-Eberstadt; Helmut Moroff, Trautheim, and Norbert Suetterlin, Greisheim, all of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed June 15, 1973, Ser. No. 370,239

Claims priority, application Germany, June 24, 1972, 2230985

Int. Cl.^{2} D21D *3/00*

U.S. Cl. 162—168 R **2 Claims**

1. In the method of making a resin-filled paper on a paper machine from an aqueous fiber slurry having a resin filler dispersed therein, said resin-filled paper having a resin content of from 20 to 100 percent, based on the weight of the fibers therein, the improvement which comprises employing, as the aqueous resin-filled fiber slurry, a slurry comprising

A. 100 parts by weight of fibers comprising at least 30 percent by weight of natural cellulosic fibers;

B. an aqueous dispersion of a non-ionic synthetic thermoplastic resin free of groups capable of thermal cross-linking and completely comprising neutral vinyl or vinylidene monomers which form salts neither in aqueous alkaline media nor in aqueous acid media, said dispersion comprising from 0.5 to 2.5 percent, by weight of the aqueous phase of said dispersion, of a cationic dispersing agent, and from 1 to 4 percent, by weight of the aqueous phase of said dispersion, of a non-ionic dispersing agent, the dry weight of resin in said dispersion being from 30 to 100 parts; and

C. an amount of water such that the fiber content of the fiber slurry is between 0.5 and 1 percent.

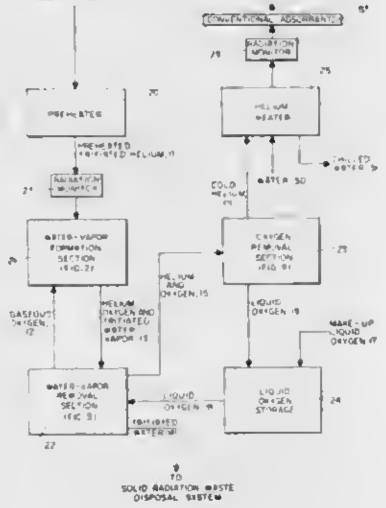
3,937,649
PROCESS AND SYSTEM FOR REMOVING TRITIUM

John N. Ridgely, 628 Rutledge Ave., Folsom, Pa. 19033

Filed Oct. 31, 1973, Ser. No. 411,249

Int. Cl.^{2} G21C *17/00*

U.S. Cl. 176—19 R **14 Claims**



1. A process for the removal of tritium from a system containing an inert-to-oxygen circulating fluid which becomes tritiated comprising the steps of: forming tritiated water vapor by combining with the tritiated circulating fluid gaseous oxygen under pressure and at a temperature sufficient to initiate and sustain a water vapor formation reaction between tritium in the circulating fluid and the gaseous oxygen; and then removing the tritiated water vapor from the circulating fluid-gaseous oxygen mixture, and the system, by fractional liquefaction.

3,937,650
NUCLEAR REACTOR PROTECTIVE SYSTEM

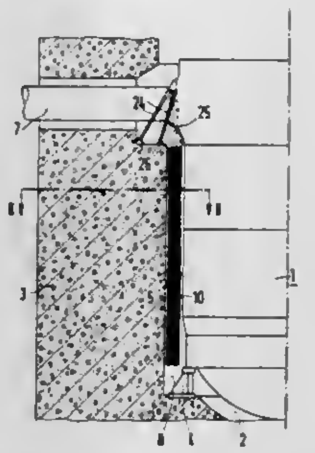
Axel Jungmann, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed July 26, 1973, Ser. No. 382,841

Claims priority, application Germany, Aug. 2, 1972, 2238024

Int. Cl. G21c *13/10*

U.S. Cl. 176—37 **9 Claims**



1. A nuclear reactor protective system including a reactor pressure vessel having a substantially cylindrical side wall protected by a biological shield forming a substantially cylindrical concrete wall surrounding said side wall and defining a circumferentially extending space therearound having a radial extent adequate to permit the insertion therein of a device for monitoring the condition of said side wall; wherein the improvement comprises a plurality of substantially cylindrical segments, and means for positioning said segments in said space so that the segments are circumferentially movable between mutually partial circumferential overlapping relationship forming a circumferentially continuous cylindrical wall and more complete circumferential overlapping relationship opening a portion of said space adequate for said insertion.

3,937,651
NUCLEAR REACTOR FACILITY

Hans-Peter Schabert, Erlangen, and Johann Ropers, Grossdechsendorf, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation-in-part of Ser. No. 254,736, May 18, 1972, abandoned. This application Mar. 4, 1974, Ser. No. 447,996

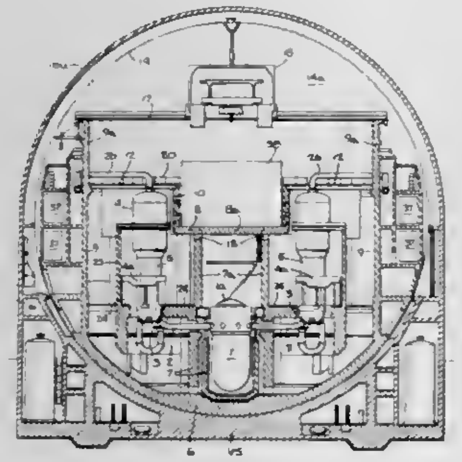
Claims priority, application Germany, May 21, 1971, 2125158

Int. Cl. G21c *9/00*

U.S. Cl. 176—38 **6 Claims**

1. A nuclear power facility comprising a pressurized-water reactor pressure vessel, at least one vertical steam generator horizontally offset from said vessel, a main pressurized-water coolant pipe loop interconnecting said pressure vessel and a lower portion of said steam generator, said loop containing circulating pressurized-water coolant, a concrete structure forming a steam generator and loop and extending upwardly and horizontally surrounding said steam generator and at least a substantial portion of said loop to a height above said steam generator and having an open top above said steam generator, said concrete structure forming at least one operating room separated from said steam generator room by one of said walls extending upwardly, accidental release of said coolant from said loop forming vapor having a vapor pressure, a horizontal ceiling above said steam generator and closing said top so that said release causes said steam generator room to be pressurized under said vapor pressure, and a containment shell enclosing said structure including said rooms and forming a space of substantial area above said steam generator room,

said ceiling being a metal ceiling formed by a metal grid-like construction defining a plurality of vertical openings and having horizontal sheet metal plates positioned on said construction and normally closing said openings, said plates being strong enough for personnel to walk upon but light enough in weight to be displaced upwardly to open said openings when the plates receive upward force from said vapor pressure in said steam generator room resulting from said loop accidentally permitting a release of said pressurized-water coolant, said opening when open being large enough in cross-sectional area collectively, to release said vapor pressure into said space to a degree substantially reducing said vapor pressure within said steam generator room and on said one of said walls extending upwardly and separating said equipment room from said steam generator room, and connecting means for connecting said plates to said metal grid-like construction and holding the plates against complete separation therefrom when forced upwardly by said fluid vapor pressure, said connecting means permitting said plates to swing upwardly when displaced to open said openings, said metal grid-like construction connecting with said open top of said concrete structure and being held thereby against horizontal displacement, and said generator having a top portion adjacently below said construction and means for connecting said top portion with said construction to restrain said top portion from horizontal displacement while permitting vertical movement of said top portion.



3,937,652
NUCLEAR POWER INSTALLATIONS

Brian Victor George, Willoughby Waterleys, England, assignor to British Nuclear Design & Construction Ltd., Leicester, England

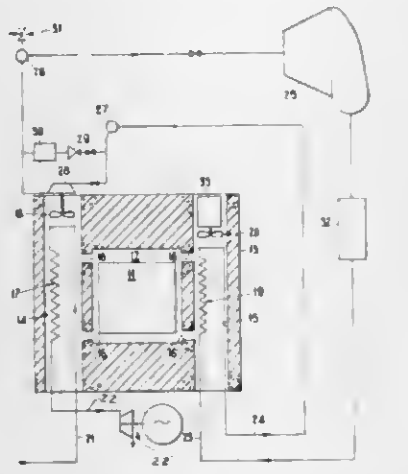
Filed Apr. 12, 1973, Ser. No. 350,629

Claims priority, application United Kingdom, Apr. 12, 1972, 16842/72

Int. Cl. G21c *15/00*

U.S. Cl. 176—60 **6 Claims**

1. A gas-cooled nuclear power installation comprising a nuclear reactor which includes a reactor core, at least one main boiler, at least one main coolant-gas circulator arranged to circulate coolant gas through the core and through the main boiler whereby to generate steam in the main boiler, a circulator-driving steam turbine arranged to drive said main coolant-gas circulator, and at least one main turbogenerator connected to be driven by steam generated in the main boiler, wherein the installation further comprises at least one auxiliary boiler, at least one auxiliary coolant-gas circulator arranged to circulate coolant gas through the core and the auxiliary boiler whereby to generate further steam in the auxiliary boiler and wherein the auxiliary boiler is connected to supply said further steam to said circulator-driving steam turbine.



3,937,653
DIAGRID FOR SUPPORTING A NUCLEAR REACTOR CORE

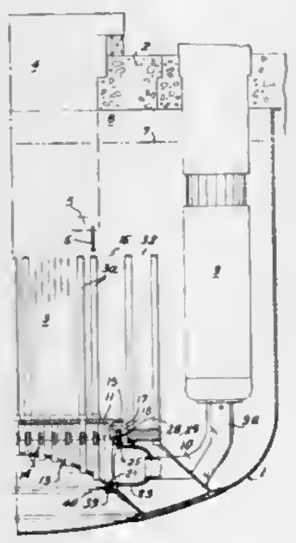
Jacques Leheu, Le Raincy, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 27, 1973, Ser. No. 345,473

Claims priority, application France, Apr. 19, 1972, 72.13789

Int. Cl.^{2} G21C *15/20*

U.S. Cl. 176—61 **5 Claims**



1. A nuclear reactor diagrid combination for supporting the core of a nuclear reactor in which a liquid sodium coolant is circulated within a vessel containing the core and diagrid, said diagrid being constituted by a box structure having end-walls formed by two metallic plates braced by hollow cylindrical support columns which are suitably disposed at intervals within the box structure on a uniform pitch, the upper end plate being flat and horizontal and the axis of the reactor core being vertical, said diagrid being provided with means for applying the box structure against a support which forms part of the reactor vessel, wherein the lower end plate of said box structure has the shape of an upwardly convex spherical segment which terminates at its periphery in a flat rim and wherein the upper flat end plate has a circular flange which is parallel to the peripheral rim of the lower plate, said rim and said flange being braced with respect to each other, the flange of the upper end plate resting on a ring-girder supported by the vessel which provides the box structure with a peripheral side restraint and the flat rim of the lower end plate being supported by a flat circular flange formed on a shell element rigidly fixed to the reactor vessel, wherein the shell element has a conical shape and is in the line of extension of the spherical segment of the lower end plate of the box structure, and wherein the ring-girder is a hollow metallic torus opening laterally toward the box structure, said torus being a manifold for supplying the diagrid with the coolant sodium.

3,937,654
PRODUCTION OF EDIBLE PROTEIN SUBSTANCES

Gerald L. Solomons, High Wycombe, and Gerald W. Scammell, Chinnor, both of England, assignors to Ranks Hovis McDougall Limited, London, England

Continuation of Ser. No. 459,021, April 8, 1974, abandoned, which is a continuation of Ser. No. 140,303, May 4, 1971, abandoned. This application July 25, 1975, Ser. No. 599,026

Claims priority, application United Kingdom, May 14, 1970, 23452/70; June 24, 1970, 30584/70

Int. Cl.^{2} C12B *1/08;* C12D *13/06*

U.S. Cl. 195—35 **25 Claims**

1. A process for the production of an edible protein-containing substance which comprises incubating and proliferating, under aerobic conditions, a non-toxic strain of the genus Fusarium or a variant or mutant thereof in a culture medium containing all essential growth-promoting nutrient substances, of which carbon in the form of assimilable carbohydrate constitutes the limiting substrate in proliferation, and separating the proliferated organism comprising the edible protein-containing substance possessing a high net protein utilization value of at least 70 based on the α-amino nitrogen.

17. A method for the preparation of variants of *Fusarium graminearum* Schwabe IMI 145425 which comprises growing the parent strain IMI 145425 under continuous culture conditions with carbon limitation in a fermentation.

20. A method for cultivating a strain of *Fusarium graminearum* Schwabe IMI 145425 or a mutant or variant thereof wherein the strain is present in a culture medium containing or being supplied with all nutrients or additives necessary for the sustenance and multiplication of the strain, the medium having a pH between 3.5 and 7 at a temperature of between 25° and 34°C and wherein the carbon in the form of assimilable carbohydrate constitutes the limiting substrate in proliferation.

3,937,655
METHOD FOR PREPARING STABLE β-LACTAM-TYPE-NTIBIOTIC SUSCEPTIBILITY TEST DISCS

Ralph R. Pfeiffer, and Gary L. Engel, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 16, 1974, Ser. No. 461,465

Int. Cl.^{2} C12K *1/04*

U.S. Cl. 195—103.5 R **13 Claims**

1. A method for preparing stable β-lactam-type-antibiotic susceptibility test discs comprising contacting absorbent paper with a metered amount of a dispersion of a crystalline β-lactam-type-antibiotic in a volatile non-solvent vehicle, absorbing such vehicle into such paper, evaporating such vehicle from such paper leaving a deposit of a measured quantity of such antibiotic per unit area of such paper, and forming test discs from such paper, such discs having an area wherein the desired amount of β-lactam-type-antibiotic is uniformly and consistently deposited.

3,937,656
SHED-TYPE ENCLOSURE AT THE COKE SIDE OF COKE OVENS

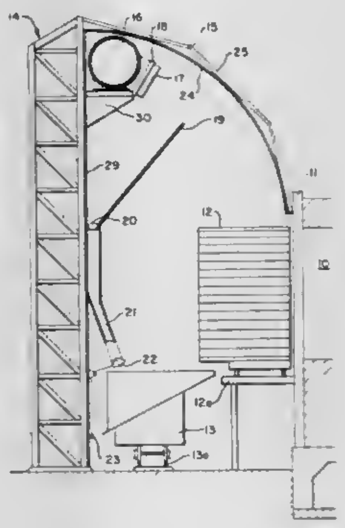
Erich Pries, and Friedrich-Wilhelm Drebes, both of Bochum, Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Germany

Filed May 31, 1974, Ser. No. 474,921

Claims priority, application Germany, June 1, 1973, 2327890

Int. Cl.^{2} C10B *33/00;* C10G *41/08*

U.S. Cl. 202—262 **7 Claims**



1. In combination with a battery of coke ovens having a coke discharge side at which a track extends along said battery of coke ovens for the displacement of a quench car to receive coke pushed from a chamber forming said ovens, a shed at the coke discharge side of said ovens comprising: a wall extending along the entire length of said battery of coke ovens and spaced outwardly therefrom beyond said track, a roof rising from the top of said coke ovens, said roof extending above said track to said wall, extractor means for removing smoke from the area below said roof, a baffle plate extending from said wall in a direction upwardly and toward said battery of coke ovens within said shed, and a conveyor extending in a direction along the length of said battery of coke ovens, said conveyor lying between said baffle plate and said wall for receiving solid particles of coke falling onto the baffle plate within said shed.

3,937,657
ELECTROWINNING OF COPPER

Alan James Parker; Winfield Earle Waghorne, both of Canberra; Dion Ewing Giles; John Howard Sharp, both of Sydney; Robert Alexander, and David Michael Muir, both of Canberra, all of Australia, assignors to Anumin Pty. Limited, Canberra, Australia

Division of Ser. No. 237,061, March 22, 1972, Pat. No. 3,865,744. This application Dec. 17, 1974, Ser. No. 533,697

Claims priority, application Australia, Apr. 2, 1971, 4500/71; Apr. 2, 1971, 4501/71; Apr. 2, 1971, 4502/71; Apr. 28, 1971, 4735/71; June 4, 1971, 5110/71; Sept. 14, 1971, 6281/71; Sept. 24, 1971, 6411/71; Oct. 20, 1971, 6718/71; Oct. 20, 1971, 6798/71; Dec. 14, 1971, 7383/71; Jan. 26, 1972, 7776/72

Int. Cl.^{2} C25C *1/12*

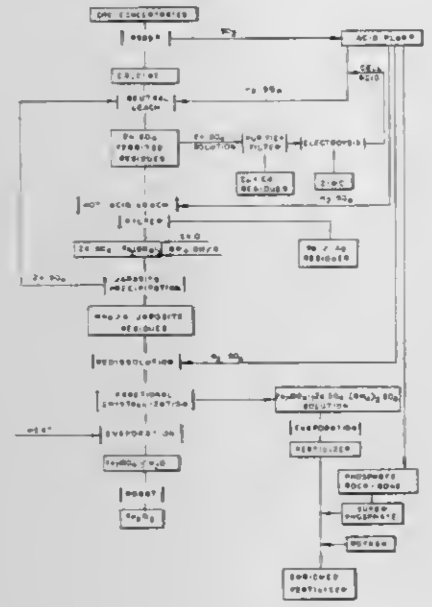
U.S. Cl. 204—108 **9 Claims**

2. The method as claimed in claim 1 in which the homogeneous solution being electrolysed is protected from gaseous oxidants, and contains at least 50% by volume water, sufficient sulfuric acid to maintain a pH of 3 or less, cuprous sulfate assaying at least 5 grams per liter cuprous ion and at least 2.5 moles of an organic nitrile selected from the group consisting of acetonitrile, 2-hydroxycyanoethane and mixtures thereof, per mole of cuprous ion in solution, and is circulated past the electrodes with a current density of between 4 and 30

amps per square foot and at a temperature of between 20° and 45°C.

3,937,658
ELECTROLYTIC ZINC REFINING PROCESS INCLUDING PRODUCTION OF BY-PRODUCTS FROM JAROSITE RESIDUES

David A. Jackson, 330 W. Diversey Parkway, Chicago, Ill. 60657
Division of Ser. No. 377,623, July 9, 1973, Pat. No. 3,871,859. This application Dec. 24, 1974, Ser. No. 536,093
Int. Cl.² C25C *1/16*
U.S. Cl. 204—119 11 Claims

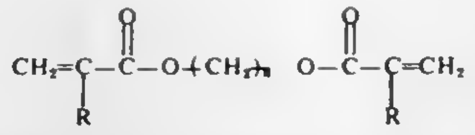


1. In a plant system for the electrolytic refining of zinc using the jarosite process, the process of treating the jarosite residue waste material to recover valuable by-products therefrom comprising acidifying the wet jarosite residue with sulphuric acid from the refining system acid plant only sufficiently to break down the basic sulphate and redissolve the iron sulphate to produce a solution containing dissolved plant nutrients including the sulphates of iron, ammonium, zinc, manganese and trace metals and thereafter withdrawing said solution from said plant system and treating said solution to recover the solute values thereof.

3,937,659
POLYCHLOROPRENE MIXTURE

Jurgen Boldt, Opladen, and Kurt Heine, Bad Honnef, both of Germany, assignors to Bayer Aktiengesellschaft, Germany
Filed Mar. 5, 1974, Ser. No. 448,188
Claims priority, application Germany, Mar. 9, 1973, 2311672
Int. Cl.² C08F *2/46*
U.S. Cl. 204—159.2 7 Claims

1. A chloroprene polymer composition consisting of (a) 90 to 20 parts by weight of a benzene soluble chloroprene polymer having a Mooney viscosity ML-4' at 100°C. of from 30 to 100 and (b) 10 to 80 parts by weight of a benzene insoluble chloroprene polymer having a Mooney viscosity ML-4' at 100°C. of from 30 to 75 and consisting of a copolymer of 90 to 99% by weight of chloroprene and 1 to 10% by weight of a copolymerizable monomer of the formula

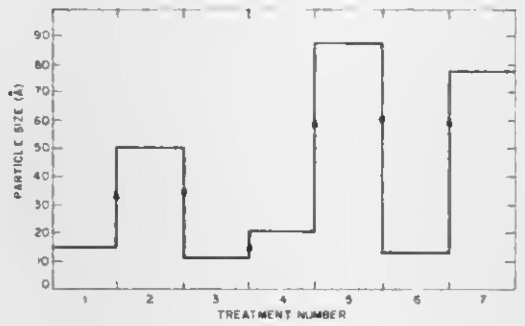


$$CH_2{=}\underset{R}{\underset{|}{C}}-\overset{O}{\overset{\|}{C}}-O{+}CH_2{)_n}\;O-\overset{O}{\overset{\|}{C}}-\underset{R}{\underset{|}{C}}{=}CH_2$$

wherein R is hydrogen or alkyl having 1 to 6 carbon atoms and *n* is an integer of from 2 to 6, said copolymer of (b) having been irradiated by γ-radiation or high speed electron radiation at a dose of 0.1 to 10.0 Mrad applied to a layer of (b) of 1 to 30 mm thickness in latex form and at a radiation intensity of 0.01 to 2,000 Mrad/h.

3,937,660
REGENERATION PROCEDURE FOR IRIDIUM-CONTAINING CATALYST

David J. C. Yates, Westfield, and Walter S. Kmak, Scotch Plains, both of N.J., assignors to Exxon Research & Engineering Company, Linden, N.J.
Continuation-in-part of Ser. No. 343,304, March 21, 1973, which is a continuation-in-part of Ser. No. 248,683, April 28, 1972. This application Aug. 16, 1973, Ser. No. 388,744
Int. Cl.² C10G *35/08;* **B01J** *23/96*
U.S. Cl. 208—140 24 Claims

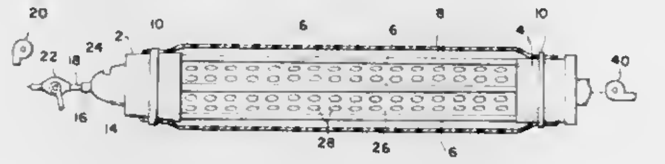


1. In a process for the catalytic reforming of hydrocarbons wherein a hydrocarbon feed stock is contacted with a catalyst comprising from about 0.01 to about 3.0 wt. % of an iridium component and a halogen component contained in an inorganic refractory oxide support at reforming conditions, the catalyst having been at least partially deactivated during contact with said feed stock by the depositing of carbonaceous residues, a method for regenerating said catalyst after discontinuing contact of said catalyst with said feed stock comprising:

1. contacting said catalyst in a reaction zone with a gaseous mixture containing oxygen at an elevated temperature of less than about 600°C. for a time sufficient to burn at least a substantial portion of said carbonaceous residues from said catalyst;
2. contacting said carbonaceous residue-depleted catalyst in said reaction zone with a hydrogen-containing gas at an elevated temperature for a time sufficient to convert a substantial portion of said iridium on said catalyst to its metallic form;
3. contacting said treated catalyst having a substantial portion of the iridium contained thereon in the metallic form in said reaction zone with an elemental halogen-containing gas at a temperature of at least about 300°C. for a time sufficient to redisperse at least a portion of the iridium on the catalyst;
4. contacting said halogen treated catalyst in said reaction zone with a hydrogen-containing gas at an elevated temperature for a time sufficient to convert a substantial portion of said iridium on said catalyst to its metallic form; and
5. contacting said treated catalyst having a substantial portion of the iridium contained thereon in the metallic form in said reaction zone with a halogen-containing gas at a temperature of at least about 300°C. for a time sufficient to redisperse at least a portion of the iridium on the catalyst.

3,937,661
METHOD AND APPARATUS FOR FLUFFING, SEPARATING, AND CLEANING FIBERS

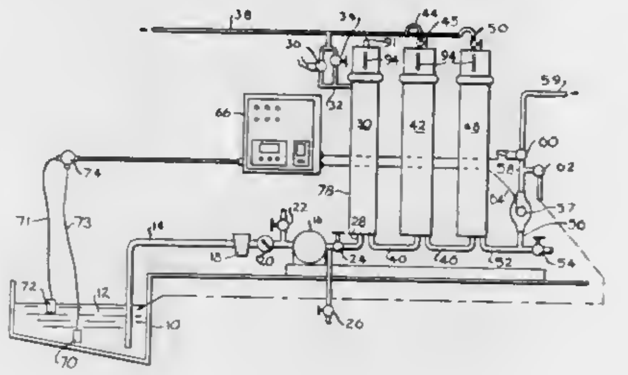
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Dan Padilla, Littleton, Colo.
Filed Mar. 12, 1974, Ser. No. 450,502
Int. Cl.² B07B *7/12*
U.S. Cl. 209—250 9 Claims



1. Apparatus for fluffing, separating and cleaning fibers from fiber fragments and particulate matter comprising:
an elongated perforated tube, closed at one end and having means for directing a jet of air axially into the other end;
means for directing fibrous material into said air jet at said other end whereby said fibrous material is entrained by said jet and carried into said perforated tube; said fibrous material being directed into said air jet along a line which is not parallel to said air jet;
housing means spaced from but enclosing said perforated tube; and
means for withdrawing air from said housing means exteriorly of said tube whereby the fibers of said fibrous material are fluffed and separated from each other and from particulate matter as they enter said air jet, said fibers being retained in said tube and said particulate matter and fiber fragments being drawn outwardly of said perforated tube and housing by said last-named means.

3,937,662
MARINE DISCHARGE CONTROL APPARATUS AND METHOD FOR TREATING FLUIDS ON A MARINE VESSEL

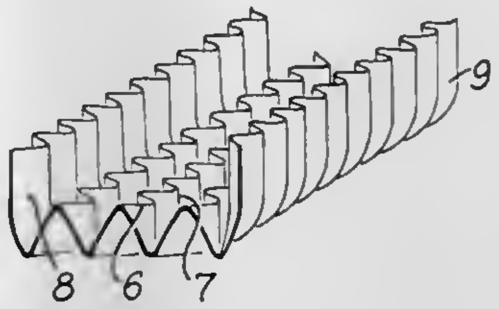
Ivan Bartik, Cookeville, Tenn., assignor to Keene Corporation, New York, N.Y.
Filed May 13, 1974, Ser. No. 469,401
Int. Cl.² B01D *29/36*
U.S. Cl. 210—23 11 Claims



1. In a system for treating bilge or ballast liquid on board a marine vessel to separate the oil therein from the water, said system comprising in combination, a filter/coalescing unit means having liquid inlet means, oil outlet means and water outlet means, said filter/coalescing unit means operable to separate and filter the oil and water flowing therethrough, a pump connected to supply liquid to be treated to said inlet means, said water outlet means including a turbidity meter operable to develop a signal in response to any oil that may be in the water, said turbidity meter operable to monitor the full flow of any water therein, and control means connected to said turbidity meter and responsive to said actuating signal for interrupting the flow of water through the water outlet means when oil of predetermined maximum is reached.

3,937,663
STRUCTURE OF FILTER MEMBERS

Pierre Etienne Bessiere, Golf Saint-nom-la-Breteche, France, assignor to Precision Mecanique Labinal, Saint-Ouen, France
Filed June 5, 1974, Ser. No. 476,458
Claims priority, application France, Apr. 16, 1974, 74.13138
Int. Cl.² B01D *27/06*
U.S. Cl. 210—493 R 29 Claims

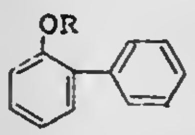


1. A filter structure comprising a support and a porous folded sheet having a plurality of cooperating groups of corrugations, the folds of one group overlapping at least in part the folds of the adjacent group and having uniform thickness, length and substantially parallel fold apex lines, said folded sheet having at least two borders each having a single group of folds terminating in a frontal edge located in a plane substantially perpendicular to the apex lines of the folds, the folds of each of said borders extending outwardly of said cooperating groups of corrugations to form an extended area for contact with said support and seal means for embedding said border areas fixedly to said support.

3,937,664
OIL FILLED ELECTRICAL DEVICE

Fumio Tanimoto; Mineaki Nishimatsu, both of Kyoto; Sadayoshi Mukai, Katano, and Kaname Ishida, Kyoto, all of Japan, assignors to Nissin Electric Co., Ltd., Kyoto and Sugai Chemical Industry Co., Ltd., Wakayama, both of, Japan
Filed Mar. 25, 1974, Ser. No. 454,132
Claims priority, application Japan, Mar. 29, 1973, 48-35921
Int. Cl.² H01B *3/18;* **H01F** *27/02*
U.S. Cl. 252—64 10 Claims

1. An oil-filled electrical device comprising a casing, an electrical device element in said casing and an insulating oil consisting essentially of one or more 2-diphenylalkylethers having the structural formula of



wherein R is the alkyl group expressed as C_nH_{2n+1} wherein $1 \leqq n \leqq 8$.

9. The device of claim 1, wherein said insulating oil consists essentially of a mixture of at least two of said 2-diphenylalkylethers, one of which is more than 30% of the total amount of said oil.

10. The device of claim 1, wherein said insulating oil consists essentially of a mixture of at least two of said 2-

diphenylalkylethers, one of which is from 30 to 70% of the total amount of said oil.

3,937,665

PHOTORECEPTOR SOLVENT CLEANER

Joseph Mammino, Penfield, and Franklin Jossel, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 27, 1975, Ser. No. 553,783

Int. Cl.^{2} C11D *7/50*

U.S. Cl. 252—162 **5 Claims**

1. A method of cleaning photoreceptor surfaces comprising providing a filmed photoreceptor surface, applying a photoreceptor cleaning solution which comprises a solvent blend capable of dissolving toner polymers and paper tars, said blend comprising a halogenated hydrocarbon exhibiting no flash point, as determined by TAG Open Cup, ASTM Method D-1310 and a petroleum hydrocarbon having a closed cup flash point of over about 135°F.

3,937,666

USE OF THIOINDIGO FOR OBTAINING FLUORESCENT DYEINGS IN POLYVINYL CHLORIDE

Hugo Schafer, Kelkheim, Taunus, and Erwin Janousch, Camberg, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 181,193, Sept. 16, 1973, abandoned. This application July 25, 1973, Ser. No. 382,380

Claims priority, application Germany, Sept. 18, 1970, 2046111

Int. Cl.^{2} C08F *45/66;* **C09K** *11/00*

U.S. Cl. 252—301.2 R **2 Claims**

1. A fluorescent dyed polyvinyl chloride homopolymer composition consisting essentially of solid polyvinyl chloride homopolymer and an amount of unsubstituted thioindigo sufficient to effect fluorescence.

3,937,667

PROCESSES FOR SEPARATING METALS

Kenneth Thomas Bartlett Scott, Reading; John Herbert Grimes, and Peter William Ball, both of Basingstoke, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 4, 1970, Ser. No. 95,371

Claims priority, application United Kingdom, Dec. 15, 1969, 61087/69

Int. Cl.^{2} B01J *13/00;* **C09K** *3/00*

U.S. Cl. 252—301.1 S **22 Claims**

1. A process for separating a metal from a mixture including at least one further metal comprising:

forming a viscous mixture of a water-soluble polymeric organic compound with an aqueous medium containing said metals, said metal-containing medium being selected from the group consisting of a mixed solution of salts of said metals, a mixture of hydrous sols of said metals, and a mixture of a solution of a salt of one said metal with a hydrous sol of the other said metal;

forming said viscous mixture into discrete entities of selected physical configuration;

contacting said entities with chemical reagent means capable of precipitating at least one said metal as an insoluble compound whereby each entity is converted to a gel containing said compound;

said reagent means being also capable of dissolving at least one other said metal;

and physically separating said gelled entities from said reagent means.

3,937,668

METHOD FOR INCORPORATING SUBSTANCES INTO PROTEIN MICROSPHERES

Ilse Zolle, Lazarettgasse 14A, Vienna 1090, Austria

Continuation-in-part of Ser. No. 55,231, July 15, 1970, abandoned. This application Nov. 6, 1972, Ser. No. 304,218

Int. Cl. B01j *13/02;* **B44d** *1/02*

U.S. Cl. 252—316 **1 Claim**

1. A process for incorporating a substance capable of being precipitated into albumin millimicrospheres comprising: preparing a precipitate of said substance and forming a mixture of the precipitate with an aqueous solution of albumin; injecting said mixture into oil and pressing the resultant through a fine capillary or rotating disc to form an extremely fine emulsion of droplets of the precipitate and albumin in said oil, heating said oily mixture above 100°C and separating the formed albumin millimicrospheres from said oil having said precipitate encapsulated therein.

3,937,669

CATALYST FOR METHYLATION OF PHENOLS

Hitoshi Nakajima, Ageo; Fujio Nomura, and Shinichi Izawa, both of Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 207,546, Dec. 13, 1971, Pat. No. 3,855,318. This application June 10, 1974, Ser. No. 478,002

Claims priority, application Japan, Dec. 11, 1970, 45-109385; Dec. 17, 1970, 45-112490; Dec. 17, 1970, 45-112491

Int. Cl.^{2} B01J *21/02, 23/84, 23/78*

U.S. Cl. 252—432 **5 Claims**

1. A metallic oxide catalyst comprising an oxide or iron, an oxide of vanadium, and at least one oxide selected from the group consisting of oxides of manganese, magnesium, titanium, beryllium and boron in which the atomic ratio of iron to vanadium to other metal or mixture thereof is from about 9 to 1/9 : 1 : 1 – 0.01.

3,937,670

COMPOSITION FOR PREPARING SOLID ELECTROLYTES AND THE FORMULATION OF A SOLID ELECTROLYTE

Novella Vladimirovna Semkina, prospekt Bljukhera, 71/1, kv. 38; Zinaida Ulyanovna Evdokimova, pereulok Vstrechny, 7, korpus 1, kv. 7; Konstantin Sergeevich Assanovich, 4 ulitsa Cheljuskintsev, 18, kv. 84, all of Sverdlovsk, and Anatoly Alexandrovich Rozlovsky, ulitsa 3 Olovozavodskaya 3, kv. 10, Novosibirsk, all of U.S.S.R.

Filed Oct. 2, 1973, Ser. No. 402,814

Int. Cl.^{2} H01B *1/08*

U.S. Cl. 252—519 **2 Claims**

1. A composition for preparing solid electrolytes, consisting essentially of in percent by weight, sintered alumina, 93 to 99.5; a substance selected from the group consisting of zinc oxide and iron oxide, 0.5 to 5.0; and titania, 0.5 to 2.0 of the total weight of the composition.

3,937,671

METHOD OF RECOVERING CONSTITUENTS FROM POLYESTER AND CELLULOSIC TEXTILE WASTE

Irving Gruntfest, Cheltenham, Pa.; Rudolph Turner, Trenton, and Ludwig Rebenfeld, Princeton, both of N.J., assignors to Textile Research Institute, Princeton, N.J.

Filed Nov. 18, 1974, Ser. No. 524,590

Int. Cl.^{2} C08J *11/04*

U.S. Cl. 260—2.3 **6 Claims**

1. A method of producing useful products from textile wastes containing blended polyester and cellulose fibers which comprises treating such wastes with an aqueous solution of glacial acetic acid and acetic anhydride under conditions which serve to acetylate the cellulose while leaving the polyester substantially unaffected and separating the unreacted

polyester fiber from the cellulose acetate composition thereby produced.

3,937,672

PROCESS FOR THE MANUFACTURE OF CONSOLIDATED SHAPED STRUCTURES OF CELLULOSE HYDRATE

Walter Busch, Wiesbaden-Biebrich; Klaus-Dieter Hammer, Mainz, and Wolfgang Klendauer, Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Sept. 20, 1973, Ser. No. 399,086

Claims priority, application Germany, Sept. 23, 1972, 2246829

Int. Cl.^{2} G08L *1/06;* **D01F** *11/02*

U.S. Cl. 260—17.3 **22 Claims**

1. A process for the preparation of a cellulose hydrate moulding which comprises

a. treating a cellulose hydrate moulding while in the gel state, for a period within the range of from 10 seconds to 20 minutes, with an aqueous liquid having a pH value of less than 7 and having dissolved therein at least one plasticizer, a chemical cross-linking agent comprising at least one cyclic urea compound having at least 2 N-methylol groups and being present in an amount of 0.5 to 15% relative to the weight of the plasticizer solution, and at least one cross-linking catalyst selected from the group consisting of an acid and an acid salt,

b. drying the moulding to a residual water content of from 8 to 12% by weight, and

c. heating the moulding at a temperature within the range of from 100° to 150° C for a period of from 30 seconds to 20 minutes.

20. A cellulose hydrate moulding prepared by a process as claimed in claim 1.

3,937,673

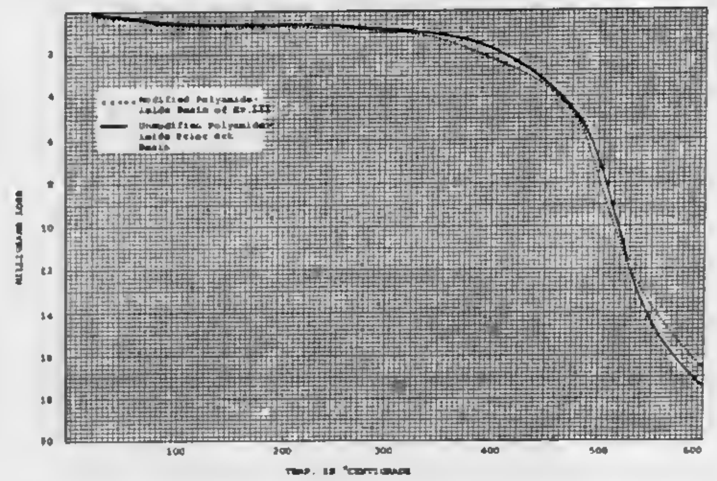
MODIFIED AMIDE-IMIDE RESINS AND METHOD OF MAKING THE SAME

Ernest C. Koerner, and Donny R. Disque, both of Fort Wayne, Ind., assignors to Phelps Dodge Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 399,393, Sept. 21, 1973. This application June 3, 1974, Ser. No. 475,826. The portion of the term of this patent subsequent to May 20, 1992, has been disclaimed.

Int. Cl.^{2} C08G *18/38*

U.S. Cl. 260—18 TN **22 Claims**



1. A composition of matter comprising the reaction product of aromatic tricarboxylic acid anhydride reactant and aromatic diisocyanate reactant and aliphatic dicarboxylic acid reactant having more than 6 carbon atoms reacted in a reaction solution comprising aprotic solvent having solvency parameters within the following ranges: δd 8.0 through 10.0, δp 0.3 through 4.5, δh 0.7 through 4.0 and said reactants at a temperature ranging from about 150°C. to about 200°C., said reactants being a major portion of said reaction solution, said dicarboxylic acid reactant being present in an amount which is greater than about 10 mol percent and less than about 50 mol percent of said anhydride reactant.

3,937,674

PREPARATION OF MODIFIED PETROLEUM RESINS

Jan Laarkamp, Midden-Beemster, Netherlands, assignor to Stamicarbon N.V., Geleen, Netherlands

Filed Sept. 19, 1972, Ser. No. 290,359

Claims priority, application Netherlands, Sept. 24, 1971, 7113141

Int. Cl.^{2} C08L *91/00*

U.S. Cl. 260—19 UA **28 Claims**

1. In a process for the preparation of a modified petroleum resin comprising mixing and reacting together, at a temperature of about 150° C. to about 320° C:

a. a weakly unsaturated petroleum resin, and

b. from about 5 to about 50% by weight, calculated on the amount of resin component (a), at least one unsaturated fatty acid having from 12–30 carbon atoms, the improvement comprising using a weakly unsaturated petroleum resin composed essentially of polymerized units of cyclopentadiene, methyl cyclopentadiene or both and obtained by thermal polymerization of essentailly cyclopentadiene, methylcyclopentadiene or dimers thereof, having a melting point between 70° C. and 200° C. and a bromine number, expressed as grams of bromine per 100 grams of resin, of less than 150, and conducting the reacting in the presence of from about 0.05 to about 5% by weight, calculated on the amount of resin component (a), of metal compound soluble in the reaction mixture and substantially free from forming strongly colored products in combination with components (a) and (b), the metal selected from the group consisting of magnesium, aluminum and zinc, and continuing the reaction until a resin product having a melting point of at least 125° C. is obtained.

3,937,675

TREATMENT OF TEXTILE WASTE FORMED OF POLYESTER AND CELLULOSIC FIBERS

Irving Gruntfest, Cheltenham, Pa., and Rudolph Turner, Trenton, N.J., assignors to Textile Research Institute, Princeton, N.J.

Filed Nov. 18, 1974, Ser. No. 524,591

Int. Cl.^{2} C08J *11/04*

U.S. Cl. 260—2.3 **8 Claims**

1. A method for recovering polyester fibers and cellulosic material in useful form from textile wastes containing the same which comprises the steps of treating the waste with an aqueous solution of a mineral acid under reaction conditions which serve to convert the cellulose to a substantially nonfibrous condition while leaving the polyester fibers substantially unaffected, separating the liquid and cellulosic reaction product from the polyester fibers and thereafter separating said reaction product from said liquid.

3,937,676

LUBRICITY COATING FOR PLASTIC COATED GLASS ARTICLES

Francis J. Shonebarger, Lancaster, and William Brown, Amanda, both of Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio

Division of Ser. Nn. 375,684, July 2, 1973, Pat. No. 3,864,151. This application Oct. 7, 1974, Ser. No. 512,401

Int. Cl.^{2} C08L *91/00*

U.S. Cl. 260—23 R **10 Claims**

1. A lubricity coating material in water emulsion form and having a solids content consisting essentially of,

1 part by weight of a member of the group of salts consisting of calcium stearate, zinc stearate, calcium oleate, zinc oleate, and mixtures thereof.

about 0.5 to 2 parts of a soluble polyvinyl alcohol,
and about 1.7–3.6 parts of an oleate of the class consisting of potassium, sodium, and ammonium oleates, and mixtures thereof.

3,937,677

PROCESS FOR THE MANUFACTURE OF HEAT-CURABLE SYNTHETIC RESINS WHICH CAN BE DILUTED WITH WATER AND ARE SUITABLE FOR THE ELECTROPHORETIC COATING PROCESS

Bernhard Broecker, Hamburg; Richard Schardt, Oststeinbeck, and Gerhard Werner, Glashutten, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Mar. 11, 1974, Ser. No. 449,618

Claims priority, application Switzerland, Mar. 13, 1973, 3619/73

Int. Cl.² B25B *13/28*

U.S. Cl. 260—23.7 A **20 Claims**

1. Process for the manufacture of heat-curable synthetic resins, based on reaction products of maleic anhydride with mixtures of polybutadiene, unsaturated hydrocarbon resins and unsaturated fatty acid glyceride esters, which can be diluted with water and are suitable for the electrophoretic coating process, characterized in that a mixture consisting of

a. 20–60% by weight of a polybutadiene having an average molecular weight of 750–2,000 and an iodine number between 300 and 450,

b. 10–60% by weight of a hydrocarbon resin of predominantly aliphatic structure, having a viscosity between 30 and 800 cP, measured in 70% strength solution in toluene at 20°C. and an iodine number of between 160 and 400, consisting of

b_1. 20–80% by weight of polyisoprene,

b_2. 5–50% by weight of cyclopentadiene and/or dicyclopentadiene, and

b_3. 5–50% by weight of further mono-unsaturated or poly-unsaturated hydrocarbons with 5–6 C atoms which are of predominantly aliphatic or cycloaliphatic structure, and

c. 5-40% by weight of a fatty acid glyceride ester, wherein each fatty acid radical contains 16–18 C atoms and the fatty acid glyceride ester has an iodine number between 140 and 220,

is pre-polymerized by heating to 200°–270°C. until the reaction mixture of components (a), (b) and (c), which has an initial viscosity of about 100 to 300 sec., measured according to DIN 53,211, displays viscosities between 500 and 2,000 sec., measured according to DIN 53,211, the resulting mixture is then reacted with

d. 10–20% by weight of maleic anhydride at 180° to 190°C., until no further free maleic anhydride is present, the sum of components (a), (b), (c) and (d) employed having to add up to 100 % by weight, and

e. in the resulting adduct the anhydride groups present are opened by hydrolysis with water or alcoholysis with the amount of monohydric alcohols with 1–4 C atoms required to form the half-ester.

3,937,678

PROCESS FOR MODIFYING RHEOLOGICAL AND SUSPENSION PROPERTIES OF NONAQUEOUS SUSPENSION

Zenpachi Yasuda, Kasukabe; Hiroshi Koizumi, Tokyo; Masao Hasunuma, Ohmiya, and Satoshi Oda, Koshigaya, all of Japan, assignors to Kusumoto Chemicals Ltd., Tokyo, Japan

Filed July 5, 1974, Ser. No. 485,948

Claims priority, application Japan, July 16, 1973, 48-79290

Int. Cl.² C08L *91/00*

U.S. Cl. 260—28.5 R **10 Claims**

1. A process for improving the rheological and suspension properties of a nonaqueous fluid system which contains finely divided solid particles characterized in that: (1) an amide wax having a melting point of about 100° to about 160°C. obtained from reaction of hydrogenated castor oil fatty acid or an organic acid mixture containing at least 30 molar percent of hydrogenated castor oil fatty acid with at least one primary or secondary amine; and (II) an emulsifiable polyethylene wax having an acid number of about 2 to 50, a softening point of about 95 to about 120°C., a density of about 0.92 to about 0.98 and a penetration of about 1 to about 20; are added to the nonaqueous fluid system.

3,937,679

ELECTRODEPOSITABLE COMPOSITIONS

Joseph F. Bosso, Lower Burrell, and Marco Wismer, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. Nos. 158,063, June 29, 1971, abandoned, and Ser. No. 167,470, July 29, 1971, and Ser. No. 129,267, March 29, 1971, and Ser. No. 100,825, Dec. 22, 1970, and Ser. No. 100,834, Dec. 22, 1970, said Ser. No. 158,063, is a division of Ser. No. 772,366, Oct. 31, 1968, abandoned, said Ser. No. 167,470, is a continuation-in-part of Ser. No. 840,847, July 10, 1969, abandoned, and Ser. No. 840,848, July 10, 1969, abandoned, and Ser. No. 100,825, and Ser. No. 100,834, said Ser. No. 100,825, and Ser. No. 100,834, each is a continuation-in-part of Ser. No. 56,730, July 20, 1970, abandoned, which is a continuation-in-part of said Ser. No. 772,366, said Ser. No. 129,267, is a continuation-in-part of said Ser. No. 100,825. This application Aug. 4, 1972, Ser. No. 277,931

Int. Cl.² C08L *61/06, 61/20*

U.S. Cl. 260—29.3 **21 Claims**

1. A coating composition electrodepositable on a cathode comprising an aqueous dispersion comprising

a. an acid salt solubilized quaternary onium salt group containing synthetic organic resin where the onium group is selected from the group consisting of ammonium, sulfonium and phosphonium,

b. an amine/aldehyde condensate and

c. an unsaturated methylol phenol ether the combined weight of (b) and (c) being from about 2% to about 30% by weight of the combined weight of (a), (b) and (c), and the weight ratio of (b) to (c) being between about 5:1 and about 1:5.

3,937,680

HYDROPHILIC GEL TERPOLYMERS FROM HYDROPHILIC N-VINYL MONOMERS, HYDROXYALKYL ACRYLATES OR METHACRYLATES AND POLYMERIZABLE UNSATURATED CARBOXYLIC ACIDS

John Trevor de Carle, London, England, assignor to Global Vision, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 223,122, Feb. 3, 1972, abandoned. This application May 29, 1973, Ser. No. 364,532

Int. Cl.² C08L *39/06;* **B29D** *11/00;* **G02C** *7/04*

U.S. Cl. 260—29.6 TA **4 Claims**

1. A contact lens which comprises a terpolymer hydrogel containing from about 55% to about 85% by weight of water based on the total weight of the hydrogel, the molecular structure of said terpolymer including alkaline carboxylate moieties therein and being the hydrated polymeric product resulting from the polymerization of a monomer mixture comprising 30–50% by weight of N-vinyl lactam, up to 3% by weight of a glycol dimethacrylate or diacrylate, 0.25–5.6% by weight acrylic or methacrylic acid and a hydroxyalkyl acrylate or methacrylate monomer which constitutes the balance of the mixture.

3,937,681

TIRE TREAD OF HOMOPOLYMERS OF BUTADIENE

Karl-Heinz Nordsiek, Marl, Germany, assignor to Chemische Werke Huels Aktiengesellschaft, Marl, Germany

Continuation of Ser. Nos. 435,869, Jan. 23, 1974, and Ser. No. 304,598, Nov. 8, 1972, abandoned, and Ser. No. 8,745, Feb. 4, 1970, abandoned. This application Dec. 20, 1974, Ser. No. 535,107

Claims priority, application Germany, Feb. 7, 1969, 1906037

Int. Cl.² B29H *5/02;* **B60C** *5/00;* **C08K** *5/01*

U.S. Cl. 260—33.6 AQ **10 Claims**

1. A vulcanizable composition shaped into tire tread strip form, consisting essentially of

a. 100 parts by weight of a polybutadiene consisting of 25–50% monomer units arranged in the 1,2-position; 10–40% monomer units arranged in the 1,4-cis position; and correspondingly 15–55% monomer units arranged in the 1,4-trans position, the ratio of cis to trans structures being 10:55 to 40:15, said polybutadiene having an ML-4 100° C. value of 70–120 and being prepared by subjecting a lithium polymerized polybutadiene having an ML-4 100° C. value of 10–60 to a molecular weight jump or coupling reaction to increase the molecular weight thereof;

b. 5–100 parts by weight of a plasticizer oil; and

c. 30–120 parts by weight of a carbon black filler.

3,937,682

STRESS-SENSITIVE COMPOSITION

Mitsuo Onozuka; Koki Nomoto, and Koji Sato, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 436,593, Jan. 24, 1974, abandoned. This application Oct. 30, 1974, Ser. No. 519,276

Claims priority, application Japan, Oct. 5, 1971, 46-78125

Int. Cl.² C08K *3/30;* **C01B** *17/00*

U.S. Cl. 260—42.24 **2 Claims**

1. A polyolefine formed product made of a composition comprising a polyolefine resin and 50–90 wt.% of hemihydrated calcium sulfite, prepared by reacting alkali bisulfite or ammonium bisulfite with calcium carbonate, having crystal sizes of 1 – 30 μ in the lateral or smaller dimension and 5 – 100μ in the axial or larger dimension, said formed product being capable of becoming soft and pliable when subjected to severe mechanical forces.

3,937,683

COHESIVE COATING COMPOSITIONS

Andrew Nicholas Ferrar, Bridgwater, England, assignor to British Cellophane Limited, England

Filed Nov. 19, 1973, Ser. No. 417,406

Claims priority, application United Kingdom, Nov. 23, 1972, 54237/72

Int. Cl.² C08J *3/20;* **C08K** *3/34*

U.S. Cl. 260—42.47 **1 Claim**

1. A cohesive coating composition comprising in dispersion in a liquid a mixture of between 70 and 90% by weight of carboxylated styrene butadiene rubber and between 10 and 30% by weight of poly-n-butyl methacrylate in which dispersion there is incorporated between 10% and 25% by weight, based on the weight of the solids, of particulate hydrated aluminum silicate having a mean particle size lying in the range between 2.0 and 20 microns.

3,937,684

PROCESS FOR PRODUCING HIGH MOLECULAR WEIGHT DIORGANOPOLYSILOXANES FOR USE IN HEAT VULCANIZABLE SILICONE RUBBER COMPOSITIONS

John S. Razzano, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Apr. 24, 1974, Ser. No. 463,435

Int. Cl.² C08G *77/04*

U.S. Cl. 260—46.5 G **7 Claims**

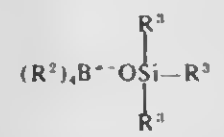
1. A process for producing diorganopolysiloxane polymers having a viscosity from 1,000 to 200,000,000 centipoise at 25°C where at least one of the organo groups is an aliphatic or haloaliphatic radical of 3 carbon atoms or more consisting essentially of (a) hydrolyzing in a water and a water-immiscible organic solvent mixture, a silane of the formula,

$$R\,R'\,SiX_2$$

and mixtures of said silane, where R is selected from the class consisting of methyl, ethyl, vinyl and phenyl and R′ is selected from the class consisting of alkyl radicals, halogenated alkyl radicals and cycloalkyl radicals of 3 to 8 carbon atoms, X is halogen; (b) separating the water and water-immiscible organic solvent from the hydrolyzate; (c) adding 0.5 to 2% by weight of a catalyst selected from the class consisting of KOH, NaOH, and CsOH to the hydrolyzate and heating the hydrolyzate to 150°C to 200°C; (d) removing overhead a mixture of cyclic polysiloxanes and transferring such cyclic polysiloxanes into a distillation column; (e) separating by distillation at a temperature of 80°–200°C and 1 to 50 mm of Hg vacuum essentially pure tetracyclic polysiloxanes of the formula,

$$(R\,R'\,SiO)_4$$

and mixtures thereof, where R and R′ are as previously defined; (f) heating the tetracyclic polysiloxanes above 100°C with a nitrogen purge to reduce the water content to less than 10 parts per million; (g) reacting the cyclic tetrapolysiloxanes at a temperature in the range of 0° to 90°C in the presence of 5 to 300 parts per million of a catalyst selected from the class consisting of CsOH and



$$(R^2)_4B^{+-}O\overset{R^3}{\underset{R^3}{Si}}-R^3$$

where R^2 is selected from the class consisting of alkyl radicals of 1 to 8 carbon atoms, cycloalkyl radicals of 4 to 8 carbon atoms and phenyl, B is selected from the class consisting of nitrogen and phosphorous, R^3 is selected from the class consisting of alkyl radicals of 1 to 8 carbon atoms, cycloalkyl radicals of 4 to 8 carbon atoms, phenyl, siloxane chains of the unit formula, $R_n{}^4\,SiO_{(4-n)/2}$ and mixtures thereof, where R^4 is selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, a varies from 1.5 to 2.5, until equilibration is reached and (h) neutralizing the catalyst in the reaction mixture after equilibrium has been reached.

3,937,685

POLYGLYCIDYL ETHERS

Herbert Kölbel; Georg Manecke, and Eftichia Güttler-Pimenidou, all of Berlin, Germany, assignors to Hoechst Aktiengesellschaft, Germany

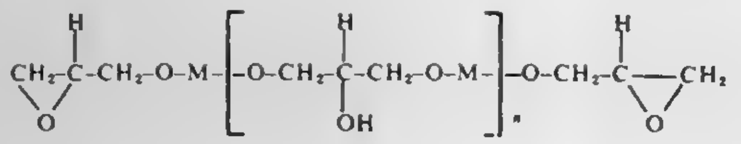
Filed Nov. 19, 1973, Ser. No. 417,120

Claims priority, application Germany, Nov. 21, 1972, 2256947

Int. Cl.² C08G *30/04*

U.S. Cl. 260—47 EP **14 Claims**

1. A polyglycidyl ether of the formula

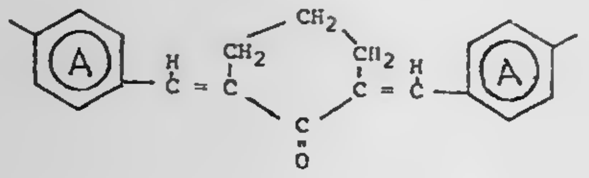


(I)

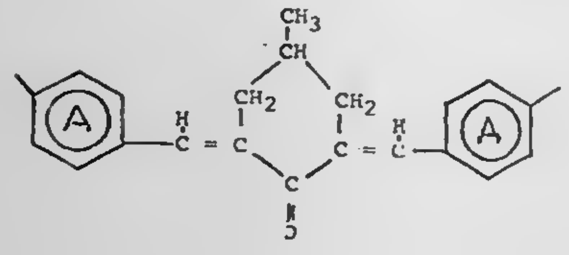
in which

n denotes zero or an integer of 1 to about 20, and
M denotes a chalcone radical of the formula

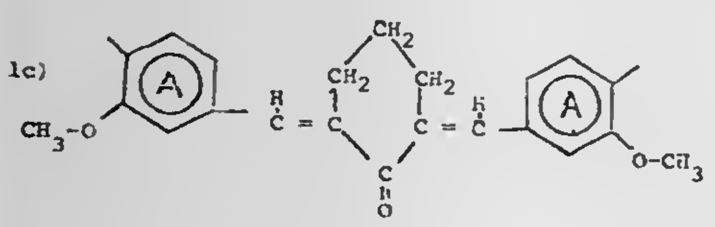
1a)



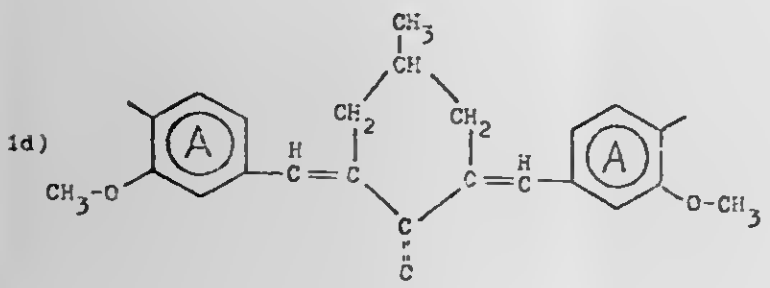
1b)



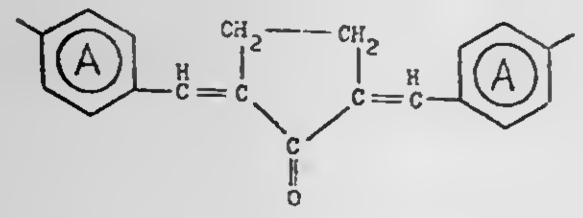
1c)



1d)



1e)



3,937,686

PROCESS OF PREPARING HIGH MOLECULAR WEIGHT POLYAMIDE WITH RECOVERY OF DIAMINE AND RETURN OF SAME TO POLYMERIZATION SYSTEM

Valdis Ansis Augstkalns, Parkersburg, W. Va., assignor to c/o E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Jan. 10, 1974, Ser. No. 432,172

Int. Cl.^{2} C08G *69/28*

U.S. Cl. 260—78 R **7 Claims**

1. In the process for preparing a fiber-forming or moldable polyamide from an aqueous solution of a polyamide-forming salt of an organic diamine and an organic dicarboxylic acid wherein the salt is concentrated and polymerized, during which steam and organic diamine are vented from the evaporation and polymerization equipment; the improvement which comprises in sequence

1. collection and condensing vented vapor to form an aqueous solution of organic diamine condensate,
2. contacting the condensate of the vented vapor with the hydrogen form of a carboxylic cation-exchange resin which has a strength sufficient to recover said organic diamine from an aqueous solution thereof,
3. contacting the resin employed in step (2) with an organic dicarboxylic acid of the type employed in making said polyamide to form an aqueous solution of organic diamine-organic dicarboxylic acid salt,
4. collecting the aqueous solution obtained in step (3), and
5. adding the solution from step (4) to the salt preparation facility of said polymerization equipment.

3,937,687

AMIDIFICATION PRODUCTS OF C_{19} DICARBOXYLIC ACID AND CYCLICAL DIAMINES

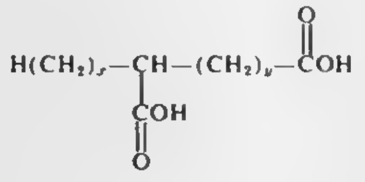
Edgar R. Rogier, Hopkins; Allan H. Jevne, Anoka, and Gerald L. Schwebke, Minneapolis, all of Minn., assignors to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed May 28, 1974, Ser. No. 473,968

Int. Cl.^{2} C08G *69/26*

U.S. Cl. 260—78 R **2 Claims**

1. A polyamide consisting essentially of the amidification product of a mixture of isomers of heptadecane dicarboxylic acid having the formula:



$$H(CH_2)_x-\underset{\displaystyle \overset{|}{\underset{\|}{C}OH}\atop O}{CH}-(CH_2)_y-\overset{O}{\overset{\|}{C}}OH$$

wherein *x* is an integer from 1 to 15, *y* is an integer from 1 to 15 and the sum of *x* and *y* is 16, and a cyclical diamine bis(4-aminocyclohexyl)methane, wherein the equivalents of the dicarboxylic acid and the diamine are substantially equal, wherein the amidification reaction is conducted at a temperature between about 100°C. and 300°C., and wherein the amidification product has a logarithmic viscosity number of about 30 to 150 as measured in orthochlorophenol solvent at a concentration of 0.005 g./ml. at a temperature of 30°C.

3,937,688

COPOLYAMIDES FROM AN ISOMERIC MIXTURE OF HEPTADECANE DICARBOXYLIC ACID

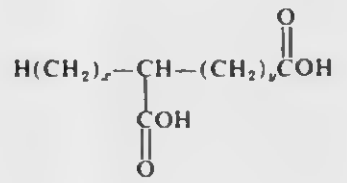
Edgar R. Rogier, Hopkins; Allan H. Jevne, Anoka, and Gerald L. Schwebke, Minneapolis, all of Minn., assignors to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed May 28, 1974, Ser. No. 473,967

Int. Cl.^{2} C08G *69/26*

U.S. Cl. 260—78 R **6 Claims**

1. A noncrystalline, moisture insensitive polyamide consisting essentially of an amidification product of an acid component of (a) a mixture of isomers of heptadecane dicarboxylic acid having the formula



$$H(CH_2)_x-\underset{\displaystyle \overset{|}{\underset{\|}{C}OH}\atop O}{CH}-(CH_2)_y-\overset{O}{\overset{\|}{C}}OH$$

wherein *x* is an integer from 1 to 15, *y* is an integer from 1 to 15 and the sum of *x* and *y* is 16, and (b) an acid which is isophthalic acid, terephthalic acid, alkyl substituted isophthalic acid wherein the alkyl radical has from 1 to 12 carbon atoms or mixtures thereof; wherein the equivalent percentage of the heptadecane dicarboxylic acid in the acid component is from about 15 to 80% and of the acid which is isophthalic acid, terephthalic acid, alkyl substituted isophthalic acid or mixtures thereof is from about 85 to 20% based on the total acid component; and a diamine component which is hexamethylene diamine, or trimethylhexamethylene diamine, wherein the equivalents of the acid component and the diamine component are substantially equal, wherein the amidification reaction is conducted at a temperature between about 100°C. and 300°C., and wherein the amidification product has a logarithmic viscosity number of about 30 to 150 as measured in orthochlorophenol solvent at a concentration of 0.005 g./ml. by weight and at a temperature of 30°C.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

3,937,689

RADICAL INITIATOR-CURABLE DIALLYL ESTER COMPOSITIONS AND CURED RESINS OBTAINED THEREFROM

Yuji Mitani; Yuzo Aito; Masahiro Yamaguchi, all of Hino, and Kiyoshi Nawata, Hachioji, all of Japan, assignors to Teijin Ltd., Osaka, Japan

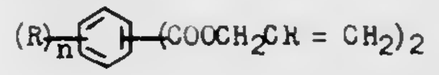
Filed July 1, 1974, Ser. No. 484,871

Int. Cl.^{2} C08F *218/16, 218/18, 222/26*

U.S. Cl. 260—78.5 UA **3 Claims**

1. A radical initiator-curable diallyl ester composition consisting essentially of 80 – 100% by weight of the following components (A) and (B):

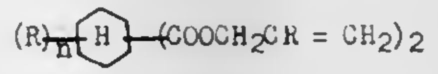
A. a prepolymer wherein
  1. 70 – 100 mole % of its structural units are derived from a diallyl ester selected from the group consisting of
    a. a diallyl ester of benzenedicarboxylic acid having the formula (I)



(I)

wherein the R's, which may be the same or different, are independently selected from the group consisting of hydrogen and methyl, and *n* is an integer from 1 to 2,

b. a diallyl ester of cyclohexanedicarboxylic acid having the formula (II)



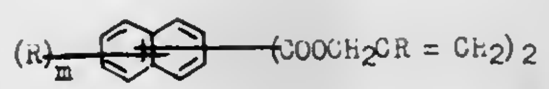
(II)

wherein the R's and *n* are as above defined, and

c. a mixture of the above (a) and (b); and

2. 30 – 0 mole % of its structural units are derived from other compounds selected from monomeric diallyl esters of dibasic acids and other monomers and polymers, said compound being copolymerizable with said (a) – (c) under the conditions of forming said prepolymer; and

B. a monomer of a diallyl ester of naphthalenedicarboxylic acid having the formula (III)



(III)

wherein the R's are as above defined, and *m* is an integer from 1 to 4, which groups $-COOCH_2CR{=}CH_2$ are attached in a position selected from the 2,7-, 1,5- and 2,6-positions;

said monomer (B) being contained in an amount of 5 – 50% by weight based on said prepolymer (A), and the remaining 20 – 0% by weight of said composition being a compound (C) other than said (A) and (B), said (C) being selected from the group consisting of monomers and polymers copolymerizable with a member selected from the group consisting of said prepolymer (A) and said monomer (B) at the conditions under which said composition is cured.

3,937,690

PROCESS FOR THE PREPARATION OF THERMOPLASTICALLY WORKABLE FLUORO-OLEFIN POLYMERS

Gregor Weisgerber, Konigswinter, and Werner Trautvetter, Troisdorf-Spich, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed June 7, 1973, Ser. No. 367,902

Claims priority, application Germany, June 19, 1972, 2229607

Int. Cl.^{2} C08F *214/18, 218/08, 114/20, 114/22*

U.S. Cl. 260—86.3 **9 Claims**

1. In a process for the preparation of thermoplastically workable fluoro-polyolefins and their copolymers by polymerization of fluorine-containing olefins in the aqueous phase in the presence of water-soluble radical-forming catalysts and a

polymerization regulator, the improvement which comprises employing as such regulator a partially or completely halogenated hydrocarbon having from two to three carbon atoms and at least three halogen atoms of which at least one is fluorine and at least another is bromine or iodine said regulator being employed in an amount between 0.05 and 10% by weight.

3,937,691
MANUFACTURE OF POLY (α-OLEFINS)

Gerhard Staiger, Bobenheim-Roxheim; Klaus Bronstert, Carlsberg; Hannes Schick, Mannheim; Peter Hennenberger, and Heinz Mueller-Tamm, both of Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed May 30, 1973, Ser. No. 365,218

Claims priority, application Germany, May 30, 1972, 2226167

Int. Cl.² C08F *4/66, 10/06*

U.S. Cl. 260—93.7 **5 Claims**

1. In a process for the manufacture of poly(α-olefins) by polymerization of α-olefins at temperatures of from 0° to 150°C and pressures of from 1 to 100 atm. absolute using a catalyst system comprising (1) a titanium-containing component of (1.1) a substance of the formula $TiCl_3.1/3AlCl_3$ having a maximum particle diameter of 2 mm and (1.2) an organic electron donor containing phosphorus atoms and/or nitrogen atoms and ground together with said substance of formula $TiCl_3.1/3AlCl_3$ (1.1) to form a complex compound therewith, and (2) an aluminum-containing component of a substance of a formula $Al(C_nH_{2\cdot n+1})_3$ or $Al(C_nH_{2\cdot n+1})_2Cl$ or a mixture thereof, where n is an integer of from 2 to 6, provided that the molar ratio of titanium in the substance of formula $TiCl_3.1/3AlCl_3$ (1.1) to the electron donor (1.2) is from 10:5 to 10:1 and the molar ratio of titanium in the substance of formula $TiCl_3.1/3AlCl_3$ (1.1) to the aluminum-containing component (2) is from 10:5 to 10:300, the improvement consisting essentially of using as said catalyst system a system in which grinding of the substance of formula $TiCl_3.1/3AlCl_3$ (1.1) with the electron donor (1.2) has been carried out without the use of auxiliaries or additives in a vibratory ball mill using steel balls having a diameter of from 6 to 60 mm and at a grinding acceleration of from 30 to 70 m.sec⁻² over a period of time of from 10 to 70 hours at a temperature which is from 4° to 10°C below the temperature at which the particles in the ground material begin to agglomerate.

3,937,692
PROCESS FOR THE STEREOSPECIFIC POLYMERIZATION OF DIOLEFINS, PRODUCTS OBTAINED THEREBY AND PROCESS FOR THE POLYMERIZATION OF OLEFINS

Gabriele Lugli; Alessandro Mazzei, and Gabriele Modini, all of San Donato Milanese, Italy, assignors to Snamprogetti S.p.A., San Donato Milanese, Italy

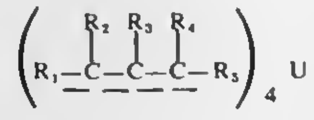
Filed Nov. 17, 1972, Ser. No. 307,373

Claims priority, application Italy, Nov. 26, 1971, 31730/71; Oct. 10, 1972, 30289/72

Int. Cl.² C08F *4/82, 4/44, 136/04*

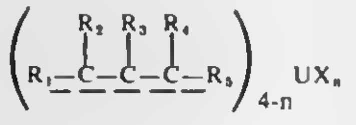
U.S. Cl. 260—94.3 **20 Claims**

1. Process for the stereospecific homopolymerization of a diolefin wherein the homopolymerization reaction is carried out in the presence of a catalyst selected from the uranium allyl derivatives having the formula



$$\left(R_1-\overset{\overset{R_2}{|}}{C}-\overset{\overset{R_3}{|}}{C}-\overset{\overset{R_4}{|}}{C}-R_5\right)_4U$$

and



$$\left(R_1-\overset{\overset{R_2}{|}}{C}-\overset{\overset{R_3}{|}}{C}-\overset{\overset{R_4}{|}}{C}-R_5\right)_{4-n}UX_n$$

wherein R_1, R_2, R_3, R_4 and R_5, the same or different, are selected from the group consisting of hydrogen atoms, alkyl radicals containing from 1 to 10 carbon atoms, aryl radicals containing from 6 to 10 carbon atoms, cycloalkyl radicals containing from 4 to 10 carbon atoms and alkylaryl radicals; X is an anion selected from Cl^-, Br^- and I^-; n is a number ranging between 1 and 3; and the dotted line indicates the possible delocalization of the valence electrons.

3,937,693
PRODUCTION OF EDIBLE PROTEIN CONTAINING SUBSTANCES

Peter John Towersey, High Wycombe; John Longton, Chesham, and Geoffrey Norman Cockram, Henley on Thames, all of England, assignors to Ranks Hovis McDougall Limited, London, England

Filed Feb. 8, 1974, Ser. No. 440,775

Claims priority, application United Kingdom, Feb. 13, 1973, 7087/73

Int. Cl.² A23J *3/00*

U.S. Cl. 260—112 R **12 Claims**

1. A process for reducing the nucleic acid content in the production of an edible protein-containing substance comprising contacting a grown non-toxic microfungus of the class Fungi Imperfecti with a solvent comprising between 40% and 100% by volume of a lower alkanol containing up to three carbon atoms and the remainder being water, substantially separating said solvent from said microfungus, incubating said microfungus at a pH between 5 and 9.5 in an aqueous suspension and at a temperature between 30°C and 80°C for a time of at least 90 seconds and thereafter separating said microfungus from the aqueous suspension.

3,937,694
PROCESS FOR THE RECOVERY OF ZINC BACITRACIN FREE FROM ZINC HYDROXIDE

Judit Báthory; Márta Éry née Nagy; Lajos Gerei; Ferenc Lakatos; Mágdolna Stiller née Kisteleki, and Tamás Vághy, all of Budapest, Hungary, assignors to Phylaxia Oltoanyag- es Tapszertermelo Vallalat, Budapest, Hungary

Filed Apr. 12, 1974, Ser. No. 460,574

Claims priority, application Hungary, Apr. 16, 1973, PI 380

Int. Cl.² C07C *103/52;* **C07G** *7/00;* **C08H** *1/00*

U.S. Cl. 260—112.5 R **3 Claims**

1. A process for the recovery of bacitracin from a solution containing same which comprises the step of raising the pH of said solution in the presence of zinc ion from a soluble zinc source added to the solution and in the presence of ammonium ion to precipitate the bacitracin in the form of a zinc bacitracin complex while maintaining zinc which does not form said zinc bacitracin complex in solution; removing the zinc bacitracin complex precipitated from said solution; and drying the zinc bacitracin complex precipitate.

3,937,695
P-GLU-TRP-SER-TYR-D-LYS-LEU-ARG-PRO-GLY-NH_2 AND INTERMEDIATES

Dmitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,515

Int. Cl.² C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 LH **5 Claims**

1. A compound selected from the class consisting of
   L-p-Glu-L-Trp-L-Ser-L-Tyr-D-Lys-L-Leu-L-Arg-L-Pro-Gly-NH_2 (I)

and
   R^4-L-p-Glu-L-Trp(R^6)-L-Ser(R^3)-L-Tyr(R^2)-D-Lys(R^5)-L-Leu-L-Arg(N^G-R^1)-Pro-Gly-X (II)

and its non-toxic salts; wherein

R^1 is a protecting group for the N^δ, N^ω and $N^{\omega'}$ nitrogen atoms of arginine selected from the group consisting of nitro, tosyl, benzyloxycarbonyl, adamantyloxycarbonyl and tert-butyloxycarbonyl or R^1 is hydrogen;

R^2 is a protecting group for the phenolic hydroxyl group of tyrosine selected from the group consisting of tert-butyl, tetrahydropyranyl, trityl, benzyl, 2,6-dichlorobenzyl, 4-bromobenzyloxycarbonyl and benzyloxycarbonyl or R^2 is hydrogen;

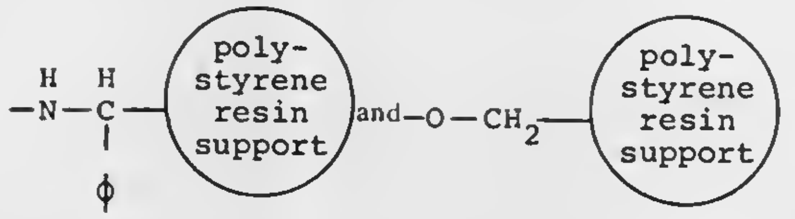
R^3 is a protecting group for the alcoholic hydroxyl group of serine and is selected from the group consisting of acetyl, benzoyl, tetrahydropyranyl, tert-butyl, trityl, 2,6-dichlorobenzyl and benzyl or R^3 is hydrogen;

R^4 is selected from the group consisting of hydrogen or an α-amino protecting group;

R^5 is a protecting group for the side chain amino substituent of lysine selected from the class consisting of 2-chlorobenzyloxycarbonyl, benzyloxycarbonyl, tosyl, t-amyloxycarbonyl, t-butyloxycarbonyl; or R^5 is hydrogen;

R^6 is selected from the class consisting of hydrogen and formyl; and

X is selected from the group consisting of NH_2, O-(lower)-alkyl, O-benzyl and an anchoring bond linked to a solid polystyrene resin represented by one of the formula



wherein said polystyrene resin is cross linked through the phenyl group on each second carbon atom of the alkyl chain of said polystyrene and said symbol ϕ means phenyl, with the proviso that at least one of R^1, R^2, R^3, R^5 and R^6 is a protecting group.

3,937,696
PROCESS FOR PREPARING HIGHER PURITY AZO COMPOUNDS

Richard N. Knowles, and Earl P. Moore, Jr., Hockessin, both of Del., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Apr. 2, 1974, Ser. No. 457,386

Int. Cl.² C07C *107/02*

U.S. Cl. 260—192 **9 Claims**

1. In a process for producing an azonitrile by coupling an aminonitrile in the presence of a hypochlorite, the improvement which comprises acidifying the reaction mixture to a pH of a maximum of 4 and adding an alkali metal nitrite, alkali metal sulfite, alkali metal bisulfite, alkali metal thiosulfate, alkaline earth metal nitrite, alkaline earth metal sulfite, alkaline earth metal bisulfite, alkaline earth metal thiosulfate, quaternary ammonium nitrite, quaternary ammonium sulfite, quaternary ammonium bisulfite, quaternary ammonium thiosulfate, sulfur dioxide, nitrogen oxide, oxalic acid, formaldehyde or hydroxylamine as a reducing agent after the coupling reaction is completed.

3,937,697
12-DEHYDRO DIGOXIN-4'''-AND 3'''-ALKYL ETHERS

Ulrich Stache, Hofheim, Taunus; Werner Fritsch, Neuenhain, Taunus; Werner Haede, Hofheim, Taunus, and Ernest Lindner, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

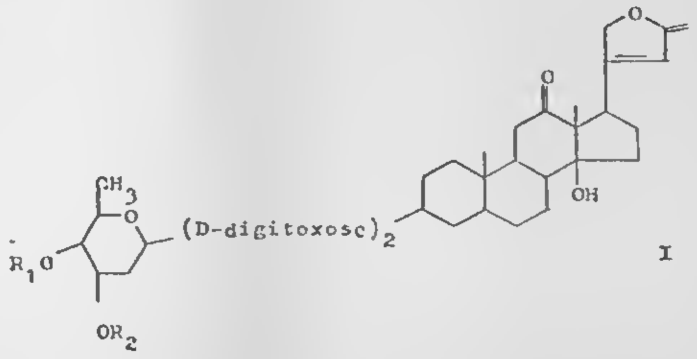
Filed Feb. 28, 1975, Ser. No. 554,182

Claims priority, application Germany, Mar. 2, 1974, 2410012

Int. Cl.² C07J *19/00*

U.S. Cl. 260—210.5 **4 Claims**

1. A compound of the formula I



I

in which R_1 and R_2 are different and each stands for hydrogen or lower alkyl of 1 to 4 carbon atoms.

3,937,698

TRITIATED DERIVATIVES OF CYCLIC NUCLEOTIDES MONOPHOSPHATES

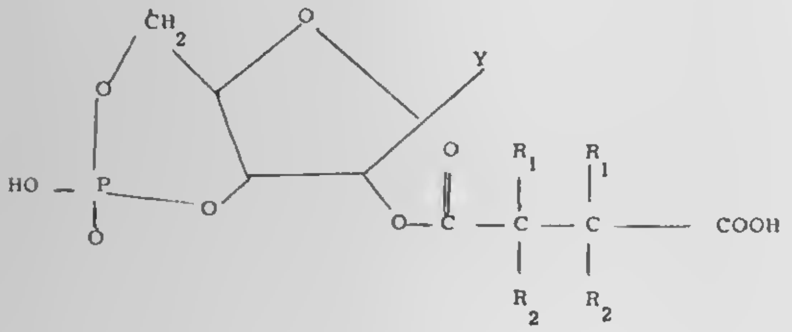
Sidney Gutcho, Monsey; Raul Rapun, Sloatsburg, both of N.Y.; Herman Rutner, Hackensack, N.J., and Andrew Charig, Valley Cottage, N.Y., assignors to Becton, Dickinson & Company, Rutherford, N.J.

Filed July 27, 1973, Ser. No. 383,461

Int. Cl. C07d *51/52, 51/54*

U.S. Cl. 260—211.5 R **27 Claims**

1. A compound selected from the group consisting of compounds represented by the following structural formula I:



I

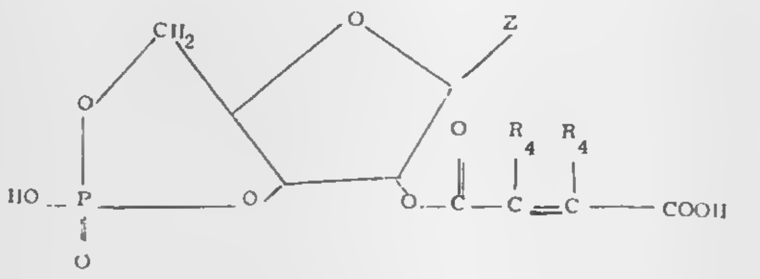
wherein

Y is selected from the group consisting of inosyl, adenyl, uradyl, guanyl, thymyl, cytidyl and the tritium substituted derivatives thereof;

each R_1 is selected from the group consisting of hydrogen, tritium and lower alkyl; and

each R_2 is selected from the group consisting of tritium and hydrogen with at least one R_2 being tritium;

and compounds having the following structural formula II:



II

wherein

Z is selected from the group consisting of uradyl, guanyl, inosyl, thymyl, adenyl, cytidyl and the chloro-, bromo and iodo- substituted derivatives thereof; and

each R_4 is selected from the group consisting of hydrogen, chloro, iodo, bromo, and lower alkyl.

3,937,699

6-(1′-CYCLOHEXENYLGLYCINAMIDO)PENICILLANIC ACID AND SALTS THEREOF

Tsunehiko Asako, Kyoto; Takenobu Soma, Suita; Hirotomo Masuya, Kobe; Tadatsugu Harukawa, Kyoto, and Takuichi Miki, Amagasaki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 188,622, Oct. 12, 1971, Pat. No. 3,824,237. This application May 7, 1974, Ser. No. 467,823

Claims priority, application Japan, Oct. 12, 1970, 45-89918; May 24, 1971, 46-35382; Aug. 3, 1971, 46-58905; Aug. 28, 1971, 46-66104

Int. Cl.² C07D *499/46*

U.S. Cl. 260—239.1 **2 Claims**

1. A compound selected from the group consisting of 6-(1′-cyclohexenylglycinamido)penicillanic acid and non-toxic pharmaceutically acceptable salts thereof.

3,937,700

NOVEL 1,2-METHYLENE-17α-ACYLOXY (OR IMPROVED HYDROXY)-9β, 10α-STEROID COMPOUNDS OF THE PREGNANE SERIES, PHARMACEUTIC PREPARATIONS ON THE BASIS OF THE NOVEL COMPOUNDS AND METHODS OF PRODUCING SAID COMPOUNDS AND PREPARATIONS

Harmen Van Kamp; Pieter Westerhof, and Lucas Morsink, all of Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

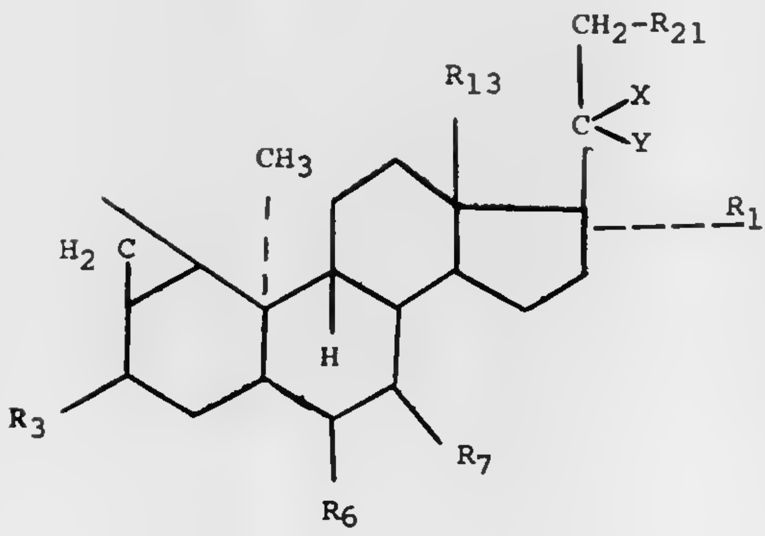
Continuation of Ser. No. 120,705, March 3, 1971, abandoned. This application July 18, 1973, Ser. No. 380,196

Claims priority, application Netherlands, Mar. 4, 1970, 7003064

Int. Cl.² C07J *17/00*

U.S. Cl. 260—239.55 R **14 Claims**

1. A compound of the formula



wherein X is hydrogen and Y is a member selected from the group consisting of hydroxy and esterified hydroxy of 1–20 carbon atoms derived from an acid containing only carbon, hydrogen and carboxylic moieties or X and Y together form a double bonded oxygen atom, R_3 is a member selected from the group consisting of 3-keto-4-dehydro, 3-keto-4,6-bisdehydro-, 3-OR′-3,5-bisdehydro and 3-OR′-4,6-bisdehydro wherein OR′ is a member selected from the group consisting of esterified hydroxy of 1–20 carbon atoms derived from an acid containing only carbon, hydrogen and carboxylic moieties, methoxy, ethoxy, butoxy, cyclohexyloxy, benzyloxy, tetrahydrofuranyloxy and tetrahydropyranyloxy, R_6 is a member selected from the group consisting of hydrogen, chlorine, fluorine, 6,6-difluoro, 6,6-dichloro and methyl, R_7 is a member selected from the group consisting of hydrogen and 6,7-methylene with the proviso that R_7 is 6,7 methylene when R_6 is hydrogen and R_6 is a member of the group consisting of hydrogen, chlorine and fluorine abd R_3 is 3-keto-4-dehydro when R_7 is 6,7-methylene, R_{17} is a member of the group consisting of esterified hydroxy of 1 to 5 carbon atoms and esterified hydroxy of 1 to 8 carbon atoms derived from an acid containing only carbon, hydrogen and carboxylic moieties, R_{21} is a member of the group consisting of hydrogen, fluorine, hydroxy and esterified hydroxy of 1 to 20 carbon atoms derived from an acid containing only carbon, hydrogen and carboxylic moieties, and R_{13} is a member of the group consisting of methyl and ethyl.

3,937,701

1-(10-CYANO/HALO-5H-DIBENZO[A,D]CYCLOHEPTEN-YL)-4-[(PYRIDYLMETHYLENE)AMINO]PIPERAZINES

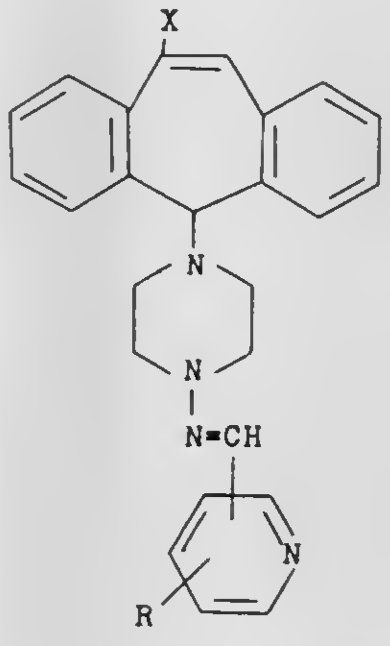
John W. Cusic, Skokie, and Charles R. Ellefson, Chicago, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Nov. 1, 1974, Ser. No. 519,939

Int. Cl.² C07D *401/12*

U.S. Cl. 260—240 G **12 Claims**

1. A compound of the formula



wherein X represents chlorine, bromine or cyano and R represents hydrogen or lower alkyl.

3,937,702

2,3-DIHYDRO-2-AMINOBENZOFURAN-5-YL SULFONATES

Peter Stuart Gates, Cambridge; John Gillon, Great Shelford, and David Thomas Saggers, Saffron Walden, all of England, assignors to Fisons Limited, Suffolk, England

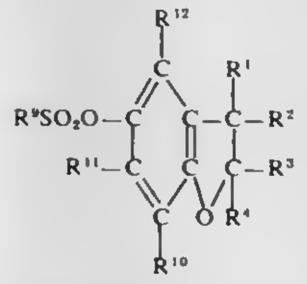
Continuation of Ser. No. 826,274, May 20, 1969, Pat. No. 3,689,507. This application Aug. 9, 1972, Ser. No. 279,262

Claims priority, application United Kingdom, May 24, 1968, 24858/68; Feb. 28, 1969, 6951/69; Apr. 8, 1969, 17985/69

Int. Cl.² C07D *307/82*

U.S. Cl. 260—247.1 S **13 Claims**

1. A benzofuranyl compound of the formula



wherein R^1, R^2 and R^3 are the same or different and are selected from the group consisting of hydrogen and alkyl of 1 to 6 carbon atoms.

R^4 is $-NR^6R^7$ wherein R^6 and R^7 are the same or different members selected from the group consisting of alkyl of 1–4 carbon atoms and halogen substituted alkyl of 1 to 4 carbon atoms, or R^6 and R^7 together with the nitrogen to which they are attached form a heterocyclic ring selected from the group consisting of piperidino, morpholino, methyl piperazino and pyrrolidino,

R^9 is a member selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms substituted by halogen, alkyl or 1 to 4 carbon atoms substituted by alkoxy of 1 to 6 carbon atoms, phenyl and phenyl substituted by alkyl of 1 to 4 carbon atoms, and

R^{10}, R^{11} and R^{12} are the same or different and are selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and halogen.

3,937,703
PREPARATION OF RDX

Joseph A. Meredith, Bluff City, Tenn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 8, 1974, Ser. No. 522,153

Int. Cl.² C07D *251/54*

U.S. Cl. 260—248 NS **5 Claims**

1. A process for preparing 1,3,5-trinitrohexahydro-s-triazine, which comprises reacting formaldehyde with a nitrile of the general formula RCN, wherein R is an alkyl group of 1 to 3 carbon atoms, in the absence of added solvents to produce the corresponding 1,3,5-triacylhexahydro-s-triazine, and contacting the resulting reaction mixture containing said triazine with concentrated nitric acid at a temperature sufficient to effect nitrolysis of said triazine to form 1,3,5-trinitrohexahydro-s-triazine.

3,937,704
3-(METHYLSULFINYL)CINNOLINONES AND THEIR DERIVATIVES

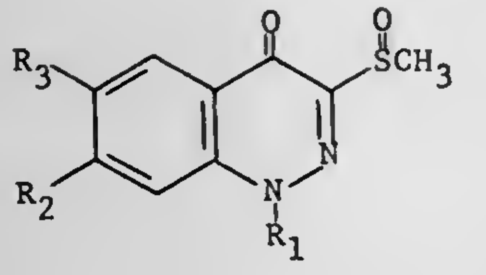
Maximilian von Strandtmann, Rockaway; John Shavel, Jr., Mendham; Sylvester Klutchko, Hackettstown, and Marvin Cohen, New Milford, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 190,293, Oct. 18, 1971. This application Nov. 15, 1973, Ser. No. 416,332

Int. Cl.² C07D *237/28*

U.S. Cl. 260—250 C **1 Claim**

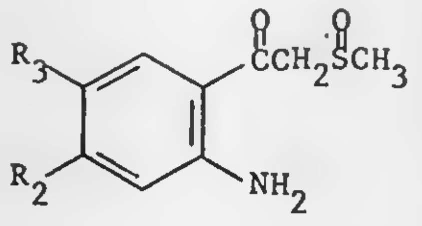
1. A process for the production of a compound of formula I:



I

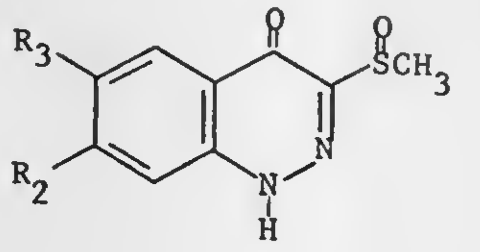
wherein R_1 is methyl, and R_2 and R_3 are hydrogen, chlorine, methyl and methoxy, comprising the steps of:

a. treating compounds of formula II:



II

with sodium nitrite and hydrochloric acid to give a compound of formula III:



III

wherein R_2 and R_3 are as hereinbefore defined;

b. treating compounds of formula III wherein R_2 and R_3 are as hereinbefore defined with a dialkylsulfate having 1 to 6 carbon atoms in the alkyl residue and an alkali metal hydroxide; and

c. recovering the products of formula I wherein R_1, R_2 and R_3 are as hereinbefore defined.

3,937,705
1-ISOPROPYL-7-METHYL-4-(P-FLUOROPHENYL)-2(1H)-QUINAZOLINONE

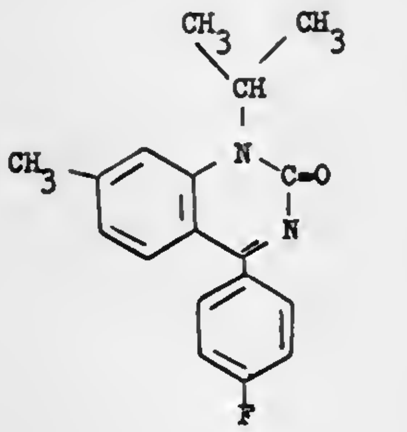
Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation of Ser. No. 233,289, March 9, 1972, abandoned. This application July 3, 1974, Ser. No. 485,360

Int. Cl.² C07D *239/82*

U.S. Cl. 260—251 QB **1 Claim**

1. The compound of the formula:



3,937,706
1-(2′ETHYNYL-PHENOXY)-2-HYDROXY-3-(CYCLOALKYL-AMINO)-PROPANES AND SALTS THEREOF

Herbert Koppe; Werner Kummer; Helmut Stahle; Karl Zeile, all of Ingelheim am Rhein; Albrecht Engelhardt, Mainz, and Werner Traunecker, Munster-Sarmsheim, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

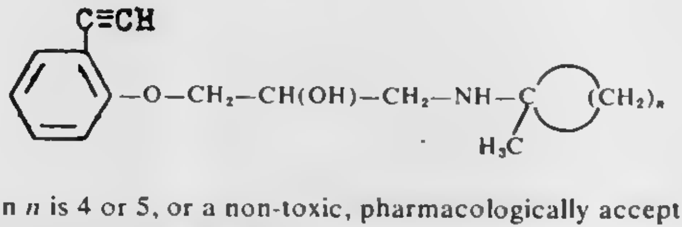
Continuation-in-part of Ser. No. 57,353, July 22, 1970, Pat. No. 3,755,413. This application Nov. 29, 1972, Ser. No. 310,638

Claims priority, application Germany, July 23, 1969, 1937477

Int. Cl.² C07C *93/06;* **C07D** *473/00*

U.S. Cl. 260—254 **3 Claims**

1. A compound of the formula



wherein *n* is 4 or 5, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,937,707
6-SUBSTITUTED 1-PHENAZINOL 5,10-DIOXIDE DERIVATIVES

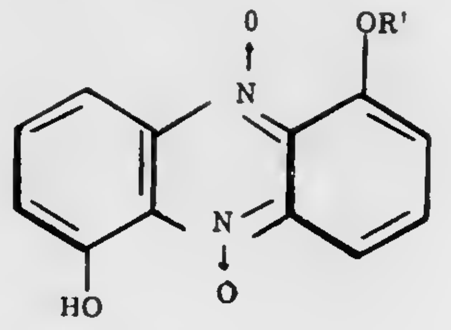
Willy Leimgruber, Montclair, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 248,907, May 1, 1972, Pat. No. 3,829,423, which is a division of Ser. No. 25,298, April 2, 1970, Pat. No. 3,681,331. This application July 22, 1974, Ser. No. 490,615

Int. Cl.² C07D *241/46*

U.S. Cl. 260—267 **3 Claims**

1. A compound of the formula



wherein R′ is selected from the group consisting of halo-lower alkyl, and phthalimido-N-lower alkyl.

3,937,708
N-PHENYL-IMIDAZOLIDINE-1-ONES

Anton Mentrup; Ernst-Otto Renth; Kurt Schromm, all of Ingelheim am Rhein, and Peter Danneberg, Ockenheim, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

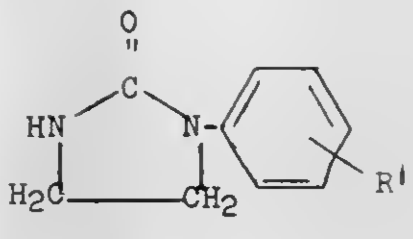
Continuation of Ser. No. 259,532, June 5, 1972, abandoned. This application Feb. 8, 1974, Ser. No. 440,823

Claims priority, application Austria, June 7, 1971, 4920/71

Int. Cl.² C07D *295/12*

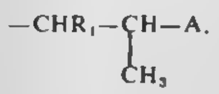
U.S. Cl. 260—268 PH **5 Claims**

1. A compound of the formula



wherein

R′ is in the m- or p- position and is selected from the group consisting of $-CH_2-A$, $-CHR_1-CH_2\text{-}A$ and

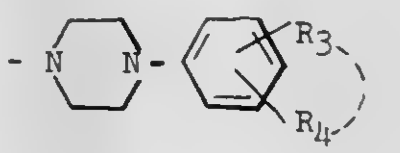


$$-CHR_1-\underset{\displaystyle CH_3}{\underset{|}{C}H}-A.$$

where

R_1 is hydrogen or hydroxyl, and

A is



where

R_3 is hydrogen, chlorine, methyl, ethyl, trifluoromethyl or lower alkoxy, and

R_4 is hydrogen or methyl, or

R_3 and R_4, together with each other and neighboring carbon atoms of the phenyl ring to which they are attached, are naphthyl,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,937,709
VINCAMINE DERIVATIVES AND PROCESS FOR THE PREPARATION OF VINCAMINE AND DERIVATIVES THEREOF

Thierry Sevenet, Gif, Yvette; Claude Thal, Malakoff; Henri Philippe Husson, Chevreuse, and Pierre Potier, Bois-Darcy, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

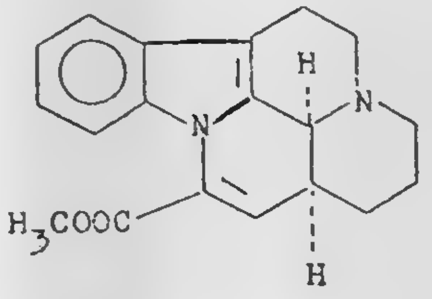
Filed June 15, 1973, Ser. No. 370,334

Claims priority, application France, June 19, 1972, 72.22021

Int. Cl.² C07D *471/04*

U.S. Cl. 260—293.53 **7 Claims**

1. 20-Deethyl-apovincamine, having the formula:



under its racemic and optically active forms.

3,937,710
HYPOCHOLESTEROLEMIC COMPOUNDS

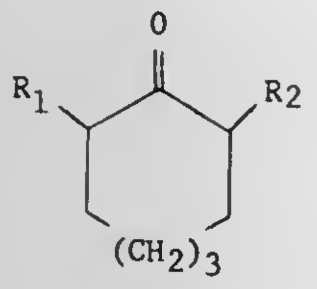
Bobby R. Ezzell, Houston, Tex.; Eugene R. Fluck, Berwyn, Pa., and Louis R. Haefele, Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Division of Ser. No. 198,445, Nov. 12, 1971, Pat. No. 3,781,444, which is a continuation-in-part of Ser. No. 105,076, Jan. 8, 1971, abandoned. This application Aug. 15, 1973, Ser. No. 388,366

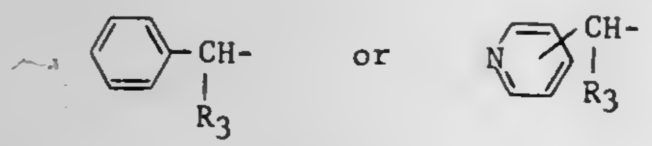
Int. Cl.^{2} G07C *49/34;* **C07D** *213/50*

U.S. Cl. 260—297 R **4 Claims**

1. As new compositions of matter compounds of the formula



where R_1 and R_2 =



with R_3 being H, OH, OCH_3, OC_2H_5, CH_3 or C_2H_5 and the aromatic ring in each of R_1 and R_2 being independently unsubstituted or substituted with not more than three substituents selected from Cl, F, CN, NH_2, CF_3, OH, lower alkyl, lower alkoxy, lower alkylamine and lower dialkylamino.

3,937,711
4-(CARBOXAMIDOETHYL) PIPERIDINES

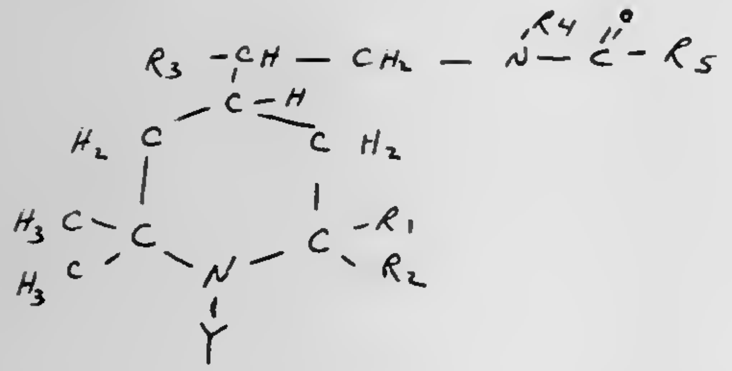
Barry Cook, Flixton, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,527

Int. Cl.^{2} C07D *211/32*

U.S. Cl. 260—293.86 **8 Claims**

1. A compound of the formula



3,937,712
(5-NITRO-2-FURYL)-PYRIDINES

Ludwig Schroder, Ingelheim am Rhine; Klaus Thomas, Gau-Algesheim, and Hanns Goeth, Biberach and der Riss, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

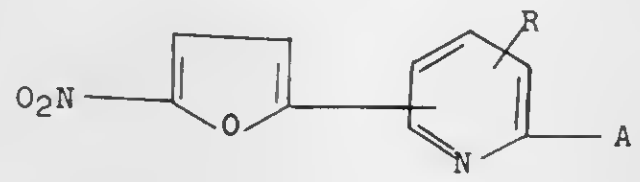
Continuation-in-part of Ser. No. 290,334, Sept. 19, 1972, Pat. No. 3,518,256. This application May 28, 1974, Ser. No. 473,324

Claims priority, application Germany, Sept. 22, 1971, 2147288

Int. Cl.^{2} C07D *213/44*

U.S. Cl. 260—296 AE **6 Claims**

1. A compound of the formula



wherein

A is alkoxy of 1 to 10 carhon atoms, dimethylamino-ethoxy or diethylamino-ethoxy, and

R is hydrogen, alkyl of 1 to 4 carbon atoms, or pyridyl.

3,937,713
PROCESS FOR THE PREPARATION OF S-TRIAZOLO[3,4-B]BENZOTHIAZOLES

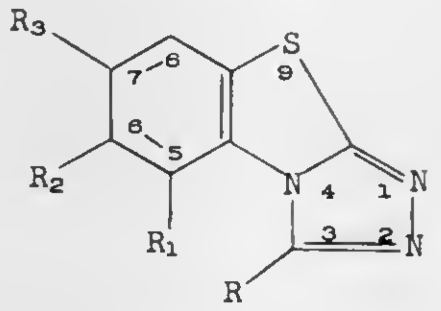
Charles J. Paget, Indianapolis, and James H. Wikel, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 7, 1974, Ser. No. 449,141

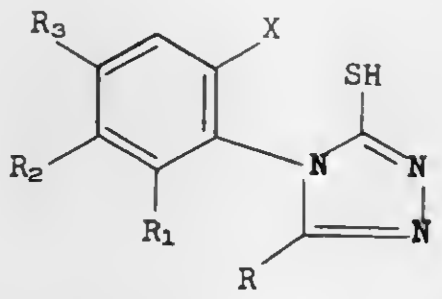
Int. Cl.^{2} C07D *513/04*

U.S. Cl. 260—305 **8 Claims**

1. A process for preparing an s-triazolo(3,4-b)benzothiazole compound of the formula:



which comprises commingling a molar equivalent of base in a substantially anhydrous amide solvent at a temperature from about 60°C. to about 200°C. with a 4-(o-halophenyl)-1,2,4-triazole-3-thiol compound of the formula:



and recovering the product; wherein, in the foregoing formulas,

R is hydrogen, C_1–C_{11} alkyl, cyclopropyl or trifluoromethyl;

R_1 is hydrogen, bromo, chloro or fluoro;

R_2 and R_3 are independently hydrogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, bromo, chloro, fluoro or trifluoromethyl with the limitation that at least one of R_2 and R_3 is hydrogen;

X is bromo, chloro or fluoro;

subject to the further limitation that when R_1 is halogen, R is other than hydrogen and R_2 is hydrogen.

3,937,714
EXCHANGE AMINATION PROCESS FOR PREPARING 2-HYDRAZINOBENZOTHIAZOLES

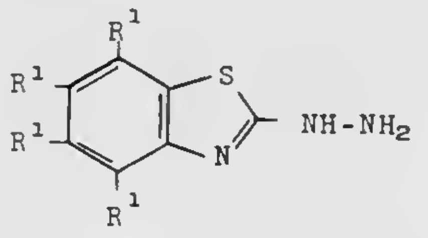
Charles J. Barnett, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 296,381, Oct. 10, 1972, abandoned. This application Mar. 11, 1974, Ser. No. 450,024

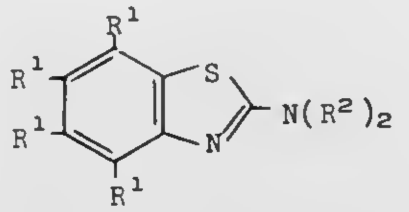
Int. Cl.^{2} C07D *277/82*

U.S. Cl. 260—305 **26 Claims**

1. Process for the preparation of a compound of the formula



wherein each R^1 independently represents hydrogen, halo, lower alkyl of C_1-C_3, lower alkoxy of C_1-C_3, or lower alkylthio of C_1-C_3, subject to the limitation that at least two R^1's represent hydrogen; which process comprises reacting a corresponding 2-aminobenzothiazole compound of the formula



wherein each R^2 independently represents hydrogen or methyl with hydrazine in the presence of at least a catalytic amount of an acid exhibiting a pK_a of 5 or less, at a temperature above 100°C., and in a solvent selected from the group consisting of C_2-C_4-alkylenediols; di- and tri(ethylene and propylene) glycols; mono(C_1-C_4-alkyl) ethers of ethylene and propylene gylcols; mono(C_1-C_4-alkyl) ethers of di- and tri(ethylene and propylene) glycols; triethanolamine; sulfolane; and dimethylsulfoxide.

3,937,715
CERTAIN DIFLUORODICHLOROETHYLDIAZOLE COMPOUNDS

Hans Röchling, Altenhain, Taunus; Peter Hartz, Eschborn, Taunus, and Gerhard Horlein, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

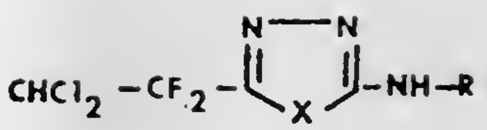
Filed June 20, 1974, Ser. No. 481,459

Claims priority, application Germany, June 23, 1973, 2332000

Int. Cl.^{2} C07D *285/12, 271/10*

U.S. Cl. 260—306.8 D **2 Claims**

1. Compounds of the formula



where X is oxygen or sulfur and R hydrogen, (C_1–C_4)-alkyl, C_1–C_3-alkanoyl, (C_1–C_2)-halo -alkyl-carbonyl, (C_2–C_6)-alkoxy-alkyl-carbonyl, (C_1–C_4)-alkoxycarbonyl, phenyloxycarbonyl, N-mono- or di-(C_1–C_4)-alkyl-carbamoyl, N-(C_1–C_4)-alkyl-N-(C_1–C_4)-alkoxy-carbamoyl, N-phenyl-carbamoyl, the phenyl nucleus of which optionally being substituted by one or two halogen atoms and/or trifluoromethyl groups; morpholino-carbonyl, N′-methylpiperazino-carbonyl, piperidino-carbonyl, pyrrolidino-carbonyl, N-(trihalogenophenoxy-sulfonyl)carbamoyl or N-(1,1,3,3-tetrachloro-2-propoxy-sulfonyl)carbamoyl, or, in the case of R being H or alkyl, also the physiologically tolerable salts thereof.

3,937,716
OXAZOLIDINE DERIVATIVES

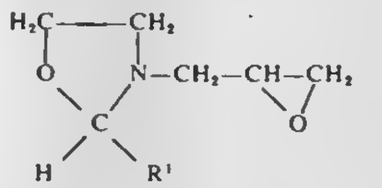
Sheldon N. Lewis, Willow Grove; Jerome F. Levy, Dresher, and Napoleon L. Horton, Philadelphia, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed July 9, 1973, Ser. No. 377,377

Int. Cl.^{2} C07D *263/04*

U.S. Cl. 260—307 FA **4 Claims**

1. An N-glycidyl-1,3-oxazolidine of the formula



wherein R^1 is hydrogen or a hydrocarbyl radical selected from the group consisting of alkyl groups having 1 to 4 carbon atoms, and aralkyl groups selected from benzyl, phenethyl, and menaphthyl.

3,937,717
2-PHENYLAMINO-IMIDAZOLINES-(2)

Helmut Stahle; Herbert Koppe; Werner Kummer, and Klaus Stockhaus, all of Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

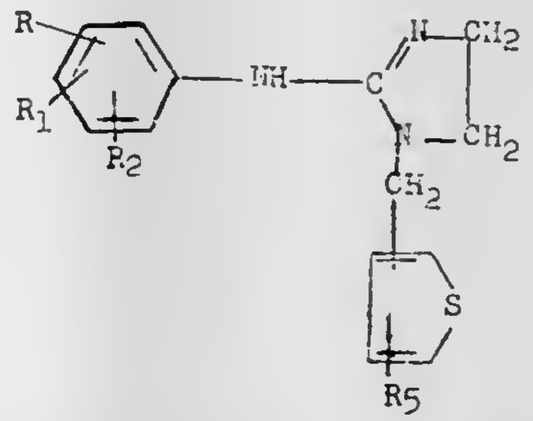
Filed Feb. 11, 1974, Ser. No. 441,451

Claims priority, application Germany, Feb. 23, 1973, 2308883

Int. Cl.^{2} C07D *49/34*

U.S. Cl. 260—309.6 **5 Claims**

1. A compound of the formula



wherein

R, R_1 and R_2 are each hydrogen, fluorine, chlorine, bromine, methyl, ethyl, methoxy, trifluoromethyl or cyano, and

R_5 is hydrogen, methyl or ethyl, or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

3,937,718

PROCESS FOR THE PREPARATION OF A CARBOXYLIC ACID ESTER

Teruaki Mukaiyama; Masaaki Ueki; Rei Matsueda, and Hiroshi Maruyama, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Nov. 17, 1970, Ser. No. 90,420

Claims priority, application Japan, Nov. 19, 1969, 44-92684

Int. Cl.^{2} C07D *207/46*

U.S. Cl. 260—326.4 **5 Claims**

1. A process for the preparation of a carboxylic acid ester which comprises reacting an aliphatic, aromatic or heterocyclic carboxylic acid with an aliphatic, aromatic or heterocyclic alcohol or an alkyl- or aryl-sulfenic acid ester thereof in the presence of an aliphatic or aromatic hydrocarbonyl tertiary phosphine and a disulfide of a mercaptoheterocyclic compound containing a nitrogen-carbon double bond with which the disulfide linkage is conjugated.

3,937,719

(4-OXO-4H-1-BENZOPYRAN-2-YL)-OXAMIC ACID, SALTS AND ESTERS ANTI-ALLERGIC AGENTS

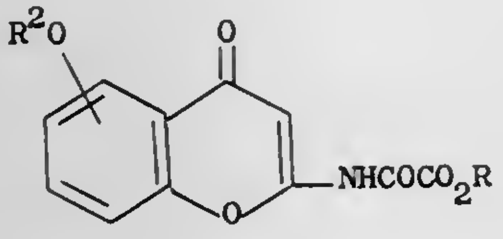
John H. Sellstedt, Pottstown, and Dieter H. Klaubert, West Chester, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Jan. 6, 1975, Ser. No. 538,672

Int. Cl.^{2} C07D *311/02*

U.S. Cl. 260—345.2 **5 Claims**

1. A compound of the formula



in which

R is —H, alkyl of 1 to 6 carbon atoms or an alkali metal cation and

R^2 is alkyl of 1 to 6 carbon atoms or hydroxyalkyl of 2 to 6 carbon atoms.

3,937,720

STEROIDAL[16α,17-β]NAPHTHALENES

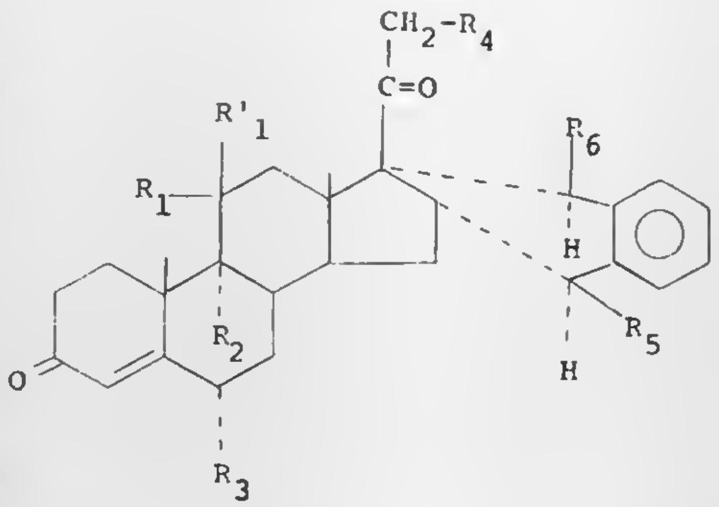
Ravi K. Varma, Belle Mead, and Christopher M. Cimarusti, Hamilton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 25, 1974, Ser. No. 526,866

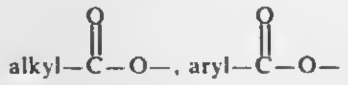
Int. Cl.^{2} C07C *3/00*

U.S. Cl. 260—397.45 **17 Claims**

1. A steroid having the structure

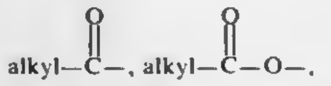


and the 1,2-dehydro derivative thereof, wherein R_1 is chlorine, fluorine or hydroxy and R'_1 is hydrogen or R_1 and R'_1 together are =O; R_2 is hydrogen or halogen; R_3 is hydrogen, methyl or fluorine; R_4 is hydrogen, hydroxy,



$$\text{alkyl}-\overset{\overset{\displaystyle O}{\|}}{C}-O-,\ \text{aryl}-\overset{\overset{\displaystyle O}{\|}}{C}-O-$$

or halogen; and R_5 and R_6 are the same or different and are hydrogen, alkyl, alkylthio, alkoxy, carboalkoxy, formyl,



$$\text{alkyl}-\overset{\overset{\displaystyle O}{\|}}{C}-,\ \text{alkyl}-\overset{\overset{\displaystyle O}{\|}}{C}-O-,$$

hydroxy, halogen, phenyl or cyano, with the proviso that when R_5 and R_6 are different, one of R_5 and R_6 is hydrogen.

3,937,721

METHOD FOR THE PREPARATION OF SULFONIC ACID ESTERS FROM FREE SULFONIC ACIDS

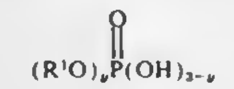
Calvin William Schroeck, Eastlake, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Division of Ser. No. 358,213, May 7, 1973. This application May 9, 1974, Ser. No. 468,359

Int. Cl.^{2} C07C *143/16*

U.S. Cl. 260—456 A **4 Claims**

1. A method for the preparation of a sulfonic acid ester which comprises reacting an acrylamidoalkanesulfonic acid with a compound having the formula



$$(R^1O)_y\overset{\overset{\displaystyle O}{\|}}{P}(OH)_{3-y}$$

wherein

R^1 is a lower alkyl radical; and

y is 1, 2 or 3.

3,937,722

α-(CYANOETHYL)-BENZOIN ETHERS

Hans-Georg Heine, Krefeld; Hans Rudolph, Krefeld-Bockum, and Karl Fuhr, Krefeld, all of Germany, assignors to Bayer AG, Germany

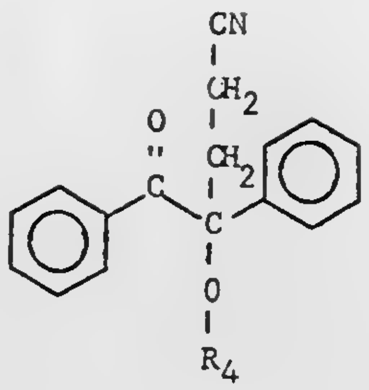
Division of Ser. No. 163,470, July 16, 1971, which is a continuation-in-part of Ser. No. 885,985, Dec. 17, 1969, abandoned. This application Nov. 15, 1973, Ser. No. 416,041

Claims priority, application Germany, Jan. 19, 1969, 1902051

Int. Cl.^{2} C07C *121/75*

U.S. Cl. 260—465 F **3 Claims**

1. A compound of the formula



wherein R_4 is ethyl or isopropyl.

3,937,723

CYCLOALIPHATIC COMPOUNDS AS ODOUR- AND TASTE-MODIFYING AGENTS

Karl-Heinrich Schulte-Elte, Onex, Geneva, Switzerland, assignor to Firmenich S.A., Genevà, Switzerland

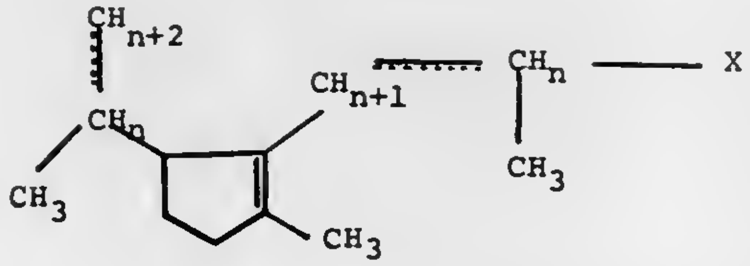
Filed Jan. 25, 1974, Ser. No. 436,786

Claims priority, application Switzerland, Feb. 9, 1973, 1941/73

Int. Cl.^{2} C07C *69/07, 69/145, 69/24*

U.S. Cl. 260—488 R **9 Claims**

1. Compounds of formula



containing a single or a double bond in the positions indicated by the dotted lines and wherein:

n stands for 0 or 1; and X represents a univalent radical of formula

$-CH_2OR^1$

wherein R^1 represents a hydrogen atom or an acyl radical derived from a fatty acid containing from 1 to 6 carbon atoms.

3,937,724

ORGANO-PHOSPHORUS COMPOUNDS CONTAINING PERFLUOROALKYL RADICALS AND THEIR APPLICATION TO CELLULOSIC TEXTILES

Leon H. Chance, and Jerry P. Moreau, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 151,507, June 9, 1971, which is a division of Ser. No. 843,200, July 18, 1969, Pat. No. 3,639,144. This application Mar. 24, 1975, Ser. No. 561,587

Int. Cl.^{2} C07F *9/38*

U.S. Cl. 260—502.4 P **1 Claim**

1. 1-(1H,1H-perfluorooctyl)-1,3-trimethylenediphosphonic acid.

3,937,725

SULPHONIC ACID SALTS WITH ANTISTATIC ACTIVITY

Josef Pfeifer, Domat-Ems, GR, Switzerland, assignor to Inventa AG fur Forschung und Patenverwertung, Zurich, Switzerland

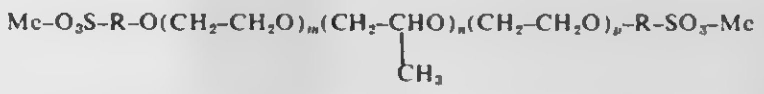
Filed Aug. 21, 1972, Ser. No. 282,283

Claims priority, application Switzerland, Sept. 6, 1971, 13013/71

Int. Cl.^{2} C07C *143/11*

U.S. Cl. 260—513 R **2 Claims**

1. A block copolymeric sulphonic acid salt of the general formula



$$Me-O_3S-R-O(CH_2-CH_2O)_m(CH_2-\underset{\displaystyle CH_3}{\underset{|}{C}}HO)_n(CH_2-CH_2O)_p-R-SO_3-Me$$

in which Me is one equivalent of an alkali metal or alkaline-earth metal,

R is an alkylene group of 3–4 carbon atoms,

n is a whole number from 3–100

(m+p) is a whole number from 20–500

$$\frac{n}{(m+p)} = 0.15 \text{ to } 3.$$

3,937,726

UREA DERIVATIVES AND THEIR USE AS HERBICIDES

Otto Scherer, Bad Soden, Taunus; Gerhard Hörlein, Frankfurt am Main, and Hubert Schonowsky, Neu-Isenburg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

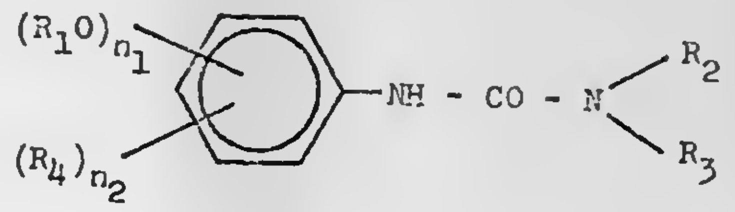
Continuation-in-part of Ser. Nos. 628,843, April 6, 1967, abandoned, and Ser. No. 799,088, Feb. 13, 1969, abandoned, and Ser. No. 800,748, Feb. 19, 1969, abandoned. This application May 26, 1970, Ser. No. 40,704

Claims priority, application Germany, Apr. 22, 1966, 48990; Apr. 22, 1966, 48991; Dec. 8, 1966, 50877; Dec. 14, 1966, 50938; Mar. 16, 1968, 1668116; Mar. 20, 1968, 1768002

Int. Cl.^{2} C07C *127/19*

U.S. Cl. 260—553 A **2 Claims**

1. A compound of the formula



wherein R_1 is haloalkyl having 2 to 5 carbon atoms, the halogen being selected from the group consisting of fluorine, chlorine, and bromine; n_1 is 1 or 2; R_2 is hydrogen or alkyl having 1 to 4 carbon atoms; R_3 is alkyl having 1 to 4 carbon atoms; R_4 is halogen, trifluoromethyl, or alkyl or alkoxy having 1 to 3 carbon atoms; and n_2 is 0, 1, 2, or 3.

3,937,727

PROCESS FOR PREPARING N, N-DIMETHYLUREA

Peter E. Throckmorton, Worthington; Sari Frey, and Dace Grote, both of Columbus, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed July 5, 1974, Ser. No. 485,835

Int. Cl.^{2} C07C *127/15*

U.S. Cl. 260—553 R **6 Claims**

1. A process for the preparation of N, N-dimethylurea which comprises reacting dimethylamine and urea neat in a molar ratio of not less than 2:1, respectively, under autogenous pressure and substantially anhydrous conditions at a temperature of from 110° to 150° C.

3,937,728

LOW-TEMPERATURE SYNTHESIS OF UREA

Richard L. Every, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Division of Ser. No. 31,420, April 23, 1970, which is a continuation-in-part of Ser. No. 581,189, Sept. 22, 1966, abandoned. This application July 29, 1974, Ser. No. 492,663

Int. Cl.^{2} C07C *126/00*

U.S. Cl. 260—555 R **1 Claim**

1. A process for separating a mixture of urea and ammonium chloride produced in high yield with a low level of impurities by combining as reactants phosgene and ammonia at a temperature in the range of about −50°C to about −20°C by adding one reactant to the other and maintaining the mixture in said temperature range, then combining said mixture and methanol, dissolving said urea in said methanol and separating the resulting solution of urea from the relatively insoluble ammonium chloride.

3,937,729

META-BIS ANILIDE DERIVATIVES AND THEIR UTILITY AS HERBICIDES

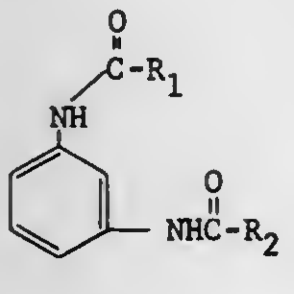
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 180,916, Sept. 15, 1971, abandoned, which is a continuation of Ser. No. 20,104, March 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 741,267, July 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 659,865, Aug. 11, 1967, abandoned. This application Mar. 19, 1973, Ser. No. 342,579

Int. Cl.^{2} C07C *103/44, 103/64, 103/82*

U.S. Cl. 260—557 R **36 Claims**

1. A compound having the formula



in which R_2 is halogenated lower alkyl, and R_1 is alkyl.

3,937,730

PLANT GROWTH REGULATING AGENT

Christian Vogel, Binningen, and Rudolf Aebi, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

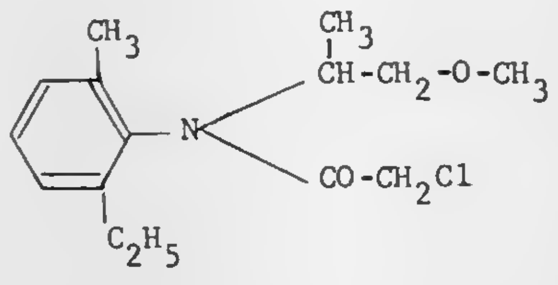
Continuation-in-part of Ser. No. 366,955, June 4, 1973, abandoned. This application Oct. 4, 1974, Ser. No. 511,321

Claims priority, application Switzerland, June 6, 1972, 08345; Mar. 30, 1973, 04607

Int. Cl.^{2} C07C *103/34*

U.S. Cl. 260—562 B **1 Claim**

1. The compound 2-ethyl-6-methyl-N-(1′-methoxyprop-2′-yl)-N-chloroacetanilide of the formula



3,937,731

IMINE DERIVATIVES OF ALKYLATED ARYL COMPOUNDS

William C. Hollyday, Plainfield, and Shih-En Hu, Linden, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation of Ser. No. 466,419, June 23, 1965, abandoned. This application Jan. 14, 1972, Ser. No. 218,030

Int. Cl.^{2} C07C *119/00*

U.S. Cl. 260—566 F **5 Claims**

1. An oil-soluble additive having pour point depressing and sludge dispersing properties when added to a mineral lubricating oil, which comprises the product obtained by condensing a ketone, obtained by acylation of wax-alkylated naphthalene, with an alkylene polyamine at a temperature of from about 140° to 350°F. for a sufficient period of time to split out water and form a Schiff base and wherein:

said wax-alkylated naphthalene is the condensation product of naphthalene with a chlorinated paraffin wax of 12 to 40 carbon atoms chlorinated to about 10 to about 15 wt. % chlorine, wherein from about 9 parts of chlorinated paraffin wax is condensed per part of naphthalene, to about 100 parts by weight of chlorinated paraffin wax is condensed per 20 parts by weight of naphthalene,

said acylation being effected by mild oxidation by air blowing at temperatures in the range of about 160° to 480°F. for about 2 to 48 hours, of said wax-alkylated naphthalene, or by reaction with in the range of about 0.1 to about 1.0 molar proportion of an acyl halide or acid anhydride of a C_2 to C_{10} monocarboxylic acid per molar proportion of wax-alkylated naphthalene,

said alkylene polyamine having 2 to 12 nitrogen atoms, and wherein pairs of nitrogen atoms are joined by alkylene groups of 2 to 4 carbon atoms,

and in the range of about 0.2 to about 1.5 molar proportion of polyamine is condensed per molar proportion of acylated wax-alkylated naphthalene.

3,937,732

OXAMIDE BY HYDROLYSIS OF CYANOGEN

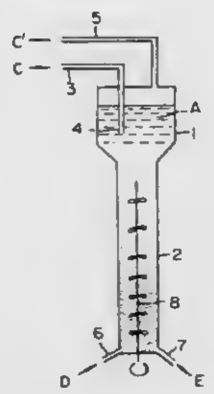
Shun-Ichi Uchida, and Shigeru Ogawa, both of Tokyo, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Division of Ser. No. 324,791, Jan. 18, 1973, abandoned, which is a continuation of Ser. No. 56,455, July 20, 1970, abandoned. This application Apr. 9, 1974, Ser. No. 459,361

Claims priority, application Japan, July 21, 1969, 44-57071

Int. Cl.^{2} C07C *103/34*

U.S. Cl. 260—561 R **1 Claim**



1. A process for the continuous production of oxamide by hydrolysis of cyanogen, said process comprising:

providing a reaction zone having therein an aqueous solution containing mineral acid as a hydrolizing agent;

continuously feeding into said reaction zone gaseous cyanogen and contacting said gaseous cyanogen with said aqueous solution to form solid precipitates of oxamide;

passing said precipitates of oxamide formed in said reaction zone down into an through a precipitation zone, the precipitation zone being in contiguous communication with the bottom of said reaction zone and being equipped with a stirrer means arranged coaxially only in said precipitation zone;

continuously feeding water into the bottom of said precipitation zone and passing it upwardly therethrough into said reaction zone and washing said solid precipitates of oxamide by said water in said precipitation zone;

continuously removing said solid precipitates of oxamide washed by said water as cake or slurry from the bottom of said precipitation zone; and

the amount of water fed into the bottom of said precipitation zone being the sum of the amount of water consumed in the reaction of hydrolysis of cyanogen in said reaction zone and the amount of water accompanied with the oxamide taken out as cake or slurry.

3,937,733

SALTS OF IODOMETHANESULFONIC ACID WITH ORGANIC BASES

Hermann Ulbrich, and Wolfgang Beich, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

Filed Mar. 31, 1972, Ser. No. 239,937

Claims priority, application Germany, Apr. 2, 1971, 2117014

Int. Cl.^{2} C07C *143/02*

U.S. Cl. 260—501.19 **11 Claims**

1. A myelographic salt of iodomethanesulfonic acid with an amine selected from the group consisting of glucamine, N-alkylglucamine, N,N-dialkylglucamine and hydroxyalkylglucamines of the latter and former alkylglucamines containing more than one carbon atom in the alkyl radical, said amine in all cases having up to a total of four carbon atoms in the alkyl portion.

3,937,734

PROCESS FOR PRODUCING DECACHLOROOCTAHYDRO-1,3,4-METHENO-2H-CYCLOBUTA-(C,D)-PENTALEN-2-ONE

William Percy Moore, Hopewell, and Virgil Anton Hundtofte, Chester, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 3, 1975, Ser. No. 538,493

Int. Cl.^{2} C07C *45/00*

U.S. Cl. 260—586 R **10 Claims**

1. A process for producing decachlorooctahydro-1,3,4-metheno-2H-cyclobuta(c,d)-pentalen-2-one in at least 95% yield, which comprises:

a. reacting hexachlorocyclopentadiene and sulfur trioxide at a temperature between about 95°C. and about 120°C., at a pressure of between 50 p.s.i.g. and 300 p.s.i.g., in the presence of a catalytic quantity of an antimony compound selected from the group consisting of trivalent and pentavalent antimony halides, oxides and oxy acids, the mol ratio of sulfur trioxide to hexachlorocyclopentadiene being about 1.5 and 2, to form a reaction product thereof; said reacting step being further characterized in that an admixture of the hexachlorocyclopentadiene and the antimony compound is first formed, the sulfur trioxide is added to said admixture to form the reaction mixture, the reaction temperature is maintained below 105°C. during addition of the sulfur trioxide, and the reaction mixture is reacted until it turns to a black color;

b. hydrolyzing the reaction product from step (a) in at least about 5 parts by weight of an aqueous solution containing dissolved caustic alkali and having a pH of at least 9, per part by weight of reaction mixture, said hydrolysis being carried out at a temperature between about 85°C. and about 115°C. for at least about 30 minutes until all solids have gone into solution;

c. acidifying the hydrolysis mixture from step (b) with a mineral acid to pH 5–6;

d. digesting the acidified hydrolysis mixture at pH 5–6 at a temperature between about 85°C. and about 105°C. for at least 1 hour, until the decachlorooctahydro-1,3,4-metheno-2H-cyclobuta(c,d)-pentalen-2-one is completely precipitated as a crystalline product; and

e. recovering the crystalline product from the digestion mixture.

3,937,735

PROCESS FOR THE PREPARATION OF CYCLOHEXANONE

Peter L. M. Dols, Geleen, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Nov. 21, 1973, Ser. No. 418,021

Claims priority, application Netherlands, Nov. 23, 1972, 7215853

Int. Cl.^{2} C07C *27/04, 27/12, 45/16, 45/02*

U.S. Cl. 260—586 P **4 Claims**

1. A process for the preparation of cyclohexanone which comprises oxidizing cyclohexane in the liquid phase with oxygen or an oxygen-containing gas, to produce an oxidation reaction product containing cyclohexyl hydroperoxide, catalytically hydrogenating the said oxidation product in a hydrogenation zone in the presence of a catalyst containing palladium, platinum, nickel or rhodium with a hydrogen gas-containing stream, obtained as hereinafter set forth, whereby the said cyclohexyl hydroperoxide is converted substantially to cyclohexanol, recovering the cyclohexanol fraction by distillation and catalytically dehydrogenating the said cyclohexanol, to cyclohexanone and hydrogen, separating the said cyclohexanone and passing the resulting hydrogen gas-containing stream to the said hydrogenating zone to effect the said hydrogenation of the oxidation product.

3,937,736

BENZOBICYCLOALKANE AMINES

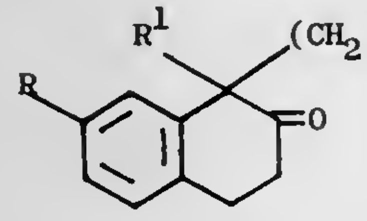
Meier E. Freed, Paoli, and John R. Potoski, Spring City, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 262,849, June 14, 1972, Pat. No. 3,836,670, which is a continuation-in-part of Ser. No. 200,511, Nov. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 94,983, Dec. 3, 1970, abandoned. This application Dec. 3, 1973, Ser. No. 421,374

Int. Cl.² C07C *49/76*

U.S. Cl. 260—590 FA **14 Claims**

1. A compound of the formula:



wherein R is hydrogen, lower alkyl, lower alkyloxy, phen(-lower)-alkyloxy, halogen, or trifluoromethyl; R^1 is lower alkyl, lower alkenyl, or phen(lower)alkyl; Y is chlorine or bromine; and *n* is an integer of from 3 to 5.

3,937,737

PROCESS FOR THE MANUFACTURE OF AROMATIC 1,3-DIKETONES

Kurt Eiglmeier, Idstein, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

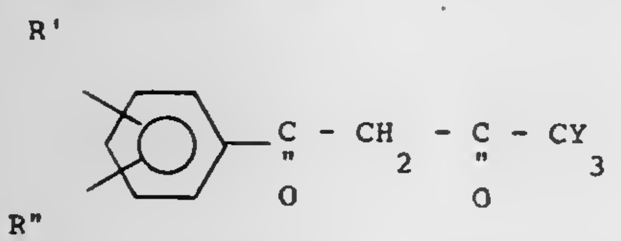
Filed July 22, 1974, Ser. No. 491,476

Claims priority, application Germany, July 23, 1973, 2337396

Int. Cl.² C07C *49/76, 49/80*

U.S. Cl. 260—592 **3 Claims**

1. A compound of the formula



wherein R' and R'' each is hydrogen or alkyl and R' and R'' together contain 6 to 12 carbon atoms, and each Y is hydrogen, fluorine, chlorine or bromine.

3,937,738

(PERHALOALKYL) THIO-SUBSTITUTED ALDEHYDES AND KETONES

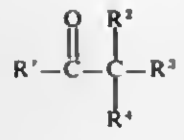
James R. Throckmorton, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 25, 1974, Ser. No. 464,492

Int. Cl.² C07C *49/16, 47/14*

U.S. Cl. 260—593 H **5 Claims**

1. A compound of the formula:



$$R'-\overset{\overset{O}{\|}}{C}-\underset{R^4}{\overset{R^2}{C}}-R^3$$

wherein R' is $-CH_3$ or $-CH_2SCF_2$; R^2 and R^3 are H or $-CH_3$; and R^4 is $-CH_3$, CF_3S or $CFCl_2S-$, except that when R' is $-CH_3$, R^4 is not $-CH_3$.

3,937,739

HYDROCARBON CONVERSION

Pierre M. J. G. de Radzitzky d'Ostrowick, Brussels, and Philippe J. A. Camerman, Wezembeek-Oppem, both of Belgium, assignors to Labofina S. A., Brussels, Belgium

Filed June 19, 1973, Ser. No. 371,398

Claims priority, application Belgium, May 4, 1973, 130730

Int. Cl.² C07C *45/02*

U.S. Cl. 260—604 R **11 Claims**

1. A process for the oxidation of a diethylbenzene feed to form diethylbenzene hydroperoxide which comprises passing a molecular oxygen containing gas into contact with said feed at a temperature between 100° and 180°C. in the presence of 0.01 to 5.0%, by weight, of said diethylbenzene feed, of a superbasic sulfonate of an alkaline earth metal of the formula:

$$R - Y - M - CO_3 - (M - CO_3)_x - M - SO_3R$$

wherein R is a hydrocarbon radical having at least 18 carbon atoms, Y is selected from the group consisting of CO_2 and SO_3 radicals, M is selected from the group consisting of barium, calcium and magnesium, and X is an integer between 0 and 8.

3,937,740

PROCESS FOR THE MANUFACTURE OF 2,3,6-TRIMETHYLPHENOL

Wolf Brenner, Fullinsdorf; Herbert Lindlar, Reinach, and Rudolf Hinderling, Riehen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 28, 1974, Ser. No. 455,821

Claims priority, application Switzerland, Apr. 5, 1973, 4918/73

Int. Cl.² C07C *39/06*

U.S. Cl. 260—621 R **6 Claims**

1. A process for producing 2,3,6-trimethylphenol comprising reacting m-cresol with methanol wherein the m-cresol and methanol are present in the gas phase, said reaction taking place in the presence of a catalyst system composed of 24 parts by weight of said catalyst system of magnesium in the form of magnesium oxide, 2 to 15 parts by weight of said catalyst system cerium in the form of ceric oxide, 1 to 5 parts by weight of said system of zinc in the form of zinc oxide and 0.1 to 1.5 parts by weight of said system of metal selected from the group consisting of an alkali metal, barium, calcium or strontium wherein said metal is in the form of its oxide wherein the reaction is carried out at a temperature of from about 300°C and about 520°C and at a pressure of from 1 atmosphere to about 10 atmosphere.

3,937,741

PRODUCTION OF HYDROQUINONE

Nicholas P. Greco, Edgewood, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 267,534, June 29, 1972, Pat. No. 3,862,247, which is a continuation-in-part of Ser. No. 16,545, March 4, 1970, abandoned. This application Jan. 20, 1975, Ser. No. 542,605

Int. Cl.² C07C *39/10*

U.S. Cl. 260—621 M **6 Claims**

1. A process for the manufacture of hydroquinone from nitrobenzene which compreses the steps of:

a. subjecting a solution of nitrobenzene in an aqueous sulfuric acid electrolyte at a temperature of 50° to 80°C to electrolytic reduction, thereby forming amino products,
b. subjecting said electrolyte containing said amino products to hydrolysis at a temperature of 200° to 300°C for a period of time sufficient to hydrolyze said amino products to hydroquinone,
c. cooling said hydrolysis solution, and
d. extracting hydroquinone from said solution with a water immiscible organic solvent.

3,937,742

HYDROFORMYLATION PROCESS USING CATALYST COMPRISING PLATINUM GROUP METAL ON SUPPORT HAVING SEPARATE ALUMINA PHASE

Jin Sun Yoo, South Holland, Ill., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 17,335, March 6, 1970, abandoned. This application Feb. 7, 1975, Ser. No. 547,838

Int. Cl.² C07C *27/22*

U.S. Cl. 260—632 HF **5 Claims**

1. In a process for the hydroformylation reaction of an aliphatic monoolefin hydrocarbon of 2 to about 16 carbon atoms in the liquid phase, the improvement which comprises conducting said hydroformylation reaction in contact with a catalyst composition which comprises a minor, catalytically effective amount of a noble metal selected from; the group consisting of rhodium, ruthenium, platinum, and palladium on a major amount of a solid, acidic, silica-based support of silica-alumina containing a separate phase of alumina, the total catalyst composition containing 0.001 to 1 weight per cent of said noble metal, said support being calcined and comprising 45 to 95 weight per cent amorphous acidic silica-alumina having a Cat-A activity of at least 20 and about 5 to 55 weight per cent of said separate phase of alumina, said alumina resulting from the calcination of a mixture of amorphous hydrous alumina, and alumina monohydrate, the total alumina content of said support being about 20 to 70 weight per cent, said support being prepared by mixing together a separate phase alumina hydrogel with a silica-alumina hydrogel, dewatering the mixture to provide a gel slurry of about 14 weight per cent solids, spray-drying said slurry, washing the spray-dried material, pelletting the washed material, and calcining the pellets at about 1350°F. for about 3 hours to provide calcined particles, said support containing less than 1.5 weight per cent sodium, said reaction being conducted at a temperature of from about 100° to 550°C. at a pressure up to about 2500 psig at an hourly velocity of weight of aliphatic monoolefin hydrocarbon per weight of catalyst of from about 0.5 to about 10, the hydrogen to carbon monoxide mol ratio being from about 1:1 to about 5:1.

3,937,743

MAINTAINING HF SOLUBILITY IN ALKYLATION ISOBUTANE RECYCLE

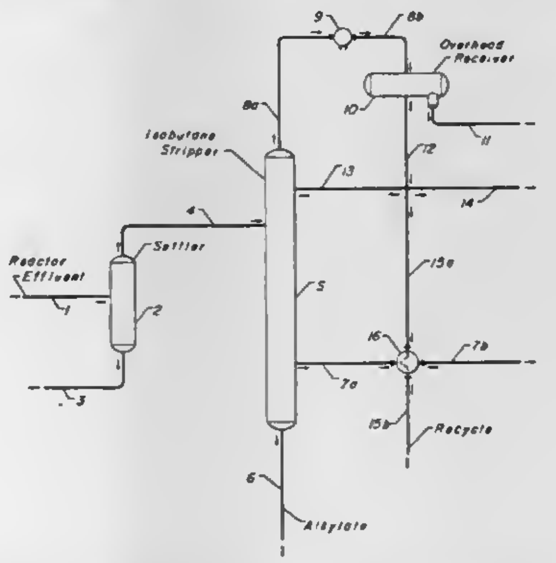
Jay E. Sobel, Highland Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 18, 1975, Ser. No. 550,897

Int. Cl.² C07C *3/54*

U.S. Cl. 260—683.48 **6 Claims**

1. In a process for producing an alkylation reaction product by reacting an isobutane reactant stream with an olefin-acting reactant stream in contact with an HF acid catalyst wherein said reactant streams are initially combined with an acid saturated recycle stream, as hereinafter defined, and then contacted with said HF acid catalyst in a reaction zone at alkylation conditions; a resulting reactor effluent is settled to form an acid phase and a hydrocarbon phase; said hydrocarbon phase is separated to provide a vaporous overhead stream, a vaporous product stream containing principally n-butane, and a liquid alkylation reaction product stream; said vaporous overhead stream is condensed, cooled to a separation temperature, and separated to provide an overhead product stream, a reflux stream, an acid liquid stream, and an acid saturated recycle stream including isobutane and entrained acid; and said acid saturated recycle stream is combined with said reactant streams as previously indicated; the improvement which comprises heating said acid saturated recycle stream to a temperature sufficient to place said entrained acid in solution therein prior to said combination of said acid saturated recycle stream with said reactant streams.



3,937,744

VINYL CHLORIDE PROCESS

Herbert Riegel, Maplewood, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 831,414, June 9, 1969, abandoned, which is a continuation-in-part of Ser. No. 614,338, Feb. 6, 1967, abandoned. This application June 15, 1971, Ser. No. 153,374

Int. Cl.² C07C *21/02*

U.S. Cl. 260—656 R **43 Claims**

1. A process for producing vinyl chloride, comprising:
a. contacting at a temperature of from about 700°F to about 1200°F a feed comprising a member selected from the group consisting of ethane, ethylene and mixtures thereof with a melt comprising a multivalent metal chloride in both its higher and lower valence state to produce a reaction effluent comprising vinyl chloride and 1,2-dichloroethane, said multivalent metal chloride being selected from the group consisting of the chlorides of copper, chromium, cobalt, manganese and iron;
b. recovering 1,2-dichloroethane and vinyl chloride from the reaction effluent;
c. dehydrochlorinating at a temperature of from about 700°F to about 1200°F recovered 1,2-dichloroethane to vinyl chloride by contacting the 1,2-dichloroethane with a melt comprising a multivalent metal chloride in both its higher and lower valence state in an amount effective to catalyze the dehydrochlorination of 1,2-dichloroethane to vinyl chloride, said multivalent metal chloride being selected from the group consisting of the chlorides of copper, chromium, cobalt, manganese and iron.

3,937,745

SELECTIVE HYDROGENATION OF CYCLOPENTADIENE

Lawson G. Wideman, Akron, and Henry R. Menapace, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 29, 1974, Ser. No. 501,534

Int. Cl.² C07C *5/02;* **B01D** *31/12*

U.S. Cl. 260—666 A **6 Claims**

1. In the method of selective hydrogenation of cyclopentadiene which comprises contacting cyclopentadiene with hydrogen and in contact with a homogeneous catalyst, the improvement which comprises utilizing as a homogeneous catalyst a mixture consisting of an aluminum trialkyl and an organonickel compound selected from the group consisting of nickel salts of carboxylic acids, nickel acetyacetonate, nickel

salicaldehyde, bis(salicaldehyde) nickel, ethylene diamine nickel, bis(α-furyl dioxime) nickel and nickel tetracarbonyl in which the mole ratio of the trialkyl aluminum compound/nickel compound ranges from about 1.5/1 to about 10/1.

3,937,746

SULFUR PROMOTED OXIDATIVE DEHYDROGENATION

Louis J. Croce, Seabrook, Tex., and Laimonis Bajars, Princeton, N.J., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Division of Ser. No. 859,565, Sept. 19, 1969, Pat. No. 3,666,687. This application June 23, 1971, Ser. No. 156,086

Int. Cl.^{2} C07C *5/20*

U.S. Cl. 260—669 R 52 Claims

1. A process for the oxidative dehydrogenation of organic compounds in the presence of an oxygen containing gas, a metal ferrite catalyst, and at least a promoting amount of sulfur.

10. The process according to claim 9 wherein butene is oxidatively dehydrogenated.

32. A process for the dehydrogenation of ethylbenzene to styrene comprising:

contacting ethylbenzene and SO_2 in the vapor phase under dehydrogenation conditions with a catalyst comprising:

a ferrite of the spinel form having the formula

$A_aA'_bFe_cO_4$

where A has a valence of plus 2 and is a metal selected from the group consisting of cobalt, nickel, zinc and magnesium; A' has a valence of plus 3 and is selected from the group consisting of chromium and lanthanum; *a* has a value from 0.1 to about 3; *b* has a value from 0 to less than 2; *c* has a value from greater than 0 to about 3; and *a+b+c* has a value of 3; or a ferrite of the perovskite form having the formula

$B_dCr_eFe_fO_3$

where B has a valence of plus 3 and is selected from lanthanum and yttrium; *d*, *e* and *f* are each values from 0.5 to 1.5 and the sum of *d*, *e*, and *f* is 2.

3,937,747

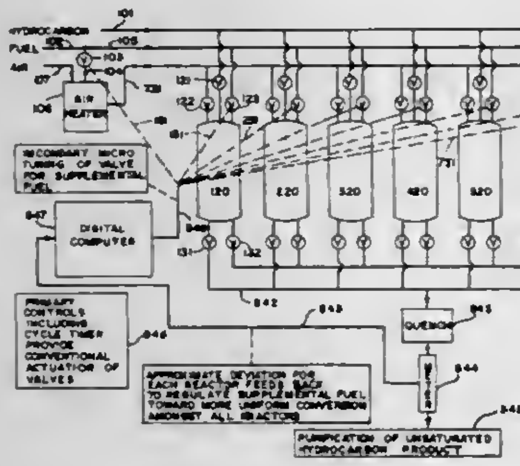
BALANCING ADIABATIC REACTORS

Bruce C. Thornton, Houston, Tex.; Michael B. Albert, Bala Cynwyd, and G. Richard Worrell, Media, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 18, 1974, Ser. No. 462,014

Int. Cl.^{2} C07C *5/36*

U.S. Cl. 260—680 R 5 Claims


HYDROCARBON
FUEL
AIR
AIR HEATER
SECONDARY MICRO TUNING OF VALVE FOR SUPPLEMENTAL FUEL
DIGITAL COMPUTER
PRIMARY CONTROLS INCLUDING CYCLE TIMER PROVIDE CONVENTIONAL ACTUATION OF VALVES
APPROXIMATE DEVIATION FOR EACH REACTOR FEEDS BACK TO REGULATE SUPPLEMENTAL FUEL TOWARD MORE UNIFORM CONVERSION AMONGST ALL REACTORS
QUENCH
FLUE GAS
PURIFICATION OF UNSATURATED HYDROCARBON PRODUCT
120
220
320
420
520
620
720

1. In a method of preparing unsaturated hydrocarbons from a gaseous hydrocarbon feedstock, wherein during a complete cycle the feedstock is directed through a dehydrogenation system comprising *n* adiabatic reactor beds in parallel, *n* being the number of adiabatic reactor beds in said system, said *n* having the same numerical value throughout said system, and wherein the dehydrogenation effluent from each of the *n* adiabatic reactor beds is mixed and directed through a quenching zone to provide a mixed, quenched product stream, which during the complete cycle time for one adiabatic reactor bed contains the mixture of product from all of said adiabatic reactor beds, said cycle time being arbitrarily divided into n instances of 1/nth of the cycle time, said system comprising primary controls for conducting said dehydrogenation to seek from each of said adiabatic reactor beds a targeted conversion of hydrocarbon feedstock, the improvement which consists of:

making a series of n measurements of a characteristic indicative of the conversion of hydrocarbon feedstock during 1/nth of cycle time;

determining the average characteristic indicative of the conversion from the n instances of thus measured characteristic of conversion, said time average characteristic indicative of the conversion being a measurement of the average conversion of all reactors during said cycle time;

determining the approximate positive or negative deviation of measurement of a characteristic indicative of conversion from said average characteristic indicative of conversion, said deviation being determined for each of the *n* time periods;

utilizing said n deviations of time periods to determine for the adiabatic reactor bed imminently scheduled for regeneration the approximate positive or negative deviation of said adiabatic reactor bed from said average characteristic indicative of conversion;

determining for the adiabatic reactor bed imminently scheduled for regeneration the deviation of said targeted conversion from said average characteristic indicative of conversion;

generating for each adiabatic reactor bed as it is imminently scheduled for regeneration a summation signal indicative of the summation of conversion deviation of targeted conversion from average characteristic indicative of conversion and said approximate positive or negative deviation of said adiabatic reactor bed from said average characteristic indicative of conversion and generating a positive or negative correction signal related to said summation signal;

utilizing said correction signal for adjusting the temperature of the regeneration gas to said reactor during said scheduled regeneration at conditions adapted to restore as closely as feasible the conversion in said reactor in the subsequent cycle to said targeted conversions; and

repeating such adjustment of the temperature of the regeneration gas to each reactor for each regeneration to maximize approach toward targeted conversion.

3,937,748

OXIDATIVE DEHYDROGENATION USING GEL PRECIPITATED CATALYST PREPARATION

Edward J. Miklas, Conroe, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Division of Ser. No. 365,916, June 1, 1973, Pat. No. 3,849,545, which is a continuation-in-part of Ser. No. 122,162, March 8, 1971, abandoned. This application Aug. 26, 1974, Ser. No. 500,243

Int. Cl.^{2} C07C *5/48*

U.S. Cl. 260—680 E 18 Claims

1. In a process for the oxidative dehydrogenation of organic compounds having at least two adjacent, hydrogen containing carbon atoms in the presence of a catalyst wherein the improvement comprises utilizing a zinc ferrite catalyst prepared by the steps of (a) contacting a solution of a soluble metal component comprising zinc and iron with a precipitating agent to precipitate an insoluble metal component comprising zinc and iron, said solution containing in addition to the soluble metal component from 0.1 to 11 weight percent of a soluble polyhydric organic compound based on the weight of metal and (b) calcining the precipitate to form said zinc ferrite oxidative dehydrogenation catalyst, wherein the precipitating agent is a solution of a hydroxide of a metal selected from the group consisting of Li, Na, K, Rb, and Cs, said precipitating

solution having a normality of between 2 and 4 and said polyhydric compound contains at least 2 hydroxyl groups and is selected from the group consisting of organic alcohols, polyesters, polyethers, polysaccharides and mixtures thereof having a molecular weight of at least about 3,000.

3,937,749

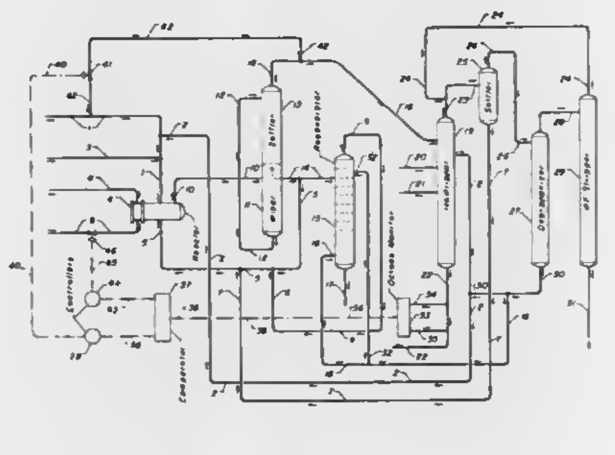
HF ALKYLATION REACTION TEMPERATURE CONTROL

Robert F. Zabransky, Oak Brook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 468,955, May 10, 1974. This application Nov. 29, 1974, Ser. No. 528,390

Int. Cl.^{2} C07C *3/54*

U.S. Cl. 260—683.48 6 Claims



1. A process for alkylating an isoparaffin with an olefinic feed stream containing at least two olefins, which process comprises the steps of:

a. reacting said isoparaffin with said feed stream in admixture with a hydrogen fluoride catalyst, in an alkylation reaction zone, at alkylating conditions resulting in a reaction product effluent containing normally liquid alkylate;

b. regulating the temperature of the reaction mixture, within said reaction zone, through indirect contact of said reaction mixture with a cooling medium passing through conduit means through said reaction zone, the flow of said cooling medium being adjusted by first flow-varying means connected to said conduit means;

c. separating said reaction product effluent into a hydrocarbon phase and an acid phase;

d. recycling a first portion of said hydrocarbon phase to said reaction zone, the flow of said first portion of hydrocarbon phase being adjusted by second flow-varying means connected to the recycle conduit to said reaction zone;

e. recovering said normally liquid alkylate from a second portion of said hydrocarbon phase;

f. introducing a sample of said alkylate into a hydrocarbon analyzer and developing therein a first output signal which is representative of a composition characteristic of said sample; and,

g. transmitting said first output signal to comparator means which compares the rate of change and actual value of said composition characteristic, said comparator generates a second output signal and transmits said second output signal to at least one of two signal-receiving means, the first of said signal-receiving means transmits said second signal to said first flow-varying means, whereby the flow of cooling medium passing throus said conduit means is adjusted, and the second of said signal-receiving means transmits said second signal to said second flow-varying means, whereby the flow of said recycled hydrocarbon phase through said recycle conduit is adjusted in response to said composition characteristic.

3,937,750

PERFLUORO COMPOUND-SOIL RESISTANT EPOXY RESIN COMPOSITIONS

Philip Bernstein, Yardley, Pa., and John P. Stirpe, Trenton, N.J., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Dec. 12, 1973, Ser. No. 426,611

Int. Cl.^{2} C08G *45/00*

U.S. Cl. 260—830 TW 10 Claims

1. Perfluoro compound-epoxy resin compositions comprising an epoxy resin and a block copolymer of the type $(ABA)_n$ wherein A is a perfluoro group having from about 8 to about 10 carbon atoms, B is a low molecular weight functionality, derived from a compound having at least sufficient stoichiometry to fulfill the functions of two active hydrogens, which is reactive with the epoxy resin, and *n* is from 1 to about 5 and wherein the block copolymer comprises from about 0.5 to about 10 weight percent of the perfluoro compound - epoxy resin composition, and more than one vicinal epoxy group is present in each epoxy resin molecule.

3,937,751

CURABLE COMPOSITIONS BASED ON EPOXIDE RESINS AND POLYESTER-TRICARBOXYLIC ACIDS OR -TETRACARBOXYLIC ACIDS

Rolf Schmid, Gelterkinden; Friedrich Lohse, Oberwil; Willy Fatzer, Bottmingen, and Hans Batzer, Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 6, 1974, Ser. No. 530,334

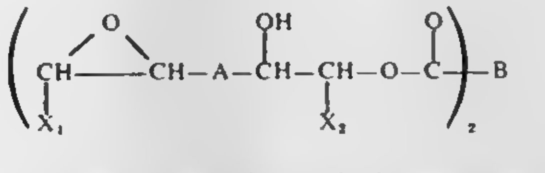
Claims priority, application Switzerland, Dec. 19, 1973, 17807/73

Int. Cl.^{2} C08L *63/00*

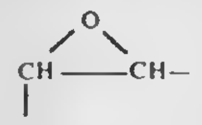
U.S. Cl. 260—835 16 Claims

1. A curable epoxide resin composition based on adducts containing epoxide groups and polyester-tricarboxylic acids and/or -tetracarboxylic acids, characterised in that it comprises

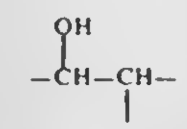
a. at least 60 per cent by weight, based on the total amount of epoxide resin, of adducts containing epoxide groups, of the formula I


(I)

wherein X_1 and X_2 each denote hydrogen or methyl and A denotes the radical, obtained by removal of the 1,2-epoxyethyl groups of a diglycidyl compound, or wherein A together with X_1 and/or X_2 and with inclusion of the grouping



and/or

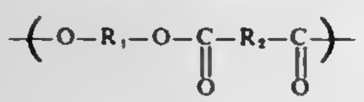


$$-\overset{\overset{\displaystyle OH}{|}}{C}H-\underset{|}{C}H-$$

denotes the cycloaliphatic ring or the cycloaliphatic ring system of a partially reacted cycloaliphatic or cycloaliphatic-aliphatic diepoxide compound, B denotes a long-chain polyester radical obtained by removing both carboxyl groups from a polyester dicarboxylic acid in which unsubstituted or substituted alkylene and/or alkenylene chains alternate with carboxylic acid ester groups, and the quotient Z/Q, wherein Z is the number of carbon atoms present in the recurring structural element of the radical B and Q is the number of oxygen bridges present in the recurring structural element of the radical

B, has to be at least 4 and, furthermore, the total number of carbon atoms present in the radical B is at least 50, and

b. as curing agents, linear or slightly branched polyesters possessing 3 or 4 terminal carboxyl groups and having an average molecular weight of 600 – 6,000, which contain at most 30, structural elements of the formula II



$$-\!\left(O-R_1-O-\underset{\underset{O}{\|}}{C}-R_2-\underset{\underset{O}{\|}}{C}\right)\!- \qquad (II)$$

wherein R_1 and R_2 denote divalent aliphatic, araliphatic, cycloaliphatic, cycloaliphatic-aliphatic, aromatic or heterocyclic-aliphatic radicals, and at least one of the two radicals R_1 or R_2 has to contain a carbocyclic or heterocyclic ring or a carboxylic or heterocyclic ring system and not more than 4 methylene groups are present in the structural element per ring, component (b) being present in an amount such that 0.7 – 1.2 equivalents of carboxyl groups are present in the mixture per 1 equivalent of epoxide groups.

3,937,752

HOMOPOLYAMIDE AND TERPOLYAMIDE BLEND

Hiroshi Ueno, Kawasaki, and Tetsuo Tsukamoto, Higashirokugo, both of Japan, assignors to Toyo Seikan Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 13,892, Feb. 25, 1970, abandoned. This application Dec. 6, 1972, Ser. No. 312,651

Claims priority, application Japan, Mar. 6, 1969, 44-16463

Int. Cl.² C08L ***77/00***

U.S. Cl. 260—857 TW **6 Claims**

1. An adhesive composition for bonding together metal sheets, said composition being a homogeneous blend consisting essentially of:

I. a crystalline linear homopolyamide selected from the group consisting of polyhexamethylene adipamide, poly ε-caprolactam, polyhexamethylene sebacamide, poly ω-undecamide, and poly ω-dodecamide, of a relative viscosity of at least 1.5 when measured in a solution of 1 g polymer in 100CC of 98% sulphuric acid at 20°C and

II. a copolyamide of at least three members selected from the group consisting of alkylene diammonium carboxylates of alkylene diamines having 4 to 14 carbon atoms and alkylene dicarboxylic acids having 4 to 14 carbon atoms, and alkylene amino carboxylic acids having 4 to 14 carbon atoms,

in a ratio by weight of (I): (II) from 99:1 to 90:10.

3,937,753

ACID DYEABLE POLYESTERS

Maneung Hahn, Akron; Leroy C. T. Lin, Uniontown, and William C. T. Tung, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 23, 1975, Ser. No. 543,399

Int. Cl.² C08G ***63/36;*** **C08L** ***67/02***

U.S. Cl. 260—860 **9 Claims**

1. A block polymer containing blocks of polyethylene terephthalate and polymer blocks selected from the group consisting of (A) blocks of a polymer of diacid having the hydantoin nucleus in its structure and cyclohexyl diethanolamine and (B) blocks of a polymer of diacid having the hydantoin nucleus in its structure and a mixture of cyclohexyl diethanol amine and a diol selected from the group consisting of hydantoin diol, a polymethylene diol containing from 2 to 10 methylene groups and polyether diols.

3,937,754

BIAXIALLY ORIENTED POLYETHYLENE-2,6-NAPHTHALATE FILM CONTAINING ANOTHER POLYESTER RESIN AND PROCESS FOR ITS PRODUCTION

Sakae Shimotsuma; Takeo Asai; Masahiro Hosoi, all of Sagamihara; Hiroshi Aoki, and Masanori Masuda, both of Ogaki, all of Japan, assignors to Teijin Ltd, Osaka, Japan

Filed July 23, 1973, Ser. No. 381,580

Claims priority, application Japan, July 25, 1972, 47-73803

Int. Cl.² C08G ***39/02***

U.S. Cl. 260—860 **3 Claims**

1. A biaxially oriented polyethylene-2,6-naphthalate film, which comprises a blended mixture of

1. a polyethylene-2,6-naphthalate resin having a unit derived from not more than 10 mol % of a polyester-forming component other than a polyethylene-2,6-naphthalate-forming component, and (2) 0.5 to 10% by weight, based on the polyethylene-2,6-naphthalate resin (1), of a polyester resin other than the polyethylene-2,6-naphthalate resin (1) which contains at least 90 mol % of units derived from a dicarboxylic acid component selected from the group consisting of terephthalic acid, isophthalic acid, adipic acid, oxalic acid, succinic acid, naphthalene-2, 6-dicarboxylic acid, naphthalene-2,7-dicarboxylic acid, naphthalene-1,5-dicarboxylic acid, 4,4′-diphenoxyethane dicarboxylic acid, 4,4′-tetramethylene diphenyl dicarboxylic acid and lower alkyl ester functional derivatives of these acids, and a glycol component selected from the group consisting of ethylene glycol, trimethylene glycol, tetramethylene glycol, hexamethylene glycol, neopentyl glycol and functional derivatives of these glycols, in which the amount of the homopolyester unit is at least 90 mol %,

said film having a softening point at least 1°C. higher than its equilibrium softening point.

3,937,755

POLYESTERS HAVING IMPROVED DISPERSE DYEABILITY

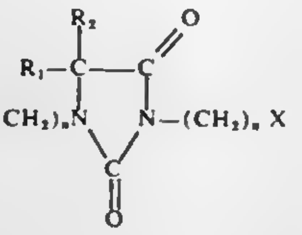
Maneung Hahn, Akron; Leroy C. T. Lin, Uniontown, and William C. T. Tung, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 23, 1975, Ser. No. 543,400

Int. Cl.² C08G ***63/16;*** **C08L** ***67/02***

U.S. Cl. 260—860 **6 Claims**

1. A polyethylene terephthalate block copolyester in which the copolyester comprises a polymer of a derivative of a hydantoin diacid and a hydantoin diol having the general formula



where R_1 and R_2 are hydrogen, alkyl, aryl, aralkyl and heterocyclic compounds, *n* and *n′* are integers from 1 to 10 and X is —OH in the hydantoin diol and —COOH in the hydantoin diacid said copolyester block being present in the polyethylene terephthalate block copolyester in an amount of from 1 to 20 percent by weight of said block copolyester.

3,937,756

FIRE RETARDANT POLYESTER RESINS

Howard Paul Klein, and Harold George Waddill, both of Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

Filed May 24, 1974, Ser. No. 473,000

Int. Cl.² C08L ***67/06***

U.S. Cl. 260—869 **13 Claims**

1. A process for making a fire retardant infusible cured polyester bromine-containing resin comprising the steps of:

initially forming a bromine containing polyester resin having ester groups derived from an ethylenically unsaturated dicarboxylic acid or acid anhydride in the polyester chain by simultaneously mixing and reacting

a. polyhydric alcohol selected from the group consisting of aliphatic glycols having from 2 to 10 carbon atoms and aliphatic glycol ethers having from 4 to 20 carbon atoms;

b. an ethylenically unsaturated dicarboxylic acid or acid anhydride selected from the group consisting of maleic acid, maleic anhydride, fumaric acid, itaconic acid, and mixtures thereof, and

c. a 4,5-dibromohexahydrophthalic compound selected from 4,5-dibromohexahydrophthalic anhydride and 4,5-dibromohexahydrophthalic dicarboxylic acid at a temperature of from about 100°C to about 175°C to form a product having an acid number within the range of about 0 to 40 mg. KOH/g., wherein the dicarboxylic acid or anhydride (b) and the 4,5-dibromohexahydrophthalic compound (c) are collectively employed in an amount such that there is approximately one hydroxyl equivalent based on the polyhydric alcohol (a) per carboxyl equivalent and wherein the 4,5-dibromohexahydrophthalic compound (c) is present in an amount of from about 5 to about 25 mole percent of the total dicarboxylic acids (b) and (c);

mixing the resulting polyester resin with a cross linking agent which is a polymerizable monomer having terminal ethylenic unsaturation; and,

curing the resultant mixture to produce said fire retardant infusible cured polyester.

3,937,757

MOLDING COMPOSITIONS OF POLYBUTYLENE TEREPHTHALATE AND OLEFIN POLYMER

Wolfgang Seydl, Frankenthal, and Erich Strickle, Mannheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Sept. 5, 1974, Ser. No. 503,522

Int. Cl.² C08L ***67/06***

U.S. Cl. 260—873 **10 Claims**

1. Molding compositions based on polybutylene terephthalate and containing, based on the total weight of the molding composition, from 5 to 50% by weight of an olefin polymer selected from the group consisting of polyolefins and olefin polymers containing at least 50% by weight of olefin units, said olefin polymer having a melt index of from 0.01 to 100 as measured at a temperature of 190°C 2nd under a load of 2.16Kg.

3,937,758

PROCESS FOR THE PRODUCTION OF HIGH IMPACT COMPOSITIONS OF POLYETHYLENE AND POLYPROPYLENE BLOCK COPOLYMERS

Eugene G. Castagna, Clark, N.J., assignor to Dart Industries Inc., Los Angeles, Calif.

Division of Ser. No. 344,683, March 26, 1973. This application July 1, 1975, Ser. No. 592,145

Int. Cl.² C08L ***51/00, 53/00, 23/00***

U.S. Cl. 260—876 B **5 Claims**

1. A process for the preparation of a binary polypropylene composition having synergistic impact properties which comprises:

1. polymerizing propylene in a slurry in the presence of a catalytic amount of a catalyst formed by admixing a subhalide of a metal selected from the metals of Groups IV*a*, V*a* and VI*a* of the Periodic Table according to Mendeleef and an aluminum compound containing at least one carbon to metal bond to a solids content of 10 to 60 percent by weight to form a polypropylene preblock;
2. removing any volatiles present with said preblock to a level of no more than 5 percent by weight;
3. transferring said preblock while it still contains active catalyst to a continuously agitated reaction zone;
4. introducing ethylene and another α-olefin having from 3 to 8 carbon atoms to said reaction zone;
5. block copolymerizing said ethylene and other α-olefin onto said preblock in the vapor phase to form a random copolymer post block having from about 25 to about 75 mole percent ethylene derived units and constituting from about 5 to about 40 percent by weight of the total block copolymer;
6. deashing the block copolymer thus produced;
7. transferring the deashed copolymer to at least one agitated drying zone;
8. introducing a linear polyethylene having a melt index between about 0.5 and about 0.9 and a density of at least 0.93 to the drying zone in an amount corresponding to between about 3 and about 15 percent by weight of the total of the linear polyethylene component and the block copolymer component, and
9. recovering the polypropylene composition from said drying zone.

3,937,759

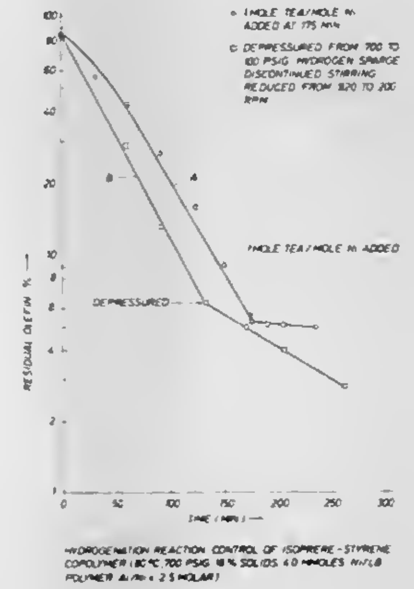
HYDROGENATION PROCESS

Herman J. Baumgartner, Cypress, and Jaroslav G. Balas, Palos Verdes Penn., both of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed May 1, 1974, Ser. No. 465,771

Int. Cl.² C08C ***19/02***

U.S. Cl. 260—879 **10 Claims**



1. In the process for the hydrogenation of polymers of olefinically unsaturated hydrocarbons wherein the hydrocarbons are hydrogenated in the presence of a catalyst comprising the reaction product of 1.0–5.0 moles of an aluminum trihydrocarbyl per mole of an alkoxide or carboxylate of a metal of the group consisting of cobalt, nickel, iron or mixtures thereof, the improvement comprising hydrogenating the hydrocarbon and thereafter reversibly interrupting the hydrogenation by injection of supplementary aluminum trihydrocarbyl in an amount between 0.75 and 2.5 moles per mole of cobalt, nickel or iron.

3,937,760

PROCESS FOR PRODUCING MULTIBLOCK COPOLYMER AND PRODUCTS PRODUCED THEREBY

William Max Cole, Norton, and Shingo Futamura, Seville, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 29, 1974, Ser. No. 464,871

Int. Cl.^{2} C08L *9/02, 9/06*

U.S. Cl. 260—880 B **16 Claims**

1. In a process for preparing a multiblock copolymer of two or more monomers, the steps of preparing said copolymer in a continuous system comprising (1) alternately feeding into a highly agitated polymerization system a first monomer stream, and then a second monomer stream, differing in monomer composition from the first monomer stream, each monomer stream being interrupted while the other monomer stream is flowed, and repeating continually the feeding of said alternating streams, (2) adding to the polymerization system an anionic polymerization catalyst capable of polymerizing each of said monomers, the rate of addition of said catalyst being controlled to give the desired molecular weight to the resultant multiblock copolymer, (3) withdrawing from said polymerization system a product stream at the same rate as the total of the said feed streams whereby there is substantially continual flow through said polymerization system.

3,937,761

SYMMETRICAL BIS(UNSYMMETRICAL TERTIARY-ALKYL AND TERTIARY- ARALKYL AZO) COMPOUNDS

Ronald Edward Mac Leay, Williamsville, and Chester Stephen Sheppard, Tonawanda, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 88,247, Nov. 9, 1970, which is a continuation-in-part of Ser. No. 725,180, April 29, 1968, abandoned, which is a continuation of Ser. No. 616,158, Feb. 15, 1967, abandoned, which is a continuation of Ser. No. 409,306, Nov. 5, 1964, abandoned. This application Dec. 26, 1973, Ser. No. 428,494

Int. Cl.^{2} C08L *31/02, 25/08;* **C09B** *31/02, 29/22*

U.S. Cl. 260—885 **11 Claims**

1. The process for preparing a polymer by free radical initiation, the improvement which comprises polymerizing at least one monomer containing ethylenic unsaturation in the presence of a bis-azo compound having the formula:

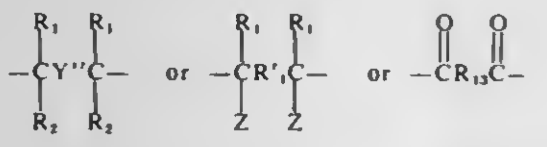
$$R-N=N-R_{12}-N=N-R'' \qquad (1)$$

wherein

R equals R′ equals $(R'')_3C$;

$(R'')_3C$ is C_4–C_{20} t-alkyl, cycloalkyl, alkylcycloalkyl, arylcycloalkyl or aralkyl wherein R″ is C_1–C_8 alkyl, C_7–C_{12} aralkyl or C_6–C_{14} aryl, not more than one R′ being aromatic, and two or three of said R″s can join with the tertiary carbon atom to form a cyclo-, bicyclo- or tricyclo-hydrocarbon radical of 3–12 carbons;

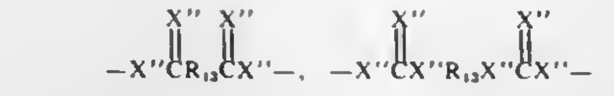
R_{12} is



$$-\overset{R_1}{\underset{R_2}{C}}Y''\overset{R_1}{\underset{R_2}{C}}- \quad \text{or} \quad -\overset{R_1}{\underset{Z}{C}}R'_{13}\overset{R_1}{\underset{Z}{C}}- \quad \text{or} \quad -\overset{\overset{O}{\|}}{C}R_{13}\overset{\overset{O}{\|}}{C}-$$

R_1 and R_2 are C_1–C_8 alkyl, C_3–C_{12} cyclo-, bicyclo- or tricycloalkyl, C_7–C_{12} aralkyl, or 5–6 membered heterocyclic wherein the hetero atom is O or N, R_1 and R_2 taken together can form a C_3–C_{11} alkylene diradical, one or more of each of the R_1s and R_2s can be substituted with lower alkoxy, hydroxy, carboxy, lower alkoxycarbonyl, lower alkylcarbonyloxy, halo, cyano, dimethylamido or lower alkylsulfonato radicals, and R_1 can also be C_6–C_{14} aryl;

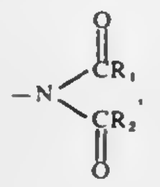
Y″ is —NHNH—, —S—, —O—, —SS—,

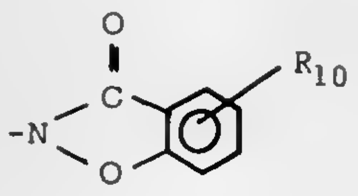


$$-X''\overset{\overset{X''}{\|}}{C}R_{13}\overset{\overset{X''}{\|}}{C}X''-, \quad -X''\overset{\overset{X''}{\|}}{C}X''R_{13}X''\overset{\overset{X''}{\|}}{C}X''-$$

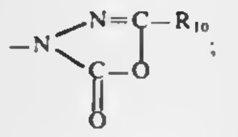
or $-X''R_{13}X''-$;

Z is —CN, —Cl, —Br, $-X''R_5$, $-N_3$, —SCN, —NCS, —OCN, —OOR, —OOH, —OH, $-R_5$, $-NO_2$, $-NO_3$, —C CR$_{10}$, $-C(=O)NH_2$, $-C(=O)OR_6$, $-C(=NH)NH_2$, $-C(=NH)OR_6$, $-OC(=O)H$, $-X''C(=X'')X''R_5$, $-X''C(=X'')R_5$, $-OOC(=O)R_5$,





or



R'_{13} is a C_2–C_{20} symmetrical diradical selected from alkyl, alkylaralkyl or alkylcycloalkylalkyl groups optionally containing two or more non-adjacent oxygen, sulfur or nitrogen atoms in the backbone structure, cycloalkyl or, when R_1 is not phenyl or substituted phenyl, from C_6–C_{12} hydrocarbon aromatic;

R_{13} is a symmetrical C_5–C_{15} alkyl-cycloalkyl, C_2–C_{10} alkylene, C_3–C_{12} cycloalkylene, C_6–C_{12} hydrocarbon aryl or C_8–C_{15} alkyl-aryl diradical;

X″ is oxygen or sulfur;

R_5 is C_1–C_{10} alkyl or cycloalkyl or C_6–C_{12} hydrocarbon aromatic;

R_6 is lower alkyl; and

R_{10} is hydrogen, C_1–C_{10} alkyl or cycloalkyl or C_6–C_{12} hydrocarbon aryl.

3,937,762

HEAT SEALABLE THERMOPLASTIC FILM FORMING COMPOSITIONS

A. Michael Nahmias, Canandaigua, and Edward M. Bullard, Brighton, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 351,211, April 16, 1973, Pat. No. 3,865,905. This application June 7, 1974, Ser. No. 477,234. The portion of the term of this patent subsequent to Feb. 11, 1992, has been disclaimed.

Int. Cl.^{2} C08L *23/16, 47/00*

U.S. Cl. 260—889 **16 Claims**

1. A resinous blend composition comprising a blend of an essentially isotactic crystalline ethylene-propylene copolymer containing a minor amount sufficient to improve the heat sealability of film prepared therefrom of from about 5% to about 40% by weight of a normal solid, resinous, random multipolymer of a mixture comprising pentadiene 1,3 and at least one other compound containing ethylenic unsaturation copolymerizable therewith.

3,937,763

OLEFINIC COPOLYMER COMPOSITIONS

Masatoshi Ogura, and Keisaku Yamamoto, both of Ichihara, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

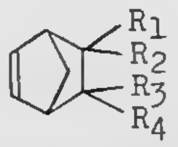
Continuation-in-part of Ser. No. 335,774, Feb. 26, 1973, Pat. No. 3,876,595. This application Jan. 28, 1975, Ser. No. 544,686

Claims priority, application Japan, Feb. 28, 1972, 47-20354

Int. Cl.^{2} C08L *9/00, 23/00;* **C08F** *210/00, 212/00*

U.S. Cl. 260—889 **24 Claims**

1. A composition comprising 90 to 20 % by weight of at least one diene rubber or butyl rubber and 10 to 80 % by weight of a halogen-containing, sulfur-curable, normally amorphous quadripolymer obtained by contacting a mixture comprising (1) ethylene, (2) an α-olefin of the formula R—CH=CH_2 wherein R is a hydrocarbon radical having 1 to 20 carbon atoms, (3) a hydrocarbon compound having a plurality of non-conjugated unsaturated bonds capable of polymerizing with a coordinated catalyst, and (4) a halogenated norbornene compound represented by the formula,



wherein R_1, R_2, R_3 and R_4 are hydrogen atoms, hydrocarbon radicals having 1 to 20 carbon atoms, halogen atoms, or halogenated hydrocarbon radicals having 1 to 20 carbon atoms and containing at least one halogen atom as substituent, provided that R_1, R_2, R_3 and R_4 have as a whole at least one halogen atom, with a coordinated catalyst comprising an organoaluminum compound of the formula, AlR'_nX_{3-n} wherein R′ is a hydrocarbon radical having 1 to 20 carbon atoms; X is a halogen atom; and n is any number of from 1.5 to 3 and a transition metal compound selected from the group consisting of vanadium compounds and titanium compounds, the molar ratio of said organoaluminum compound to said transition metal compound being from 5 : 1 to 0.5 : 1.

3,937,764

POLYMER ELECTROLYTES

Hideichi Horikawa; Shitomi Katayama; Hajime Serita, all of Akita, and Noboru Masuda, Kawaguchi, all of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

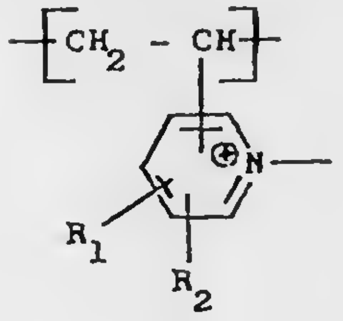
Continuation-in-part of Ser. No. 160,541, July 7, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 314,033

Claims priority, application Japan, July 9, 1970, 45-60084

Int. Cl.^{2} C08L *39/04*

U.S. Cl. 260—895 **18 Claims**

1. An electrolyte polymer having an inherent viscosity of from about 0.2 to about 5 at a concentration of 0.5 g./100 ml. methanol at 30°C; at least 10 mole percent of said polymer being polymerized vinylpyridine units having grafted upon the nitrogen thereof poly-β-propiolactone; and wherein said grafted vinyl pyridine unit is of the structural formula:



$$\ominus$$

$$CH_2CH_2CO_2(CH_2CH_2CO_2)_{n-2}CH_2CH_2CO_2$$

wherein R_1 and R_2 are hydrogen, methyl or ethyl and n has an average value greater than about 0.2 and less than that producing an X-ray crystalline pattern of poly-β-propiolactone homopolymer.

3,937,765

PROCESS FOR PREPARING O,O-DIARYL N,N-DIALKYL PHOSPHORAMIDATES

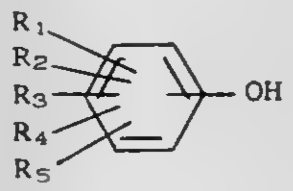
Arthur D. F. Toy, Stamford, Conn., and Kenneth L. Eilers, Irvington, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Filed Oct. 12, 1970, Ser. No. 80,195

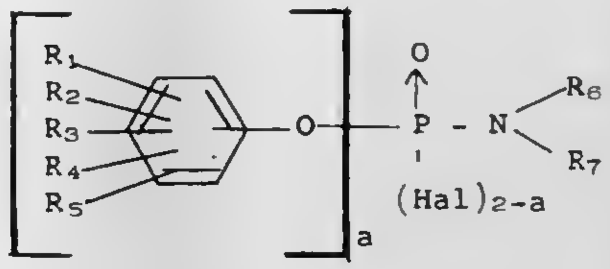
Int. Cl.^{2} C07F *9/24;* **D06C** *27/00*

U.S. Cl. 260—973 **10 Claims**

1. A method for preparing O,O-diaryl N,N-dialkyl phosphoramidates which comprises reacting a phenol of the formula:



wherein R_1-R_5 independently represent hydrogen, C_1-C_4 alkyl and hydroxy alkyl, chlorine or bromine with an N,N-dialkyl phosphoamidic halide of the formula:



wherein R_6 and R_7 represent the same or different C_1-C_4 alkyl radicals, R_1-R_5 are as defined hereinbefore, a is a number equal to 1 or 0 and Hal is a halogen of chlorine or bromine; said reaction being conducted in the presence of an alkali metal or an alkaline earth metal hydroxide in an amount at least stoichiometrically equivalent to the phenol, said hydroxide being used in concentrations of from 50 to 100% by weight, the remainder being composed of water; and a substantially water-insoluble, water-immiscible, non-hydroxylic, polar ketone which is a solvent for said phenol, said halide and phosphoramidate; said ketone being selected from the group consisting of ketones defined by the formula:

$$R_xC(O)R_y$$

wherein R_x represents a C_1-C_4 alkyl group and R_y represents a C_3-C_8 alkyl and alicyclic ketones of the formula:

$$CH_2(CH_2)_nC\ O$$

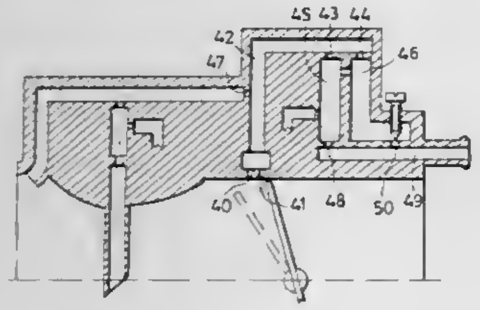
wherein *n* is an integer of 4 or 5 and the lower alkyl substituted derivatives thereof; the total number of carbon atoms of said ketone not exceeding 10.

3,937,766

MIXTURE CARBURATION DEVICE FOR THE OPERATION IN IDLING CONDITIONS IN PROGRESSION OF AN INTERNAL COMBUSTION ENGINE

Giampaolo Garcea; Gennaro Police, and Angelo Ciccarone, all of Milan, Italy, assignors to Alpha Romeo S.p.A., Milan, Italy

Filed Mar. 4, 1974, Ser. No. 447,770
Claims priority, application Italy, Mar. 5, 1973, 21183/73
Int. Cl.^{2} F02M *3/08*
U.S. Cl. 261—41 D **8 Claims**



1. A carburettor for an internal combustion engine, more particularly for a motor vehicle, said carburettor being of the kind essentially formed by at least a principal system for metering and forming the mixture drawn by the engine during its operation at fair and high powers, by at least an additional system called for idling and progression for metering and forming the mixture drawn by the engine during its operation at no power and at small powers, and by at least one throttle for throttling the mixture fed to the engine, the position of the throttle governing the magnitude of the power delivered by the engine when operating, the improvement wherein said carburettor is characterized in that said idling and progression system is essentially formed by at least one emulsion chamber and a compensation chamber, said at least one emulsion chamber and said compensation chamber communicating each by means of a calibrated hole with a duct which in turn communicates with the intake duct of the engine upstream of the throttle, at least one hole being provided in the feed duct in the vicinity of the throttle edge so as to arrive upstream of the throttle when the latter is closed, that is in the position of maximum throttling, and to come downstream of the throttle when the latter is in a position of slight opening, the feeding duct being put in communication through said at least one hole with a duct, said at least one emulsion chamber and compensation chamber communicating each with said duct and thus communicating each with the intake duct upstream of the throttle when the throttle is closed, downstream of the throttle when the latter is slightly open, said at least one emulsion chamber being in communication with the intake duct in the area downstream of the throttle through a respective calibrated hole and being further in communication with the float chamber through a calibrated hole, whereas said compensation chamber is in communication with the intake duct in the area downstream of the throttle through an adjustable section port, said at least one emulsion chamber being also in communication with said compensation chamber through a respective calibrated hole.

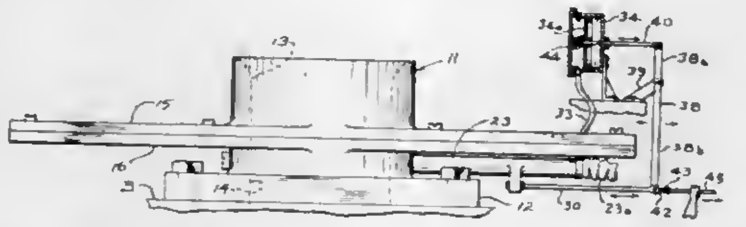
3,937,767

CARBURETOR

Donald L. Chapman, 191 Osceola Ave., Tallmadge, Ohio 44278

Continuation-in-part of Ser. No. 298,187, Oct. 16, 1972, Pat. No. 3,855,366. This application Oct. 1, 1974, Ser. No. 510,936
Int. Cl.^{2} F02M *11/08*
U.S. Cl. 261—41 B **4 Claims**

1. A carburetor, as for a gasoline engine, comprising, a housing having connecting air-intake and gas-mixing chambers; a slide-valve member, adjustably mounted between said chambers, and having a venturi-aperture means of variable flow area therethrough, for passage of air from said air-intake chamber to said gas-mixing chamber with correspondingly varying venturi effect on said air; means for adjusting said slide-valve member to vary the flow area of said venturi-aperture means; and a gas metering device presented within said gas-mixing chamber, for supplying gas to said gas-mixing chamber for convergence with air passed through said venturi-aperture means, said slide-valve member including vacuum aperture means communicating with said venturi-aperture means; and accelerator speed-control means operable by variations in vacuum effect in said vacuum aperture means to adjust the size of the venturi opening, with resultant proportional automatic adjustment of the amount of gas being mixed with air passing through the effective venturi opening, said vacuum aperture means in the slide-valve member including a series of spaced passages communicating with said effective venturi aperture opening.

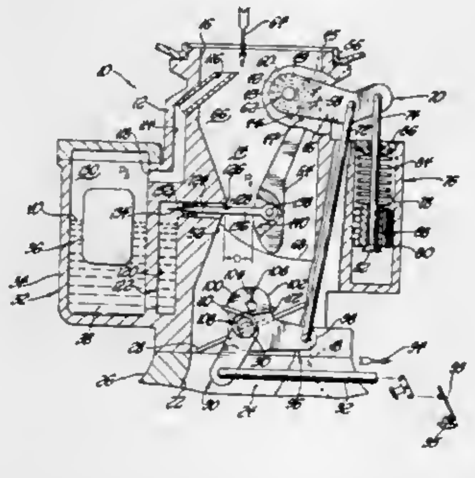


3,937,768

VARIABLE VENTURI CARBURETOR

Kenneth C. Bier, Bloomfield Hills; Kalin S. Johnson, Northville, and Ronald E. Herman, Romeo, all of Mich., assignors to Colt Industries Operating Corporation, New York, N.Y.

Continuation of Ser. No. 347,187, April 2, 1973, abandoned. This application Feb. 27, 1975, Ser. No. 553,457
Int. Cl.^{2} F02M *9/14*
U.S. Cl. 261—44 R **9 Claims**



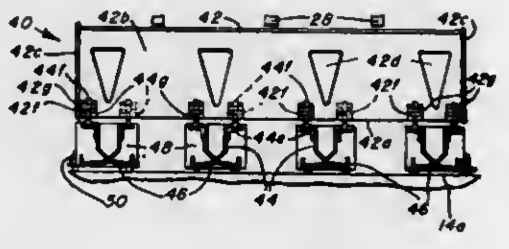
1. A carburetor for an internal combustion engine, comprising carburetor body means, induction passage means formed through said body means, a related source of fuel, variable venturi means situated in said induction passage means for variably determining a variably openable venturi throat, a fuel passage means comprising metering restriction means between said source of fuel and said induction passage and discharging fuel into said passage adjacent said venturi throat, the dominant metering characteristic of said carburetor being venturi depression at said throat proportional to the square of the airflow through said throat, fuel flow through said restriction means proportional to the square root of said metering depression, resulting in fuel flow directly proportional to airflow, said variable venturi means comprising a first fixed venturi section and a second variably positionable venturi section, said first venturi section and said second venturi section cooperating to define said variably openable venturi throat therebetween, variably positional throttle valve means situated in said induction passage means downstream of said variable venturi means, connecting means operative interconnecting said throttle valve means and said second variably positionable venturi section for causing said second venturi section to assume opening positions determined by the position of said throttle valve means and correspondingly determine the effective opening of said variably openable venturi throat over the entire range of throttle movements from closed throttle to wide open throttle, said restriction means comprising calibrated orifice metering means and calibrated valve metering means, said calibrated orifice metering means and said calibrated valve metering means being relatively movable with respect to each other in order to thereby cooperatively define an effective fuel metering area, and one of said calibrated metering means being directly positioned by said second variably positionable venturi section and not any portion of said connecting means in order to thereby assure said effective fuel metering area to be totally dependent upon the actual position of said second variably positionable venturi section and thereby assure said effective fuel metering area to be correct for the then existing effective opening of said variably openable venturi throat, said connecting means comprising first and second lost motion means, said first lost motion means enabling said throttle valve means to at times move in the throttle opening direction without absolutely causing a corresponding movement of said second venturi section, and said second lost motion means enabling said second venturi section to move toward a further reduced venturi throat opening after said throttle valve means has attained a curb idle position.

3,937,769

LIQUID DISTRIBUTOR

Ralph F. Strigle, Jr., Akron, and Frank D. Moore, Tallmadge, both of Ohio, assignors to Norton Company, Worcester, Mass.

Filed Dec. 27, 1973, Ser. No. 428,886
Int. Cl.^{2} B01F *3/04*
U.S. Cl. 261—97 **2 Claims**



1. A liquid distributor for use in a liquid/gas contact tower having

liquid feed splitter means for receiving a source of liquid feed and dividing the liquid feed into a plurality of liquid streams and

a plurality of troughs including apertures in opposite sidewalls thereof disposed beneath and extending transversely outward from the splitter means, across a chamber of predetermined cross sectional area to support means adjoining an inner wall of the contact tower, for receiving the liquid streams and further dividing the liquid feed into a greater number of streams, wherein the improvement comprises:

a pan disposed beneath each of the troughs for collecting, the liquid streams flowing from the trough and further dividing the liquid flowing into the pan and each pan having

a central ridge,

a pair of inclined bottom walls diverging outwardly and downwardly from the central ridge to opposite lower sides,

a pair of short sidewalls extending upwardly from a junction with the inclined bottom walls at the opposite lower sides, and

a plurality of drain openings located solely in each of the short sidewalls of the pan of greater number than the apertures in each sidewall of the trough and each of the drain openings having

a configuration defined by and situated within diverging sides extending upwardly from a bottom point of convergence located at least at the junction of the short sidewall with the inclined bottom wall and out of alignment with the apertures in an adjacent sidewall of the trough and there being at least three drain openings in the short sidewalls of the pans for each square foot of cross sectional area of the chamber;

converging walls, on each of the troughs, extending downwardly from the opposite sides to and converging at a lower central portion situated above and substantially opposite the central ridge of the pan beneath the trough, and wherein each of the apertures in the opposite sidewalls of the trough have a configuration defined by and located within diverging sides extending upwardly from a bottom point adjacent the lower central portion to a top side extending between the diverging sides; and means at opposite ends of the troughs and the pans for closing off and preventing the liquid from draining therefrom;

whereby a relatively low rate of liquid feed supplied to the distributor is divided by the apertures in the troughs, and thereafter further divided and uniformly distributed over the cross sectional area of the chamber by flowing down the inclined bottom wall and out of the bottoms of the drain openings at the junction without substantially increasing the level of the liquid in the pan.

3,937,770

METHOD FOR THE PRODUCTION OF MEALY CRUDE BLACK POWDER WHICH CAN BE FURTHER PROCESSED

Wolfgang Wiedemann, Dulmen, and Friedrich Platte, Recklinghausen, both of Germany, assignors to Wasagchemie GmbH, Munich, Germany

Filed Oct. 3, 1973, Ser. No. 403,200
Claims priority, application Germany, Oct. 17, 1972, 2250823
Int. Cl.^{2} C06B *21/00*
U.S. Cl. 264—3 C **8 Claims**

1. A method for the production of mealy crude black powder from components consisting essentially of potassium nitrate, sulfur and carbon all in particle form comprising the steps of placing each component in a storage container, continuously withdrawing said components individually from said storage containers in the determined proportions, continuously feeding said separate components as particles into a circular oscillating cylindrical grinding zone consisting of at least two grinding zones rigidly interconnected and containing grinding elements, whereby said component particles are ground and mixed with each other with agglomeration of the individual component particles, and continuously withdrawing said mealy crude black powder.

3,937,771

PROCESS FOR PREPARING MODIFIED BLACK POWDER PELLETS

H. William Voigt, Jr., Stanhope; Lawrence W. Pell, West Orange, and Jean P. Picard, Morristown, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 21, 1974, Ser. No. 499,248
Int. Cl.^{2} C60B *21/02*
U.S. Cl. 264—3 E **10 Claims**

1. A process for preparing black powder pellets consisting essentially of potassium nitrate, sulfur and carbon, which comprises:

dissolving the potassium nitrate in water,
mixing the aqueous potassium nitrate solution with an alcoholic precipitating medium, the aqueous potassium nitrate solution and the alcoholic medium being such that the potassium nitrate is essentially insoluble in the resulting mixture and precipitates therefrom in particulate form,
incorporating in the aqueous potassium nitrate solution or the alcoholic medium prior to the mixing step, the sulfur having an average particle size not greater than about 10 microns, the carbon selected from the group consisting of wood charcoal having an average particle size not greater than about 50 microns in longest dimension, and carbon black having an average particle size not exceeding about 100 millimicrons and a surface area not less than about 20 square meters per gram, and mixtures thereof, and a small amount of a polyvinyl pyrrolidone,
separating the resulting particulate mixture of potassium nitrate, sulfur and carbon containing polyvinyl pyrrolidone from said resulting mixture,
drying the particulate mixture, and
pressing the dry particulate black powder mixture into pellets.

3,937,772
PRODUCTION OF MIXTURES OF PLASTICS MATERIALS

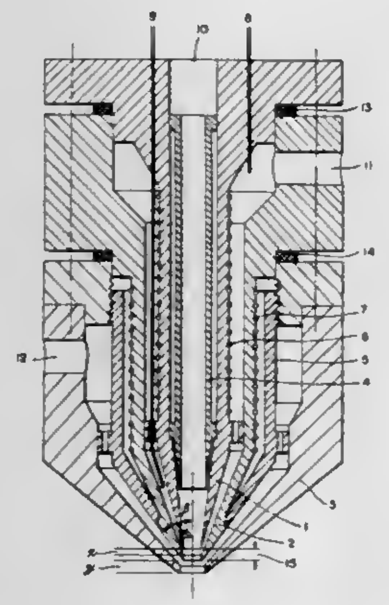
Friedrich Urban, Neuhofen; Oskar Buechner; Klaus Steigerwald, both of Ludwigshafen; Karl-Heinz Fauth, Frankenthal, and Heinz Gehrig, Buerstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed June 9, 1971, Ser. No. 151,392

Claims priority, application Germany, June 11, 1970, 2028751

Int. Cl.² B29B *1/02*

U.S. Cl. 264—12 **5 Claims**



1. A process for the production of a pulverulent homogeneous mixture of plastic material which comprises:
a. extruding a nonhomogeneous mixture of two or more plastic materials through a nozzle means,
  1. at a temperature between the melting point of the plastic material having the lowest melting point of all components of the mixture and the maximum temperature which may be used without causing a chemical change therein,
  2. at a nozzle speed of from 1 to 200 m/sec.,
  3. in an annular flow which tapers to a cone angle of from 5° to 40° which has an annular gap width of from 0.2 to 3 mm and an angle of twist from 0° to 60° to form a molten tube having an internal diameter of from 1 to 30 mm and a wall thickness of from 0.2 to 3 mm;
b. exposing said extruded nonhomogeneous mixture of plastic materials to a gas or steam shearing medium which is divided into inner and outer streams to create a high shear velocity whereby a homogeneous mixture of plastic material is formed,
  1. said inner stream of gas or steam shearing medium having a diameter of from 1 to 30 mm and an elevated temperature sufficient to maintain said extruded nonhomogeneous mixture of plastic material in a molten state, said inner stream being so directed that it impinges upon the inner surface of said extruded tube of said nonhomogeneous mixture for a distance of from 2 to 8 mm before reaching the inner edge of the orifice of said product nozzle means,
  2. said outer stream of gas or steam shearing medium, flowing in an annular space which tapers to a cone angle of from 15° to 70° and having an annular gap width of from 0.3 to 5 mm at an elevated temperature sufficient to maintain said extruded nonhomogeneous mixture in a molten state so that said outer stream being so directed that it impinges upon the outer surface of said extruded tube for a distance of from 1 to 6 mm before exiting from said nozzle means, the volume of said outer stream to said inner stream being 1.2:1;
c. said extruded nonhomogeneous mixture of plastic materials being subject to high shear velocities of from 10^4 to 10^8 sec^{-1} for from 10^{-4} to 10^{-6} seconds by said inner and outer streams; and
d. spraying the resultant pulverulent homogeneous mixture of plastic material and gas or steam shearing medium from the nozzle means into a cooling and collecting means.

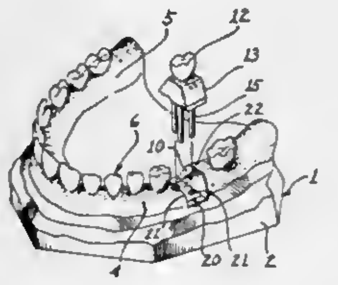
3,937,773
METHOD OF CONSTRUCTING DENTAL MODELS USING GUIDE PINS AND APERTURED RETAINER

Ronald E. Huffman, Tucson, Ariz., assignor to KV33 Corporation, Tucson, Ariz.

Filed Mar. 4, 1974, Ser. No. 448,070

Int. Cl.² A61C *13/00;* **B28B** *1/08;* **B32B** *31/18*

U.S. Cl. 264—17 **3 Claims**



1. A method for forming a dental model with cast teeth which are selectively detachable and replaceable, the model being formed from a negative impression of a plurality of teeth, which negative impression includes buccal and lingual walls and wherein an uncured casting stone is poured into the negative impression to a depth sufficient to include margins, the teeth being removable and insertable while maintaining their alignment, said method comprising the steps of:
a. using a retainer having a plurality of parallel transversely oriented cylindrical cavities and of a length and configuration commensurate with the type and number of cast teeth to be removed from and inserted into the dental model;
b. removably inserting the body of each of a plurality of non-tapered guide pins into a mating one of the cylindrical cavities extending through the retainer, each of the guide pins having a perturbation disposed at one end thereof;

c. positioning the guide pins within the retainer to maintain the perturbed end of each of the guide pins external to the retainer;
d. locating the retainer adjacent the uncured casting stone to fully immerse the perturbed ends of the guide pins within the casting stone;
e. compacting the casting stone to fill any voids within the negative impression and to remove any air bubbles;
f. curing the casting stone to form a rigid composite assembly of casting stone and the perturbed ends of the guide pins, which assembly terminates at a nearer surface of the retainer; and
g. making mesial and distal cuts through the cured casting stone only to the surface of the retainer from which the perturbed ends of the guide pins extend to segregate a section of casting stone defining at least one cast tooth and having at least the perturbed end of one guide pin lodged therein but leaving the retainer intact; whereby, the guide pin or guide pins extending from the section and being non-tapered and slidably retained within the cylindrical cavities of the retainer prevent wobble and tilting of the section during removal and reinsertion thereof.

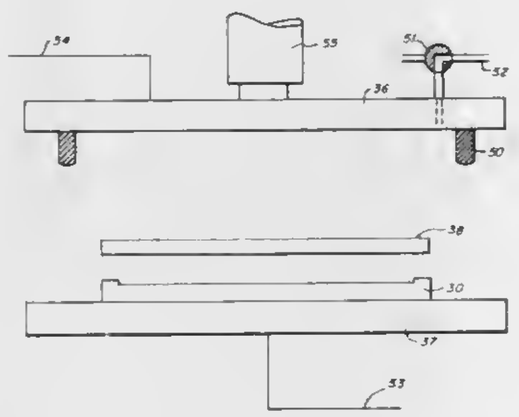
3,937,774
FLOW MOLDING MEANS AND METHOD

Paul J. Wiley, Lexington, and Robert Davis, Concord, both of Mass., assignors to Allied Resin Corporation, Weymouth, Mass.

Continuation-in-part of Ser. No. 308,830, Nov. 22, 1972, abandoned. This application Oct. 31, 1973, Ser. No. 407,716

Int. Cl.² B29C *1/02, 17/00;* **H05B** *9/00*

U.S. Cl. 264—26 **8 Claims**



7. In a method of flow molding wherein a mold and sheet to be flow molded are positioned between a pair of platens and the platens are brought together to mold said sheet with a surface configuration, the improvement comprising,
said mold comprising a mold body, a mold base and a mold outer surface carrying means for transferring a surface configuration to said sheet to be molded, said mold body being formed of a rigid thermosetting plastic material and having an electrically conductive layer forming a continuous conductive path from said base to said means, said path being formed by a plurality of finely divided, uniformly dispersed, metal surfaced particles with the metal selected from the group consisting of gold, silver and platinum and said conductive layer having a volume resistivity of from 1×10^{-3} to 1×10^{-5} ohms-cm at 20°C.

3,937,775
PROCESS FOR PRODUCTION OF CARBON PRODUCTS

Shozo Horikiri, Amagasaki; Jiro Iseki, Toyonaka; Masao Minobe, Ibaraki, and Chikanao Kawai, Amagasaki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed Oct. 18, 1973, Ser. No. 407,509

Claims priority, application Japan, Oct. 23, 1972, 47-106445

Int. Cl.² B29C *25/00*

U.S. Cl. 264—29 **18 Claims**

1. A process for producing carbon micro-balloons which comprises reacting micro-particles made from at least one polymer selected from the group consisting of an alkyl vinyl polymer, an aryl vinyl polymer, a vinyl ether polymer, a polyacrylic ester, a polyvinyl nitrile, an alkyl vinylidene polymer, an aryl vinylidene polymer, a cyanovinylidene polymer, polybutadiene, polyisoprene and polychloroprene with sufficient sulfuric anhydride or chlorosulfonic acid at a temperature of 0°C. to 400°C. so as to render the surface layer of said micro-particles infusible while the inner part of the micro-particles is maintained without being so modified, and carbonizing the resulting modified micro-particles by heating at a temperature above the decomposition point of the starting polymer, said temperature being at least in the range of 500°C. to 1,500°C.

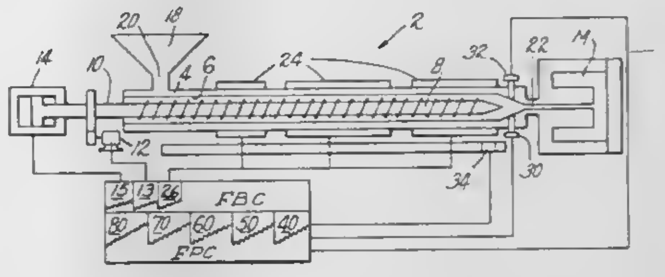
3,937,776
METHOD FOR CONTROLLING INJECTION MOLDING MACHINES

Peter Hold; Angelo J. Notte, both of Milford, and Marc A. Rizzi, Orange, all of Conn., assignors to USM Corporation, Boston, Mass.

Continuation of Ser. No. 194,280, Nov. 1, 1971, abandoned. This application Jan. 21, 1974, Ser. No. 435,348

Int. Cl.² B29F *1/06*

U.S. Cl. 264—40 **8 Claims**



1. A method for controlling the parameters of an injection molding process, said molding process including; sequence of steps feeding material into a plasticating chamber, applying, by the use of heaters, a predetermined amount of heat to the chamber, rotating a plasticating screw located in the chamber at a predetermined speed to plasticate the material, slidably retracting the screw during plastication, under a predetermined back pressure, to a charged position to collect a quantity of plasticated material ahead of the screw, and injecting the material into a mold by a forward sliding thrust of the screw, the forward sliding thrust of the screw stopping at a predetermined standard position said control method comprising:
A. detecting the sliding speed of the screw during injection;
B. detecting the temperature of the plasticated material;
C. detecting the position of the screw during injection:
D. comparing the detected screw position with the predetermined standard position when the sliding speed of the screw is reduced substantially to zero;
E. adjusting the charged position of the screw to compensate for any difference in the detected screw position and the standard position for subsequent injection cycles;
F. comparing the detected temperature of the plasticated material with a predetermined standard temperature; and
G. adjusting the supply of heat energy to the plasticating chamber to compensate for any difference in the temper-

ature of the plasticated material and the standard temperature for subsequent injection cycles by selectively adjusting rotational screw speed, back pressure, and the heat applied by the chamber heaters according to a priority sequence which maximizes the input of mechanical energy.

3,937,777

PROCESS FOR THE PRODUCTION OF SHEETS OF FOAMED THERMOPLASTICS SYNTHETIC RESINS

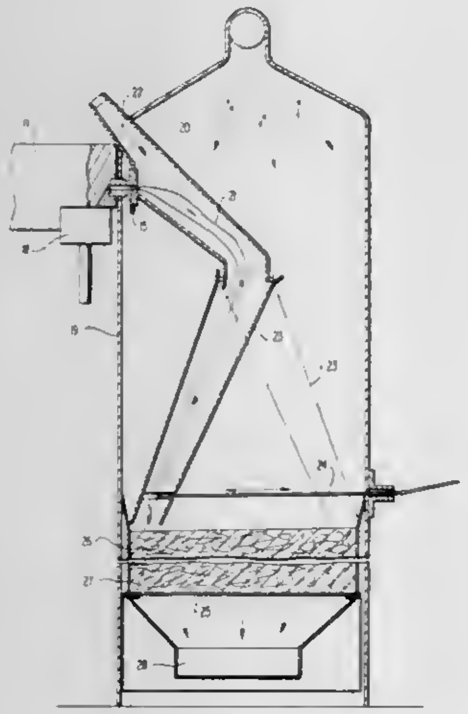
Michael Wienand, Siegburg; Jürgen Hasberg, Troisdorf-Oberlar, and Franz-Werner Alfter, Siegburg, all of Germany, assignors to Dynamit Nobel AG, Germany

Filed Nov. 27, 1972, Ser. No. 309,914

Claims priority, application Germany, Nov. 26, 1971, 2158673

Int. Cl. B29d *27/00*

U.S. Cl. 264—53 **27 Claims**



1. A process for continuously producing an endless sheet product of a foamed thermoplastic synthetic resin comprising feeding a thermoplastic synthetic resin into an extruder, introducing at least about 35% based on the volume of the resultant admixture of a low-boiling volatile organic liquid expanding agent into the synthetic resin in said extruder under high pressure, said liquid expanding agent being capable of dissolving the thermoplastic resin at temperatures above 100°C and under pressures greater than one atmosphere, admixing the resin and expanding agent to provide a fluid admixture, heating said fluid admixture to a temperature substantially above the boiling point of the liquid expanding agent under normal pressure and subjecting the fluid admixture to high pressures, extruding the admixture through a die of the screw extruder having a plurality of small extrusion nozzles whereby the admixture suddenly expands and forms a plurality of filaments of synthetic resin foam, aligning the foam filaments exiting from the nozzles by an air stream, placing the foam filaments into an oscillating motion, loosely layering the oscillating foam filaments into a continuous web on a sieve-like conveyor belt traveling offset by about 90° with respect to the oscillating motion of the foam filaments, continuously pressing the thus-layered web of synthetic resin foam into a crude sheet between two sieve-like conveyor belts, tempering the crude sheet so formed by passing hot air therethrough whereby substantial removal of the expanding agent is effected, and thereafter forming said crude sheet into said endless sheet product.

3,937,778

METHOD OF VACUUM-PRESSURE INJECTION MOULDING

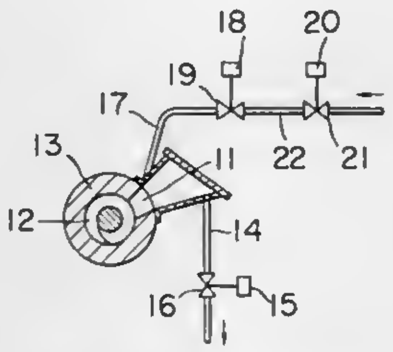
Shoichi Tanaka, Shizuoka, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1974, Ser. No. 517,799

Claims priority, application Japan, Oct. 27, 1973, 48-120997

Int. Cl.^{2} B29D *09/04, 29/00*

U.S. Cl. 264—102 **2 Claims**



1. In a method of injection moulding of the type utilizing an injection moulding machine including a heated cylinder having a vent opening at an intermediate point between the opposite ends thereof and a screw rotatably contained in the cylinder and wherein the screw is rotated during metering but stopped during injection, the improvement which comprises the steps of maintaining a reduced pressure in said vent opening during the rotation of said screw, and introducing into said vent opening a predetermined quantity of vaporizable liquid at the same time when the rotation of said screw is stopped thus causing said liquid to evaporate to increase the pressure in said vent opening.

3,937,779

MOULDING OF GRAMOPHONE RECORDS

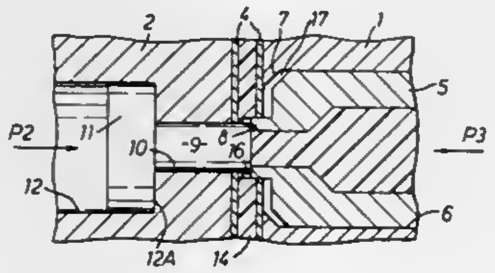
John Ernest Simmons, Ruislip, England, assignor to EMI Limited, Hayes, England

Continuation of Ser. No. 356,180, May 1, 1973, abandoned. This application Feb. 3, 1975, Ser. No. 546,760

Claims priority, application United Kingdom, May 3, 1972, 20513/72

Int. Cl.^{2} B29D *17/00*

U.S. Cl. 264—106 **4 Claims**



1. A method of moulding a gramophone record including the steps of introducing mouldable material into a mould cavity between first and second mould parts through a nozzle tip which also acts as a hole-forming member and forming an aperture in the record during the formation of the record in said mould cavity by causing said first and second co-operable hole-forming members in respective mould parts to press into contact at a position within the thickness of the record, thereby to form the hole, subsequently moving one of said hole-forming members beyond said position to sever any thin web remaining at said nozzle tip, and thereafter opening the mould cavity and removing the apertured record therefrom.

3,937,780

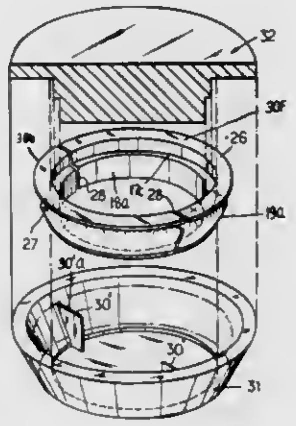
METHOD OF MOLDING A PRESSURE VESSEL LOCKING RING WITH SPLIT RIGID REINFORCING SEGMENTS

Jacques H. Mercier, 49 rue de Naples, Paris, France

Division of Ser. Nos. 613,660, Feb. 2, 1967, Pat. No. 3,537,481, and Ser. No. 822,445, May 7, 1969, Pat. No. 3,640,172, and Ser. No. 188,955, Oct. 13, 1971, Pat. No. 3,733,682, and Ser. No. 336,840, Feb. 28, 1973, Pat. No. 3,827,133. This application May 3, 1974, Ser. No. 466,876

Int. Cl.^{2} B29B *5/00;* **B29D** *3/00;* **B29H** *9/10*

U.S. Cl. 264—274 **1 Claim**



1. The method of forming a locking member having a molded ring of resilient material, said ring having one portion uninterrupted and another portion having an annular recess therein, said ring being secured to plural arcuate rigid segments having adjacent spaced ends, said segments each having undercut configured portions complementary to said recess and adapted to coact therewith to securely retain said arcuate segments to said ring, comprising, disposing said segments in a mold cavity with said configured portions remote from mold surfaces, separating ends of said segments with spacer elements, said spacer elements projecting beyond said segments on sides thereof having said configured portions, and molding resilient material about said segments and about said undercut configured portions thereof and about said spacer elements to form said ring with said recess and with slits corresponding to said spacer elements extending partially through said ring.

3,937,781

METHOD FOR FORMING FIBER-REINFORCED PLASTIC ARTICLES

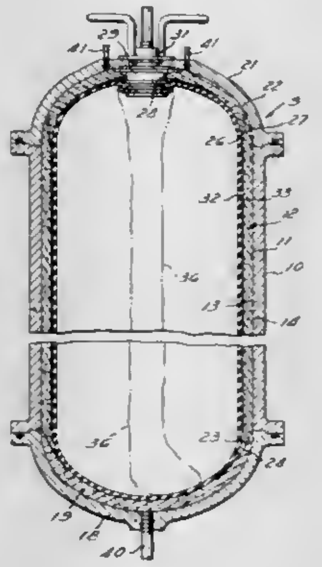
Phillip E. Allen, Wickliffe, Ohio, assignor to Structural Fibers, Inc., Chardon, Ohio

Continuation of Ser. No. 145,237, May 20, 1971, abandoned. This application June 15, 1973, Ser. No. 370,460

Int. Cl.^{2} B29C *17/06;* **B32B** *17/04*

U.S. Cl. 264—314 **7 Claims**

1. A method of making hollow-reinforced resin articles of accurate wall thickness comprising positioning a hollow layup of loosely felted reinforcing fibers against the inner surface of a rigid mold having a cylindrical wall portion and domed end portions, venting said mold, providing in said mold an amount of uncured resin required to form said article, compressing said lay-up with an internally pressurized inflatable core, while confining only a cylindrical portion of the inflatable core with a substantially inextensible sleeve, inflating said inflatable core to a first pressure sufficient to fully expand said core against the interior of the sleeve until said fiber lay-up along said cylindrical portion is compressed to a desired state of compression, while maintaining said state of compression on said lay-up along said cylindrical portion increasing inflation of said core to a second pressure to further compress the portions of said lay-up along said domed ends in regions extending axially beyond said sleeve to a state of compression greater than that developed by said first pressure, curing said resin, deflating said core, and removing said core from the mold.



3,937,782

PROCESS FOR THE PRODUCTION OF MONOSILANDIOL

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 262,485, June 14, 1972, which is a continuation-in-part of Ser. No. 71,628, Sept. 11, 1970, abandoned. This application Mar. 24, 1975, Ser. No. 561,084

Int. Cl.^{2} C01B *33/00;* **C01D** *5/02;* **C01B** *13/00, 31/20*

U.S. Cl. 423—325 **8 Claims**

1. The method of producing monosilandiol by the following steps:

a. a dry alkali metal metasilicate is added, with agitation over a period of 15 to 45 minutes to a mineral acid in the ratio of 1:2 mols, and the temperature is kept between 25° and 85°C; the chemical reaction is completed in 4 to 12 hours, producing silico-formic acid and an alkali metal hydrogen salt in the form of a white granular mixture; then

b. an alkali metal carbonate is slowly mixed with the above silico-formic acid and alkali metal hydrogen salt until the pH is from 8 to 12; carbon dioxide and oxygen evolve from the mixture, and the mixture forms a solid mass in about 1 to 2 hours, which contains monosilanal and an alkali metal salt; then

c. water is mixed with the above solid mass and the alkali metal salt is filtered off and the water reacts with monosilanal, thereby forming silandiol ($H_2Si(OH)_2$), a white granular compound.

3,937,783

RECOVERY OF FLUORINE, URANIUM AND RARE EARTH METAL VALUES FROM PHOSPHORIC ACID BY-PRODUCT BRINE RAFFINATE

Christian A. Wamser, Camillus, N.Y., and Charles P. Bruen, Bernardsville, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 21, 1974, Ser. No. 444,211

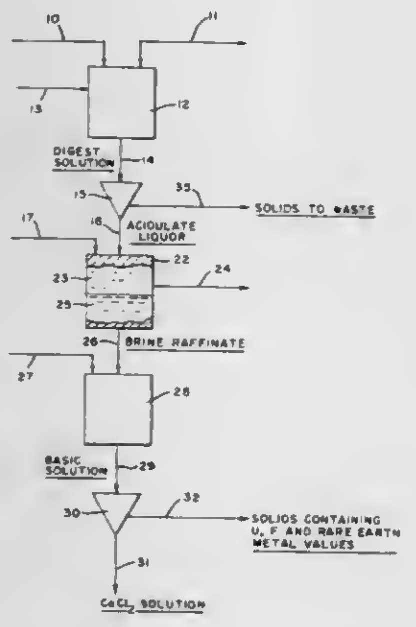
Int. Cl.^{2} B01D *11/04;* **C01G** *56/00*

U.S. Cl. 423—8 **9 Claims**

1. A process for simultaneous recovery of fluorine, uranium and rare earth metal values from a tricalcium phosphate mineral containing same, which comprises:

a. contacting said mineral with hydrochloric acid to digest said mineral, thereby forming (1) a digest solution containing phosphoric acid, calcium chloride, fluorine, uranium and rare earth metal values and (2) an insoluble residue;

- b. separating said insoluble residue from said digest solution;
- c. contacting said separated digest solution with an organic solvent capable of dissolving phosphoric acid but having limited miscibility with water free of phosphoric acid, thereby forming an organic phase containing phosphoric acid and an aqueous phase containing calcium chloride and fluorine, uranium and rare earth metal values;



- d. separating said organic phase from said aqueous phase;
- e. admixing said separated aqueous phase with an amount of a basically reacting compound sufficient to effect a pH of at least about 9, thereby forming:
  - 1. a basic solution containing calcium chloride and
  - 2. precipitated solids containing fluorine, uranium and rare earth metal values; and
- f. separating the precipitated solids containing fluorine, uranium and rare earth metal values from said basic solution.

3,937,784

METHOD FOR REMOVING FLUORIDE IONS FROM UO_2 POWDERS

Richard Beutner, Hanau, and Friedrich Plöger, Kleinostheim, both of Germany, assignors to RBG, Reaktorbrennelemente GmbH, Wolfgang, near Hanau, Germany

Continuation of Ser. No. 256,007, May 23, 1972, abandoned. This application Nov. 23, 1973, Ser. No. 418,731

Claims priority, application Germany, June 1, 1971, 2127107

Int. Cl. C01g *43/02, 56/00*

U.S. Cl. 423—19 **3 Claims**

1. A method of purification of a heavy metal oxide selected from uranium and plutonium oxides for use as a nuclear fuel contaminated with fluoride and hydrogen to produce a purified heavy metal oxide containing not more than 25 parts per million fluoride which comprises passing steam in contact with said contaminated heavy metal oxide to effect removal of substantially all the hydrogen and thereafter subjecting said heavy metal oxide to pyrohydrolysis in the absence of hydrogen by passing steam at a temperature above 650°C in contact with said heavy metal oxide from which hydrogen has been removed to effect reduction of the fluorine content in said contaminated heavy metal oxide to no more than 25 parts per million.

3,937,785

TREATMENT OF CHROMIUM ORE RESIDUES TO SUPPRESS POLLUTION

Alan Brian Gancy, Syracuse, and Christian Albert Wamser, Camillus, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 17, 1974, Ser. No. 506,922

Int. Cl.^{2} C01G *37/00, 37/14*

U.S. Cl. 423—53 **10 Claims**

1. The method for reducing bleeding of water-soluble chromium compounds from the solid residue obtained in the production of chromates from chromite ore by roasting the ore under alkaline oxidizing conditions to form water-soluble chromate, followed by extraction of the chromate, which comprises reducing the particle size of the solid residue prior to disposal so that at least about 20 percent by weight of the residue, dry basis, passes through a 200 mesh (U.S.) screen.

3,937,786

PRODUCTION OF ALUMINUM CHLORIDE FROM RAW MATERIALS CONTAINING COAL

Ernő Nemecz, Budapest; Aurél Újhidy, Veszprem; Károly Polinszky, Budapest; Janós Szépvölgyi, Veszprem; Oszkár Borlai, Budapest; László Kápolyi, Budapest, and Tamás Székely, Budapest, all of Hungary, assignors to Toth Aluminum Corporation, New Orleans, La.

Filed June 20, 1974, Ser. No. 481,543

Claims priority, application Hungary, June 28, 1973, 16126

Int. Cl.^{2} C01F *7/56*

U.S. Cl. 423—136 **5 Claims**

1. A process for production of aluminum chloride consisting essentially the steps of: comminuting bituminous shale having an ash content of approximately 50% by weight and the aluminum content of the ash being at least 20%, calculated as Al_2O_3; calcining the bituminous shale to remove physically and chemically bound water and to cause coking; and chlorinating the calcined bituminous shale with a gaseous stream containing chlorine and carbon monoxide to form the aluminum chloride.

3,937,787

TREATMENT OF GASES CONTAINING SULFUR DIOXIDE

Everett Gorin; Metro D. Kulik, and Robert T. Struck, all of Pittsburgh, Pa., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. Nos. 222,760, Feb. 2, 1972, abandoned, and Ser. No. 309,869, Nov. 27, 1972, abandoned, and Ser. No. 347,261, April 2, 1973, abandoned. This application May 9, 1973, Ser. No. 358,786

Int. Cl.^{2} C01B *17/00*

U.S. Cl. 423—242 **11 Claims**

1. In a regenerative process for the removal of SO_2 from an SO_2-containing gas stream which has (1) a scrubbing circuit containing a scrubbing zone through which a recirculating stream of aqueous sodium, potassium or ammonium carbonate solution continuously passes in intimate contact with said gas stream under sulfite-forming conditions to thereby convert the SO_2 in the gas stream to sulfite, and (2) a regeneration zone for regenerating said carbonate for reuse in said scrubbing zone, the improvement which comprises

- a. maintaining in said recirculating aqueous solution, throughout its entire traverse around said scrubbing circuit, a thiosulfate having the same cation as said carbonate and in a concentration of at least 10 percent by weight of said recirculating solution;
- regulating the amount of sulfite in said recirculating aqueous solution so that its concentration is always less than 5 percent by weight thereof;
- c. converting the sulfite formed in said scrubbing zone to thiosulfate while in said scrubbing circuit, but in a sulfite-reduction zone separate from said scrubbing zone, by means of a sulfite-reducing agent;

- d. withdrawing a minor portion of said recirculating aqueous solution from said scrubbing circuit to a regeneration zone wherein thiosulfate contained in said minor portion is converted by means of CO to a mixture of carbonate and said sulfite-reducing agent; and
- e. returning an effluent aqueous stream containing in admixture said carbonate and said reducing agent to said scrubbing circuit.

3,937,788

TREATMENT OF GASES CONTAINING SULFUR DIOXIDE

Everett Gorim; Metro D. Kulik, and Robert T. Struck, all of Pittsburgh, Pa., assignors to Continental Oil Company, Ponca City, Okla.

Continuation of Ser. No. 222,760, Feb. 2, 1972, abandoned. This application Oct. 29, 1973, Ser. No. 410,722

Int. Cl.^{2} C01B *17/00*

U.S. Cl. 423—242 **5 Claims**

1. A process for removing SO_2 from a gas containing the same which comprises

- a. recirculating an aqueous absorbent through a circuit which includes a gas scrubbing zone and a thiosulfate generation zone outside of said scrubbing zone but still in said circuit;
- b. introducing into said gas scrubbing zone a sulfite-forming additive selected from the class consisting of the hydroxides and carbonates of the alkali metals, the alkaline earth metals, and ammonia in approximately the amount required to convert the SO_2 in said SO_2-containing gas to sulfite;
- c. maintaining in said recirculating aqueous absorbent a thiosulfate having the same cation as said sulfite-forming additive, the minimum concentration of said thiosulfate being 50 weight percent of the total sulfur-containing solutes in the aqueous absorbent as the latter leaves said scrubbing zone;
- d. maintaining the pH of said recirculating aqueous absorbent in said scrubbing zone between 6 and 8;
- e. passing said SO_1-containing gas through said gas scrubbing zone in contact with said recirculating aqueous absorbent, whereby an effluent gas stream containing a reduced amount of SO_2 results, and an effluent water stream containing sulfites and thiosulfate is produced;
- f. reacting sulfites formed in step (e) with a sulfite-reducing agent in said thiosulfate generation zone which is maintained at a pH between 6 and 7.8 to convert said sulfites to the corresponding thiosulfate;
- g. withdrawing a portion of said recirculating aqueous absorbent from said circuit;
- h. subjecting said portion to reduction by a thiosulfate-reducing agent to produce fresh aqueous absorbent containing said sulfite-forming additive and said sulfite-reducing agent; and
- i. returning said fresh aqueous absorbent to said thiosulfate generation zone.

3,937,789

PROCESS FOR THE NEUTRALIZATION OF ACID SOLUTIONS OF CAPROLACTAM

Ivo Donati; Rieti; Werner Muench, Milan, Switzerland, and Mario Fidecicchi, Torviscosa, all of Italy, assignors to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 31,343, April 23, 1970, abandoned, which is a continuation-in-part of Ser. No. 520,555, Jan. 14, 1966, abandoned. This application Dec. 14, 1973, Ser. No. 425,171

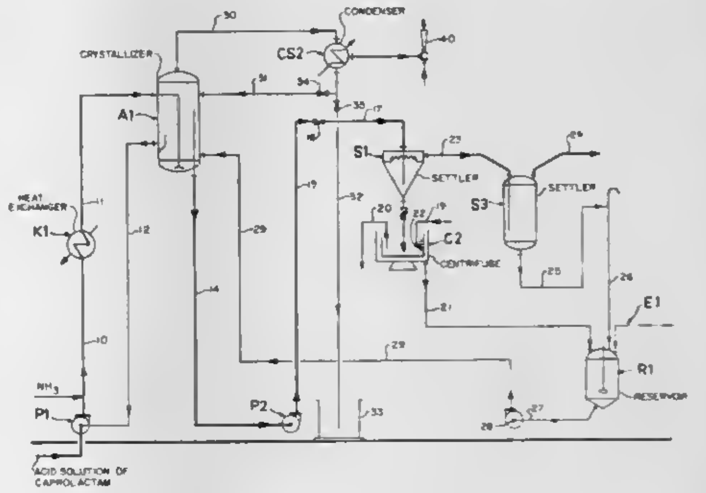
Claims priority, application Italy, Jan. 21, 1975, 1329/65

Int. Cl.^{2} C01C *1/242*

U.S. Cl. 423—549 **5 Claims**

1. In a process for neutralizing a solution of ξ caprolactam in sulfuric acid wherein neutralization is effected with ammonia, and the ammonium sulfate, formed as a result of the neutralization is subsequently recovered in the presence of water, the improvement comprising

- feeding into a reaction vessel an aqueous solution of ξ-caprolactam in sulfuric acid, and a quantity of liquid ammonia sufficient to neutralize all the sulfuric acid, holding this mixture, including the water which is present, in this same vessel under subatmospheric pressure sufficient to maintain said vessel at a temperature of about 40°C to 50°C, and
- utilizing the heat evolved by the exothermic reaction between the sulfuric acid and the ammonia to effect in said same vessel, simultaneously with the neutralization of the sulfuric acid by the ammonia, evaporation of the water present in said vessel, in an amount at least three-fourths the amount of sulfuric acid concurrently neutralized, and consequent crystallization in said vessel of the produced ammonium sulfate, so that substantial hydrolysis of the caprolactam is avoided while a substantial portion of the water present in the mixture is being evaporated and the ammonium sulfate is allowed to crystallize in said vessel substantially free from the caprolactam, and



- drawing off the evaporated water from said same reaction vessel,
- separating the caprolactam from the remaining mother liquor, and
- separating the ammonium sulfate also from said mother liquor.

3,937,790

USE OF WATER AS A CATALYST FOR THE POLYMERIZATION OF CHLOROCYCLOPHOSPHAZENES

Harry Rex Allcock and Karen M. Smeltz, both of State College, Pa.; James Earl Gardner, deceased, late of State College, Pa. (by Patricia Gardner, executrix), assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 2, 1974, Ser. No. 511,400

Int. Cl.^{2} C01B *25/00*

U.S. Cl. 423—300 **5 Claims**

1. In the polymerization of chlorocyclophosphazenes to produce a substantially linear $(NPCl_2)_n$ polymer product in which n is from about 16 to about 20,000, wherein hexachlorocyclotriphosphazene, octachlorocyclotetraphosphazene or mixtures of said hexa- and octachlorocyclophosphazenes are polymerized at temperatures between 200° and 300°C, the improvement which comprises conducting the polymerization in the presence of between 0.005 and 1.0 mol % of H_2O.

3,937,791

ALUMINA REMOVAL FROM CRYSTALLINE ALUMINOSILICATES WITH CR(III) SOLUTIONS

William E. Garwood, Haddonfield; Nal Yeun Chen, Titusville, and Stanley J. Lucki, Runnemede, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 129,108, March 29, 1971, abandoned. This application Aug. 17, 1973, Ser. No. 389,109

Int. Cl.^{2} C01B *33/28;* **B01J** *29/06*

U.S. Cl. 423—328 **14 Claims**

1. A method of removing alumina from a crystalline aluminosilicate having a silica/alumina mole ratio of from above 3 to about 12 which comprises heating said aluminosilicate to a temperature of greater than 50°C to about 100°C in the presence of positive trivalent chromium ions in aqueous solution of above 0.01 Normal of a chromium salt of a mineral acid whereby the pH is less than 3.5 such that the atomic ratio of chromium in the solution to aluminum in the aluminosilicate is greater than 0.5 for a time sufficient to remove alumina.

3,937,792

MANUFACTURE OF SILICON NITRIDE POWDER

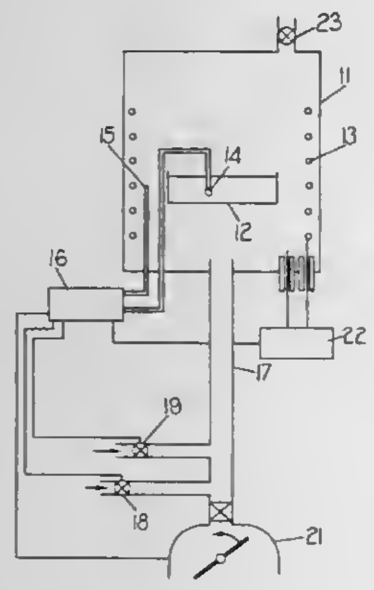
Roland John Lumby, Northfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Continuation-in-part of Ser. No. 55,019, July 15, 1970, abandoned. This application Mar. 14, 1972, Ser. No. 234,624

Claims priority, application United Kingdom, July 28, 1969, 37717/69; July 28, 1969, 37718/69

Int. Cl.^{2} C01B *21/06*

U.S. Cl. 423—344 **6 Claims**



1. A method of manufacturing a silicon nitride powder comprising heating a bed containing silicon powder in a furnace having an atmosphere including nitrogen, sensing the temperature in the bed and comparing said temperature with a further temperature at another point in the furnace outside said bed, and controlling the partial pressure of the nitrogen in the furnace atmosphere in accordance with the difference between said temperatures so as to ensure that the temperature in the bed does not exceed a predetermined value above which β-phase silicon nitride is formed, the partial pressure of the nitrogen in the furnace being controlled by effecting at least one of the steps of:

a. diluting the nitrogen in the furnace atmosphere and,
b. evacuating the furnace.

3,937,793

PROCESS FOR THE CONTINUOUS MANUFACTURE OF CRYSTALLIZED AMMONIUM THIOSULFATE

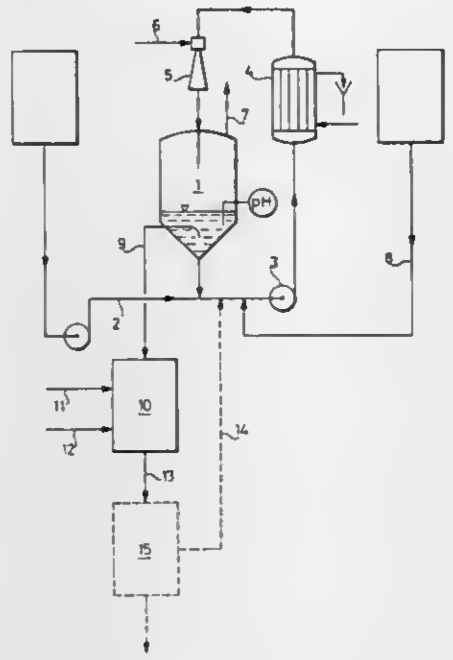
Adotl Metzger, Wiesbaden; Karl-Heinz Henke, Frankfurt am Main, and Horst Schreiber, Kelkheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed June 18, 1973, Ser. No. 370,686

Claims priority, application Germany, Juoe 20, 1972, 2230005

Int. Cl.^{2} C01B *17/64*

U.S. Cl. 423—514 **3 Claims**



1. A process for the continuous manufacture of crystallized ammonium thiosulfate which comprises: reacting ammonia with oxygen containing sulfur dioxide in an ammonium thiosulfate solution to form ammonium bisulfite and ammonium sulfite at a pH of from 5.5 to 7.0 and a temperature of up to 80°C; and, in a second step, converting the ammonium bisulfite and ammonium sulfite in the solution formed with ammonia and sulfur to ammonium thiosulfate at a temperature of 105°C, said temperature being obtained by heating, if necessary.

3,937,794

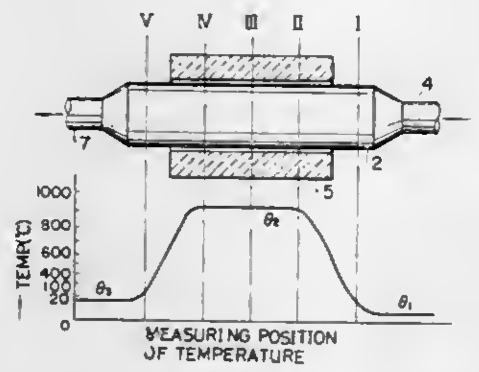
METHOD OF MANUFACTURING FINE POWDERS OF METAL SULFIDE

Norio Kanetake, Tokyo; Ikuo Maruyama, Kawasakl, and Katsuyuki Morita, Fujisawa, all of Japan, asslgnors to Kabushiki Kaisha Kito, Japan

Continuation-in-part of Ser. No. 144,809, May 19, 1972, Pat. No. 3,769,098. This application Aug. 2, 1973, Ser. No. 384,838

Int. Cl.^{2} C01G *37/00, 37/04;* **C01F** *7/58, 7/70*

U.S. Cl. 423—561 **4 Claims**



1. The process of producing the sulfide of chromium or aluminum which comprises the steps of: placing a chromium or aluminum chloride or bromide occluded mass in the shape

of a porous hollow cylinder which does not contain carbon, moisture, hydroxyl ions or oxidizing agent in a closed heating chamber; heating said mass to at least the fusing point of said chromium or aluminum chloride or bromide; vaporizing the chromium or aluminum chloride or bromide produced thereby in a stream of a dried gaseous mixture supplied to said chamber at a low temperature, said low temperature being lower than the temperature at the point where the chromium or aluminum chloride or bromide occluded body is heated and lower than the fusing point of said bromide or chloride, and said gaseous mixture consisting of an inert gas and hydrogen sulfide gas, and thus directly reacting the vaporized chromium or aluminum chloride or bromide with the hydrogen sulfide component of said dried gaseous mixture whereby the corresponding metal sulfide is produced; and quenching and recovering the chromium or aluminum sulfide so produced in the form of a fine dry powder in the presence of the said inert gaseous component of the dried gaseous mixture.

3,937,795

DESULFURIZING PROCESS FOR HYDROGEN SULFIDE-CONTAINING GASES

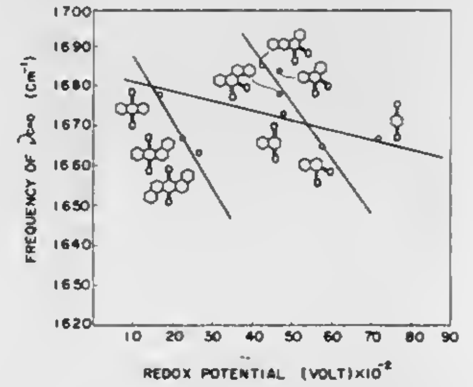
Nobuyasu Hasebe, No. 24-8, 2-chome, Nishiogi-kita, Suginami, Tokyo, Japan

Continuation-in-part of Ser. No. 210,249, Dec. 20, 1971, abandoned. This application Feb. 4, 1974, Ser. No. 439,616

Claims priority, application Japan, Dec. 21, 1970, 45-114904

Int. Cl.^{2} C01B *17/04;* **B01D** *53/34*

U.S. Cl. 423—573 G **9 Claims**



1. A process for the desulfurization of hydrogen sulfide-containing gases comprising mixing (A) a hydrogen sulfide oxidizing catalyst having a standard oxidation-reduction potential, Eo, in a range of from about 0.45 to 0.7 volt, and selected from the group consisting of quinones and hydroquinones having present therein at least one substituent selected from the group consisting of sulfonic and carboxylic acid groups and alkali and alkaline earth metal salts thereof, thioglycol, thiol, hydroxyl, lower alkyl and lower alkoxy groups with (B) a precursor of a chelating agent which is selected from the group consisting of the reaction product of a metal selected from the group consisting of the metals of groups V, VI, VII and VIII in the fourth period of the Periodic Table, arsenic and selenium with an acid selected from the group consisting of oxalic, citric, tartaric and glutaric acids; aging the mixture of (A) and (B) for from about 10 minutes to about 12 hours and forming a naphthoquino chelate compound, forming an absorption medium comprising said chelate compound, contacting a hydrogen sulfide-containing gas with said absorption medium, and absorbing the hydrogen sulfide from said gas, contacting the absorption medium with an oxidizer selected from the group consisting of air, oxygen and oxygen-containing gas, and converting said hydrogen sulfide to sulfur while regenerating said naphtho-quino chelate compound, recirculating the regenerated naptho-quino chelate compound for further use and recovering a substantially hydrogen sulfide-free gas.

3,937,796

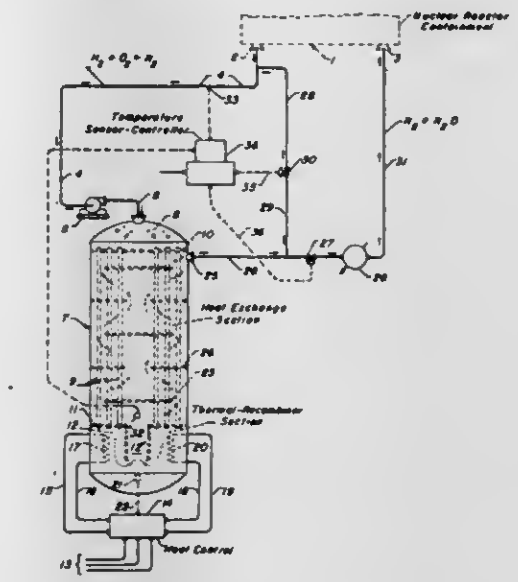
RECUPERATIVE THERMAL RECOMBINING SYSTEM FOR HANDLING LOSS OF COOLANT

Andrew Tej Bhan, Palatine, Ill., asslgnor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 308,354, Nov. 21, 1972, Pat. No. 3,853,482, which ls a continuation-in-part of Ser. No. 216,714, Jan. 10, 1972, Pat. No. 3,791,923. This application Nov. 23, 1973, Ser. No. 418,697. The portion of the term of this patent subsequent to Dec. 10, 1991, has been disclaimed.

Int. Cl.^{2} C01B *5/00*

U.S. Cl. 423—580 **6 Claims**


Nuclear Reactor Containment
H₂+O₂+N₂
Temperature Sensor-Controller
H₂+H₂O
Heat Exchange Section
Thermal-Recombiner Section
Heat Control

1. A method for thermally recombining dissociated hydrogen and oxygen in a loss of coolant gaseous stream from a nuclear reactor containment which comprises:

a. passing the dissociated gaseous charge stream into admixture with a resulting high temperature water vapor containing combined gaseous stream obtained as hereinafter set forth,
b. subsequently passing the resulting higher temperature gaseous stream into a recombiner zone having a temperature therein sufficiently high to effectuate association with said dissociated gaseous charge stream wherein the stream is heated under non-flame conditions to effect the reaction of hydrogen and oxygen and providing a resulting water vapor containing combined gaseous stream,
c. subsequently splitting the resulting combined gaseous stream and recycling a regulated proportion thereof into admixture with the dissociated charge stream as aforesaid, and
d. effecting the regulation of the quantity of such recycle portion of the combined gaseous stream responsive to the sensing of the temperature level at said high temperature recombiner zone so that there is maintained an oxygen content therein below an explosive level.

3,937,797

PRODUCTION OF HARD TITANIA

Andrzej Antooi Florlan Romanski; Derek John Brookes, both ol Sheffield; Anthony Smith, Rotherham, and Harry Markham, Sheffield, all ol England, assignors to British Steel Corporation (Chemicals) Limited, Great Britain

Filed June 3, 1974, Ser. No. 475,910

Claims priority, applicatioo United Kingdom, June 4, 1973, 26484/73

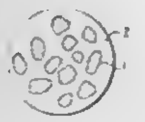
Int. Cl.^{2} B01J *9/02, 35/02;* **C01G** *23/04;* **C22B** *34/00*

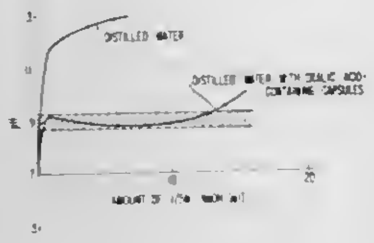
U.S. Cl. 423—610 **7 Claims**

1. A method of hardening powdered titania comprising thoroughly dispersing a composition consisting essentially of commercial pigment grade anatase or rutile in a large excess of water, removing excess water to form a paste of said titania and water, drying said paste and then calcining the titania at a temperature of 650°C to 900°C.

3,937,798
METHOD OF CONTROLLING HYDROGEN ION CONCENTRATION BY MICROCAPSULES

Masao Kitajima, and Asaji Kondo, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 17, 1971, Ser. No. 172,535
Claims priority, application Japan, Aug. 17, 1970, 45-71962
Int. Cl.^{2} C02B *1/30*
U.S. Cl. 423—659 **17 Claims**





1. A method for controlling the hydrogen ion concentration of an aqueous alkali solution which comprises adding to the aqueous alkali solution an aqueous solution containing a dispersion of microcapsules prepared by encapsulating an acid material with a polymer which is non-permeable prior to attack by alkali, said polymer being swelled in an alkali state only, the term "swelled" meaning the attacking of said polymer by said solution so that the microcapsule shell is swelled to increase the permeability thereof and thus permit part of the acid within said microcapsule to be released into the solution to neutralize alkali present.

3,937,799
RADIOASSAY OF VITAMIN B-12 EMPLOYING BENTONITE

Nathan Lewin, Corte Madera; James E. Fries, Novato, and C. Steven Richards, Vallejo, all of Calif., assignors to Bio-Rad Laboratories, Richmond, Calif.
Filed Aug. 26, 1974, Ser. No. 500,967
Int. Cl.^{2} G01N *31/00;* **G21H** *5/02*
U.S. Cl. 424—1 **7 Claims**

4. An improved radioassay for vitamin B-12 including the steps of providing a first solution containing acid and a preselected amount of radioactive vitamin B-12; providing a blood serum sample; combining a second solution containing cyanide ions with said first solution and said blood serum sample; heating said last-named combination of solutions to reduce the binding capacity of the serum proteins to free vitamin B-12 therefrom; providing a third solution containing intrinsic factor (IF) and human serum albumin; combining said third solution with a cooled combination of said first solution, second solution and serum sample following said heating step to competitively bind a portion of the radioactive vitamin B-12 and serum vitamin B-12 by said IF; and separating free radioactive vitamin B-12 and free serum vitamin B-12 from radioactive vitamin B-12 and serum vitamin B-12 bound by said IF.

3,937,800
BRONCHOGRAPHIC X-RAY CONTRAST METHOD

Peter Dure-Smith, and Roger L. Schnaare, both of 1500 Spring Garden St., Philadelphia, Pa. 19101
Continuation-in-part of Ser. No. 272,632, July 17, 1972, abandoned. This application Apr. 3, 1974, Ser. No. 457,462
Int. Cl.^{2} A61K *29/02*
U.S. Cl. 424—4 **1 Claim**

1. In the process of producing a bronchiograph using tantalum the improvement which comprises employing the tantalum in a composition comprising about 20 to about 70% by weight of finely divided tantalum metal having an average diameter of from about 0.5 to about 30 microns and from about 5% to about 15% of a metallic soap which is oil soluble and prepared from a hydroxide of a polyvalent metallic ion and a fatty acid containing from about 12 to about 18 carbon atoms, dispersed in a liquid vehicle which comprises the remainder of the composition said vehicle having an apparent viscosity of from about 100 centipoise to about 1,000 centipoise at body temperature as measured by a Brookfield Viscometer, and exhibiting non-Newtonian flow properties in an effective amount and administering said composition.

3,937,801
REDUCING THE INCIDENCE OF GASTROINTESTINAL SIDE EFFECTS DURING THE TREATMENT OF INFLAMMATORY CONDITIONS WITH ANTIINFLAMMATORY DRUGS

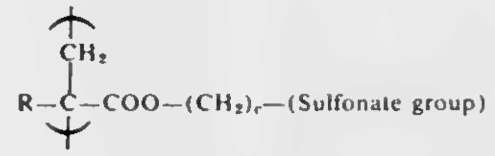
Wilbur Lippmann, Montreal, Canada, assignor to American Home Products Corporation, New York, N.Y.
Filed July 10, 1973, Ser. No. 378,112
Int. Cl.^{2} A61K *31/19, 31/40, 31/61*
U.S. Cl. 424—10 **2 Claims**

1. A method of reducing the incidence of gastrointestinal side effects in a mammal during the treatment of inflammatory conditions with an antiinflammatory agent, which comprises administering to said mammal a gastrointestinal side effect inhibiting amount within the range of about 1.0 microgram to about 10 milligrams per kilogram of trans, cis-7-[2-(3-hydroxy-4,4-dimethyl-1-octenyl)-5-oxocyclopentyl]-5-heptenoic acid during said treatment.

3,937,802
SPRAYABLE HAIR-SETTING COMPOSITION CONTAINING A SULFONATE CONTAINING HYDROPHILIC COPOLYMER

Takehiko Fujimoto, Habayoshi; Tetsuo Kakehi, Kyoto, and Kazumichi Susaki, Gojobashi-higashi, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan
Filed Aug. 23, 1973, Ser. No. 390,848
Claims priority, application Japan, Aug. 24, 1972, 47-84854
Int. Cl.^{2} A61K *7/11*
U.S. Cl. 424—47 **3 Claims**

1. A sprayable hair-setting composition which comprises a hydrophilic copolymer and a solvent selected from the group consisting of water, a (C_1-C_4) aliphatic alcohol, dioxane, methylethyl ketone, acetone, tetrahydrofuran, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether and mixtures thereof and a propellant, said hydrophilic copolymer having 3–95 per cent by weight of a structural unit of the formula



$$\left[\begin{array}{c} CH_2 \\ | \\ R-C-COO-(CH_2)_c-(\text{Sulfonate group}) \end{array}\right]$$

wherein R is H or methyl and c is an integer from 1 to 3 and 97 to 5% by weight of at least one comonomer selected from the group consisting of a (C_1-C_{20}) alkyl acrylate, a (C_1-C_{20}) alkyl methacrylate, a (C_1-C_4) hydroxyalkyl acrylate, and a (C_1-C_4) hydroxyalkyl methacrylate, said hydrophilic copolymer being present in an amount effective to set hair.

3,937,803
FLAVORED DENTAL CREAMS

Thomas James Delaney, Piscataway, and William Grant Pierson, Flanders, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Continuation-in-part of Ser. No. 295,068, Oct. 4, 1972, abandoned. This application Apr. 30, 1974, Ser. No. 465,461
Int. Cl.^{2} A61K *7/16*
U.S. Cl. 424—49 **11 Claims**

1. A toothpaste containing about 20 to 60% of abrasive particles comprising at least about 25% sodium bicarbonate in a vehicle containing sufficient liquids and including a water-glycerol mix, the water-glycerol ratio being in the range of about 0.4 to 0.7:1, said vehicle consisting essentially of about 5 to 35% water and said glycerol, and a sufficient amount of gelling or thickening agent to impart to the dental cream the pasty consistency, body and non-tacky nature which is characteristic of conventional dental creams or toothpastes, said toothpaste containing a water-insoluble essential oil flavoring agent in the range of about 0.5 to 1.5%, said sodium bicarbonate being primarily in the undissolved solid state, said dental cream having a granular textured appearance comprising a substantially dispersed non-crystalline appearing granulate of macroscopic crystalline bicarbonate granules in an otherwise smooth continuous matrix.

3,937,804
TOOTHPASTE

Thomas James Delaney, Piscataway, and William Grant Pierson, Flanders, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Continuation-in-part of Ser. No. 419,741, Nov. 28, 1973, which is a continuation-in-part of Ser. Nos. 295,094, Oct. 4, 1972, abandoned, and Ser. No. 389,827, Aug. 20, 1973, abandoned. This application Apr. 30, 1974, Ser. No. 465,463
Int. Cl.^{2} A61K *7/18*
U.S. Cl. 424—52 **11 Claims**

1. A dental cream containing an abrasive content comprising at least about 20% sodium bicarbonate in a vehicle containing sufficient liquids, said vehicle consisting essentially of about 5 to 35% water admixed with about 45 to 15% viscous water miscible polyol humectant or mixtures thereof, and a sufficient amount of gelling or thickening agent to impart to the dental cream the pasty consistency, body and the non-tacky nature which is characteristic of conventional dental creams or toothpastes, and over 1% of a water-insoluble dental abrasive material compatible with said bicarbonate in the dental cream and about 0.01 to 1.% fluorine selected from the group of water soluble fluorine salts consisting of sodium, potassium, ammonium, lithium and amine fluorides; complex water soluble fluorine salts selected from the group consisting of fluorosilicate, fluorozirconate, fluorostannite, fluoroborate, fluorotitanate and fluorogermanate and organic fluorides selected from the group consisting of mono-, di-, and triethanolamine hydrofluoride, said sodium bicarbonate being primarily in the undissolved solid state, said dental cream having a granular textured appearance comprising a substantially dispersed non-crystalline appearing granulate of macroscopic crystalline bicarbonate granules in an otherwise smooth continuous matrix.

3,937,805
METHOD OF MAKING DENTIFRICE COMPOSITIONS CONTAINING INSOLUBILIZED SALTS OF 1,6-DI-(P-CHLOROPHENYL BIGUANIDO) HEXANE

Michael Harrison, Newcastle Upon Tyne, England, assignor to Colgate-Palmolive Company, New York, N.Y.
Continuation-in-part of Ser. No. 197,498, Nov. 10, 1971, abandoned. This application Dec. 13, 1973, Ser. No. 424,388
Int. Cl.^{2} A61K *7/18, 7/22;* **C09F** *5/00;* **C07C** *129/08*
U.S. Cl. 424—52 **15 Claims**

1. A method of preparing a dentifrice composition which comprises mixing in a dentifrice vehicle a non-toxic insolubilized salt of 1,6-di-(p-chlorophenyl biguanido) hexane antimicrobial agent in amount corresponding to about 0.01–5% by weight of the free base thereof wherein said antimicrobial agent is in the form of a monomer salt selected from the group consisting of disarcosinate salt and dibenzoate salt and a polymer salt.

3,937,806
ORAL COMPOSITIONS FOR CARIES PROPHYLAXIS

William Edward Cooley, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Continuation-in-part of Ser. No. 52,774, July 6, 1970, which is a continuation-in-part of Ser. No. 848,081, Aug. 6, 1969, abandoned, which is a continuation-in-part of Ser. No. 737,328, June 17, 1968, abandoned, which is a continuation-in-part of Ser. No. 546,511, May 2, 1966, abandoned. This application May 7, 1974, Ser. No. 467,693
Int. Cl.^{2} A61K *7/18*
U.S. Cl. 424—52 **4 Claims**

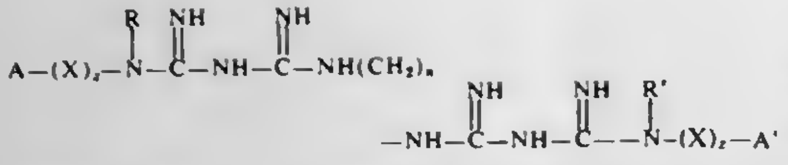
1. An oral composition for caries prophylaxis comprising (1) a water-soluble fluoride salt in a quantity sufficient to provide from about 100 to about 4000 p.p.m. of fluoride ion, and (2) an indium-malic acid water-soluble complex, the molar ratio of malic acid to indium being in a range of from about 1:1 to about 6:1, said composition having a total In(III) content of from about 10 to about 7,500 p.p.m. and a pH in the range from about 4.0 to 6.5.

3,937,807
ORAL COMPOSITIONS FOR PLAQUE, CARIES, AND CALCULUS RETARDATION WITH REDUCED STAINING TENDENCIES

John William Haefele, Sarasota, Fla., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Continuation-in-part of Ser. No. 338,463, March 6, 1973, abandoned. This application July 9, 1974, Ser. No. 486,800
Int. Cl.^{2} A61K *7/16, 7/18, 7/22*
U.S. Cl. 424—52 **11 Claims**

1. An oral composition effective in inhibiting bis-biguanide tooth staining and the formation of plaque, caries and calculus comprising a carrier suitable for use in the oral cavity, and

A. from about 0.01% to about 2.5% by weight of a tooth-staining bis-biguanide compound, otherwise tending to produce a rather offensive brown tooth stain, and having the generic formula:



$$A{-}(X)_z{-}\overset{\displaystyle R}{\overset{|}{N}}{-}\overset{\displaystyle NH}{\overset{\|}{C}}{-}NH{-}\overset{\displaystyle NH}{\overset{\|}{C}}{-}NH(CH_2)_n{-}NH{-}\overset{\displaystyle NH}{\overset{\|}{C}}{-}NH{-}\overset{\displaystyle NH}{\overset{\|}{C}}{-}{-}\overset{\displaystyle R'}{\overset{|}{N}}{-}(X)_z{-}A'$$

wherein A and A' each represent either (1) a phenyl radical which can contain as substituents up to two alkyl or alkoxy groups containing from 1 to about 4 carbon atoms, a nitro group, or a halogen atom; (2) an alkyl group containing from 1 to about 12 carbon atoms; or (3) alicyclic groups containing from 4 to about 12 carbon atoms; wherein X and X' each represent an alkylene radical containing from 1 to 3 carbon atoms; wherein *z* and *z'* each can be either 0 or 1; wherein R and R' each represent either hydrogen, an alkyl radical containing from 1 to about 12 carbon atoms, or an aralkyl radical containing from 7 to about 12 carbon atoms; wherein *n* is an integer from 2 to 12 inclusive; and wherein the polymethylene chain $(CH_2)_n$ can be interrupted by up to 5 ether, thioether, phenyl, or naphthyl moieties; or the pharmaceutically acceptable salts thereof; and

b. from about 0.10% to about 1.25% by weight, in excess of the molar amount which will react with the bis-biguanide compounds of an amino carboxylate compound which in said concentration range effectively reduces said bis-biguanide tooth stain, without precipitating said tooth-staining bis-biguanide, and which is selected from the group consisting of nitrilo triacetic acid and its pharmaceutically acceptable water-soluble salts; said composition having a pH of from about 4.5 to about 8.0.

3,937,808
SUN TANNING AND HAIR PROTECTING ACID SALTS OF AMINOMETHYL-O-HYDROXYPHENONES COMPOSITIONS

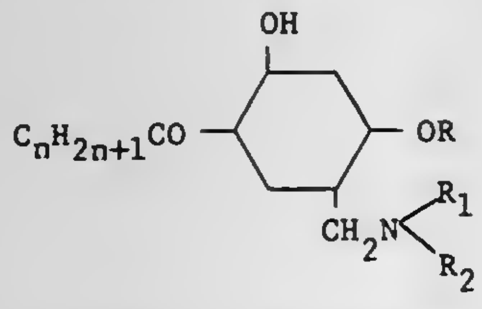
Albert F. Strobel, Delmar, N.Y., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 230,458, Feb. 29, 1972, abandoned. This application Dec. 17, 1973, Ser. No. 425,693

Int. Cl.² A61K *7/06, 7/42, 31/12;* A61L *13/00*

U.S. Cl. 424—59 **9 Claims**

1. A sun tanning and hair protecting composition comprising between about 0.4% and about 10% by weight of a compound selected from the group consisting of acid addition salts of a compound having the formula:



wherein R is hydrogen or an alkyl having from 1–4 carbon atoms, R_1 and R_2 each represents an alkyl having from 1–4 carbon atoms and *n* has a value of 1 to 3, said compound having ultra-violet absorption in the sun burning range of 300–350 mμ while transmitting radiation in the sun tanning range; and a carrier selected from the group consisting of water, vegetable oil, mineral oil, and aqueous solutions of methanol, ethanol, glycerol and isopropanol.

3,937,809
ADDITION COMPOUND OF A NUCLEOTIDE AND AN AMINO ACID AND THE USE THEREOF IN PROTECTION AGAINST ACTINIC RADIATION

Otto K. Jacobi, Wiesbaden-Igstadt, Germany, assignor to Kolmar Laboratories, Inc., Port Jervis, N.Y.

Filed May 1, 1974, Ser. No. 465,914

Int. Cl.² A61K *7/44;* C07H *19/10, 19/20*

U.S. Cl. 424—60 **7 Claims**

1. A topical composition for protection against actinic radiation, comprising a dermatologically acceptable inert carrier suitable for application to human skin, and having dispersed therein from 0.1% to 99.9% by weight of a compound of the formula:

$$[\text{Nucleoside }(PO_3)_n.Me_{n+1}]AS_m$$

wherein the nucleoside is a glycoside of a compound selected from the group consisting of adenine, guanine, cytosine, uracil and thymine; Me is a cation selected from the group consisting of hydrogen, an alkali metal, and ammonium; *n* is an integer from 1 to 3; *m* is an integer from 1 to (*n* + 1); and AS is acid having from 1 to 20 carbon atoms and selected from the group consisting of an amino carboxylic acid and an amino sulfo acid.

3,937,810
SKIN LIGHTENING COMPOSITION AND METHOD OF USING THE SAME

Girish Prasad Mathur; Kuruvakkat Kochu Govind Menon, and Srinivasan Varadarajan, all of Bombay, India, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 322,251, Jan. 9, 1972, Pat. No. 3,861,689. This application June 12, 1974, Ser. No. 478,477

Claims priority, application United Kingdom, Jan. 11, 1972, 1236/72

Int. Cl.² A61K *7/135*

U.S. Cl. 424—62 **4 Claims**

2. A cosmetic composition for application to the skin comprising a skin lightening amount of niacin of from about 0.2 to about 10% by weight, from 0.1 to 10% by weight of urocanic acid absorbing in the range of 290–320 nm and a physiologically acceptable carrier for niacin.

3,937,811
FATTY COMPOSITIONS FOR USE IN COSMETIC MAKEUP COMPOSITIONS AND SAID COSMETIC MAKEUP COMPOSITIONS

Christos Papantoniou, Epinay-sur-Seine, and Jean Boulogne, L'Hay-les-Roses, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed June 7, 1974, Ser. No. 477,515

Claims priority, application Luxemburg, June 8, 1973, 67772

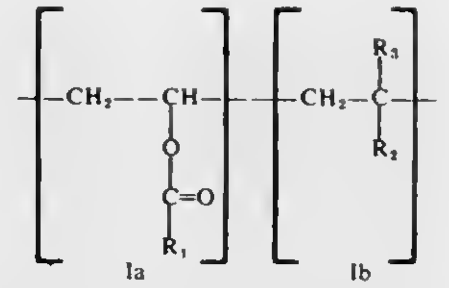
Int. Cl.² A61K *7/025*

U.S. Cl. 424—64 **16 Claims**

1. A fatty composition for use in producing a cosmetic composition selected from the group consisting of a lip rouge and a mascara, comprising a mixture of:

i. at least one cosmetic fatty body consisting essentially of about 6–100% by weight of at least one cosmetic wax and 0–94% of at least one cosmetic oil, and

ii. a non-toxic, fat soluble copolymer having the formula:

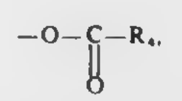


wherein:

R_1 represents a saturated hydrocarbon chain, linear or branched, having from 1 to 19 carbon atoms,

R_2 represents a member selected from the group consisting of

a.



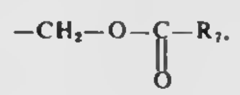
$$-O-\underset{\underset{\displaystyle O}{\|}}{C}-R_4,$$

wherein R_4 has the same meaning as R_1 but is different from R_1 in the same copolymer,

b. $-CH_2-R_5$, wherein R_5 represents a saturated hydrocarbon chain, linear or branched, having from 5 to 25 carbon atoms,

c. $-O-R_6$, wherein R_6 represents a saturated hydrocarbon chain, having from 2 to 18 carbon atoms, and

d.



$$-CH_2-O-\underset{\underset{\displaystyle O}{\|}}{C}-R_7,$$

wherein R_7 represents a saturated hydrocarbon chain, linear or branched, having from 1 to 19 carbon atoms, and R_3 represents hydrogen when R_2 represents radicals (a), (b) or (c) or R_3 represents methyl when R_2 represents radical (d), the said copolymer including at least 15% by weight of at least one monomer of unit Ia or unit Ib, wherein said saturated hydrocarbon chain, linear or branched, has at least 7 carbon atoms, said copolymer having a molecular weight between 2,000 and 500,000 and being present in an amount of about 2–35% by weight relative to the total weight of the fatty composition.

11. A cosmetic composition selected from the group consisting of a lip rouge and a mascara comprising the fatty composition of claim 1 in an amount between 99.5 and 15% by weight of the total weight of the cosmetic composition and a dye in an amount of 6–15 weight percent, the amount of said copolymer relative to the total weight of said cosmetic composition being at least 1.5% by weight.

3,937,812
FELINE CALICIVIRUS VACCINE AND PRODUCTION THEREOF

James Long Bittle, Doylestown, Pa., and Wayne J. Rubic, Titusville, N.J., assignors to Pitman-Moore, Inc., Washington's Crossing, N.J.

Division of Ser. No. 525,689, Nov. 21, 1974. This application Aug. 13, 1975, Ser. No. 604,375

Int. Cl.² A61K *39/12*

U.S. Cl. 424—89 **14 Claims**

1. A vaccine for immunizing cats against feline calicivirus comprising at least about 10^3 tissue culture infectious doses of an attenuated feline calicivirus per ml, which vaccine is capable of stimulating the production of protective feline calicivirus antibodies comparable to those produced by natural infections when parenterally administered into non-immune cats and without producing the usual pathological symptoms of disease due to feline calicivirus.

3,937,813
INSECTICIDAL COMPOSITIONS COMPRISING MIXTURES OF *BACILLUS THURINGIENSIS* AND CHLORDIMEFORM

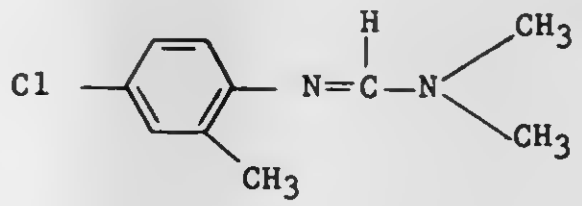
Robert Kingsbury Clark, Jr., St. Petersburg, Fla., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 20, 1974, Ser. No. 444,076

Int. Cl.² A01N *9/02, 9/20, 15/00*

U.S. Cl. 424—93 **6 Claims**

1. A composition for inhibiting the growth of lepidopterous larvae on plants comprising 1 to 2 parts of *Bacillus thuringiensis* and 1 part of chlordimeform having the structure



3,937,814
COMPOSITIONS FOR SAFE EXTENSION OF STORAGE LIFE OF FOODS

John T. R. Nickerson, Buzzards Bay, and John R. Darack, Holliston, both of Mass., assignors to Dirigo Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 180,099, Sept. 13, 1971, abandoned. This application Mar. 29, 1974, Ser. No. 455,987

Int. Cl.² A61K *37/00;* A23B *4/00, 7/00*

U.S. Cl. 424—93 **6 Claims**

1. A spoilage control composition for use with food products highly susceptible to contamination and spoilage selected from the group of foods consisting of custard-type foods, salads and fish fillets, comprising: the combination of an inoculum of bacteria and an organic acid compound which inhibits the growth of common food-borne disease and spoilage organisms in the temperature range of approximately 40° to 86° F., but only slightly inhibits the growth of the inoculum at such temperatures; the inoculum being a non-pathogenic member of the Lactobacteriaciae which is characterized as growing in food in the temperature range of approximately 40° to 86° F.; said inoculum being either *Pediococcus cerevisiae* or *Lactobacillus viridescens;* said orgnaic acid compound being a mixture of sorbic acid compound with propionate compound; said sorbic acid compound being either sorbic acid, potassium sorbate or sodium sorbate and said propionate compound being either sodium propionate or potassium propionate or calcium propionate; each said compound being present at a concentration of at least 0.10%; said composition being characterized in that the growth of common disease and spoilage organisms in such food are inhibited, but said inoculum grows for a finite period of time until it causes an undesirable flavor in the foods, thus causing the food to be discarded.

3,937,815
LYSOZYME DERIVATIVES

Tiberio Bruzzese, and Rodolfo Ferrari, both of Milan, Italy, assignors to SPA—Societa Prodotti Antibiotici S.p.A., Italy

Filed Dec. 5, 1975, Ser. No. 530,022

Int. Cl.² C07C *103/52;* A61K *37/00*

U.S. Cl. 424—94 **10 Claims**

1. A salt or complex of a member selected from the group consisting of lysozyme, guanidyl lysozyme, methyl lysozyme and methyl guanidyl lysozyme with a bile acid.

3,937,816
GROWTH REGULATING COMPOSITIONS EXTRACTED FROM SPLEEN

Karl-Heinz Jaeger, Freiburg, and Hellmut Mittenzwei, Munich, both of Germany, assignors to Solco Basel AG, Birsfelden, Switzerland

Continuation of Ser. No. 64,033, July 21, 1970, abandoned, which is a continuation of Ser. No. 344,182, Feb. 12, 1964, abandoned, which is a continuation-in-part of Ser. No. 503,344, April 22, 1955, abandoned. This application Mar. 4, 1974, Ser. No. 447,939

Int. Cl.² A61K *35/28*

U.S. Cl. 424—95 8 Claims

1. A process for the preparation of compositions derived from spleens which comprises recovering the spleens of vertebrata selected from the group consisting of vertebrata whose spleen has been irradiated with a stimulating dose below the dose which irreparably damages the organ and vertebrata which have received intravenous injections of hypotonic aqueous solutions of a chemical stimulant, comminuting the said spleens, extracting the comminuted spleens with an aqueous solution, precipitating proteins from the aqueous extract by the addition thereto of a member selected from the group consisting of lower alkanols, perchloric acid and trichloroacetic acid, neutralizing the protein-free solution and subjecting it to dialysis with a membrane adapted to pass compounds having a molecular weight up to 4500, extracting fatty material from the resulting inner dialysate with a lower alkyl ether to obtain a clear aqueous solution and concentrating the resulting aqueous inner dialysate solution to a concentration of 10 to 60 mg of solid per milliliter of solution.

3,937,817
PHARMACEUTICAL COMPOSITIONS CONTAINING A SACCHARASE INHIBITOR

Werner Frommer; Walter Puls, and Delf Schmidt, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 336,741, Feb. 28, 1973. This application June 20, 1974, Ser. No. 481,224

Int. Cl.² A61K *35/00*

U.S. Cl. 424—115 2 Claims

1. A pharmaceutical composition containing as an active ingredient a therapeutically effective quantity of a saccharase inhibitor mixed with a solid or semi-liquid diluent, wherein said saccharase inhibitor is produced by a method comprising growing Actinoplanaceae strain CBS 961.70 in a starch-free nutrient medium to produce a culture and separating the saccharase inhibitor from the culture.

3,937,818
BENZYLAMINE NARCOTIC ANTAGONISTS

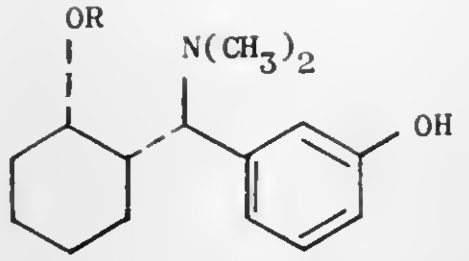
Horace Fletcher, Pottstown; Jerry L. Malis, Bluebell, and John P. Yardley, King of Prussia, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 27, 1974, Ser. No. 455,172

Int. Cl.² A61K *31/135*

U.S. Cl. 424—330 8 Claims

1. A process for antagonizing the effect of a narcotic agent in warm-blooded animals which comprises administering to a warm-blooded animal in need thereof a sufficient amount of a compound of the formula:



wherein R is ethyl or benzyl; and the pharmacologically acceptable acid addition salts thereof.

3,937,819
METHOD OF STABILIZING AN INJECTABLE COMPOSITION OF A CHOLECYSTOKININ ACTIVE OCTAPEPTIDE

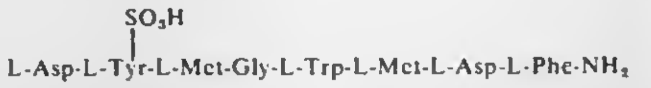
Miguel Angel Ondetti, Princeton; Charles Riffkin, Edison; Bernard Rubin, Lawrence Township, and Aaron L. Weiss, East Brunswick, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed July 22, 1974, Ser. No. 490,644

Int. Cl.² A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 1 Claim

1. A method of enhancing the stability of the octapeptide



$$\text{L-Asp-L-}\underset{}{\overset{\overset{\displaystyle SO_3H}{|}}{\text{Tyr}}}\text{-L-Met-Gly-L-Trp-L-Met-L-Asp-L-Phe-}NH_2$$

against degradation during storage, which comprises lyophilizing a solution containing per liter about 2500 mcg of said octapeptide and about 21.43 g of sodium chloride, and a sufficient quantity of water for injection to adjust the volume to about 1 liter, the pH of the solution being adjusted to from 5.50 to 6.50, if necessary, by addition of sodium hydroxide or hydrochloric acid.

3,937,820
INSULIN COMPOSITION PROVIDING ALTERNATIVES TO IMMUNOLOGICAL RESISTANCE

Adolf Mager, Niedernhausen; Hans-Hermann Schöne, Bad Soden, Taunus; Rolf Geiger, Frankfurt am Main, and Franz Enzmann, Kelkheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 14, 1973, Ser. No. 415,635

Claims priority, application Germany, Nov. 16, 1972, 2256215

Int. Cl.² A61K *37/26*; C07C *103/52*

U.S. Cl. 424—178 4 Claims

1. An insulin composition for providing an alternative to an immunological resistance to insulin of different mixed species of insulin which comprises, in an aqueous suspension, a crystallized insulin and an amorphous des-phenyl-alanine^{B1} insulin of the same species, having a pH value in the range of from 6.8 to 7.6, containing zinc ions in an amount of up to 340γ/100 I.U., wherein the insulin crystals have a uniform size of from 15 to 35 microns; wherein the ratio of crystallized insulin to amorphous des-phenyl-alanine^{B1} insulin ranges from 60 : 40 to 80 : 20; and wherein the insulin content is from 40 to 80 I.U. per ml.

3,937,821
PLASMA SUBSTITUTE INCLUDING ARTIFICIAL STARCH AND METHOD FOR THE PREPARATION THEREOF

Tsutomu Irikura, Tokyo; Kazunari Shirai, Tokyo; Mamoru Tada, Urawa; Terumi Tamada, Tokyo, and Jun Imai, Ageo, all of Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha, Japan

Continuation of Ser. No. 213,553, Dec. 29, 1971. This application Nov. 19, 1973, Ser. No. 416,725

Claims priority, application Japan, Aug. 21, 1971, 46-63838

Int. Cl.² A01N *9/28*

U.S. Cl. 424—180 5 Claims

1. A process for preparing a plasma substitute for injection by treating hydroxyethyl starch having a DS of 0.5–0.6 and an intrinsic viscosity of 0.28–0.30 dl/g in water with dilute hydrochloric acid to obtain a hydroxyethyl starch solution having a DS of 0.5–0.6 and an intrinsic viscosity of 0.08–0.14 dl/g, adding physiologically acceptable electrolytes and glucose to the solution and then diluting the solution with sufficient water to give an isotonic plasma substitute having an oncotic pressure and osmotic pressure equal to those of plasma.

3,937,822
METHOD FOR TREATING PSORIASIS

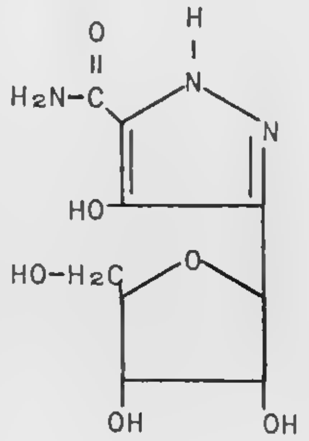
Donald C. DeLong, and Koert Gerzon, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed July 22, 1974, Ser. No. 490,626

Int. Cl.² A61K *31/71*

U.S. Cl. 424—181 5 Claims

1. The method of treating psoriasis in humans comprising the administration to a patient suffering from psoriasis an effective dose for treating psoriasis of a compound having the formula



3,937,823
TOPICAL ANTI-INFLAMMATORY COMPOSITIONS AND METHODS OF USE

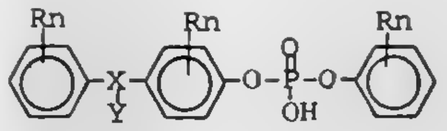
Frank Jeng Dea, Newport Beach, and Richard Allen Schroer, Silverado, both of Calif., assignors to Nelson Research & Development Co., Irvine, Calif.

Filed Oct. 18, 1974, Ser. No. 515,906

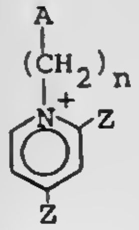
Int. Cl.² A61K *31/66, 31/44*

U.S. Cl. 424—210 14 Claims

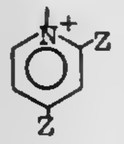
1. A composition for treating inflammation comprising about 0.1 to about 5% of an active compound having the structural formula



where R is selected from the group consisting of H, lower alkyl, lower alkoxy, halogen, CF_3, NO_2, OH, CN, $COOR_1$, $CONR_1R_2$, $NHCOR_1$ and NR_1R_2, R_1 and R_2 are each selected from the group consisting of H and lower alkyl, R, R_1 and R_2 being the same or different, and *n* is 0–5; and where X is selected from the group consisting of an alkyl chain and an alkenyl chain having 2–8 carbon atoms, one of which carbon atoms may be in the form of a carbonyl group; and Y is selected from the group consisting of hydrogen, alkyl, aryl, aralkyl or aryl and aralkyl substituted with one or more R, and pharmaceutically acceptable salts thereof, together with a topical pharmaceutical carrier containing an effective amount of an active radical having the structural formula



where *n* is 1–4, A is selected from the group consisting of H and



Z is selected from the group consisting of H, —CH=NOH and CONHOH where one and only one Z in each heterocyclic ring is H.

3,937,824
COMPOSITIONS AND METHODS OF KILLING INSECTS AND ACARIDS USING ALKOXYIMINO CARBAMOYLOXY PHOSPHORUS COMPOUNDS

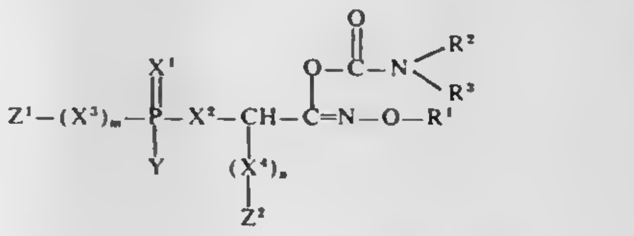
Leonard J. Stach, Riverside, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 311,079, Dec. 1, 1974, Pat. No. 3,835,205. This application Aug. 19, 1974, Ser. No. 498,496

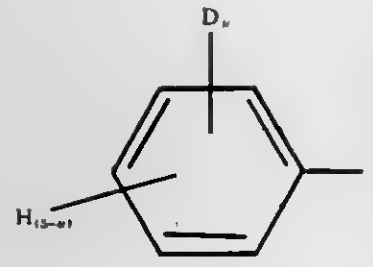
Int. Cl.² A01N *9/36*

U.S. Cl. 424—211 3 Claims

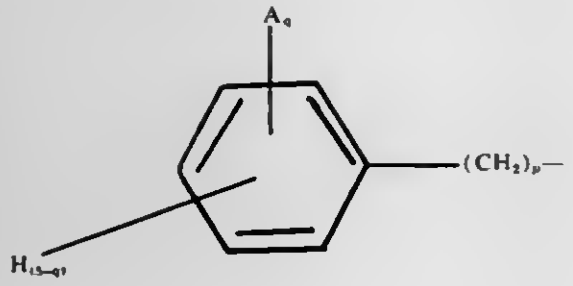
1. An insecticidal or acaricidal composition comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to insects or acarids, a compound of the formula



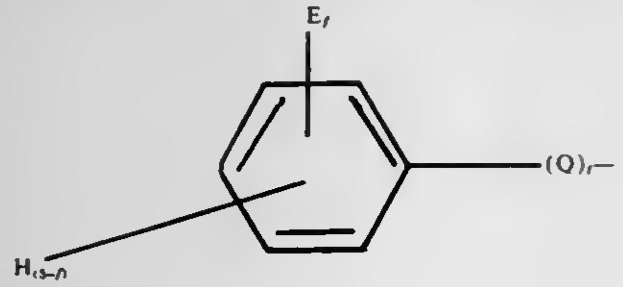
wherein R¹ is lower alkyl; R² is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl and lower haloalkyl; R³ is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower haloalkyl, cycloalkyl of from 3 to 7 carbon atoms and



wherein D is selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, lower alkylthio, chlorine, bromine, fluoring, lower haloalkyl, nitro and di(lower alkyl-)amino; u is an integer from 0 to 3; X^1, X^2, X^3 and X^4 are independently selected from the group consisting of oxygen and sulfur; m and n are each integers from 0 to 1; Z^1 is selected from the group consisting of lower alkyl, lower alkenyl and



wherein A is selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, lower alkylthio, lower haloalkyl, chlorine, bromine, fluoring, nitro, lower alkylsulfoxide, lower alkylsulfone and di(lower alkyl)amino; and q and p are each integers from 0 to 3; Z^2 is selected from the group consisting of hydrogen and Z^1, provided that when Z^2 is hydrogen then n is zero; and Y is selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, lower alkenyloxy, lower alkylthio, amino, lower alkylamino, di(lower alkyl)amino and



wherein E is selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, lower alkylthio, chlorine, bromine fluorine, nitro, lower alkylsulfoxide, lower alkylsulfone and di(lower alkyl)amino; f is an integer from 0 to 3; Q is selected from the group consisting of oxygen, sulfur, lower alkylene, lower alkyleneoxy and lower alkylenethio; and t is an integer from 0 to 1.

3,937,825

ANTHELMINTIC COMPOSITION AND METHOD OF USE

Booker Taliaferro Alford, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 399,651, Sept. 21, 1973, abandoned. This application Oct. 15, 1974, Ser. No. 514,726

Int. Cl.^{2} A61K *31/66*

U.S. Cl. 424—217 2 Claims

1. An anthelmintic composition for controlling strongyles in equine species comprising 0,0-dimethyl (2,2,2-trichloro-1-hydroxyethyl)phosphonate and 1-6-phenyl-2,3,5,6-tetrahydroimidazo[2,1-b]thiazole hydrochloride in an amount of from 4 grams to about 40 grams in a weight ratio of 5 parts by weight of 0,0-dimethyl (2,2,2-trichloro-1-hydroxyethyl)phosphonate to each part by weight of 1-6-phenyl-2,3,5,6-tetrahydroimidazo[2,1-b]-thiazole thiazole hydrochloride.

3,937,826

FLY KILLING COMPOSITION

Lewis P. Harris, Prairie Village, Kans., assignor to PBI-Gordon Corporation, Kansas City, Kans.

Continuation-in-part of Ser. No. 359,767, May 14, 1973, abandoned. This application May 3, 1974, Ser. No. 466,781

Int. Cl.^{2} A01N *9/36*

U.S. Cl. 424—219 3 Claims

1. A fly killing composition, comprising: from about 2 to 20% by weight, based upon the total weight of the composition, of a dark, organic, absortive granular component comprising:

Beef Meal Scraps and By-Products	15.00 – 20.00%
Dried Poultry By-Products	10.00 – 15.00%
Cottonseed Meal	15.00 – 20.00%
Soybean Meal	10.00 – 15.00%
Pulverized Milo	15.00 – 20.00%
Wheat Middlings	1.00 – 5.00%
Dehydrated Alfalfa Meal	10.00 – 15.00%

wherein all precentages immediately above are given on a weight basis and separately total 100%;

from about 70 to 90% by weight, based upon the total weight of the composition of a cooked yellow, sugar-based granular component comprising:

Sugar	40.00 – 60.00%
Corn Syrup	10.00 – 15.00%
Corn Grits	20.00 – 30.00%
Corn Cereal	5.00 – 10.00%
Egg Yolk Powder	0.01 – 0.10%
Milk Powder	0.25 – 1.00%
Vegetable Oil	1.00 – 5.00%
Yellow Food Grade Coloring	0.15 – 0.50%

wherein all precentages immediately above are given on a weight basis and separately total 100%;

a toxicant mixture residing on the surface of said granular components and being at least partially absorbed into the interstices thereof, said toxicant mixture comprising from about 0.10 to 3.00% by weight 2,2-dichlorovinyl 0,0-dimethyl phosphate, based upon the total weight of the composition, and from about 0.25 to 2.00% by weight 0,0-dimethyl 0-2,4,5-trichlorophenylphosphorothioate, based upon the total weight of the composition; and

a particulate coating mixture on said granular components and comprising from about 0 to 10% dried milk, from about 0–5% dried egg yolks, from about 0.1 to 5% hydrated amorphous silica oxide and yellow food dye in sufficient quantity to give the coating mixture a yellow color, all percentages being based on the total weight of the composition.

3,937,827

THERAPEUTIC COMPOSITION AND METHOD OF TREATING ADVANCED OR DISSEMINATED MAMMARY CANCER

John C. Babcock, and Roman P. Holysz, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 393,851, Sept. 4, 1973, abandoned, which is a continuation-in-part of Ser. No. 160,900, July 8, 1971, abandoned, which is a continuation of Ser. No. 855,050, Sept. 3, 1969, abandoned, which is a continuation-in-part of Ser. No. 823,490, May 9, 1969, abandoned. This application Aug. 30, 1974, Ser. No. 501,885

Int. Cl.^{2} A61K *31/56*

U.S. Cl. 424—243 1 Claim

1. A process for producing regression of advanced or disseminated mammary cancer comprising the oral or parenteral administration of $7\beta,17\alpha$-dimethyltestosterone in association

with a pharmaceutical carrier to an adult woman with advanced or disseminated mammary cancer, wherein from about 1 to about 50 mg. of compound selected per kg. of said adult woman's weight/day is administered.

3,937,828

SUBSTITUTED PYRANO[3,2-C][1,2]BENZOTHIAZINE 6,6-DIOXIDES

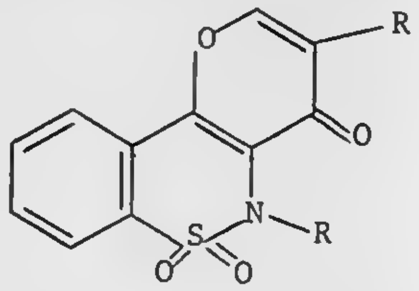
Daniel Kaminsky, Parsippany; Sylvester Klutchko, Hackettstown, and Maximilian von Strandtmann, Rockaway, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 365,399, May 29, 1973. This application July 31, 1974, Ser. No. 493,292

Int. Cl.^{2} A61K *31/54*

U.S. Cl. 424—246 2 Claims

1. A method for preventing asthmatic symptoms which comprises administering to a mammal in need thereof an effective amount of a compound of the formula:



wherein R represents lower alkyl; and R' represents carboxaldehyde and hydroxymethyl.

3,937,829

MEDICINAL PREPARATION FOR TREATMENT OF VARIOUS FORMS OF LEPROSY

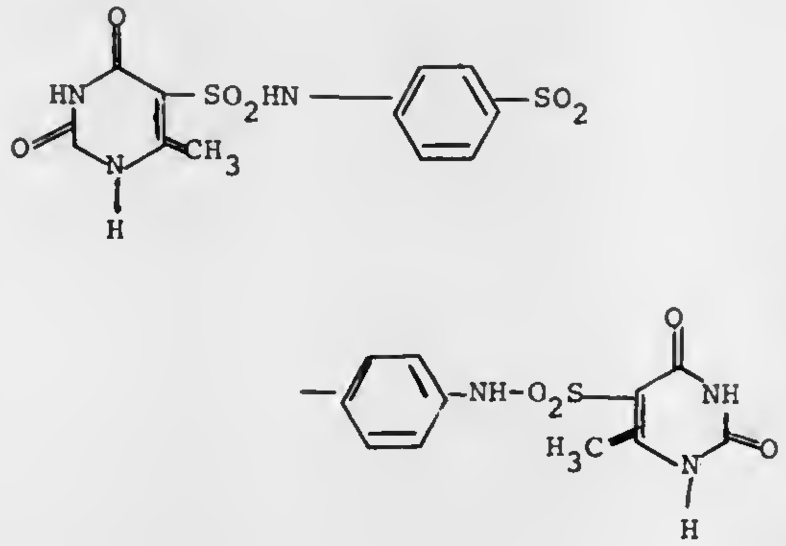
Vladimir Savich Reznik, ulitsa Gospitalnaya 34, kv. 34; Nikolai Grigorievich Pashkurov, ulitsa Druzhby 6, kv. 20; Abdurakhim Abdurakhimovich Muslinkin, ulitsa Zhdanova 60, kv. 33, all of Kazan; Elena Nikolaevna Zhurkina, prospekt Kosmonavtov 86, kv. 48, Leningrad; Nikolai Mikhailovich Goloschapov, ulitsa Druzhby, 9, kv. 110, Zagorsk, and Vladimir Konstantinovich Steklovsky, Zagorsky raion, p/o Krasnozavodsk, Moskovskaya oblast, all of U.S.S.R.

Filed Aug. 31, 1973, Ser. No. 393,676

Int. Cl.^{2} A61K *31/495*

U.S. Cl. 424—250 12 Claims

11. A method for the treatment of leprosy in humans comprising administering internally or parenterally a composition comprising an amount effective against leprosy of p,p-bis(2,4-dioxy-6-methylpyrimidinyl-5-sulfonamido) diphenyl sulfone of the formula:



3,937,830

5-PIVALOYLOXY-5-(1-PHENYLETHYL) BARBITURIC ACID, ANALGETIC COMPOSITION AND METHOD BASED THEREON

Carlos M. Samour, Wellesley, and Julius A. Vida, Billerica, both of Mass., assignors to The Kendall Company, Walpole, Mass.

Continuation of Ser. No. 378,482, July 12, 1973, Pat. No. 3,894,023. This application Nov. 22, 1974, Ser. No. 526,113

Int. Cl.^{2} A61K *31/515*

U.S. Cl. 424—254 2 Claims

1. A therapeutic composition for treatment of symptoms of pain in a warm-blooded animal comprising a physiologically acceptable carrier and an analgetically effective amount of 5-pivaloyloxy-5-(1-phenylethyl) barbituric acid.

3,937,831

CHLOROMETHYL NITROPYRIDINES AS ANTIMICROBIALS

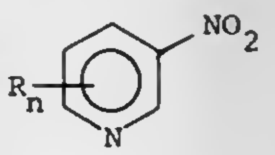
Jeffrey D. Griffith, Lafayette, and Helen K. Tobol, Concord, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 386,653, Aug. 8, 1973, abandoned. This application Nov. 7, 1974, Ser. No. 521,615

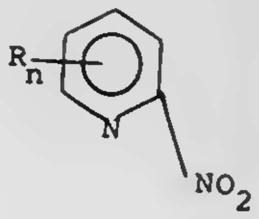
Int. Cl.^{2} A01N *9/22*

U.S. Cl. 424—263 10 Claims

1. A method for killing microbes selected from the group consisting of bacteria and fungi which comprises contacting said microbes with an antimicrobial amount of a chloromethyl nitropyridine compound corresponding to one of the formulae



or



wherein R represents dichloromethyl or trichloromethyl and *n* represents an integer of 1 or 2, with the proviso that when *n* is 2, the R groups are not ortho to each other.

3,937,832

ESTERS OF 2,2-DIPHENYL-CYCLOPROPANE-CARBOXYLIC ACIDS AS COUGH SUPPRESSANTS

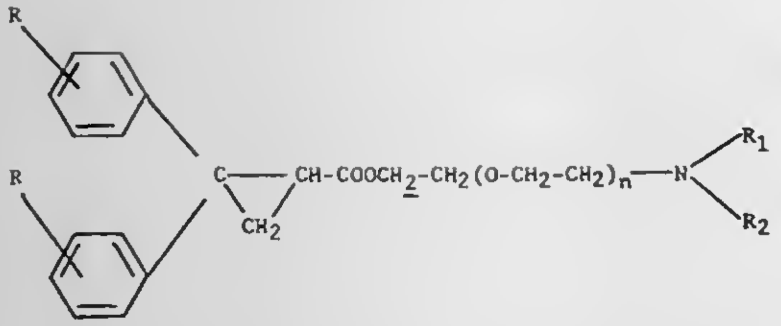
Jean-Claude Cognacq, Bourg-la-Reine, France, assignor to Societe anonyme dite: Hexachimie, Malmaison, France

Division of Ser. No. 214,473, Dec. 30, 1971, Pat. No. 3,846,436. This application Mar. 4, 1974, Ser. No. 448,033

Int. Cl.^{2} A61K *31/445*

U.S. Cl. 424—267 14 Claims

1. A cough-suppressing composition comprising (1) an effective, non-toxic amount of an ester of a 2,2-diphenylcyclopropane-carboxylic acid of the formula:



in which R is hydrogen, halogen, lower alkyl, or lower alkoxy, *n* is zero or 1, and R_1 and R_2 taken together form, with the nitrogen to which they are attached, piperidino or lower alkyl-substituted piperidino; or a non-toxic acid addition salt of said ester and (2) a pharmaceutically acceptable excipient.

3,937,833

PHARMACEUTICALLY USEFUL NITROGEN CONTAINING HETEROCYCLIC DERIVATIVES

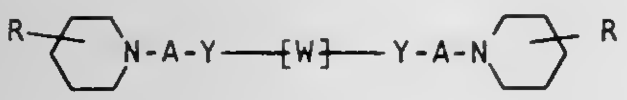
Irving Shemano, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed June 15, 1973, Ser. No. 370,425

Int. Cl.² H61K *31/445*

U.S. Cl. 424—267 **13 Claims**

1. A method of treating conditions of delayed hypersensitivity which comprises administering to a patient in need thereof a compound selected from the formula



wherein [W] is an aromatic polycyclic nucleus selected from fluoranthene, fluorene, fluoren-9-ol, fluoren-9-one, or anthraquinone; each Y is selected from carbonyloxy, carbonylthio, oxygen, divalent sulfur, or carbonyl with the provisos that when Y is carbonyloxy or carbonylthio, [W] is other than fluoren-9-ol or anthraquinone; A is selected from a straight or branched alkylene chain of from 1 to 6 carbon atoms with the proviso that when Y is carbonyloxy or carbonylthio, A contains from 2 to 6 carbon atoms; R is selected from hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, phenyl or benzyl; or pharmaceutically acceptable acid addition salt thereof, in an amount effective to suppress delayed hypersensitivity.

3,937,834

PHARMACEUTICAL PREPARATIONS

Alfred Hunger, Basel, and Hans-Jochen Janssen, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 180,492, Sept. 14, 1971, abandoned. This application Nov. 19, 1973, Ser. No. 417,305

Claims priority, application Switzerland, Oct. 2, 1970, 14614/70

Int. Cl.² A61K *31/175, 31/415*

U.S. Cl. 424—273 **3 Claims**

1. A pharmaceutical preparation for the treatment of angina pectoris and high blood pressure, containing a β-receptor blocker selected from the group consisting of 1-(2-allyloxyphenoxy)-2-hydroxy-3-isopropylaminopropane and 1-(4-indanyloxy)-2-hydroxy-3-isopropylaminopropane or a non-toxic salt thereof and an α-receptor blocker, 2-[N-(m-hydroxyphenyl)-p-toluidinomethyl]-2-imidazoline, or a non-toxic salt thereof together with a pharmacuetical carrier wherein the β-blocker and the α-blocker are in a ratio of from 5 to 1 to 1 to 40.

3,937,835

PHARMACEUTICALLY USEFUL SULFUR CONTAINING HETEROCYCLIC DERIVATIVES

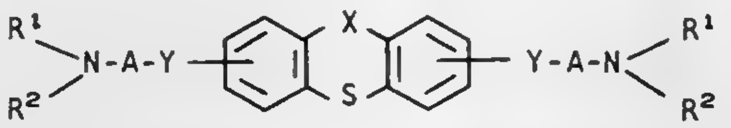
Irving Shemano, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed June 15, 1973, Ser. No. 370,424

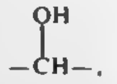
Int. Cl.² A61K *31/38, 31/39*

U.S. Cl. 424—275 **9 Claims**

1. A method of treating conditions of delayed hypersensitivity which comprises administering to a patient in need thereof a compound selected from the formula



wherein X is selected from a bond, $-CH_2-$, or oxygen; each Y is selected from a vinylene group,



$$-\overset{\displaystyle OH}{\overset{|}{C}}H-,$$

carbonyl, oxygen, divalent sulfur, or carbonyloxy with the proviso that when Y is selected from oxygen, divalent sulfur or carbonyloxy, X is a bond; A is selected from a straight or branched alkylene chain of from 1 to 6 carbon atoms with the proviso that when Y is a vinylene group, A contains from 1 to 5 carbon atoms and with the proviso that when Y is carbonyloxy, A contains from 2 to 6 carbon atoms; each R^1 and R^2 is selected from hydrogen, a straight or branched alkyl group of from 1 to 4 carbon atoms, or alkenyl of 3 to 6 carbon atoms having the vinyl unsaturation in other than the 1-position; and pharmaceutically acceptable acid addition salts thereof, in an amount effective to suppress delayed hypersensitivity.

3,937,836

ANTIBIOTIC COMPOUNDS FOR RUMINANT FEED UTILIZATION IMPROVEMENT

Arthur P. Raun, New Palestine, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 323,599, Jan. 15, 1973, Pat. No. 3,839,557, which is a continuation-in-part of Ser. No. 220,304, Jan. 24, 1972, Pat. No. 3,794,732. This application June 3, 1974, Ser. No. 475,720

Int. Cl.² A61K *31/35*

U.S. Cl. 424—283 **10 Claims**

1. A method of increasing the efficiency of feed utilization by ruminant animals having a developed rumen function which comprises the oral administration to such animals of a propionate-increasing amount of an antibiotic selected from the group consisting of X206, dianemycin, nigericin, the deshydroxymethyl derivative of nigericin, and their physiologically acceptable esters and salts.

3,937,837

SUBSTITUTED CHROMONE-3-CARBONITRILES, CARBOXAMIDES AND CARBOXYLIC ACIDS USEFUL FOR PREVENTING ASTHMATIC SYMPTOMS

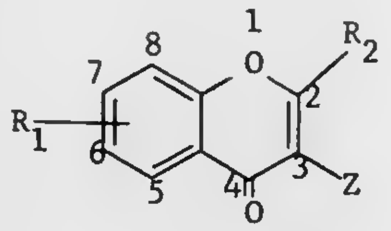
Sylvester Klutchko, Hackettstown; Richard E. Brown, Hanover, and Maximilian Von Strandtmann, Rockaway, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 312,154, Dec. 4, 1972, Pat. No. 3,862,143. This application Sept. 9, 1974, Ser. No. 504,628

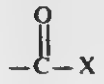
Int. Cl.² A61K *31/35*

U.S. Cl. 424—283 **1 Claim**

1. A method for preventing asthmatic symptoms in a mammal in need thereof which comprises the administration of from about 5 to about 100 mg/kg of body weight of a compound of the formula:

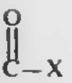


wherein R_1 represents hydrogen, halogen, lower alkyl, hydroxy, lower alkoxy, or lower alkanoyloxy; R_2 represents hydrogen, lower alkyl, fluorinated lower alkyl, lower alkoxycarbonyl, carboxy, or lower alkyl carboxylic acid; Z represents cyano, carboxy, lower alkoxycarbonyl or



$$-\overset{\displaystyle O}{\overset{\|}{C}}-X$$

wherein X represents amino, N-lower-alkyl-amino, hydroxylamino, N-lower-alkylhydroxylamino, or ureido, with the proviso that when R_2 represents hydrogen, Z represents cyano or



$$-\overset{\displaystyle O}{\overset{\|}{C}}-X$$

wherein X has the same meaning as given above; or the corresponding non-toxic, pharmaceutically acceptable salts thereof.

3,937,838

ORALLY ACTIVE BRONCHOSPASMOLYTIC COMPOUNDS AND THEIR PREPARATION

Kjell Ingvar Leopold Wetterlin, Sandby, and Leif Ake Svensson, Lund, both of Sweden, assignors to Aktiebolaget Draco, Lund, Sweden

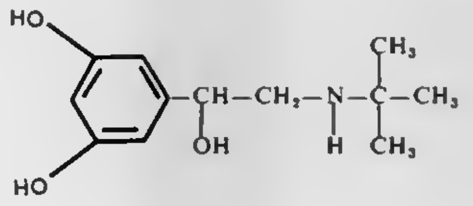
Continuation of Ser. Nos. 55,791, July 17, 1970, and Ser. No. 55,676, July 17, 1970, each is a continuation-in-part of Ser. No. 676,288, Oct. 18, 1967, abandoned. This application June 21, 1973, Ser. No. 372,497

Claims priority, application Sweden, Oct. 19, 1966, 14182/66

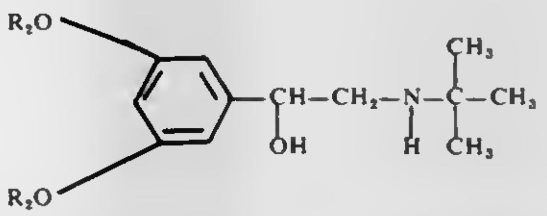
Int. Cl.² A61K *31/22, 31/135*

U.S. Cl. 424—311 **7 Claims**

1. A method of producing bronchial dilation in animals, including humans, in need therof, comprising the administration of a therapeutically effective amount of a compound selected from the group consisting of ethanol amines having the formulas



and



wherein R_2 is the acyl radical of a 2–5 carbon fatty acid and pharmaceutically acceptable salts thereof.

3,937,839

METHOD FOR ATTENUATING BLEEDING

Donald P. Strike, St. Davids; Wenling Kao, Devoo, and Richard L. Fenichel, Wyncote, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 446,835, Feb. 28, 1974. This application Apr. 11, 1975, Ser. No. 567,448

Int. Cl.² A61K *31/19*

U.S. Cl. 424—317 **5 Claims**

1. A method for the attenuation of bleeding at a wound surface which comprises the topical application to the wound surface of an effective amount of a compound selected from the group consisting of:

a. 7-(5α-hydroxy-2β-[(3RS)-3-hydroxy-3-methyl-trans-1-octenyl]-3α-methyl-1α-cyclopentyl)-cis-5-heptenoic acid;
b. 7-(5α-hydroxy-2β-[(3RS)-3-hydroxy-3-methyl-trans-1-octenyl]-1α-cyclopentyl)-cis-5-heptenoic acid; and
c. 7-(2β-[(3RS)-hydroxy-3-methyl-trans-1-octenyl]-5-oxo-1α-cyclopentyl)-cis-5-heptenoic acid.

3,937,840
COMPOSITIONS AND METHODS OF COMBATTING BACTERIA AND FUNGI USING 2-METHYLBENZANILIDE DERIVATIVES

Isao Chiyomaru, Shimizu; Seigo Kawada, Fujieda, and Kiyoshi Takita, Shimizu, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

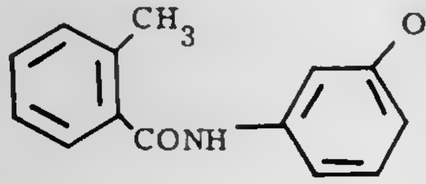
Filed July 17, 1974, Ser. No. 489,412

Claims priority, application Japan, Aug. 18, 1973, 48-92702

Int. Cl.² A01N *9/20, 9/24*

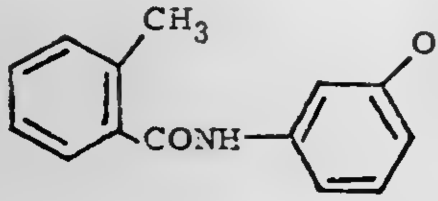
U.S. Cl. 424—324 **6 Claims**

1. A method of protecting plants against agricultural fungi or bacteria, which comprises: applying a fungicidally or bacteriocidally effective amount of a 2-methylbenzanilide compound having the formula



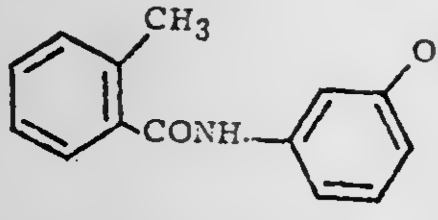
wherein R represents C_{1-12} alkyl, to plants, seeds or soil.

2. A method of protecting plants against agricultural fungi or bacteria, which comprises: applying a fungicidally or bactericidally effective amount of a 2-methylbenzanilide compound having the formula



wherein R represents allyl to plants, seeds or soil.

3. A method of protecting plants against agricultural fungi or bacteria, which comprises: applying a fungicidally or bactericidally effective amount of a 2-methylbenzanilide compound having the formula



wherein R represents propargyl to plants, seeds or soil.

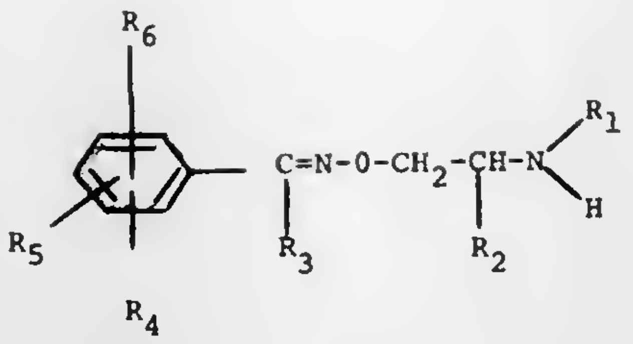
3,937,841
TREATMENT OF DEPRESSION

Jan Van Dijk, and Jenkins Eric Davies, both of Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y. Division of Ser. No. 279,971, Aug. 11, 1972. This application Oct. 24, 1974, Ser. No. 517,519

Int. Cl.² A61K *31/15, 31/36, 31/39, 31/44, 31/54*

U.S. Cl. 424—327 **4 Claims**

1. The method of combatting depression in a mammal exhibiting depressive symptoms comprising administering to said mammal an antidepressively effective quantity of an antidepressive composition suitable for administration to mammals comprising an antidepressive amount of a compound of the formula



or salts thereof with pharmaceutically acceptable acids wherein R_1 is a moiety selected from the group consisting of hydrogen and methyl, R_2 is a moiety selected from the group consisting of hydrogen and methyl, R_3 is a moiety selected from the group consisting of hydrogen, alkyl, alkoxyalkyl alkylthioalkyl, alkylsulphoxyalkyl each of up to eight carbon atoms and benzyo, R_4 and R_5 are each moieties selected from the group consisting of hydrogen, alkoxy of up to six carbon atoms, alkyl of up to six carbon atoms and halogen and R_6 is a moiety selected from the group consisting of trifluoromethyl and halogen with the proviso that at least one of R_1, R_2 and R_3 is other than hydrogen when two of R_4, R_5 and R_6 are ortho-chloro.

3,937,842
METHOD OF TREATING CONDITIONS OF DELAYED HYPERSENSITIVITY USING BIS-BASIC SUBSTITUTED ACENAPHTHENE DERIVATIVES

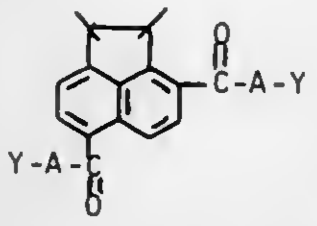
Irving Shemano, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed June 15, 1973, Ser. No. 370,289

Int. Cl.² A61K *31/135*

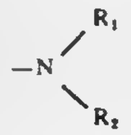
U.S. Cl. 424—330 **4 Claims**

1. A method of treating conditions of delayed hypersensitivity which comprises administering to a patient in need thereof a 3,6-bis-basic ketone of acenaphthene having the formula:



wherein A is a straight or branched alkylene chain having from 1 to 6 carbon atoms; and Y is selected from the group consisting of:

(a)



wherein R_1 and R_2 are individually selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, alkenyl having from 3 to 6 carbon atoms in which the unsaturation is in a position other than the 1-position of the alkenyl group;

and the pharmaceutically acceptable salts thereof, in an amount effective to suppress delayed hypersensitivity.

3,937,843
BEAN-ODOR-FREE SOY BEAN PRODUCT AND ITS PRODUCTION

Motomi Osaka, Osaka, and Yukio Hashimoto, Izumiotsu, both of Japan, assignors to Fouji Oil Co., Ltd., Osaka, Japan

Filed Dec. 4, 1973, Ser. No. 421,697

Claims priority, application Japan, Dec. 4, 1972, 47-12192; Apr. 20, 1973, 48-45546

Int. Cl.² A23L *1/20*

U.S. Cl. 426—46 **25 Claims**

1. A method for elimination of a bean odor from a soy milk which comprises subjecting the soy milk containing added saccharide to lactic fermentation until the acidity thereof is not more than 4 and then distilling the resulting fermented soy milk at a temperature of 10° to 85°C. under a pressure of not more than 500 mmHg.

3,937,844
PROCESS FOR PRODUCING PROCESSED LOW SALT SOYBEAN PASTE

Masakuni Koyama, Tokyo, Japan, assignor to Shinshu Miso Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1974, Ser. No. 534,863

Int. Cl.² A23L *1/204*

U.S. Cl. 426—46 **4 Claims**

1. In a process for producing a fermented miso soybean paste including the steps of:

a. fermenting an aqueous cooked paste containing soybeans with yeast in the presence of salt, and

b. brewing and ripening the paste,

the improvement comprising adding from 0.05–0.5% lactic acid to the soybean paste at the initiation of fermentation step (a) thereby lowering the pH of the paste and maintaining the fermentation at a temperature of 15°–35°C thereby producing a soybean paste having a salt content less than 10% and devoid of deterioration.

3,937,845
SEMI-SOLID FERMENTATION OF STRAW

Youn W. Han, and Arthur W. Anderson, both of Corvallis, Oreg., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 8, 1975, Ser. No. 539,552

Int. Cl.² A23K *1/00*

U.S. Cl. 426—53 **6 Claims**

1. A process for increasing the digestibility and protein content of straw, which consists of

a. mixing 1 part of straw with about 2 to 4 parts of aqueous sulphuric acid having a normality of about 0.1 to 1, and holding the mixture at about 100° to 125° C. for about 30 to 60 minutes,

b. adding to the acid-treated straw an amount of ammonia to provide a pH of about 4.0–4.5,

c. aerobically fermenting the ammoniated acid-treated straw, which is a moist fibrous mass having a solids content of about 20–33% and a moisture content of about 80–67%, with a microorganism selected from the group consisting of *Candida utilis*, *Pullularia pullulans*, and *Trichoderma viride*, at a temperature of about 30° C. for a period of about 1 to 7 days, and

d. drying the so-fermented product.

3,937,846
PROCESSES FOR PREPARING NUTRITIONAL COMPOSITIONS FOR ANIMAL FEEDS

Raymond Teissier, Versailles; Jean Louis Colas, Saint-Maur-des-Fosses, and Dominique Taisne, Paris, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed June 2, 1975, Ser. No. 582,632

Claims priority, application France, June 6, 1974, 74.19514

Int. Cl.² A23K *1/22*

U.S. Cl. 426—69 **14 Claims**

1. A process for preparing nutrient compositions for feeding animals which comprises preparing a dry mixture containing 35 to 48 parts of urea with 65 to 52 parts of urea phosphate, melting the urea-urea phosphate mixture so obtained at a temperature of from 72° to 90°C, absorbing the molten mixture in an animal feed material, and cooling the feed material containing the mixture.

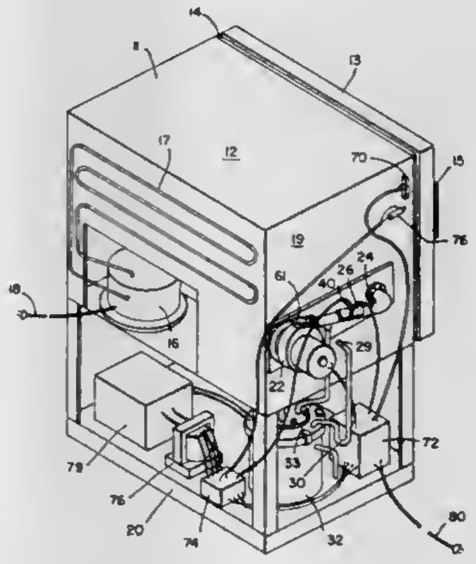
3,937,847
METHOD OF AND MEANS FOR PRESERVING PERISHABLE FOODSTUFFS

William Elkins, 7081 Galli Drive, San Jose, Calif. 95127; Harold H. Kuehn, 1760 Los Altos Drive, San Mateo, Calif. 94402, and Richard H. Chamberlin, 273 Cypress Ave., San Bruno, Calif. 94066

Filed Aug. 2, 1974, Ser. No. 494,194

Int. Cl.² A23L *3/00*

U.S. Cl. 426—231 **15 Claims**



1. The method of preserving foodstuffs comprising the steps of:

a. placing said foodstuffs in a container of air at atmospheric pressure that may be selectively scaled substantially air-tight;

b. sealing said container substantially air-tight with said foodstuffs therein and establishing air flow of given time rate through said container by means of a substantially closed circuit system external to said container and including a gas pump, said conduit having its inlet and outlet coupled to said container at spaced locations;

c. generating hydrogen gas at a given time rate less than 40% of said given time rate of air flow for a given predetermined length of time and introducing said hydrogen gas into said substantially closed conduit system at a point in said conduit system intermediate said gas pump and said outlet of said conduit;

d. reacting said hydrogen gas with the oxygen in said air flow in a catalytic means interposed in said substantially closed conduit intermediate said point of introduction of said hydrogen gas and said outlet of said substantially closed conduit;

e. admitting air into said substantially closed conduit system intermediate said gas pump and said catalytic means during operation in an amount just sufficient to maintain substantially atmospheric pressure in said container and said conduit system;

f. thermally or electrically sensing the level of reaction of said hydrogen gas with said oxygen in said catalytic means;

g. after the end of said predetermined length of time, decreasing said given time rate of generation of said hydrogen gas in a direct relation to said level of reaction of said hydrogen gas with said oxygen in said catalytic means; and

h. restarting said predetermined length of time each time said container is opened and subsequently substantially resealed after a prior said predetermined length of time.

8. Apparatus for preserving foodstuffs comprising:

a. means defining a container for a given volume of air at atmospheric pressure including means for selectively sealing said container substantially air-tight;

b. means establishing air flow of given time rate through said container including a gas pump interposed in a substantially closed conduit having its inlet and outlet communicating with said container at spaced locations;

c. means for generating hydrogen gas at a given time rate less than 40% of said given time rate of air flow during a given predetermined length of time and for introducing said hydrogen gas into said substantially closed conduit system at a point in the conduit intermediate said gas pump and said outlet of said substantially closed conduit;

d. catalytic means for reacting said hydrogen gas with the oxygen in said air flow interposed in said conduit intermediate said point of introduction of said hydrogen gas into said conduit and said outlet of said conduit;

e. pressure sensitive valve means extending through the wall of said substantially closed conduit intermediate said gas pump and said catalytic means and adapted to admit air into said conduit when the gas pressure within said conduit is below atmospheric pressure;

f. means for thermally or electrically sensing the level of reaction between said hydrogen gas and said oxygen in said catalytic means and for decreasing the time rate of generation of hydrogen gas in a direct relation to said level of reaction between said hydrogen gas and said oxygen in said catalytic means;

g. means for operating said means for generating hydrogen gas independently of said means for sensing the level of reaction between said hydrogen gas and said oxygen in said catalytic means for a given predetermined length of time including switch means for restarting said given predetermined length of time upon opening and subsequent closure of said means for selectively sealing said container substantially air-tight after the end of a prior said given predetermined length of time.

3,937,848

CHIP FRACTURING FROM A FRIED RIBBON

Glenn M. Campbell, Minneapolis, and Stanley G. Liedman, Anoka, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Apr. 27, 1973, Ser. No. 355,231

Int. Cl.^{2} A23L *1/01*

U.S. Cl. 426—439 **9 Claims**

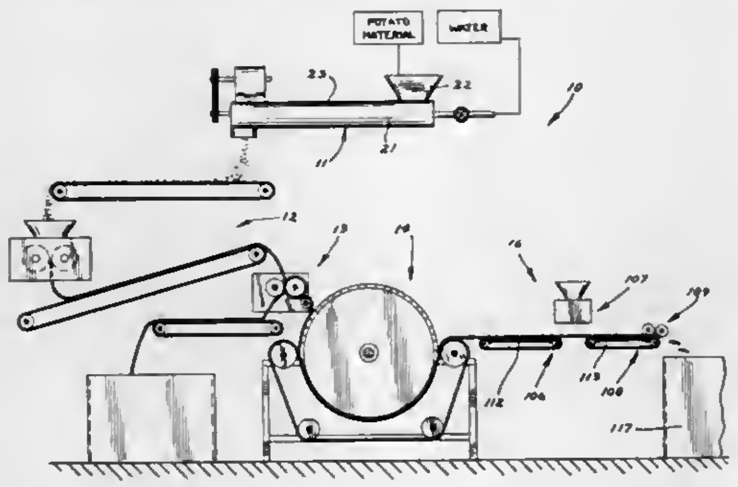
1. A process for preparing a chip snack comprising:

preparing a dough by mixing a starchy food material and water, said dough having high enough moisture content to provide the dough with sufficient cohesiveness to permit sheeting of the dough and less than that amount of moisture that would cause the dough to be adhesive and stick to equipment, the moisture content of said dough being about 25 to 45 percent by weight;

sheeting the dough;

cutting the sheeted dough into a ribbon having alternating wide portions and narrow portions;

frying the ribbon in an oil bath, said ribbon extending from the point at which said ribbon enters the bath to the point at which the ribbon exits the frying bath; and



then fracturing the ribbon at said narrow portions, said fracturing taking place at least 5 seconds after the ribbon has exited said bath, said ribbon having become friable, thereby separating the fried ribbon at the narrow portions into individual chips.

3,937,849

PROCESS FOR IMPROVING THE DIGESTIBILITY OF HEMICELLULOSE-FREE STRAW

Youn W. Han, Corvallis, Oreg.; James W. Pence, El Cerrito, Calif., and Arthur W. Anderson, Corvallis, Oreg., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 23, 1975, Ser. No. 543,707

Int. Cl.^{2} A23K *1/18*

U.S. Cl. 426—442 **3 Claims**

1. A process for improving the digestibility of hemicellulose-free straw, which comprises

a. soaking the hemicellulose-free straw for about one hour at room temperature in dioxane containing about 1 to 2% HCl, the amount of dioxane being enough to completely immerse the straw therein,

b. removing dioxane and HCl from the so-treated straw by washing it with hot water, and

c. drying the treated and washed straw.

3,937,850

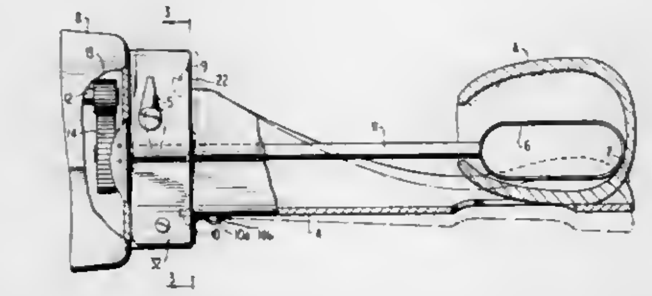
METHOD OF HOLLOWING OUT AN ARTICLE OF FOOD

Bahia Rashid Farha, and Lloyd Lee, both of Charlton Heights, W. Va., assignors to Bahia Rashid Farha, Charlton Heights, W. Va.

Division of Ser. No. 212,943, Dec. 28, 1971, Pat. No. 3,780,435. This application Oct. 4, 1973, Ser. No. 403,575

Int. Cl.^{2} A23P *1/00*

U.S. Cl. 426—484 **1 Claim**



1. A method of hollowing out an article of food such as a fruit or vegetable having a longitudinal axis and two end areas to provide a shell of substantially uniform thickness, comprising:

rotating a knife about its axis, guiding one of said end areas of said article of food against said rotating knife with a curved guide member loosely supporting said article of food for (1) rotation about said longitudinal axis and (2) translation in a direction substantially parallel to said longitudinal axis, relatively rotating said knife and said article of food with respect to each other about said longitudinal axis of said article of food while the guide maintains said knife a predetermined distance from the surface of said article of food and while simultaneously advancing said knife into said article of food in the longitudinal direction to a point short of the other end area of said article of food, thereby forming a shell of substantially uniform thickness and removing an inside area of the article of food which is greater than the cross-sectional area of the knife.

3,937,851

ZONED COLORATION

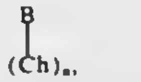
Nicolo Bellanca, and Thomas Edward Furia, both of San Jose, Calif., assignors to Dynapol, Palo Alto, Calif.

Filed Apr. 15, 1974, Ser. No. 460,908

Int. Cl.^{2} A23L *1/275*

U.S. Cl. 426—540 **6 Claims**

1. A multicolored composition comprising a plurality of zones of viscoelastic edible substance, said zones containing different effective coloring amounts of polymeric dye of a molecular weight of from 2000 to 400,000, said dye being represented by the structural formula selected from the formulae —(Ch B)$_n$ and



$$\overset{\displaystyle B}{\underset{}{\big|}}\atop (Ch)_n,$$

wherein *n* is an integer greater than 1, Ch is an organic chromophore and B is a non-chromophoric organic linking group, and said zones thereby differing in color from one another.

3,937,852

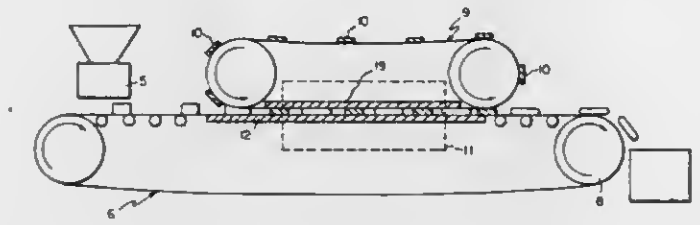
PROCESS FOR BAKING A COMPRESSED CRACKER

Irwin Wolf, 105 Rogers Drive, New Rochelle, N.Y. 10804

Filed July 5, 1973, Ser. No. 376,598

Int. Cl.^{2} A21D *8/06*

U.S. Cl. 426—560 **1 Claim**



1. A process for preparing a baked cracker which comprises compressing between two surfaces at a distance of about one-eighth to one-sixteenth of an inch a quantity of bakable dough having a rubbery consistency which tends to resume its original shape when free of compressive forces and wherein said dough consists essentially of wheat flour, and wherein a few percent of said wheat flour is replaced by a few percent of soy or cottonseed flour, vegetable or cooking oil, or an equivalent amount of hydrogenated vegetable shortening and water between two surfaces, present in amounts in said dough in the ratio of 3½ cups to 5 cups wheat flour to 3 to 4 ounces oil to 3½ to 4½ ounces water, and baking said dough while it is compressed between said surfaces.

3,937,853

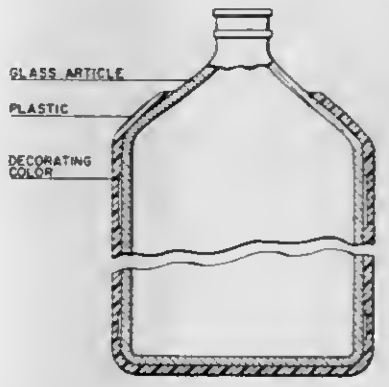
METHOD OF MAKING A COLOR DECORATED, PLASTIC COATED GLASS ARTICLE

Herbert C. Shank, Jr., Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed July 12, 1973, Ser. No. 378,493

Int. Cl.^{2} B05D *1/06, 1/24*

U.S. Cl. 427—29 **18 Claims**



1. A method of permanently decorating a glass container comprising,

applying to an outside surface region of a preformed glass container a glass decorating color which requires heating to a temperature higher than about 150° F. to bond permanently to the glass surface,

then, prior to heating said container with the said decorating color thereon to a temperature effective for such permanent bonding to occur, coating a finely divided heat settable plastic onto said glass container, the said plastic being coated over the applied color and extending on said glass surface beyond the surface region on which said color has been applied,

then anchoring said plastic to said glass container by heating the decorated and thus coated container to set the plastic so that it forms a smooth continuous film,

and cooling the container,

the resultant plastic film being supported by and anchored to the surface of said glass container at least over the region beyond that covered by the said decorating color,

thereby producing a final permanently decorated glass container wherein said film provides a permanent outer covering over said decorating color which encloses and protects the latter on the glass surface, the decorating color being captured between the film and the glass surface and not extending to the outside surface of said film.

3,937,854

METHOD OF MAKING A THERMOPLASTIC INK DECORATED, POLYMER COATED GLASS ARTICLE

Herbert C. Shank, Jr., Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Continuation-in-part of Ser. No. 378,493, July 12, 1973. This application Feb. 7, 1974, Ser. No. 440,331

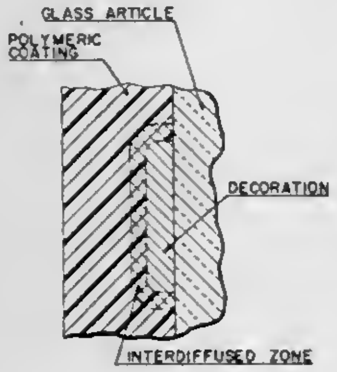
Int. Cl.^{2} B05D *1/06, 1/24*

U.S. Cl. 427—29 **17 Claims**

1. A method for decorating a previously formed article of glassware, comprising,

applying to a glass surface area of the previously formed article a decoration of a thermoplastic ink which is solid at room temperature but which becomes semi-fluid upon heating, said ink being applied by silk screening it onto the article at a temperature at which the ink is semi-fluid, the article being at a lower temperature at which the ink solidifies rapidly on the glass surface area, when it contacts the article,

coating a layer of finely divided polymeric coating material onto the decorated article and over the ink thereon, said coating material being a resin which is fusible at a temperature above the temperature at which the ink becomes semi-fluid, heating the article with the ink decoration and resin layer thereon to a temperature at which the ink again becomes semi-liquid and the resin fuses to form a smooth continuous protective film on said article and melt-unites to said decoration,



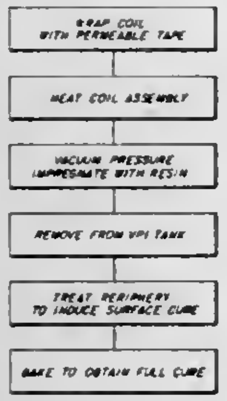
and cooling the coated, decorated article, thereby providing a final decorated article of glassware wherein said film provides a permanent outer coating which covers and protects said decoration on said glass surface area, the decoration being in solid but thermoplastic remeltable condition under the said outer coating.

3,937,855

METHOD OF CURING VACUUM PRESSURE IMPREGNATED COILS

Geza Gruenwald, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed June 21, 1974, Ser. No. 481,900
Int. Cl.² B05D *3/06*; **H01F** *5/06*
U.S. Cl. 427—54 **8 Claims**


WRAP COIL WITH PERMEABLE TAPE
HEAT COIL ASSEMBLY
VACUUM PRESSURE IMPREGNATE WITH RESIN
REMOVE FROM VPI TANK
TREAT PERIPHERY TO INDUCE SURFACE CURE
BAKE TO OBTAIN FULL CURE

1. A method of insulating an electro-magnetic coil comprising the steps of:

a. applying a permeable electrical insulating material to the coil;
b. applying a first chemical catalyst throughout said material, said chemical catalyst being reactive with a resin at elevated temperatures but relatively unreactive therewith at room temperatures;
c. vacuum pressure impregnating said material throughout with a liquid, chemically reactive, cross linkable resin;
d. thereafter inducing a quick cure to solidify said resin on the surface of said impregnated material, thereby encapsulating the liquid resin which is in the bulk of said material; and
e. subsequently exposing said material to elevated temperatures to cure said liquid resin and thereby form a solid structure throughout said material.

4. A method of insulating an electro-magnetic coil as set forth in claim 1 wherein the step of inducing curing is accomplished by applying to the surface of the impregnated material a highly reactive chemical cross linking agent.

6. A method of insulating an electro-magnetic coil as set forth in claim 1 wherein the step of inducing curing is accomplished by the ultra-violet irradiation of the outer surface of the impregnated material.

3,937,856

REHABILITATION OF WATER-DAMAGED ELECTRICAL EQUIPMENT

Edward M. Geiser, Downers Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 16, 1973, Ser. No. 416,548
Int. Cl.² B23P *7/00*
U.S. Cl. 427—58 **10 Claims**

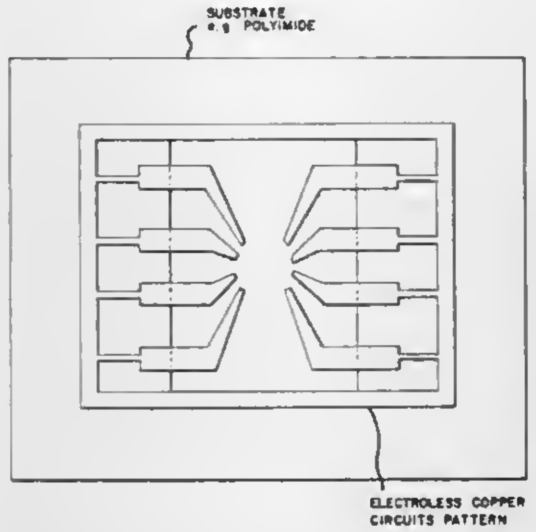
1. A method for the rehabilitation of water-damaged electrical equipment which comprises treating said equipment with a bath consisting essentially of an inert organic solvent, a paraffinic oil having a Saybolt Universal Second value of from 90 to 110 at 100°F., a polymethyl aromatic compound, and a salt selected from the group consisting of the reaction product of N-propyl-1, 3-propylenediamine with malonic acid, N-n-amyl-1, 3-propylenediamine with acetylene dicarboxylic acid, and N-n-butyl-1, 6-hexylenediamine with oxalic acid, and removing the resultant rehabilitated equipment from said bath.

3,937,857

CATALYST FOR ELECTROLESS DEPOSITION OF METALS

Charles Roscoe Brummett, Harrisburg; Ray Ned Shaak, Lebanon, and Daniel Marshall Andrews, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed July 22, 1974, Ser. No. 490,817
Int. Cl.² B05D *5/12*
U.S. Cl. 427—98 **20 Claims**



1. A method for the decomposition of a metal into an inert substrate from a bath containing said metal, said metal comprising the steps of:

applying to said substrate a thin film of a thermally decomposable complex of palladium or platimum having the formulae

LmPdXn or

LmPtXn wherein

L is a ligand or an unsaturated organic group; Pd or Pt is palladium or platinum metal; X is a halide, an alkyl group or a bidentate ligand; and *m* is from 1 to 4 and *n* is from 0 to 3;

exposing said substrate to which said complex has been applied to heat at a temperature of about 300°C and less to effect decomposition of said complex and to create a residue catalytic to a metal in an electroless bath solution; and

depositing a metal from said electroless bath on said substrate in an area rendered catalytic by decomposition of said complex.

3,937,858

METHOD OF AND BATH FOR THE PLATING OF ALUMINUM OR AN ALUMINUM ALLOY ON A METALLIC SUBSTRATE

Wolfgang Thiele, Bad Homburg, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 13, 1974, Ser. No. 441,967
Claims priority, application Germany, Feb. 20, 1973, 2308281
Int. Cl.² C23C *1/00*
U.S. Cl. 427—431 **7 Claims**

1. A hot dip method of producing an aluminum-alloy coating comprising the steps of immersing a metallic substrate into a bath of molten aluminum-alloy consisting essentially of 0.005 to 1.0% by weight of strontium and/or 0.01 to 5.0% by weight antimony balance aluminum and metallic impurities due to the producing process, for a period sufficient to deposit an aluminum-alloy coating on said substrate.

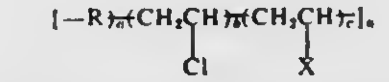
3,937,859

INTERLINING MADE OF A THERMOPLASTIC AND THERMOSETTING RESIN COMPOSITION

Mark Ernest Carra, Springfield, and Louis Albert Manrique, Jr., Chicopee, both of Mass., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Apr. 12, 1974, Ser. No. 460,659
Int. Cl.² B32B *3/02*, *7/14*
U.S. Cl. 428—194 **8 Claims**

1. A fusible interlining comprising a fabric carrying a coating of a thermoplastic-thermosetting composition consisting of a terpolymer having the following formula:



$$[-(R)_a(CH_2\underset{Cl}{CH})_b(CH_2\underset{X}{CH})_c]_n$$

where R is selected from the group consisting of ethylene, propylene and butylene, *a* and *b* are substantially equal, *a* plus *b* equals 20c, x is a radical selected from the group consisting of $CONH_2$ and COOH, *n* is an integer of from 100 to 300, and an aminoplast whereby the coating will soften and become adhesive at elevated temperatures of about 150°F. and will cross-link without the addition of any catalyst when heated to a temperature of from 250°F. to 350°F. for no longer than a 12 second period.

3,937,860

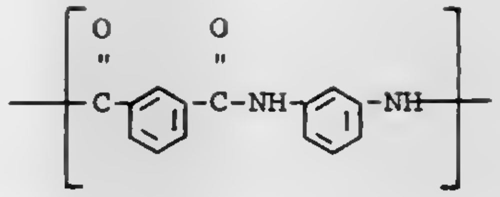
FILTRATION MATERIAL

Irwin J. Gusman, Great Neck, N.Y., and Carlo Strack, Wyckoff, N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

Filed Apr. 23, 1975, Ser. No. 570,698
Int. Cl.² B32B *17/06*
U.S. Cl. 428—228 **6 Claims**

1. A high temperature resistant filtration material comprising:

a. Two outer layers of nonwoven fabric of fibers of an aromatic polyamide having repeating units of the formula



b. A first inner layer of nonwoven fabric of glass fibers, and
c. A second inner layer of woven fabric made of yarns of glass or said aromatic polyamide,

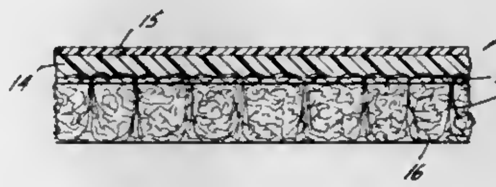
said layers being needled together into an integral structure.

3,937,861

FLOOR COVERING FOR ATHLETIC FACILITY

Joseph L. Zuckerman, Livingston; Carl R. Eckardt, Morris Plains, and Robert V. Bertotti, New Milford, all of N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

Filed May 6, 1974, Ser. No. 466,921
Int. Cl.² B32B *5/02*, *29/00*; **D03D** *3/00*
U.S. Cl. 428—235 **6 Claims**



1. A multilayer product suitable for use as a floor covering of an athletic facility comprising a composite needlepunched material having a fiber batt bottom layer at 10 to 80 ounces per square yard needled into a support layer of fabric or film so that a minor portion of the fiber batt protrudes through the top of said support layer and a major portion of the fiber batt remains as a fibrous layer at least 1/16 inch thick attached to the bottom of said support layer; a layer of polyurethane elastomer of from 3/64 inch to ⅝ inch thick adhered to the top of said composite needlepunched material, said polyurethane elastomer having a Shore A hardness of 30 to 90, a resilience of 20 to 50 percent rebound, a compression set of not greater than 35 percent, an ultimate elongation of at least 80 percent, an ultimate tensile strength of at least 200 p.s.i., a density of 0.5 to 1.6 gm./cm.³ and a tear strength of at least 50 p.l.i.; and a wear coating of polyurethane having a high abrasion resistance adhered to the top of said layer of urethane elastomer said wear coating providing said multilayer product with a smooth surface.

3,937,862

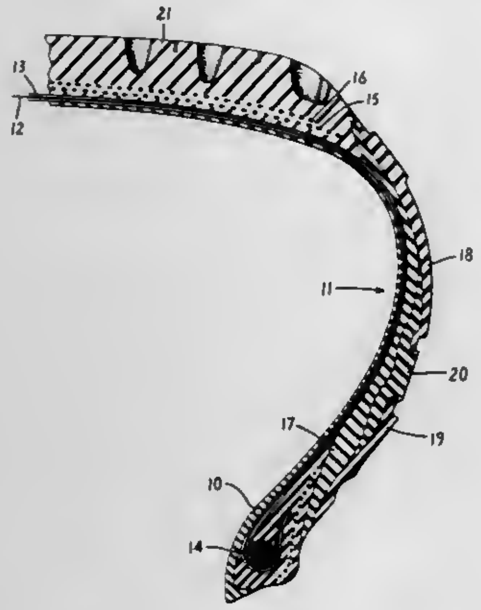
PNEUMATIC TIRES

Jean-Paul Dillenschneider, Beaumont, France, assignor to Compagnie Generale des Establissements Michelin, raison sociale Michelin & Cie, France

Continuation of Ser. No. 255,615, May 22, 1972, abandoned.
This application June 14, 1974, Ser. No. 479,275
Claims priority, application France, June 2, 1971, 71.20047
Int. Cl.² B32B *25/16*
U.S. Cl. 428—409 **7 Claims**

1. A radial carcass tire whose sidewalls are formed, at least on the outer surface layer thereof, of at least one surface layer mixture comprising nonhalogenated elastomers both of the diene type selected from the group consisting of natural rubber, polybutadiene, polyisoprene, styrene-butadiene copolymer and transpolypentene mixed with an ethylene-propylene type selected from the group consisting of ethylene-propylene copolymer and ethylene-propylene-diene terpolymer containing on the order of 5% diene, characterized by the fact that the outer surface layer portions of the sidewalls formed of said mixes are vulcanized by means of an organic peroxide, the amount of organic peroxide used being from about 1 to about 10 parts by weight per 100 parts by weight of elastomers of a

commercial organic peroxide containing 40% by weight of active product, said sidewalls having high flexure fatigue resistance, said outer surface layer portions having a thickness at least about one fourth the thickness of the sidewalls, said mixture containing from about 30 to about 65 parts by weight of carbon black per 100 parts by weight of elastomers, and the amount of said elastomer of the ethylene-propylene type used being between about 15% and about 60% by weight of the total of the elastomers.



3,937,863
PRESSURE POLISHED EXTRUDED POLYCARBONATE SHEET

Richard E. Moore, R.D. 1, Locust Grove Road, West Chester, Pa. 19380

Continuation-in-part of Ser. No. 232,725, March 8, 1972, Division of Ser. No. 54,185, July 13, 1970, Pat. No. 3,681,483. This application Dec. 6, 1974, Ser. No. 530,067

Int. Cl.² 428 *910, 918;* **B29C** *25/00;* **B29D** *11/00*

U.S. Cl. 428—410 **9 Claims**

1. A sheet of extruded unfilled transparent polycarbonate having opposed pressure polished mirror finished substantially parallel surfaces which are substantially free of ripples, wiggles, extrusion die lines and stresses and whose percent luminous transmittance is greater than, its percent haze less than and its distortion less than the as extruded sheet of the same thickness, said pressure polished sheet having a thickness of about 0.040 inch, a luminous transmittance of about 87.5% to 95.4% and a haze of about 1.68% to 2.74%, said sheet being made by first preheating the as extruded sheet between a pair of mirror polished plates at a pressure of zero to a maximum of 50 psi to the heat distortion temperature of the sheet to expel air entrapped between the sheet and the plates, then increasing the pressure to about 300 to 500 psi while allowing the temperature to rise to about 310°–330°F to transfer the mirror finish of the plates to the sheet surfaces while substantially eliminating the ripples, wiggles and extrusion die lines and stresses, and then cooling the sheet while reducing the pressure to fix the mirror finish in the sheet surfaces as the sheet contracts and solidifies.

9. A sheet of extruded unfilled transparent polycarbonate having opposed pressure polished mirror finished substantially parallel surfaces which are substantially free of ripples, wiggles, extrusion die lines and stresses and whose percent luminous transmittance is greater than, its percent haze less than and its distortion less than the as extruded sheet of the same thickness, said pressure polished sheet having a thickness of about 2.0 inches, a luminous transmittance of about 40.1% and a haze of about 30.9% to 34.4%, said sheet being made by first preheating the as extruded sheet between a pair of mirror polished plates at a pressure of zero to a maximum of 50 psi to the heat distortion temperature of the sheet to expel air entrapped between the sheet and the plates, then increasing the pressure to about 300 to 500 psi while allowing the temperature to rise to about 310°–330°F to transfer the mirror finish of the plates to the sheet surfaces while substantially eliminating the ripples, wiggles and extrusion die lines and stresses, and then cooling the sheet while reducing the pressure to fix the mirror finish in the sheet surfaces as the sheet contracts and solidifies.

3,937,864
HEAT-SENSITIVE RECORDING SHEETS HAVING IMPROVED STABILITY

Isao Kohmura, and Kiyoshi Futaki, both of Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Sept. 4, 1973, Ser. No. 394,012

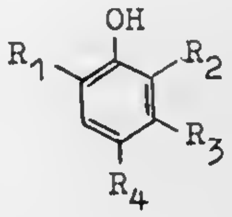
Claims priority, application Japan, Sept. 4, 1972, 47-87944

Int. Cl.² B41M *5/00*

U.S. Cl. 428—411 **4 Claims**

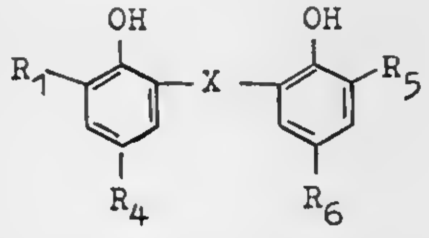
1. Heat-sensitive recording sheets having an improved stability comprising a colorless or pale-colored chromogenic compound and an organic acid for coloring said chromogenic compound by heating, which contain at least one phenol derivative different from said chromogenic compound and said organic acid, which phenol derivative is present in an amount of 10 to 500 wt % based on the weight of chromogenic compound and increases the stability of the colored reaction product of the chromogenic compound and is selected from the group consisting of

(Formula I)

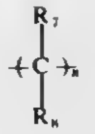


(wherein R_1 represents a branched alkyl group having 3 to 8 carbon atoms, R_2 and R_3 represent each a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R_4 represents a hydroxyl group, an alkyl group having 1 to 8 carbon atoms or an alkoxy group),

(Formula II)



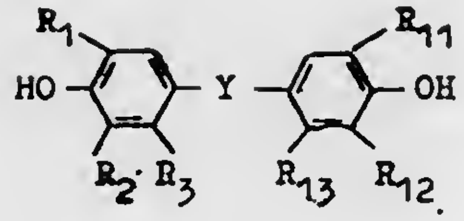
(wherein R_1 and R_5 represent each a branched alkyl group having 3 to 8 carbon atoms, R_4 and R_6 represent each an alkyl group having 1 to 8 carbon atoms, and X represents S, O, SO_2, S_2 or



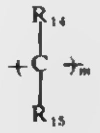
$$\left(\overset{R_7}{\underset{R_8}{C}} \right)_n$$

wherein *n* is an integer of 0 to 3, and R_7 and R_8 represent each a hydrogen atom or an alkyl group having 1 to 8 carbon atoms or R_7 and R_8 form a cyclopentamethylene group by binding together)

(Formula III)



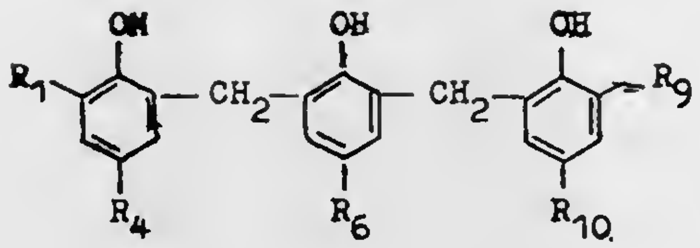
(wherein R_1 and R_{11} represent each a branched alkyl group having 3 to 8 carbon atoms, R_2, R_3, R_{12} and R_{13} represent each a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and Y represents S, O, SO_2, S_2 or



$$\left(\overset{R_{14}}{\underset{R_{15}}{C}} \right)_m$$

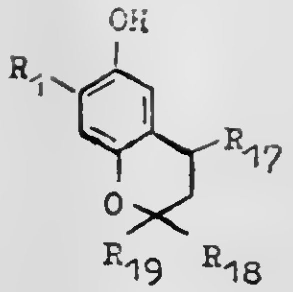
wherein *m* represents an integer of 0 to 3, and R_{14} and R_{15} each represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, or R_{14} and R_{15} form a cyclopentamethylene group by binding together),

(Formula IV)



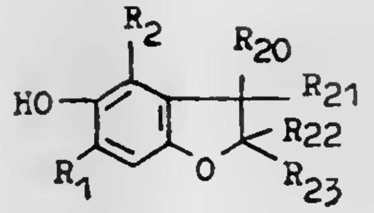
(wherein R_1 and R_9 represent each a branched alkyl group having 3 to 8 carbon atoms, and R_4, R_6 and R_{10} represent each an alkyl group having 1 to 8 carbon atoms),

(Formula V)



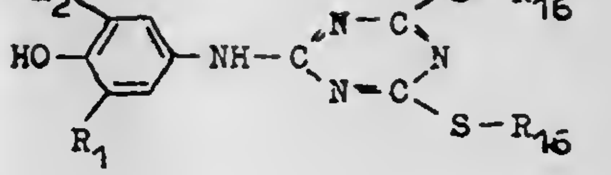
(wherein R_1 represents a branched alkyl group having 3 to 8 carbon atoms, R_{17} represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, and R_{18} and R_{19} represent each an alkyl group having 1 to 8 carbon atoms),

(Formula VI)



(wherein R_{20}, R_{21}, R_{22} and R_{23} represent each a hydrogen atom or an alkyl group having 1 to 18 carbon atoms, and R_1 represents a branched alkyl group having 3 to 8 carbon atoms, R_2 represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms), and

(Formula VII)



(wherein R_1 and R_2 represent each a branched alkyl group having 3 to 8 carbon atoms, and R_{16} represents an alkyl group having 1 to 18 carbon atoms).

3,937,865

REINFORCED PLASTICS CARRIER FOR PRINTED CIRCUITS

Hendrik Jongetjes, Heemskerk, Netherlands, assignor to Koninklijke Papierfabrieken Van Gelder Zonen N.V., Amsterdam, Netherlands

Continuation of Ser. No. 196,782, Nov. 8, 1971, abandoned. This application Jan. 25, 1974, Ser. No. 436,669

Claims priority, application Netherlands, Nov. 11, 1970, 7016489

Int. Cl.² B32B ***17/04*;** **D21H** ***5/18***

U.S. Cl. 428—413 **4 Claims**

1. A process for making an insulating sheet for printed circuits, which comprises the steps of forming a 0.005–0.05% suspension of fibers and particulate binder in water, said fibers being fibers of E glass 5–30 mm long and 5–15 μ thick and said binder being a particulate polyvinyl alcohol having a degree of hydrolization of 98–100%, being present in the amount of 5–25% based upon weight of the glass fibers, said binder having a particle size of 50–180 mμ and a degree of swelling of 20°C of 3–8, and having a viscosity measured as a 4% solution in water at 20°C. of 20–100 cP; processing this suspension on a fiber web making machine by dewatering to form a non-woven glass fiber web; drying said glass fiber web by heating to a temperature of 85°–100°C to dissolve the polyvinylalcohol granules in their own swelling water and subsequently further heating to an increased temperature to evaporate the water and dehydrate and harden the polyvinyl alcohol; impregnating a plurality of said glass fiber webs with a solution of an epoxy resin and hardener in acetone, evaporating the acetone; arranging said plurality of webs as a laminate; and compressing said webs into an insulating sheet laminate at elevated pressure and temperature.

3. A laminate for printed circuit boards, made by the process of claim 1, the electrical characteristics of which fully satisfy the DIN standard for a G-10 laminate.

ELECTRICAL

3,937,866

PROCESS OF STRIKING AN ARC FOR A PLASMA BEAM INSIDE AN ENCLOSURE AND A STICK-ELECTRODE FOR CARRYING OUT THE PROCESS

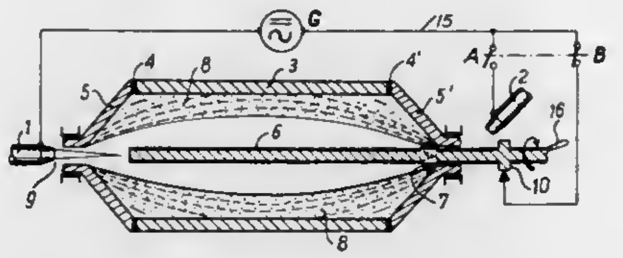
Jean Albert Sunnen, and Henry Rene Schoumaker, both of Brussels, Belgium, assignors to La Soudure Electrique Autogene, Procedes Arcos, Anderlecht, Belgium

Filed Sept. 3, 1974, Ser. No. 502,825

Claims priority, application Belgium, Oct. 17, 1973, 136776

Int. Cl.² H05H ***1/26***

U.S. Cl. 13—9 R **2 Claims**



1. A process of striking a plasma beam at high temperature, which is practiced in an enclosure with two torches having nozzles and located at opposite ends of the said enclosure and outside said enclosure and windows associated with the torches, which comprises introducing a stick-electrode lengthwise through the window associated with one of the torches and brought near the opposite torch until the plasma hooks to the stick-electrode, thereby closing between the nozzle of the one torch and the stick-electrode a circuit of superimposed current, pulling the stick-electrode out progressively from the enclosure, carrying with it the plasma beam until it meets with a second torch which is energized at the very moment the extraction of the stick-electrode is completed, in order to transfer the superimposed current to its nozzle, and disconnecting the stick-electrode and closing the laminar plasma flow circuit.

3,937,867

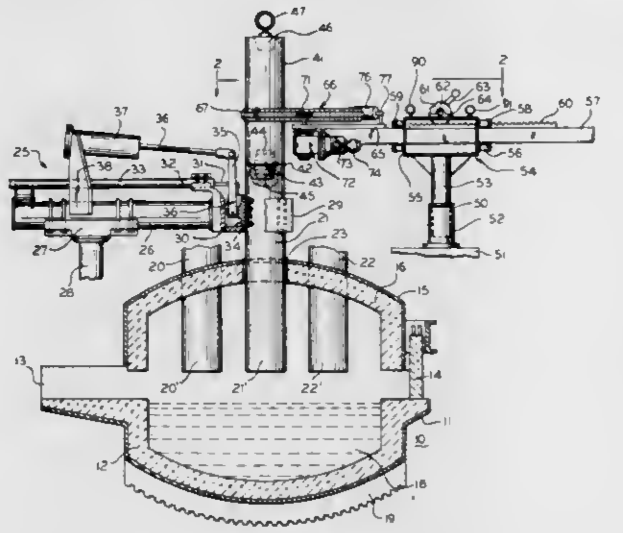
COUPLER FOR ELECTRIC FURNACE ELECTRODES

Peter J. Wynne, Pittsburgh, Pa., assignor to Lectromelt Corporation, Pittsburgh, Pa.

Filed Sept. 23, 1974, Ser. No. 508,510

Int. Cl.² H05B ***7/10***

U.S. Cl. 13—18 **23 Claims**



1. A device for coupling a new furnace electrode section to another electrode section previously operatively associated with said furnace comprising:

a. a flexible means for being formed into a loop to enclose at least one of said electrode sections and to dispose at least a portion of said flexible means in gripping engagement with at least a portion of the periphery of one electrode section, and

b. means for translating said flexible means to effect turning of said at least one electrode section when said flexible means is in gripping engagement therewith.

3,937,868

INDUCTION MELTING FURNACE

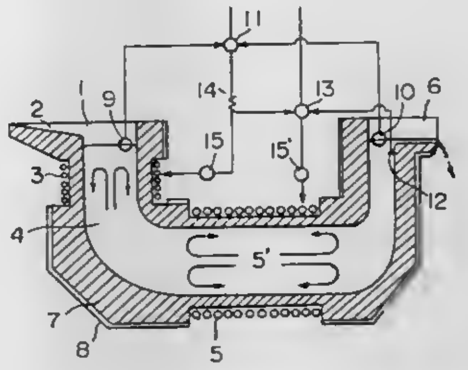
Ryuichi Nakagawa; Shiro Yoshimatsu, both of Tokyo; Akira Fukuzawa, Yokohama; Akira Sato, Omiya; Tatsuro Mitsui, Sagamihara; Takuya Ueda, Zushi, and Tsuyosho Ozaki, Tokyo, all of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Division of Ser. No. 404,901, Oct. 10, 1973. This application June 28, 1974, Ser. No. 484,153

Claims priority, application Japan, Oct. 11, 1972, 47-101125

Int. Cl.² H05B ***5/16***

U.S. Cl. 13—26 **3 Claims**



1. An induction melting furnace for melting unmelted material introduced therein into molten metal already in the furnace, comprising:

a material charging section having an auxiliary induction coil, said auxiliary induction coil promoting melting of the material by induction heating of the material while in the material charging section;

a main melting section having a main induction coil for melting metal in the main melting section by induction heating;

a molten metal effluent section;

means for measuring the temperature of the metal at the molten effluent section; and

means for regulating power supplied to the induction coil of the melting section according to the temperature measured at the molten metal effluent section, to thereby control the temperature of the molten metal effluent.

3,937,869

FORCE SENSING CONTROL APPARATUS AND METHOD FOR ELECTRIC ARC FURNACES

Kegham M. Markarian, University Heights, and Thomas M. Maloney, Cleveland, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Oct. 8, 1974, Ser. No. 513,124

Int. Cl. H05b ***7/00***

U.S. Cl. 13—13 **17 Claims**

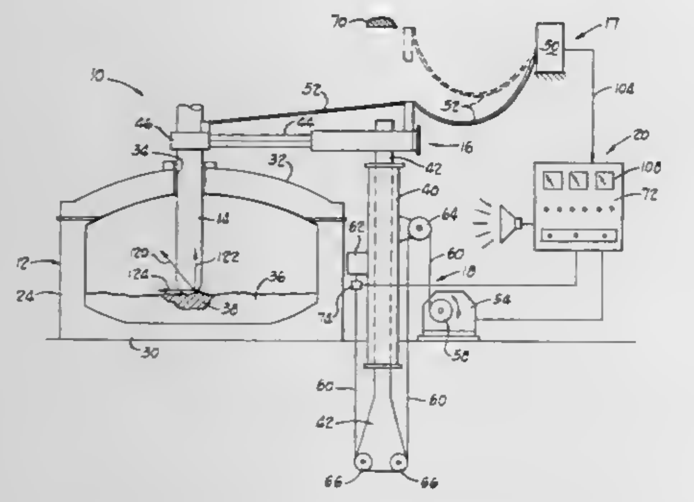
1. In an electric arc furnace system:

a. an electrode system comprising an electrode projecting into a furnace along an axis and electrode support structure supported for movement relative to said furnace in directions parallel to said axis;

b. drive means for movably positioning said electrode system relative to said furnace;

c. force sensing means cooperating with said electrode system for detecting changes in forces applied to said electrode system, said force sensing means producing force signals which vary as a function of changes in the direction, magnitude and rate of change of magnitude with respect to time of the components of detected force changes acting parallel to said axis; and,

d. force responsive control means for said drive means, said force responsive control means comprising:
   i. discriminating means for discriminating between force signal values having at least a predetermined rate of change with respect to time caused by said electrode system encountering an obstruction to its movement in said furnace and force signal values having less than said predetermined rate of change with respect to time resulting from weight or positional changes of said electrode system; and,
   ii. control signal means for producing an output control signal for terminating operation of said drive means when said discriminating means detects a force signal caused by an obstruction.



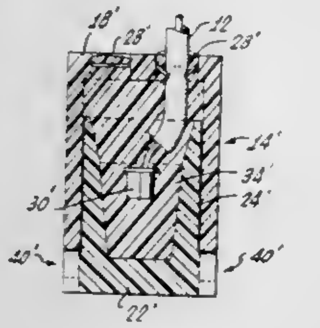
3,937,870
DEVICE FOR INSULATING AN ELECTRICAL WIRE JOINT

John Bumpstead, Glendora, and Robert B. Costa, Covina, both of Calif., assignors to Clemar Manufacturing Corporation, Glendora, Calif.

Continuation-in-part of Ser. No. 495,878, Aug. 8, 1974, abandoned, which is a continuation of Ser. No. 322,851, Jan. 11, 1973, abandoned. This application Mar. 18, 1975, Ser. No. 559,429

Int. Cl.² H02G *15/08*

U.S. Cl. 174—87 **11 Claims**



1. In a device protecting the joined ends of two or more electrical conductors, and which includes a tubular casing having a side wall, an end wall, and an open end, and a closure member assembled with the casing and having an end wall closing the open end of the casing and defining therewith an internal space, at least two passageways through one of the end walls to the internal space, at least two conductors projecting through the passageways and electrically joined within the internal space, and a bonding compound disposed within the internal space, the improvement comprising:

a plurality of generally radially inwardly extending flexible tabs disposed on the inner sidewalls of said passageways centering and holding the electrical conductors and substantially impeding the flow of uncured bonding compound out of said internal space.

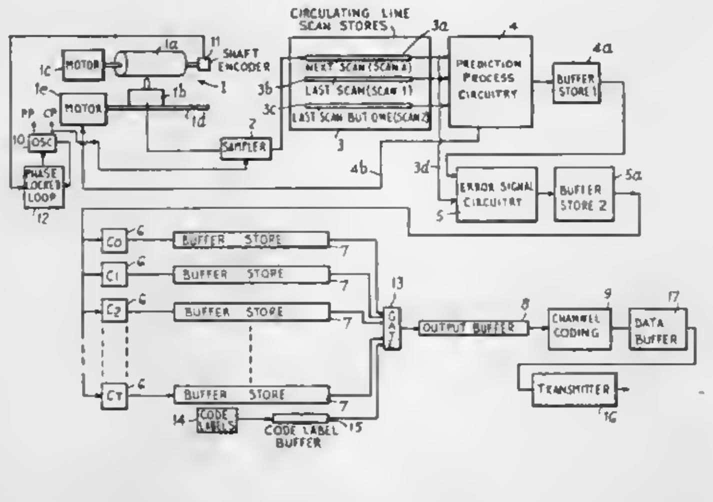
3,937,871
CODE COMMUNICATION

Alfred Henry Robinson, London, England, assignor to International Publishing Corporation Limited, London, England

Filed Mar. 26, 1973, Ser. No. 344,765

Int. Cl.² H04N *7/12;* H03K *13/22*

U.S. Cl. 178—6 **3 Claims**



3. A method of code communication for a source of message symbols, comprising the steps of:

accepting successive groups of message symbols from said source,

predicting from said accepted groups the positions of transitions of signal level in a succeeding group of message symbols by using a polynomial curve fitting procedure to fit polynomial curves to transitions of signal level in at least one preceding group of message symbols, said positions of transitions of signal level being predicted to lie on said curves fitted to said transitions,

generating an error signal corresponding to the difference between said succeeding group of message symbols and the prediction of said following group of message symbols,

and coding the error signal for transmission to a receiving device.

3,937,872
INTERNAL TEST METHOD FOR FACSIMILE TRANSCEIVER

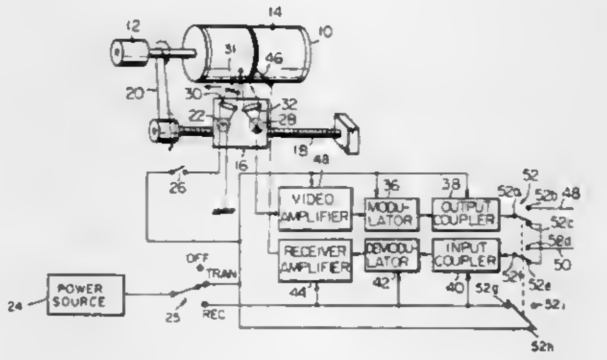
Mitsuru Kondo, and Toshihiko Misawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed May 1, 1974, Ser. No. 465,793

Claims priority, application Japan, May 8, 1973, 48-50951

Int. Cl.² H04N *1/06, 1/32*

U.S. Cl. 178—6 **10 Claims**



1. A method of testing a facsimile transceiver having a transmitter section with a light source to illuminate the copy and a receiver section, the method comprising the steps of:

energizing both the transmitter section and the receiver section;

connecting the output of the transmitter section to the input of the receiver section; and

varying the intensity of the lights source; whereby

the correlation between the pattern produced by the receiver section and the variation in intensity of the light source is an indication of the normality of operation of the transceiver.

3,937,873
ENGRAVING MACHINES

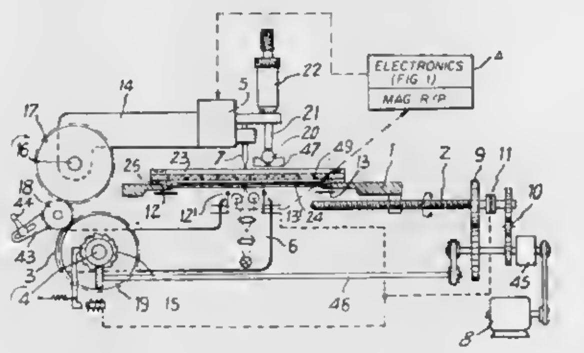
Paul E. Gastineau, 24 rue Mansart, 22000, Saint-Brieuc, France

Filed Apr. 22, 1974, Ser. No. 463,064

Claims priority, application France, Apr. 25, 1973, 73.14912

Int. Cl.² H04N *1/10, 1/24*

U.S. Cl. 178—6.6 B **25 Claims**



1. A method of automatically forming watermark engravings, in which an optical reading head is coupled with an engraving head provided with an oscillating stylet which are both moved with a longitudinal scanning motion combined with an intermittent transverse motion respectively relative to a model and a plate to be engraved which are in fixed relative position, wherein the maximum amplitude of oscillation of the stylet is of the order of 3 to 4 mm and engraving is effected in successive identical passes, the distance between the engraving head and the plate being decreased progressively in successive stages by a maximum depth of the order of 0.2 mm.

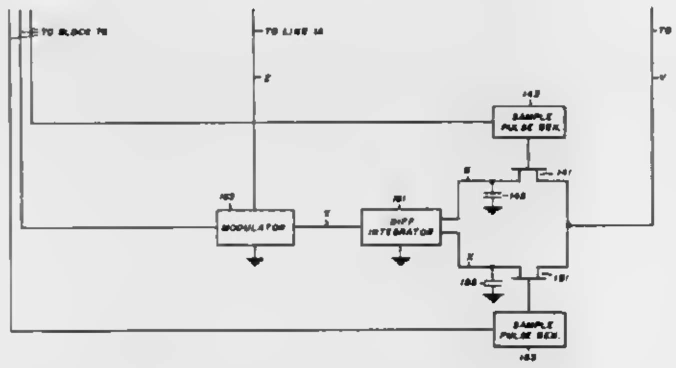
3,937,874
OFFSET VOLTAGE CORRECTION CIRCUIT FOR MULTIPLE VIDEO CHANNEL IMAGER

Joseph Carbone, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Jan. 9, 1975, Ser. No. 539,897

Int. Cl.² H04N *3/16;* H01L *29/78;* H03B *1/00*

U.S. Cl. 178—7.1 **16 Claims**



1. An imaging system comprising

a. a two-dimensional array of sensing sites of MIS cell pairs, said sensing sites being arranged in a matrix of rows and columns;

b. a plurality of column lines, each connected respectively to the sensing sites of each column, said lines arranged in a plurality of consecutively numbered sets, each set including the same number of consecutively numbered lines;

c. a plurality of charge integrating means connected to one of said lines of each set, respectively, for simultaneous readout of charges through the lines of at least one said set;

d. switch means for connecting each said set, in turn, for readout;

e. a plurality of video channel circuits, respectively, in circuit with each said integrating means for respectively transmitting an output signal from each said integrating means; and

f. a correction circuit means in circuit with said plurality of video channel circuit means for generating a correction signal to cancel a D.C. offset voltage between the output signals on said video channel circuit means.

3,937,875
SYSTEMS FOR ELIMINATING HIGH-FREQUENCY DISTURBANCES IN TELEVISION CAMERAS

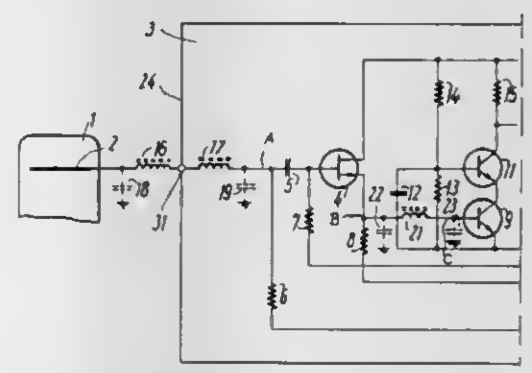
Mohamed Marey, Gross-Gerau, and Klaus Pollath, Nieder-Ramstadt, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Aug. 15, 1974, Ser. No. 497,705

Claims priority, application Germany, Sept. 1, 1973, 2344154

Int. Cl.² H04N *5/21*

U.S. Cl. 178—7.2 **4 Claims**



1. In a television camera system comprising a television camera tube with a signal electrode for providing a video signal, a first amplifier stage having an input terminal and connected for receiving and for amplifying the video signal to provide an amplified video signal at a first stage output terminal, and a second amplifier stage having a second stage input terminal for receiving the amplified video signal from the first stage output terminal and for further use in any conventional manner, and wherein there are parasitic capacitances to ground respectively from the signal electrode, the first stage input terminal, the first stage output terminal, and the second stage input terminal, the improved system for eliminating the effects of stray transmitted television signals from the amplified video signal comprising:

A. a first inductance inserted between the signal electrode and the first stage input terminal and forming, together with the parasitic capacitances to ground respectively from the signal electrode and from the first stage input terminal, a first low-pass filter having a cutoff frequency above the frequency of the video signal but below the frequency of the stray transmitted television signals,

B. a second inductance inserted between the first stage output terminal and the second stage input terminal and forming, together with the parasitic capacitance to ground respectively from the first stage output terminal and the second stage input terminal, a second low-pass filter having a cutoff frequency above the frequency of the video signal but below the frequency of the stray transmitted television signals, and

C. A shield means for completely blocking off the amplifier stages from stray transmitted television signals.

3,937,876
PICTURE DISPLAY APPARATUS INCLUDING A LINE PHASE DISCRIMINATOR FOR GENERATING A CONTROL VOLTAGE

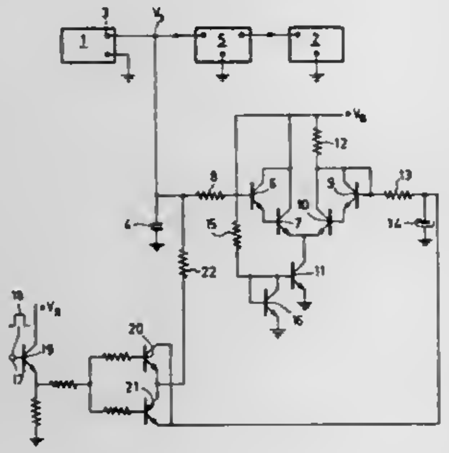
Willem Hendrik Amsen, and Paulus Joseph Maria Hovens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 11, 1971, Ser. No. 197,886

Claims priority, application Netherlands, Nov. 24, 1970, 7017137

Int. Cl.² H04N *5/04*

U.S. Cl. 178—7.3 R **3 Claims**



1. A circuit comprising a line phase discriminator having an output means for supplying a control voltage, integrator means having an input coupled to said discriminator output and an output means for supplying an integrated control voltage, a field frequency periodically operating switching means coupled between said outputs and a separating circuit means coupled between said outputs for isolating said discriminator from said integrator.

3,937,877
POSITION INDICATING DEVICE

Hien Vodinh, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

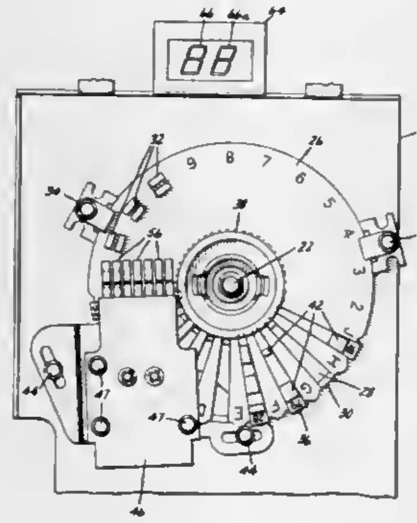
Continuation-in-part of Ser. No. 456,401, March 27, 1974, abandoned. This application Apr. 17, 1974, Ser. No. 461,665

Int. Cl.² H04N *3/16*

U.S. Cl. 178—7.3 R **5 Claims**

1. Television receiver channel numeral indicating apparatus comprising,

- tuner means for receiving a television signal and having a tuner shaft rotatable to any of a plurality of positions, each position corresponding to a respective television transmitted channel,
- disc means attached to said tuner shaft and rotatable therewith,
- a plurality of slot means being placed in said disc means,
- a plurality of cam sticks, each stick having a cam surface, said cam sticks insertable into and removable from a respective slot means,
- a leaf switch panel fixedly mounted to the television receiver chassis and carrying in a cantilever manner a plurality of leaf switches,
- said panel being positioned so that the free end of said leaf switches are in registration with the cam surfaces of said cam stick, as said tuner shaft is rotated,
- multi-segment display means having a plurality of individual segments being located on said television receiver at a readily viewable position,
- means for illuminating each of said segments,
- each of said leaf switches being in operable relation to said means for illuminating a segment of said display means,



- said cam surfaces being configured to operate those switches which will illuminate the segments to numerically identify on said display means the tuner channel selected.

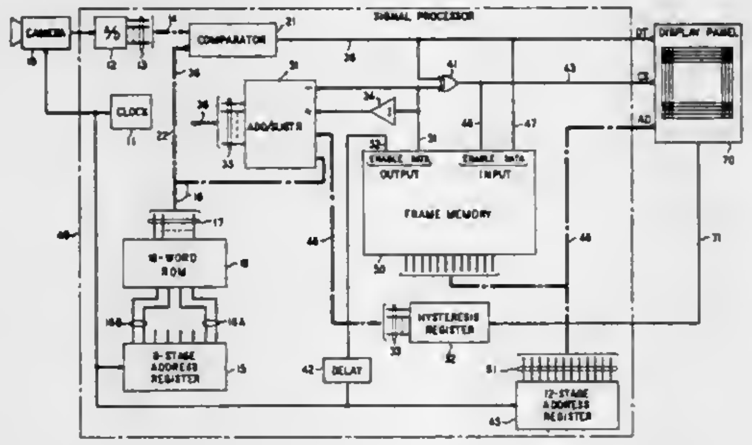
3,937,878
ANIMATED DITHERED DISPLAY SYSTEMS

Charles Norris Judice, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 21, 1975, Ser. No. 542,863

Int. Cl.² H04N *3/14*

U.S. Cl. 178—7.3 D **15 Claims**



1. In a display system including a plurality of selectively energized and de-energized bi-level display cells to which are assigned respective dither threshold values, a method for representing a matrix of picture elements each having a predetermined intensity and each corresponding to a respective one of said display cells, said method comprising the steps of

- accessing a de-energized one of said cells only if the intensity of the corresponding picture element bears a first predetermined relationship to the dither threshold value assigned to that cell, and
- accessing an energized one of said cells only if the intensity of the corresponding picture element bears a second predetermined relationship to the dither threshold value assigned to that cell.

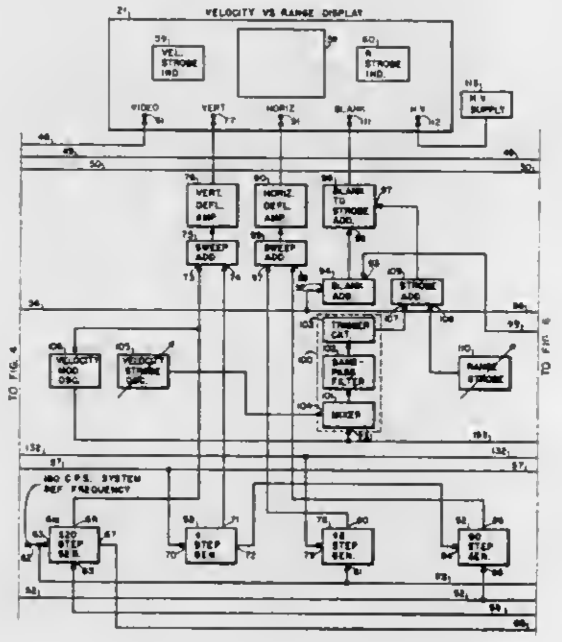
3,937,879
INFORMATION DISPLAY SYSTEM HAVING MAIN AND AUXILIARY SWEEPS

Garold K. Jensen, Pinecrest, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 29, 1965, Ser. No. 476,782

Int. Cl.² H04N *3/16, 5/44*

U.S. Cl. 178—7.5 R **15 Claims**



1. A display system for multi-dimensional information comprising:

- display means having an input, horizontal deflection circuit, and vertical deflection circuit;
- means for applying information having at least first and second dimensions to said input, said first dimension of said information having a first frequency, said second dimension of said information having a second frequency;
- means for applying a first sweep signal to one of said deflection circuits, said first sweep signal having a frequency equal to a multiple of said first frequency;
- means for applying a second sweep signal to said one deflection circuit, said second sweep signal having a frequency different from the frequency of said first sweep signal; and
- means for applying a third sweep signal to the other of said deflection circuits, said third sweep signal having a frequency equal to a multiple of said second frequency.

3,937,880
MAGNETIC DISC CODER-DECODER

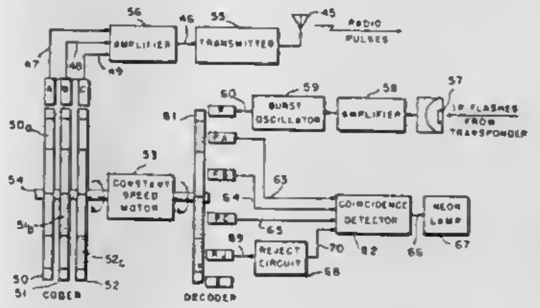
Vesper A. Schlenker, Moorestown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 5, 1957, Ser. No. 700,919

Int. Cl.² G08C *19/16;* H04L *9/00*

U.S. Cl. 178—22 **8 Claims**

1. A magnetic disc coder-decoder comprising a rotatable magnetic disc means, said disc means being adapted to have a code comprising a plurality of tone bursts recorded thereon, means for rotating said disc means, means for taking said tone burst from said disc means and transmitting said code in the form of pulses of radiant energy, means for receiving transponder reply pulses in the form of coded infrared flashes, means for converting said infrared flashes to tone bursts, means for recording said tone bursts on said disc means, a coincidence detector, means for taking said tone bursts from said disc means for applying said tone bursts to said coincidence detector, said coincidence detector providing a single pulse output only when simultaneous application thereto of a predetermined number tone bursts.



3,937,881
METHOD OF AND SYSTEM FOR TRANSCODING BINARY SIGNALS WITH REDUCED CHANGEOVER RATE

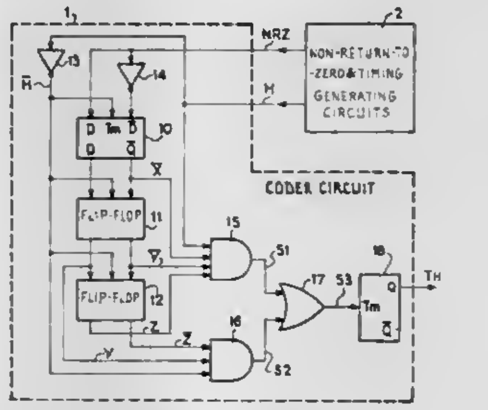
Thaddeus Hawkes, Paris, France, assignor to Thomson-CSF, Paris, France

Filed June 18, 1974, Ser. No. 480,398

Claims priority, application France, June 22, 1973, 73.22878

Int. Cl.² H04L *15/00*

U.S. Cl. 178—68 **10 Claims**



1. A method of converting a series of bits into a binary signal with a reduced changeover rate, comprising the steps of:

- temporarily storing successive bits of a bit stream coinciding with respective clock cycles;
- generating a two-level signal voltage;
- changing the level of said signal voltage in the middle of a clock cycle upon a shift from a first kind of bit to a second kind of bit in said bit stream;
- changing the level of said signal voltage at the end of a clock cycle upon the occurrence of said first kind of bit in a succession of a plurality of bits of said first kind following a shift from a bit of said second kind in said bit stream; and
- keeping constant the level of said signal voltage in all other instances.

3,937,882
FULL-DUPLEX COMMUNICATION SYSTEM ON A TWO WIRE LINE

John A. C. Bingham, Palo Alto, Calif., assignor to Vadic Corporation, Mountain View, Calif.

Filed Apr. 11, 1974, Ser. No. 460,179

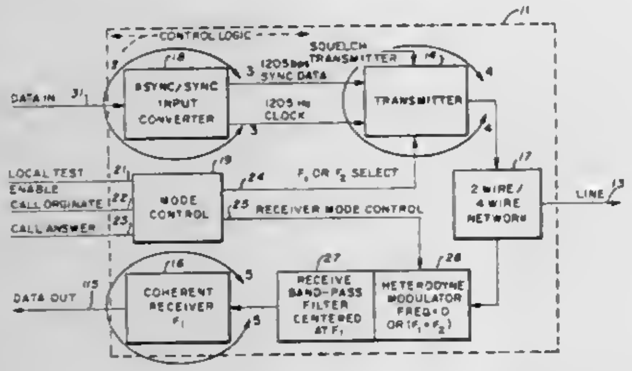
Int. Cl.² H04L *5/14;* H04M *11/00*

U.S. Cl. 178—69.5 R **12 Claims**

1. In a full-duplex modem for communicating over a two wire circuit;

transmitter means to be connected to the two wire circuit for transmitting a data stream thereover at a first carrier frequency;

receiver means to be connected to the same two wire circuit at the location of said transmitter means for receiving a data stream thereover at a second carrier frequency simultaneously with transmission of data by said transmitter means;



said transmitter means including means for synchronously encoding and modulating the data of the data stream to be transmitted at the first carrier frequency; and

said receiver means including means for coherently detecting the data in the data stream received at the second carrier frequency.

3,937,883
BRAKING CIRCUIT FOR USE WITH PHASE SYNCHRONIZING CIRCUITRY

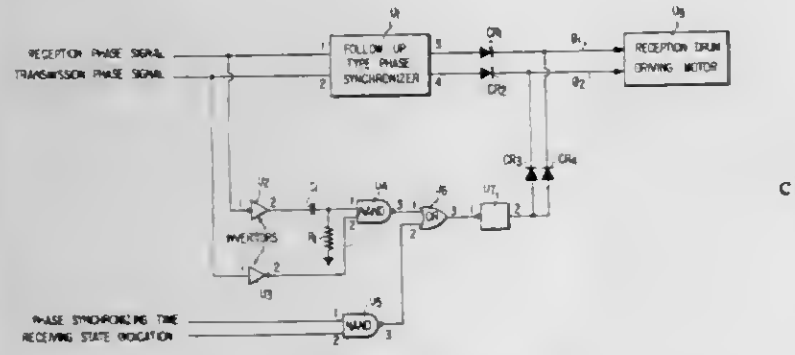
Kenji Tanimoto, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed July 26, 1974, Ser. No. 492,907

Claims priority, application Japan, Aug. 17, 1973, 48-91693

Int. Cl.² H04L *7/00;* **H02P** *5/16*

U.S. Cl. 178—69.5 F **4 Claims**


RECEPTION PHASE SIGNAL
TRANSMISSION PHASE SIGNAL
FOLLOW UP TYPE PHASE SYNCHRONIZER
CR1
CR2
RECEPTION DRUM DRIVING MOTOR
CR3
CR4
INVERTORS
NAND
OR
PHASE SYNCHRONIZING TIME RECEIVING STATE INDICATION
NAND

1. A circuit which synchronizes a motor at the receiving end of a communication link with one at the transmitting end thereof, said receiving end including means responsive to a receiving end motor for generating a reception phase signal and said transmitting end including means responsive to a transmitting end motor for generating a transmission phase signal, said circuit comprising

a phase synchronizing circuit for repeatedly applying to the main coils of the receiving end motor reduced frequency signals having a lower frequency than the rated frequency thereof to thereby reduce the phase deviation between the receiving and transmitting end motors, and

a braking circuit for enhancing the speed and accuracy of said phase synchronizing circuit, said braking circuit including means responsive to said reception phase signal for applying for a predetermined period of time a direct-current voltage to said main coils of the receiving end motor in lieu of said reduced frequency signals,

said phase synchronizing circuit generating said reduced frequency signal in response to said reception phase signal and said braking circuit including means for preventing said reduced frequency signal from being applied to said main coils while said direct-current voltage is being applied thereto,

said phase synchronizing circuit ceasing the generation of said reduced frequency signal in response to said transmission phase signal, said braking circuit including means for permitting the application of said reduced frequency signal to said main coils subsequent to the termination of said direct-current voltage but prior to the occurrence of said transmission phase signal whenever said transmission phase signal occurs subsequent to the termination of said direct-current voltage.

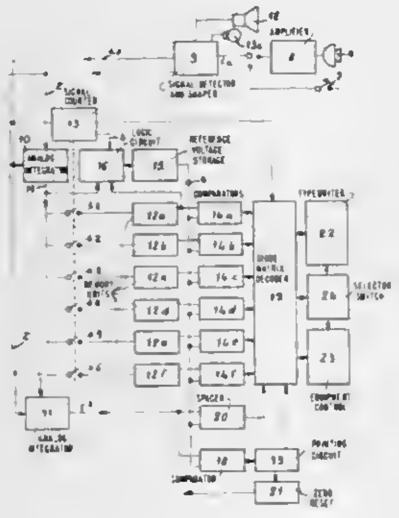
3,937,884
DECODING EQUIPMENT ESPECIALLY FOR A TYPEWRITER INTENDED FOR HANDICAPPED PERSONS

Jean Richez, Geneva, Switzerland, assignor to Rotary Cluh Geneve SUD, Carouge, Switzerland

Filed July 2, 1974, Ser. No. 485,980

Int. Cl.² G10L *1/16*

U.S. Cl. 179—1 SE **12 Claims**



1. A decoding control device for controlling an electrical circuit in response to a coded control signal, comprising

a receiver able to receive a control signal having successive short or long elements and comprising at least one short and one long element,

identifying means for identifying each element of a control signal so received as short or long by comparison of a signal derived from the element with a reference signal having a value dependent on a signal derived from at least one other element of the control signal, means for producing the reference signal, and means for producing for each element an identifying signal having a value corresponding to the identification of the element as short or long,

and a decoder responsive to a permutation of the identifying signals thereby to control an electrical circuit.

3,937,885
CONTROL CIRCUIT FOR A MATRIXED FOUR CHANNEL AUDIO REPRODUCING SYSTEM

Michael J. Gay, Geneva, Switzerland, assignor to Motorola, Inc., Chicago, Ill.

Filed Sept. 6, 1974, Ser. No. 503,833

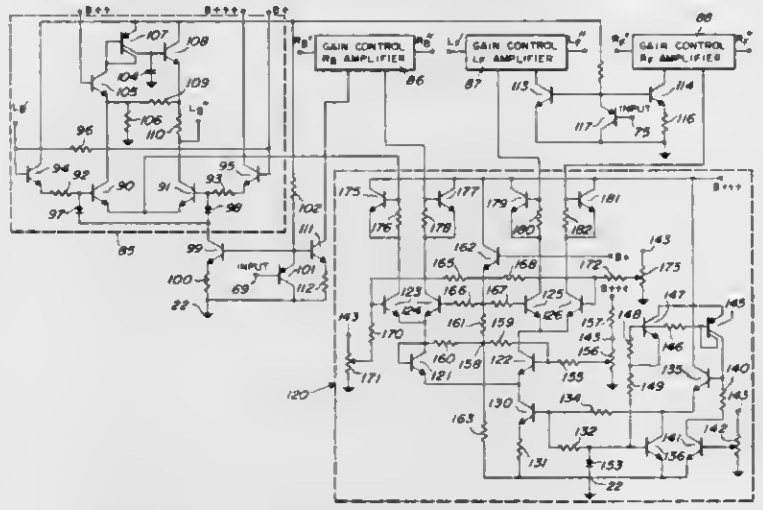
Int. Cl. H04r *5/00*

U.S. Cl. 179—1 GQ **14 Claims**

1. In an audio reproducing system having a plurality of speakers driven by signals from four channels, which signals are derived from a two-channel input, a control circuit comprising:

a. logic circuitry for separating the four channels into two pairs of channels and determining which signals in the two pairs of channels are dominant and providing output signals indicative thereof;

b. adjustable enhancement circuitry connected to receive the output signals from said logic circuitry and providing a pair of output signals for substantially increasing the output of the speakers driven by the dominant channels and reducing the output of the remaining speakers, said enhancement circuitry including first and second amplifier sections connected together so that the output voltage of one section increases as the output voltages of the other section decreases and vice versa, the output voltage of said sections being controlled by the output signals from said logic circuitry, said amplifier sections being constructed so that the output voltage of either section can only decrease to a minimum predetermined value,


GAIN CONTROL R_B AMPLIFIER
GAIN CONTROL L_F AMPLIFIER
GAIN CONTROL R_F AMPLIFIER
INPUT
INPUT

and said amplifier sections further being constructed so that the decrease of output voltage in either section occurs substantially more rapidly than the increase of output voltage in the other section;

c. four gain control amplifiers each connected to a different channel and connected to drive a speaker associated with that channel, said gain control amplifiers further being connected in pairs and each pair being connected to receive one of the output signals from said adjustable enhancement circuitry for substantially increasing the drive provided by one pair of amplifiers while reducing the drive provided by the remaining pair of amplifiers in accordance with the output signals of said enhancement circuitry; and

d. balance and volume control circuitry connected to said gain control amplifiers for controlling the drive to each of said amplifiers relative to each of the other amplifiers.

3,937,886
POWER SUPPLY SWITCHING CIRCUIT FOR COMBINED AUDIO SYSTEM

Takahiko Saito, Kamakura; Koichi Iwase, Chofu, and Shojiro Shimada, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 13, 1974, Ser. No. 505,623

Claims priority, application Japan, Sept. 19, 1973, 48-109689[U]

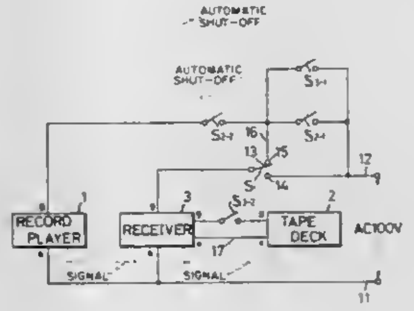
Int. Cl.² H04B *1/00*

U.S. Cl. 179—1 SW **10 Claims**

1. In a combined audio system including main audio apparatus having an amplifier and auxiliary audio apparatus connected to said main audio apparatus and having automatic shut-off means, a power supply circuit comprising:

main switch means connected between said main audio apparatus and a source of power and being operable to a first position for connecting said source to said main audio apparatus for energizing said main audio apparatus, and to a second position;

auxiliary switch means comprised of at least first and second series-connected interlocked switch means connected between said auxiliary audio apparatus and said source of power to selectively supply power from said source to said auxiliary audio apparatus, said first and second switch means being opened by said automatic shut-off means for de-energizing said auxiliary audio apparatus; and



means for connecting said main switch means in series with one of said first and second switch means such that power is selectively supplied to said main audio apparatus through said main switch means and said one switch means when said main switch means is operable to said second position.

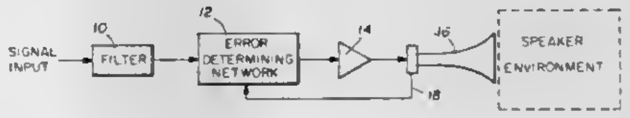
3,937,887
ACOUSTIC POWER SYSTEM

Francis A. Miller, Lawton, Okla., assignor to Ben O. Key, Lawton, Okla.

Filed May 15, 1969, Ser. No. 824,791

Int. Cl.² H04M *1/00*

U.S. Cl. 179—1 F **5 Claims**



1. The amplifier and loudspeaker system comprising:

a loudspeaker having a voice coil for producing acoustic energy in response to a current applied thereto;

an amplifier having an input and an output and an output impedance of the same order-of-magnitude as that of the speaker;

a first capacitor coupling the output of the amplifier to the loudspeaker;

an input network comprising a transistor with collector, base and emitter bias resistors, the base of the transistor being the input and the collector being the output;

a second capacitor coupling the output of the input network to the input of the amplifier; and

feedback means substantially capacitively coupling the terminal of the speaker to which the output of the amplifier is coupled to the emitter of the transistor of the input network.

3,937,888
SIGNAL TRANSMISSION WITH SECRECY

Oscar Myers, Mount Vernon, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

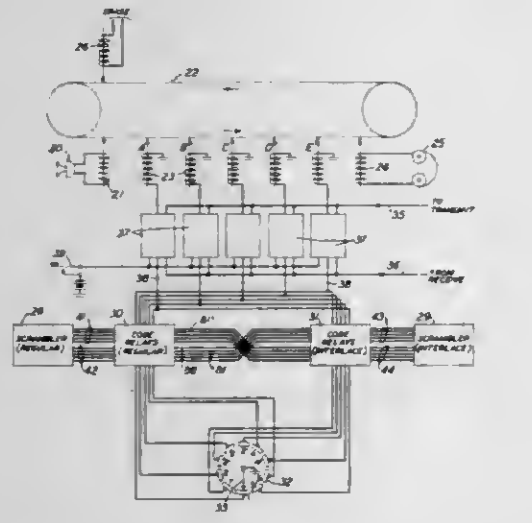
Filed July 17, 1943, Ser. No. 495,127

Int. Cl.² H04K *1/06*

U.S. Cl. 179—1.5 C **12 Claims**

1. In a privacy system in which the signals are divided into fragments on a time basis and the different fragments are delayed in transmission by different amounts to afford privacy, a timing means having a timing cycle divided into several periods, a relay individual to each period and individually operated during its respective period by said timing means, a

plurality of delay devices to introduce delay into said signals, means controlled by said timing means to select a delay device for each timing period, and means jointly controlled by said relays and selecting means to operate the selected devices.



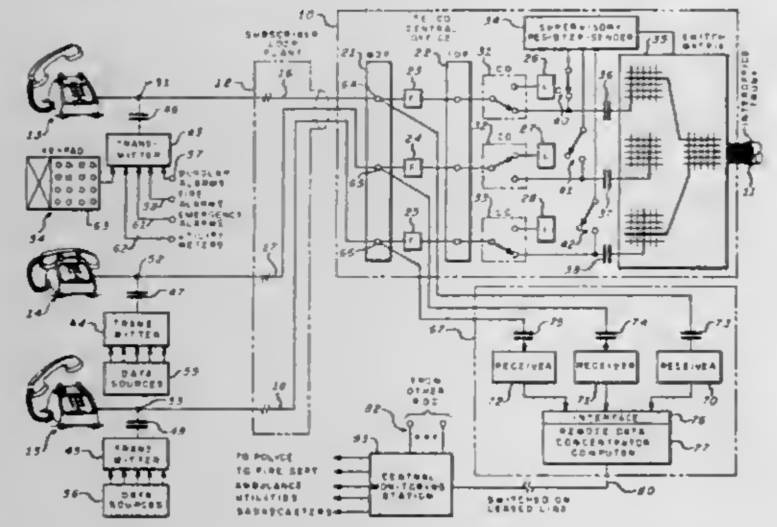
3,937,889
DATA COMMUNICATION APPARATUS FOR USE IN A TELEPHONE SYSTEM

William W. Bell, III, Sands Point, and Peter K. Shizume, Hicksville, both of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 15, 1973, Ser. No. 323,563

Int. Cl.² H04M *11/00*

U.S. Cl. 179—2 DP 6 Claims



1. A data communication system for use with the public telephone voice communication system including a plurality of telephone company central offices each with switching matrix means, inter-office trunk line means inter-coupling said switching matrix means of said central offices, a plurality of subscriber telephones associated with each central office, a subscriber loop plant having a plurality of subscriber loops connecting said telephones with said associated central office respectively, the data communication system comprising:

- data sources at the locations of said telephones respectively for providing date to be transmitted,
- data transmitters at the locations of said telephones respectively having inputs coupled to said data sources for receiving said data to be transmitted and having respective outputs for providing data signals representative of said data at frequencies above the standard telephone voice transmission frequency band of said telephone system,
- first bridge taps connected to said subscriber loops at the locations of said telephones respectively,
- first capacitors coupling said outputs of said transmitters to said first bridge taps respectively, thereby coupling said data signals to said subscriber loops respectively,
- second bridge taps connected to said subscriber loops respectively at said central offices,
- second capacitors coupled to said second bridge taps respectively,
- data receivers at the locations of said central offices having inputs coupled through said second capacitors to said second bridge taps respectively for receiving said data signals and having outputs for providing received data corresponding to said received data signals,
- low pass filters coupled between said second bridge taps respectively and said switching matrix means at said central offices for passing frequencies within said standard telephone voice transmission frequency band and for blocking frequencies of said data signals thereby preventing erroneous transmission of data through said switching matrix means between transmitters and receivers associated with the same central office but not associated with each other,
- data concentrator computers at the locations of said central offices respectively having inputs coupled to said outputs of said data receivers for processing said received data,
- a central monitoring station for receiving and distributing said processed data, and
- telephone lines coupling said data concentrator computers to said central monitoring station for conveying said processed data thereto.

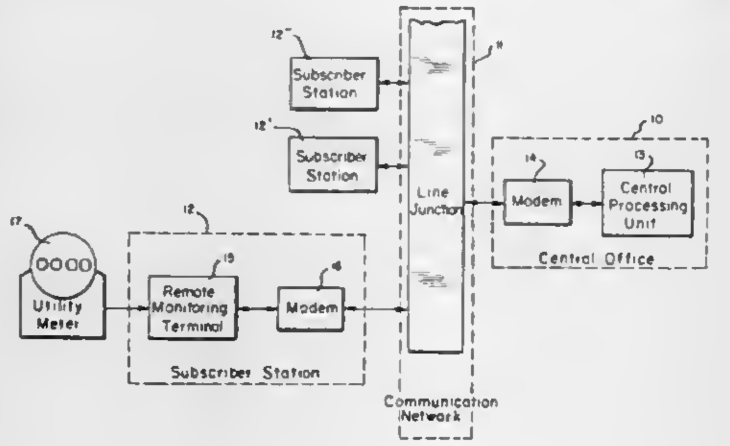
3,937,890
REMOTE MONITORING COMMUNICATION SYSTEM AND TERMINAL FOR UTILITY METERS

William M. Blethen, 4 Noel Lane, East Brunswick, N.J. 08816, and Lee J. Milligan, 14 Cheri Lane, Fairfield, N.J. 07006

Filed Apr. 16, 1974, Ser. No. 461,308

Int. Cl.² H04M *11/02*

U.S. Cl. 179—2 A 7 Claims



5. A remote monitoring system operable over a communication network for selectively monitoring the contents of utility meters at remote locations and transmitting such contents upon command to a central office, said system including:

- a. a central office including a data processing unit, means for generating an address signal corresponding to an address of a selected subscriber station for addressing any of a plurality of remote monitoring terminals to obtain data stored therein, and a modem for connecting the data processing unit with such communication network; and
- b. a plurality of subscriber stations, each including a modem connected to such communication network for communicating therethrough with the central office, means for receiving an address signal, an address memory for storing an address corresponding to said subscriber station, and a comparator for comparing addresses corresponding to received address signals with the address stored in the address memory, each subscriber station thereby being selectively addressable by said data processing unit, and each subscriber station including a remote monitoring terminal connected to a utility meter at the subscriber station for serially transmitting to such data processing unit a count corresponding to that contained in the utility meter, said remote monitoring terminal including a pulse output converter for providing output pulses from such utility meter corresponding to increments in the count stored therein, said converter comprising a cam mountable on the shaft of the utility meter corresponding to the least significant digit of said count, and a switch operable by said cam to provide output pulses corresponding to increments in such least significant digit.

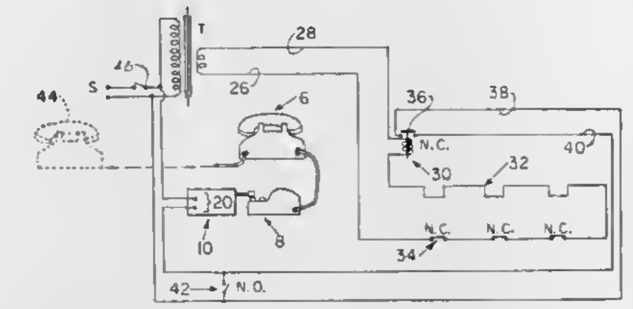
3,937,891
BURGLAR ALARM

George K. Roeder, P.O. Box 4335, Odessa, Tex. 79760

Filed Sept. 16, 1974, Ser. No. 506,439

Int. Cl.² H04M *11/04*

U.S. Cl. 179—5 R 3 Claims



1. An alarm system by which unauthorized entrance through a closure means into an enclosure causes a first telephone to dial a second telephone comprising:

- a first switch means (34) for connection to a closure means so that movement of the closure means activates said first switch means;
- a motor-driven switch actuator (10), a first telephone (6), a second telephone (44), means forming an automatic dialing apparatus by which a predetermined telephone number can be dialed;
- circuit means connecting said automatic dialing apparatus to said first telephone; means, including a call switch on said automatic dialing apparatus, by which said first telephone will dial said second telephone when said call switch is activated;
- circuit means connected to said first switch means for causing said motor of said motor-driven switch actuator to be energized upon movement of the closure means to which said first switch is connected;
- means by which said motor-driven switch actuator is positioned respective to said automatic dialing apparatus so that said call switch is actuated when said motor-driven switch actuator is energized;
- said motor-driven switch actuator being a motor-driven reduction gear assembly having an output shaft, a cam affixed to said shaft, said cam being arranged respective to said motor-driven reduction gear assembly, shaft and call switch, so that rotation of said shaft causes said cam to engage and actuate said call switch.

3,937,892
ELECTRONIC TIME-DIVISION-MULTIPLEXED PABX TELEPHONE SYSTEM

Alan Bloch, New York, N.Y.; Charles B. Falconer, Hamden; David L. Joslow, and Harold M. Straube, both of Chester, all of Conn., assignors to Chestel, Inc., Chester, Conn.

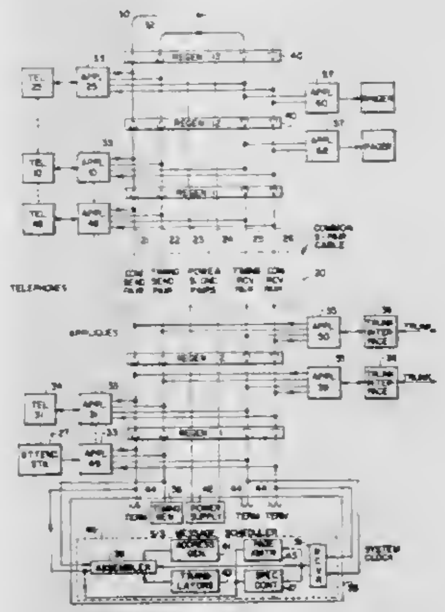
Continuation-in-part of Ser. No. 296,322, Oct. 10, 1972, abandoned. This application Jan. 21, 1974, Ser. No. 435,318

Int. Cl.² H04J *3/12*

U.S. Cl. 179—15 AL 27 Claims

7. A communication system for audio information comprising: a timing line, a communication line separate from said timing line, a timing signal generator for generating timing signals applied to said timing line and which timing signals divide time into repetitive frames of time slots, said time slots of each frame including at least one thereof assigned exclusively to signalling and supervision use and a plurality of other ones thereof assigned exclusively to audio communication use, and a plurality of appliques each connected to both said timing line and said communication line, said appliques each including a means controlled by said timing signals for inserting signalling and supervision information onto said communication line in said signalling and supervision time slots and a means controlled by said timing signals for extracting from said communication line the signalling and supervision information appearing in said signalling and supervision time slots, said appliques further including means responsive to the signalling and supervision information interexchanged by said appliques over said communication line in said signalling and supervision time slots for making and breaking talking path connections between said appliques, which talking path connections are made over said communication line in said audio communication time slots.

21. A communication system comprising: a lineal transmission medium including a communication line, means time dividing the usage of said communication line into a number of time-division-multiplexed communication channels over which information may be transmitted on said communication line said means time dividing the usage of said communication line including means for transmitting on said transmission medium and along with the information on said communication line a timing signals consisting of repetitive frames of pulses, which pulses divide each frame into a number of time slots, said communication channels including a plurality of audio communication channels, a plurality of appliques located along said transmission medium, means providing each of said appliques sending access to one of said audio communication channels, means providing each of said appliques with receiving access to all of said audio communication channels, each of said appliques having a send terminal connected to said communication line at one point along said transmission medium for said sending access and a receive terminal connected to said communication line at a second point along said transmission medium for said receiving access, a first counter in each applique for counting pulses taken from said transmission medium at the associated said one point to identify said time slots, means in each applique responsive to the count of its said first counter for controlling its sending access to its associated one of said audio communication channels, a second counter in each applique for counting pulses taken from said transmission medium at the associated said second point to identify said time slots, and means in each applique responsive to the count of its said second counter for controlling the receiving access of said applique to said audio



communication channels.

3,937,893

AUTOMATIC TELEPHONE ANSWERING DEVICE

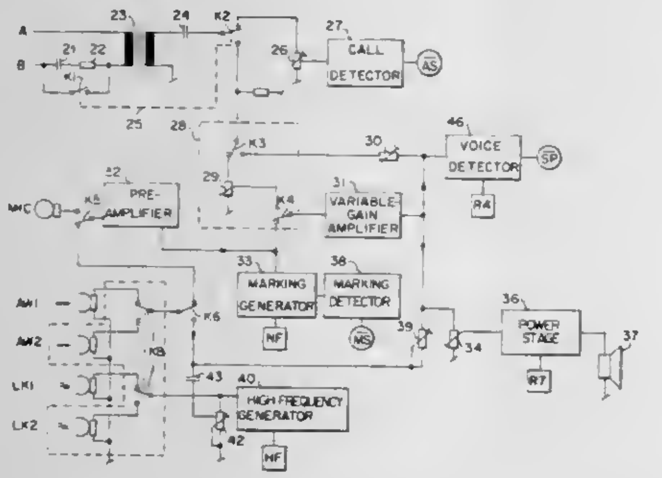
Willy Muller, Zollikon, and Markus Moser, Egg, both of Switzerland, assignors to Willy Muller, Zollikon, Switzerland

Filed July 24, 1973, Ser. No. 382,067

Claims priority, application Switzerland, July 31, 1972, 11353/72

Int. Cl.^{2} H04M *1/64;* **G11B** *23/04*

U.S. Cl. 179—6 R **17 Claims**



1. Automatic telephone answering and announcement device comprising in operative electrical connection:
   a. a first sound recorder (AW1) for recording, reproducing and answering oral text;
   b. a second sound recorder (AW2) for recording and playing back incoming messages;
   c. action control switch means (3); and
   d. additional selectivity switches (10, 11, 12, 13) for selecting specific functions;
   e. a switching system (33, 40, 52, 54, 56, 65, 66);
   f. amplifying system;
   g. a control system for independent control of the work cycle of the device in its different functions, said control system (3) including third recording means to apply at least a marking signal on the first sound recorder (AW1) and for the playback thereof, whereby to switch the device from playing back the call answering text to recording the incoming message and to correct in event of a premature ending of the playback of the call answering text;
   h. call detector means (27);
   i. voice detector means (46) for incoming messages;
   j. marking detector means (38) for detecting marking signals on the first recorder;
   said action control means (3) and the additional switches (10, 11, 12, 13) as well as the call detector (27), the voice detector (46) and the marking detector (38) being interconnected to deliver binary message signals (ST1W), STWT, STAT, ASTE, ST, STO, RT, LT, AS, SP, MS);
   k. a digital control means (67, 68, 69) comprising an integrated circuit, the inputs (67) of which are in connection with said action control switch (3), the additional switches (10, 11, 13) and the outputs of said respective detectors (27, 46 and 38) and the output of the digital control means (68) being connected with control inputs of an electrical switching means (33, 40, 52, 54, 56, 65, 66), whereby the digital control means, depending on its internal condition and that of the binary message signal, generates binary control signals (MTX, MTP, MAX, MAP, HF, NF, ZL1, ZL2, R1 to R8) for said electrical switching means requiring control;
   l. driving means for the respective recorders; and
   m. a source of electrical power.

3,937,894

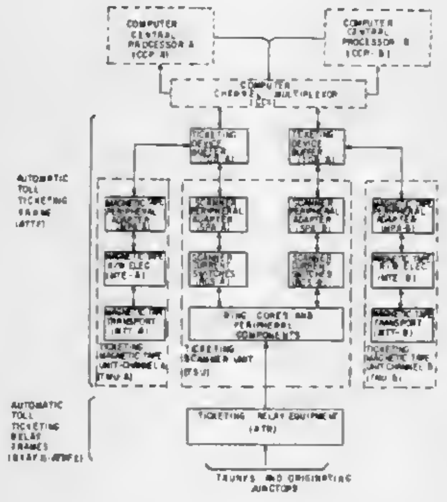
ADDRESSABLE TICKETING SCANNER

George T. Grzybowski, Westchester; David E. Gaon, Villa Park, both of Ill.; Bryan F. Gearing, Bedford, Mass., and Martin R. Winandy, La Grange, Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 18, 1974, Ser. No. 434,743

Int. Cl.^{2} H04M *15/18*

U.S. Cl. 179—7.1 R **14 Claims**


COMPUTER CENTRAL PROCESSOR A (CCP A)
COMPUTER CENTRAL PROCESSOR B (CCP B)
AUTOMATIC TOLL TICKETING FRAME (ATTF)
AUTOMATIC TOLL TICKETING RELAY FRAMES
TICKETING RELAY EQUIPMENT (ATR)
TRUNKS AND ORIGINATING JUNCTORS

1. In a communication switching system including a switching network and common control equipment for establishing paths through the switching network between calling and called lines, said network including status means for indicating a busy condition for a given path through the network, scanning means responsive to calls-for-service from calling lines, and memory means for storing addresses of the lines requesting service, a ticketing arrangement comprising:

monitoring means including a plurality of monitoring devices responsive to said status means for determining that a given path is busy;

switching means for selectively connecting said monitoring devices to busy paths established between calling and called lines; and

means responsive to the addresses stored in said memory means for controlling said switching means.

3,937,895

CIRCUIT ARRANGEMENT FOR DETECTING DOUBLE CONNECTIONS IN DIGITAL TELECOMMUNICATION SWITCHING SYSTEMS

Otto Karl, Forstenrieder-Allee 78/III, 8000 Munich 71, Germany

Filed Feb. 22, 1974, Ser. No. 444,837

Claims priority, application Germany, Feb. 22, 1973, 2308855

Int. Cl.^{2} H04J *3/00*

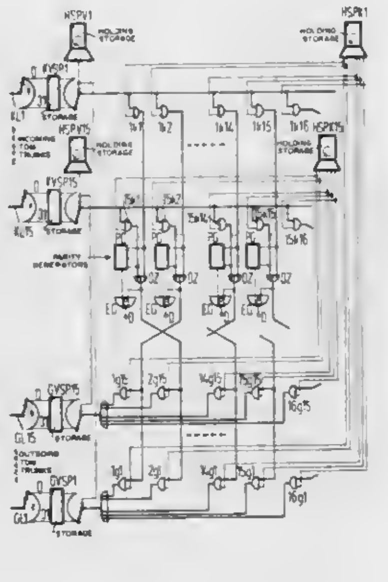
U.S. Cl. 179—15 AT **1 Claim**

1. In a telecommunication switching system for time division multiplex (TDM) signals wherein incoming TDM trunks, coupled through first time coupling stages in the form of storages allocated to individual TDM trunks, are connectable in pairs, by means of crosspoint switches, over pairs of TDM links to outgoing TDM trunks which are coupled through second time coupling stages having storages allocated to individual TDM trunks, apparatus for detecting double connections comprising:

OR gate means having a plurality of inputs and an output inserted in a said TDM link, said inputs being connected to outputs of said crosspoint switches connecting the incoming TDM trunks with said TDM link and said output being connected to crosspoint switches connecting said TDM link to said outgoing TDM trunks,

parity generator means having a plurality of inputs connected to said plurality of inputs of said OR gate means, and

exclusive OR gate means for producing an output signal responsive to a dissimilarity in signals coupled thereto and thereby indicating a double connection, said exclusive OR gate having one input connected to an output of said parity generator means and another input connected to the output of said OR gate means.



3,937,896

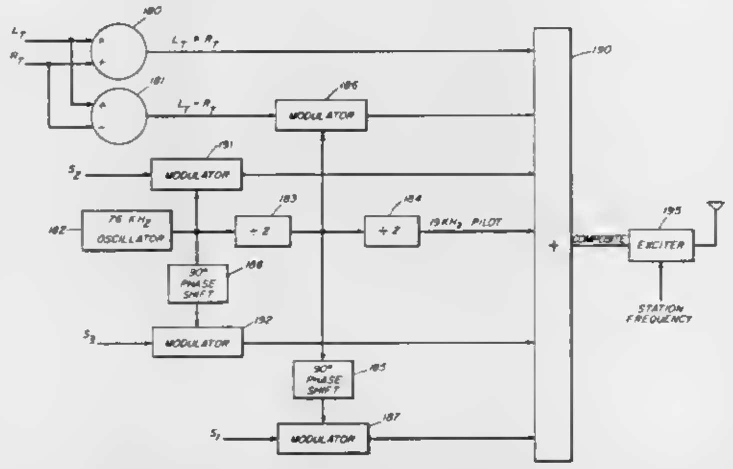
COMPATIBLE FOUR CHANNEL RADIO BROADCAST AND RECEIVING SYSTEM

Benjamin B. Bauer, Stamford, Conn., assignor to CBS Inc., New York, N.Y.

Filed Apr. 18, 1974, Ser. No. 462,044

Int. Cl.^{2} H04R *5/00*

U.S. Cl. 179—15 BT **13 Claims**



1. A compatible four channel system for use in conjunction with a radio transmission system for transmitting four individual audio signals designated L_f, L_b, R_b and R_f over a medium having primary and secondary information channels and first and second subsidiary information channels, said primary and secondary channels carrying information that is consistent and compatible with existing monophonic and stereophonic standards; comprising
   a. means for forming a first composite signal designated L_T which contains, to the extent they are present, L_f in a dominant proportion and L_b and R_b in sub-dominant proportions, L_b and R_b being phase shifted with respect to each other;
   b. means for forming a second composite signal designated R_T which contains, to the extent they are present, R_f in a dominant proportion and L_b and R_b in sub-dominant proportions, L_b and R_b being phase shifted with respect to each other;
   c. means for forming first and second conjugates of said first and second composite signals, respectively, said first and second conjugates being designated L_T^* and R_T^*;
   d. means for forming a sum signal as a function of the sum of L_T and R_T and for applying said sum signal to the primary information channel;
   e. means for forming a difference signal as a function of the difference between L_T and R_T and for applying said difference signal to said secondary information channel; and
   f. means for applying said first and second conjugates to said first and second subsidiary channels, respectively.

3,937,897

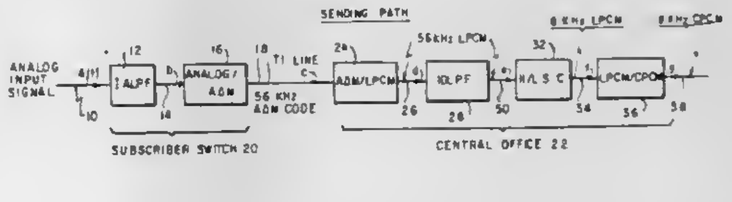
SIGNAL CODING FOR TELEPHONE COMMUNICATION SYSTEM

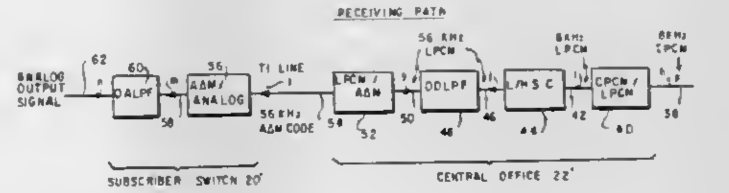
Ching-Long Song, Columbus, Ohio, assignor to North Electric Company, Galion, Ohio

Filed July 25, 1974, Ser. No. 491,767

Int. Cl.^{2} H03K *11/00, 13/22*

U.S. Cl. 179—15 AP **29 Claims**



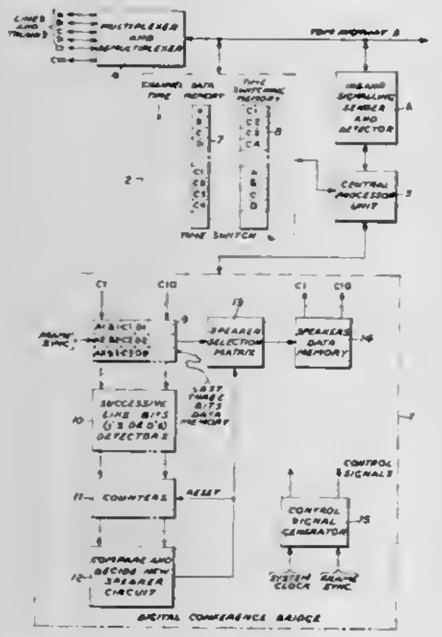


1. In a telephone communication system having a plurality of transmission lines over which voice signals are transmitted in an adaptive delta modulation code, the improvement comprising sending means including first digital converter means for converting said adaptive delta modulation signals received over one of said transmission lines to linear pulse code modulation signals, first filter means connected to the output of said first digital converter means for smoothing the signals output from said digital converter means, first speed converter means connected to the output of said first filter means for decreasing the speed of the signals output from said filter means to a value compatible for use with a pulse code modulation communication system; and receiving means including second speed converter means, input means for providing said pulse code modulation signals from said communication system to said second speed converter means, second filter means connected to the output of said second speed converter means for smoothing the signals output therefrom, and second digital converter means for converting the pulse code modulation signals output from said second filter means to adaptive delta modulation signals for transmission over a second one of said transmission lines.

3,937,898
DIGITAL CONFERENCE BRIDGE

Anthony Frank Presto, Nutley; James Grant Dunn, Upper Montclair, and Thomas Chungmin Chen, West Caldwell, all of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed July 18, 1974, Ser. No. 489,574
Int. Cl.² H04M *3/56*; H04Q *11/04*
U.S. Cl. 179—18 BC 9 Claims



1. A digital conference bridge for a delta modulated switching system having information transmitted by delta modulated bits in M channels of a time division multiplex frame, where M is an integer greater than three, comprising:

N conferees, where N is an integer greater than two but less than M;

first means to interconnect said N conferees to enable a conference to take place among said N conferees;

N means of a second type coupled to said first means, each of said N means of said second type storing the three latest delta modulation bits of a different one of each of said N conferees;

N means of a third type each coupled to a different one of said N means of said second type, each of said N means of said third type providing an indication when said three latest bits have identical values;

fourth means coupled to each of said N means of said third type to determine from said indications a new speaker and to produce a control signal identifying said new speaker; and

fifth means coupled to said first means, said N means of said second type and said fourth means responsive to said control signal to distribute said delta modulation bits of said new speaker to all of said N conferees.

3,937,899
TONE DETECTOR USING SPECTRUM PARAMETER ESTIMATION

Jeffrey Neil Denenberg, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 30, 1975, Ser. No. 545,410
Int. Cl.² H04M *1/50*
U.S. Cl. 179—84 VF 9 Claims

1. A tone detector comprising:

an input terminal for receiving an input signal;

a plurality of estimating means each comprising:

an input connected to said input terminal; an output; and

means for generating at said estimating means output an estimate of a parameter of the frequency spectrum of said input signal;

one or more decision circuits, each decision circuit comprising:

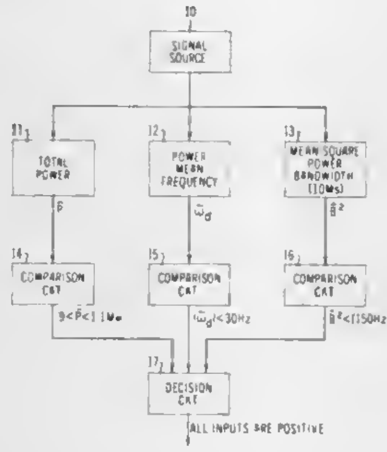
a plurality of inputs each connected to a respective one of said plurality of estimating means outputs;

an output; and

a plurality of comparison circuits, each comparison circuit corresponding to one of said plurality of estimating means and comprising:

an input connected to the one of said decision circuit inputs connected to the corresponding estimating means;

an output; and



means for generating at said comparison circuit output a first signal if the signal present on said input of said comparison means is essentially equal to the value of the corresponding parameter of a tone to be detected and a second signal in the absence of equality; and

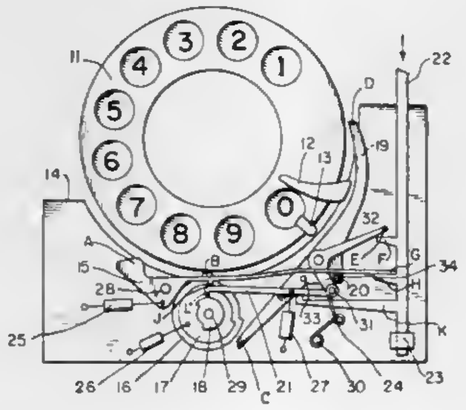
means for generating at said decision circuit output a third signal if all of said outputs of said plurality of comparison circuits have a first signal present and a fourth signal if one or more of said outputs of said plurality of comparison circuits has a second signal present; and

one or more output terminals, each connected to a corresponding decision circuit output for indicating the presence or absence of a predetermined tone whose presence is to be detected.

3,937,900
LONG DISTANCE TELEPHONE CALL LIMITING DEVICE

Masayuki Nagakura, c/o Azabu Second Corporation 27-10, 3-chome, Tokyo, Japan

Filed Aug. 27, 1974, Ser. No. 500,859
Claims priority, application Japan, May 25, 1974, 49-058951
Int. Cl.² H04M *1/66*
U.S. Cl. 179—90 D 4 Claims



1. A long distance telephone call limiting device for preventing the dialing of a long distance telephone number said device comprising:

a. a telephone set;

b. a stopper provided on the outer periphery of the finger hole of the dial numeral 0 of a telephone dial plate;

c. first, second and third rotatable cam members spaced from said dial plate;

d. an arch-shaped 0-check lever means, wherein one end thereof checks said stopper and the other end thereof engages with the first cam member of said cam members;

e. a rotatable sensing lever means for sensing the rotation of the dial plate said sensing lever means including a hook portion for engaging the second cam member of said cam members;

f. a hook lever means for engaging the third cam member of said cam members;

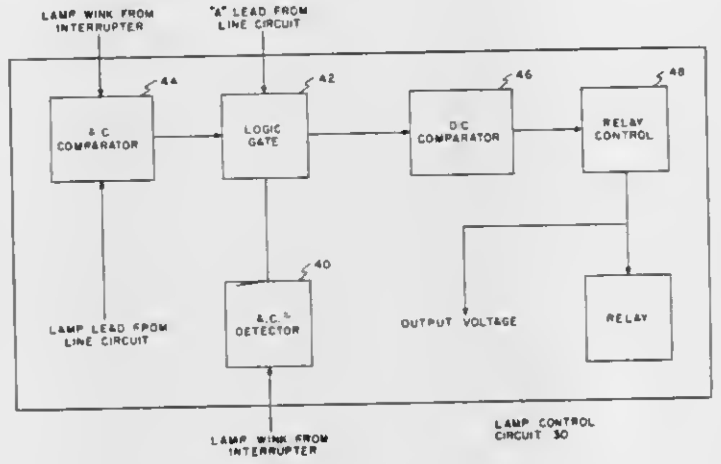
g. set lever means pivotably and coaxially mounted with said 0-check lever means and connected to said hook lever means; and

h. a connecting rod having a plurality of hook means for engaging said set lever means, said rotation sensing lever means and said hook lever means respectively said rod moving in response to the movement of a handset on and off the telephone, wherein the dialing of an 0 or 1 in either of the first two digits of a phone number prevents the dialing of the remainder of the number.

3,937,901
LAMP CONTROL CIRCUIT FOR KEY TELEPHONE SYSTEMS

Coy Edwin Matheny, Corinth, Miss., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Filed June 3, 1974, Ser. No. 475,420
Int. Cl.² H04M *1/21*
U.S. Cl. 179—99 5 Claims

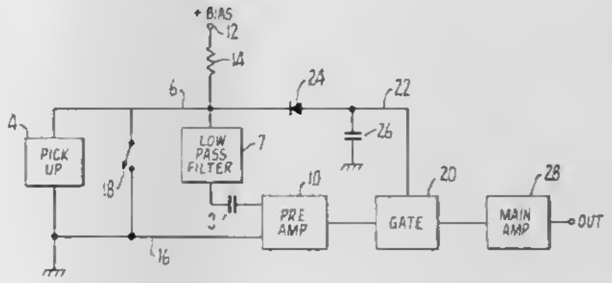


1. In a key telephone system, a circuit for detecting the condition of a line in the system, in which the line may be in one state in which a line lamp representing that line is being pulsed by a signal comprised of current interrupted at a first rate, or in a second state in which the lamp is being pulsed by a signal comprised of current interrupted at a second rate, said circuit including means receptive of a current signal directed toward the line lamp, means for receiving a reference signal at a predetermined amplitude and at an interrupted predetermined one of said rates, means for comparing the rate of the signal directed toward said lamp against the predetermined signal rate, and means responsive to the rate of the signal directed toward said lamp and said predetermined reference signal being essentially identical for producing an output reaction indicative of the signal directed toward the lamp.

3,937,902
CARTRIDGE MUTING CIRCUIT

Louis Dorren, Millbrae, Calif., assignor to Quadracast Systems, Inc., San Mateo, Calif.

Filed Apr. 18, 1974, Ser. No. 461,884
Int. Cl.² G11B *15/12*
U.S. Cl. 179—100.4 A 3 Claims



1. An automatic muting system for a semi-conductor phonograph pickup cartridge, said cartridge having a shorting switch for the output leads of the cartridge, said muting circuit being actuated solely by said shorting switch, comprising in combination:

a. bias means for biasing said semi-conductor pickup cartridge through its output leads at a first polarity,

b. first output leads from said semi-conductor pickup cartridge, said leads being connected through a passive time delay circuit to the input leads of an amplifier,

c. bias means for said amplifier,

d. second output leads from said semi-conductor pickup cartridge connected directly to said bias means for said amplifier, and

e. means whereby the bias means for said amplifier is cut off when a voltage of opposite polarity is applied to said second output leads.

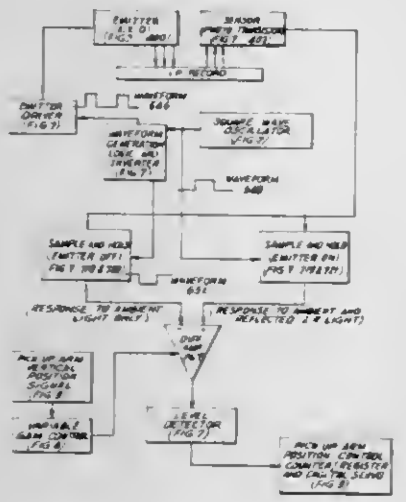
3,937,903
SOUND TRACK SELECTOR SYSTEM FOR PHONOGRAPH RECORD PLAYERS

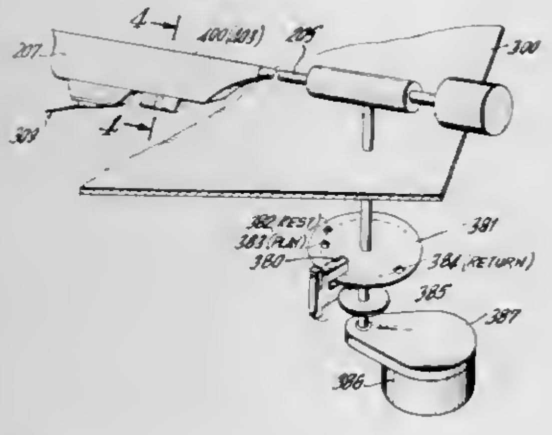
Robert Osann, Jr., 6725 Mariposa Ave., Citrus Heights, Calif. 95610

Filed Apr. 29, 1974, Ser. No. 464,927
Int. Cl.² G11B *19/14*
U.S. Cl. 179—100.4 D 12 Claims

12. In a sound track selection system for a phonograph record, means for sensing the peripheral positions of the pickup arm comprising a rotatable shaft for the pickup arm, a disc mounted on said shaft below the turntable platform and rotatable with said shaft, said disc being provided with two slots radially spaced at different distances from the axis of rotation of the disc and one slot radially spaced from the axis of rotation of the disc at substantially the same distances represented by each of the aforesaid two slots, each said slot also being arcuately spaced from one another to represent positions of "rest," "return" and "play" with respect to the pickup arm, and an optical encoder assembly comprising a pair of light emitting diodes and a pair of photo-transistors in fixed position to register with the aforesaid slots and develop

a corresponding signal when each said slot is rotated to permit light from a diode to be transmitted to the corresponding photo-transistor sensor, thereby producing a signal representing the position of the pickup arm.


EMITTER
SENSOR
LP RECORD
EMITTER DRIVER (FIG 7)
WAVEFORM 646
SQUARE WAVE OSCILLATOR (FIG 7)
WAVEFORM GENERATOR LOGIC AND INVERTER (FIG 7)
WAVEFORM 648
SAMPLE AND HOLD (EMITTER OFF)
SAMPLE AND HOLD (EMITTER ON)
WAVEFORM 652
RESPONSE TO AMBIENT LIGHT ONLY
RESPONSE TO AMBIENT AND REFLECTED I R LIGHT
DIFF AMP
PICK UP ARM VERTICAL POSITION SIGNAL
VARIABLE GAIN CONTROL (FIG 6)
LEVEL DETECTOR (FIG 7)
PICK UP ARM POSITION CONTROL COUNTER/REGISTER AND DIGITAL SERVO (FIG 8)



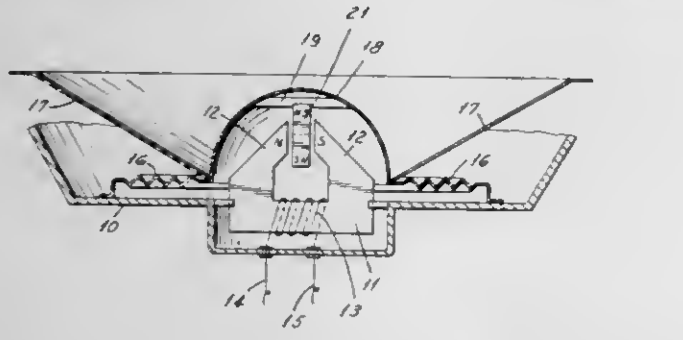
3,937,904
MOVING MAGNET ELECTROACOUSTIC TRANSDUCER

Rollin James Parker, Greenville, Mich., assignor to Hitachi Magnetics Corporation, Edmore, Mich.

Filed Aug. 7, 1974, Ser. No. 495,305

Int. Cl.² H04R *9/02*

U.S. Cl. 179—114 R **6 Claims**



1. An electroacoustic transducer device comprising a (U-shaped) core of magnetically permeable material having solely a simple U-shape, a stationary electrical coil around said core for the creation of an electromagnetic field, a pole piece mounted on each protruding end of said core, the pole pieces defining a gap between the protruding ends of said core, a permanent magnet centrally positioned within said gap and having diagonally positioned poles of the same magnetic orientation whereby the side facing each pole piece has an end which is repelled from said pole piece and an opposite end which is attracted to said pole piece when said electrical coil is energized; and a diaphragm driven by reciprocating movement of said magnet.

3,937,905
MOVING VOICE COIL TRANSDUCER HAVING A FLAT DIAPHRAGM OF AN IMPREGNATED KNIT

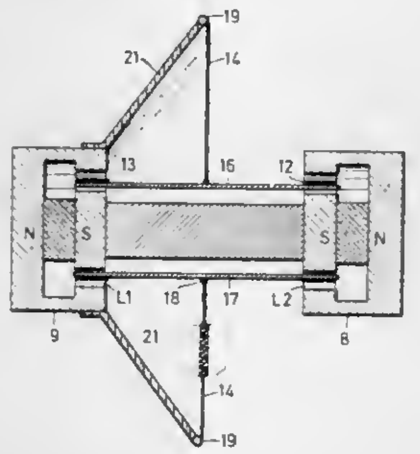
Josef W. Manger, Karlstadter Strasse 5, 8725 Arnstein, Germany

Filed July 24, 1973, Ser. No. 382,157

Claims priority, application Germany, July 25, 1972, 2236374

Int. Cl.² H04R *7/04, 9/02*

U.S. Cl. 179—115.5 R **13 Claims**



1. An electro-acoustic transducer system comprising:

a magnetic system having pole shoes and an air gap limited by said pole shoes;

a substantially flat viscoelastic diaphragm which is highly elastically stretchable;

fixed support means fixed to said magnetic system and supporting said diaphragm; and

moving coil means fixed to a portion of said diaphragm.

3,937,906
TELEPHONE HOOK SWITCH COMPRISING SEPARATELY OPERABLE CONTACT GROUPS

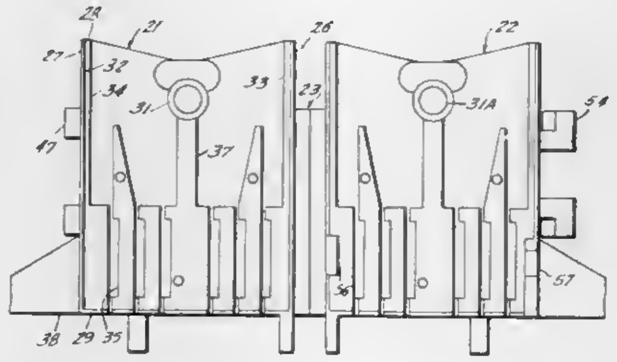
Keizou Ohta, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Jan. 31, 1974, Ser. No. 438,337

Claims priority, application Japan, Feb. 7, 1973, 48-16038

Int. Cl.² H04M *1/08*

U.S. Cl. 179—164 **6 Claims**



1. In a telephone hook switch including a plurality of contact members, a frame member having a pair of axially aligned pivot members outwardly extended from said frame member and having means for supporting said contact members enclosed within said frame member and positioned on both sides of said pivot members common axis, and a lever member pivotally mounted on said pivot members for positively moving predetermined ones of said contact members into and out of contact with predetermined other ones of said contact members, the improvement wherein said frame member comprises two initially non-contacting block portions, each having a back surface, one of said pivot members disposed on each said back surface, a first side surface disposed perpendicular to said back surface on one side of said pivot member axis, and a second side surface spaced a predetermined amount from said first side surface and disposed on the other side of said pivot member axis, the back surfaces of both said block portions being brought into substantial contact with each other with the first and second side surfaces of one of said block portions being coextensive with the respective first and second side surfaces of the other of said block portions.

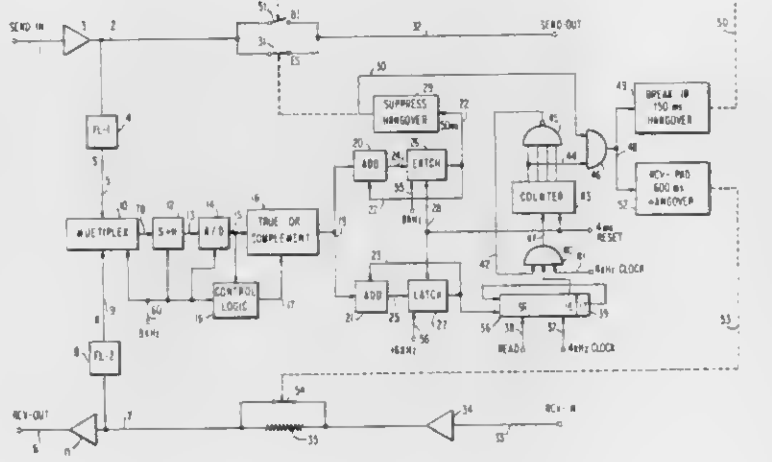
3,937,907
DIGITAL ECHO SUPPRESSOR

Samuel Joseph Campanella, Gaithersburg; Henri George Suyderhoud, Potomac, and Michael Onufry, Jr., Gaithersburg, all of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed June 13, 1974, Ser. No. 479,061

Int. Cl.² H04B *3/20*

U.S. Cl. 179—170.6 **9 Claims**



1. An echo suppressor adapted for connection between the receive and send lines of a communications circuit to reduce send line echo, comprising:

a. first means, connected to receive signals on said receive line and said send line, for producing, at an output thereof, in alternating sequence receive line digital codes representative of a first signed absolute values of said receive line signals and send line digital codes representative of an opposite signed absolute values of said send line signals,

b. first digital summation means connected to said first means for accumulating the sum of said receive line digital codes over repetitive fixed first periods of time,

c. suppression hangover means connected to said first digital summation means for providing an interrupt output for a first predetermined hangover time when said sum accumulated by said first digital summation means equals or exceeds a predetermined threshold value,

d. second digital summation means connected to said first means for accumulating the sum of said receive line and send line digital codes over said repetitive fixed first periods of time,

e. storage means connected to said second digital summation means for storing indicia representing the signs of the last N sums accumulated by said second digital summation means, and

f. break-in logic means connected to said storage means and to said suppression hangover means for providing a break-in output for a second predetermined hangover time when M of the indicia stored in said storage means represent said opposite sign and said suppression hangover means is providing said interrupt output, where M is a predetermined positive number less than N.

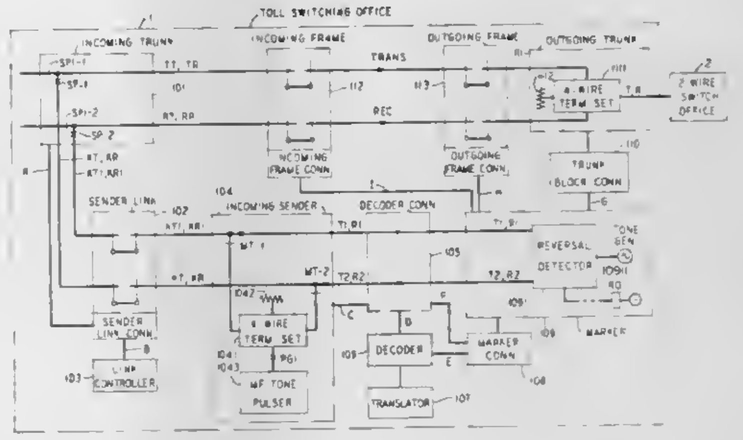
3,937,908
NETWORK PATH TEST CIRCUIT

Charles John Funk, Columbus, and George Minchenko, Reynoldsburg, both of Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 27, 1975, Ser. No. 544,235

Int. Cl.² H04M *3/24*

U.S. Cl. 179—175.2 R **12 Claims**



1. A test circuit for testing call connections established through a switch network of a switching system, said test circuit comprising

means for applying a test tone signal simultaneously to both a transmit and receive path comprising one of the call connections, and

means responsive to said tone applying means for detecting path reversals occurring in the call connections and for enabling the switching system to establish another call connection in accordance with a predetermined value of reflected impedance of the call connection denoting a transmit and receive path reversal.

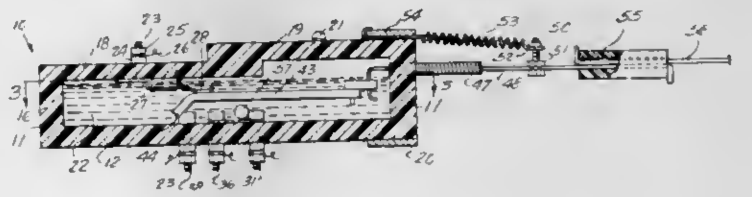
3,937,909
MULTIPLE CONTACT SWITCH

Jack L. Warren, P.O. Box 5784, Reno, Nev. 89502

Filed Nov. 1, 1974, Ser. No. 520,346

Int. Cl.² H01H *15/00*

U.S. Cl. 200—16 C **5 Claims**



1. A multiple contact switch comprising a housing, a sliding contact bar mounted in said housing and connected to an external source of power, means extending into said housing for reciprocating said contact bar, a pair of contact posts mounted in closely adjacent but spaced apart relation in said housing and having external electrical connections, a ball adapted for contact with either of said contact posts selectively, said contact bar engaging said ball to move said ball from contact with one of said contact posts to contact with the other of said contact posts and thus establish a connection between the contact bar, the external source of power, the contact posts and the external connections, and means extending into said housing engaging said contact bar for biasing said contact bar into engagement with said ball.

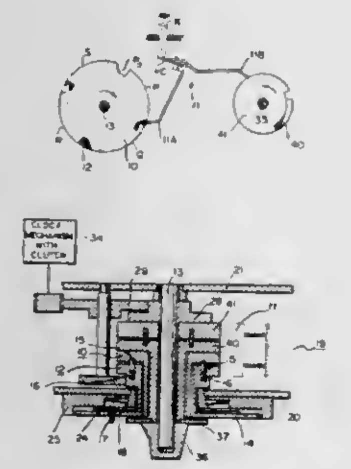
3,937,910
TIMER HAVING A VARIABLE OPERATION PERIOD

Tadashi Fukami, Kawasaki, Japan, assignor to Jeco Kabushiki Kaisha, Japan

Filed Apr. 16, 1974, Ser. No. 461,291

Int. Cl.² H01H *7/08*

U.S. Cl. 200—35 R **11 Claims**



1. In a timer the combination comprising a frame, a clock motor, a drive train driven by the clock motor and having a slow cam and a fast cam, the slow cam being in the form of a disc having a plurality of notches equally spaced thereon, a slow cam follower movably mounted on the frame and responsive to the arrival of a notch in the cam, a shielding disc adjacent the slow cam and rotatable therewith, the shielding disc having a plurality of lobes of differing arcuate spacing and indexable with respect to the slow cam between a plurality of successive phase positions in which the lobes selectively shield thereby to activate the only desired ones of the notches for response by the slow cam follower, the fast cam having a notch, a fast cam follower movably mounted on the frame and responsive to arrival of such notch, control means operated jointly by the cam followers so that the control means is actuated to initiate a turn-on cycle only when both cam followers respond by dropping into respective notches, the slow cam being provided with a pointer, a time scale for cooperating with the pointer, the time scale being stationary but adjustably positionable on the frame to set the time that a turn-on cycle is initiated, the motor having a clutch to enable manual rotation of the drive train so that the pointer and associated cams are synchronized with the time scale.

3,937,911
CIRCUIT BREAKER FOR SMALL SIZE MOTORS

Kenichi Mabuchi, and Kogiro Komatsu, both of Tokyo, Japan, assignors to Mabuchi Motor Co. Ltd., Tokyo, Japan

Filed Apr. 29, 1974, Ser. No. 464,939

Int. Cl.² H01H *3/16;* **A63H** *33/26;* **H02K** *23/60*

U.S. Cl. 200—61.39 **4 Claims**

1. A circuit breaker for a battery powered motor, in which the motor, the rotor shaft bearing and the affixed stator are rotatably supported by a fixed member, the circuit breaker being electrically connected between the motor and the battery, the circuit breaker comprising:

a first electrical contact adjustably fixed to the fixed member;

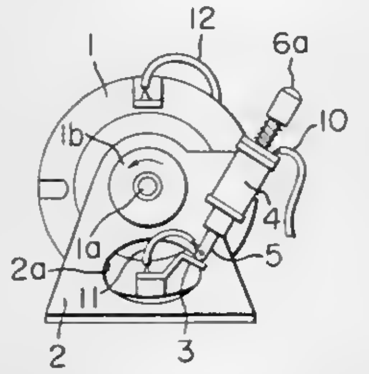
a second electrical contact movable into engagement with said first contact in response to rotation of the stator in a first direction;

biasing means urging the second contact to disengage from the first contact and urging the bearing in a second direction opposite to said first direction;

a spring acting on said second contact to urge the disengagement of said first and second contacts from each other; and

a stopper engaged with said second contact and carried by the stator and urged thereby into engagement with said first contact by the rotation of the bearing in said first direction;

whereby the stator is rotated in the first direction by motor reaction torque, and the second contact engages with the first contact to connect the motor to the battery when the reaction torque is above a predetermined value, the charge remaining in the battery being also above a predetermined value.



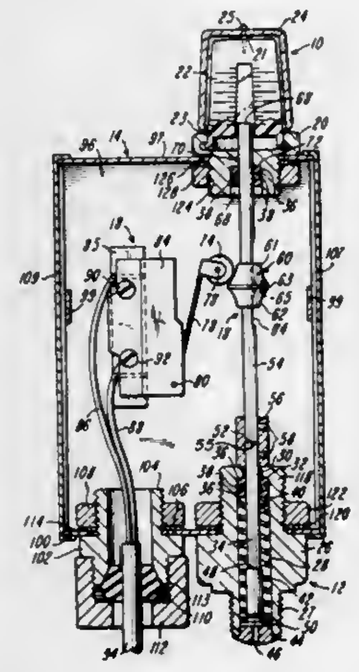
3,937,912
PRESSURE RESPONSIVE CIRCUIT CONTROL UNIT HAVING ADJUSTABLE, INTERCHANGEABLE ACTUATOR COMPONENTS AND CAM-OPERATED SWITCH

Clyde J. Martin, Cincinnati, Ohio, assignor to Martin Industries, Inc., Cincinnati, Ohio

Filed Sept. 30, 1974, Ser. No. 510,435

Int. Cl.² H01H *35/38*

U.S. Cl. 200—82 C **12 Claims**



1. Combination pressure actuated switch and gauge, comprising: a housing having aligned openings in opposite, spaced walls thereof; a pressure responsive device mounted in the opening in one wall and including a body having a bore therethrough and a reciprocable pressure responsive member in the bore including a rod portion extending out of the bore and into the housing; a pressure indicating scale mounted in the opening in the other wall and extending exteriorly of the housing and having a bore therein aligned with the bore in said body; an elongate actuator stem within the housing having one end thereof secured to the rod in coaxial, justaposed relationship therewith for movement with the rod, the other end of the actuator stem slidably extending into the bore in the scale and cooperable therewith to indicate pressure sensed by the pressure responsive member; cam means secured on the actuator stem between the ends thereof; and electrical switch means disposed within said housing and including switch actuator means situated in the path of movement of the cam means so as to be actuated thereby upon predetermined movement thereof.

3,937,913
SEALED PUSH-BUTTON CONTROL APPARATUS

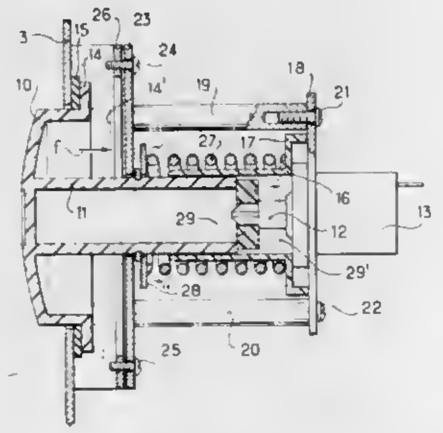
Jacques Soulas, St-Remy-Les-Cheureuse, and Paul Vilella, Chilly Mazarin, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, France

Filed Dec. 18, 1973, Ser. No. 425,786

Claims priority, application France, Dec. 18, 1972, 72.45034

Int. Cl.² H01H *3/12, 9/04*

U.S. Cl. 200—302 **4 Claims**



1. A push-button apparatus for actuating out-door equipment disposed within an equipment housing, comprising a push-button having a cap-shaped part protruding through a hole in the equipment housing from inside toward the outside thereof and a cylindrical part projecting from the central portion of the inside surface of said cap-shaped part, the inside of said equipment housing including a hollow cylindrical member fixed with respect to said equipment housing and positioned to slideably engage said cylindrical part of said push-button, a collar fixed to the cylindrical part of said push-button and a spring disposed between said collar and said hollow cylindrical member for biasing said push-button in a direction toward the outside of said equipment housing, wherein said hollow cylindrical member is fixed with respect to said equipment housing by means including a clevis secured to said housing, a plate contacting said hollow cylindrical member and a plurality of rod-shaped supports secured between said plate and said clevis.

3,937,914
METHOD AND APPARATUS FOR MANUFACTURING WELDED METAL TUBES OF FINITE LENGTH

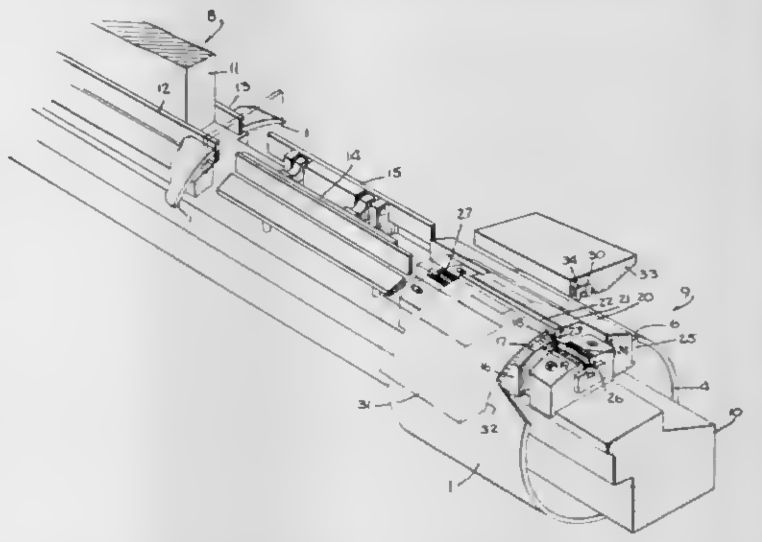
George T. Larson, Port Chester, N.Y., and Richard Hartmann, Jr., Trumbull, Conn., assignors to Thermatool Corporation, Stamford, Conn.

Filed Aug. 2, 1974, Ser. No. 494,035

Int. Cl.² B23K *31/06*

U.S. Cl. 219—67 **9 Claims**

1. Apparatus for welding together a pair of metal portions at their edges, each of said portions having an edge face and a major surface adjacent and extending transversely to said edge face, said apparatus comprising a welding station comprising welding means for welding said portions together, said welding means comprising an elongated proximity conductor, means for connecting one end of said proximity conductor to a first portion of each of said metal portions at the edge face thereof, contact means for engaging a second portion of each of said metal portions at the edge face thereof and means for supplying electrical welding current to said contact means and to the other end of said proximity conductor, holding means for receiving, engaging and supporting said portions including means for engaging the edge face of one of said portions and positioning said last-mentioned edge face in predetermined spaced relation to said proximity conductor with said last-mentioned edge face substantially parallel to the length of said proximity conductor and for thereafter holding said last-mentioned edge face in said predetermined relation to said proximity conductor while pressing the edge face of the other of said portions against said edge face of said one portion when the latter is positioned in said predetermined relation, and loading means for engaging said metal portions and delivering said metal portions to said holding means.



3,937,915
METAL WORKING METHOD USING ELECTRIC ARC AND JET GAS AND THE APPARATUS THEREFOR

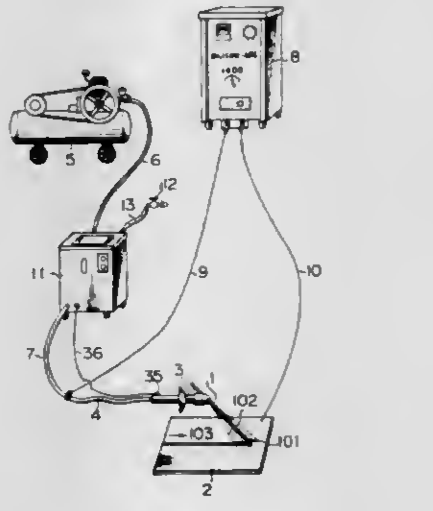
Koziro Matsuo, Yamatokoriyama; Kozi Ishihara, Hirakata, and Masonori Maeda, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 18, 1973, Ser. No. 425,802

Claims priority, application Japan, Dec. 19, 1972, 47-127865; Feb. 13, 1973, 48-18075; May 17, 1973, 48-58629[U]

Int. Cl.² B23P *1/00*

U.S. Cl. 219—68 **16 Claims**



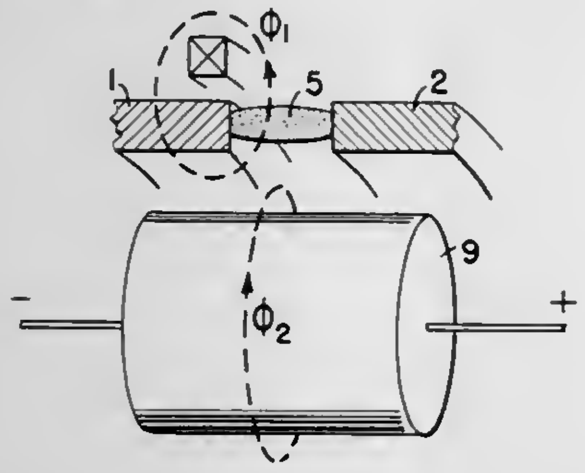
1. A metal working method for removing a portion of a metal work piece, comprising the steps of: generating an electric arc between an electrode bar and the metal work piece; heating and melting a portion of the metal work piece with the arc; discharging, during the step of heating and melting, a non-combustible gas in the form of a jet gas to the heated and molten portion of the metal work piece and the surrounding environment of the portion for blowing off the molten portion; mixing a non-combustible liquid in the non-combustible compressed gas; discharging the non-combustible liquid together with the non-combustible gas to form a jet spray; and supplying the jet spray to the molten portion of the

metal work piece and the surrounding environment of the portion.

3,937,916
ROTATING ARC WELDING METHOD AND APPARATUS

David Sciaky, Chicago, Ill., assignor to Welding Research, Inc., Chicago, Ill.

Filed July 22, 1974, Ser. No. 490,306
Int. Cl.² B23K *9/08*
U.S. Cl. 219—104 7 Claims



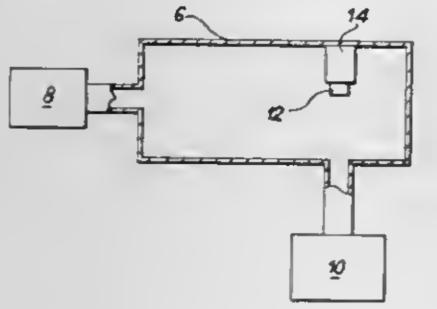
7. A method for welding two parts along their adjacent edges comprising the steps of;

clamping the two parts to be welded so that their adjacent edges are separated by a gap;
causing an electric arc to be produced across the said gap;
generating a radial magnetic field between the said edges for causing the arc to move along said edges;
generating a second magnetic field concentric to said parts between the said edges to cause the said arc to be urged in a radial direction while being propelled by the first mentioned magnetic field so that the arc describes a spiral motion;
controlling the arc current so that it follows a predetermined program of arc current with respect to time; and,
pressing the said parts together at the said edges.

3,937,917
METHOD FOR PRODUCING AND HEATING A PLASMA

Terenzio Consoli, Meylan, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Feb. 22, 1973, Ser. No. 334,897
Claims priority, application France, Mar. 6, 1972, 72.07756
Int. Cl.² B21B *1/00;* **H05B** *7/00*
U.S. Cl. 219—121 P 8 Claims



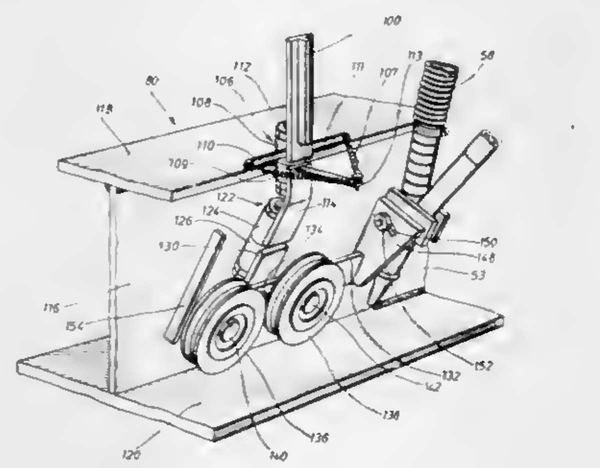
1. A method for producing and heating a plasma, comprising the steps of:

locating non-ionized solid material from which the plasma is to be obtained within a superconducting resonant cavity structure;
storing microwave-frequency electromagnetic energy in said superconducting resonant cavity structure; and then
pre-ionizing said solid material to create an absorbent load into which the previously-stored electromagnetic energy is discharged to thereby produce said plasma and heat said produced plasma.

3,937,918
BEAM CARRIAGE TYPE AUTOMATIC ARC WELDING APPARATUS WITH WELDING HEAD TRACKING MECHANISM

Paul E. Robertson, 811 Creager St., Houston, Tex. 77034

Filed July 22, 1974, Ser. No. 490,762
Int. Cl.² B23K *9/12*
U.S. Cl. 219—125 R 27 Claims



1. In automatic arc welding apparatus having a generally horizontal carriage beam upon which is mounted a movable welding carriage that positions arc welding heads for causing the formation of elongated compound welds in work pieces having joints of compound configuration between angularly related portions to be welded, wherein the improvement comprises:

connecting shaft means extending from said welding carriage;
guide means being provided on said welding carriage and providing guiding support for said connecting shaft means;
compound connection means being provided on said connecting shaft means, said compound connection means including a first pivotal connection defining a first axis that is substantially parallel with said connecting shaft means and a second pivotal connection that defines a second axis that is in inclined relation to said first axis;
at least one joint tracking means being supported by said compound connection means and being positioned for contact with the angularly related portions of said work piece; and
welding head means being connected to said joint tracking means and having a welding nozzle thereof positioned immediately adjacent the joint between said angularly related portions to be welded, whereby deviation of said joint causes pivotal movement of at least one of said pivotal connection means.

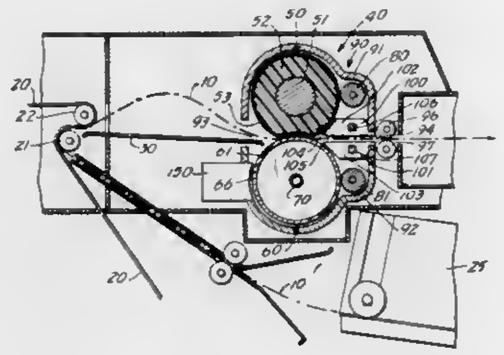
3,937,919
FIXING DEVICE

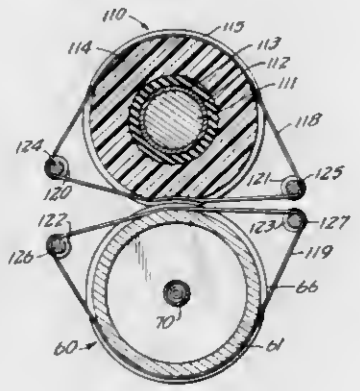
Henricus P. M. Clerx, Baarlo; Pieter M. J. Extra, Belfeld; Leonardus L. M. Keursten, and Franciscus M. J. Peeters, both of Grubbenvorst, all of Netherlands, assignors to Oce-van der Grinten N.V., Venlo, Netherlands

Filed Oct. 30, 1973, Ser. No. 411,291
Claims priority, application Netherlands, Nov. 8, 1972, 7215064; Sept. 17, 1973, 7312749
Int. Cl.² H05B *1/00*
U.S. Cl. 219—216 32 Claims

1. Device for fixing a thermoplastic powder image on a support, comprising an elastic roller that is to contact the image side of the support and a substantially rigid roller having a surface sufficiently rigid to hold its shape under pressure against said elastic roller, said rollers together forming a nip through which the support is transported, the elastic roller comprising an elastically pliable annular body the outer surface of which is provided with at least one circumferential

formation lying radially away from the contour thereof, and a separating organ complementary to and coacting with each said formation to assure separation of the support from said surface, each said formation being of such dimensions and said surface being sufficiently pliable that each said formation is deformed elastically by pressure of said rigid roller so as to form an even elastic roller surface in said nip.

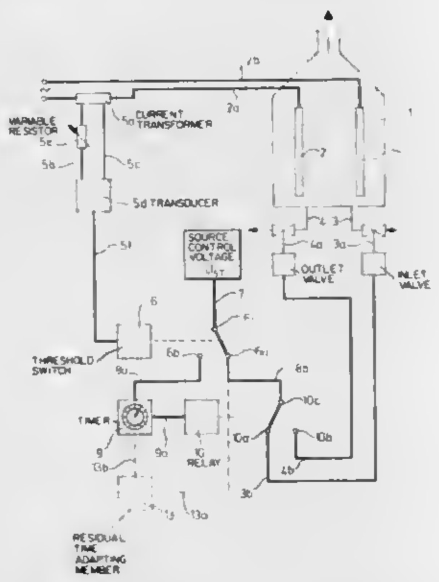




3,937,920
METHOD OF OPERATING AN ELECTRODE-TYPE WATER-VAPOR GENERATOR

Siegbert Gundacker, Reinach, and Gerhard Badertscher, Bolligen, both of Switzerland, assignors to Plascon AG., Munchenstein, Switzerland

Filed Feb. 4, 1974, Ser. No. 439,468
Claims priority, application Switzerland, Mar. 9, 1973, 3469/73
Int. Cl.² H05B *1/02, 3/60;* **H01C** *10/02*
U.S. Cl. 219—286 10 Claims

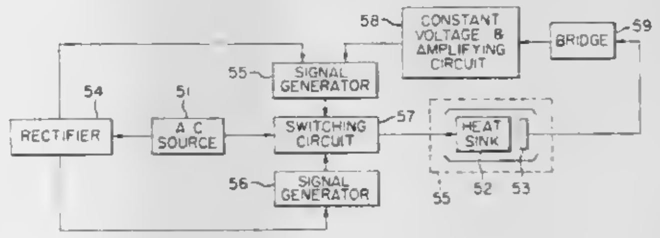


1. An improved method of operating a water-vapor generator comprising a vaporization vessel containing water and having electrodes which are connected to a current supply and between which flows a current whose magnitude depends on the depth of immersion of the electrodes in the water in the vessel, the method comprising discharging water from the vessel from time to time in order to reduce the concentration of minerals resulting from the vaporization, introducing fresh water into the vessel in order to replace water that has been evaporated and discharged, and employing the electrode current as a controlled condition for the control of supply of water and discharge of water, the improvement consisting in continuously measuring the magnitude of the electrode current, comparing the course of variations in the measured current with respect to time from a preselected maximum electrode current to a preselected minimum electrode current, which maximum and minimum electrode currents depend upon a desired mean rate of generation of water vapor, with a predetermined set course from the maximum electrode current to the minimum electrode current, and in the event that the measured course of variations lies beneath the predetermined set course, when plotted in a Cartesian coordinate system with values of current as ordinates and values of time as abscissae, discharging from the vessel a quantity of water dependent upon the deviation of the measured course from the predetermined set course.

3,937,921
TEMPERATURE CONTROL SYSTEM

Katsushi Furuichi, Yokohama; Kenji Kurita; Yoshimasa Kimura, both of Kawasaki, and Hisashi Sakamaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1974, Ser. No. 461,796
Claims priority, application Japan, Apr. 19, 1973, 48-44440; Apr. 19, 1973, 48-44441; May 30, 1973, 48-60622; May 30, 1973, 48-60624
Int. Cl.² H05B *1/02*
U.S. Cl. 219—494 17 Claims

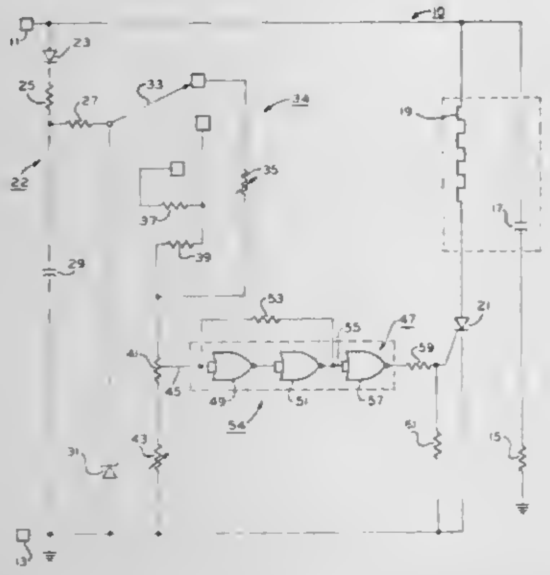


1. A temperature control system comprising:

a heat sink;
an AC power source for heating said heat sink;
means for detecting the temperature of said heat sink and to generate a signal corresponding to the detected temperature;
means, responsive to the signal, for generating a first control signal when the temperature detected by said detecting means is under a predetermined temperature;
means for generating a second control signal to supply a partial power of said AC power source to said heat sink when the temperature detected by said detecting means reaches the predetermined temperature;
means responsive to at least one of said, first and second control signals for controlling the supply of power from said power source to said heat sink;
whereby said heat sink is supplied with full power from said AC power source in response to said first control signal when the temperature detected by said detecting means is under the predetermined temperature, and said heat sink is supplied with the partial power from said AC power source in response to said second control signal when the temperature detected by said detecting means reaches the predetermined temperature.

3,937,922
CONTROL SYSTEM

David C. Hamstra, Clinton, Iowa, assignor to General Electric Company, Fort Wayne, Ind.
Filed Aug. 27, 1974, Ser. No. 500,947
Int. Cl.^{2} H05B *1/02*
U.S. Cl. 219—501 **19 Claims**



1. A control system having means for changing temperature in an enclosed space to maintain it generally near a selected value comprising:

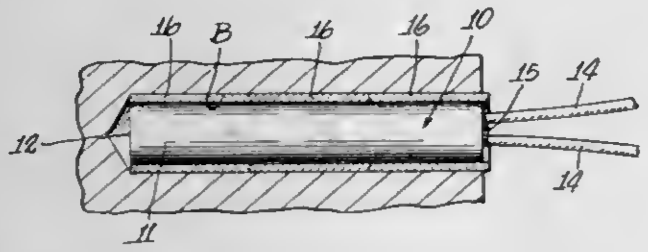
means electrically energizable for enabling the temperature changing means;

means for electrically indicating variations of the temperature in the enclosed space from the selected value; and

bistable means responsive to the indicating means and coupled to the enabling means for respectively effecting actuation and de-actuation of the temperature changing means when the temperature in the enclosed space varies from the selected value by one of a first predetermined amount in excess of the predetermined value and a second predetermined amount less than the predetermined value, the bistable means being constituted by a Schmitt trigger circuit having output voltage versus input voltage hysteresis characteristics to limit cycling of the temperature changing means.

3,937,923
ELECTRIC CARTRIDGE HEATER WITH METAL SLEEVE ADAPTER

Herman P. Smith, Monroeville, Pa., assignor to Emerson Electric Company, St. Louis, Mo.
Filed Apr. 28, 1975, Ser. No. 572,054
Int. Cl.^{2} H05B *3/06*
U.S. Cl. 219—523 **5 Claims**



1. In combination:

an electric cartridge heater having a metal sheath of a predetermined outside diameter and adapted to have its external wall surface closely fit the wall of a bore in a mass to be heated,

means for adapting said cartridge heater to fit in heat transfer relationship within a bore of larger diameter, comprising metal sleeve means having an inside diameter to provide an inside wall surface to closely fit the sheath exterior wall surface, and having an outside diameter to provide an exterior wall surface to closely fit the wall surface of said larger bore,

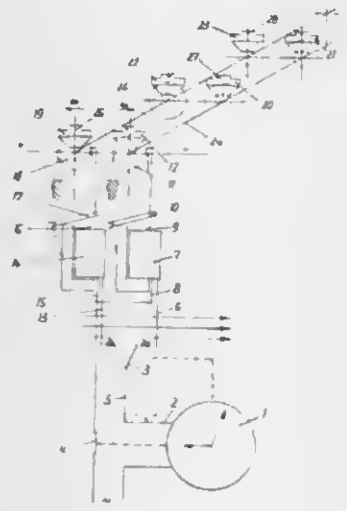
said cartridge heater being produced in various sheath lengths,

said sleeve means being formed as multiple sleeves disposed serially in end-to-end abutting relation between facing wall surfaces of said sheath and said bore in number to cover a selected sheath length, and

each sleeve being of continuous cross-section and of constant thickness and uniform diameter throughout its length, whereby hot spots between a sleeve and a cartridge heater are minimized.

3,937,924
SYSTEM FOR COLLECTING DATA

Kurt Wilhelm Kratt, Aldingen, and Alois Bolsinger, Spaichingen, both of Germany, assignors to J. Hengstler K.G., Aldingen, Germany
Filed Aug. 5, 1974, Ser. No. 494,570
Claims priority, application Germany, Aug. 16, 1973, 2341284
Int. Cl.^{2} G06K *15/18, 7/00, 19/04;* **G06F** *7/38*
U.S. Cl. 235—61.6 R **32 Claims**



1. A system for collecting data, which comprises counter holder means,

a plurality of counters, which are removably held by said counter holder means at predetermined locations, each of said counters being adapted to perform incremental and decremental counting operations,

a program timer operable to produce first and second control signals in alternation in accordance with a predetermined time schedule,

drive means carried by said counter holder means and comprising drive output means and operable under control of said program timer to rotate said drive output means in a decremental sense when said control timer produces said first control signal and in an incremental sense when said control produces said second control signal,

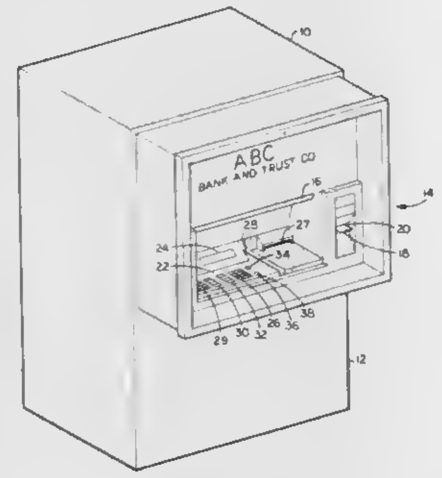
a plurality of clutch means carried by said counter holder means and connected to said drive output means and associated each with one of said counters, each of said clutch means being adapted to assume a first state for driving the associated counter in an incremental sense and a second state for driving the associated counter in a decremental sense,

a plurality of code detectors, each of which is associated with one of said counters and comprises code detector elements and is adapted to receive an identification code carrier in a predetermined position and to assume a first state in response to an insertion of a mating identification code carrier having code elements, which represent the same code as said code detector elements, and a second state in response to the removal of such mating identification code carrier, and

a plurality of clutch-shifting means, which are carried by said counter holder means and associated with respective ones of said clutch means and of said code detectors and adapted to cause the associated clutch means to assume said first and second states in response to the first and second states, respectively, of the associated code detector.

3,937,925
MODULAR TRANSACTION TERMINAL WITH MICROPROCESSOR CONTROL

William A. Boothroyd, San Jose, Calif., assignor to IBM Corporation, Armonk, N.Y.
Filed June 25, 1974, Ser. No. 482,860
Int. Cl.^{2} G06K *17/00;* **G06F** *7/00*
U.S. Cl. 235—61.7 B **20 Claims**



1. A flexible, modular transaction execution terminal comprising:

an information bus for carrying data signals and bus access control signals which control the transfer of bus data signals between the bus and an adapter unit connected to the bus;

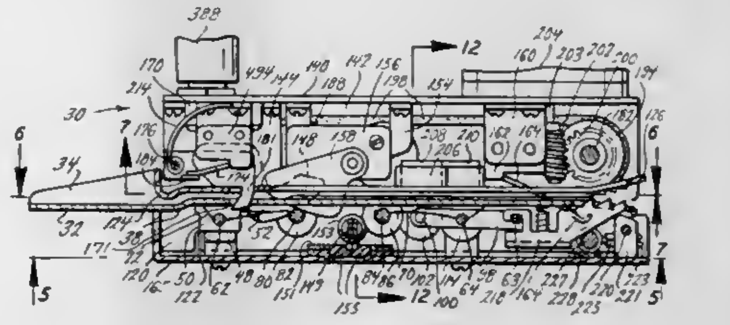
a programmable processor unit connected to the bus, the processor unit including program storage and electrically alterable random access storage operable under control of program information to generate data signals on the bus for commanding an adapter unit to perform a specific operation, to receive data information from the bus, and to generate bus control signals;

a document handling system connected to the information bus, the document handling system including storage for a plurality of issuable articles, an issue port, a transport mechanism for selectively conveying issuable documents from storage to the issue port, and control circuitry connected to control a plurality of issue system operations with pertain to the issuance of a document in response to data signals received from the bus, the control circuitry further generating document issue subsystem status information for communication as a bus data signal upon command; and

a user communication sybsystem including means for receiving information from a user, and means for conveying information messages to a user, the user communication subsystem including control circuitry connected to control a plurality of communication subsystem operations which pertain to the conveyance of an information message to a user in response to bus data signals and connected to generate user communication subsystem status information indicative of information received from a user for communication as a bus data signal upon command.

3,937,926
VALIDATOR FOR SCRIP

Thaddeus M. Jones, South Bend, Ind.; Hasmukh R. Shah, and Charles D. Nash, both of Hot Springs, Ark., assignors to UMC Industries, Inc., New York, N.Y.
Filed Jan. 10, 1974, Ser. No. 432,429
Int. Cl.^{2} G06K *7/14, 19/06, 5/04*
U.S. Cl. 235—61.7 R **29 Claims**



1. A validator which comprises sensing means that senses a plurality of patterns on a document in a predetermined sequence to effect the developing of sensed data, recognition means responsive to the developing of said sensed data to provide a plurality of logic level signals, a preprogrammed memory which is an electronic memory and thus has no moving parts and which contains pre-programmed data hard-wired therein, said hard-wired pre-programmed data corresponding to said plurality of patterns on said document, said pre-programmed memory holding said pre-programmed data as a plurality of discrete groupings of pre-programmed data in the form of predetermined logic level signals, one of said groupings of pre-programmed data corresponding to the logic level signals which said recognition means develops when said sensing means senses a predetermined one of said plurality of patterns on said document, another of said groupings of pre-programmed data corresponding to the logic level signals which said recognition means develops when said sensing means senses a predetermined succeeding one of said plurality of patterns on said document, said one and said other groupings of said pre-programmed data being stored within said pre-programmed memory in a manner which permits said one and said other groupings of said pre-programmed data to be read in the same sequence in which said predetermined one and said predetermined succeeding one of said patterns on said document are sensed by said sensing means, a comparing means that can compare said logic level signals which said recognition means develops when said sensing means senses said predetermined one and said predetermined succeeding one of said plurality of patterns on said document directly with said predetermined logic level signals while said predetermined logic level signals are stored within said pre-programmed memory, further means to effect sequential comparing by said comparing means of said logic level signals, developed by said recognition means during the sensing of said predetermined one and of said predetermined succeeding one of said patterns by said sensing means, with said predetermined logic level signals which constitute said pre-programmed data within said pre-programmed memory, and additional means to effect validation of said document if said sensed data obtained during the sensing of said predetermined one and of said predetermined succeeding one of said patterns by said sensing means corresponds in nature and in sequence with said pre-programmed data within said pre-programmed memory.

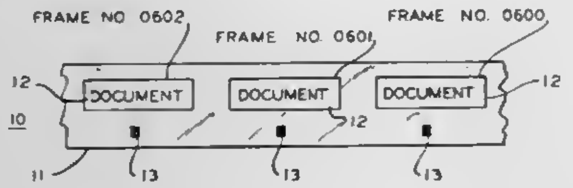
3,937,927
FRAME LOCATION SYSTEM

Hans Weigert, Woodcliff Lake, N.J., assignor to Ragen Precision Industries, Inc., North Arlington, N.J.

Filed June 21, 1974, Ser. No. 481,556

Int. Cl.² G03B *23/12;* **G06K** *7/10;* **G06G** *7/28*

U.S. Cl. 235—61.11 R **10 Claims**



1. A frame location system for use with a strip record medium retrieval device of the type that includes means for moving the strip record medium past a predetermined station, said strip record medium containing *m* frames, each frame having a unique address, which comprises:

- a first reversible counter having a counting capacity of *m* pulses for storing the address of a selected frame to be moved to said predetermined station and generating an overflow signal when the accumulative count applied thereto exceeds *m;*
- a second reversible counter having a counting capacity of *m* pulses for storing the address of the frame presently at said predetermined station and generating an overflow signal when the accumulative count applied thereto exceeds *m;*
- a third reversible counter, having a counting capacity of *m* pulses connected to said first and second reversible counter, for determining the difference between the addresses stored therein;
- means responsive to the application of a start search command from an external source, for generating a burst of *m* pulses;
- means for connecting the output of said pulse generating means to the up-count inputs of said first and second reversible counters to cause said counters to overflow;
- logic means, connected to said first and second reversible counters, for routing pulses from said burst of pulses to the up-count input of said third reversible counter upon receipt of a first overflow signal from either said first or said second reversible counter and for terminating the same upon receipt of a second overflow signal from either said second or said first reversible counter; and
- means, responsive to said address difference, for actuating said strip record moving means, whereby said selected frame is presented at said predetermined station.

3,937,928
EMBOSSED CARD READER

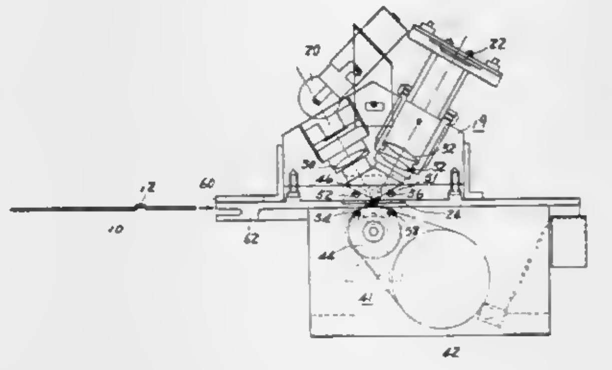
Takehiko Sasaki, Yamatokoriyama; Keizo Yamamoto, Nara, and Hiroaki Fukuda, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 15, 1974, Ser. No. 460,900

Int. Cl.² G06K *7/10;* **G08C** *9/06;* **G06K** *9/00*

U.S. Cl. 235—61.11 E **12 Claims**

1. An embossed card reader comprising a table for providing support for an embossed card to be read, means for transporting the embossed card along the table, a slit plate disposed over said table, said slit plate being provided with an incident light slit and a reflection light slit, a source of light for irradiating the surface of the embossed card through the incident light slit of the slit plate to produce a parallel light beam, and light-responsive means for detecting light reflected from the surface of the embossed card and passed through the reflection light slit of the slit plate, said parallel light beam enabling the simple and accurate reading of information contained on the embossed card.



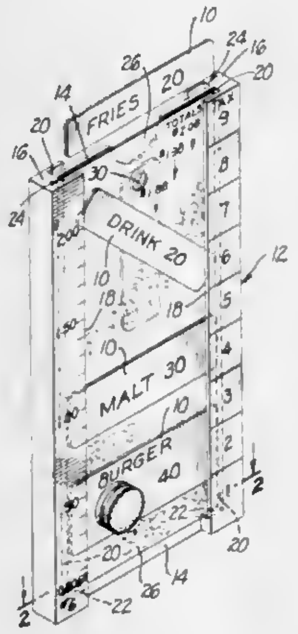
3,937,929
METHOD FOR IDENTIFYING SELECTED INVENTORY ITEMS AND READING THE SUM OF THEIR VALUES

Peter Knauer, 3223 Royal Oaks Drive, Thousand Oaks, Calif. 91360

Filed June 18, 1973, Ser. No. 371,125

Int. Cl.² G11C *15/00, 19/06*

U.S. Cl. 235—61.11 R **1 Claim**



1. A method of inventory distribution and control utilizing a plurality of coded elements separated from and corresponding to one of a predetermined inventory of items, each element being identity coded to provide a first indicium thereon representing the corresponding inventory items, and magnitude coded to provide a second indicium thereon indicating a predetermined magnitude associated with the corresponding inventory item, and utilizing a holding member for retaining together a group of said coded elements, said method comprising the steps of:

- selecting a predetermined group of said elements;
- positioning said predetermined group of elements in cooperative relationship with said holding member; and
- sensing the indicia on said predetermined group of elements to identify their corresponding inventory items and to read the sum of their magnitudes.

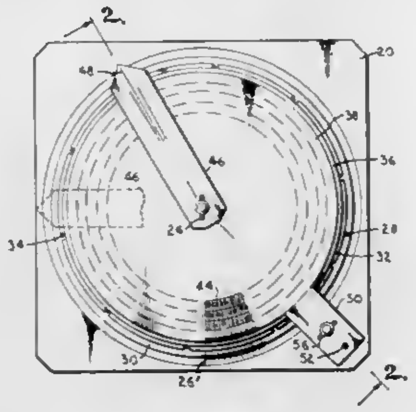
3,937,930
ROTARY SLIDE RULE FOR TOPOGRAPHIC CALCULATIONS

Frank J. Thomas, Box 5262 Hicrest Station, Topeka, Kans. 66605

Filed Dec. 17, 1973, Ser. No. 425,562

Int. Cl.² G06C *27/00, 3/00*

U.S. Cl. 235—78 R **11 Claims**



1. A rotary topographic calculator comprising:

- a baseplate having an annular scale graduated to indicate a range of rod readings;
- a conversion unit mounted on said baseplate and operable to directly convert rod readings on said scale into corresponding elevations relative to a predetermined reference elevation,
- said unit including a rotatable disc component coaxial with said scale, and an annular elevation scale concentrically arranged on said disc component and graduated to cover a range of numerical values corresponding to said range of rod readings, like angular increments between the graduations of said rod reading and elevation scales being equal to the same distance on both scales,
- said elevation scale being numbered inversely with respect to said rod reading scale, and said disc component being rotatable to an operational setting radially aligning a predetermined rod reading with the numerical value on said elevation scale corresponding to a known elevation, whereby other rod readings may be directly converted into corresponding elevations by reading the aligned numerical values on the elevation scale or, conversely, elevations may be converted into rod readings;
- a rotatable disc member carried by said baseplate and coaxial with said disc component; and
- an annular depth scale concentrically arranged on said disc member and graduated to indicate depth of cut and depth of fill in progressively increasing amounts in opposite directions away from a zero mark, the angular increments between the graduations of said depth scale being equal to the same units of measurement as like angular increments on said rod reading and elevation scales,
- said disc member being rotatable to a position radially aligning said zero mark with a selected rod reading or elevation, whereby the depth scale then indicates the cut or fill at other corresponding radially aligned elevations.

3,937,931
PROCEDURE TO DETERMINE THE TEMPORAL MEAN OF A QUANTITY TO BE MEASURED, AS A FUNCTION OF ITS PERIOD OF OPERATION

Gerhard Stumpner, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 28, 1971, Ser. No. 184,553

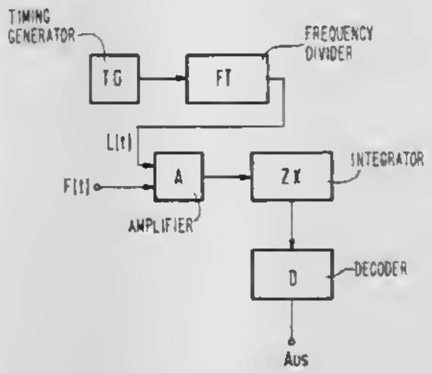
Claims priority, application Germany, Sept. 30, 1970, 2048149

Int. Cl.² H03K *21/36;* **G06M** *3/04*

U.S. Cl. 235—92 EC **2 Claims**

1. A method for measuring the time mean of a quantity being measured as a function of its period of operation, comprising the steps of:

- applying the quantity being measured to an integrator,
- producing a constant extinguishing quantity which is a function of at least two predetermined pairs of values for said time mean and the integration period of the quantity being measured and which is of a value such that the storage capacity of said integrator is uniform for said predetermined pairs of values for said time mean and the integration period of the quantity being measured,
- superimposing said extinguishing quantity on said quantity being measured and
- generating a signal from the values stored in said integrator responsive to the exceeding of said value pairs.



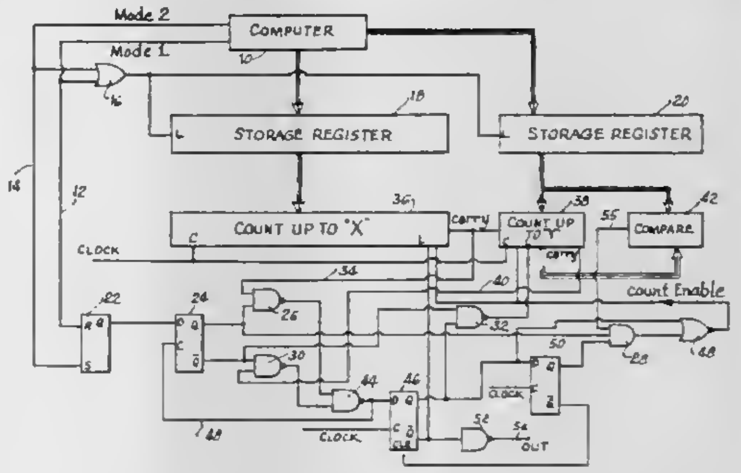
3,937,932
DIGITAL FREQUENCY GENERATOR

Joseph R. Ahlgren, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Apr. 15, 1974, Ser. No. 461,094

Int. Cl.² H03K *21/36*

U.S. Cl. 235—92 PE **6 Claims**



1. A two-mode digital pulse generator producing a selectable frequency output determined by a controlling computer, said computer also selecting the mode of operation depending on the selected frequency comprising:

- a. storage means for receiving a multiple bit binary number in parallel from said computer;
- b. means for producing clock pulses;
- c. means for counting said clock pulses and producing a carry signal when counting capacity is exceeded including first and second counters each producing a carry signal when they overflow; the carry signal of the 1st counter incrementing the second counter;
- d. means tranferring said binary number into both of said counters in a first mode and a portion of said number into only the 1st counter in a second mode to preset the initial value at which counting begins;
- e. means responsive to the second counter carry signals in said first mode and to the first counter carry signals in said second mode for producing said output pulses at the selected frequency;

f. comparison means operative in said second mode for repetitively comparing the value of the second counter against the untransferred protion of said binary number in said storage means to produce an inhibit output indicative of the need for counting inhibition to maintain the selected frequency output;

g. logic means receiving said inhibit output, in the second mode, for inhibiting counting for a predetermined period to effect correction of the output pulse frequency.

3,937,933
SYSTEM AND METHOD FOR REDUCING THE PULSE REPETITION RATE IN AN ELECTRONIC TAXI METER

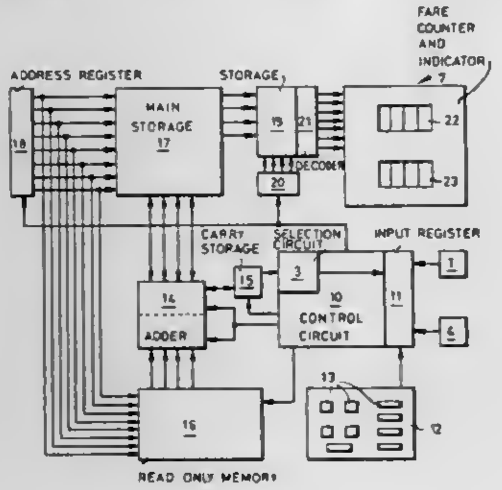
Ulrich Warkentin, Tannheim, Germany, assignor to Kienzle Apparate GmbH, Villingen, Germany

Filed Dec. 3, 1974, Ser. No. 528,820

Claims priority, application Germany, Dec. 5, 1973, 2360587

Int. Cl.² G07B *13/10;* G06F *15/20*

U.S. Cl. 235—150.3 **3 Claims**



1. In a taxi meter, a method for creating a sequence of tariff signals each representing a determined fare increment in response to, and in a determined ratio with respect to a plurality of input pulses each representing a determined distance travelled or a determined waiting time, comprising, in combination, the steps of furnishing an addend signal signifying a determined addend; creating a sum signal by sequential additions of said addend signal, one in response to each of said input signals; and creating a carry signal whenever the so-created sum signal exceeds a sum signal signifying a predetermined number, said determined addend being substantially equal to the ratio of K/T where K is said predetermined number and T said determined ratio, said carry signals constituting said tariff signals.

3,937,934
SYSTEM AND METHOD FOR OPERATING A STEAM TURBINE WITH DIGITAL CONTROL HAVING VALIDITY CHECKED DATA LINK WITH HIGHER LEVEL DIGITAL CONTROL

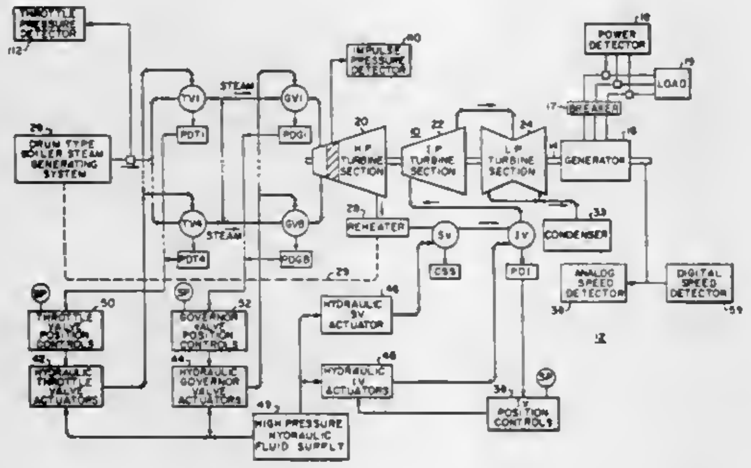
Klaus Pasemann, Martin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 247,884, April 26, 1972, abandoned. This application Dec. 21, 1973, Ser. No. 427,281

Int. Cl. F01d *17/02;* G05b *15/00;* G06f *15/06*

U.S. Cl. 235—151.21 **4 Claims**

1. A system for operating a steam turbine in an electric power plant, said system comprising an arrangement of throttle and governor valves for supplying steam to the turbine, means for actuating said valves to position said valves in accordance with valve position signals, means for generating signals representative of the turbine speed and the turbine load, a first digital controller having means for generating a speed setpoint and means for generating a load setpoint, said first controller including a speed control for generating valve position signals in response to the turbine speed signal and speed setpoint during turbine startup, said first controller further including a load control for generating valve position signals in response to the turbine load signal and load setpoint during turbine load operation, means for generating signals representative of additional turbine parameters and for coupling the additional signals to said first controller, means for registering the additional signals in said first controller, a second digital controller, means for linking at least digital data signals between said controllers, said data link means including respective first and second means for transmitting data word signals from said first and second controllers, rcspective first and second means for receiving data word signals in said first and second controllers, said second transmitting means including means for generating setpoint data control and data change word signals for transmittal to said first controller in one of the data link modes to modify at least one of the setpoints operative in said first controller, each of said transmitting means including means for generating a check signal related in a predetermined way to a predetermined group of transmitted digital data signals and each of said receiving means including means for generating a second check representation related in the same way to the group of transmitted data signals as received, and means for comparing the received check signal and the check representation and for generating an indication of a discrepancy between the two.



3,937,935
FAULT DETECTION PROCESS AND SYSTEM FOR A TIME-DIVISION SWITCHING NETWORK

Jean Pierre Le Pabic, Jean Pierre, Paris, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 6, 1974, Ser. No. 521,316

Claims priority, application France, Nov. 27, 1973, 73.42091

Int. Cl.² G06F *11/00*

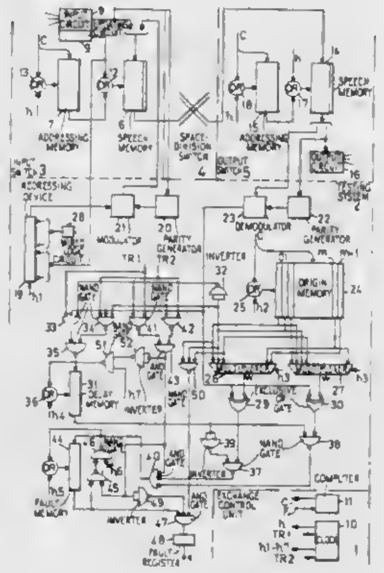
U.S. Cl. 235—153 AK **11 Claims**

1. A fault detection process for detecting faults occurring in a time-division switching network comprising the steps of

inserting partial origin coded data into said switching network together with coded samples from an input time-division channel so that the address of said input time-division channel can be determined from said partial origin coded data;

storing the address of said time-division channel connected to an output time-division channel for the duration of a communication; and

comparing the address of said input time-division channel produced from said partial origin coded data received from an output of said switching network together with associated ones of said coded samples transmitted to said output time-division channel with said stored address related to said input time-division channel connected to said output time-division channel to signal a fault upon the occurrence of any difference between said produced address and said stored address.



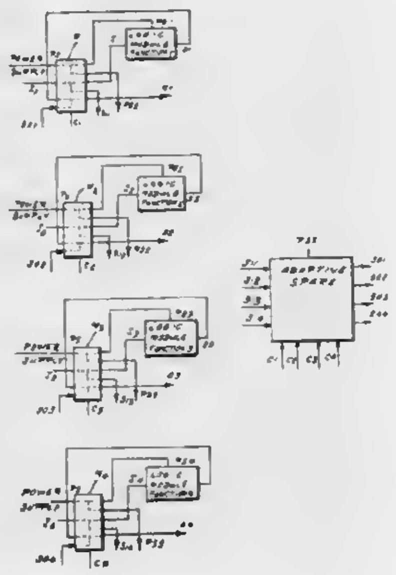
3,937,936
EQUIPMENT SELF-REPAIR BY ADAPTIVE MULTIFUNCTION MODULES

James Saporito, Stamford, Conn., and Wolfgang W. Gaertner, Utica, N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 14, 1975, Ser. No. 567,893

Int. Cl.² G06F *15/16;* H03K *19/00, 17/60*

U.S. Cl. 235—153 AE **7 Claims**



1. An equipment self-repair apparatus utilizing adaptive multifunction modules comprising in combination:

a plurality of logic units having an input, an output, and power supply respectively,

a plurality of multiplexer units respectively connected to said plurality of logic units, said plurality of multiplexer units respectively controlling the input and the power supply connections to said plurality of logic units, said plurality of multiplexer units respectively controlling the output from said plurality of logic units, said plurality of multiplexer units respectively providing a control signal, and

an adaptive spare unit connected respectively to each of said plurality of multiplexer units to receive said input and control signals therefrom, said adaptive spare unit providing a plurality of output signals respectively to said plurality of multiplexer units, said adaptive spare unit being substituted for one of said plurality of logic units when said respective multiplexer unit control signal indicates a faulty logic unit, said adaptive spare unit receiving the input from said faulty logic unit and providing an output to the multiplexer associated with said faulty logic unit.

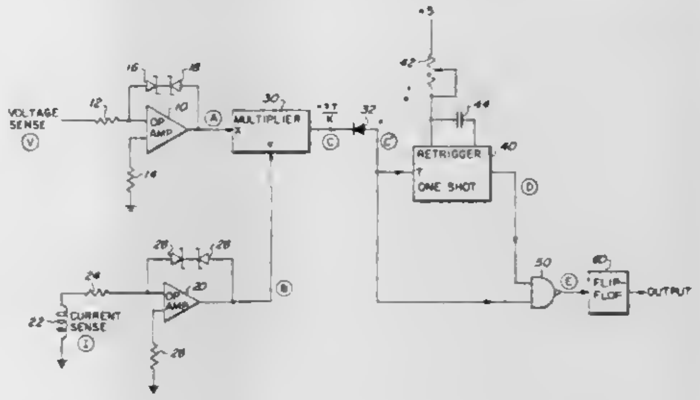
3,937,937
PRIMARY POWER FAULT DETECTOR

Irvin Maurice McVey, Agoura, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 26, 1973, Ser. No. 428,602

Int. Cl.² H02H *3/26;* G06F *11/00*

U.S. Cl. 235—153 R **18 Claims**



1. A power fault detection system comprising:

first means for detecting applied voltage and generating a voltage sensed signal, second means for detecting applied current and generating a current sensed signal, multiplier means for multiplying the voltage and current sensed signals, circuit means coupled to said multiplier means for generating predetermined width signals in response to the output from said multiplier means, and logic circuit means coupled to the output of the circuit means and the output of the multiplier means for detecting the logic level of said outputs, said logic circuit means remaining in a first logic state at an indication of power flowing in a first direction in said system and switching to a second logic state at an indication of power flowing in a second direction in said system.

3,937,938
METHOD AND APPARATUS FOR ASSISTING IN DEBUGGING OF A DIGITAL COMPUTER PROGRAM

Gordon H. Matthews, Dallas, Tex., assignor to Action Communication Systems, Inc., Dallas, Tex.

Filed June 19, 1974, Ser. No. 480,949

Int. Cl.² G06F *11/00*

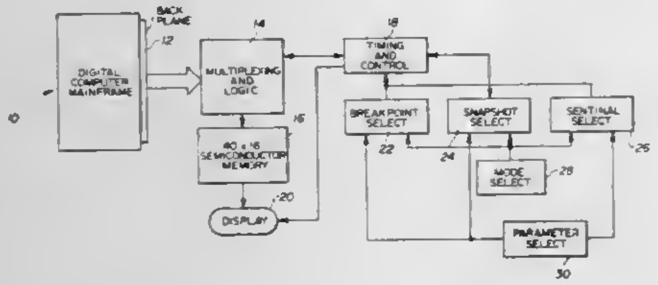
U.S. Cl. 235—153 AK **57 Claims**

7. A system for assisting in the detection of errors and malfunctions in the operation of a programmed digital computer comprising:

means for exterior connection to the computer to receive representations of the program instructions executed by the computer,

a memory having a plurality of memory cells for sequentially storing a plurality of the representations of the program instructions,

circuitry responsive to a predetermined state of operation of the computer for controlling said memory such that a plurality of the last program instructions prior to the occurrence of the predetermined state are stored in said memory cells, and

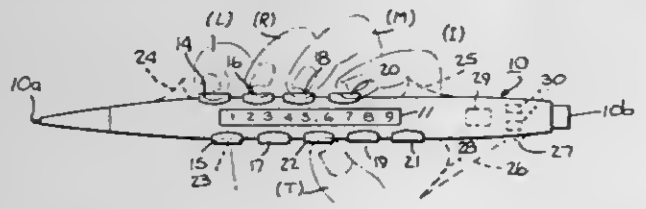


display means operable to selectively display representations of the program instructions stored in said memory cells.

3,937,939
SINGLE-HAND DIGITAL CALCULATOR

Marvin A. Frenkel, 26323 Hendrie Blvd., Huntington Woods, Mich. 48070

Filed Jan. 7, 1974, Ser. No. 431,499
Int. Cl.^{2} G06F *7/38*
U.S. Cl. 235—156 15 Claims



1. An electronic digital calculator comprising an elongated cylindrical tubular body; a plurality of input value setting keys mounted on and carried on the outer surface of said tubular body; a plurality of function keys mounted on and carried on the outer surface of said tubular body; a display readout screen mounted on said tubular body for visible scanning of the calculation being performed; an electronic chip housed within said tubular body and electrically connected to said value setting keys, said function keys, and said read-out screen; and, battery means housed within said tubular body for providing a source of electrical power to said electronic chip, said valve setting keys and said function keys being arranged on the outer surface of said tubular body such that they can be manually actuated by the fingers of one hand of a user while held in said hand.

3,937,940
DIRECT COMPARE IN AN ELECTRONIC DIGITAL CALCULATOR

George L. Brantingham, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

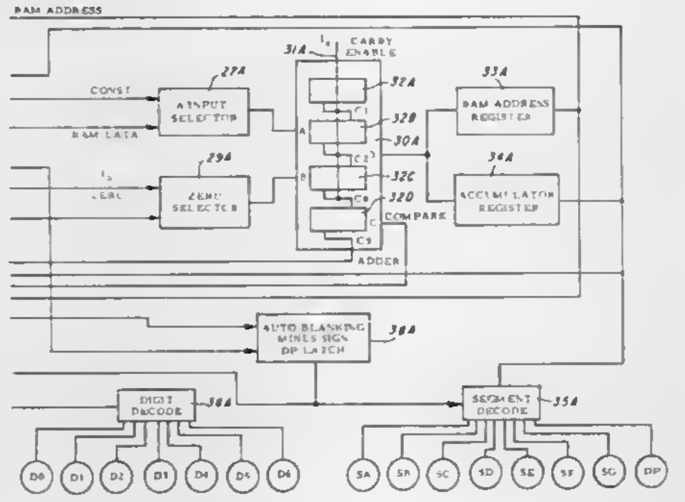
Filed Nov. 26, 1974, Ser. No. 527,456
Int. Cl.^{2} G06F *7/02*; G06F *7/50*
U.S. Cl. 235—156 14 Claims

1. In an electronic calculator system having data storage means, an arithmetic unit including first and second input means and first and second cascaded half adder stages for performing operations on data applied to said input means and control circuitry including addressable instruction storage means for providing multi-bit commands at its output which define the operation of the system, a circuit arrangement for directly comparing selected bits of said instruction storage means with resultant data from said arithmetic unit comprising:

a. comparison means in said first half adder stage of said arithmetic unit coupled to the first and second input means for comparing data applied to said first input means with data applied to said second input means and generating a condition signal indicative of the results of the compaison;

b. means coupling first selected bits of a multi-bit command at the output of said instruction storage means directly to said first input means of said arithmetic unit;

c. register means coupled to the second half adder stage of said arithmetic unit for receiving data from said arithmetic unit;



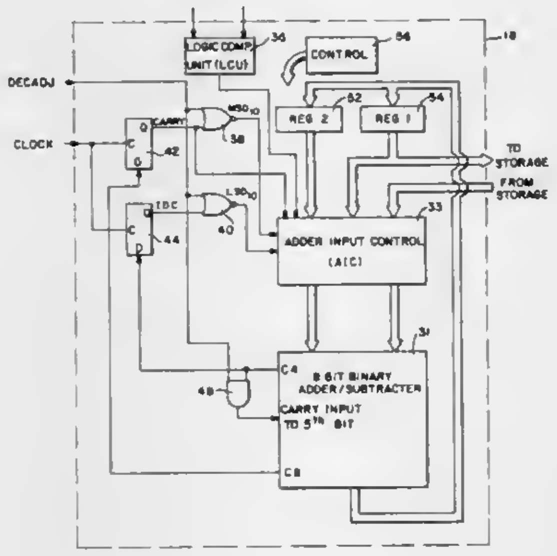
d. means coupling said register means to the second input means of said arithmetic unit; and

e. means coupled to second different selected bits of said multi-bit command at the output of said instruction storage means for controlling said comparison means to compare said first selected bits to the contents of said register means in accordance with a compare command defined by said second selected bits.

3,937,941
METHOD AND APPARATUS FOR PACKED BCD SIGN ARITHMETIC EMPLOYING A TWO'S COMPLEMENT BINARY ADDER

David Larry Zemel, Palo Alto, and Robert Gerald Kirk, Danville, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Nov. 27, 1974, Ser. No. 527,605
Int. Cl.^{2} G06F *7/385*
U.S. Cl. 235—159 6 Claims



1. A data processing system storing a BCD encoded number N and a BCD encoded number P which are operated upon in low to high order information bytes to form a decimal arithmetic sum and a decimal arithmetic difference where each byte includes least and most significant decimal digits each encoded as four BCD bits, said system comprising,

a first unit for adding and for two's complementing operands, said unit including an eight bit adder having first and second inputs and having fourth and eighth bit carry outputs and a blocking input for blocking the fourth carry input to the fifth bit,

an input control unit for directing data to said first unit inputs and providing a predetermined translation value and plural predetermined adjust values,

a plurality of registers for storing operands including said BCD encoded number N and said BCD encoded number P,

a carry storage unit for storing the adder carry outputs,

control means for controlling the processing of operands,

means, responsive to said control means, for gating an information byte of number N from said registers to the first input of said adder and if the operands are to be added for gating the predetermined operand translation value to the second input of said adder to form a preconditioned sum and connecting said adder to said registers for storing said sum, and if the operands are to be subtracted for forming the two's complement of said information byte of N by said adder,

means, responsive to said control means, for gating said byte of N and byte of P from the respective registers and the carry from the carry storage to the first and second inputs of said adder to form an initial binary sum and connecting the adder output to said registers for storing said sum, and simultaneously storing the adder carry outputs in said carry storage,

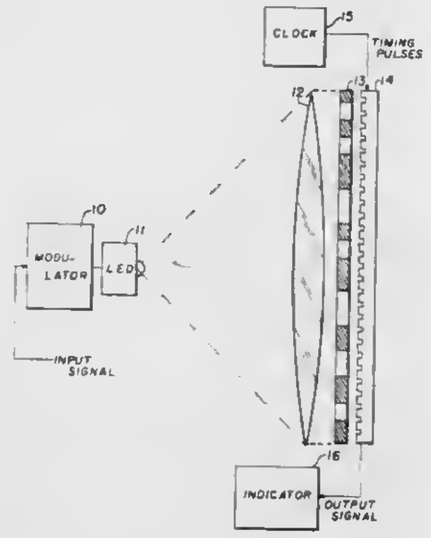
means, responsive to said control means, for gating to said input control unit the contents of said carry storage to form an adjust value in a predetermined manner,

means, responsive to said control means, for gating the initial binary sum from said registers and the adjust value to the first and second inputs of said adder to form an adjusted sum, and gating said sum to said registers for storing said adjusted sum.

3,937,942
MULTI-CHANNEL OPTICAL CORRELATION SYSTEM

Keith Bromley, San Diego; Michael A. Monahan, Poway, and Richard P. Bocker, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 1, 1974, Ser. No. 484,832
Int. Cl.^{2} G06G *7/19*, *9/00*
U.S. Cl. 235—181 5 Claims



1. A multi-channel optical correlation system comprising:

a mask having a plurality of linearly disposed channels, each said channel having known recorded information defined by variations in opacity along its linear length;

a light source positioned to illuminate said mask;

means for modulating the intensity of said light source as a function of an input signal;

a multiple element, photo-responsive charge coupled device positioned to receive the light energy transmitted by the illuminated mask and having elements arrayed in linearly disposed groups along axes parallel to said linearly disposed channels for developing a charge within each said element commensurate with the photo energy received at its position;

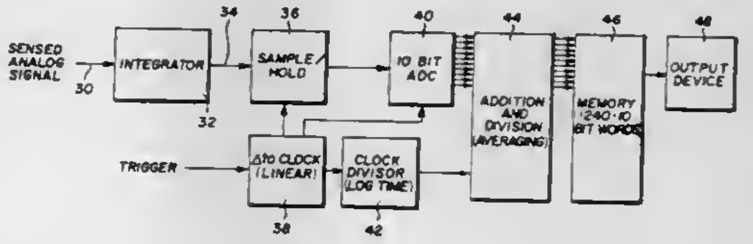
a source of clock signals; and

means applying said clock signals to said charge coupled device for cumulatively shifting charges developed within each said linearly disposed group and generating a cumulative charge output for each said group indicative of its degree of correlation to said input signal.

3,937,943
DIGITAL SIGNAL AVERAGER WITH LOGARITHMIC TIME BASE

Peter Debrunner, and Hans Frauenfelder, both of Urbana, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Aug. 29, 1974, Ser. No. 501,798
Int. Cl.^{2} G06G *7/18*
U.S. Cl. 235—183 9 Claims



1. A method of analyzing a kinetic action comprising the steps of:

providing periodic digital samples of information sensed during said kinetic action; and

averaging said periodic digital samples of information over exponentially increasing time intervals to obtain measurements of said kinetic action over several time decades.

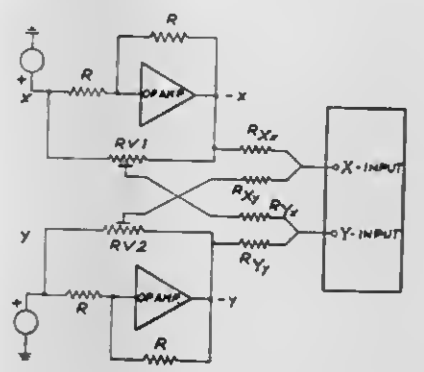
3,937,944
ELECTRONIC CIRCUITRY AND IN PARTICULAR TO CIRCUITRY FOR THE CROSS FEED CANCELLATION OF SECOND ORDER DISTORTION

Robert Radzyner, 35 Culver St., Kogarah, New South Wales, and Warwick Harvey Holmes, 3 Bortfield Drive, Chiswick, New South Wales, both of Australia

Filed Dec. 14, 1973, Ser. No. 424,881

Claims priority, application Australia, Dec. 15, 1972, 1630/72

Int. Cl.^{2} G06G *7/16*
U.S. Cl. 235—184 9 Claims



1. A method for the reduction of undesired second and higher order distortion products present in the signal(s) w_1, w_2, . . . , w_M appearing at the M outputs of an imperfect nonlinear electronic device which has input signals u_1, u_2, . . . , u_N applied to its N inputs, where N is an integer greater than unity and M is an integer greater than zero, and where input u_n is

applied to the n-th input, n being an integer lying between 1 and N inclusive, which comprises the steps of:

incorporating cross-feed connections at the inputs of the non-linear electronic device, and

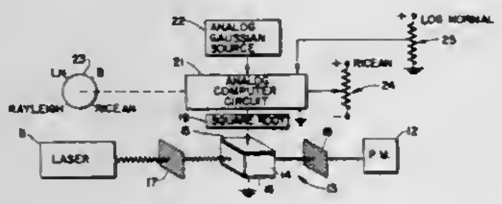
generating by use of the cross-feed connections signals u $_1'u_2'$. . . . , u_N' from the input signals u_1, u_2, . . . , u_N such that at least one of the signals u_1', u_2', . . . , u_N' is a non-trivial function of at least two of the signals u_1, u_2, . . . , u_N and such that the signal u_N is a non-trivial function of at least the signal u_N, where n is an integer between 1 and N inclusive, and

applying the signals u_1', u_2', . . . , u_N' to the N inputs of the electronic device instead of applying the input signals u_1, u_2, . . . , u_N directly to the N inputs so that the undesired second and higher order distortion products are reduced.

3,937,945
APPARATUS FOR SIMULATING OPTICAL TRANSMISSION LINKS

Michael W. Fitzmaurice, Gambrills, and Mona Tycz, Greenbelt, both of Md., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed June 25, 1974, Ser. No. 482,953
Int. Cl.^{2} G06G *7/48;* **H04B** *9/00*
U.S. Cl. 235—184 **13 Claims**

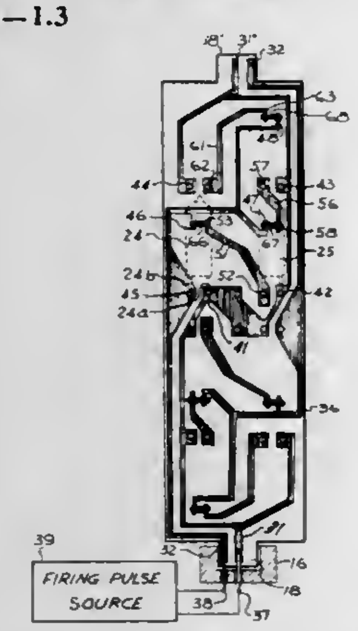


1. Apparatus for simulating a space-to-space or space-to-earth optical transmission link comprising a Gaussian random source, a computer responsive to the Gaussian random source for deriving an analog signal having random variations indicative of characteristics of the transmission link, and a linear optical modulator connected to be responsive to the analog signal and adapted to be positioned between an optical carrier source and a receiver for the carrier of the source, whereby light transmitted through the modulator is modulated in accordance with the random variations of the analog signal.

3,937,946
MULTIPLE FLASH LAMP UNIT

Kurt H. Weber, Pepper Pike, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 6, 1974, Ser. No. 448,671
Int. Cl.^{2} G03B *15/02*
U.S. Cl. 240—1.3 **21 Claims**

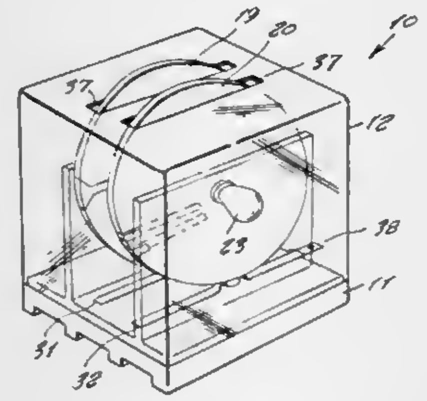


1. A multiple flash lamp unit for alleviating red-eye photographic results comprising a unitary structure having definable first and second regions, at least one photoflash lamp disposed in each of said regions, first and second mounting devices forming a part of said structure and disposed in or adjacent to said first and second regions respectively, said lamp in said first region being separated from said second mounting device by said second region, said lamp in said second region being separated from said first mounting device by said first region, and coupling means for transmitting flash actuation signals from said first mounting device to the lamp in said second region and from said second mounting device to the lamp in said first region respectively.

3,937,947
DISK SWITCH LIGHT

Albert Nathanson, 75-60 199th St., Flushing, N.Y. 11366

Filed Aug. 12, 1974, Ser. No. 496,460
Int. Cl.^{2} F21S *1/12;* **F21P** *3/00*
U.S. Cl. 240—10.1 **3 Claims**



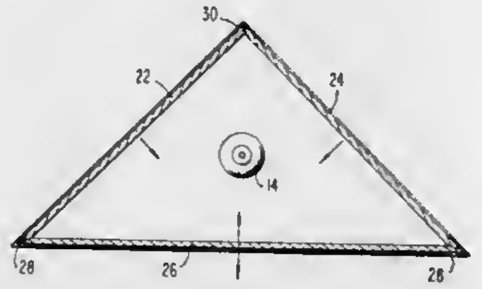
1. In a disk switch light, the combination of a base of electrical insulation material, said base having upstanding stanchions with bearing openings, a rotatable disc switch supported in said bearing openings, a pair of stationary leaf springs secured upon said base providing electric contact means, said rotatable disk siwtch carrying a pair of lamps and a plurality of leaf contacts engagable with said contact means for illumination of said lamps, said rotatable disk switch comprising a tubular, cylindrical hub having a lamp socket in each end fitted with said lamps, a pair of axially spaced apart circular disks affixed around said hub, said leaf contacts being connected to said lamps and being wrapped around the peripheral edges of said disks so to engage said stationary leaf springs of said base, and a transparent hollow dome being fitted upon said base enclosing said rotatable disk switch and stationary leaf springs, said dome including a top wall having a pair of slots therethrough, a portion of each said circular disk protruding upwardly therethrough for manual rotation thereof, and an end of each said stationary leaf spring extending sidewardly outward from under said dome for connection to a power source.

3,937,948
LIGHT FIXTURE

Donn Allison, Saugus, Calif., assignor to Donn Allison, Saugus, Calif.

Filed Aug. 14, 1974, Ser. No. 497,283
Int. Cl.^{2} F21S *1/04*
U.S. Cl. 240—78 R **11 Claims**

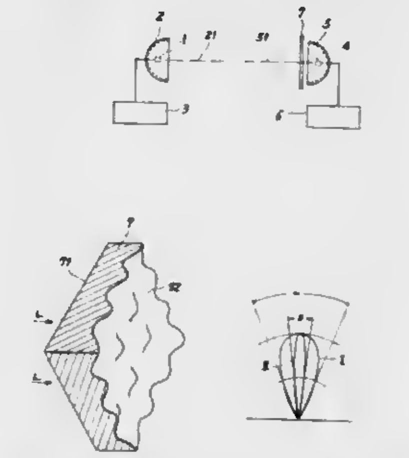
1. A light fixture comprising a housing, a light source carried by and disposed substantially centrally within said housing, said housing including a plurality of reflective surfaces disposed about said light source and comprising a first planar two-way mirror, second and third planar mirrors each including one of said plurality of reflective surfaces, said first two-way mirror being carried by said housing along one side of said light source and said second mirror being carried by said housing along another side of said light source and disposed in a plane at an angle other than 90° with respect to the plane containing said first mirror, said third mirror being carried by said housing along another side of said light source and disposed in a plane at an angle other than 90° with respect to said first planar two-way mirror said mirrors being arranged about said light source such that at least a portion of the light rays generated by said light source are reflected by the reflective surfaces of said second and third mirrors for passage through said first mirror and another portion of the light rays are reflected by the reflective surface of said first mirror interiorly of said housing for further reflection by said reflective surfaces and passage through said first mirror whereby a three-dimensional multiple light source effect comprised of a series of discrete light sources which diminish in intensity and size with depth and repetitiously fade to infinity within said housing is provided when the light source is viewed through said first mirror.



3,937,949
OPTICAL REMOTE CONTROL APPARATUS EMPLOYING LIGHT SCATTERING PLATE

Kiyotsugu Ishikawa, Takatsuki; Tetsuo Kobune, Uji; Hitoo Iwasa, Takatsuki, and Iwao Teramoto, Ibaraki, all of Japan, assignors to Matsushita Electronics Corporation, Japan

Filed May 30, 1973, Ser. No. 365,242
Claims priority, application Japan, May 30, 1972, 47-53985
Int. Cl.^{2} H04B *9/00*
U.S. Cl. 250—199 **1 Claim**

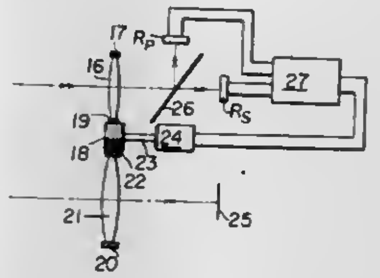


1. In an optical-remote-control apparatus including a light beam transmitter and a light-receiver disposed remote with respect to said transmitter, the improvement wherein a light-scattering plate is provided in front of said light-receiver and is arranged so as to have the entirety of its light receiving face exposed to the light beam from said transmitter irrespective of the direction from which said light beam impinges upon said light receiving face, said plate being transparent and the light receiving face thereof being substantially flat and the rear face thereof being roughened, said receiver including a photodetecting element and a focusing element disposed relative to said photodetecting element for focusing impinging light onto said photodetecting element, said focusing element comprising a reflecting focusing mirror disposed behind said photodetecting element, and wherein said light-scattering plate is disposed relative to said focusing element to scatter said impinging light thereonto, and thereby increase the angular response characteristic of said light-receiver.

3,937,950
FOCUS DEFECTING SYSTEM

Kazuya Hosoe, Tokyo; Seiichi Matsumoto, Yokohama; Hideo Yokota, and Hiroshi Aizawa, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Apr. 8, 1974, Ser. No. 459,219
Claims priority, application Japan, Apr. 11, 1973, 48-41000
Int. Cl.^{2} G01J *1/20*
U.S. Cl. 250—201 **16 Claims**



1. A detecting device for detecting the image sharpness of an object, comprising;

A. a movable image forming optical system;

B. a photoelectric transducing means positioned behind the optical system to receive an image formed by the optical system, and having;

a. a first elongated photoelectric transducing element having a semiconductor and electrodes deposited on both long sides of the semiconductor;

b. a second elongated photoelectric transducing element having a semiconductor and electrodes deposited on both short sides of the semiconductor;

C electrical circuit means coupled to the elements for generating an electrical signal in response to the intensity distribution of the light on the phototransducing means, said first transducing means and second transducing means being connected to the circuit means to produce the electrical signal combining the output of the first transducing means with the output of the second transducing means,

D. signal responding means coupled to said electrical circuit means in the path of light from the imaging forming optical system for detecting the image sharpness,

E. said first transducing means and second transducing means being positioned in the path of light from the image forming optical system to receive light from the object.

3,937,951
ALL-SKY PHOTOELECTRIC LIGHTNING DETECTOR APPARATUS

Edmund Philip Krider, Tucson, Ariz., assignor to United States of America as represented by the Secretary of the Navy, Washington, D.C.

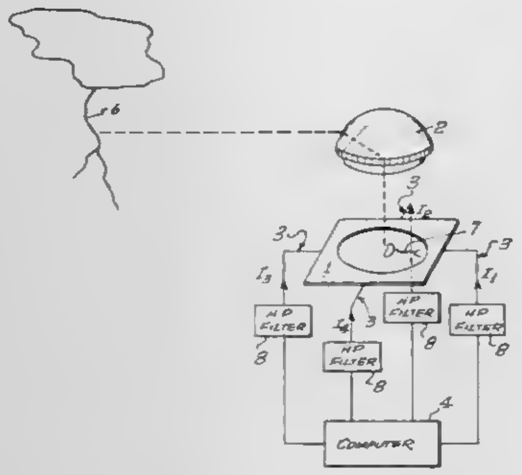
Filed Dec. 9, 1974, Ser. No. 530,643
Int. Cl.^{2} H01J *39/12*
U.S. Cl. 250—209 **4 Claims**

1. All-sky photoelectric apparatus for detecting and locating lightning discharges comprising:

a pair of wafer-like planar detector members disposed horizontally with their vertical axes spaced apart a predetermined distance (D), said members each including means responsive to impinging optical radiations for producing XY quadrature electrical signal outputs corresponding in magnitude to the XY wafer location of the impinging radiation,

optical means for imaging substantially the entire sky on the detectors whereby a lightning discharge radiation occur-

ring at any sky location is optically imaged simultaneously at a related location on both of said detectors,
data acquisition means, and
circuit means coupling said quadrature signal outputs to said data acquisition means, said circuit means including



background-filtering means for passing to said acquisition means signal information substantially wholly representative of the optical transients of the lightning discharges,
said data acquisition means being responsive to said filtered information for providing in real time said lightning discharge location data.

3,937,952

KEYBOARD AND SWITCHES FOR KEYBOARDS

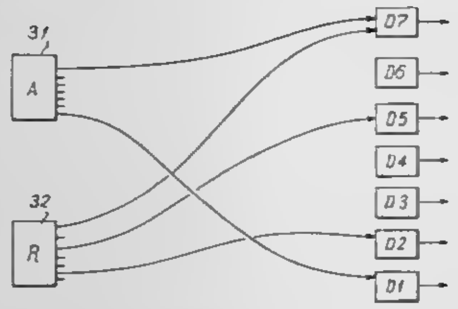
Lionel George Ripley, Lewes, and Richard Lawrence Grimsdale, Brighton, both of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 399,618, Sept. 21, 1973, abandoned. This application Dec. 30, 1974, Ser. No. 537,546

Claims priority, application United Kingdom, Sept. 22, 1972, 43965/72

Int. Cl.^{2} G02B *5/14*

U.S. Cl. 250—227 **6 Claims**



1. A keyboard comprising:
a light source,
a plurality of optical switches,
a plurality of photodetectors,
a plurality of output light pipes for each switch selectively connecting the switch to a plurality of photodetectors,
one input light pipe for each switch being connected to the light source,
each optical switch comprising light conduction means to transmit light from the input light pipe to the plurality of output light pipes,
the amount of light from each input light pipe entering the light conduction means for transmission to the plurality of output light pipes being variable between a first level when the switch is actuated and a second level when the switch is not actuated,
each plurality of output light pipes being connected to a different combination of photodetectors which generate a signal consisting of a different multibit binary code for each switch.

3,937,953

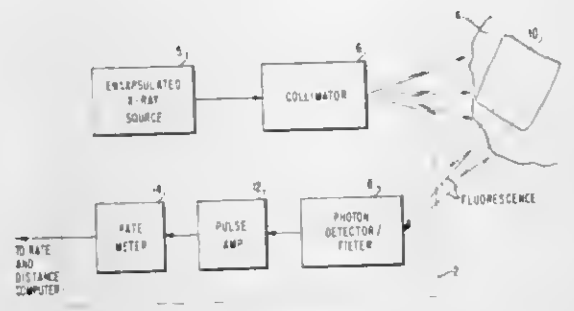
NON-CONTACTIVE PROXIMITY SENSOR SYSTEM UTILIZING NUCLEONIC RADIATION FLUORESCENCE

R. Wayne Stafford; William H. Tobey, and Benton C. Clark, III, all of Littleton, Colo., assignors to Martin Marietta Corporation, New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 415,188

Int. Cl. G01n *23/20*

U.S. Cl. 250—272 **4 Claims**



1. In a terminal closure and docking alignment system for docking a monitoring vehicle with a target vehicle, radiation responsive apparatus for providing range data comrising:
a source of radiation,
means for directing said radiation to said target vehicle,
at least three targets arranged in a nonlinear configuration on said target vehicle, each of said targets being coated with a different fluorescent material for emitting a different characteristic fluorescence in response to said radiation, and
a plurality of detectors on said monitoring vehicle equal in number to the number of said targets, each of said detectors cooperating with a single one of said targets for detecting only the characteristic fluorescence of said target.

3,937,954

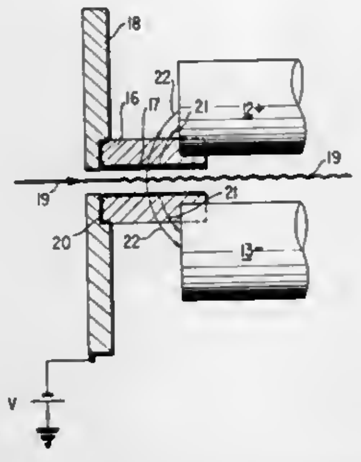
METHODS AND APPARATUS FOR SPATIAL SEPARATION OF AC AND DC ELECTRIC FIELDS, WITH APPLICATION TO FRINGE FIELDS IN QUADRUPOLE MASS FILTERS

Wade L. Fite, Pittsburgh, Pa., assignor to Extranuclear Laboratories, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 346,250, March 30, 1973, Pat. No. 3,867,632. This application Aug. 30, 1974, Ser. No. 502,158. The portion of the term of this patent subsequent to Feb. 18, 1992, has been disclaimed.

Int. Cl.^{2} H01J *39/34*

U.S. Cl. 250—282 **30 Claims**



1. In a method for the spatial separation of the high frequency AC fringe fields and low frequency AC, including DC, fringe fields, near the ends of a quadrupole mass filter, the use of field separation means which includes a material which responds to the high frequency AC fields substantially as a dielectric and responds to the low frequency AC, including DC, fields substantially as a conductor of electricity.

3,937,955

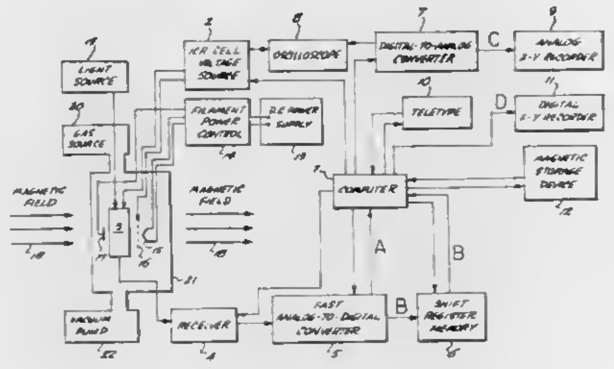
FOURIER TRANSFORM ION CYCLOTRON RESONANCE SPECTROSCOPY METHOD AND APPARATUS

Melvin Barnet Comisarow, and Alan George Marshall, both of Vancouver, Canada, assignors to Nicolet Technology Corporation, Mountain View, Calif.

Filed Oct. 15, 1974, Ser. No. 514,505

Int. Cl.^{2} H01J *39/34;* **B01J** *59/44*

U.S. Cl. 250—283 **43 Claims**



1. A Fourier transform ion cyclotron resonance mass spectrometer comprising:
an evacuable chamber suitable for receiving a gaseous sample to be mass analyzed;
evacuation means connected to said evacuable chamber for reducing the atmospheric pressure in said chamber to a predetermined level;
an ion cyclotron resonance cell, including a plurality of electrode plates, mounted in said evacuable chamber;
ion forming means for ionizing gases located in said ion cyclotron resonance cell;
magnetic field means for creating a unidirectional magnetic field, said magnetic field means mounted so that said unidirectional magnetic field passes through said ion cyclotron resonance cell in a predetermined direction;
voltage means connected to said plurality of plates of said ion cyclotron resonance cell, said voltage means generating voltages of a level and a polarity adequate to trap substantially all ions of a given charge sign formed by said ion forming means in said ion cyclotron resonance cell, said unidirectional magnetic field means causing said trapped ions to move orbitally at angular frequencies dependent on the mass-to-charge ratio of individual ions;
broad-band excitation means connected to said ion cyclotron resonance cell for producing a broad-band electric field at right angles to said unidirectional magnetic field, said broad-band electric field exciting all ions trapped within said ion cyclotron resonance cell that have a mass-to-charge ratio falling within a predetermined range;
broad-band detection means connected to said ion cyclotron resonance cell for simultaneously detecting the number of ions of each different mass-to-charge ratio excited by said broad-band excitation means and for generating a single time domain analog signal containing information related to the magnitude and nature of said numbers;
digitizing means connected to said broad-band detection means for digitizing said time domain analog signal related to the magnitude and nature of the number of ions of each different mass-to-charge ratio so as to produce a time domain digital signal related to the magnitude and nature of said numbers; and,
Fourier transform means connected to said digitizing means for transforming said time domain digital signal into a frequency domain signal containing information about the numerical magnitude and frequency of excited ions of each different mass-to-charge ratio trapped in said ion cyclotron resonance cell.

3,937,956

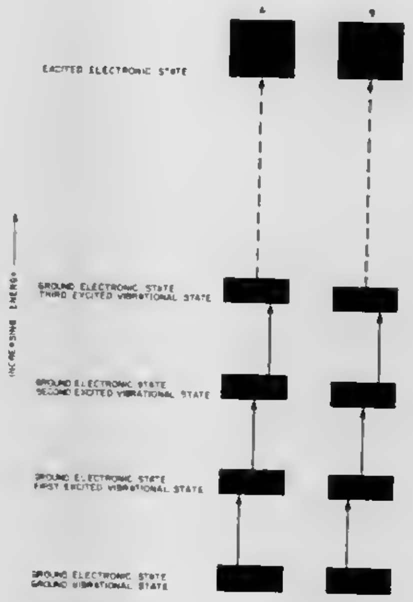
ISOTOPE SEPARATION PROCESS

Richard K. Lyon, Fanwood, N.J., assignor to Exxon Research & Engineering Company, Linden, N.J.

Filed Oct. 23, 1973, Ser. No. 408,669

Int. Cl. H01j *39/34*

U.S. Cl. 250—290 **11 Claims**


EXCITED ELECTRONIC STATE
INCREASING ENERGY
GROUND ELECTRONIC STATE THIRD EXCITED VIBRATIONAL STATE
GROUND ELECTRONIC STATE SECOND EXCITED VIBRATIONAL STATE
GROUND ELECTRONIC STATE FIRST EXCITED VIBRATIONAL STATE
GROUND ELECTRONIC STATE GROUND VIBRATIONAL STATE

1. A method of separating the isotopes of an element, said method being applied to a gaseous compound of said element, said method comprising subjecting the molecules of said compound to IR radiation at a predetermined frequency by means of an IR laser, said gaseous compound being irradiated by said IR laser at a power density of at least 10^4 watts per cm^2 per torr pressure of said gaseous compound for a time of between 10^{-10} and 5×10^{-5} seconds and wherein a second gas is present along with said gaseous compound, said second gas partial pressure being at least 5 times the partial pressure of said gaseous compound, whereby the molecules containing the lighter isotope or isotopes are preferentially excited and absorb more than one quanta of IR radiation, subjecting said gaseous mixture to radiation at the second predetermined frequency within the visible or ultraviolet spectrum, said second predetermined frequency being selected to convert said excited molecules to a form whereby they may be separated from the nonexcited molecules, and separating said converted molecules.

3,937,957

APPARATUS FOR DETERMINING THE ENERGY OF CHARGED PARTICLES

Helmut Schillalies, Rondorf, and Alfred Barz, Lohmar, both of Germany, assignors to Leybold-Heraeus-GmbH & Co., Cologne-Bayental, Germany

Filed June 18, 1974, Ser. No. 480,924

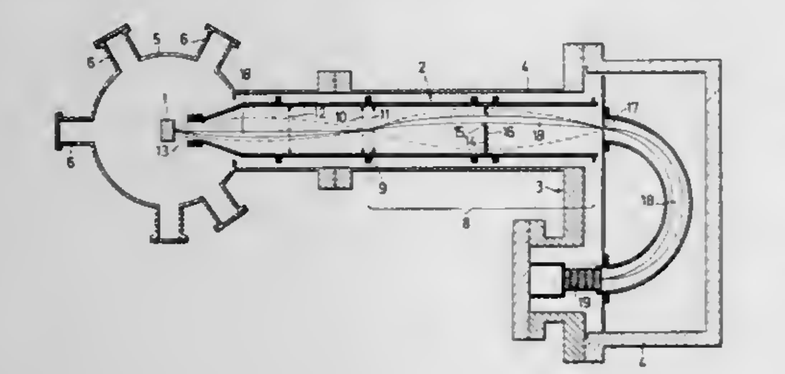
Claims priority, application Germany, June 19, 1973, 2331091

Int. Cl.^{2} H01J *37/26*

U.S. Cl. 250—305 **6 Claims**

1. In a device for measuring the energy of charged particles separated from a sample by bombardment with ionizing radiation, which device includes an energy analyzer and an electron-optical system disposed between the sample location and the energy analyzer and containing means defining a deceleration path for the charged particles to be analyzed, the improvement wherein said electron-optical system comprises means defining two individual lenses between which an intermediate image is formed, and grids with high transmission disposed at the boundary between each said lens and said deceleration path, and wherein said deceleration path is disposed between said lenses at the location of such intermediate

image, and said two lenses are constructed so that the image plane of the lens closer to the sample lies in the deceleration path, this image plane coincides with the object plane of the lens closer to the analyzer and the image plane of the lens closer to the analyzer lies in the entrance slit of the analyzer.



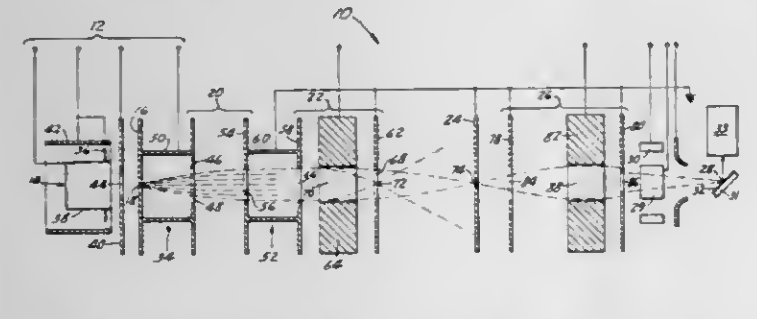
3,937,958
CHARGED PARTICLE BEAM APPARATUS

Thomas W. Rusch, Falcon Heights, and Jerry A. Sievers, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 31, 1975, Ser. No. 563,330

Int. Cl.² H01J *37/26*

U.S. Cl. 250—307 **31 Claims**



1. A charged particle beam apparatus comprising: (a) means for generating a charged particle beam including a source of charged particles and a primary extractor electrode having an aperture defining the effective diameter of said generated beam, (b) means for accelerating said charged particles in said beam, (c) a first focusing means for focusing said beam at a cross-over point, (d) means for limiting the diameter of said focused beam, and (e) a second focusing means for focusing said beam at a target, each of said means being located along a beam axis downstream from previously recited means, THE IMPROVEMENT WHEREIN: said accelerating means comprises

- a first electrode assembly including said primary extractor electrode at the upstream end thereof and means for providing a circularly-symmetric axially-centered unipotential surface extending a first predetermined distance downstream from said extractor electrode,
- a second electrode assembly the upstream end of which is spaced a second predetermined distance downstream from the downstream end of said first electrode assembly and including means for providing a circularly-symmetric axially-centered unipotential surface extending axially a third predetermined distance,
- means for applying a given potential between said source of charged particles and said second electrode assembly, and
- means for applying a given fraction of said given potential to said first electrode assembly in order to establish an electrostatic lens, a focal point of which is approximately in the plane of the aperture of said primary extractor electrode such that the trajectories of charged particles passing through said second electrode assembly are substantially parallel, thereby enhancing the current density of the beam at said target under a given set of focusing conditions.

3,937,959
METHOD AND APPARATUS FOR AUTOMATICALLY FOCUSING

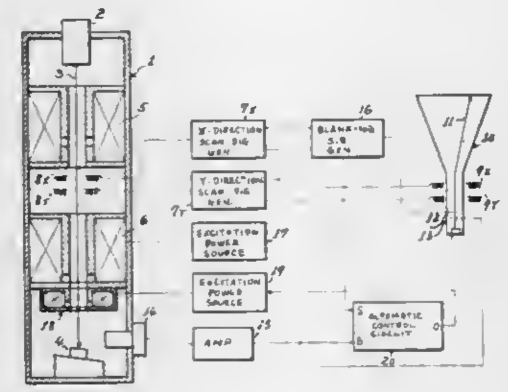
Takao Namae, Akishima, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1974, Ser. No. 536,188

Claims priority, application Japan, Dec. 24, 1973, 49-1436; Apr. 24, 1974, 49-46286

Int. Cl.² G01N *23/00;* **G21K** *7/00;* **H01K** *37/26*

U.S. Cl. 250—311 **10 Claims**



1. A method for automatically focusing the electron beam of a scanning device having an electron beam source, a condenser lens system for focusing the electron beam on the specimen, a scanning means for scanning the electron beam over the specimen, a detecting means for detecting the signal emanating from the specimen, and a display means for displaying the specimen image on a display device by using the output signal of said detecting means to modulate the scanning beam of the display device which is in synchronism with said scanning means comprising the steps for:

- a. changing the condenser lens system focal length stepwise in synchromism with said scanning means,
- b. converting the output of said detecting means into a signal indicative of the diameter of said electron beam,
- c. comparing two converting signals indicative of the beam diameter obtained in step (b) and,
- d. controlling the polarity and change width in step (a) in response to the result in step (c) to minimize the beam diameter.

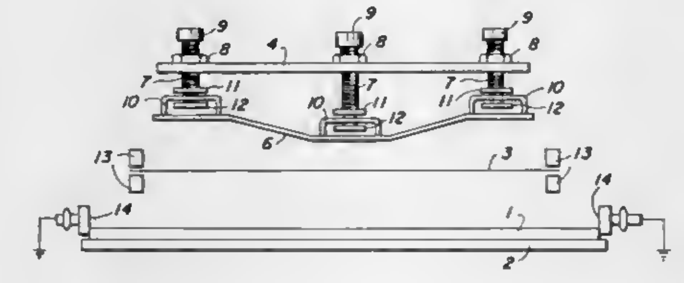
3,937,960
CHARGING DEVICE FOR ELECTROPHOTOGRAPHY

Seiji Matsumoto, Asaka, and Isoji Takahashi, Tokyo, both of Japan, assignors to Rank Xerox, Ltd., London, England

Continuation of Ser. No. 227,970, Feb. 22, 1972, abandoned. This application May 3, 1974, Ser. No. 466,763

Int. Cl.² G03G *13/00*

U.S. Cl. 250—326 **4 Claims**



1. In combination

- a chargable insulating surface having a directly grounded portion and another portion which is not directly grounded,
- corona electrode means overlying said surface, said electrode means having a first segment overlying said directly grounded portion and a second segment overlying said portion of said surface which is not directly grounded, and
- movable control plate means for varying the corona discharge generated adjacent said first segment relative to the corona discharge adjacent said second segment, whereby the flow of charge from said second segment to said indirectly grounded portion is greater than that from said first segment to said portion which is directly grounded.

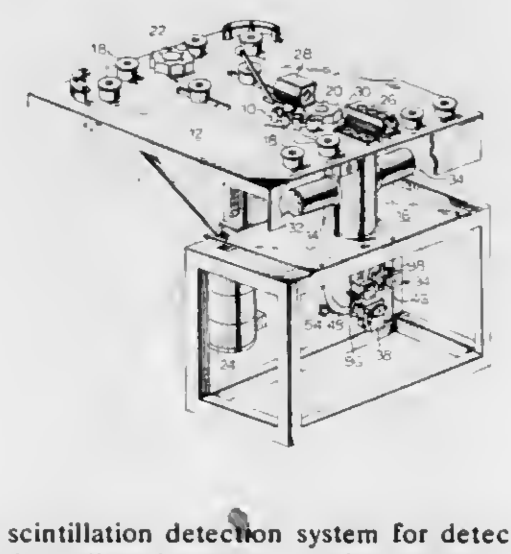
3,937,961
LIQUID SCINTILLATION SYSTEMS AND APPARATUS FOR MEASURING HIGH-ENERGY RADIATION EMITTED BY SAMPLES IN STANDARD LABORATORY TEST TUBES

Ronald A. Benvenutti, Woodbridge, Va., assignor to Meloy Laboratories, Inc., Springfield, Va.

Filed Jan. 18, 1974, Ser. No. 434,600

Int. Cl.² G01T *1/20, 7/08*

U.S. Cl. 250—328 **17 Claims**



1. A scintillation detection system for detecting radiation emitted by radioactive samples, said system comprising:

- a sample holder including a vial containing a scintillator, means forming a well extending substantially centrally into the scintillator, the bottom end of said well being closed and the top end of said well being open, and a test tube received in said well;
- a scintillation detection chamber; and
- transfer means for moving said sample holder into said scintillation detection chamber for detection of scintillations emanating from said scintillator and for removing said sample holder from said chamber after said detection.

3,937,962
CORRECTION OF TWO BEAM PHOTOMETER FOR FLUID ANALYSIS

Reimar Faulhaber, and Kurt Moldenhauer, both of Frankfurt, Germany, assignors to Hartmann & Braun Aktiengesellschaft, Frankfurt, Germany

Filed Nov. 29, 1974, Ser. No. 528,420

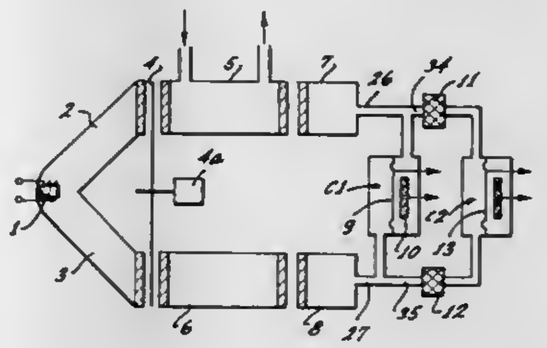
Claims priority, application Germany, Nov. 30, 1973, 2359637

Int. Cl.² G01N *21/26, 21/36*

U.S. Cl. 250—346 **8 Claims**

1. In a two beam infrared gas analyzer having a first and a second beam of radiation, the first beam traversing sample fluid in a chamber, the second beam traversing a reference fluid in a chamber, a first and second detector respectively for the first and second beams, and first means connected to the first and second detectors to derive therefrom a first signal representing the difference in detected intensities of the beams, the improvement comprising:

- second means connected to the first and second detectors to derive therefrom a second signal which is the sum of the products, respectively, of two parameters α and β and of the detected intensities; and



- third means connected to the first and second means for forming the ratios of the first and second signals, said ratio representing directly the relation $A/(\alpha + \beta(1 - A))$, wherein A is the absorption of radiation in the first chamber due to presence of a particular component to be quantitatively detected in said sample fluid.

3,937,963
RADIOGRAPHIC APPARATUS

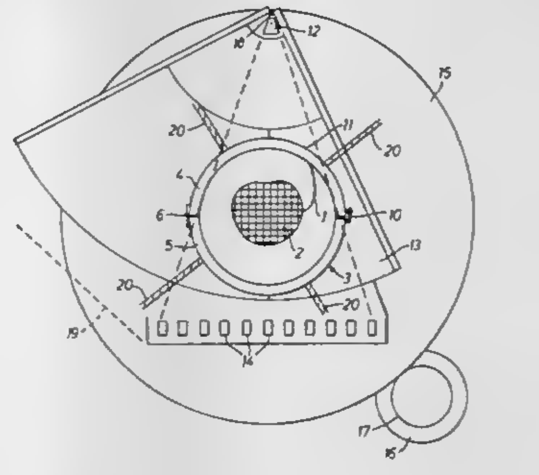
Godfrey Newbold Hounsfield, Newark, England, assignor to E M I Limited, Hayes, England

Filed June 4, 1974, Ser. No. 476,300

Claims priority, application United Kingdom, June 5, 1973, 26811; Feb. 14, 1974, 6809/74

Int. Cl.² G01T *1/20;* **G02B** *5/00;* **G21K** *5/08, 5/06*

U.S. Cl. 250—363 **9 Claims**



1. Apparatus for examining the body of a patient by means of penetrating radiation comprising:

- a. a ring-shaped locating structure adapted to enclose the part of the patient to be examined,
- b. a source of penetrating radiation,
- c. a detecting means sensitive to the radiation,
- d. a scanning structure, which is rotatable about an axis passing through the part of the patient enclosed by said locating structure, supporting said source and said detecting means so that the source can project radiation through the said part of the patient to be received by the detecting means,
- e. means for rotating said scanning structure about said axis so that the radiation can be projected through the body from a plurality of different directions in a plane substantially perpendicular to the said axis and,
- f. an attenuating mass not attached to and adapted to rotate around said locating structure on rotation of said scanning structure so as to present substantially the same profile to the radiation in the different positions of the scanning structure to compensate for changes in the absorbing path length presented to the X-rays by the body

and locating structure during the scanning movement, wherein the locating structure is located in a fixed position during motion of the scanning structure.

3,937,964

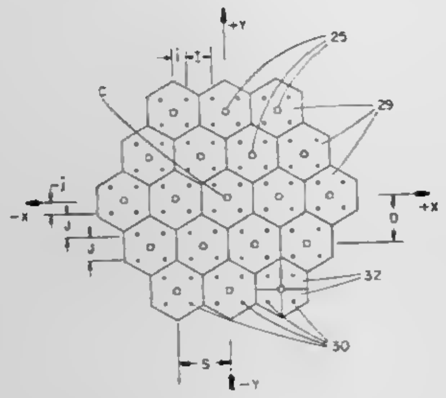
SCINTILLATION CAMERA WITH SECOND ORDER RESOLUTION

Gerd Muehllehner, Mount Prospect, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed June 21, 1974, Ser. No. 481,694

Int. Cl.² G01T *1/20*

U.S. Cl. 250—366 7 Claims



1. A radiation imaging device comprising scintillation means producing flashes of light therein at the locations of impinging quanta or radiation, a plurality of phototubes each positioned for viewing a particular area of said scintillation means and each comprising a plurality of anodes for generating discrete electrical output signals, each anode being particularly responsive to flashes of light emanating from a sector encompassing only a part of the area of said scintillation means viewed by the associated phototube, and electrical circuit means connected to the anodes of said phototubes and resolving the outputs of said anodes in response to each flash of light into co-ordinate signals corresponding to the co-ordinates of impinging quanta of radiation in said scintillation means.

3,937,965

RADIOGRAPHY APPARATUS

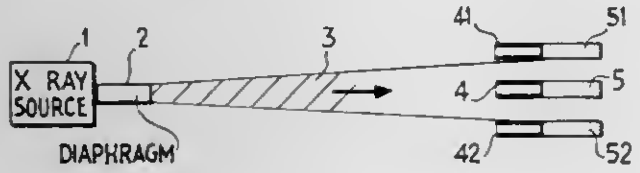
Jean Pierre Vasseur, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Oct. 29, 1974, Ser. No. 518,889

Claims priority, application France, Oct. 30, 1973, 73.38641

Int. Cl.² G01T *1/20;* G02B *5/00;* G21K *1/02*

U.S. Cl. 250—366 8 Claims



1. A radiography apparatus comprising an X-ray source, a collimator system for concentrating the emitted rays in a flat beam, and principal receptors connected to said source and arranged in the plane in order each to receive a predetermined portion of the beam, the set of principal receptors receiving substantially the whole of the beam, and associated with each principal receptor at least one auxiliary receptor, means for shielding said auxiliary receptor from the direct rays emitted by the source so that it only receives the radiation portions emitted as a consequence of the Compton effect, electrical circuits being provided in order to effect a linear combination of the amplitudes of the signals received respectively by the receptor and the auxiliary receptor.

3,937,966

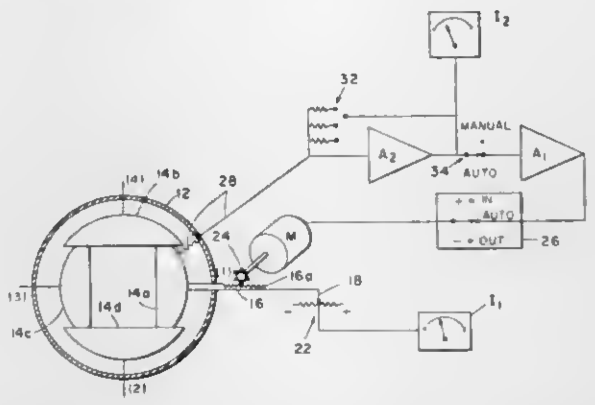
ACCELERATOR BEAM PROFILE ANALYZER

Julius B. Godel, Bayport, N.Y.; Marcel Guillaume, Grivegnee, Belgium; Richard M. Lambrecht, East Quogue, and Ronald Withnell, East Setauket, both of N.Y., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Feb. 19, 1975, Ser. No. 551,200

Int. Cl.² G01T *1/16*

U.S. Cl. 250—393 5 Claims



1. Apparatus for defining edges of a beam of subatomic particles along axes transverse to the directional axis of said beam comprising:

- a. multiple quadrant plate means independently movable along each of said transverse axes;
- b. means for measuring current flowing out of each of said plate means caused by impingement of said beam on each of said plate means; and
- c. means for moving each of said plate means along each said transverse axis until current flow reaches predetermined values indicating a predetermined point on the outer edges of said beam along said transverse axes thereby defining the extent of said beam along said transverse axes.

3,937,967

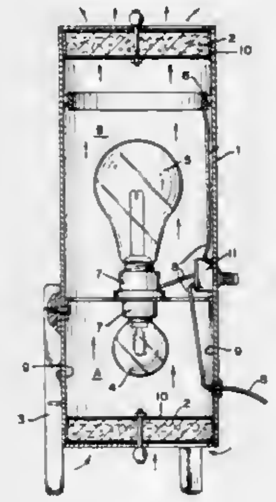
ELECTRONIC AIR PURIFIER WITH OZONE SUPPRESSION

Kurt Steinitz, 7 Kingswood Road, Danbury, Conn. 06810

Filed Apr. 16, 1974, Ser. No. 461,409

Int. Cl.² G01N *21/24*

U.S. Cl. 250—435 4 Claims



1. An apparatus for purifying and sterilizing the air in a space and for decomposing ozone within said air comprising; a tubular housing having top and bottom sections with a horizontal cross section smaller than its vertical cross section and comprising a flow path for air and air-ozone mixtures; an air inlet in said bottom section and air outlet in said top section; an ultra violet radiating device placed in said bottom section of said housing in proximity to said air inlet for creating within said bottom section ozone in air of ambient temperature, and for emitting germicidal radiation; a heating device placed in said top section of said housing above said ultra violet radiating device for heating and decomposing ozone in said air-ozone mixture, and for supporting air flow through said tubular housing; means for connecting said ultra violet radiating device and said air heating device to an electric power supply; means for regulating the temperature of said heating device and of said air-ozone mixture in said top section of said housing; the air flow path in said housing comprising in the bottom section a germicidal radiation and ozone forming region and in the top section an ozone decomposing, impurities oxidizing and molecular oxygen forming region.

3,937,968

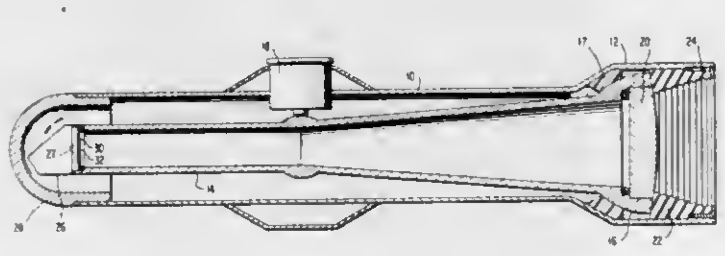
OPTICAL AIMING DEVICE EMPLOYING RADIOLUMINOUS MATERIAL

Samuel G. Harris, Vienna, Va., assignor to Singlepoint U.S.A. Inc., Washington, D.C.

Filed May 2, 1969, Ser. No. 821,177

Int. Cl.² F21K *2/00*

U.S. Cl. 250—467 4 Claims



1. An aiming device for guns, optical instruments and the like comprising:

- a. an elongated housing for mounting on a gun or optical instrument with the longitudinal axis of said housing substantially parallel to the longitudinal axis of the device to be aimed;
- b. a light collimator adjacent one end of said housing and having its optical axis substantially aligned with the longitudinal axis of said housing;
- c. a spot source of light of a first color supported adjacent the opposite end of said housing and positioned on the optical axis of said collimator;
- d. a thin opaque plate having an aperture therein smaller than said spot source, positioned adjacent said source and between said source and said collimator with said aperture on the optical axis of said collimator; and
- e. a light gathering filter surrounding said spot light source, said filter having a color different from said first color, said filter being exposed to the ambient light surrounding said housing;

whereby under conditions of high ambient lighting intensity said spot source of light will appear to the user as a spot of the color of said filter and as ambient lighting intensity decreases toward zero, said spot source of light will appear to the user as a spot of said first color.

3,937,969

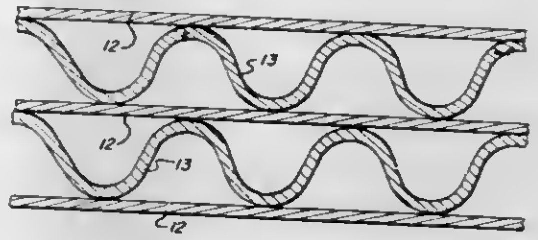
GAMMA RAY CAMERA SYSTEM WITH CORRUGATED COLLIMATORS

Gerd Muehllehner, Mount Prospect, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Continuation of Ser. No. 357,917, May 7, 1973, and a continuation-in-part of Ser. No. 332,934, Feb. 16, 1973, and a continuation-in-part of Ser. No. 260,188, June 6, 1972, abandoned, Division of Ser. No. 52,924, July 7, 1970, abandoned. This application Nov. 14, 1974, Ser. No. 523,690. The portion of the term of this patent subsequent to Nov. 18, 1992, has been disclaimed.

Int. Cl.² G21K *1/02*

U.S. Cl. 250—505 6 Claims



1. A gamma ray camera system for imaging an in vivo distribution of a radioactive material which emits gamma rays comprising:

- a gamma ray detector, including a transducer sensitive to gamma rays, of the type producing output signals delineating spatial coordinates of interaction of gamma rays with said transducer; and
- a gamma ray collimator adapted to be mounted adjacent said transducer comprising a plurality of straight strips of lead foil no greater than about 0.01 inches in thickness and a plurality of strips of lead foil no greater than about 0.01 inches in thickness and having corrugations therein arranged with each corrugated strip mounted between successive straight strips to produce an array of collimating channels.

3,937,970

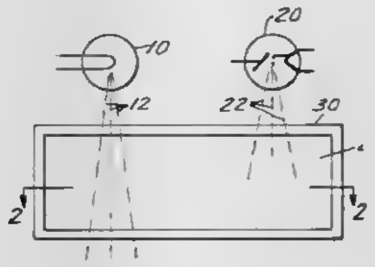
OPTICALLY-TRANSPARENT RADIATION-SHIELDING COMPOSITION

Theodore F. Bolles, and Peter B. Fleming, both of Woodbury, Minn., assignors to Theodore F. Bolles and Peter B. Fleming, both of St. Paul, Minn.

Filed May 16, 1974, Ser. No. 470,351

Int. Cl.² G21C *11/00*

U.S. Cl. 250—515 10 Claims



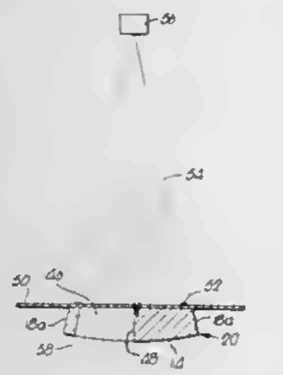
1. A high energy radiation shield consisting essentially of

- A. an optically transparent container means and, filling said container means,
- B. highly viscous substantially optically transparent, coloress and clear liquid composition in metastable glassy state consisting essentially of
  - a. at least one lead salt of a first organic acid of from one to five carbon atoms and
  - b. at least one chloride, bromide, nitrate or different salt of organic acid of one to five carbon atoms, of at least one metal of the group consisting of lead, thallium and mercury.

3,937,971

METHOD AND APPARATUS FOR MAKING A FOCUSED SHIELD

Richard A. Morrison, 9021 Delmar, Prairie Village, Kans. 66207, and Cecil W. Johnston, 19710 Lake City Road, Independence, Mo. 64057
Filed Oct. 11, 1974, Ser. No. 514,109
Int. Cl.² G21C *11/00;* **H01J** *35/16*
U.S. Cl. 250—515 **17 Claims**

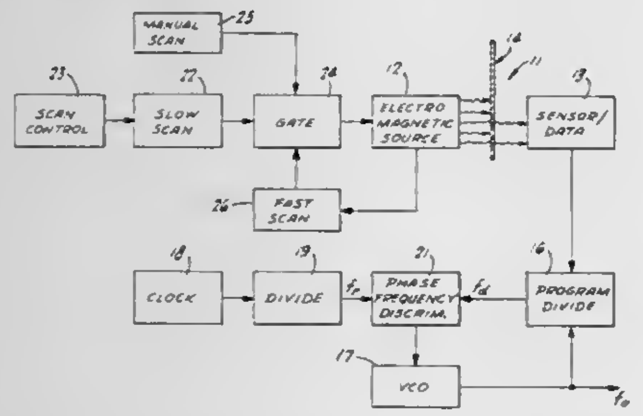


1. A method of making a focused shield for use in connection with a radiation therapy machine or the like, said method comprising the steps of:
forming a shield blank having a planar top side and an opposite, rounded bottom side;
forming a shield blank holding fixture having a rounded shield blank supporting surface provided with a radius of curvature complementary to the curvature of the bottom side of said shield blank;
selectively placing on the top side of said shield blank an outline having a configuration corresponding to a predetermined area of a patient to be exposed to a field of radiation;
placing said fixture on a cutting table of a band saw or the like;
positioning said shield blank on said fixture with the rounded bottom side of said shield blank resting on said rounded surface of said fixture; and
cutting said shield blank along said outline with said saw or the like while maintaining the shield blank in contact with said rounded surface to provide a focused shield having a bevel-walled aperture corresponding to said predetermined area.

3,937,972

ELECTROMAGNETICALLY ENERGIZED SCANNING FREQUENCY SYNTHESIZER

Stephen Charles Snell, Watsonville, Calif., assignor to Linear Systems Incorporated, Watsonville, Calif.
Filed Dec. 26, 1974, Ser. No. 536,488
Int. Cl.² G06K *7/10;* **H04B** *1/06*
U.S. Cl. 250—555 **14 Claims**

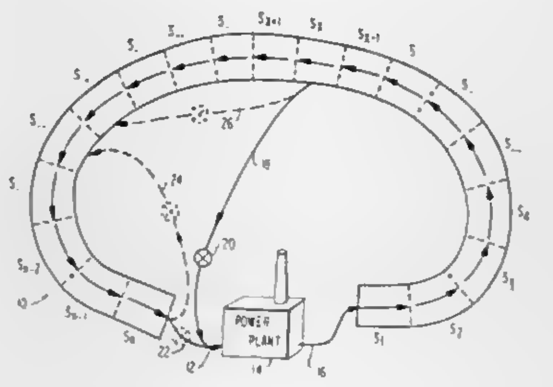


1. A frequency synthesizer comprising means for radiating electromagnetic energy, an array of electromagnetic energy transducers spaced from said means for radiating for producing a plurality of discrete electrical output signals responsive to impingement of electromagnetic energy thereon, removable means for positioning between said means for radiating and said array having a predetermined pattern thereon for blocking said electromagnetic energy from predetermined transducers in said array, thereby providing a predetermined combination of said discrete electrical output signals, a voltage controlled oscillator for providing an output signal at a controlled output frequency, a programmable divider having a plurality of input terminals each connected to one of said discrete electrical output signals, said programmable divider connected to receive said controlled output frequency and producing an output signal having a divider output frequency determined by said predetermined combination of said discrete electrical output signals, means for providing a reference frequency, means for comparing said divider output frequency with said reference frequency producing a control signal related to the difference therebetween, said control signal being connected to said voltage controlled oscillator for driving said controlled output frequency to a predetermined value.

3,937,973

METHOD FOR DETERMINING AND CONTROLLING LIQUID COOLING SYSTEM CHARACTERISTICS

Charles W. Weber; C. Olen Rucker; Patrick L. Peavy; Pak-Fat William Woo, and James E. Bear, all of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.
Division of Ser. No. 247,703, April 26, 1972, Pat. No. 3,847,207. This application July 30, 1974, Ser. No. 493,662
Int. Cl.² B60L *1/02;* **F01K** *17/02*
U.S. Cl. 290—2 **11 Claims**

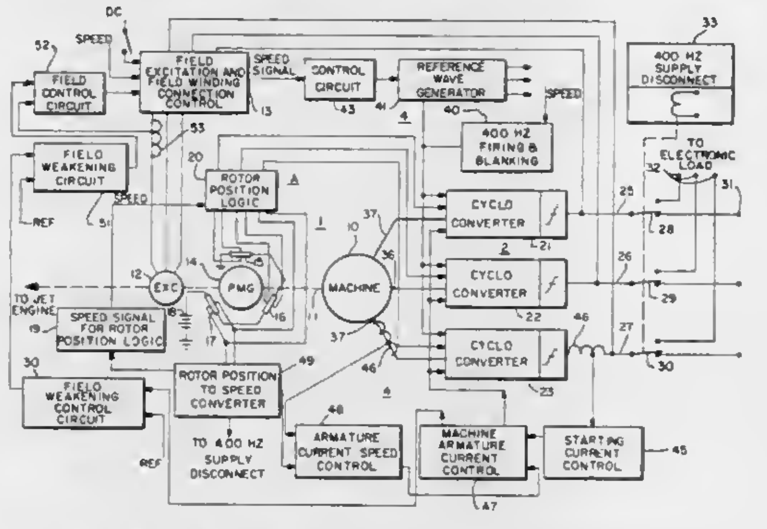


1. A method for operating a liquid cooling system including a cooling reservoir having a surface exposed to the atmosphere along at least a portion of a flow path of a reservoir, the method comprising the steps of:
establishing a plurality of reservoir segments each representing specified time intervals and together representing at least a portion of an overall flow pattern of the cooling system, the flow path of the reservoir including an electric power generating plant condenser;
determining an initial thermal characteristic of at least one of the segments at a first time and at a predetermined location in the cooling system;
at least periodically determining the thermal characteristic of the one segment at successive specified time intervals after said first time in response to the initially determined thermal characteristic and prevailing heat transfer conditions to which the segments are exposed, the prevailing heat transfer conditions including the hourly generated electric power of the electric power generating plant; and,
modifying the flow pattern of the cooling system responsively to the determined thermal characteristics of the at least one segment.

3,937,974

STARTER-GENERATOR UTILIZING PHASE CONTROLLED RECTIFIERS TO DRIVE A DYNAMOELECTRIC MACHINE AS A BRUSHLESS DC MOTOR IN THE STARTING MODE WITH STARTER POSITION SENSE VARIATION WITH SPEED

David Logan Lafuze, Erie, Pa., assignor to General Electric Company, Wilmington, Mass.
Filed Aug. 30, 1974, Ser. No. 502,027
Int. Cl.² F02N *11/04;* **H02K** *23/52;* **H02P** *9/04*
U.S. Cl. 290—46 **4 Claims**

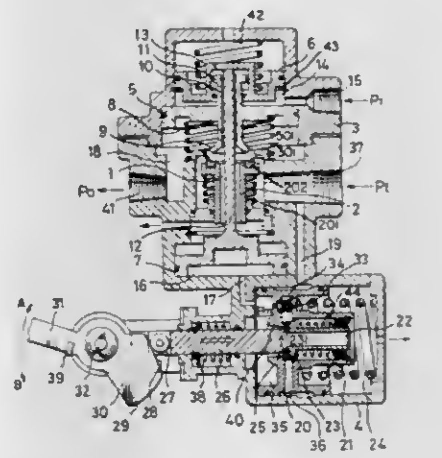


1. In a starter-generator system, the combination of:
a. a dynamoelectric machine for operation both as a brushless DC motor and as a constant frequency AC generator,
b. cycloconverter means coupled to said machine for selectively supplying current to the machine armature windings during motoring operation and for converting the frequency of the output signal from the machine to provide a constant frequency output during generator operation, said cycloconverter means including banks of oppositely poled, phase controlled, gated, switching devices.
c. means to operate said dynamoelectric machine as a brushless DC motor including,
  1. a source of constant frequency alternating supply voltage coupled to said banks of switching devices,
  2. means for sensing the rotor position of said dynamoelectric machine and for producing in response thereto enabling signals to gate selected ones of said switching devices in sequence to permit current flow in selected armature windings as a function of rotor position so that current flows in the armature winding having flux associated therewith to produce positive torque,
  3. means for controlling the phase angle between armature current, flux, and machine voltage over a predetermined speed range only to provide a fixed phase angle over a speed range wherein the machine voltage frequency does not exceed one-half of the supply voltage and to vary the phase angle at speeds wherein the machine voltage frequency exceeds one-half the supply voltage frequency, including means responsive to the speed of the machine for shifting the phase of the enabling signals to vary the angle at which the switching devices are gated over the speed range wherein the machine voltage frequency exceeds one-half of the supply voltage frequency, to permit commutation of the switching devices by the machine voltage whereby the said gating angle is maintained at a fixed minimum value at speeds up to said range thereby maximizing torque, and is increased with speed over said speed range,
d. a source of constant frequency reference waves,
e. means for converting the system from the motoring to the generating mode including means responsive to the speed of the dymamoelectric machine for disconnecting the constant frequency supply voltage, and for disconnecting the rotor position sensing and enabling signal producing means from said bank of switching devices when the machine reaches a predetermined speed at which the machine is to operate as a generator, and means for coupling the source of constant reference frequency waves to said banks of said switching devices for said cycloconverter means when the machine reaches said predetermined speed.

3,937,975

COMBINED LOAD SENSING PRESSURE PROPORTIONING RELAY VALVE

Itiro Yanagawa, and Isao Suzuki, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co. Ltd., Japan
Filed Nov. 15, 1974, Ser. No. 524,136
Claims priority, application Japan, Dec. 6, 1973, 48-136652
Int. Cl.² B60T *8/18*
U.S. Cl. 303—22 R **4 Claims**

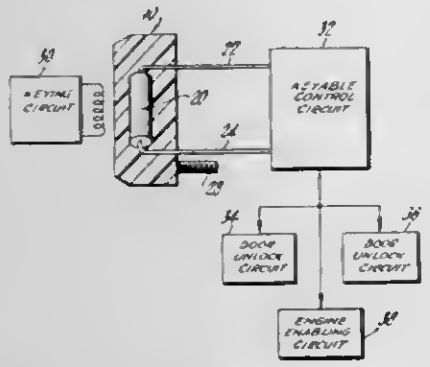


1. A combined load-sensing and pressure-proportioning relay valve, for a vehicle air brake system, comprising, in combination, a relay valve unit including a relay valve body formed with a first inlet port for connection to a source of indicated pressure for controlling brake application, a second inlet port for connection to a source of brake supply pressure, an outlet port for connection to the air brake actuators, and an exhaust port, a main valve disc in said relay valve body controlling communication between said second inlet port and said outlet port and having an axial exhaust bore communicating with said exhaust port, means in said relay valve body biasing said main valve disc to a closed position blocking communication between said second inlet port and said outlet port and said exhaust bore, and a control piston assembly in said relay valve body operable to adjustably displace said main valve disc to an open position; and a modulated-pressure control valve unit communicating with said relay valve unit and supplying, to said control piston assembly, a pressure modulated according to the loading of the vehicle; said control piston assembly including first, second and third pressure-responsive pistons; said first and second pressure-responsive pistons conjointly defining, with said relay valve body, an indicated pressure chamber communicating with said first inlet port; said first pressure-responsive piston and said relay valve body defining an output pressure chamber communicating with said outlet port; said third pressure-responsive piston and said relay valve body defining a modulated-pressure chamber; said first pressure-responsive piston being engageable with said main valve disc, responsive to the indicated pressure, to close said axial exhaust bore and to displace said main valve disc to an open position connecting said inlet port to said output pressure chamber; means biasing said first pressure-responsive piston to a position disengaged from said main valve disc; a loading spring biasing said second pressure-responsive piston toward aid first pressure-responsive piston in opposition to the indicated pressure; said modulated-pressure control valve unit communicating with said second inlet port and said modulated-pressure chamber; means biasing said modulated-pressure control valve unit to a closed position blocking communication between said second inlet port and said modulated-pressure chamber; a stroke adjuster operatively associated with said modulated-pressure control valve

unit and operable, responsive to vehicle loading, to open said modulated-pressure control valve unit; and a normally closed valve in said modulated-pressure control valve unit opened, responsive to the modulated pressure exceeding the brake supply pressure upon a decrease in the brake supply pressure, to equalize the modulated pressure and the brake supply pressure.

3,937,976
DISGUISED COIL FOR SECURITY SYSTEM FOR AUTOMOTIVE VEHICLES AND THE LIKE

Francis A. McGuirk, Jr., Chatham, N.J., assignor to Wagner Electric Corporation, Parsippany, N.J.
Filed Sept. 20, 1974, Ser. No. 508,292
Iot. Cl.^{2} H02G *3/00*
U.S. Cl. 307—10 AT **5 Claims**

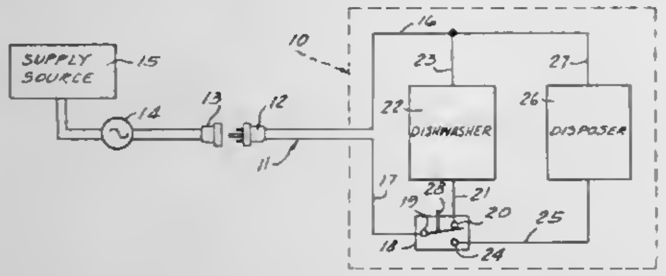


1. A security system comprising:

A keyable control circuit operative to generate a signal to actuate at least a door unlock circuit; a sensing element connected to said keyable control circuit for coupling a key circuit to said keyable control circuit; a molded epoxy resin casting having a plurality of surfaces encapsulating said sensing element; at least one predetermined symbol molded into a first surface to disguise said sensing element; mounting means molded into and extending from a second surface of said epoxy resin casting; and electrical connections from said sensing element molded into and extending from the same second surface of said epoxy resin casting.

3,937,977
COMBINATION DISPOSER RUN AND DISHWASHER DISCONNECT SWITCH FOR KITCHEN MODULE

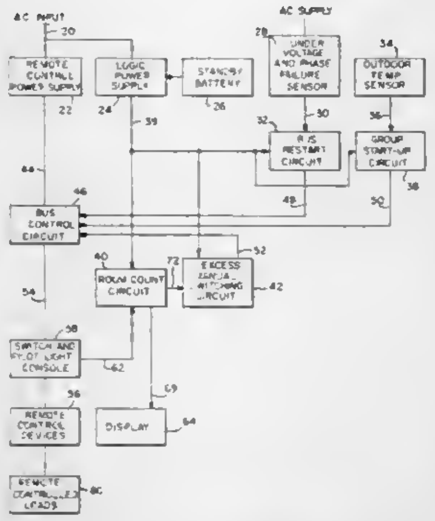
Keith Ellis Carr, Stevensville, Mich., assignor to Whirlpool Corporation, Beoton Harbor, Mich.
Filed Aug. 26, 1974, Ser. No. 500,599
Int. Cl.^{2} H02J *4/00*
U.S. Cl. 307—38 **1 Claim**



1. A modular kitchen unit comprising a dishwasher, a sink, and a batch-feed garbage disposer in said sink, in combination with, a supply circuit having a single overload protection means remote from said unit, and comprising: an electrical switch in said disposer, means electrically connecting said switch to said single overload protection means and to circuitry for operating said unit, said switch having a first, normally closed contact means therein to supply electrical energy to said dishwasher and having a second, normally open contact means therein to supply electrical energy upon actuation of said switch to said disposer, said actuation interrupting said supply of energy to said dishwasher and connecting power to said disposer so that said single overload protection means is used and only one appliance is connected to the power source at one time.

3,937,978
REMOTE CONTROL SYSTEMS FOR ELECTRICALLY OPERATED LOADS

Carl L. Owenby, Jr., 219 W. King St., Quincy, Fla. 32351
Filed May 30, 1975, Ser. No. 582,150
Int. Cl.^{2} H02J *3/14*
U.S. Cl. 307—41 **18 Claims**



1. A remote control system for a plurality of loads adapted to be operated by electrical power supplied on a plurality of buses comprising:

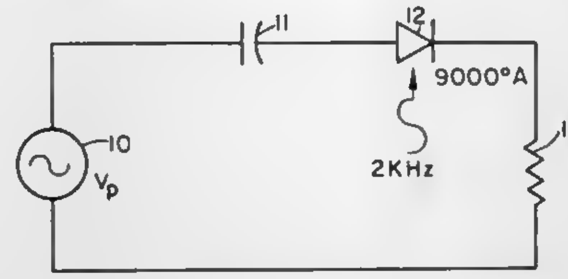
switching means for controlling the electrical power supplied to the loads;

electrical sensing means for providing a signal corresponding to variations of the electrical power from a prescribed value;

restarting means receiving said signal from said electrical sensing means and including timing means for producing a timing signal representative of the time said signal from said electrical sensing means exists, a plurality of output means coupled with said switching means and responsive to said signal from said electrical sensing means for interrupting power supplied to the loads, and sequencing means responsive to said timing means to sequentially operate said output means with the time between the operation of successive output means dependent upon the time said signal from said electrical sensing means exists whereby power is returned to the loads sequentially.

3,937,979
PHOTOPARAMETRIC AMPLIFYING UPCONVERTER

Michael K. Giles, and Walter E. Freitag, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 7, 1973, Ser. No. 422,810
Int. Cl.^{2} H03F *7/04*
U.S. Cl. 307—88.3 **3 Claims**



1. A low frequency photoparametric amplifying upconverter comprising:

pump means for providing a pumping voltage of a frequency of approximately one megahertz;

an output load;

photodiode means operatively connected in series with said pump means and said load means;

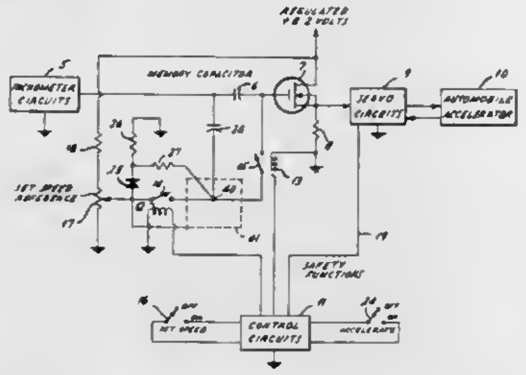
clamping means comprising an isolating capacitor also connected in series with said pump means and said photodiode means for clamping the photodiode means in a reverse bias condition and for blocking the input signal;

said photodiode being pumped so that it operates as a photoparametric amplifying upconverter;

the input signal for the photoparametric amplifying upconverter comprising the junction current generated by illuminating the photodiode means.

3,937,980
PRINTED WIRING CIRCUIT GUARD RING

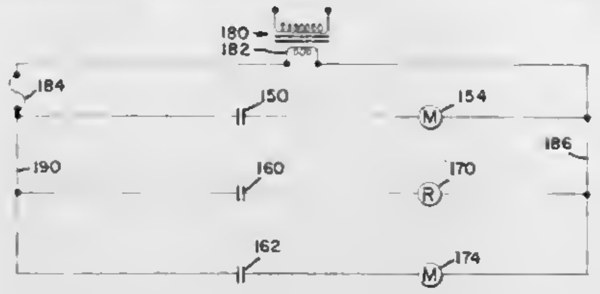
Helmut G. Seidler, Schwenksville, and James T. Walker, Norristown, both of Pa., assignors to Aeronutronic Ford Corporation, Blue Bell, Pa.
Filed Sept. 16, 1974, Ser. No. 506,256
Int. Cl.^{2} H01H *35/00, 35/06*
U.S. Cl. 307—120 **3 Claims**



1. A printed wiring circuit board intended for automotive speed control circuit applications; said circuit including a low leakage memory capacitor connected to provide a speed reference function; a first electrical relay connected to establish a controlled charge on said capacitor; a controlled accelerate component group including a large value resistor, a second electrical relay, and a capacitor having a value large compared with said memory capacitor; said group connected to provide for a slowly changing increment of charge on said memory capacitor in response to the controlled actuation of said relays, and having a common point of connection on said printed wiring board; said circuit board comprising: an insulating substrate having metallic conductors arrayed thereon to establish the wiring pattern necessary to interconnect the components of said circuit, and a conductive ring immediately surrounding said common point of connection, said ring being connected to a source of potential approximating the normal operating potential of said common point.

3,937,981
WASH PROGRAM SELECTION AND INDEXING APPARATUS

Marcus I. Nystuen, St. Paul, and Roger L. Dillon, Cottage Grove, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.
Filed Mar. 22, 1974, Ser. No. 453,716
Int. Cl.^{2} H01H *43/00, 47/00*
U.S. Cl. 307—141 **28 Claims**



16. In fabric washing apparatus having a program band having a continuous program surface encoded with a plurality of program triggering elements occupying zones of varying extent about the program surface each of the program triggering elements being associated with at least one laundering function, and control means operatively connected to survey the continuous program surface and being responsive, when activated, to the encoded program triggering elements to cause said washing apparatus to sequentially perform selected ones of the laundering functions in time dependent manner as the program band is advanced, the improvement comprising:

a. a continuous indexing band connected to said program band to advance therewith, said indexing band being divided into a plurality of laterally spaced tracks extending longitudinally about said band, each of said tracks being characterized by indexing elements thereon marking the start and end of a different laundry program defined by the program triggering elements representing laundry functions encoded within one of the zones on said program band whose longitudinal extent corresponds to the spacing of said indexing elements within that associated track and has a predetermined longitudinal position with respect thereto;

b. a plurality of individual sensing means each operatively mounted in fixed position relative a different one of said tracks and disposed to survey a small area of its associated said track, for sensing when energized said indexing elements of its associated said track within said surveyed area thereof;

c. a plurality of manually operated input selector switching means, one each of said selector switching means being operatively connected with a different one of said sensing means, for selectively energizing in response to manual stimulation thereof said sensing means, each of said switching means being operative upon stimulation thereof to energize a different one of said sensing means;

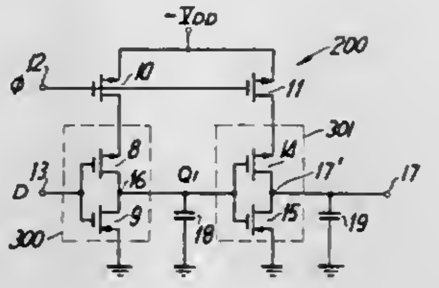
d. motor means, responsive to energization of any one of said sensing means, for moving said indexing band relative said sensing means;

e. means, responsive to each of said sensing means for activating the control means upon the sensing of one of said indexing elements by any one of said energized sensing means; and

f. timer means, responsive to each of said energized sensing means upon the sensing thereof of their respective said indexing elements for moving said program band relative said control means in time dependent fashion to sequentially execute the laundering functions of the selected said laundry program.

3,937,982
GATE CIRCUIT

Toshio Nakajima, Tokyo, Japan, assignor to Nippon Electric Co., Inc., Tokyo, Japan
Filed Mar. 18, 1974, Ser. No. 452,425
Claims priority, application Japan, Mar. 20, 1973, 48-32892
Int. Cl.^{2} H03K *19/08, 19/34, 19/36, 3/353*
U.S. Cl. 307—205 **10 Claims**



1. A gate circuit including

a power source having first and second terminals;

a logic circuit including at least one complementary pair of insulated gate field effect transistors, said logic circuit having at least one input terminal, an output terminal, a first biasing terminal and a second biasing terminal, said first biasing terminal of said logic circuit being directly and continuously connected to said first terminal of said power source;

means for applying an input signal to said input terminal of said logic circuit;

first switching means connected between said second terminal of said power source and said second biasing terminal of said logic circuit;

a first inverter circuit including a complementary pair of insulated gate field effect transistors, said first inverter circuit having an input terminal, an output terminal, a first biasing terminal and a second biasing terminal, said input terminal of said inverter circuit being connected to said output terminal of said logic circuit and said first biasing terminal of said inverter circuit being directly and continuously connected to said first terminal of said power source;

second switching means connected between said second terminal of said power source and said second biasing terminal of said inverter circuit; and

means for applying a common control signal to both said first and said second switching means, said common control signal including at least a first and second sequential pulses, and wherein an output signal is generated at said output terminal of said inverter circuit in response to said input signal which is applied to said input terminal of said logic circuit while said first pulse is being applied to said first and second switching means and said output signal is stored at said output terminal of said inverter circuit until said second pulse is applied to said first and second switching means.

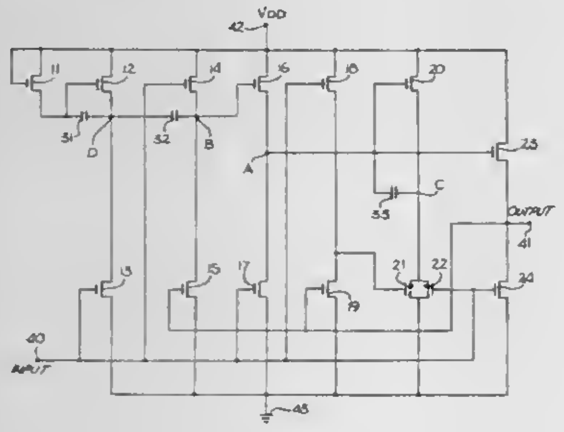
3,937,983
MOS BUFFER CIRCUIT

John A. Reed, Los Altos, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 380,348, July 18, 1973, abandoned. This application Apr. 3, 1975, Ser. No. 564,855

Int. Cl.² H03K *19/08, 19/40, 17/10*

U.S. Cl. 307—205 **9 Claims**



2. An MOS control circuit for causing an output signal to approach the voltage of a source of potential comprising:

an output MOS device having a gate and two terminals, said one of said terminals being coupled to said source of potential and said other terminal to the output of said control circuit;

a first MOS circuit means for applying a first voltage to said gate of said output MOS device, coupled to said output MOS device, said first MOS circuit means including capacitance means;

a second MOS circuit for applying a second voltage to said gate of said output MOS device, coupled to said output MOS device, said second voltage having a magnitude greater than said source of potential;

feedback means, for feeding back said output signal such as to cause said second voltage to be applied to said gate of said output MOS device and to electrically decouple said capacitance means of said first MOS circuit from said gate;

whereby said output MOS device is first driven by said first voltage, then by said second voltage.

3,937,984
SHIFT REGISTERS

Peter William Fry, Dorchester, England, assigoor to Integrated Photomatrix Limited, Dorchester, England

Filed Oct. 7, 1974, Ser. No. 512,490

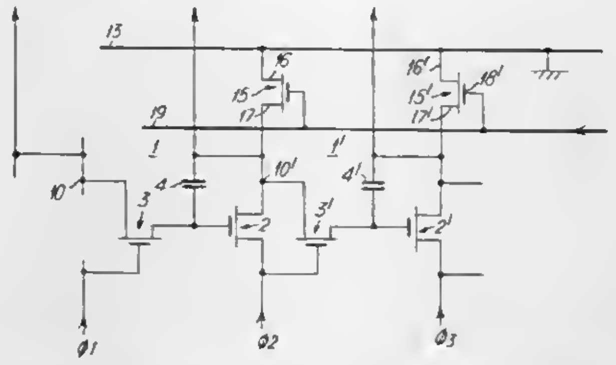
Claims priority, application United Kingdom, July 25, 1974, 32981/74

Int. Cl.² G11C *19/28, 19/18;* **H03K** *1/17*

U.S. Cl. 307—221 C **6 Claims**

6. A shift register circuit comprising:

a plurality of stages, each stage including an input node for receiving pulses to be shifted through the stage; a single amplifying element having a non-inverting signal input electrode, a current input electrode and an output electrode which constitutes the output of the stage; an inpu gate means which is connected between the input node and the signal input electrode of the amplifying element, said input gate means having a control electrode; charge storage means connected between the signal input electrode and the output electrode of the amplifying element; and a current source connected between the output electrode of the amplifying element and a clock pulse reference potential, said current source having a control electrode connected to a second reference potential continuously biasing the current source for conduction;



means connecting the output electrode of at least selected of said stages to the respective input node of the next succeeding stage in the shift register circuit,

the said control electrode of a said input gate means for a given stage being connected to receive a first series of clock pulses, and said current input electrode of said amplifying element of the same given stage being connected to receive a second series of clock pulses in non-overlapping relation with the pulses of the first series,

and wherein a next succeeding stage following said given stage has the control electrode of its input gate means connected to receive the second series of clock pulses, and the current input electrode of its amplifying element connected to receive said first series of clock pulses.

3,937,985
APPARATUS AND METHOD FOR REGENERATING CHARGE

James Albert Cooper, Jr., Millington, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 5, 1974, Ser. No. 476,702

Int. Cl.² H01L *27/10, 29/78*

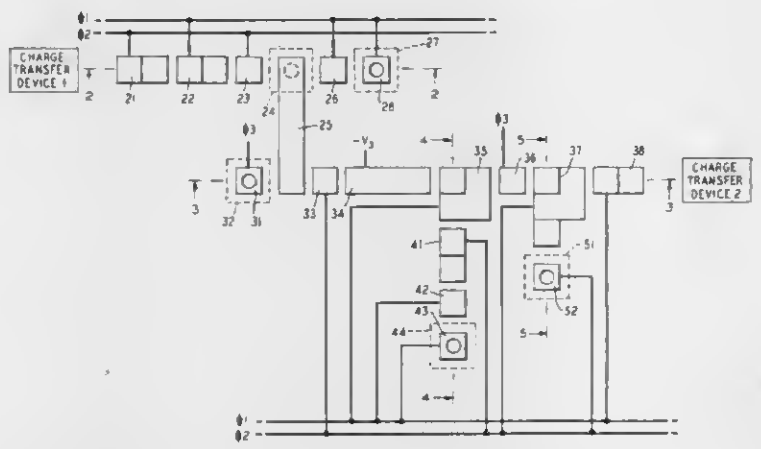
U.S. Cl. 307—221 D **25 Claims**

1. A semiconductor apparatus including first and second charge transfer device sections of the type adapted for the storage and serial transfer of charge carriers localized in induced potential wells along a surface portion of a body by sequentially applying a plurality of differing potentials to successive portions of the surface and further adapted for logical bit regeneration, said apparatus comprising:

means for detecting a charge packet output of the first charge transfer device section and for multiplying said charge packet by a multiplication factor so that after multiplication the difference in the amount of charge in a charge packet representing a logical 1 and in a charge packet representing a logical 0 is at least as great as the maximum charge storage capacity of a potential well of the second charge transfer device section, said means for multiplying including a semiconductor charge storage region controlled by an overlying electrode of such geometry as to produce a sufficient storage capacitance that the region in response to said output stores a charge packet which is amplified compared with the storage packet output;

means for subtracting a fixed quantity of charge from the multiplied charge packet, sufficient to remove the charge of a charge packet representing a logical zero, said means for subtracting including a second semiconductor charge storage region controlled by an overlying electrode; and

means including a localized impurity zone charge sink for limiting the amount of charge in the charge packet to a maximum value equal to the minimum charge storage capacity of a potential well of the second charge transfer device section.



3,937,986
LINEAR WAVEFORM GENERATOR

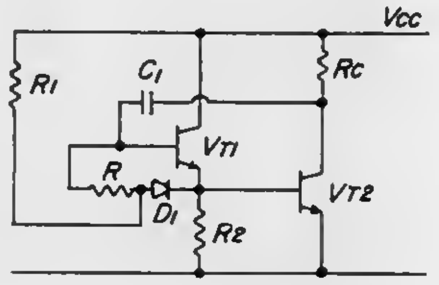
Arnold Wilson, Hertford, England, assignor to Rank Xerox Ltd., London, England

Filed Mar. 11, 1974, Ser. No. 450,270

Claims priority, application United Kingdom, Mar. 23, 1973, 14211/73

Int. Cl.² H03K *4/08*

U.S. Cl. 307—228 **2 Claims**



1. A timing ramp generating comprising first and second transistors each having collector, emitter and base electrodes, a capacitor connected between base of said first transistor and the collector of said second transistor, a resistance connected between the base and emitter of said first transistor, the emitter of said first transistor being connected to a first terminal and the base of said second transistor, a resistive load coupled intermediate the collector of said second transistor, and a second terminal, said second terminal connected to the collector of said first transistor, source of d.c. voltage connected across said first and second terminals, whereby a constant current charges the capacitor and a linear timing ramp is generated at the collector of said second transistor which approaches the applied d.c. voltage.

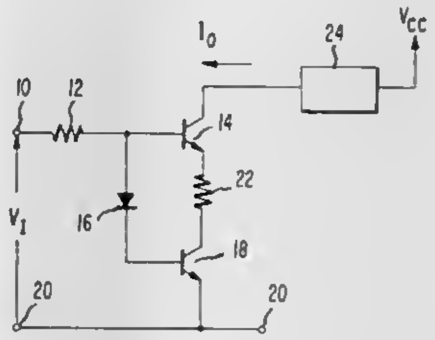
3,937,987
THRESHOLD DETECTOR

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 11, 1974, Ser. No. 459,954

Int. Cl.² H03K *5/20, 17/60*

U.S. Cl. 307—235 W **9 Claims**



1. A threshold switch comprising:

input, output and common terminals;

first and second transistors, each having a base and an emitter and a collector electrode, said first transistor collector electrode being connected to said output terminal and said second transistor emitter electrode being connected to said common terminal;

a first resistive element connected between said first transistor emitter electrode and said second transistor collector electrode;

a second resistive element connected between said input terminal and said first transistor base electrode;

means with first and second terminals for providing a substantially fixed offset potential responsive to current flow having a range of values between its first and second terminals;

negligible direct current impedance means connecting said first terminal to said base electrode of said first transistor; and

negligible direct current impedance means connecting said second terminal to the base electrode of said second transistor.

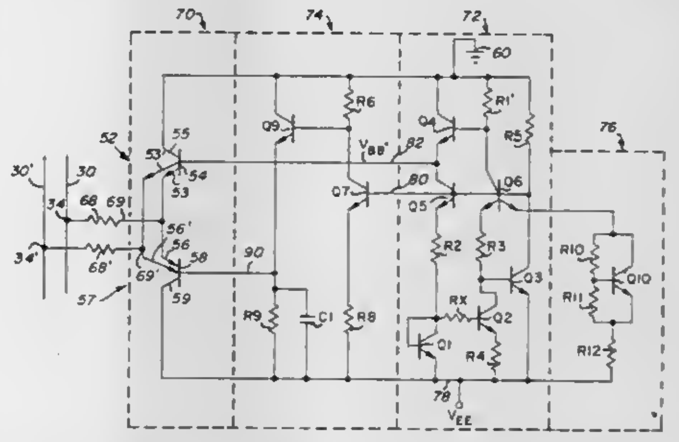
3,937,988
ACTIVE TERMINATION NETWORK FOR CLAMPING A LINE SIGNAL

Larry W. DeClue, San Jose, and Harold H. Muller, Mountain View, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Apr. 5, 1974, Ser. No. 458,151

Int. Cl.² H03K *5/08*

U.S. Cl. 307—237 **9 Claims**



1. An active termination network for clamping line signals near the receiving portions of a plurality of data paths, said line signals each having a high state and a low state and being susceptible to noise, which causes said line signals to undesirably fluctuate above said high state and below said low state, said network comprising:

NPN transistor means including a first plurality of emitter means, a first base and a first collector;

PNP transistor means including a second plurality of emitter means, a second base and a second collector, each of said first plurality of emitter means being coupled to corresponding ones of said second plurality of emitter means to form a plurality of input terminal means for said termination network, said plurality of input terminal means being disposed for connection to said plurality of data paths near said receiving portion;

first means for biasing said first base with a first reference bias potential such that said NPN transistor means is caused to turn on when said line signals are below said low state;

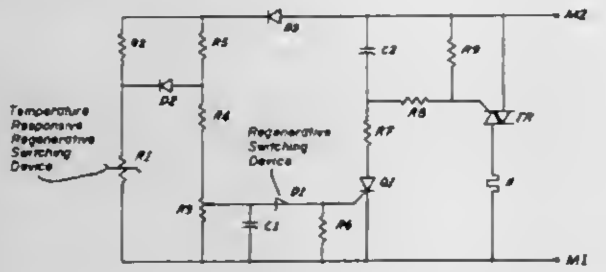
second means for biasing said second base with a second reference bias potential such that said PNP transistor means is caused to turn on when said line signals are above said high state;

third means for biasing said first collector at a third reference potential; and,

fourth means for biasing said second collector at a fourth reference potential that is relatively negative with respect to said third reference potential, such that when said line signal fluctuates above said high state said PNP transistor means turns on so as to clamp each of said line signals to said high state, and when said line signals fluctuate below said low state said NPN transistor means turns on so as to clamp each of said line signals to said low state, wherein said first and second means for biasing include means responsive to said third and said fourth reference potentials and operative to provide said first and said second reference bias potentials which are voltage compensated with respect to said third reference potential such that each of said input terminal means is voltage and temperature compensated.

3,937,989
TEMPERATURE DISCRIMINATION APPARATUS

Robert S. Meijer, Montreal, Canada, assignor to Multi-State Devices Ltd., Dorval, Canada
Filed Dec. 6, 1974, Ser. No. 530,390
Int. Cl.² H03K *17/72*
U.S. Cl. 307—252 B 7 Claims


R2
R5
D3
C2
R9
M2
D2
R4
R8
TR
Temperature Responsive Regenerative Switching Device
R1
Regenerative Switching Device
R7
D1
Q1
R3
C1
R6
M1

1. A temperature discrimination apparatus comprising:

a. a first switching device exhibiting regenerative switching action at a power level which is dependent on the temperature sensed by said first switching device;

b. a second switching device exhibiting regenerative switching action solely in response to a preselected power level;

c. means for simultaneously applying power from an a.c. source to said first and second switching devices; and

d. discriminating means connected to said first and second switching devices for determining if said first switching device has switched ahead of said second switching device in the cycle of the a.c. power source as the magnitude of the a.c. source increases from zero, thus providing an indication that the temperature to be sensed has been reached.

3,937,990
ULTRASONIC COMPOSITE DEVICES

Ronald H. Winston, 18 E. 73rd St., New York, N.Y. 10019
Filed May 28, 1974, Ser. No. 474,044
Int. Cl.² H01L *41/04, 41/18*
U.S. Cl. 310—8.3 56 Claims

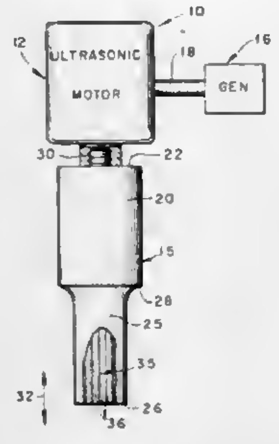
35. An ultrasonic system, comprising:

A. an ultrasonic motor,

B. a mechanical energy transmitting member including:

1. a plurality of vibration transmitting components, each having an average cross-sectional area and length substantially less than the longitudinal length or cross-sectional area of the tool, and

2. means for coupling said components together along the longitudinal length and circumferentially of each component to form a bond therebetween so as to obtain a unitary rigid composite structure containing the plurality of vibration transmitting components substantially uniformly oriented throughout said member and bonded together along the longitudinal length and outer surface thereof such that mechanical vibrations of predetermined frequency are adapted to be transmitted through said coupling means and the plurality of vibration transmitting components, and



C. means connecting said energy transmitting member to said ultrasonic motor.

3,937,991
ELECTROACOUSTIC TRANSDUCERS OF THE BILAMINAR FLEXURAL VIBRATING TYPE AND METHOD FOR MANUFACTURING SAME

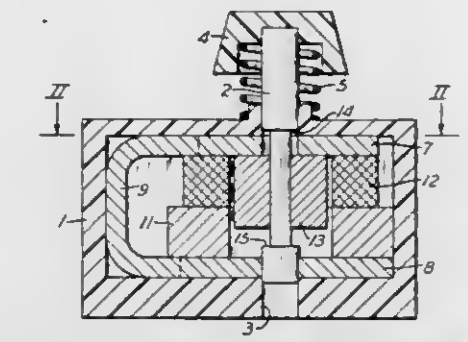
Frank Massa, Cohasset, and Gilbert C. Barrow, Scituate, both of Mass., assignors to Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees of the Stoneleigh Trust, Cohasset, Mass.
Continuation-in-part of Ser. No. 17,430, March 9, 1970, abandoned. This application Dec. 8, 1971, Ser. No. 206,043
Int. Cl.² H01L *41/04*
U.S. Cl. 310—9.1 12 Claims

1. An electroacoustic transducer comprising a bilaminar vibratile element having at least two plate members bonded together in face-to-face relationship, at least one of said bonded plates being piezoelectric material with electrode surfaces thereon, electrical conductor means connected to said electrode surfaces, vibratile plate mounting means comprising a structural support member having an opening therein for receiving said vibratile plate with a space separating the entire periphery of the plate and the support, flexible rubber-like support means for attaching said bilaminar vibratile element to said structural support member, said vibratile element having flexural vibrations responsive to an application of alternating voltage to said electrical conductors, said flexible support means comprising a plurality of resilient spot members spanning said peripheral space between the plates and said support member for holding said vibratile element in a predetermined spacial relationship without any direct contact with said structural support member, said resilient spot members being attached to said vibratile element in the vicinity of the nodal points established in said vibratile element when said vibratile element is operating at its fundamental resonant frequency mode of vibration.

3,937,992
PULSE KEYBOARD SWITCH

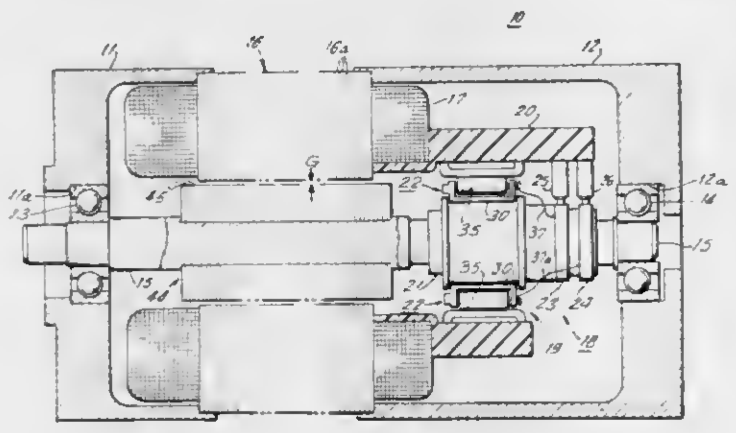
Erle I. Shobert, II, St. Marys, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.
Filed Nov. 18, 1974, Ser. No. 522,026
Int. Cl.² H02K *35/06*
U.S. Cl. 310—15 5 Claims

1. A pulse keyboard switch comprising an annular permanent magnet having an open center, a plate of soft magnetic material disposed against one side of said magnet, a stationary electric coil at the opposite side of the magnet and coaxial therewith, the coil having an open center, an unrestrained free-flying member of soft magnetic material coaxial with said magnet and coil, said member being small enough to move axially in the open centers of said coil and magnet toward and away from said plate, keeper means normally holding said free-flying member in a predetermined rest position away from the plate, means movable relative to the free-flying member for first engaging and then pushing that member toward said plate until the magnetic attraction between said magnet and free-flying member causes said member to fly from said pushing means through said magnet to said plate at increasing high velocity, whereby a rapid change in flux in said free-flying member is created and produces a voltage pulse in said coil, and movable means for returning said member to said keeper means, said returning means being spaced from said free-flying member while it is flying to said plate.



3,937,993
COMMUTATING STRUCTURE FOR DC MACHINES

Samuel Noodleman, Blacksburg, Va., assignor to Kollmorgen Corporation, Hartford, Conn.
Continuation-in-part of Ser. No. 471,313, May 20, 1974, Pat. No. 3,876,892, which is a continuation-in-part of Ser. No. 383,883, July 30, 1973, Pat. No. 3,819,964. This application Aug. 30, 1974, Ser. No. 502,213. The portion of the term of this patent subsequent to June 25, 1991, has been disclaimed.
Int. Cl.² H02K *37/00*
U.S. Cl. 310—46 20 Claims



1. Switching apparatus for a machine responsive to a source of DC power and having interacting rotor and stator assemblies which rotate relative to each other wherein said stator has a winding having a plurality of energizeable coils, said coils having an annular array of commutator bars associated therewith for supplying electrical power thereto, and said rotor has a magnetic assembly associated therewith, said apparatus comprising:

a. first and second annular brush rings associated with said rotor;

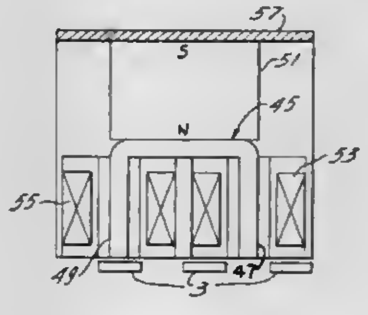
b. first and second brush means associated with said stator for respectively coupling said first and second brush rings to opposite polarities of said DC source;

c. first roller contact means associated with said rotor and electrically connected to said first brush ring for progressively and sequentially engaging said commutator bars to thereby momentarily couple said commutator bars to said first brush ring; and

d. second roller contact means associated with said rotor and electrically connected to said second brush ring for progressively and sequentially engaging said commutator bars to thereby momentarily couple said commutator bars to said second brush ring.

3,937,994
MAGNETIC SPEED SENSOR

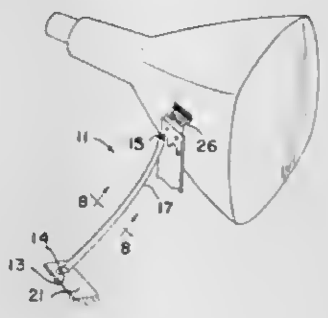
Rex Wallace Presley, Livonia, and Jack Richardson Lorraine, Howell, both of Mich., assignors to The Bendix Corporation, South Bend, Ind.
Filed June 13, 1974, Ser. No. 478,989
Int. Cl.² H02K *21/38*
U.S. Cl. 310—168 10 Claims



1. A speed sensor for a vehicle wheel comprising a tone wheel driven by the vehicle and subject to axial misalignment and vibration, the tone wheel being made of magnetic material and having a plurality of teeth, and sensing means having a pair of poles of magnetic material proximate the tone wheel teeth, coil means on the poles, and a permanent magnet having one of its poles connected to the poles on the sensing means for magnetizing the poles on the sensing means to induce a signal voltage in the coil means corresponding to wheel speed upon rotation of the tone wheel relative to the sensing means, the poles on the sensing means being phased relative to the teeth on the tone wheel to reduce noise voltage components in the wheel speed signal voltage due to axial misalignment and vibration of the tone wheel, and a substantially U-shaped shield connected to the other pole of the permanent magnet and enclosing a substantial portion of the sensing means from electromagnetic noise, a portion of the U-shaped shield being positioned adjacent the tone wheel remote from the teeth to provide a return path for magnetic flux.

3,937,995
HIGH VOLTAGE GROUNDING STRAP

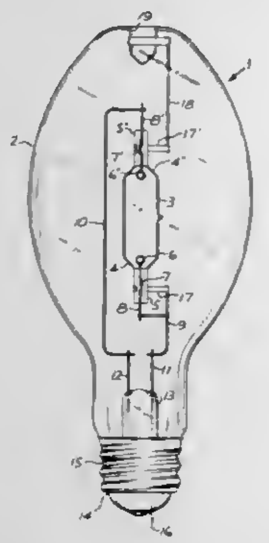
Albert P. DeVito, Glenview, Ill., assignor to Palmer Industries Ltd., Chicago, Ill.
Filed Dec. 5, 1974, Ser. No. 529,615
Int. Cl.² H01J *31/00*
U.S. Cl. 313—49 8 Claims



1. A high voltage grounding strap connected to the graphite coating of a cathode ray tube, said grounding strap comprising

a connector device having a base with opposing sides, a plurality of independently extending resilient members attached to a first edge of said base, at least one male connector being attached to the edge opposite the first edge of said base, said connector device being electrically connected to the graphite-coated periphery of the cathode ray tube with said resilient members closely conforming to and making electrical contact with the graphite-coated periphery of the cathode ray tube, an electrically conductive strap, a connector means affixed to one end of said strap, said connector means formed as flattened oval having a flared top receiving said male connector therein, metal strips depending from said top, said metal strips having lengthwise openings therebetween, one of said metal strips having an impression thereon facing the interior of the connector means and bearing against and securing said male connector inserted therein, said openings enabling said strips to resiliently deform for facilitating release of said male connector, and insulation sheathing covering the entire electrically conductive strap thereby inhibiting corona discharge and arcing therefrom.

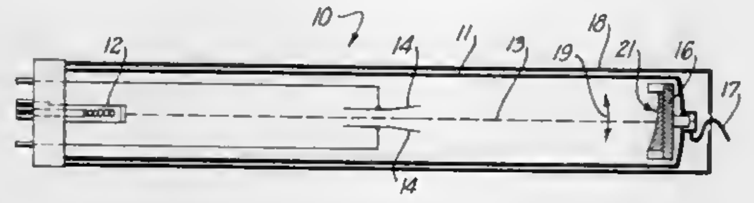
3,937,996
METAL HALIDE LAMP USING LOOP ELECTRODES
Daniel M. Cap, Kirtland, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Oct. 7, 1974, Ser. No. 512,705
Int. Cl.² H01J *61/06*
U.S. Cl. 313—217 **10 Claims**



1. A metal halide vapor arc lamp comprising:
a fused silica envelope;
an ionizable filling within said envelope comprising mercury, an inert starting gas and metal halide including at least one pyrolytically decomposable metal halide of low work function capable of serving as activator of a higher work function refractory metal to promote electron emission therefrom;
and electrodes sealed into opposite ends of said envelope, said electrodes being of refractory metal wire formed into open loops with their axes normal to the inter-electrode axis, said lamp operating with a temperature distribution permitting condensation of metal from said pyrolytically decomposable metal halide on said electrodes.

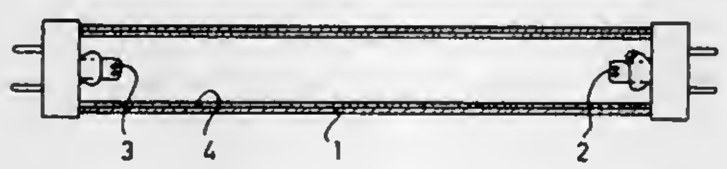
3,937,997
CATHODE-RAY TUBE SIGNAL GENERATOR HAVING RESISTANCE CONFIGURATED ELECTRON RECEPTOR
Dene Barrett, 15608 Delcombre Ave., Paramount, Calif. 90723
Filed Sept. 13, 1974, Ser. No. 505,768
Int. Cl.² H01J *31/02*
U.S. Cl. 313—418 **11 Claims**

1. In combination with a cathode-ray tube having means for producing an electron beam, means for deflecting said electron beam, and a collector electrode for collecting the electrons of said electron beam, the improvement comprising:
a resistance configurated electron receptor positioned to be impinged upon by said electron beam as said electron beam is deflected by said deflection means;
the resistance of said resistance-configurated electron-receptor varying longitudinally along the area presented to the electron beam, being adapted to produce an output signal corresponding to a desired waveform;



said electron-receptor being a unitary structure of resistive material, having a front surface onto which said electron beam impinges, and having a back surface;
the front-surface/back-surface direction defining the longitudinal direction of said electron-receptor;
the entire back-surface of said electron-receptor being in electrical contact with said collector-electrode.

3,937,998
LUMINESCENT COATING FOR LOW-PRESSURE MERCURY VAPOUR DISCHARGE LAMP
Judicus Marinus Pieter Jan Verstegen; Dragutin Radielovic, and Lambertus Wilhelmus Johannes Manders, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 25, 1974, Ser. No. 509,142
Claims priority, application Netherlands, Oct. 5, 1973, 7313694
Int. Cl.² H01J *61/44*
U.S. Cl. 313—487 **9 Claims**



1. A low-pressure mercury vapour discharge lamp having a vacuum tight radiation transmitting envelope comprising a quantity of mercury and a quantity of rare gas and provided with electrodes between which the discharge takes place during operation, and with a luminescent coating comprising three luminescent materials, a first material having an emission band at a maximum in the wavelength range between 430 and 490 nm and a half value width of less than 100 nm, a second material mainly having its emission in the wavelength range between 520 nm and 565 nm, and a third material mainly having its emission in the wavelength range between 590 and 630 nm, wherein said second luminescent material is activated by terbium and is selected from the group consisting of materials defined by the formulas:

$Ce_{1-x-y}La_xTb_yMgAl_{11}O_{19}$ and a

$(Ce_{1-x-y}La_xTb_y)_2O_3 \cdot nAl_2O_3$ b

in which

$O \leqslant x \leqslant 0.50$

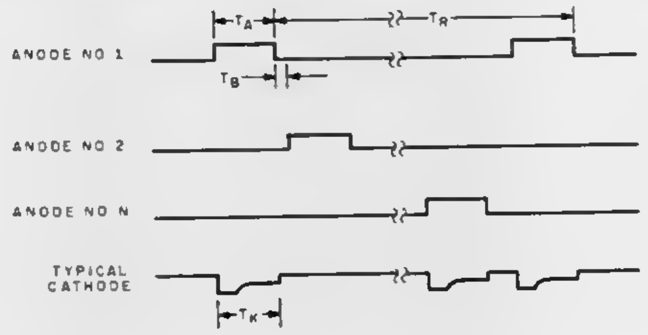
$0.20 \leqslant y \leqslant 0.50$

$x+y \leqslant 0.90$

$10 \leqslant n \leqslant 12$

and in which up to a maximum of 25 at% of aluminum may be replaced by elements selected from the group consisting of gallium and scandium and in which magnesium may at least in part be replaced by one or more elements selected from the group consisting of zinc and beryllium.

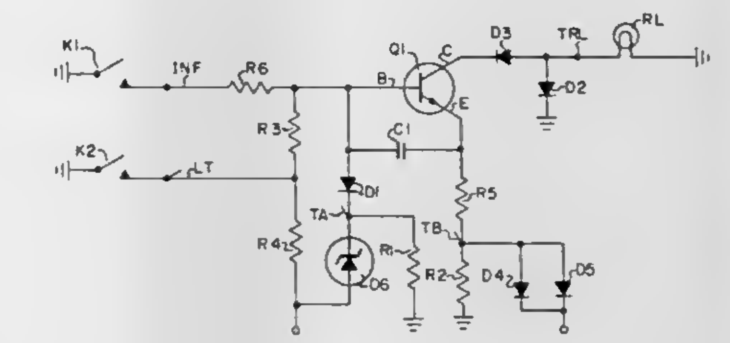
3,937,999
REDUCTION OF BLANKING REQUIREMENTS IN A GASEOUS GLOW DISCHARGE DISPLAY TUBE HAVING A PLURALITY OF DIGITS
Dan J. Schott, Scottsdale, Ariz., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed Oct. 17, 1973, Ser. No. 407,130
Int. Cl.² H05B *37/00*
U.S. Cl. 315—169 TV **12 Claims**



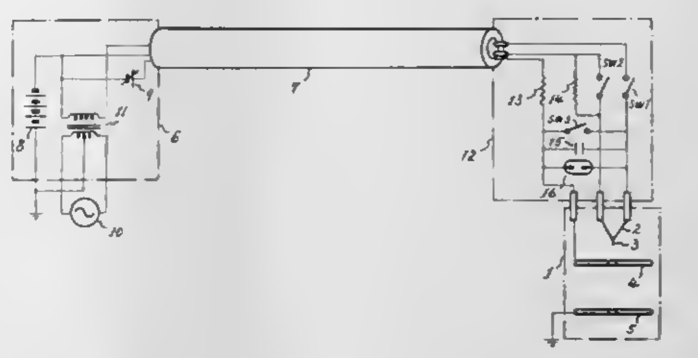
10. A multiplexed multiple character multi-anode, raised planar cathode gaseous glow discharge display device comprising
a plurality of groups of raised planar cathodes, each group arranged in a character forming pattern,
connection means for electrically connecting corresponding cathodes in each group to each other to enable electrical potentials to be applied simultaneously to selected corresponding electrodes in each group,
a plurality of operatively adjacent anodes operatively associated with said groups of cathodes respectively,
means for individually energizing said anodes in a predetermined order,
envelope means enclosing said cathodes and anodes, and
a prescribed mixture within said envelope means comprising neon and argon with said argon constituting approximately from 0.1 percent to 0.8 percent of said mixture, said device cathodes being disposed at heights of from at least one to a few mils and operated at minimum current density and maximum anode-cathode voltage conditions on the order respectively of about one-tenth ampere per square inch and at about 100 to 200 volts;
whereby in operation of said device the blanking interval utilized for streamer elimination is reduced to an arbitrarily small value in accordance with the voltage applied to said anodes and the current density through said cathodes as well as in accordance with electrode geometry and spacing.

3,938,000
LAMP DRIVER FOR TELEPHONE PANEL INDICATOR LAMPS
Carlos S. Higashide, Elk Grove Village, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Apr. 29, 1974, Ser. No. 465,212
Int. Cl.² H05B *37/00*
U.S. Cl. 315—205 **3 Claims**

1. A lamp driver for switching electrical current from a power source to an incandescent lamp whose resistance is low during the first moments of application of power thereto; said lamp having one terminal connected to a first terminal of said power source, said lamp driver including a transistor having a base, a collector, and an emitter, a biasing diode having an anode and a cathode, said collector electrically connected to said incandescent lamp and said emitter electrically connected to a second terminal of said power source via said biasing diode in the anode to cathode direction, a zener diode in series with a first resistor having its anode connected to said second terminal and said resistor to said first terminal of said power source, said base electrically connected to a control input terminal operative to cause said transistor to begin conduction, and to said second terminal of said power source via a second resistor for maintaining said transistor in a non-conducting state and an isolating diode having its cathode connected to the junction of said zener diode and first resistor for maintaining a predetermined bias on said base during the conduction of said transistor.



3,938,001
PROTECTION CIRCUIT FOR ELECTRON GUN
Susumu Ota, and Ryuzo Aihara, both of Akishima, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 26, 1974, Ser. No. 445,955
Claims priority, application Japan, Mar. 3, 1973, 48-25452
Int. Cl.² H01J *29/70*
U.S. Cl. 315—381 **6 Claims**



1. A field emission type electron gun comprising an electron gun chamber (1) containing a filament (2) for supporting and heating an emitter (3), a first electrode (4) for generating a strong electric field at the emitter tip, and a grounded anode (5), a power unit (6) containing a d.c. high voltage power source (8) for maintaining the filament (2) and first electrode (4) at negative high potential, and a power source (10) for supplying heating current to said filament (2), an insulating cable (7) for connecting the power unit (6) and the electron gun chamber (1) via an electric wiring changeover chamber (12) located between said insulating cable (7) and said electron gun chamber (1), said chamber (12) containing high order resistors (13 and 14) located in the d.c. high voltage power source (8) and first electrode (4) line circuit and the power source (10) and filament (2) line circuit respectively, for preventing the electric charge stored in the stray capacity of the insulated cable (7) and in the capacitance of power sources (8 and 10) from discharging an excess current, within said changeover chamber (12) a changeover means (SW3) being connected between the emitter (2) and the first electrode (4) in order to provide a normal operating mode when open and a conditioning operating mode for increasing the in-vacuo withstand voltage in the gun chamber when closed.

3,938,002
FIELD DEFLECTION CIRCUIT

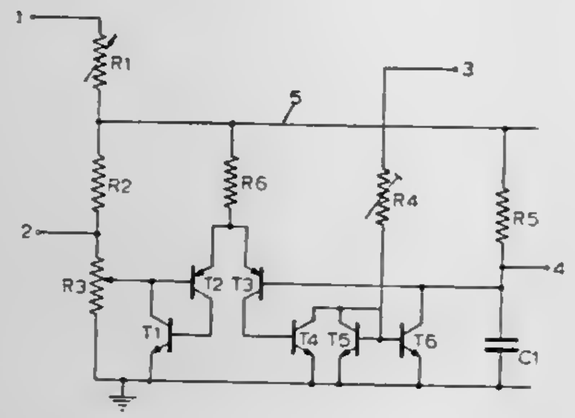
Alan John Terry, London, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 24, 1974, Ser. No. 491,612

Claims priority, application United Kingdom, July 24, 1973, 35109/73

Int. Cl.^{2} H01J *29/70, 29/72*

U.S. Cl. 315—389 **8 Claims**



1. A field deflection circuit arrangement in which the flyback pulse produced across the deflection coil is clamped to a fixed potential, said deflection circuit comprising a sawtooth wave generator means adapted to be connected to a first source of direct voltage for producing a waveform having a scan period and a flyback period, said flyback period increasing as the amplitude of the sawtooth wave increases, said generator means having a control input means for varying said flyback period, an output stage adapted to be connected to a second source of direct voltage, and means for feeding said second source of direct voltage to said control input means of said sawtooth wave generator for causing the flyback period to decrease as the voltage of said second source of direct voltage increases.

3,938,003
DUAL TRACE DISPLAY DEVICE

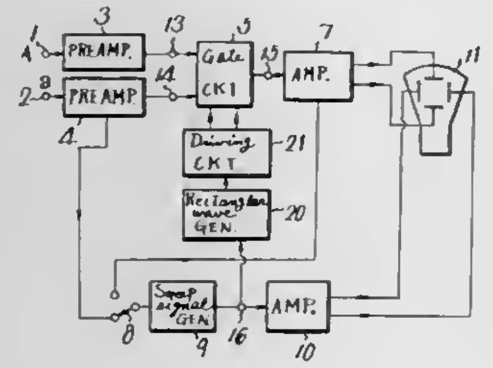
Kazuyoshi Shimizu, Yokohama, Japan, assignor to Leader Denshi Kabushikikaisha, Japan

Filed June 27, 1973, Ser. No. 374,018

Claims priority, application Japan, June 29, 1972, 47-76840

Int. Cl.^{2} G01R *13/28*

U.S. Cl. 315—392 **5 Claims**



1. A dual trace display device comprising:

a. two input terminals supplied with two signals to be displayed, respectively,

b. a gate circuit connected to receive said two input signals,

c. a sweep signal generator producing a signal in synchronism with one of said two input signals,

d. a rectangular waveform generator connected to receive the output from said sweep signal generator and producing an output signal,

e. a driving circuit connected to receive the output from said rectangular waveform generator, producing a pair of signals with opposite polarities and applying said signals to said gate circuit to alternatively pass said two input signals through said gate circuit, and

f. a display device connected to receive the outputs from said gate circuit and said sweep signal generator and display thereon said input signals with the same reference axis and simultaneously in a time sequential manner.

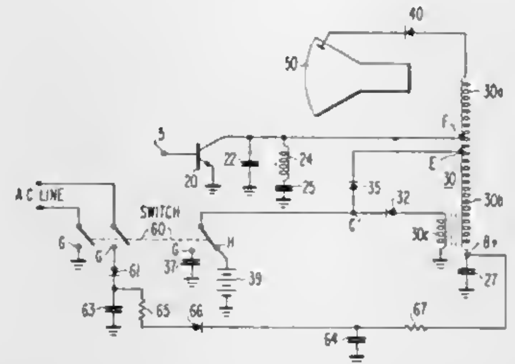
3,938,004
DEFLECTION SYSTEM

David Warren Luz, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 27, 1974, Ser. No. 446,458

Int. Cl.^{2} H01J *29/70*

U.S. Cl. 315—411 **10 Claims**



1. A deflection system selectively operable either from a first rectified and filtered alternating current line voltage supply or from a second substantially lower voltage direct current voltage supply, comprising:

a deflection winding;

a deflection current generator coupled to said deflection winding for generating in said deflection winding deflection current having trace and retrace intervals;

switching means; and

a transformer having at least a first winding coupled to said deflection current generator and to said first and second voltage supplies, said first and second supplies being coupled to said transformer at first and second points respectively for having excited at said first and second points respectively voltages substantially equal to said first supply voltage and to said second supply voltage during said trace interval, said second supply being coupled to said second point through said switching means having a first state for coupling said second supply to said second point during at least a portion of said trace interval and having a second state for decoupling said second supply from said second point during at least a portion of said retrace interval.

3,938,005
ELECTRICAL GENERATING SYSTEM OVERVOLTAGE PROTECTION CIRCUIT

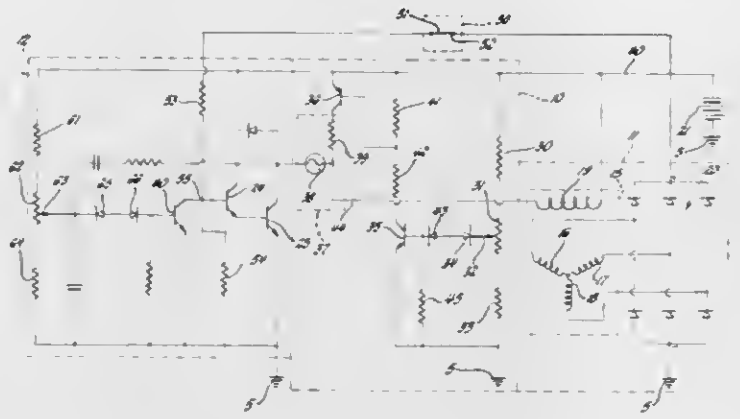
Donald L. Cummins, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1974, Ser. No. 526,538

Int. Cl.^{2} H02H *3/20*

U.S. Cl. 317—13 R **5 Claims**

1. An electrical generating system overvoltage protection circuit comprising in combination with an electrical generating system including an electrical generator having a field coil connected in series with the current carrying elements of a field coil energizing circuit electrical switching device across a source of energizing voltage and a voltage regulator circuit which operates the current carrying elements of the electrical switching device to the electrical circuit closed and open conditions in response to generator output voltage below and above a predetermined level, respectively: a thermally sensitive fuse element connected in series with said generator field coil and said current carrying elements of said field coil energizing circuit electrical switching device; an electrically energizable heater element in heat transfer relationship with said thermally sensitive fuse element; a voltage divider network including a potentiometer having a movable contact; means for applying the generating system output voltage across said voltage divider network; and NPN transistor having base, collector and emitter electrodes; a Zener diode; means for connecting said Zener diode in an inverse polarity relationship across said base electrode of said NPN transistor and said movable contact of said potentiometer; a PNP transistor having base, collector and emitter electrodes; means for connecting said emitter-base electrodes of said PNP transistor in series with said collector-emitter electrodes of said NPN transistor; means for applying the generating system output voltage across said collector-emitter electrodes of said NPN transistor and the series combination of said emitter-base electrodes of said PNP transistor and said collector-emitter electrodes of said NPN transistor; and means for applying the generating system output voltage across the series combination of said emitter-collector electrodes of said PNP transistor, said heater element, said thermally sensitive fuse element and said current carrying elements of said field coil energizing circuit electrical switching device.



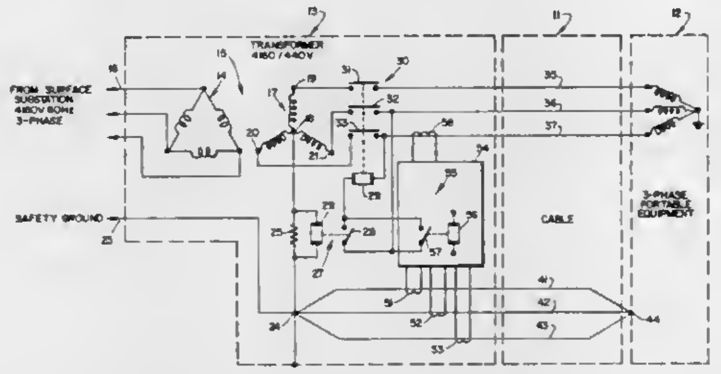
3,938,006
ACTIVE NEGATIVE SEQUENCE CABLE MONITOR

Govind Rao Gadwal, Bradford, Pa., and Eldon Keith Stanek, Morgantown, W. Va., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Feb. 5, 1975, Ser. No. 547,276

Int. Cl.^{2} H02H *3/16*

U.S. Cl. 317—18 C **14 Claims**



1. Apparatus for detecting a broken ground conductor in a polyphase A.C. cable having a separate power conductor for each phase and an equal number of ground conductors, said power conductors normally carrying a set of balanced positive-sequence currents, said conductors being reactively coupled together so that currents are induced in the ground conductors in response to currents flowing in the power conductors, positive-sequence currents normally being induced into the ground conductors by the power conductors, comprising means coupled to the ground conductors for sensing a negative-sequence current induced in the ground conductors and for deriving a first signal indicative of a negative-sequence current being sensed, means coupled to the conductors for deriving a second signal indicative of no current flowing in the ground conductors because a plurality of the ground conductors are open-circuited, and means responsive to either the first or second signal being derived for open circuiting the polyphase power conductors.

3,938,007
ELECTRICAL NETWORK PROTECTION DEVICE WITH AUTOMATIC SWITCH OVER BETWEEN PROTECTION CRITERIA

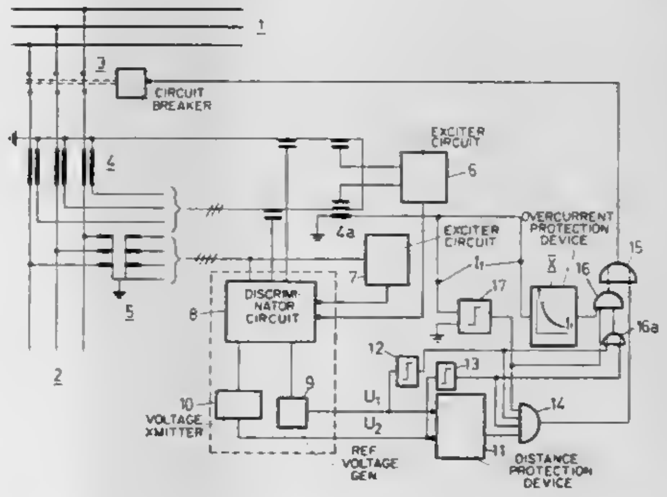
Jacques Boniger, Niederrohrdorf, and Venkat Narayan, Spreitenbach, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed May 23, 1974, Ser. No. 472,805

Claims priority, application Switzerland, May 30, 1973, 7781/73

Int. Cl.^{2} H02H *3/38*

U.S. Cl. 317—27 R **9 Claims**



1. An electrical network protection device comprising:

a distance protection device (11) coupled to said electrical network and indicating a fault condition in said network responsive to voltage signals (U_1 and U_2) derived from said network and being a function of voltages in said network;

an overcurrent protection device (X) coupled to said electrical network and indicating a fault condition in said network responsive to a current signal (I_f) derived from said network and which is a function of current flowing in said network;

circuit breaker means (3) coupled to said electrical network;

a threshold-value logic system coupling said distance protection device (11) and said overcurrent protection device (X) to said circuit breaker means (3) and including OR gate means (15) having an output operatively coupled to said circuit breaker means (3) and having two inputs, one of which is coupled to an output of said distance protection device (11) and the other of which is coupled through additional gating means to the output of said overcurrent protection device (X), said additional gating means comprising first AND gate means (16) having one input coupled to the output of said overcurrent protection device (X) and a further input gating means (16*a*) coupled with said first AND gate means and having inputs coupled to said voltage signals (U_1, U_2) through respective first threshold switches (12, 13) which deliver output signals when the corresponding voltage signals (U_1, U_2) exceed predetermined threshold values, the output signal of said first AND gate means (16) depending on at least one of said voltage signals (U_1, U_2)

failing to exceed the corresponding one of said predetermined threshold values.

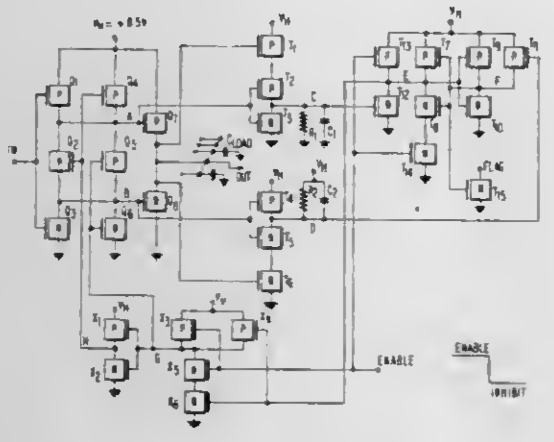
3,938,008
COMMON BUS DRIVER COMPLEMENTARY PROTECT CIRCUIT

Ronald W. Knepper, La Grangeville; Ralph D. Lane, Wappingers Falls; Peter J. Ludlow, Hopewell Junction, and Barry L. Moore, Middletown, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 18, 1974, Ser. No. 507,111

Int. Cl.² H02H *3/08, 7/20*

U.S. Cl. 317—31 **6 Claims**



1. An over current protection circuit for at least one of a plurality of drivers whose outputs are coupled to a common bus load, each driver including an output stage comprising at least one active element having at least three terminals, comprising:

a. means for sensing an output current from the driver above a predetermined level and for producing an output signal during the time that the driver output current exceeds the predetermined level, said sensing means comprising and AND gate responsive to the potentials across at least two pairs of the three terminals of the active element,

b. capacitor means coupled to the sensing means output for accumulating and storing a charge proportional to the time integral of the output signal,

c. a bistable latch coupled to the capacitor means and adapted to be triggered thereby in response to the accumulated charge reaching a predetermined level, and

d. gate means coupled between the latch and the driver for disabling the driver in response to the triggering of the latch.

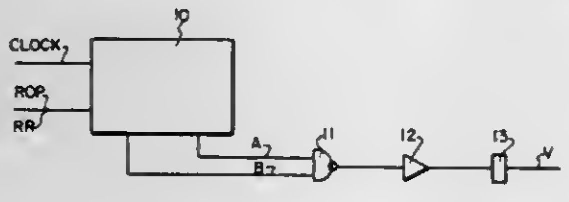
3,938,009
PRECISION CONTROL OF RELAY OPERATE AND RELEASE TIMES

John A. Gauthier, Brockville, Canada, assignor to GTE Automatic Electric (Canada) Limited, Brockville, Canada

Filed Sept. 27, 1974, Ser. No. 510,085

Int. Cl.² H03H *9/00*

U.S. Cl. 317—148.5 R **3 Claims**



1. A system for varied accurate relay operate and release times including, a relay, a free running clock producing clock pulses, and relay operate and release signals, said system comprising:

a single shift register device having one input coupled to said clock pulses and a second input coupled to said relay operate and release signals;

a single output gate means coupled to said shift register device; and

relay driver means coupled to said output gate means and to said relay.

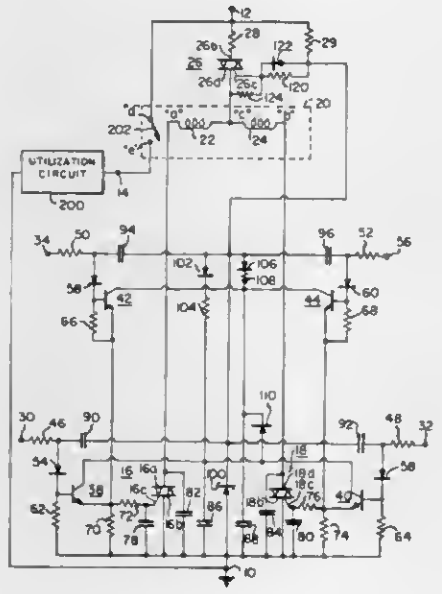
3,938,010
CONTROLLABLE ELECTRICAL SWITCH

Donald Charles Long, Yardley, Pa.; Albert Charles Hartsough, Willingboro, and Robert Fincher Sanford, Titusville, both of N.J., assignors to Princeton Electro Dynamics, Inc., Princeton Junction, N.J.

Filed Mar. 5, 1975, Ser. No. 555,700

Int. Cl.² H01H *47/32*

U.S. Cl. 317—155.5 **6 Claims**



1. A controllable electrical switch, comprising:

first and second terminals; and

actuating means for making electrical connection between said terminals when closing said switch, and for breaking said electrical connection when opening said switch;

said actuating means including:

a. a bistable electromechanical relay having an input electrode coupled to said first terminal and an output electrode coupled to said second terminal, and conditionable to one of a low and high impedance state between its input and output electrodes as a function of current flow therein;

b. a pair of semiconductor control devices, each having an input circuit, and each having an output circuit respectively coupled to said electromechanical relay such that a conductivity condition in one of said devices produces a current flow in said relay as to place it in its low impedance state and such that a conductivity condition in the other of said devices produces a current flow in said relay as to place it in its high impedance state;

c. a pair of pulse triggering circuits for signal pulsing the input circuits of said semiconductor control devices to change the conductivities thereof, with said changes in conductivity conditions serving to change the current flow through the output circuits of said control devices to change the impedance state of said bistable relay in actuating said electrical switch from a make to a break condition and vice versa;

d. a first power supply means for energizing said bistable electromechanical relay and said pair of semiconductor control devices; and

e. a second power supply means for energizing said pulse triggering circuits at a lower potential than energizes said bistable relay and said pair of control devices.

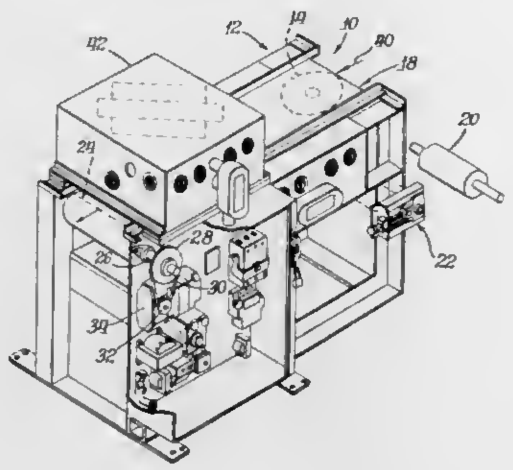
3,938,011
TAPE DEGAUSSER

Arthur K. Littwin, 2235 N. Knox Ave., Chicago, Ill. 60639

Filed Aug. 20, 1973, Ser. No. 389,578

Int. Cl.² H01F *13/00*

U.S. Cl. 317—157.5 MR **4 Claims**



1. Apparatus for degaussing a magnetized tape wound in a reel about an axis and constituting bulk or mass form, comprising

conveyor means for conveying the tape continuously in a path extending longitudinally through the apparatus,

degaussing units in juxtaposition to the path and in close juxtaposition to the tape as the tape is conveyed along the path, the degaussing units being operative for impressing degaussing magnetic fields on the tape, and

means for adjustably driving the conveyor means at progressively reduced speeds and correspondingly adjustably reducing the magnetic field of the degaussing means to a level approximating zero while the tape is in the range of and passing the degaussing units.

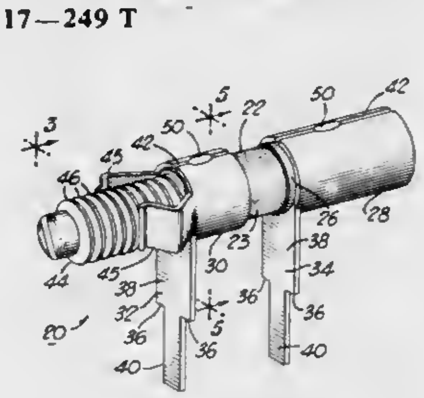
3,938,012
VARIABLE CAPACITOR

Vincent J. Patti, Norridge, Ill., assignor to Standex International Corporation, Andover, Mass.

Filed Jan. 28, 1974, Ser. No. 436,865

Int. Cl.² H01G *5/24*

U.S. Cl. 317—249 T **13 Claims**



1. A capacitor comprising

means for electrically connecting said capacitor into an electrical circuit, said electrically connecting means comprising a first, elongated, generally tubularly shaped, radially outwardly expandable, conductive member, said first conductive member including a first elongated slot extending along the entire length of said first conductive member, and a second, elongated, generally tubularly shaped, radially outwardly expandable, conductive member, said second conductive member including a second elongated slot extending along the entire length of said second conductive member,

means electrically insulating said first and second conductive members, said electrically insulating means comprising an elongated, generally tubularly shaped, radially outwardly expandable, dielectric member received within said first and second conductive members, said first and second conductive members being spaced apart along the length of said dielectric member, said dielectric member including a third elongated slot extending along the entire length of said dielectric member, and

means radially outwardly expanding said first and second conductive members and said dielectric member to thereby increase the widths of said first, second and third slots, said expanding means comprising an elongated conductive member received within said dielectric member and electrically short circuited to said first conductive member.

3,938,013
D.C. MOTOR CONTROL SYSTEM EFFECTING CHANGES IN THE CONNECTIONS OF THE ARMATURE AND VARIATIONS IN CURRENT FLOW THROUGH THE FIELD

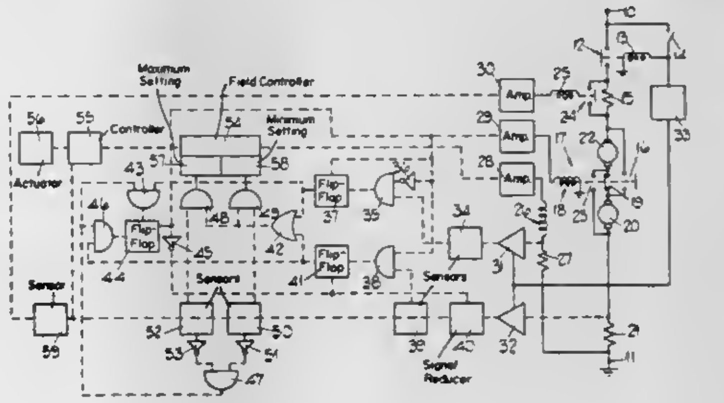
Alec Harry Seilly, North Wembley; Kenneth Clive Scott, London, and Kenneth Leslie Driver, Weighbridge, all of England, assignors to C.A.V. Limited, Brimingham, England

Filed June 7, 1974, Ser. No. 477,408

Claims priority, application United Kingdom, June 9, 1973, 27574/73

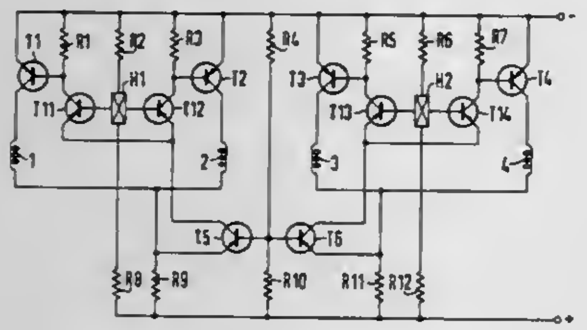
Int. Cl.² H02P *1/16*

U.S. Cl. 318—92 **5 Claims**



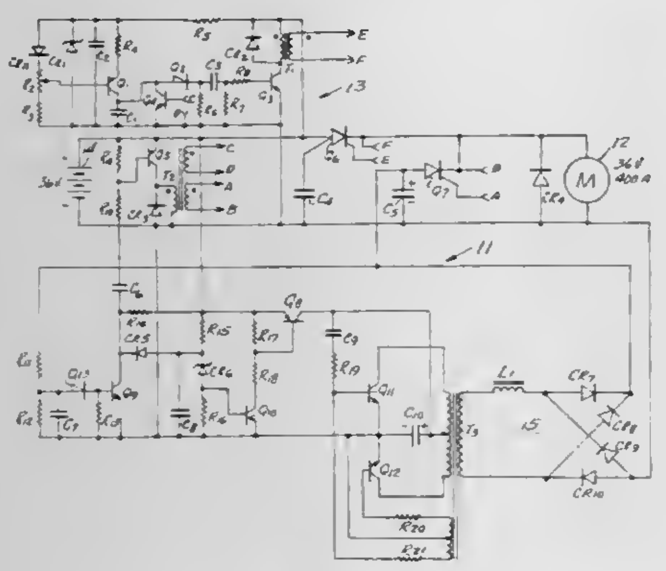
1. A d.c. motor control system comprising a pair of armature windings mounted on a single rotor or on a pair of mechanically coupled rotors, a field winding or windings, the system including switch means operable to effect a change in the electrical connections of the armature windings to a pair of electric supply terminals, and means for effecting variation of the current flowing in the field winding or windings, said switch means comprising a contactor, the contactor serving in one condition to place said windings in series with each other and in the other condition in parallel with each other, said means for effecting variation in the current flowing in the field winding or windings comprising an operator controlled member, and a field current controller of the chopper type, said field current controller receiving a first control signal from said operator controlled member and acting to reduce the current flowing in the field windings when it is required to accelerate the motor, a power amplifier being further provided intermediate the controller and the field winding, said system additionally including means for providing a field current signal representative of the field current, means for providing an armature current signal representative of the armature current, switch means operable to control said contactor, said switch means being operated to cause the contactor to connect said armature windings in the correct parallel or series mode when the armature and field current are at predetermined values.

3,938,014
BRUSHLESS D-C MOTOR
Toshitaka Nakajima, Matsumoto, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan
Filed Feb. 14, 1974, Ser. No. 442,681
Claims priority, application Japan, Feb. 16, 1973, 48-19065
Int. Cl.² H02K *29/00*
U.S. Cl. 318—138 **8 Claims**



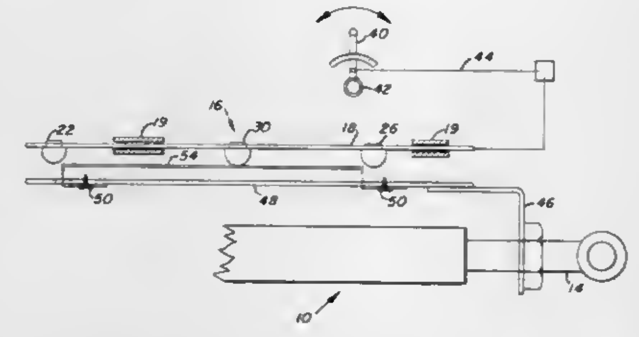
1. In a brushless d-c motor having a permenant magnet rotor and a plurality of stator windings with at least two of the stator windings having a lead in common and further including means to successively energize the stator windings using commutation transistors, in dependence of the angular position of the rotor, the improvement comprising:
   a. a resistor coupling two stator windings in common to a voltage terminal to develop a voltage output representing the current flowing in the stator windings with which it is associated; and
   b. means having said voltage output as an input and providing an output coupled to control the commutation transistors associated with said two stator windings having a common lead so as to regulate the current flowing through said transistors to maintain currents of approximately equal magnitude flowing in each of the two stator windings having a common lead.

3,938,015
SCR MOTOR VOLTAGE CONTROLLER
Ronald Beebe, 32960 Parkview Drive, Fort Bragg, Calif. 95437
Filed Apr. 5, 1974, Ser. No. 458,127
Int. Cl.² H02P *7/06*
U.S. Cl. 318—139 **10 Claims**



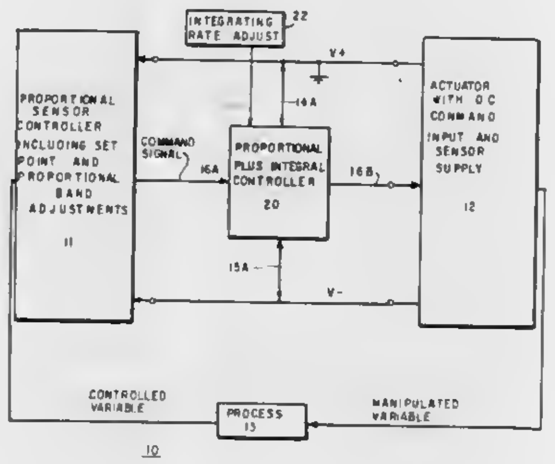
1. A motor speed controlling system comprising in combination:
   a. a DC source;
   b. DC motor means;
   c. a main pass switch device connecting said source to said motor means;
   d. means to turn on said main pass switch device at a constant periodic rate, comprising:
      i. a constant current circuit connected to said DC source;
      ii. a turn-on capacitor;
      iii. means to charge said turn-on capacitor from said constant current circuit;
      iv. a first transformer;
      v. circuit means to apply a pulse to the input of said first transformer responsive to a predetermined charge level of said turn-on capacitor; and
      vi. means operatively connecting said first transformer to said main pass switch device;
   e. means to turn off said main pass switch device at said periodic rate after a power pulse, whereby to deliver power pulses to said motor means at said constant periodic rate, comprising:
      i. a second switch device;
      ii. a turn-off capacitor;
      iii. a DC to DC converter operatively connected to said DC source for charging said turn-off capacitor to a trigger voltage substantially higher than that of the DC source;
      iv. circuit means operatively connected to said second switch device and said turn-off capacitor acting to turn on said second switch device responsive to attainment of said trigger voltage including a second transformer operatively connected to said second switch device, a differentiating circuit drivingly connected to said second transformer and means to develop a driving pulse in said differentiating circuit responsive to the attainment of said trigger voltage;
      v. circuit means to back-bias said main switch device to a turn-off state responsive to the turning on of said second switch device; and
      vi. means to turn off said DC to DC converter simultaneously with the turning on of said second switch device responsive to the attainment of said trigger voltage; and
   f. means to adjust the point of turn-on of said main pass switch device in its cycle, whereby to vary the width of the power pulses and correspondingly vary the effective voltage applied to said motor means.

3,938,016
ACTUATOR POSITION CONTROL
Henry James Lange, Juneau; Myron Lee McCunn, Horicon; Martin Adolph Berk, Horicon; Peter Jay Classen, Horicon, and David Thomas Allen, Horicon, all of Wis., assignors to Deere & Company, Molioe, Ill.
Filed Sept. 18, 1974, Ser. No. 506,978
Int. Cl.² G05B *11/14*
U.S. Cl. 318—467 **6 Claims**



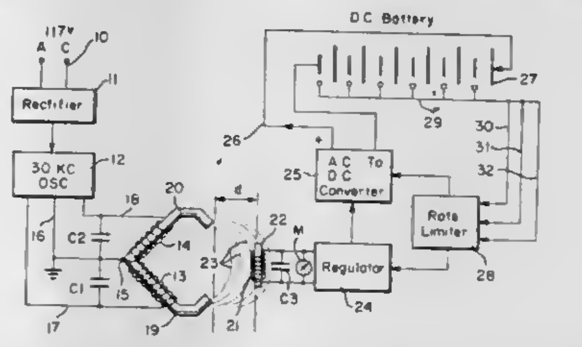
1. In a combination of an actuator including a reversible electric motor and a control for the motor wherein the combination is of a type including an electical energy source connected to the motor by circuitry including control switch means having a normal condition disconnecting the source from the motor and first and second operative conditions respectively connecting the source to the motor for effecting forward and reverse driving of the motor; a manually operable input member connected to the switch means for controlling movement of the latter to its first and second operative conditions; a follow-up member connected to an output member of the actuator and to the switch means for restoring the latter to its neutral condition after the output member has undergone a predetermined movement corresponding to a selected setting of the input member, the improvement comprising: said input and followup members being mounted adjacent each other for relative movement along parallel first and second paths; said control switch means being entirely embodied in said input and follow-up members and including first electrical contact means carried by the input member and second electrical contact means carried by the follow-up member; said first and second electrical contact means being so arranged relative to each other that when the input and follow-up members bear a first spatial relationship to each other the neutral condition of the switch means exists and when the input member is respectively moved in said first and second directions, to thus disturb the first spatial relationship, the first and second operative conditions respectively exist.

3,938,017
ANTI-RESET WINDUP PROPORTIONAL AND INTEGRAL CONTROLLER
Thomas Edward Hayes, Goshen, Ind., assignor to Johnson Service Company, Milwaukee, Wis.
Filed Mar. 5, 1974, Ser. No. 448,365
Int. Cl.² G05B *11/42*
U.S. Cl. 318—610 **16 Claims**


INTEGRATING RATE ADJUST
22
V+
14A
PROPORTIONAL SENSOR CONTROLLER INCLUDING SET POINT AND PROPORTIONAL BAND ADJUSTMENTS
11
COMMAND SIGNAL
16A
PROPORTIONAL PLUS INTEGRAL CONTROLLER
20
16B
ACTUATOR WITH DC COMMAND INPUT AND SENSOR SUPPLY
12
15A
V-
CONTROLLED VARIABLE
PROCESS
13
MANIPULATED VARIABLE
10

1. In a process control system having a proportional control loop including sensor means for monitoring a controlled variable and for providing a linearly changing command signal indicating deviations of the controlled variable from a system set point, and actuator means responsive to the command signal to control a manipulated variable to effect a change in the controlled variable to return the controlled variable to the set point, a proportional plus integral controller means comprising proportional means responsive to said command signal to provide a first signal proportional to said command signal, integral means operable when enabled to be responsive to said command signal to provide a second signal that varies in proportion to the time integral of the command signal, summing means for summing said first and second signals to provide a modified command signal for said actuator means and control means for normally enabling said integral means to provide said second signal, said control means having a first means for providing at least one reference signal of a predetermined value and second means for comparing said modified command signal with said reference signal and for controlling said integral means to vary the amplitude of said second signal by disabling said integral means whenever said modified command signal exceeds said predetermined value.

3,938,018
INDUCTION CHARGING SYSTEM
Ernest A. Dahl, 3747 Breaker Drive, Ventura, Calif. 93003
Filed Sept. 16, 1974, Ser. No. 506,530
Int. Cl.² H02J *7/10*
U.S. Cl. 320—2 **4 Claims**



1. An apparatus for charging a D.C. rechargeable battery without physical conductors extending between a charging source and said battery, comprising in combination:

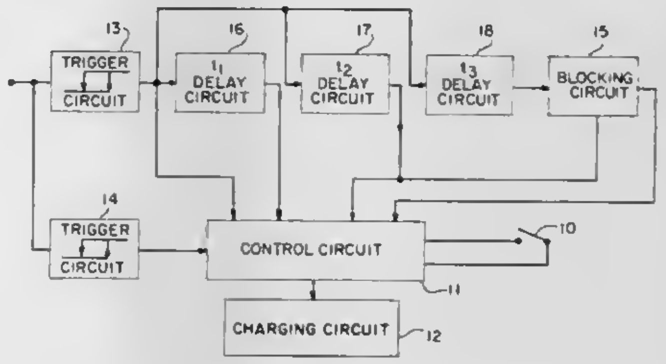
a. oscillator means for connection to said charging source for converting said source into a signal of given high frequency in the range from 10,000 to 40,000 cycles per second;

b. a transmitting coil means including powdered iron core means connected to the output of said oscillator means for radiating said signal, said transmitting coil means being tuned to said given high frequency;

c. a receiving coil means including a powdered iron core spaced a given distance from said transmitting coil means substantially less than one wave length of said given high frequency so as to be inductively coupled with said transmitting coil means including first and second coils connected together at first ends to provide a common connection, said coils with their powdered iron core means being disposed at an angle to each other to direct the path of the generated electromagnetic field in a direction for maximum flux coupling with said receiving coil mcans over said given distance; and

d. A.C. to D.C. converter means connected between said receiving coil means and said battery for converting the inductively received signal into a D.C. charging signal.

3,938,019
CHARGING OF STORAGE BATTERIES
Gerhard Schmitt, Ffm-Zeilsheim, and Gerhard Knierim, Fischbach, both of Germany, assignors to Varta Batterie Aktiengesellschaft, Hannover, Germany
Filed Dec. 11, 1974, Ser. No. 531,557
Claims priority, application Germany, Jan. 2, 1974, 2400090
Int. Cl.² H02J *7/10*
U.S. Cl. 320—21 **7 Claims**



1. A method of charging a storage battery, utilizing a heavy charging phase followed by a pulse charging phase, and comprising the steps of:
   charging during said heavy charging phase with constant current until a predetermined battery voltage U1 is reached;

charging during the subsequent pulse charging phase with constant current pulses which include a charge-continuation interval *t*1 following the attainment of said battery voltage U1 in response to each said pulse;

shutting off the charging pulse at the end of each *t*1 interval for a pause of duration *t*2;

measuring the battery rest potential during a measuring interval *t*3 within said pause and comparing said rest potential with a reference value; and

terminating the pulse charging phase when said rest potential ceases to fall below said reference value during a measuring interval.

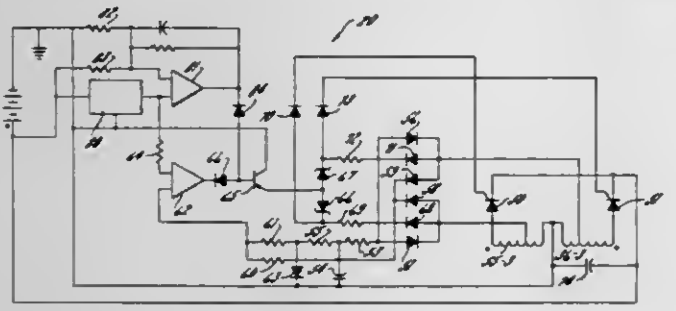
3,938,020
CHARGER CIRCUIT FOR ACCESSORY BATTERY

Robert F. Bourke, Wilson, Wis., assignor to Gould, Inc., Rolling Meadows, Ill.

Filed Feb. 11, 1975, Ser. No. 548,914

Int. Cl.^{2} H02J *7/00;* H02M *7/44*

U.S. Cl. 320—21 12 Claims



12. A circuit for charging an auxiliary battery and usable with thyristor controlled resonant circuits of the type including a resonating inductance, said charging circuit comprising in combination, charging inductance means inductively coupled to the resonating inductance, switch means coupled to the charging inductance means, means for providing a first signal related to the peak voltage induced in said charging inductance means, means for producing a second signal following the voltage induced in said charging inductance means, means for comparing the first and second signals for producing a firing signal when said second signal reaches a magnitude which is a predetermined proportion of said first signal, and means coupling the firing signal to the switch means for causing said charging inductance means to take energy from the resonating inductance.

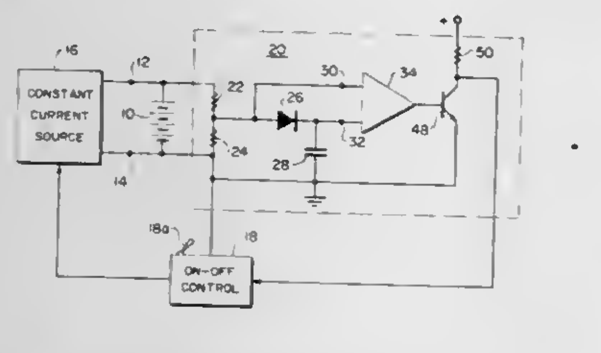
3,938,021
BATTERY CHARGING CIRCUIT WITH FULL-CHARGE CUTOFF

Melvyn S. Kosmin, Ocean Township, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 15, 1974, Ser. No. 497,773

Int. Cl.^{2} H02J *7/04*

U.S. Cl. 320—40 1 Claim



1. A battery charging circuit including overcharge protection for a battery being charged comprising:

a constant current source having a pair of output terminals,

a resistive voltage divider connected across the output terminals of the current source,

a series connected diode and capacitor connected across a resistor of the voltage divider with the diode in the forward direction to follow changes in the terminal voltage of a battery connected across the current source and being charged,

a high input impedance amplifier having a pair of input terminals connected across the diode,

a transistor amplifier including a collector resistor, the base of the transistor amplifier being connected to the output of the high input impedance amplifier to operate at saturation when the diode conducts, and to reduce current level abruptly when the diode ceases to conduct, and

on-off control means connected between the collector of the transistor amplifier and the constant current source for turning off the constant current source when the current level in the transistor amplifier is reduced abruptly.

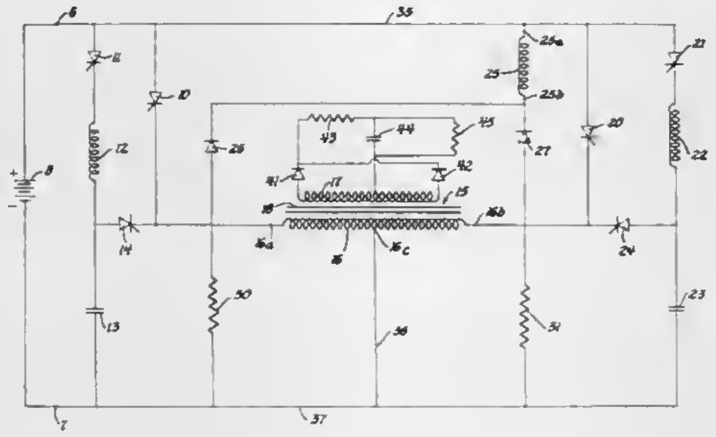
3,938,022
DC TO DC INVERTER CIRCUIT

William C. Staker, Springfield, and Richard N. Lehnhoff, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 28, 1974, Ser. No. 501,024

Int. Cl.^{2} H02M *3/315*

U.S. Cl. 321—2 6 Claims



1. A DC to DC inverter circuit comprising: positive and negative polarity input circuit means; a transformer having at least a primary winding with two terminal ends and a center tap; first and second power silicon controlled rectifiers, each having anode and cathode electrodes; means for connecting each terminal end of said transformer primary winding to the same one of said input circuit means through the said anode-cathode electrodes of a respective one of said power silicon controlled rectifiers; means for connecting said transformer primary winding center tap to the other one of said input circuit means; first and second commutating capacitors; first and second charge circuit silicon controlled rectifiers, each having anode and cathode electrodes; first and second charge circuit inductor elements; means for separately connecting the series combination of said anode-cathode electrodes of one of said charge circuit silicon controlled rectifiers, one of said charge circuit inductor elements and one of said commutating capacitors and the series combination of said anode-cathode electrodes of the other one of said charge circuit silicon controlled rectifiers, the other one of said charge circuit inductor elements and the other one of said commutating capacitors across said positive and negative polarity input circuit means; a commutating silicon controlled rectifier having anode and cathode electrodes corresponding to each one of said power silicon controlled rectifiers; and means for connecting said anode-cathode electrodes of each of said commutating silicon controlled rectifiers across the positively charged plate of a respective one of said commutating capacitors and the said cathode electrode of the said power silicon controlled rectifier to which it corresponds.

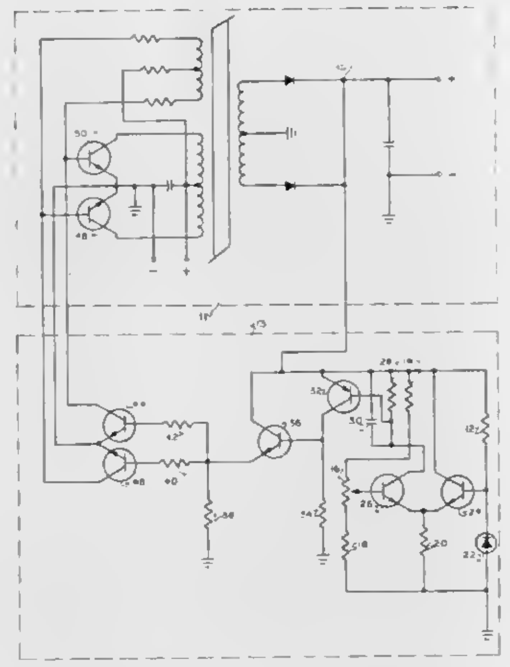
3,938,023
VOLTAGE MONITOR AND CONTROL CIRCUIT

Homer F. Hutchinson, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 27, 1974, Ser. No. 509,751

Int. Cl.^{2} H02M *3/335*

U.S. Cl. 321—2 7 Claims



1. A voltage monitoring control circuit connected to a DC to DC power converter utilizing switching transistors connected to a primary winding and a feedback winding of a transformer having a secondary winding whose output is rectified and forms the output of the power converter, wherein said voltage monitoring control circuit comprises:

a differential amplifier;

voltage reference means connected to one input of said differential amplifier;

sensing means connected between said power converter output and said second input of said differential amplifier, said differential amplifier producing an output in response to voltage changes at said second input proportional in magnitude to said voltage changes;

shunting control means connected to said switching transistors of said power counverter, said shunting means including a control transistor connected across each of said switching transistors, the main current path of said control transistors connected across the base emitter junction of said respective switching transistors; and

translating means connected between said control leads of said junction control transistors and said output of said differential amplifier, said shunting control transistors controlling the base current of said switching transistors so as to regulate the output of said power converter.

3,938,024
CONVERTER REGULATION BY CONTROLLED CONDUCTION OVERLAP

Patrick William Clarke, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 6, 1975, Ser. No. 538,593

Int. Cl.^{2} H02M *3/335*

U.S. Cl. 321—2 11 Claims

1. In a DC to DC converter,

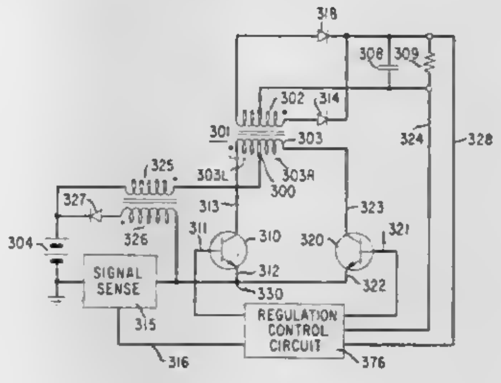
transformer means

first and second switching means coupled to said transformer means,

signal monitoring means responsive to a signal conducted by said transformer means,

switch control means to cyclically operate said first and second switching means,

said switch control means being responsive to said signal monitoring means to control conduction intervals of said first and second switching means, said switch control means operating to render each of said first and second switching means conducting during each cycle of operation for a time interval in excess of one-half the time period of each cycle of operation and nonconducting during each cycle of operation for a time interval less than one-half the time period of each cycle of operation, said first and second switching means thereby being alternately nonconducting and simultaneously conducting for a controlled time duration during each cycle of operation in order to maintain a predetermined regulated signal output magnitude to continuously energize a load at an output of said converter in response to the controlled time duration of simultaneous conduction.



3,938,025
DC TO DC CONVERTER FOR PRODUCING TWO INDIVIDUALLY CONTROLLED AND STABILIZED DC-VOLTAGES

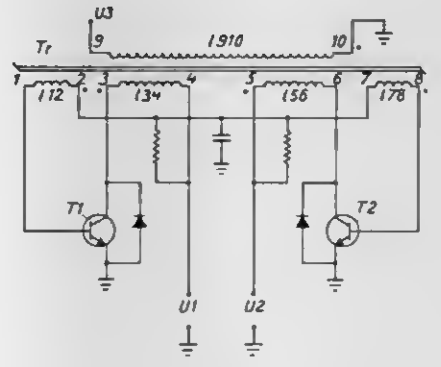
Rolf Erik Olof Gustafsson, Huddinge, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Oct. 2, 1974, Ser. No. 511,209

Claims priority, application Sweden, Oct. 17, 1973, 140923

Int. Cl.^{2} H02M *3/335*

U.S. Cl. 321—2 5 Claims



5. A DC to DC converter for producing two individually controlled and stabilized DC-voltages comprising:

an oscillator arrangement of the push-pull type including a transformer having a primary winding which is split into two halves each having an end terminal and a secondary winding having an output terminal;

a first and a second DC voltage;

means for connecting said first and second DC voltage to the respective half of said primary winding for determining the amplitude of the two half waves appearing on the output of said secondary winding;

first and second rectifier means each having an input terminal and an output terminal, said input terminal being connected to the output terminal of said secondary winding for rectifying the pulse formed output voltage on said output terminal;
a first and a second variable reference voltage source, said first rectifier means being a half wave rectifier and said second rectifier means being a peak-to-peak rectifier; and
first and second regulator means for providing said first and second DC voltage, each having a first and a second input terminal and an output terminal, said output terminal being connected to each of said end terminals of said primary winding halves, the first of said input terminals being connected to the output of each of said rectifier means, and said second input terminal being connected to one of said reference voltage sources.

3,938,026

CIRCUIT FOR THE SIMULTANEOUS IGNITION OF A PLURALITY OF THYRISTORS

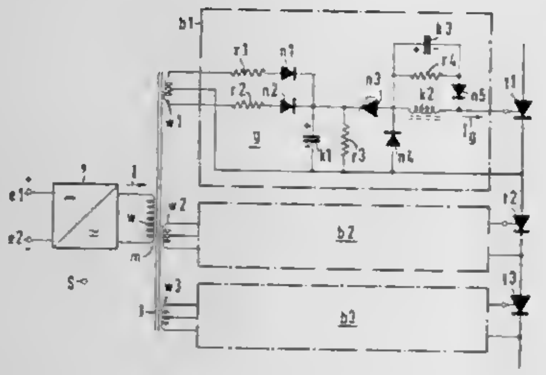
Manfred Hoffmann; Jakob Schenk, both of Erlangen, and Karl-Friedrich Leowald, Weiher, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 4, 1974, Ser. No. 520,849

Claims priority, application Germany, Nov. 21, 1973, 2358091

Int. Cl.² H02M *7/12*

U.S. Cl. 321—27 R **10 Claims**



1. Apparatus for the simultaneous ignition of a plurality of series-connected thyristors comprising,
a control amplifier the output of which is an alternating current,
a pulse transformer, the primary windings of which are coupled to the output of said control amplifier, said transformer having a plurality of secondary windings,
a plurality of full-wave rectifiers, one each coupled to said secondary windings, and having two output leads,
a plurality of control circuits, one each coupled in the control path of each thyristor, each control circuit comprising,
a storage reactance coil having a first lead coupled to the grid of the thyristor and a second lead coupled to one output lead of a full-wave rectifier, and
an uncontrolled diode having its cathode coupled to said second lead of said storage reactance coil, and its anode coupled to the cathode of the thyristor and the other output lead of said rectifier.

3,938,027

ELECTRICAL THYRISTOR CIRCUIT

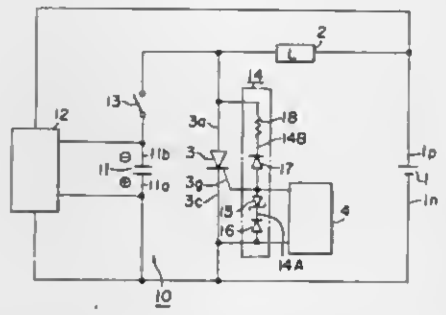
Hideo Iwamoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed June 12, 1974, Ser. No. 478,512

Int. Cl.² H02M *7/515*

U.S. Cl. 321—45 C **22 Claims**

1. An electrical circuit comprising at least one thyristor having an anode, cathode and gate;
an ignition circuit for applying an ignition signal between the gate and cathode of the thyristor when turning on the thyristor;
a turn-off circuit for turning off the thyristor which applies a reverse voltage between the anode and cathode of the thyristor when turning off the thyristor and which comprises an inverse bias circuit;
said turn off circuit comprising a commutation capacitor connected by switch means across the anode and cathode of the thyristor, means for reverse charging the commutation capacitor while the thyristor conducts so that upon actuation of the switch means the commutation capacitor applies voltage to the anode of the thyristor which is negative with respect to the voltage applied by the commutation capacitor to the cathode of the thyristor;



said inverse bias circuit comprising a first path across the gate and cathode of the thyristor and a second path across the gate and anode of the thyristor; and
said inverse bias circuit applying a reverse bias voltage having opposite polarity to the ignition signal between the gate and cathode of the thyristor.

3,938,028

VOLTAGE REGULATOR FOR A SEPARATELY EXCITED GENERATOR

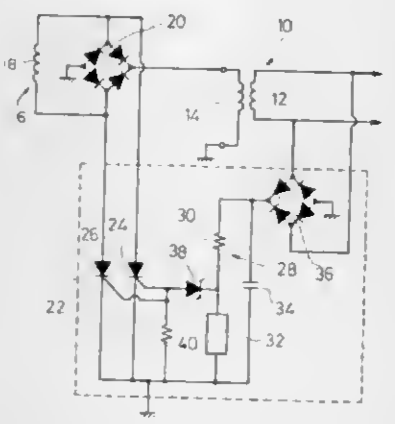
Yoshihiko Ikeda, Susono, Japan, assignor to Kokusan Denki Co., Ltd., Numazu, Japan

Filed July 5, 1974, Ser. No. 485,984

Claims priority, application Japan, July 9, 1973, 48-80540[U]

Int. Cl.² H02P *9/26*

U.S. Cl. 322—28 **5 Claims**



1. A voltage regulator for a separately excited generator including a main generator unit having generating winding means and exciting winding means and an exciter comprising a magnet field type generator with the output connected through a rectifier to said exciting winding means of said main generator unit, said voltage regulator comprising thyristor means connected to said output of said exciter to short the AC output from said exciter from being supplied to said exciting winding means of said main generator unit, a voltage divider with the input connected through a rectifier to the output of said generating winding means of said main generator unit, said voltage divider comprising first electric resistance means and second electric resistance means, and a Zener diode, the cathode of said Zener diode being connected to the point of connection between said first electric resistance means and said second electric resistance means and the anode of said Zener diode being connected to the gate of said thyristor means, characterized in that said first electric resistance means of said voltage divider is non-linear in voltage to current characteristic.

3,938,029

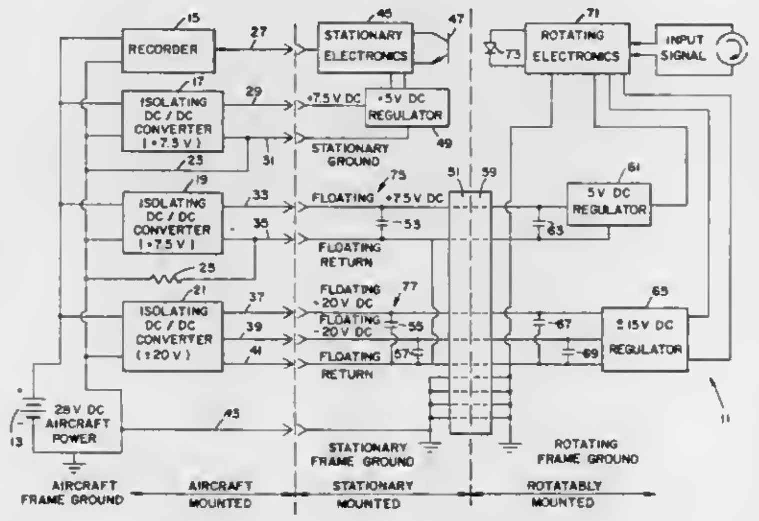
LOW NOISE DC POWER SUPPLY SYSTEM FOR ELECTRONICS ON A ROTATING ASSEMBLY

Peter B. Wagner, and James W. Telford, both of Reno, Nev., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 5, 1974, Ser. No. 486,036

Int. Cl.² H02J *1/00*

U.S. Cl. 323—2 **6 Claims**



1. A low noise D. C. power supply comprising:
a. a stationary assembly and a rotatable assembly;
b. a brush assembly operably connected to said stationary assembly and a slip ring assembly operably connected to said rotatable assembly;
c. said brush assembly including at least first, second and third brushes and said slip ring assembly including at least first, second and third slip rings, said first, second and third brushes being respectively operably connected to said first, said and third slip rings;
d. a stationary D. C. power source having one side connected to a stationary ground, to said third brush and to one input of a stationary D. C. to D. C. converter and the other side connected to the other input of said D. C. to D. C. counter;
e. a first ouput of said stationary D. C. to D. C. converter being connected to said first brush and a second output being connected to said second brush;
f. said first and second slip rings being connected to a D. C. regulator mounted on said rotatable assembly;
g. the output of said D. C. regulator being connected to one input of an electronic assembly mounted on said rotatable assembly; and
h. the ground of said electronics assembly and said second slip ring being connected to said third slip ring.

3,938,030

CONTROLLABLE POWER TRANSFERRING DEVICE UTILIZING A SHORT-CIRCUITED CONTROLLED REACTANCE

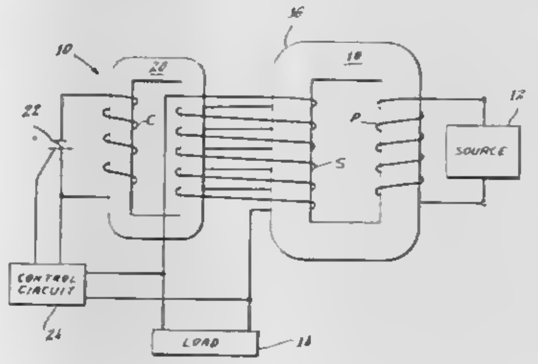
Lionel B. Cornwell, 52 Madison Springs Drive, Madison, Conn. 06443

Filed July 18, 1974, Ser. No. 489,783

Int. Cl.² G05F *7/00*

U.S. Cl. 323—50 **17 Claims**

1. A power transferring device of the type used for regulating or controlling the application of alternating current electric power to a load by means of a reactance controlled by selectively short-circuiting a control coil with a controllable short-circuiting switch, characterized by:
a power transformer having a power core and primary and secondary coils each encircling the power core and arranged for connection respectively to means acting as a source of alternating current electric power and to means forming a load;
a control core separate from the power core and encircled by the selectively short-circuited control coil;
one and only one of the primary or secondary coils being arranged to encircle both the control core and the power core, thereby to subject that coil to the controlled reactance of the control core;



the control core being arranged to subject the coil encircling both cores to essentially complete choking reactance without saturation of the control core when the control coil is open-circuited, thereby to substantially prevent power transfer between the primary and secondary coils;
the control coil loading the control core with the small resistance of the control coil and switch when the switch is short-circuited, thereby to transfer power substantially unimpeded between the primary and secondary coils;
whereby the control core and coil are enabled to efficiently control the transfer of power between the primary and secondary coils by selective opening and closing of the switch with little power dissipation occurring in the transferring device in either switch state.

3,938,031

ADJUSTABLE VOLTAGE POWER SUPPLY

Ronald C. Blackmond, Allison Park, Pa., assignor to Robicon Corporation, Pittsburgh, Pa.

Filed Sept. 3, 1974, Ser. No. 502,656

Int. Cl.² G05F *1/40, 1/66, 3/08*

U.S. Cl. 323—23 **7 Claims**

1. An adjustable voltage alternating current power supply comprising two similar, substantially constant voltage sources, switching means for alternatively connecting said voltage sources in parallel or in series for connection to a load, and means for controlling said switching means to switch said voltage sources between parallel and series connections at predetermined points in each half-cycle of the applied voltage wave.

3,938,032

GATE PULSE POWER SUPPLY FOR STATIC ALTERNATING CURRENT SWITCH

Donald M. Demarest, Wallingford, Pa., assignor to General Electric Company, Philadelphia, Pa.

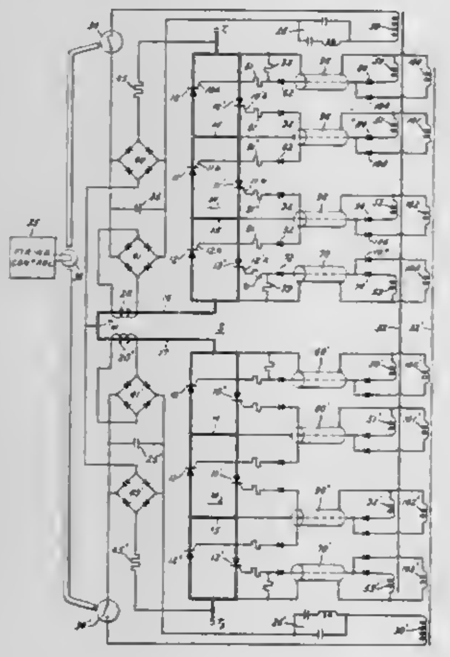
Filed May 21, 1974, Ser. No. 472,025

Int. Cl.² G05F *1/56*

U.S. Cl. 323—24 **7 Claims**

1. Alternating current static switching apparatus for an electric power circuit comprising two oppositely poled branch circuits connected in parallel circuit relation between a pair of terminal cross connections, each said branch circuit including an equal number of at least three gate controlled semiconduc-

tor devices in series circuit relation and each said device having an anode, a cathode and a gating electrode, serially connected semiconductor devices in each said branch circuit having common anode-cathode terminals defining intermediate operating voltage levels in each said branch circuit, intermediate cross connections between common anode-cathode terminals at like intermediate voltage levels in each of said branch circuits, said terminal and intermediate cross connections defining a plurality of serially connected switch sections each including at least two oppositely poled semiconductor devices, and common gate pulse supply means connected to supply current pulses between the cathodes and gating electrodes of all said semiconductor devices once during each half cycle of alternating voltage impressed between said switch terminals.



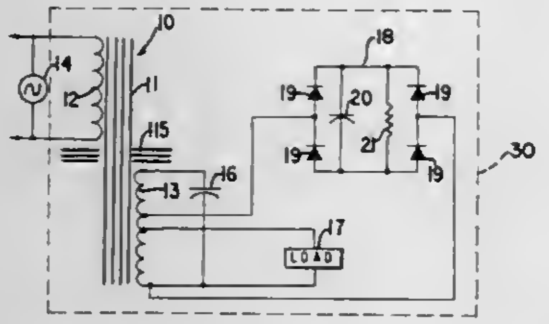
3,938,033
FERRORESONANT TRANSFORMER REGULATOR

Henry S. Borkovitz, Skokie, and William E. Lucarz, Des Plaines, both of Ill., assignors to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed May 22, 1974, Ser. No. 472,182

Int. Cl.² G05F *3/06; 323/60, 61*

U.S. Cl. 323—60 6 Claims



1. In an alternating current regulator system resistant to the effects of transients such as occur at start-up, a source of alternating current energy, a high leakage reactance transformer, a primary winding therewith for connection to said source, secondary winding means having means for connection to a load, a magnetic shunt interposed between said primary winding and said secondary winding means, a first capacitor connected in shunt with said secondary winding means, means for minimizing the effects of transients such as occur during start-up comprising rectifier means connected to a portion of said secondary winding means, a second capacitor connected in shunt with the direct current output of said rectifier means and a resistor connected in shunt with said second capacitor, whereby the effects of voltage variation on said load due to transients is minimized.

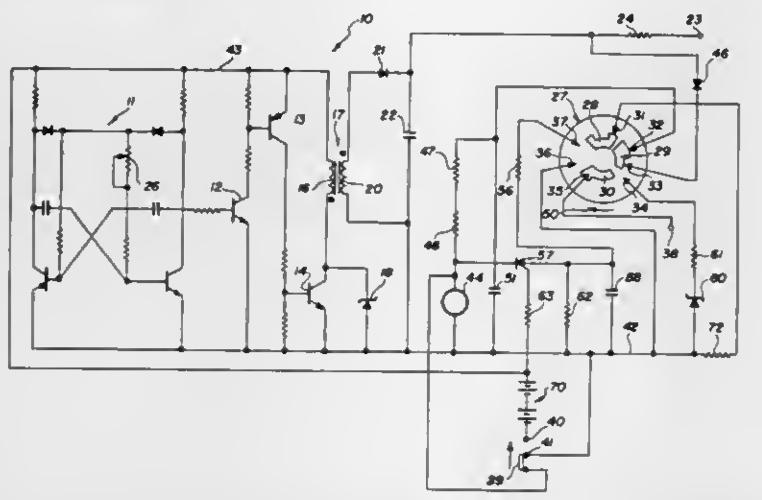
3,938,034
GAS TUBE TESTER

Ronald J. Japenga, Glendale Heights, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed May 6, 1974, Ser. No. 467,066

Int. Cl.² G01R *31/24*

U.S. Cl. 324—20 R 12 Claims



1. A gas tube tester comprising in combination: terminal means for connection to the external terminals of a cold cathode gas discharge tube to be tested, a first circuit arrangement selectively connected to said terminal means for applying a progressively increasing voltage to said terminal means, said progressively increasing voltage ultimately reaching a breakover voltage of the gas tube being tested, first detector means for sensing said breakover voltage, indicating means connected to said first detector means for indicating said breakover voltage, a second circuit arrangement selectively connected to said terminal means for applying a fixed voltage of predetermined value to establish a static leakage current through the gas discharge tube being tested, and a second detector means for sensing said static leakage current flowing through said gas tube being tested, said detector means including switching means for producing a discharge current therethrough when the static leakage current through said gas tube being tested exceeds a predetermined minimum value.

3,938,035
ELECTRICAL CONDUCTIVITY CELL AND METHOD FOR FABRICATING THE SAME

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of William P. Gilbreath, San Jose, Calif.; Michael J. Adamson, San Jose, Calif., and Alexander G. Fassbender, San Jose, Calif.

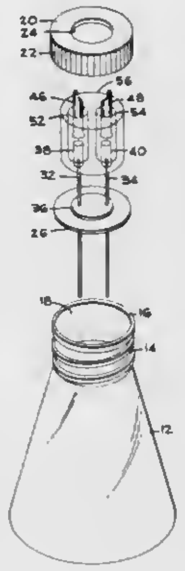
Filed July 16, 1974, Ser. No. 489,009

Int. Cl.² G01N *27/07*

U.S. Cl. 324—30 B 5 Claims

1. A test cell for testing the electrical characteristics of a sample comprising an impervious container for the sample, said container having an opening and a shoulder circumscribing said opening, a laminated disc having an area corresponding to that of the opening, said disc having an inner lamina and an outer lamina, said inner lamina being inert to the sample and sealable on said shoulder, said outer lamina being formed of self sealing material fixed to said inner lamina, means for retaining said disc in spanning relation of said opening, said retaining means acting to seal the periphery of said inner lamina against said shoulder and to expose a medial region of said outer lamina exterior of said container, first and second electrodes transpiercing said disc at a portion of the medial region thereof, and means for supporting said electrodes in gas tight relation to said disc, said supporting means being limited so as to afford access to a portion of the medial region of said disc so that the medial region can be pierced to afford introduction of the sample into said container, wherein said supporting means comprises first and second cylindric members having central bores of a diameter larger than the outer diameter of said electrodes, said cylindric members being disposed

on respective said electrodes so that the outer ends of the electrodes extend through said bores, said cylindric members having axial extremities secured to said outer lamina, and means intermediate the surface of said electrodes and said bores for forming a gas tight seal therebetween.



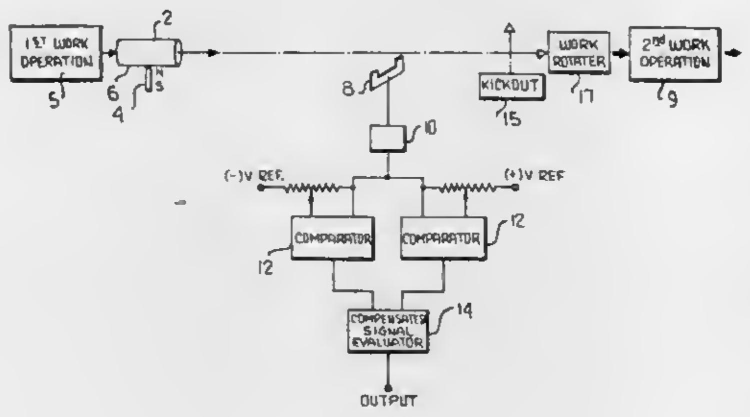
3,938,036
METHOD OF ASCERTAINING AND CORRECTING WORKPIECE TURNING

Erik Hansen, Otterup, Denmark, assignor to A/S Haustrups Fabriker, Odense, Denmark

Continuation of Ser. No. 51,909, July 2, 1970, abandoned. This application May 5, 1972, Ser. No. 250,618

Int. Cl.² G01R *33/00*

U.S. Cl. 324—34 R 6 Claims



1. Method for ascertaining whether a ferromagnetic cylindrical workpiece having an axis and being conveyed generally axially along a path of travel from a first work operation to a subsequent work operation has rotated about its axis away from the position assumed in the first work operation comprising the steps of in connection with the first work operation applying an axial magnetic track on the workpiece with a certain rotational placement about the workpiece axis in relation to a selected site where the first work operation is performed on the workpiece, and in combination with the subsequent work operation detecting the magnetic track on the workpiece by magnetism detecting means that have the same rotational placement with respect to the workpiece axis relative to the selected site of the first work site.

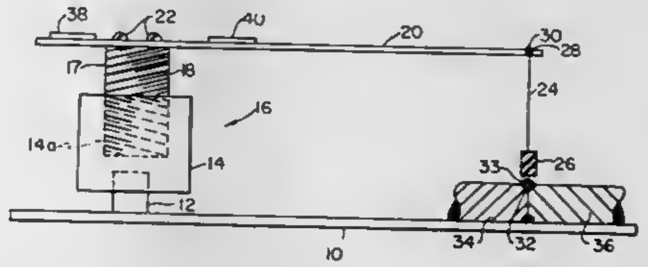
3,938,037
DEVICE FOR MEASURING THE FERRITE CONTENT IN AN AUSTENITIC STAINLESS STEEL WELD MATERIAL

Wayman N. Clotfelter, and Benjamin F. Bankston, both of Huntsville, Ala., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 29, 1974, Ser. No. 518,546

Int. Cl.² G01R *33/12*

U.S. Cl. 324—34 R 5 Claims



1. A device for measuring the ferrite content in an austenitic stainless steel weld material comprising:

a. a base plate;
b. a support member;
c. means mounted adjacent one end of said base plate for adjustably positioning said support member in a vertical direction;
d. a cantilever beam mounted on said support member;
e. a permanent magnet suspended from the free end of said cantilever beam;
f. strain gauge means mounted on said cantilever beam for measuring the amount of deflection of said beam;
g. instrumentation means connected with said strain gauge means for converting the amount of deflection of said beam into a signal indicating the ferrite content of a specimen of austenitic weld material;

whereby said magnet is lowered by adjusting said support member downwardly until said magnet magnetically grabs said specimen of weld material whereupon said magnet is raised by adjusting said support member upwardly until the force of attraction is overcome at which time the deflection of the beam is measured by said strain gauge means to indicate the content of ferrite present in the weld material specimen.

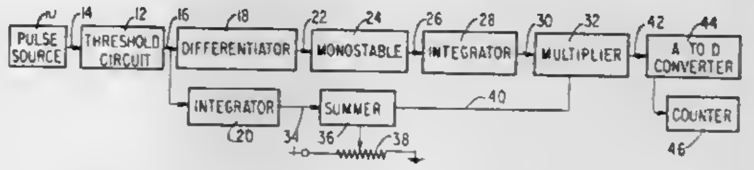
3,938,038
METHOD AND APPARATUS FOR PROVIDING PRIMARY COINCIDENCE CORRECTION DURING PARTICLE ANALYSIS

Stephen K. Campbell, Hialeah, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed July 1, 1974, Ser. No. 484,580

Int. Cl.² H03K *21/30;* G06M *11/00*

U.S. Cl. 324—71 CP 21 Claims



1. A method for automatically correcting a particle pulse count subject to coincidence error wherein particle pulses are developed in response to passage of particles in a particulate system through a sensing zone, including the steps of:

developing a first signal which varies in accordance with the number of particle pulses,

developing a second signal which varies in accordance with the duration of the particle pulses, combining said first and second signals to develop an error corrected signal representing the error corrected particle pulse count.

10. An apparatus for automatically correcting a particle pulse count subject to coincidence error wherein particle pulses are developed in response to passage of particles in a particulate system through a particle sensing device, said apparatus including in combination,

accumulation means operative in response to said particle pulses to develop a first signal which varies in accordance with the number of particle pulses,

error correction means operative in response to the duration of said particle pulses to develop a second signal which varies in accordance with the duration of said particle pulses,

combining means coupled to said accumulation means and said error correction means and operative to combine said first and second signals to develop an error corrected signal representing the error corrected particle pulse count.

3,938,039

VOLTAGE MEASURING DEVICE FOR ENCAPSULATED HIGH-VOLTAGE INSTALLATIONS

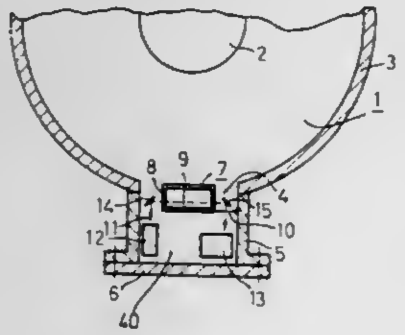
Wolfgang Hermstein, Nurnberg; Gerhard Rosenberger, and Willi Müller, both of Berlin, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 8, 1974, Ser. No. 495,839

Claims priority, application Germany, Aug. 10, 1973, 2341074

Int. Cl.² G01R *31/00*

U.S. Cl. 324—96 **11 Claims**



1. A voltage measuring device for use with an encapsulated, high-voltage switching installation including an inner conductor within a grounded metallic outer tube wherein an electric field exists between said inner conductor and said outer tube which comprises:

a. means for widening said outer tube to thereby form a space for locating at least one of the following elements of said measuring device;

b. a Kerr cell positioned, approximately, at a distance from said inner conductor equal to the distance said outer tube is located from said inner conductor, said Kerr cell positioned such that said electric field passes through said cell;

c. a source of polarized light, said polarized light directed towards said Kerr cell and passing therethrough;

d. a metal layer covering said Kerr cell on the side facing away from said inner conductor, said metal layer electrically connected to said outer tube; and

e. an optical evaluation device for monitoring the polarized light exiting from said instrument, said evaluation device producing an indication proportional to the amount of shift of the plane of polarization of said light, the amount of said shifting being proportional to the intensity of said electric field.

3,938,040

APPARATUS FOR MEASURING A SIGNAL VOLTAGE INCLUDING A CURRENT SOURCE WITH A CONTROL INPUT ON WHICH SAID SIGNAL APPEARS

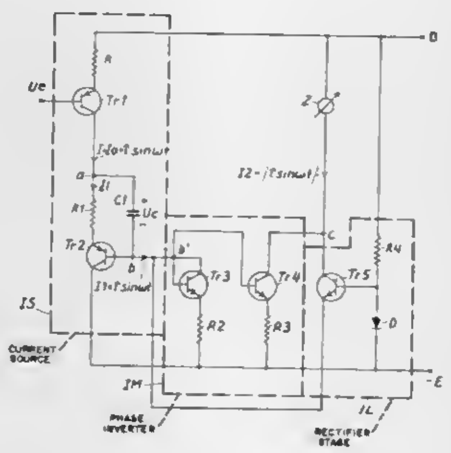
Bengt Gustav Lofmark, Skarholmen, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Mar. 22, 1974, Ser. No. 453,563

Claims priority, application Sweden, Apr. 17, 1973, 73054124

Int. Cl.² G01R *19/22*; H02M *7/00*

U.S. Cl. 324—119 **3 Claims**



1. An apparatus for measuring the voltage of a signal which is substantially sinusoidal comprising a source of operating voltage having first and second output terminals, first and second transistors each having emitter, collector and base terminals, a first resistor connecting the emitter terminal of said first transistor to the first output terminal of said source, the base terminal of said first transistor being adapted to receive signals to be measured, means for connecting the collector terminal of said second transistor directly to the second output terminal of said source, a second resistor connecting the collector terminal of said first transistor to the emitter terminal of said second transistor, a capacitor connecting the collector terminal of said first transistor to the base terminal of said second transistor, a current indicating means having one terminal connected to one of the output terminals of said source and having another terminal, phase inversion means having an input connected to the base of the second transistor and an output connected to the another terminal of said current indicating means, first unidirectional current conducting means having one terminal connected to the another terminal of said current indicating means and having a second terminal, and nonreactive means for directly connecting the second terminal of said first unidirectional current conducting means to the base terminal of said second transistor.

3,938,041

TAPE PACK DIAMETER MEASUREMENT MEANS AND METHOD

Kenneth Louth, Menlo Park, and Reginald William Oldershaw, San Jose, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed June 21, 1973, Ser. No. 371,975

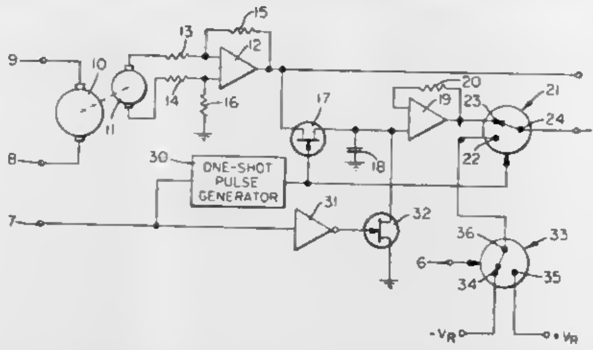
Int. Cl.² G01R *17/00*; B65H *59/38*

U.S. Cl. 324—158 R **11 Claims**

1. A method of measuring the tape pack diameter of a reel of tape driven by a reel servomotor, comprising:

measuring the inertia of a first tape pack, and

comparing said inertia with an inertia value representative



of the inertia of a second tape pack of known diameter to determine the diameter of said first tape pack.

3,938,042

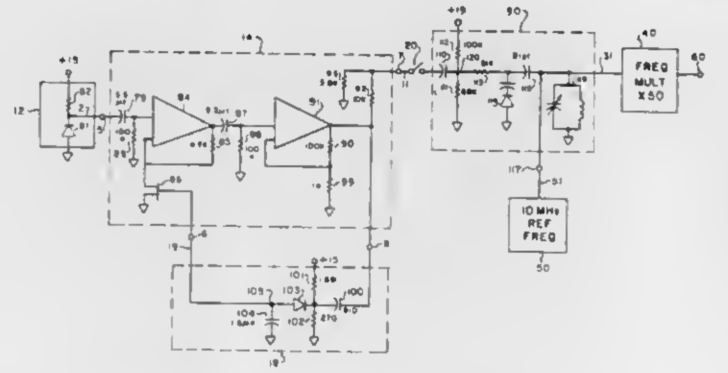
MEASUREMENT AVERAGING COUNTING APPARATUS EMPLOYING A RANDOMLY PHASE MODULATED TIME BASE TO IMPROVE COUNTING RESOLUTION

John H. Gilever, San Jose, and David C. Chu, Woodside, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 437,460, Jan. 28, 1974, Pat. No. 3,886,451. This application Aug. 12, 1974, Ser. No. 496,510

Int. Cl.² G04F *11/06*

U.S. Cl. 324—186 **12 Claims**



1. Measuring apparatus comprising:

means for producing a modulating signal;

means for producing a reference frequency signal having a reference frequency;

means coupled to receive the modulating signal and the reference frequency signal for producing a plurality of phase varied reference pulses varied in phase with respect to the reference frequency signal; and

averaging counting means having a synchronized gate coupled to receive an applied signal having a repetitive characteristic to be measured and the plurality of phase varied reference pulse for producing an output representative of the average of the number of phase varied reference pulses with respect to the number of repetitive characteristics occurring during a measurement.

3,938,043

PUBLIC ADDRESS/RADIO SWITCHING SYSTEM

Samir Thakorbhai Desai, Roselle, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Feb. 10, 1975, Ser. No. 548,323

Int. Cl.² H04B *1/40*

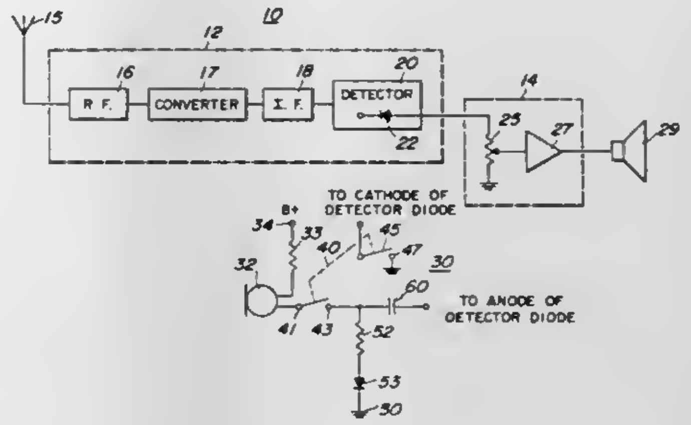
U.S. Cl. 325—18 **14 Claims**

1. In combination with a radio receiver having a tuner and an audio amplifier coupled thereto

a signal source means including an electrical gain stage, the gain stage biased to conduct a quiescent current, the signal source means optimally operable with a fixed load,

a switching means operable in a first or a second state, the switching means operable in the second state to couple the source means to the audio amplifier and operable in the first state to decouple the source means from the audio amplifier,

a load means including a semiconductor device series connected to a load element selected to optimally operate the signal source means, the device having a pair of elec-



trodes and an internal resistance therebetween, the resistance relatively low in response to a common current flowing from the first to the second electrode, the resistance otherwise relatively high,

means coupling the source means quiescent current to the load means device in response to the switching means assuming a second state.

3,938,044

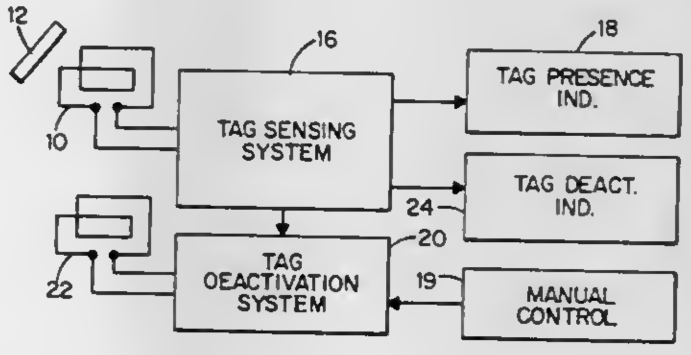
ANTENNA APPARATUS FOR AN ELECTRONIC SECURITY SYSTEM

George Jay Lichtblau, 425 E. 63rd St., New York, N.Y. 10021

Filed Nov. 14, 1973, Ser. No. 415,657

Int. Cl.² H04B *1/48*

U.S. Cl. 325—22 **28 Claims**



19. An antenna system comprising:

a receiving loop antenna operative to provide to utilization means an output indication of the presence of a resonant tag circuit;

a transmitting loop antenna;

said receiving and transmitting antennas being disposed in coplanar adjacent spaced balanced coupling relationship;

means for energizing said transmitting antenna in response to manual actuation, including:

transmitting means operative in response to said manual actuation;

coupling means operative to supply energizing signals from said transmitting means to said transmitting antenna in response to said manual actuation; and

switching means operative in response to said manual actuation to isolate said receiving antenna from said utilization means upon energization of said transmitting antenna, thereby to prevent damage to said utilization means during operation of said transmitting antenna.

3,938,045

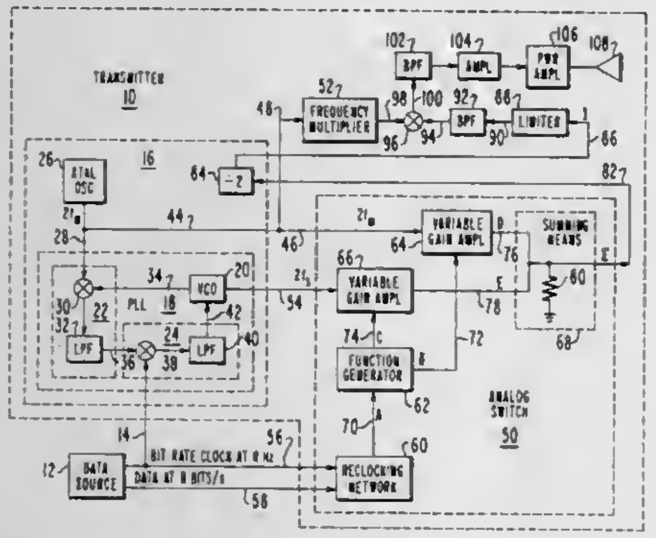
TRANSMITTER FOR FREQUENCY SHIFT KEYED MODULATION

Howard Robert Mathwich, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 3, 1974, Ser. No. 485,519

Int. Cl.² H04L *27/12*

U.S. Cl. 325—163 8 Claims



1. A transmitter for communicating binary data by frequency shift keying (FSK), wherein the FSK signal comprises bits of mark frequency signals and space frequency signals in accordance with said binary data, said mark frequency and said space frequency being respectively indicative of predetermined values in said data, comprising:

means for generating said mark and space frequency signals;

analog switching means, receptive of said mark and space frequency signals and said binary data, for generating said FSK signal;

said analog switching means effecting, in accordance with said binary data, transitions between said mark frequency signals and said space frequency signals and controlling the respective amplitudes of said mark and space frequency signals during said transitions to lengthen said transitions as compared to an abrupt transition between said mark and space frequency signals, thereby controlling derivatives with respect to time of the phase of said FSK signal at said transitions.

3,938,046

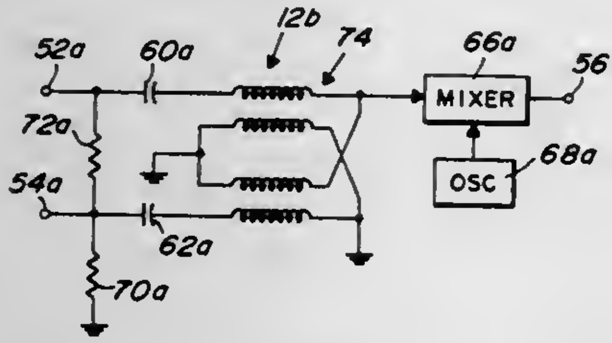
NETWORK FOR ISOLATING ANTENNA FROM TUNER

Alarico A. Valdettaro, Bloomington, Ind., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.

Filed Oct. 21, 1974, Ser. No. 516,185

Int. Cl.² H04B *1/18*

U.S. Cl. 325—362 18 Claims



1. An isolation network for isolating a first pair of terminals from a second pair of terminals for preventing the flow of power line frequency signals between said first and second pairs of terminals while permitting the transfer of radio frequency signals between said first and second terminals comprising:

first isolating means connecting a first one of said first pair of terminals to a first one of said second pair of terminals, said first isolating means being operative to pass radio frequency alternating current signals therethrough and substantially to block the passage of power line frequency alternating current signals;

second isolating means connecting a second one of said first pair of terminals to a second one of said second pair of terminals, said second isolating means being operative to pass said radio frequency alternating current signals therethrough and substantially to block the passage of said power line frequency alternating current signals;

direct current conductive means connected between the first terminals of each of said first and second terminal pairs for providing a direct current conductive path therebetween for discharging said first isolating means; and

second direct current conductive means connected between the first and second terminals of said first pair of terminals to provide a direct current conductive path therebetween for discharging said second isolating means through said second direct current conductive means and at least a portion of said first direct current conductive means.

3,938,047

CONTROL CIRCUIT FOR USE WITH AMPLIFIER

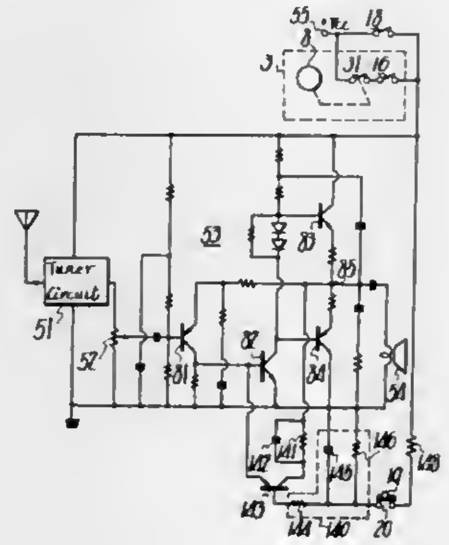
Taiwa Okanobu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 25, 1974, Ser. No. 464,034

Claims priority, application Japan, May 1, 1973, 48-52286

Int. Cl.² H04B *1/06*

U.S. Cl. 325—396 4 Claims



1. A control circuit for use with an amplifier comprising: a signal source for producing a signal; an amplifier circuit consisting of an input transistor which receives said signal from said signal source on its control electrode, a driving transistor with its control electrode connected to an output electrode of said input transistor, and a power amplifying transistor with its control electrode connected to an output electrode of said driving transistor;

an output means connected to the output electrode of said power amplifying transistor;

a switching transistor with its output electrode connected to the control electrode of said driving transistor;

a negative feedback circuit connected between the output electrode of said power amplifying transistor and an input electrode of said switching transistor, said negative feedback circuit including a capacitor and a resistor connected in parallel with each other;

a voltage source for applying a voltage to said amplifier circuit;

a charging and discharging circuit connected between ground and the control electrode of said switching transistor, and

a momentary switch means connected between said voltage source and said charging and discharging circuit such that when said switch is means momentarily closed said charging and discharging circuit charges which causes said switching transistor to conduct and supply negative feedback to said driving transistor to turn it off and when said switch opens after closing said charging and discharging circuit discharges for a period of time after which said switching transistor is turned off which turns said driving transistor on to supply power to said output means.

3,938,048

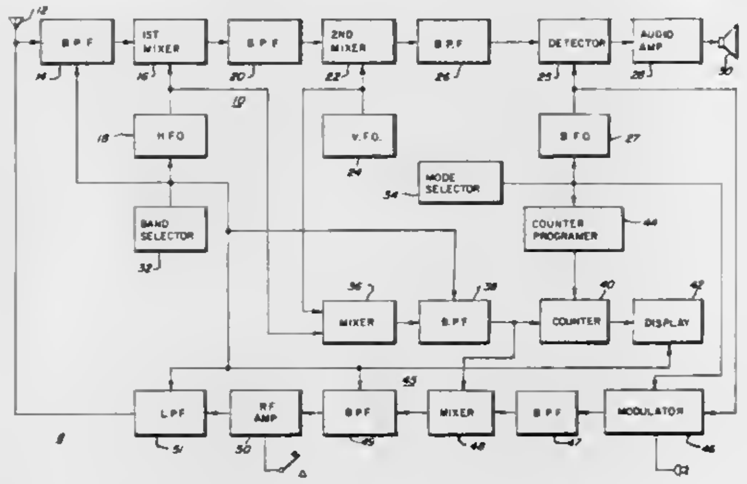
FREQUENCY MEASURING APPARATUS

Michael F. Elliott, St. Joseph, Mich., assignor to Heath Company, Benton Harbor, Mich.

Filed Oct. 10, 1974, Ser. No. 513,851

Int. Cl.² H04B *1/16*

U.S. Cl. 325—455 8 Claims



1. A digital tuning indicator for use with a multi-conversion radio apparatus including a plurality of local oscillators, said indicator comprising:

mixing means coupled to each of said local oscillators and forming a premix signal having a frequency responsive to the frequencies of operation of said local oscillators;

counting means coupled to the output of said mixing means and forming a count responsive to the number of cycles of said premix signal occurring over a period of predetermined length;

display means coupled to said counting means for displaying the count achieved by said counting means at the end of said period; and

programming means coupled to said counting means for altering the count attained on said counting means by an amount related to an intermediate frequency of said radio apparatus.

3,938,049

BASELINE CORRECTION SYSTEM FOR PULSE TRAINS

Jesse L. Acker, Rockaway, N.J., and Peter M. Meserol, E. Northport, N.Y., assignors to Akro-Medic Engineering, Inc., Denville, N.J.

Division of Ser. No. 290,654, Sept. 20, 1972, Pat. No. 3,837,745. This application Aug. 23, 1974, Ser. No. 500,124

Int. Cl.² H03B *1/00;* **H03K** *5/00;* **H04B** *1/10*

U.S. Cl. 328—162 6 Claims

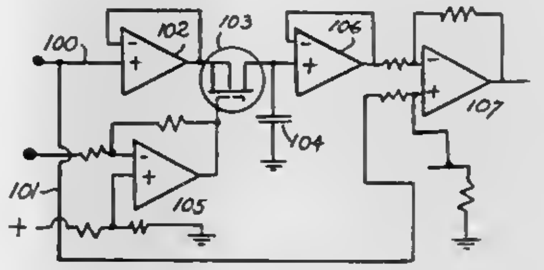
1. In combination:

a. a source generating a train of pulses separated by intervals of varying baseline levels;

b. signal generator means for generating an output signal for each successive pair of said pulses, said output signal being of time extent equal to the interval separating such pulse pair;

c. switch means having an input terminal for receiving said train of pulses, a control terminal for receiving such output signals and an output terminal, said switch means being rendered conductive throughout occurrence of said output signals;

d. signal storage means connected to said switch means output terminal for storing signals conducted through said switch means; and



e. differential amplifier means having a first input terminal for receiving said signals stored in said storage means, a second input terminal for receiving said train of pulses and an output terminal providing signals indicative of the level difference between said pulse train and said stored signals.

3,938,050

NON-LINEAR CORRECTION OF WAVEFORMS

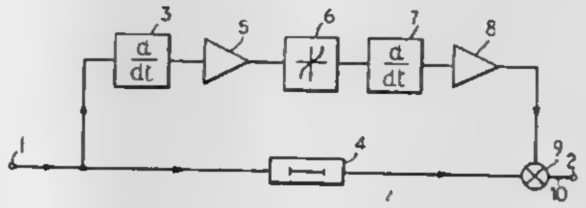
John McCreath Corbett, Harrow, and Josef Maria Linke, Watford, both of England, assignors to The Post Office, London, England

Filed Sept. 9, 1974, Ser. No. 504,157

Claims priority, application United Kingdom, Sept. 25, 1973, 44888/73

Int. Cl.² H03B *1/04;* **H04B** *1/10, 15/00*

U.S. Cl. 328—163 14 Claims



1. A waveform correction circuit comprising:
an input terminal for receipt of a signal to be corrected, an output terminal from which, in use, a corrected signal is taken,

a time-delay circuit having its input connected to the input terminal,

a differentiator having its input connected to the input terminal,

a circuit whose input/output characteristic is non-linear and skew-symmetrical having its input connected to the output of the differentiator,

a further differentiator having its input connected to the output of the non-linear skew-symmetric circuit,

a signal combining circuit operative to combine the output of the further differentiator and the output of the delay circuit, and

means connecting the output of the signal combining circuit to the output terminal.

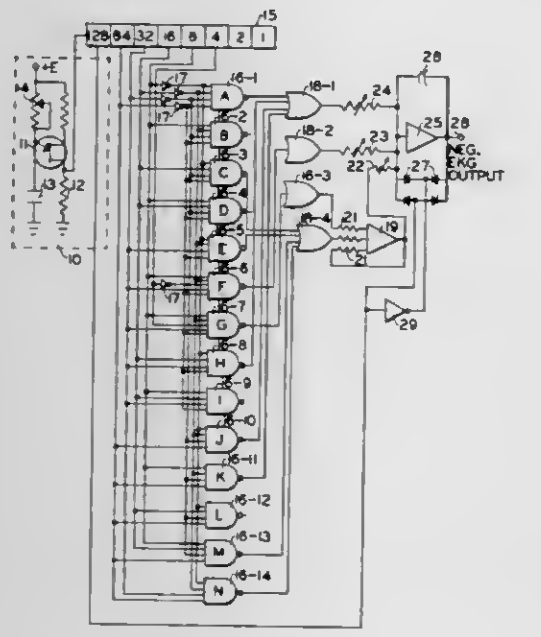
3,938,051
DIGITAL ELECTROCARDIOGRAM WAVEFORM GENERATOR

Robert M. Eisenberg, Derwood, Md., assignor to The Singer Company, New York, N.Y.

Filed Oct. 1, 1974, Ser. No. 511,052

Int. Cl.^{2} H03K *4/00*

U.S. Cl. 328—187 **8 Claims**



1. A waveform generator for generating a non-symmetrical recurrent waveform, said generator comprising a source of clock signals, a counter, means for connecting the output from said source to the count input of said counter, said counter having a plurality of outputs which are energized in a prescribed sequence as said counter counts clock signals from said source, a plurality of coincidence circuits, means for connecting the individual outputs from said counter to the inputs of said coincidence circuits so that individual coincidence circuits are rendered conductive at prescribed times and for prescribed intervals to generate individual potentials each of which represents a unique slope of the waveform at a prescribed time, means connected to the outputs of said coincidence circuits for receiving the signal outputs of said coincidence circuits and forming them into a continuous multisloped waveform, said means for connecting the outputs of the counter to the inputs of said coincidence circuits includes means for directly connecting the outputs of said counter to the inputs of those coincidence circuits for generating the portions of the waveform having a slope in one direction, and means including inverters for connecting the inverted outputs from the counter to those coincidence circuits which generate the portions of the waveform having a slope of opposite polarity to said one direction.

3,938,052
DIGITAL DEMODULATOR FOR PHASE-MODULATED WAVEFORMS

Jerry M. Glasson, Skokie, and Ira S. King, Chicago, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed May 9, 1974, Ser. No. 468,325

Int. Cl.^{2} H04L *27/22*

U.S. Cl. 329—104 **7 Claims**

1. A demodulator for a received wave having phase shifts between successive signalling intervals the phase shifts encoding data elements, which includes: a timing generator, means for synchronizing the timing generator with the received wave, means for generating a squared version of the received wave, a shift register for storing periodic samples of the squared wave for a period encompassing a current signalling interval and at least a portion of a previous signalling interval, a plurality of exclusive-OR gates connected to stages of the shift register for comparing selected pairs of samples from the shift register; and means controlled by the exclusive-OR gates and the timing generator for identifying which data element is received during each signalling interval, wherein the identifying means comprises:

a. for each data element:

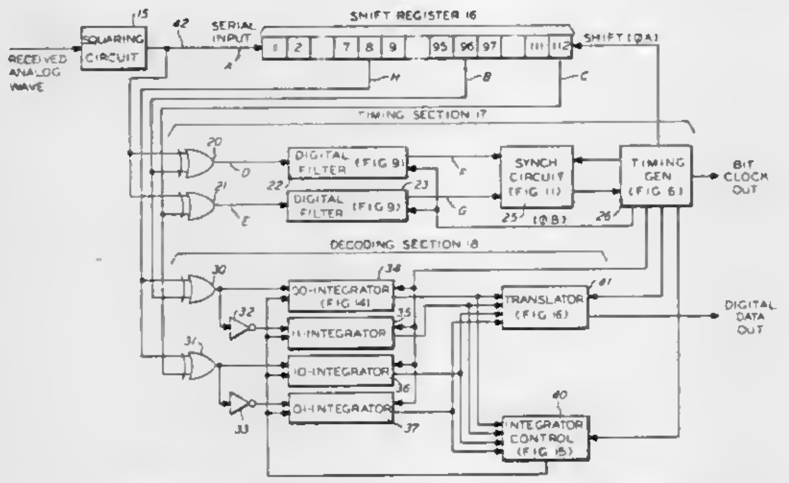
  i. a counter,

  ii. an output gate connected to the counter for sensing when the counter reaches a particular count,

  iii. means controlled by the timing generator and the exclusive-OR gate whose selected output state is associated with the data element for incrementing the counter at a first periodic rate during a mid-portion of each signalling interval when the output signal of the exclusive-OR gate is in the selected state;

b. means controlled by the timing generator and the output gates for simultaneously incrementing all of the counters at a second periodic rate higher than the first periodic rate during a portion of each signalling interval subsequent to the mid-portion until one of the output gates becomes enabled, thus identifying the data element associated with the enabled output gate as received during the signalling interval; and

c. means controlled by the timing generator for resetting the counters subsequent to one of the output gates becoming enabled and before the mid-portion of the next signalling interval.



3,938,053
INTEGRATED CIRCUIT FOR CLASS-B POWER AMPLIFIER

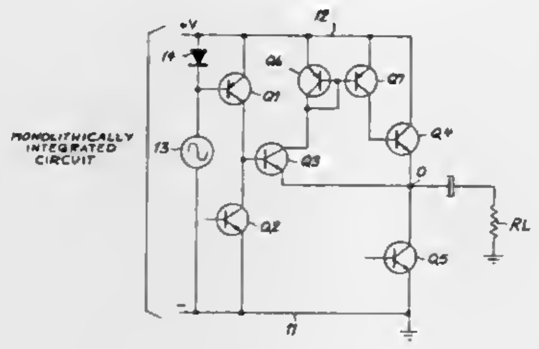
Pietro Menniti, and Bruno Murari, both of Milan, Italy, assignors to SGS-ATES Componenti Elettronici SpA, Milan, Italy

Filed Sept. 19, 1974, Ser. No. 507,464

Claims priority, application Italy, Sept. 20, 1973, 29148/73

Int. Cl.^{2} H03F *3/187*

U.S. Cl. 330—17 **10 Claims**



1. A power amplifier comprising:

a supply of direct current with a first bus bar and a second bus bar of opposite polarities;

a source of signals to be amplified;

a control transistor of one conductivity type having a base, a collector and an emitter;

an output transistor of said one conductivity type having a base, a collector and an emitter, the emitter of said control transistor being tied to that of said output transistor;

an output impedance inserted between said first bus bar and the interconnected emitters of said control and output transistors;

input circuitry connecting said source between said first bus bar and the base of said control transistor;

a diode connected in forward direction between said second bus bar and the collector of said control transistor;

an ancillary transistor of opposite conductivity type having an emitter connected to said second bus bar, a base connected to the collector of said control transistor, and a collector connected to the base of said output transistor for delivering to said output transistor a driving current substantially replicating the collector current of said control transistor; and

a load circuit connected across said output impedance.

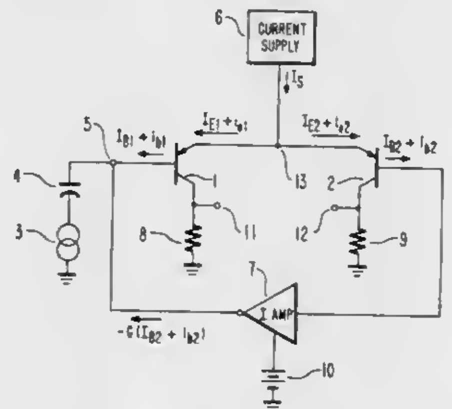
3,938,054
TRANSISTOR AMPLIFIER

Arthur John Leidich, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 16, 1975, Ser. No. 541,518

Int. Cl.^{2} H03F *3/04*, *3/45*

U.S. Cl. 330—30 D **4 Claims**



4. In combination:

two transistors of the same conductivity type, each having base and emitter and collector electrodes, their respective emitter electrodes connected to one terminal for a current supply and individually coupled at their collector electrodes to the other terminal for said current supply, said transistors operating at substantially the same temperature and having substantially the same current gain;

a signal input terminal at the base electrode of said first transistor;

a signal output terminal at the collector electrode of one of said transistors; and

a feedback path comprising a current amplifier directly connected at its input terminal to the base electrode of said second transistor and at its output terminal to the base electrode of said first transistor, said amplifier exhibiting inverting current gain.

3,938,055
HIGH PERFORMANCE DIFFERENTIAL AMPLIFIER

Frederick T. Buhler, Newark, Calif., assignor to Aeronutronic Ford Corporation (formerly Philco-Ford Corporation), Blue Bell, Pa.

Filed Jan. 17, 1975, Ser. No. 541,937

Int. Cl.^{2} H03F *3/68*

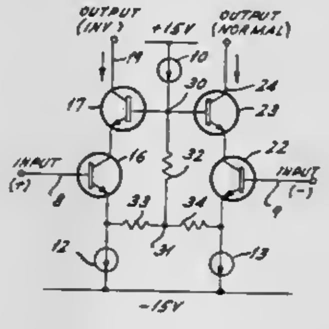
U.S. Cl. 330—30 D **5 Claims**

1. A differential amplifier comprising an input pair of transistors connected as base driven common emitter amplifiers, said input pair having the emitter of each element connected to a separate one of a first pair of constant current sources, said first pair of sources having equal current characteristics,

an output pair of transistors connected as common base transistors emitter driven from the collectors of said input pair, the base electrodes of said output pair being connected together and supplied from a constant current source independent from said first pair of constant current sources,

a matched pair of resistors elements series connected between the emitter electrodes of said input pair, and

a resistor connected between the juncture of said matched pair of resistors and the base electrodes of said output pair.



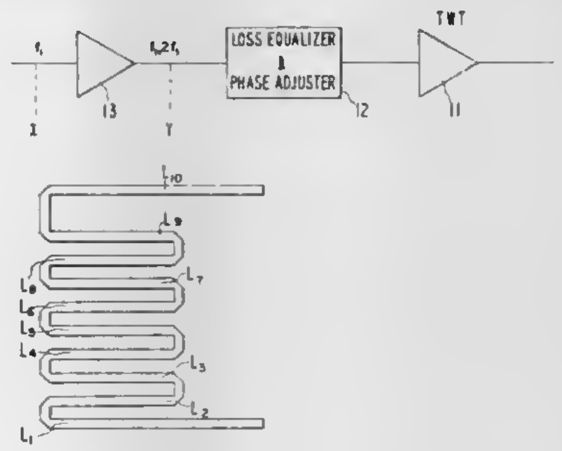
3,938,056
METHOD AND APPARATUS FOR ENHANCING THE OUTPUT FROM A TRAVELING WAVE TUBE

Norman H. Pond, Los Altos, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Jan. 18, 1971, Ser. No. 107,404

Int. Cl.^{2} H03F *3/58*

U.S. Cl. 330—43 **4 Claims**



1. A microwave amplification circuit comprising:

a first microwave amplifying means of at least an octave bandwidth having an input and an output,

a second microwave amplifying means of at least

an octave bandwidth having an input connected to receive and amplify signals from the output of said first amplifier,

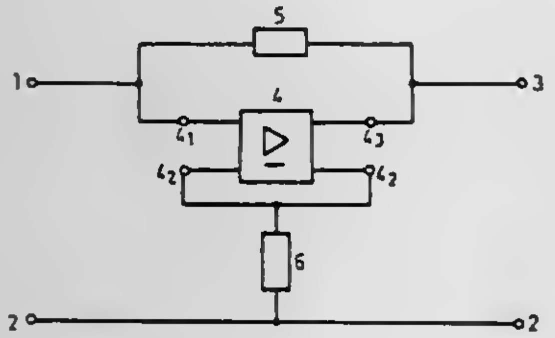
both of said amplifying means constructed to amplify a fundamental microwave signal and producing a second harmonic signal of such fundamental signal during amplification of said fundamental signal, and

a dispersive delay line connected in circuit between the output of said first amplifying means and the input of said second amplifying means,

said delay line constructed to shift the phase between a fundamental signal and a second harmonic of such fundamental signal from the output of said first amplifying means at the input of said second amplifying means by less than one cycle for optimum suppression at frequencies within at least plus or minus 20 percent of the upper frequency of the octave.

3,938,057
TELECOMMUNICATIONS SIGNAL AMPLIFIER

Pierre Jean Marie Minot, Ivry-sur-Seine, France, assignor to Societe Anonyme de Telecommunications, Paris, France
Filed Mar. 26, 1973, Ser. No. 345,010
Claims priority, application France, Aug. 4, 1972, 72.28336
Int. Cl.² H03F *1/34*
U.S. Cl. 330—78 **1 Claim**



1. A telecommunications signal amplifier presenting an input terminal, an output terminal, and a common input and output terminal and being composed:

of an active tripole provided with an input terminal,

an output terminal and a common input and output terminal and

a first passive dipole including two terminals, one of which is connected to the common input and output terminal of the tripole, and the other of which is connected to the common input and output terminal of the amplifier; and

a second passive dipole including two terminals, one of which is connected to said input terminal of said amplifier and said input terminal of said active tripole and the other of which is connected to said output terminal of said amplifier and said output terminal of said active tripole;

said amplifier being characterized in that the active tripole presents a transfer function with a negative real portion and the active tripole also exhibits an input impedance and an output impedance which are approximately equal to one another and to the iterative impedance of the line in which said amplifier is inserted, in that said first passive dipole presents a complex impedance, and in that the impedance of the second dipole is the reciprocal of the impedance of the first dipole with respect to the iterative impedance of the line into which the amplifier is inserted.

3,938,058
TUNABLE LASER

Manabu Yamamoto, Odawara, Japan, assignor to Hitachi, Ltd., Japan
Filed Mar. 25, 1974, Ser. No. 454,710
Claims priority, application Japan, Mar. 26, 1973, 48-34270
Int. Cl.² H01S *3/082*
U.S. Cl. 331—94.5 C **7 Claims**

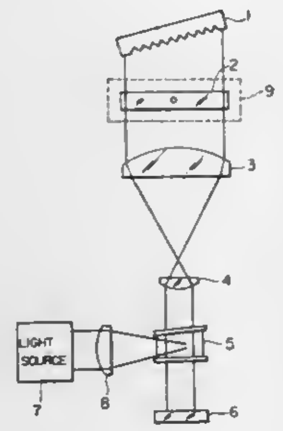
1. A tunable laser comprising:

an optical resonant cavity capable of supporting a plurality of optical wavelengths within only a selectable prescribed wave number range;

a laser active medium, disposed within said optical resonant cavity, for producing laser radiation;

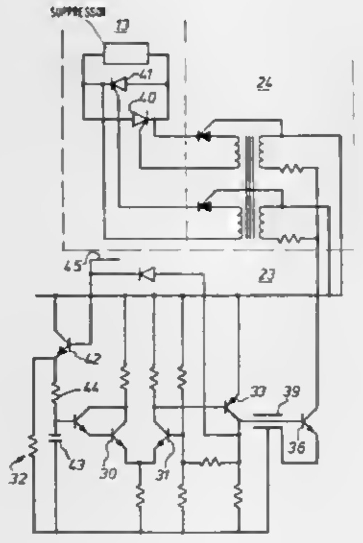
pumping means for exciting said laser active medium, for producing laser radiation at said plurality of optical wavelengths; and

interference means, disposed within said optical resonant cavity in the path of said laser radiation, for permitting passage therethrough of only a pair of said laser wavelengths, the respective polarizations of which are different, said interference means including a pair of reflectors separated from each other by optically anisotropic material, the refractive index of said anisotropic material and the distance between said reflectors being such that the difference in the wave number between said pair of laser wavelengths is less than said prescribed wave number range.



3,938,059
SOLID STATE RECTIFIER CONTROL UNIT

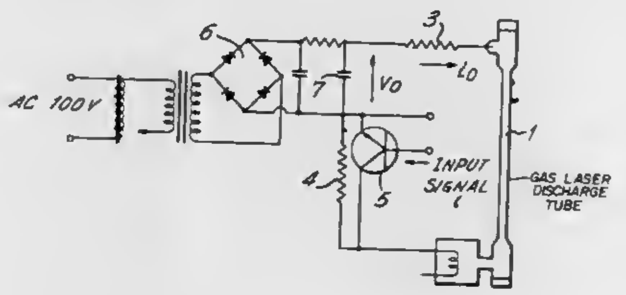
Bernard Canning, Birmingham, England, assignor to Lodge-Cottrell Limited, Birmingham, England
Filed Aug. 21, 1974, Ser. No. 499,367
Claims priority, application United Kingdom, Aug. 23, 1973, 39956/73
Int. Cl.² H03K *3/26, 3/35*
U.S. Cl. 331—111 **3 Claims**



1. A rectifier control circuit comprising a transformer having a primary winding and a secondary winding, a thyristor having anode and gate electrodes connected to the secondary winding and an oscillator coupled with the transformer primary winding, the oscillator comprising a pair of parallel connected alternately conducting transistors, a switching transistor connected with and controlling the energization of the primary winding, the conductive state of the switching transistor being controlled by one of said transistors, and a capacitor timing circuit controlling the conduction of the other of said transistors, the timing circuit comprising a capacitor connected in series with a charging transistor and in parallel with a discharge circuit, the base of said charging transistor being connected to said switching transistor whereby the conductive state of the switching transistor determines the conductive state of the charging transistor.

3,938,060
DEVICE FOR MODULATING INTENSITY OF LIGHT RAYS GENERATED FROM GAS LASER

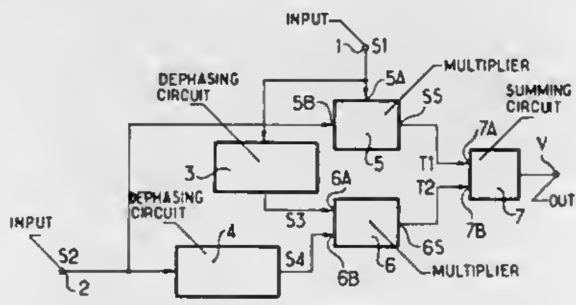
Masahiko Kato, No. 37-3, Shimoyotsugi, Akita, Nishitama, Tokyo; Asao Hayashi, No. 914, Komiya-cho, Hachioji, Tokyo, and Takeomi Suzuki, No. 182, Higashioizumi, Nerima, Tokyo, all of Japan
Continuation of Ser. No. 289,218, Sept. 15, 1972, abandoned.
This application Dec. 11, 1974, Ser. No. 531,820
Claims priority, application Japan, Dec. 27, 1971, 46-105399
Int. Cl.² H01S *3/09;* **H05B** *37/00*
U.S. Cl. 332—7.51 **10 Claims**



1. A device for rapidly modulating at frequencies up to 200 KH, the intensity of light rays generated by a gas laser for picture image transmission, said device comprising an He-Ne gas laser discharge tube connected across the secondary side of a transformer, the pressure of gas sealed being of the order of 3 to 4.3 torr, and a modulating current supply source connected across said gas laser discharge tube and controlled by an input modulating signal such that the discharge current changes within a range from a current value at which the laser light output becomes maximum to a current value which is larger than said current value, said current source including a direct current supply source connected across said gas laser discharge tube for supplying discharge current to said gas laser discharge tube, resistors connected in series with said direct current supply source, and a switching transistor connected in parallel with one of said resistors, whereby said switching transistor is controlled by said input modulating signal so as to control the discharge current, thereby modulating the intensity of output light generated from said gas laser.

3,938,061
FREQUENCY SUMMING DEVICE

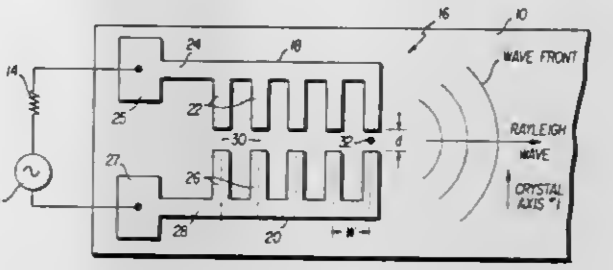
Georges Levasseur, Goussainville, and Michel Garconnat, Ris Orangis, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, France
Filed Dec. 20, 1973, Ser. No. 426,576
Claims priority, application France, Dec. 20, 1972, 72.45392
Int. Cl.² H03C *1/52*
U.S. Cl. 332—45 **10 Claims**



1. Device for summing two first and second sinusoidal signals of frequency F and *f*, respectively, comprising a first dephasing circuit receiving said first signal and providing a third signal whose frequency is F dephased 90° in relation to the said first signal, a second dephasing circuit receiving said second signal and providing a fourth signal whose frequency is *f* dephased by 90° in relation to said second signal, a first and a second analog multiplier each comprising two inputs, said first multiplier receiving on one of its inputs a signal whose frequency is F and a signal whose frequency is f taken from the group of signals constituted by said first, second, third and fourth signals, said second multiplier receiving at its inputs, the two remaining signals of said group, and an adder having inputs connected to the outputs of said two multipliers, characterized in that the frequency f varies in a frequency band centered on the frequency fo and in that said second dephasing circuit comprises a first elementary dephaser receiving on its input said second signal whose frequency is f and providing at its output an intermediate signal whose amplitude is equal to the amplitude of said second signal and whose dephasing in relation to the said second signal depends on the frequency *f*, that dephasing being equal to 90° for the frequency *fo*, a second and a third elementary dephaser connected in series to the output of the said first elementary dephaser, an attenuator having an attenuation factor of 3 whose input is connected to the output of said third elementary dephaser, and an adder having two inputs connected to the output of the said first elementary dephaser and of said attenuator, respectively, and whose output provides said fourth signal.

3,938,062
END FIRE SURFACE WAVE PIEZOELECTRIC TRANSDUCER

Theodore H. Hopp, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 10, 1975, Ser. No. 567,048
Int. Cl.² H03H *9/02, 9/20, 9/26;* **H01L** *41/10*
U.S. Cl. 333—30 R **11 Claims**



1. An acoustic surface wave device, which comprises:

a substrate of a material capable of propagating acoustic surface wave energy;

at least one electro-acoustic transducer coupled to a region of a surface of said substrate; and

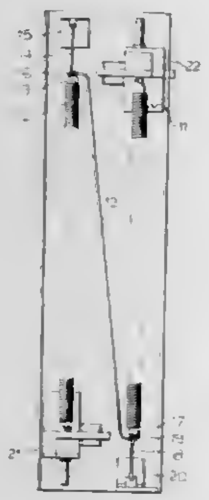
said transducer including first and second sets of elongated electrode elements having open ends and being regularly spaced along a first direction, each of said open ends of said first set of elongated electrode elements substantially facing one of said open ends of said second set of elongated electrode elements and being separated therefrom along a second direction which is substantially perpendicular to said first direction, the other ends of said first set of elongated electrode elements all being connected to a first common bus, the other ends of said second set of elongated electrode elements all being connected to a second common bus.

3,938,063
CASCADE COUPLED COILED SPRING REVERBERATION MEANS

Herbert E. Meinema, 2231 Holly Ave., Escondido, Calif. 92027
Filed Feb. 27, 1975, Ser. No. 553,830
Int. Cl.² H03H *9/30;* **H10H** *1/02*
U.S. Cl. 333—30 R **10 Claims**

1. An artificial reverberation line comprising in combination, at least two coil springs coupled into said line in cascade from a first spring to a terminal spring, transducer means for introducing acoustic energy into the first spring in a rotational

mode, transducer means for deriving acoustic energy in the rotational mode from the terminal spring, and transverse wave motion transmission means coupled between a selected two of said springs in said line with first coupling means to convert said rotational mode energy from one spring and transmit it in the transverse wave motion mode and second coupling means to transfer the transverse wave motion into the rotational mode into said other spring.



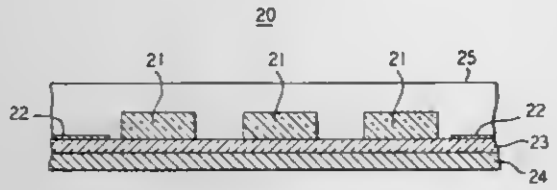
3,938,064
DEVICES USING LOW LOSS DIELECTRIC MATERIAL

Henry Miles O'Bryan, Jr., Plainfield, N.J.; James Kevin Pluorde, Allentown, Pa., and John Thomson, Jr., Wall Township, Monmouth County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 394,187, Sept. 4, 1973, abandoned. This application July 1, 1974, Ser. No. 484,559

Int. Cl.² H01P *3/08, 7/06, 5/12;* H01B *3/10*

U.S. Cl. 333—73 S **10 Claims**



1. An apparatus for processing microwave electrical energy comprising a dielectric material for interaction with the microwave electrical energy a means for introducing microwave electrical energy to the dielectric material and a conducting member to contain the microwave electrical energy in the apparatus characterized in that the dielectric material consists essentially of a composition made up of ingredients that yields 18.0 – 19.0 mole percent divalent metal oxide remainder tetravalent metal oxide in which of the total amount of divalent metal oxide 0 – 0.4 mole percent is a metal oxide other than BaO, remainder BaO and of the total amount of tetravalent metal oxide 0 – 7 mole percent is metal oxide other than TiO_2, remainder TiO_2.

3,938,065
PUSH-BUTTON OPERATED BIPOLAR FAULTY CURRENT PROTECTIVE SWITCH

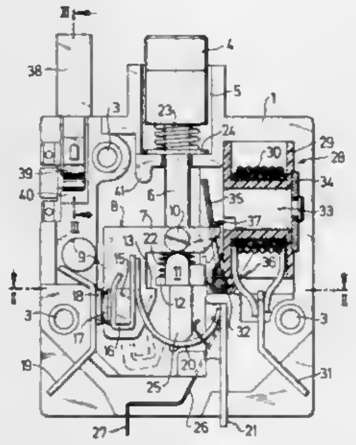
Jakob Ellenberger, Altendorf, near Nurnberg, Germany, assignor to Ellenberger & Poensgen GmbH, Altendorf, near Nurnberg, Germany

Filed July 12, 1974, Ser. No. 488,299

Claims priority, application Germany, July 31, 1973, 2338738

Int. Cl.² H01H *83/00*

U.S. Cl. 335—24 **6 Claims**



1. A push-button operated bipolar faulty current protective switch having two fixed contacts and two movable contacts, said fixed contacts co-operating with said movable contacts, and an electromagnetic tripping device which is actuated in dependence of a faulty current, such a circuit breaker comprising a switching bar, a bell crank made of electrically insulating material, a spring biased push-button, said push-button being rigidly connected to the switching bar, said bell crank including first and second leg members, said first leg member being arranged transversely of the switching bar so that it is freely pivotable thereon and displaceable axially thereof, said second leg member being arranged parallel to said switching bar, a cross member of an insulating material, said cross member having an abutment and being arranged on said second leg member and pivotally mounted about an axis substantially parallel to said switching bar and being provided at each of its ends with one of said movable contacts, said switching bar including a drive member, said drive member being adapted to engage said abutment on said second leg member in the switched off condition of said bell crank, a stop member, said stop member being adapted to maintain said bell crank at an angle to said switching bar in the switched off condition of said bell crank, so that it can be moved to the switched on condition, said electromagnetic tripping device including an armature provided with a protuberance, a spring, said protuberance being adapted to maintain said bell crank in its switched on condition against the bias of said spring.

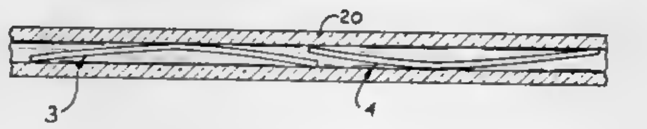
3,938,066
REED SWITCHES AND PROCESS FOR MAKING THEM

Vaughan Morrill, Jr., St. Louis, Mo., assignor to Morex, Inc., St. Louis, Mo.

Filed July 8, 1974, Ser. No. 486,452

Int. Cl.² H01H *1/66, 51/28*

U.S. Cl. 335—154 **12 Claims**



9. A reed switch comprising an envelope having a sealed, contact-containing section, and an elongated reed having, in succession, a lead section having an end-bearing portion, a sealing-bearing section, and a contact section having an end-bearing portion, all within said envelope, said lead and contact-bearing portions bearing upon undistorted parts of the inside wall of said envelope, at least a part of said sealing-bearing portion being sealed in and to said envelope, and said lead section extending in a direction from said sealed-in part of said sealing-bearing portion away from said sealed, contact-containing section of said envelope.

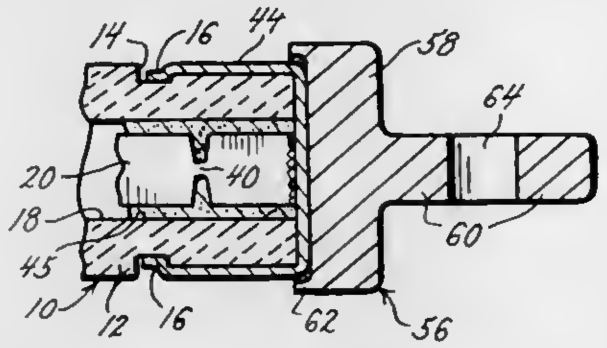
3,938,067
PROTECTOR FOR ELECTRIC CIRCUITS

Aloysius J. Fister, Overland, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

Filed June 28, 1974, Ser. No. 484,129

Int. Cl.² H01H *85/04*

U.S. Cl. 337—159 **24 Claims**



1. A current-limiting electric fuse that comprises a housing which has an elongated passage therein, terminals which are located at the ends of said passage, a fusible element which is disposed within said passage and which is electrically connected to said terminals, said fusible element being essentially composed of copper or silver and having at least one weak spot therein, said fusible element responding to a prolonged low but potentially-harmful overload or to a short circuit or heavy overload to "open", and arc-extinguishing material which directly contacts said weak spot and the inner surface of said passage and which substantially fills said passage, said weak spot having at least one portion thereof which is displaced from said inner surface of said passage but said one portion being displaced from said inner surface by a distance less than 64 millimeters, said weak spot having said one portion thereof displaced from each of said terminals a distance greater than eighty millimeters, said housing being made from an inorganic ceramic material which has a thermal conductivity greater than thirty thousandths of a calorie per square centimeter of cross section per centimeter of length per second of time per degree centigrade, said housing having the major portion of the outer surface thereof exposed to a cooling medium to enable said major portion of said outer surface to radiate heat to said cooling medium, said weak spot generating heat whenever current flows through said fusible element, said arc-extinguishing material absorbing appreciable amounts of said heat from said weak spot and transferring most of said appreciable amounts of said heat to said inner surface of said passage, said housing transferring appreciable amounts of the heat which it receives from said arc-extinguishing material to said outer surface thereof to enable said outer surface to radiate heat to said cooling medium, said weak spot having a temperature in excess of 80 percent of the melting temperature of said fusible element whenever said electric fuse is operated at its maximum continuous current carrying capacity but said arc-extinguishing material and said housing transferring so much heat to said outer surface of said housing that the temperature of said inner surface of said passage remains below 350°C., said thermal conductivity of said inorganic ceramic material of said housing limiting the temperature gradient between said inner surface of said passage and said outer surface of said housing to less than 200°C., the temperature of said weak spot rising to the melting temperature of said fusible element whenever said fusible element responds to a prolonged low but potentially-harmful overload to open but said arc-extinguishing material and said housing transferring so much heat to said outer surface of said housing that the temperature of said inner surface of said passage remains below 350°C.

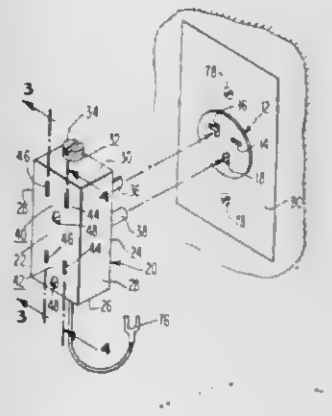
3,938,068
ELECTRICAL PLUG AND OUTLET UNIT

Charles Hagan, 226 Lynn Road, Ridley Park, Pa. 19078

Filed Apr. 2, 1975, Ser. No. 564,312

Int. Cl.² H01H *85/46, 85/48*

U.S. Cl. 337—189 **8 Claims**



1. An electrical plug and outlet unit adapted to be plugged into a high voltage, three-hole receptacle in which two of the holes are aligned with electrical contacts connected to hot lines for providing the high voltage current, and the other of said receptacle holes is aligned with a grounded electrical contact to provide an equipment ground; said unit comprising:

A. a non-conductive body member;

B. a single conductor prong and a single ground prong projecting rearwardly of the body member, said prongs being arranged in a pattern for permitting the conductor prong to be received within a receptacle hole aligned with an electrical contact connected to one of the high voltage hot lines, and for permitting the ground prong to be received within the receptacle hole aligned with the grounded electrical contact;

C. at least one outlet, each outlet including a pair of electrical contacts aligned with openings in a front face of said body member for permitting prongs of a conventional low voltage plug to be inserted through said openings into engagement with the electrical contacts aligned with said openings;

D. first electrical conductive means for connecting the conductor prong to one of said pair of electrical contacts of each outlet; and

E. second electrical conductive means for connecting the ground prong to the other of said pair of electrical contacts of each outlet, whereby one of the hot lines associated with the high voltage receptacle is excluded from the circuitry associated with each outlet of the plug and outlet unit.

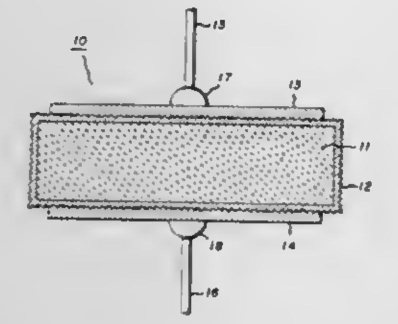
3,938,069
METAL OXIDE VARISTOR WITH PASSIVATING COATING

John E. May, Skaneateles, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 401,334, Sept. 27, 1973, Pat. No. 3,857,174. This application Sept. 26, 1974, Ser. No. 509,337

Int. Cl.² H01C *7/12*

U.S. Cl. 338—21 **4 Claims**



1. A metal oxide varistor comprising a body portion consisting essentially of a metal oxide and a relatively small amount of a plurality of additives and with a passivating coating on said body portion, said coating comprising a granular reaction product obtained by prereacting said additives.

3,938,070
TRIMMING POTENTIOMETER IN T OR PI NETWORK CONNECTION WITH PARALLEL RESISTANCE PATHS

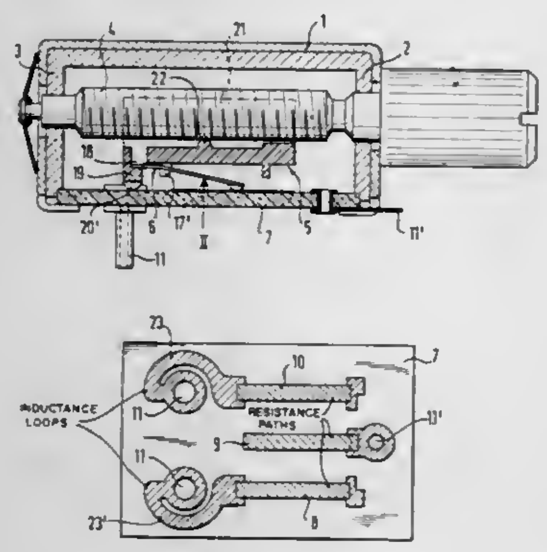
Georg Koerner, Hohenkirchen, and Tibor Hargita, Munich, both of Germany, assignors to Wilhelm Rul KG, Hohenkirchen, Germany

Filed July 30, 1974, Ser. No. 493,079

Claims priority, application Germany, Aug. 25, 1973, 7331048[U]

Int. Cl.² H03H *7/26;* **H01C** *10/16, 10/40, 1/12*

U.S. Cl. 338—60 **9 Claims**



1. A trimming potentiometer comprising, in combination, an insulating plate; three parallel resistance paths in a plane on said insulating plate; terminals connected to said resistance paths; wiper contacts displaceable in the same direction on said resistance paths; carrier means attached to said wiper contacts for mounting said contacts; a threaded spindle connected to said carrier means for displacing said carrier means longitudinally; and inductance loop means between said resistance paths and said terminals for matching electrically the trimming potentiometer to its inductive and capacitive input and output values.

3,938,071
GENERATOR FOR CONTROLLING AN ULTRASONIC TRANSDUCER

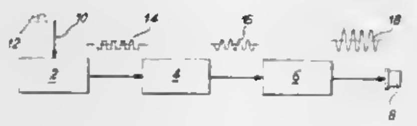
Roger Berger, Manosque; Claude Estienne, Marseille, and Jean Lapie, Volx, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed June 5, 1974, Ser. No. 476,576

Claims priority, application France, June 13, 1973, 73.21519

Int. Cl.² H04B *11/00*

U.S. Cl. 340—15 **5 Claims**



1. In combination, an ultrasonic transducer and a device for controlling said ultrasonic transducer; said device comprising control means having an output, said control means output providing a control signal of predetermined frequency, an oscillator, said control means being electrically connected to said oscillator to activate and deactivate said oscillator, said oscillator having an output emitting a rectangular full-wave periodic signal of predetermined oscillating frequency and predetermined amplitude, said oscillator being constructed and arranged such that the duration of said periodic signal is dependent upon said activating and deactivating of said oscillator by said control signal and such that said oscillator only oscillates during the time period between said activating and deactivating, said control signal being synchronous with said periodic signal, said predetermined oscillating frequency of said oscillator periodic signal being wholly independent of said predetermined frequency of said control signal, filter means electrically connected to said oscillator output for filtering said rectangular full-wave periodic signal, said filter means output being constructed and arranged to emit a sinusoidal signal consisting of the fundamental component of said rectangular full-wave periodic signal; and said ultrasonic transducer having an input electrically connected to said filter means output to receive said sinusoidal signal emitted by said filter means output.

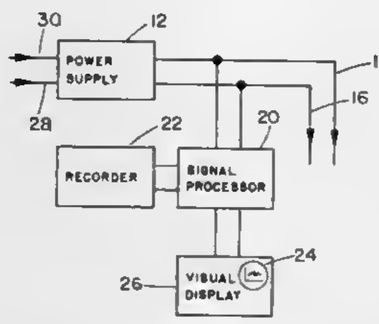
3,938,072
RESONANCE EARTH STRUCTURE LOGGING

Charles Baird, 77 Olive St., Oak View, Calif. 93022, and William B. Plum, 611 Colina Vista, Ventura, Calif. 93003

Filed Mar. 18, 1974, Ser. No. 452,052

Int. Cl.² G01V *1/00*

U.S. Cl. 340—15.5 R **4 Claims**



1. Apparatus for resonance earth structure logging comprising:

a. a constant frequency power supply,

b. a transducer adapted to be driven by the output of the power supply, and

c. means for presenting the electrical relationships of the output of said power supply as said transducer is operated at resonance while in contact with the earth, said electrical relationships versus time providing a representation of the subsurface structure of the earth.

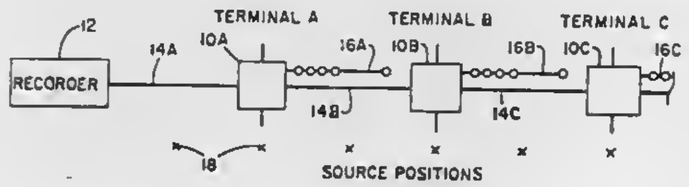
3,938,073
DATA ARRAY NETWORK SYSTEM

J. Robert Fort; James A. Westphal, both of Altadena, and Donald R. Juilfs, Chatsworth, all of Calif., assignors to Geophysical Systems Corporation, Pasadena, Calif.

Continuation of Ser. No. 358,097, May 7, 1973, Pat. No. 3,881,166. This application Mar. 28, 1975, Ser. No. 563,184

Int. Cl.² G01V *1/34*

U.S. Cl. 340—15.5 TS **10 Claims**



1. A data acquisition system comprising:

a. a plurality of N spaced apart array terminals and means for collecting a plurality of M analog signals into each of said terminals:

b. means in each of said terminals for converting said analog signals and storing same in parallel to serial converter means:

c. means to connect said parallel to serial converter means in each of said terminals in series operative connection and to connect said parallel to serial converter means in each of said terminals to the buffer register means in the next in series terminal the last in series parallel to serial converter means connected to a data storage means in an array processor means:

d. means on first command to simultaneously transmit the stored digital data in each of said parallel to serial converter means to said buffer register means in the next in series terminal to last in series, said array processor data storage means, and

e. means on second command to simultaneously transmit from the buffer register in each of said terminals the data stored therein to the buffer register in the next in series terminal to last in series, said array processor data storage means,

said data acquisition system further including clock means in each of said terminals and means to transmit the clock signals from a first terminal to the next in series second terminal simultaneously with the transmission of the data stored in the buffer register means in said first terminal to the buffer register means in said second terminal.

3,938,074
FUEL ECONOMY INDICATOR

Clarence D. Fox, Decatur, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 12, 1974, Ser. No. 532,075

Int. Cl.² G08B *21/00*

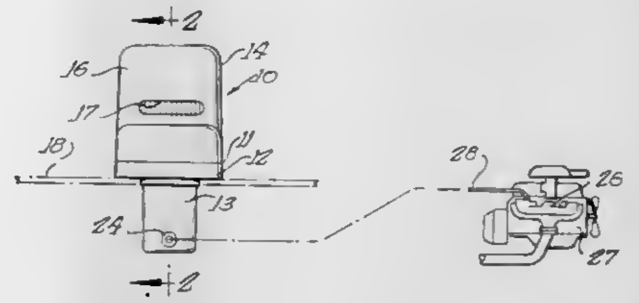
U.S. Cl. 340—52 R **7 Claims**

1. A fuel economy indicator device for use with an internal combustion engine having a fuel induction system,

said device including a body having actuating means secured thereto, said actuating means being arranged for connection to said induction system and adapted for actuating movement in response to pressure changes in said induction system;

luminous means;

and spaced lucidly distinct symbols disposed adjacent said luminous means, each symbol representing a condition of relative fuel economy, said symbols and said luminous means being operatively connected to said body and said actuating means for relative movement in response to actuating movement of said actuating means,



whereby respective of said spaced symbols receive varying intensity of illumination responsive to changes in induction system pressure, automatically providing a distinct indication of relative fuel economy during engine operation.

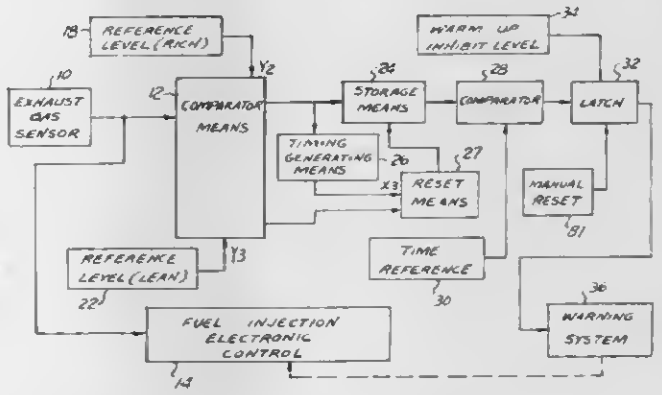
3,938,075
EXHAUST GAS SENSOR FAILURE DETECTION SYSTEM

Junuthula Nirdosh Reddy, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sept. 30, 1974, Ser. No. 510,277

Int. Cl.² G08B *21/00*

U.S. Cl. 340—52 R **10 Claims**



1. In a fuel management system for an internal combustion engine wherein the quality of combustion of the fuel is sensed by a sensor unit in the exhaust gas, a sensor detection system comprising:

an exhaust gas sensor positioned in the exhaust gas conduit of the internal combustion engine, said sensor responsive to one of the constituent gases of combustion for generating a first electrical signal greater than a first voltage threshold level indicating a first fuel mixture and generating a second electrical signal less than a second voltage threshold level indicating a second fuel mixture;

comparator means responsive to said sensor for generating a first output signal when said first electrical signal falls below and remains below said first voltage threshold level and for generating a second output signal when said second electrical signal falls below and remains below said second voltage threshold level;

storage means responsive to said first output signal from said comparator means for storing an electrical signal during the time duration of said first output signal;

timing generating means responsive to the leading edge of said first output signal for generating a timing signal having a predetermined interval;

storage reset means responsive to the simultaneous occurrence of said timing signal and said second output signal for generating a reset signal for clearing said storage means;

a timing voltage reference means for generating a voltage level representing an interval substantially greater than said first interval, and a comparator for receiving said signal from said timing voltage reference means and said electrical signal from said storage means and generating an ouput signal when the magnitude of said electrical signal exceeds the magnitude of said voltage level from said timing voltage reference means.

3,938,076
VEHICLE TIRE PRESSURE SENSING DEVICE

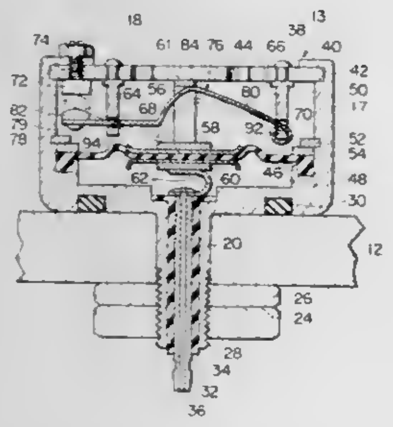
Tadashi Hayashi, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 5, 1974, Ser. No. 448,519

Claims priority, application Japan, Mar. 6, 1973, 48-25699

Int. Cl.^{2} B60C *23/00;* **H01H** *35/24*

U.S. Cl. 340—58 **4 Claims**



3. A tire pressure sensing device for sensing a fall in the pressure in a tire below a predetermined value, comprising a casing disposed in an air chamber of the tire and fixedly mounted on a wheel rim on which the tire is mounted, a pressure sensitive member dividing the interior of said casing into a pressure chamber communicating with said air chamber of the tire and an atmospheric chamber vented to the outside atmosphere, said pressure sensitive member being movable in response to variations in the pressure in said pressure chamber, a leaf spring disposed in said pressure chamber, said pressure sensitive member being connected to said leaf spring to cause said leaf spring to move in accordance with movement of said pressure sensitive member, switch means actuated by movement of said leaf spring to produce an electric signal when the pressure in said pressure chamber falls below a predetermined value, said leaf spring having a portion made of two members which overlap one another and which have respectively coefficients of thermal expansion different from each other to deform said leaf spring to cause said leaf spring to actuate said switch means to produce an electric signal when the temperature of the pressure chamber exceeds a predetermined level.

3,938,077
ALARM DEVICE FOR CONTINUALLY INDICATING THE STATE OF AIR PRESSURE IN A PLURALITY OF TIRES

Kenzo Nakanishi, and Yasuaki Hanasaka, both of Kyoto, Japan, assignors to Bridgestone Tire Company, Ltd., Tokyo, Japan

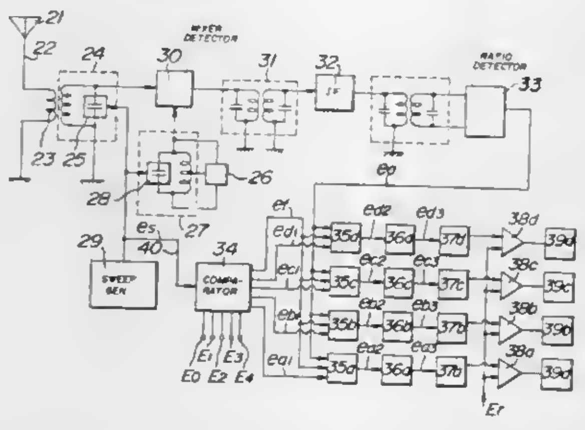
Filed Nov. 25, 1974, Ser. No. 527,010

Claims priority, application Japan, Nov. 28, 1973, 48-136400

Int. Cl.^{2} B60C *23/02*

U.S. Cl. 340—58 **17 Claims**

1. An alarm device for informing reduction of pneumatic pressure of tires comprising a transmitter means including a group of transmitters provided at wheels having tires and each consisting of an oscillator circuit, an electric power supply source for said oscillator, a switch for closing an electric power supply circuit to supply the voltage to the oscillator when the internal pressure of the tire is lowered to less than a prescribed value and a radiation antenna for electromagnetic waves; a receiver means including at least one receiver antenna for reception of electromagnetic waves from the transmitters, and a receiver turning circuit capable of continuously tuning over a range of a predetermined tuning frequency covering a plurality of frequency sections; a sweep generator for sweeping said tuning circuit; a signal processing means including a comparison circuit for comparing the sweeping output of the sweep generator with reference voltages to generate gate control outputs of the multiple channels corresponding to the number of the sweep frequency sections, gate circuits for sequentially gating the output of the receiver means by said gate control signals, monostable circuits operated by the outputs of the gate circuits, pulse noise elimination circuits consisting of smoothing filters and for smoothing the outputs of the monostable circuits and comparators for comparing the smoothed DC outputs of the pulse noise elimination circuits with reference signals for discrimination of the operated transmitter; and alarm display means operated by the outputs of the signal processing means for generating and displaying alarm information.



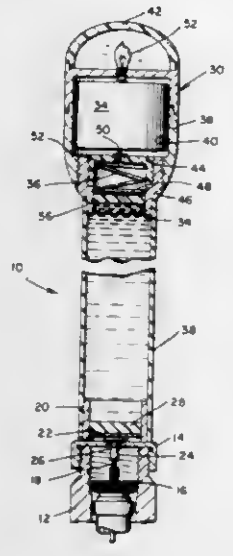
3,938,078
LOW TIRE PRESSURE INDICATING DEVICE

Raymond D. Davis, Jacksonville, Ark., and Z. Y. Plant, Jr., Ontario, Calif., assignors to R. Davis, Jacksonville, Ark.; Z. Y. Plant and W. Tribbey, both of Ontario, Calif.

Filed Jan. 8, 1975, Ser. No. 539,388

Int. Cl.^{2} B60C *23/04*

U.S. Cl. 340—58 **11 Claims**



1. A low fluid presssure indicating system comprising:

a plunger adapted to fit into and open a pressure valve assembly for releasing fluid pressure,

a first moveable piston attached to said plunger and moveable by said releasing fluid pressure,

a light assembly comprising a battery, a bulb, and a compressionable spring switch assembly electrically connected in series with each other,

said compressionable spring switch assembly providing a closed electrical path for energizing said bulb in the normal position and an open electrical path for extinguishing said bulb in the compressed position,

a second moveable piston contacting said compressionable spring switch assembly for compressing said spring switch assembly to close said electrical circuit and extinguish said bulb, and

a flexible liquid filled tube connected at one end to said first moveable piston and at the other end to said second moveable piston whereby escaping fluid pressure moves said first piston causing pressure on said liquid in said tube to move against said second piston for operating said compressionable spring switch assembly.

3,938,079
ANTI-THEFT DEVICE FOR A VEHICLE

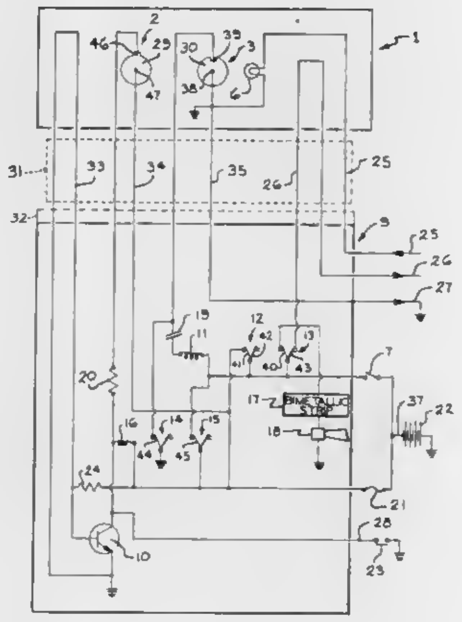
Jean-Paul Croisier, 27 rue Charles Boisser, 1223 Cologny, Switzerland

Filed Mar. 27, 1974, Ser. No. 455,189

Claims priority, application Switzerland, Mar. 27, 1973, 4393/73

Int. Cl.^{2} B60R *25/10*

U.S. Cl. 340—64 **8 Claims**



1. An anti-theft device for a vehicle which includes an ignition circuit for the engine of the vehicle as well as a power switch, comprising, in combination:

a first casing disposed in the engine compartment of said vehicle;

a second casing disposed in the dashboard of said vehicle;

a multi-lead electric cable operable and electrically connected between said first casing and said second casing;

means operably and electrically connected to said multi-lead electric cable, said means emitting an alarm signal and switching off said ignition circuit to the engine of said vehicle when a thief attempts to switch on said power switch, or cuts said multi-lead electric cable, or opens the hood of said engine compartment, or opens the lid of the luggage trunk of said vehicle, or opens a door of said vehicle;

said ignition circuit including a vehicle battery, an ignition device and a contactor controlled by electric means;

said power switch comprising a manually-controlled power switch;

said multi-lead electric cable including at least a portion of an electric wire which enables said ignition device to be supplied with electrical energy; and

said electric wire starting from a terminal of said vehicle battery, leads to said manually-controlled power switch and from said power switch enters said first casing in said engine compartment wherein it leads to said contactor control by said electric means, and is connected from said contactor through said multi-lead electric cable to enter said second casing disposed in the dashboard of said vehicle, and from there passes again through said multi-lead electric cable back into said first casing in said engine compartment, and from there leads to said ignition device.

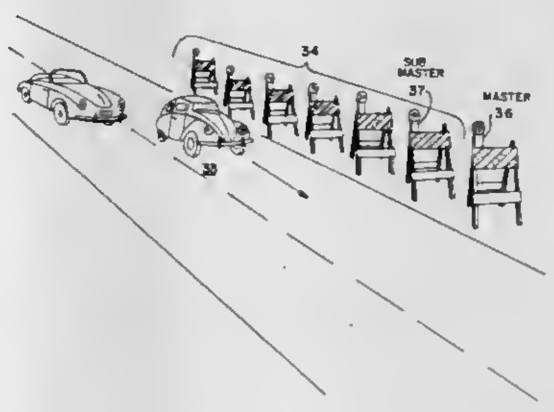
3,938,080
SYSTEM FOR THE PROGRAMMED FLASHING OF WARNING LIGHTS

Edwin C. Hulme, Coogee, New South Wales, Australia, assignor to Kurt W. Thurston, Sparks, Nev. and William L. Selig, Lafayette, Calif., part interest to each

Filed June 3, 1974, Ser. No. 475,575

Int. Cl.^{2} E01F *9/00*

U.S. Cl. 340—114 B **12 Claims**



11. A system as in claim 10 where said master transmitter means includes a carrier oscillator and first and second modulating means for modulating the carrier signal of said oscillator said first means providing a modulating signal for continuously actuating directly said energizing means and said second means providing a modulating signal to prevent interference from other transmitters and where said rejecting means includes a phase locked loop having a free running frequency equal to the frequency of said second modulating signal included in said master transmitter signal.

3,938,081
CIRCUITRY FOR PREVENTING THE USE OF ERRONEOUS DATA

Robert T. Kirk, 115 S. 350 West, Bountiful, Utah 84010

Continuation of Ser. No. 356,889, May 3, 1973, abandoned, which is a continuation of Ser. No. 216,318, Jan. 10, 1972, abandoned. This application May 21, 1974, Ser. No. 471,927

Int. Cl.^{2} G06F *11/00*

U.S. Cl. 340—146.1 R **2 Claims**

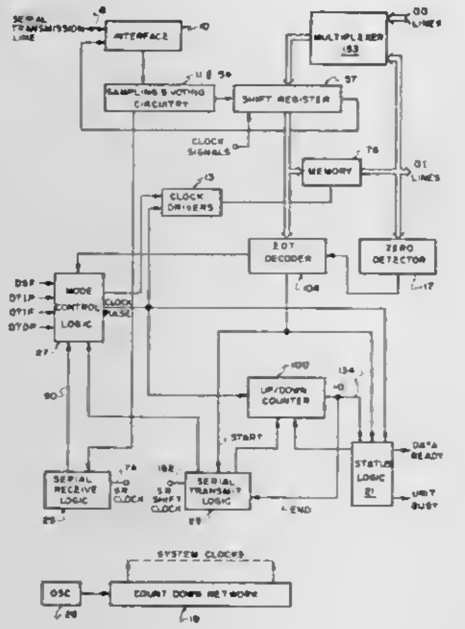
1. Circuitry for preventing the use of erroneous data in a transceiver for controlling computerized stacker cranes comprising:

means receiving serial incoming signals comprising data bits and control bits including a lead control bit;

memory means for storing at least some of said control bits and all said data bits;

voting circuitry in communication with said memory means and to which said data bits and at least some of the control bits are communicated, said voting circuitry comprising signal comparator means;

sampling circuitry in communication with the voting circuitry and to which the lead control bit is communicated, said sampling circuitry comprising means subdividing the lead control bit into sub-parts, delay sampling means for examining intermediate sub-parts of the lead control bit and clocking the voting circuitry when the state of said intermediate sub-parts comprise a predetermined state, and means for thereafter clocking the voting circuitry causing the signal comparator means to vote on all said data bits and at least some of the control bits, whereby approved bits are communicated to said memory means, and means turning off the voting circuitry when the state of said lead control bit is other than said predetermined state.



3,938,082

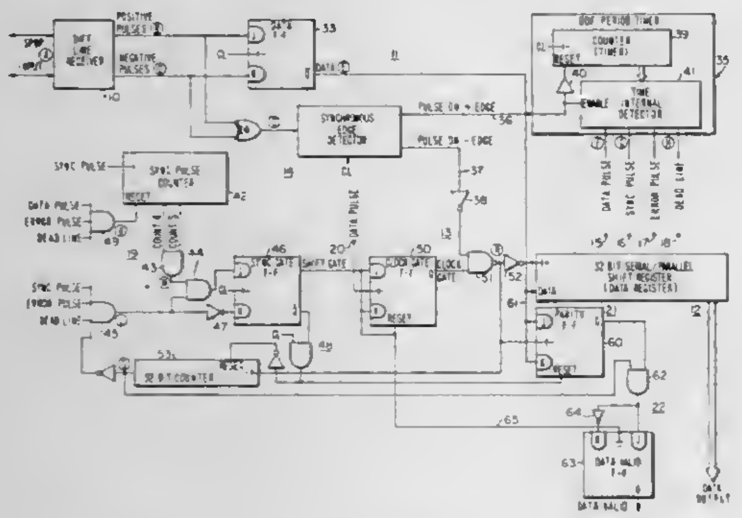
RECEIVER FOR BI-POLAR CODED DATA WITH BIT TIME INTERVAL DETECTION USED AS THE DATA VALIDATION DISCRIMINANT

Lester F. Schowe, Jr., Endwell, N.Y., assignor to General Electric Company, Binghamton, N.Y.

Filed Sept. 19, 1974, Ser. No. 507,503

Int. Cl.^{2} G08C *25/00;* **H03K** *5/18;* **H04B** *17/00;* **H04L** *1/00*

U.S. Cl. 340—146.1 D **6 Claims**



1. In a data receiver for decoding digital data, the combination comprising,

a. means to extract the data from the received digital signal which includes a plurality of synchronizing and data bits,

b. a data storage means for storing received data,

c. Bit Period Timer means for determining from the bit period whether each received bit is a data or synchronizing bit or whether a transmission error has occurred including,

1. means for measuring the time interval between successive pulses of each received bit,

2. means for comparing the measured interval with predetermined intervals associated with data and synchronizing bits to produce data and synchronizing pulses if the measured intervals are the same as the predetermined intervals,

d. A Data Clocking Path associated with said Data Storage means for clocking received data from said data extraction means into said register, and,

e. means for coupling Data Pulses from said Bit Period Timer means to said Data Clocking Path as enabling pulses for said clocking path to permit clocking of data into said register only if the received bit period as determined by the Bit Period Timer indicates a valid data bit has been received.

3,938,083

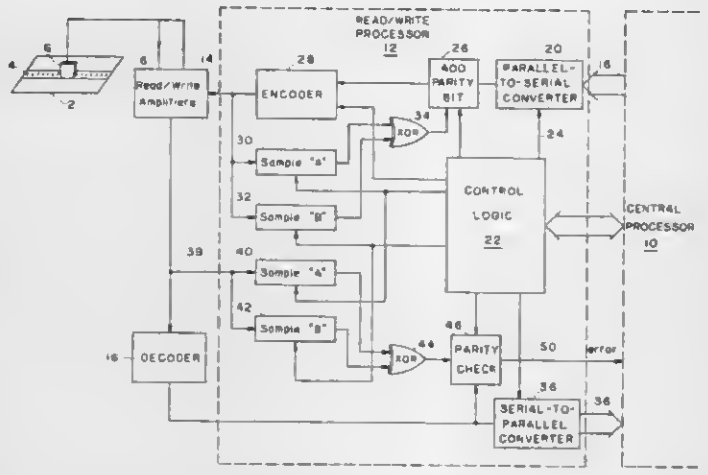
PARITY CHECKING A DOUBLE-FREQUENCY COHERENT-PHASE DATA SIGNAL

Garry A. G. Stansfield, Mitcham, England, assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 27, 1974, Ser. No. 527,899

Int. Cl.^{2} G06F *11/10*

U.S. Cl. 340—146.1 AG **10 Claims**



1. The method of generating a parity bit for parity checking a double-frequency coherent-phase data signal having a plurality of "*n*" data bits, wherein whether "*n*" is an odd or even number and whether there is to be an odd or even parity check have both been predetermined beforehand, the method comprising the steps of:

sampling the level of the signal at a first point between the beginning and middle of the first data bit;

sampling the level of the signal at a second point between the middle and the end of the "*n*"th data bit;

comparing the levels at said two sampled points;

and generating in response to said comparison a parity bit of a level as predetermined by whether "*n*" is an odd or even number and whether there is to be odd or even parity.

3,938,084

ERROR DETECTION APPARATUS FOR VERIFYING BINARY CODED CONSTANTS

George J. Barlow, Tewksbury, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Dec. 24, 1974, Ser. No. 536,127

Int. Cl.^{2} H03K *13/34;* **G11B** *27/36*

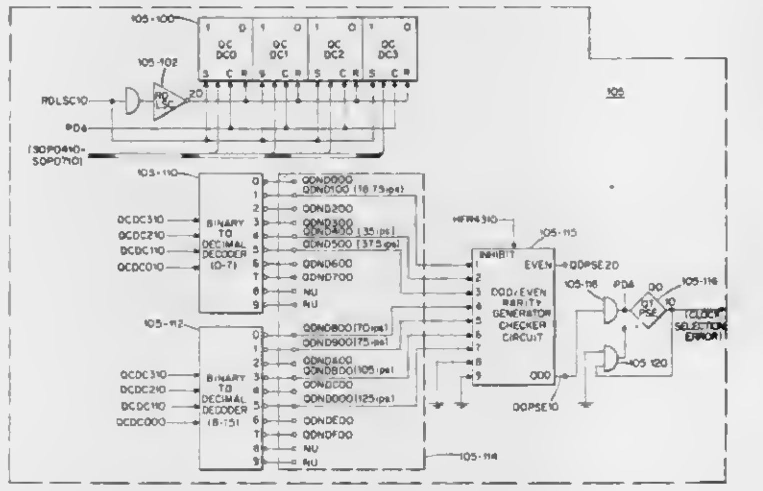
U.S. Cl. 340—146.1 AB **20 Claims**

1. Error detection apparatus for verifying the correctness of a binary coded constant, said apparatus comprising:

code conversion means having a plurality of input terminals for receiving signals representative of said binary coded constant and a predetermined number of output terminals, said code conversion means being operative in response to said binary coded signals to produce output signals coded in a predetermined manner;

selection means coupled to only certain ones of said predetermined number of said output terminals; and,

check circuit means including a predetermined number of input terminals coupled to said selection means for receiving coded signals from said only certain ones of said predetermined number of output terminals, said check circuit means being operative to generate a check signal in response to said coded signals applied to said input terminals for signaling that said constant is valid and the error free operation of said code conversion means.


DC DC0
DC DC1
DC DC2
DC DC3
RDLSC10
BINARY TO DECIMAL DECODER (0-7)
BINARY TO DECIMAL DECODER (8-15)
INHIBIT
EVEN
ODD/EVEN PARITY GENERATOR CHECKER CIRCUIT
ODD
DOPSE20
DOPSE10
(CLOCK SELECTION ERROR)

3,938,085

TRANSMITTING STATION AND RECEIVING STATION FOR OPERATING WITH A SYSTEMATIC RECURRENT CODE

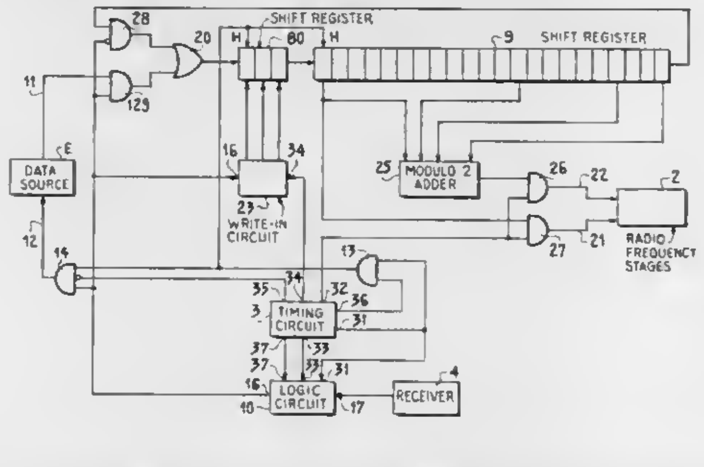
Gerard Battail, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 19, 1975, Ser. No. 551,031

Claims priority, application France, Feb. 19, 1974, 74.05592

Int. Cl.^{2} G06F *11/08*

U.S. Cl. 340—146.1 AQ **10 Claims**



1. A transmitting station for transmitting intelligence from a binary data source, said station comprising : coding means having an input, for coding in a systematic recurrent code of length L a sequence of bits applied to said input, said coding means comprising a shift register having L successive stages, the first of said stages having an input and an output, and the last of said stages having an output, said input of said first stage forming the input of said coding means, and *m* modulo 2 adders, *m* being a positive integer, having respective outputs, each of said adders having a plurality of inputs respectively coupled to different stages of said shift-register, and an output, for delivering at its output a parity bit associated with the bit appearing at said output of said first stage; a timing circuit; first further means coupled to said timing circuit for successively applying to said input of said coding means the bits of a group of L message bits from said data source; second further means, coupled to said timing circuit, for successively applying to said input of said coding means the bits of a group of L message bits previously stored in said shift-register; controlling means, coupled to said timing circuit, for selectively actuating either said first further means or said second further means; and means for transmitting bit trains, referred to as continuation bit trains, each of which includes the L bits appearing at said first output of said first stage of said shift register upon said further means being actuated by said controlling means and the parity bits associated therewith, and further bit trains, referred to as repetition bit trains, each of which includes the L bits appearing at said output of said first stage of said shift-register, upon said second further means being actuated by said controlling means, and the parity bits associated therewith.

3,938,086

CIRCUIT ARRANGEMENT FOR CORRECTING SLIP ERRORS IN PCM RECEIVERS

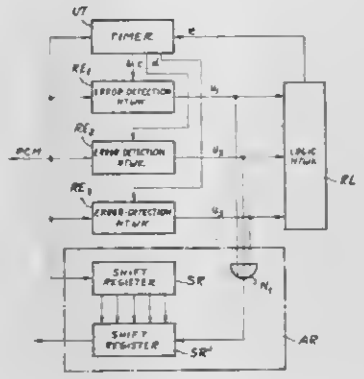
Giuseppe Valbonesi, Settimo Milanese, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Apr. 11, 1975, Ser. No. 567,062

Claims priority, application Italy, Apr. 11, 1974, 21252/74

Int. Cl.^{2} H04L *7/00*

U.S. Cl. 340—146.1 D **5 Claims**



1. In a receiver for binary code words including information bits and redundancy bits to enable detection of an error, in combination:

a line carrying incoming code words;

a plurality of error detectors including a principal detector connected to said line in parallel with one another and provided with transitory storage means for said code words;

clock means connected to said line for generating a plurality of relatively staggered trains of timing pulses respectively delivered to said error detectors for triggering same into emitting an output signal in the presence of an error-free code word on said storage means thereof, only said principal detector emitting such an output signal upon proper synchronization of said clock means with said incoming code words; and

logical circuitry connecting said error detectors to said clock means for resynchronizing same in response to an output signal from an error detector other than said principal detector.

3,938,087

HIGH SPEED BINARY COMPARATOR

Ming H. Louie, Norristown, Pa., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed May 31, 1974, Ser. No. 475,089

Int. Cl.^{2} G06F *7/02*

U.S. Cl. 340—146.2 **23 Claims**

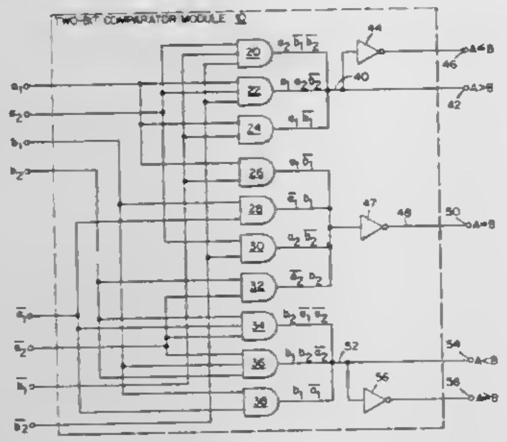
1. A binary comparator for determining a plurality of relationships between a first and a second binary number, each of said binary numbers having two bits, said comparator comprising:

first comparing means having a plurality of inputs from bits of said first binary number and a corresponding plurality of inputs from complements of bits of said second binary number, said first comparing means providing a first signal indicating a first relationship between said binary numbers;

second comparing means having a plurality of inputs from bits of said second binary number and a corresponding plurality of inputs from complements of bits of said first binary number, said second comparing means providing a second signal indicating a second relationship between said binary numbers;

third comparing means having a plurality of inputs from bits of said first and said second numbers and from complements of bits of said first and said second numbers providing an intermediate signal, said third comparing means further having first inverting means responsive to said intermediate signal providing a third signal indicating a third relationship between said binary numbers; and

output means coupled to each of said comparing means for transferring each of said indicating signals.



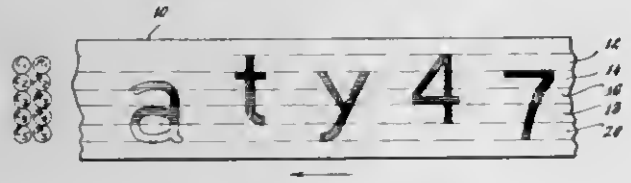
3,938,088
CHARACTER CODING AND RECOGNITION SYSTEM

Harold E. Clark, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1971, Ser. No. 214,282

Int. Cl.^{2} G06K *7/12*

U.S. Cl. 340—146.3 B **1 Claim**



1. A method for forming coded characters which are recognizable both by an individual and a machine comprising impacting a printing character against a multi-color printing band, said band comprising two or more parallel colored strips, no two adjacent strips being of the same color, to create indicia corresponding to the shape of a character on a record member;

said characters being of a size relative to said band to intersect more than one but less than all the strips in said band when impacted against said band; and,

shifting said characters and said band relative to one another in predetermined manner to code different characters with different color combinations or different color strip positions contained in the band.

3,938,089
DOUBLE READ SYSTEM FOR CHARACTER RECOGNITION SYSTEMS

Arvin D. McGregor, and William E. Holmes, both of Birmingham, Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 25, 1974, Ser. No. 445,773

Int. Cl.^{2} G06K *9/00*

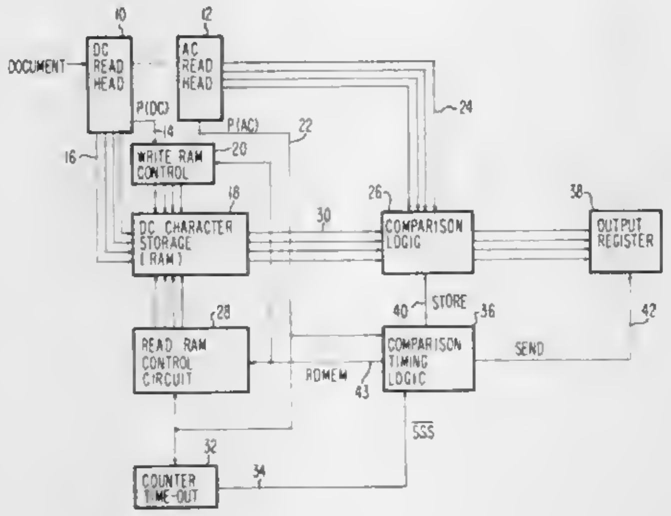
U.S. Cl. 340—146.3 D **17 Claims**

1. In a method of reading characters which includes the steps of reading each character with a first reading means and again reading each character with a second independent and different reading means, the improvement comprising the steps of:

storing two interpretations of a first character, the first interpretation as read by said first reading means and the second interpretation as read by said second reading means;

providing two interpretations of a second character, the first interpretation as read by said first reading means and the second interpretation as read by said second reading means;

selecting for output the first interpretation of said first character if both interpretations of said first character are the same;



selecting a non-reject interpretation of said first character for output when the other interpretation of said first character is a reject character;

outputting a reject character when both interpretations of said first character are reject characters;

selecting only characters from said first reading means when the second interpretation of said first character and of said second character are both reject characters;

selecting only characters from said second reading means when the first interpretation of said first character and of said second character are both reject characters; and

outputting a reject character where the interpretations of said first character are not equal, but where neither is a reject character, and where both interpretations of said second character are equal and not reject characters.

3,938,090
TERMINAL APPARATUS

Victor Scott Borison, Middletown; Hans George Mattes, Ocean Township, Monmouth County; Colonel Blake McDowell, III, Holmdel; George William Schramm, Oakhurst; Gerald Steven Soloway, Morganville, and John William Wesner, Jr., Freehold, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 13, 1975, Ser. No. 549,472

Int. Cl.^{2} G06F *3/04;* **H04M** *11/06;* **H04Q** *9/00*

U.S. Cl. 340—149 A **30 Claims**

1. Terminal apparatus for assembling data representing a proposed business transaction, for communicating said data to a remotely located central data base and for receiving responses from said central data base concerning said proposed transaction, comprising in combination:

a magnetic stripe card reader for reading said data related to said proposed transaction coded on magnetic stripes;

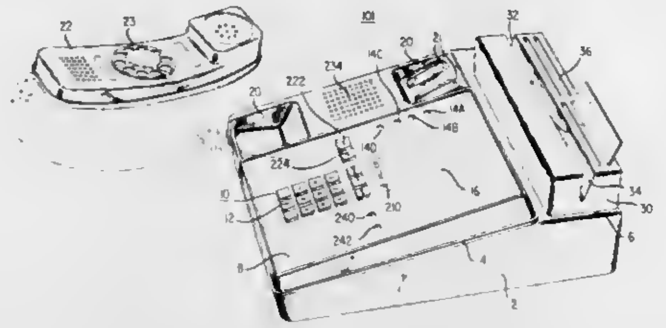
a keyboard for entering said data related to said transaction;

a microprocessor for receiving and processing said data from said card reader and said keyboard and for producing outputs controlling said terminal apparatus;

instruction lights operable in sequence for controlling the entry of said data into said terminal apparatus;

a decoder responsive to first ones of said outputs for sequencing said lights;

means responsive to second ones of said outputs for establishing a communications link with said central data base;



detector means for detecting a first one of said responses from said central data base and providing a signal to said microprocessor representative of said first one of said responses;

means responsive to third ones of said outputs subsequent to said detecting of said first one of said responses for applying said data to said communications link; and

means receiving a second one of said responses for indicating subsequent steps in said proposed transactions.

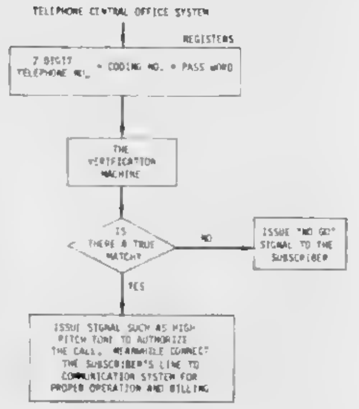
3,938,091
PERSONAL VERIFICATION SYSTEM

Martin M. Atalla, Portola Valley, and Alexander F. Liu, San Jose, both of Calif., assignors to Atalla Technovations Company, Sunnyvale, Calif.

Continuation of Ser. No. 235,641, March 17, 1972, abandoned. This application July 19, 1974, Ser. No. 490,179

Int. Cl.^{2} G06K *9/00*

U.S. Cl. 340—149 A **7 Claims**


TELEPHONE CENTRAL OFFICE SYSTEM
REGISTERS
7 DIGIT TELEPHONE NO. + CODING NO. + PASS WORD
THE VERIFICATION MACHINE
IS THERE A TRUE MATCH?
NO
ISSUE "NO GO" SIGNAL TO THE SUBSCRIBER
YES
ISSUE SIGNAL SUCH AS HIGH PITCH TONE TO AUTHORIZE THE CALL, MEANWHILE CONNECT THE SUBSCRIBER'S LINE TO COMMUNICATION SYSTEM FOR PROPER OPERATION AND BILLING

1. The method of operating a personal verification system including encoding means and code word input means coupled to the encoding means for verifying the authority of an individual to complete transactions on the basis of the combination of an individual code word which is peculiar to the individual, a secret code word which need only be known to the individual and a compiled code word which is derived from the other of the code words, the method comprising the steps, performed in selected sequence, of:

preparing a logical encoding status in accordance with a selected logical combination of both the individual code word and a secret code word received from the individual prior to verification of his authority to complete a transaction;

encoding the combination of both the individual code word and the secret code word received from the individual in accordance with said logical encoding status to produce a compiled code word therefrom;

preparing a record of said compiled code word for subsequent use in verifying the authority of the individual to complete a transaction;

applying to the code word input means of the system both an individual code word for identifying the individual attempting to complete a transaction and a secret code word from such individual;

preparing a logical encoding status in the encoding means of the system in accordance with said logical combination of both the individual code word and secret code word applied to the code word input means of the system;

encoding the combination of both the individual code word and the secret code word applied to the code word input means in accordance with said logical encoding status prepared in the encoding means of the system to produce a corresponding compiled code word therefrom;

comparing said corresponding compiled code word with the compiled code word from said record for the authorized individual having such individual code word; and

controlling completion of the transaction in response to the comparison of the compiled code word from said record with said corresponding compiled code word produced from the applied individual code word and secret code word received from the individual attempting to complete the transaction.

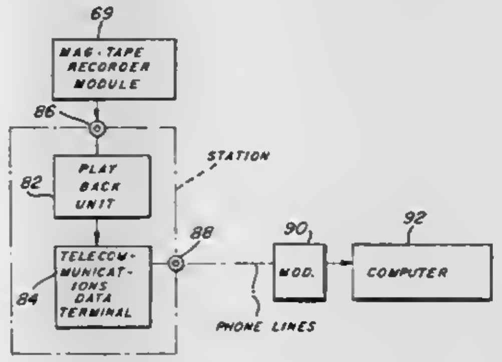
3,938,092
SYSTEM FOR TELECOMMUNICATING VEHICLE OPERATION DATA BETWEEN A GROUND STATION AND A REMOTE DATA PROCESSING STATION

Bernard E. Callahan, Hoffman Estates, Ill., assignor to Vapor Corporation, Chicago, Ill.

Division of Ser. No. 379,371, July 16, 1973, Pat. No. 3,864,731. This application Sept. 6, 1974, Ser. No. 503,725

Int. Cl.^{2} G11B *1/00, 5/00;* **G01D** *9/00;* **H04Q** *9/00*

U.S. Cl. 340—150 **4 Claims**



1. A vehicle data recorder-playback system comprising:

a portable tape recorder module for recording and playing back vehicle engineering operation data, the module including;

- a. a self-contained magnetic tape,
- b. magnetic tape head means contacting the tape for reading data in and out of the tape,
- c. means for driving the tape across the head means,

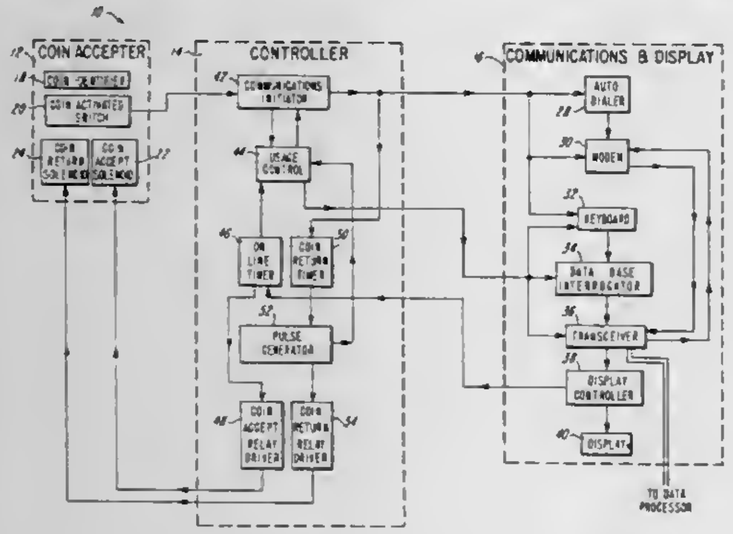
a ground station including;

- d. playing back means removably connected with the module for controlling data playback,
- e. connector means located on the module and the playing back means for facilitating insertion and removal of the module from the playing back means, and
- f. means connected to the output of the playing back means for communicating played back data to a remote data processing station.

3,938,093
COIN OPERATED TERMINAL

Joseph A. Riess, Dayton, Ohio, assignor to Quote, Inc., Dayton, Ohio

Filed July 2, 1974, Ser. No. 485,097
Int. Cl.² H04Q *5/00*
U.S. Cl. 340—152 R **7 Claims**

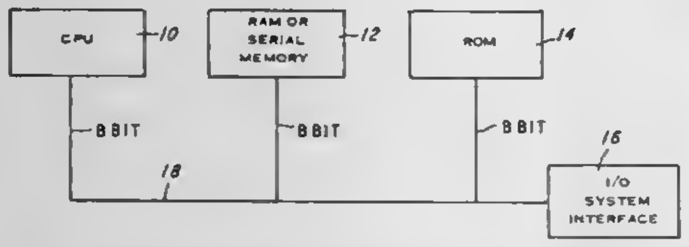


1. A terminal adapted for communication with a remote data processor comprising
- terminal communication means including a transceiver and a modem for communicating with the data processor,
- display circuit means for displaying information received from the data processor,
- switch means,
- and controller circuit means,
- said controller circuit means including communication initiator means responsive to said switch means energizing said terminal communication means and said display circuit means to initiate communication with said data processor,
- first timer means energized upon actuation of said switch means and de-energized upon receipt of communications from the data processor for de-energizing said terminal communication and display circuit means in the event communication with said data processor is not initiated within a predetermined time interval,
- on-line timer means energized upon receipt of communication from said data processor,
- and means responsive to said on-line timer means when said timer means times out to discontinue communication with said data processor.

3,938,094
COMPUTING SYSTEM BUS

Edward R. Caudel, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 176,670, Aug. 31, 1971, abandoned. This application Aug. 28, 1973, Ser. No. 392,405
Int. Cl.² G06F *13/00*
U.S. Cl. 340—172.5 **23 Claims**

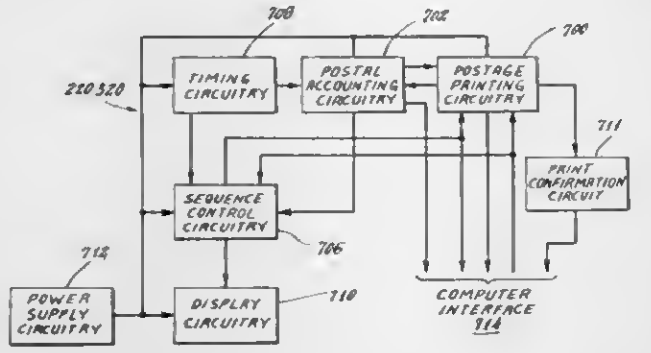


1. In a calculating system which includes a central processor unit connected to a memory unit spaced from said processor, said memory unit being connected to said processor by a parallel bus system that sequentially transmits data between said processor unit and memory unit, circuit means for detecting an output current on said bus and for generating a voltage input signal for said bus, comprising:
- a. first gating means connecting said memory unit with said bus for selectively generating a current on said bus corresponding to data which is to be transmitted from said memory unit to said processor;
- b. a multi-phase clock system having first and second clock phases connected to said processor and memory unit for controlling transmittal of data therebetween;
- c. means for sensing the current on said bus during said first clock phase;
- d. a latch responsive to the output of said sensing means, said latch being enabled during said first phase and being set at the termination thereof to a selected state responsive to said output;
- e. a logic gate for receiving the output of said latch, having a control terminal responsive to a second phase of said clock, said gate being operative to transfer said latch output during said second phase;
- f. voltage generating means coupled to said gate and said bus for generating a voltage signal on said bus responsive to the output level of said logic gate; and
- g. second gating means responsive to said second phase for transferring said voltage signal to said processor.

3,938,095
COMPUTER RESPONSIVE POSTAGE METER

Frank T. Check, Jr., Orange; Alton B. Eckert, Jr., Norwalk; Bruce E. Hinman, Ridgefield; Howell A. Jones, Jr., Fairfield; Raymond R. Lupkas, Trumbull, and Robert B. McFiggans, Stamford, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 195,694, Nov. 4, 1971, abandoned. This application Oct. 16, 1973, Ser. No. 406,898
Int. Cl.² G06F *15/24;* **G07B** *17/02, 17/04*
U.S. Cl. 340—172.5 **4 Claims**

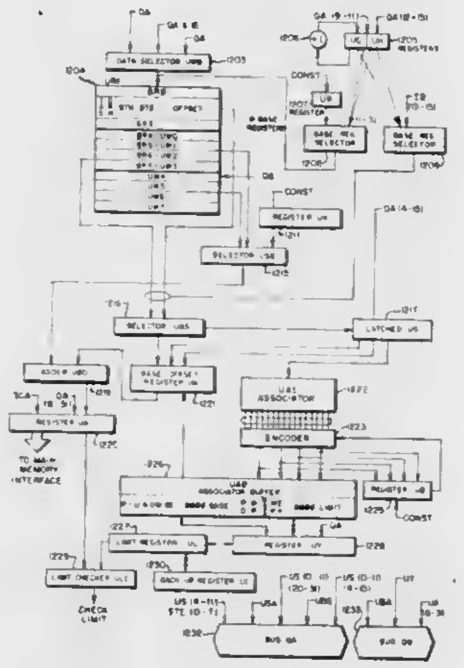

708
702
700
220 320
TIMING CIRCUITRY
POSTAL ACCOUNTING CIRCUITRY
POSTAGE PRINTING CIRCUITRY
711
PRINT CONFIRMATION CIRCUIT
SEQUENCE CONTROL CIRCUITRY
706
712
POWER SUPPLY CIRCUITRY
DISPLAY CIRCUITRY
710
COMPUTER INTERFACE 714

1. In the combination of a computer and metering means arranged to print a numerical amount, said metering means including means for receiving from said computer a signal designating said amount, printing means responsive to said signal receiving means, an addressable memory for storing a balance, an arithmetic unit responsive to said memory and said signal receiving means to alter said balance by said computer-designated amount each time said printing means is actuated, memory addressing means for fetching a present balance from a predetermined memory address and conveying it to said arithmetic unit for said balance altering operation and loading the new balance resulting from such operation back into said same memory address, said memory addressing means comprising:
- a pulse stream source, a first counter responsive to said pulse stream, a gate responsive to said first counter, a second counter responsive to said gate, means for selecting a memory address in response to said second counter, means for detecting the beginning of a count sequence of said first counter, means for detecting the end of a count sequence of said second counter, and means responsive to both said count sequence detecting means for enabling said gate to start a memory addressing count sequence of said second counter at the beginning of said first count sequence, and for disabling said gate at the end of said memory addressing count sequence.

3,938,096
APPARATUS FOR DEVELOPING AN ADDRESS OF A SEGMENT WITHIN MAIN MEMORY AND AN ABSOLUTE ADDRESS OF AN OPERAND WITHIN THE SEGMENT

James L. Brown, Chelmsford; Richard P. Wilder, N. Billerica, both of Mass., and Richard P. Kelly, Nashua, N.H., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 17, 1973, Ser. No. 425,356
Int. Cl.² G06F *9/00*
U.S. Cl. 340—172.5 **8 Claims**

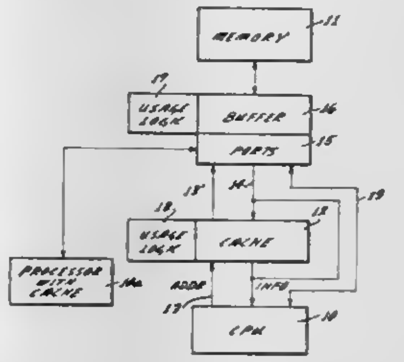


1. An apparatus for developing an absolute address for a selected operand within a selected one of a plurality of variable size segments within a memory space, said apparatus comprising:
- a. first means for storing a plurality of first addresses for identifying and locating said variable size segments within said memory space;
- b. second means for storing a plurality of second addresses for identifying said variable size segments and for providing an address of a first byte of said selected operand within said variable size segments;
- c. third means, coupled to said second means, for selecting one of said second addresses;
- d. fourth means, in said first means and coupled to said second and third means, for matching the variable segment of said selected one of said second addresses with one of the variable segments of said first addresses;
- e. fifth means, coupled to said first, second and third means and responsive to said fourth means, for adding said selected one of said second addresses to one of said first addresses whose segment matches the segment of said selected one of said second addresses; and,
- f. sixth means, coupled to said fifth means, for storing a third address of said selected operand said third address being the address of a selected byte in said operand relative to the first byte, and whereby said fifth means adds said third address to said first and second addresses to generate the absolute address of a byte within said selected operand.

3,938,097
MEMORY AND BUFFER ARRANGEMENT FOR DIGITAL COMPUTERS

Reaman Paul Niguette, III, New Canaan, Conn., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1974, Ser. No. 456,537
Int. Cl.² G06F *13/00*
U.S. Cl. 340—172.5 **27 Claims**



1. In a digital, stored program computer having a random accessible memory and a central processing facility with an information flow path to and from memory, from and to the processing facility including a path for memory addresses to the memory and paths for other information taken from and to be provided to memory locations, the improvement comprising:
- a random accessible buffer having a plurality of storage blocks, each block having a plurality of storage locations, each block further having means for storing addresses for identifying the locations in the block, the buffer upon receiving addressing signals corresponding to an address identifying a location in the buffer by its addressing signals providing access to that location, the buffer having significantly less storage space than the memory but significantly faster access to each of its location than to any memory location;
- means in the buffer determining a recency of usage ranking among the blocks of the buffer corresponding to the respective last access request made to each block, to obtain a criterium used for determining availability of storage space;
- a random accessible cache having a plurality of blocks, each block having a plurality of storage locations, each block further having means for storing addresses for identifying the locations in the block each as a location corresponding to an address and location in the memory and in the buffer as stored therein, the cache upon receiving addressing signals corresponding to an address identifying a location in the cache by its addressing signals providing access to that location, the cache having significantly less storage space than the buffer but significantly faster access to each location than the buffer;
- means for establishing representation of availability of storage space in the cache including establishing a limit on the number of accesses to a cache block of the plurality.
- means connecting the cache to the processing facility for transmitting to the address storage means in the cache memory addresses for access requests to locations in the cache and for purposes of reading in each instance the content of a location whose stored address corresponds to such memory address, the cache having means for transferring the content of a successfully accessed cache location to the processing facility;
- means for causing the memory address provided by the processing facility to be transferred to the buffer if a corresponding location was not found in the cache;
- means connected to the buffer for receiving the said memory address as transferred by the last-mentioned means and for applying such address to the address storage means in the buffer, for transferring the content of the successfully accessed buffer location having said address

to the processing facility; or for receiving from the processing facility information for storage in the successfully accessed buffer location as defined by the address;

means for causing the memory address provided by the processing facility to be transferred to the memory if a corresponding location is represented neither in the cache nor the buffer for accessing the location, so that the particular memory location having said latter address provides the corresponding information it contains to the processing facility;

means for providing information as provided by the buffer or by the memory to the cache to be stored in a location of the cache determined on the basis of the operation of the means for establishing and including storing the address of such memory location in the means for storing addresses in the cache in association with the latter cache location to render the location addressible by corresponding address signals when provided by the processing facility;

means for providing information as provided by the memory to the buffer to be stored in the buffer and in a location there as determined on the basis of the recency of usage ranking determining means; and

means for transferring the content of a buffer location which received information from the processing facility, to the memory independently from the time of receiving such information.

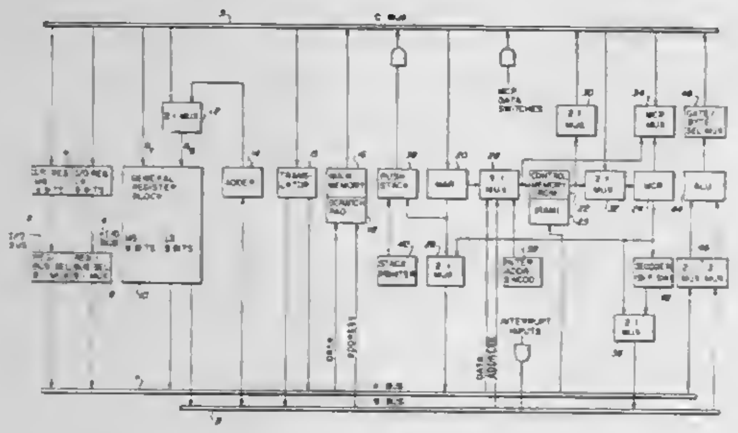
3,938,098
INPUT/OUTPUT CONNECTION ARRANGEMENT FOR MICROPROGRAMMABLE COMPUTER

Richard A. Garlic, Irvine, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 16, 1973, Ser. No. 428,597

Int. Cl.^{2} G06F *3/00, 9/06*

U.S. Cl. 340—172.5 **10 Claims**



1. In a microprocessor comprising: a control memory for storing control words at addressable locations, means for addressing said control memory, a first bus, a second bus and a third bus;

a. an input/output device external to said microprocessor and connected to said first, second and third buses, said input/output device having an address,
b. means for interrupting the means for addressing said control memory,
c. means responsive to said means for interrupting for modifying the address of said control memory to a desired address,
d. means associated with said input/output device for placing said address of said input/output device on said first bus,
e. means associated with said input/output device for placing input signals on said second bus,
f. means responsive to a control word at said desired address for utilizing said first bus input signals for identifying said input/output device, and
g. means for executing said control word at said desired address to operate upon said second bus input signals.

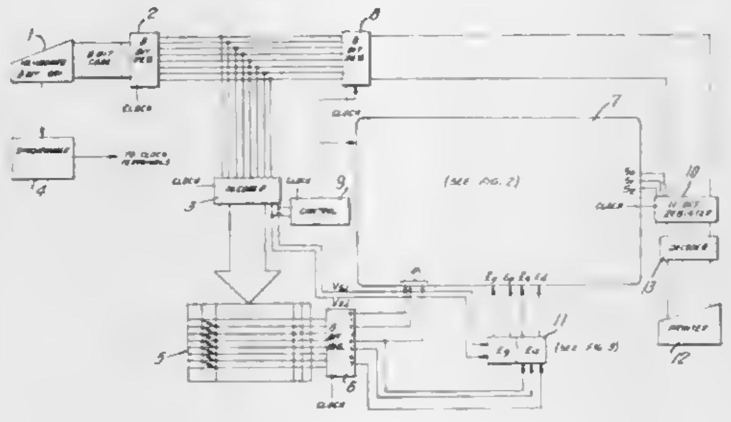
3,938,099
ELECTRONIC DIGITAL SYSTEM AND METHOD FOR REPRODUCING LANGUAGES USING THE ARABIC-FARSI SCRIPT

Syed Salahuddin Hyder, Paris, France, assignor to Alephtran Systems Ltd., Montreal, Canada

Continuation-in-part of Ser. No. 303,277, Nov. 2, 1972, abandoned. This application Mar. 15, 1974, Ser. No. 451,481

Int. Cl.^{2} G06K *15/02;* **B41J** *5/00*

U.S. Cl. 340—172.5 **6 Claims**



1. A system for mechanically reproducing language characters in a cursive form in accordance with the natural style calligraphy of said language, wherein a plurality of j concatenation properties is associated with said natural style calligraphy, a selected combination of said cancatenation properties being applicable to each character of said language characters, said selected combination comprising an integral number of said concatenation properties equal in number from j to O where j is an integer; said system comprising;

a. input means for inserting characters one at a time and for providing coded representations of characters which do concatenate and coded representations of characters which do not concatenate,
b. said input means providing coded representations associated with spaces between groups of characters,
c. decoder means for receiving said coded representations of said characters for providing output signals associated with said coded representation,
d. said decoder means providing a first group of output signals associated with said coded representation of characters which do not concatenate, and a second group of output signals associated with said coded representation of characters which do concatenate,
e. means responsive to said output signals from said decoder means for storing coded representations of a successive string of characters comprising a character under consideration, a preceding character and a following character,
f. means for analyzing said stored coded representations of said successive string of characters according to the concatenation properties of said character under consideration, said preceding character and said following character, said analyzer means providing further coded representations whereby said further coded representations are representative of the applicable concatenation property,
g. means for combining said coded representations from said input means with said further coded representations to provide a composite coded representation containing information corresponding to said character under consideration and its applicable concatenation property, and
h. output means for receiving said composite coded representations for reproducing said characters with the natural style calligraphy.

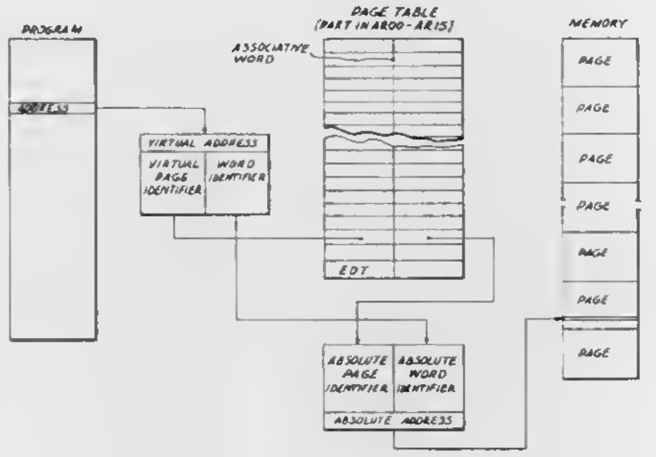
3,938,100
VIRTUAL ADDRESSING APPARATUS FOR ADDRESSING THE MEMORY OF A COMPUTER UTILIZING ASSOCIATIVE ADDRESSING TECHNIQUES

Louis Kent Steiner, Blaine, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed June 7, 1974, Ser. No. 477,215

Int. Cl.^{2} G06F *9/20, 13/00*

U.S. Cl. 340—172.5 **8 Claims**



1. Apparatus for forming an absolute address for accessing a memory of a computer comprising, in combination:

a plurality of ordered register means each being capable of storing a respective associative word, each associative word having a respective absolute page identifier and a respective virtual page identifier, said register means being arranged in sequential order;

read means for sequentially reading associative words from said memory into the highest ordered register means;

shift means for sequentially shifting associative words from a higher ordered register means to a lower ordered register means;

receiver means for receiving a virtual address from a job program, said virtual address having a virtual page identifier and a virtual word identifier;

compare means connected to said receiver means and at least one of said register means for comparing the virtual page identifier of said virtual address in said receiver means with the virtual page identifier in said one of said register means, said compare means providing a signal indicative of the correspondence or non-correspondence between the virtual page identifier of said virtual address and the virtual page identifier of the associative word in said any of said register means;

first control means, responsive to the signal indicative that said compare means senses a correspondence between the virtual page identifier of said virtual address and a virtual page identifier of an associative word,

for transferring the associative word containing the corresponding virtual page identifier from a lower ordered register means to the highest ordered register means, and

for operating said shift means to shift associative words, previously stored in register means having a higher order than the said lower ordered register means from which the transferred associative word was transferred, to the next lower ordered register means; and

storage address register means responsive to said compare means for storing the absolute page identifier of the associative word containing said corresponding virtual page identifier.

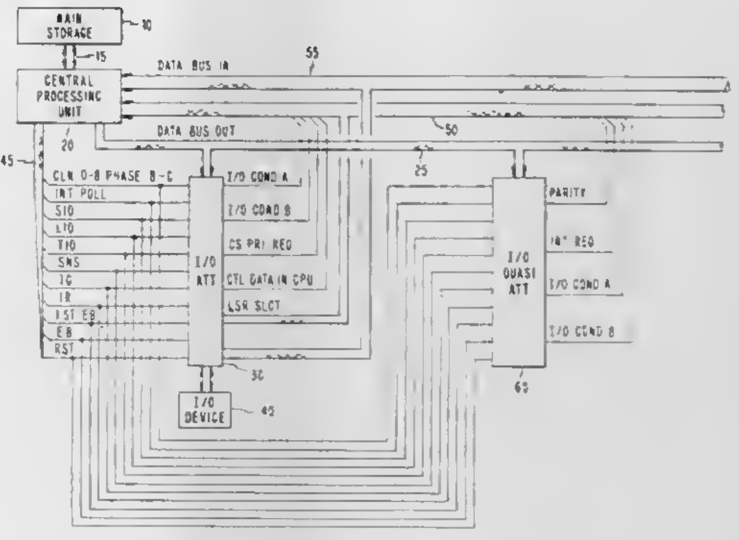
3,938,101
COMPUTER SYSTEM WITH POST EXECUTION I/O EMULATION

David O. Lewis; Thomas H. Miller, and Steven A. Schmitt, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,633

Int. Cl.^{2} G06F *3/00*

U.S. Cl. 340—172.5 **17 Claims**



1. In a computer system includingn a main storage, a central processing unit connected to said main storage, at least one I/O attachment device connected to said central processing unit, and an I/O device connected to said I/O attachment device, said main storage storing sequences of instructions for operating an I/O device other than said I/O device connected to said I/O attachment device, the improvement comprising

a quasi I/O attachment connected to said central processing unit and responsive to instructions for operating said other I/O device for generating a control signal, and

means within said central processing unit responsive to said control signal for issuing control signals to said I/O attachment device to control the operation of said I/O device connected thereto according to the instructions for operating said other I/O device.

3,938,102
METHOD AND APPARATUS FOR ACCESSING HORIZONTAL SEQUENCES AND RECTANGULAR SUB-ARRAYS FROM AN ARRAY STORED IN A MODIFIED WORD ORGANIZED RANDOM ACCESS MEMORY SYSTEM

Thomas Harvey Morrin, San Jose, and David Curtis Van Voorhis, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 19, 1974, Ser. No. 498,352

Int. Cl.^{2} G06F *15/20*

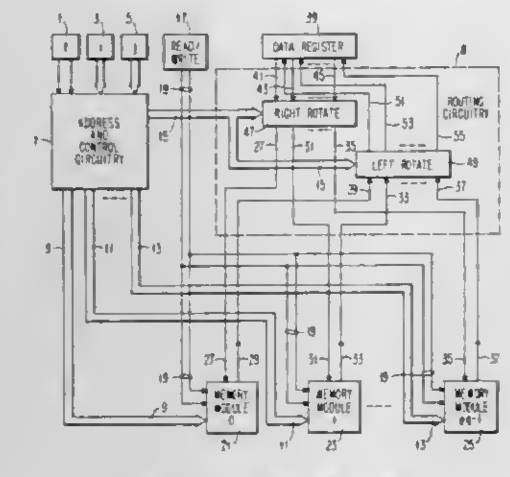
U.S. Cl. 340—172.5 **5 Claims**

1. A word organized random access memory system modified for image processing operations so that the pq image points of any $1 \times pq$ or $p \times q$ subarray of any $rp \times sq$ image array $I(*,*)$, of points storable in the memory system can be retrieved from or written into the system in a single memory cycle, each image point $I(i,j)$ assuming a Boolean value when i and j lie respectively in the ranges 0 $i<rp-1$ and 0 $j<sq-1$, the system comprising:

memory means (21, 23, 25) for storing $rpsq$ image points in the cells of pq different memory modules, each memory module being an entity capable of storing rs image points in distinguishable cells, only one cell of each module being accessible at any single instant of time; and

accessing means (7, 39, 47, 49, FIGS. 3–9) for causing each image point $I(i,j)$ to be retrieved from or written into cell location $A(i,j)$ of the $M(i,j)$th memory module, where the integer valued functions $A(i,j)$ and $M(i,j)$ are defined by

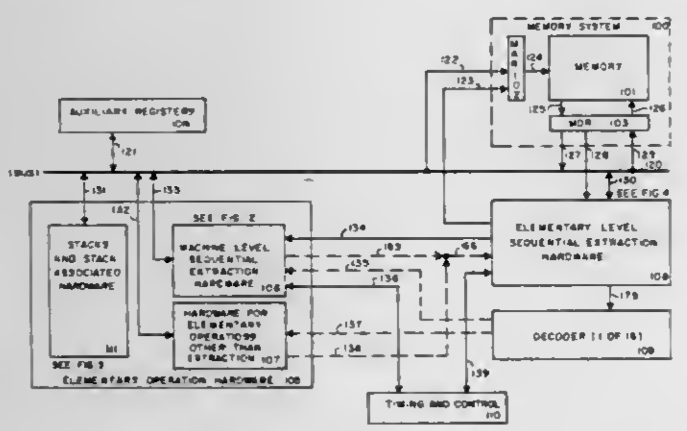
the relations:
$A(i,j)=(i/p)s+j/q$, wherein i/p and j/q are integer quotients,



APPARATUS FOR ACCESSING MODIFIED WORD ORGANIZED RAM

$M(i,j)=(iq+j)//pq$, wherein $(iq+j)//pq$ is the remainder resulting from the integer division of $iq+j$ by pq.

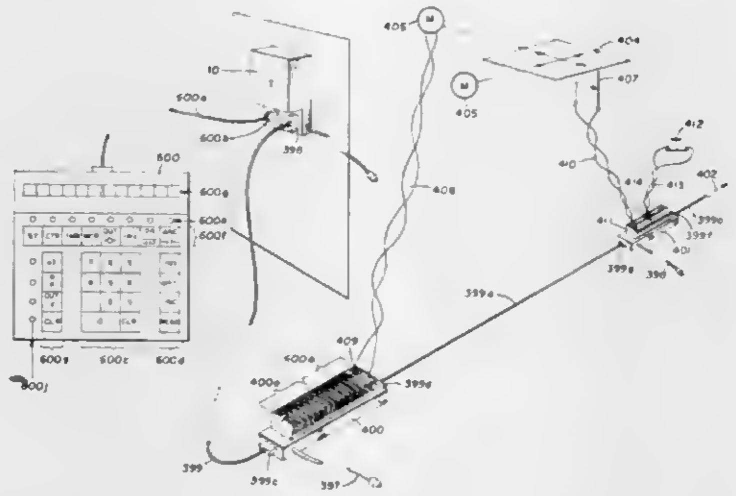
3,938,103
INHERENTLY MICRO PROGRAMMABLE HIGH LEVEL LANGUAGE PROCESSOR
Andrew M. Welin, Rte. 1, Waldo, Ohio 43356
Filed Mar. 20, 1974, Ser. No. 452,819
Int. Cl.^{2} G06F *7/00*
U.S. Cl. 340—172.5 25 Claims


MEMORY SYSTEM
MEMORY
MDR
AUXILIARY REGISTERS
STACKS AND STACK ASSOCIATED HARDWARE
MACHINE LEVEL SEQUENTIAL EXTRACTION HARDWARE
HARDWARE FOR ELEMENTARY OPERATIONS OTHER THAN EXTRACTION
ELEMENTARY LEVEL SEQUENTIAL EXTRACTION HARDWARE
DECODER (1 OF 16)
ELEMENTARY OPERATION HARDWARE
TIMING AND CONTROL
SEE FIG. 2
SEE FIG. 3
SEE FIG. 4

1. An inherently microprogrammable high level language processor which includes an electrical interconnection with a storage device for executing an interpretable language string stored in said storage device, wherein said string includes machine level operation codes, and for executing one of a plurality of elementary language programs stored in said storage device, each program being represented by a machine level operation code, comprising:

a. first extration means for extracting a machine level operation code via said electrical interconnection from said interpretable language string stored in said storage device for use in locating the one of the elementary language programs stored in said storage device which is represented by the extracted code;
b. second extraction means for extracting an elementary language operation code via said electrical interconnection from said one elementary language program stored in said storage device;
c. decoding means for decoding the extracted elementary language operation code; and
d. logic means connected to said decoding means for executing the elementary operation which is represented by the elementary language operation code.

3,938,104
SYSTEM FOR MODIFYING A LOGIC CONTROLLER INSTRUCTION SET
Raymond W. Henry, Dallas, Tex., and Anthony F. Zizzo, Phoenix, Ariz., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 7, 1974, Ser. No. 431,442
Int. Cl.^{2} G06F *3/02*
U.S. Cl. 340—172.5 10 Claims



1. In a programmable logic controller, the combination comprising:

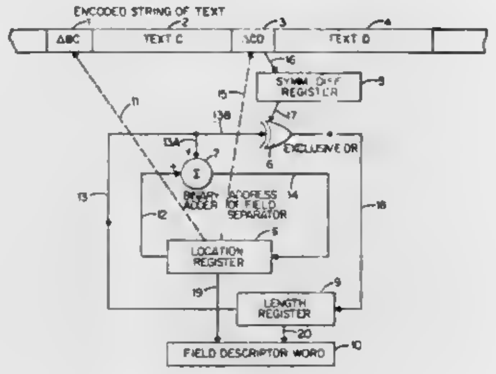
a. a read/write memory for storing multibit instructions which direct computations in said controller;
b. a programming keyboard module connected to said controller for encoding instructions to be stored in said memory;
c. means operable cyclically to read said instructions from said memory for operation of said controller;
d. a temporary storage means;
e. program counter means for generating memory addresses;
f. first logic means responsive to a first keyboard command for transferring instructions from said keyboard module via said temporary storage means to said memory; and g. second logic means responsive to a second keyboard command for inserting a new instruction at a location in said memory having a designated address and sequentially shifting each instruction in said memory stored at a location having an address beyond said designated address to a memory location having an address once removed, said second logic means including:
   i. means for transferring said new instruction to said temporary storage means;
   ii. means for setting said program counter means to said designated address;
   iii. means for transferring the instruction in said temporary storage means to said memory at the address according to said program counter means and concomitantly transferring the instruction at said address to said temporary storage means; and
   iv. means for controlling said program counter means to sequentially access each address beyond said designated address.

3,938,105
SEQUENTIALLY ENCODED DATA STRUCTURES THAT SUPPORT BIDIRECTIONAL SCANNING
Robert J. Lechner, Needham, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed June 24, 1974, Ser. No. 482,406
Int. Cl.^{2} G06F *7/00*
U.S. Cl. 340—172.5 21 Claims

1. A bidirectional scanning apparatus for determining, in a forward or reverse direction, the address of a next sequential field desired in a sequence of fields of variable length, said fields in said sequence being separated from each other by

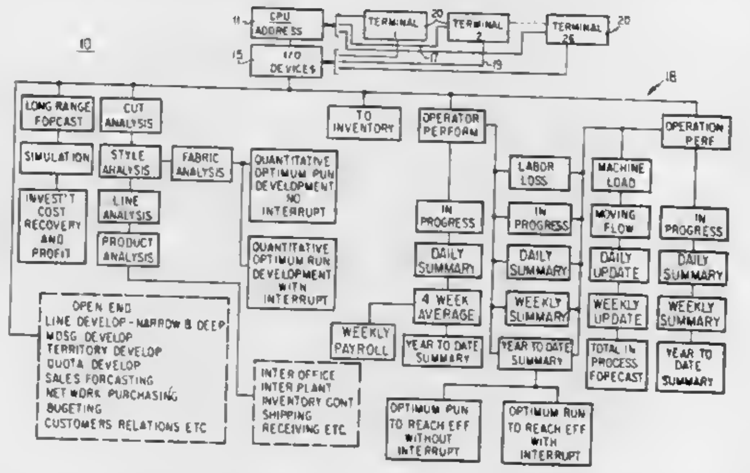
symmetric difference separators, each symmetric difference separator comprised of the carry-free exclusive-OR addition of the values of the lengths of its adjacent fields on either side of said symmetric difference separator, said bidirectional scanning apparatus comprising:

a. first means, responsive to one of said sequential difference separators currently being scanned and to a length or type code for one adjacent field of said one of said sequential difference separators, for generating the length or type code of the other adjacent field;



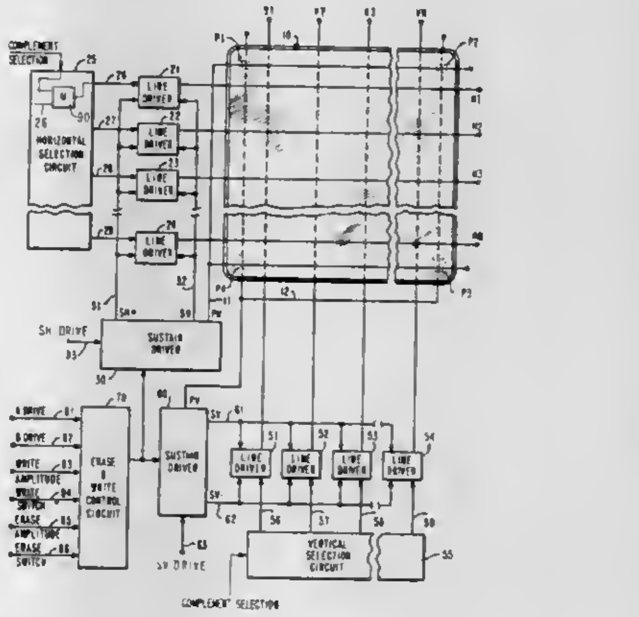
b. second means, coupled to said first means, for storing the location of the field currently being scanned; and,
c. third means, coupled to said first and second means, for algebraically adding the length of either adjacent field to the location of the separator preceding the left edge of the field currently being scanned, whereby the address of the next sequential field separator desired is generated.

3,938,106
PRODUCTION DATA GATHERING AND PROCESSING SYSTEM
Bernard E. Becker, 675 Serramonte, Marietta, Ga. 30062; Virgil D. Baker, III, 2296 Eastway Road, Decatur, Ga. 30033, and Theodore S. Britton, 6900 Castleton Drive, NW., Atlanta, Ga. 30328
Filed Dec. 4, 1974, Ser. No. 529,366
Int. Cl.^{2} G06F *3/04*
U.S. Cl. 340—172.5 19 Claims


CPU ADDRESS
TERMINAL 1
TERMINAL 2
TERMINAL 25
I/O DEVICES
LONG RANGE FORCAST
CUT ANALYSIS
SIMULATION
STYLE ANALYSIS
FABRIC ANALYSIS
INVEST'T COST RECOVERY AND PROFIT
LINE ANALYSIS
PRODUCT ANALYSIS
TO INVENTORY
OPERATOR PERFORM
QUANTITATIVE OPTIMUM RUN DEVELOPMENT NO INTERRUPT
QUANTITATIVE OPTIMUM RUN DEVELOPMENT WITH INTERRUPT
LABOR LOSS
MACHINE LOAD
OPERATION PERF
IN PROGRESS
MOVING FLOW
DAILY SUMMARY
DAILY UPDATE
4 WEEK AVERAGE
WEEKLY PAYROLL
WEEKLY SUMMARY
WEEKLY UPDATE
YEAR TO DATE SUMMARY
TOTAL IN PROCESS FORECAST
OPEN END LINE DEVELOP - NARROW & DEEP MDSG. DEVELOP TERRITORY DEVELOP QUOTA DEVELOP SALES FORCASTING NET WORK PURCHASING BUGETING CUSTOMERS RELATIONS ETC
INTER OFFICE INTER PLANT INVENTORY CONT SHIPPING RECEIVING ETC
OPTIMUM RUN TO REACH EFF WITHOUT INTERRUPT
OPTIMUM RUN TO REACH EFF WITH INTERRUPT

1. A system for gathering and processing data from a production line along which work units sequentially undergo a plurality of different operations respectively performed at a plurality of work stations, said system comprising data media respectively associated with the work units for travel therewith and containing signature data therefor; a plurality of addressable data terminals equal in number to and respectively disposed at the work stations and being coupled to a common communication channel; each of said data terminals including data input means for acquiring the signature data of each work unit from its data medium when the work unit is at the associated work station, transmitting means coupled to said data input means for transmitting the work unit signature data on the communication channel, and address data receiving means coupled to said data transmitting means for actuating same in response to receipt on the communication channel of an address data signal corresponding to that data terminal; a central processing unit including means for sequentially addressing said data terminals on the common communication channel sequentially to actuate said transmitting means thereof for transmitting signature data to the central processing unit; and means for retrieving data from said central processing unit for analysis of the production process.

3,938,107
GAS PANEL WITH IMPROVED CIRCUIT FOR WRITE OPERATION
Tony Nick Criscimagna, Woodstock, N.Y., assignor to IBM Corporation, Armonk, N.Y.
Filed July 1, 1974, Ser. No. 484,835
Int. Cl.^{2} G11C *11/28*
U.S. Cl. 340—173 PL 6 Claims



1. In a gas panel of the type having light emitting cells formed at crossover points of horizontal and vertical conductors and means for producing an alternating polarity sustain waveform across the conductors for each cell, the improvement comprising,

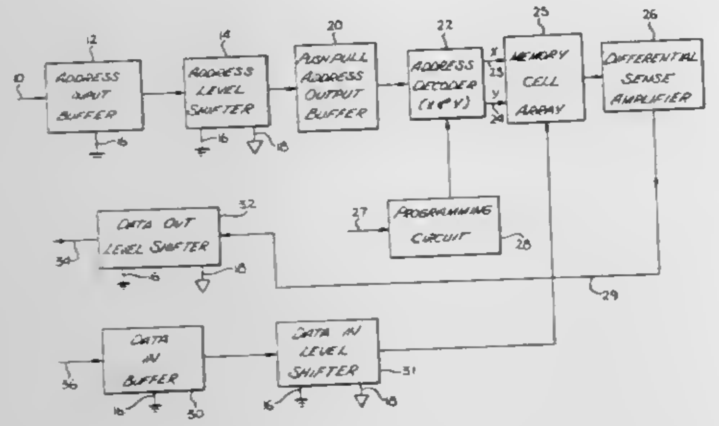
- means for producing opposite polarity write pulses of an amplitude and width to establish a value of wall charge accumulation that is less than the value required for a write operation, and
- means for applying said write pulses to the horizontal and vertical conductors of a selected cell in the polarity of the sustain waveform for a plurality of sequential sustain half cycles to produce a write operation.

3,938,108
ERASABLE PROGRAMMABLE READ-ONLY MEMORY
Phillip J. Salsbury, Sunnyvale, and George Perlegos, Santa Clara, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed Feb. 3, 1975, Ser. No. 546,546
Int. Cl.^{2} G11C *11/40;* H03K *5/00, 3/26, 3/353*
U.S. Cl. 340—173 R 19 Claims

1. A read-only memory deployed on a doped silicon substrate comprising:

- a first region on said substrate having a higher dopant level than said substrate;
- a plurality of memory cells disposed in said first region, each of said cells including a floating gate for storing charge;
- a plurality of buffers disposed on said substrate, spaced apart from said first region, for communicating signals to said memory cells, each of said buffers including a plural-

ity of field-effect transistors having channels with a first level of dopant and at least one field-effect transistor having a channel with a second level of dopant wherein



said saecond level of dopant is higher than said first level of dopant;

whereby said buffers act as level shifters to permit signals to be readily transmitted to said memory cells.

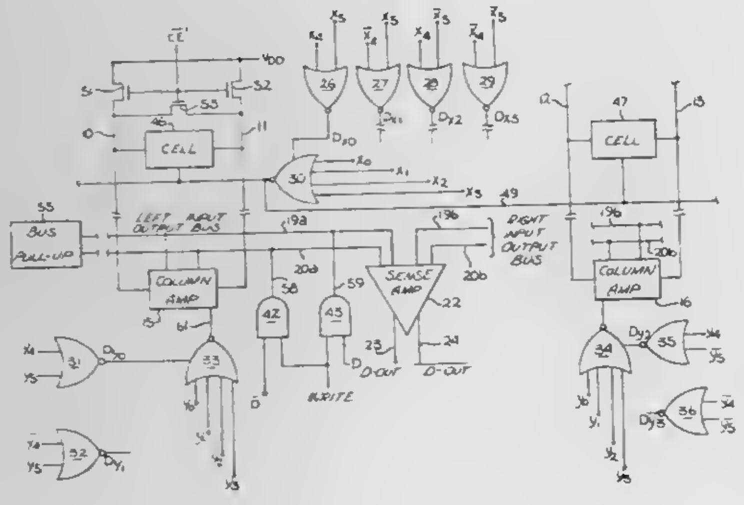
3,938,109
HIGH SPEED ECL COMPATIBLE MOS-RAM

John Gionis, Sunnyvale; Mark S. Ebel, Santa Clara, and William M. Regitz, Cupertino, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 19, 1975, Ser. No. 551,001

Int. Cl.² G11C *7/06, 8/00*

U.S. Cl. 340—173 R **16 Claims**



1. A metal-oxide-silicon, random-access memory which is compatible with emitter-coupled logic and which is deployed on a single substrate comprising:

a plurality of memory cells for storing information;

a plurality of sensing means for sensing information in said memory cells, coupled to said memory cells;

a plurality of timing signal generators for generating timing signals coupled to said memory cells and to said sensing means;

a plurality of input buffers for receiving input signals to said memory, each of said buffers having at least two input terminals, one of said input terminals for receiving a reference signal and the other of said terminals for receiving an input signal, each of said buffers including circuit means for adjusting the sensitivity of said buffer to said input signal as a function of the magnitude of said reference signal;

whereby said memory will be compatible with external logic circuitry.

3,938,110
METHOD OF CONTROLLING MAGNETIC STRIP DOMAINS

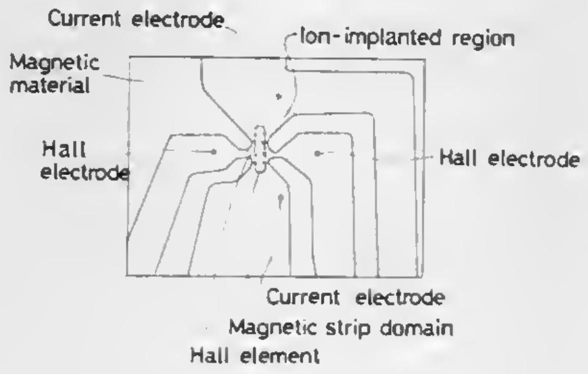
Shoei Kataoka; Toshio Tsurushima, both of Tanashi; Yoshinobu Sugiyama, Akishima; Hisao Tanoue, Tanashi; Hideo Yamada, Kawasaki, and Yasuo Komamiya, Yokohama, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Feb. 5, 1974, Ser. No. 439,727

Claims priority, application Japan, Feb. 7, 1973, 48-14613

Int. Cl.² G11C *11/14*

U.S. Cl. 340—174 TF **41 Claims**



33. A logic device comprising: a magnetic material provided with at least one magnetic strip domain stretching region made by local ion-implantation, at least one means for generating at least one magnetic strip domain, at least one means for controlling the stretching of said at least one magnetic strip domain, and at least one detecting means for detecting said at least one controlled magnetic domain.

3,938,111
MAGNETIC DEVICE FOR PRODUCING DOMAINS

Coenraad Jozef Maria Rooijmans; Willem Frederik Druyvesteyn, and Jan Willem Frederik Dorleijn, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

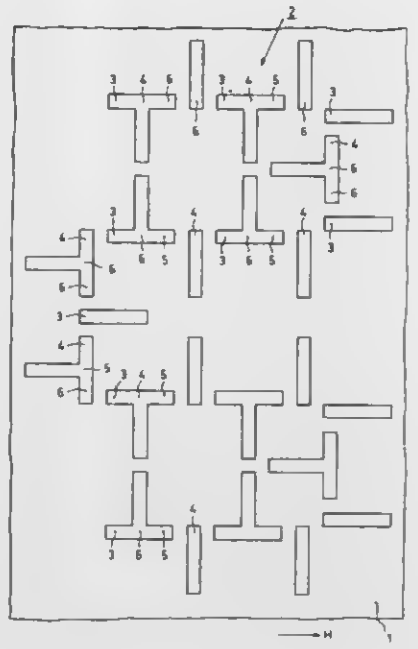
Filed Mar. 13, 1974, Ser. No. 450,760

Claims priority, application Netherlands, Mar. 13, 1973, 733464

Int. Cl.² G11C *11/14*

U.S. Cl. 340—174 TF **3 Claims**

1. A magnetic device comprising at least one thin layer of a magnetizable material having a preferred direction of magnetization with a uniaxial anisotropy field H_K substantially at right angles to the surface of the layer, means to produce a magnetic field having a strength exceeding the uniaxial anisotropy field in the plane of the layer which does not change direction whereby the layer is homogeneously magnetized, and means to reduce the magnetic field in the plane of the layer to zero whereby magnetic domains are produced in the layer.



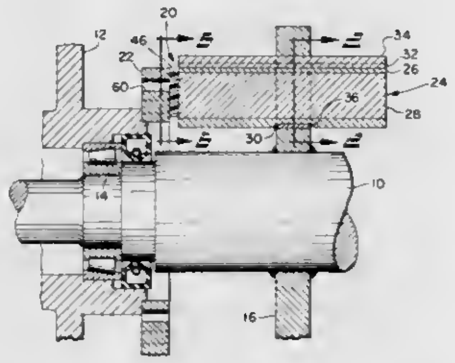
3,938,112
TUBULAR WHEEL SPEED SENSOR

Thomas A. Gee, Allen Park, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 12, 1974, Ser. No. 460,325

Int. Cl.² G08C *19/12*

U.S. Cl. 340—195 **10 Claims**



1. A rotation indication system for generating signals in response to the rotation of a body, said indication system comprising:

a rotor affixed to and rotatable with said body, said rotor having at least one array of apertures on the outer periphery thereof;

sensing means mounted proximate to said rotor and cooperating with said rotor to establish an air gap, said sensing means being retained in a tubular housing permitting proper orientation of said sensing means for use with various sizes of said rotor or various spacings of said apertures in said rotor;

means for mounting said sensing means, said mounting means permitting said tubular housing and said sensing means retained thereby to move axially relative to said rotor while preventing angular movement of said tubular housing, said tubular housing being parallel to the axis of said body and spaced a predetermined distance from said axis;

gauging means adjacent said sensing means, said gauging means projecting from said sensing means and being in contact with said rotor for limiting axial movement of said sensing means;

said sensing means comprising a source of magnetic flux, means for producing a split magnetic flux path, and coil means, said split magnetic flux path being interrupted by said apertures when said rotor is rotated producing a flux change, said flux change inducing an output signal in said coil means, said coil means being minimally responsive to any flux change caused by relative axial movement between said sensing means and said rotor.

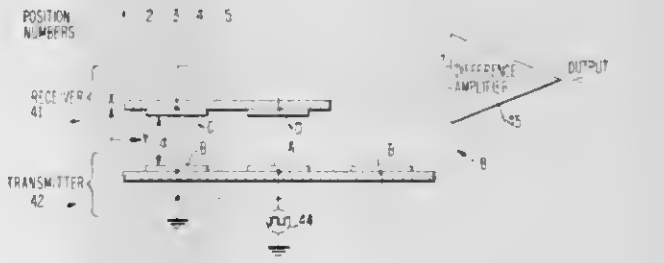
3,938,113
DIFFERENTIAL CAPACITIVE POSITION ENCODER

Donald R. Dobson, Versailles, and Robert A. Williams, Lexington, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 17, 1974, Ser. No. 480,088

Int. Cl.² G08C *19/10*

U.S. Cl. 340—200 **4 Claims**



1. A capacitive transducer, comprising:

a transmitter portion having a planar surface and incorporating a plurality of parallel conductive surfaces thereon arranged as a transmitter grating having length L and width W;

a receiver portion having a planar surface and incorporating a plurality of parallel conductive surfaces of period P thereon arranged as a receiver grating having length L′ comparable to length of said transmitter grating and width W′ that is substantially less than width W of said transmitter grating;

means mounting said transmitter and receiver portions for relative movement with said transmitter and receiver gratings a distance Y apart and in face-to-face complementary relationship in order to establish capacitive coupling between the respective conductive surfaces in said gratings, the relationship of said width dimensions W and W′ of said gratings insuring that said transducer is insensitive to undesired movement of said transmitter and receiver portions in a transverse Z direction, the ratio W′/P being relatively small in order to minimize angular misalignment of the longitudinal axis of said receiver portion relative to said transmitter portion, and the ratio L′/P being relatively large in order to minimize the sensitivity of said transducer to non-uniform separation between said transmitter and receiver portions;

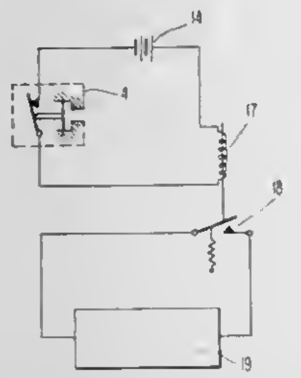
moving means operable to relatively move said transmitter and receiver portions and their associated gratings with respect to one another;

at least one alternating signal generator coupled to alternate conductive surfaces of said transmitter grating;

an amplifier circuit having input and output connections and means interconnecting selected conducting surfaces of said receiver grating to the input connections of said amplifier circuit, said amplifier circuit thereby providing output signals indicative of both extent and direction of movement of said transmitter and receiver portions during relative movement.

3,938,114
GAS-POWERED ALARM WITH PRESSURE RESPONSIVE REMOTE INDICATOR CIRCUIT

Joseph T. Sullivan, Huntingdon Valley, Pa., assignor to Standard-Farrington Alarm & Signal Corporation, Trevose, Pa.
Filed Apr. 5, 1974, Ser. No. 458,062
Int. Cl.² G08B *17/02, 17/04*
U.S. Cl. 340—227.1 **3 Claims**



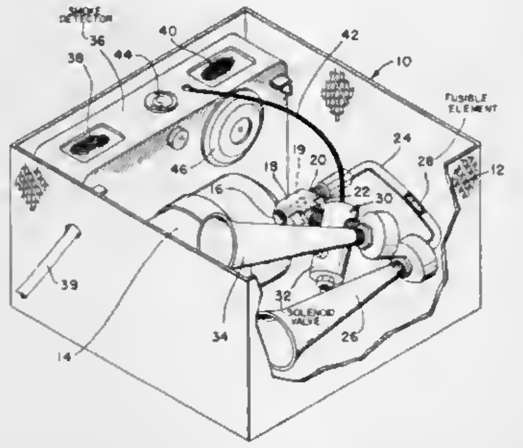
1. In a temperature detection and alarm sounding apparatus for physically sounding an alarm at a predetermined alarm temperature comprising:
   a. a cylinder containing freon under pressure;
   b. a horn, activated by freon under pressure; and
   c. a temperature sensitive passage means, isolating said horn from said cylinder when the ambient temperature is below said alarm temperature, and providing a connecting passage between said horn and said cylinder when the ambient temperature attains said alarm temperature,

the improvement wherein said passage means further comprises a pressure conversion means for increasing gas pressure within said passage means, and a pressure sensing means for detecting an increase in the gas pressure within said passage means, and wherein said pressure conversion means comprises a part of said connecting passage adjacent to said horn, said part comprising at least two portions, a first constricted portion located at the end of the part immediately adjacent to said horn, and a second unconstricted portion contiguously located to said first constricted portion, and wherein said pressure sensing means comprises at least one pressure sensitive interior surface of said second unconstricted portion, and wherein said pressure sensing means further comprises a pressure sensitive switch, and wherein said pressure sensing means further comprises an alarm circuit connected to the switch having means for activating remote indicating devices in response to the activation of said switch.

3,938,115 *
COMBINATION SMOKE AND HEAT DETECTOR ALARM

Sidney Jacoby, Philadelphia, Pa., assignor to Evergard Fire Alarm Co., Inc., Philadelphia, Pa.
Filed June 13, 1974, Ser. No. 478,928
Int. Cl.² G08B *17/04, 17/10*
U.S. Cl. 340—237 S **12 Claims**

1. In a combination smoke and heat detector alarm, the combination of
   A. a self contained source of energy,
      1. said source including an energy outlet,
      2. said source being compressed gas;
   B. a first conduit system communicating with the outlet,
      1. said first conduit system including a first sounding device, said first sounding device being a gas operated horn,
      2. said first conduit system including first valve means to regulate the flow of energy from the source to the first sounding device,
      3. said first valve means being movable by non-electrical energy from a closed condition to an open condition upon sensing a predetermined high temperature in the vicinity of the alarm; and
   C. a second conduit system communicating with the said outlet,
      1. said second conduit system including a second sounding device, said second sounding device being a gas operated horn,



      2. said second conduit system including second valve means to regulate the flow of energy from the source to the second sounding device,
      3. said second valve means being movable by electrical energy from a closed position to an open position upon sensing a predetermined quantity of smoke in the vicinity of the alarm.

3,938,116
LEAK DETECTION DEVICE

Helmut L. Schneider, Toronto, Canada, assignor to The Molson Companies Limited, Rexdale, Canada
Filed Aug. 12, 1974, Ser. No. 496,400
Claims priority, application Canada, Apr. 22, 1974, 197942
Int. Cl.² G08B *21/00*
U.S. Cl. 340—242 **1 Claim**

1. In combination
   a. a conveyor for conveying containers formed of absorbent material and containing frangible bottles filled with liquid;
   b. a sensor plate, having an upper surface, forming part of the conveyor and arranged in the path of travel of said containers;
   c. a pair of parallel, spaced, copper, sensing bars detachably secured to said upper surface, projecting therefrom and extending normal to said path of travel for sensing the moisture content of the bottom of each said container;
   d. at least one sensing conductor connected to each said bar;
   e. an amplifier and sensitivity control electrically connected to said sensor plate and to
   f. a selector and relay panel which, in turn, is electrically connected to
   g. an alarm and to said conveyor to activate the former and deactivate the latter when said bars detect any moisture emanating from containers passing over said bars.

3,938,117
CRITICAL LIQUID-LEVEL WARNING CIRCUIT

Michael Bozoian, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Sept. 20, 1974, Ser. No. 508,018
Int. Cl.² G08B *21/00*
U.S. Cl. 340—244 R **11 Claims**

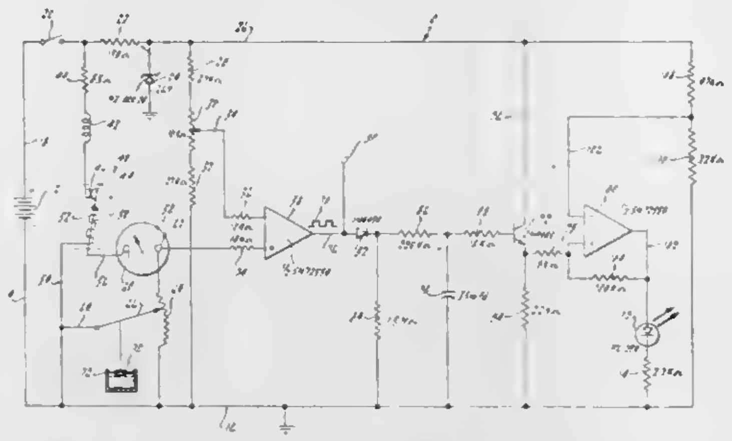
1. A critical liquid-level warning circuit for association with a liquid-level indicating circuit, said indicating circuit including a sensing device which provides a voltage that varies between lower and upper voltage limits as a function of a liquid level sensed by said sensing device, said critical liquid-level warning circuit comprising:

* NOTE: To be issued Feb. 11, 1976.

first circuit means, supplied with said sensing device voltage, for generating an electrical signal having one of two conditions depending upon whether said sensing device voltage is below or above a predetermined critical level;

an electrically actuable warning device;

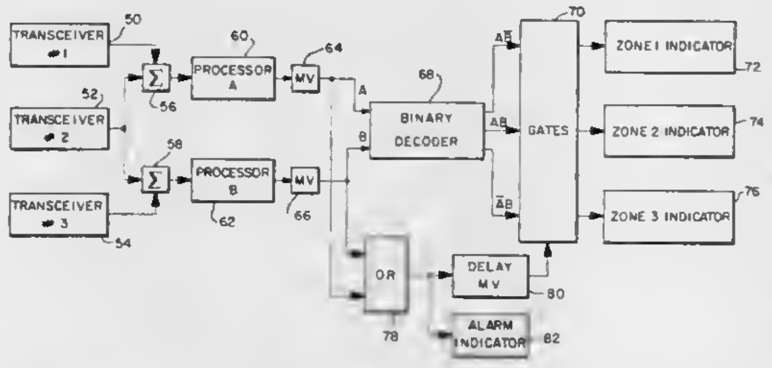
second circuit means for controlling the actuation of said warning device, said second circuit means having an output coupled to said warning device and having an input responsive to a predetermined voltage level to cause said output to actuate said warning device; and



a delay circuit, coupled to the output of said first circuit means and to the input of said second circuit means, said delay circuit producing a voltage signal which varies in magnitude as a function of time elapsed subsequent to the change of said electrical signal generated by said first circuit means from one of said two conditions to the other of said two conditions, said second circuit means actuating said warning device when said variable voltage signal reaches a predetermined level.

3,938,118
MULTIZONE INTRUSION ALARM SYSTEM

Aaron A. Galvin, Lexington, and L. Dennis Shapiro, Lincoln, both of Mass., assignors to American District Telegraph Company, New York, N.Y.
Filed June 12, 1974, Ser. No. 478,526
Int. Cl.² G08B *13/24, 13/16*
U.S. Cl. 340—258 R **6 Claims**



1. A multiple zone intrusion alarm system comprising:

a plurality of transmitting and receiving means each disposed in a respective zone under protection and each including means for propagating a signal in said zone and means for receiving signals returned from said zone and from objects therein;

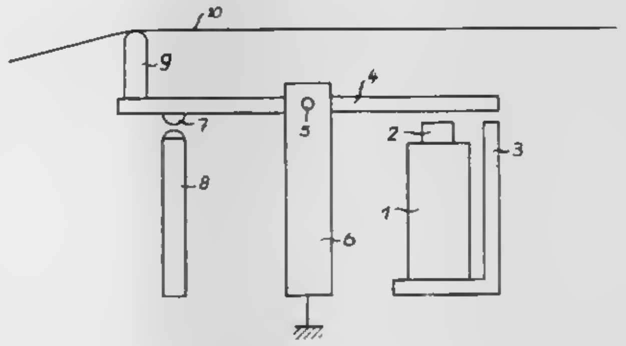
means for selectively combining said returned signals to provide a plurality of differently combined signal versions thereof, said signal versions being less in number than the number of zones being protected;

a plurality of signal processors of a lesser number than the number of zones under protection and each operative to discriminate between an actual intruder and spurious signal conditions, each signal processor receiving a respective one of said signal versions and providing an output signal in response thereto; and

decoder means operative in response to said output signals from said signal processors to provide a plurality of signals each corresponding to a respective protected zone and each representative of intruder presence in said zone.

3,938,119
ELECTRO-MECHANICAL THREAD SUPERVISORY APPARATUS

Hermann Schwartz, Pfaffikon, Switzerland, assignor to Siegfried Peyer, Bach, Switzerland
Filed May 5, 1975, Ser. No. 574,399
Claims priority, application Switzerland, June 20, 1974, 8469/74
Int. Cl.² G08B *21/00*
U.S. Cl. 340—259 **10 Claims**



1. Electro-mechanical thread supervisory apparatus having a deflectable mechanical arm (4) in contact with the thread (9) being supervised and deflected by pressure by the thread on the arm, comprising

electromagnetic means (1, 2, 3) acting on the arm in a direction counter the direction of pressure force exerted on the arm (4) by the thread (9), said arm being magnetically responsive to said electromagnetic means, said electromagnetic means being pulse-energized to cause the arm to vibrate;

arm movement sensing means (7, 8) connected to a source of electrical power (23, 23') and controlled by deflection of the arm due to pressure of the thread on the arm and generating pulses upon vibration of the arm (4);

and electrical detection means (15, 16, 17, 18; 37, 38, 39, 18') connected to and responsive to the generated electrical pulses and providing an alarm signal upon failure to sense vibration of the arm and thus generate pulses indicative of: (a) absence of thread; or (b) excessive thread tension; or (c) jamming of movement of the arm.

10. Method to supervise supply of a filament at a predetermined tension at a supervisory location by a supervisory apparatus, and additionally supervise operation of said apparatus, said method comprising: generating a thread presence force of a first magnitude, by engaging the thread;

generating a counteracting electromagnetic force, in recurring pulses, which is larger than said thread presence force;

balancing said forces against each other and generating a resulting output signal, said output signal being interrupted when the thread presence force counteracts the pulsed electromagnetically generated force during pulse gaps, but becoming a constant signal upon the absence of said thread presence force during said pulse gaps;

and testing if the sensed signal is an interrupted signal or a constant signal, and providing an alarm output if the signal is not an interrupted signal.

3,938,120

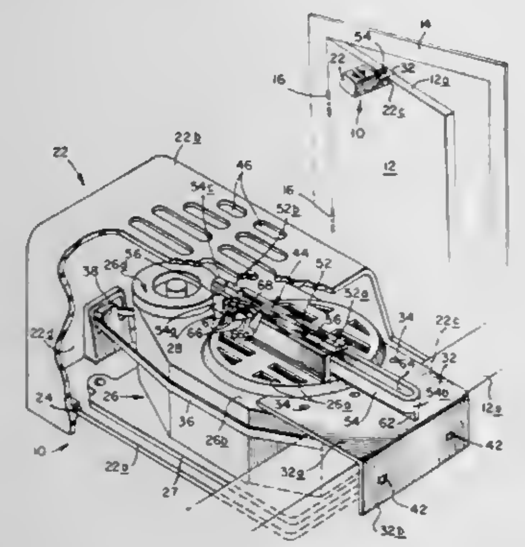
TALKING DOOR SENTINEL

Gerard O'Connell, Holyoke, Mass., assignor to Baltimore Brushes, Inc., Boston, Mass.

Filed May 6, 1974, Ser. No. 467,297

Int. Cl.² G08B *13/08;* **H04M** *11/04*

U.S. Cl. 340—274 R **7 Claims**



1. A sentinel for signalling the opening and closing of a closure member relative to a frame therefor comprising:

A. a housing;

B. a battery operated voice box in the housing of the type having an exposed button which causes the box to cycle through one playback operation when the button is depressed momentarily and to cycle repetitively as long as the button is depressed;

C. means for mounting the housing near an edge of the member;

D. a trigger mounted adjacent the voice box button, said trigger

   1. being movable between the first and second positions;
   2. having one portion which engages the frame when the member is closed so as to move the trigger to its first position; and
   3. having another portion which engages and momentarily depresses the voice box button when the trigger is moved to one of its two positions so that the box cycles through only one playback operation and emits an audible message at the vicinity of the closure member;

E. means for resetting the trigger when the member is moved to its other position so that the box will cycle through another playback operation when the member is moved again to its said one position.

3,938,121

ELECTRICAL WIRING AND ALARM SYSTEM

Fred W. Jamison, 215 E. Palm Ave., Apt 411, Tampa, Fla. 33602

Filed Aug. 7, 1974, Ser. No. 495,322

Int. Cl.² G08B *13/08*

U.S. Cl. 340—274 R **11 Claims**

1. In an electrical wiring and alarm system at a premises to be protected, said system having:

one or more receptacles, each having a common terminal and first and second supply terminals insulated from each other and from said common terminal and arranged so that one plug can be plugged into said first and common terminals and another plug can be concurrently plugged into said second and common terminals;

a first line conductor connected to said first supply terminals and connected to one side of a current supply;

a second line conductor connected to said common supply terminals and connected to the other side of said current supply;

a third line conductor connected to said second supply terminals;

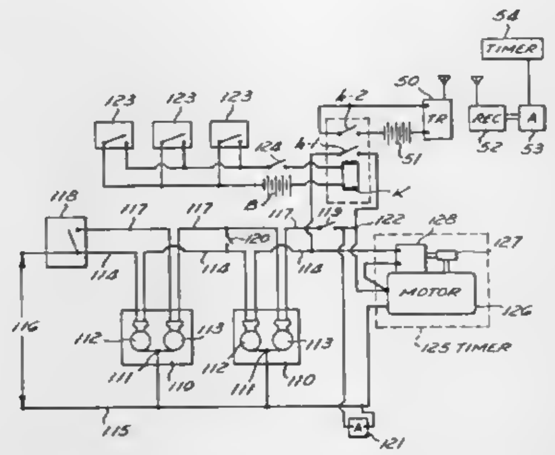
and a wall switch connected between said first and third line conductors and operable when closed to connect said third line conductor to said one side of the current supply for turning on lights which are plugged into said second and common terminals of said one or more receptacles;

the improvement which comprises;

alarm switch means and first selector switch means connected by circuit means in series with each other between said first line conductor and said second supply terminals of the receptacles, whereby the opening of said first selector switch means disconnects said alarm switch means from said second supply terminals, said circuit means having a junction between said alarm switch means and said first selector switch means;

alarm signalling means operatively connected to said junction to be activated in response to the closing of said alarm switch means;

and second selector switch means connected in said circuit means for controlling the connection of said alarm switch means to said alarm signalling means.



3,938,122

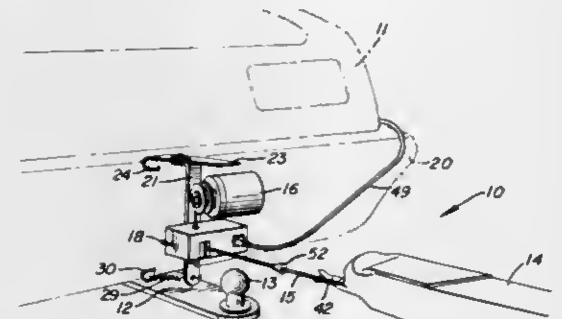
GUIDANCE DEVICE

Jack E. Mangus, 456 Broadview Road, Tallmadge, Ohio 44278

Filed Nov. 15, 1974, Ser. No. 524,223

Int. Cl.² B62D *53/00*

U.S. Cl. 340—275 **6 Claims**



1. A guidance device activated by a power source to aid an operator in the alignment of a first and a second object at least one of which is movable with respect to the other comprising:

a flexible line connectible between desired points on said first and second objects;

means mounted on said first object for drawing in said line as said first object moves toward said second object;

sensing means for detecting changes in the alignment of said desired points; and,

indicating means for signalling said changes to the operator whereby alignment may be determined and maintained during movement of said first object toward said second object wherein said sensing means includes:

a frame;

a switching element in electrical contact with one pole of the power source;

means for pivotally mounting said element on said frame; and,

at least three contact points carried by said frame and in electrical contact with the other pole of said power source; and, wherein said switching element includes;

an elongated slot through which a rivet passes to guide reciprocable movement of said element on said frame;

at least one gate extending outwardly from said element and having an aperture therein for the passage of said flexible line freely therethrough; and,

a forward edge communicable with all of said contact points and terminating in a point communicable with any one of said contact points.

3,938,123

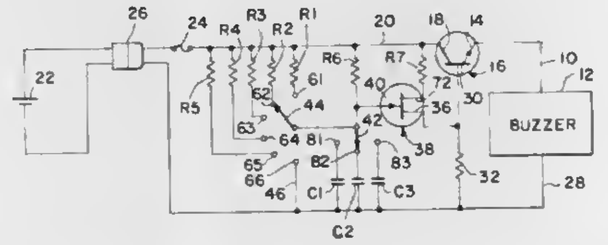
DRIVER ALERT DEVICE

Glenfield Warner, Ville St. Laurent, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Jan. 20, 1975, Ser. No. 542,102

Int. Cl.² G08B *21/00*

U.S. Cl. 340—279 **5 Claims**



1. An alarm system for keeping alert a motor vehicle operator which comprises: an alarm, a motion switch responsive to movements of the vehicle operator, and which switch includes a plurality of contacts disposed for random contact with a pendant, and means for periodically initiating and terminating operation of said alarm responsive to the position of said motion switch, said means for initiating and terminating including a first capacitor which is charged by an electric current passed through said pendent, a plurality of resistors of different value which are respectively connected to said plurality of contacts of said motion switch, said different resistance values causing charging of said first capacitor at varying rates.

3,938,124

ALARM SYSTEM SENSING DEVICE

Blaine A. Way, Schenectady, and William R. Scholtz, Scotia, both of N.Y., assignors to Salient Electronics, Inc., Schenectady, N.Y.

Continuation-in-part of Ser. No. 159,697, July 6, 1971. This application May 23, 1974, Ser. No. 472,615

Int. Cl.² G08B *21/00*

U.S. Cl. 340—280 **3 Claims**

1. An alarm system sensing device attachment for use with alarm systems instruments and detector systems which monitor the stability of energy forms transmitted between remote locations comprising:

a housing having within a secure enclosed chamber, said chamber containing a number of connecting devices protectively recessed within and extending to and through the outer surface of the housing;

a flexible cable component containing within one or more conductive energy paths, said cable originating from within the interior of the protective housing and thereafter passing to a physical location outside of said housing, thereafter extending without interruption for a certain distance outside of the housing and ultimately terminating within said same housing, the final termination being accomplished by means of suitable recessed connector component devices;

the internal conductive energy transmission paths being completely concealed and protectively enclosed by the housing and the body of the connecting device components to provide the physical condition of self-protection and freedom from tampering and so as to establish a condition whereby the partial physical separation of the joined connector device components causes an interruption of the energy paths within prior to the time when a further physical connector component separation actually exposes to view those elements which comprise portions of said energy paths;

the connection devices being capable of simultaneously providing both the junction of energy transmission paths, and mechanical interconnections of adequate strength to resist accidental separation of the associated mating connector components;

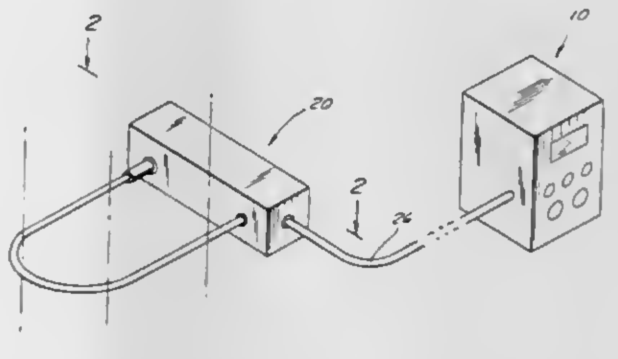
said housing, said connecting devices, and said external cable component, providing a physical design wherein the housing itself and the external cable join together through the connecting devices so as to form in concernt a closed loop of invariable length of circumference thereby allowing the loop so established to encircle and thereby become securely attached to the narrow portion of an irregularly shaped object without the necessity of having any portion of the attachment device pass through openings or other apertures in the object itself;

means on the housing for communication with alarm system detection instruments located remotely;

the connector components, conduits, cables, and conductive paths being interconnected with the housing so that energy supplied to the device will establish pathways within the external cable portion and through portions of the interior area of the housing;

means permitting the device to be made compatible with detection instruments of desired form of transmitted energy; and

the several mechanical and energy conductive components of the device being interrelated so as to assure that the attempted enlargement of the established fixed circumference of the closed attachment loop will result in the interruption of alteration of the normal pattern of energy preestablished within said loop components thereby providing a means whereby the physical act of said loop enlargement may be remotely detected by instruments.



3,938,125

ANTIPILFERAGE SYSTEM AND MARKER THEREFOR

Dominic A. Benassi, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

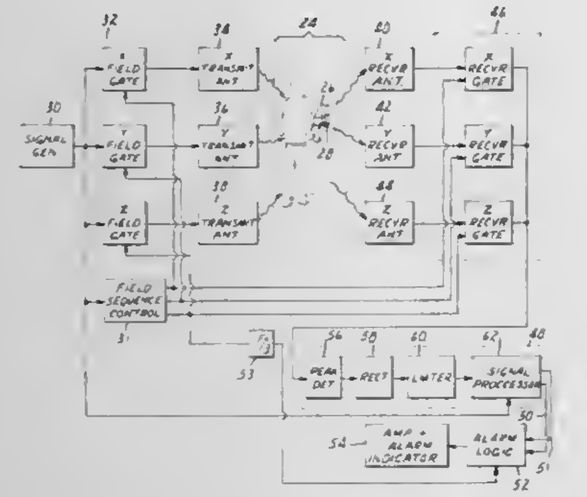
Filed Feb. 20, 1974, Ser. No. 443,954

Int. Cl.² G08B *13/24*

U.S. Cl. 340—280 **8 Claims**

1. A system for detecting the presence of an object within an interrogation zone comprising:

a. a marker carried by said object, which marker comprises a sheet including a laminate of a ferromagnetic layer and an electrically conductive layer wherein said ferromagnetic layer is characterized by an initial relative permeability in excess of 20,000, a maximum relative permeability in excess of 100,000 and a coercivity less than 0.3 σe such that said sheet is capable of responding to a magnetic field having a major field component in one direction in an interrogation zone, which field varies at a predetermined rate of not less than 1 KHz, to cyclically enhance said field in the zone and wherein said electrically conductive layer is characterized by a resistivity of not greater than about 3.0 microhm-cm such that said sheet is capable of responding to another cyclical magnetic field having a major field component in a direction substantially normal to said one direction to diminish said another field in the zone;



b. means defining an interrogation zone;

c. means for sequentially producing in said zone at least three magnetic fields, the intensity of each field periodically varying at a predetermined rate of not less than 1 KHz, a major field component of each field within said zone being orthogonally disposed with respect to a major field component of the other two fields; and

d. means for detecting in the vicinity of the interrogation zone a change in the magnetic field condition due to the presence of a marker in the zone resulting in a signal corresponding to said enhancement and diminishment occurring during at least two of said three produced sequential fields irrespective of the orientation of said marker within said zone.

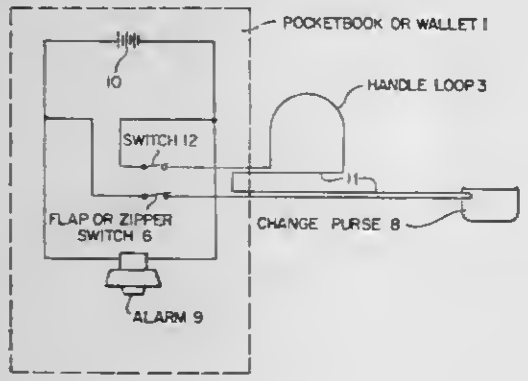
3,938,126
HANDBAG ALARM SYSTEM

Mary Ransom, New York, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 7, 1974, Ser. No. 521,676

Int. Cl.^{2} G08B *13/08, 13/12*

U.S. Cl. 340—280 **3 Claims**



1. A handbag alarm system for a handbag having a handle, an opening, closing means for selectively closing the opening, and a change purse stored in the handbag, said alarm system comprising

an audible alarm in the handbag;

battery means in the handbag electrically connected to the alarm for energizing the alarm to produce an audible signal; and

a short-circuiting electrical conductor electrically connected in shunt across the battery means and extending through the handle and closing means of the handbag whereby the short-circuiting short-circuits the battery means and prevents energizing of the alarm and when the short-circuiting conductor is opened anywhere along its length it fails to short-circuit the alarm and the alarm is energized.

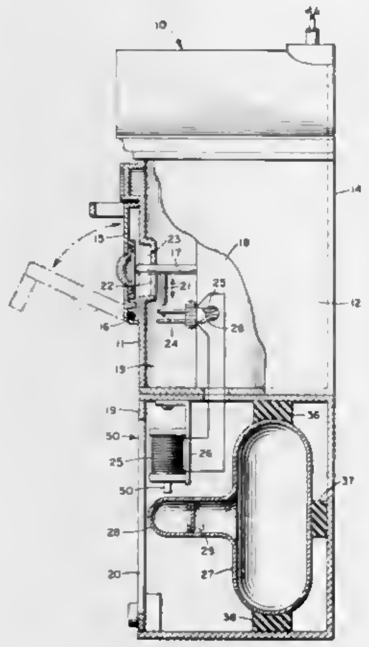
3,938,127
ALARM DEVICE

Michael A. Tabet, Norfolk, Va., assignor to Hughes D. Burton, Norfolk, Va., a part interest

Filed July 22, 1974, Ser. No. 490,743

Int. Cl.^{2} G08B *25/00*

U.S. Cl. 340—304 **6 Claims**



1. An apparatus for initiating an alarm and assisting in the identification of the person initiating the alarm comprising an alarm signalling means, movable means for initiating the signalling means, an evacuated container adapted to be opened to the atmosphere, and means responsive to movement of the movable means for opening the container, said container being disposed where air about the said movable means is drawn into the container when the container is opened, said air carrying the characteristic scent of the person initiating the alarm.

3,938,128
WARNING CIRCUIT FOR INDICATING THAT AN INTERMITTENTLY OPERATED DEVICE HAS BEEN OPERATED FOR A PREDETERMINED CUMULATIVE LENGTH OF TIME

Richard A. Pidsosny, Detroit, and John Zimmer, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 12, 1974, Ser. No. 523,088

Int. Cl.^{2} G08B *1/00;* **G04F** *10/00*

U.S. Cl. 340—309.1 **10 Claims**

1. A warning circuit for indicating that an intermittently operated device has been operated for a predetermined cumulative length of time, said warning circuit comprising:

a coulometer having first and second electrodes and an active material capable of being transferred from said first electrode to said second electrode, said coulometer having an impedance after all of said active material is transferred to said second electrode that is substantially higher than its impedance when said active material is on both of said electrodes;

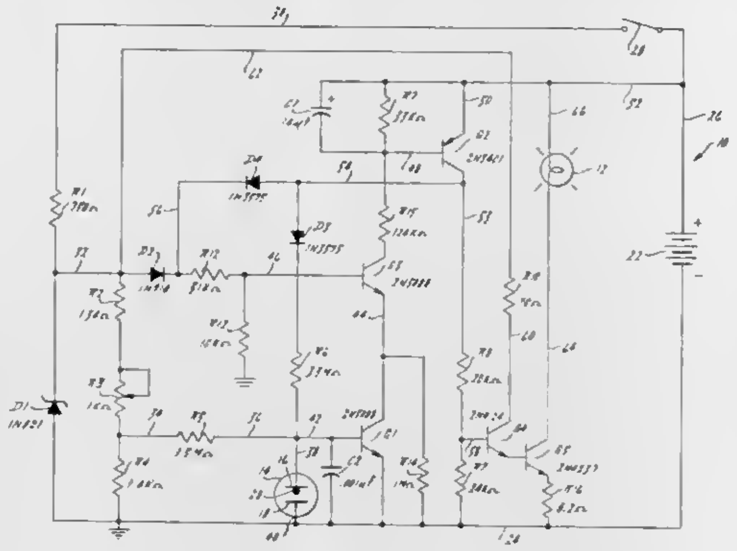
means for causing the transfer of said active material from said first electrode to said second electrode of said coulometer when said intermittently operated device is in operation;

means for providing a warning;

a first transistor coupled to said coulometer, said first transistor changing in its state of conductivity when said higher-impedance condition of said coulometer occurs;

a second transistor coupled to said first transistor, said second transistor being placed in and maintained in a state of conductivity as a result of the initial occurrence of said change in state of conductivity of said first transistor, said second transistor when in said maintained state of conductivity supplying current to said coulometer to maintain it in its higher impedance condition;

circuit means for controlling said warning means, said circuit means permitting said warning means to provide a warning indication only when said device is in operation and said second transistor is in said maintained state of conductivity, whereby, said warning indication may be used to indicate the elapse of said predetermined cumulative length of time.



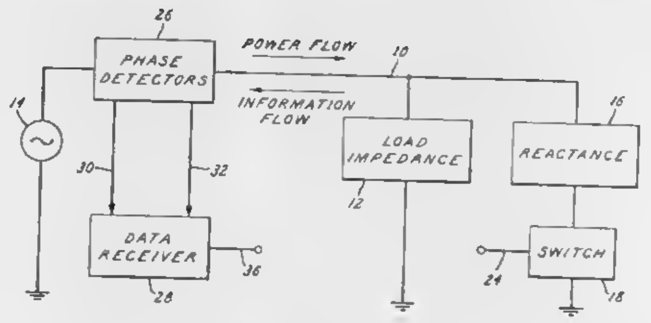
3,938,129
POWER LINE DATA TRANSMISSION SYSTEM

Miles A. Smither, Harris, Tex., assignor to General Electric Company, Fairfield, Conn.

Filed Aug. 21, 1974, Ser. No. 499,363

Int. Cl.^{2} H04M *11/04*

U.S. Cl. 340—310 R **13 Claims**



1. A method of transmitting data over a line carrying alternating current power, comprising the steps of:

varying the phase angle between the voltage and the current of the line between a first and a second predetermined value in response to a data signal to be transmitted, said first phase angle value representing a first signal condition, said second phase angle value representing a second signal condition;

detecting the phase angle between the voltage and the current on said line; and

providing a first signal in response to detecting said first predetermined value of phase angle and a second signal in response to detecting said second predetermined value of phase angle.

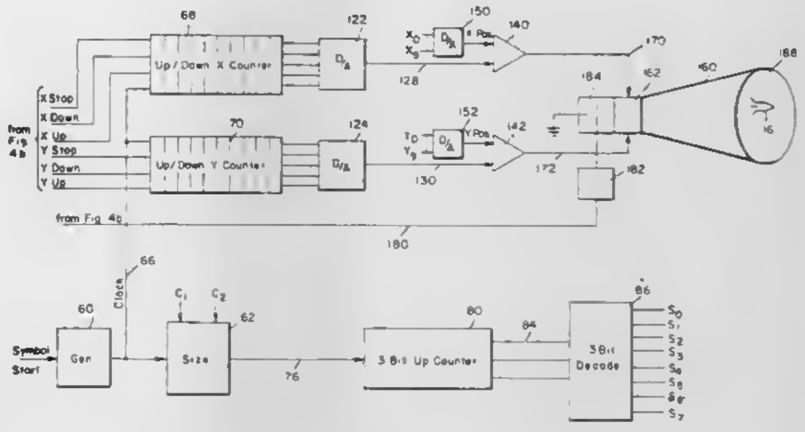
3,938,130
DIRECTION CODED DIGITAL STROKE GENERATOR PROVIDING A PLURALITY OF SYMBOLS

Gerald O. Burnham, Los Angeles, and John W. Weber, Inglewood, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 229,231, Feb. 25, 1972, abandoned. This application Aug. 6, 1973, Ser. No. 385,919

Int. Cl.^{2} G06F *3/14*

U.S. Cl. 340—324 A **2 Claims**



1. A symbol generating system comprising:

display means including X and Y deflecting means;

X and Y up and down counters coupled to said X and Y deflecting means to develop a plurality of line segments;

a source of direction commands for each segment for selectively controlling each of said X and Y counters to count up, count down or to stop;

decoding means coupled to said X and Y counters and responsive to said source of direction commands to develop X and Y count up, count down and stop signals to control said respective X and Y counters so that said plurality of line segments after a first segment each start at the termination of the previous segment;

a source of clock signals for providing clock signals of a fixed frequency coupled to said X and Y up and down counters;

a source of segment length commands; and segment length control means responsive to said source of segment length commands including frequency divider means coupled between said source of clock signals and said decoding means to control the time of passing of the direction commands for each segment by said decoding means to said X and Y up and down counters to determine the length of said line segments.

3,938,131
ENERGIZING CIRCUIT FOR A VISUAL DISPLAY ELEMENT

Rudolf Alexander Van Doorn, and Pieter Tammo Bolwijn, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 3, 1974, Ser. No. 511,662

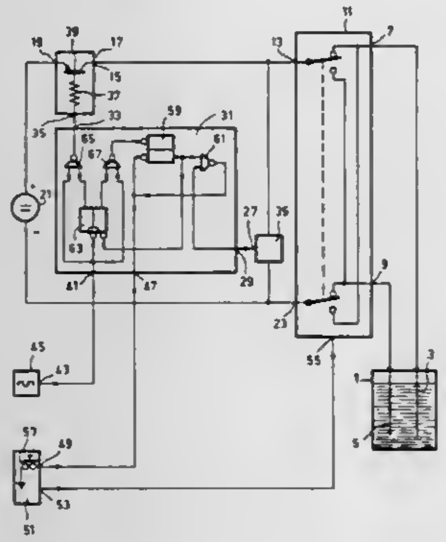
Claims priority, application Netherlands, Oct. 11, 1973, 7313982

Int. Cl.^{2} G08B *5/36*

U.S. Cl. 340—324 R **5 Claims**

1. An energizing circuit for a visual display element having energizing electrodes, comprising a liquid situated between said energizing electrodes, said liquid comprising a redox pair with one component being insoluble, a power supply source

coupled to said energizing electrodes capable of being disconnected; a threshold circuit having an output for controlling the power supplied to the display element by said supply source;



and a first polarity change-over switch coupled between said supply source and the display element for changing over between a registering state and an erasing state.

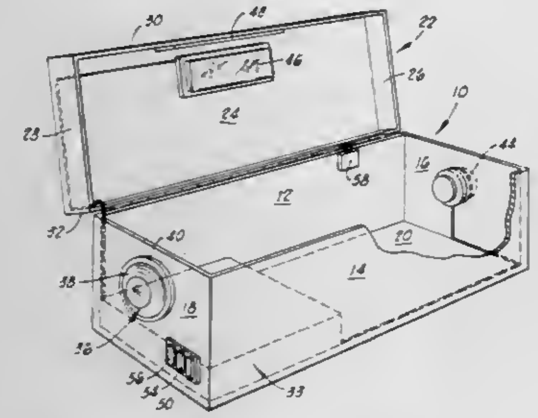
3,938,132
ILLUMINATED FISHING TACKLE BOX

Jerry L. Cunningham, 301 N. College, Cordell, Okla. 73632

Filed Dec. 6, 1974, Ser. No. 530,218

Int. Cl.^{2} G08G *3/00*

U.S. Cl. 340—321 10 Claims



1. An illuminated fishing box comprising:
a hollow base portion having a pair of opposed end walls;
a lid hingedly connected to one side of the base portion; and
a light movably mounted in one of said end walls for manual movement to varying positions in said one end wall to direct light downwardly or outwardly from the fishing box.

3,938,133
CONDITIONING OF GAS DISCHARGE DISPLAY/MEMORY DEVICE

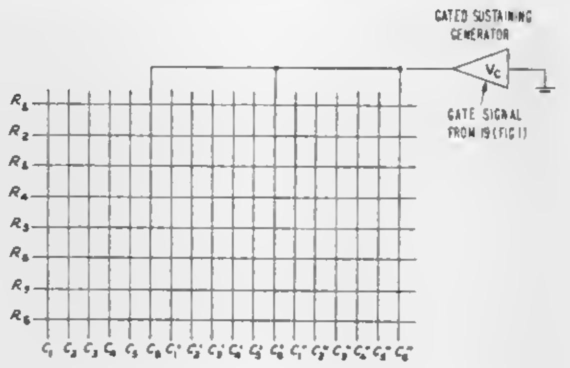
John W. V. Miller, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 3, 1971, Ser. No. 204,466

Int. Cl.^{2} G08B *5/36*

U.S. Cl. 340—324 M 8 Claims

1. In a process for conditioning multiple gas discharge display/memory panel, having a relatively large geometrical area, and containing an ionizable gaseous medium and having a plurality of discharge cells formed by a pair of transversely related electrodes, said discharge cells being geometrically arranged in rows and columns and the panel being electrically addressable in a plurality of matrices for displaying alphanumeric characters formed by selected rows and columns of addressable discharge cells, each addressable matrix within said panel having a relative size of C by R discharge cells with a spacing between adjacent addressable matrices of at least one column or one row of not-to-be addressed discharge cells and a series of panel border discharge cells being maintained in the one state to constitute pilot cells, the improvement



which comprises conditioning a selected portion of the panel by supplying at least one high voltage cycle pulse to the not-to-be addressed cells between addressable matrices so as to photonically condition the to-beaddressed cells within the adjoining matrices.

3,938,134
UNBALANCE VECTOR DISPLAY DEVICE AND PROCESS

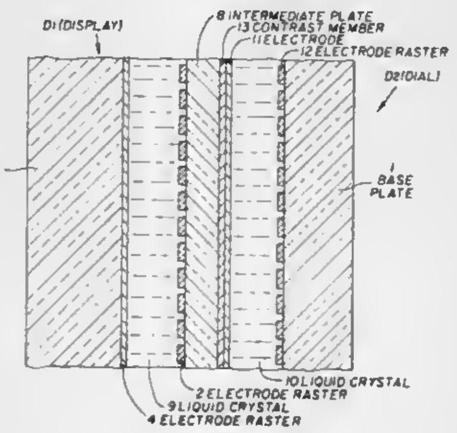
Guenter Hackstein, Niedernhausen, Odenwald; Paul Holdinghausen, Bickenbach, and Karl Homilius, Nieder-Ramstadt, all of Germany, assignors to Carl Schenck AG, Darmstadt, Germany

Filed Aug. 30, 1974, Ser. No. 501,884

Claims priority, application Germany, Sept. 5, 1973, 2344622

Int. Cl.^{2} G08B *5/36*

U.S. Cl. 340—324 M 12 Claims



1. A display device for displaying an unbalance information for a body to be balanced in at least one plane, comprising a liquid crystal display panel, transparent dial means superimposed upon said liquid crystal display panel, means holding said liquid crystal display panel and said transparent dial means in an operational relationship to each other, said liquid crystal display panel comprising row electrodes and column electrodes each including respective row electrode elements and column electrode elements, said electrode elements having different configurations, said row electrodes further comprising first means for conductively interconnecting elements of the same configuration to form a plurality of rows, said column electrodes further comprising second means for conductively interconnecting elements of the same configuration to form a plurality of columns, said rows and columns being arranged so that elements of the same configuration are in register with each other and so that an element of one configuration alternates with an element of another configuration in the physical distribution of said electrode elements in said liquid crystal display panel.

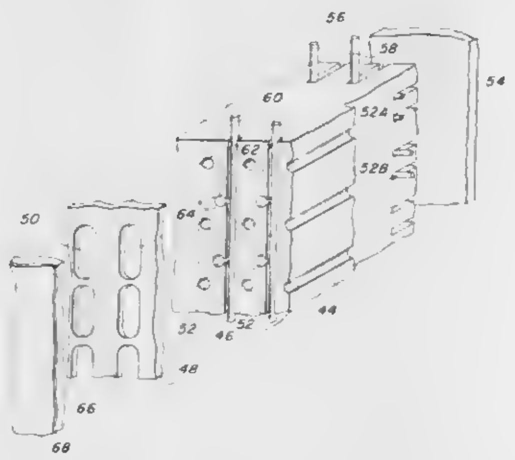
3,938,135
GAS DISCHARGE DISPLAY DEVICE AND AN IMPROVED CELL THEREFOR

Michael C. DeJule, Chicago, Ill., and David Glaser, Greenbrook, N.J., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Nov. 27, 1974, Ser. No. 527,568

Int. Cl.^{2} G08B *5/36*

U.S. Cl. 340—324 M 8 Claims



1. For use in a display device having a matrix of rows and columns of light emitting gas discharge cells, an improved gas discharge cell comprising:
enclosure means defining a gas-filled cell cavity;
cathode means disposed near the rear of the cavity and adapted to receive an electrical voltage;
a video anode situated in the front end of the cavity, the space in the cavity between the video anode and the cathode constituting a main discharge path; and
a priming anode adapted to receive a priming voltage which is positive with respect to the cathode voltage, said priming anode extending along a substantial part of the main discharge path between the video anode and the cathode so that, when the priming voltage is applied to the priming anode, a part of the priming anode nearest the cathode establishes a priming discharge in the cavity between the cathode and the priming anode, which discharge is progressively propagated by the priming anode along the main discharge path toward the video anode so that a substantial portion of the distance between the cathode and the video anode is primed, thereby permitting the use of a low level video signal on the video anode to sustain and control the primed discharge.

6. A gas discharge display device having a matrix of rows and columns of light emitting gas discharge cells comprising:
enclosure means defining a plurality of gas-filled cell cavities;
cathode means and anode means disposed across said cavities and near opposite ends thereof for sustaining a gas discharge therebetween; and
a flat, transparent glass plate comprising a part of said enclosure means through which the cells are viewed and having a transparent conductive film and a side of the plate opposite the cavities, said film comprising one plate of a capacitor for receiving a periodic priming pulse for establishing an automatically decaying electric field between said plate and the cathode means so as to induce a gas discharge therebetween and to permit the continuation of the discharge by a voltage applied to the anode means that is less than required to initiate a discharge.

8. A gas discharge device comprising:
a matrix of rows and columns of gas-filled discharge cells;
an array of electrodes in the device arranged in the following order from the back to the front of the device:
cathode means;
scan anode means for establishing a scanning discharge between itself and the cathode means;
video anode means for receiving an information-bearing signal, and
a flat transparent glass plate covering each cell cavity and having a transparent conductive film thereon, said film acting as one plate of a capacitor and being adapted to receive a periodic priming pulse for establishing an electric field between itself and the cathode means so as to induce a brief gas discharge therebetween and permit the video anode means to sustain the discharge with a relatively low voltage signal.

3,938,136
METHOD AND DEVICE FOR DRIVING A MATRIX TYPE LIQUID CRYSTAL DISPLAY ELEMENT

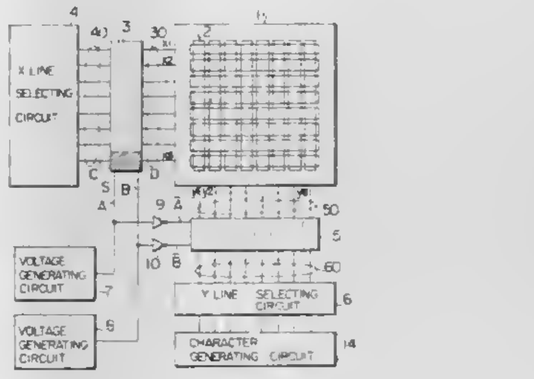
Hideaki Kawakami, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Jan. 4, 1974, Ser. No. 430,919

Claims priority, application Japan, Jan. 10, 1973, 48-5182

Int. Cl.^{2} G06F *3/14*

U.S. Cl. 340—324 M 5 Claims


X LINE SELECTING CIRCUIT
VOLTAGE GENERATING CIRCUIT
VOLTAGE GENERATING CIRCUIT
Y LINE SELECTING CIRCUIT
CHARACTER GENERATING CIRCUIT

1. A method for driving a matrix type liquid crystal display element driven by the predetermined number of X lines and the predetermined number of Y lines, comprising the step of applying to a non-selected X line an alternating voltage $\mp 1/6V_0$ of one-sixth times as great as a voltage V_0 required for rendering the liquid crystal opaque, the step of applying to a non-selected Y line an alternating voltage $\pm 1/6V_0$ opposite in phase to the alternating voltage applied to the non-selected X line, the step of applying to a selected X line an alternating voltage $\pm \frac{1}{2}V_0$ opposite in phase to the alternating voltage applied to the non-selected X line, and the step of applying to a selected Y line an alternating voltage $\mp \frac{1}{2}V_0$ opposite in phase to the alternating voltage applied to the selected X line, whereby an alternating voltage of $\pm V_0$ is applied to a selected dot at an intersection of the selected X and Y lines to render the selected dot opaque, and an alternating voltage having an absolute amplitude value of $\frac{1}{3} V_0$ is applied to the dots other than said selected dot to prevent cross talk between the X and Y lines.

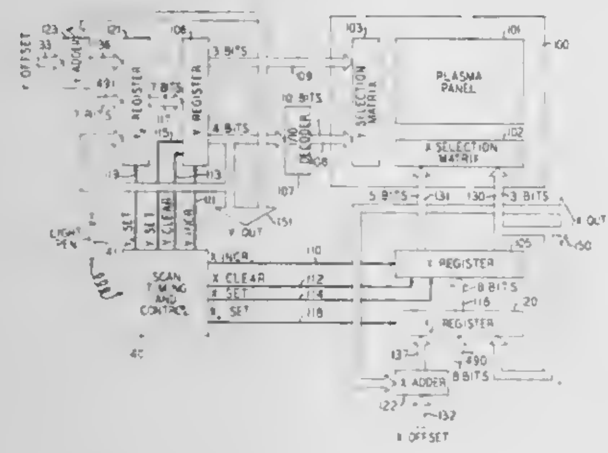
3,938,137
PLASMA PANEL LIGHT PEN TRACKING USING ADAPTIVE TRACKING SCAN

Peter Dinh-Tuan Ngo, Colts Neck, and William Herbert Ninke, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 21, 1974, Ser. No. 472,075

Int. Cl.^{2} G06F *3/14*

U.S. Cl. 340—324 M 11 Claims



1. Apparatus for detecting a moving light sensor over a plasma panel display surface having a plurality of plasma cells located at respective display sites, selected ones of said plurality of cells being periodically activated, thereby to emit light pulses at periodic intervals and at a fixed time in each such interval, comprising

first means for sequentially activating at least selected ones of said plurality of plasma cells at times different from said fixed times,

second means for sequentially activating at least selected ones of a subset of said plurality of plasma cells at times other than said fixed times, the position of said subset having a predetermined relationship to the position of said light sensor at the time said sensor last detected a light pulse at one of said plurality of plasma cells at other than said fixed time, and

output means responsive to said light sensor for generating signals indicating the positions at which said sensor detects light pulses at other than said fixed times.

3,938,138
TIME SWITCHING POWER SAVER SYSTEM FOR ELECTRONIC INDICATORS

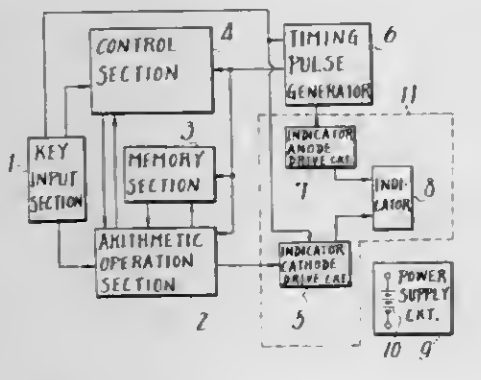
Koichi Kojima, Chigasaki, and Hidetoshi Kamoto, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 17, 1974, Ser. No. 480,095

Claims priority, application Japan, June 19, 1973, 48-72438[U]; June 19, 1973, 48-72439[U]

Int. Cl.^{2} G06F *3/14*

U.S. Cl. 340—324 R 5 Claims



1. A time switching power saver circuit for a battery powered electronic indicator comprising:

A. An indicator for displaying figures connected to be supplied with a DC power supply voltage by a battery;

B. control means having an indicator instruction signal input, said means effective to control a time switching means in accordance with the state of an induced instruction time signal;

C. switching means connectedd to said control means, said time switching means generating in response to said instruction signal a switching signal; and

D. indication control means connected between said time switching means and said indicator for receiving said switching signal to control the indication of the latter, said indication control means being responsive to said switching signal for controlling the indicator to first make a continuous indication for a predetermined time period in response to the indication signal and to later automatically make an intermittent indication also in response to said switching signal.

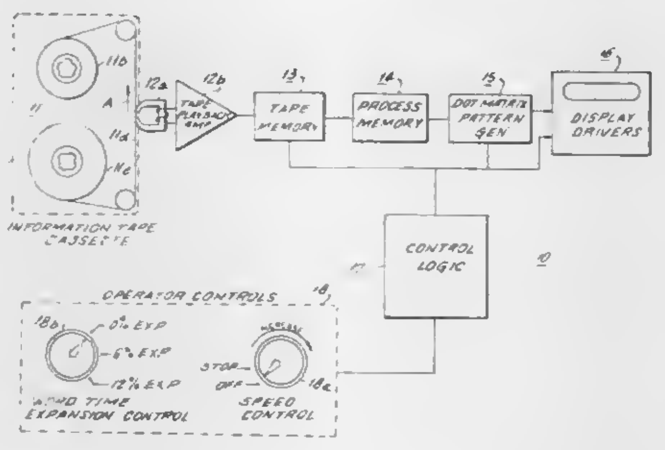
3,938,139
MINIATURE DISPLAY COMMUNICATOR

Leslie R. Day, Wyckoff, N.J., assignor to Young Communications Corporation, Larchmont, N.Y.

Filed Dec. 30, 1974, Ser. No. 537,071

Int. Cl.^{2} G06F *3/14*

U.S. Cl. 340—324 R 4 Claims



1. A portable hand-held device for displaying textual material in a single line position comprising:

removable first storage means for storing binary coded data representative of textual information;

said device having means for receiving said first storage means;

a first memory adapted to store a predetermined block of textual information in binary form;

reader means being selectively actuated for transferring a block of data from said first storage means to said first memory;

logic means responsive to the presence of each end of block code interspersed in said first storage means to deactivate said reader means;

second memory means for storing a block of textual information in binary form;

transfer means for transferring the contents of said first memory to said second memory responsive to the sensing of an end of block code by said logic means;

second means responsive to the transfer of an end of block code into said second memory means for deactivating said transfer means;

a multi-bit register means;

means responsive to completion of the transfer of data into said second memory means for transferring binary coded words into said register means in sequential fashion;

character generator means for converting the binary coded word in said register means into an M × N dot matrix pattern comprised of M dot columns of N dots per column, wherein each pattern forms a character associated with a predetermined binary code;

display means comprising a dot matrix of a P × N dot matrix of light emitting devices comprised of P columns of N dots per column, where $P = K(M+2)$ and K is a real integer greater than 1;

N shift register means each associated with a row of said P × N matrix of light emitting devices;

means for transferring each dot column pattern generated by said character generator means into the input stages of said N shift registers in a sequential dot column by dot column fashion;

means responsive to the word length of at least one of the words loaded into said N shift registers for controlling the interval of time during which the said last word is illuminated.

3,938,140
DATA DISPLAY DEVICE

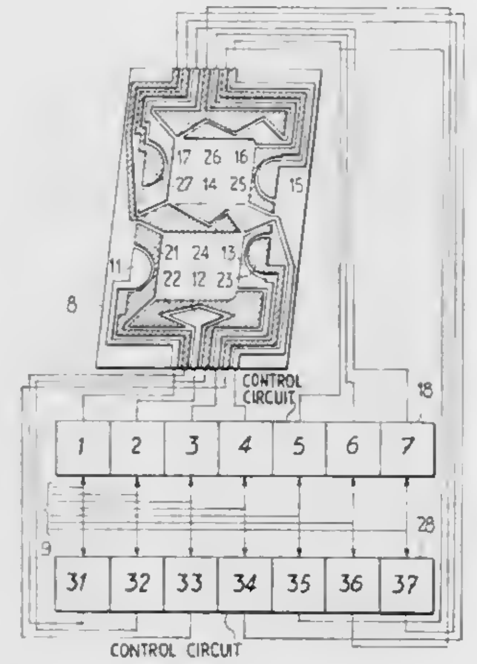
Jean Garcia; Michel Hareng, and Eugene Leiba, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 6, 1974, Ser. No. 467,562

Claims priority, application France, May 9, 1973, 73.16737

Int. Cl.^{2} G08B *5/36*

U.S. Cl. 340—336 9 Claims



1. A data display device comprising at least one segment whose shape has a descriptive value, said shape undergoing a perceptible change in appearance under the action of a control signal applied to means for exciting said segment, wherein each said segment comprises a same number of complementary areas; said excitation means being divided up into as many excitation units as there are areas in each said segment; said units being electrically connected to said areas by separate connections and being controlled simultaneously by said control signal.

3,938,141
SNAP-ON HOUSING ADAPTED FOR PANEL MOUNTING OF TRANSDUCER

Jacob Neuhof, Bridgeport, Conn., assignor to General Signal Corporation, Rochester, N.Y.

Filed Jan. 6, 1975, Ser. No. 538,995

Int. Cl.^{2} G08B *3/00*

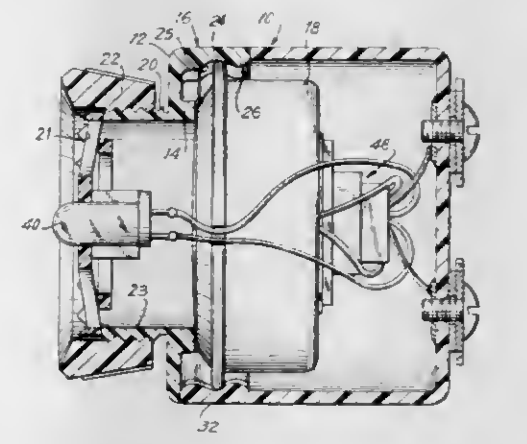
U.S. Cl. 340—384 R 9 Claims

1. A housing for an electrical component, said component having a flange-like portion at its periphery, comprising:

a cover having a series of resilient axially extending, spaced fingers or tabs at the periphery thereof;

each of said fingers having a convex leading portion and an abutting groove at its inner surface, the grooves together receiving the flange-like portion at the periphery of the electrical component;

a back-end bracket having a like series of resilient axially extending, spaced fingers, as defined above, which likewise receive the flange-like portion at the periphery of



said component and which fit between the fingers on said cover such that a complete housing is provided and said component is firmly retained inside said housing.

3,938,142
ULTRASONIC TRANSMITTER FOR THE REMOTE CONTROL OF RADIO AND TELEVISION RECEIVERS

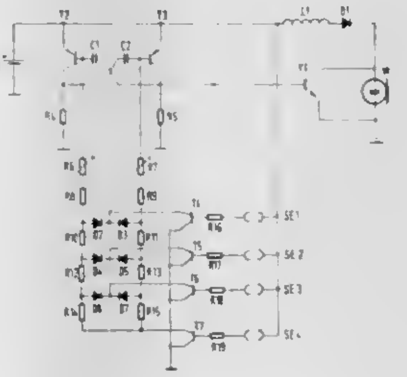
Wolfgang Schröder, Pforzheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 29, 1974, Ser. No. 474,455

Claims priority, application Germany, June 12, 1973, 2329740

Int. Cl.^{2} G08B *3/00*

U.S. Cl. 340—388 9 Claims



1. An ultrasonic frequency transmitter for remote control devices, comprising:

an electrostatic transducer;

a source of d.c. voltage connected in parallel with the electrostatic transducer;

a controllable electronic switch connected across said electrostatic transducer for periodically shorting said transducer; and

an a.c. voltage generator connected to said electronic switch for controlling said switch so that said transducer transmits a desired ultrasonic frequency.

3,938,143
BUZZER

Arthur J. Little, Springfield, and William R. Mayer, Rochester, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

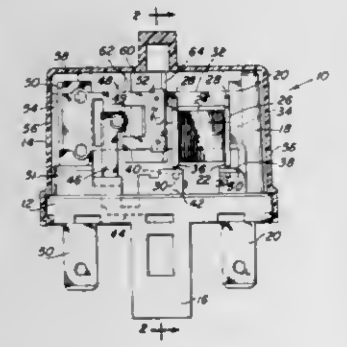
Division of Ser. No. 191,861, Oct. 22, 1971, Pat. No. 3,768,158. This application May 7, 1973, Ser. No. 357,551

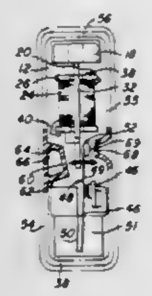
Int. Cl.^{2} G01K *1/08*; G10K *1/00*

U.S. Cl. 340—402 4 Claims

1. A buzzer comprising a molded insulated base carrying a pair of electrical terminals spaced longitudinally relative said base and extending through the base, a coil having ends, a bobbin carrying said coil and having a pair of spaced lugs with

a coil end wrapped around each lug, a contact member spaced intermediate said terminals carrying a contact at one end with the other end of said member fixed in said base, an armature fixed to one terminal and biased in one direction into engagement with said contact, a cup-shaped housing having an open end receiving said base and defined by a peripheral wall and a back wall with said terminals, contact member and bobbin encircled by said peripheral wall, a first integral wall spaced inwardly of said peripheral wall for engagement by said armature in a direction for engaging said contact and extending from said back wall to a position spaced from said base, another integral wall spaced inwardly of said peripheral wall and extending from said back wall to a position spaced from said base, a pair of walls integrally formed between said other inwardly spaced wall and peripheral wall and of substantially the same length as said inwardly spaced wall to form a cavity, a core integrally formed on the other of said electrical terminals and carrying said bobbin, a solder coating on each end of said coil to secure the respective coil end to a respective lug, a finger integrally formed with said contact member and having a slot for receiving one lug, and a finger integrally formed on said other terminal and having a slot for receiving said other lug to support said coil in response to the deformation of said fingers against a respective lug and establish an electrical connection from said other terminal through said coil and contact member to said armature and one terminal for energizing said coil to move said armature from said contact to deenergize said coil, whereafter said biased armature reengages said contact and said first wall.





3,938,144
DIGITAL MULTIPLEXING SYSTEM REMOTE SCANNING OF A PLURALITY OF MONITORING POINTS

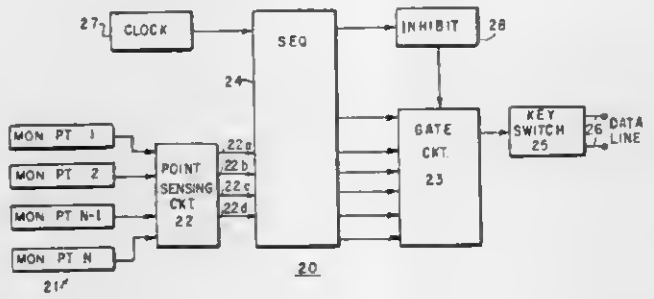
Carl N. Pederson, Westmont, and Peter G. Angelopoulos, Elmhurst, both of Ill., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Nov. 28, 1973, Ser. No. 419,714

Int. Cl.² G08B *19/00*

U.S. Cl. 340—413 24 Claims

1. In a multiplexed data transmission system for transmitting data over a transmission line from a first location to a second location, sender means at said first location including first means for generating a serial pulse train including a start pulse followed by a plurality of data pulses during each of a plurality of time frames, second means for transmitting pulse trains provided by said first means to said second location over said transmission line, and inhibit means for inhibiting the transmission of pulse trains during alternate time frames, and receiver means at said second location including means for receiving said pulse train, data storage means, and sequencing means including clock pulse generating means responsive to the start pulse to provide a plurality of clock pulses having a predetermined relation to said start pulse for enabling said data pulses to be gated into said data storage means.



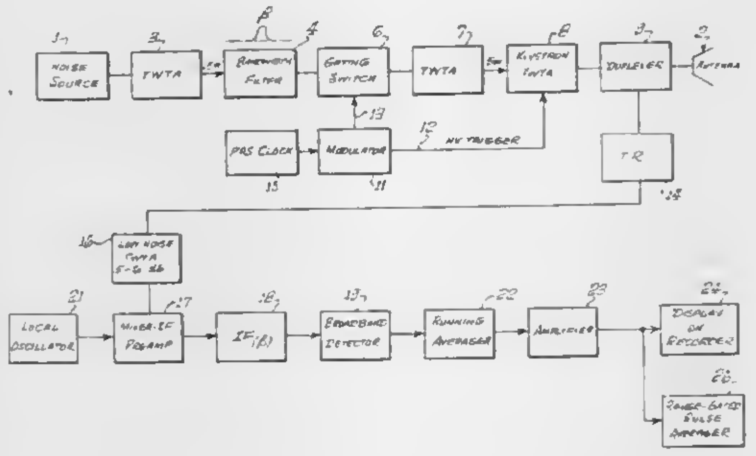
3,938,145
FAST-SCANNING BROAD BAND RADAR SYSTEM

Marx Brook, and Paul R. Krehbeil, both of Socorro, N. Mex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 3, 1974, Ser. No. 475,673

Int. Cl.² G01S *9/60*

U.S. Cl. 343—5 W 6 Claims



1. A radar system for providing the mean reflected power of return signals derived from randomly-arranged constantly-changing clutter type targets, comprising:
   a noise source,
   means coupled to said noise source for producing a series of noise signal output pulses each having a predetermined bandwidth centered on a predetermined frequency and each having a predetermined pulse length,
   transmitting means coupled to said series output for driveably transmitting each of said output pulses in a single undivided form into said clutter type targets, said bandwidth and pulse length being predetermined to assure the inclusion of a plural number of individual uncorrelated electrical field noise configurations in each of said single transmitted pulses,
   receiver means matched to said bandwidth for receiving said return signals, and
   return signal processing means including:
      means for integrating the reflected power of each of said return signals over the full pulse length period of each of said single transmitted pulses whereby the reflected power of each return signal is averaged for all of said individual configurations to produce a mean intensity value for said reflected power, and
   indicator means for providing said mean intensity value.

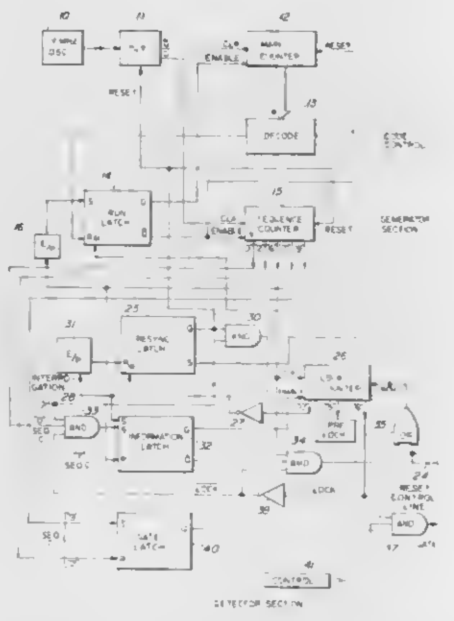
3,938,146
SECURE ENCODER FOR TRILATERALIZATION LOCATOR UTILIZING VERY NARROW ACCEPTANCE PERIODS

Paul K. Dano, Euless, Tex., assignor to Del Norte Technology, Inc., Euless, Tex.

Filed Apr. 1, 1974, Ser. No. 457,145

Int. Cl.² G01S 9/56

U.S. Cl. 343—6.5 LC 7 Claims



1. A radar station identification system wherein said system comprises a plurality of local radar stations, each of said local stations comprising means for receiving from another of said stations a train containing an indefinite number of successively occurring interrogation pulses which might have any one of many different pulse repetition rates, a local source of cyclically recurring pulses within each station, means at each local station for repeatedly counting a predetermined number of said recurring pulses from said local source, means at each of said local stations for successively defining a series of repetitive narrow time of acceptance periods which individually identifies that local station according to the repetition rate, said periods being defined responsive to each completion of said count of said predetermined number of pulses, means at each local station responsive to each train of interrogation pulses for responding to any one pulse in the indefinite number of pulses and thereafter detecting as they are received a plurality of each cyclically recurring interrogation signals appearing within said times of acceptance that identifies the local station, means at each local station for rejecting as they are received interrogation signals appearing outside of said times of acceptance which individually identifies that particular local station, and decoder means for identifying the interrogation signals addressed to said local radar stations responsive to the repetition rate of a succession of said cyclically accepted interrogation signals, whereby each of said plurality of local radar stations responds individually to only those of the received interrogation signals having the repetition rate which is addressed to the responding station.

3,938,147
FREQUENCY MODULATED DOPPLER DISTANCE MEASURING SYSTEM

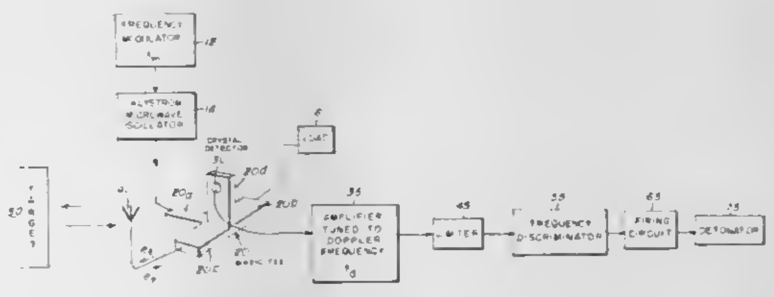
Henry P. Kalmus, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 19, 1959, Ser. No. 814,351

Int. Cl.² G01S *9/24;* F42C *13/04*

U.S. Cl. 343—7 PF 4 Claims

4. A single antenna missile fuzing system adapted to function at a predetermined distance from a target, said system comprising in combination: a microwave oscillator, a frequency modulator for modulating said oscillator at a frequency which is considerably lower than the doppler frequency occurring when the missile is falling at terminal velocity, a magic tee having first and second side arms, an H-arm and an E-arm, the output of said microwave oscillator being fed to said H-arm, an antenna connected to said first side arm and adapted to radiate energy towards a target and receive energy reflected therefrom, a load connected to said second side arm, a crystal detector disposed in said E-arm, said load being chosen so that only a relatively small portion of the energy from said microwave oscillator passes to said crystal detector to mix with the received energy passing to said detector from said first side arm, the output of said detector comprising a frequency modulated wave having a carrier frequency equal to the doppler frequency and sidebands equal, respectively, to the sums and differences of said carrier frequency and said modulation frequency and its harmonics, said frequency modulated wave having a frequency deviation which is dependent upon target distance, an amplifier to which said detected signal is fed, said amplifier being tuned to the doppler frequency and having a bandwidth which is equal to at least twice said modulation frequency, a limiter to which the output of said amplifier is fed for producing an essentially constant amplitude signal, a frequency discriminator to which the output of said limiter is fed, said discriminator producing an output voltage which is substantially proportional to target distance, and means connected to the output of said discriminator for functioning said fuze when the output of said discriminator is a predetermined value corresponding to said predetermined distance.



3,938,148
AUTOMATIC FREQUENCY CONTROL SYSTEM

Charles A. Hobson, Fremont, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

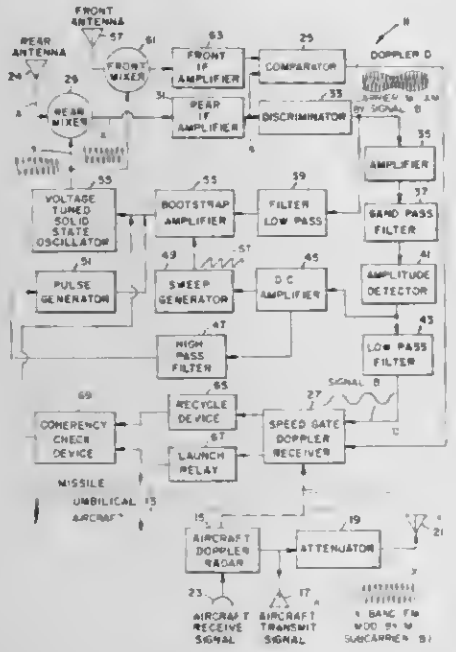
Filed July 10, 1974, Ser. No. 487,341

Int. Cl.² G01S *7/02*

U.S. Cl. 343—7 A 10 Claims

1. An automatic frequency control system comprising:
   a. first means for receiving reflected radar signals from a target;
   b. second means for receiving radar signals directly from a radar transmitter means;
   c. a voltage tuned solid state oscillator the output of which is connected to said first and second means;
   d. third means responsive to the output of said second means for applying a first control voltage to said solid state oscillator;
   e. fourth means responsive to the output of said first means for applying a second control voltage to said solid state oscillator;

f. fifth means responsive to the output of said second means; and



g. sixth means responsive to the output of said fifth means for modifying the output of said third means.

3,938,149

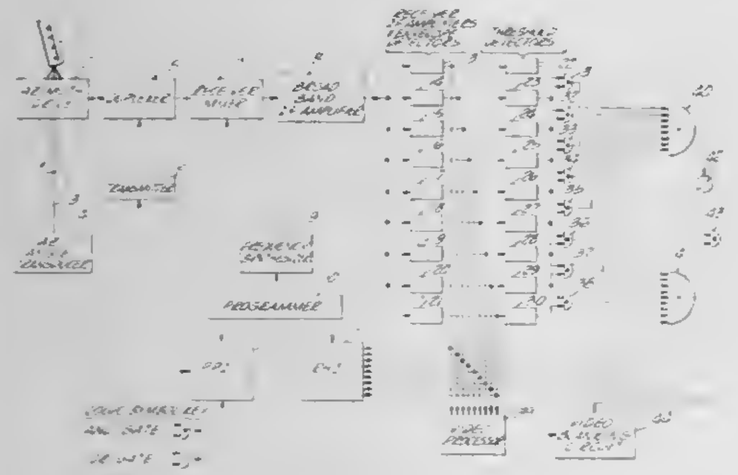
FREQUENCY SCAN RADAR SYSTEM WITH PROVISION FOR INTERFERENCE ELIMINATION

George William Grantham, West Covina, Calif., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Filed Jan. 19, 1967, Ser. No. 611,538

Int. Cl.^{2} G01S *7/28*

U.S. Cl. 343—17.1 R 6 Claims



1. A pulsed radar system having an antenna for radiating, during each transmitted pulse, N beams of electromagnetic energy each narrow in at least a first plane, said antenna radiating said beams each at an angle in said first plane, which angle is a function of the instantaneous frequency of excitation of said antenna, having transmitting means for providing variable frequency excitation to said antenna in N discrete frequency steps within each of said transmitted pulses, the frequency spacing of said frequency steps being such that adjacent ones of said beams partially overlap in space, receiving means operative in the time between said transmitted pulses, said receiving means having N separate receiver channels corresponding to said N transmitted frequencies, and comprising the combination of: first means for time aligning and adding the outputs to produce a composite signal of at least part of the outputs of said N receiver channels; second means responsive to the outputs of said receiver channels for generating an output whenever at least one of the said outputs of said receiving channels contains a signal; third means for comparing the outputs of said N receiver channels for providing an output signal when signal is present contemporaneously in any two of said receiver channels which correspond to adjacent frequencies, fourth means responsive to the outputs of said second and third means for producing a control signal when a signal is present at the output of said second means but not at the output of said third means; and video switching means responsive to said control signal and connected in series with the output of said first means whereby said composite signal may be interrupted when and so long as said control signal is present in a predetermined condition.

3,938,150

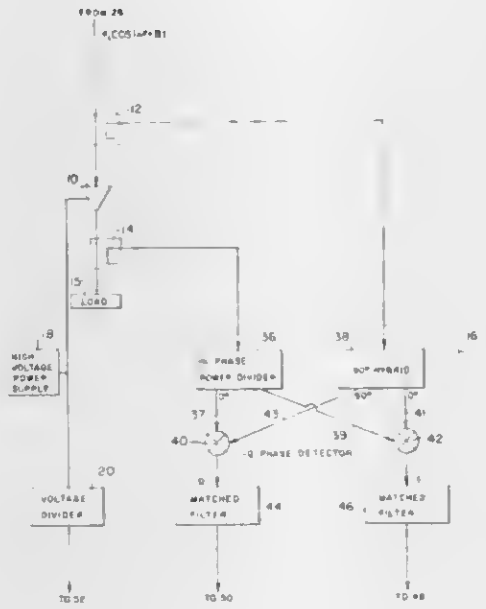
MICROWAVE AMPLIFIER TUBE COHERENCY TEST SET

Chester C. Phillips, Rockville; William H. Zinger, Columbia; Robert F. Platte, Laurel; Melrose M. Jesurun, Silver Spring, and Dennis H. Matthias, Columbia, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 25, 1974, Ser. No. 482,974

Int. Cl.^{2} G01S *7/40*

U.S. Cl. 343—17.7 5 Claims



1. An apparatus for testing the coherency of an electronic device including an input and an output comprising:
- pulse means connected to the input of said electronic device for energizing said electronic device with an input series of pulses;
- first means coupled between said pulse means and said electronic device input for providing a first signal indicative of the input to said electronic device;
- second means coupled to the output of said electronic device for providing a second signal indicative of the output of said electronic device;
- detector means having first and second detector inputs and first and second detector outputs;
- said first detector input being coupled to said first means such that said detector means receives said first signal and said second detector input being coupled to said second means such that said detector means receives said second signal;
- whereby in response to said input series of pulses, a first series of signals are present at said first detector output and a second series of signals are present at said second detector output,
- means for storing each of said first series of signals and each of said second series of signals;
- a first power divider connected to said first means for providing a first power divider signal and a second divider signal which is 90° phase shifted from said first power divider signal; and
- a second power divider connected to said second means for providing third and fourth power divider signals.

3,938,151

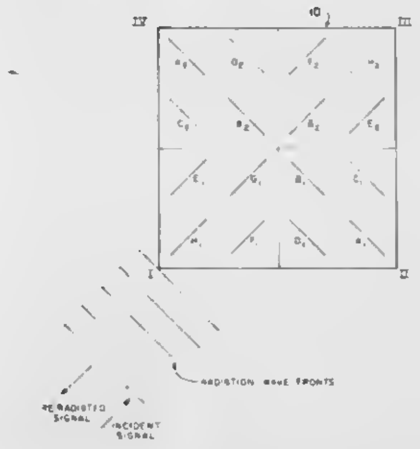
PASSIVE RADAR DECOY HAVING A LARGE CROSS SECTION

Richard S. Trenam, Adelaide, Australia, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1970, Ser. No. 70,612

Int. Cl.^{2} H01Q *15/00*

U.S. Cl. 343—18 B 4 Claims



1. A passive, high-cross section radar decoy comprising:
- a plastic balloon having a selectively predetermined volume,
- said balloon having uniformly distributed on the surface thereof a plurality of printed circuit radiators,
- said radiators being disposed and arranged in a Van Atta array configuration whereby radiant energy from a distant source received by said radiators is reradiated in the direction of the source.

3,938,152

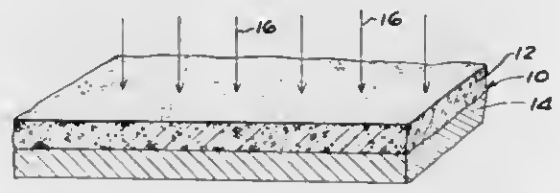
MAGNETIC ABSORBERS

Dale M. Grimes; William W. Raymond; Ralph J. Hach, and Rodger M. Walser, all of Ann Arbor, Mich., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed June 3, 1963, Ser. No. 285,128

Int. Cl.^{2} H01Q *17/00*

U.S. Cl. 343—18 A 7 Claims



1. In an absorber for minimizing reflections of electromagnetic radiation of preselected radar wave lengths in the approximate corresponding preselected frequency range of 10 megacycles to 15,000 megacycles wherein a layer of absorber material has a highly conductive planar backing with the absorber material and the backing arranged and disposed so as to establish a standing wave with a maximum magnetic field positioned within said layer in response to radiation incident upon said layer, that improvement wherein said absorber is free of static, externally-applied magnetic fields, said absorber material comprises a ferrimagnetic metallic oxide having a complex permeability the imaginary part of which is substantially greater than the real part of said permeability at frequencies within said preselected range, said material has a complex permittivity, a complex permeability and a layer thickness τ such that the product of B τ is substantially less than unity where B is the wave number of radiation within said range measured inside the absorber material and said thickness of said layer is substantially less than one quarter of a wave length measured inside said material at preselected frequencies within said range so that absorption is substantially independent of said permittivity of said material at said preselected frequencies within said range.

3,938,153

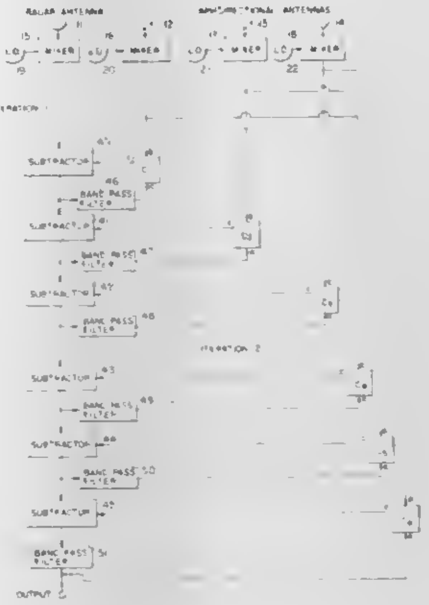
SIDELOBE CANCELLER SYSTEM

Bernard L. Lewis, Oxon Hill, and Irwin D. Olin, Potomac, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 16, 1974, Ser. No. 499,260

Int. Cl.^{2} G01S *3/06*

U.S. Cl. 343—100 LE 9 Claims



1. An interference cancellation system comprising:
- a main channel means for receiving desired signals and interference signals and forming a main channel signal;
- a plurality of auxiliary channel means for receiving primarily interference signals and forming auxiliary channel signals.
- first means coupled to said main channel means and said auxiliary channel means for comparing interference signals in the main channel means and each of the auxiliary channel means and providing cancelling signals which reduce interference in the main channel signal; and
- at least one iterative means coupled to said first means and said auxiliary channel means for comparing the main channel signal from said first means with each of the signals of the auxiliary channel means and providing cancelling signals which further reduce interference in the main channel signal.

3,938,154

MODIFIED SIDELOBE CANCELLER SYSTEM

Bernard L. Lewis, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

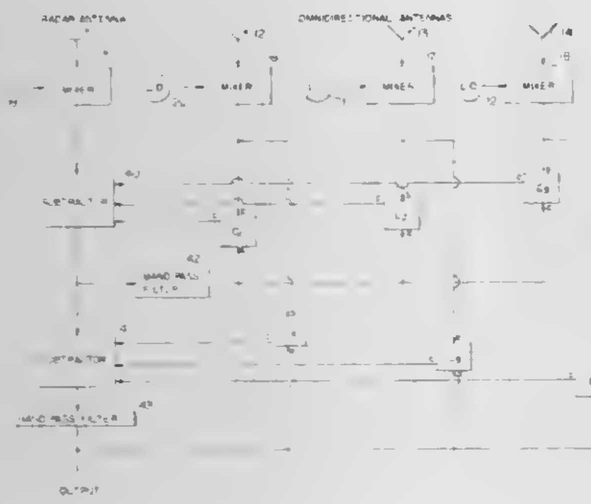
Filed Aug. 16, 1974, Ser. No. 499,374

Int. Cl.^{2} H04B *7/00*

U.S. Cl. 343—100 LE 5 Claims

1. An interference cancellation system comprising:
- a main channel means for receiving desired signals and interference signals and forming a main channel signal;
- a plurality of auxiliary channel means for receiving primarily interference signals and forming auxiliary channel signals;
- first means for reducing interference in the main channel signal comprising, a plurality of canceller means with

each one coupled to receive said main channel signal and a different auxiliary channel signal for comparing the main channel interference signal and its respective auxiliary channel signal and providing a first cancelling signal therefrom and a first subtractor means coupled to said canceller means and said main channel means for combining the first cancelling signal from all of said canceller means in parallel and subtracting said first cancelling signals from the main channel signal to form a reduced interference main signal output, each of said canceller means being connected to receive the output of the first subtractor means as the main channel interference signal: and



at least one iterative means for reducing interference in the main signal output from said first means comprising, a plurality of second canceller means with each one coupled to receive said main channel signal and a different auxiliary channel signal for comparing the main channel interference signal and its respective auxiliary signal and providing a second cancelling signal therefrom and a second subtractor means coupled to said second canceller means and said first subtractor means for combining the second cancelling signal from all of said canceller means in parallel and subtracting said second cancelling signals from the main signal output to form a main signal output of further reduced interference, each of said second canceller means being connected to receive the output of said second subtractor means as the main channel interference signal

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3,938,155

HIGH STABILITY MODULATOR FOR INSTRUMENT LANDING SYSTEMS

William E. Mears, Leawood, Kans.; Clifford E. Mueller, Wellington, and David M. Staehling, Raytown, both of Mo., assignors to Wilcox Electric, Inc., Kansas City, Mo.

Filed July 15, 1974, Ser. No. 488,582

Int. Cl.^{2} G01S *1/08*

U.S. Cl. 343—107 **6 Claims**

1. Transmitting apparatus for a radio navigation system which requires a first RF signal comprising a high frequency carrier amplitude modulated by the sum of a pair of signals of different, relatively low frequency, and a second RF signal comprising sidebands of said carrier derived from the difference between said pair of low frequency signals, said apparatus comprising:

means for generating said pair of low frequency signals;

means responsive to said pair of low frequency signals for summing the latter to provide a composite modulating signal;

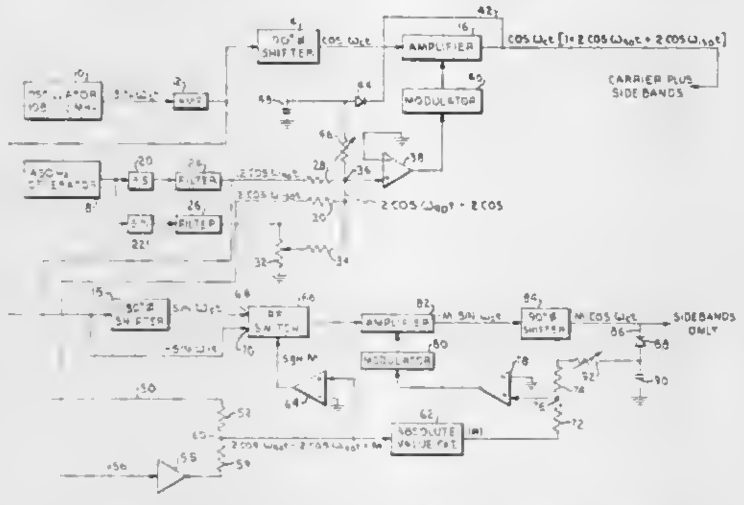
first output means responsive to said carrier and said composite modulating signal for amplitude modulating the carrier therewith to provide a carrier plus sidebands output signal presenting said first RF signal;

means responsive to said pair of low frequency signals for subtracting one from the other to provide a difference signal;

means responsive to said carrier and said difference signal for reversing the phase of the carrier with each change in the sign of said difference signal;

means for deriving a modulating signal which is the absolute value of said difference signal: and

second output means coupled with said phase reversal means and said deriving means for amplitude modulating the phase-changing carrier with said absolute value modulating signal to provide a double sideband, suppressed carrier output signal presenting said second RF signal,



said phase reversal means including means for changing the phase of said carrier, 180°, switching means for delivering either said carrier or the 180° phase-changed carrier, and comparator means coupled with said switching means and responsive to polarity changes in said difference signal for operating said switching means to cause said carrier and said 180° phase-changed carrier to be alternately delivered to said second output means.

3,938,156

RADIO COMMUNICATION TRANSMITTER

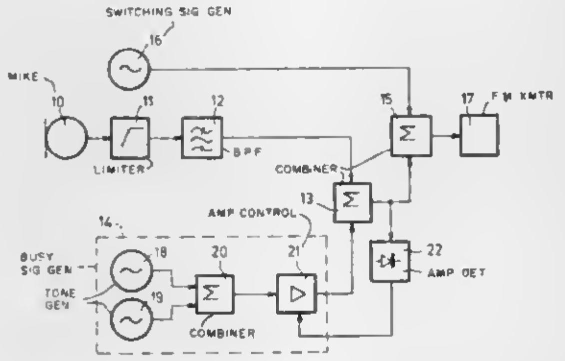
Peter L:Son Lunden, Jarfalla, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 20, 1974, Ser. No. 443,974

Claims priority, application Sweden, Feb. 28, 1973, 7302804

Int. Cl.^{2} H04B *1/02*

U.S. Cl. 343—207 **3 Claims**



1. A radio transmitter comprising:

means for providing a speech signal in a selected band,

means for generating a busy signal outside of said selected band,

means for adding said speech and busy signals to provide a sum signal,

envelope signal producing means responsive to at least said speech signal to provide an envelope signal which varies with the instantaneous speech amplitude,

means for varying the amplitude of said busy signal in accordance with said envelope signal to provide said sum signal at constant amplitude,

means for transmitting said constant amplitude sum signal in a single selected channel.

3,938,157

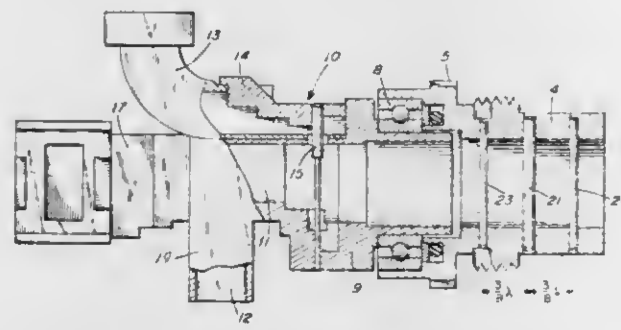
ROTATABLE RADAR ANTENNA FEED AND RECEIVER HORN

Orville G. Brickey, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1969, Ser. No. 851,158

Int. Cl.^{2} H01Q *3/12*; G01S *9/22*; H01P *5/16*

U.S. Cl. 343—756 **2 Claims**



1. A monopulse radar antenna feed comprising:

a radio frequency energy comparator having a first sum port, a difference port, and a second sum output means including a coupling probe, said comparator being supported on the radar antenna by a first sum waveguide and a difference waveguide coupled in alignment with said first sum port and said difference port, respectively;

a cylindrical housing rotatably mounted to said comparator, and

an enlarged susceptor pin and first and second smaller susceptor pins passing through diameters of said cylindrical housing, said susceptor pins being parallel with one another whereby linearly polarized energy radiated from said feed is rotated as said cylindrical housing is rotated.

3,938,158

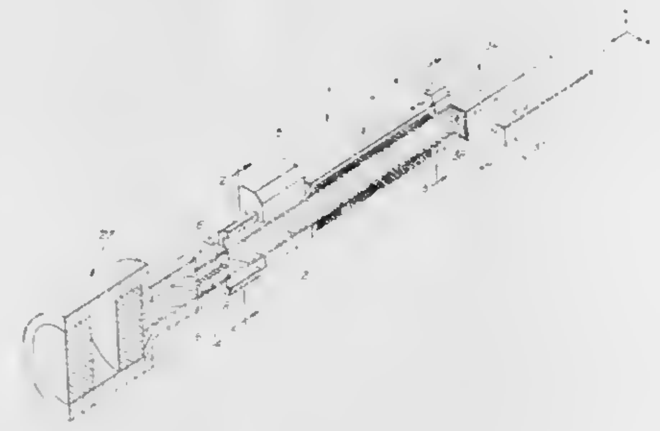
ANTENNA ELEMENT FOR CIRCULAR OR LINEAR POLARIZATION

James D. Birch, Townsend; Max C. Mohr, Rockport, both of Mass., and Stephen R. Monaghan, Marshall Islands, assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 19, 1973, Ser. No. 426,388

Int. Cl.^{2} H01Q *13/02*; H01P *1/17*, *1/40*

U.S. Cl. 343—756 **3 Claims**



1. An antenna element comprising:

a. a waveguide means for passing radio frequency energy introduced thereto and for radiating such radio frequency energy;

b. means for transforming the polarization of the radio frequency energy as such energy passes through the waveguide means for radiating such radio frequency energy selectively with either linear or circular polarization, such transforming means including

i a first and a second nonreciprocal quarter-wave plate having field orientations within the waveguide means effectively 45° with respect to each other;

ii. a third nonreciprocal quarter-wave plate disposed between the first and the second nonreciprocal quarter-wave plate:

iii. a reciprocal quarter-wave plate disposed between thee radiating end of the waveguide means and the third nonreciprocal quarter-wave plate: and

iv. means for operating the third nonreciprocal quarter-wave plate in a selected one of a plurality of manners, such means including means for switching to align the field orientation of the third nonreciprocal quarter-wave plate with the field orientation of the first quarter-wave plate when a first one of the plurality of manners is selected, for switching to reverse the field orientation of the third nonreciprocal quarter-wave plate when a second one of the plurality of manners is selected, and for switching to eliminate the field of the third nonreciprocal quarter-wave plate when a third one of the plurality of manners is selected, and,

c. feed means connected to the waveguide means for introducing linearly polarized radio frequency energy within the waveguide means, such feed means including means for absorbing linearly polarized radio frequency energy having a polarization orthogonal to the polarization of the introduced radio frequency energy.

3,938,159

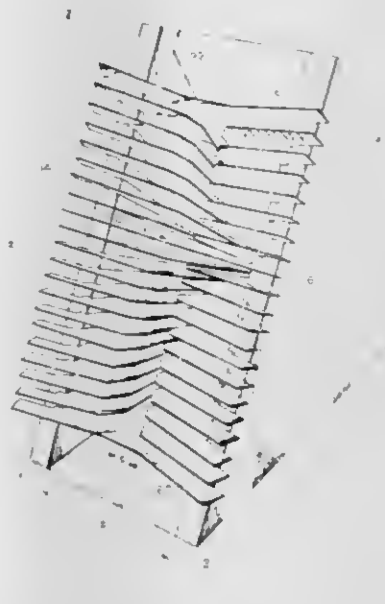
DUAL FREQUENCY FEED HORN USING NOTCHED FINS FOR PHASE AND AMPLITUDE CONTROL

James S. Ajinka, Fullerton, and Kenneth L. Schaffer, Diamond Bar, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 17, 1974, Ser. No. 506,830

Int. Cl.^{2} H01Q *13/02*, *15/24*

U.S. Cl. 343—756 **7 Claims**

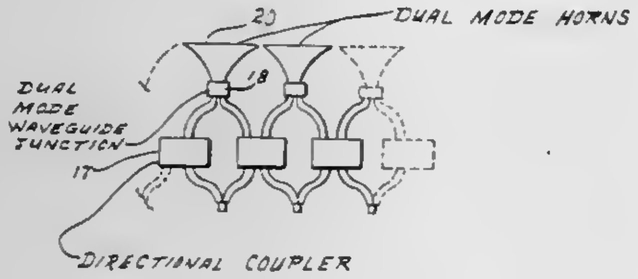


1. An antenna element comprising a horn-type radiating element, means for exciting said horn-type radiating element with two orthogonally polarized signals from a higher and a lower frequency band, and means for providing a plurality of conductive fin pairs on opposing inner surfaces of said horn-type radiating element in a plane parallel to that of the polarization of said signal from the higher frequency band, said conductive fin pairs having a plurality of notches disposed along the adjacent edges thereof having a nominal depth of one-quarter wavelength at the frequency of said polarized signal from said higher frequency band.

3,938,160
PHASED ARRAY ANTENNA WITH ARRAY ELEMENTS COUPLED TO FORM A MULTIPLICITY OF OVERLAPPED SUB-ARRAYS

Robert J. Mailloux, Wayland, and Peter R. Franchi, Winchester, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 7, 1974, Ser. No. 495,475
Int. Cl.² H01Q *3/26*
U.S. Cl. 343—778 **4 Claims**

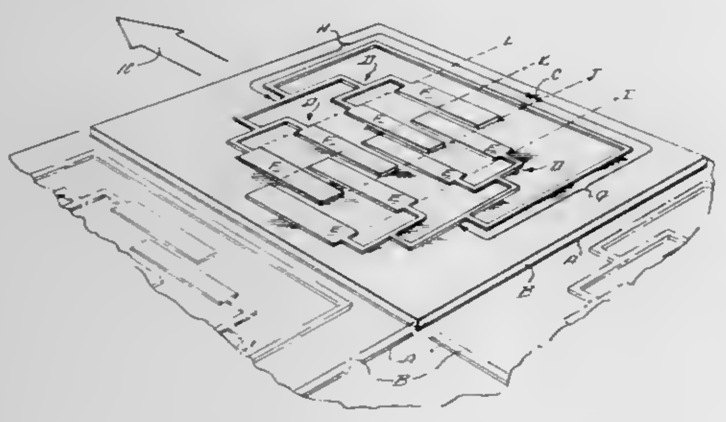


1. A phased array antenna comprising
an array of radiating elements,
a sum and difference hybrid connected to the input of each radiating element,
a microwave transmission line feed circuit connected to deliver electromagnetic wave power to each sum and difference hybrid,
a coupling means associated with each radiating element for coupling discrete amounts of the even and odd mode electromagnetic wave power propagating through the feed circuit of its associated radiating element with the electromagnetic wave power propagating through the feed circuits of each of the nearest adjacent radiating elements, and
means for establishing a given phase relationship between even and odd mode power at the aperture of each radiating element.

3,938,161
MICROSTRIP ANTENNA STRUCTURE

Gary G. Sanford, Boulder, Colo., assignor to Ball Brothers Research Corporation, Boulder, Colo.

Filed Oct. 3, 1974, Ser. No. 511,706
Int. Cl.² H01Q *9/38*
U.S. Cl. 343—829 **23 Claims**

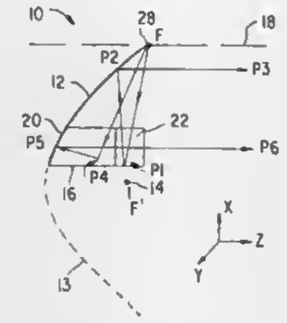


1. An antenna structure, said structure comprising:
an electrically conductive ground plane surface,
a layer of electrically conductive radiator elements having respectively corresponding feed line elements connected thereto,
a dielectric substrate having a predetermined thickness disposed between said ground plane surface and said layer,
said radiator elements comprising a first set of spaced apart radiators having respectively associated resonant axes directed in a first direction away from the connection of said feed line elements respectively associated therewith and a second set of spaced apart radiators having respectively associated resonant axes directed in a second direction opposite to said first direction away from the connection of said feed line elements respectively associated therewith,
the indvidual radiators of said first and said second sets of spaced apart radiators being interleaved, and
said feed line elements being connected between a common feed point and the individual ones of said radiator elements to provide electrical signals thereto in a transmit mode and to receive electrical signals therefrom in a receive mode said electrical signals having predetermined relative phase relationships for producing a correspondingly predetermined antenna response pattern.

3,938,162
VARIABLE BEAMWIDTH ANTENNA

Richard F. Schmidt, Seabrook, Md., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Aug. 27, 1974, Ser. No. 500,979
Int. Cl.² H01Q *19/12, 15/14*
U.S. Cl. 343—840 **26 Claims**



1. An antenna comprising:
a parabolic cylindrical main reflector having a first focal axis;
a cylindrical sub-reflector having a second focal axis;
said main reflector and sub-reflector being positioned with said first and second axes orthogonally and a point source on said second axis being an image of a line source on said first axis; and
a multibeam feed for transducing electromagnetic waves, said feed being positioned in a plane of an Airy disc of the antenna, said waves being reflected between said subreflector and said main reflector, said Airy disc lying on said second focal axis and said plane being oblique to said axes.

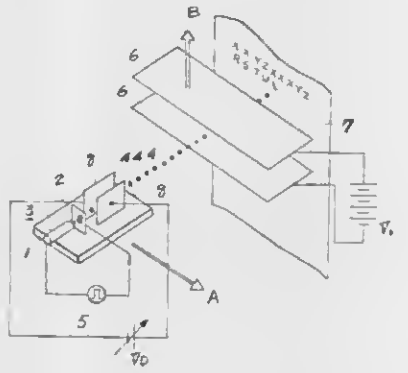
3,938,163
PRINTED PATTERN INCLINATION CONTROL IN INK JET PRINTER

Isao Fujimoto, Kunitachi; Takeshi Kasubuchi, and Masahiko Aiba, both of Nara, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Sharp Kabushiki Kaisha, both of Osaka, Japan

Filed Jan. 17, 1974, Ser. No. 434,217
Claims priority, application Japan, Jan. 17, 1973, 48-7495
Int. Cl.² G01D *15/18*
U.S. Cl. 346—75 **9 Claims**

1. An ink jet system printer comprising
a nozzle for issuing a stream of ink drops at a fixed velocity,
a charging electrode for charging the ink drops in accordance with signals to be recorded,
a pair of high voltage deflection plates having a constant high voltage electric field therebetween and thus deflecting the ink drops passing between said plates in a first coordinate direction in accordance with the amplitudes of the individual charges on the ink drops,

a record receiving member for forming images indicative of the signals by means of the deflected ink drops,
carriage means mounting said nozzle and said charging electrode for relatively moving the nozzle, said charging electrode and said ink drops with reference to the record receiving member in a second coordinate direction resulting in an inclination of said images, and

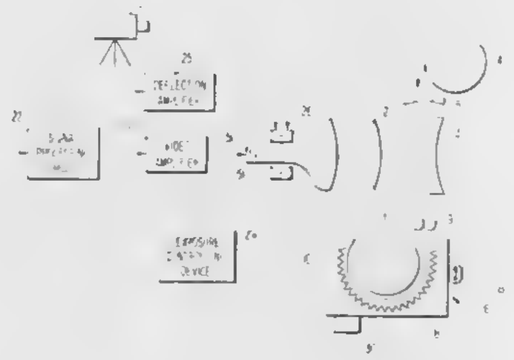


a pair of compensation electrodes mounted on said carriage means deposited between the charge electrode and the high voltage deflection plates having a compensation electric field of predetermined constant value in a different direction from the electric field formed by the high voltage deflection plates deflecting ink drops passing between said plates to modify said resulting inclination of said images in accordance with said value of said compensation field.

3,938,164
DEVICE FOR THERMALLY RECORDING A CATHODE-RAY TUBE IMAGE

Masahiro Ohnishi; Yoshihiko Okamoto, and Takahiro Ohta, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 29, 1974, Ser. No. 501,578
Claims priority, application Japan, Aug. 29, 1973, 48-97053
Int. Cl.² G01D *15/10;* G03B *27/72*
U.S. Cl. 346—110 R **4 Claims**

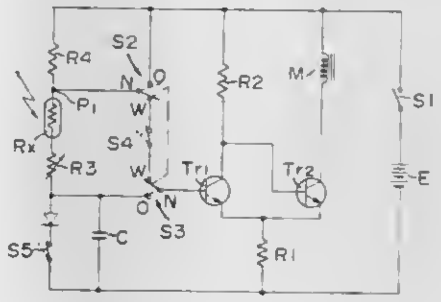


1. A device for recording a cathode-ray tube image on a thermally developable recording medium comprising:
means for generating a cathode-ray tube image;
means for supplying a thermally developable recording medium so as to expose said thermally developable recording medium to the image of said cathode-ray tube; and
means for thermally developing said exposed thermally developable recording medium; and including
means for detecting the temperature of the thermal developing means to convert the detected temperature into an electrical signal; and
means responsive to said electrical signal for controlling the degree of exposure of said thermally developable recording medium to the image of said cathode-ray tube.

3,938,165
PHOTOGRAPHIC CAMERA WITH AUTOMATIC EXPOSURE CONTROL MEANS

Seizi Asano, Okegawa, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed June 24, 1975, Ser. No. 589,846
Claims priority, application Japan, July 23, 1974, 49-87510[U]
Int. Cl.² G03B *7/08, 17/38*
U.S. Cl. 354—50 **8 Claims**

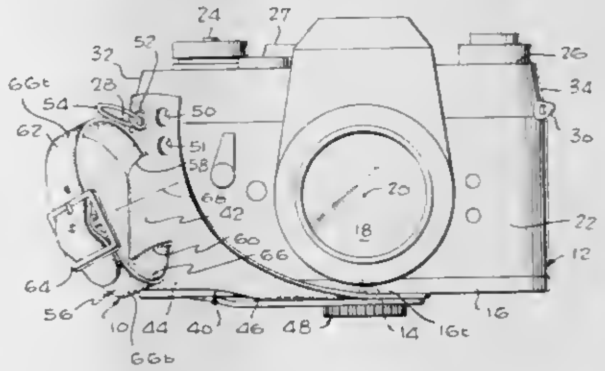


1. A photographic camera comprising,
a camera body containing a shutter mechanism therein and having a shutter release button thereon to be depressed for operating said shutter mechanism,
an automatic exposure control means provided in the camera body for controlling said shutter mechanism in accordance with the scene brightness measured thereby to obtain a photograph of normal exposure,
a shutter release locking means provided in the camera body for locking said shutter mechanism to prevent the same from operating when the scene brightness is below a predetermined level,
a self-timer provided in the camera body,
a self-timer starting member provided in the camera body and operatively connected to said self-timer for starting the operation of the self-timer, and
a shutter locking nullifying lever pivotally mounted on the camera body movable between a first position where the shutter release mechanism is capable of being locked by said shutter release locking means and a second position where the effect of the shutter release locking means is nullified,
said self-timer starting member being capable of being operated when said shutter locking nullifying lever is in said second position.

3,938,166
CAMERA SIDE STRAP

Conrad Beebe Sloop, 9092 Bermuda Drive, Huntington Beach, Calif. 92646

Filed Oct. 10, 1974, Ser. No. 513,761
Int. Cl.² G03B *29/00*
U.S. Cl. 354—82 **10 Claims**



1. A camera assembly comprising:
a camera having a body with front, rear, side, top, and bottom walls and having means defining an optical axis

portion which extends in a direction substantially normal to the plane of said front wall through the center portion thereof,

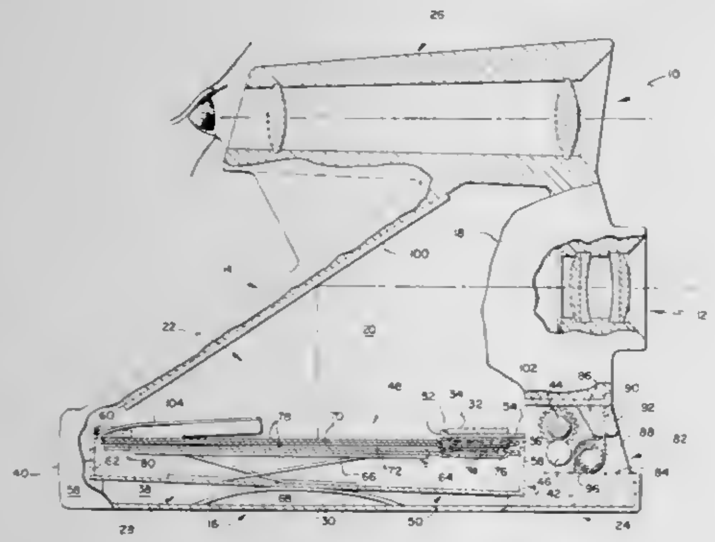
hand strap means forming a loop for closely receiving a plurality of fingers; and

means coupled to said camera body for holding said hand strap means to said camera body near one side of said camera, said holding means holding said hand strap means with one side of said loop next to said camera body to allow fingers extending through the loop to grasp the camera body, and with the axis of the loop extending at a forward-upward incline as seen in a side elevation view, and with the forwardly-extending portion of the axis of the loop angled inwardly toward the optical axis as seen in a plan view.

3,938,167
FILM CATCHER

John N. Amey, Winchester, and Andrew S. Ivester, Charlestown, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 2, 1974, Ser. No. 466,414
Int. Cl.² G03B *17/50*
U.S. Cl. 354—86 **12 Claims**



1. Photographic apparatus for processing and releasably retaining an exposed film unit of the type including a plurality of superposed layers including photosensitive and transparent layers, and a processing composition including an opacifying agent which is adapted to be spread across the photosensitive layer comprising:

means for supporting the film unit in position for exposure of the photosensitive layer;

pressure-applying means including a pair of juxtaposed members between which the exposed film unit is adapted to be advanced leading edge first during spreading of the processing composition;

means defining an exit opening located forwardly of said pressure-applying means through which the film unit is adapted to be advanced to the exterior of said photographic apparatus;

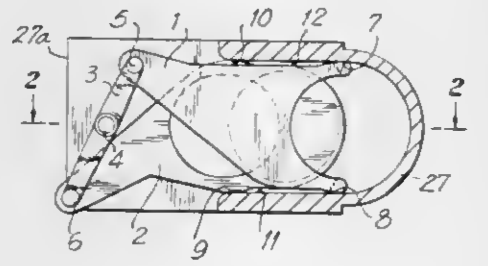
resilient means mounted on the same side of said pressure-applying means as said exit opening for frictionally engaging one side of the film unit as it passes through said pressure-applying means; and

opaque means mounted adjacent said exit opening for movement in a first direction wherein it progressively covers at least a predetermined area of the transparent layer of the film unit as it passes through said exit opening for preventing ambient actinic light from being transmitted by portions of the transparent layer forward of said pressure-applying members to portions of the transparent layer rearwardly of said pressure-applying means, and in a second direction, generally opposite said first direction wherein it cooperates with said resilient means for releasably retaining an end portion of the film unit after the film unit has moved out of engagement with said pressure-applying means.

3,938,168
HIGH SPEED CAMERA SHUTTER

Karl-Heinz Lange, Bunde, Germany, assignor to Balda-Werke, Bunde, Germany

Filed Sept. 20, 1974, Ser. No. 507,914
Claims priority, application Germany, Feb. 25, 1974, 2408932
Int. Cl.² G03B *9/40*
U.S. Cl. 354—247 **11 Claims**



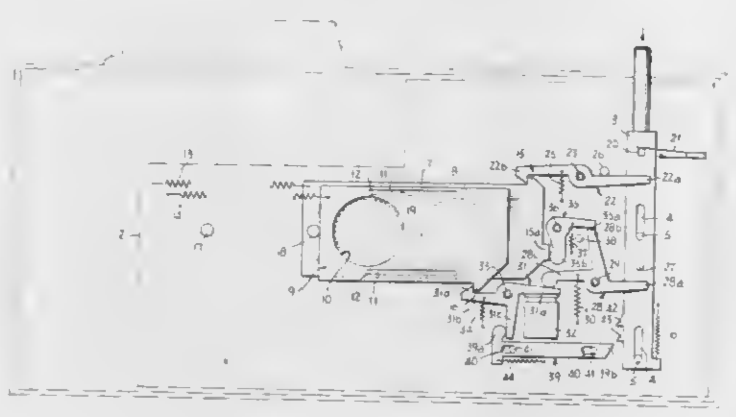
1. A high speed camera shutter comprising first and second asymmetric substantially planar shutter plates arranged in tandem, a first and second groove means corresonding respectively to said first and second shutter plates, each of said first and second shutter plates being longitudinally slidable between first and second positions in said respective first and second groove means along respective pairs of substantially opposed points of each of said first and second shutter plates, said first shutter plate having a substantially circular aperture therein for defining an exposure clearance area, said second shutter plate having a substantially semicircular recess in the perimeter thereof for concomitantly defining an exposure clearance area therein, said exposure clearance areas of said first and second shutter plates being substantially alignable for defining a shutter opening when said first and second shutter plates are respectively in their second positions, a pivotally mounted rocker lever oscillatable on its pivotal axis including first and second lever arms, said first lever arm thereof having a longer length relative to the pivotal axis of said rocker lever than said second lever arm so as to optimize said shutter opening when said first and second shutter plates are respectively in their second positions, said first shutter plate being pivotally connected to a remote end of said first rocker lever arm, said second shutter plate being pivotally connected to a corresponding remote end of said second rocker lever arm, said first and second shutter plates being longitudinally slidable in response to a pivoting movement of said rocker lever in said respective first and second groove means, and mechanical means for oscillating said rocker lever for thereby sliding said first and second shutter plates in their respective first and second groove means between their respective first and second positions thereof.

3,938,169
SHUTTER RELEASE STOP DEVICE FOR AN ELECTRIC SHUTTER

Kiyoshi Kitai, Tokyo, Japan, assignor to Seiko Koki Kabushiki Kaisha, Japan

Filed Apr. 10, 1974, Ser. No. 459,720
Claims priority, application Japan, Apr. 11, 1973, 48-42697
Int. Cl.² G03B *9/40, 9/62*
U.S. Cl. 354—268 **5 Claims**

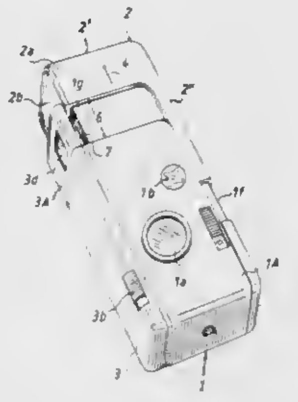
1. In a shutter for a camera; a shutter blade means movable from a cocked position to an uncocked position for opening and closing an exposure aperture; operating mechanism for operating the shutter blade means comprising a release member operable for initiating taking of an exposure, an electromagnet for controlling the exposure time, a locking member for for selectively locking said release member to preclude initiating taking of an exposure; detecting means detecting a first condition when said shutter blade means is in said uncocked position and for detecting a secod condition when said electromagnet is not energized sufficiently to control exposure time; means controlled by said detecting means for rendering said locking means effective when at least one of the first and second conditions is present.



3,938,170
STILL CAMERA WITH EXPANSIBLE HOUSING

Alfred Winkler, Munich; Dieter Engelsmann, Unterhaching, and Roll Schröder, Baldham, all of Germany, assignors to AGFA-Gevaert, AG, Leverkusen, Germany

Filed July 23, 1974, Ser. No. 491,144
Claims priority, application Germany, July 31, 1973, 2338794
Int. Cl.² G03B *17/02*
U.S. Cl. 354—288 **9 Claims**

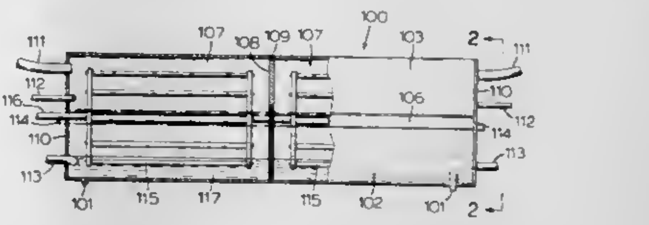


1. In a photographic apparatus, particularly in a still camera, a combination comprising a housing having a rear side and including a first section and a second section which is supported by and is reciprocable relative to said first section between first and second positions in which one of said sections respectively conceals and exposes a portion of the other of said sections, said first and second sections respectively having first and second walls which are spaced apart in at least one of said positions of said second section whereby said walls define at least one slot; and a barrier located at the rear side of said housing, supported by one of said sections and overlying at least a portion of said slot in said one position of said second section.

3,938,171
PHOTOGRAPHIC DEVELOPER APPARATUS

Raymond Joseph Masygan, Burlington, Canada, assignor to Alex E. Clark Limited, Islington, Canada

Division of Ser. No. 80,836, Oct. 15, 1970, abandoned. This application Nov. 20, 1973, Ser. No. 417,523
Int. Cl.² 603D *13/00*
U.S. Cl. 354—299 **2 Claims**



1. A tank, for processing sheets of photographic material or film mounted circumferentially on a reel rotatably mountable in the tank, comprising:

a horizontally oriented closed tubular cylinder having a cylindrical wall defining a chamber, the cylinder being divided into an upper section and a lower section, the upper section being hinged to the lower section and openable for access to the chamber;

means to feed air into the upper portion of the chamber;

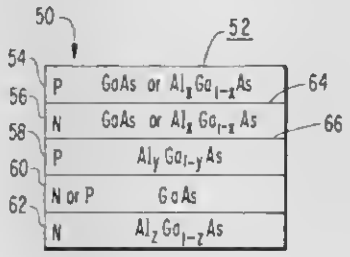
means to feed liquid into the lower portion of the chamber;

the wall of the cylinder being interrupted in the area of the junction between the upper and lower sections thereof to define a longitudinal slot, a flap being freely hinged on the wall and covering the slot, whereby air in the chamber may pass out therefrom through the slot and liquid in the lower portion of the chamber may, on rotating the cylinder on the longitudinal axis thereof, pass out from the chamber through the slot.

3,938,172
SEMICONDUCTOR INJECTION LASER

Harry Francis Lockwood, New York, N.Y., assignor to RCA Corporation, New York, N.Y.

Filed May 22, 1974, Ser. No. 472,292
Int. Cl.² H01S *33/00;* H01L *29/161*
U.S. Cl. 357—18 **11 Claims**



1. A semiconductor injection laser comprising

a body of semiconductor material having a pair of spaced opposed end surfaces forming a Fabry-Perot cavity, said body having four contiguous regions extending between said end surfaces with each region being of a conductivity type opposite to that of the adjacent region so as to provide three spaced PN junctions extending between said end surfaces,

at least a portion of at least one of the regions along one of the outer PN junctions being a recombination zone where light is generated upon the recombination of oppositely charged carriers when the PN junctions are forwardly biased to inject one type of charged carriers into said recombination zone,

means along at least one side of the recombination zone for confining a portion of the generated light in said recombination zone, and means along at least one side of the recombination zone for confining the injected charged carriers in said recombination zone.

3,938,173
OPTICALLY COUPLED SEMICONDUCTIVE SWITCHING DEVICES

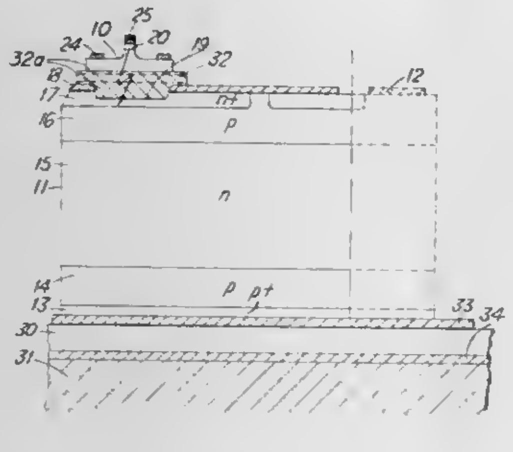
Thomas M. Jackson, Bishops Stortford; Alan D. Brisbane, Epping; Jack R. Peters; Rudolf A. H. Heinecke, both of Harlow, and David J. Moule, Saffron Walden, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 3, 1974, Ser. No. 466,571

Claims priority, application United Kingdom, May 4, 1973, 21241/73

Int. Cl.² H01L *31/12, 29/74*

U.S. Cl. 357—19 **5 Claims**



1. An optically coupled semiconductor switching device comprising:

a light-emitting diode having a mesa construction;

a triggerable pnpn semiconductor switching structure; and a preformed intervening light transmitting dielectric material coupled between said switching structure and said light-emitting diode for providing electrical insulation and optical coupling between said diode and said structure, said preformed intervening light transmitting dielectric material comprising a first mass of dielectric material coated on opposite sides with a layer of a second dielectric material, said second material having a lower melting point than said first mass and providing a bond between said first mass and said diode and between said first mass and said pnpn structure.

3,938,174
SEMICONDUCTOR INTEGRATED CIRCUIT AND METHOD OF MANUFACTURE

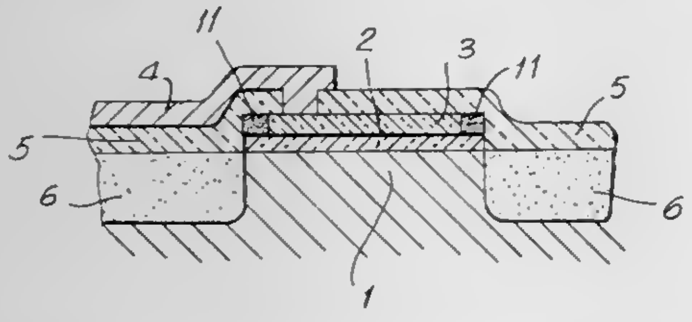
Tadashi Sano, Suwa, Japan, assignor to Kabushiki Kaisha Seikosha, Tokyo, Japan

Filed Jan. 9, 1974, Ser. No. 432,116

Claims priority, application Japan, Jan. 9, 1973, 48-4934

Int. Cl.² H01L *29/78, 27/02, 29/34, 29/04*

U.S. Cl. 357—23 **3 Claims**



1. In an insulated gate semiconductor structure, a substrate bearing at least two semiconductor devices, each device including a source and a drain defining a channel therebetween, a gate insulating film overlying said channel, a polycrystalline silicon gate overlying said gate insulating film, a gate electrode connected to said gate, and stopper regions defined by impurity diffused into said substrate around each device and between said respective devices for inhibiting the formation of inversion layers in said substrate between the source and drain of each device between respective devices, the improvement comprising a stopper-diffused portion in said gate at at least one side of said gate in the channel-width direction adjacent a stopper region, said gate electrode being connected only to said stopper-free remainder of said gate, said stopper-diffused portion having impurity diffused therein of a conductivity-type corresponding to the conductivity-type of the impurity defining said stopper region and opposite in conductivity-type to at least the central region of said gate in the channel-width direction, said gate electrode being connected only to said region of said gate free of said stopper impurity, whereby a P-N junction is formed at at least said one side of said gate, and the threshold voltage necessary for producing an inversion layer under said one side of said gate is substantially greater than under the remainder of said gate.

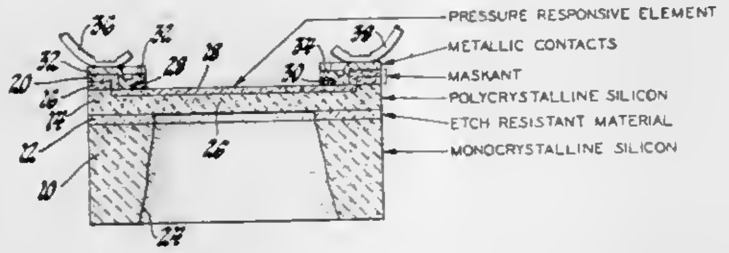
3,938,175
POLYCRYSTALLINE SILICON PRESSURE TRANSDUCER

James M. Jaffe, Southfield, and John Y. W. Seto, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 463,515, April 24, 1974, abandoned. This application Nov. 25, 1974, Ser. No. 526,580

Int. Cl.² H01L *29/84, 29/06, 29/04*

U.S. Cl. 357—26 **2 Claims**



1. A semiconductor pressure transducer having a thin vapor deposited polycrystalline silicon diaphragm providing an extremely sensitive and temperature stable device, said pressure transducer comprising:

a base member having a similar coefficient of thermal expansion to that of silicon, said base member having two major end surfaces and an aperture extending therebetween;

a layer of etch-resistant material on one of said base member end surfaces, said etch-resistant material having a crystallographic structure so as to promote vapor deposition of polycrystalline silicon thereon;

a thin, vapor deposited intrinsic polycrystalline silicon film on said etch-resistant material and covering said aperture in said base member thereby providing an extremely sensitive pressure responsive diaphragm bridging said aperture, said polycrystalline silicon diaphragm being less than about 10 microns thick and having a resistivity of at least 10^6 ohm-centimeters, said diaphragm being free of any material having a dissimilar coefficient of thermal expansion thereby providing improved temperature stability for said pressure transducer;

a pressure responsive electronic device formed in centrally located portions of said polycrystalline silicon diaphragm wherein said device is automatically electrically isolated by the surrounding high resistivity polycrystalline silicon; and

means for making electrical connection to said pressure responsive electronic device thereby providing electrical access to said pressure transducer.

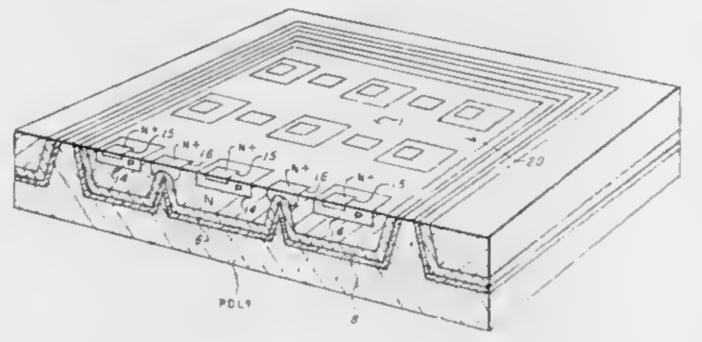
3,938,176
PROCESS FOR FABRICATING DIELECTRICALLY ISOLATED SEMICONDUCTOR COMPONENTS OF AN INTEGRATED CIRCUIT

Benjamin Johnston Sloan, Jr., Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 24, 1973, Ser. No. 400,492

Int. Cl.² H01L *27/12*

U.S. Cl. 357—49 **6 Claims**



1. A dielectrically isolated semiconductor component of an integrated circuit in a substrate, comprising:

a. a dielectrically isolated pocket of monocrystalline semiconductor material of one conductivity type in said substrate, said isolation being furnished by a layer of insulating material between said pocket and the remainder of said substrate, said insulating layer having selected spaced ridges in close proximity to one surface of said pocket;

b. a region of said one conductivity type but of greater conductivity in said pocket and adjacent said insulating layer;

c. a plurality of rows of semiconductor regions of the opposite conductivity type in said pocket; and, d. a plurality of rows of high conductivity regions of said one conductivity type in said pocket, alternating with said rows of semiconductor regions, said high conductivity regions extending from the surface of said pocket in contact with said region of high conductivity, along said ridges.

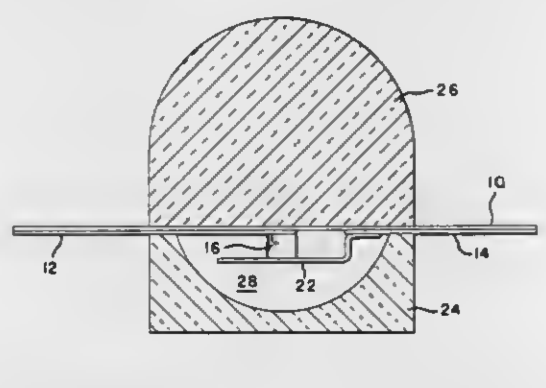
3,938,177
NARROW LEAD CONTACT FOR AUTOMATIC FACE DOWN BONDING OF ELECTRONIC CHIPS

Niels Junior Hansen, Camp Hill, and Ronald James Capp, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 373,227, June 25, 1973, abandoned. This application Apr. 29, 1974, Ser. No. 465,383

Int. Cl.² H01L *23/28*

U.S. Cl. 357—72 **14 Claims**



1. In combination with an electronic chip having at least one metallic bonding pad thereon and associated circuitry for the chip, an improved lead frame assembly comprising:

a thin flexible substrate of insulating material, and

at least one narrow lead printed on said substrate in alignment with a respective pad of said chip, each said lead having a width in the range of 23% to 35% of the width of said chip.

3,938,178
PROCESS FOR TREATMENT OF SEMICONDUCTOR

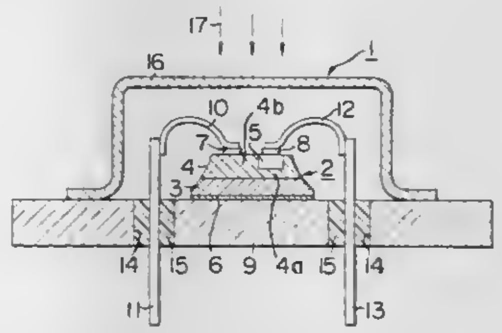
Shunji Miura, Higashikurume, and Toshio Kawamata, Fujimi, both of Japan, assignors to Origin Electric Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1972, Ser. No. 316,579

Claims priority, application Japan, Dec. 22, 1971, 46-104403

Int. Cl. B01j *17/00*

U.S. Cl. 357—91 **9 Claims**



1. A process for imparting desirable characteristics to transistor devices of the type having a base region exposed at one surface of said transistor and an emitter region positioned at one side of said base region between an emitter electrode and a non-exposed, masked portion of said base region, said exposed base region being unmasked, and said emitter electrode being of electron ray absorptive material, said process comprising the steps of, irradiating the transistor device with electron rays directed towards said one side of said base region and into said exposed portion of said base region but with said emitter electrode masking said masked portion of said base region, said electron rays being of sufficient energy to produce recombination centers in the unmasked base portion while leaving the masked base portion substantially free of lattice defects, and thereafter heat treating said transistor device.

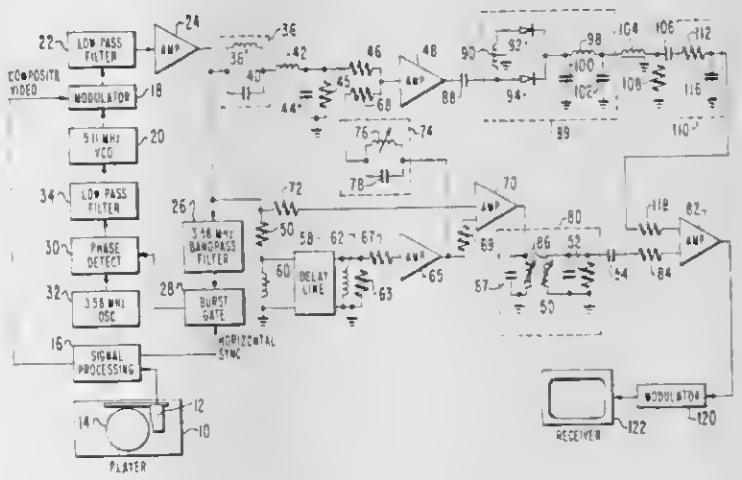
3,938,179
COMB FILTER FOR VIDEO PROCESSING

John Gordon Amery, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,446

Int. Cl.² H04N *9/535, 9/42, 5/76*

U.S. Cl. 358—4 **13 Claims**



1. In a system receptive to a first composite video signal having a nominal line frequency and including a luminance signal component occupying a given band of frequencies and a chrominance signal component interleaved therewith within only a portion of said given band, said chrominance component being in the form of sidebands of a subcarrier at a first frequency; apparatus for transcoding said first composite video signal to a second composite video signal having a chrominance signal component in the form of sidebands of a subcarrier at a second frequency comprising:

means for receiving said first composite video signal;

means for frequency translating the constituent frequency portions of said first composite video signal such that a portion of said translated signal has a chrominance subcarrier at a frequency corresponding to said second frequency, said frequency translating means comprising means for amplitude modulating oscillations of a third frequency in accordance with the output of said receiving means;

band rejection filter means coupled to said translating means for providing attenuation to said frequency translated signal about a frequency corresponding to the sum of said first and third frequencies;

delay means coupled to said translating means for providing a predetermined delay, substantially corresponding to a period at said nominal line frequency, to signals passing therethrough, said delay means having a passband of lesser bandwidth than said luminance signal component but of greater bandwidth than said chrominance signal component and encompassing said second frequency;

first comb filter means responsive to signals provided by said band rejection filter means and said delay means for forming a luminance signal component that is substantially free of chrominance signals;

second comb filter means responsive to signals provided by said frequency translating means and said delay means for forming a frequency translated chrominance signal component that is substantially free of luminance signals; and

means for combining signals formed by the respective first and second comb filter means for providing said second composite video signal.

3,938,180

COLOR TELEVISION SIGNAL RECORDING EMPLOYS CHROMINANCE BELOW LUMINANCE SPECTRUM AND COLOR BURST TO CORRECT TIMING VARIATIONS

Ichiro Arimura, Kyoto; Hiroshi Taniguchi, Hirakata, and Hiromichi Tanaka, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

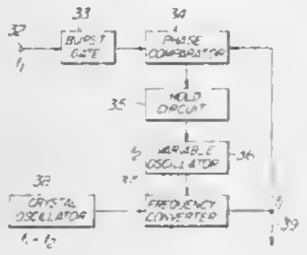
Continuation of Ser. No. 163,272, July 16, 1971, abandoned. This application Feb. 26, 1974, Ser. No. 445,922

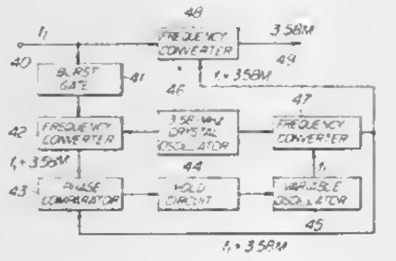
Claims priority, application Japan, July 20, 1970, 45-64105; Dec. 9, 1970, 45-109905

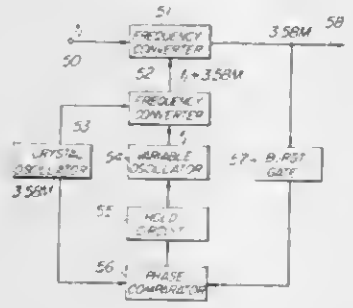
Int. Cl.² H04N *5/76, 9/02*

U.S. Cl. 358—8 **3 Claims**

1. A signal processing system for removing a jitter component in a modulated color signal, which is previously converted into a low band signal, of a composite color television signal comprising a variable oscillator, the oscillation frequency and phase of said variable oscillator being controlled by an applied control signal, a stable and fixed oscillator providing an output of higher frequency than the oscillation frequency of said variable oscillator, first frequency converter means connected to said variable oscillator and fixed oscillator for converting the output of said variable oscillator into a higher frequency signal by means of said higher frequency of said fixed oscillator, phase comparator means receiving the output of said first frequency converter means and a reference signal for producing an error signal according to the phase difference between the output of said first frequency converter means and the reference signal, means for applying said error signal to said variable oscillator as said control signal to control the oscillation frequency and phase of said variable oscillator, said oscillation frequency being lower than that of said reference signal, second frequency converter means connected to said first frequency converter means and receiving the modulated color signal for producing a difference signal of the output of said first frequency converter means and the modulated color signal, means for separating a burst signal from the modulated color signal, third frequency converter means connected to said burst signal separating means and fixed oscillator for converting said separated burst signal into a higher frequency signal by means of said higher frequency of said fixed oscillator, and means for connecting said converted burst signal to said phase comparator as said reference signal.







2. A signal processing system for a composite color television signal comprising: means for separating a luminance signal from a color signal including a color burst signal in the standard color television signal, means for frequency modulating the separated luminance signal, first frequency converter means for frequency converting the separated color signal into a first signal of a frequency belonging to a low band of a frequency band of the modulated luminance signal, first mixer means for mixing said modulated luminance signal and said first signal, means for recording and reproducing a mixed output signal of said mixer means in and from a recording medium, means for separating said modulated luminance signal from said first signal in the reproduced mixed signal which has a jitter component, demodulator means for demodulating said reproduced and separated modulated luminance signal, a signal source for generating a second signal of a frequency equal to that of the color subcarrier of the standard color television signal, second frequency converter means receiving said reproduced and separated first signal and said second signal for frequency converting said reproduced and separated first signal into a third signal of a higher frequency, means for separating the color burst signal from said third signal, variable oscillator means having a center frequency substantially equal to that of said first signal, the oscillation frequency and phase of said variable oscillator means being controlled by an applied control signal, third frequency converter means receiving the output of said variable oscillator means and said second signal for frequency converting said second signal into a fourth signal of a higher fequency, phase comparator means for comparing the phase of said color burst signal with that of said fourth signal and producing an output according to the phase difference therebetween, means for applying said output of said phase comparator means to said variable oscillator means as said control signal, fourth frequency converter means receiving said fourth signal and said reproduced and separated first signal for frequency converting said reproduced and separated first signal into a fifth signal of a frequency equal to that of the color subcarrier of the standard color television signal, and second mixer means for mixing said fifth signal and the demodulated luminance signal derived from said demodulator means to obtain the standard color television signal.

3. A signal processing system for a composite color television signal comprising: means for separating a luminance signal from a color signal including a color burst signal in the standard color television signal; means for frequency modulating the separated luminance signal; first frequency converter means for frequency converting the separated color signal into a first signal of a frequency belonging to a low band of a frequency band of the modulated luminance signal; first mixer means for mixing said modulated luminance signal and said first signal; means for recording and reproducing a mixed output signal of said mixer means in and from a recording medium; means for separating said modulated luminance signal from said first signal in the reproduced mixed signal which has a jitter component; demodulator means for demodulating said reproduced and separated modulated luminance signal; a signal source for generating a second signal; variable oscillator means having a center frequency substantially lower than that of said second signal, the oscillation frequency and phase of said variable oscillator means being controlled by an applied control signal; second frequency converter means receiving an output of said variable oscillator means and said second signal for frequency converting said output of said variable oscillator means into a third signal, the frequency of which is higher than that of said first signal by the frequency of the color subcarrier of the standard color television signal, third frequency converter means receiving said third signal and said reproduced and separated first signal for frequency converting said reproduced and separated first signal into a fourth signal of a frequency equal to that of the color subcarrier of the standard color television signal; means for separating a color burst signal from said fourth signal; phase comparator means for comparing the phase of said second signal with that of said color burst signal and producing an output according to the phase difference therebetween; means for applying said output of said phase comparator means to said variable oscillator means as said control signal, a single closed loop for controlling the oscillation frequency and phase of said variable oscillator consisting of said second frequency converter means, third frequency converter means, color burst signal separating means, phase comparator means and applying means; and second mixer means for mixing said fourth signal and the demodulated luminance signal derived from said demodulator means to obtain the standard color television signal, whereby the oscillation frequency of said variable oscillator is sufficiently low for locking said closed loop despite center frequency drift caused by changes in ambient temperature.

3,938,181

AUTOMATIC LUMINANCE CHANNEL FREQUENCY RESPONSE CONTROL APPARATUS

Jack Avins, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 21, 1974, Ser. No. 516,589

Int. Cl.² H04N *5/14*

U.S. Cl. 358—38 **18 Claims**

1. Apparatus for processing television video signals, comprising:

a source of video signals;

signal delaying means coupled to said source of video signals;

a plurality of signal coupling means coupled to said signal delaying means for developing a plurality of delayed video signals;

first means for combining at least a first and a second of said delayed video signals being spaced apart in time by a time interval substantially equal to NT/2, where T is the period of a predetermined signal component supplied by said source and N is an integer greater than one, to produce a first combined signal;

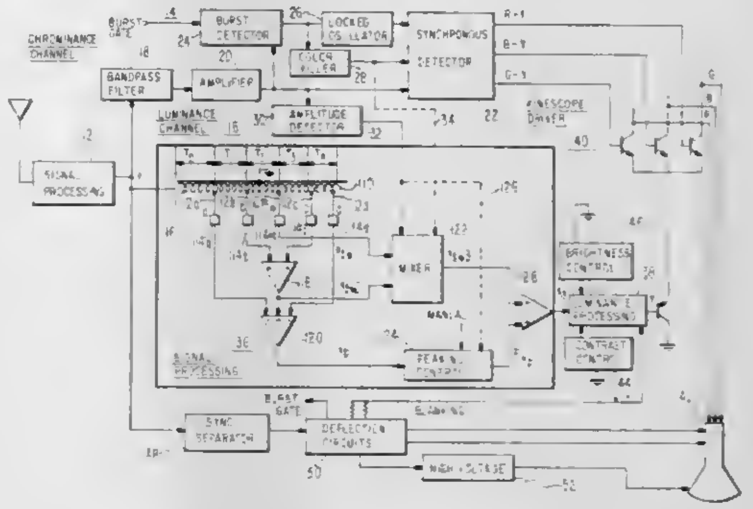
means for deriving a first bandwidth determining signal from at least a third of said delayed video signals being located in time between said first and second delayed video signals;

means for deriving a second bandwidth determining signal from at least a fourth and a fifth of said delayed video signals each being located in time between said first and second delayed video signals;

second means for combining one of said bandwidth determining signals with said first combined signal to produce a second combined signal;

means for selectively combining said first and second bandwidth determining signals to produce a third bandwidth determining signal including controlled amplitude portions of said first and second bandwidth determining signals; and

third means for combining said third bandwidth determining signal and said second combined signal to produce an output signal.



3,938,182

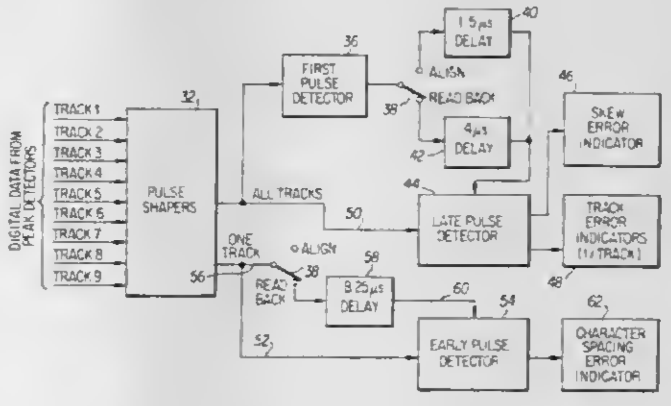
AUTOMATIC CHARACTER SKEW AND SPACING CHECKING NETWORK

Robert T. McKenna, Rockville, Md., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Jan. 6, 1975, Ser. No. 538,983

Int. Cl.² G11B *15/02*

U.S. Cl. 360—26 **10 Claims**



1. A network for monitoring character skew and spacing in a tape recording and reproducing system comprising:

a plurality of pulse shaping means adapted to be coupled to a like plurality of track outputs from said tape recording and reproducing system,

first pulse detector means for detecting the first pulse generated by said pulse shaping means,

late pulse detecting means coupled to said pulse shaping means for receiving pulses therefrom.

first timing means coupled to said first pulse detector means and to said late pulse detecting means for inhibiting said late pulse detecting for a first predetermined interval following detection of said first pulse; and,

skew error indicating means coupled to said late pulse detecting means for indicating the existance of late pulses representing an unacceptable skew condition.

3,938,183

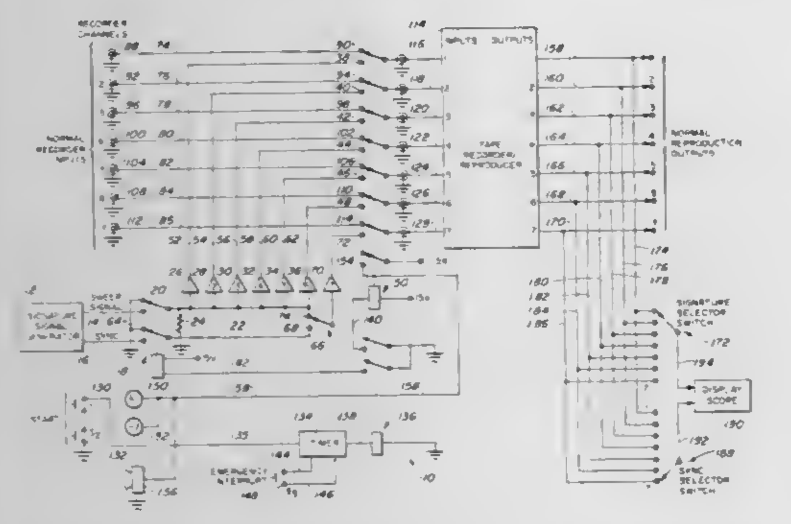
MAGNETIC TAPE SIGNATURE SIGNAL INJECTION DEVICE

Donald R. Hust, Camarillo, Calif., and Emory D. Heberling, deceased, late of Riverside, Calif., by Frances L. Herberling, executrix, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 3, 1974, Ser. No. 511,903

Int. Cl.² G11B *27/36*

U.S. Cl. 360—31 **13 Claims**



1. An apparatus for injecting a signature signal onto a magnetic tape comprising:

a. means for generating a signature signal having an output upon which said signature signal appears;

b. a plurality of magnetic tape recorder channel input lines one each connected between one pair each of a plurality of first and second recorder inputs;

c. switching means for connecting said signature signal generating means output to one one of said plurality of second recorder inputs and disconnecting said plurality of channel input lines from said plurality of second recorder inputs; and

d. timing means communicating with said switching means for allowing said switching means to inject said signature signal and disconnect said channel inputs for a specific time period.

3,938,184

DIGITAL FLUTTER REDUCTION SYSTEM

Richard E. DeFrancesco, Holland, Pa.; Bernard Harris, Dobbs Ferry, N.Y., and David Hoffman, Hillsdale, N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 21, 1975, Ser. No. 560,855

Int. Cl.² G11B *5/09*

U.S. Cl. 360—51 **10 Claims**

1. A digital time base error correcting system for FM tape recorders having a reference tone on a first tape track and data signals on a second tape track comprising, in combination:

timing means for generating a series of clock pulses;

first pulse generating means connected to receive said clock pulses for producing a series of periodic output pulses having a frequency equal to the average frequency value of said reference tone;

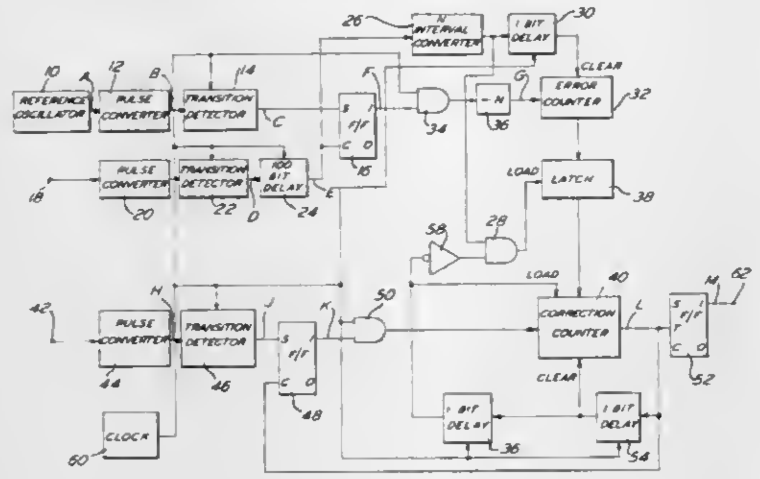
second pulse generating means adapted to receive said reference tone and connected to receive said clock pulses for producing a series of output pulses indicative of the zero crossings of said tone;

delay means connected to receive said clock pulses and said second generating means output pulses for producing a time delayed replica output thereof;

pulse width encoding means connected to receive said first pulse generating means output signals and said delay means output for producing an output pulse having a variable width depending upon the time separation between corresponding ones of said first pulse generating means output signals and the delay means output pulses;

first counting means connected to receive said pulse width encoding means output pulse and said clock pulses for producing a digital count indicative of the width of said pulse width encoding means output pulse;

third pulse generating means adapted to receive said data signals and connected to receive said clock pulses for producing a series of output pulses indicative of the zero crossings of said data signals;



second counting means connected to receive said first counting means digital count and said clock pulses for counting from said digital count to a predetermined count upon the receipt of individual ones of said third pulse generating means output pulses and for producing an output pulse indicative of the occurrence of said predetermined count; and

fourth pulse generating means connected to receive said second counting means output pulse for producing a series of output pulses having respective widths corresponding to the sequential time occurrence of said second counting means output pulse;

whereby said fourth pulse generating means output pulses are indicative of the data signals corrected for time base error.

3,938,185

CASSETTE TAPE DATA PROCESSING TERMINAL UNIT WITH LATCH

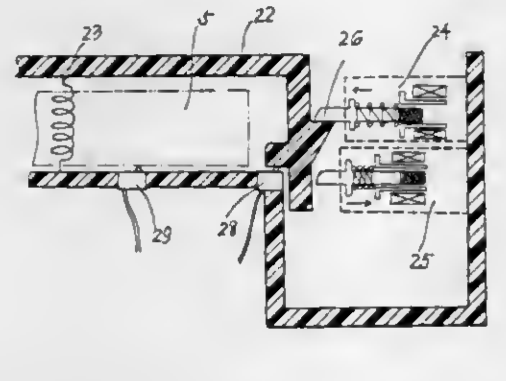
Youichi Ito, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed June 28, 1974, Ser. No. 484,344

Claims priority, application Japan, June 29, 1973, 48-74058

Int. Cl. G11b *15/04, 15/10*

U.S. Cl. 360—69 **5 Claims**



1. A data processing terminal unit comprising:

a cassette tape including a data field;

recording means associated with said cassette tape for recording data thereon;

data input means connected with said recording means for transmitting data therethrough to said cassette tape;

said cassette tape including at least one data field;

entry means in said data input means providing start and end marking signals to said recording means to effect start and end markings on said tape defining the beginning and end, respectively, of said data field; and

housing means for releasably receiving said cassette tape, comprising:

closure means for closing and opening said housing to contain or release said cassette tape therefrom,

sensing means in said housing means detecting the presence and absence of a said cassette tape in said housing and the closed and open states of said closure means and providing state signals representative thereof,

circuit means responsive to said state signals and said start and end marking signals to provide closure control signals in response to predetermined combinations of said state and marking signals, and

latch means responsive to said closure control signals to selectively preclude opening and closing of said closure means.

3,938,186

APPARATUS FOR CONVERTING VISUALLY LEGIBLE NUMERICAL CHARACTERS INTO A BINARY CODE

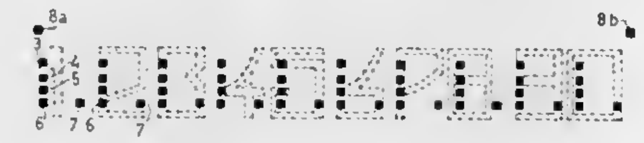
Daniel Paul Henri Destame, Anes-Dreux, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 388,254, Aug. 14, 1973, abandoned. This application Dec. 13, 1974, Ser. No. 532,512

Claims priority, application France, Sept. 18, 1972, 72.32975

Int. Cl.² G06K *9/18*

U.S. Cl. 340—146.3 Z **2 Claims**



1. Apparatus for converting into a binary code a visually legible numerical character selected from a closed group of numerical characters, said numerical character being present within a character format area on a support, said apparatus comprising:

a set of exactly four character-identifying sensing elements, each for deriving from a predetermined portion of the character format area, a binary information element;

means for juxtaposing said set of sensing elements in proper alignment with said character format area, said sensing elements sensing and directly converting a machine printable numerical character into a corresponding unique four-bit digital number; and

means for converting the group of unique digital numbers corresponding to said closed group of numerical characters into binary digital form;

wherein said character format area includes alignment areas and said apparatus includes an additional sensing element for deriving alignment information;

wherein a fifth sensing element is provided for deriving a fifth binary information element from a fifth predetermined portion within the character format area, said sensing element for supplying a parity determining information signal derived from the said fifth predetermined portion and the shape of the numerical character;

wherein said closed group of numerical characters are the numerals 1, 2, 3, 4, 5, 6, 7, 8, 9, and 0, said four sensing elements being substantially colinear and being consecutively designated 3, 4, 5, and 6, said elements sensing and converting said numerals into four-bit digital numbers in accordance with the following table:

	Elements			
Numerals	4	5	6	3
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
0	0	0	0	0.

3,938,187

SYSTEM FOR PUTTING AN INFORMATION RECORD ONTO A MAGNETIC SUBSTRATE

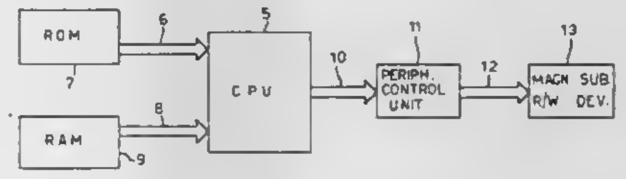
Angelo Subrizi, and Ettore Violino, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed July 9, 1974, Ser. No. 486,873

Claims priority, application Italy, July 13, 1973, 69104/73

Int. Cl.² G06F *3/06*

U.S. Cl. 340—172.5 **9 Claims**



1. System for recording an information character onto a magnetic substrate comprising a first memory for storing a microprogram adapted to control said record operation, a second memory for storing said character, a central unit conditioned by said microprogram for reading said character out of said second memory, and a record device for recording said character onto said magnetic substrate, wherein a peripheral control unit responsive to predetermined decoded microinstructions provided by said central unit for providing corresponding record signals to said record device, said central unit comprising means for cyclically transmitting said predetermined microinstructions to said peripheral control unit at fixed time intervals, a register for storing in corresponding cells the bits of the character to be recorded, means for sequentially sensing each of said cells substantially in the middle of said fixed time intervals and means controlled by said sensing means for selectively sending said predetermined microinstructions to said peripheral control unit in coincidence with sending said bits to said record device.

3,938,188

ANALOG TO DIGITAL CONVERTER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Charles H. Lucas, Glendora, Calif.

Filed Aug. 27, 1974, Ser. No. 501,011

Int. Cl.² H03K *13/06*

U.S. Cl. 340—347 AD **20 Claims**

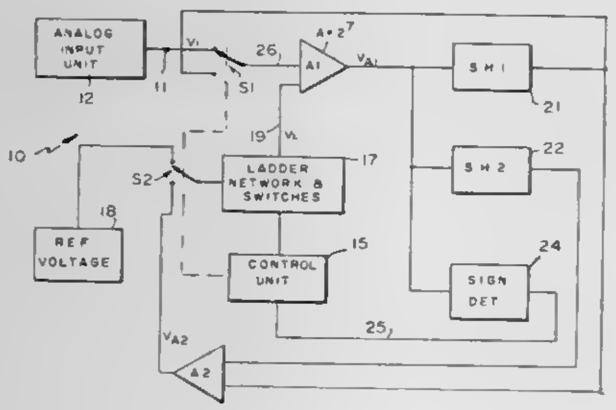
1. An analog to digital converter for digitizing an analog input voltage to an N-bit digital number where N is an integer, comprising:

input means for receiving the input voltage to be digitized;

an amplifier for providing an output voltage which is a function of the difference between first and second voltages applied thereto, amplified by a factor 2^B where B is an integer greater than one;

a sign detector connected to said amplifier for providing first and second signals when the amplifier output voltage is of first and second polarities, respectively, said ampli-

fier output being of said first polarity when said first voltage is not less than said second voltage and of said second polarity when said first voltage is less than said second voltage;
control means for defining first and second conversion steps;
first and second voltage storage means coupled to said amplifier and selectively actuatable to store the output voltage thereof;
a source of reference potential;
digital-to-analog converter means including a B-bit up-down counter coupled to said control means and to said sign detector, for applying said second voltage to said amplifier as a function of the states of said B bits of said counter;
means for applying said reference potential to said digital-to-analog means during said first step;
means for applying said input voltage to said amplifier as said first voltage during said first step;

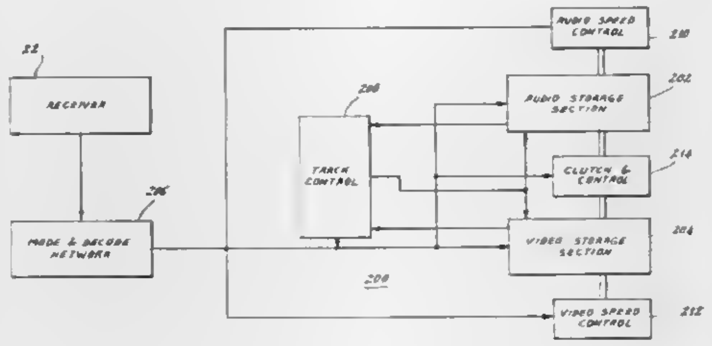


first successive approximation means coupled to said sign detector, said control means and said up-down counter for successively approximating the states of said B bits during a first portion of said first step as a function of the signals from said sign detector;
means for stepping the count in said counter by one during each of second and third portions of said first step following said first portion so as to decrease the difference between said first and second voltages, and for storing the amplifier output after said second portion in either said first storage means or said second storage means when said amplifier output voltage is either of said first polarity or said second polarity, respectively, and for storing the amplifier output voltage in the other storage means after the third portion of said first step; and
buffer means of at least B+C bits, for receiving in the first higher order B bits thereof the states of the B bits of said working counter, B+C being not less than N.

3,938,189
SYSTEM FOR RECORDING AND PLAYING BACK INDIVIDUAL FRAMES OF VIDEO AND RELATED AUDIO SIGNALS

Peter C. Goldmark, Stamford, Conn., assignor to Goldmark Communications Corporation, Stamford, Conn.
Filed Oct. 13, 1972, Ser. No. 297,180
Int. Cl.^{2} H04N *5/79*
U.S. Cl. 360—8 **26 Claims**

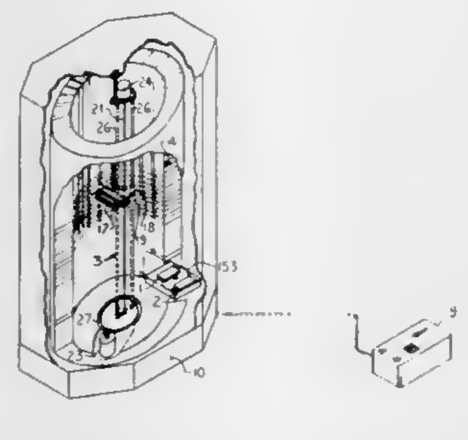
1. An apparatus for recording and playing back video and associated audio signals for display and sound projection on a television display comprising
means including a magnetic storage medium for recording and playback audio signals;
means for moving the magnetic storage medium at a first high operating speed to record audio signals and at a second low operating speed for playback of the audio signal;
a magnetic video frame storage loop having a length selected to produce video frame signals for frame display on a conventional television receiver upon continuous rotation of the loop;
means for sensing signals which identify a video frame and producing video start and video end signals respectively indicative of the beginning and end of a video frame;
means actuated by the video start and end signals to store a video frame on said loop;



means for sensing audio pilot signals recorded on the magnetic medium along with the audio signals to identify an audio frame and producing an audio end signal indicative of the end of the audio frame;
means responsive to the audio end signal for initiating the playback of another viewo frame and the playback of audio signals associated with said other video frame.

3,938,190
STORAGE AND RETRIEVAL SYSTEM FOR MAGNETIC TAPE CASSETTES

John Leonard Semmlow, Chicago, Ill., and Lawrence Stark, Berkeley, Calif., assignors to Direct Access Corporation, Berkeley, Calif.
Filed Aug. 15, 1974, Ser. No. 497,563
Int. Cl.^{2} G11B *15/68, 23/04, 15/18, 19/08*
U.S. Cl. 360—72 **23 Claims**

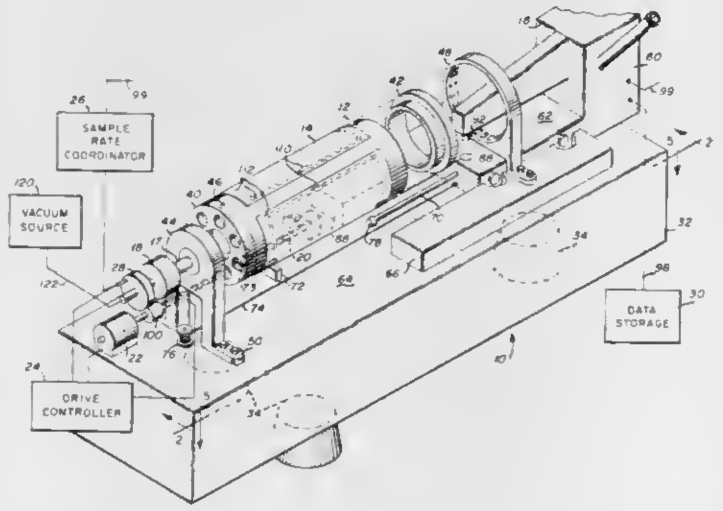


1. A system for storing and retrieving information contained within discrete information-bearing modules, comprising:
a. a fixed storage area for storing a plurality of discrete information-bearing modules in a two-dimensional array, each of said modules having a designated location within said array;
b. a fixed processing station remotely situated from said fixed storage area for extracting information from individual modules;
c. a movable selection mechanism having three degrees of freedom for retrieving an individual module from said storage area and for transferring it to said fixed processing station and for restoring the same to its designated position within said storage area after information has been extracted therefrom;
d. memory means remote from said storage area for storing a predetermined schedule of modules to be sequenced through said fixed processing station;

e. input means for enabling said predetermined schedule of modules to be entered in said memory means;
f. means for automatically controlling said selection mechanism to sequentially retrieve, process and restore modules according to said fixed predetermined schedule stored in said memory means; and
g. additional means for initializing each information-bearing module before next being processed at said fixed processing station.

3,938,191
ROTARY DATA BASE WITH AIR BEARING

Howard I. Jarmy, San Francisco, Calif., assignor to The Singer Company, New York, N.Y.
Filed Aug. 21, 1974, Ser. No. 499,339
Int. Cl.^{2} G11B *70/08*
U.S. Cl. 360—102 **21 Claims**

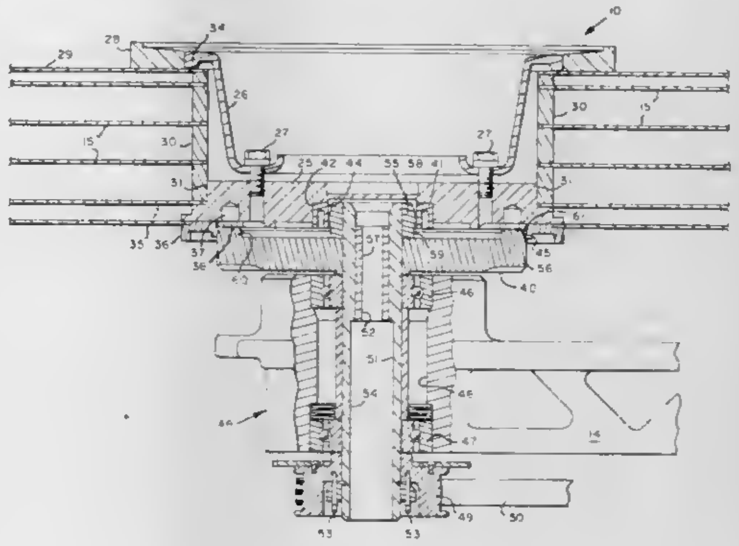


1. A system for reading an original data base and new data base, comprising:
an annular member adapted to retain the original data base;
means for rotatably supporting the annular member;
rotary drive for turning the annular member on the bearing means about an axis of rotation;
scanning member for illuminating and reading the original data base;
traverse drive for establishing relative traverse motion between the members parallel to the axis of rotation by moving at least one of the members;
guide means for retaining the members in parallel relationship during the traverse motion;
drive controller for coordinating the rotary drive and traverse drive to scan the desired area of the original data base and establish the desired format of the new data base; and
air bearing means for spacing the traversely movable member from the guide means during the traverse motion for reducing the friction and vibration coupling therebetween.

3,938,192
METHOD OF MANUFACTURING A SPINDLE ASSEMBLY FOR A DISC DRIVE

Robert H. Caletti, Menlo Park, Calif., assignor to Information Storage Systems, Inc., Cupertino, Calif.
Continuation of Ser. No. 441,172, Feb. 11, 1974, abandoned. This application May 27, 1975, Ser. No. 580,762
Int. Cl.^{2} G11B *25/04, 17/26, 19/20*
U.S. Cl. 360—133 **3 Claims**

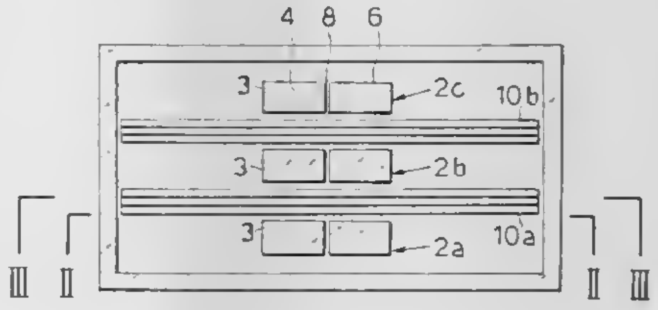
1. A method for manufacturing a spindle assembly for use in a disc drive apparatus having a baseplate and utilizing a disc pack having centering surfaces formed by inwardly facing insert members in a central opening in the bottom thereof and having horizontal support surfaces spaced radially outward from the central opening, said method comprising the steps of:
forming an elongated central drive shaft having first and second ends with the first end being adapted for attachment to a drive means;
fixing a hardened centering hub to the second end of the drive shaft; and



fixing a hardened support plate to the drive shaft at a position intermediate the centering hub and drive means whereby the hardened centering hub and support plate will contact and support the disc pack.

3,938,193
MAGNETIC TRANSDUCER HEAD HAVING AN INTEGRAL MAGNETIC SHIELD AND WEAR INDICATOR

John Ebenezer Sargunar, Glenrothes, Scotland, assignor to Burroughs Corporation, Detroit, Mich.
Filed Nov. 27, 1974, Ser. No. 527,895
Claims priority, application United Kingdom, Mar. 15, 1974, 11609/74
Int. Cl.^{2} G11B *5/22, 5/28, 5/115*
U.S. Cl. 360—137 **8 Claims**

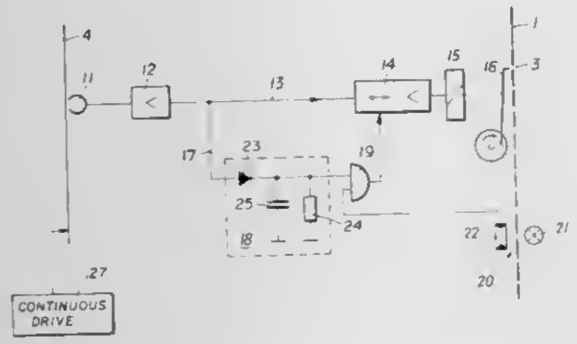


1. A magnetic transducer head assembly comprising a magnetic head including a magnetic core defining a pair of pole faces and a gap therebetween, the pole faces being subject to wear during use with respect to a recording medium, and a magnetic shield of magnetic material disposed adjacent to said magnetic core for shielding same, said magnetic shield being electrically-conductive and including a pair of terminals electrically connected together only by a bridging portion aligned with the pole faces and subject to wear therewith so that the electrical continuity between said terminals is interrupted upon the interruption of said bridging portion occurring upon a predetermined amount of wear of the pole faces, said terminals being connectable to an electrical monitoring device for monitoring the electrical continuity of said shield bridging portion and thereby for providing an indication of the occurrence of the predetermined amount of wear.

3,938,194

METHOD OF AND APPARATUS FOR OBTAINING SYNCHRONOUS MOVEMENT BETWEEN TWO MEDIA

Otto Freudenschuss, Vienna, Austria, assignor to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria
Filed Oct. 30, 1973, Ser. No. 411,063
Claims priority, application Austria, Oct. 31, 1972, 9255/72
Int. Cl.^{2} G11B *15/18, 31/00;* G03B *31/00*
U.S. Cl. 360—71 6 Claims



1. In an apparatus having means for simultaneously processing two independently movable recordhearing stips, in combination:

first drive means for intermittently advancing a first record strip provided with at least one first marking;
second drive means for continuously advancing a second record strip provided with a sequence of second markings having a discontinuity in a zone entering the processing means substantially simultaneously with a part of said first strip identified by said first marking;
first sensing means for detecting said first marking on said first strip and emitting a first output signal in response thereto;
second sensing means for detecting said second markings on said second strip and emitting a series of second output signals in response thereto, said first drive means being connected to said second sensing means for actuation by said second output signals to step said first strip in response to said second markings;
coincidence means connected to said first and second sensing means for emitting a switching signal upon simultaneous reception of said first and second output signals;
control means for said first drive means connected to said coincidence means for halting the advance of said first strip in response to said switching signal in a position in which said first marking confronts said first sensing means; and
delay means inserted between said second sensing means and said coincidence means for retarding the effect of a recurrence of said second markings upon said coincidence means, thereby enabling renewed actuation of said first drive means by said second output signals in response to the second markings which follow said discontinuity.

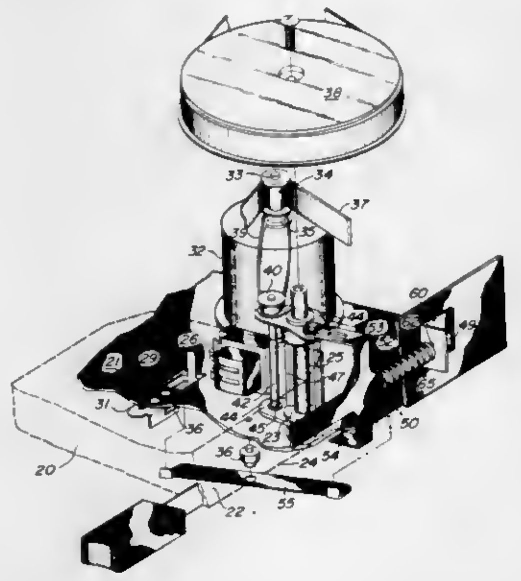
3,938,195

8-TRACK - FAST FORWARD MECHANISM

Gary P. Fukayama, Roselle, Ill., assignor to Motorola, Inc., Chicago, Ill.
Filed Sept. 26, 1974, Ser. No. 509,521
Int. Cl.^{2} G11B *15/28, 15/48, 19/26, 25/06*
U.S. Cl. 360—93 9 Claims

1. In a magnetic tape cartridge having a housing with an opening adapted to receive an exchangeable cartridge having magnetic tape thereon, and a transducer head positioned to be adjacent the tape in the cartridge for cooperating therewith, the combination including:

a play capstan mounted in the housing for engagement with a pressure roller in the cartridge to drive the magnetic tape past the transducer head,
drive means mounted in the housing including a tape drive motor operatively connected to said capstan for rotating said capstan,
fast forward means selectively engageable with said drive means, and having means adapted to engage the pressure roller in the cartridge to move the same,
bracket means mounted in the housing for providing support for said fast forward means, said bracket means being movable between a first position wherein said fast forward means is disengaged from said drive means when the cartridge is in the play position against said capstan and a second position wherein said fast forward means is engaged by said drive means and said means thereof is positioned to thereby engage the pressure roller in the cartridge when the cartridge is out of the play position to advance the magnetic tape therein, and
actuating means operatively connected to said bracket means to move the same between said first position wherein said fast forward means is disengaged from said drive means and said second position wherein said fast forward means is engaged by said drive means to advance the magnetic tape in the cartridge.



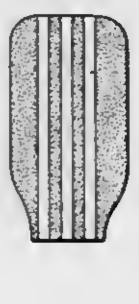
DESIGNS

FEBRUARY 10, 1976

238,723

TONGUE FOR A SHOE

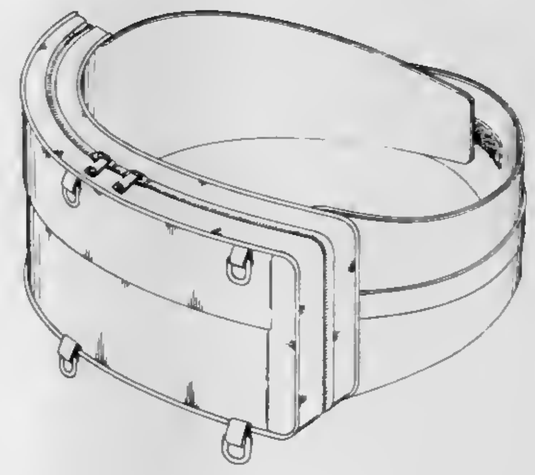
Horst R. Dassler, Eckartswiller, France, assignor to Adidas
Original design application Aug. 21, 1973, Ser. No. 390,186, which is a division of design application Ser. No. 190,435, Oct. 18, 1971, now Patent No. 231,281. Divided and this application Aug. 16, 1974, Ser. No. 498,130
Claims priority, application France Apr. 23, 1971
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—315



238,725

BELT PACK

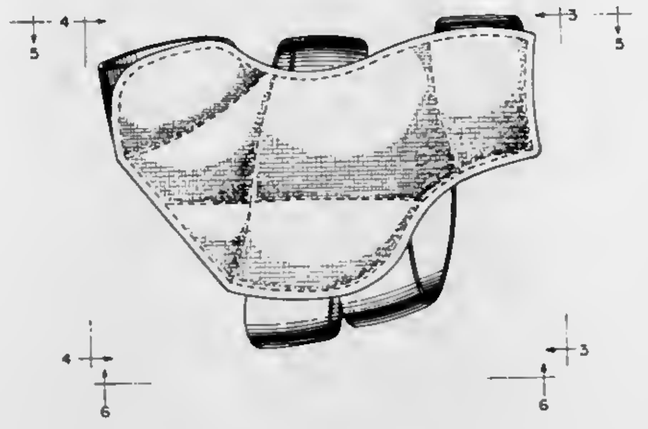
Alan H. Zerobnick, P.O. Box 6638, Cherry Creek Station, Denver, Colo. 80206, and David J. Cole, Denver, Colo.; said Cole assignor to said Zerobnick
Filed June 3, 1974, Ser. No. 475,422
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—381



238,724

PROTECTIVE HAND CUSHION

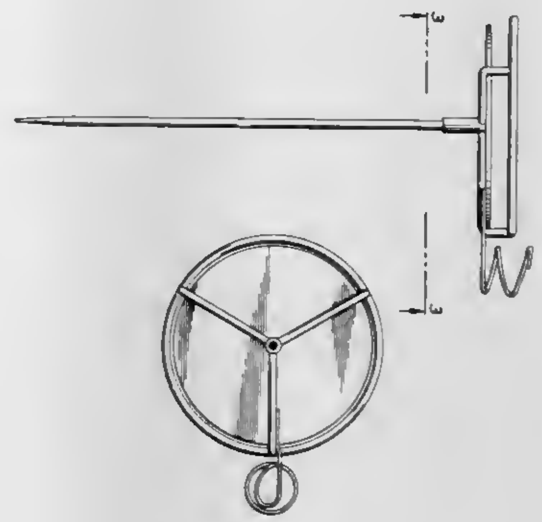
Walter J. Kanicki, 2011 3rd St., Bay City, Mich. 48706
Filed Apr. 4, 1974, Ser. No. 457,775
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361



238,726

PORTABLE TRAY AND GLASS HOLDER COMBINATION

Margaret H. Labik, 540 Bird St., Wadsworth, Ohio 44281
Filed Feb. 27, 1974, Ser. No. 446,136
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—20

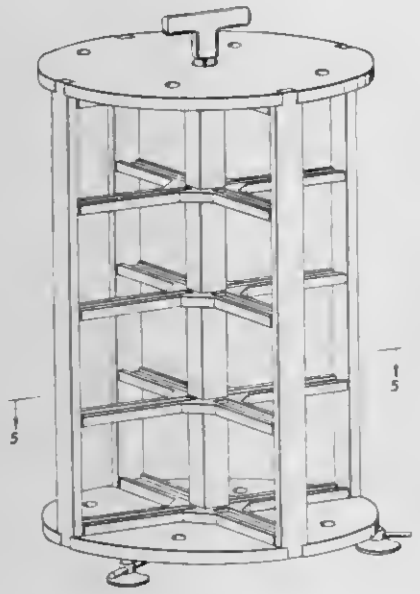


238,727

DISPLAY STAND OR SIMILAR ARTICLE

Clive St. John Rumble, 47 Orchard Court, Portland Square, London W. 1, England
Filed Oct. 12, 1973, Ser. No. 406,179
Term of patent 14 years
Int. Cl. D20—*02*

U.S. Cl. D6—24

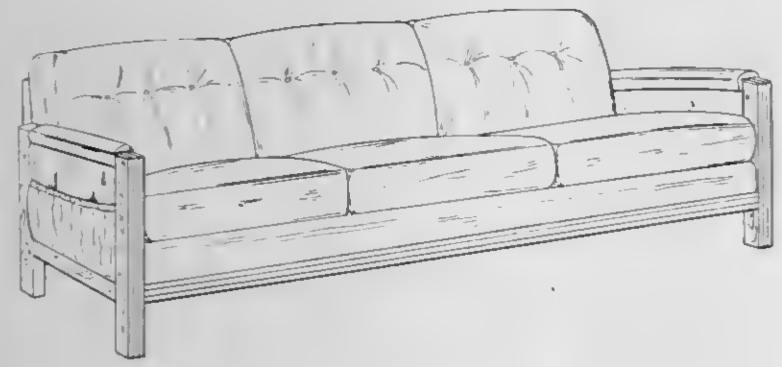


238,728

SEAT

Stanley P. Nash, Rte. 1, Riverhill Drive, Johnson Creek, Wis. 53038
Filed Feb. 11, 1974, Ser. No. 440,980
Term of patent 7 years
Int. Cl. D6—*01*

U.S. Cl. D6—63

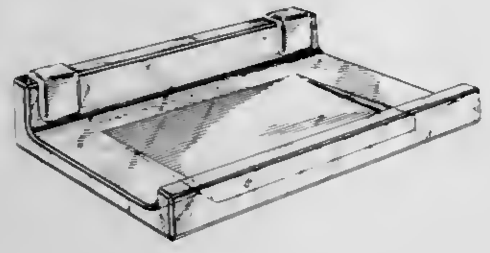


238,729

SOAP DISH

Guy Vrignaud, Grenoble, France, assignor to Allibert Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,483
Claims priority, application France May 6, 1974
Term of patent 14 years
Int. Cl. D23—*02*

U.S. Cl. D6—90

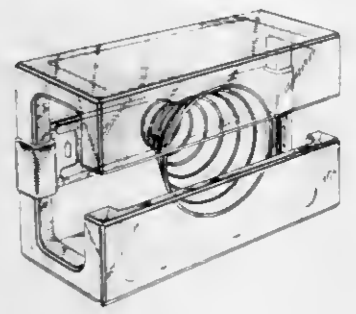


238,730

DISPENSER FOR SHEETS OF TOILET PAPER

Guy Vrignaud, Grenoble, France, assignor to Allibert Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,482
Claims priority, application France May 6, 1974
Term of patent 14 years
Int. Cl. D23—*02*

U.S. Cl. D6—96

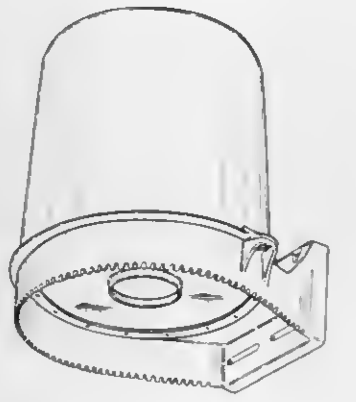


238,731

CONTAINER FOR PAPER ROLLS

Carl-Arne Breger, Malmo, Sweden, assignor to Kooperativa Forbundet Fack, Stockholm, Sweden
Filed Nov. 14, 1974, Ser. No. 523,822
Claims priority, application Sweden May 15, 1974
Term of patent 14 years
Int. Cl. D6—*06*

U.S. Cl. D6—97

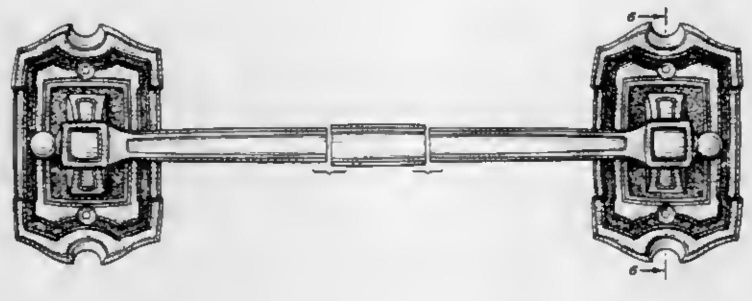


238,732

TOWEL BAR

George D. Read, Glendora, Lawrence Glen McCain, Beverly Hills, and Edward William Scott, Culver City, Calif., assignors to Scovill Manufacturing Company, Waterbury, Conn.
Filed Oct. 15, 1974, Ser. No. 514,634
Term of patent 14 years
Int. Cl. D6—*06*

U.S. Cl. D6—99

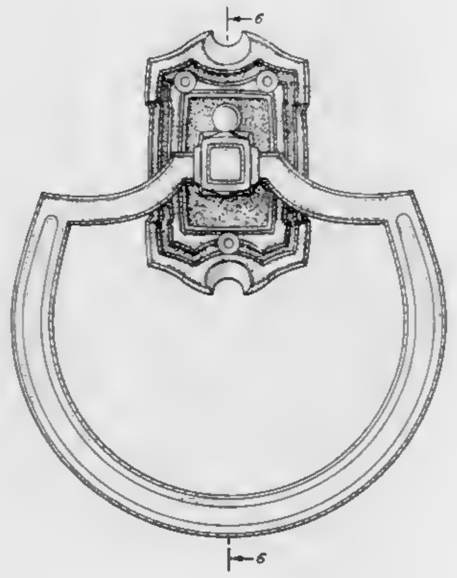


238,733

TOWEL RING

George D. Read, Glendora, Lawrence Glen McCain, Beverly Hills, and Edward William Scott, Culver City, Calif., assignors to Scovill Manufacturing Company, Waterbury, Conn.
Filed Oct. 15, 1974, Ser. No. 514,843
Term of patent 14 years
Int. Cl. D6—*06*

U.S. Cl. D6—99

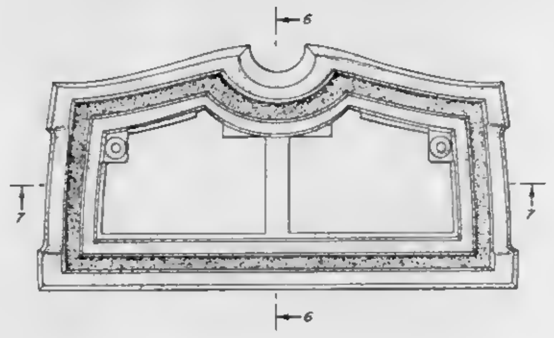


238,734

BATHROOM BRACKET FOR SOAP DISH OR TOOTHBRUSH HOLDER

George D. Read, Glendora, Lawrence Glen McCain, Beverly Hills, and Edward William Scott, Culver City, Calif., assignors to Scovill Manufacturing Company, Waterbury, Conn.
Filed Oct. 15, 1974, Ser. No. 514,844
Term of patent 14 years
Int. Cl. D6—*04*

U.S. Cl. D6—103

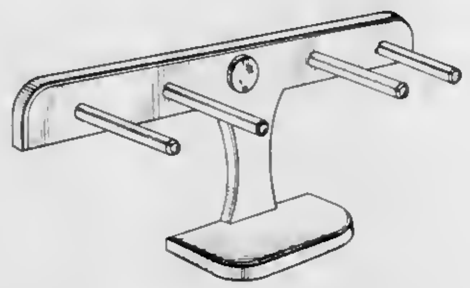


238,735

TENNIS RACQUET HOLDER AND SHELF

Donald C. Trieschmann, 615 Cherry St., Winnetka, Ill. 60093
Filed Nov. 21, 1973, Ser. No. 417,878
Term of patent 7 years
Int. Cl. D6—*06*

U.S. Cl. D6—114

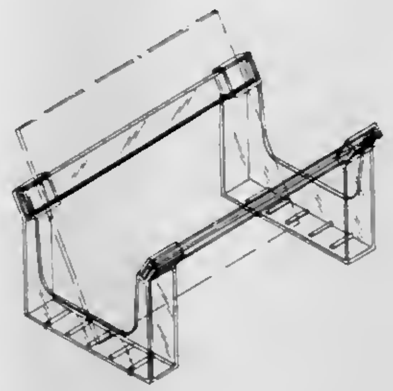


238,736

RECORD ALBUM HOLDER

Martin A. Jaffe, Bronx, N.Y., assignor to Crestmark Industries, Bayonne, N.J.
Filed Oct. 4, 1974, Ser. No. 512,050
Term of patent 14 years
Int. Cl. D6—*04*

U.S. Cl. D6—185

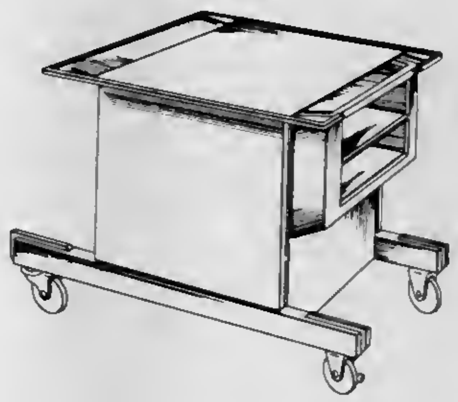


238,737

COPYING MACHINE STAND

Jacob W. Patla and Stephen K. Bright, Fairport, N.Y., and John F. Zinni, London, England, assignors to Xerox Corporation, Stamford, Conn.
Filed July 25, 1974, Ser. No. 491,703
Term of patent 14 years
Int. Cl. D6—*04*

U.S. Cl. D6—186

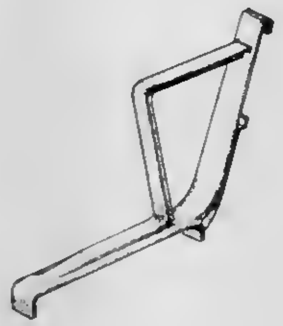


238,738

COMBINED ARMREST, BACKREST SUPPORT AND CLAMP DOWN ELEMENT FOR A STADIUM SEAT

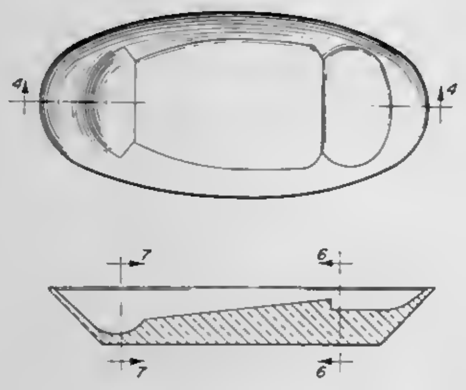
Wilmer R. Schultz, Emmaus, Pa. 18049
Filed Apr. 1, 1974, Ser. No. 456,635
Term of patent 14 years
Int. Cl. D6—*06*

U.S. Cl. D6—194



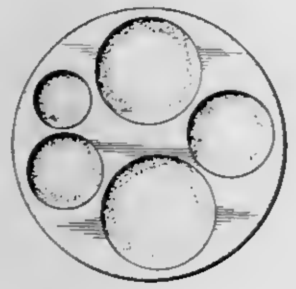
238,739
SPAGHETTI DISH

John D. Thomas, 315 W. Peck St., Negaunee, Mich. 49866
Filed Oct. 18, 1974, Ser. No. 516,036
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—1



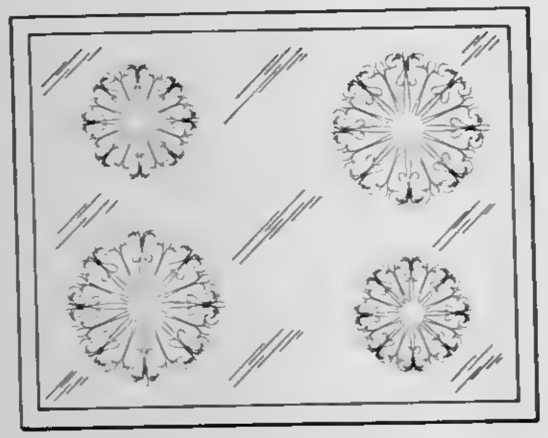
238,740
TRAY

Richard E. R. Cone, Dallas, Tex., assignor to Plastics Manufacturing Company, Dallas, Tex.
Filed Nov. 29, 1974, Ser. No. 528,472
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—27



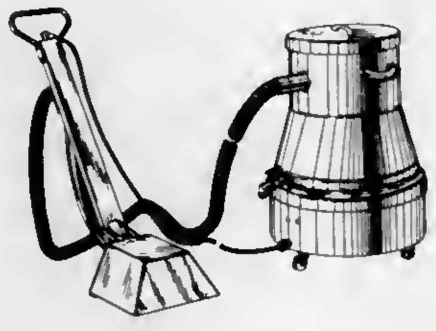
238,741
COOKING SURFACE OR THE LIKE

Jerry E. Wright, Corning, N.Y., assignor to Corning Glass Works
Filed Mar. 19, 1975, Ser. No. 559,790
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—121



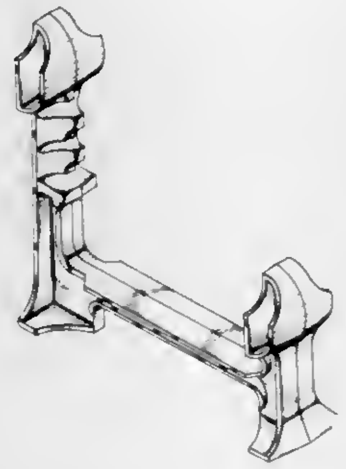
238,742
FLOOR CLEANER OR SIMILAR ARTICLE

Alfred H. Brickley, Denver, Colo., assignor to Omega Tool Company, Denver, Colo.
Filed Sept. 13, 1974, Ser. No. 505,615
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—166



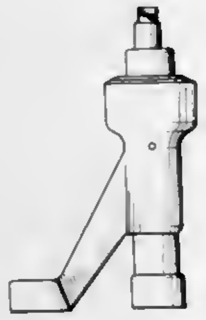
238,743
ANDIRON

James W. Welch, Bellevue, Wash.
(P.O. Box 455, Lake Stevens, Wash. 98258)
Continuation-in-part of design application Ser. No. 470,178, May 15, 1974. This application Oct. 23, 1974, Ser. No. 517,207
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—211



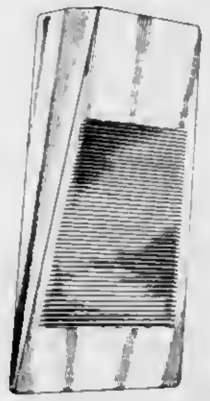
238,744
WRENCH

Masao Yoshihara, 20–3 chome, Kujyo-dori, Nishi-ku, Osaka, Japan
Filed May 13, 1974, Ser. No. 469,555
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—21



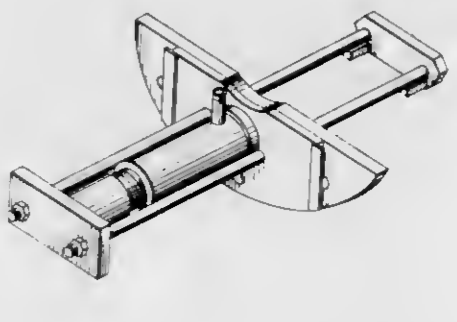
238,745
NONSKID PLASTIC WOODCUTTER'S WEDGE

Gerald R. Bedard, 419 Campbell St., Manchester, N.H. 03103, and Donald Oleniak, Squamscott Road, Stratham, N.H. 03885
Filed Dec. 13, 1974, Ser. No. 532,291
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—47



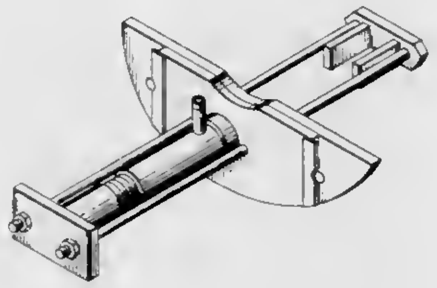
238,746
FLUID ACTUATED PULLER

Augustus J. D'Antoni, Sr., 6646 Hooper Road, Baton Rouge, La. 70811
Filed June 20, 1974, Ser. No. 481,150
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51



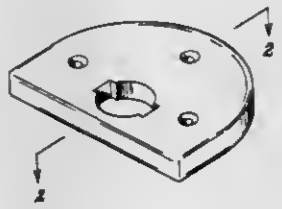
238,747
FLUID ACTUATED PULLER

Augustus J. D'Antoni, Sr., 6646 Hooper Road, Baton Rouge, La. 70811
Filed June 20, 1974, Ser. No. 481,157
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51



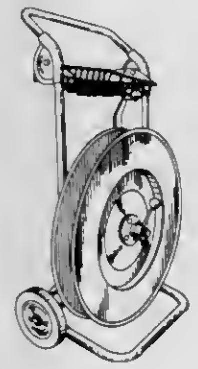
238,748
KEEPER PLATE FOR A DOOR CATCH

Frank Mestre, R.D. 1, Box 108, Rhinebeck, N.Y. 12572
Filed July 15, 1974, Ser. No. 488,287
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—137



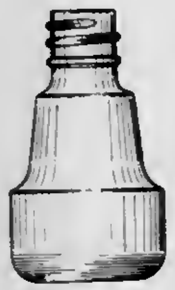
238,749
COMBINED REEL AND MOBILE STAND

Karl Johan Back and Ragnar Ilmari Olov Walhelm, Helsinki, Finland, assignors to Oy Cyklop AB, Helsinki, Finland
Filed Sept. 11, 1973, Ser. No. 396,180
Claims priority, application Finland Mar. 12, 1973
Term of patent 14 years
Int. Cl. D8—*99;* D12—*02*
U.S. Cl. D8—221



238,750
BOTTLE

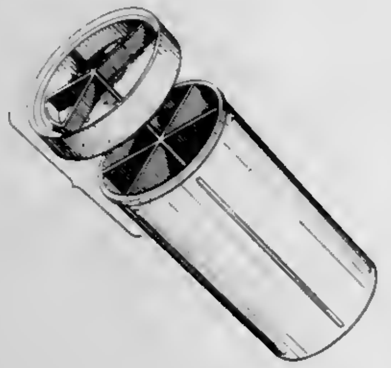
Marie Joseph Coffy, Paris, France, assignor to Saint-Gobain-Desjonqueres
Filed Aug. 1, 1974, Ser. No. 493,852
Claims priority, application France Apr. 9, 1974
Term of patent 3½ years
Int. Cl. D9—*01*
U.S. Cl. D9—1



238,751
DISPENSING CONTAINER FOR VITAMINS OR THE LIKE

Gregory Scott MacGrossen, Manhattan Beach, Calif., assignor to Photographic Marketing Corporation of America, Hermosa Beach, Calif.

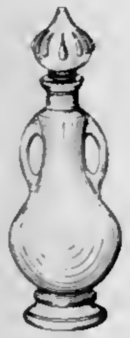
Filed Aug. 23, 1973, Ser. No. 390,886
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—18



238,752
BOTTLE

Marie Joseph Coffy, Paris, France, assignor to Saint-Gobain-Desjonqueres

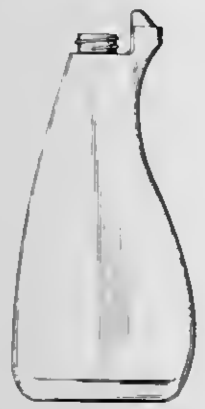
Filed Aug. 1, 1974, Ser. No. 493,851
Claims priority, application France Apr. 12, 1974
Term of patent 3½ years
Int. Cl. D9—*01*
U.S. Cl. D9—48



238,753
BOTTLE OR SIMILAR ARTICLE

James C. McKinney, Simpsonville, and William J. Britt and John G. Antonio, Greenville, S.C., and Sam Han, Leonia, N.J., assignors to Morton-Norwich Products, Inc.

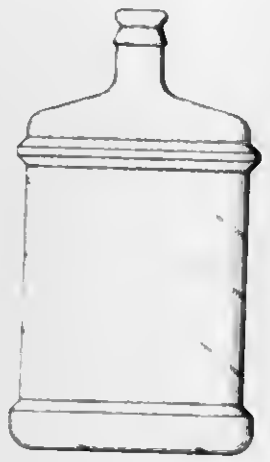
Filed Apr. 24, 1974, Ser. No. 463,465
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—60



238,754
BOTTLE

Carl E. Frahm and Shirley E. Frahm, both of 1428 Oak Meadow Road, Arcadia, Calif. 91106

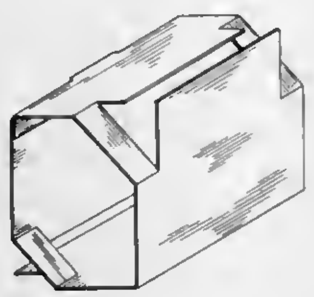
Filed Aug. 5, 1974, Ser. No. 494,465
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—86



238,755
PACKAGING CONTAINER

Charles K. Huff, Omaha, Nebr., assignor to Harold Mangelsen & Sons, Inc., Omaha, Nebr.

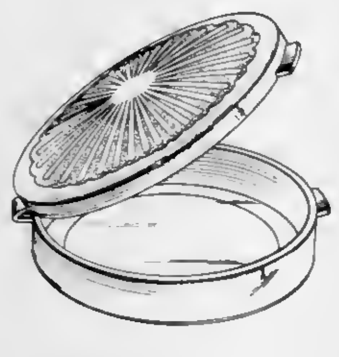
Filed Aug. 13, 1973, Ser. No. 387,683
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—171



238,756
PILL CONTAINER OR THE LIKE

James B. Swett, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.

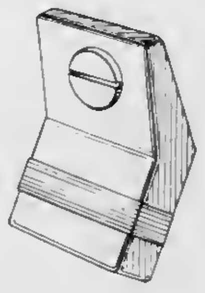
Filed July 25, 1974, Ser. No. 491,888
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D9—231



238,757
DIGITAL ELECTRONIC PENDANT WATCH

Francoise Glarner, Geneva, Switzerland, assignor to Bulova Watch Co., Inc., New York, N.Y.

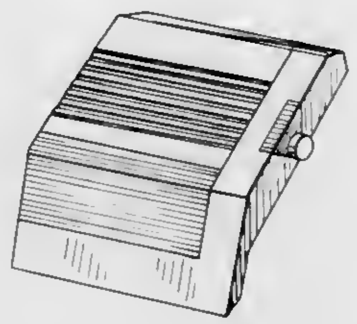
Filed Aug. 15, 1974, Ser. No. 497,761
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—30



238,758
DIGITAL-DISPLAY ELECTRONIC WRISTWATCH

Marlyse Schulthess, Geneva, Switzerland, assignor to Bulova Watch Company, Inc., New York, N.Y.

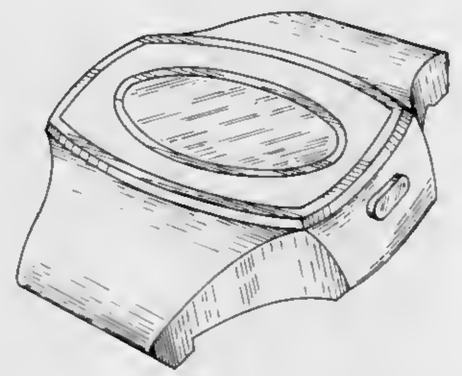
Filed Aug. 15, 1974, Ser. No. 497,763
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



238,759
DIGITAL WRIST WATCH

Eugene Joseph Sulek, Richardson, Tex., assignor to Texas Instruments Incorporated

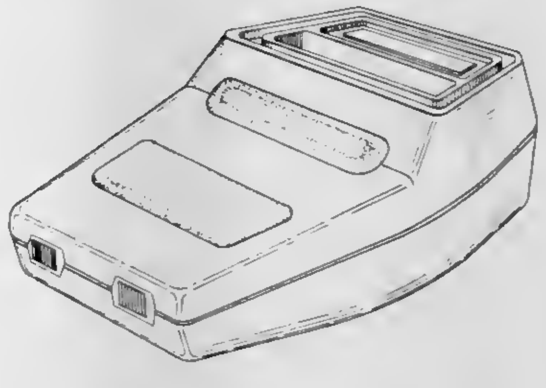
Filed Aug. 29, 1974, Ser. No. 501,549
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



238,760
STOP WATCH CASING

Gerald Ray Daum, 14655 Coit Road, Dallas, Tex. 75240

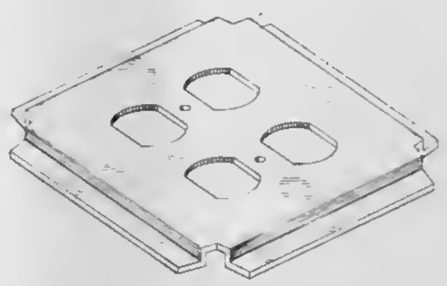
Filed Aug. 26, 1974, Ser. No. 500,974
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—40



238,761
WALLPAPER TEMPLATE FOR A DOUBLE-DUAL ELECTRICAL OUTLET PLATE

John Douglass Black, 9332 Ambassador Drive, Westminster, Calif. 92683

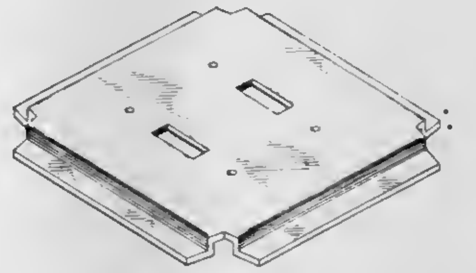
Filed Nov. 22, 1974, Ser. No. 526,140
Term of patent 14 years
Int. Cl. D8—*09;* D19—*08*
U.S. Cl. D10—64



238,762
WALLPAPER TEMPLATE FOR A DOUBLE ELECTRICAL SWITCH PLATE

John Douglass Black, 9332 Ambassador Drive, Westminster, Calif. 92683

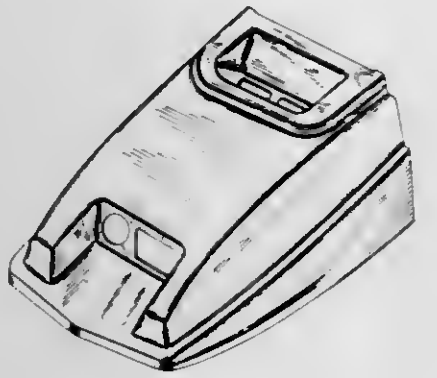
Filed Nov. 22, 1974, Ser. No. 526,141
Term of patent 14 years
Int. Cl. D8—*09;* D19—*08*
U.S. Cl. D10—64



238,763

SNOWMOBILE ENGINE COWLING

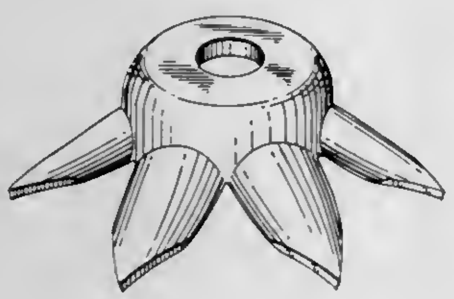
Edwin B. Hatch, West Bend, Wis., assignor to Brunswick Corporation, Skokie, Ill.
Filed Mar. 13, 1974, Ser. No. 450,663
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—7



238,764

ICE STUD FOR SNOWMOBILE TRACKS

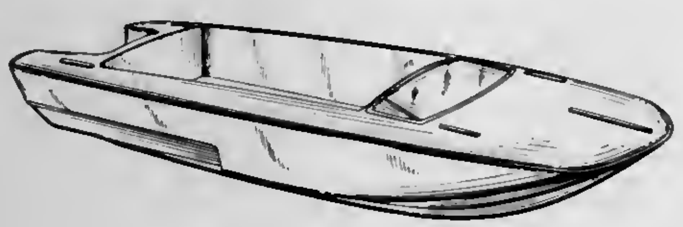
Roger G. Janssen, Rte. 2, Crookston, Minn. 56716, and Wayne G. Schantzen, 201 S. Crocker, Thief River Falls, Minn. 56701
Filed May 6, 1974, Ser. No. 467,019
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—7



238,765

MOTOR BOAT BODY

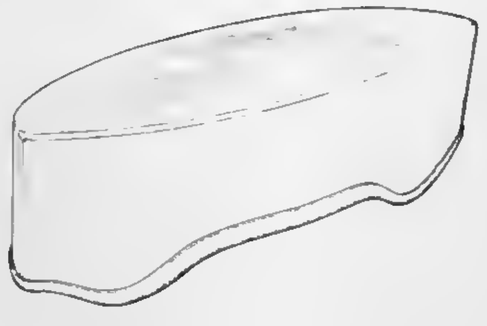
Kalman Szabadi, Vac, Hungary, assignor to Novex Talalmanyfejleszto es Ertekesito, Budapest, Hungary
Filed Sept. 4, 1974, Ser. No. 503,485
Claims priority, application Hungary Mar. 6, 1974
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62



238,766

MOTORCYCLE ACCESSORY HOUSING

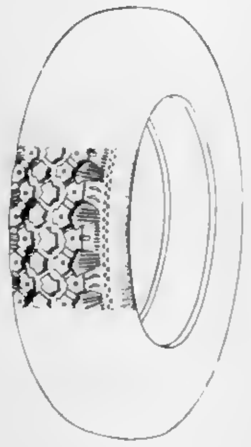
David J. Fritts and Faye B. Fritts, both of 3422 Caracas Drive, Mesquite, Tex. 75149
Filed Oct. 3, 1974, Ser. No. 511,583
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114



238,767

TIRE

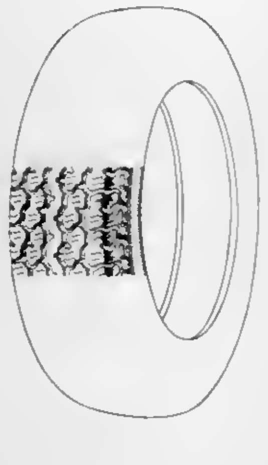
Yvon Maurice Dartois, Bois-Colombes, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber Colombes
Filed Oct. 9, 1973, Ser. No. 404,321
Claims priority, application France June 28, 1973
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—136



238,768

TIRE

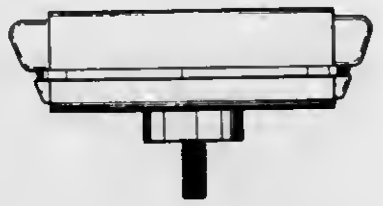
Daniel Dubos, Asnieres, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber Colombes
Filed Jan. 13, 1975, Ser. No. 540,344
Claims priority, application France Oct. 2, 1974
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



238,769

TIRE HOLDER FOR HOLDING PNEUMATIC TIRE ON A WHEEL RIM

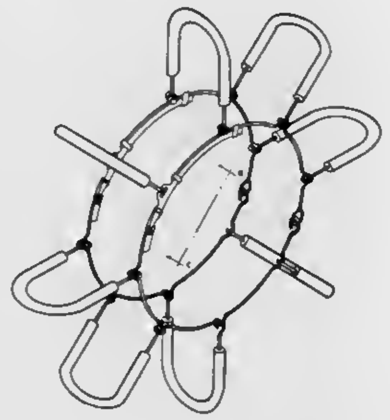
Borje Christer Carl-Gustav Victor, Trelleborg, Sweden, assignor to Trelleborgs Gummifabriks AB, Trelleborg, Sweden
Filed Sept. 5, 1974, Ser. No. 503,546
Claims priority, application Sweden Mar. 11, 1974
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—153



238,770

DEMOUNTABLE TRACTION BOOSTER FOR MOTOR VEHICLE TIRES

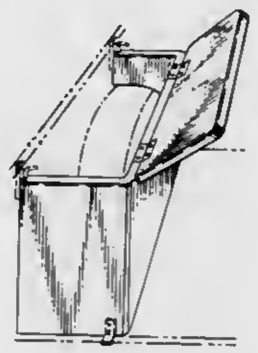
Leonard Leslie Lewis, 35 Carroll St., Poughkeepsie, N.Y. 12601
Filed July 22, 1974, Ser. No. 490,504
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D12—154



238,771

COVERED STORAGE PARTITION FOR STATION WAGONS

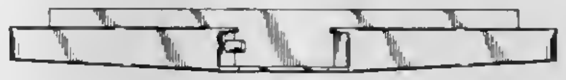
Albin J. Spokus, Sr., 1121 Fairwood Ave., Sunnyvale, Calif. 94086
Filed July 8, 1974, Ser. No. 486,481
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



238,772

BUMPER FOR TRUCKS

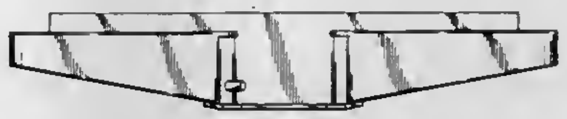
Ted L. Cline, Rush Springs, Okla., assignor to Cline Industries
Filed Oct. 25, 1974, Ser. No. 517,869
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—169



238,773

BUMPER FOR TRUCKS

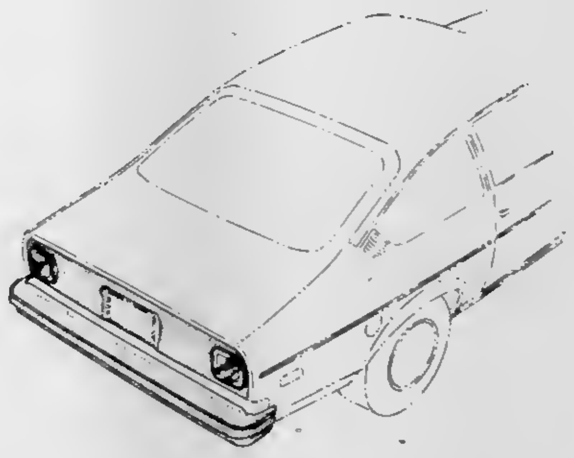
Ted L. Cline, Rush Springs, Okla., assignor to Cline Industries
Filed Oct. 25, 1974, Ser. No. 517,873
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—169



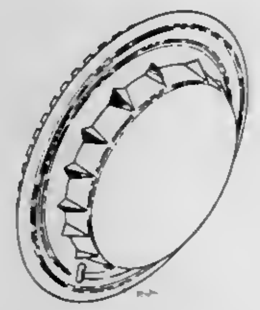
238,774

COMBINED BUMPER, REAR PANEL AND TAILLIGHT ASSEMBLY

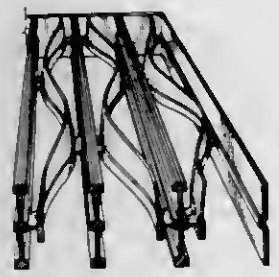
Henry G. Haga, Bloomfield Hills, and Jerry P. Palmer, Royal Oak, Mich., assignors to General Motors Corporation
Filed Feb. 22, 1974, Ser. No. 444,864
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D12—170



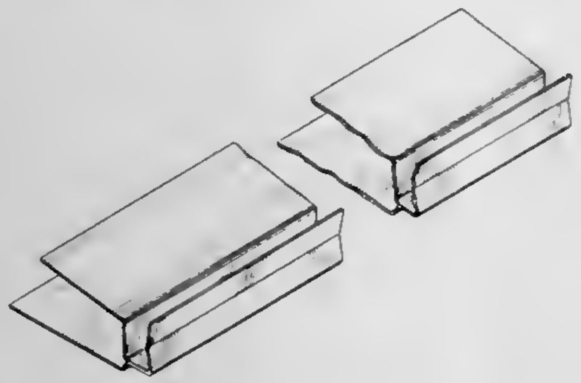
238,775
WHEEL COVER
Norman Earl Whitinger, 2117 S. Fawn Drive,
Spokane, Wash. 99206
Filed Jan. 6, 1975, Ser. No. 538,761
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—212



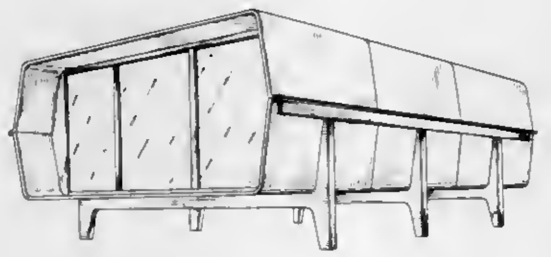
238,776
GRATING
Ronald McKenzie Howells, Yennora, New South Wales,
Australia, assignor to Comalco (J & S) Pty. Limited
Filed Nov. 6, 1972, Ser. No. 304,107
Claims priority, application Australia June 8, 1972
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 J



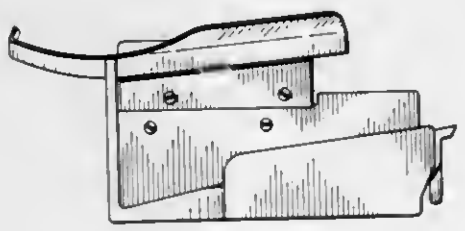
238,777
GUTTER FOR BUILDINGS
Raymond Rodoey McSherry-Rhoades, 72 Jenkins Grove,
Copnor, Portsmouth, Hampshire, England
Filed Sept. 11, 1973, Ser. No. 396,304
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 H



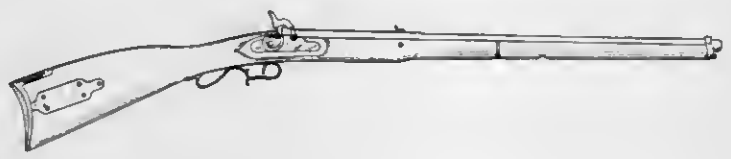
238,778
MODULAR BUILDING
Berne A. Watkins, 76 Cambridge Road,
Gleomont, N.Y. 12077
Filed Nov. 16, 1973, Ser. No. 416,718
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



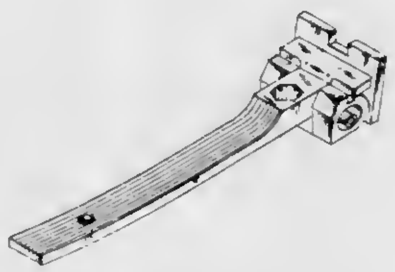
238,779
DOCUMENT TRAY
Donald A. Robertson, Fairport, and Craig A. Smith, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 8, 1974, Ser. No. 495,604
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—92



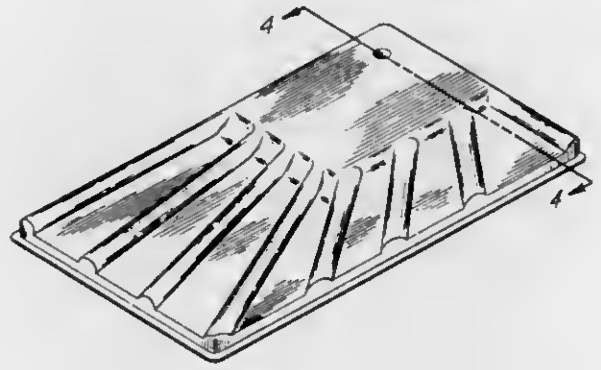
238,780
AIR RIFLE
S. Jack Hillock, Naucalpan de Juarez, Mexico, assignor to
Ultra-Hi Products Co. Inc., Hawthorne, N.J.
Filed Nov. 26, 1974, Ser. No. 527,256
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—6



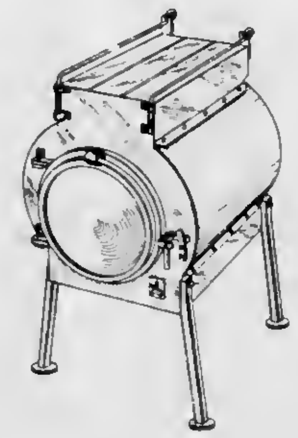
238,781
GUN SIGHT
Austin Behlert, 550 Boulevard,
Kenilworth, N.J. 07033
Filed Oct. 29, 1974, Ser. No. 518,597
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D22—8



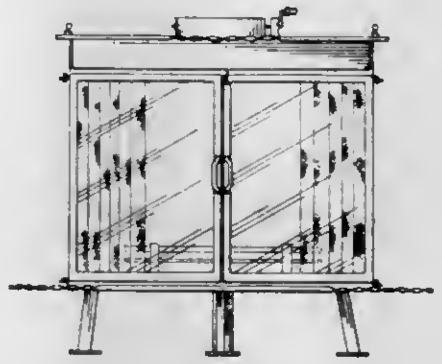
238,782
AQUARIUM FILTER BASE
Roth K. Christopherson, 5404 Plaza,
Wichita, Kans. 67208
Filed Nov. 4, 1974, Ser. No. 520,744
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



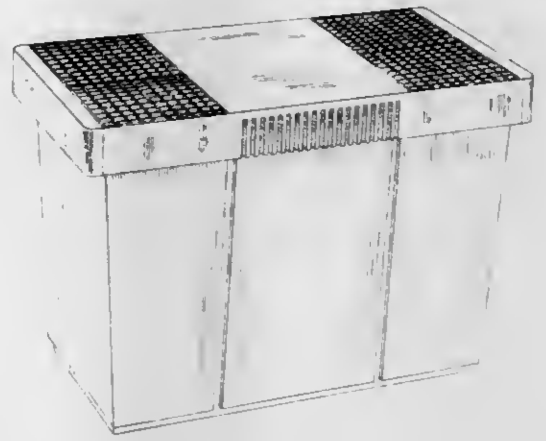
238,783
COMBINATION STOVE AND HEATER
Peter Kilham, Barrington, R.I., assignor to
Droll Yankees, Inc.
Filed May 13, 1974, Ser. No. 469,335
Term of patent 14 years
Int. Cl. D23—*03, 05*
U.S. Cl. D23—97



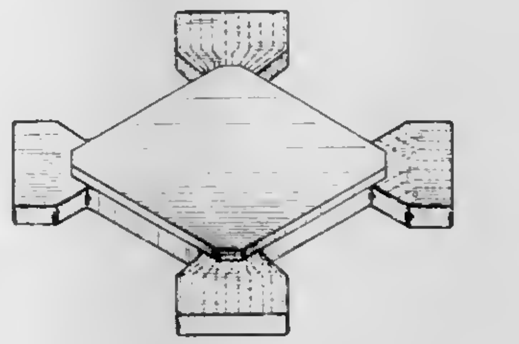
238,784
FIREPLACE OR SIMILAR ARTICLE
Donald L. Wescott, Rte. 12, Sherburne, N.Y. 13460
Filed Dec. 30, 1974, Ser. No. 537,437
Term of patent 7 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



238,785
COOL VAPOR HUMIDIFIER
Andrew J. Alger, Chicago, Ill., and Eugene R. Luedtke, Reedsburg, Wis., assignors to Gerber Products Company, Freemont, Mich.
Filed Jan. 29, 1975, Ser. No. 545,247
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—146

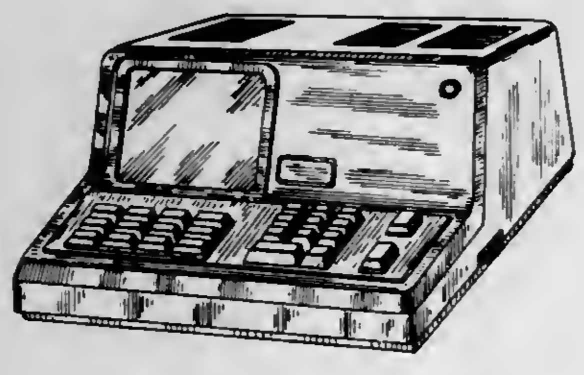


238,786
CIRCUIT MOUNTING PACKAGE
David Nixen, Anaheim, and Thomas T. Chen, Yorba Linda, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jan. 24, 1974, Ser. No. 436,304
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 R



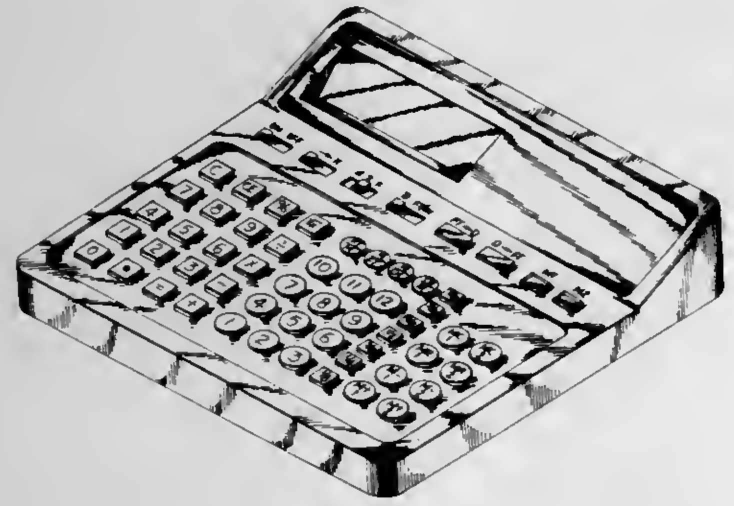
238,787
CATHODE RAY TUBE TERMINAL DEVICE OR SIMILAR ARTICLE

James R. Ferrara, Poundridge, N.Y., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed May 10, 1974, Ser. No. 468,780
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D26—5 C



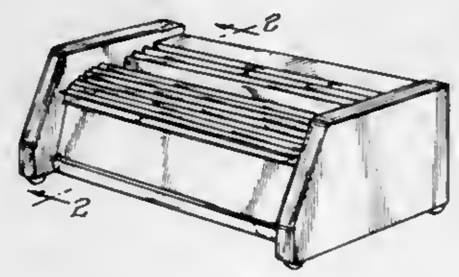
238,788
CALCULATOR

Alan B. Goldsamt, Banksville Road, Greenwich, Conn. 06830
Filed Sept. 19, 1974, Ser. No. 507,532
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D26—5 C



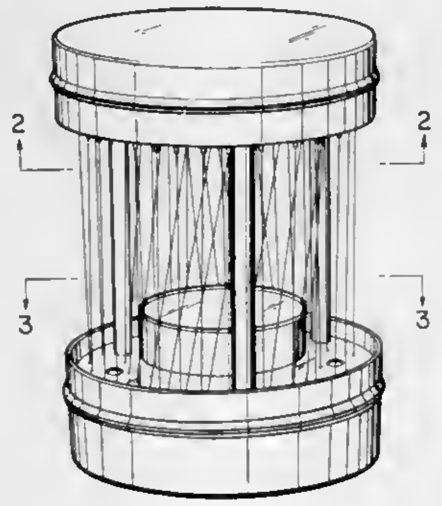
238,789
AMPLIFIER HOUSING

Charles A. Ross, Fort Scott, Kans., assignor to Road Electronics, Inc., Fort Scott, Kans.
Filed Dec. 16, 1974, Ser. No. 532,955
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 G



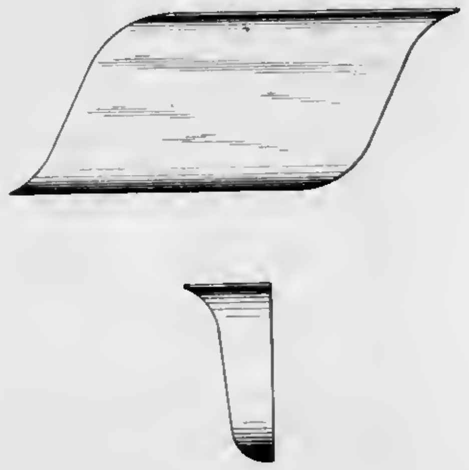
238,790
CAKE DECORATION

Katherine V. Orosz, 616 E. Pearl St., Toledo, Ohio 43608, and Carol A. Christopher, 1361 E. Rauch Road, Erie, Mich. 48133
Filed Apr. 22, 1974, Ser. No. 462,808
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 R



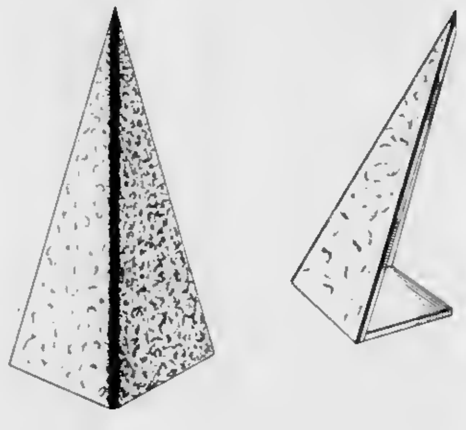
238,791
WALL PLAQUE

Donovan Worland, San Francisco, Calif., assignor to Miller Brewing Company, Milwaukee, Wis.
Filed Nov. 1, 1974, Ser. No. 519,956
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A



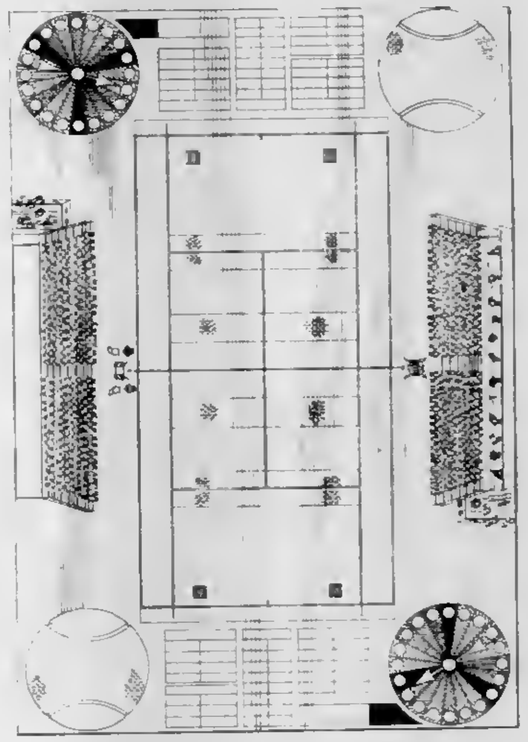
238,792
SCRATCHING POST FOR A CAT

Lionel A. White, 2305 Penrose St., San Diego, Calif. 92110
Filed May 15, 1974, Ser. No. 470,172
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—42



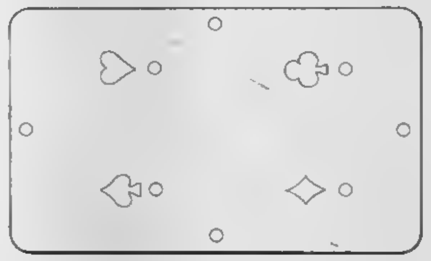
238,793
TENNIS GAME BOARD

James William Wallace, San Antonio, Tex., assignor to Wallace, Oxford & Bray, Inc., San Antonio, Tex.
Filed Oct. 4, 1973, Ser. No. 403,471
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 FG



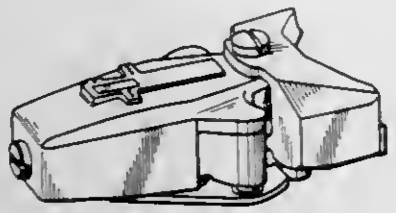
238,794
CARD GAME PEG BOARD

Frank I. Smythe, 715 Tam-O-Shanter Ave., Sun City Center, Fla. 33570
Filed Dec. 26, 1973, Ser. No. 427,463
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—13 A



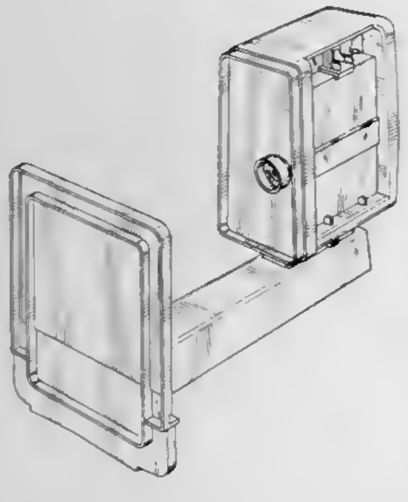
238,795
TOE FIXTURE FOR A SKI SAFETY BINDING

Noriyasu Hashioka, Tokyo, Japan, assignor to Hope Kabushiki Kaisha, Tokyo-to, Japan
Filed May 22, 1974, Ser. No. 472,384
Claims priority, application Japan Nov. 24, 1973
Term of patent 3½ years
Int. Cl. D21—*02*
U.S. Cl. D34—14 D



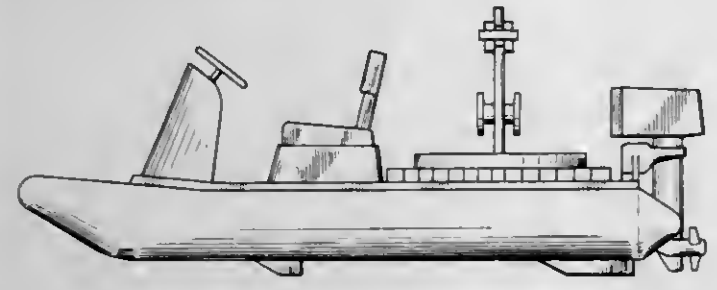
238,796
TOY PROJECTOR

Charles A. Cummings and Gerald M. Rodmaker, Cincinnati, Ohio, assignors to General Mills Fun Group, Inc., Minneapolis, Minn.
Filed Feb. 4, 1974, Ser. No. 439,518
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 R



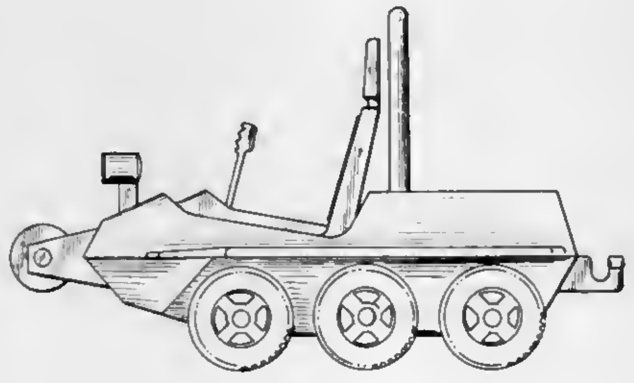
238,797
TOY BOAT

Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif. 91345, Erwin Benkoe, 17965 Medley Drive, Encino, Calif. 91316, and Delmar K. Everitt, Woodland Hills, Ronald F. Chesley, La Crescenta, and Richard D. Frierdich, Canoga Park, Calif.; said Everitt, Chesley and Frierdich assignors to said Goldfarb and Benkoe
Filed Feb. 19, 1974, Ser. No. 443,699
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 JJ



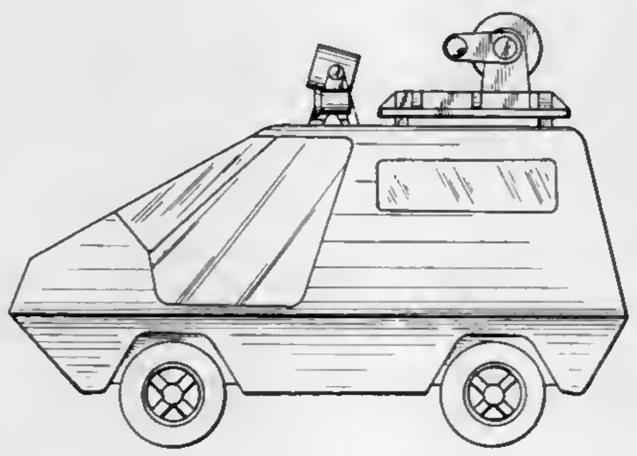
238,798
TOY VEHICLE

Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif. 91345, Erwin Benkoe, 17965 Medley Drive, Encino, Calif. 91316, and Delmar K. Everitt, Woodland Hills, Ronald F. Chesley, La Crescenta, and Richard D. Frierdich, Canoga Park, Calif.; said Everitt, Chesley and Frierdich assignors to said Goldfarb and Benkoe
Filed Feb. 19, 1974, Ser. No. 443,707
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



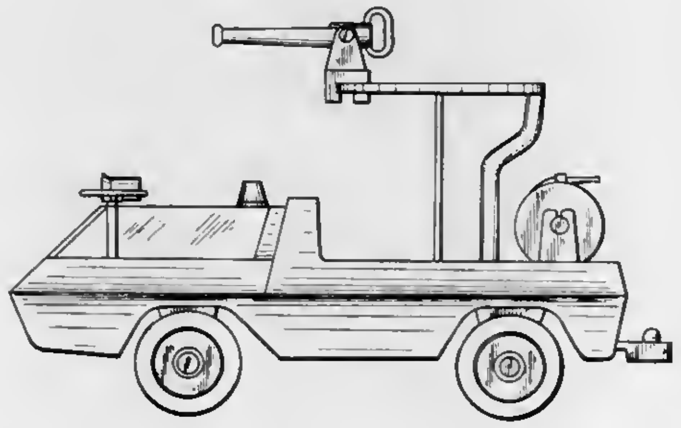
238,799
TOY VEHICLE

Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif. 91345, Erwin Benkoe, 17965 Medley Drive, Encino, Calif. 91316, and Delmar K. Everitt, Woodland Hills, Ronald F. Chesley, La Crescenta, and Richard D. Frierdich, Canoga Park, Calif.; said Everitt, Chesley and Frierdich assignors to said Goldfarb and Benkoe
Filed Feb. 19, 1974, Ser. No. 443,708
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



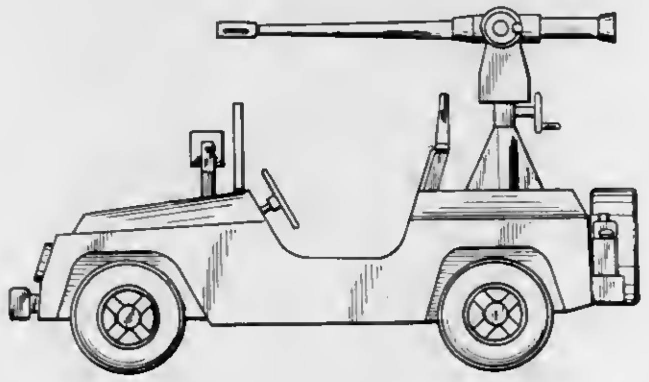
238,800
TOY VEHICLE

Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif. 91345, Erwin Benkoe, 17965 Medley Drive, Encino, Calif. 91316, and Delmar K. Everitt, Woodland Hills, Ronald F. Chesley, La Crescenta, and Richard D. Frierdich, Canoga Park, Calif.; said Everitt, Chesley and Frierdich assignors to said Goldfarb and Benkoe
Filed Feb. 19, 1974, Ser. No. 443,771
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



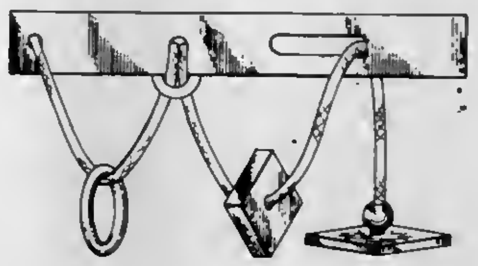
238,801
TOY VEHICLE

Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif. 91345, Erwin Benkoe, 17965 Medley Drive, Encino, Calif. 91316, and Delmar K. Everitt, Woodland Hills, Ronald F. Chesley, La Crescenta, and Richard D. Frierdich, Canoga Park, Calif.; said Everitt, Chesley and Frierdich assignors to said Goldfarb and Benkoe
Filed Feb. 19, 1974, Ser. No. 443,857
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



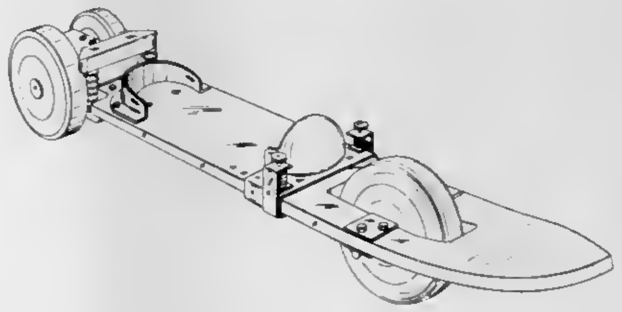
238,802
FLEXIBLE CORD AND RING PUZZLE

David L. Paige, 1682 Newfield Road, Columbus, Ohio 43209
Filed Mar. 20, 1974, Ser. No. 452,807
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M



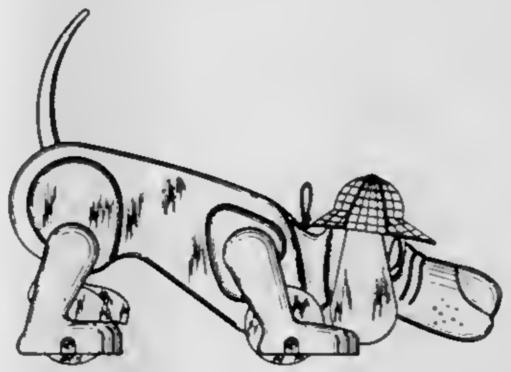
238,803
SKI SKATE

Raymond V. Sessa, 34 Girard St., Marlboro, N.J. 07746
Filed May 9, 1974, Ser. No. 468,252
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AT

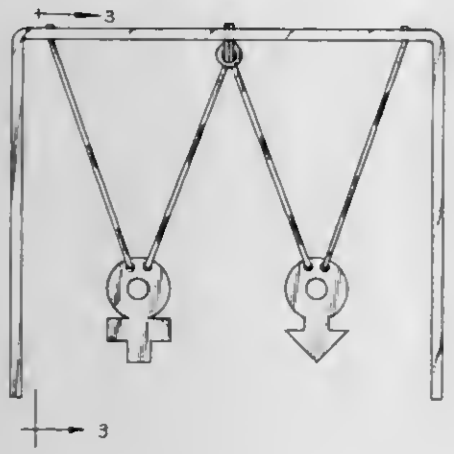


238,804
DOG TOY

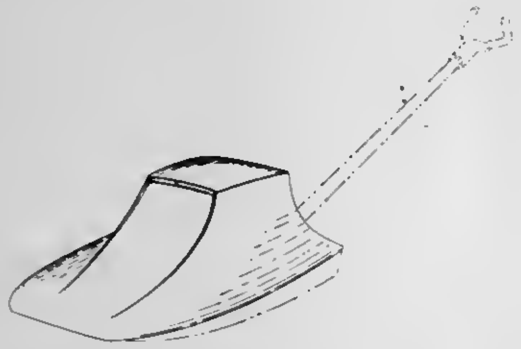
John Holden, Line Ridge Farm, R.D. #1, Mount Joy, Pa. 17552
Filed July 23, 1974, Ser. No. 491,044
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B



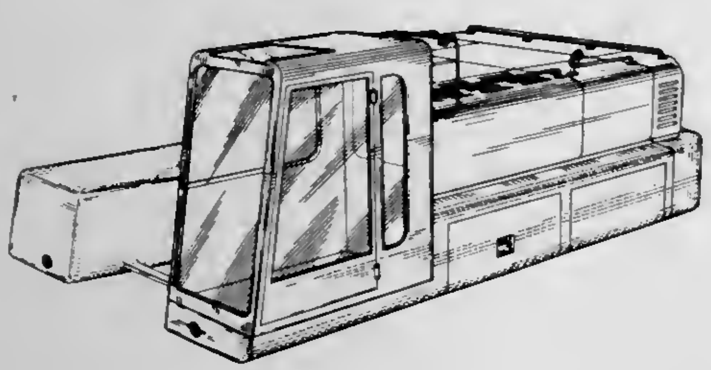
238,805
FLEXIBLE CORD AND RING PUZZLE
David L. Paige, 1682 Newfield Road, Columbus, Ohio 43209
Filed July 31, 1974, Ser. No. 493,417
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AG



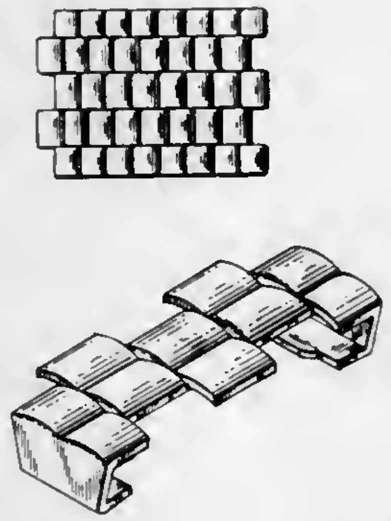
238,806
TOP HOUSING OF A WATER-SKI TOWING DEVICE
Miroslav Uroshevich, 2505 Fleetwood Ave., Cincinnati, Ohio 45211
Filed Oct. 4, 1973, Ser. No. 403,409
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D34—41



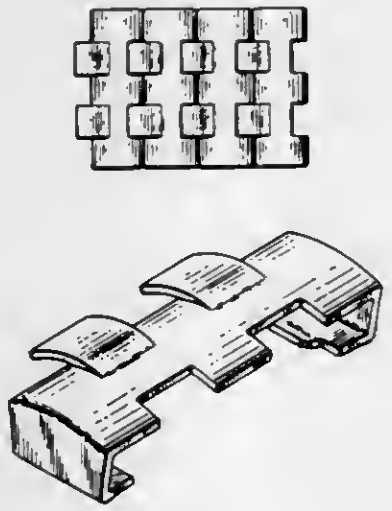
238,807
COMBINED CAB AND BODY STRUCTURE FOR AN EARTH MOVING AND HANDLING MACHINE
Bernard Jean Marie Pierre, Crepy-en-Valois, France, assignor to Poclain, Le Plessis-Belleville, Oise, France
Filed Oct. 22, 1974, Ser. No. 516,994
Claims priority, application France Apr. 23, 1974
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D40—5



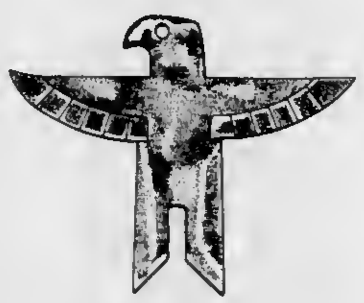
238,808
CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Murray L. Cowan, Norwood, Mass., assignor to Textron Inc.
Filed Sept. 27, 1974, Ser. No. 509,844
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4 E



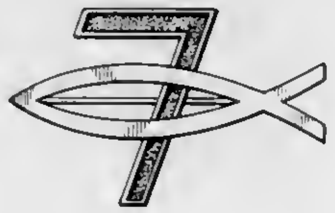
238,809
CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Raymond C. Fontaine, Greenville, R.I., assignor to Textron Inc.
Filed Sept. 27, 1974, Ser. No. 510,077
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4 E



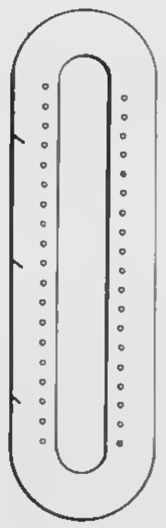
238,810
PENDANT OR SIMILAR ARTICLE
Margaretta C. Roberts, Providence, R.I., assignor to Reed and Barton Corporation, Taunton, Mass.
Filed May 28, 1974, Ser. No. 474,876
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—17



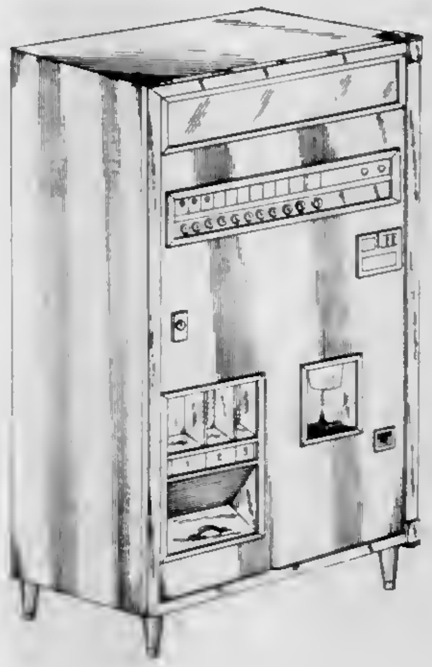
238,811
PIN
Hilary H. Ziglar, 6148 Dilbeck Lane 75240; Melvin R. Carter, 9437 Brentgate Drive 75238; and Libby S. Daniels, 3417 St. Johns Drive 75205, all of Dallas, Tex.
Filed Mar. 11, 1974, Ser. No. 450,124
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—19 N



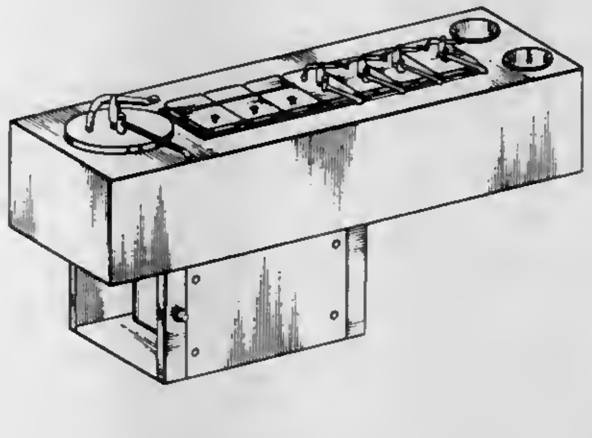
238,812
KNITTING BOARD
Edna Jeanne Fioretti, 5648 Cherry St. Extension, Erie, Pa. 16509
Filed Mar. 20, 1973, Ser. No. 342,946
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D47—5



238,813
VENDING MACHINE
Francis A. Wittern, 1616 Casady Drive, Des Moines, Iowa 50315, and Arthur N. Wirstlin, 360 3rd St., SE., Altoona, Iowa 50009
Filed Apr. 27, 1973, Ser. No. 355,157
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—3 R

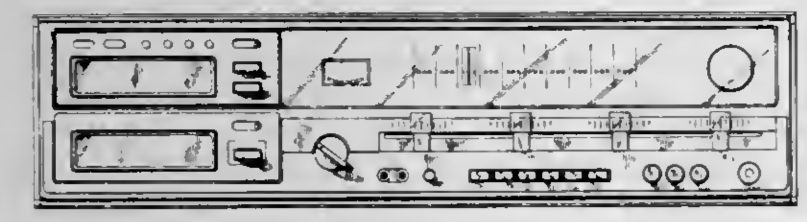


238,814
COMBINED SYRUP AND FRUIT DISPENSER
Bernard L. Rothbardt, Sherman Oaks, Calif., assignor to Baskin-Robbins Ice Cream Company, Burbank, Calif.
Filed May 28, 1974, Ser. No. 474,049
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D55—1 E



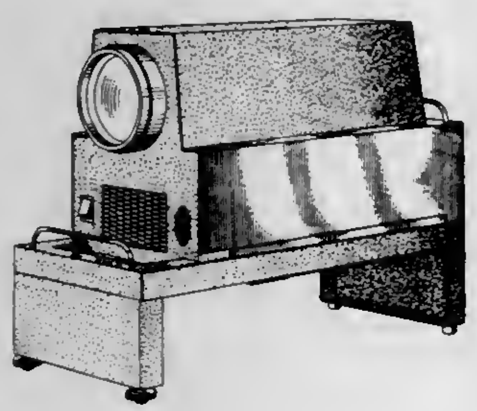
238,815
COMBINED RADIO AND CARTRIDGE RECORDER AND PLAYER

Minol Araki, Tokyo, Japan, assignor to Lloyd's Electronics, Inc., Compton, Calif.
Filed Apr. 1, 1974, Ser. No. 456,815
Term of patent 14 years
Int. Cl. D14—*01, 32*
U.S. Cl. D56—4 B



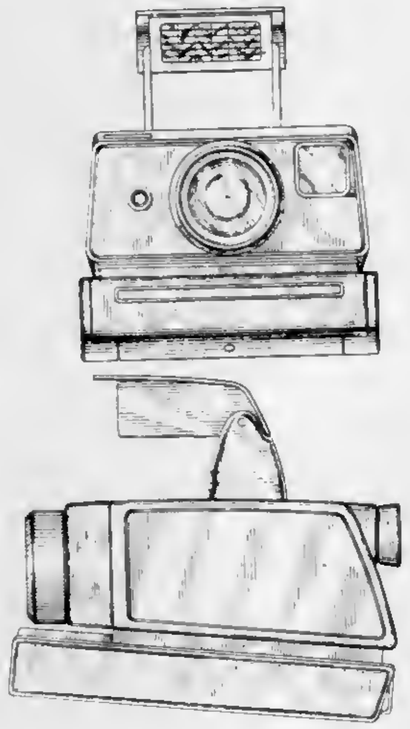
238,816
EPISCOPE

Robert Mees, Wissmar, and Heinrich Janke, Braunfels, Germany, assignors to Ernst Leitz GmbH
Filed Oct. 1, 1973, Ser. No. 402,102
Claims priority, application West Germany Apr. 13, 1973
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 L



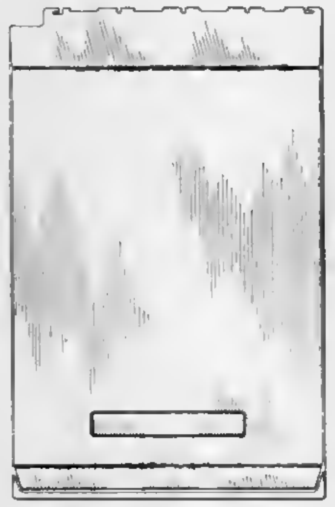
238,817
CAMERA WITH SELF-CONTAINED STROBE LIGHT

Ronald Emmerling, New City, N.Y., assignor to Berkey Photo, Inc., Paramus, N.J.
Filed Jan. 4, 1974, Ser. No. 430,936
Term of patent 14 years
Int. Cl. D03—*02*
U.S. Cl. D61—1 A



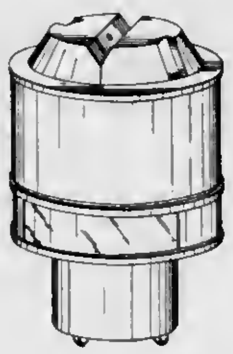
238,818
PLATEN COVER FOR COPIER

Donald A. Robertson, Fairport, and Craig A. Smith, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 8, 1974, Ser. No. 495,605
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



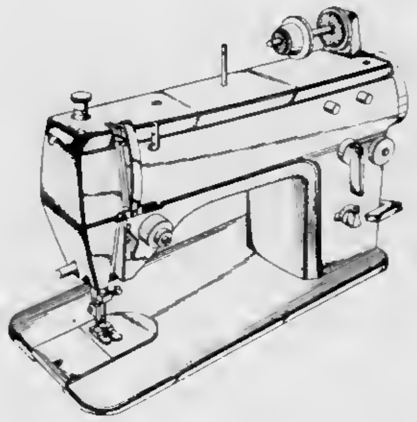
238,819
BOTTLE COOLER

Robert Arthur Arnold, 291 Fergusson Drive, Upper Hutt, New Zealand, and Wayne Tucker Hird, 8 Gribble Grove, Stokes Valley, New Zealand
Filed Aug. 15, 1973, Ser. No. 388,420
Claims priority, application New Zealand Feb. 19, 1973
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D67—4



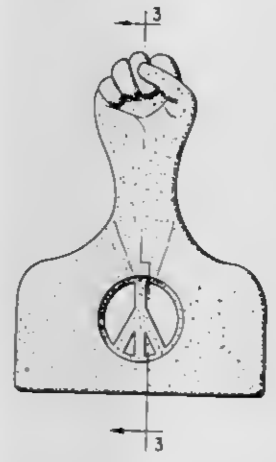
238,820
SEWING MACHINE

James F. Condran, Roselle, and George D. La Police, Somerville, N.J., assignors to The Singer Company
Filed July 17, 1974, Ser. No. 489,200
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



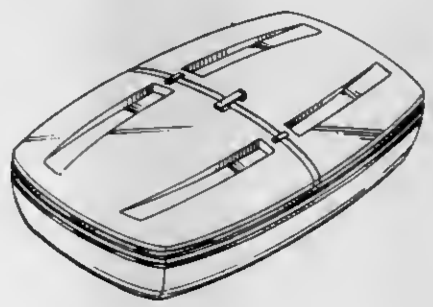
238,821
COMB HANDLE

Anthony R. Romani, Hollidaysburg, Pa. (℅ Antonio's Manufacturing Inc., P.O. Box 1803, Altoona, Pa. 16603)
Filed Jan. 14, 1974, Ser. No. 432,952
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8



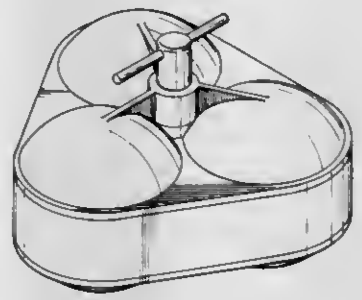
238,822
STORAGE POD FOR A TRAILER TOP OR THE LIKE

Robert L. Brison, Glendora, and Albert J. Luirette, Santa Ana, Calif., assignors to Inca Plastics, Inc., Santa Ana, Calif.
Filed June 19, 1974, Ser. No. 480,995
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R

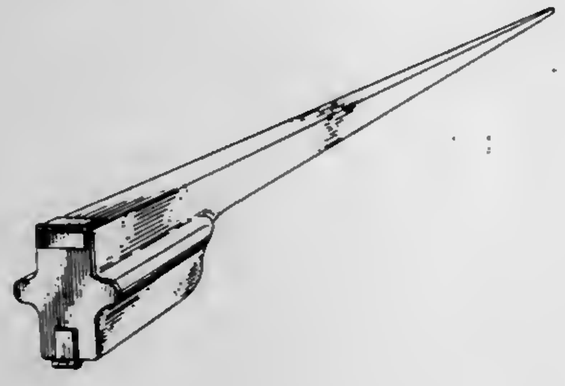


238,823
CONTAINER FOR TENNIS BALLS

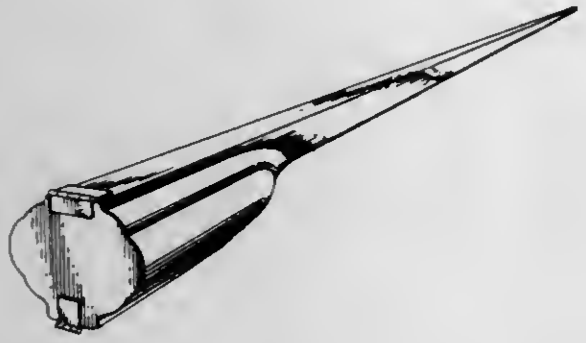
Robert S. Feinberg, 81 Edgemont Place, Teaneck, N.J. 07666, and David A. Selick, 76 Le Roy St., Tenafly, N.J. 07670
Filed Aug. 16, 1974, Ser. No. 497,899
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



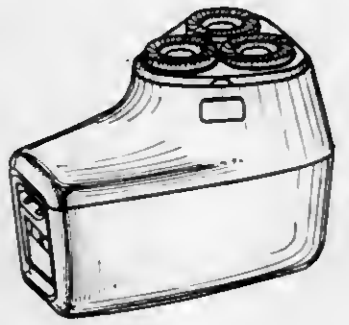
238,824
CARRYING CASE FOR FISHING POLES OR THE LIKE
John Michal, Box 7, South Prairie, Wash. 98385
Filed Aug. 23, 1974, Ser. No. 500,100
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



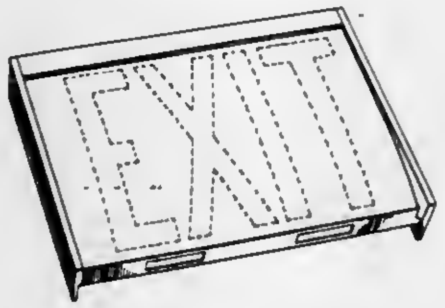
238,825
CARRYING CASE FOR FISHING POLES OR THE LIKE
John Michal, Box 7, South Prairie, Wash. 98385
Filed Aug. 23, 1974, Ser. No. 500,101
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



238,826
DRY SHAVER OR SIMILAR ARTICLE
Maarten Willem van Lelyveld, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 16, 1973, Ser. No. 406,910
Claims priority, application Switzerland Apr. 16, 1973
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



238,827
ILLUMINATED SIGN
William P. Shine, Monroe, Conn., assignor to Dual-Lite Company, Newtown, Conn.
Filed Mar. 11, 1974, Ser. No. 449,736
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 R



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OF
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- Batzer, Hans; and Habermeier, Jurgen, to Ciba-Geigy Corporation. Unsaturated linear polyesters. B 521,128, Cl. 260-75.00N.
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- Bien, Hans-Samuel: *See—*
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- Boden, Heinrich: *See—*
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  - Crast, Leonard Bruce, Jr.; and Gottstein, William Joseph, B 516,047.
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  - Naito, Takayuki; Okumura, Jun; and Kamachi, Hajime, B 473,040.
- Brown, Maurice H. Adjustable wire control mechanism. B 506,167, Cl. 242-129.800.
- Buxbaum, Lothar; Habermeier, Jurgen; and Batzer, Hans, to Ciba-Geigy Corporation. Linear, thermoplastic polyesters. B 552,489, Cl. 260-75.00N.
- Carlson, Robert C., to Minnesota Mining and Manufacturing Company. Sulfonated aromatic polyisocyanates and preparation of stable anionic polyurethane or polyurea latices therefor. B 414,266, Cl. 260-29.2TN.
- Cellarius-Haigermoser, Herta, legal representative: *See—*
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	Class 208			
15		B 437,596	C	Jan. 27, 1976
78		B 467,250	C	Feb. 3, 1976
210		B 501,317	C	Jan. 13, 1976
253		B 438,916	C	Jan. 13, 1976
	Class 210			
130		B 532,901	C	Jan. 13, 1976
	Class 214			
18N		B 373,344	M	Feb. 3, 1976
58		B 555,772	M	Jan. 13, 1976
152		B 480,604	M	Jan. 13, 1976
	Class 215			
216		B 541,015	M	Jan. 27, 1976
	Class 219			
233		B 463,388	E	Feb. 10, 1976
273		B 403,507	E	Feb. 10, 1976
	Class 220			
23.83		B 529,156	M	Jan. 13, 1976
288		B 516,032	M	Jan. 27, 1976
337		B 578,447	M	Jan. 20, 1976
	Class 222			
67		B 521,480	M	Jan. 13, 1976
136		B 487,260	M	Jan. 27, 1976
306		B 559,954	M	Feb. 3, 1976
325		B 515,303	M	Jan. 20, 1976
	Class 228			
190		B 473,972	M	Jan. 13, 1976
	Class 229			
2.5		B 537,990	M	Jan. 13, 1976
17R		B 461,257	M	Jan. 13, 1976
62.5		B 429,157	M	Jan. 27, 1976
	Class 235			
151.34		B 492,946	E	Jan. 27, 1976
152		B 559,737	E	Jan. 20, 1976
154		B 534,016	E	Feb. 3, 1976
156		B 536,009	E	Jan. 27, 1976
181		B 520,924	E	Jan. 27, 1976
	Class 236			
15A		B 558,813	M	Feb. 3, 1976
	Class 239			
424		B 580,921	M	Jan. 13, 1976
424		B 586,215	M	Jan. 20, 1976
	Class 240			
41.35R		B 454,283	E	Feb. 3, 1976
	Class 242			
43R		B 521,600	M	Jan. 27, 1976
129.8		B 506,167	M	Feb. 10, 1976
	Class 244			
134R		B 535,928	M	Jan. 13, 1976

NOTE.—First number, class; second number, subclass; third number, document number

			CAT.	PUB. DATE
169		B 511,346	M	Jan. 27, 1976
	Class 248			
73		B 494,806	M	Feb. 3, 1976
	Class 249			
135		B 548,155	M	Jan. 13, 1976
	Class 250			
210		B 515,908	E	Jan. 20, 1976
227		B 522,577	E	Jan. 27, 1976
		B 560,765	E	Feb. 3, 1976
291		B 500,981	E	Jan. 27, 1976
402		B 451,534	E	Jan. 13, 1976
577		B 507,396	E	Feb. 10, 1976
	Class 251			
319		B 490,589	M	Feb. 3, 1976
	Class 252			
182		B 471,405	C	Feb. 10, 1976
301.4S		B 535,813	C	Jan. 27, 1976
364		B 370,309	C	Jan. 20, 1976
429R		B 457,850	C	Feb. 10, 1976
454		B 450,967	C	Jan. 13, 1976
518		B 585,731	C	Feb. 3, 1976
543		B 403,766	C	Feb. 10, 1976
	Class 254			
186R		B 511,407	M	Feb. 10, 1976
188		B 437,559	M	Feb. 3, 1976
	Class 259			
191		B 556,057	M	Jan. 13, 1976
	Class 260			
2.5AC		B 497,194	C	Feb. 3, 1976
		B 537,102	C	Jan. 13, 1976
2.5AJ		B 557,856	C	Feb. 10, 1976
2.5AM		B 422,063	C	Feb. 3, 1976
2.5AR		B 483,606	C	Jan. 27, 1976
		B 502,589	C	Jan. 27, 1976
2.5AV		B 460,441	C	Jan. 13, 1976
2.5AW		B 483,762	C	Feb. 10, 1976
2.5R		B 471,579	C	Jan. 13, 1976
17R		B 510,998	C	Feb. 10, 1976
18TN		B 528,303	C	Feb. 10, 1976
23XA		B 483,865	C	Jan. 13, 1976
28.5AS		B 501,540	C	Jan. 13, 1976
29.2EP		B 526,997	C	Jan. 13, 1976
29.2TN		B 414,266	C	Feb. 10, 1976
33.6AQ		B 657,438	C	Jan. 20, 1976
37EP		B 441,605	C	Feb. 3, 1976
37R		B 465,955	C	Feb. 3, 1976
42.15		B 415,122	C	Feb. 10, 1976
45.75W		B 561,387	C	Feb. 10, 1976
45.8N		B 506,648	C	Feb. 3, 1976
45.85R		B 236,342	C	Feb. 10, 1976
47EP		B 440,633	C	Feb. 10, 1976
75N		B 521,125	C	Feb. 10, 1976
		B 521,126	C	Feb. 10, 1976
		B 521,128	C	Feb. 10, 1976
		B 552,489	C	Feb. 10, 1976
77.5CR		B 306,668	C	Feb. 3, 1976
78.5R		B 437,209	C	Feb. 3, 1976
88.2C		B 417,014	C	Jan. 13, 1976
112.5R		B 471,617	C	Feb. 10, 1976
		B 503,817	C	Jan. 13, 1976
140R		B 503,579	C	Feb. 10, 1976
239A		B 349,370	C	Jan. 27, 1976
239D		B 520,256	C	Jan. 13, 1976
		B 536,935	C	Jan. 13, 1976
239.1		B 538,753	C	Feb. 10, 1976
239.3A		B 506,148	C	Feb. 3, 1976
243C		B 473,039	C	Feb. 10, 1976
		B 473,040	C	Feb. 10, 1976
		B 516,047	C	Feb. 10, 1976
		B 516,296	C	Feb. 3, 1976
		B 526,096	C	Feb. 3, 1976
244R		B 348,433	C	Feb. 3, 1976
247.7T		B 468,052	C	Feb. 10, 1976
248NS		B 537,711	C	Jan. 13, 1976
250BC		B 491,883	C	Feb. 3, 1976
256.5R		B 531,096	C	Feb. 10, 1976
285.5		B 530,318	C	Jan. 13, 1976
293.54		B 545,464	C	Feb. 10, 1976
293.56		B 447,000	C	Feb. 3, 1976
294.8D		B 526,510	C	Jan. 20, 1976
295.5B		B 458,617	C	Feb. 3, 1976
296R		B 477,252	C	Jan. 13, 1976
306.7C		B 385,024	C	Feb. 10, 1976
307D		B 486,280	C	Feb. 3, 1976
308A		B 488,111	C	Jan. 13, 1976
309.2		B 542,158	C	Jan. 13, 1976
326R		B 398,084	C	Feb. 3, 1976
326.5B		B 276,026	C	Feb. 3, 1976
326.5FN		B 484,269	C	Feb. 10, 1976
326.9		B 477,481	C	Feb. 3, 1976
327C		B 480,452	C	Feb. 10, 1976
330.5		B 552,498	C	Jan. 13, 1976
343.2R		B 491,032	C	Feb. 10, 1976
343.3		B 536,675	C	Jan. 20, 1976
343.3R		B 495,550	C	Feb. 3, 1976
		B 495,554	C	Feb. 3, 1976
346.2M		B 440,858	C	Feb. 3, 1976
		B 302,160	C	Feb. 3, 1976
348.5L		B 521,324	C	Jan. 27, 1976
348.6		B 546,295	C	Jan. 20, 1976
378		B 431,713	C	Feb. 10, 1976
429.7		B 464,587	C	Feb. 3, 1976
448.2H		B 390,408	C	Feb. 3, 1976
465.5R		B 747,785	C	Feb. 10, 1976
465.9		B 456,900	C	Feb. 3, 1976
471R		B 388,521	C	Jan. 13, 1976
472		B 472,256	C	Jan. 13, 1976
513R		B 494,669	C	Feb. 3, 1976
515A		B 390,031	C	Jan. 13, 1976
516		B 386,828	C	Feb. 3, 1976
534R		B 301,143	C	Jan. 27, 1976
557R		B 386,257	C	Feb. 3, 1976
566A		B 513,014	C	Feb. 10, 1976
593R		B 468,350	C	Jan. 13, 1976
601R		B 208,916	C	Jan. 13, 1976
609E		B 474,573	C	Jan. 20, 1976
621K		B 470,348	C	Jan. 13, 1976
647		B 394,248	C	Jan. 27, 1976
648F		B 330,736	C	Feb. 3, 1976
674SA		B 426,274	C	Jan. 20, 1976
683.15D		B 428,103	C	Feb. 10, 1976
859R		B 519,485	C	Feb. 10, 1976
873		B 465,688	C	Jan. 27, 1976
876B		B 575,851	C	Feb. 10, 1976
880B		B 510,458	C	Feb. 10, 1976
884		B 456,579	C	Feb. 10, 1976
890		B 495,408	C	Feb. 3, 1976
937		B 512,373	C	Feb. 10, 1976
940		B 496,430	C	Feb. 10, 1976
942		B 386,673	C	Feb. 3, 1976
	Class 261			
39A		B 562,462	C	Jan. 13, 1976
98		B 480,702	C	Jan. 27, 1976
	Class 264			
36		B 308,659	C	Jan. 27, 1976
51		B 506,144	C	Feb. 10, 1976
		B 508,369	C	Jan. 13, 1976
161		B 555,437	C	Feb. 3, 1976
225		B 453,759	C	Jan. 27, 1976
	Class 274			
37		B 526,388	M	Feb. 3, 1976
	Class 280			
150.5		B 583,051	M	Feb. 3, 1976
236		B 572,642	M	Feb. 10, 1976
	Class 293			
71P		B 552,932	M	Feb. 3, 1976
	Class 296			
35R		B 463,671	M	Jan. 13, 1976
	Class 298			
35M		B 510,588	M	Jan. 27, 1976
	Class 305			
27		B 506,566	M	Jan. 20, 1976
	Class 307			
88.3		B 540,872	E	Jan. 20, 1976
137		B 466,444	E	Jan. 20, 1976
205		B 513,368	E	Feb. 3, 1976
232		B 540,078	E	Jan. 13, 1976

NOTE.—First number, class; second number, subclass; third number, document number

			CAT.	PUB. DATE
255		B 492,688	E	Jan. 20, 1976
270		B 497,960	E	Jan. 20, 1976
293		B 519,932	E	Feb. 3, 1976
296		B 512,849	E	Feb. 3, 1976
	Class 310			
9.6		B 501,482	E	Jan. 13, 1976
41		B 561,784	E	Jan. 27, 1976
155		B 592,143	C	Jan. 27, 1976
	Class 313			
42		B 534,443	E	Jan. 27, 1976
60		B 513,706	M	Jan. 13, 1976
99		B 518,859	E	Feb. 3, 1976
273		B 531,929	E	Jan. 20, 1976
366		B 515,455	E	Jan. 27, 1976
404		B 523,696	E	Jan. 13, 1976
452		B 160,045	E	Jan. 13, 1976
477		B 279,969	E	Jan. 13, 1976
	Class 315			
169TV		B 463,322	E	Jan. 20, 1976
371		B 483,615	E	Jan. 27, 1976
388		B 516,002	E	Jan. 13, 1976
399		B 467,971	E	Jan. 13, 1976
	Class 317			
9R		B 488,634	E	Jan. 20, 1976
120		B 509,606	E	Feb. 3, 1976
259		B 506,461	E	Jan. 20, 1976
	Class 318			
139		B 475,236	E	Feb. 3, 1976
231		B 511,886	E	Feb. 3, 1976
257		B 502,973	E	Jan. 27, 1976
	Class 321			
2		B 533,734	E	Jan. 27, 1976
7		B 509,185	E	Feb. 3, 1976
61		B 495,759	E	Feb. 3, 1976
	Class 323			
1		B 430,276	E	Jan. 20, 1976
17		B 459,811	E	Jan. 20, 1976
		B 583,089	E	Jan. 27, 1976
22T		B 501,181	E	Feb. 10, 1976
	Class 324			
13		B 079,099	E	Jan. 13, 1976
51		B 534,767	E	Feb. 3, 1976
60C		B 540,218	E	Feb. 10, 1976
62		B 465,393	E	Jan. 27, 1976
	Class 325			
40		B 558,220	E	Jan. 27, 1976
468		B 544,961	E	Jan. 13, 1976
	Class 328			
129		B 78,315	E	Feb. 10, 1976
155		B 550,693	E	Jan. 20, 1976
	Class 330			
33		B 439,542	E	Jan. 27, 1976
207P		B 553,460	E	Feb. 3, 1976
	Class 331			
44ST		B 527,669	E	Jan. 13, 1976
51		B 538,686	E	Jan. 13, 1976
94.5C		B 549,931	E	Jan. 20, 1976
94.5L		B 506,916	E	Feb. 3, 1976
94.5P		B 394,350	E	Jan. 13, 1976
116R		B 527,693	E	Feb. 3, 1976
	Class 333			
30R		B 453,616	E	Jan. 27, 1976
31A		B 568,770	E	Feb. 10, 1976
72		B 534,991	E	Jan. 27, 1976
73W		B 339,194	E	Feb. 3, 1976
	Class 335			
210		B 541,517	E	Jan. 13, 1976
253		B 515,452	E	Feb. 10, 1976
	Class 338			
166		B 489,526	E	Feb. 3, 1976
202		B 528,761	E	Feb. 10, 1976
	Class 340			
172.5		B 461,336	E	Feb. 3, 1976
		B 482,907	E	Jan. 20, 1976
173R		B 545,945	M	Jan. 27, 1976
174DC		B 443,712	E	Jan. 27, 1976
174TF		B 429,018	C	Feb. 10, 1976
		B 455,425	E	Feb. 3, 1976
		B 476,681	E	Jan. 13, 1976
		B 499,718	E	Jan. 27, 1976
198		B 546,665	E	Jan. 20, 1976
347AD		B 507,647	E	Jan. 27, 1976
		B 526,106	E	Jan. 27, 1976
347CC		B 498,500	E	Jan. 20, 1976
	Class 343			
7A		B 248,240	E	Jan. 13, 1976
7.7		B 484,029	E	Feb. 10, 1976
100LE		B 488,395	E	Jan. 27, 1976
100LE		B 496,502	E	Jan. 20, 1976
786		B 547,994	E	Jan. 20, 1976
815		B 563,244	E	Jan. 27, 1976
	Class 346			
75		B 512,964	E	Feb. 10, 1976
	Class 350			
96WG		B 381,985	M	Feb. 3, 1976
		B 537,722	M	Feb. 3, 1976
103		B 586,663	M	Feb. 3, 1976
173		B 469,947	M	Jan. 20, 1976
310		B 520,543	M	Jan. 27, 1976
320		B 548,440	M	Feb. 3, 1976
	Class 354			
70		B 533,580	E	Feb. 3, 1976
298		B 489,328	E	Jan. 20, 1976
	Class 355			
17		B 493,501	M	Feb. 3, 1976
	Class 357			
16		B 496,487	E	Jan. 20, 1976
36		B 508,961	E	Feb. 3, 1976
65		B 470,798	E	Jan. 20, 1976
	Class 358			
8		B 554,939	E	Feb. 10, 1976
41		B 502,289	E	Jan. 13, 1976
	Class 360			
1		B 484,365	E	Jan. 27, 1976
15		B 283,941	E	Feb. 3, 1976
17		B 461,874	E	Jan. 27, 1976
27		B 427,883	E	Jan. 20, 1976
80		B 403,477	E	Feb. 3, 1976
81		B 500,176	E	Feb. 3, 1976
85		B 501,253	E	Feb. 3, 1976
130		B 579,806	E	Feb. 3, 1976
	Class 401			
219		B 557,621	M	Feb. 3, 1976
	Class 403			
107		B 513,789	M	Feb. 3, 1976
318		B 540,632	M	Jan. 13, 1976
	Class 404			
71		B 452,672	M	Jan. 13, 1976
77		B 434,206	M	Feb. 3, 1976
	Class 408			
124		B 501,993	M	Jan. 13, 1976
146		B 521,986	M	Feb. 3, 1976
	Class 415			
14		B 471,735	M	Feb. 3, 1976
213R		B 512,547	M	Jan. 13, 1976
214		B 552,006	M	Feb. 3, 1976
	Class 416			
61		B 549,394	M	Jan. 27, 1976
	Class 423			
238		B 485,401	C	Jan. 27, 1976
315		B 471,221	C	Jan. 13, 1976
390		B 549,198	C	Jan. 13, 1976
393		B 491,455	C	Feb. 3, 1976
580		B 379,177	C	Jan. 27, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 424			
9	B 426,424	C	Feb. 3, 1976
115	B 482,660	C	Feb. 10, 1976
122	B 524,179	C	Jan. 13, 1976
177	B 490,995	C	Feb. 3, 1976
203	B 576,903	C	Feb. 3, 1976
230	B 487,133	C	Jan. 27, 1976
257	B 374,588	C	Jan. 27, 1976
258	B 426,639	C	Feb. 3, 1976
263	B 466,929	C	Jan. 27, 1976
267	B 307,698	C	Feb. 3, 1976
	B 407,737	C	Feb. 3, 1976
270	B 521,711	C	Feb. 10, 1976
273	B 566,464	C	Feb. 3, 1976
274	B 496,431	C	Jan. 13, 1976
311	B 457,862	C	Jan. 27, 1976
317	B 510,850	C	Feb. 3, 1976
362	B 495,489	C	Feb. 3, 1976
Class 425			
222	B 163,463	M	Jan. 27, 1976
384	B 562,813	C	Feb. 3, 1976
Class 426			
3	B 583,712	C	Feb. 10, 1976
276	B 535,944	C	Jan. 13, 1976
535	B 560,717	C	Feb. 10, 1976
548	B 439,778	C	Feb. 3, 1976
Class 427			
39	B 476,837	C	Jan. 20, 1976
70	B 381,709	C	Jan. 13, 1976
207	B 501,415	C	Jan. 13, 1976
343	B 160,099	C	Jan. 13, 1976
372	B 409,848	C	Jan. 27, 1976
389	B 519,377	C	Jan. 27, 1976
Class 428			
73	B 481,737	C	Jan. 13, 1976
289	B 402,929	C	Feb. 3, 1976
315	B 373,354	C	Jan. 27, 1976
341	B 450,196	C	Feb. 10, 1976
434	B 457,886	C	Jan. 13, 1976
Class 431			
175	B 534,313	M	Jan. 27, 1976
264	B 398,220	M	Feb. 3, 1976

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF FEBRUARY, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.N.F. - Frangeco: *See—*
Durocher, Jean, 3,937,153.

A/S Haustrups Fabriker: *See—*
Hansen, Erik, 3,938,036.

Aardee Spring & Lock Company Limited: *See—*
McCoag, John, 3,937,507.

AB Bofors: *See—*
Eriksson, Carl-Erik, 3,937,125.

AB Carbox: *See—*
Trolle, Sten, 3,937,057.

Abbott Lahoratories: *See—*
Clark, Robert Kingsbury, Jr., 3,937,813.

Abbott, Randle Leslie, to GKN Transmissions Limited. Control means. 3,937,313, Cl. 192-48.910.

Abex Corporation: *See—*
Adams, Cecil E.; and Born, Ellis H., 3,937,130.

Acker, Jesse L.; and Meserol, Peter M., to Akro-Medic Engineering, Inc. Baseline correction system for pulse trains. 3,938,049, Cl. 328-162.000.

Action Communication Systems, Inc.: *See—*
Matthews, Gordon H., 3,937,938.

Acushnet Company: *See—*
Jepson, John W.; and Allen, Earle F., Jr., 3,937,474.

Adamovske strojirny, narodni podnik: *See—*
Cerny, Arnost; and Svoboda, Jiri, 3,937,142.

Adams, Cecil E.; and Born, Ellis H., to Abex Corporation. Low friction seal assembly. 3,937,130, Cl. 92-125.000.

Adamson, Michael J.: *See—*
United States of America, National Aeronautics and Space Administration; Gilbreath, William P.; Adamson, Michael J.; and Fassbender, Alexander G., 3,938,035.

Addressograph-Multigraph Corporation: *See—*
Krulik, Gerald A.; and Sable, Harvey J., 3,937,571.

Advanced Drainage Systems, Inc.: *See—*
Gahler, Lester, 3,936,961.

Aebi, Rudolf: *See—*
Vogel, Christian; and Aebi, Rudolf, 3,937,730.

Aerojet-General Corporation: *See—*
Briar, Herman P., 3,937,070.

Aeronutronic Ford Corporation: *See—*
Seidler, Helmut G.; and Walker, James T., 3,937,980.

Aeronutronic Ford Corporation (formerly Philco-Ford Corporation): *See—*
Buhler, Frederick T., 3,938,055.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Barras, Gerard, 3,936,978.
Sevenet, Thierry; Thal, Claude; Husson, Henri Philippe; and Potier, Pierre, 3,937,709.
Thureau, Pierre; and Bremont, Michel, 3,937,599.

Agency of Industrial Science & Technology: *See—*
Kataoka, Shoei; Tsurushima, Toshio; Sugiyama, Yoshinobu; Tanoue, Hisao; Yamada, Hideo; and Komamiya, Yasuo, 3,938,110.

AGFA-Gevaert, AG: *See—*
Winkler, Alfred; Engelsmann, Dieter; and Schroder, Rolf, 3,938,170.

Agosta, Vito. Process and apparatus for obtaining the emulsification of nonmiscible liquids. 3,937,445, Cl. 259-4.00R.

Ahlgren, Joseph R., to Barber-Colman Company. Digital frequency generator. 3,937,932, Cl. 235-92.0PE.

Ahlstone, Arthur G.; and Bartos, Josef A., to Vetco Offshore Industries, Inc. Fluid pressure operated shut off valve apparatus. 3,937,251, Cl. 137-594.000.

Ahmed, Adel Abdel Aziz, to RCA Corporation. Threshold detector. 3,937,987, Cl. 307-235.00W.

Aiba, Masahiko: *See—*
Fujimoto, Isao; Kasubuchi, Takeshi; and Aiba, Masahiko, 3,938,163.

Aihara, Ryuzo: *See—*
Ota, Susumu; and Aihara, Ryuzo, 3,938,001.

Ailes, Curtis: *See—*
Hoagland, Harold G., 3,937,368.

Aito, Yuzo: *See—*
Mitani, Yuji; Aito, Yuzo; Yamaguchi, Masahiro; and Nawata, Kiyoshi, 3,937,689.

Aizawa, Hiroshi: *See—*
Hosoe, Kazuya; Matsumoto, Seiichi; Yokota, Hideo; and Aizawa, Hiroshi, 3,937,950.

Ajioka, James S.; and Schaffer, Kenneth L., to Hughes Aircraft Company. Dual frequency feed horn using notched fins for phase and amplitude control. 3,938,159, Cl. 343-756.000.

Akado, Hajime; Kawashima, Yutaka; Yamaguchi, Akihide; and Matsuura, Hideki, to Nippondenso Co., Ltd. Pleated filter in the exhaust manifold. 3,937,015, Cl. 60-288.000.

Akamatsu, Mototsugu. Forming die structure. 3,937,053, Cl. 72-352.000.

Akiba, Toyoaki; Sato, Takero;; Tokuda, Makoto; and Tomono, Hiroshi, to Sumitomo Shipbuilding and Machinery Co. Ltd.; and Sumitomo Metal Industries Limited. Measuring means for measuring secondary cooling zone roller gaps in continuous casting machine. 3,937,271, Cl. 164-150.000.

Akro-Medic Engineering, Inc.: *See—*
Acker, Jesse L.; and Meserol, Peter M., 3,938,049.

Aktiebolaget Demektor: *See—*
Salmijak, Erich; and Goransson, Eric, 3,937,362.

Aktiebolaget Draco: *See—*
Wetterlin, Kjell Ingvar Leopold; and Svensson, Leif Ake, 3,937,838.

Alais, Michel, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Module for conditioning air by the peltier effect and air conditioning installations comprising such modules. 3,937,028, Cl. 62-3.000.

Alasia, Alfred V. Process of coding indicia and product produced thereby. 3,937,565, Cl. 350-320.000.

Albany International Corporation: *See—*
Benson, Richard W.; Crnak, John R.; and Ingraham, Richard G., 3,937,467.

Albert, Michael B.: *See—*
Thornton, Bruce C.; Albert, Michael B.; and Worrell, G. Richard, 3,937,747.

Alday, James Marion; and Rowlands, Kenneth Charles, to Remington Arms Company, Inc. Oscillating target throwing device with rotary magazine assembly. 3,937,204, Cl. 124-9.000.

Aledyne Corporation: *See—*
Northcutt, Michael E., 3,936,938.

Alephtran Systems Ltd.: *See—*
Hyder, Syed Salahuddin, 3,938,099.

Alex E. Clark Limited: *See—*
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Alford, Booker Taliaferro, to American Cyanamid Company. Anthelmintic composition and method of use. 3,937,825, Cl. 424-217.000.

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Allcock, Harry Rex; Gardner, James Earl, deceased (by Gardner, Patricia, executrix); and Smeltz, Karen M., to Firestone Tire & Rubber Company, The. Use of water as a catalyst for the polymerization of chlorocyclophosphazenes. 3,937,790, Cl. 423-300.000.

Allen, Brian Robert; and Harrison, Anthony William, to Girling Limited. Friction plates. 3,937,303, Cl. 188-73.200.

Allen, Clayton H. Noise suppression. 3,937,102, Cl. 74-569.000.

Allen, David Thomas: *See—*
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Allmanna Svenska Elektriska Aktiebolaget: *See—*
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Alvarez-Calderon F., Alberto M. Inflatable envelope systems for use in excavations. 3,937,025, Cl. 61-35.000.

- Alwes, Dieter; Eckardt, Helmut; Leiste, Hans Peter; and Melcher, Robert Alhert, to Siemag Siegener Maschinenbau GmbH. Injection molding apparatus. 3,937,447, Cl. 259-191.000.
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- American Hoechst Corporation: *See—*
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- Amey, John N.; and Ivester, Andrew S., to Polaroid Corporation. Film catcher. 3,938,167, Cl. 354-86.000.
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- Amsen, Willem Hendrik, and Hovens, Paulus Joseph Maria, to U.S. Philips Corporation Picture display apparatus including a line phase discriminator for generating a control voltage. 3,937,876, Cl. 178-7.30R.
- Amundsen, Hyrum J., Jr. Electrical brush contact. 3,937,542, Cl. 339-3.00R.
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  - Shank, Herbert C., Jr., 3,937,854.
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- Anders, Dietmar, to Hermann Berstorff Maschinenbau GmbH. Apparatus for connecting and sealing together two lengths of cylinder barrel of a worm extruder. 3,937,495, Cl. 285-41 000.
- Anderson, Alfred F. Collapsible liquid container for use with plastic liners. 3,937,363, Cl. 222-105.000.
- Anderson, Arthur W.: *See—*
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- Arcata Microfilm Corporation: *See—*
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- Arthur D. Little, Inc.: *See—*
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- Asada, Tsunesaburo; Horiuchi, Takefumi; Matsumoto, Kiyoshi; Monju, Yoshiyuki; Yamaguchi, Yoshihiro; Noguti, Masataka; Nishihara, Masao; Fujita, Tatsu; and Matsushita, Tomiharu, to Kobe Steel Ltd. Method of manufacturing compound billets for hydrostatic extrusion. 3,937,385, Cl. 228-131.000.
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- Asano, Seizi, to Fuji Photo Optical Co., Ltd. Photographic camera with automatic exposure control means. 3,938,165, Cl. 354-50.000.
- Ascoli, Fred; and Hermann, Robert R., to Standard Container Company. Heat sealing apparatus. 3,937,645, Cl. 156-522.000.
- Ashland Oil, Inc.: *See—*
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- Aspinwall, Robert H., to General Motors Corporation. By-pass jet engine with centrifugal flow compressor. 3,937,013, Cl. 60-226.00R.
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- Atalla, Martin M.; and Liu, Alexander F., to Atalla Technovations Company. Personal verification system. 3,938,091, Cl. 340-149.00A.
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- Avery, Bennett W., to Caterpillar Tractor Co. Replaceable lubricating cartridge for spline connections. 3,937,300, Cl. 184-70.000.
- Avins, Jack, to RCA Corporation. Automatic luminance channel frequency response control apparatus. 3,938,181, Cl. 358-38.000.
- Ayers, David T., Jr.; Doerfler, Roger E.; and Stelzer, William, to Kelsey-Hayes Company. Proportioning brake control device with bypass. 3,937,523, Cl. 303-6.00C.
- Azumano, Hideyuki, to Sansyu Sangyo Co., Ltd. Tobacco leaf curing system. 3,937,227, Cl. 131-134.000.
- Bahcock, John C.; and Holysz, Roman P., to Upjohn Company, The. Therapeutic composition and method of treating advanced or disseminated mammary cancer. 3,937,827, Cl. 424-243.000.
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- Backstrom, Inga L.; Hartler, Nils J. C.; and Kringstad, Knut P., to Svenska Traforskningsinstitutet. Method of increasing cellulosic pulp yields in an alkaline digestion process. 3,937,647, Cl. 162-16.000.
- Bacquie, Serge B.; and Cheylus, Jean-Francois M., to Poclain. Pressurized fluid feed apparatus. 3,937,597, Cl. 417-216.000.
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- Baird, Charles; and Plum, William B. Resonance earth structure logging. 3,938,072, Cl. 340-15.50R.
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- Bammert, Karl, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Multi-stage axial flow compressor. 3,937,592, Cl. 415-194.000.
- Bank, Morton L.; and Spieler, Ronald J. Wire dolly. 3,937,414, Cl. 242-86.50R.
- Banko, Anton, to Surgical Design Corporation. Surgical instrument employing cutter means. 3,937,222, Cl. 128-305.000.
- Banks, James W., to Chemetron Corporation. Bellows forming method and apparatus. 3,937,051, Cl. 72-110.000.
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  - Hubbartt, Donald S., 3,936,931.
- Barber, Theodore C. Artificial nest for hatching bees. 3,936,894, Cl. 6-11.000.
- Barlocher, Toni; and Ebert, Edith, to Ciba-Geigy Corporation. Agents for regulating plant metabolism. 3,937,626, Cl. 71-92.000.
- Barlow, George J., to Honeywell Information Systems, Inc. Error detection apparatus for verifying binary coded constants. 3,938,084, Cl. 340-146.1AB.
- Barnert, Heiko, to Kernforschungsanlage Julich Gesellschaft. Safety equipment for installations under pressure. 3,937,255, Cl. 138-148.000.
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- Barnett, Charles J., to Eli Lilly and Company. Exchange amination process for preparing 2-hydrazinobenzothiazoles. 3,937,714, Cl. 260-305.000.
- Barras, Gerard, to Agence Nationale de Valorisation de la Recherche (ANVAR). Window having a bellows-type opening movement and permitting complete reversal of the window-leaf. 3,936,978, Cl. 49-252.000.
- Barrett, Dene. Cathode-ray tube signal generator having resistance configurated electron receptor. 3,937,997, Cl. 313-418.000.
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- Bartik, Ivan, to Keene Corporation. Marine discharge control apparatus and method for treating fluids on a marine vessel. 3,937,662, Cl. 210-23.000.
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- Bateman, George H., to Martin Marietta Corporation. Electro-optical ranging means. 3,937,575, Cl. 356-5.000.
- Bathory, Judit; Ery nee Nagy, Marta; Gerei, Lajos; Lakatos, Ferenc; Stiller nee Kisteleki, Magdolna; and Vaghy, Tamas, to Phylaxia Oltoanyag- es Tapszertermelo Vallalat. Process for the recovery of zinc bacitracin free from zinc hydroxide. 3,937,694, Cl. 260-112.50R.
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- Bauer, Benjamin B., to CBS Inc. Compatible four channel radio broadcast and receiving system. 3,937,896, Cl. 179-15.0BT.
- Bauer, Everhard. Machine for filling carrying trays with objects disposed in groups. 3,936,992, Cl. 53-162.000.
- Bauer, Fritz. Sliding piston gas spring. 3,937,450, Cl. 267-113.000.
- Baughman, Harold E. Grab-stick for litter. 3,937,512, Cl. 294-19.00R.
- Baumann, Hans D. Rotary valve. 3,937,441, Cl. 251-298.000.
- Baumgartner, Herman J.; and Balas, Jaroslav G., to Shell Oil Company. Hydrogenation process. 3,937,759, Cl. 260-879.000.
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- Beale, William Taylor, to Research Corporation. Power piston actuated displacer piston driving means for free-piston stirling cycle type engine. 3,937,018, Cl. 60-520.000.
- Bean, Kenneth E.; and Lloyd, William W., to Texas Instruments Incorporated. Fet and bipolar device and circuit process with maximum junction control. 3,936,929, Cl. 29-580.000.
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- Beck, Harold D., to International Harvester Company. Fan shroud exit structure. 3,937,189, Cl. 123-41.490.
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- Becker, Arno, to Bruckner-Trockentechnik KG. Cloth feeding device for tentering machines. 3,936,915, Cl. 26-57.00A.
- Becker, Bernard E.; Baker, Virgil D., III; and Britton, Theodore S. Production data gathering and processing system. 3,938,106, Cl. 340-172.500.
- Becker, Danny J.; Boggs, Roger L.; Vaughn, Kenneth E.; and Shuler, James Richard, to Caterpillar Tractor Co. Low ground pressure track shoe. 3,937,529, Cl. 305-54.000.
- Becker, Raymond. Key for removing locking members from drive chains or the like. 3,937,005, Cl. 59-7.000.
- Becker, Rudolf; and Brautigam, Max, to Linde Aktiengesellschaft. System for the transportation of low-temperature fluids. 3,937,353, Cl. 220-9.0LG.
- Beckman Instruments G.m.b.H.: *See—*
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  - O'Bryan, Henry Miles, Jr.; Pluorde, James Kevin; and Thomson, John, Jr., 3,938,064.
  - Plewes, John Travis, 3,937,638.
  - Van Vechten, James Alden, 3,937,209.
- Bell, William W., III; and Shizume, Peter K., to Sperry Rand Corporation. Data communication apparatus for use in a telephone system. 3,937,889, Cl. 179-2.0DP.
- Bellanca, Nicolo; and Furia, Thomas Edward, to Dynapol. Zoned coloration. 3,937,851, Cl. 426-540.000.
- Beloit Corporation: *See—*
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  - Justus, Edgar J., 3,937,410.
- Benassi, Dominic A., to Minnesota Mining and Manufacturing Company. Antipilferage system and marker therefor. 3,938,125, Cl. 340-280.000.
- Bende, Miklos. Sausage brushing apparatus. 3,936,900, Cl. 15-3.120.
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Benson, Richard W.; Crnak, John R.; and Ingraham, Richard G., to Albany International Corporation. Billiard ball. 3,937,467, Cl. 273-59.00R.

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Bergeron, Claude A.; and Smith, Hubert L., to Philip Morris Incorporated. Apparatus for applying a backing of plastic material to a cutting blade. 3,937,644, Cl. 156-498.000.

Berk, Martin Adolph: *See—*
Lange, Henry James; McCunn, Myron Lee; Berk, Martin Adolph; Classen, Peter Jay; and Allen, David Thomas, 3,938,016.

Berney, Jean-Claude. Watch movement driven by a spring and regulated by an electronic circuit. 3,937,001, Cl. 58-23.00D.

Bernstein, Philip; and Stirpe, John P., to ESB Incorporated. Perfluoro compound-soil resistant epoxy resin compositions. 3,937,750, Cl. 260-830.0TW.

Bertail, Philippe. Trailer having a self-lifting platform. 3,937,301, Cl. 187-19.000.

Bertin, Ira L.: *See—*
Bertin, Mannie; and Bertin, Ira L., 3,937,133.

Bertin, Mannie; and Bertin, Ira L. Outlets for conditioned air and mounting frames therefor. 3,937,133, Cl. 98-40.00D.

Bertotti, Robert V.: *See—*
Zuckerman, Joseph L.; Eckardt, Carl R.; and Bertotti, Robert V., 3,937,861.

Beschorner, Franz; Feurer, Burkart; and Aupor, Hans, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft; and Motoren-Werke Mannheim Aktiengesellschaft, Vormals Benz Abtielung Stationarer Motorenbau, Firma. External combustion hot gas engine system. 3,937,017, Cl. 60-516.000.

Bessiere, Pierre Etienne, to Precision Mecanique Labinal. Structure of filter members. 3,937,663, Cl. 210-493.00R.

Beutner, Richard; and Ploger, Friedrich, to RBG, Reaktorbrennelemente GmbH. Method for removing fluoride ions from UO_2 powders. 3,937,784, Cl. 423-19.000.

Bhan, Andrew Tej, to Universal Oil Products Company. Recuperative thermal recombining system for handling loss of coolant. 3,937,796, Cl. 423-580.000.

Bible, Harley V., and Moon, William T., Jr., to Robertshaw Controls Company. Condition responsive valve construction. 3,937,244, Cl. 137-269.000.

Bier, Kenneth C.; Johnson, Kalin S.; and Herman, Ronald E., to Colt Industries Operating Corporation. Variable venturi carburetor. 3,937,768, Cl. 261-44.00R.

Bierlein, Carl A.; and Schaefer, Ernest D., to General Motors Corporation. Master cylinder. 3,937,020, Cl. 60-534.000.

Bihler, Wolfgang, to Audi NSU Auto Union Aktiengesellschaft. Heating means for the intake system of a water-cooled combustion engine. 3,937,197, Cl. 123-122.00H.

Billi S.p.A.: *See—*
Negri, Ettore, 3,937,040.

Bingham, John A. C., to Vadic Corporation. Full-duplex communication system on a two wire line. 3,937,882, Cl. 178-69.50R.

Bio-Medical Sciences, Inc.: *See—*
Sagi, Zsigmond L.; Lang, Robert A.; Scott, Jimmie D.; Weinstein, Berel; and Pickett, Charles G., 3,937,323.

Bio-Rad Laboratories: *See—*
Lewin, Nathan; Fries, James E.; and Richards, C. Steven, 3,937,799.

Birch, James D.; Mohr, Max C.; and Monaghan, Stephen R., to Raytheon Company. Antenna element for circular or linear polarization. 3,938,158, Cl. 343-756.000.

Bird Machine Company, Inc.: *See—*
Fleury, Leo W., Jr., 3,937,317.

Birkin, Michael S., to British Railways Board. Train control. 3,937,432, Cl. 246-187.00B.

Biro Fils: *See—*
Biro, Guy Dion, 3,937,257.

Biro, Guy Dion, to Biro Fils. Method and apparatus for pressurizing reservoirs of fire-fighting equipment. 3,937,257, Cl. 141-3.000.

Biron, Normand R. System of verified communication. 3,937,492, Cl. 282-25.000.

Biron, Raymond Joseph: *See—*
Vermeer, Dick Charles; and Biron, Raymond Joseph, 3,936,917.

Bittle, James Long; and Rubic, Wayne J., to Pitman-Moore, Inc. Feline calicivirus vaccine and production thereof. 3,937,812, Cl. 424-89.000.

Black and Decker Manufacturing Company, The: *See—*
Sauerwein, William Douglas, 3,937,036.

Black Hole Nebula Incorporated: *See—*
Cottingham, Hugh, 3,937,347.

Blackmond, Ronald C., to Robicon Corporation. Adjustable voltage power supply. 3,938,031, Cl. 323-23.000.

Blackstone, Michael; Maddox, Bryant K.; Rowland, Bobby A.; and Tate, Stanley L., to Southwire Company. Method and apparatus for recovering insulation and conductor from scrap insulated wire. 3,936,922, Cl. 29-234.000.

Blakeley, Ronald Edward: *See—*
Jeyes, John Anthony; and Blakeley, Ronald Edward, 3,937,593.

Blasi, Alvi R., to Raymond Lee Organization, Inc., The, a part interest. Golf swing training device. 3,937,473, Cl. 273-183.00B.

Blauer, Roland E.; and Durborow, Clarence J., to Dow Chemical Company, The; and Minerals Management, Inc. Formation fracturing with stable foam. 3,937,283, Cl. 166-307.000.

Blethen, William M.; and Milligan, Lee J. Remote monitoring communication system and terminal for utility meters. 3,937,890, Cl. 179-2.00A.

Bleyl, Donald Louis; and Irons, John Dowe, to Brown & Root, Inc. Pipe handling device. 3,937,334, Cl. 214-2.500.

Bloch, Alan; Falconer, Charles B.; Joslow, David L.; and Straube, Harold M., to Chestel, Inc. Electronic time-division-multiplexed PABX telephone system. 3,937,892, Cl. 179-15.0AL.

Blount, David H. Process for the production of monosilandiol. 3,937,782, Cl. 423-325.000.

Blum, Hans. Apparatus for comminuting tree stumps. 3,937,261, Cl. 144-218.000.

Bocker, Richard P.: *See—*
Bromley, Keith; Monahan, Michael A.; and Bocker, Richard P., 3,937,942.

Bode, Charles H., Jr., to United States Steel Corporation. Sliding gate mechanism with side wall mounted biasing springs. 3,937,372, Cl. 222-504.000.

Boehringer Ingelheim GmbH: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; Engelhardt, Albrecht; and Traunecker, Werner, 3,937,706.
Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; and Danneberg, Peter, 3,937,708.
Schroder, Ludwig; Thomas, Klaus; and Goeth, Hanns, 3,937,712.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Stockhaus, Klaus, 3,937,717.

Boggs, Roger L.: *See—*
Becker, Danny J.; Boggs, Roger L.; Vaughn, Kenneth E.; and Shuler, James Richard, 3,937,529.

Boisseau, Bernard. System for thermal exchangers. 3,937,275, Cl. 165-85.000.

Boldt, Jurgen; and Heine, Kurt, to Bayer Aktiengesellschaft. Polychloroprene mixture. 3,937,659, Cl. 204-159.200.

Bolles, Theodore F.; and Fleming, Peter B., to Bolles, Theodore F.; and Fleming, Peter B. Optically-transparent radiation-shielding composition. 3,937,970, Cl. 250-515.000.

Bolsinger, Alois: *See—*
Kratt, Kurt Wilhelm; and Bolsinger, Alois, 3,937,924.

Bolwijn, Pieter Tammo: *See—*
Van Doorn, Rudolf Alexander; and Bolwijn, Pieter Tammo, 3,938,131.

Bon, Gerard, to La Soie. Spool for fishline. 3,937,419, Cl. 242-118.400.

Bondarev, Konstantin Timofeevich: *See—*
Kononko, Vasily Porfirovich; Bondarev, Konstantin Timofeevich; Krivokon, Alexandr Alexandrovich; Kovshar, Nikolai Nikiforovich; Ivanova, Ljudmila Mikhailovna; Frolova, Elena Gavrilovna; Shestak, Nikolai Antonovich; and Shevchenko, Nikolai Leontievich, 3,937,623.

Boniger, Jacques; and Narayan, Venkat, to BBC Brown Boveri & Company Limited. Electrical network protection device with automatic switch over between protection criteria. 3,938,007, Cl. 317-27.00R.

Boone, Ralph D.; and Griffin, Charles, to Lockwood Corporation. Univalve irrigation system. 3,937,237, Cl. 137-1.000.

Boothroyd, William A., to International Business Machines Corporation. Modular transaction terminal with microprocessor control. 3,937,925, Cl. 235-61.70B.

Borenstein, David E.; and Hatcher, Charles S., to Phillips Petroleum Company. Method and apparatus for the production of textured yarn. 3,936,916, Cl. 28-1.600.

Borg-Warner Corporation: *See—*
Fox, Clarence D., 3,938,074.
Gyory, Emeric J., 3,937,477.
Huffman, Dale F.; and Zeh, Charles E., 3,937,100.
Zimmer, George A.; Weidman, William K.; and Allaben, Charles M., 3,937,538.

Borison, Victor Scott; Mattes, Hans George; McDowell, Colonel Blake, III; Schramm, George William; Soloway, Gerald Steven; and Wesner, John William, Jr., to Bell Telephone Laboratories, Incorporated. Terminal apparatus. 3,938,090, Cl. 340-149.00A.

Borkovitz, Henry S.; and Lucarz, William E., to Sola Basic Industries, Inc. Ferroresonant transformer regulator. 3,938,033, Cl. 323-60.000.

Borlai, Oszkar: *See—*
Nemecz, Erno; Ujhidy, Aurel; Polinszky, Karoly; Szepvolgyi, Janos; Borlai, Oszkar; Kapolyi, Laszlo; and Szekely, Tamas, 3,937,786.

Born, Ellis H.: *See—*
Adams, Cecil E.; and Born, Ellis H., 3,937,130.

Bosland, James M., to Ketcham & McDougall, Inc. Time delay mechanism for pencil sharpener. 3,937,239, Cl. 144-28.500.

Bosso, Joseph F.; and Wismer, Marco, to PPG Industries, Inc. Electrodepositable compositions. 3,937,679, Cl. 260-29.300.

Boulogne, Jean: *See—*
Papantoniou, Christos; and Boulogne, Jean, 3,937,811.

Bourggraff, Robert: *See—*
Heitzer, Xaver; and Bourggraff, Robert, 3,937,624.

Bourke, Robert F., to Gould, Inc. Charger circuit for accessory battery. 3,938,020, Cl. 320-21.000.

Bowden, Nancy. Culinary coring device. 3,936,934, Cl. 30-113.200.

Boye, Charles M.: *See—*
DiPaola, Philip J.; and Boye, Charles M., 3,937,451.

Bozoian, Michael, to Ford Motor Company. Critical liquid-level warning circuit. 3,938,117, Cl. 340-244.00R.

Braidwood, Robert O. Fluid pump driving control. 3,937,596, Cl. 417-36.000.

Brantingham, George L., to Texas Instruments Incorporated. Direct compare in an electronic digital calculator. 3,937,940, Cl. 235-156.000.

Brautigam, Max: *See—*
Becker, Rudolf; and Brautigam, Max, 3,937,353.

Bremont, Michel: *See—*
Thureau, Pierre; and Bremont, Michel, 3,937,599.

Brennan, Gerald R. Multiple-board chess game with additional chessmen. 3,937,471, Cl. 273-131.0AC.

Brenner, Wolf; Lindlar, Herbert; and Hinderling, Rudolf, to Hoffmann-La Roche Inc. Process for the manufacture of 2,3,6-trimethylphenol. 3,937,740, Cl. 260-621.00R.

Brewer, Steven V.: *See—*
Martin, Charles H.; and Brewer, Steven V., 3,937,442.

Briar, Herman P., to Aerojet-General Corporation. Method and sensors for predetermining dynamic moduli in situ of castable-type material. 3,937,070, Cl. 73-88.00R.

Brickey, Orville G., to United States of America, Navy. Rotatable radar antenna feed and receiver horn. 3,938,157, Cl. 343-756.000.

Bricknell, Russell C.: *See—*
Tucker, Roy G.; Fruzzetti, Ernest G.; Rihak, Charles R.; and Bricknell, Russell C., 3,937,333.

Bridgestone Tire Company, Ltd.: *See—*
Nakanishi, Kenzo; and Hanasaka, Yasuaki, 3,938,077.

Bright, James A., to General Motors Corporation. Tray ice maker temperature control ice clutch 3,937,032, Cl. 62-135.000.

Brisbane, Alan D.: *See—*
Jackson, Thomas M.; Brisbane, Alan D.; Peters, Jack R.; Heinecke, Rudolf A. H.; and Moule, David J., 3,938,173.

Brite, Alan D. Oven cleaning process. 3,937,634, Cl. 134-2.000.

British Cellophane Limited: *See—*
Ferrar, Andrew Nicholas, 3,937,683.

British Nuclear Design & Construction Ltd.: *See—*
George, Brian Victor, 3,937,652.

British Railways Board: *See—*
Birkin, Michael S., 3,937,432.

British Steel Corporation (Chemicals) Limited: *See—*
Romanski, Andrzej Antoni Florian; Brookes, Derek John; Smith, Anthony; and Markham, Harry, 3,937,797.

British Visqueen Limited: *See—*
Lawes, Norman Edward, 3,937,395.

Britton, Theodore S.: *See—*
Becker, Bernard E.; Baker, Virgil D., III; and Britton, Theodore S., 3,938,106.

Brix, Hermann, to Girling Limited. Disc brake calipers. 3,937,304, Cl. 188-73.500.

Broecker, Bernhard; Schardt, Richard; and Werner, Gerhard, to Hoechst Aktiengesellschaft. Process for the manufacture of heat-curable synthetic resins which can be diluted with water and are suitable for the electrophoretic coating process. 3,937,677, Cl. 260-23.70A.

Bromley, Keith; Monahan, Michael A.; and Bocker, Richard P., to United States of America, Navy. Multi-channel optical correlation system. 3,937,942, Cl. 235-181.000.

Bronstert, Klaus: *See—*
Staiger, Gerhard; Bronstert, Klaus; Schick, Hannes; Hennenberger, Peter; and Mueller-Tamm, Heinz, 3,937,691.

Brook, Marx; and Krehbeil, Paul R., to United States of America, Navy. Fast-scanning broad band radar system. 3,938,145, Cl. 343-5.00W.

Brookes, Derek John: *See—*
Romanski, Andrzej Antoni Florian; Brookes, Derek John; Smith, Anthony; and Markham, Harry, 3,937,797.

Broughton, John B. Toothbrush with paste cartridge. 3,937,235, Cl. 132-84.00B.

Brown Boveri-Sulzer Turbomaschinen Aktiengesellschaft: *See—*
Portaleoni, Libero, 3,937,433.

Brown, Edmund J., to Pneumatic Traction Company. Pneumatic traction means for medical patients. 3,937,216, Cl. 128-75.000.

Brown, James L.; Wilder, Richard P.; and Kelly, Richard P., to Honeywell Information Systems Inc. Apparatus for developing an address of a segment within main memory and an absolute address of an operand within the segment. 3,938,096, Cl. 340-172.500.

Brown, Richard E.: *See—*
Klutchko, Sylvester; Brown, Richard E.; and Von Strandtmann, Maximilian, 3,937,837.

Brown & Root, Inc.: *See—*
Bleyl, Donald Louis; and Irons, John Dowe, 3,937,334.
Koehler, Albert M.; and Hruska, Stanley J., 3,937,027.
Weber, Charles W.; Rucker, C. Olen; Peavy, Patrick L.; Woo, Pak-Fat William; and Bear, James E., 3,937,973.

Brown, William: *See—*
Shonebarger, Francis J.; and Brown, William, 3,937,676.

Bruckner-Trockentechnik KG: *See—*
Becker, Arno, 3,936,915.

Bruen, Charles P.: *See—*
Wamser, Christian A.; and Bruen, Charles P., 3,937,783.

Bruhlmeier, Josef; and Gasser, Andreas, to Luwa AG Air outlet apparatus. 3,937,132, Cl. 98-40.00N.

Brummett,-Charles Roscoe; Shaak, Ray Ned; and Andrews, Daniel Marshall, to AMP Incorporated. Catalyst for electroless depositinn of metals. 3,937,857, Cl. 427-98.000.

Brunswick Corporation: *See—*
Sleder, Richard L.; and Fitzner, Arthur O., 3,937,200.

Bruzzese, Tiberio; and Ferrari, Rodolfo, to SPA—Societa Prodotti Antibiotici S.p.A. Lysozyme derivatives. 3,937,815, Cl. 424-94.000

Bryce, Donald H.: *See—*
Peckham, Vernon D.; Baker, Charles E., Jr.; and Bryce, Donald H., 3,937,574.

Buck, Immanuel. Blade arrangement for a meat cutter. 3,937,408, Cl. 241-282.200.

Buechner, Oskar: *See—*
Urban, Friedrich; Buechner, Oskar; Steigerwald, Klaus; Fauth, Karl-Heinz; and Gehrig, Heinz, 3,937,772.

Buell, David N.: *See—*
Spanel, Abram N., Jacobs, David R.; and Buell, David N., 3,937,160.

Buhler, Frederick T., to Aeronutronic Ford Corporation (formerly Philco-Ford Corporatinn). High performance differential amplifier 3,938,055, Cl. 330-30.00D.

Bullard, Edward M.: *See—*
Nahmias, A. Michael; and Bullard, Edward M., 3,937,762.

Bullard, Edward P., III. Measuring system. 3,936,943, Cl. 33-125.00R

Bulova Watch Company, Inc.: *See—*
Van Haaften, Egbert, 3,937,002.

Bumpstead, John; and Costa, Robert B., to Clemar Manufacturing Corporation. Device for insulating an electrical wire joint. 3,937,870, Cl. 174-87.000.

Burgess, Ronald R., to Tom McGuane Industries, Inc. Pressure-vacuum relief fuel filler cap. 3,937,357, Cl. 220-203.000.

Burkett, Richard O., to Westinghouse Air Brake Company. Apparatus for checking integrity of magnet valves in electro-pneumatic brake systems. 3,937,074, Cl. 73-121.000.

Burnham, Gerald O.; and Weber, John W., to Hughes Aircraft Company. Direction coded digital stroke generator providing a plurality of symbols. 3,938,130, Cl. 340-324.00A.

Burroughs Corporation: *See—*
McGregor, Arvin D.; and Holmes, William E., 3,938,089.
Sargunar, John Ebenezer, 3,938,193.
Simms, Dewey M., Jr., 3,936,925.
Stansfield, Garry A. G., 3,938,083.

Burton, Hughes D.: *See—*
Tabet, Michael A., 3,938,127.

Busch, Dieter; and Sudler, Roland, to VDO Adolf Schindling AG. Electric clock. 3,937,003, Cl. 58-23.00D.

Busch-Jaeger Ludenscheider Metallwerk GmbH: *See—*
Romer, Werner; and Orthey, Rolf, 3,937,639.

Busch, Walter; Hammer, Klaus-Dieter; and Klendauer, Wolfgang, to Hoechst Aktiengesellschaft. Process for the manufacture of consolidated shaped structures of cellulose hydrate. 3,937,672, Cl. 260-17.300.

Buzzard, Kenneth J., to Westinghouse Air Brake Company. Cab signal control circuits for railroad interlockings. 3,937,427, Cl 246-34.0CT.

Byne, Zachary Paul. Linear cut sewing tape. 3,936,944, Cl 33-137.00R.

Byron Jackson Inc.: *See—*
Langowski, Faustyn C., 3,937,514.
Langowski, Faustyn C., 3,937,515.

C.A.V. Limited: *See—*
Seilly, Alec Harry; Scott, Kenneth Clive; and Driver, Kenneth Leslie, 3,938,013.

c/o E. I. Du Pont de Nemours & Co.: *See—*
Augstkalns, Valdis Ansis, 3,937,686.

Cairns, Thomas M.; and Froats, Ronald F., to Ford Motor Company. Waterproof electrical connector. 3,937,545, Cl. 339-60.00R.

Caletti, Robert H., to Information Storage Systems, Inc. Method of manufacturing a spindle assembly for a disc drive. 3,938,192, Cl. 360-133.000.

Callahan, Bernard E., to Vapor Corporation. System for telecommunicating vehicle operation data between a ground station and a remote data processing station. 3,938,092, Cl. 340-150.000.

Calvin, Edward L. Interlocking brick or building block and walls constructed therefrom. 3,936,987, Cl. 52-309.000.

Cambridge Thermionic Corporation: *See—*
Simpson, Paul A., 3,937,148.

Camerman, Philippe J. A.: *See—*
de Radzitzky d'Ostrowick, Pierre M. J. G.; and Camerman, Philippe J. A., 3,937,739.

Campanella, Samuel Joseph; Suyderhoud, Henri George; and Onufry, Michael, Jr., to Communications Satellite Corporation. Digital echo suppressor. 3,937,907, Cl. 179-170.600.

Campbell, Glenn M.; and Liedman, Stanley G., to General Mills, Inc. Chip fracturing from a fried ribbon. 3,937,848, Cl. 426-439.000.

Campbell, Stephen K., to Coulter Electronics, Inc. Method and apparatus for providing primary coincidence correction during particle analysis. 3,938,038, Cl. 324-71.0CP.

Campenon Bernard Europe: *See—*
Thivans, Pierre Armand Maurice, 3,937,165.

Canadian Patents & Development Limited: *See—*
Heggie, William S., 3,937,087.

Candor, James T. Method for playing strategy golf. 3,937,466, Cl. 273-32.00R.

Canning, Bernard, to Lodge-Cottrell Limited. Solid state rectifier control unit. 3,938,059, Cl. 331-111.000.

Canon Kabushiki Kaisha: *See—*

Furuichi, Katsushi; Kurita, Kenji; Kimura, Yoshimasa; and Sakamaki, Hisashi, 3,937,921.

Hosoe, Kazuya; Matsumoto, Seiichi; Yokota, Hideo; and Aizawa, Hiroshi, 3,937,950.

Cantaloube, Bernard Andre: *See—*

Caruel, Jacques Emile Jules; Bedue, Jean Robert; and Cantaloube, Bernard Andre, 3,937,011.

Cantor, Charles E., to Textron Inc. Apparatus and method for installing a slide fastener. 3,936,923, Cl. 29-408.000.

Cap, Daniel M., to General Electric Company. Metal halide lamp using loop electrodes. 3,937,996, Cl. 313-217.000.

Capp, Ronald James: *See—*

Hansen, Niels Junior; and Capp, Ronald James, 3,938,177.

Carbone, Joseph, to General Electric Company. Offset voltage correction circuit for multiple video channel imager. 3,937,874, Cl. 178-7.100.

Carl Schenck AG: *See—*

Hackstein, Guenter; Holdinghausen, Paul; and Homilius, Karl, 3,938,134.

Carl Zeiss-Stiftung: *See—*

Koehler, Kurt, 3,937,099.

Carlson, Kenneth G. Palletizing and depalletizing apparatus for supplemental feed. 3,937,336, Cl. 214-6.00P

Carr, Keith E.: *See—*

Stewart, Bruce E.; and Carr, Keith E., 3,936,905.

Carr, Keith Ellis, to Whirlpool Corporation. Combination disposer run and dishwasher disconnect switch for kitchen module. 3,937,977, Cl. 307-38.000.

Carra, Mark Ernest; and Manrique, Louis Albert, Jr., to Johnson & Johnson. Interlining made of a thermoplastic and thermosetting resin composition. 3,937,859, Cl. 428-194.000.

Carroll, James C., to Phillips Petroleum Company. Nesting and stacking containers. 3,937,327, Cl. 206-507.000.

Carter, Clarence F., to Carter Engineering Company. Apparatus for severing thin tubing members. 3,936,909, Cl. 17-42.000.

Carter Engineering Company: *See—*

Carter, Clarence F., 3,936,909.

Caruel, Jacques Emile Jules; Bedue, Jean Robert; and Cantaloube, Bernard Andre, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Fuel injector for atomizing and vaporizing fuel. 3,937,011, Cl. 60-39 710.

Caruso, Vincent P.; and Minter, Elbert J., to United States of America, National Aeronautics and Space Administration. Method of peening and portable peening gun. 3,937,055, Cl. 72-399.000.

Castagna, Eugene G., to Dart Industries Inc. Process for the production of high impact compositions of polyethylene and polypropylene block copolymers. 3,937,758, Cl. 260-876.00B.

Castoldi, Luigi. Water jet propelling apparatus for boats. 3,937,172, Cl. 115-12.00R.

Caterpillar Tractor Co.: *See—*

Avery, Bennett W., 3,937,300.

Becker, Danny J.; Boggs, Roger L.; Vaughn, Kenneth E.; and Shuler, James Richard, 3,937,529.

Clemens, Donald E.; Piepho, Donald A.; and Reiss, Stephen W., 3,937,528.

Durgan, Virgil Richard Charles, 3,937,443.

Golan, Kenneth F.; and Oetzel, Larry W., 3,937,250.

Hardy, Gerald D.; Plouzek, Eugene A.; and Starling, James G., 3,937,299.

Hicks, Leon E.; Grant, John W.; Watts, Loyal O.; and Peterson, Wayne A., 3,937,128.

Loebs, Richard G.; and Ostrowski, Richard C., 3,937,268.

Sturges, James R., 3,937,530.

Cattermole, David Christopher, to Elliott Brothers (London) Limited. Partially rotated fastener. 3,937,585, Cl. 403-300.000.

Caudel, Edward R., to Texas Instruments Incorporated. Computing system bus. 3,938,094, Cl. 340-172.500.

CBS Inc.: *See—*

Bauer, Benjamin B., 3,937,896.

Centre Technique des Industries Mechaniques: *See—*

Flambard, Christian; Lambert, Alain; and Pavon, Miguel Sancho, 3,937,067.

Cerny, Arnost; and Svoboda, Jiri, to Adamovske strojirny, narodni podnik. Sheet transfer apparatus. 3,937,142, Cl. 101-409.000.

Cesca, Silvano: *See—*

Cognigni, Franco; and Cesca, Silvano, 3,937,000.

Chamberlin, Richard H.: *See—*

Elkins, William; Kuehn, Harold H.; and Chamberlin, Richard H., 3,937,847.

Chan, Kingsley, to Chan, Kingsley. Tennis scoring device. 3,936,963, Cl. 40-70.00R.

Chance, James L., and Han, Shu Tang, to Beloit Corporation. Air impingement system. 3,936,953, Cl. 34-160.000.

Chance, Leon H.; and Moreau, Jerry P., to United States of America, Agriculture. Organo-phosphorus compounds containing perfluoroalkyl radicals and their application to cellulosic textiles. 3,937,724, Cl. 260-502.40P.

Chao, Albert L.; and Chao, Ethel. Lighted jewelry box. 3,937,320, Cl. 206-75.000.

Chao, Ethel: *See—*

Chao, Albert L.; and Chao, Ethel, 3,937,320.

Chapman, Donald L. Carburetor. 3,937,767, Cl. 261-41.00B.

Chapman, Joe W. Extension compartment for motor vehicle. 3,937,516, Cl. 296-26.000.

Charig, Andrew: *See—*

Gutcho, Sidney; Rapun, Raul; Rutner, Herman; and Charig, Andrew, 3,937,698.

Check, Frank T., Jr.; Eckert, Alton B., Jr.; Hinman, Bruce E.; Jones, Howell A., Jr.; Lupkas, Raymond R.; and McFiggans, Robert B., to Pitney-Bowes, Inc. Computer responsive postage meter. 3,938,095, Cl. 340-172.500.

Chemetron Corporation: *See—*

Banks, James W., 3,937,051.

Chemische Werke Huels Aktiengesellschaft: *See—*

Nordsiek, Karl-Heinz, 3,937,681.

Chen, Nai Yeun: *See—*

Garwood, William E.; Chen, Nai Yeun; and Lucki, Stanley J., 3,937,791.

Chen, Thomas Chungmin: *See—*

Presto, Anthony Frank; Dunn, James Grant; and Chen, Thomas Chungmin, 3,937,898.

Chestel, Inc.: *See—*

Bloch, Alan; Falconer, Charles B.; Joslow, David L.; and Straube, Harold M., 3,937,892.

Chevron Research Company: *See—*

Guenther, Lloyd M., 3,937,417.

Cheylus, Jean-Francois M.: *See—*

Bacquie, Serge B.; and Cheylus, Jean-Francois M., 3,937,597.

Chiba, Yositaka: *See—*

Watanabe, Rikizo; and Chiba, Yositaka, 3,937,628.

Chiyomaru, Isao; Kawada, Seigo; and Takita, Kiyoshi, to Kumiai Chemical Industry Co., Ltd. Compositions and methods of combatting bacteria and fungi using 2-methylbenzanilide derivatives. 3,937,840, Cl. 424-324.000.

Chodzko, Richard A., to United States of America, Air Force. Calorimeter for an unstable laser resonator. 3,937,079, Cl. 73-190.0EW.

Christie, Joe William. Method and apparatus for connecting a right angle service line to a main. 3,937,245, Cl. 137-318.000.

Chrysler Corporation: *See—*

Sudhir, Gopinath, 3,937,198.

Vanden Bossche, Daniel Julius, 3,937,305.

Chu, David C.: *See—*

Gliever, John H.; and Chu, David C., 3,938,042.

Ciba-Geigy Corporation: *See—*

Barlocher, Toni; and Ebert, Edith, 3,937,626.

Cook, Barry, 3,937,711.

Hunger, Alfred; and Janssen, Hans-Jochen, 3,937,834.

Schmid, Rolf, Lohse, Friedrich; Fatzer, Willy; and Batzer, Hans, 3,937,751.

Vogel, Christian; and Aebi, Rudnlf, 3,937,730.

Ciccarone, Angelo: *See—*

Garcea, Giampaolo; Police, Gennaro; and Ciccarone, Angelo, 3,937,766.

Cicognani, Mario, to Industrie Pirelli S.p.A. Toothed belt. 3,937,094, Cl. 74-231.00C.

Cimarusti, Christopher M.: *See—*

Varma, Ravi K.; and Cimarusti, Christopher M., 3,937,720.

Cincinnati Butchers' Supply Company, The: *See—*

Cook, Frank M., 3,936,908.

Cinex Communications Inc.: *See—*

Kopernicky, Jaroslav J., 3,937,378.

Citizen Watch Co., Ltd.: *See—*

Murakami, Tomomi; and Kawashima, Hideyuki, 3,937,049.

Natori, Minoru; Nomura, Yasushi; Sekiya, Fukuo; Morokawa, Shigeru; and Nakai, Akira, 3,937,004.

Clack, Peter J.; and Moreland, George R., to Leeds & Northrup Company. Auto-ranging glucose measuring system. 3,937,615, Cl. 23-253.00R.

Clapsaddle, Arthur B., to United States of America, Navy. Sonar reverberation simulation. 3,936,958, Cl. 35-10.400.

Clar, Milton. Apparatus for the compaction of refuse material and the like. 3,937,354, Cl. 220-63.00R.

Clark, Benton C., III: *See—*

Stafford, R. Wayne; Tobey, William H.; and Clark, Benton C., III, 3,937,953.

Clark Equipment Company: *See—*

Haddock, Louis A., 3,937,294.

Clark, Harold E., to Xerox Corporation. Character coding and recognition system. 3,938,088, Cl. 340-146.30B.

Clark, Robert Kingsbury, Jr., to Abbott Laboratories. Insecticidal compositions comprising mixtures of *bacillus thuringiensis* and chlordimeform. 3,937,813, Cl. 424-93.000.

Clarke, Patrick William, to Bell Telephone Laboratories, Incorporated. Converter regulation by controlled conduction overlap. 3,938,024, Cl. 321-2.000.

Classen, Peter Jay: *See—*

Lange, Henry James; McCunn, Myron Lee; Berk, Martin Adolph; Classen, Peter Jay; and Allen, David Thomas, 3,938,016.

Clegg, Samuel E. Method and apparatus for rooted plant excavating and plant package produced thereby. 3,936,960, Cl. 37-2.00R.

Clemar Manufacturing Corporation: *See—*

Bumpstead, John; and Costa, Robert B., 3,937,870.

Clemens, Donald E.; Piepho, Donald A.; and Reiss, Stephen W., to Caterpillar Tractor Co. Segmented and cushioned idler for track-type vehicles and method for repairing same. 3,937,528, Cl. 305-21.000.

Clerx, Henricus P. M.; Extra, Pieter M. J.; Keursten, Leonardus L. M.; and Peeters, Franciscus M. J., to Oce-van der Grinten N.V. Fixing device. 3,937,919, Cl. 219-216.000.

Clewes, Antony Brasher; and Tuckwood, Denis William, to TRW Inc. Multiway connector for a printed circuit board. 3,937,546, Cl. 339-61.00R.

Clotfelter, Wayman N.; and Bankston, Benjamin F., to United States of America, National Aeronautics and Space Administration. Device for measuring the ferrite content in an austenitic stainless steel weld material. 3,938,037, Cl. 324-34.00R.

Clougherty, Edward V., to Manlabs, Incorporated. Ternary boride product and process. 3,937,619, Cl. 29-182.500.

Cloup, Philippe. Device for injecting an adjuvant into a liquid. 3,937,241, Cl. 137-99.000.

Clymer, Bonita E., special administratrix: *See—*

Clymer, Joseph D., deceased, 3,937,095.

Clymer, Joseph D., deceased (by Clymer, Bonita E., special administratrix), to Lincoln Manufacturing Company, Inc. Self adjusting elevator. 3,937,095, Cl. 74-224.000.

Coal Industry (Patents) Limited: *See—*

Monks, Harry, 3,937,151.

Coats Company, Inc., The: *See—*

Mikovits, John L.; Strang, Elmer J.; Scott, Ray A.; and Sorenson, Billy L., 3,937,264.

Cobbledick-Kihbe Glass Company: *See—*

Hammerel, James T., 3,937,329.

Cockram, Geoffrey Norman: *See—*

Towersey, Peter John; Longton, John; and Cockram, Geoffrey Norman, 3,937,693.

Cognacq, Jean-Claude, to Societe anonyme dite: Hexachimie. Esters of 2,2-diphenyl-cyclopropane-carboxylic acids as cough suppressants. 3,937,832, Cl. 424-267.000.

Cognigni, Franco; and Cesca, Silvano, to Snam Progetti S.p.A. Continuous bi-compound acrylic bulky yarn and the method of the production of same. 3,937,000, Cl. 57-157.0TS.

Cohen, Jules Barry, to Medical Laboratory Automation, Inc. Package for disposable pipette tips. 3,937,322, Cl. 206-216.000.

Cohen, Marvin: *See—*

Strandtmann, Maximilian von; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,937,704.

Cohen, Samuel W. Games using magnetically actuated members. 3,937,469, Cl. 273-85.00F.

Colas, Jean Louis: *See—*

Teissier, Raymond; Colas, Jean Louis; and Taisne, Dominique, 3,937,846.

Cole, William Max; and Futamura, Shingo, to Firestone Tire & Rubbher Company, The. Process for producing multiblock copolymer and products produced thereby. 3,937,760, Cl. 260-880.00B.

Coleman, Howard. Torque-jet engine. 3,937,009, Cl. 60-39.350.

Colgate-Palmolive Company: *See—*

Delaney, Thomas James; and Pierson, William Grant, 3,937,321.

Delaney, Thomas James; and Pierson, William Grant, 3,937,803.

Delaney, Thomas James; and Pierson, William Grant, 3,937,804.

Harrison, Michael, 3,937,805.

Colt Industries Operating Corporation: *See—*

Bier, Kenneth C.; Johnson, Kalin S.; and Herman, Ronald E., 3,937,768.

Columbia Ribbon and Carbon Manufacturing Co., Inc.: *See—*

Newman, Douglas A., 3,937,178.

Colwill, Richard H. Sheet recirculator. 3,937,454, Cl. 271-6.000.

Comisarow, Melvin Barnet; and Marshall, Alan George, to Nicolet Technology Corporation. Fourier transform ion cyclotron resonance spectroscopy method and apparatus. 3,937,955, Cl. 250-283.000.

Commissariat a l'Energie Atomique: *See—*

Berger, Roger; Estienne, Claude; and Lapie, Jean, 3,938,071.

Consoli, Terenzio, 3,937,917.

Leheu, Jacques, 3,937,653.

Communications Satellite Corporation: *See—*

Campanella, Samuel Joseph; Suyderhoud, Henri George; and Onufry, Michael, Jr., 3,937,907.

Compagnie Generale des Establissements Michelin, raison sociale Michelin & Cie: *See—*

Dillenschneider, Jean-Paul, 3,937,862.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*

Alais, Michel, 3,937,028.

Levasseur, Georges; and Garconnat, Michel, 3,938,061.

Soulas, Jacques; and Vilella, Paul, 3,937,913.

Concordia Fluidtechnik GmbH Steuergerate: *See—*

Stahle, Kurt, 3,937,254.

Conde, Francis E., Sr. Handle for a nunchaku device. 3,937,468, Cl. 273-84.000.

Conn, Charles E., Jr., to TRE Corporation. Aerodynamic shell structure with fittings and method for fabricating same. 3,936,920, Cl. 29-156.80B.

Consoli, Terenzio, to Commissariat a l'Energie Atomique. Method for producing and heating a plasma. 3,937,917, Cl. 219-121.00P.

Consolidated Engineering Company: *See—*

Reuter, Brian R., 3,937,521.

Consumat Systems, Inc.: *See—*

Hughes, Carroll T., Jr., 3,937,154.

Continental Can Company, Inc.: *See—*

Sawert, Walter, 3,937,383.

Continental Hair Products, Inc.: *See—*

Tomaro, Patrick M., 3,937,232.

Tomaro, Patrick M., 3,937,543.

Continental Oil Company: *See—*

Every, Richard L., 3,937,728.

Gorim, Everett; Kulik, Metro D.; and Struck, Robert T., 3,937,788.

Gorin, Everett; Kulik, Metro D.; and Struck, Robert T., 3,937,787.

Sievert, John A., 3,937,520.

Control Data Corporation: *See—*

Steiner, Louis Kent, 3,938,100.

Cook, Barry, to Ciba-Geigy Corporation. 4-(Carboxamidoethyl) piperidines. 3,937,711, Cl. 260-293.860.

Cook, Frank M., to Cincinnati Rutchers' Supply Company, The. Hide pulling method and apparatus. 3,936,908, Cl. 17-21.000

Cook, Neal A., to Modine Manufacturing Company. Cooling system and method of cooling. 3,937,031, Cl. 62-98.000.

Cook, Robert R.; and Diehl, Roy E., to Ford Motor Company. Intake manifold for an internal combustion engine having an internally contained exhaust gas recirculation cooler. 3,937,196, Cl. 123-119.00A.

Cooley, William Edward, to Procter & Gamble Company, The. Oral compositions for caries prophylaxis. 3,937,806, Cl. 424-52.000.

Cooper, James Albert, Jr., to Bell Telephone Laboratories, Incorporated. Apparatus and method for regenerating charge. 3,937,985, Cl. 307-221.00D.

Copeland, William F.; Sciulli, Charles M., Jr.; and White, Donald G., to United States Steel Corporation. Liquid-fuel atomization and injection device. 3,937,449, Cl. 266-29.000.

Corbett, John McCreath; and Linke, Josef Maria, to Post Office, The. Non-linear correction of waveforms. 3,938,050, Cl. 328-163.000.

Corbin Gentry, Inc.: *See—*

Hanagan, Michael W., 3,937,291.

Cordone, Leonard G.; Donakowski, William A.; and Morgan, John R., to Ford Motor Company. Method for application of wear-resistant coating. 3,937,266, Cl. 164-9.000.

Cornwell, Lionel B. Controllable power transferring device utilizing a short-circuited controlled reactance. 3,938,030, Cl. 323-50.000.

Costa, Robert B.: *See—*

Bumpstead, John; and Costa, Robert B., 3,937,870.

Cottingham, Hugh, to Black Hole Nebula Incorporated. Apothecary safety closure. 3,937,347, Cl. 215-213.000.

Coulter Electronics, Inc.: *See—*

Campbell, Stephen K., 3,938,038.

Countryman, Donald L., to Wagner Mining Equipment, Inc. Shovel loader with ejector bucket. 3,937,345, Cl. 214-510.000.

Courtot, Louis B., to Weatherhead Company, The. Mounting for nonmetallic valves. 3,937,499, Cl. 285-319.000.

Cox, Elton D. Filter device for deep fat fryer. 3,937,136, Cl. 99-408.000.

Cox Instrument Division, Lynch Corporation: *See—*

Dabanian, Karnig H.; Rapp, Lawrence F.; and Good, Dale C., 3,937,081.

Cox, Joe L. Multi-purpose vehicle for hauling bulk material or discrete packages. 3,937,338, Cl. 214-83.360.

Coyne, Nancy, to International Paper Company. Sterile aspiration catheter. 3,937,220, Cl. 128-276.000.

Crabtree, Delbert M., to Sisson, Margaret, a part interest. Sharpening stone for dehorners. 3,936,982, Cl. 51-211.00R.

Craig, J. Andrew, to Gripnail Corporation. Apparatus for attaching insulating material to sheet metal. 3,937,380, Cl. 227-100.000.

Creamer, Adelene. Buoyant shoe. 3,936,896, Cl. 9-310.00D.

Creative Tools, Inc.: *See—*

Whiteford, Carlton L., 3,937,324.

Cremer, Joseph; and Martin, Willi, to Hoechst Aktiengesellschaft. Apparatus for the manufacture of phosphorous acid. 3,937,616, Cl. 23-263.000.

CRI-DAN: *See—*

Renoux, Pierre E., 3,937,110.

Criscimagna, Tony Nick, to International Business Machines Corporation. Gas panel with improved circuit for write operation. 3,938,107, Cl. 340-173.0PL.

Critelli, Frank, to Lawrence Peska Associates, Inc., a part interest. Retractable dog leash. 3,937,418, Cl. 242-107.40R.

Crnak, John R.: *See—*

Benson, Richard W.; Crnak, John R.; and Ingraham, Richard G., 3,937,467.

Croce, Louis J.; and Bajars, Laimonis, to Petro-Tex Chemical Corporation. Sulfur promoted oxidative dehydrogenation. 3,937,746, Cl. 260-669.00R.

Croisier, Jean-Paul. Anti-theft device for a vehicle. 3,938,079, Cl. 340-64.000.

Crucible Inc: *See—*

Salvadore, Eugene A.; and Zimmerman, Paul J., 3,937,269.

CSR Limited: *See—*

Luxford, Ronald William Alexander, 3,937,318.

Cubic Handling Systems N.V.: *See—*

van der Laan, Hans Robert, 3,937,346.

Cummins, Donald L., to General Motors Corporation. Electrical generating system overvoltage protection circuit. 3,938,005, Cl. 317-13.00R.

Cunningham, Jerry L. Illuminated fishing tackle box. 3,938,132, Cl. 340-321.000.

Cunningham, Joseph A.; and White, Jimmy L., to H. C. Price Co. Internal pipe clamp with weld backup. 3,937,382, Cl. 228-49.000.

Cunningham, Willis C.: *See—*

Shryock, Stanley H.; George, Charles R.; and Cunningham, Willis C., 3,937,282.

Curtis Products Lt.: *See—*

Tacke, William H., 3,937,434.

Cusic, John W.; and Ellefson, Charles R., to G. D. Searle & Co. 1-(10-Cyano/halo-5H-dibenzo[a,d]cyclohepten-5-yl)-4-[(pyridylmethylene)amino]piperazines. 3,937,701, Cl. 260-240.00G.

Dabanian, Karnig H.; Rapp, Lawrence F.; and Good, Dale C., to Cox Instrument Division, Lynch Corporation. Vortex flowmeter. 3,937,081, Cl. 73-194.00C.

Dahl, Ernest A. Induction charging system. 3,938,018, Cl. 320-2.000.

Dahlgren, Harold P. Dampener for lithographic printing plates. 3,937,141, Cl. 101-148.000.

Dahlin, Carl Erik Ingemar, to von Tell Trading Co. AB. Arrangement in cargo hatches on ship weather decks. 3,937,169, Cl. 114-202.000.

Dalton, Virgil D. Dolly for moving and positioning vehicles. 3,937,479, Cl. 280-3.000.

Damon Corporation: *See—*
Sodickson, Lester A.; and Lim, Franklin, 3,937,614.

Damon, Melvin H., Jr.: *See—*
Anderson, Warren A.; Rosenberg, Lawrence; and Damon, Melvin H., Jr., 3,936,954.

Damour, Lawrence R. Expanding outer sleeve for a mandrel or chuck. 3,937,412, Cl. 242-72.00B.

Danfoss A/S: *See—*
Stannow, Jorgen; Kjeldsen, Kjeld; Karll, Bent; and Nissen, Ole Joker, 3,937,598.

Daniels, Everette E. Bumper support for a boat loader. 3,937,375, Cl. 224-42.070.

Daniels, Peter, to United States of America, Navy. Internal stabilizing device for air and water missiles. 3,937,144, Cl. 102-2.000.

Danneberg, Peter: *See—*
Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; and Danneberg, Peter, 3,937,708.

Dano, Paul K., to Del Norte Technology, Inc. Secure encoder for trilateralization locator utilizing very narrow acceptance periods. 3,938,146, Cl. 343-6.5LC.

Darack, John R.: *See—*
Nickerson, John T. R.; and Darack, John R., 3,937,814.

Dart Industries Inc.: *See—*
Castagna, Eugene G., 3,937,758.

Davies, Jenkins Eric: *See—*
Van Dijk, Jan; and Davies, Jenkins Eric, 3,937,841.

Davis, Charles H. Emergency sign device. 3,936,967, Cl. 40-129.00C.

Davis, Donald E.: *See—*
Belew, Robert R.; and Davis, Donald E., 3,936,942.

Davis, Harry J.; and Rongus, Leo P., to United States of America, Army. Dual signature safety and arming mechanism. 3,937,146, Cl. 102-78.000.

Davis, R.: *See—*
Davis, Raymond D.; and Plant, Z. Y., Jr., 3,938,078.

Davis, Raymond D.; and Plant, Z. Y., Jr., to Davis, R.; Plant, Z. Y.; and Tribbey, W. Low tire pressure indicating device. 3,938,078, Cl. 340-58.000.

Davis, Robert: *See—*
Wiley, Paul J.; and Davis, Robert, 3,937,774.

Day, Leslie R., to Young Communications Corporation. Miniature display communicator. 3,938,139, Cl. 340-324.00R.

De Laval Separator Company, The: *See—*
Zitke, Ernest John; and Horton, Donald Dickinson, 3,937,397.

Dea, Frank Jeng; and Schroer, Richard Allen, to Nelson Research & Development Co. Topical anti-inflammatory compositions and methods of use. 3,937,823, Cl. 424-210.000.

Dean, Joe O. Door security pin. 3,937,506, Cl. 292-300.000.

Debrunner, Peter; and Frauenfelder, Hans, to University of Illinois Foundation. Digital signal averager with logarithmic time base. 3,937,943, Cl. 235-183.000.

de Carle, John Trevor, to Global Vision, Inc. Hydrophilic gel terpolymers from hydrophilic N-vinyl monomers, hydroxyalkyl acrylates or methacrylates and polymerizable unsaturated carboxylic acids. 3,937,680, Cl. 260-29.6TA.

DeClue, Larry W.; and Muller, Harold H., to Fairchild Camera and Instrument Corporation. Active termination network for clamping a line signal. 3,937,988, Cl. 307-237.000.

Deere & Company: *See—*
Lange, Henry James; McCunn, Myron Lee; Berk, Martin Adolph; Classen, Peter Jay; and Allen, David Thomas, 3,938,016.

Deering Milliken Research Corporation: *See—*
Klein, Norman E.; and Stewart, William H., Jr., 3,937,045.

DeFrancesco, Richard E.; Harris, Bernard; and Hoffman, David, to United States of America, Navy. Digital flutter reduction system. 3,938,184, Cl. 360-51.000.

Deix, Jean, to Le Bouchage Mecanique. Bottle stoppering apparatus. 3,936,991, Cl. 53-76.000.

DeJule, Michael C.; and Glaser, David, to Zenith Radio Corporation. Gas discharge display device and an improved cell therefor. 3,938,135, Cl. 340-324.00M.

Dekeyser, Willy Rene Evarist: *See—*
Mortier, Frans Henri; Dekeyser, Willy Rene Evarist; and Sadler, Loren Gage, 3,936,994.

de Kock, Cornelis, to ITT Industries, Inc. Arrangement for adjusting the damping force of a shock absorber. 3,937,307, Cl. 188-319.000.

Del Norte Technology, Inc.: *See—*
Dano, Paul K., 3,938,146.

Delaney, Thomas James; and Pierson, William Grant, to Colgate-Palmolive Company. Toothpaste. 3,937,321, Cl. 206-84.000.

Delaney, Thomas James; and Pierson, William Grant, to Colgate-Palmolive Company. Flavored dental creams. 3,937,803, Cl. 424-49.000.

Delaney, Thomas James; and Pierson, William Grant, to Colgate-Palmolive Company. Toothpaste. 3,937,804, Cl. 424-52.000.

Del Bon, Franco. Automatically opening and closing closure device. 3,937,371, Cl. 222-494.000.

Del Bon, Franco, to Trisa Burstenfabrik AG. Fountain toothbrush. 3,937,582, Cl. 401-134.000.

DeLong, Donald C.; and Gerzon, Koert, to Eli Lilly and Company. Method for treating psoriasis. 3,937,822, Cl. 424-181.000.

Demarest, Donald M., to General Electric Company. Gate pulse power supply for static alternating current switch. 3,938,032, Cl. 323-24.000.

Demole, Edouard P., to Firmenich SA. Aromatic compositions. 3,937,228, Cl. 131-17.00R.

Dempsey, Edward, to Lawrence Peska Associates, Inc., a part interest. Electric hood latch for vehicles. 3,937,505, Cl. 292-201.000.

Denenberg, Jeffrey Neil, to Bell Telephone Laboratories, Incorporated. Tone detector using spectrum parameter estimation. 3,937,899, Cl. 179-84.0VF.

Denki Onkyo Co., Ltd.: *See—*
Horikawa, Hideichi; Katayama, Shitomi; Serita, Hajime; and Masuda, Noboru, 3,937,764.

de Radzitzky d'Ostrowick, Pierre M. J. G.; and Camerman, Philippe J. A., to Labofina S. A. Hydrocarbon conversion. 3,937,739, Cl. 260-604.00R.

Desai, Samir Thakorbhai, to Motorola, Inc. Public address/radio switching system. 3,938,043, Cl. 325-18.000.

DeSoto, Inc.: *See—*
Jansons, Eric G., 3,936,907.

Destame, Daniel Paul Henri, to U.S. Philips Corporation. Apparatus for converting visually legible numerical characters into a binary code. 3,938,186, Cl. 340-146.30Z.

Detraz, Jacques: *See—*
Fund, Jean Claude; and Detraz, Jacques, 3,937,097.

Devaud, Jacques, to Grouzet. Static non-swinging course determining device on a vehicle. 3,936,949, Cl. 33-352.000.

Devine, Joseph C. Dual frame rocker trailer. 3,937,413, Cl. 242-86.50R.

DeVito, Albert P., to Palmer Industries Ltd. High voltage grounding strap. 3,937,995, Cl. 313-49.000.

DeVito, Albert P.: *See—*
Maximoff, Paul A.; and DeVito, Albert P., 3,937,553.

de Winter, Jan Gerrit, to Nicolon B.V. Bed for growing mushrooms and the like. 3,936,975, Cl. 47-1.100.

Dickinson, Lawrence Chapman. Snow cat. 3,937,289, Cl. 180-9.440.

Diehl, Roy E.: *See—*
Cook, Robert R.; and Diehl, Roy E., 3,937,196.

Diepering, Gerrit J.: *See—*
Nicholson, David W.; and Diepering, Gerrit J., 3,937,176.

Dietterich, Charles W., to White-Westinghouse Corporation. Molded plastic refrigerator pan and window assembly. 3,937,537, Cl. 312-204.000.

Dillenschneider, Jean-Paul, to Compagnie Generale des Establissements Michelin, raison sociale Michelin & Cie. Pneumatic tires. 3,937,862, Cl. 428-409.000.

Dillingham Corporation: *See—*
Martin, Charles H.; and Brewer, Steven V., 3,937,442.

Dillon, Roger L.: *See—*
Nystuen, Marcus I.; and Dillon, Roger L., 3,937,981.

Dinning, Robert W., to Macco Oil Tool Company, Inc. Artificial lift well apparatus. 3,937,280, Cl. 166-224.00R.

DiPace, Gino: *See—*
Kopich, Leonard F.; and DiPace, Gino, 3,937,603.

DiPaola, Philip J.; and Boye, Charles M. Holder. 3,937,451, Cl. 269-45.000.

Direct Access Corporation: *See—*
Semmlow, John Leonard; and Stark, Lawrence, 3,938,190.

Dirigo Corporation: *See—*
Nickerson, John T. R.; and Darack, John R., 3,937,814.

Disque, Donny R.: *See—*
Koerner, Ernest C.; and Disque, Donny R., 3,937,673.

Dittmann, Larry Eugene, to AMP Incorporated. Device for splicing wire. 3,937,548, Cl. 339-95.00D.

Dixon, Arthur B.: *See—*
Shelley, George R.; Shelley, Robert J., Jr.; Dixon, Arthur B.; and House, Bruce F., 3,937,365.

Dixon, James R.; and Jones, Charles M., to Ford Motor Company. Staggered configuration for wankel engine spark plugs. 3,937,185, Cl. 123-8.010.

Doak, Lyle E. Bilge pump. 3,937,168, Cl. 114-183.00A.

Doblin, Jay: *See—*
Tucker, James E.; and Doblin, Jay, 3,937,231.

Dobson, Donald R.; and Williams, Robert A., to International Business Machines Corporation. Differential capacitive position encoder. 3,938,113, Cl. 340-200.000.

Dr. C. Otto & Comp. G.m.b.H.: *See—*
Pries, Erich; and Drebes, Friedrich-Wilhelm, 3,937,656.

Docutel Corporation: *See—*
Hickey, Richard C.; Swafford, Jerry W.; Swartzendruber, Robert F.; and Barnes, Thomas P., 3,937,453.

Dodge, Thomas W.; Rinkleib, Helfried O.; and Rueger, William J., to International Business Machines Corporation. Cartridge with lock stabilization. 3,937,325, Cl. 206-387.000.

Doerfler, Roger E.: *See—*
Ayers, David T., Jr.; Doerfler, Roger E.; and Stelzer, William, 3,937,523.

Dols, Peter L. M., to Stamicarbon B.V. Process for the preparation of cyclohexanone. 3,937,735, Cl. 260-586.00P.

Dominguez, David G.: *See—*
Wolf, Ludwig, Jr.; and Dominguez, David G., 3,937,064.

Dompas, John M. A., to Hazelett Strip-Casting Corporation. Belt back-up apparatus and coolant application means for twin-belt casting machines. 3,937,274, Cl. 164-278.000.

Donakowski, William A.: *See—*
Cordone, Leonard G.; Donakowski, William A.; and Morgan, John R., 3,937,266.

Donati, Ivo; Muench, Werner; and Fidecicchi, Mario, to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A. Process for the neutralization of acid solutions of caprolactam. 3,937,789, Cl. 423-549.000.

Donner, Meinrad: *See—*
Ruffner, Heinz E.; and Donner, Meinrad, 3,936,946.

Donovan, William J.; and Frey, G. Robert, to Joy Manufacturing Company. Protective canopy. 3,937,517, Cl. 296-68.000.

Dorer, Wilfried, to Mathias Bauerle GmbH. Envelope filling machine. 3,936,993, Cl. 53-266.00A.

Dorleijn, Jan Willem Frederik: *See—*
Rooijmans, Coenraad Jozef Maria; Druyvesteyn, Willem Frederik; and Dorleijn, Jan Willem Frederik, 3,938,111.

Dorren, Louis, to Quadracast Systems, Inc. Cartridge muting circuit. 3,937,902, Cl. 179-100.40A.

Dorsch, Robert R., to Du Pont de Nemours, E. I., and Company. Zeeman effect atomic absorption spectrometer. 3,937,577, Cl. 356-85.000.

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- Garcia, Jean; Hareng, Michel; and Leiba, Eugene, to Thomson-CSF. Data display device. 3,938,140, Cl. 340-336.000.
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Huffman, Dale F.; and Zeh, Charles E., to Borg-Warner Corporation. Transmission shift control. 3,937,100, Cl. 74-476.000.

Huffman, Ronald E., to KV33 Corporation. Method of constructing dental models using guide pins and apertured retainer. 3,937,773, Cl. 264-17.000.

Hufnagel, Frank W., to Lawrence Peska Associates, Inc., a part interest. Animal feces collecting device. 3,937,509, Cl. 294-1.00R.

Hughes Aircraft Company: *See—*
  Ajioka, James S.; and Schaffer, Kenneth L., 3,938,159.
  Burnham, Gerald O.; and Weber, John W., 3,938,130.
  Johansen, Donald G., 3,937,423.

Hughes, Carroll T., Jr., to Consumat Systems, Inc. Afterburner apparatus for incinerators or the like. 3,937,154, Cl. 110-8.00A.

Hughes, Donald Kent, to AMP Incorporated. Strimp. 3,937,549, Cl. 339-97.00C.

Hughes, John D.; and Klingensmith, Al W., to White-Westinghouse Corporation. Vapor saving ambient air intake system for a dry cleaner. 3,937,043, Cl. 68-18.00R.

Hulme, Edwin C., to Thurston, Kurt W.; and Selig, William L., part interest to each. System for the programmed flashing of warning lights. 3,938,080, Cl. 340-114.00B.

Hundtofte, Virgil Anton: *See—*
  Moore, William Percy; and Hundtofte, Virgil Anton, 3,937,734.

Hunger, Alfred; and Janssen, Hans-Jochen, to Ciba-Geigy Corporation. Pharmaceutical preparations. 3,937,834, Cl. 424-273.000.

Hurwitz, Mathew. Levelling attachment for ladders. 3,937,298, Cl. 182-200.000.

Husqvarna AB: *See—*
  Naslund, Ulf Vilheim; and Skog, Egil, 3,937,306.

Husson, Henri Philippe: *See—*
  Sevenet, Thierry; Thal, Claude; Husson, Henri Philippe; and Potier, Pierre, 3,937,709.

Hust, Donald R.; and Heberling, Emory D., deceased (by Herberling, Frances L., executrix), to United States of America, Navy. Magnetic tape signature signal injection device. 3,938,183, Cl. 360-31.000.

Hutchins, Thomas B., IV. Electromedical patient monitoring system. 3,937,214, Cl. 128-2.10A.

Hutchinson, Homer F., to GTE Automatic Electric Laboratories Incorporated. Voltage monitor and control circuit. 3,938,023, Cl. 321-2.000.

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Huydts, Eduard J. C.; Klassen, Alfons; and Nacke, Erich, to G. Siempelkamp & Co. System for measuring plastic deformation created by a bending press. 3,937,072, Cl. 73-100.000.

Hyder, Syed Salahuddin, to Alephtran Systems Ltd. Electronic digital system and method for reproducing languages using the Arabic-Farsi script. 3,938,099, Cl. 340-172.500.

Hydril Company: *See—*
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I and H Conveying and Machine Company: *See—*
  Ittner, Delbert J.; and Hofstetter, Robert W., 3,937,342.

Ichise, Yoshio; and Sato, Kinichiro. Releaseable steel cable anchor and method for withdrawing the same. 3,936,924, Cl. 29-427.000.

Ikeda, Kikuo: *See—*
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Ikeda, Morio; and Tsumoto, Mamoru, to Teijin Ltd. False twist-crimped polyester yarns production. 3,936,999, Cl. 57-157.0TS.

Ikeda, Yoshihiko, to Kokusan Denki Co., Ltd. Voltage regulator for a separately excited generator. 3,938,028, Cl. 322-28.000.

Illinois Tool Works, Inc.: *See—*
  Ernst, Richard John, 3,937,119.

Imai, Jun: *See—*
  Irikura, Tsutomu; Shirai, Kazunari; Tada, Mamoru; Tamada, Terumi; and Imai, Jun, 3,937,821.

Imai, Takayoshi: *See—*
  Tajima, Eiichi; Yamamoto, Kaname; and Imai, Takayoshi, 3,937,640.

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  Nicholson, James, 3,937,050.

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  Cicognani, Mario, 3,937,094.
  Ferrentino, Antonio; and Beretta, Germano, 3,937,559.

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Ingraham, Richard G.: *See—*
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Ingram, Brian; and Riddoch, Henry Jamieson, to Girling Limited. Pneumatic braking systems for vehicles. 3,937,524, Cl. 303-21.00F.

Integrated Photomatrix Limited: *See—*
  Fry, Peter William, 3,937,984.

Intel Corporation: *See—*
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  Criscimagna, Tony Nick, 3,938,107.
  Dobson, Donald R.; and Williams, Robert A., 3,938,113.
  Dodge, Thomas W.; Rinkleib, Helfried O.; and Rueger, William J., 3,937,325.
  Knepper, Ronald W.; Lane, Ralph D.; Ludlow, Peter J.; and Moore, Barry L., 3,938,008.
  Lewis, David O.; Miller, Thomas H.; and Schmitt, Steven A., 3,938,101.
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  Pfeifer, Josef, 3,937,725.

Inzerill, Andrew J. Mortar tool. 3,937,511, Cl. 294-16.000.

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Irish, William D.: *See—*
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Irons, John Dowe: *See—*
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Irwin, Malcolm F.: *See—*
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Iseki, Jiro: *See—*
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Ishida, Kaname: *See—*
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Ishida, Takashi, to Mikuni Kogyo Co., Ltd. Impulse signal producing device of the pneumatic pressure type. 3,937,252, Cl. 137-624.130.

Ishihara, Kozi: *See—*
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Ishikawa, Kiyotsugu; Kobune, Tetsuo; Iwasa, Hitoo; and Teramoto, Iwao, to Matsushita Electronics Corporation. Optical remote control apparatus employing light scattering plate. 3,937,949, Cl. 250-199.000.

Ito, Hideo; Tanaka, Mizuho; and Sato, Harumasa, to Hitachi, Ltd. Object disposed in a fluid flow and having a selected configuration to minimize generation of Karman's vortex street. 3,937,594, Cl. 416-223.00A.

Ito, Youichi, to Sharp Kabushiki Kaisha. Cassette tape data processing terminal unit with latch. 3,938,185, Cl. 360-69.000.

Itoh, Tomoo: *See—*
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ITT Industries, Inc.: *See—*
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Ittner, Delbert J.; and Hofstetter, Robert W., to I and H Conveying and Machine Company. Apparatus for opening and unloading cartons. 3,937,342, Cl. 214-304.000.

Ivanova, Ljudmila Mikhailovna: *See—*
  Kononko, Vasily Porfirovich; Bondarev, Konstantin Timofeevich; Krivokon, Alexandr Alexandrovich; Kovshar, Nikolai Nikiforovich; Ivanova, Ljudmila Mikhailovna; Frolova, Elena Gavrilovna; Shestak, Nikolai Antonovich; and Shevchenko, Nikolai Leontievich, 3,937,623.

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Iwasa, Hitoo: *See—*
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Iwase, Koichi: *See—*
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  Zuckerman, Joseph L.; Eckardt, Carl R.; and Bertotti, Robert V., 3,937,861.

Jackson, David A. Electrolytic zinc refining process including production of by-products from jarosite residues. 3,937,658, Cl. 204-119.000.

Jackson, Thomas M.; Brisbane, Alan D.; Peters, Jack R.; Heinecke, Rudolf A. H.; and Moule, David J., to International Standard Electric Corporation. Optically coupled semiconductive switching devices. 3,938,173, Cl. 357-19.000.

Jacobi, Otto K., to Kolmar Laboratories, Inc. Addition compound of a nucleotide and an amino acid and the use thereof in protection against actinic radiation. 3,937,809, Cl. 424-60.000.

Jacobs, David R.: *See—*
  Spanel, Abram N.; Jacobs, David R.; and Buell, David N., 3,937,160.
  Spanel, Abram Nathaniel; and Jacobs, David R., 3,937,157.

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Jacobs, Virginia Michael: *See—*
  Jacobs, Hubert Hudson; and Jacobs, Virginia Michael, 3,937,297.

* Jacoby, Sidney, to Evergard Fire Alarm Co., Inc. Combination smoke and heat detector alarm. 3,938,115, Cl. 340-237.00S.

Jaeger, Karl-Heinz; and Mittenzwei, Hellmut, to Solco Basel AG. Growth regulating compositions extracted from spleen. 3,937,816, Cl. 424-95.000.

Jaffe, James M.; and Seto, John Y. W., to General Motors Corporation. Polycrystalline silicon pressure transducer. 3,938,175, Cl. 357-26.000.

Jamison, Fred W. Electrical wiring and alarm system. 3,938,121, Cl. 340-274.00R.

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Janousek, Radovan: *See—*
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Jansons, Eric G., to DeSoto, Inc. Molded hinge construction. 3,936,907, Cl. 16-171.000.

Janssen, Hans-Jochen: *See—*
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Jantunen, Vilho Viljo, to Outokumpu Oy. Controlling a sludge flow. 3,937,591, Cl. 415-157.000.

Japenga, Ronald J., to Reliable Electric Company. Gas tube tester. 3,938,034, Cl. 324-20.00R.

Jarmy, Howard I., to Singer Company, The. Rotary data base with air bearing. 3,938,191, Cl. 360-102.000.

Jaspers, Hendrik Alphons. Method and device for gas refrigeration. 3,937,030, Cl. 62-86.000.

Jaworsky, Hugo: *See—*
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Jensen, Garold K., to United States of America, Navy. Information display system having main and auxiliary sweeps. 3,937,879, Cl. 178-7.50R.

Jepson, John W.; and Allen, Earle F., Jr., to Acushnet Company. Golf club with polyurethane insert. 3,937,474, Cl. 273-173.000.

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Jevremov, Milan P. Dial gauge measuring device. 3,936,945, Cl. 33-172.00R.

Jeyes, John Anthony; and Blakeley, Ronald Edward, to Joseph Lucas (Industries) Limited. Rotor assemblies. 3,937,593, Cl. 416-214.00A.

Jidosha Kiki Co. Ltd.: *See—*
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Joensson, Karl-Erik; and Nordquist, Hakan, to Mo och Domsjo Aktiebolag. Apparatus for cutting logs. 3,937,114, Cl. 83-425.200.

Johansen, Donald G., to Hughes Aircraft Company. Nutation and roll error angle correction means. 3,937,423, Cl. 244-3.220.

John D. Hollingsworth on Wheels, Inc.: *See—*
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Johnson, Merlin. Self-uprighting towable sled for snowmobiles and the like. 3,937,482, Cl. 280-18.000.

Johnson, Robert Edward, to Whirlpool Corporation. Vacuum cleaner suction tool. 3,936,903, Cl. 15-331.000.

Johnson, Ronald G.; and Kashmerick, Gerald E., to Outboard Marine Corporation. Marine propulsion device with anchoring means for propeller shaft bearing carrier. 3,937,093, Cl. 74-417.000.

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Jones, James Eddie; Harbottle, William E.; and Otto, Dennis Lee, to Timken Company, The. Bearing assembly having press-fitted thrust ribs. 3,937,539, Cl. 308-214.000.

Jones, Richard W. Apparatus for sampling a liquid. 3,937,091, Cl. 73-425.40R.

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Joy, Ivan L. Transducer arrangement for ultrasonic rail tester coupling carriages. 3,937,068, Cl. 73-67.700.

Joy Manufacturing Company: *See—*
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Judice, Charles Norris, to Bell Telephone Laboratories, Incorporated. Animated dithered display systems. 3,937,878, Cl. 178-7.30D.

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Jungmann, Axel, to Siemens Aktiengesellschaft. Nuclear reactor protective system. 3,937,650, Cl. 176-37.000.

Justus, Edgar J., to Beloit Corporation. Method of and means for controlling internal tension in web rolls. 3,937,410, Cl. 242-66.000.

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Kachaylo, John, to Raymond Lee Organization, Inc., The, a part interest. Condenser lid. 3,937,210, Cl. 126-384.000.

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Kalmus, Henry P., to United States of America, Army. Frequency modulated doppler distance measuring system. 3,938,147, Cl. 343-7.0PF.

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Kapp, Arno Fritz Ottomar, to Jenkins of Retford, Ltd. Mixer. 3,937,444, Cl. 259-40.000.

Kappler, Gunter, to Motoren- und Turbinen-Union Munchen GmbH. Combustion chamber and process utilizing a premix chamber of a porous ceramic material. 3,937,007, Cl. 60-39.060.

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Karl, Otto. Circuit arrangement for detecting double connections in digital telecommunication switching systems. 3,937,895, Cl. 179-15.0AT.

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Karpisek, Ladislav S. Rotary piston machine. 3,937,605, Cl. 418-219.000.

Kasdan, Harvey Lee, to Recognition Systems, Inc. Electro-optical method for measuring gaps and lines. 3,937,580, Cl. 356-156.000.

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Kataoka, Shoei; Tsurushima, Toshio; Sugiyama, Yoshinobu; Tanoue, Hisao; Yamada, Hideo; and Komamiya, Yasuo, to Agency of Industrial Science & Technology. Method of controlling magnetic strip domains. 3,938,110, Cl. 340-174.0TF.

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Kato, Masahiko; Hayashi, Asao; and Suzuki, Takeomi. Device for modulating intensity of light rays generated from gas laser. 3,938,060, Cl. 332-7.510.

Kato, Tomomi, to Sansui Electric Co., Ltd. Magnetic tape recording and reproducing machines. 3,937,422, Cl. 242-204.000.

Katsumata, Mitsuo, to Kokusan Denki Co., Ltd. Ignition timing controller for a breakerless ignition system. 3,937,190, Cl. 123-117.00R.

Katz, Howard S.; and Rittelmann, P. Richard, to Sunearth Construction Company, Inc. Solar collector system. 3,937,208, Cl. 126-271.000.

Kawada, Seigo: *See—*
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Kawakami, Hideaki, to Hitachi, Ltd. Method and device for driving a matrix type liquid crystal display element. 3,938,136, Cl. 340-324.00M.

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Kellogg, Robert C., to Ex-Cell-O Corporation. Carton feeding apparatus. 3,937,131, Cl. 93-53.0SD.

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Samour, Carlos M.; and Vida, Julius A., 3,937,830.

Kendall, Willard E., to Winnebago Industries, Inc. Range top hold-down and pilot light flash tube. 3,937,207, Cl. 126-39.00B.

Kenny, James Edward. Electric hairdressing iron. 3,937,230, Cl. 132-37.00R.

Kernforschungsanlage Julich Gesellschaft: *See—*
Barnert, Heiko, 3,937,255.

Kessler, Reinhard: *See—*
Schulz, Horst; Hild, Erich; Steuer, Werner; Schmidt, Karl-Heinz; Eisend, Ewald; Loffler, Karlheinz; Flosser, Josef; and Kessler, Reinhard, 3,937,309.

Ketcham & McDougall, Inc.: *See—*
Bosland, James M., 3,937,239.

Kethley, Lancelot I. Vapor pressure metering apparatus and method. 3,937,063, Cl. 73-29.000.

Keursten, Leonardus L. M.: *See—*
Clerx, Henricus P. M.; Extra, Pieter M. J.; Keursten, Leonardus L. M.; and Peeters, Franciscus M. J., 3,937,919.

Keutzer, Richard K.: *See—*
Lundin, Robert S.; and Keutzer, Richard K., 3,937,096.

Key, Ben O.: *See—*
Miller, Francis A., 3,937,887.

Khaitin, Benno Abramovich: *See—*
Fix, Izrail Grigorievich; Morokhovsky, Alexei Sergeevich; Gammerman, Mikhail Yakovlevich; Khaitin, Benno Abramovich; Laar, Tynis Eduardovich; and Mezhhurd, Volf Iolevich, 3,937,080.

Kienzle Apparate GmbH: *See—*
Warkentin, Ulrich, 3,937,933.

Kim, Soo Nam, to Ford Motor Company. Electronic ignition system. 3,937,193, Cl. 123-117.00R.

Kimberlin, Dan R.: *See—*
Harkrader, Ronald L.; and Kimberlin, Dan R., 3,937,243.

Kimura, Takashi; Majima, Azusa; and Hamamoto, Hiroshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for producing iron-base sintered alloys with high density. 3,937,630, Cl. 75-200.000.

Kimura, Yoshimasa: *See—*
Furuichi, Katsushi; Kurita, Kenji; Kimura, Yoshimasa; and Sakamaki, Hisashi, 3,937,921.

Kincaid, Elmo, Jr. Diesel-electric wheel tractor with steerable trucks. 3,937,292, Cl. 180-45.000.

King, Ira S.: *See—*
Glasson, Jerry M.; and King, Ira S., 3,938,052.

Kira, Hiroshi, to Holtzman, Norman. Film strip advance mechanism. 3,937,568, Cl. 353-68.000.

Kirk, Robert Gerald: *See—*
Zemel, David Larry; and Kirk, Robert Gerald, 3,937,941.

Kirk, Robert T. Circuitry for preventing the use of erroneous data. 3,938,081, Cl. 340-146.10R.

Kirkham, Kathleen E., to Franklin Mint Corporation. Method for producing bi-metal object and product thereof. 3,937,618, Cl. 29-182.200.

Kisslan, John H., to United Technologies Corporation. Emergency control system for gas turbine engine variable compressor vanes. 3,937,588, Cl. 415-17.000.

Kitai, Kiyoshi, to Seiko Koki Kabushiki Kaisha. Shutter release stop device for an electric shutter. 3,938,169, Cl. 354-268.000.

Kitajima, Masao; and Kondo, Asaji, to Fuji Photo Film Co., Ltd. Method of controlling hydrogen ion concentration by microcapsules. 3,937,798, Cl. 423-659.000.

Kjeldsen, Kjeld: *See—*
Stannow, Jorgen; Kjeldsen, Kjeld; Karll, Bent; and Nissen, Ole Joker, 3,937,598.

Klamm, Robert L. Tire pressure indicators and methods of making and using the same. 3,937,077, Cl. 73-146.800.

Klassen, Alfons: *See—*
Huydts, Eduard J. C.; Klassen, Alfons; and Nacke, Erich, 3,937,072.

Klaubert, Dieter H.: *See—*
Sellstedt, John H.; and Klaubert, Dieter H., 3,937,719.

Klawitter, Horst: *See—*
Riedmueller, Eberhard; and Klawitter, Horst, 3,937,203.

Klein, Howard Paul; and Waddill, Harold George, to Jefferson Chemical Company, Inc. Fire retardant polyester resins. 3,937,756, Cl. 260-869.000.

Klein, Norman E.; and Stewart, William H., Jr., to Deering Milliken Research Corporation. Dyeing and printing of materials. 3,937,045, Cl. 68-205.00R.

Kleinhans, Siegfried, to Siemens Aktiengesellschaft. Flywheel arrangement for an electrical machine. 3,937,103, Cl. 74-572.000.

Klendauer, Wolfgang: *See—*
Busch, Walter; Hammer, Klaus-Dieter; and Klendauer, Wolfgang, 3,937,672.

Klimaschka, Norbert, to Gebruder Netzsch Maschinenfahrik. Agitator mill. 3,937,406, Cl. 241-46.110.

Kline, Larry Harold: *See—*
Seals, Harold, 3,937,369.

Klingensmith, Al W.: *See—*
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Klockner-Humboldt-Deutz AG: *See—*
Howe, Hans-Ulrich, 3,937,201.

Klutchko, Sylvester; Brown, Richard E.; and Von Strandtmann, Maximilian, to Warner-Lambert Company. Substituted chromone-3-carbonitriles, carboxamides and carboxylic acids useful for preventing asthmatic symptoms. 3,937,837, Cl. 424-283.000.

Klutchko, Sylvester: *See—*
Kaminsky, Daniel; Klutchko, Sylvester; and von Strandtmann, Maximilian, 3,937,828.
Strandtmann, Maximilian von; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,937,704.

Kmak, Walter S.: *See—*
Yates, David J. C.; and Kmak, Walter S., 3,937,660.

Knapp, Ralph E., to Lear Siegler, Inc. Rotating arm aiming device system. 3,936,947, Cl. 33-275.00G.

Knauer, Peter. Method for identifying selected inventory items and reading the sum of their values. 3,937,929, Cl. 235-61.11R.

Knepper, Ronald W.; Lane, Ralph D.; Ludlow, Peter J.; and Moore, Barry L., to International Business Machines Corporation. Common bus driver complementary protect circuit. 3,938,008, Cl. 317-31.000.

Knierim, Gerhard: *See—*
Schmitt, Gerhard; and Knierim, Gerhard, 3,938,019.

Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., to Hercules, Incorporated. Use of radiation-induced polymers in cement slurries. 3,937,633, Cl. 106-90.000.

Knofel, Harald: *See—*
Korner, Siegfried; Meurer, Wolfgang; Knofel, Harald; Prochazka, Dieter; and Hirche, Rudi, 3,937,109.

Knorr-Bremse GmbH: *See—*
Eckhart, Alfred, 3,937,527.

Knowles, Richard N.; and Moore, Earl P., Jr., to Du Pont de Nemours, E. I., and Company. Process for preparing higher purity azo compounds. 3,937,696, Cl. 260-192.000.

Knudson, William Lewis. Dental clinic. 3,936,936, Cl. 32-1.000.

Kobe Steel Ltd.: *See—*
Asada, Tsunesaburo; Horiuchi, Takefumi; Matsumoto, Kiyoshi; Monju, Yoshiyuki; Yamaguchi, Yoshihiro; Noguti, Masataka; Nishihara, Masao; Fujita, Tatsu; and Matsushita, Tomiharu, 3,937,385.
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Kobune, Tetsuo: *See—*
Ishikawa, Kiyotsugu; Kobune, Tetsuo; Iwasa, Hitoo; and Teramoto, Iwao, 3,937,949.

Koehler, Albert M.; and Hruska, Stanley J., to Brown and Root, Inc. Method and apparatus for transporting and launching an offshore tower. 3,937,027, Cl. 61-46.500.

Koehler, Kurt, to Carl Zeiss-Stiftung. Device for the fine adjustment of an instrument table supporting an optical equipment. 3,937,099, Cl. 74-471.0XY.

Koehring Company: *See—*
Geis, Warren P.; and Liegel, Reinald D., 3,937,339.

Koerner, Ernest C.; and Disque, Donny R., to Phelps Dodge Industries, Inc. Modified amide-imide resins and method of making the same. 3,937,673, Cl. 260-18.0TN.

Koerner, Georg; and Hargita, Tibor, to Wilhelm Ruf KG. Trimming potentiometer in T or Pi network connection with parallel resistance paths. 3,938,070, Cl. 338-60.000.

Kohmura, Isao; and Futaki, Kiyoshi, to Mitsubishi Paper Mills, Ltd. Heat-sensitive recording sheets having improved stability. 3,937,864, Cl. 428-411.000.

Koizumi, Hiroshi: *See—*
Yasuda, Zenpachi; Koizumi, Hiroshi; Hasunuma, Masao; and Oda, Satoshi, 3,937,678.

Kojima, Koichi; and Kamoto, Hidetoshi, to Sony Corporation. Time switching power saver system for electronic indicators. 3,938,138, Cl. 340-324.00R.

Kokusan Denki Co., Ltd.: *See—*
Ikeda, Yoshihiko, 3,938,028.
Katsumata, Mitsuo, 3,937,190.

Kolbel, Herbert; Manecke, Georg; and Guttler-Pimenidou, Eftichia, to Hoechst Aktiengesellschaft. New polyglycidyl ethers. 3,937,685, Cl. 260-47.0EP.

Koleda, Michael T. Ski construction. 3,937,481, Cl. 280-11.35C.

Kollmorgen Corporation: *See—*
Noodleman, Samuel, 3,937,993.

Kolmar Laboratories, Inc.: *See—*
Jacobi, Otto K., 3,937,809.

Komamiya, Yasuo: *See—*
Kataoka, Shoei; Tsurushima, Toshio; Sugiyama, Yoshinobu; Tanoue, Hisao; Yamada, Hideo; and Komamiya, Yasuo, 3,938,110.

Komatsu, Kogiro: *See—*
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Kondo, Asaji: *See—*
Kitajima, Masao; and Kondo, Asaji, 3,937,798.

Kondo, Mitsuru; and Misawa, Toshihiko, to Kabushiki Kaisha Ricoh. Internal test method for facsimile transceiver. 3,937,872, Cl. 178-6.000.

Koninklijke Papierfabrieken Van Gelder Zonen N.V.: *See—*
Jongetjes, Hendrik, 3,937,865.

Kononko, Vasily Porfirovich; Bondarev, Konstantin Timofeevich; Krivokon, Alexandr Alexandrovich; Kovshar, Nikolai Nikiforovich; Ivanova, Ljudmila Mikhailovna; Frolova, Elena Gavrilovna; Shestak, Nikolai Antonovich; and Shevchenko, Nikolai Leontievich. Method of making glass tubes. 3,937,623, Cl. 65-88.000.

Konrad, Hermann-Heinz: *See—*
Fuchs, Hermann; and Konrad, Hermann-Heinz, 3,937,611.

Kopernicky, Jaroslav J., to Cinex Communications Inc. Film feed device. 3,937,378, Cl. 226-55.000.

Kopich, Leonard F.; and DiPace, Gino, to General Motors Corporation. Rotary machine apex seal. 3,937,603, Cl. 418-117.000.

Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; Engelhardt, Albrecht; and Traunecker, Werner, to Boehringer Ingelheim GmbH. 1-(2'Ethynyl-phenoxy)-2-hydroxy-3-(cycloalkyl-amino)-propanes and salts thereof. 3,937,706, Cl. 260-254.000.

Koppe, Herbert: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Stockhaus, Klaus, 3,937,717.

Koppers Company, Inc.: *See—*
Greco, Nicholas P., 3,937,741.

Korger, Heinz, to Hannes Marker. Safety ski binding. 3,937,480, Cl. 280-11.35T.

Korn, Roland; Seyd, Gunter; and Paulsen, Uwe, to Siemens Aktiengesellschaft. Apparatus for continuous feeding of granular material with sharp corners to a conveyer pipe line. 3,937,522, Cl. 302-56.000.

Korner, Siegfried; Meurer, Wolfgang; Knofel, Harald; Prochazka, Dieter; and Hirche, Rudi, to VEB Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen. Method of manufacturing cutting and/or creasing die. 3,937,109, Cl. 76-107.00C.

Kosaka, Katuaki; Ueno, Zene; and Nagaoka, Tadahiko, to Nissan Motor Co., Ltd. Fuel oxidizer. 3,937,010, Cl. 60-39.46R.

Koschmieder, Hartmut: *See—*
Fuhrmann, Jorg; Koschmieder, Hartmut; and Schaeffler, Georg, 3,937,532.

Kosmin, Melvyn S., to United States of America, Army. Battery charging circuit with full-charge cutoff. 3,938,021, Cl. 320-40.000.

Kosonen, Ahti A., to Outokumpu Oy. Intrauterine contraceptive device. 3,937,217, Cl. 128-130.000.

Koszegi Leather & Vinyl Products, Inc.: *See—*
Artz, Kenneth W., 3,937,373.

Koth, Gerhard: *See—*
Luhdorff, Dieter; Oehlerking, Bernd; Jaworsky, Hugo; Koth, Gerhard; and Simon, Klaus-P., 3,937,525.

Kovshar, Nikolai Nikiforovich: *See—*
Kononko, Vasily Porfirovich; Bondarev, Konstantin Timofeevich; Krivokon, Alexandr Alexandrovich; Kovshar, Nikolai Nikiforovich; Ivanova, Ljudmila Mikhailovna; Frolova, Elena Gavrilovna; Shestak, Nikolai Antonovich; and Shevchenko, Nikolai Leontievich, 3,937,623.

Koyama, Masakuni, to Shinshu Miso Kabushiki Kaisha. Process for producing processed low salt soybean paste. 3,937,844, Cl. 426-46.000.

Kraftwerk Union Aktiengesellschaft: *See—*

Reisacher, Raimund, 3,937,183.

Kraftwerkunion AG: *See—*

Remberg, Axel, 3,937,589.

Kratt, Kurt Wilhelm; and Bolsinger, Alois, to J. Hengstler K.G. System for collecting data. 3,937,924, Cl. 235-61.60R.

Krause, Janusz Josef Henryk, to Imperial Chemical Industries Limited. Apparatus for spraying paint. 3,937,400, Cl. 239-11.000.

Krauss-Maffei Aktiengesellschaft: *See—*

Schimpfle, Jorg, 3,936,952.

Winkle, Gunther; Schwarzler, Peter; Otto, Peter H.; Molzer, Peter; and Walkner, Christian, 3,937,149.

Krehbeil, Paul R.: *See—*

Brook, Marx; and Krehbeil, Paul R., 3,938,145.

Krider, Edmund Philip, to United States of America, Navy. All-sky photoelectric lightning detector apparatus. 3,937,951, Cl. 250-209.000.

Krings, Josef. Lining apparatus for the protection of trenches. 3,937,026, Cl. 61-41.00A.

Kringstad, Knut P.: *See—*

Backstrom, Inga L.; Hartler, Nils J. C.; and Kringstad, Knut P., 3,937,647.

Krivokon, Alexandr Alexandrovich: *See—*

Kononko, Vasily Porfirovich; Bondarev, Konstantin Timofeevich; Krivokon, Alexandr Alexandrovich; Kovshar, Nikolai Nikiforovich; Ivanova, Ljudmila Mikhailovna; Frolova, Elena Gavrilovna; Shestak, Nikolai Antonovich; and Shevchenko, Nikolai Leontievich, 3,937,623.

Krolmann, Siegfried; and Heinen, Bruno, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Tubular apparatus, in particular a steam generator. 3,937,277, Cl. 165-162.000.

Kronseder, Hermann; and Wetter, Franz, to Kronseder, Hermann. Labeling device with an installation for marking labels. 3,937,642, Cl. 156-384.000.

Krulik, Gerald A.; and Sable, Harvey J., to Addressograph-Multigraph Corporation. Reproduction system utilizing ion modular and dielectric imaging surface. 3,937,571, Cl. 355-3.00R.

Krumes, Rolf, to United States of America, Army. Settable warhead burst range selector. 3,937,124, Cl. 89-6.500.

Kubota, Shigeyoshi: *See—*

Tanaka, Toyozo; Kubota, Shigeyoshi; and Kunieda, Masao, 3,936,910.

Kuehn, Harold H.: *See—*

Elkins, William; Kuehn, Harold H.; and Chamberlin, Richard H., 3,937,847.

Kulde, Harry H. Shower spray massage-sauna. 3,936,891, Cl. 4-145.000.

Kulik, Metro D.: *See—*

Gorim, Everett; Kulik, Metro D.; and Struck, Robert T., 3,937,788.

Gorin, Everett; Kulik, Metro D.; and Struck, Robert T., 3,937,787.

Kumiai Chemical Industry Co., Ltd.: *See—*

Chiyomaru, Isao; Kawada, Seigo; and Takita, Kiyoshi, 3,937,840.

Kummer, Werner: *See—*

Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; Engelhardt, Albrecht; and Traunecker, Werner, 3,937,706.

Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Stockhaus, Klaus, 3,937,717.

Kunieda, Masao: *See—*

Tanaka, Toyozo; Kubota, Shigeyoshi; and Kunieda, Masao, 3,936,910.

Kunstler, Hans. Combustion furnace particularly for burning refuse. 3,937,155, Cl. 110-18.00R.

Kupfer, Hans: *See—*

Rudolph, Paul; Kupfer, Hans; and Schmidt, Werner, 3,937,620.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*

Onozuka, Mitsuo; Nomoto, Koki; and Sato, Koji, 3,937,682.

Kurita, Kenji: *See—*

Furuichi, Katsushi; Kurita, Kenji; Kimura, Yoshimasa; and Sakamaki, Hisashi, 3,937,921.

Kuroiwa, Tsuneyoshi: *See—*

Maeda, Ichiya; and Kuroiwa, Tsuneyoshi, 3,937,267.

Kurtz, Robert L., to United States of America, National Aeronautics and Space Administration. Holographic motion picture camera with doppler shift compensation. 3,937,555, Cl. 350-3.500.

Kushner, Gerald J.; and Irish, William D., to General Electric Company. Method of assembling adhesive joint. 3,937,641, Cl. 156-87.000.

Kusmer, Kasimir. Exercising device. 3,937,462, Cl. 272-83.00R.

Kusumoto Chemicals Ltd.: *See—*

Yasuda, Zenpachi; Koizumi, Hiroshi; Hasunuma, Masao; and Oda, Satoshi, 3,937,678.

KV33 Corporation: *See—*

Huffman, Ronald E., 3,937,773.

Kyorin Seiyaku Kabushiki Kaisha: *See—*

Irikura, Tsutomu; Shirai, Kazunari; Tada, Mamoru; Tamada, Terumi; and Imai, Jun, 3,937,821.

Kysor Industrial Corporation: *See—*

Beckwith, Sterling; Vogel, Robert E.; and Goyman, William, 3,937,033.

La Soie: *See—*

Bon, Gerard, 3,937,419.

La Soudure Electrique Autogene, Procedes Arcos: *See—*

Sunnen, Jean Albert; and Schoumaker, Henry Rene, 3,937,866.

La Technique Integrale S.A.: *See—*

Fund, Jean Claude; and Detraz, Jacques, 3,937,097.

Laar, Tynis Eduardovich: *See—*

Fix, Izrail Grigorievich; Morokhovsky, Alexei Sergeevich; Gammerman, Mikhail Yakovlevich; Khaitin, Benno Abramovich; Laar, Tynis Eduardovich; and Mezhburd, Volf Iolevich, 3,937,080.

Laarkamp, Jan, to Stamicarbon N.V. Preparation of modified petroleum resins. 3,937,674, Cl. 260-19.0UA.

Labofina S. A.: *See—*

de Radzitzky d'Ostrowick, Pierre M. J. G.; and Camerman, Philippe J. A., 3,937,739.

Laboratorios Del Dr. Esteve SA: *See—*

Osaka, Motomi; and Hashimoto, Yukio, 3,937,843.

Laby, Jordan M.: *See—*

Henkin, Melvyn L.; and Laby, Jordan M., 3,936,899.

Ladin, Eli M., to Federal-Mogul Corporation. Bearing wheel assembly. 3,937,535, Cl. 308-191.000.

Laflaquiere, Regis; Janousek, Radovan; and Wettel, Albert, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Textile machine frames. 3,936,995, Cl. 57-1.00R.

Lafuze, David Logan, to General Electric Company. Starter-generator utilizing phase controlled rectifiers to drive a dynamoelectric machine as a brushless DC motor in the starting mode with starter position sense variation with speed. 3,937,974, Cl. 290-46.000.

Lakatos, Ferenc: *See—*

Bathory, Judit; Ery nee Nagy, Marta; Gerei, Lajos; Lakatos, Ferenc; Stiller nee Kisteleki, Magdolna; and Vaghy, Tamas, 3,937,694.

Lambert, Alain: *See—*

Flambard, Christian; Lambert, Alain; and Pavon, Miguel Sancho, 3,937,067.

Lambrecht, Richard M.: *See—*

Godel, Julius B.; Guillaume, Marcel; Lambrecht, Richard M.; and Withnell, Ronald, 3,937,966.

Landvogt, Gunther Friedrich, to U.S. Philips Corporation. Transducer comprising strain gauges. 3,937,075, Cl. 73-141.00A.

Lane, Ralph D.: *See—*

Knepper, Ronald W.; Lane, Ralph D.; Ludlow, Peter J.; and Moore, Barry L., 3,938,008.

Lang, Joseph; Meckenstock, Helmut; and Nopper, Hans-Joachim, to Flachglas Aktiengesellschaft Delog-Detag. Apparatus for treating the corners of planar polygonal workpieces. 3,937,381, Cl. 228-6.000.

Lang, Robert A.: *See—*

Sagi, Zsigmond L.; Lang, Robert A.; Scott, Jimmie D.; Weinstein, Berel; and Pickett, Charles G., 3,937,323.

Lange, Henry James; McCunn, Myron Lee; Berk, Martin Adolph; Classen, Peter Jay; and Allen, David Thomas, to Deere & Company. Actuator position control. 3,938,016, Cl. 318-467.000.

Lange, Karl-Heinz, to Balda-Werke. High speed camera shutter, 3,938,168, Cl. 354-247.000.

Langen, Marinus J. M., to H. J. Langen & Sons Ltd. Rotary transfer mechanism. 3,937,458, Cl. 271-95.000.

Langowski, Faustyn C., to Byron Jackson Inc. Guide head for pipe rackers. 3,937,514, Cl. 294-88.000.

Langowski, Faustyn C., to Byron Jackson Inc. Head for pipe rackers. 3,937,515, Cl. 294-88.000.

Lanham Machinery Company, Inc.: *See—*

Lanham, William E.; Lanham, William E., Jr.; and Miller, Gene C., 3,937,335.

Lanham, William E.; Lanham, William E., Jr.; and Miller, Gene C., to Lanham Machinery Company, Inc. Automatic bread pan control system. 3,937,335, Cl. 214-6.0DS.

Lanham, William E., Jr.: *See—*

Lanham, William E.; Lanham, William E., Jr.; and Miller, Gene C., 3,937,335.

Lapie, Jean: *See—*

Berger, Roger; Estienne, Claude; and Lapie, Jean, 3,938,071.

Larocque, Walter. Animal trap. 3,936,973, Cl. 43-81.000.

Larson, George T.; and Hartmann, Richard, Jr., to Thermatool Corporation. Method and apparatus for manufacturing welded metal tubes of finite length. 3,937,914, Cl. 219-67.000.

Larson, Richard R., to Hercules Incorporated. Firing device, explosive charge, method, and system, for seismic exploration. 3,937,296, Cl. 181-118.000.

Lawes, Norman Edward, to British Visqueen Limited. Vented bags. 3,937,395, Cl. 229-62.500.

Lawrence, Frederick J., to Stewart, Keith B.; and Shea, Peter. Sorting machine. 3,937,459, Cl. 271-173.000.

Lawrence Peska Associates, Inc.: *See—*

Critelli, Frank, 3,937,418.

Dempsey, Edward, 3,937,505.

Hufnagel, Frank W., 3,937,509.

Miceli, Nicholas M., 3,936,988.

Warner, Glenfield, 3,938,123.

Lawson, Gustaf Rudolph, to AMP Incorporated. Electrical terminals for flat wire. 3,937,403, Cl. 339-97.00C.

Le Bouchage Mecanique: *See—*

Deix, Jean, 3,936,991.

Leader Denshi Kabushikikaisha: *See—*

Shimizu, Kazuyoshi, 3,938,003.

Lear Siegler, Inc.: *See—*

Knapp, Ralph E., 3,936,947.

Lechner, Robert J., to Honeywell Information Systems Inc. Sequentially encoded data structures that support bidirectional scanning. 3,938,105, Cl. 340-172.500.

Lectromelt Corporation: *See—*

Wynne, Peter J., 3,937,867.

Lee-Kemp, Kenneth William. Connector portion having releasable fastening means. 3,937,547, Cl. 339-74.00R.

Lee, Lloyd: *See—*

Farha, Bahia Rashid; and Lee, Lloyd, 3,937,850.

Lee, Poy. Sure grip winter tire traction device. 3,937,262, Cl. 152-179.000.

Leeds & Northrup Company: *See—*

Clack, Peter J.; and Moreland, George R., 3,937,615.

Leheu, Jacques, to Commissariat a l'Energie Atomique. Diagrid for supporting a nuclear reactor core. 3,937,653, Cl. 176-61.000.

Lehnhoff, Richard N.: *See—*

Staker, William C.; and Lehnhoff, Richard N., 3,938,022.

Leiba, Eugene: *See—*

Garcia, Jean; Hareng, Michel; and Leiba, Eugene, 3,938,140.

Leidich, Arthur John, to RCA Corporation. Transistor amplifier. 3,938,054, Cl. 330-30.00D.

Leimgruber, Willy; and Weigele, Manfred, to Hoffmann-La Roche Inc. 6-Substituted 1-phenazinol 5,10-dioxide derivatives. 3,937,707, Cl. 260-267.000.

Leiste, Hans Peter: *See—*

Alwes, Dieter; Eckardt, Helmut; Leiste, Hans Peter; and Melcher, Robert Albert, 3,937,447.

Lendi, Ulrich, to Mageba S.A. Compressing refuse. 3,937,139, Cl. 100-215.000.

Lentz, Carl A., to General Motors Corporation. Downshift inhibitor for a powershift transmission. 3,937,107, Cl. 74-861.000.

Leonard, Verna M. Inversion sliderule. 3,937,118, Cl. 84-471.0SR.

Leowald, Karl-Friedrich: *See—*

Hoffmann, Manfred; Schenk, Jakob; and Leowald, Karl-Friedrich, 3,938,026.

Le Pabic, Jean Pierre, to International Standard Electric Corporation. Fault detection process and system for a time-division switching network. 3,937,935, Cl. 235-153.0AK.

Let-R-Edge of Canada, Ltd.: *See—*

Minogue, Robert W.; and Troyer, Lloyd E., 3,937,384.

Levasseur, Georges; and Garconnat, Michel, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Frequency summing device. 3,938,061, Cl. 332-45.000.

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Lewis, George E.; and Peterman, Charles P., to Hydril Company. Mud gas content sampling device. 3,937,060, Cl. 73-19.000.

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Lindem, Thomas J.; and Van Roojen, Jan, to Ingersoll Milling Machine Company, The. Adjustable cutter tooth mounting. 3,937,587, Cl. 408-181.000.

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Lindsay, Ian. Float connection assemblies for multi-hulled boats. 3,937,166, Cl. 114-123.000.

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Littwin, Arthur K. Tape degausser. 3,938,011, Cl. 317-157.5MR.

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Loebs, Richard G.; and Ostrowski, Richard C., to Caterpillar Tractor Co. Method for bonding a bronze bushing on a metallic member. 3,937,268, Cl. 164-66.000.

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Loge, Hans, to Kaltenbach & Voight. Dental handtool. 3,936,940, Cl. 32-26.000.

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- Lucki, Stanley J.: *See—*
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- Ludlow, Peter J.: *See—*
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- Lumby, Roland John, to Joseph Lucas (Industries) Limited. Manufacture of silicon nitride powder. 3,937,792, Cl. 423-344.000.
- Lummus Company, The: *See—*
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- Lunden, Peter L:Son, to U.S. Philips Corporation. Radio communication transmitter. 3,938,156, Cl. 343-207.000.
- Lundin, Robert S.; and Keutzer, Richard K., to General Time Corporation. Motor system with replaceable output shaft. 3,937,096, Cl. 74-421.00A.
- Lupkas, Raymond R.: *See—*
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- Luxford, Ronald William Alexander, to CSR Limited. Billet orientation system. 3,937,318, Cl. 198-287.000.
- Luz, David Warren, to RCA Corporation. Deflection system. 3,938,004, Cl. 315-411.000.
- Lyon, Richard K., to Exxon Research & Engineering Company. Isotope separation process. 3,937,956, Cl. 250-290.000.
- M. L. Aviation Company Limited: *See—*
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- Maag Gear-Wheel & Machine Co., Ltd: *See—*
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- Maheg Maschinenbau GmbH: *See—*
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  - Dinning, Robert W., 3,937,280.
- MacGregor, Benjamin N.; and Wilson, Arnold I., to General Motors Corporation. Metering pump and combination two-section pinch-off aspirator valve. 3,937,440, Cl. 251-61.100.
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- Maddox, Bryant K.: *See—*
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- Maeda, Ichiya; and Kuroiwa, Tsuneyoshi, to Kabushiki Kaisha Akita. Method of preventing fin occurrence during metal casting. 3,937,267, Cl. 164-47.000.
- Maeda, Masonori: *See—*
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- Mageba S.A.: *See—*
  - Lendi, Ulrich, 3,937,139.
- Mager, Adolf; Schone, Hans-Hermann; Geiger, Rolf; and Enzmann, Franz, to Hoechst Aktiengesellschaft. Insulin composition providing alternatives to immunological resistance. 3,937,820, Cl. 424-178.000.
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- Mahoney, James D. Method of loading, handling and unloading cargo from a transporting vehicle. 3,937,341, Cl. 214-152.000.
- Mailloux, Robert J.; and Franchi, Peter R., to McDonnell Douglas Corporation. Phased array antenna with array elements coupled to form a multiplicity of overlapped sub-arrays. 3,938,160, Cl. 343-778.000.
- Majima, Azusa: *See—*
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- Malis, Jerry L.: *See—*
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- Mammino, Joseph; and Jossel, Franklin, to Xerox Corporation. Photoreceptor solvent cleaner. 3,937,665, Cl. 252-162.000.
- Mancebo, Lloyd. Coining seal. 3,937,478, Cl. 277-171.000.
- Mancini, William A. Separable fastener. 3,936,914, Cl. 24-201.0BN.
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- Manecke, Georg: *See—*
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- Manger, Josef W. Moving voice coil transducer having a flat diaphragm of an impregnated knit. 3,937,905, Cl. 179-115.50R.
- Mangus, Jack E. Guidance device. 3,938,122, Cl. 340-275.000.
- Mani, Ramani, to General Electric Company. Acoustic duct with peripherally segmented acoustic treatment. 3,937,590, Cl. 415-119.000.
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- Manrique, Louis Albert, Jr.: *See—*
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- Marey, Mohamed; and Pollath, Klaus, to Robert Bosch G.m.b.H. Systems for eliminating high-frequency disturbances in television cameras. 3,937,875, Cl. 178-7.200.
- Markarian, Kegham M.; and Maloney, Thomas M., to Republic Steel Corporation. Force sensing control apparatus and method for electric arc furnaces. 3,937,869, Cl. 13-13.000.
- Markham, Harry: *See—*
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- Markowski, Stanley J.; and Reilly, Richard S., to United Technologies Corporation. Low emission combustion chamber. 3,937,008, Cl. 60-39.060.
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- Marrie, Paul, to S.A.R.L. "ETUD". Pancake making machine. 3,937,137, Cl. 99-423.000.
- Marshall, Alan George: *See—*
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- Martin, Charles H.; and Brewer, Steven V., to Dillingham Corporation. Gate valve having O-ring seal. 3,937,442, Cl. 251-328.000.
- Martin, Clyde J., to Martin Industries, Inc. Pressure responsive circuit control unit having adjustable, interchangeable actuator components and cam-operated switch. 3,937,912, Cl. 200-82.00C.
- Martin Industries, Inc.: *See—*
  - Martin, Clyde J., 3,937,912.
- Martin Marietta Corporation: *See—*
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  - Stafford, R. Wayne; Tobey, William H.; and Clark, Benton C., III, 3,937,953.
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- Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
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- Maschinenfabrik Koeppern & Co. KG: *See—*
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- Maselli, George P., to Raytheon Company. Method for determining azimuthal direction relative to true north. 3,936,948, Cl. 33-301.000.
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- Masuda, Masanori: *See—*
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- Masygan, Raymond Joseph, to Alex E. Clark Limited. Photographic developer apparatus. 3,938,171, Cl. 354-299.000.
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- Mathwich, Howard Robert, to RCA Corporation. Transmitter for frequency shift keyed modulation. 3,938,045, Cl. 325-163.000.

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- Matsuo, Jon T., to United States of America, Navy. Multiple strap shock absorber. 3,937,407, Cl. 244-151.00R.
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  - Matsuo, Koziro; Ishihara, Kozi; and Maeda, Masonori, 3,937,915.
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- Matthews, Gordon H., to Action Communication Systems, Inc. Method and apparatus for assisting in debugging of a digital computer program. 3,937,938, Cl. 235-153.0AK.
- Matthias, Dennis H.: *See—*
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- Matuschek, Josip; and Louw, Johan August, to Textron Inc. Blind fastener with shear washer. 3,937,123, Cl. 85-72.000.
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- Maximoff, Paul A.; and DeVito, Albert P., to Palmer Industries Ltd. Electrical terminal connector. 3,937,553, Cl. 339-258.00R.
- May, John E., to General Electric Company. Metal oxide varistor with passivating coating. 3,938,069, Cl. 338-21.000.
- May, Walter M., to Mack Trucks, Inc. Liquid level indicator. 3,937,084, Cl. 73-309.000.
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- McDonnell Douglas Corporation: *See—*
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- McElroy, Richard Lee. Push and pull door latch. 3,937,504, Cl. 292-164.000.
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- McVey, Irvin Maurice, to Xerox Corporation. Primary power fault detector. 3,937,937, Cl. 235-153.00R.
- MDT Chemical Company: *See—*
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- Mead, Ralph T.; and Greatbatch, Wilson, to Greatbatch, Wilson. Lithium-iodine battery. 3,937,635, Cl. 136-83.00R.
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- Mechanical Technology Incorporated: *See—*
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- Meckenstock, Helmut: *See—*
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- Meier, Hans Justus; Sadowski, Herbert; and Stampa, Ulrich, to Vereinigte Flugtechnische Werke-Fokker GmbH. Electrically powered aircraft. 3,937,424, Cl. 244-53.00R.
- Meijer, Robert S., to Multi-State Devices Ltd. Temperature discrimination apparatus. 3,937,989, Cl. 307-252.00B.
- Meinema, Herbert E. Cascade coupled coiled spring reverberation means. 3,938,063, Cl. 333-30.00R.
- Meins, Peter: *See—*
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- Raulins, George M., to Otis Engineering Corporation. Retractable landing shoulder for downhole devices. 3,937,279, Cl. 166-214.000.
- Raun, Arthur P., to Eli Lilly and Company. Antibiotic compounds for ruminant feed utilization improvement. 3,937,836, Cl. 424-283.000.
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- Reddy, Junuthula Nirdosh, to Bendix Corporation, The. Exhaust gas sensor failure detection system. 3,938,075, Cl. 340-52.00R.
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- Riegel, Herbert, to Lummus Company, The. Vinyl chloride process. 3,937,744, Cl. 260-656.00R.
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- Risse, Jean-Claude; and Hardegger, Bruno, to Tesa S.A. Measuring instrument. 3,937,090, Cl. 74-55.000.
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- Robinson, Alfred Henry, to International Publishing Corporation Limited. Code communication. 3,937,871, Cl. 178-6.000.
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- Roeder, George K. Burglar alarm. 3,937,891, Cl. 179-5.00R.
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- Rogier, Edgar R.; Jevne, Allan H.; and Schwebke, Gerald L., to General Mills Chemicals, Inc. Copolyamides from an isomeric mixture of heptadecane dicarboxylic acid. 3,937,688, Cl. 260-78.00R.
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- Runnells, Robert R., to MDT Chemical Company. Ultrasonic cleaning device. 3,937,236, Cl. 134-184.000.
- Ruof, Edgar J., to Goodyear Aerospace Corporation. Single valve braking system having anti-skid control. 3,937,526, Cl. 303-21.00A.
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- Sakai, Masaaki, to Sony Corporation. Reproducing apparatus for a disc type record medium. 3,937,476, Cl. 274-39.00A.
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- Saunders, Frank L., to Dow Chemical Company, The. Hardness tester. 3,937,069, Cl. 73-81.000.
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- Sawert, Walter, to Continental Can Company, Inc. High speed room temperature seam bonding of metal sheets. 3,937,383, Cl. 228-115.000.
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- Thal, Claude: *See—*
  - Sevenet, Thierry; Thal, Claude; Husson, Henri Philippe; and Potier, Pierre, 3,937,709.
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  - Larson, George T.; and Hartmann, Richard, Jr., 3,937,914.
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- Thivans, Pierre Armand Maurice, to Campenon Bernard Europe. Construction of bridge decking and like structures. 3,937,165, Cl. 14-77.000.
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  - Thomas, Richard, deceased; and Thomas, Betty M., executrix, 3,937,567.
- Thomas, Betty M., executrix: *See—*
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- Thomas, Frank J. Rotary slide rule for topographic calculations. 3,937,930, Cl. 235-78.00R.
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  - Schroder, Ludwig; Thomas, Klaus; and Goeth, Hanns, 3,937,712.
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  - Gillemot, George W., 3,937,550.
- Thomson-CSF: *See—*
  - Battail, Gerard, 3,938,085.
  - Garcia, Jean; Hareng, Michel; and Leiba, Eugene, 3,938,140.
  - Hawkes, Thaddeus, 3,937,881.
  - Vasseur, Jean Pierre, 3,937,965.
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- Throckmorton, Peter E.; Frey, Sari; and Grote, Dace, to Ashland Oil, Inc. Process for preparing N, N-dimethylurea. 3,937,727, Cl. 260-553.00R.
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  - Hulme, Edwin C., 3,938,080.
- Tidwell, Felix M. Barbecue grill. 3,937,138, Cl. 99-450.000.
- Timken Company, The: *See—*
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- Tobey, William H.: *See—*
  - Stafford, R. Wayne; Tobey, William H.; and Clark, Benton C., III, 3,937,953.
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  - Griffith, Jeffrey D.; and Tobol, Helen K., 3,937,831.
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  - Burgess, Ronald R., 3,937,357.
- Tomaro, Patrick M., to Continental Hair Products, Inc. Liquid feeding means for steam-producing appliance. 3,937,232, Cl. 132-37.00R.
- Tomaro, Patrick M., to Continental Hair Products, Inc. Electrical swivel contact assembly. 3,937,543, Cl. 339-6.00R.
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  - Gehrke, Gerard William, 3,937,311.

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377	3,937,621
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228	3,936,994
CLASS 57	
1R	3,936,995
34HS	3,936,996
34.5	3,936,997
100	3,936,998
157TS	3,936,999
	3,937,000
CLASS 58	
23BA	3,937,002
23D	3,937,001
	3,937,003
152B	3,937,004
CLASS 59	
7	3,937,005
76	3,937,006
CLASS 60	
39.06	3,937,007
	3,937,008
39.35	3,937,009
39.46R	3,937,010
39.71	3,937,011
39.74A	3,937,012
226R	3,937,013
243	3,937,014
288	3,937,015
325	3,937,016
516	3,937,017
520	3,937,018
527	3,937,019
534	3,937,020
575	3,937,021
657	3,937,022
670	3,937,023
676	3,937,024
CLASS 61	
35	3,937,025
41A	3,937,026
45D	Re.28,707
46.5	3,937,027
CLASS 62	
3	3,937,028
77	3,937,029
86	3,937,030
98	3,937,031
135	3,937,032
155	3,937,033
401	3,937,034
CLASS 64	
17A	3,937,035
29	3,937,036
CLASS 65	
88	3,937,623
135	3,937,624
136	3,937,625
CLASS 66	
93	3,937,037
157	3,937,038
177	3,937,039
	3,937,040
197	3,937,041
CLASS 68	
13A	3,937,042
18R	3,937,043
205R	3,937,044
	3,937,045
CLASS 70	
81	3,937,046
CLASS 71	
92	3,937,626
120	3,937,627
CLASS 72	
110	3,937,051
166	3,937,052
344	3,937,047
352	3,937,053
393	3,937,054
399	3,937,055
405	3,937,056
422	3,937,057
453	3,937,050
CLASS 73	
3	3,937,048
6	3,937,049
11	3,937,058
17A	3,937,059
19	3,937,060
27R	3,937,061
	3,937,062
29	3,937,063
40	3,937,064
67	3,937,065
67.5R	3,937,066
67.7	3,937,067
	3,937,068
81	3,937,069
88R	3,937,070
91	3,937,071
100	3,937,072
101	3,937,073
121	3,937,074
141A	3,937,075
146	3,937,076
146.8	3,937,077
189	3,937,078
190EW	3,937,079
194EM	3,937,080
194C	3,937,081
208	3,937,082
224	3,937,083
309	3,937,084
338.6	3,937,085
359	3,937,086
398AR	3,937,087
418	3,937,088
425.4R	3,937,091
CLASS 74	
25	3,937,089
27	3,937,092
55	3,937,090
224	3,937,095
231C	3,937,094
417	3,937,093
421A	3,937,096
424.8R	3,937,097
462	3,937,098
471XY	3,937,099
476	3,937,100
551.8	3,937,629
552	3,937,101
569	3,937,102
572	3,937,103
732	3,937,104
846	3,937,105
857	3,937,106
861	3,937,107
866	3,937,108
CLASS 75	
134F	3,937,628
200	3,937,630
CLASS 76	
107C	3,937,109
CLASS 82	
25	3,937,110
33A	3,937,111
CLASS 83	
57	3,937,112
400	3,937,113
425.2	3,937,114
CLASS 84	
1.23	3,937,115
395	3,937,116
454	3,937,117
471SR	3,937,118
CLASS 85	
47	3,937,119
	3,937,120
61	3,937,121
71	3,937,122
72	3,937,123
CLASS 89	
6.5	3,937,124
45	3,937,125
CLASS 91	
6	3,937,126
372	3,937,127
392	3,937,128
412	3,937,129
CLASS 92	
125	3,937,130
CLASS 93	
53SD	3,937,131
CLASS 96	
1.5	3,937,631
CLASS 98	
40D	3,937,133
40N	3,937,132
CLASS 99	
295	3,937,134
352	3,937,135
408	3,937,136
423	3,937,137
450	3,937,138
CLASS 100	
215	3,937,139
245	3,937,140
CLASS 101	
148	3,937,141
409	3,937,142
CLASS 102	
2	3,937,144
28M	3,937,143
73	3,937,145
78	3,937,146
CLASS 104	
93	3,937,147
148LM	3,937,149
148MS	3,937,148
148SS	3,937,150
172R	3,937,151
CLASS 105	
61	3,937,152
190R	3,937,153
CLASS 106	
72	3,937,632
90	3,937,633
CLASS 110	
8A	3,937,154
18R	3,937,155
CLASS 112	
79FF	3,937,156
	3,937,157
	3,937,158
	3,937,160
79R	3,937,159
83	3,937,161
CLASS 114	
.5R	3,937,162
43.5VC	3,937,163
66.5R	3,937,164
123	3,937,166
183A	3,937,168
202	3,937,169
219	3,937,170
235R	3,937,171
CLASS 115	
12R	3,937,172
39	3,937,173
CLASS 118	
7	3,937,175
19	3,937,176
50	3,937,177
109	3,937,178
301	3,937,179
635	3,937,180
637	3,937,181
CLASS 119	
1	3,937,182
82	Re.28,708
CLASS 122	
32	3,937,184
34	3,937,183
CLASS 123	
8.01	3,937,185
8.45	3,937,186
8.47	3,937,187
32SP	3,937,188
41.49	3,937,189
	3,937,192
117R	3,937,190
	3,937,193
119A	3,937,194
	3,937,196
119R	3,937,195
122H	3,937,197
136	3,937,198
140MC	3,937,199
148CC	3,937,200
193CH	3,937,201
198R	3,937,202
CLASS 124	
8	3,937,203
9	3,937,204
11R	3,937,191
30A	3,937,205
35A	3,937,206
CLASS 126	
39B	3,937,207
271	3,937,208
375	3,937,209
384	3,937,210
CLASS 128	
2F	3,937,211
	3,937,213
2S	3,937,212
2.1A	3,937,214
26	3,937,215
75	3,937,216
130	3,937,217
149	3,937,218
184	3,937,219
276	3,937,220
287	3,937,221
305	3,937,222
325	3,937,223
348	3,937,224
418	3,937,225
419D	3,937,226
CLASS 131	
134	3,937,227
144	3,937,228
256	3,937,229
CLASS 132	
11A	3,937,231
37R	3,937,230
	3,937,232
40	3,937,233
75.6	3,937,234
84B	3,937,235
CLASS 134	
2	3,937,634
184	3,937,236
CLASS 136	
83R	3,937,635
135S	3,937,636
CLASS 137	
1	3,937,237
15.1	3,937,238
99	3,937,241
102	3,937,242
115	3,937,243
269	3,937,244
318	3,937,245
322	3,937,246
375	3,937,247
487.5	3,937,248
527.8	3,937,240
543.13	3,937,249
543.17	3,937,250
594	3,937,251
624.13	3,937,252
625.18	3,937,253
637	3,937,254
CLASS 138	
148	3,937,255
CLASS 140	
71R	3,937,256
CLASS 141	
3	3,937,257
67	3,937,258
98	3,937,259
CLASS 144	
28.5	3,937,239
193A	3,937,260
218	3,937,261
CLASS 148	
6	3,937,637
12.7	3,937,638
13.2	3,937,639
CLASS 152	
179	3,937,262
213R	3,937,263
CLASS 156	
71	3,937,640
87	3,937,641
384	3,937,642
435	3,937,643
498	3,937,644
522	3,937,645

CLASS 157	
1.1	3,937,264
1.2	3,937,265
CLASS 159	
23	3,937,646
CLASS 162	
16	3,937,647
157R	Re.28,711
168R	3,937,648
212	3,937,273
CLASS 164	
9	3,937,266
47	3,937,267
50	3,937,270
66	3,937,268
73	3,937,269
150	3,937,271
159	3,937,272
278	3,937,274
CLASS 165	
85	3,937,275
135	3,937,276
162	3,937,277
CLASS 166	
63	3,937,278
214	3,937,279
224R	3,937,280
233	3,937,281
293	3,937,282
307	3,937,283
CLASS 169	
37	3,937,284
CLASS 172	
52	3,937,285
59	3,937,460
CLASS 173	
119	3,937,286
CLASS 174	
87	3,937,870
CLASS 176	
19R	3,937,649
37	3,937,650
38	3,937,651
60	3,937,652
61	3,937,653
CLASS 177	
25	3,937,287
CLASS 178	
6	3,937,871
	3,937,872
6.6B	3,937,873
7.1	3,937,874
7.2	3,937,875
7.3D	3,937,878
7.3R	3,937,876
	3,937,877
7.5R	3,937,879
22	3,937,880
68	3,937,881
69.5F	3,937,883
69.5R	3,937,882
CLASS 179	
1GQ	3,937,885
1SE	3,937,884
1SW	3,937,886
1F	3,937,887
1.5C	3,937,888
2DP	3,937,889
2A	3,937,890
5R	3,937,891
6R	3,937,893
7.1R	3,937,894
15AL	3,937,892
15AP	3,937,897
15AT	3,937,895
15BT	3,937,896
18BC	3,937,898
84VF	3,937,899
90D	3,937,900
99	3,937,901
100.4A	3,937,902
100.4D	3,937,903
114R	3,937,904
115.5R	3,937,905
164	3,937,906
170.6	3,937,907
175.2R	3,937,908
CLASS 180	
9.3	3,937,288
9.44	3,937,289
14C	3,937,290
33A	3,937,291
33R	3,937,484
45	3,937,292
65F	3,937,293
77R	3,937,294
103BF	3,937,295
CLASS 181	
118	3,937,296
CLASS 182	
13	3,937,297
200	3,937,298
CLASS 184	
1R	3,937,299
70	3,937,300
CLASS 187	
19	3,937,301
CLASS 188	
1B	3,937,302
73.2	3,937,303
73.5	3,937,304
	3,937,305
166	3,937,306
319	3,937,307
CLASS 191	
12.2R	3,937,308
CLASS 192	
6A	3,937,309
41A	3,937,310
45	3,937,311
	3,937,312
48.91	3,937,313
CLASS 194	
63	3,937,314
CLASS 195	
35	3,937,654
103.5R	3,937,655
CLASS 198	
131	3,937,315
156	3,937,316
213	3,937,317
287	3,937,318
CLASS 200	
16C	3,937,909
35R	3,937,910
61.39	3,937,911
82C	3,937,912
302	3,937,913
CLASS 202	
262	3,937,656
CLASS 204	
108	3,937,657
119	3,937,658
159.2	3,937,659
CLASS 206	
45.13	3,937,319
75	3,937,320
84	3,937,321
216	3,937,322
306	3,937,323
349	3,937,324
387	3,937,325
465	3,937,326
507	3,937,327
521	3,937,328
CLASS 208	
140	3,937,660
CLASS 209	
250	3,937,661
CLASS 210	
23	3,937,662
493R	3,937,663
CLASS 211	
41	3,937,329
CLASS 213	
166	3,937,330
CLASS 214	
1PB	3,937,331
1P	3,937,332
1Q	3,937,333
2.5	3,937,334
6DS	3,937,335
6P	3,937,336
80	3,937,337
83.36	3,937,338
140	3,937,339
147G	3,937,340
152	3,937,167
	3,937,341
304	3,937,342
332	3,937,343
505	3,937,344
510	3,937,345
730	3,937,346
CLASS 215	
213	3,937,347
252	3,937,348
254	3,937,349
361	3,937,350
CLASS 219	
67	3,937,914
68	3,937,915
104	3,937,916
121P	3,937,917
125R	3,937,918
216	3,937,919
286	3,937,920
494	3,937,921
501	3,937,922
523	3,937,923
CLASS 220	
3	3,937,351
3.94	3,937,352
9LG	3,937,353
63R	3,937,354
	3,937,355
73	3,937,356
203	3,937,357
	3,937,358
369	3,937,359
CLASS 221	
11	3,937,360
242	3,937,361
CLASS 222	
20	3,937,362
105	3,937,363
190	3,937,364
241	3,937,365
321	3,937,366
399	3,937,367
402.11	3,937,368
410	3,937,369
464	3,937,370
494	3,937,371
504	3,937,372
CLASS 224	
26R	3,937,373
32A	3,937,374
42.07	3,937,375
42.08	3,937,376
CLASS 225	
94	3,937,377
CLASS 226	
55	3,937,378
150	3,937,379
CLASS 227	
100	3,937,380
CLASS 228	
6	3,937,381
49	3,937,382
115	3,937,383
120	3,937,384
131	3,937,385
180	3,937,386
193	3,937,387
222	3,937,388
CLASS 229	
2.5R	3,937,389
23R	3,937,390
28R	3,937,391
41C	3,937,392
51TC	3,937,393
54R	3,937,394
62.5	3,937,395
	3,937,396
CLASS 233	
3	3,937,397
CLASS 235	
61.11E	3,937,928
61.11R	3,937,927
	3,937,929
61.6R	3,937,924
61.7B	3,937,925
61.7R	3,937,926
78R	3,937,930
92EC	3,937,931
92PE	3,937,932
150.3	3,937,933
151.21	3,937,934
153AE	3,937,936
153AK	3,937,935
	3,937,938
153R	3,937,937
156	3,937,939
	3,937,940
159	3,937,941
181	3,937,942
183	3,937,943
184	3,937,944
	3,937,945
CLASS 236	
38	3,937,398
CLASS 239	
1	3,937,399
11	3,937,400
15	3,937,401
70	3,937,402
567	3,937,404
CLASS 240	
1.3	3,937,946
10.1	3,937,947
78R	3,937,948
CLASS 241	
39	3,937,405
46.11	3,937,406
282.2	3,937,408
CLASS 242	
18R	3,937,409
66	3,937,410
68.3	3,937,411
72B	3,937,412
86.5R	3,937,413
	3,937,414
106	3,937,415
107.4A	3,937,416
107.4R	3,937,418
118.4	3,937,419
147R	3,937,417
158.4A	3,937,420
182	3,937,421
204	3,937,422
CLASS 244	
3.22	3,937,423
53R	3,937,424
123	3,937,425
151R	3,937,407
153R	3,937,426
CLASS 246	
34CT	3,937,427
34R	3,937,428
169A	3,937,429
182B	3,937,430
	3,937,431
187B	3,937,432
CLASS 248	
19	3,937,433
188.7	3,937,434
464	3,937,435
499	3,937,436
	3,937,437
CLASS 249	
117	3,937,438
CLASS 250	
199	3,937,949
201	3,937,950
209	3,937,951
227	3,937,952
272	3,937,953
282	3,937,954
283	3,937,955
290	3,937,956
305	3,937,957
307	3,937,958
311	3,937,959
326	3,937,960
328	3,937,961
346	3,937,962
363	3,937,963
366	3,937,964
	3,937,965
393	3,937,966
435	3,937,967
467	3,937,968
505	3,937,969
515	3,937,970
	3,937,971
555	3,937,972
CLASS 251	
11	3,937,439
61.1	3,937,440
298	3,937,441
328	3,937,442
CLASS 252	
64	3,937,664
162	3,937,665
301.1S	3,937,667
301.2R	3,937,666
316	3,937,668
432	3,937,669
519	3,937,670
CLASS 254	
10B	3,937,443
CLASS 259	
4R	3,937,445
40	3,937,444
105	3,937,446
191	3,937,447
CLASS 260	
2.3	3,937,671
	3,937,675
17.3	3,937,672
18TN	3,937,673
19UA	3,937,674
23R	3,937,676
23.7A	3,937,677
28.5R	3,937,678
29.3	3,937,679
29.6TA	3,937,680
33.6AQ	3,937,681
42.24	3,937,682
42.47	3,937,683
46.5G	3,937,684
47EP	3,937,685
78R	3,937,686
	3,937,687
	3,937,688
78.5UA	3,937,689
86.3	3,937,690
93.7	3,937,691
94.3	3,937,692
112R	3,937,693
112.5LH	3,937,695
112.5R	3,937,694
192	3,937,696
210.5	3,937,697
211.5R	3,937,698
239.1	3,937,699
239.55R	3,937,700
240G	3,937,701
247.1S	3,937,702
248NS	3,937,703
250C	3,937,704
251QB	3,937,705
254	3,937,706
267	3,937,707
268PH	3,937,708
293.53	3,937,709
293.86	3,937,711
296AE	3,937,712
297R	3,937,710
305	3,937,713
	3,937,714
306.8D	3,937,715
307FA	3,937,716
309.6	3,937,717
326.4	3,937,718
345.2	3,937,719
397.45	3,937,720
456A	3,937,721
465F	3,937,722
488R	3,937,723
501.19	3,937,732
502.4P	3,937,724
513R	3,937,725
553A	3,937,726
553R	3,937,727
555R	3,937,728
557R	3,937,729
561R	3,937,733
562B	3,937,730
566F	3,937,731
586P	3,937,735
586R	3,937,734
590FA	3,937,736
592	3,937,737
593H	3,937,738
604R	3,937,739
621M	3,937,741
621R	3,937,740
632HF	3,937,742
656R	3,937,744
666A	3,937,745
669R	3,937,746
680E	3,937,748
680R	3,937,747
683.48	3,937,743
	3,937,749
830TW	3,937,750
835	3,937,751
857TW	3,937,752
860	3,937,753
	3,937,754
	3,937,755
869	3,937,756
873	3,937,757
876B	3,937,758
879	3,937,759
880B	3,937,760
885	3,937,761
889	3,937,762
	3,937,763
895	3,937,764
973	3,937,765
CLASS 261	
41B	3,937,767
41D	3,937,766
44R	3,937,768
97	3,937,769
CLASS 264	
3C	3,937,770
3E	3,937,771
12	3,937,772
17	3,937,773
26	3,937,774
29	3,937,775
40	3,937,776
53	3,937,777
102	3,937,778
106	3,937,779
274	3,937,780
314	3,937,781
CLASS 266	
6S	3,937,448
29	3,937,449
CLASS 267	
113	3,937,450
CLASS 269	
45	3,937,451
CLASS 270	
39	3,937,452
CLASS 271	
4	3,937,453
6	3,937,454
10	3,937,455
64	3,937,456
92	3,937,457
95	3,937,458
173	3,937,459
CLASS 272	
60R	3,937,461
83R	3,937,462
85	3,937,463
CLASS 273	
26R	3,937,464
29A	3,937,465
32R	3,937,466
59R	3,937,467
84	3,937,468
85F	3,937,469
106R	3,937,470
131AC	3,937,471
157R	3,937,472
173	3,937,474
176FA	3,937,475
183B	3,937,473
CLASS 274	
39A	3,937,476
CLASS 277	
25	3,937,477
171	3,937,478
CLASS 280	
3	3,937,479
11.35C	3,937,481
11.35T	3,937,480
18	3,937,482
21R	3,937,483
35	3,937,485
87R	3,937,486
150AB	3,937,488
150SB	3,937,487
204	3,937,489
242WC	3,937,490
CLASS 281	
15B	3,937,491
CLASS 282	
25	3,937,492
CLASS 283	
41	3,937,493
CLASS 285	
13	3,937,494
41	3,937,495
52	3,937,496
111	3,937,497
243	3,937,498
319	3,937,499
323	3,937,500
365	3,937,501
CLASS 290	
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46	3,937,974
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16	3,937,510
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21F	3,937,524
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40	3,937,527
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21	3,937,528
54	3,937,529
	3,937,530
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10AT	3,937,976
38	3,937,977
41	3,937,978
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120	3,937,980

141	3,937,981
205	3,937,982
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237	3,937,988
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	154	238,770
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*NOTE: To be issued Feb. 11, 1976.

Design Patents

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12	:	3,830

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Elliot L. Richardson, Secretary

PATENT AND TRADEMARK OFFICE
C. Marshall Dann, Commissioner

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Vol. 943 Number 3

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PATENTS

February 17, 1976

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February 17, 1976 Volume 943 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Second Trial Voluntary Protest Program

A Second Trial Voluntary Protest Program will be conducted during the coming months. It will be increased in scale and somewhat modified in procedure from the first such program. Announcement of and description of the rules for the first program appeared in 923 O.G. 2 on June 4, 1974.

As before, the objective is to gain experience in carrying out such a program and to determine the extent of interest by the public in participating and in supplying pertinent references. To the extent there is participation, the program should be beneficial by bringing new art to the attention of the Office, preventing inadvertent issuance of invalid patents, and increasing confidence in the strength of those patents which survive the protest proceedings.

The first Trial Voluntary Protest Program showed a considerable interest by applicants and the public in taking part in protest proceedings. A summary of the results will be published soon in this Gazette. The second Trial Voluntary Protest Program is designed to gain additional information as to public participation and also to follow more closely the procedures which would be required in a continuing, permanent protest program.

Applications Involved

In the second Trial Voluntary Protest Program, a Request to Participate and Waiver of Confidentiality form (PTOL–224 Temp.) will be sent to each applicant to whom a Notice of Allowance is mailed during a selected three week period, probably in October, 1975. The total number of requests mailed will be about 4,500. Applications for plant patents will be excluded from the program. The reason for this exclusion is the high cost of printing colored drawings and the relatively limited prior art available. No other applications will be excluded from the trial program, regardless of subject matter, type of application or earlier proceedings.

Waiver of Confidentiality

Two copies of the form letter requesting voluntary waiver of confidentiality (form PTOL–224 Temp.) will be mailed in the same envelope along with the Notice of Allowance. An additional copy of the form letter will be made of record in each application at the time of mailing. The applicant will have three months from the notice of allowance date in which to either (1) elect to participate in the Trial Voluntary Protest Program by filing a signed waiver of confidentiality, or (2) elect not to participate in the program by paying the issue fee. If he does neither, the application will become abandoned, as provided in 37 C.F.R. 1.316. The waiver of confidentiality is a part of form PTOL–224 Temp. This procedure will avoid any increase in pendency time for those applications in which an election is made not to participate in the program. An early filing of a waiver of confidentiality by the applicant will result in early publication of the application.

Publication

If the applicant decides not to participate in the protest program and payment of the issue fee is timely made, the patent will issue routinely without delay.

If the applicant elects to participate in the protest program and a signed waiver of confidentiality is filed in the Office within 3 months of the notice of allowance date, the Notice of Allowance will be vacated. In such a case the issue fee should not be filed, as it will not be accepted and applied if filed with a signed waiver of confidentiality. An additional Notice of Allowance will be issued after the protest proceedings have been completed if only allowable claims remain in the application.

After a signed waiver has been filed, the application will be printed in the form of a patent and be available for sale as in the first Trial Voluntary Protest Program. At least one claim and a drawing figure, if any, will be printed in the Official Gazette. These published applications will appear in about 6 to 9 issues of the Official Gazette early in 1976. Advance notice will be given in the Official Gazette of the dates on which applications will be published under this program.

Inspection of Files

The Patent and Trademark Office files of the published applications will be available for inspection by the public for a period of three months after publication. The application files will be retained in a single location in the Patent Issue Division during the protest period. This single location will be staffed with personnel to process papers directed to these files, supervise inspection of the files by the public, provide copies of file contents when ordered, and perform other related duties. A coin operated copying machine will also be available at this location.

Filing of Protests

Protests relating to the patentability of any published application must be filed in writing in the Patent and Trademark Office no later than three months after publication of the application. No extension of the three month protest period will be granted. Each protest must be filed in duplicate (one copy will be forwarded to the applicant and the other copy will be placed in the application file) and must indicate the grounds for protesting the allowance of any claim contained in the published application. If the protest involves prior art not of record in the application, two copies of the alleged prior art, together with an explanation of the relevance of such prior art to the allowed claims, should be included. The protester may also comment on the prior art record in the application and the manner in which it was applied.

In those applications where prima facie evidence of prior public use or sale the claimed invention is presented in accordance with 37 C.F.R. 1.292, public use proceedings will give the protester an opportunity to present evidence.

Should claims be copied from a published application for interference purposes, the applicant copying claims must also file a notice of such copying in the file of the published application to avoid the possibility of inadvertent issuance of the published application as a patent before conclusion of any interference proceedings.

For easy identification, all protests should be headed, "Protest Under Trial Voluntary Protest Program" and be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

The protester should fully identify himself and include his mailing address so that communications may be addressed to him. In view of administrative problems encountered in the first Trial Voluntary Protest Program in protecting the confidentiality of the identity of protesters, no attempt will be made by the Office to maintain the confidentiality of any protester under the new program.

If no protests are received during the protest period, the application file will be rerouted for the mailing of a new Notice of Allowance. The file will not be returned to the examining group except for consideration of matters which normally require return of an allowed file.

If one or more protests are filed in an application, the application file and the protest(s) will be returned to the examining group for consideration.

Consideration of Protest

The examining group will acknowledge receipt of all protests. The authority for deciding whether or not the evidence submitted constitutes a prima facie showing of unpatentability of any allowed claim will reside with the Group Director. If the Group Director decides that no such showing has been made, the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. Protesters will be notified in such cases that prosecution has not been reopened, and the applicant will be sent a duplicate copy of all protests. The decision of the Group Director will be final and will not be subject to petition by a protester.

If the Group Director decides that the submitted evidence constitutes a prima facie showing of unpatentability of any allowed claim, prosecution of the application will be reopened. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim considered unpatentable. The duplicate copy of each protest will be mailed to the applicant with the Office action. Protesters who submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

Response by the Applicant to Subsequent Office Actions

During this period, the applicant may present amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters who submitted evidence on which a rejection in the Office action is based to participate in later prosecution and to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response filed, including any appeal brief. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

Comment on Applicant's Response by the Protester

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent and Trademark Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

Any appeal by the applicant to the Board of Appeals in a protested application will be made special and will be taken up out of order.

Conclusion of Prosecution

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified and the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. A decision of the primary examiner to allow an application will not be subject to petition or appeal by any protester.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.
Sept. 16, 1975.

[938 O.G. 945]

Availability of Consolidated Listing

The "Consolidated Listing of Recent Official Gazette Notices—Re Patent and Trademark Office Practices and Procedures" which appeared in the Official Gazette of Jan. 6, 1076 is available in separate reprints at a price of $2.80 from the Superintendent of Documents, Washington, D.C. 20402. Please include the following information when ordering: Stock No. 003–004–00529–7, Catalog No. C21.5/A5: NS45/976.

RICHARD J. SHAKMAN,
Assistant Commissioner for Administration.
Jan. 22, 1976.

International Trademark Classification

At its November 3–6, 1975 meeting, the Committee of Experts of the Nice Agreement decided to conduct a systematic overall review of the Classification. A working Group will consider all proposals for changes in the Classification submitted by the member countries and certain international and intergovernmental organizations. The entire review is expected to require 2 to 3 years. The Group's recommendations will then be submitted to the Committee of Experts which will determine the actual changes to be made. Concurrently, an Ad Hoc Committee will prepare a revision of the Nice Agreement, particularly with respect to Article 3(3), the unanimity rule.

Suggestions for changes were submitted to the Patent and Trademark Office last year when a general review of the Classification was first contemplated. Additional suggestions will be welcomed by the Office for consideration in the preparation of proposed changes to be submitted to the Committee of Experts. The Committee has requested that proposals be accompanied by an explanation of why the change is warranted. Suggestions should be sent, by March 5, 1976, to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of Legislation and International
Affairs, Room 1108, CP–6

BERNARD A. MEANY,
Jan. 16, 1976. *Assistant Commissioner for Trademarks.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,857,730, A. W. Vibber, APPARATUS FOR TWISTING AND PLYING STRANDS; **2,870,596**, same, TWISTING SPINDLE BALLOON CONTROL; **3,499,277**, same, APPARATUS FOR TWISTING AND PLYING STRANDS; **3,605,394**, same, STRAND PLYING METHOD AND APPARATUS; **Re. 24,380**, same, TWISTING AND PLYING SPINDLE BALLOON CONTROL, **filed** Jan. 12, 1972, D.C.N.J. (Newark), Doc. 62–72, *Alfred W. Vibber* v. *Uniroyal, Inc.* Order of dismissal of action, Oct. 8, 1975.

2,870,596. (See 2,857,730.)

2,910,927, I. F. Barnwell, MEANS FOR CONTROLLING AIR FLOW FROM A WALL DUCT; **3,052,011**, Brainard, Hansen, Sedgwick, Sipek, and Baechle, MACHINE TOOL WITH A MECHANICAL CUTTING TOOL CHANGER; **3,099,873**, Brainard and Merner, SHUTTLE OPERATED TAPE CONTROLLED MACHINE TOOL; **Re. 25,583**, Brainard, Hansen, Sedgwick, Sipek and Baechle, MACHINE TOOL WITH MECHANICAL CUTTING TOOL CHANGER; **Re. 25,737**, same; **Re. 25,812**, M. Morgan, AUTOMATIC MACHINE TOOL, **filed** Oct. 17, 1975, D.C., S.D. Ohio (Cincinnati), Doc. 6019 and 6146, *Kearny & Trecker Corp.* v. *Cincinnati Milacron, Inc. and Cincinnati Milacron Co.* Judgment, plaintiff is owner of all patents in the above action. Complaint is dismissed. The counterclaim for a declaration of invalidity of all the claims of said patents is dismissed as no justiciable issue is presented in view of such claims being void and/or unenforceable, Oct. 22, 1975.

3,052,011. (See 2,910,927.)

3,094,663, V. H. Siegel, MICROWAVE SIGNAL CHECKER FOR CONTINUOUS WAVE RADIATIONS, **filed** Oct. 23, 1975, D.C., N.D. Tex. (Dallas), Doc. CA3–75–1312, *Radatron Corporation* v. *Autronics, Inc.*

3,099,873. (See 2,910,927.)

3,269,882, Lanza and Stivers, CROSSLINKED POLYVINYLIDENE FLUORIDE OVER A CROSSLINKED POLYOLEFIN, **filed** Oct. 8, 1975, United States Court for the First Circuit, Mass. (Boston), Doc. 75–1373, *International Telephone and Telegraph Corporation* v. *Rachem Corporation.*

3,311,047, Smith and Randall, ROOF VENTILATORS, **filed** Oct. 21, 1975, D.C., W.D. Mich. (Grand Rapids), Doc. G75–504–Cal, *H.C. Products Co.* v. *Leigh Products, Inc.*

3,432,605, Bolkcom and Knapp, SILICON CARBIDE FURNACES AND PLANTS; **Re. 27,018**, same, **filed** Sept. 30, 1975, United States Court of Appeals, Sixth Circuit, Ohio (Cincinnati), Doc. 73–1320, *Wilbur T. Bolkcom and William E. Knapp* v. *The Carborundum Company.* The decision of the District Court affirmed, Sept. 30, 1975.

3,485,587, A. S. Keston, PROTEIN INDICATOR, **filed** July 30, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c2536, *Miles Laboratories, Inc.* v. *Boehringer Mannheim Corp. et al.*

3,499,277. (See 2,857,730.)

3,605,394. (See 2,857,730.)

3,757,087, D. P. E. Barnard, HEAT ELEMENTS, **filed** Oct. 21, 1975, D.C.N.J. (Camden), Doc. C–75–1826, *Interdynamics, Inc. and Smiths Industries, Limited* v. *Budge Mfg. Co., Inc.*

3,765,527, J. W. Vargo, DUAL-COMPARTMENT PACKAGE, **filed** July 22, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2062, *Filter Dynamics International, Inc. et al.* v. *Astron Battery Incorporated et al.* By agreement order cause dismissed with prejudice and without costs, Dec. 17, 1974.

3,854,630, R. E. Standridge, APPARATUS FOR INJECTING COLORANT INTO INJECTION MOLDING, **filed** June 24, 1975, D.C., N.D. Ga. (Atlanta), Doc. C–75–1216A, *Evans Products Company* v. *Standridge Corporation and Robert E. Standridge.* Dismissed with prejudice by plaintiff, Oct. 15, 1975.

Re. 24,380. (See 2,857,730.)

Re. 25,583. (See 2,910,927.)

Re. 25,737. (See 2,910,927.)

Re. 25,812. (See 2,910,927.)

Re. 27,018. (See 3,432,605.)

D. 237,228, B. H. Kaplan, FURNITURE SEAT, **filed** Oct. 21, 1975, D.C., W.D. Tenn. (Jackson), Doc. 75–85–E, *Rowe Furniture Corp.* v. *Gaines Manufacturing Company, Inc.*

D. 237,228, B. H. Kaplan, FURNITURE SEAT; **D. 237,230**, same, CHAIR, **filed** Oct. 22, 1975, D.C., W.D.N.C. (statesville), Doc. St–C–75–45, *Rowe Furniture Corporation* v. *Image Furniture Company.* **Same, filed** Oct. 22, 1975, D.C., W.D.N.C. (Statesville), Doc. ST–C–75–46, *Rowe Furniture Corporation* v. *Southern Furniture Company of Conover, Inc.*

D. 237,230. (See D. 237,228.)

PATENT NOTICES

Certificates of Correction for the Week of Feb. 17, 1976

Re. 28,554
3,517,359
3,615,317
3,725,093
3,727,366
3,729,226
3,737,666
3,806,145
3,807,223
3,818,299
3,835,148
3,838,664
3,839,321
3,842,308
3,842,743
3,843,985
3,850,985
3,855,099
3,856,074
3,856,428
3,857,838
3,861,056
3,865,767
3,866,066
3,868,163
3,868,360
3,868,691
3,868,817
3,869,005
3,869,523
3,871,265
3,871,369
3,876,619
3,876,766
3,876,826
3,878,217
3,878,656
3,879,513
3,879,960
3,881,523
3,882,103
3,882,686
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3,887,112
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3,890,433
3,890,578
3,891,366
3,891,654
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3,892,704
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3,913,294
3,913,298
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3,915,113
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3,916,135
3,916,142
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3,916,660
3,916,767
3,916,910
3,917,604
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3,918,108
3,918,206
3,918,217
3,918,307
3,918,535
3,918,609
3,918,610
3,918,684
3,919,291
3,919,332
3,919,333
3,919,424
3,919,547
3,919,892
3,919,972
3,920,052
3,920,117
3,920,118
3,920,303
3,920,504
3,920,626
3,920,676
3,920,686
3,920,812
3,920,868
3,920,927
3,921,193
3,924,214
3,928,297

Patents Available for Licensing or Sale

D 235,134. MULTI-PURPOSE CLAMP FOR HOLDING WITHIN ITS TUBULAR ELEMENTS PENCILS, WIRES OR SIMILAR ARTICLES. James J. A. Sartore, 128 Morris St., Albany, N.Y., 12208.

3,826,717. QUANTITATIVE ANTIBIOTIC TEST CONTAINER. Dr. Verne E. Gilbert, 301 Blount Professional Building, Knoxville, Tenn., 37920.

3,837,428. ELECTRO-MAGNETIC SAFETY SKIFF. Leonard W. Gish, Route 1, Mount Iron, Minn., 55768.

3,844,748. HYDRO FILTRATION APPARATUS. Theodore Lanier, 620 Trinity Ave., Apt. E–4, Bronx, N.Y., 10455.

3,880,165. DISPOSABLE DIAPER WITH T-SHIRT HOLDING MEANS. Rose Prizzia, Weeds Mill Road, Highland, N.Y., 12528.

3,892,006. MULTI-BLADED WIPER FOR WINDSHIELD WIPER ASSEMBLY. Michio Yasumoto, 3909 NE. 135th, Portland, Oreg., 97230.

3,902,781. ASSEMBLY UNIT FOR THE CONSTRUCTION OF COMPOSITE LAMP HOLDERS. Nagel KG, Wesseling, Germany. Correspondence to: Michael J. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,911,752. REMOTE CONTROL APPARATUS FOR TELEVISION RECEIVERS. Joyce L. Olson, Arlington, Va., and Stephen A. Lazorcak, Jr., Arlington, Va. Correspondence to: Stephen A. Lazorcak, P.O. Box 33082, District Heights, Md., 20028.

3,911,846. STEPPED HULL FOR JET-POWERED BOAT. Wayne England, P.O. Box 1167, North Fork, Idaho, 83466.

3,911,989. TIRE CHANGER. William Vandenburg, Scranton, N. Dak., 58653.

3,916,459. TOILET BOWL VENTILATING APPARATUS IN KIT FORM. Marko Ivancevic, 423 N. Broadway, Redondo Beach, Calif., 90277.

3,917,275. GAME SUPPORT TRAY. Elliott J. Alpher, Washington, D.C. Correspondence to: Frederick L. Bergert, 1755 Jefferson Davis Highway, Suite 507, Arlington, Va., 22202.

3,920,775. FUEL INJECTOR. Anthony Greenfield, Baltimore, Md., assignor to Stanley Sollins, Baltimore, Md. Correspondence to: Sherman Levy, 635 Washington Bldg., 15th St. & New York Ave. NW., Washington, D.C., 20005.

3,921,564. PORTABLE BURGLAR ALARM. Harry A. Murray, 146 Red Stone Ridge, Delran, N.J., 08075.

3,921,863. JAR CAP DISPENSER. Irene P. Welch, 2001 Maple Glen Road, Sacramento, Calif., 95825.

3,924,966. WIND DRIVEN POWER GENERATOR. Robert J. Tamanini, 4 Pinewood Road, Wyomissing, Pa., 19610.

3,930,698. PLATE HOLDER AND DISPENSER. Bruce W. Calgan, 1 Stagecoach Road, Northfield, Vt., 05663.

3,934,666. BIKE BOOSTER. Robert W. Ellington, 4414 Concho St., Dallas, Tex., 75206.

Eastman Kodak Company announces that non-exclusive licenses are available to responsible applicants under the following 1 patent.

Application for licenses may be addressed to the Director, Patent Department, Eastman Kodak Company, 343 State St., Rochester, N.Y., 14650.

3,487,762. IRIS TYPE DIAPHRAGM.

General Electric Company is prepared to grant non-exclusive licenese under the following 59 patents on reasonable terms to domestic manufacturers.

Applications for licenses under the following 5 patents may be addressed to: General Electric Company, Construction Materials Div., 101 E. Carmel Drive, Suite 205, Carmel, Ind., 46032, Attention: Division Patent Counsel.

3,813,771. METHOD OF PRODUCING ELECTRICAL RESISTANCE HEATERS AND THE IMPROVED HEATER PRODUCTS.

3,815,015. TRANSFORMER-DIODE ISOLATED CIRCUITS FOR HIGH VOLTAGE POWER SUPPLIES.

3,890,562. REGULATED POWER SUPPLY UTILIZING A HALFWAVE SWITCH.

3,892,115. METHOD AND MACHINE FOR FORMING LAMINATIONS FOR USE IN SELF LOCKING CORES.

3,898,517. BALLAST CIRCUIT.

Application for license under the following 4 patents may be addressed to: General Electric Company, Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn., 06602.

3,728,805. MULTI-FUNCTION STEAM IRON.

3,738,033. STEAM FLATIRON.

3,758,969. FAST START SPRAY IRON.

3,884,543. APPLIANCE CORD ANCHOR.

Application for license under the following 4 patents may be addressed to: General Electric Company, Appliance Components Bus., Division, 1635 Broadway, Fort Wayne, Ind., 46804.

3,903,395. TEMPERATURE CONTROL SYSTEM.

3,909,768. TERMINAL MOUNT FOR AN ELECTRICAL DEVICE.

3,911,682. THERMAL ACTUATOR.

3,912,957. DYNAMOELECTRIC MACHINE STATOR ASSEMBLY WITH MULTI-BARREL CONNECTION INSULATOR.

Application for license under the following 19 patents may be addressed to: General Electric Company, Patent Counsel, Silicone Products Department, Chemical and Metallurgical Division, Waterford, N.Y., 12188.

3,047,528. ELASTOMER COMPOSITION.

3,057,821. AMMONIUM HALIDE STABILIZED ORGANOPOLYSILOXANES.

3,271,359. EQUILIBRATION OF ORGANOPOLYSILOXANES USING PHOSPHOROUS-CONTAINING CATALYSTS.

3,318,843. PROCESS FOR MAKING EQUILIBRATION FOR ORGANOPOLYSILOXANES USING PHOSPHOROUS-CONTAINING CATALYSTS.

3,328,347. NITRILE - CONTAINING ORGANOSILICON POLYMERS.

3,332,974. PURIFICATION OF CYCLIC ORGANOPOLYSILOXANES WITH HEAT-ACTIVATED METAL HYDRIDES.

3,352,799. ORGANOSILICON CARBOIMIDE POLYMER.

3,378,521. ORDERED ORGANOPOLYSILOXANES.

3,506,699. HETEROCYCLIC COMPOUNDS CONTAINING HETERO SULFUR AND SILICON ATOMS.

3,673,272. BLOCK COPOLYMERS OF SILICONES WITH VINYL PYRIDINE.

3,234,180. SILOXY POLYMERS.

3,261,807. ORGANOSILICON MATERIALS.

3,324,157. METALLOCENYL - SUBSTITUTED ORGANOPOLYSILOXANES.

3,326,952. METALLOCENYL - SUBSTITUTED ORGANOSILICON MATERIALS

3,414,597. METALLOCENYLARYL - SUBSTITUTED ORGANOSILICON MATERIALS.

3,432,488. SOLUBLE SILYLATED CELLULOSE & METHOD OF PREPARING SAME.

3,544,498. DETERGENT RESISTANT SILICONE POLISH.

3,576,779. AMINE - FUNCTIONAL ORGANOPOLYSILOXANE SALT THEREOF & POLISH COMPOSITION THEREFROM.

3,662,765. SMOKE FILTER.

Applications for license under the following 16 patents may be addressed to: Gas Turbine Products Division, General Electric Company, 1 River Road, Building No. 500–2nd Floor, Schenectady, N.Y., 12345.

3,690,874. GRAIN SIZE OF METAL CASTINGS.

3,725,057. GRAIN SIZE OF METAL CASTINGS.

3,736,971. BUCKET TIP/COLLECTION SLOT COMBINATION FOR OPEN-CIRCUIT LIQUID-COOLED GAS TURBINES.

3,802,797. REVERSING TURBINE FLOW DIVIDER SUPPORT.

3,804,551. SYSTEM FOR THE INTRODUCTION OF COOLANT INTO OPEN-CIRCUIT COOLED TURBINE BUCKETS.

3,816,022. POWER AUGMENTER BUCKET TIP CONSTRUCTION FOR OPEN-CIRCUIT LIQUID COOLED TURBINES.

3,831,373. PUMPED AIR STORAGE PEAKING POWER SYSTEM USING A SINGLE SHAFT GAS TURBINE-GENERATOR UNIT.

3,844,679. PRESSURIZED SERPENTINE COOLING CHANNEL CONSTRUCTION FOR OPEN-CIRCUIT LIQUID COOLED TURBINE.

3,848,307. MANUFACTURE OF FLUID-COOLED GAS TURBINE AIRFOILS.

3,849,025. SERPENTINE COOLING CHANNEL CONSTRUCTION FOR OPEN-CIRCUIT LIQUID COOLED TURBINE BUCKETS.

3,851,697. REGENERATOR SUPPORT SYSTEM FOR MARINE GAS TURBINE.

3,856,433. LIQUID COOLED TURBINE BUCKET WITH DOVETAILED ATTACHMENT.

3,866,674. GAS TURBINE REGENERATOR.

3,867,060. SHROUD ASSEMBLY.

3,877,519. PRESSURIZED STRONGBACK REGENERATOR.

3,904,317. BUCKET LOCKING MECHANISM.

Application for license under the following 11 patents may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,739,552. AIR FILTER UTILIZING SPACE TRAPPING OF CHARGED PARTICLES.

3,739,554. AIR FILTER UTILIZING ALTERNATING CURRENT ELECTRIC FIELDS.

3,742,874. SOLID WASTE INCINERATOR.

3,746,416. MODULAR FURNITURE SYSTEM AND MEANS FOR MANIPULATING AND CONNECTING COMPONENTS THEREOF.

3,746,417. FURNITURE SYSTEM HAVING MEANS FOR CONNECTING SUB-ASSEMBLIES THEREOF.

3,899,658. SHEATHED HEATING ELEMENT INSTALLATION.

3,902,629. COMPRESSOR TUBE CONNECTOR SEAL.

3,903,911. DISHWASHER SPRAY SYSTEM.

3,908,681. FORCED AIR CIRCULATION SYSTEM FOR A DISHWASHER.

3,911,247. THERMOSTAT MOUNTING DEVICE FOR PLASTIC TUB DISHWASHER.

3,921,253. FASTENING DEVICE FOR HINGEDLY ASSEMBLING MEMBERS.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 36 patents.

Inquires respecting licenses under these patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y., 10036.

3,917,378. FREQUENCY-ENCODED FOCUSSED IMAGE HOLOGRAM RECORD.

3,917,903. DETACHABLE PICKUP ARM MAGNETIC COUPLING.

3,917,925. EMBOSSED CHARACTER READER.

3,917,964. SIGNAL TRANSLATION USING THE SUBSTRATE OF AN INSULATED GATE FIELD EFFECT TRANSISTOR.

3,917,980. PROTECTION CIRCUIT.

3,918,007. FABRY-PEROT POLARIZATION LASER BEAM MODULATOR.

3,918,039. HIGH-RESOLUTION DIGITAL GENERATOR OF GRAPHIC SYMBOLS WITH EDGING.

3,918,226. THERMOPLASTIC HEAT RESPONSIVE FIRE VENT APPARATUS.

3,918,815. DENSITOMETER FOR MEASURING AVERAGE APERTURE DIAMETER.

3,918,982. BLACK CERAMIC BODY.

3,919,468. CHARGE TRANSFER CIRCUITS.

3,919,472. AUTOMATIC TARGET CONTROL SYSTEM FOR A TELEVISION CAMERA TUBE.

3,919,484. LOOP CONTROLLER FOR A LOOP DATA COMMUNICATIONS SYSTEM.

3,919,582. TARGET MOUNTING STRUCTURE FOR USE IN CAMERA TUBE.

3,919,589. ELECTROLUMINESCENT CELL WITH A CURRENT LIMITING LAYER OF HIGH RESISTIVITY.

3,919,649. STAIRCASE WAVEFORM GENERATOR.

3,919,714. AUTOMATIC PEAKING APPARATUS.

3,920,861. METHOD OF MAKING A SEMICONDUCTOR DEVICE.

3,920,892. ALTERNATING CURRENT LINE VOLTAGE SUPPLY ISOLATION USING DEFLECTION SYSTEM OUTPUT TRANSFORMER.

3,921,010. PEAK VOLTAGE DETECTOR CIRCUITS.

3,921,013. BIASING CURRENT ATTENUATOR.

3,921,022. FIELD EMITTING DEVICE AND METHOD OF MAKING SAME.

3,921,056. FREQUENCY MULTIPLIER CIRCUIT.

3,921,090. OPERATIONAL TRANSCONDUCTANCE AMPLIFIER.

3,921,879. WEB ADVANCE MECHANISM.

3,921,885. METHOD OF BONDING TWO BODIES TOGETHER.

3,922,049. METHOD OF DEGASSING A CATHODE-RAY TUBE PRIOR TO SEALING.

3,922,394. METHOD FOR COATING FERROUS-METAL MASK FOR CATHODE-RAY TUBE.

3,922,395. METHOD FOR APPLYING ORGANIC POLYMERIC COATING COMPOSITION TO FERROUS-METAL SURFACES.

3,922,416. MEDIUM FOR RECORDING PHASE HOLOGRAMS.

3,922,420. METHOD OF MAKING A SEMI-TRANSPARENT PHOTOMASK.

3,922,536. MULTINOMIAL PROCESSOR SYSTEM.

3,922,540. APPROXIMATOR FOR SQUARE ROOT OF SUMS OF SQUARES.

3,922,587. DIGITAL FEEDBACK RELAY CONTROLLER.

3,922,593. CIRCUIT FOR PRODUCING ODD FREQUENCY MULTIPLE OF AN INPUT SIGNAL.

3,922,703. ELECTROLUMINESCENT SEMICONDUCTOR DEVICE.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 17, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds: Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry: Batteries: Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-19-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur: Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-2-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-3-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products: Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-10-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-5-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-23-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-12-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-18-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-10-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	9-23-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-10-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	4-15-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-2-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-13-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	6-25-75

Expiration of patents: The patents within the range of numbers indicated below expire during February 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents........ Numbers 2,871,479 to 2,875,444 inclusive
Plant Patents........ Numbers 1,805 to 1,813 inclusive

PATENT APPLICATIONS

PUBLISHED FEBRUARY 17, 1976
UNDER THE SECOND TRIAL VOLUNTARY PROTEST PROGRAM

NOTE- A copy of the notice setting forth the details of the Second Trial Voluntary Protest Program may be found in the Patent and Trademark Notices section of this issue.

Any protests relating to the patentability of these published applications must be filed in writing before April 13, 1976. These applications are available for inspection in the Allowed Files Branch, Crystal Plaza, Room 2-10C28. All correspondence should be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

Printed copies of the published applications may be purchased from the Patent and Trademark Office at 50 cents each.

An "Index of Applicants and Assignees of Published Applications" and a concordance entitled "Classification of Published Patent Applications" are located in the back of this issue.

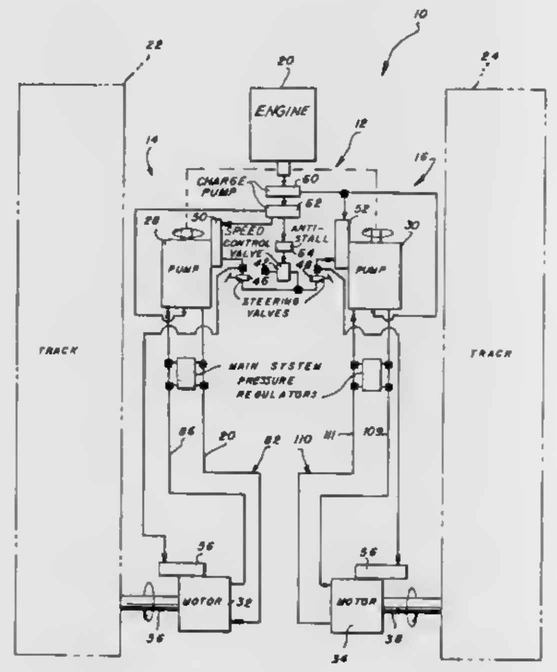
GENERAL AND MECHANICAL APPLICATIONS

B 400,871
HYDROSTATIC TRANSMISSION DRIVE SYSTEM

Edward J. Bojas, and Harold R. Ward, both of Marshall, Mich., assignors to Eaton Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 248,685, April 28, 1972, Pat. No. 3,795,109. This application Sept. 26, 1973, Ser. No. 400,871
Int. Cl.^{2} F16D *31/02*
U.S. Cl. 60—445 **32 Claims**

References Cited
UNITED STATES PATENTS

2,518,578	8/1950	Tomlinson	60/447
2,880,586	4/1959	Lincoln	60/447
3,234,856	2/1966	Martin	180/6.48
3,238,723	3/1966	Young	60/444
3,279,637	10/1966	Olson et al.	180/6.48
3,368,425	2/1968	Lewis	74/720
3,442,344	5/1969	Ocule	180/6.48
3,526,288	9/1970	Cryder et al.	60/447
3,650,107	3/1972	Court	60/443
3,727,402	4/1973	Keith et al.	60/444
3,795,109	3/1974	Bojas et al.	60/490



1. An apparatus comprising a hydrostatic transmission, said hydrostatic transmission including a pump unit, a motor unit adapted to be connected with an output member, and first conduit means having one passage for conducting relatively high pressure fluid from said pump unit to said motor unit and another passage for conducting relatively low pressure fluid from said motor unit to said pump unit, charge pump means for supplying fluid to said hydrostatic transmission, actuator means for varying the effective displacement of at least one of said units of said hydrostatic transmission to vary the speed at which the output member is driven by said motor unit, said actuator means including pressure responsive motor means for effecting a variation in the displacement of said one unit in response to a variation in control fluid pressure, second conduit means for conducting control fluid pressure to said motor means, pressure controller means for varying the control fluid pressure conducted to said motor means to vary the speed at which the output member is driven by said first motor unit, said pressure controller means being operable from a neutral setting in which said motor unit is substantially ineffective to drive the output member to any one of a plurality of operating settings in each of which said pressure controller means is effective to port a different fluid pressure to said motor means, and control means for varying the control fluid pressure ported to said motor means in response to a decrease in the fluid pressure output of said charge pump means while maintaining the setting of said pressure controller means substantially constant to effect a reduction in the speed at which said output member is driven, said control means including pressure responsive valve means for decreasing the relatively high fluid pressure in said one passage in response to a decrease in the charge pressure during operation of said hydrostatic transmission, said valve means including a valve operable from a closed condition to an open condition enabling relatively high pressure fluid to flow from said one passage and means for effecting operation of said valve from the closed condition to the open condition in response to a decrease in the charge pressure.

B 423,441
MINIMIZATION OF RESIDUAL SPACECRAFT NUTATION DUE TO DISTURBING TORQUES

Kevin John Phillips, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Dec. 10, 1973, Ser. No. 423,441
Int. Cl.^{2} B64G *1/20*
U.S. Cl. 244—169 **7 Claims**

References Cited
UNITED STATES PATENTS

2,974,594	3/1961	Boehm	244/1 SA
3,135,479	6/1964	Badewitz	244/1 SA
3,384,323	5/1968	Gilbert et al.	244/1 SA
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3,643,897	2/1972	Johnson	244/1 SA
3,695,554	10/1972	Phillips	244/1 SA

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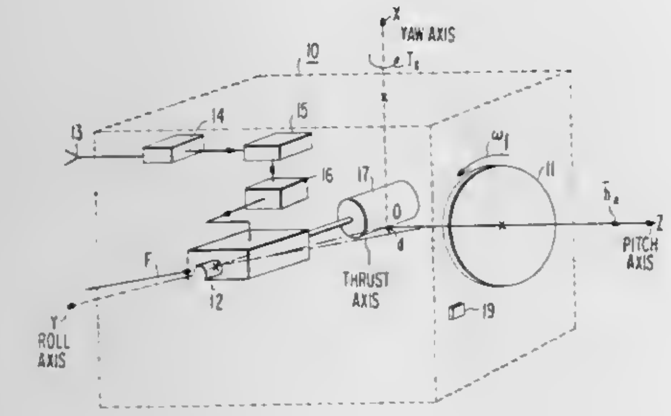
P. C. Wheeler, "Two–Pulse Attitude Control of an Asymmetric Spinning Satellite," AIAA Guidance and Control Conference, 8–12–63.



1. A method for minimizing nutation in a spacecraft of the dual spin type having a spin axis and a characteristic nutation period and further having a platform despun from a spinning member, comprising the steps of:

- transmitting signals to spacecraft receiver means causing a receiver means output signal;
- coupling said receiver output signal to logic circuit means causing a logic circuit means output signal;
- activating a force generating means mounted on said platform a first time for a predetermined operating period T_1 in response to said logic circuit output signal, said predetermined operating period determined by said logic means to be a predetermined portion of said nutation period of said spacecraft;
- deactivating said force generating means for a waiting period T_w, in response to said logic circuit means output signal at the end of said predetermined operating period T_1;
- activating said force generating means automatically a second time in response to said logic circuit means output signal for said predetermined operating period T_1 after said waiting period T_w, wherein said waiting period, T_w, is determined by:

$$T_w = \frac{2}{\omega_n}\tan^{-1}\left[\frac{1+\cos\omega_n T_1}{\sin\omega_n T_1}\right]$$

where ω_n is the spacecraft nutation frequency and T_1 is said force generating means operating period.

B 426,819

POLYTETRAFLUOROETHYLENE LIP SEAL

Robert M. Smith, Dayton, Ohio, assignor to The Duriron Company, Inc., Dayton, Ohio

Filed Dec. 20, 1973, Ser. No. 426,819

Int. Cl.² F16J *15/32*

U.S. Cl. 277—184 **6 Claims**

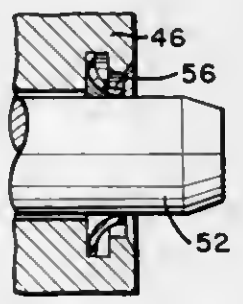
References Cited

UNITED STATES PATENTS

2,743,119	4/1956	Covert et al.	277/188
3,118,681	1/1964	Fuehrer	277/9

FOREIGN PATENTS OR APPLICATIONS

928,749	6/1963	United Kingdom	277/DIG. 6



1. A polytetrafluoroethylene lip seal for use as an O.D. lip seal on a part having an annular groove formed therein and adapted to fit within a bore, said lip seal to seal against unidirectional fluid flow between said part and said bore, comprising a curved, unitary, internally stressed polytetrafluoroethylene frusto-conical shape stretch-formed from a flat annulus having a substantially uniform thickness of at least 0.010 inch but less than the width of the groove into which said lip seal is to sit, an interference between the inside diameter of the seal and the outside diameter of the part to which it is attached of between 0.100 inch and 0.200 inch and an annulus width of at least 0.04 inch greater than the maximum clearance between the bore which it contacts and the bottom of the groove in which the lip seal sits.

B 429,434

ROTARY MOTION FAILSAFE GATE VALVE ACTUATOR

Joseph A. Burkhardt, New Orleans; Thomas W. Childers, Mandeville, both of La., and Roger J. Koerner, Fountain Valley, Calif., assignors to Exxon Production Research Company, Houston, Tex.

Filed Dec. 28, 1973, Ser. No. 429,434

Int. Cl.² F16K *31/12*

U.S. Cl. 251—58 **19 Claims**

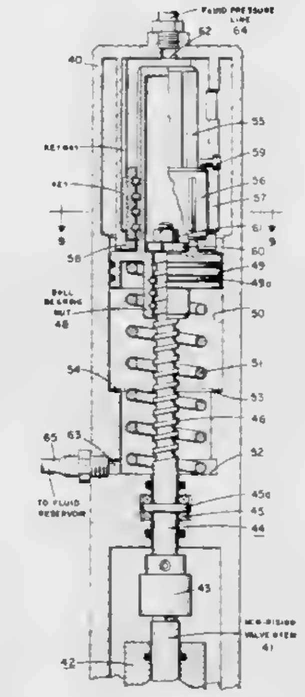
References Cited

UNITED STATES PATENTS

2,709,062	5/1955	Lamb	251/14
2,883,144	4/1959	Kendig	92/33
3,450,382	6/1969	Calim	92/31
3,512,421	5/1970	Anderson	74/89.15
3,628,397	12/1971	Sheesley	74/424.8 VA
3,640,140	2/1972	Gulick	74/89.15

1. A valve actuator for a valve comprising:

- a housing having a fluid pressure inlet, a fluid pressure exhaust, and an inner sealing shoulder;
- a rotatable screw shaft arranged in said housing connectable at one end to said valve;
- a ball bearing nut mounted on the other end of said shaft and forming a piston longitudinally movable in said housing from a first to a second position;



- biasing means surrounding said screw shaft engaging said piston and urging said piston to said first position thereof; said piston containing peripheral seals for sealing engagement with the inner wall of said housing; said piston sealingly engaging said inner sealing shoulder of said housing when said piston is in said second position thereof; and
- means connected to said piston engaging said housing to prevent rotation of said piston.

B 443,647

RESILIENT MOUNTING MEANS FOR A PROTECTION CAB OR THE LIKE

Richard D. Palmer, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 19, 1974, Ser. No. 443,647

Int. Cl.² B62D *27/04*

U.S. Cl. 296—35 R **4 Claims**

References Cited

UNITED STATES PATENTS

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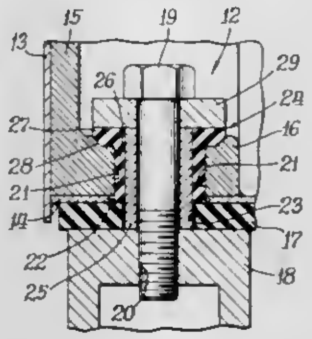
2,144,170	6/1937	Utz et al.	296/35 R
2,838,339	6/1958	Schaldenbrand	296/35 R
3,321,236	5/1967	Sewelin	296/35 R
3,390,914	7/1968	Sewelin	296/35 R
3,479,081	11/1969	Schaaf	296/35 R
3,797,604	3/1974	Davis	296/35 R
3,831,704	8/1974	Zuege	296/35 R

FOREIGN PATENTS OR APPLICATIONS

5,503	2/1889	United Kingdom	296/35 R

1. A cushioned fastening device for mounting protective cabs and the like on a vehicle, comprising a rubber-like base pad disposed between the vehicle and the cab, securing means for holding the cab securely on the vehicle over said base pad, a metallic cylindrical spacer, a rubber bushing bonded to the outer surface of said spacer and on said securing means to provide a complete dampening barrier between the cab and the main body of the vehicle, members at the lower end of the cab formed to receive the securing means and said rubber bushing, said bushing having a flanged section at the upper end thereof formed to fit over said members of the cab, the securing means comprises a bolt and washer assembly sized to fit through said spacer and threadably engage the frame of the vehicle, and in which the members of the cab have accurately machined vertically oriented bore holes extending therethrough toward said frame and sized to receive said rubber bushing, and in which each bore hole has an annular recess at the upper end thereof sized to receive the flanged portion of said rubber bushing, whereby the bolt and the washer assembly will be above and in close proximity to said recess in said members upon complete assembly of said fastening device with said washer overlapping the members of the cab above said recess and around said hole and squeezes the flanged section of the bushing in said annular recess against said member of the cab and is accurately positioned by the metallic cylindrical spacer disposed with one end abutting the bolt and washer assembly and the other end abutting the frame of the vehicle, whereby the cab is securely held in the event of turnover or the like, because only slight movement is permitted before strong metal-to-metal contact is obtained.



B 447,440

APPARATUS FOR MOISTURE ADDITION TO ENGINE AIR-FUEL INPUT

Edward M. Geiser, Downers Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 1, 1974, Ser. No. 447,440

Int. Cl.² F02D *19/00*

U.S. Cl. 123—25 R **6 Claims**

References Cited

UNITED STATES PATENTS

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1,178,913	4/1916	Garber	123/25 N
1,269,252	6/1918	Brown	123/25 N X
1,489,827	4/1924	Heckenlively	123/25 B
1,525,102	2/1925	Moendi	123/25 B
1,611,530	12/1926	Judia	123/25 N
2,580,013	12/1951	Gazda	261/99 X
2,702,027	2/1955	Drydyke	123/25 N
2,717,148	9/1955	Hall	123/25 A X
2,843,216	7/1958	Powell	123/25 A
3,834,360	9/1974	Blitch	123/25 A

FOREIGN PATENTS OR APPLICATIONS

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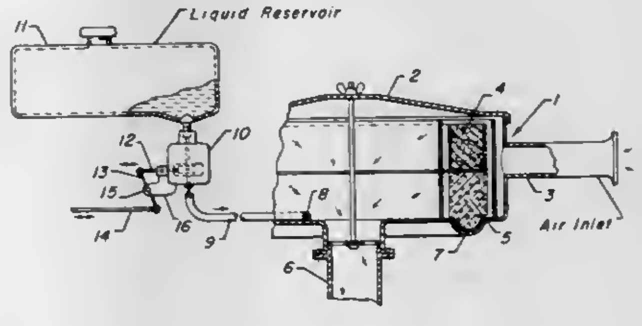


1. In an internal combustion engine, means for providing moisture to the fuel-air mixture passing to the fuel intake

means for said engine, said first named means comprising in combination,

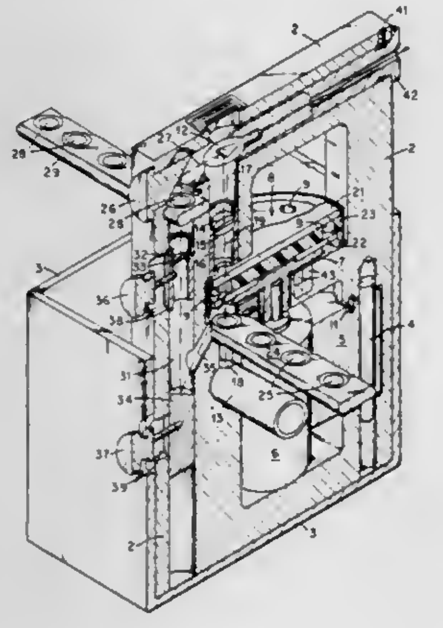
a. an air intake means to said engine, an upper air filter element and an air pervious wettable member positioned therebelow and adjacent thereto, said element and member being disposed adjacent to said air intake means, said member being positioned in only a portion of the flow path of air from said air intake means,
b. a holding means for said wettable member,
c. a fillable liquid retaining means in interconnection with said holding means and positioned adjacent the lower portion of said wettable member for contact therewith and to effect wetting thereof only from the lower surface thereof whereby, under freezing conditions, ice formation in the upper portion of said wettable member is precluded, and
d. means for at least periodically filling said liquid retaining means to maintain fluid in contact with said wettable member, whereby the air stream to the fuel supply means will be humidified by passage through and over the surface of said wettable member.

B 450,521
COMPACT FAST ANALYZER OF ROTARY CUVETTE TYPE

Louis H. Thacker, Knoxville, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed Mar. 12, 1974, Ser. No. 450,521
Int. Cl.² G01N *21/24*
U.S. Cl. 356—201 **5 Claims**

References Cited
UNITED STATES PATENTS

3,555,284	1/1971	Anderson	250/565
3,700,335	10/1972	Seelbinder	356/201
3,763,374	10/1973	Tiffany et al.	356/246
3,800,161	3/1974	Scott et al.	250/564
3,824,402	7/1974	Mullaney et al.	250/565



1. A compact fast analyzer of the rotary cuvette type suitable for selectively making both absorbance and fluorescence analyses of a multiplicity of samples comprising:

a. an upstanding, rigid, rectangular frame defining first and second optical passageways;
b. a light source disposed within said frame in optical communication with said first and second optical passageways;
c. a photodetector disposed within said frame in optical communication with said first and second optical passageways;
d. a motor-driven rotor mount pivotally attached to said frame, said rotor mount being selectively movable to an operating position intermediate said light source and photodetector and in optical communication with said first and second optical passageways and to a rotor loading position displaced from said operating position;
e. a cuvette rotor defining a circular array of sample analysis cuvettes removably disposed on said rotor mount and rotatable therewith; and
f. means for selectively blocking light passage through said first and second optical passageways.

B 459,597
WALLS

Jonathan Clive Pearson, Sheffield, England, assignor to Ellis Pearson & Co., Ltd., United Kingdom
Filed Apr. 10, 1974, Ser. No. 459,597
Claims priority, application United Kingdom, Apr. 12, 1973, 17571/73
Int. Cl.² E06B *1/04*; E04B *5/56*; E06B *3/70*
U.S. Cl. 52—207 **9 Claims**

References Cited
UNITED STATES PATENTS

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1,619,811	3/1927	Coryell	52/457
1,799,482	4/1931	Schlacks	52/207
1,987,380	1/1935	Triller	52/509
2,059,489	11/1936	Reisig	52/314
2,173,758	9/1939	Lynch et al.	52/207
2,191,500	2/1940	Rosling	52/202
2,197,195	4/1940	Schemers	292/DIG. 63
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3,189,140	6/1965	Luss	49/399
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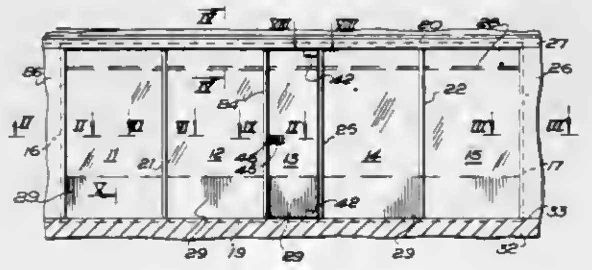
3,352,078	11/1967	Neal	52/495
3,430,384	3/1969	Malenfant	49/400
3,720,025	3/1973	Eichman	52/204



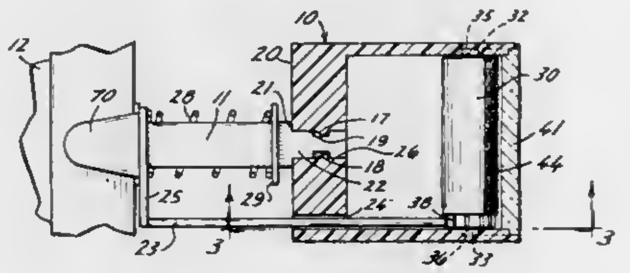
1. An assembly for forming a wall substantially of glass comprising a plurality of glass sheets in abutment to each other, a pair of side channels with resilient linings fitted to the end pair of glass edges, a bottom channel with a resilient lining fitted along the bottom edges of the glass sheets, a top channel with a resilient lining fitted along the top edges of the glass sheets, a pillar overlapping each pair of abutting glass edges on only one side of said glass sheets and spaced therefrom by a resilient strip to provide intermediate support for said glass sheets, a door comprising a glass sheet, pivots secured to the door and to the top and bottom channels, a pair of pillars flanking the door, and a latch carried by the door and engageable with one of the pillars flanking the door, the door being provided with a small hole for access to the latch from the face of the door remote from the latch.

B 469,228
PUSH BUTTON SWITCH MODE INDICATOR ELEMENT

Kenneth Lee Roy, Menomonee Falls, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.
Filed May 13, 1974, Ser. No. 469,228
Int. Cl.² G09F *9/00*; H01H *9/16*
U.S. Cl. 116—124 L **7 Claims**

References Cited
UNITED STATES PATENTS

513,705	1/1894	Busby	116/172
2,293,752	8/1942	O'Brien	200/340 X
2,447,453	8/1948	Zehnpfennig	200/340 X
3,250,887	5/1966	Sorenson	200/308
3,375,337	3/1968	Barrett et al.	200/308 X
3,576,175	4/1971	Cammill	116/124 L
3,715,548	2/1973	Schadow	116/124 X
3,769,482	10/1973	New et al.	200/167 R
3,855,959	12/1974	Hinze	200/167 A X
3,855,961	12/1974	Schadow	200/167 A X



1. A mode indicating device for a pushbutton switch, said switch having a body and a reciprocating slider moveable between a first position in which said switch is in one mode and a second position in which said switch is in a second mode, said indicating device comprising:

a hollow housing attached to said slider, said housing having a lens in one end and an aperture at the opposite end;
a mode indicator rotatably mounted within said housing adjacent the interior of said lens, said indicator being rotatable about an element having an axis which is fixed relative to said housing, said element extending transverse to the direction of movement of said slider between opposed walls of said housing, said mode indicator having a rounded surface formed about said fixed axis and having mode indicating indicia formed thereon; and
actuator means having one end coupled to said switch body and the other end extending through said aperture and means pivotally coupled to said mode indicator for pivoting said indicator in response to movement of said slider and housing to position said indicia adjacent said lens when said switch is in said second mode.

B 486,614
MAGNETIC MIXER

Robert D. Cichy, Maumee, Ohio; Anthony P. Schmid, Riga, Mich., and Barry Watson, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed July 8, 1974, Ser. No. 486,614
Int. Cl.² B01F *13/08*
U.S. Cl. 259—4 **2 Claims**

References Cited
UNITED STATES PATENTS

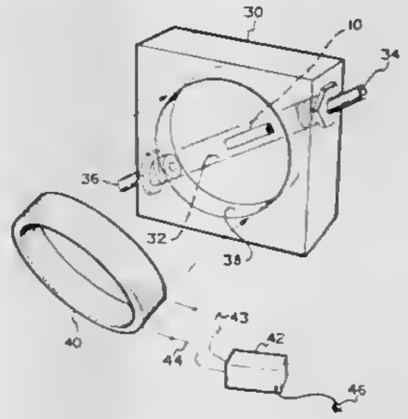
3,689,033	9/1972	Holmstrom	259/DIG. 46

FOREIGN PATENTS OR APPLICATIONS

991,941	10/1951	France	259/DIG. 46

1. A magnetic mixing device for mixing a moving fluid stream which comprises, in combination:

a block of non-magnetic material, said block including a recess formed in one face thereof and further including a passage extending completely therethrough behind said recess in close proximity thereto but not in communication with said recess, said passage defining a flow tube;
a elongated magnetic stirring element contained within said passage;
means for limiting the travel of said stirring element, in engagement with both ends of said passage, to prevent movement of said stirring element out of said flow tube and to allow movement of said fluid stream through said passage;
a coil formed of electrically conductive material positioned in said recess in said block; and
means for furnishing a low voltage oscillating electrical supply to said coil to thereby generate an oscillating magnetic field in said passage for causing said magnetic stirring element to oscillate longitudinally in said passage.



B 489,290
ELECTROMAGNETIC DENT PULLER

Karl A. Hansen, and Iver Glen Hendrickson, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed July 17, 1974, Ser. No. 489,290
Int. Cl.² B21D *26/14*
U.S. Cl. 72—56 **32 Claims**

References Cited
UNITED STATES PATENTS

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3,703,958	11/1972	Kolm	72/56
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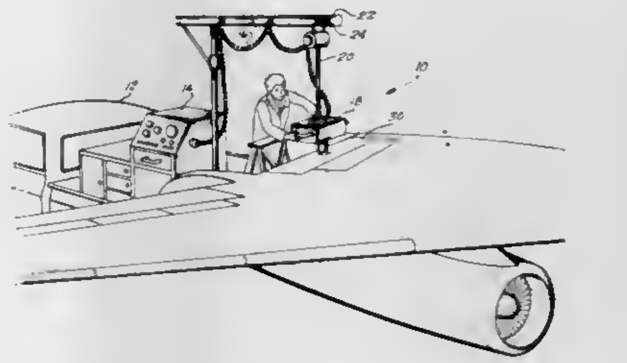
3,810,373	5/1974	Quegrolx	72/56

FOREIGN PATENTS OR APPLICATIONS

2,030,497	11/1970	France	72/56



20. A method of electromagnetically pulling dents from conductive material, the steps comprising: positioning a working surface of a working head of a nonconducting material adjacent a dent in a part; energizing a coil within the head, shaped for electromagnetic coupling to the part, with a slowly rising current; controlling the amplitude and duration of the current for generating a strong electromagnetic field without

deforming the part; introducing a countercurrent into the coil; controlling the amplitude of the countercurrent to about 50 to 100 percent of the slowly rising current; and timing the duration of the countercurrent to generate a deforming tensioning magnetic force against the part to remove the dent.

B 495,402
CONVEYOR DIVERTER

Wesley R. Maxted, Grand Rapids, and Bernard H. Woltjer, Jenison, both of Mich., assignors to Rapistan Incorporated, Grand Rapids, Mich.

Filed Aug. 7, 1974, Ser. No. 495,402
Int. Cl.² B65G *43/08*
U.S. Cl. 198—38 16 Claims

References Cited
UNITED STATES PATENTS

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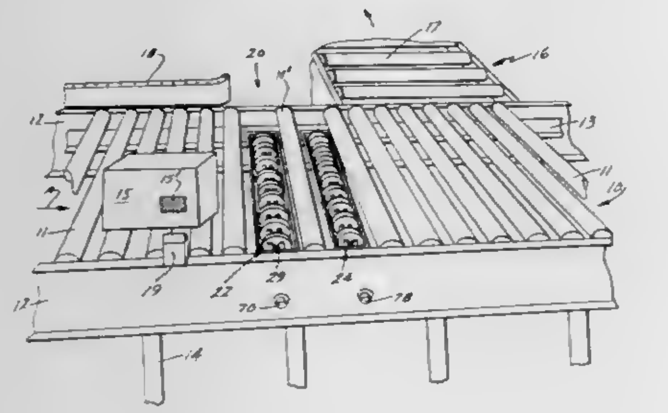
3,138,238	6/1964	DeGood et al.	198/127 R
3,254,752	6/1966	Bauch et al.	193/36
3,279,583	10/1966	Abegglen	198/38
3,370,685	2/1968	Guilie	193/36
3,650,375	3/1972	Fleischauer et al.	198/127 R



1. A diverter for selectively diverting articles from one conveyor to an intersecting conveyor comprising:

first article conveying means positioned on said one conveyor upstream of the intersecting conveyor and skewed to transport articles at an angle relative to the direction of advancement of such articles on said one conveyor;

second article conveying means positioned between said first article conveying means and the intersection of said one conveyor with said intersecting conveyor and skewed to transport articles at a greater angle relative to the direction of advancement of such articles on said one conveyor than said first article conveying means;

drive means coupled to said first and second article conveying means for driving them at a speed to move articles in contact therewith at a speed greater than the conveying speed of said one conveyor; and

selectively actuated means coupling said first and second article conveying means to said one conveyor for moving said first and second article conveying means between an operative position with said first article conveying means extending above said one conveyor a predetermined distance and said second article conveying means extending above said one conveyor a greater predetermined distance than said first article conveying means for progressively elevating and rotating articles onto said intersecting conveyor and an inoperative position where articles continue along said one conveyor.

B 497,853
VOLUME SETTING MECHANISM FOR FLUID DISCHARGE DEVICES

Richard Dean Reed, San Jose, and Doud Roger Branham, Redwood City, both of Calif., assignors to Oxford Laboratories Inc., Foster City, Calif.

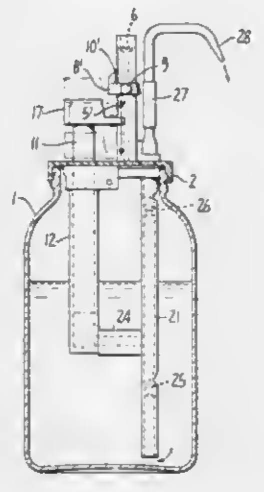
Filed Aug. 16, 1974, Ser. No. 497,853
Int. Cl.² G01F *11/06*
U.S. Cl. 222—43 2 Claims

References Cited
UNITED STATES PATENTS

1,581,298	4/1926	Schotthoefer	222/43 X
2,776,075	1/1957	Etter	222/43
2,985,339	5/1961	Fischer et al.	222/44
3,176,876	4/1965	Fischer et al.	222/44
3,452,901	7/1969	Roach	222/49

FOREIGN PATENTS OR APPLICATIONS

905,949	9/1962	United Kingdom	222/43



1. In a fluid dispensing device that comprises:

a barrel forming a fluid chamber,

a plunger positioned with one end extending into said barrel and another end remaining outside of said barrel,

an operating handle attached to the plunger at its outside end,

means permitting fluid to be drawn into said chamber when the plunger is moved in a direction out of the chamber and permitting fluid to be discharged when the plunger is moved in an opposite direction into said chamber,

an elongated scale post held fixed with respect to said barrel, and characterized by a uniform shape along at least a portion thereof in a cross-section perpendicular to its length, said shape including a circular portion joined by substantially a straight line, thereby to form a substantially flat portion along its length, said scale post further including along said substantially flat portion a plurality of indicia lines arranged parallel to one another and perpendicular to the length of the post in a row,

a stop surrounding said post with a circular interior surface shape in cross-section that is complementary to the outside post shape and movable along the length of said post and selectively attachable thereto, said stop being positioned to abut said handle as the plunger is moved outward of said barrel, said stop additionally having a pointer that moves from one parallel indicia line to another as the stop is moved along the length of said scale post, and

means for selectively fastening said stop to said scale post against movement therealong at desired positions corresponding to a desired plunger fluid volume;

the improvement comprising:

said indicia lines being raised above said substantially flat portion of said scale post in a manner to form notches therebetween,

said pointer being shaped for insertion into any of said notches in a manner to hold said stop from movement along the length of said scale post, and said stop being rotatable about said scale post at least from an extreme position wherein said pointer is fully nested within the desired position of one of said notches to at least a second extreme position wherein said pointer clears said raised indicia lines to permit movement of said stop along the length of said scale post,

whereby the volume of fluid dispensed by said device is accurately set by positive detent engagement.

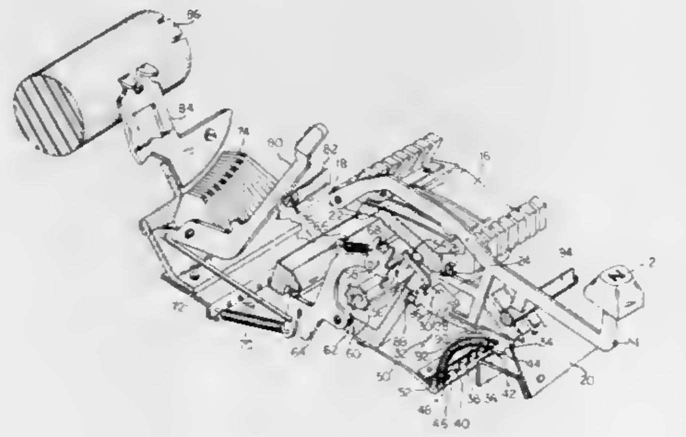
B 501,122
TYPING MACHINE KEY ACTION

Hans W. Mueller, and Richard E. Shattuck, both of Cortland, N.Y., assignors to SCM Corporation, New York, N.Y.

Filed Aug. 28, 1974, Ser. No. 501,122
Int. Cl.² B41J *23/06*
U.S. Cl. 197—17 12 Claims

References Cited
UNITED STATES PATENTS

3,400,799	9/1968	Stuiber	197/17
3,419,123	12/1968	Salzberger et al.	197/17
3,537,562	11/1970	Caudill et al.	197/17
3,578,128	5/1971	Frechette et al.	197/17
3,623,587	11/1971	Link	197/17
3,633,723	1/1972	Kosters	197/17
3,638,775	2/1972	Hishida et al.	197/17
3,706,366	12/1972	Hishida et al.	197/17
3,738,470	6/1973	Osaka	197/17
3,838,762	10/1974	Madison	197/17



1. In a typing machine of the kind having means for actuating a typing machine operation, a power roll rotatably mounted in the typing machine for engagement by the actuating means to actuate the typing machine operation, a key lever movably mounted in the typing machine, an interposer, means for supporting the interposer, means for releasing the interposer relative to the supporting means upon depression of the key lever, and means for restoring the key lever to a rest position, in combination, the improvement comprising:

a. means, connected between the interposer and a stationary portion of the typing machine, for biasing the interposer against the supporting means and after activation of the releasing means, against the actuating means to cause the actuating means to engage the power roll to actuate the typing machine operation; and

b. means for restoring potential energy in the biasing means during return of the key lever to the rest position by the restoring means.

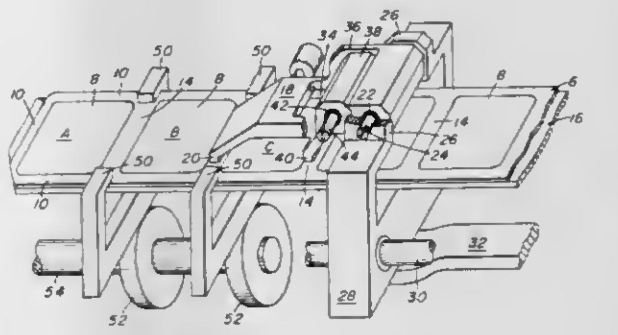
B 506,926
SHUTTLE MECHANISM

Neil S. White, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 17, 1974, Ser. No. 506,926
Int. Cl.² B65H *17/40*
U.S. Cl. 226—68 7 Claims

References Cited
UNITED STATES PATENTS

2,268,405	12/1941	Kohnle	226/68
2,301,054	11/1942	Laing	226/62
2,996,001	8/1961	Schlegel	226/147 X
3,051,361	8/1962	Menkel	226/151 X
3,434,640	3/1969	Coutant	226/62 X
3,477,627	11/1969	Webers	226/62 X
3,587,960	6/1971	Gerb	226/62



1. In a shuttle mechanism for use in intermittently transporting a stretchable web having spaced first, second, and third succeeding grooves of a normal pitch in its normal unstretched condition; the combination comprising:

a first member reciprocally movable between initial and final positions for intermittently transporting a web, said first member having a first claw at one end thereof provided with a leading tip surface for engaging a first groove in said web;

a second member supported by said first member for movement between extended and retracted positions, and having a second claw provided with a leading tip surface for engaging a succeeding second groove in said web and assisting in the transport of said web by said first member;

first means for moving said first member between said initial and final positions; and

second means for moving said first member when said first member is positioned in its final position causing said first claw to be removed from said first groove while allowing said second claw to move while in said second groove away from said first claw to its extended position in which the distance between said leading tip surfaces of said first and second claws is greater than said normal pitch of said grooves, and for moving said first member when said first member is returned to its initial position causing said first claw to move into said second groove and said second claw into a succeeding third groove, and further moving while in its third groove to its retracted position, in which the distance between said leading tip surfaces of said first and second claws and the distance between said second and third grooves are both equal to said normal pitch whereby said claws are in position to transport said web a distance equal to said normal pitch upon movement of said first member to its final position.

B 508,940

VEHICLE FUEL SYSTEM

John T. Risse, and James C. Taggart, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Sept. 24, 1974, Ser. No. 508,940

Int. Cl.² F02M *37/00*

U.S. Cl. 137—255 **4 Claims**

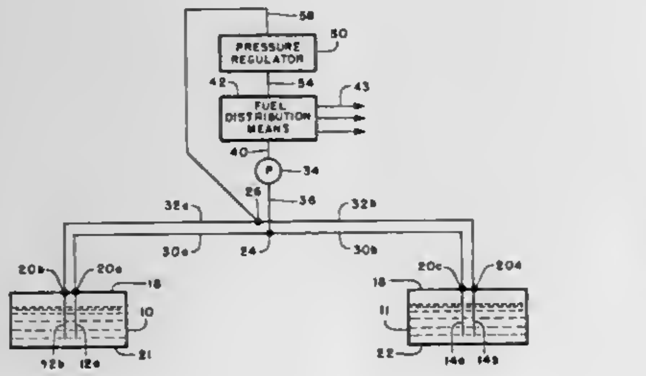
References Cited

UNITED STATES PATENTS

731,918	6/1903	Landers	137/255 X
811,749	2/1906	Somers	137/268
1,776,877	9/1930	Yonkese	244/135 C
2,519,968	8/1950	Jordan	244/135 C
2,573,299	10/1951	Bast	137/268
2,773,556	12/1956	Meyers et al.	137/255 X
2,901,031	8/1959	Powell et al.	123/139 AW
3,026,928	3/1962	Phillips et al.	123/139 AW
3,771,504	11/1973	Woods	123/139 AW
3,789,819	2/1974	Moulds	123/139 AW

FOREIGN PATENTS OR APPLICATIONS

44-25685	1/1969	Japan	137/255
98,679	7/1921	Switzerland	137/255



1. A self-regulating fuel level equalizing system for internal combustion engines of vehicles comprising a plurality of spaced apart fuel tanks, feed conduits having about equal length, about equal inner diameter, and about equal fuel flow restriction and having lower portions with open ends each disposed at about the same level for automatic preferential fuel withdrawal from the fuller of said tanks, housed within and extending from lower portions of each of said tanks through an upper portion of each of said tanks and devoid of external bottom connections with said tanks and each coupled to a fuel pump, a fuel pump for preferentially withdrawing fuel from the fuller of said tanks through said feed conduits and supplying at least a portion of said fuel to a said engine, distribution means for feeding said fuel from said fuel pump to said engine, return conduits separate from said feed conduits having about equal length, about equal inner diameter, and about equal fuel flow restriction, and having lower portions with open ends each disposed at about the same level in said tanks for automatic preferential fuel return to the less full of said tanks, housed within and extending from lower portions of each of said tanks through and upper portion of each of said tanks and coupled to said fuel pump for preferentially returning any unused portion of said withdrawn fuel to the less full of said tanks, said preferential fuel withdrawing and returning automatically coacting to maintain an about equal fuel level in said fuel tanks.

B 509,474

IMPROVEMENTS IN OR RELATING TO SCANNING LENS SYSTEMS FOR ELECTROSTATIC COPYING MACHINES

Nandor Mihalik, Walton-on-Thames, and Terence Cunningham Frostick, London, both of England, assignors to Gestetner Byfleet Limited, London, England

Filed Sept. 26, 1975, Ser. No. 509,474

Claims priority, application United Kingdom, Oct. 2, 1973, 46011/73

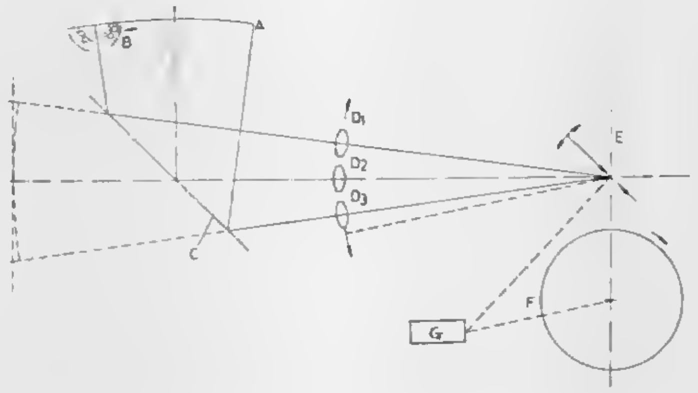
Int. Cl.² G03G *15/04*

U.S. Cl. 355—8 **12 Claims**

References Cited

UNITED STATES PATENTS

3,740,137	6/1973	Sato	355/66



1. A copying machine including a platen; a surface for the platen for supporting an object to be copied; a rotatable drum; a photo-conductive surface for said drum for receiving an image of an object supported on the platen; a mirror positioned below and spaced from the platen and inclined with respect thereto; a lens mounted for movement along an arcuate path about an axis and constrained to have that axis intersecting the optical axis of the lens, to scan the image reflected in the mirror of an object on the platen; and a second mirror on and mounted for rotation about, the axis of rotation of the lens to reflect light passing from the lens onto the photoconductive surface of the drum; and wherein the first said mirror is dimensioned and inclined with respect to the platen so that substantially the whole of the perpendicular projection of said surface of the platen falls on said first mirror.

B 511,909

METHOD AND APPARATUS FOR MEASURING A PHYSICAL PROPERTY OF A FLUID MATERIAL THAT VARIES NONLINEARLY RELATIVE TO THE DENSITY OF THE FLUID

William B. Banks, Rte. 1, Box 172, Chappell Hill, Tex. 77426

Filed Oct. 3, 1974, Ser. No. 511,909

Int. Cl.² G01N *9/36*

U.S. Cl. 73—61.1 R **13 Claims**

References Cited

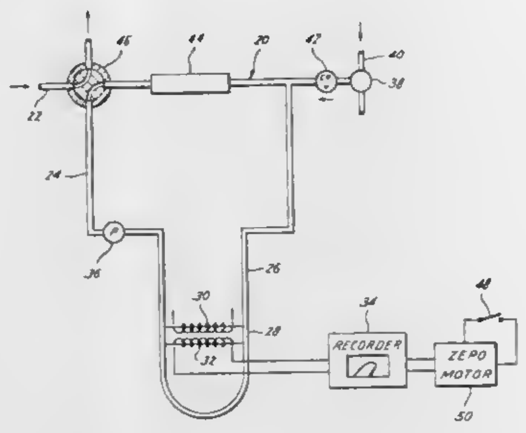
UNITED STATES PATENTS

3,310,974	3/1967	Banks	73/1 R
3,449,940	6/1969	Banks	73/32 R
3,678,734	7/1972	Mitchell	73/61.1 R

1. The method of measuring a physical property of a fluid material that varies nonlinearly relative to the density of the fluid comprising,

measuring the density of the fluid,

injecting a predetermined amount of a second miscible fluid having a density different from the density of the first fluid into a predetermined amount of the first fluid, and measuring the density of the combined fluids whereby the differences in the two measurements is an indication of the physical property of the first fluid.



B 512,324

GRATING WITH PUSH BARS FOR AN INCINERATOR

Lucien Delaplace, Sevres, France, assignor to Stein Industrie, Velizy Villacoublay, France

Filed Oct. 4, 1974, Ser. No. 512,324

Int. Cl.² F23G *5/00;* F22B *1/22*

U.S. Cl. 110—8 R **10 Claims**

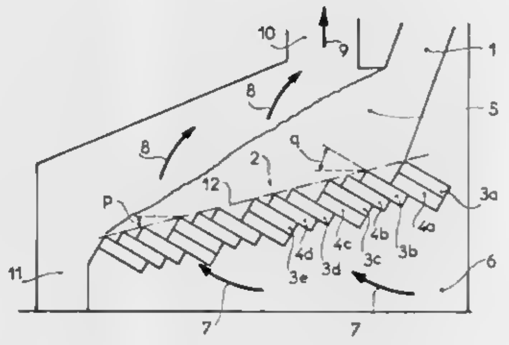
References Cited

UNITED STATES PATENTS

1,211,755	1/1917	Reagan	110/38
3,055,320	9/1962	Bolda	110/8 X
3,413,938	12/1968	Dvirka	110/38
3,541,978	11/1970	Stloukal et al.	110/38

FOREIGN PATENTS OR APPLICATIONS

911,316	5/1954	Germany	110/38



1. A grating for an incinerator of combustible waste comprising a plurality of parallel juxtaposed bars disposed transversely in the incinerator and extending lengthwise thereof to provide a support surface on which waste is advanced in the course of combustion thereof, said bars being arranged in two sets alternating with one another, the bars of one set being fixed and the bars of the second set being reciprocally movable, the bars of said one set being secured in successive gradually lowered positions in the incinerator to provide a downward inclination of about 15° with the horizontal in the lengthwise direction of advancement of the waste, said bars of both sets being inclined with the horizontal at an angle of about 30° in a direction opposite said downward inclination in the lengthwise direction.

B 515,216

APEX SEAL DEVICE FOR USE IN ROTARY PISTON ENGINE

Yasumi Ooba, No. 5106 Hoshigaoka Apartment, 268-4 Hoshigaoka, Nishiokacho, Toyota, Aichi, Japan

Filed Oct. 16, 1974, Ser. No. 515,216

Claims priority, application Japan, Mar. 28, 1974, 49-35734[U]

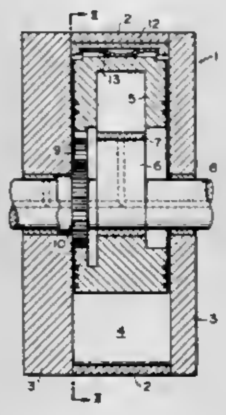
Int. Cl.² F16J *15/48*

U.S. Cl. 277—81 P **2 Claims**

References Cited

UNITED STATES PATENTS

3,118,595	1/1964	Fuhrmann	418/122



1. In a rotary piston engine of the type comprising a rotor, an apex seal groove provided in a crest portion of said rotor, a rotor housing, and an apex seal device, the improvement comprising:

- an apex seal movably located within said apex seal groove in the radial and rotational directions, said seal having a bottom surface inclined to a horizontal plane making a right angle to the radius direction in relation to said apex seal, said apex seal further having an interstice between the leading side wall of said apex seal and the inside wall of said apex seal groove opposite to the leading side wall of said apex seal; and
- an apex seal spring confined between the bottom surface of said apex seal groove and said bottom surface of said apex seal.

B 516,537

SINGLE OPERATION-TRIPLE CYCLE LOCKBOLT SETTING DEVICE AND SYSTEM

Louis A. Champoux, Seattle, and Hollis B. Merrell, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 21, 1974, Ser. No. 516,537

Int. Cl.² B21J *15/00, 15/22, 15/12*

U.S. Cl. 72—391 **13 Claims**

References Cited

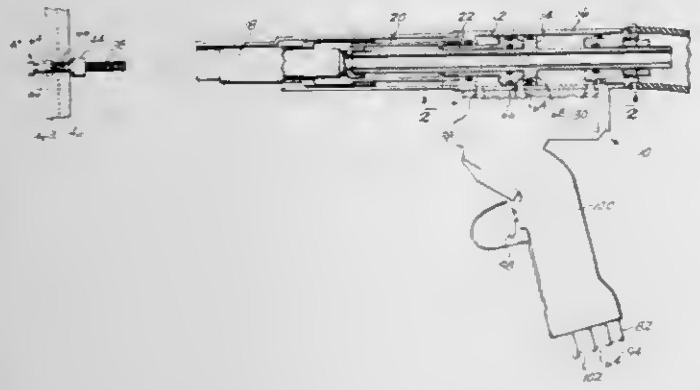
UNITED STATES PATENTS

3,309,911	3/1967	Simmons	72/391
3,475,945	11/1969	Chirco	72/391
3,645,125	2/1972	Summerlin	72/391
3,698,231	10/1972	Davis	72/391
3,792,933	2/1974	Stencel	72/391

1. A lockbolt setting apparatus having a nose piece for grasping a pintail of a bolt and an anvil for swaging a collar to the bolt wherein the apparatus comprises: a housing having a stand off to provide clearance to the collar to permit seating a lockbolt without exerting pressure on the collar; a first piston connected to the anvil to provide sliding movement of the anvil within the housing; a second piston connected to the nose piece to provide sliding movement of the nose piece within the structure of the anvil; and means for sequencing

and powering the apparatus to first, move the second piston to seat the bolt, second, to move the first piston in the opposite direction to swage the collar, third, to move the second piston an additional amount to break off the pintail of the bolt, and fourth, to move both pistons back to the original position.

11. A method of setting lockbolts with the steps comprising: providing clearance for a collar positioned on a lockbolt; grasping a pintail of the lockbolt with puller jaws; introducing hydraulic fluid under pressure between a pair of pistons for moving the pistons in opposite directions and seating the lockbolt by movement of one of the pistons that is connected to the puller jaws; holding the other piston, connected to a swaging die, stationary until the lockbolt is seated; swaging the collar onto the seated lockbolt by advancing the swaging die; breaking off the pintail by further movement of the puller jaws; and returning both of the pistons to the starting position.



B 519,599

METHOD AND AN APPARATUS FOR CLEAVING SLAUGHTERED CARCASSES

Martin Rudolf Ekstam, Kristianstad, Sweden, assignor to AB Stathmos, Jonkoping, Sweden

Filed Oct. 31, 1974, Ser. No. 519,599

Claims priority, application Sweden, Dec. 8, 1973, 7315142

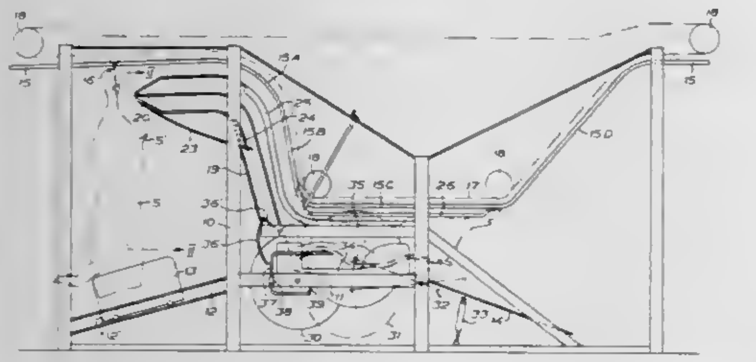
Int. Cl.^{2} A22B *5/20*

U.S. Cl. 17—23 **11 Claims**

References Cited

UNITED STATES PATENTS

3,074,102	1/1963	Hotard	17/23
3,159,869	12/1964	Vogt et al.	17/23
3,628,218	12/1971	Simonsen et al.	17/23



1. An improved method of cleaving slaughtered carcasses, the cleaving operation taking place essentially centrally by sawing through the spine while pulling the carcass forward lying on the back, the improvement consisting in that the two halves of the carcass obtained from the cleaving operation are moved apart and guided in such a way that the lower portion of each half is tipped inwardly while its upper portion is moved outwardly in order that the spine portion remaining in each carcass half may be pressed outwardly on the inside of the carcass half and become accessible for cutting by means of a saw while removing the smallest possible quantity of adjacent muscles above and below the spine portion.

B 520,277

OCULAR INSERT

Takeru Higuchi, Lawrence, Kans.; Anwar A. Hussain, Lexington, Ky., and John W. Shell, Los Altos, Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 179,129, Sept. 9, 1971. This application Nov. 4, 1974, Ser. No. 520,277

Int. Cl.^{2} A61K *27/12;* **A61M** *31/00*

U.S. Cl. 128—260 **13 Claims**

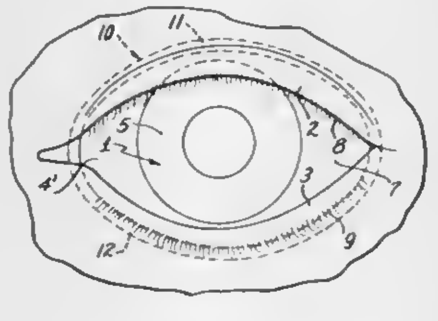
References Cited

UNITED STATES PATENTS

3,113,076	12/1963	Jacobs	424/15
3,416,530	12/1968	Ness	128/260
3,618,604	11/1971	Ness	128/260
3,828,777	8/1974	Ness	128/260
3,867,519	2/1975	Michaels	424/19

FOREIGN PATENTS OR APPLICATIONS

15,518	6/1968	Japan	128/260
1,003,914	3/1957	Germany	128/260



1. In a non-corneal, drug dispensing ocular insert comprising a flexible body containing a drug for application to the eyeball to dispense said drug to the eye over a prolonged period of time, the improvement comprising a means for permitting facile insertion into and comfortable retention within the eye, and concomitantly preventing the expulsion of the insert therefrom, wherein said flexible body comprises an annular ring that is sized relative to the eye so it can be placed about the eyeball and in contact therewith, completely posterior to the sulcus sclerae and within the upper and lower cul de sacs, the width of the ring being such that the ring is virtually invisible in the palpebral fissure when the eyelids are open.

B 520,534

DEVICE FOR SPREADING GRANULES

Jan Oosterhof, Weesp, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 385,648, Aug. 6, 1973, abandoned. This application Nov. 4, 1974, Ser. No. 520,534

Claims priority, application Netherlands, July 7, 1972, 7209463

Int. Cl.^{2} A01C *7/02*

U.S. Cl. 239—652 **3 Claims**

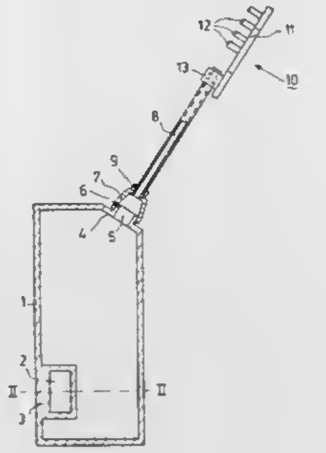
References Cited

UNITED STATES PATENTS

156,688	11/1874	Workman	239/650
657,419	9/1900	Jager	239/650
714,051	11/1902	Spitzenberg	239/653
2,221,113	11/1940	Schmitt	239/652
2,337,952	12/1943	Whiten	239/653 X
3,142,421	7/1964	Sieracki	222/567 X

FOREIGN PATENTS OR APPLICATIONS

785,251	8/1935	France	239/689



1. A hand portable combination granular container and spreader comprising a container provided with bottom, top and side wall portions and a downward projecting tubular member located at one of said side wall portions, a downwardly projecting delivery tube detachably coupled into said tubular member and a granule distributer adjustably attached to the end of said delivery tube, said distributer comprising a substantially flat plate having a major axis substantially parallel to the axis of said delivery tube and provided on the surface of said plate adjacent to the opening of said delivery tube, with a multiplicity of protrusions extending in a direction substantially perpendicular to said surface.

B 522,009

ORGAN PERFUSION SYSTEM

Robert A. Clark, Garden Grove, and John P. Hall, Irvine, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Nov. 8, 1974, Ser. No. 522,009

Int. Cl.^{2} B01F *3/04*

U.S. Cl. 62—306 **7 Claims**

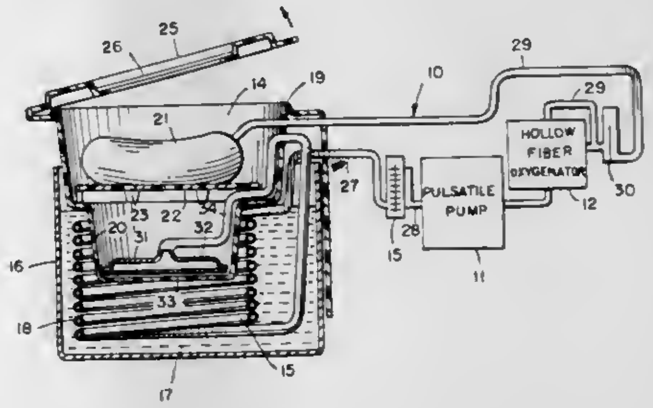
References Cited

UNITED STATES PATENTS

3,406,531	10/1968	Swenson et al.	62/306
3,545,221	12/1970	Swenson et al.	62/306
3,729,948	5/1973	Schwartz	62/64
3,777,507	12/1973	Burton et al.	62/306
3,810,367	5/1974	Peterson	62/457

1. An organ perfusion system comprising a chamber adapted to support an organ requiring perfusion, a pulsatile pump, a heat exchanger, and conduit means connecting the chamber, pump, and exchanger for the circulation of cold perfusate through an organ supported within the chamber, wherein the improvement comprises

said heat exchanger including a container for holding ice water and a cooling coil of tubular thermally-conductive material therein, said coil being connected in circuit with said pump and perfusion chamber for cooling perfusate circulated therethrough, said pulsatile pump being disposed downstream of said heat exchanger and upstream of said perfusion chamber for drawing cold perfusate from said coil and pumping the same in a series of regular pulses to an organ supported within said chamber.



B 523,080

NOISE DOSEMETER

Daniel Haig-Arbib, London, England, assignor to National Research Development Corporation, London, England

Filed Nov. 12, 1974, Ser. No. 523,080

Claims priority, application United Kingdom, Nov. 13, 1973, 52630/73

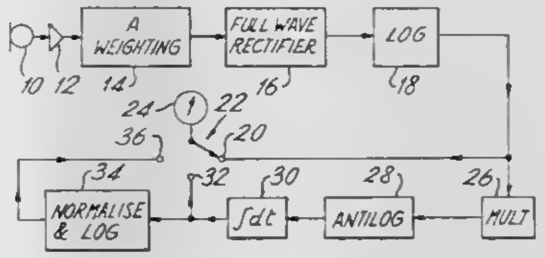
Int. Cl.^{2} G01H *3/12*

U.S. Cl. 73—557 **13 Claims**

References Cited

UNITED STATES PATENTS

3,747,703	7/1973	Knowd et al.	73/558 X
3,802,535	4/1974	Peake et al.	179/1 N
3,848,471	11/1974	Hamburg et al.	73/557



1. A noise dosemeter including

a transducer for providing an electrical signal representative of the amplitude of sound waves incident thereon,

first circuit means for providing a signal representative of the logarithm of an input signal thereto, the first circuit means being coupled to the transducer,

multiplier means for providing a signal representative of a predetermined multiple of the output signal from the first circuit means,

second circuit means for providing a signal representative of the anti-logarithm of the output signal of the multiplier means, and

integrating means for integrating the output signal of the second circuit means.

B 523,885
WET MOP CONSTRUCTION HAVING PILE FABRIC MOPPING ELEMENT

John Walter Crofton, La Grange, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 14, 1974, Ser. No. 523,885

Int. Cl.² A47L *13/20*

U.S. Cl. 15—229 A **5 Claims**

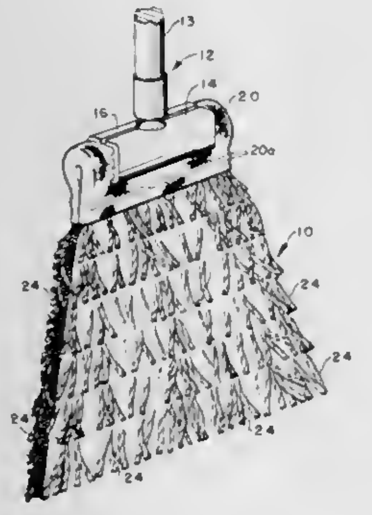
References Cited

UNITED STATES PATENTS

815,343	3/1906	Garnet	15/209 R
1,804,504	5/1931	Henderson	15/247
2,011,214	8/1935	Erickson	15/209 R
2,249,559	7/1941	Hilty	15/247
2,342,280	2/1944	Hertzberg	15/229 AP X
3,469,274	9/1969	Snapp	15/228
3,633,234	1/1972	Henningsen	15/114
3,793,668	2/1974	Olson	15/210 R
3,795,934	3/1974	Moss	15/229 A

OTHER PUBLICATIONS

Flyer of the O'Cedar Mop Corp. entitled "Every–Which Way Mops" (Form W–1,4–55) 2246 W. 49 St. Chicago, Ill. received 6/24/55 in Patent Office.



1. A wet mop construction comprising a mop head having a flexible pile fabric main body of generally trapezoidal shape with opposite parallel sides of unequal length and opposite non-parallel sides extending in flared relation therebetween, said main body pile fabric comprising a relatively dimensionally stable base sheet having water-absorbent pile yarns attached to said sheet and being disposed to extend outwardly from opposite faces of the trapezoidal shaped main body, and a headband extending along and attached to the shorter parallel side of said pile fabric main body; and support means grippingly engaging only the headband of said mop head while leaving the pile fabric main body thereof free from supporting contact by support means to thereby position said main body in flexible, free-hanging, flaring relation from said support means.

B 527,054
LIQUID CRYSTAL DISPLAY

Donald Jones Channin, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 25, 1974, Ser. No. 527,054

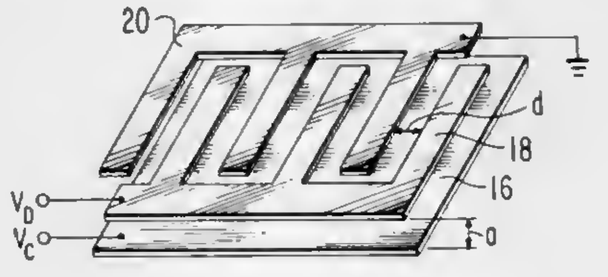
Int. Cl.² G02F *1/13*

U.S. Cl. 350—160 LC **17 Claims**

References Cited

UNITED STATES PATENTS

3,551,026	12/1970	Heilmeier	350/160 LC X
3,854,751	12/1974	Haas et al.	350/160 LC
3,883,227	5/1975	Kobayashi et al.	350/160 LC



1. A method of operating a dielectrically anisotropic liquid crystal comprising the steps of:
- applying to the liquid crystal a non-zero electric field Ey having its major component in a given direction;
- concurrently applying to the liquid crystal a non-zero electric field Ex having its major component in a direction orthogonal to said given direction; and
- independently controlling the amplitudes of the Ex and Ey fields.

B 534,333
VARIABLE GAS LEAK RATE VALVE

Errol P. Eernisse, and Gary D. Peterson, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Energy Research & Development Administration, Washington, D.C.

Filed Dec. 19, 1974, Ser. No. 534,333

Int. Cl.² F16K *31/02*

U.S. Cl. 251—129 **4 Claims**

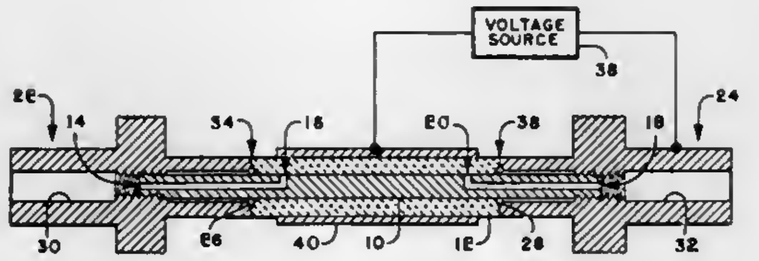
References Cited

UNITED STATES PATENTS

3,465,732	9/1969	Kattchee	251/129 X
3,614,486	10/1971	Smiley	251/129 X

FOREIGN PATENTS OR APPLICATIONS

1,106,133	5/1961	Germany	251/129



1. A variable gas leak rate valve comprising an elongated metallic rod having first passageway extending from one end of said rod to an opening in its outer surface intermediate the rod ends and a second passageway extending from the other end of said rod to an opening in its outer surface spaced from said first passageway opening; a piezoelectric sleeve fitted in gas tight relationship around a portion of said rod intermediate said passageway openings, said sleeve being poled in the radial direction and normally blocking gas flow between said openings; an electrode disposed on the outer surface of said sleeve coextensive with said gas tight portion; means for sealing the ends of said sleeve to end portions of said rod; and means for coupling voltage bias between said rod and said electrode to effect communication between said passageways through the interface between said rod and said sleeve.

B 543,078
WATER COOLING SYSTEM FOR A SHAFT TYPE FURNACE

Horst Euler, Rumeln-Kaldenhausen, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany

Filed Jan. 22, 1975, Ser. No. 543,078

Claims priority, application Germany, Jan. 26, 1974, 2403741

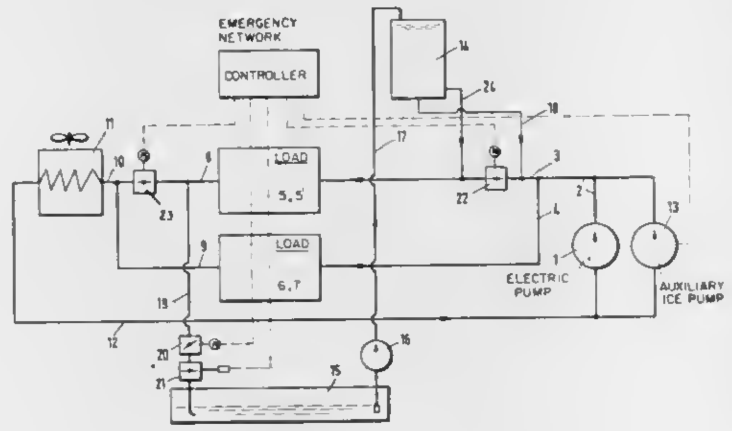
Int. Cl.² F28F *27/00*

U.S. Cl. 165—13 **9 Claims**

References Cited

UNITED STATES PATENTS

3,059,913	10/1962	Sands	165/107 X
3,236,297	2/1966	Costes	165/134 X



1. In a water cooling system for shaft furnaces, such as blast furnaces, comprising a closed circuit, a water cooling device located in said closed circuit, a first storage tank located below said closed circuit, at least one electric pump located in said closed circuit for circulating the cooling water, a second storage tank located above said closed circuit, and a pipe connecting said second storage tank to said closed circuit for maintaining a constant water pressure in said closed circuit, wherein the improvement comprises that said closed circuit includes a first feed line for cooling one portion of the shaft furnace and a second feed line disposed in parallel with said first feed line for cooling another portion of the shaft furnace, valve means in said first feed line for separating it from the flow through said closed circuit and said valve means arranged to operate automatically in a power failure affecting said at least one electric pump circulating the cooling water through said closed circuit, pipe means connecting said first feed line to said first and second storage tanks for providing flow from said second storage tank through said first feed line to said first storage tank when said first feed line is separated from said closed circuit, and an emergency pump located in said closed circuit and arranged to operate when a power failure occurs for circulating the cooling water through said second feed line in said closed circuit, said water cooling device located in said closed circuit spaced from said first feed line so that the cooling water passes through said water cooling device when a power failure occurs.

B 544,034
SHAFT SEAL ASSEMBLY

Carl H. Geary, Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 24, 1975, Ser. No. 544,034

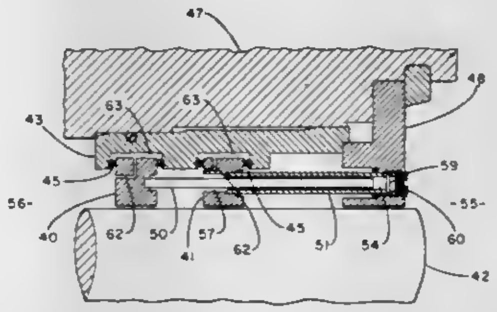
Int. Cl.² F16J *15/16, 15/44*

U.S. Cl. 277—27 **7 Claims**

References Cited

UNITED STATES PATENTS

2,956,825	10/1960	Hore et al.	277/27
3,149,846	9/1964	Verbeek	277/27
3,561,773	2/1971	Baumann	277/71
3,695,621	10/1972	Damaratowski	277/75



1. In a shaft seal assembly of the type wherein a high pressure fluid is passed between the shaft and at least one bushing encompassing the shaft, the assembly including
- a series of circumferentially spaced beams substantially aligned axially with the shaft, the beams being secured against movement at one end and supporting the bushing in coaxial alignment about the shaft at the opposite end,
- said beams having a high spring constant in the axial direction to prevent the bushing from being displaced axially by the high pressure fluid and having a relatively lower spring constant in the radial direction to permit the bushing to move radially in compliance with the shaft as the shaft is deflected, and
- adjusting means operatively associated with the beams for adjusting the axial position thereof.

B 548,719
TRANSMISSION CONTROL SYSTEM WITH IMPROVED MODULATING VALVE

Charles E. Holzinger, Peoria, and William W. Blake, Kewanee, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 10, 1975, Ser. No. 548,719

Int. Cl.² B60K *21/00*

U.S. Cl. 192—3.57 **6 Claims**

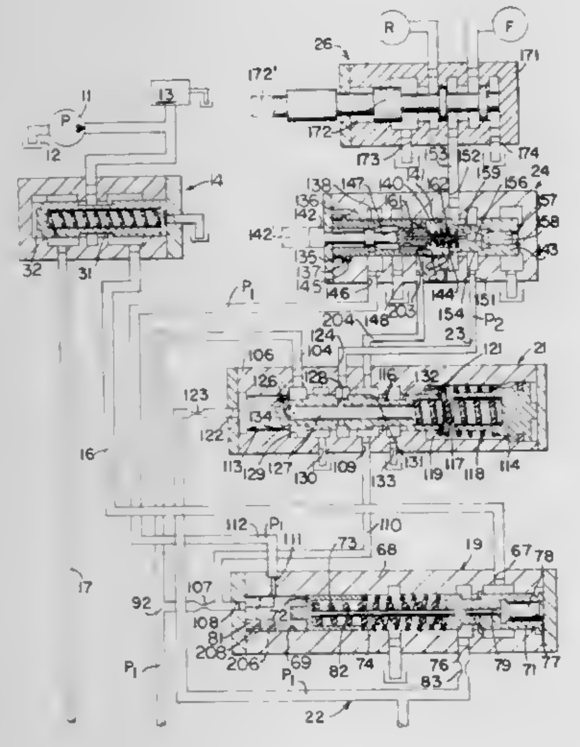
References Cited

UNITED STATES PATENTS

3,137,311	6/1964	Rohweder et al.	192/109 F
3,468,194	9/1969	Horsch et al.	192/109 F
3,882,980	5/1975	Blake	192/3.57

1. A hydraulic transmission control circuit for selectively actuating at least one of a plurality of speed ratio clutches with hydraulic fluid at a first pressure and for selectively actuating one of a plurality of directional clutches at a second differential pressure, comprising
- a fluid source,
- a speed ratio selector valve for communicating fluid at the first pressure to one of the speed ratio clutches,
- a directional selector valve for communicating fluid at the second differential pressure to one of the directional clutches,
- a differential valve in communication with the fluid source, the differential valve including means for communicating hydraulic fluid at the second differential pressure to the directional selector valve,

- a first hydraulically responsive pressure modulating valve in communication with the source and the differential valve for modulating hydraulic fluid at the first pressure, and
- a manually controlled modulating valve for communicating fluid at the second differential pressure from the differential valve to the directional selector valve, the manually controlled modulating valve including means for selectively modulating the second differential pressure into discrete operating modes in order to provide precise regulation of clutch engagement under different operating conditions, said two discrete operating modes being characterized by the selective modulating means in the manual modulating valve being operable to vary the second differential pressure at two different rates of modulation in order to selectively regulate the degree of engagement in the directional clutches,



- the manually controlled modulating valve also including first relief means in communication with the first pressure modulating valve to selectively adjust the first fluid pressure during selective modulation of the second differential pressure by the manually controlled modulating valve,
- the manually controlled modulating valve also including second relief means also in communication with the first pressure modulating valve for selectively providing relatively unrestricted communication between the first pressure modulating valve and a fluid drain in order to condition the first pressure modulating valve for establishing the first fluid pressure at a minimum level in order to facilitate subsequent modulation of both the first and second fluid pressures.

B 563,301
DEVELOPING DEVICE FOR ELECTROPHOTOGRAPHIC COPYING MACHINES

Werner Salger, Hamburg-Langenhorn, Germany, assignor to Lumoprint Zindler KG, Hamburg, Germany

Filed Mar. 31, 1975, Ser. No. 563,301

Claims priority, application Germany, Apr. 9, 1974, 2417188

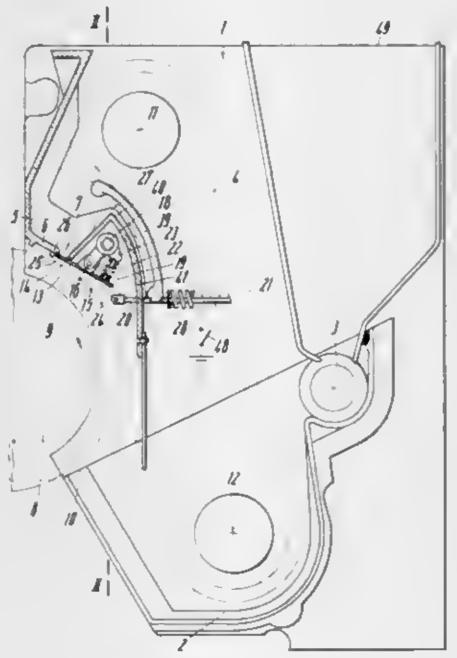
Int. Cl.² G03G *15/08*

U.S. Cl. 118—637 **9 Claims**

References Cited

UNITED STATES PATENTS

2,705,199	3/1955	Clark	118/637
3,011,474	12/1961	Ulrich	118/637
3,062,094	11/1962	Mayo	355/11
3,146,688	9/1964	Clark et al.	118/637
3,223,548	12/1965	Clark et al.	427/20



1. A developing device for electro-photographic copying machines, comprising a developing powder reservoir, a distribution hopper, a supply of developing powder in the lower region of the developing powder reservoir, said distribution hopper being positioned at a higher level than the developing powder supply, conveyor means to move through the developing powder reservoir and to carry developing powder from the supply to the distribution hopper, means defining a slot-type aperture in the distribution hopper a rotatable image transfer element below the aperture, said aperture extending over at least the axial length of said image transfer element with upper and lower longitudinal edges lying in a plane inclined at an angle to the horizontal, a plate-type shutter co-operable with the aperture and mounted for sliding movement in order selectively to close and open said aperture, control means coupled to the shutter for effecting movement thereof, support means arranged between the control means and the shutter, said support means being provided at the side of the lower longitudinal edge of the aperture, said longitudinal edge forming a guide means for the sliding shutter, and the leading edge of the shutter in the closing movement of the shutter moving in an upwards path.

B 541,464
FLUID CLUTCHES

John E. Becker, Bowmanville, Canada, assignor to Cluaran Associates Limited, Oshawa, Canada

Filed Jan. 16, 1975, Ser. No. 541,464

Int. Cl.² F16D *33/04*

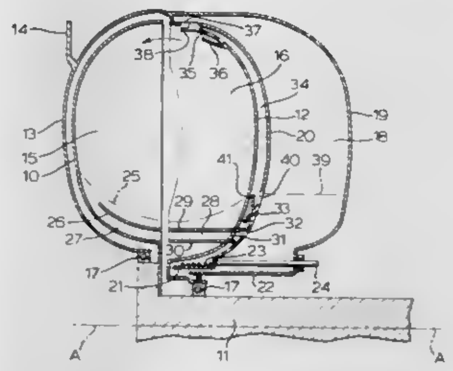
U.S. Cl. 60—349 **8 Claims**

References Cited

UNITED STATES PATENTS

2,270,545	1/1942	Neracher et al.	60/350
2,359,930	10/1944	Miller	60/350
3,237,409	3/1966	Becker	60/351

1. A fluid clutch comprising power input and power output means, a pump element and a turbine element connected respectively to the power input and power output means for rotation thereby and providing respectively cooperating pump and turbine chambers rotatable about the same axis and constituting a working chamber, a quantity of working liquid in the working chamber, each element comprising a respective annular shell and a respective set of radially-extending vortex producing vanes, the pump element comprising another annular shell axially spaced from and rotatable with the respective element shell to form a corresponding stall reservoir compartment therebetween, at least some of the vanes of the pump element being connected by a respective connecting member which is mounted for movement within the stall reservoir compartment for movement of the vanes or vane portions connected thereto into and out of vortex-producing operative cooperation with the set of turbine vanes, means connected to



the said connecting member for moving the movable pump vanes or vane portions from a clutch-engaged position to a clutch-disengaged position and vice-versa, and means for automatically feeding fluid from the working chamber upon the existence of a stall condition of the turbine element relative to the pump element.

CHEMICAL APPLICATIONS

B 54,859

THIOPHOSPHITES AND ULTRAVIOLET LIGHT STABILIZER FOR OLEFIN POLYMERS

George J. McNally, West Orange, N.J., assignor to Weston Chemical Corporation, Montvale, N.Y.

Filed July 14, 1970, Ser. No. 54,859

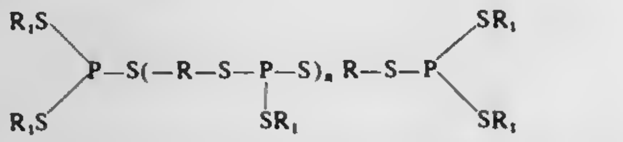
Int. Cl.^{2} C08K *5/13, 5/34, 5/49*

U.S. Cl. 260—23 H **2 Claims**

References Cited
UNITED STATES PATENTS

2,736,737	2/1956	Morris	260/928
3,016,363	1/1962	Tholstrup et al.	260/45.8
3,210,319	10/1965	Huhn et al.	260/45.8
3,239,484	3/1966	Stark	260/45.9
3,244,667	4/1966	Burgess	260/45.75
3,278,483	10/1966	Wright et al.	260/45.85
3,356,770	12/1967	Larrison	260/930
3,424,715	1/1969	Kopacki et al.	260/45.9
3,496,128	2/1970	Casey et al.	260/23
3,666,837	5/1972	Rattenbury	260/928
3,692,879	9/1972	Rattenbury et al.	260/928

1. Organic material normally susceptible to deterioration due to the effects of ultraviolet light containing a stabilizingly effective quantity of an admixture of (1) an ultraviolet light stabilizer selected from the group consisting of a benzotriazole and either nickel bis (octylphenyl) sulfide or 2,2'-thiobis-(4-t-octylphenolate) n-butylamine nickel, (2) a thiophosphite of the group consisting of



where *n* is zero or an integer, R is divalent alkylene of at least 2 carbon atoms, cycloalkylene, arylene, alkyleneoxyalkylene having 2 to 8 carbon atoms in each alkylene group, alkylenethioalkylene having 2 to 8 carbon atoms in each alkylene group, alkylene (polyoxyalkylene) having 2 to 3 carbon atoms in each alkylene group and 2 to 3 oxygen atoms, R_1 is alkyl, haloalkyl, aryl, haloaryl, alkenyl, aralkyl, haloalkenyl or cycloalkyl, said thiophosphite being present in an amount sufficient to enhance the stabilizing effect of said ultraviolet light stabilizer, (3) a metal salt stabilizer selected from the group consisting of barium, strontium, calcium, cadmium, zinc, lead, tin, magnesium, cobalt, nickel, titanium and aluminum salts of an acid selected from the group consisting of phenols, fatty acids having 6 to 18 carbon atoms, ricinoleic acid, naphthenic acid, epoxy fatty acids and aromatic carboxylic acids and (4) a phenolic antioxidant.

B 354,959

AGENTS FOR IMPROVING WET FASTNESS PROPERTIES

Hellmuth Pantke, Leichlingen, and Karl Vogel, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 27, 1973, Ser. No. 354,959

Claims priority, application Germany, Apr. 27, 1972, 2220710

Int. Cl.^{2} D06P *5/02*

U.S. Cl. 8—74 **16 Claims**

References Cited
UNITED STATES PATENTS

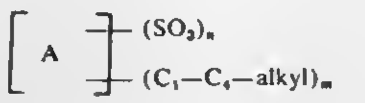
2,328,900	9/1943	Grimm	8/74 X
3,232,695	2/1966	Robin	8/165
3,764,262	10/1973	Hildebrand et al.	8/169

OTHER PUBLICATIONS

Gagliardi, American Dyestuff Reporter, Jan. 1962, pp. 31–40.

1. Agents for improving the wet fastness properties of dyeings of cellulose materials with direct dyes and of dyeings produced on synthetic polyamides with acid dyes, cationic dyes or disperse dyes from organic water immiscible solvents comprising the organic water immiscible solvent soluble adduct of *a*, *b* and *c* wherein

a is a customary wet fastness improving agent selected from the group consisting of condensation products of formaldehyde with dicyandiamide, quanidine or dicyandiamide and guanidine; polyethylene polyamines; alkylated polyethylene polyamines; condensation products of formaldehyde and hydroxydiarylsulfones; co-condensation products of dihydroxydiarylsulfones, aromatic sulfonic acids and formaldehyde; and the alkali metal or ammonium salt of the condensation product of the condensation product of aromatic sulfonic acids and formaldehyde having the formula



$$\left[\;A\;\right]\begin{matrix}—(SO_3)_n\\—(C_1—C_4—alkyl)_m\end{matrix}$$

wherein
A is diphenyl ether radical;
m is a whole number from 0 to 2; and
n is a number from 0.5 to 2;
b a surface-active amine or amine oxide which contains at least one C_{12}–C_{28}-alkyl or alkenyl radical which is directly attached or is attached via a phenyl, benzyl or —CO–NH-alkylene- bridging member to the amino or amine oxide nitrogen atom; and c an anionic surface-active agent.

B 364,797

PRECOAT FOR PERMEABILITY SEPARATION SYSTEMS

William Maxwell Conn, La Mesa, Calif., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation of Ser. No. 153,789, June 16, 1971, abandoned. This application May 29, 1973, Ser. No. 364,797

Int. Cl.^{2} B01D *13/00*

U.S. Cl. 210—23 H **13 Claims**

References Cited
UNITED STATES PATENTS

2,367,557	1/1945	Atwood	210/75 X
2,470,202	5/1949	Wickenden	210/75 X
2,600,085	6/1952	vanDyk	210/75 X
3,101,318	8/1963	Watson et al.	210/75 X
3,373,056	3/1968	Martin	210/23 X
3,462,362	8/1969	Kollsman	210/23
3,490,590	1/1970	Davies	210/23 X
3,537,988	11/1970	Marcinkowsky et al.	210/23

1. In the treatment of raw sewage containing hydrophobic and greasy materials by passage through an ultrafiltration membrane such that there will be fouling of the membrane, the method of operation to preclude fouling thereof which comprises depositing upon said membrane a mixed coating of a solid adsorbent and a solid absorbent in a quantity of about 6 to 60 grams per 1,000 square feet of membrane, and passing through said coating a feed consisting essentially of the raw sewage, prior to contact of said feed with the membrane, to remove the membrane-fouling hydrophobic and greasy materials from said raw sewage.

B 383,697

BETAINIC AZO DYESTUFFS CONTAINING COBALT IN COMPLEX UNION WITH A COLORLESS, TRIDENTATE LIGAND

Paul Lienhard, Riehen near Basel; Fabio Beffa, Basel, and Charles Soiron, Riehen near Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 57,017, June 9, 1970, abandoned, which is a division of Ser. No. 496,651, Oct. 15, 1965, abandoned. This application July 30, 1973, Ser. No. 383,697

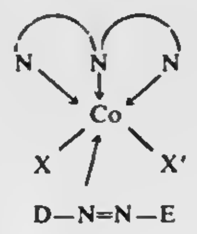
Int. Cl.^{2} C09B *45/20, 45/30;* **D06P** *3/24*

U.S. Cl. 260—147 **7 Claims**

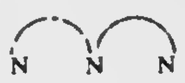
Refereoces Cited
UNITED STATES PATENTS

2,814,614	11/1957	Zickendraht	260/145 B
2,826,573	3/1958	Strobel et al.	260/147
3,030,353	4/1962	Kuster	260/147
3,051,696	8/1962	Dettwyler	260/147
3,538,073	11/1970	Mack et al.	260/150 X

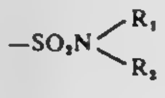
1. A betainic cobalt complex dyestuff of the formula



wherein the symbol



represents a member selected from the group consisting of diethylenetriamine, dipropylenetriamine and monoethylene-mono-propylene-triamine, said triamines being unsubstituted or N-lower alkyl-substituted,
α,β,γ-triaminopropane,
α,β,δ-triaminobutane,
α,γ-diamino-β-(aminomethyl)-propane,
N,N-bis-(β-phenylaminoethyl)-N-ethylamine,
N,N''-dibenzyldiethylenetriamine,
N,N-bis-(β-N'-piperidinoethyl)-N-ethylamine,
1-amino-2-(β-amino-ethylamino)-cyclohexane,
2,2'-diaminodicyclohexylamine,
1-amino-2-(β-amino-ethylamino)-benzene,
2,2'-diamino-diphenylamine,
2,6-(di-2'-pyridyl)-pyridine,
8-(2'-amino-phenylamino)-quinoline,
(2-pyridylmethylene-aminoethyl)-diethylamine,
1-(diethylamino)-2-(2'-pyridyl-methylene-amino)-benzene,
1-(dimethylamino)-2-(2'-pyridyl-methylene-amino)-cyclohexane,
2-(2'-pyridyl-methylene-amino-methyl)-pyridine,
8-(2'-pyridyl-methyleneamino)-quinoline,
2,6-bis-(benzyl-aminomethylene)-pyridine,
2,6-bis-(aminomethyl)-pyridine,
pyridine-2,6-dialdehyde dioxime,
pyridine-2,6-dialdehyde-dihydrazone,
2-methoxy-4,6-dihydrazino-1,3,6-triazine and
2-amino-4,6-dihydrazino-1,3,5-triazine; and
wherein
—D—N=N—E— is the divalent radical of a dyestuff selected from a benzene-azo-benzene dyestuff,
a benzene-azo-naphthalene dyestuff, a benzene-azo-(1-phenyl-5-hydroxy-pyrazole) dyestuff, a benzene-azo-(1-phenyl-5-amino-pyrazole) dyestuff, a benzene-azo-acylacetophenylamide dyestuff, a benzene-azo-benzene-azo-naphthalene dyestuff, a naphthalene-azo-naphthalene dyestuff and a naphthalene-azo-(1-phenyl-5-hydroxy-pyrazole) dyestuff, any substituents of said dyestuffs being selected from hydrogen, chlorine, brome, lower alkyl, lower alkoxy, nitro, hydroxyl, lower-alkyl-sulfonyl, phenylsulfonyl, methylphenylsulfonyl, methyphenylsulfonylamino, methylsulfonylamino, acetylamino, carbo-ethoxy-amino, a radical of the formula



$$—SO_2N\begin{matrix}R_1\\R_2\end{matrix}$$

wherein
R_1 represents hydrogen, lower alkyl, hydroxyethyl, phenyl or lower alkylphenyl and R_2 represents hydrogen, lower alkyl or hydroxyethyl; carboxylic acid-N-phenylamide and lower alkyl carbonyl, phenoxycarbonyl, phenylazo or naphthylazo; and wherein one $—SO_3^-$ group is attached to either D or E;
X is linked in ortho-position to the azo bridge to a ring carbon atom of D and represents —O—, —COO— or lower-alkylsulfonamido, and
X' is linked in ortho-position to the azo bridge to a ring carbon atom of E and represents —O—, —N—(lower alkyl)—, —N—(hydroxy-lower-alkyl), —N—(phenyl)— or —NH—, said dyestuff being capable of forming a bicyclic metal complex with cobalt;
and wherein said lower alkyl and lower alkoxy moieties have from one to five carbon atoms.

B 385,483
MONOMERIC COMPOUNDS

William R. Dunnavant, Columbus, Ohio; Edward M. Harris, Webster Groves, Mo.; Philip F. Kurz; Richard A. Markel, both of Columbus, Ohio, and Edward H. Parker, Ballwin, Mo., assignors to Wester Litho Plate & Supply Co., St. Louis, Mo.

Division of Ser. No. 173,661, Aug. 20, 1971, Pat. No. 3,799,915. This application Aug. 3, 1973, Ser. No. 385,483

Int. Cl.² C07C *101/46*

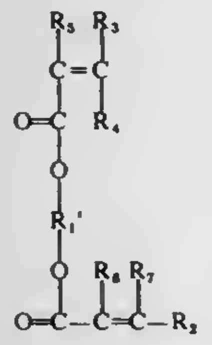
U.S. Cl. 260—471 R **11 Claims**

References Cited

OTHER PUBLICATIONS

Finar, I. L. *Organic Chemistry*, Vol. I (1931), pub. by Richard Clay & Co., Great Britian pp. 200 – 202 relied on.

1. A compound represented by the general formula:



wherein R_1' is selected from the group consisting of alkylene, haloalkylene, alkoxyalkylene, aminoalkylene, cycloalkylene, aralkylene, cycloalkylakylene and aryloxyalkylene groups, R_2 is selected from the group consisting of substituted or unsubstituted aryl groups wherein the substituents are selected from the group consisting of alkyl, methoxy, chloro, bromo and nitro, R_3, R_4 and R_5 are each selected from the group consisting of hydrogen, halogen and lower alkyl, and R_6 and R_7 are each selected from the group consisting of hydrogen, halogen, nitro, lower alkyl, phenyl, phenoxy, and lower alkoxy.

B 402,553
HIGH PURITY POLONIUM RECOVERY

Clyde H. H. Chong, Miamisburg; Calvin M. Love, Dayton; Martin D. Prisc, Bellbrook, all of Ohio, and Alexander J. Russo, Milpitas, Calif., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Oct. 1, 1973, Ser. No. 402,553

Int. Cl.² C01F *13/00*

U.S. Cl. 423—249 **4 Claims**

References Cited

UNITED STATES PATENTS

2,873,170	2/1959	Hyde et al.	423/2
2,894,817	7/1959	Karraker	423/2
3,758,663	9/1973	Kirby	423/2

1. A method for providing a radioactive heat source element comprising contacting polonium containing polonium-210 with from about 4 to about 8 normal nitric acid to form a nitric acid solution containing from about 4 to about 7 curies of polonium-210 per milliliter of solution, adding a base to said solution to adjust the pH of said solution to from about 8 to about 9pH thereby precipitating polonium hydroxide having the formula $Po(OH)_4 . xH_2O$, immediately cooling said solution and said precipitate, filtering said cooled precipitate within from about 2 to about 3 minutes in from about 10 to about 20 micron filter element, passing a heated inert gas through said filter element thereby drying said precipitate, heating said filter element to about 900°C in a vacuum of less than about 10^{-4} Torr to vaporize said polonium, and thereafter condensing said vaporized polonium in a heat source element.

B 411,471
BRASS ALLOY

Günther Rudolph, Neuberg; Erhard Schelzke, Neu-Isenburg, and Antonio Leogrande, Werdohl, all of Germany, assignors to Vereinigte Deutsche Metallwerke AG, Frankfurt am Main, Germany

Filed Oct. 31, 1973, Ser. No. 411,471

Claims priority, application Germany, Nov. 2, 1972, 2253690

Int. Cl.² C22C *9/04*

U.S. Cl. 75—156.5 **5 Claims**

References Cited

UNITED STATES PATENTS

3,158,470	11/1964	Burghoff et al.	75/157.5 X

OTHER PUBLICATIONS

Bridgeport Brass Technical Handbook, Sept. 1949, Bridgeport Brass Co., Conn., pp. 64 and 65.

Metals and Alloys, 1950, Chemical Pub. Co., N.Y., p. 51.

1. A brass alloy with improved machinability consisting essentially of 57 to 62% by weight copper, 1 to 4% by weight lead, 0.15 to 0.20% by weight magnesium, 0.15 to 0.20% by weight tin and the balance zinc.

B 414,028
HIGH STRENGTH GRAPHITE AND METHOD FOR PREPARING SAME

Lyle G. Overholser, Oak Ridge; David R. Masters, Knoxville, and John M. Napier, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Nov. 8, 1973, Ser. No. 414,028

Int. Cl.² C01B *31/04*

U.S. Cl. 423—448 **7 Claims**

References Cited

UNITED STATES PATENTS

3,174,895	3/1965	Gibson et al.	264/29
3,407,038	10/1965	Beasley	423/448
3,552,533	1/1971	Nitz et al.	423/448
3,718,720	2/1973	Lambdin et al.	423/448
3,720,575	3/1973	Cowlard	264/29
3,728,423	4/1973	Shaffer	264/29
3,790,393	2/1974	Cowland et al.	264/29

FOREIGN PATENTS OR APPLICATIONS

1,569,267	10/1970	Germany	423/448

5. A precursor composition for the manufacture of graphite products in which mixtures of particulate carbonizable filler materials and carbonizable organic binders are formed into the desired article configuration and heated in an inert atmosphere to graphitization temperatures, said graphite precursor composition comprising a particulate filler of a thermoplastic material coked at a temperature in the range of 400° to 1000°C. and of a particle size less than 100 mesh, a thermoplastic binder in a size range of less than 70 mesh and in a concentration of about 18 to 25 weight per cent of the mixture, and green organic carbonizable fibers in a maximum concentration of not more than 2 weight per cent of the particulate filler.

B 423,365
STORAGE-STABLE EPOXIDE MOULDING COMPOSITIONS

Bruno Schreiber, Basel, and Hermann Diethelm, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 7, 1973, Ser. No. 423,365

Claims priority, application Switzerland, Dec. 14, 1972, 18262/72

Int. Cl.² C08L *63/00, 63/06*

U.S. Cl. 260—37 EP **5 Claims**

References Cited

UNITED STATES PATENTS

3,409,591	11/1968	Landuo et al.	260/2 N
3,459,713	8/1969	Saran et al.	260/77.5 NC
3,505,262	4/1970	Freyhold et al.	260/2 EP
3,538,184	11/1970	Heer	260/830 TW
3,625,918	12/1971	Heer et al.	260/830 TW
3,704,281	11/1972	Saran et al.	260/77.5 NC
3,810,785	5/1974	Dominic et al.	260/2 EC X

FOREIGN PATENTS OR APPLICATIONS

6,714,294	5/1968	Netherlands	260/77.5 NC

OTHER PUBLICATIONS

Chemical Abstracts, por. 72:32700f. (Nov. 1969).

1. Storage-stable, rapidly curing epoxide moulding compositions, characterised in that they contain

a. adducts, containing epoxide groups, from triglycidyl isocyanurate and cyclohexylamine or alkyl substituted cyclohexylamine,

b. adducts, containing amino groups, from cycloaliphatic or heterocyclic diamines and diglycidyl compounds, as curing agents and

c. inorganic or organic, pulverulent or fibrous fillers with the resin and curing agent pre-adducts softening between 45° and 120°C, melting 5° – 30°C above the softening point and being present in the moulding compositions predominantly in the form of discrete particles wherein components (a) and (b) are present in about equivalent amounts.

B 426,802
9-(4-PIPERIDYLIDENE)THIOXANTHENES

Anthon Ebnöther, Arlesheim, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 308,300, Nov. 20, 1972, abandoned. This application Dec. 20, 1973, Ser. No. 426,802

Int. Cl.² C07D *335/20*

U.S. Cl. 260—293.57 **21 Claims**

References Cited

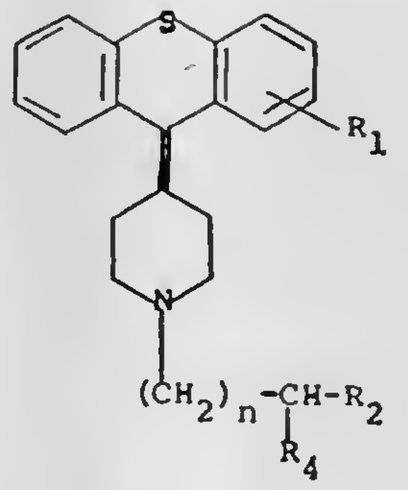
UNITED STATES PATENTS

3,055,903	9/1962	Renz et al.	260/293.4
3,275,640	9/1966	Engelhardt et al.	260/293.4
3,408,355	10/1968	Renz et al.	260/293.4
3,470,188	9/1969	Kaiser et al.	260/293.4

FOREIGN PATENTS OR APPLICATIONS

518,974	3/1972	Switzerland

1. A compound of the formula:



wherein

n is 0 or an integer from 1 to 3,

R_1 is hydrogen, chlorine, bromine, fluorine, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 3 carbon atoms or alkylthio of 1 to 3 carbon atoms,

R_2 is cyano, a $—COR_3$ or $—COOR_3$ group, wherein R_3 is alkyl of 1 to 4 carbon atoms, and

R_4 is hydrogen or alkyl of 1 to 4 carbon atoms,

in free base form, or in pharmaceutically acceptable acid addition salt form.

B 430,157
PROCESS FOR MANUFACTURING AND SEPARATING FROM PETROLEUM CUTS AROMATIC HYDROCARBONS OF HIGH PURITY

Bernard Juguin; Georges Cohen, both of Rueil-Malmaison, and Paul Mikitenko, Chatou, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jan. 2, 1974, Ser. No. 430,157

Claims priority, application France, Jan. 10, 1973, 73.00806

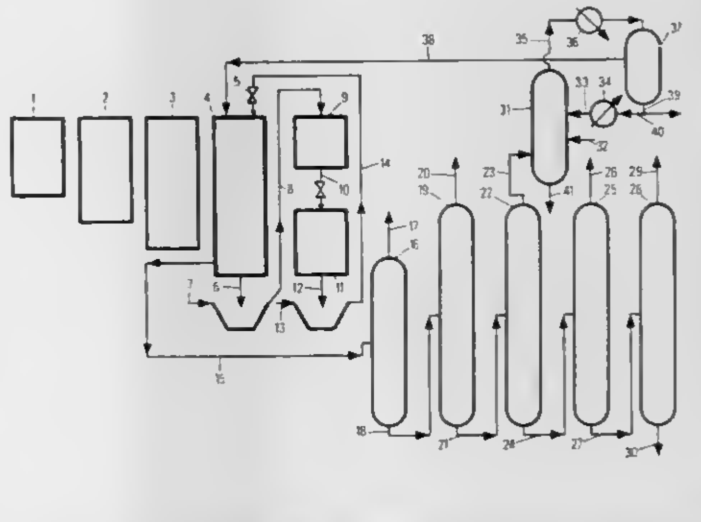
Int. Cl.² C07C *5/36*

U.S. Cl. 260—668 D **7 Claims**

References Cited

UNITED STATES PATENTS

2,834,822	5/1958	Worthington et al.	208/313
2,877,173	3/1959	Thorne et al.	208/96
2,969,317	1/1961	Hess	208/96
3,551,327	12/1970	Kelly et al.	208/313



1. A process for producing aromatic hydrocarbons in which a feed charge containing essentially paraffinic and naphthenic hydrocarbons and aromatic hydrocarbons is subjected to a treatment with hydrogen in at least two reaction zones in the presence of a catalyst, the inlet temperature of at least the last reaction zone traversed by the charge being from 570° to

600°C, the pressure from 1 to 60 kg/cm², the hourly flow rate by volume being from 0.1 to 10 times the catalyst volume and the molar ratio of the hydrogen to the hydrocarbons being from about 0.5 to 20, in which process the obtained products are made free from normally gaseous products and then subjected to at least one conventional fractionation so as to obtain a fraction containing essentially hydrocarbons having 4 and 5 carbon atoms per molecule, fractions or mixtures of fractions containing essentially at least one aromatic hydrocarbon selected from toluene, ethyl-benzene and xylenes, and aromatic hydrocarbons containing at least 9 carbon atoms per molecule, and a cut containing essentially, in addition to saturated hydrocarbons consisting essentially of 6 and/or 7 carbon atoms per molecule, a fraction selected from the benzene, toluene and benzene-toluene fractions, said process further comprising subjecting, in an extractive distillation zone, said cut to an extractive distillation in the presence of a suitable extraction solvent, recovering at the bottom of the extractive distillation column a mixture of the extraction solvent and at least one aromatic hydrocarbon, separating said aromatic hydrocarbon from the extraction solvent and recovering, at the top of the extractive distillation zone, a new cut containing non-aromatic products, said process further comprises subjecting said new cut containing the non-aromatic hydrocarbons consisting essentially of saturated hydrocarbons having 6 and/or 7 carbon atoms per molecule to a condensation, removing therefrom at least the major part of the extraction solvent contained therein and recycling at least one portion of the so-purified cut containing the said non-aromatic hydrocarbons towards the last one of the reaction zones, wherein the inlet temperature is comprised between 570° and 600°C, the catalyst of at least said reaction zone, to which said so-purified cut is recycled, containing at least two metals from group VI B, VII B or VIII of the periodic classification of elements, the concentration of each metal being comprised between 0.01 and 5% by weight.

B 438,484

PREPARATION OF KETONES

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 212,753, Dec. 27, 1971, abandoned. This application Jan. 31, 1974, Ser. No. 438,484

Int. Cl.² C07C *45/02*

U.S. Cl. 260—586 C **10 Claims**

References Cited

UNITED STATES PATENTS

2,495,286	1/1950	Brubaker	260/597 T
2,562,393	7/1951	Reppe	260/586 C
3,790,643	2/1974	Anderson et al.	260/586 R

1. A process for the preparation of a ketone which comprises reacting a hydrocarbon selected from the group consisting of saturated and alkylaromatic hydrocarbons with an olefinic hydrocarbon in the presence of carbon monoxide, anhydrous or aqueous hydrogen chloride and an organic peroxy free radical catalyst at a temperature at least as high as that necessary to generate free radicals, and recovering the resultant ketone.

B 451,308

PROCESS FOR PREPARING FILAMENTS, FIBERS AND SHEETS OF AROMATIC POLYAMIDES

Peter Eckardt, Hofheim, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 14, 1974, Ser. No. 451,308

Claims priority, application Germany, Mar. 17, 1973, 2313308

Int. Cl.² C08G *69/44*

U.S. Cl. 260—78 S **3 Claims**

References Cited

UNITED STATES PATENTS

3,063,966	11/1962	Kwoleck et al.	260/78
3,079,219	2/1963	King	264/184
3,300,450	1/1967	Clay	264/344
3,642,706	2/1972	Morgan	264/184
3,767,756	10/1973	Blades	264/184
3,775,361	11/1973	Jensen	264/184
3,796,693	7/1974	Morgan et al.	264/184
3,819,587	6/1974	Kwoleck	260/30.2

FOREIGN PATENTS OR APPLICATIONS

1,420,681	10/1968	Germany	260/78

1. In a process for the preparation of filaments, fibers and sheets of essentially aromatic polyamides comprising the steps of pre-condensing aromatic diamines and dicarboxylic acid halides to a conversion of from 80 to 98% in an amide-type solvent, neutralizing with ammonia the hydrogen halide formed in said pre-condensation step to form an ammonium halide of which a portion is soluble in said amide-type solvent, separating the insoluble portion of the ammonium halide formed in said neutralization step, adding further quantities of dicarboxylic acid halide to the reaction mixture and post-condensing them to complete the condensation reaction, neutralizing the hydrogen halide formed in said post-condensation step and spinning the resulting solution; the improvement which comprises adding to the reaction solution after separation of the insoluble portion of said ammonium halide and prior to said post-condensation step an inorganic base, the halide of which is soluble in said amide-type solvent, causing said added inorganic base to react with the dissolved portion of said ammonium halide to release ammonia, removing the ammonia thus set free and thereafter carrying out said post-condensation step until the desired degree of polymerization is obtained.

B 452,938

RESINS FOR SEPARATING HEAVY METALS CONSISTING OF THIOUREA-GROUP-CONTAINING MACROPOROUS VINYL AROMATIC CROSSLINKED MATRIXES

Herbert Corte, Opladen; Harold Heller, Cologne; Michael Lange, and Otto Netz, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Mar. 20, 1974, Ser. No. 452,938

Claims priority, application Germany, Mar. 24, 1973, 2314756; Dec. 22, 1973, 2364368

Int. Cl.² C08F *27/02*

U.S. Cl. 75—101 BE **16 Claims**

References Cited

UNITED STATES PATENTS

2,890,180	6/1959	Cerny et al.	260/79.5 NV
3,847,481	11/1974	Motani et al.	260/2.2 R
3,892,688	7/1975	Motani et al.	260/2.2 R
3,892,689	7/1975	Motani et al.	260/2.2 R

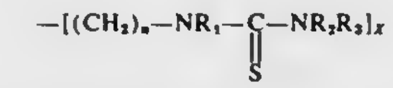
FOREIGN PATENTS OR APPLICATIONS

2,312,233	4/1973	Germany

1. A thiourea group containing synthetic resin comprising a crosslinked macroporous vinyl aromatic matrix polymer of monovinyl and polyvinyl monomers, said polymer comprising

from 50 to 99% by weight of polymerized monovinyl monomer and from 1 to 50% by weight of polymerized polyvinyl monomer and having a pore volume of from 20 to 80% by volume, a specific surface of 10 to 500 m²/g and having at least 10% of its aromatic nuclei substituted by from 1 to 3 functional groups of the formulae

(I)

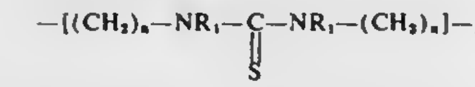


$$-[(CH_2)_n-NR_1-\underset{\underset{S}{\|}}{C}-NR_2R_3]_X\,,$$

(II) $-[(CH_2)_n-NR_1H]_Y$

and

(III)



$$-[(CH_2)_n-NR_1-\underset{\underset{S}{\|}}{C}-NR_1-(CH_2)_n]-_Z$$

wherein X, Y and Z are separately 0, 1, 2 or 3; *n* is 0, 1 or 2; R_1, R_2 and R_3 are separately hydrogen, alkyl having 1 to 6 carbon atoms, alkenyl having 2 to 6 carbon atoms, cycloalkyl having 5 to 6 carbon atoms, phenyl, naphthyl, benzyl or one of said phenyl, naphthyl or benzyl radicals substituted by alkyl or alkoxy having 1 to 3 carbon atoms or halogen; the proportion of (I) being from 1 to 95%, the proportion of (II) being from 98 to 4% and the proportion of (III) being from 1 to 95% when X, Y and Z are other than 0 and the proportion of (I) being from 5 to 100% and the proportion of (II) being from 95 to 0% when Z is O, said proportional percentages being based on the sum of the total functional groups.

16. A process for absorbing mercury, gold, silver and platinum compounds or mixtures thereof from solution which comprises employing the synthetic resin of claim 1.

B 457,547

THERMOGRAPHIC RECORDING PROCESS

Urbain Leopold Laridon, Wilrijk; Albert Lucien Poot, Kontich, and Jozef Frans Willems, Wilrijk, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Apr. 3, 1974, Ser. No. 457,547

Claims priority, application United Kingdom, Apr. 4, 1973, 16166/73; June 19, 1973, 29073/73

Int. Cl.² B41M *5/12, 5/18*

U.S. Cl. 427—145 **11 Claims**

References Cited

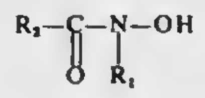
UNITED STATES PATENTS

2,129,242	9/1938	Sheppard et al.	117/36.8
2,663,657	12/1953	Miller et al.	117/36.8
3,108,896	10/1963	Owen	117/36.8
3,819,382	6/1974	Konig et al.	96/114.1
3,839,041	10/1974	Hiller	96/114.1 X

FOREIGN PATENTS OR APPLICATIONS

1,127,344	4/1962	Germany
1,129,151	5/1962	Germany

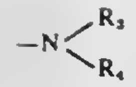
1. A recording process, which comprises exposing to a heat pattern a support carrying an organic reducing compound corresponding to one of the following general formulae:



$$R_2-\underset{\underset{O}{\|}}{C}-\underset{\underset{R_1}{|}}{N}-OH \qquad (I)$$

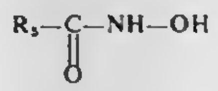
wherein:

R_1 represents hydrogen, an aliphatic group containing up to about four carbon atoms; and R_2 represents an alkoxy group containing up to 18 carbon atoms, an aryloxy group, an amino group of the formula



$$-N\left\langle\begin{matrix}R_3\\R_4\end{matrix}\right.$$

in which R_2 and R_4 (same or different) represent hydrogen, an aliphatic group or an aromatic group, or R_3 and R_4 represent together the necessary atoms to close a 5- or 6-membered heterocyclic nitrogen containing nucleus; and



$$R_5-\underset{\underset{O}{\|}}{C}-NH-OH \qquad (II)$$

wherein:

R_5 represents an aliphatic group containing up to 18 carbon atoms, an aromatic group or a 5- or 6-membered heterocyclic group; and a reducible noble metal salt of an aliphatic carboxylic acid, said organic reducing compound being present in an effective amount to reduce said noble metal salt and said heat pattern having a temperature of at least about 60°C and sufficient to initiate said reduction.

B 471,116

PREPARATION OF N-CHLOROFORMYL-CARBAMIC ACID AMIDES AND ESTERS

Artur Botta, Krefeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 416,569, Nov. 16, 1973. This application May 17, 1974, Ser. No. 471,116

Claims priority, application Germany, Nov. 22, 1972, 2257344

Int. Cl.² C07C *127/19*

U.S. Cl. 260—544 C **2 Claims**

References Cited

UNITED STATES PATENTS

3,832,389	8/1974	Koenig et al.	260/544 C

FOREIGN PATENTS OR APPLICATIONS

6,910,960	1/1971	Netherlands	260/544 C
2,008,116	9/1971	Germany	260/544 C

OTHER PUBLICATIONS

Helfert, et al., Angew. Chem. Internat. Edit., Vol. 9, (1970), 372–373.

1. The compound N-chloroformyl - N-phenyl-N'-(β-chloroethyl)-N'-methylurea.

B 472,241

HYDROFORMYLATION PROCESS

Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed May 22, 1974, Ser. No. 472,241

Int. Cl.² C07C *45/08, 29/02*

U.S. Cl. 260—604 HF **13 Claims**

References Cited

UNITED STATES PATENTS

3,511,880	5/1970	Booth	260/604 HF
3,555,098	1/1971	Olivier et al.	260/604 HF
3,641,076	2/1972	Booth	260/604 HF

1. In a method for the hydroformylation of an unsaturated compound which comprises reacting a C_1 to C_{15} alkene with carbon monoxide and hydrogen in the presence of a catalyst comprising cobalt hydrocarbonyl wherein the hydrocarbonyl contains from about 1 to about 20 carbon atoms or a complex between cobalt, carbon monoxide and a tertiary organo phosphine wherein the number of carbons in the tertiary organo phosphine group does not exceed 30 at a temperature in the range of from about 75°C to about 300°C, and a pressure of

from about 1 atmosphere to about 500 atmospheres, and recovering the resultant hydroformylation product, the improvement which consists in effecting the hydroformylation in the presence of a promoter comprising an ester of carbonic acid selected from the group consisting of ethylene carbonate, propylene carbonate, diphenyl carbonate, dialkyl carbonate wherein the alkyl groups contain from 2 to 10 carbon atoms and phenyl alkyl carbonate wherein the alkyl group contains 2 to 10 carbon atoms.

B 461,184

FIRE RETARDANT THERMOPLASTIC POLYMER COMPOSITIONS

Paul Kraft, Spring Valley, and Siegfried Altscher, Monsey, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 308,881, Nov. 22, 1972, Pat. No. 3,819,770, which is a division of Ser. No. 49,204, June 23, 1970, Pat. No. 3,725,509. This application Apr. 15, 1974, Ser. No. 461,184

Int. Cl.^{2} C08L *51/00, 53/00*

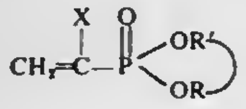
U.S. Cl. 260—876 R **8 Claims**

References Cited

UNITED STATES PATENTS

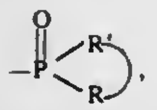
3,194,795	7/1965	Friedman	260/45.7 P
3,227,696	1/1966	Flowers et al.	260/85.7
3,255,276	6/1966	Winter et al.	260/897
3,489,706	1/1970	Mikofalvy	260/29.6 MP
3,544,509	12/1970	Carroll et al.	260/45.7 P
3,819,770	6/1974	Kraft et al.	260/898

1. A fire retardant, thermoplastic polymer composition, comprising an intimate admixture of: (a) an acrylonitrile-butadiene-styrene resin and (b) a concentration effective to provide fire retardancy of a copolymer of: (1) at least one halogen containing, ethylenically unsaturated monomer selected from the group consisting of vinyl halides, vinylidene halides, chlorinated syrenes, halogenated C_1–C_{12} alkyl acrylates and methacrylates and halo-substituted nitriles of ethylenically unsaturated carboxylic acids and (2) from about 2.5 to 99%, by weight, of at least one bis(hydrocarbyl) vinylphosphonate having the structure:



$$CH_2{=}\overset{X}{\overset{|}{C}}-\overset{O}{\overset{\|}{P}}\begin{matrix}OR'\\OR\end{matrix}$$

wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, C_1–C_{18} alkyl and



$$-\overset{O}{\overset{\|}{P}}\begin{matrix}R'\\R\end{matrix},$$

wherein R and R′ are hydrocarbyl and substituted hydrocarbyl groups which can be the same, different or conjoint.

B 478,739

PAPERMAKING MACHINE HAVING A SUCTION ZONE FREE OF WIRE SUPPORTS

Christian Schiel, Heidenheim-Schnaitheim, Germany, assignor to J. M. Voith, GmbH, Heidenheim (Brenz), Germany

Filed June 12, 1974, Ser. No. 478,739

Claims priority, application Germany, June 20, 1973, 2331313

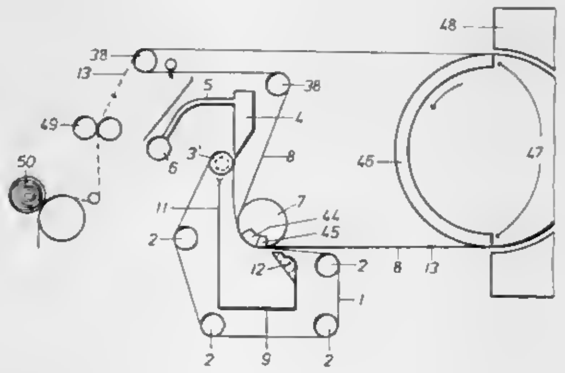
Int. Cl.^{2} D21F *1/52, 9/02*

U.S. Cl. 162—290 **11 Claims**

References Cited

UNITED STATES PATENTS

2,881,671	4/1959	Thomas	162/301
3,079,990	3/1963	Taylor et al.	162/350
3,441,476	4/1969	Schiel	162/306
3,565,757	2/1971	Jordansson	162/301
3,694,311	9/1972	Skeppstedt	162/290
3,726,758	4/1973	Parker et al.	162/203 X



1. A papermaking machine having an endless machine wire and a breast roll about which the wire is entrained and a head box for supplying suspension to the wire in the region of the breast roll; an endless belt and a curved guide means both spaced from the breast roll and about which guide means both of said wire and belt are entrained in engagement with opposite sides of the sheet formed on said wire, said machine having means defining a formation zone between said breast roll and curved guide means wherein water drains through the wire from the suspension supplied to the wire, said formation zone on the side of the wire opposite the suspension side being free of wire supporting members which create pressure pulses in the suspension, said means defining the formation zone including suction box means beneath the wire opposite the suspension side of the wire and extending from the region of said breast roll at least to the region of said guide means, said suction box means including boundary walls at the ends and the sides of the formation zone, at least the side boundary walls terminating laterally at the side edges of the wire and being spaced a short distance downwardly from the wire.

B 479,175

PROCESS FOR THE PRODUCTION OF A DISPERSION OF CONDENSATION POLYMER PARTICLES CONTAINING A MODIFYING AGENT

Peter Francis Nicks, Maidenhead; Peter George Osborn, Bourne End; Morice William Thompson, Maidenhead, and Patricia Lesley James, Kingswinsford, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 13, 1974, Ser. No. 479,175

Claims priority, application United Kingdom, June 18, 1973, 28838/73

Int. Cl.^{2} C08J *3/02, 3/20;* **C08K** *5/01, 5/02*

U.S. Cl. 260—33.6 R **12 Claims**

References Cited

UNITED STATES PATENTS

3,007,891	11/1961	Gerstenberg et al.	260/40 P
3,007,892	11/1961	Gruschke et al.	260/40 P
3,372,138	3/1968	Bowman et al.	260/40 P
3,383,352	5/1968	Duell et al.	260/33.6 R
3,433,753	3/1969	Farkas et al.	260/33.6 R
3,505,268	4/1970	Backhouse et al.	260/34.2
3,532,663	10/1970	Nicks et al.	260/34.2
3,759,864	9/1973	Nicks	260/40 R
3,879,335	4/1975	Storck et al.	260/34.2

1. A process for the production of a dispersion of condensation polymer particles in a hydrocarbon or chlorinated hydrocarbon liquid medium in which the polymer is insoluble, wherein the disperse particles of polymer are of a size from 0.1μ to 100μ and incorporate at least one modifying agent for the polymer, the process comprising heating in the said liquid medium at polymerisation temperature an appropriate condensation polymer-forming reactant or reactants, the reactant or at least one of the reactants being present as a liquid disperse phase in an emulsion of which the continuous phase is constituted by the said liquid medium and which is produced with the aid of from 1 to 10 percent by weight, based on the disperse phase, of an emulsifying agent which is a polymeric material containing in its molecule at least one chain-like component of a type which is soluble and non-self-associated in the liquid of the disperse phase and at least one chain-like component of another type which is soluble and non-self-associated in the liquid of the continuous phase, the average molecular weight of the individual components being at least 1,000, the total molecular weight of the individual components of each type being at least 3,000 or at least $n \times 1{,}000$ where n is the number of the individual components of the other type, and the ratio of the total weights of the individual components of the two types being from 3:1 to 1:3, in addition one of the chain-like components of the emulsifying agent which is soluble in a disperse phase being also capable of associating with the polymer produced, dispersing in the said liquid phase of the emulsion prior to completion of the polymer-forming condensation reaction the modifying agent or agents and then completing the polymer-forming reaction.

B 479,242

CERAMIC BINDER FOR POLYCONDUCTOR POWDERS

David Kahn, and Raymond James Geckle, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 14, 1974, Ser. No. 479,242

Int. Cl.^{2} H01B *1/08*

U.S. Cl. 252—500 **3 Claims**

References Cited

UNITED STATES PATENTS

3,520,831	7/1970	Trap	252/500 X

FOREIGN PATENTS OR APPLICATIONS

744,947	8/1954	United Kingdom

OTHER PUBLICATIONS

Chemical Abstracts; Vol. 72, 16664s. "Semiconducting Glass Ceramics."

1. As an article of manufacture, a vanadium dioxide or doped vanadium dioxide in a ratio of 5 to 50 percent, and as a binder therewith, vanadium pentoxide and phosphorus pentoxide in admixture from 85% to about 50 percent of vanadium pentoxide on a mole basis, reminder phosphorus pentoxide, said binder intimately and strongly adhering to vanadium dioxide and said binder having voltage threshold for switching which extrapolated to 0 voltage is at approximately 68°C.

B 484,067

AMINO-SUBSTITUTED NITROIMIDAZOLYL-METHYLENEAMINOIMIDAZOLIDINONES

Clemens Rufer, and Hans-Joachim Kessler, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed June 28, 1974, Ser. No. 484,067

Claims priority, application Germany, July 7, 1973, 2335144

Int. Cl.^{2} C07D *401/12, 401/14*

U.S. Cl. 260—240 A **8 Claims**

References Cited

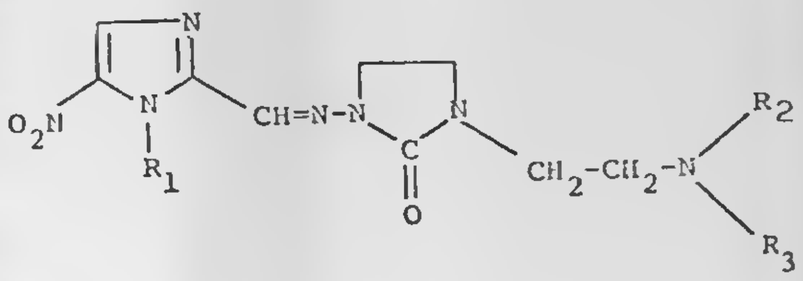
UNITED STATES PATENTS

3,752,809	8/1973	Rufer et al.	260/240 A
3,832,352	8/1974	Ilvespaa	423/273

OTHER PUBLICATIONS

Snyder et al., J. Med. Chem. 13 (1970), No. 4, p. 756–759.

1. An amino-substituted nitroimidazolylmethylene-aminoimidazolidinone of the formula



wherein R_1 is alkyl of 1–4 carbon atoms and $-NR_2R_3$ is dialkylamino wherein alkyl is of 1 to 4 carbon atoms, pyrrolidino, piperidino, morpholino or N-methylpiperazino, or a physiologically acceptable acid addition thereof.

B 485,051

PRODUCTION OF PYROMELLITIC DIANHYDRIDE

Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 1, 1974, Ser. No. 485,051

Int. Cl.^{2} C07D *307/89*

U.S. Cl. 260—346.4 **10 Claims**

References Cited

UNITED STATES PATENTS

3,723,516	3/1973	Muller et al.	260/346.4 X

FOREIGN PATENTS OR APPLICATIONS

1,068,649	5/1967	United Kingdom

1. A process for the preparation of pyromellitic dianhydride which comprises

a. treating pseudocumene with propylene, said propylene being present in a stoichiometric excess, at a temperature of from about 0° to about 150°C and a pressure of from about 1 atmosphere to about 100 atmospheres in the presence of a catalyst comprising a Lewis acid, a mineral acid or a zero-valent molybdenum-carbon monoxide complex to product 2,4,5-trimethylcumene and diisopropyl-substituted pseudocumenes;

b. treating the resultant 2,4,5-trimethylcumene and diisopropyl-substituted pseudocumenes with an oxygen-containing gas in the presence of a catalyst comprising a vanadium-containing compound dispersed on an inorganic oxide support at a temperature of from about 100° to about 500°C and a pressure of from about 1 atmosphere to about 100 atmospheres;

c. decarboxylating the polycarboxylated treatment product at a temperature of from about 450° to about 600°C at atmospheric pressure or a temperature of from about 270°C to about 400°C at subambient pressures to produce pyromellitic dianhydride; and

d. recovering the resultant pyromellitic dianhydride.

B 485,060

DIACETAL DERIVATIVES OF POLYUNSATURATED FATTY ESTERS AS PRIMARY PLASTICIZERS FOR POLYVINYLCHLORIDE

Richard A. Awl, East Peoria, and Everett H. Pryde, Peoria, both of Ill., assignors to The United Sates of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed July 1, 1974, Ser. No. 485,060

Int. Cl.^{2} C08K *5/10*

U.S. Cl. 260—30.4 R **10 Claims**

References Cited

UNITED STATES PATENTS

3,787,459	1/1974	Frankel	260/410.9 R

OTHER PUBLICATIONS

R. A. Awl, "Acetal Derivatives of Methyl 9(10) Formylstearate: Plasticizers for PVC", J. Amer. Oil Soc. 49(4), pp. 222–228, 1972.

4. In a plasticized poly(vinyl chloride) composition an improvement comprising a plasticizing amount of a primary plasticizer selected from the group consisting of methyl di(-dimethyl acetal) stearate, methyl tri(dimethyl acetal) stearate, and mixtures of the same.

B 489,331

STORAGE-STABLE, QUICK-CURING EPOXIDE RESIN MOULDING MATERIALS

Bruno Schreiber, Basel; Wolfgang Seiz, Pfeffingen, and Ewald Forster, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 257,799, May 30, 1972, abandoned. This application July 17, 1974, Ser. No. 489,331

Claims priority, application Switzerland, June 25, 1971, 9351/71

Int. Cl.^{2} C08L *91/00*

U.S. Cl. 260—28 P **14 Claims**

References Cited

UNITED STATES PATENTS

3,288,747	11/1966	Sussman	260/37 EP
3,409,591	11/1968	Landua et al.	260/47 EN
3,454,421	7/1969	Westbrook	260/47 EN X
3,533,985	10/1970	Lantz et al.	260/37 EP

OTHER PUBLICATIONS

Lee et al.; Handbook of Epoxy Resins; McGraw-Hill Book Co.; 1967; pp. 8–15.

1. Storage-stable, one package quick-curing resin moulding materials consisting essentially of:

a. epoxide resin consisting essentially of an adduct containing free epoxide groups and formed from a low molecular weight epoxide resin and a polyamine,

b. pre-adducts containing free amino groups and formed from polyamines containing aromatic groups and a diepoxide, as curing agents, wherein the ratio of the number of the reactive hydrogen atoms of the polyamine on the amine nitrogen atoms to that of the epoxide groups of the epoxide is in the range of 3:1 to 5:1, and

c. mineral or organic pulverulent or fibrous fillers, with the epoxide resins and the curing agents softening between 45° and 120°C, and having a melting point higher by 5° to 30°C than the softening point, and the epoxide resins and curing agents being present in the moulding materials predominantly as discrete particles.

B 491,673

TREATMENT OF WASTE PAPER, ESPECIALLY TO EFFECT THE RECOVERY OF CLEAN FIBERS THEREFROM

Heinz Lausch, Heidenheim (Brenz), Germany, assignor to J. M. Voith, GmbH, Heidenheim (Brenz), Germany

Filed July 25, 1974, Ser. No. 491,673

Claims priority, application Germany, Aug. 4, 1973, 2339591

Int. Cl.^{2} D21C *5/02;* D21F *1/66*

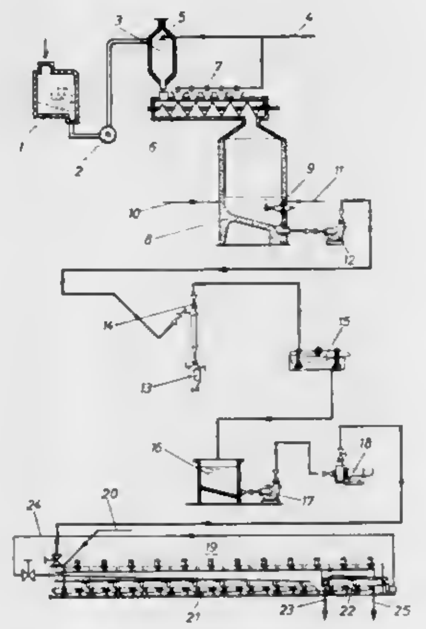
U.S. Cl. 162—5 **20 Claims**

References Cited

UNITED STATES PATENTS

2,005,742	6/1935	Hines	162/8 X
2,083,884	6/1937	Wells	162/5
3,245,868	4/1966	Espenmiller et al.	162/191 X
3,248,277	4/1966	Gartner	162/5
3,440,134	4/1969	Murphy	162/8
3,441,130	4/1969	Sisson et al.	162/55 X

1. A method of treating waste paper, especially for recovery of the fiber therefrom, which comprises; shredding the paper, conveying the shredded paper to a reaction zone while simultaneously admixing a treatment agent with the shredded paper up to about 7½ parts by weight of the agent to one part by weight of shredded paper, retaining the shredded paper treatment agent mixture in said reaction zone in the absence of the application of pressure and any significant increase in temperature for digestion of the shredded paper thereby to form a material in the form of a fibrous suspension, adding water to the said material prior to removal thereof from the reaction zone, cleaning and deflaking the diluted material, then subjecting the cleaned diluted material to flotation to effect at least partial separation of the fiber fraction thereof from the liquid fraction, and recovering at least said fiber fraction for reuse.



B 494,440

ABSORBENT ARTICLES MADE FROM CARBOXYLIC POLYELECTROLYTE SOLUTIONS CONTAINING BIS-OXAZOLINE CROSSLINKER AND METHODS FOR THEIR PREPARATION

James R. Gross, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 5, 1974, Ser. No. 494,440

Int. Cl.^{2} C08F *20/06*

U.S. Cl. 260—29.6 N **13 Claims**

References Cited

UNITED STATES PATENTS

3,669,103	6/1972	Harper et al.	128/156
3,755,237	8/1973	Isaacs	260/29.6 TA
3,812,070	5/1974	Kelley	260/29.6 TA

FOREIGN PATENTS OR APPLICATIONS

2,012,809	10/1971	Germany

1. A solution useful to form water swellable articles of a carboxylic synthetic polyelectrolyte which comprises

1. a solvent consisting of water, or a mixture thereof with lower alcohols,
2. about 5 to about 60% by weight based on the amount of solvent of a carboxylic polyelectrolyte or mixtures thereof having free carboxylic acid groups, and
3. 0.05 to 5.0% by weight based on the polyelectrolyte of a bis-oxazoline or bis-imino-oxazolidino crosslinking agent reactive with carboxylic acid groups.

B 494,450

ABSORBENT ARTICLES MADE FROM LATEXES OF CARBOXYLIC SYNTHETIC POLYELECTROLYTE CONTAINING N-SUBSTITUTED ACRYLAMIDE CROSSLINKING AGENT

James Richard Gross, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 5, 1974, Ser. No. 494,450

Int. Cl.^{2} C08L *25/08*

U.S. Cl. 260—29.6 TA **4 Claims**

References Cited

UNITED STATES PATENTS

3,860,549	1/1975	Sekmakos	260/29.6 TA

1. A solution useful to form water swellable articles of a carboxylic synthetic polyelectrolyte upon curing which comprises

1. a solvent selected from the group consisting of water, lower alcohols and mixtures thereof,
2. about 5 to about 60 percent by weight based on (1) of a crosslinkable carboxylic copolymer which contains in the copolymer
   A. about 25 to about 98 percent by weight based on the total weight of the copolymer of an alkali metal salt of an olefinically unsaturated monocarboxylic acid;
   B. about 2 to about 50 percent by weight of an olefinically unsaturated monocarboxylic acid;
   C. about 25 to about 60 percent by weight of an alkyl ester of an olefinically unsaturated monocarboxylic acid and
   D. about 0.3 to about 5.0 percent by weight of crosslinking units of an N-substituted acrylamide or methacrylamide wherein the substituent group is an hydroxy methyl or an alkoxy methylene group having 1–8 carbons.

B 494,944

EFFLUENT FRACTIONATION IN SIMULATED MOVING-BED ADSORPTION PROCESSES

Clarence George Gerhold, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 5, 1974, Ser. No. 494,944

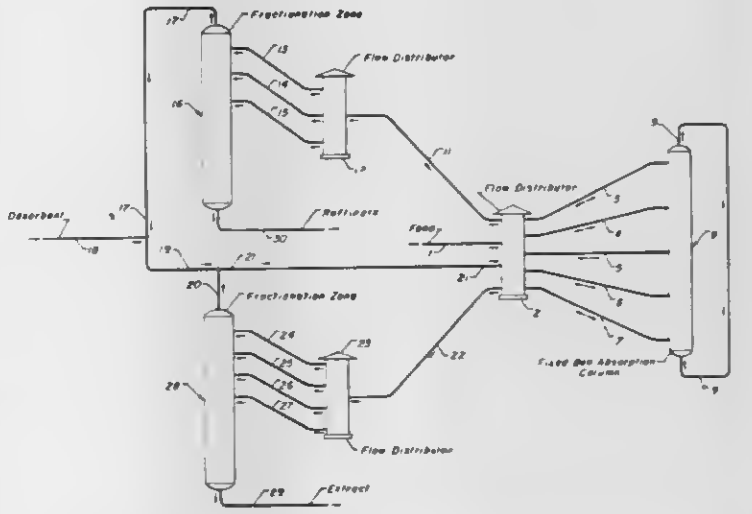
Int. Cl.^{2} C07C *7/12, 7/13*

U.S. Cl. 260—274 SA **8 Claims**

References Cited

UNITED STATES PATENTS

2,576,525	11/1951	Lipkin	260/674
2,790,016	4/1957	Lanneau	260/674
3,510,423	5/1970	Neuzil et al.	208/310
3,636,121	1/1972	Stine et al.	260/674



1. In a process for the separation of hydrocarbons wherein:

- i. a feed stream is passed into a fixed bed of a solid adsorbent which preferentially adsorbs one hydrocarbon species contained in the feed stream;
- ii. an extract-rich effluent stream and a raffinate-rich effluent stream are withdrawn from the bed of solid adsorbent;
- iii. the points at which the feed stream enters the bed of solid adsorbent and at which the effluent streams are withdrawn are periodically moved in a unidirectional pattern which simulates the utilization of a moving-bed of the adsorbent by shifting the location of the adsorption and desorption zones within the adsorption column; and,
- iv. the effluent streams are passed into fractionation zones; the improvement which comprises passing each of the effluent streams through a flow distribution means which changes the locations at which the effluent stream enters the fractionation zone and effects a correlation of the composition of the effluent stream with the composition of the liquid contents of the fractionation zone at the respective location.

B 495,903

CONCENTRATED SOLUTIONS OF ANIONIC DYESTUFFS

Gueather Boehmke, Leverkusen; Werner Theuer, Opladen-Luetzenkirchen; Konrad Nonn, Leverkusen, and Georg Pape, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 8, 1974, Ser. No. 495,903

Claims priority, application Germany, Aug. 16, 1973, 2341293

Int. Cl.^{2} D06P *3/14*

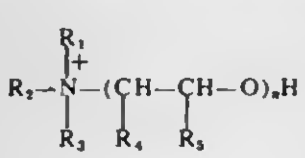
U.S. Cl. 8—84 **2 Claims**

References Cited

UNITED STATES PATENTS

2,986,444	5/1961	Rokohl et al.	8/84
3,307,901	3/1967	Bindler et al.	8/84
3,446,569	5/1969	Braun et al.	8/84
3,529,922	9/1970	Berger et al.	8/84

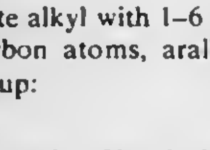
1. Anionic dyestuffs which contain a carboxyl or sulfonic acid substituent and from 1 mole per dyestuff molecule to 1 mole equivalent per mole of the acid group in the dyestuff molecule of at least one cation of the formula



$$R_2-\overset{R_1}{\underset{R_3}{\overset{|+}{\underset{|}{N}}}}-(\underset{R_4}{\underset{|}{C}}H-\underset{R_5}{\underset{|}{C}}H-O)_nH$$

wherein

R$_1$, R$_2$, and R$_3$ denote alkyl with 1–6 carbon atoms, cycloalkyl with 5–7 carbon atoms, aralkyl with 7–12 carbon atoms, or the group:



$$-(\underset{R_4}{\underset{|}{C}}H-\underset{R_5}{\underset{|}{C}}H-O)_nH$$

wherein

R$_4$ and R$_5$ denote hydrogen, methyl or ethyl and *n* is a number from 1 to 20.

B 496,792

MOTOR FUEL BLENDING CONTROL SYSTEM

Walter A. Bajek, Lombard, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 12, 1974, Ser. No. 496,792

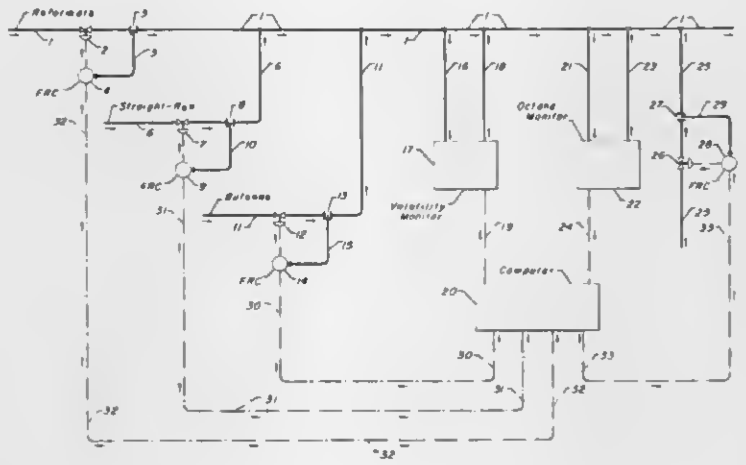
Int. Cl.^{2} C10L *1/04, 1/10;* **G01N** *33/00*

U.S. Cl. 44—2 **9 Claims**

References Cited

UNITED STATES PATENTS

3,383,190	5/1968	Weber et al.	44/2
3,385,680	5/1968	Feld et al.	44/2
3,437,461	4/1969	Hoffman et al.	44/2
3,533,746	10/1970	Fenske	23/230 A



1. In a process for motor fuel blending, wherein two gasoline streams, having dissimilar octane ratings, are admixed and (i) a butane-rich stream is added for vapor pressure control, and (ii) a lead-containing compound is added to increase the octane rating of the motor fuel blend, the control system which comprises, in cooperative combination:

- a. first flow-varying means for adjusting the flow rate of the gasoline stream having the higher octane rating;
- b. second flow-varying means for adjusting the flow rate of the gasoline stream having the lower octane rating;
- c. third flow-varying means for adjusting the flow rate of said butane-rich stream;
- d. a first hydrocarbon analyzer receiving a sample of the blend of said butane stream, said higher octane gasoline stream and said lower octane stream, and developing a first output signal representative of a volatility characteristic of said sample;
- e. a second hydrocarbon analyzer receiving a second sample of said blend, and developing a second output signal representative of the octane rating of said sample;
- f. comparator means, receiving said first and Prepolymer output signals, which compares the rate of change thereof and the actual value of the octane rating of said blend, and generates third and fourth output signals;
- g. fourth flow-varying means for adjusting the flow rate of said lead-containing compound added to said blend;
- h. first signal-receiving means to which said third output signal is transmitted by said comparator means, said first signal-receiving means in turn transmitting to said fourth flow-varying means, whereby the flow of said lead-containing compound is adjusted in response to said octane rating; and,
- i. second signal-receiving means to which said fourth output signal is transmitted by said comparator means, said second signal-receiving means in turn transmitting to said third flow-varying means whereby the flow of said butane stream is adjusted in response to said composition characteristic.

B 502,993

POLYALKYLENE GLYCOL VINYL PHOSPHATES

Kyung S. Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 389,607, Aug. 20, 1973, abandoned, which is a continuation-in-part of Ser. No. 63,262, Aug. 6, 1970, abandoned. This application Sept. 6, 1974, Ser. No. 502,993

Int. Cl.^{2} C07F *9/11;* **C08J** 9/*00*

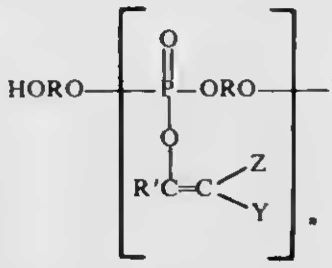
U.S. Cl. 260—929 **7 Claims**

References Cited

UNITED STATES PATENTS

3,819,750	6/1974	Shim	260/929

1. Polyalkylene glycol vinyl phosphates having the formula:



$$HORO-\left[-\overset{\displaystyle O}{\overset{\|}{P}}(-ORO-)\underset{\displaystyle R'C=C\begin{matrix}Z\\Y\end{matrix}}{\underset{|}{\underset{O}{\underset{|}{}}}}\right]-H$$

where R is a polyalkylene glycol residue obtained by removing two hydroxyl groups from a polyalkylene glycol having the formula

$$HO-\left[-R''O-\right]_m-H$$

where R'' is an alkylene group of from 2 to about 20 carbon atoms, and m is from 2 to about 20, *n* is an integer from 1 to about 100, R' is selected from the group consisting of hydrogen, alkyl and haloalkyl, Z and Y are each selected from the group consisting of halogen, hydrogen and alkyl, provided Z and Y are not both hydrogen or alkyl.

B 503,742

PROCESS FOR THE PRODUCTION OF HALOGENATED AROMATIC PRIMARY AMINES

Masatomo Fujise, Wako; Yasuo Nakano, Tokyo, and Koji Isobe, Yono, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 6, 1974, Ser. No. 503,742

Claims priority, application Japan, Sept. 6, 1973, 48-100541

Int. Cl.^{2} C07C *85/11*

U.S. Cl. 260—580 **8 Claims**

References Cited

UNITED STATES PATENTS

2,214,067	9/1940	Petersen	260/551 C UX
3,145,231	8/1964	Kosak	260/690 X

FOREIGN PATENTS OR APPLICATIONS

708,699	5/1954	United Kingdom	260/570.5
1,191,610	5/1970	United Kingdom	260/580

1. A process for the production of halogenated aromatic primary amines by catalytic hydrogenation of halogenated aromatic nitro compounds, which comprisés hydrogenating a halogenated aromatic nitro compound in the presence both of Raney nickel and of a dehalogenation inhibitor selected from the group consisting of dicyandiamide, cyanamide and calcium cyanamide, in an inert solvent at a temperature in the range from 40° to 150°C under an elevated hydrogen pressure.

B 508,118

HYDROCRACKING PROCESS FOR THE MAXIMIZATION OF AN IMPROVED VISCOSITY LUBE OIL

Le Roi E. Hutchings, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 23, 1974, Ser. No. 508,118

Int. Cl.^{2} C10G *41/00, 13/06, 37/02*

U.S. Cl. 208—59 **5 Claims**

References Cited

UNITED STATES PATENTS

3,308,055	3/1967	Kozlowski	208/111
3,444,071	5/1969	Langhout	208/59
3,463,724	8/1969	Langlois et al.	208/98
3,530,061	9/1970	Orkin et al.	208/60
3,562,149	2/1971	Bryson et al.	208/143
3,617,482	11/1971	Egan	208/59
3,617,484	11/1971	Thompson et al.	208/59
3,732,156	5/1973	Bennett et al.	208/111
3,793,191	2/1974	Billon et al.	208/59

1. A process of hydrocracking lube oil stocks to high viscosity index oils comprising subjecting a lube oil charge stock to hydrocracking conditions selected to minimize the formation of non-lube oil fractions in the presence of a first hydrocracking catalyst, fractionating the resulting hydrocracked lube oil stock to separate therefrom a light lube oil boiling below about 925° F. and a heavier lube oil boiling above about 925° F., subjecting said heavier lube oil in the presence of a second hydrocracking catalyst to more severe hydrocracking conditions than said charge stock to reduce the viscosity and improve the V.I. characteristics of the heavier lube oil, blending the thus improved heavier lube oil with said light lube oil, and recovering the resultant lube oil blend as the product of the process.

B 508,119

PROCESS FOR THE CONVERSION OF HYDROCARBONACEOUS BLACK OIL

Le Roi E. Hutchings, Mt. Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 23, 1974, Ser. No. 508,119

Int. Cl.^{2} C10G 9/*16, 34/00*

U.S. Cl. 208—208 R **4 Claims**

References Cited

UNITED STATES PATENTS

1,567,429	12/1925	Earl et al.	208/361
3,094,481	6/1963	Butler et al.	208/255
3,330,760	7/1967	Hirschbeck et al.	208/92
3,429,804	2/1969	Sze et al.	208/144
3,448,039	6/1969	Tarhan	208/255
3,565,787	2/1971	Bauer	208/48 R

1. A process for the desulfurization of a hydrocarbonaceous black oil containing sulfur and asphaltic material which comprises preheating said oil by indirect heat exchange to a temperature not in excess of about 550°F., commingling with the preheated oil a steam-containing gas in sufficient amount and of sufficient temperature to raise the oil to a desulfurization temperature of from about 600°F. to about 800°F., and contacting the thus heated oil at a hydrocarbon conversion conditions with a desulfurization catalyst.

B 509,640

TWO STAGE ACTIVATION OF FLUORIDED CHROMIUM-CONTAINING CATALYST

Benny E. Nasser, Jr., and Richard E. Dietz, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 26, 1974, Ser. No. 509,640
Int. Cl.^{2} B01J *21/02, 27/06, 29/00*
U.S. Cl. 252—432 **12 Claims**

References Cited
UNITED STATES PATENTS

3,007,905	11/1961	Bailey	252/458
3,692,697	9/1972	Kravitz et al.	252/441

1. A process for producing a catalyst comprising:
calcining a chromium-containing silicon-containing support;
cooling said thus calcined support and incorporating therewith a fluorine-containing compound; and
thereafter heating said support containing said fluorine-containing compound at a temperature within the range of 300° to 1000°F, which temperature is lower than the temperature used for said calcining.

B 517,858

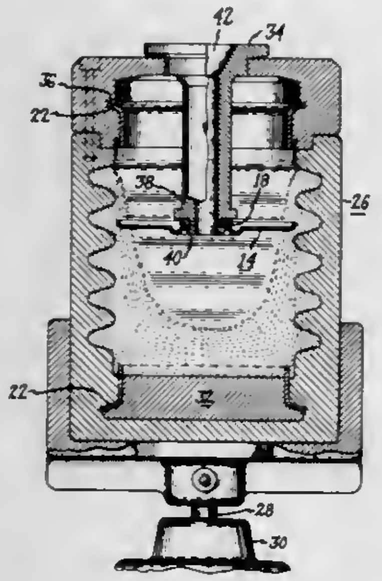
CENTRIFUGALLY CASTING HOLLOW GLASS BODY AROUND VAPOR SHIELD

John R. Lucek, and Vernon B. Palen, both of Pittsfield, Mass., assignors to General Electric Company, N.Y.

Division of Ser. No. 427,517, Dec. 27, 1973, abandoned. This application Oct. 25, 1974, Ser. No. 517,858
Int. Cl.^{2} C03B *9/00, 7/00;* **C03C** *27/02*
U.S. Cl. 65—49 **4 Claims**

References Cited
UNITED STATES PATENTS

2,478,624	8/1949	De Vine	65/71 X
3,376,186	4/1968	Dovillard et al.	65/49 X
3,417,448	12/1968	Kelley	65/49 X
3,783,094	1/1974	Baum	65/302 X



1. A method of embedding a support ring in a vacuum envelope comprising a centrifugal mold, a ring member having an internal welding flange, a cap for said mold, said cap being provided with a ring holding means extending into said mold, said ring holding means holding said support ring within said mold, charging said mold with a predetermined quantity of glass, and rotating said mold to form a glass envelope said glass extending beyond the outer circumference of said ring and firmly embedding said ring in said glass.

B 518,656

PHOTOSENSITIVE COPPER (I) COMPLEXES

Henry J. Gysling, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 365,375, May 30, 1973, Pat. No. 3,860,500. This application Oct. 25, 1974, Ser. No. 518,656
Int. Cl.^{2} C07F *1/08*
U.S. Cl. 260—438.1 **5 Claims**

References Cited
UNITED STATES PATENTS

2,199,944	5/1940	van Peski et al.	260/438.1 X
2,909,544	10/1959	Birum	260/438.1
3,505,093	4/1970	Schultz	117/36.8

OTHER PUBLICATIONS
Chemical Abstracts, V 76, 46248j (1972).
Chemical Abstracts, V 75, 56372p (1971).
Chemical Abstracts, V 76, 93025u, 93030s (1972).
Chemical Abstracts, V 79, 73081t (1973).

1. A copper (I) complex having the formula

$$Cu[P(OR)_2]_nBH_3CN$$

wherein R is alkyl containing one to four carbon atoms and *n* is an integer from 1 to 3.

B 519,486

FIRE RETARDANT THERMOPLASTIC POLYMER COMPOSITIONS

Paul Kraft, Spring Valley, and Siegfried Altscher, Monsey, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

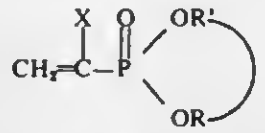
Division of Ser. No. 333,595, Feb. 20, 1973, Pat. No. 3,857,906, which is a division of Ser. No. 49,204, June 23, 1970, Pat. No. 3,725,509. This application Oct. 31, 1974, Ser. No. 519,486
Int. Cl.^{2} C08L *67/06*
U.S. Cl. 260—873 **8 Claims**

References Cited
UNITED STATES PATENTS

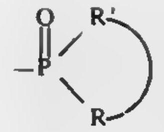
3,755,498	8/1973	Dickason et al.	260/873
3,813,454	5/1974	Juelke et al.	260/873
3,855,352	12/1974	Moedritzer	260/873

1. A fire retardant, thermoplastic polymer composition comprising an intimate admixture of a polyester resin formed by condensation of a dibasic acid with a dihydric alcohol and an effective concentration to render said polymer composition flame retardant of a copolymer of:

1. at least one halogen containing, ethylenically unsaturated monomer selected from the group consisting of vinyl halides, vinylidene halides, chlorinated styrenes, halogenated C_1-C_{12} alkyl acrylates, and methacrylates and halo-substituted nitriles of ethylenically unsaturated carboxylic acids; and
2. from about 2.5 to 99%, by weight of at least one bis(hydrocarbyl) vinylphosphonate having the structure:



wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, C_1–C_{18} alkyl and



wherein R and R' are hydrocarbyl and substituted hydrocarbyl groups which can be the same, different or conjoint.

B 519,487

FIRE RETARDANT THERMOPLASTIC POLYMER COMPOSITIONS

Paul Kraft, Spring Valley, and Siegfried Altscher, Monsey, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

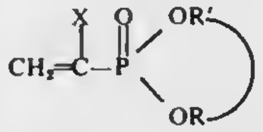
Division of Ser. No. 333,595, Feb. 20, 1973, Pat. No. 3,857,906, which is a division of Ser. No. 49,204, June 23, 1970, Pat. No. 3,725,509. This application Oct. 31, 1974, Ser. No. 519,487
Int. Cl.^{2} C08L *1/32*
U.S. Cl. 260—17 R **8 Claims**

References Cited
UNITED STATES PATENTS

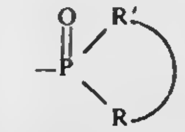
3,759,851	9/1973	Carl et al.	260/17.4
3,780,141	12/1973	Jin et al.	260/17 R X
3,792,113	2/1974	Goswami et al.	260/17.4 R X

1. A fire retardant, thermoplastic polymer composition comprising an intimate admixture of a cellulosic resin selected from the group consisting of cellulose esters and mixed esters and cellulose ethers and an effective concentration to render said polymer composition flame retardant of a copolymer of:

1. at least one halogen containing, ethylenically unsaturated monomer selected from the group consisting of vinyl halides, vinylidene halides, chlorinated styrenes, halogenated C_1-C_{12} alkyl acrylates and methacrylates and halo-substituted nitriles of ethylenically unsaturated caboxylic acids; and
2. from about 2.5 to 99%, by weight of at least one bis(hydrocarbyl) vinylphosphonate having the structure:



wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, C_1-C_{18} alkyl and



wherein R and R' are hydrocarbyl and substituted hydrocarbyl groups which can be the same, different or conjoint.

B 521,127

LINEAR(THERMOPLASTIC POLYESTERS AND PROCESS FOR THEIR MANUFACTURE

Lothar Buxbaum, Lindenfels, Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 5, 1974, Ser. No. 521,127
Claims priority, application Switzerland, Nov. 13, 1973, 15955/73
Int. Cl.^{2} C08G *63/68*
U.S. Cl. 260—75 N **24 Claims**

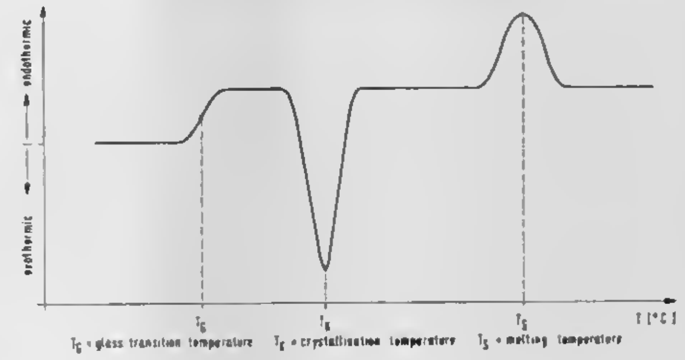
References Cited
UNITED STATES PATENTS

2,925,405	2/1960	Laakso et al.	260/75 N
3,217,014	11/1965	Van Strien et al.	260/75 N
3,856,754	12/1974	Habermeier et al.	260/75 N
3,860,564	1/1975	Habermeier et al.	260/75 N

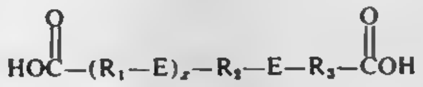
FOREIGN PATENTS OR APPLICATIONS

2,065,002	12/1971	Germany
2,218,229	11/1972	Germany

Graph of the thermogram of a thermoplastic polyester according to the invention

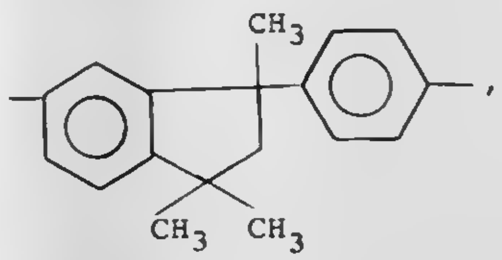


1. A linear, thermoplastic polyester with a high glass transition temperature and a relative viscosity of 1.1 to 4.0 dl/g, measured at 30°C in a 1% solution of equal parts phenol and trichloroethane consisting essentially in the total condensed acid component of (A) 0 to 90 mol % of an acid selected from the group consisting of terephthalic acid and isophthalic acid or a mixture thereof; and of (B) 10 to 100 mol % of a dicarboxylic acid selected from the group consisting of an amidodicarboxylic acid of the formula

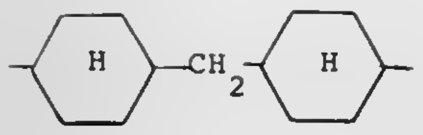


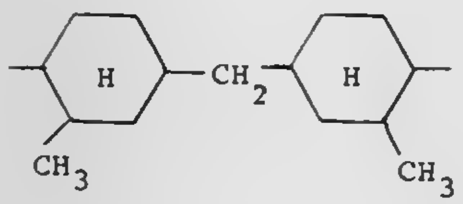
$$HO\overset{O}{\overset{\|}{C}}—(R_1—E)_x—R_2—E—R_3—\overset{O}{\overset{\|}{C}}OH$$

wherein *x* is 0 or 1, E is the —CONH—group the NH group of which is bonded to **R₂** or **R₂** or optionally to R₁ or R₂, and each of **R₁**, **R₂** and **R₃** independently is alkylene of 1 to 12 carbon atoms, an aromatic radical phenylene, diphenylene, naphthylene, 4,4'-sulphonediphenyl or

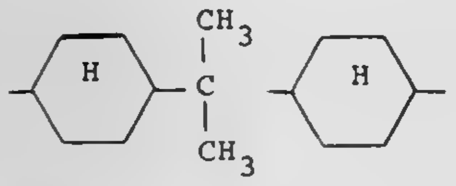


a cycloaliphatic radical

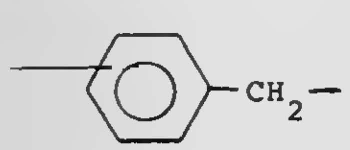




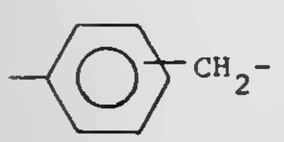
or



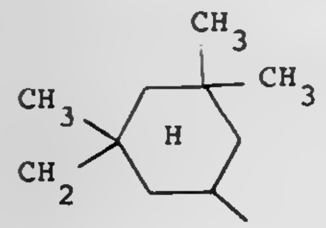
an aromatic-aliphatic radical



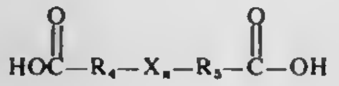
or



wherein the methylene groups can be bonded in the meta or para- position or a cycloaliphatic-aliphatic radical

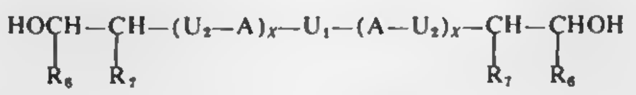


with the proviso that, if *x* is 1, R_2 cannot be the methylene group when the NH groups of the —CONH groups are bonded to R_2 and that one of R_1, R_2 and R_3 is an aromatic radical; an imidodicarboxylic acid of the structure N-carboxyalkyl-, N-carboxyphenylalkyl, N-carboxyalkylphenyl- or N-carboxyphenyltrimellitic acid imide or N,N′-carboxyalkyl-, N,N′-carboxyphenylalkyl-, N, N′-carboxyalkylphenyl-, or N, N′-carboxyphenylpyromellitic acid imide; a naphthalene dicarboxylic acid; a carboxyphenylindane carboxylic acid; and a dicarboxylic acid of the general formula



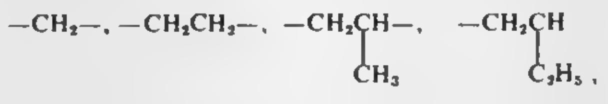
$$\mathrm{HO}\overset{\overset{O}{\|}}{C}-R_4-X_n-R_5-\overset{\overset{O}{\|}}{C}-OH$$

wherein *n* is 0 or 1, X represents the sulphur or oxygen atom, or the sulphone, methylene, ethylidene or propylidene radical and each of R_4 and R_5 independently represents a carboxylic ring with 4 to 6 members; and in the total condensed diol component of (C) 5 to 100 mol % of a diol selected from the group consisting of a diol of the formula

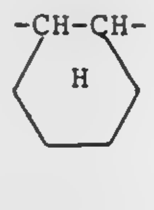


$$\underset{R_6}{\mathrm{HOCH}}-\underset{R_7}{\mathrm{CH}}-(U_2-A)_x-U_1-(A-U_2)_x-\underset{R_7}{\mathrm{CH}}-\underset{R_6}{\mathrm{CHOH}}$$

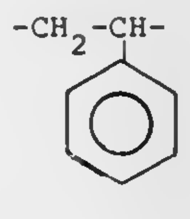
where X is 0 or 1, R_6 is hydrogen, methyl, ethyl or phenyl, R_7 is hydrogen or together with R_6 is tetramethylene, A represents a radical of the formula



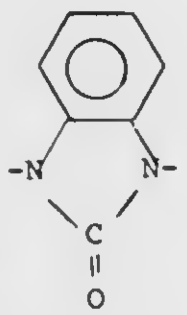
$$-CH_2-,\ -CH_2CH_2-,\ -CH_2\underset{CH_3}{CH}-,\quad -CH_2\underset{C_2H_5}{CH},$$

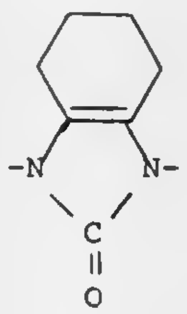


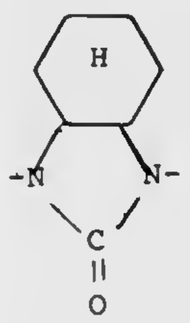
or



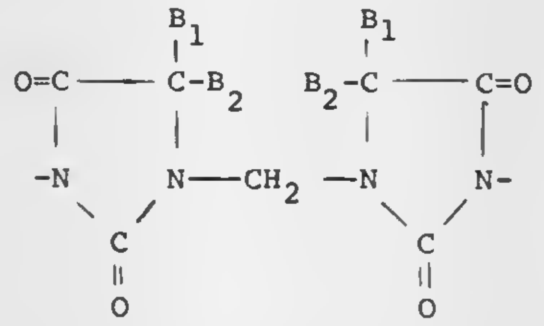
U_1 represents a radical of the formula



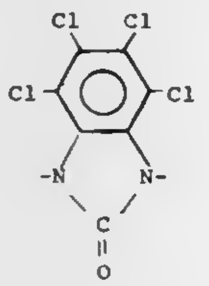




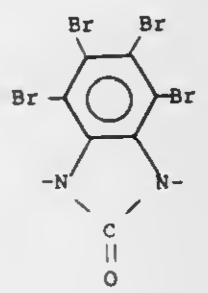
or



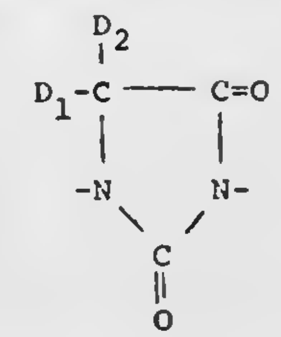
wherein each of B_1 and B_2 independently represents hydrogen or alkyl with 1 to 4 carbon atoms; or when X is 0, U_1 can be



or



and U_2 has the same meaning as U_1 or represents the formula



wherein each of D_1 and D_2 independently represents hydrogen, alkyl with 1 to 4 carbon atoms or phenyl or together D_1 and D_2 are pentamethylene; and of (D) 0 to 95 mol % of a diol selected from the group consisting of an aliphatic diol with 2 to 10 carbon atosm, 1,4-cyclohexanedimethanol and 1,4-cyclohexanediol or a mixture thereof.

B 521,984

RECOVERY OF BORIC ACID FROM ION EXCHANGERS

Charles W. Pollock, Richland, Wash., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Nov. 7, 1974, Ser. No. 521,984
Int. Cl.² C01B *35/10*
U.S. Cl. 423—283 **10 Claims**

References Cited
UNITED STATES PATENTS

2,813,838	11/1957	Lyman et al.	210/24 X
3,112,996	12/1963	Garbato	423/283
3,216,795	11/1965	Brown et al.	423/283
3,493,498	2/1970	Abrams et al.	210/32
3,567,369	3/1971	Chemtob	210/32 X
3,856,670	12/1974	Peterson	210/32

FOREIGN PATENTS OR APPLICATIONS

658,970	1/1965	Belgium	423/283 F

1. In the method for recovering boric acid from an aqueous solution by passing the solution through a strongbase anion exchange resin whereby the boric acid is adsorbed on the resin, the improvement comprising passing an aqueous ammonium bicarbonate eluent through the resin, thereby eluting the boric acid from the resin in the eluate, and heating the eluate to a temperature sufficient to volatilize and drive off the ammonium bicarbonate whereby only the boric acid remains in the solution.

B 522,567

4- OR 5-NITROIMIDAZOLES AND PROCESSES FOR THEIR MANUFACTURE

Atso Ilvespää, Neuallschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 328,816, Jan. 31, 1973, Pat. No. 3,914,248. This application Nov. 11, 1974, Ser. No. 522,567
Claims priority, application Switzerland, Feb. 8, 1972, 1810/72
Int. Cl.² C07D *49/34*
U.S. Cl. 260—309.2 **4 Claims**

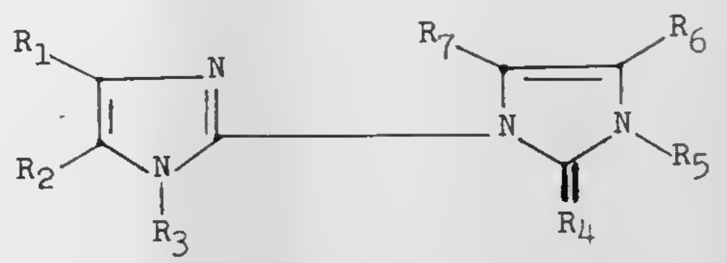
References Cited
UNITED STATES PATENTS

3,832,352	8/1974	Ilvespää	260/309.7

FOREIGN PATENTS OR APPLICATIONS

1,078,251	8/1967	United Kingdom	260/309.2
1,920,635	10/1970	Germany	260/309.2

1. An imidazole compound of the formula



wherein one of R_1 and R_2 is hydrogen or lower alkyl and the other is nitro, R_3 is hydrogen, lower alkyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl R_4 is oxo or thioxo, R_5 is hydrogen, lower alkyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl, phenyl or monosubstituted phenyl substituted by lower alkyl, lower alkoxy, halogen or trifluoromethyl, and R_6 and R_7 conjointly form the missing part of a fused benzene nucleus or a benzene nucleus substituted by lower alkyl, lower alkoxy, halogen, trifluoromethyl or a nitro group, and the S-oxides, sulfones, N-oxides or acid addition salts thereof.

B 526,027

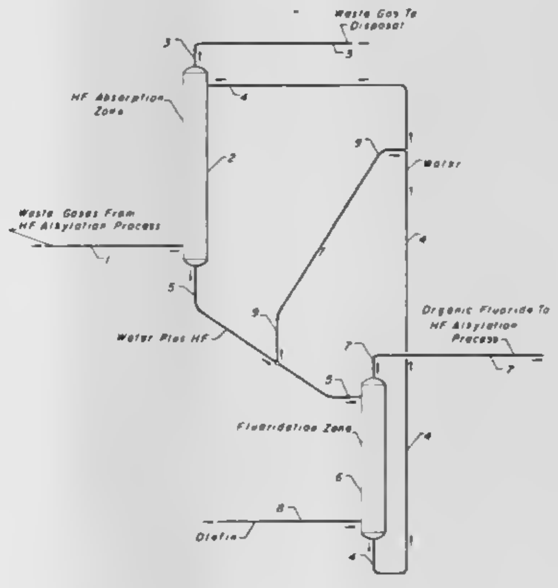
RECOVERY OF HYDROGEN FLUORIDE FROM WASTE GASES

Michael Z. Mikulicz, Palatine; William G. Boney, Rolling Meadows, and Bipin V. Vora, Buffalo Grove, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 21, 1974, Ser. No. 526,027
Int. Cl.² C07C *3/54*
U.S. Cl. 260—683.48 **2 Claims**

References Cited
UNITED STATES PATENTS

2,384,735	9/1945	Frey	260/683.42
3,716,593	2/1973	Hutson, Jr. et al.	260/653.6
3,845,158	10/1974	Sobel	260/683.49



1. In an isoparaffin-olefin alkylation process wherein hydrogen fluoride catalyst and organic fluoride are included in the alkylation reaction mixture and wherein waste gases containing HF are collected from said process, the invention comprising:

a. scrubbing a waste gas containing HF with water at a weight ratio of water to HF of from about 10:1 to about

20:1 to absorb HF from said gas into the water and thus form an HF-water mixture of low acid strength;

b. contacting the HF-water mixture from step

a. with an olefinic hydrocarbon stream at a temperature of from about 50°F. to about 110°F. and an olefin : HF mol ratio of at least 8:1 to convert substantially all of the hydrogen fluoride in said mixture to organic fluoride;

c. separating from step (b) an organic fluoride and unreacted olefin hydrocarbon phase from a water phase, and

d. supplying said organic fluoride and unreacted olefinic hydrocarbon phase to said alkylation reaction mixture.

B 529,974
QUATERNARY ARYLAMINOALKYL PHOSPHONIUM SALTS

Arlen W. Frank, Slidell, and George L. Drake, Jr., Metairie, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 376,971, July 6, 1973, Pat. No. 3,897,205. This application Dec. 5, 1974, Ser. No. 529,974

Int. Cl.² C07C *87/48*

U.S. Cl. 260—568 **2 Claims**

References Cited

UNITED STATES PATENTS

3,897,205	7/1975	Frank et al.	8/116

OTHER PUBLICATIONS

Frank et al., "Journal Organic Chemistry," Vol. 37, No. 17, pp. 2752–2755 (1972).

1. A quaternary arylaminoalkyl phosphonium salt having the formula

$(ArNHCH_2)_4P^+Cl^-$

where Ar is radical selected from the group consisting of phenyl, tolyl, xylyl, chlorophenyl, nitrophenyl, and naphthyl.

B 530,873
POLYMERS WHICH CAN BE CROSS-LINKED BY PHOTOPOLYMERISATION

Hans-Jürgen Rosenkranz, Krefeld; Hans Rudolph, Krefeld-Bochum; Erich Wolff, and Harald von Rintelen, both of Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 256,162, May 23, 1972, abandoned. This application Dec. 9, 1974, Ser. No. 530,873

Claims priority, application Germany, May 25, 1971, 2125910

Int. Cl.² G03C *5/00, 1/68*

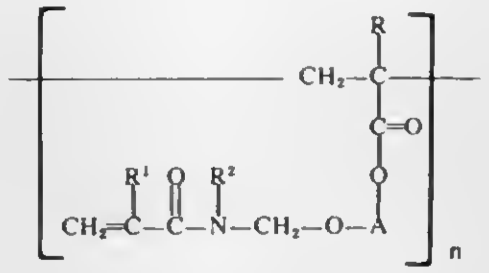
U.S. Cl. 96—35.1 **2 Claims**

References Cited

UNITED STATES PATENTS

2,972,540	2/1961	Saner et al.	96/115 P
2,976,294	3/1961	Firestine	96/115 P
3,043,805	7/1962	Burg	96/115 P
3,081,168	3/1963	Leekley et al.	96/115 R
3,427,161	2/1969	Laridon et al.	204/159.23
3,486,891	12/1969	Wilhelm et al.	96/35.1
3,533,796	10/1970	Lassig et al.	96/115 R
3,620,733	11/1971	Steppan et al.	96/115 R
3,764,501	10/1973	Hori et al.	204/159.15
3,858,510	1/1975	Kai et al.	96/35.1

1. A process for the production of photographic relief images or photoresists comprising the steps of imagewise exposing a supported light-sensitive material with a photocrosslinkable polymer in the layer, washing away the unexposed areas of the photosensitive layer to form a relief image of photocrosslinked polymeric material the improvement wherein the said photocrosslinkable polymer compound is a photopolymer of recurrent units of the general formula



wherein

R stands for hydrogen or alkyl having up to 4 carbon atoms and

R^1 represents hydrogen or alkyl having up to 4 carbon atoms,

R^2 stands for hydrogen or alkyl having up to 8 carbon atoms, and

A represents a divalent aliphatic bridging member having 2-4 carbon atoms or a bridging member of the formula

$-(CH_2-CH_2-O)_m-CH_2-CH_2-$

wherein m represents an integer of 1 to 3,

n is 2 or more,

wherein the photopolymer is either a homopolymer or a copolymer with comonomers selected from the group consisting of vinyl monomers, vinyl esters, vinyl ethers, acrylic and methacrylic acid and their derivatives, maleic acid anhydride, and styrene and the light-sensitive polymer has an average molecular weight of between 10,000 and 100,000.

B 534,591
O-METHYL/ETHYL-S-PROPYL/BUTYL-O-PHENYL THIPHOSPHATES AND DITHIOPHOSPHATES HAVING A THIOETHER GROUP ON THE PHENYL RING

Ernst Beriger, Allschwil, Switzerland; Manfred Boger, Haltingen, Germany; Jozef Drabek, Allschwil, and Odd Kristiansen, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 408,874, Oct. 23, 1973, Pat. No. 3,898,305. This application Dec. 20, 1974, Ser. No. 534,591

Claims priority, application Switzerland, Nov. 3, 1972, 16043/72; Sept. 21, 1973, 13638/73

Int. Cl.² C07F 9/*12*

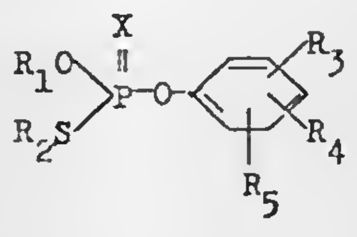
U.S. Cl. 260—948 **7 Claims**

References Cited

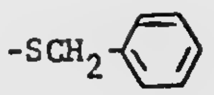
UNITED STATES PATENTS

2,916,509	12/1959	Schegk et al.	260/949 X
3,020,305	2/1962	Chupp	260/948
3,825,636	7/1974	Kishino et al.	260/948 X
3,839,511	10/1974	Kishino et al.	260/964

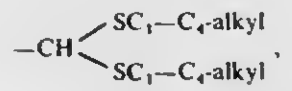
1. A compound of the formula



wherein R_1 represents methyl or ethyl, R_2 represents n-propyl, isobutyl or sec. butyl, R_3 and R_4 each represents hydrogen, chlorine, bromine, methyl or ethyl, R_5 represents



$-S-C_3-C_5-$alkenyl or



$-CH(SC_1-C_4\text{-alkyl})(SC_1-C_4\text{-alkyl})$,

and X represents oxygen or sulphur.

B 537,085
METHOD OF FORMING A ROOFING COMPOSITE USING SILICONE RUBBER COMPOSITION

Stanley J. Bessmer, Cohoes, and Warren R. Lampe, Ballston Lake, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 478,824, June 12, 1974, Pat. No. 3,888,815, which is a continuation of Ser. No. 389,733, Aug. 20, 1973, abandoned, which is a continuation of Ser. No. 180,068, Sept. 13, 1971, abandoned. This application Dec. 30, 1974, Ser. No. 537,085

Int. Cl.² B05D *1/12, 1/24*

U.S. Cl. 427—186 **2 Claims**

References Cited

UNITED STATES PATENTS

3,524,900	8/1970	Gibbon et al.	260/46.5 G X
3,678,033	7/1972	Kaiser et al.	260/46.5 G

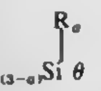
FOREIGN PATENTS OR APPLICATIONS

124,650	5/1972	Norway	427/186
216,837	11/1967	Sweden	427/186

1. A process of forming a roofing composite comprising applying to a roofing substrate a self-bonding room temperature vulcanizable silicone rubber composition comprising (a) a linear, fluid organopolysiloxane containing terminal silicon-bonded hydroxy groups and having a viscosity of 500 to 10,000,000 centipoise when measured at 25°C, the organic groups of the aforesaid organopolysiloxane representing monovalent hydrocarbon radicals; (b) 5 to 300% by weight of a filler; (c) from 0.1 – 15% by weight of an alkyl silicate selected from the class consisting of (1) a monomeric organosilicate corresponding to the general formula,

$(R^{40}O)_3Si-R^{41}$,

where R^{40} is a radical selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals and R^{41} is selected from the class consisting of alkyl, haloalkyl, aryl, haloaryl, alkenyl, cycloalkyl, cycloalkenyl, cyanoalkyl, alkoxy and acyloxy radicals, and (2) a liquid partial hydrolysis product of the aforementioned organosilicate monomeric compounds; (d) from 0.1 to 5% by weight of the organopolysiloxane of a catalyst which is metallic salt of an organic monocarboxylic or dicarboxylic acid in which the metal ion is selected from the class consisting of lead, tin, zirconium, antimony, iron, cadmium, barium, calcium, titanium, bismuth and manganese, and (e) from 0.1 to 10% by weight of a nitrogen-functional silane of the formula,



$$\epsilon_{(3-a)}\overset{R_a}{Si}\,\theta$$

where R is selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, ε is a hydrolyzable group selected from the class consisting of alkoxy, phenoxy, amino, and dialkylamino and θ is a nitrogen-functional radical which is saturated, unsaturated or aromatic hydrocarbon residue which in addition to nitrogen-functionality may be functionalized by a radical selected from the class consisting of amino, cyano, thio, oxo, and ester, and multiples and combinations thereof and a is a whole number that varies from 0 to 2, and further where there is present 0.5 to 50% by weight of the total composition of an oxygenated solvent selected from the group consisting of alcohols, ethers, ketones, esters to form a solution of said composition and permitting said composition to cure by evaporation of said oxygenated solvent.

B 538,491
SEPARATION OF URANIUM FROM (TH,U)O₂ SOLID SOLUTIONS

Premo Chiotti, Ames, Iowa, and Mahesh Chandra Jha, Arvada, Colo., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 3, 1975, Ser. No. 538,491

Int. Cl.² C22B *60/02*

U.S. Cl. 75—84.1 R **7 Claims**

References Cited

OTHER PUBLICATIONS

Kately, J.A. et al. "Reaction of Thoria with Zirconium Chloride" in J. Less Com. Met., 26(1) pp. 145–155, 1972.

Chiotti, P. et al. "Binary Systems $ThCl_4$–Th and $ThCl_4$–$ThOCl_2$" in J. Less Com. Met., 31(3): pp. 365–376, June, 1973.

JHA, M.C., NSA 30: 03864 [Pyrometallurgical Separation of Uranium from $(Th,U)O_2$ Solid Solutions — Thesis, 1974].

1. A method for separating uranium values from a mixture of thorium oxide and uranium oxide comprising:

a. mixing the metal oxides with a molten chloride salt additionally containing thorium tetrachloride and thorium metal, said salt being selected from the group consisting of the salts of the alkali metals, alkaline earth metals and mixtures thereof, whereby the uranium oxide is selectively reduced to uranium metal, and

b. recovering the uranium metal.

B 541,376
AGGLOMERATING COMBUSTOR-GASIFIER METHOD AND APPARATUS FOR COAL GASIFICATION

Joseph L. P. Chen, Murrysville, and David H. Archer, Pittsburgh, both of Pa., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 15, 1975, Ser. No. 541,376

Int. Cl.² C10J *3/20*

U.S. Cl. 48—73 **11 Claims**

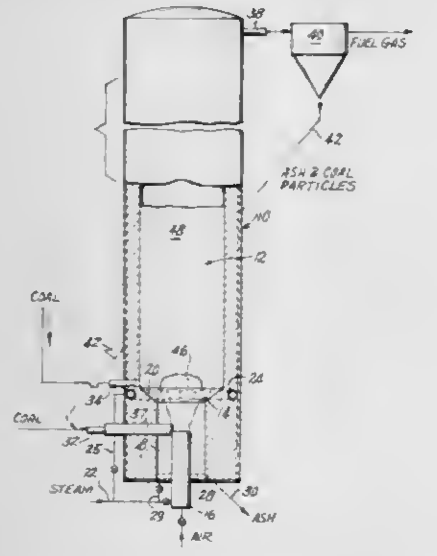
References Cited

UNITED STATES PATENTS

3,772,999	11/1973	Miller, Jr. et al.	110/28 J
3,847,563	11/1974	Archer et al.	48/202

1. Apparatus for gasification of coal particles comprising a vertically disposed refractory lined, pressure vessel, outlet means in the upper portion thereof for removing gases, an upper section of said vessel defining a gasification chamber and a lower section of said vessel being of reduced diameter

and forming a combustion chamber, a central tube for introduction of air extending into said pressure vessel through the bottom thereof and having an open upper end terminating at said combustion chamber, said tube and the lower portion of the inner refractory wall of said vessel forming an annulus, a perforated distributor plate extending across said annulus, means for introducing coal particles into the lower part of said gasification chamber, means for introducing coal particles into said combustion chamber at the open upper end of said central tube, means for introducing stripping steam below said perforated distributor plate, and means for removal of ash from the annulus above said perforated distributor plate.



B 544,899

METHOD OF MANUFACTURING OPTICALLY ACTIVE P-HYDROXYPHENYLGLYCINE

Tadashi Shirai, Musashino; Yasuhisa Tashiro, Yokohama, and Shigeru Aoki, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1975, Ser. No. 544,899

Claims priority, application Japan, Jan. 29, 1974, 49-11423; May 8, 1974, 49-50993

Int. Cl.^{2} C07C *143/28*

U.S. Cl. 260—501.12 **6 Claims**

References Cited

UNITED STATES PATENTS

3,523,969	8/1970	Chibata et al.	260/501.12
3,742,041	6/1973	Chibata et al.	260/501.12

1. DL-p-hydroxyphenylglycine p-toluene sulfonic acid salt.

B 548,058

METHOD FOR STORAGE OF SOLID WASTE

William J. Mecham, La Grange, Ill., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Feb. 7, 1975, Ser. No. 548,058

Int. Cl.^{2} G21F *5/00*

U.S. Cl. 252—301.1 W **7 Claims**

References Cited

UNITED STATES PATENTS

3,152,984	10/1964	Winsche et al.	252/301.1 W
3,479,295	11/1969	Thompson	252/301.1 W
3,507,801	4/1970	Kausz et al.	252/301.1 W
3,828,197	8/1974	Boldt	252/301.1 W
FOREIGN PATENTS OR APPLICATIONS			
1,109,279	6/1961	Germany	252/301.1 W
1,173,998	7/1964	Germany	252/301.1 W

1. In the method of storing high-level radioactive liquid wastes by calcining the waste to remove the liquid, thereby forming a high-level radioactive calcine, placing the calcine in a metal canister, sealing the metal canister and placing the sealed metal canister in a moisture-containing environment for cooling and long-term storage, the improvement comprising: adding powdered portland cement to the canister containing the calcined wastes so that the cement is in contact with the inner surface of the wall of the canister before the canister is sealed, whereby, should the canister wall fail and develop an opening to the environment, moisture from the environment will enter the canister, mix with the portland cement, forming concrete which will harden, seal the opening and prevent the escape of any radioactivity from the canister to the environment.

B 550,744

PHOTOCHLORINATION OF ALKANOLS

Norman C. Deno, State College, Pa., and Harry J. Spinelli, Newark, Del., assignors to Research Corporation, New York, N.Y.

Filed Feb. 18, 1975, Ser. No. 550,744

Int. Cl.^{2} B01J *1/10*

U.S. Cl. 204—158 HA **23 Claims**

References Cited

UNITED STATES PATENTS

3,463,826	8/1969	Richtzenhain	204/158 HA

1. A method for the photochlorination of an alkanol which comprises reacting a C_4 or higher alkanol in a liquid aqueous buffered solvent at a pH in the range from about 4 to about 9 with chlorine in the substantial absence of oxygen while irradiating the resulting reaction mixture.

B 551,463

SILYLATED CHLOROACETANILIDES FOR THE REGULATION OF PLANT GROWTH

Manfred Kühne, Pfeffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 20, 1975, Ser. No. 551,463

Claims priority, application Switzerland, Feb. 25, 1974, 2632/74

Int. Cl.^{2} C07F *7/10, 7/18*

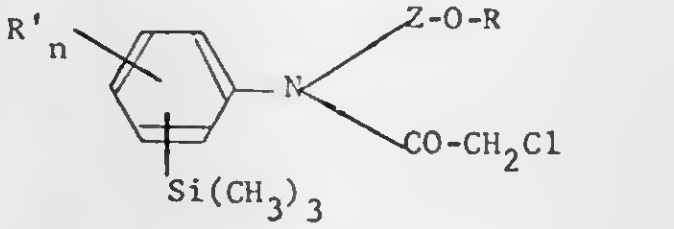
U.S. Cl. 260—448.2 N **9 Claims**

References Cited

UNITED STATES PATENTS

3,442,926	5/1969	Houtman	260/448.8 R
3,558,683	1/1971	Belsky et al.	260/448.2 N
3,651,115	3/1972	Belsky et al.	260/448.2 N
3,720,699	3/1973	Stoddard	260/448.8 R

1. Silylated chloroacetanilides of formula I



(I)

wherein

R represents a lower alkyl group having at most 4 carbon atoms, a group $—CH_2—CH_2—Si(CH_3)_3$, a group $—CH_2—Si(CH_3)_3$ or a trimethylsilyl group,

Z represents a straight or branched alkylene chain having at most 3 carbon atoms,

R′ represents halogen, lower alkyl or alkoxy having at most 3 carbon atoms or trimethylsilyl, and

n represents the number 0 or 1.

B 553,584

SYNTHESIS OF ALKADIENOLS

Kenneth Earl Atkins, South Charleston; Robert Michael Manyik, St. Albans, and George Lawrence O'Connor, Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 816,792, April 16, 1969, abandoned. This application Feb. 27, 1975, Ser. No. 553,584

Int. Cl.^{2} C07C *33/02*

U.S. Cl. 260—632 R **29 Claims**

References Cited

UNITED STATES PATENTS

3,008,943	11/1961	Guyer	260/683.15 D
3,361,840	1/1968	Kohll et al.	260/683.15 D
3,365,498	1/1968	Bryant et al.	260/586
3,379,706	4/1968	Wilke	260/683.15 D
3,407,224	10/1968	Smutny	260/497 A
3,454,538	7/1969	Naarmann et al.	260/683.15 D
3,499,042	3/1970	Smutny	260/632 R
3,518,315	6/1970	Smutny	260/632 R
3,534,088	10/1970	Bryant et al.	260/632 R
3,670,032	6/1972	Romanelli	260/632 R

1. Process for forming octadienols which comprises forming a reaction mixture containing butadiene, water, a solvent which is at least partially miscible with water and butadiene and carbon dioxide and a catalyst which is a palladium compound complexed with a phosphine ligand, causing the butadiene and water to react at a reaction temperature of from 20°C. to 180°C; to form an octadienol and recovering the octadienol from the reaction mixture; said butadiene, carbon dioxide and water being present in amounts sufficient to produce said octadienol.

B 561,712

TURBINE COOLING

Henry B. Brown, Manchester; Eugene Cantor, Glastonbury; Francis L. DeTolla, Vernon, and Gary J. Vollinger, Simsbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 25, 1975, Ser. No. 561,712

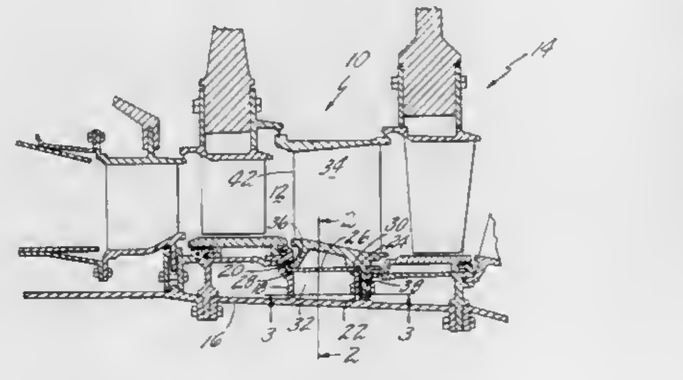
Int. Cl.^{2} F01D *5/18*

U.S. Cl. 415—115 **6 Claims**

References Cited

UNITED STATES PATENTS

2,427,244	9/1947	Warner	415/136
3,423,071	1/1969	Noren	415/217
3,730,640	5/1973	Rice et al.	415/217
3,781,125	12/1973	Rahaim et al.	415/115
3,836,279	9/1974	Lee	415/115
FOREIGN PATENTS OR APPLICATIONS			
200,056	11/1955	Australia	415/217
590,506	1/1960	Canada	415/115



1. In the turbine nozzle assembly of a gas turbine engine, the combination comprising:

- a case which radially encloses a portion of the turbine section of the engine and which has an upstream rail extending radially inward from the case including an outwardly facing surface which extends about the full circumference of the engine, and a downstream rail extending radially inward from the case including an inwardly facing surface which extends about the full circumference of the engine;
- a deformable ring which concentrically opposes the circumferential surface of the upstream rail and a downstream portion which concentrically opposes the circumferential surface of the downstream rail to form the cooling air chamber between the deformable ring and the case; and
- a plurality of hollow nozzle guide vanes, each vane having a hook which engages the upstream rail of the case with the deformable ring disposed therebetween, a downstream flange which is attached to the downstream rail of the case with the downstream portion of the deformable ring trapped therebetween, and a pair of ribs which extend axially between the hook and the flange with one rib on each side of the hollow portion of the vane forming an airfoil cavity therebetween which is in gas communication with the hollow portion of the vane and forming a platform cavity between the ribs of each pair of adjacent vanes.

B 574,128

FUEL CELL STACK WITH AN INTEGRAL EJECTOR FOR REACTANT GAS RECIRCULATION

Albert P. Grasso, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 2, 1975, Ser. No. 574,128

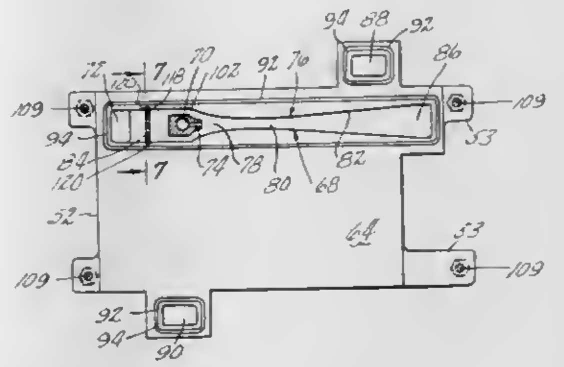
Int. Cl.^{2} H01M *8/06*

U.S. Cl. 136—86 R **12 Claims**

References Cited

UNITED STATES PATENTS

3,379,572	4/1968	Gay	136/86 B
3,542,598	11/1970	White et al.	136/100 R



1. In a fuel cell stack comprising a plurality of fuel cells each including a fuel electrode and an oxidant electrode spaced apart defining an electrolyte compartment therebetween, means constructed and arranged with said cells to define a reactant gas space on the nonelectrolyte side of each electrode, said reactant gas spaces including a fuel gas space on the nonelectrolyte side of each fuel electrode and an oxidant gas space on the nonelectrolyte side of each oxidant electrode, each of said gas spaces having an inlet and an outlet, the improvement to said stack comprising:

- an ejector for delivering and recirculating one of said reactant gases through said cells, said ejector constructed and arranged to be integral with and in heat exchange relationship with the cells of said stack, said ejector including primary inlet means, secondary inlet means, and outlet means;
- first conduit means connected to said ejector primary inlet means for delivering preheated reactant gas into said ejector primary inlet means;

second conduit means connecting said ejector outlet means to said inlets of said recirculating reactant gas spaces; and third conduit means connecting said recirculating reactant gas space outlets with said ejector secondary inlet means.

B 574,996

[1]BENZOTHIENO[3,2-B]FURANS

James Richard Beck, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed May 6, 1975, Ser. No. 574,996

Int. Cl.² C07D *333/60*

U.S. Cl. 260—330.5 **5 Claims**

References Cited

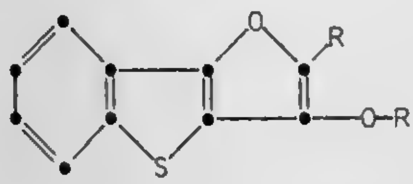
UNITED STATES PATENTS

3,499,894	3/1970	Bockstahler	260/247.1
3,659,004	4/1972	Wagner et al.	260/330.5
3,663,568	5/1972	Roos et al.	260/330.5
3,706,747	12/1972	DeAngelis et al.	260/265.5 R
3,772,336	11/1973	Wright	260/330.5
3,803,180	4/1974	Berger et al.	260/346.2 M

OTHER PUBLICATIONS

Friedlander, Chem. Ber. 32: 121 (1899).
Schroeder, et al., J. Org. Chem. 27: 586–591(1962).
Beck, J. Org. Chem. 38: 4086 (1973).

1. A compound of the formula



wherein R represents cyano, C_1–C_2 alkylcarbonyl or C_1–C_2 alkoxycarbonyl;
R^1 represents C_1–C_2 alkyl or hydrogen;
provided that R^1 represents hydrogen when R respresents cyano or C_1–C_2 alkylcarbonyl.

B 580,826

TRANSPARENT RUBBER-CONTAINING BLEND OF ACRYLONITRILE/AROMATIC OLEFIN RESIN

Charles Richard Hart, Hitchin, and Eric Nield, Watton-at-Stone, both of England, assignors to Imperial Chemical Industries Ltd., London, England

Continuation of Ser. No. 444,834, Feb. 22, 1974, abandoned, which is a division of Ser. No. 294,611, Oct. 3, 1972, abandoned. This application May 27, 1975, Ser. No. 580,826

Claims priority, application United Kingdom, Oct. 14, 1971, 47793/71; Nov. 1, 1971, 50637/71

Int. Cl.² C08L *51/00, 53/00*

U.S. Cl. 260—876 R **6 Claims**

References Cited

FOREIGN PATENTS OR APPLICATIONS

1,185,306	3/1970	United Kingdom	260/876 R
1,009,360	11/1965	United Kingdom	260/880 R
994,924	6/1965	United Kingdom	260/880 R

1. A blend suitable for making transparent molded articles having good impact resistance, which comprises (1) a graft copolymer having a substrate of a diene rubber having a refractive index in the range 1.544 to 1.519 and a superstrate which is a homogeneous copolymer comprising acrylonitrile and aromatic olefin containing units of acrylonitrile within the range 80 to 93 percent molar, and (2) a homogeneous acrylonitrile/ aromatic olefin resin containing units of acrylonitrile within the range 86 to 93 percent molar, the blend containing 1 to 50 percent by weight of rubber based on the weight of the blend, the resin having a refractive index at least 0.002 unit lower than that of a homogeneous copolymer of acrylonitrile and said aromatic olefin resin of the same acrylonitrile content as the superstrate, and the resin and the diene rubber used for the substrate having refractive indices differing from each other and from that of a homogeneous acrylonitrile/aromatic olefin resin of the same acrylonitrile content of the superstrate by not more than 0.008.

B 587,786

METHOD OF USING BENZOPYRANS AS ANTIPARASITIC AGENTS

John Anthony Pankavich, Hamilton Square, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed June 17, 1975, Ser. No. 587,786

Int. Cl.² A61K *31/37*

U.S. Cl. 424—281 **8 Claims**

References Cited

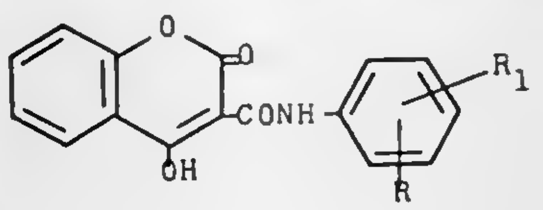
UNITED STATES PATENTS

3,511,856	5/1970	McIntyre et al.	424/281
3,511,896	5/1970	McIntyre et al.	424/281

OTHER PUBLICATIONS

Lang et al. Chem. Abst. Vol. 80, (1974), page 133192n.

1. A method for controlling helminths in a homothermic animal comprising, administering to said animal an anthelmintically effective amount of a compound of the formula:



wherein R and R_1 are selected from the group consisting of hydrogen and halogen.

B 589,966

FLAME-RETARDED ACRYLIC MULTIPOLYMER-VINYL CHLORIDE POLYMER COMPOSITIONS

Howard Robert Lucas, Danbury, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 455,452, March 27, 1974, abandoned. This application June 24, 1975, Ser. No. 589,966

Int. Cl.² C08L *51/00, 53/00*

U.S. Cl. 260—876 R **6 Claims**

References Cited

UNITED STATES PATENTS

3,321,416	5/1967	Rauschenbach et al.	260/2.5
3,326,832	6/1967	Rauschenbach et al.	260/28.5
3,652,727	3/1972	Yonezu et al.	260/876 R
3,657,390	4/1972	Tanaka et al.	260/876 R
3,657,391	4/1972	Curfman	260/876 R

1. A composition of matter comprising (1) a mixture of from about 40 to about 95 percent, by weight, of a polymeric material comprising (a) from about 70 to about 95 percent, by weight, of a terpolymer of 65–75 parts of methyl methacrylate, 15–25 parts of styrene and 1–15 parts of acrylonitrile and (b) from about 5 to about 30 percent, by weight, of polybutadiene grafted with 65–80 parts of methyl methacrylate, 15–25 parts of styrene and 1–15 parts of acrylonitrile, (2) from about 5 to about 60 percent, by weight, of a thermoplastic, non-cross-linked vinyl chloride polymer and (3) a stabilizing amount of an additive comprising (A) a compound having the formula

$RxSn(SR')_{4-x}$

wherein x is 1–3, inclusive, R is alkyl, aralkyl, alkaryl, or aryl, R′ is the same as R or may include a carboxylic acid residue

or a carboxylic acid ester residue, or (B) a barium-cadmium complex, containing (4) from about 0.025 to about 5.0 percent, by weight, based on the total weight of said composition, of dicyclopentadienyl iron or chromium acetyl acetonate.

B 596,692

PHOTODEGRADABLE POLYOLEFIN COMPOSITION CONTAINING A MIXTURE OF AN ARYL KETONE AND AN ALKANOLAMINE

Allen K. Sparks, Woodstock, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 428,561, Dec. 26, 1973, abandoned. This application July 17, 1975, Ser. No. 596,692

Int. Cl.² C08K *5/17*

U.S. Cl. 260—32.6 R **6 Claims**

References Cited

UNITED STATES PATENTS

3,371,048	2/1968	Cyba	260/45.95
3,625,744	12/1971	Juna et al.	204/159.23
3,661,614	5/1972	Bassemir et al.	204/159.23
3,759,807	9/1973	Osborn et al.	204/159.23
3,797,690	3/1974	Taylor et al.	260/23 H
3,825,627	7/1974	McGaugh	260/DIG. 43
3,830,764	8/1974	Hudgin et al.	260/DIG. 43

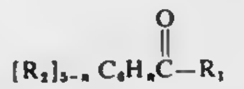
FOREIGN PATENTS OR APPLICATIONS

1,304,112	1/1973	United Kingdom	204/159.23

OTHER PUBLICATIONS

Polymer Preprints, Vol. 13, No. 2, July 15, 1972, p. 627, Scott.

1. A composition of matter comprising from about 0.01 to about 10.00 weight percent of an arylketone possessing the structure:



$$[R_2]_{5-n}\,C_6H_n\overset{\overset{\displaystyle O}{\|}}{C}{-}R_1$$

in which R_1 is selected from a group consisting of an alkyl, aryl, alkaryl, aralkyl, cycloalkyl, substituted alkyl, substituted aryl, substituted alkaryl, substituted aralkyl or substituted cycloalkyl radical and R_2 is selected from a group consisting of an alkyl, aryl, alkaryl, aralkyl, cycloalkyl, alkoxy, halogen, carboxy, carboalkoxy, substituted alkyl, substituted aryl, substituted alkaryl, substituted aralkyl, substituted cycloalkyl, substituted alkoxy, substituted carboxy and substituted carboalkoxy radical, and in which n is equal to an integer between 0 and 5; 0.01 to about 10.00 weight percent of an alkanol amine prepared from the reaction of an aliphatic amine or polyamine with one or more equivalents of an olefinic epoxide; and about 80.00 to about 99.98 weight percent of an olefinic polymer selected from the group consisting of polypropylene, polyethylene and polybutene.

B 490,946

CYCLIC QUATERNARY HYDROXYALKYL PHENOXIDE CATALYSTS FOR ISOCYANATE REACTIONS

Ibrahim S. Bechara, Boothwyn; Felix P. Carroll, Chester; Rocco L. Mascioli, Media, all of Pa., and John R. Panchak, Wilmington, Del., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 377,447, July 9, 1973, Pat. No. 3,892,687. This application July 23, 1974, Ser. No. 490,946

Int. Cl.² C07D *295/08*

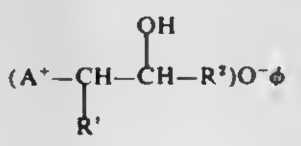
U.S. Cl. 260—268 BF **3 Claims**

References Cited

UNITED STATES PATENTS

3,010,963	11/1961	Erner	260/268 T

2. A catalyst composition for use in polymerization reactions involving organic isocyanates which consists of a quaternary ammonium compound corresponding to the formula:



$$(A^{+}{-}\underset{\displaystyle R'}{\underset{|}{C}}H{-}\overset{\displaystyle OH}{\overset{|}{C}}H{-}R^{2})O^{-}\phi$$

wherein A is 1,4-diazabicyclooocatane, 2-methyl-1,4-diazabicyclooctane, 1,4-dimethylpiperazine, 1,4-diazabicycloheptane and 1,5-diazabicyclononane, R^1 is H or A methyl group, R_2 is H or a methyl, ethyl, cyclohexyl or phenyl group, and Q is phenyl, lower alkyl phenyl or hydroxy phenyl.

B 270,274
COMPOSITE ACOUSTIC LENS

Philip S. Green, Redwood City, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed July 10, 1972, Ser. No. 270,274

Int. Cl.² H04B *13/00*

U.S. Cl. 340—8 L **17 Claims**

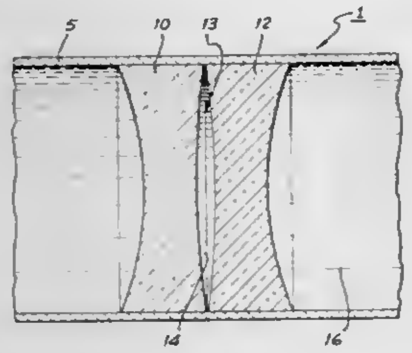
References Cited

UNITED STATES PATENTS

2,300,251	10/1942	Flint	340/8 L
2,540,953	2/1951	Kessler	350/175 NG
2,913,602	11/1959	Joy	340/8 L
3,516,735	7/1970	Goodell	350/175 NG
3,620,326	11/1971	Hogge	340/8 L

OTHER PUBLICATIONS

Kock & Harvey, "Refracting Sound Waves," Journal of the Acoustical Society of America, Sept., 1949, pp. 471–481.



1. A composite acoustic lens adapted for use in fluid media including at least a pair of lens elements composed of a solid lens medium and a liquid filler medium included between said pair of lens elements, the materials of said lens medium and fluid filler medium being selected so that the velocity of propagation of acoustic waves in the medium on at least one side of the said composite acoustic lens is intermediate the velocity of the acoustic waves in the media of the lens and the filler, said lens element material being selected so that acoustic waves have a velocity of propagation therein which is higher than their velocity of propagation in the said medium on at least one side of the said composite acoustic lens.

B 453,533
LIQUID LEVEL DETECTOR

Nobumasa Higo, Toyota, Japan, assignor to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Mar. 21, 1974, Ser. No. 453,533

Claims priority, application Japan, Mar. 31, 1973, 48-39476[U]

Int. Cl.² H01H *35/18*

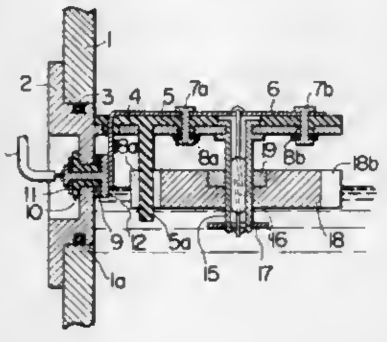
U.S. Cl. 200—84 C **6 Claims**

References Cited

UNITED STATES PATENTS

2,927,176	3/1960	Auld, Jr. et al.	200/84 C
3,258,968	7/1966	Woodcock	200/84 C
3,750,124	7/1973	Barnes et al.	200/84 C

1. A liquid level detector for detecting the level of a liquid in a container comprising:
- a body portion fitted in a mounting opening formed on one side of a container;
- a supporting plate attached to and extending from said body inside said container in a horizontal direction;
- a reed switch;
- a case for housing said reed switch therein, said case being vertically secured to said supporting plate and said reed switch being vertically positioned;
- a float formed as a horizontally long and slender shape with a length substantially greater than its width, and guided by said case to slide up and down in accordance with the change of the level of said liquid;
- a turning-preventive member engaging said float to prevent turning thereof so that the longitudinal dimension of said float is oriented toward said mounting opening;



- a permanent magnet mounted on the inside of said float to open and close said reed switch in accordance with the change of the level of said liquid;
- a stopper for sealing said float in said case;
- an electric connecting plate connected to said reed switch, and
- an insulating board for electrically insulating said electric connecting plate from said supporting plate, said insulating board formed integral with said turning-preventive member.

B 477,597
MARINE PROPULSION SYSTEM

Thomas E. Ekstrom, and Richard L. Koch, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 10, 1974, Ser. No. 477,597

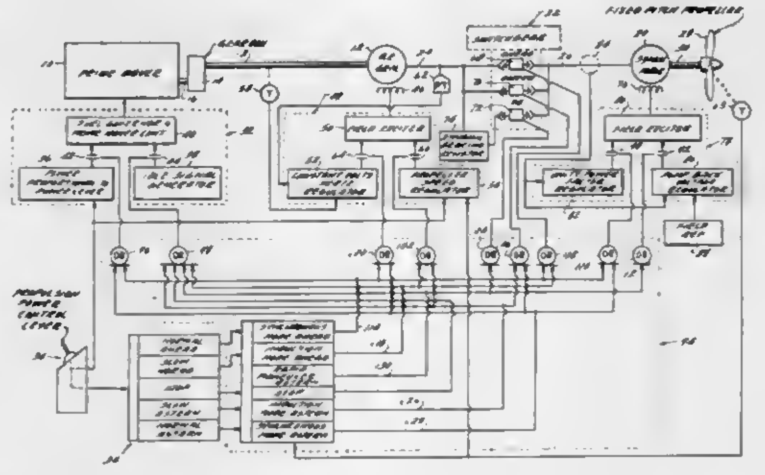
Int. Cl.² B60L *11/02*

U.S. Cl. 290—17 **1 Claim**

References Cited

UNITED STATES PATENTS

2,321,302	6/1943	Liwschitz	318/148
2,451,936	10/1948	Frisch	318/148
2,454,778	10/1948	Curry	318/148



1. A marine propulsion system comprising:
- a power propulsion lever manually movable between and within a normal ahead range, a slow ahead range, a slow astern range, and a normal astern range;

- a gas turbine engine including means for controlling the output thereof between an idle setting and a maximum power setting response to the position of said power propulsion lever, said gas turbine being in said idle setting when said lever is positioned in said slow ahead and slow astern ranges;
- an AC generator, said generator connected to and driven by said gas turbine and including a field winding;
- a synchronous motor electrically connected to the output of said generator and including a field winding;
- a fixed pitch marine propeller connected to an output shaft of said motor;
- a braking resistor;
- switchgear means for selectively providing a first, second and third electrical connection between said generator and said motor, said first electrical connection causing said motor to produce torque in an ahead direction, said second electrical connection reversing the phase connection from that of said first electrical connection, said third electrical connection reversing the phase connection from that of said first electrical connection and connecting said braking resistor in series between said generator and said motor; and
- means for controlling the excitation current in said generator field winding, the excitation current in said motor field windings and said switchgear means in response to the setting of said power control lever and selected parameters of propulsion system operation whereby when said lever is in said normal ahead and astern range said motor is operated synchronously, when said lever is in said slow ahead and astern range said motor is operated in a controlled manner asynchronously, and when said lever is rapidly moved from the normal ahead range to the normal astern range said switchgear means assumes said third connection and the field current is removed from said generator winding and applied to said motor winding so as to brake said propeller before torque is applied in the astern direction by operating said motor as a generator and absorbing the generated energy using the wiring of the propulsion system and said generator.

B 491,111
TAPE RECORDERS

Theophiel Clement Jozef Lodewijk Staar, Kraainem, Belgium, assignor to Staar, S.A., Brussels, Belgium

Filed July 23, 1974, Ser. No. 491,111

Claims priority, application Belgium, Aug. 14, 1973, 44280

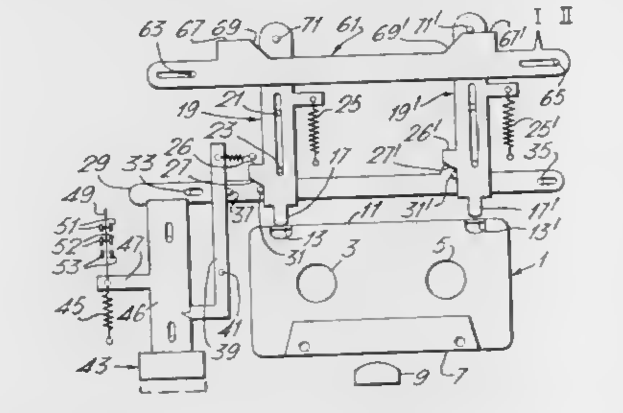
Int. Cl.² G11B *15/04*

U.S. Cl. 360—60 **3 Claims**

References Cited

UNITED STATES PATENTS

3,677,556	7/1972	Oosone	360/60



1. In a tape recorder apparatus for the recording of information on a magnetic tape extending between reels in a cartridge, said apparatus having means for transporting the tape and recording on the tape in a cartridge in both directions of tape travel, the tape cartridge being provided with a pair of recesses corresponding respectively to each direction of tape travel and a removable tab over each recess, said apparatus having sensing and control means cooperating with said removable tabs for preventing recording in either direction of tape travel when the corresponding tab is absent, the improvement in said sensing and control means comprising:
- a movable tape direction control slide having two positions corresponding respectively to the directions of tape travel,
- a first and second sensing means each including a movable slide mechanism mounted in said apparatus for sensing the absence of said removable tabs by movement into the recesses in the cartridge at the location of said tabs and a displaceable output member directly connected for displacement by the associated slide mechanism upon such movement,
- means for biasing each said slide mechanism against one of said tabs and to move into the recess in the absence of the tab,
- means actuated by said tape direction control slide for disabling one of said sensing means and for enabling the other of said sensing means to sense and produce an output reflecting the absence of the removable tab corresponding to the direction of tape travel by the slide mechanism moving into the recess in the cartridge at the location of said tab and displacing the associated output member,
- a movable recording function indicator, said indicator being slidably mounted and biased in one direction,
- a latching mechanism for said indicator operated in response to the displacement of the output member by said enabled sensing means to unlatch said indicator allowing it to move in the direction of bias,
- the unlatched condition of the recording function indicator providing an indication that tape recording is to be prevented.

B 507,087
DIGITAL FREQUENCY SHIFT KEY MODULATOR

Jerold Dennis Dwire, Byron, and Townsend Henry Porter, Jr., Rochester, both of Minn., assignors to International Business Machines, Armonk, N.Y.

Filed Sept. 18, 1974, Ser. No. 507,087

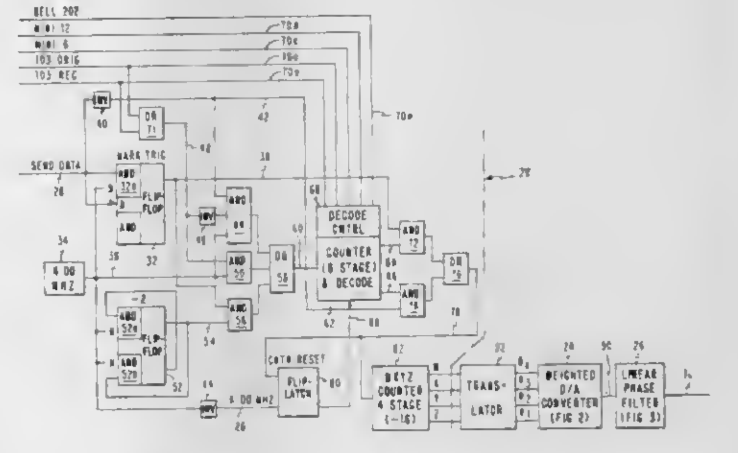
Int. Cl.² 332 *11 R;* **H04L** *27/12*

U.S. Cl. 332—9 R **2 Claims**

References Cited

UNITED STATES PATENTS

3,600,680	8/1971	Maniere et al.	325/163 X
3,659,048	4/1972	Zuerblis et al.	325/163 X
3,668,562	6/1972	Fritkin	332/9 R
3,713,017	1/1973	Vena	332/11 R X
3,773,975	11/1973	Koziol	332/9 R
3,787,785	1/1974	Bass	325/163 X



1. A modulator for producing output sine wave signals of

different frequencies to correspond with different mark and space signal levels on an input of the modulator, comprising:

an oscillator,

a first counter driven by said oscillator and having a pair of outputs and being constructed so as to have a signal on a first one of its said outputs for a predetermined number of input pulses applied to it from said oscillator and to have a signal on its second output for another predetermined number of input pulses applied to it from said oscillator,

a second counter having a plurality of outputs,

gating means under the control of said mark and space signal levels so as to connect said first output of said first counter to said second counter on the existence of said mark signal level and to connect said second output of said first counter to said second counter on the existence of said space signal level,

synthesizing means having said outputs of said second counter as inputs and effective to produce an output signal which first increases in steps and then decreases in steps that correspond with the increasing discrete counts in said second counter to thereby synthesize and produce stepped sine wave output signals,

a filter having said stepped sine wave output signals applied thereto as an input and smoothing the signals to produce smooth sine wave output signals having different frequencies in accordance with the mark and space signal levels applied to the modulator, and

a selectively operated control effective on said first counter for changing at least one of said predetermined number of input pulses applied to said first counter from said oscillator for each output signal on one of said outputs of said first counter so as to thereby change the relationship of the frequencies of said output signals from said filter corresponding to said mark and space signal levels.

B 513,027
MONOLITHIC HONEYCOMB FORM ELECTRIC HEATING DEVICE

George L. Hervert, Woodstock, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 8, 1974, Ser. No. 513,027

Int. Cl.² H05B *3/10*

U.S. Cl. 219—553 **7 Claims**

References Cited

UNITED STATES PATENTS

2,767,289	10/1956	Robinson	338/223
3,032,635	5/1962	Kraft	338/283 X
3,075,494	1/1963	Toulmin, Jr.	118/49.5
3,163,841	12/1964	Willett	338/292
3,172,774	3/1965	Diefendorf	427/249
3,345,448	10/1967	Malkin	13/25
3,502,596	3/1970	Sowards	252/477
3,651,386	3/1972	Youtsey et al.	357/10
3,825,460	7/1974	Yoshikawa et al.	156/296

FOREIGN PATENTS OR APPLICATIONS

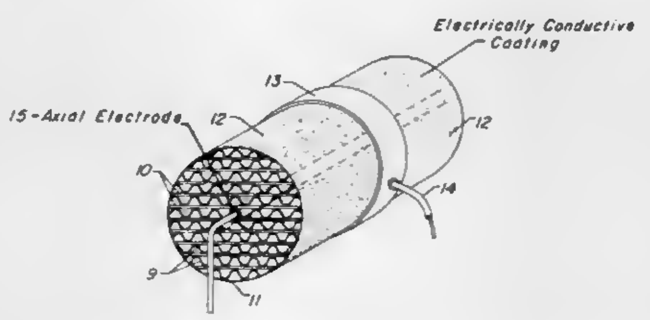
299,036	4/1971	U.S.S.R.	219/381
512,667	10/1920	France	219/374
932,558	7/1963	United Kingdom	219/300

1. A resistance heating device, which comprises in combination:

a. a non-conducting rigid substrate of primarily crystalline ceramic material having a multiplicity of channels;

b. a semiconducting carbonaceous pyropolymer coating, with a conductivity of from about 10^{-8} to about 10^2 inverse ohm-centimeters, deposited directly on the surfaces of said substrate by heating an organic pyrolyzable substance in a primarily non-oxidizing atmosphere and in contact with the substrate surfaces at a temperature above about 400° C.; and

c. spaced electrodes connected to opposing portions of said coated substrate, whereby the semiconducting carbonaceous surfaces positioned between such electrodes can provide electrical resistance heating from electrical energy supplied to the electrodes.



B 515,135
MEASUREMENT MODE INTERLOCK MECHANISM IN CAMERA TTL LIGHT MEASURING SYSTEM

Tetsuji Shono, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1974, Ser. No. 515,135

Claims priority, application Japan, Oct. 19, 1973, 48-122179[U]

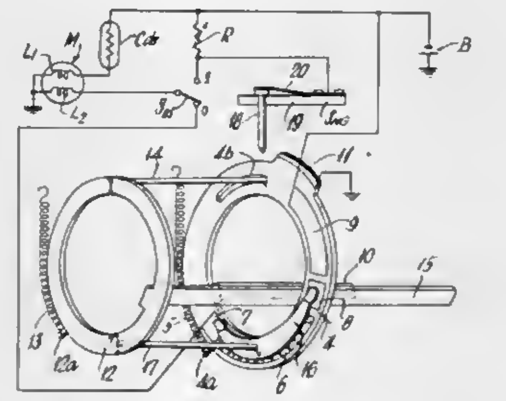
Int. Cl.² G03B *7/20*

U.S. Cl. 354—46 **6 Claims**

References Cited

UNITED STATES PATENTS

3,465,661	9/1969	Hahn et al.	354/60 E
3,470,807	10/1969	Uno	354/40 X
3,486,434	12/1969	Suzuki et al.	354/46 X
3,589,252	6/1971	Hahn et al.	354/46 X
3,603,234	9/1971	Strehle et al.	354/40 X
3,721,168	3/1973	Noack et al.	354/47
3,785,266	1/1974	Watanabe	354/46



1. In a single lens reflex camera including a through the lens light measuring network provided with alternatively actuatable fully open and stopped down aperture light measuring first and second circuits and a current meter responsive to the incident light; manually operative selector means for selectively alternatively actuating said first and second light measuring circuits, objective lenses interchangeably mounted on said camera and provided with means for identifying said respective lenses as being alternatively of the fully open aperture light measuring type and of the stopped down aperture type respectively, and means responsive to the concurrent mounting of an objective lens identified as a fully open aperture type and to the manual selection of said second circuit for disabling the light measuring operation of said network, said selector means being operable independently of the objective type of mounted on said camera lens.

B 516,060
SEMICONDUCTOR DEVICES

William S. Johnson, Hopewell Junction, N.Y., assignor to International Business Machines, Armonk, N.Y.

Division of Ser. No. 377,851, July 9, 1973, Pat. No. 3,873,372. This application Oct. 18, 1974, Ser. No. 516,060

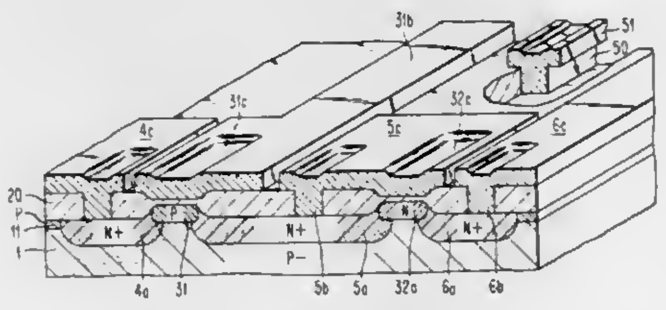
Int. Cl.² H01L *29/78, 27/02*

U.S. Cl. 357—23 **4 Claims**

References Cited

UNITED STATES PATENTS

3,653,978	4/1972	Robinson et al.	357/42
3,789,503	2/1974	Nishida et al.	357/23



1. A semiconductor device structure including an enhancement mode field effect transistor and a depletion mode field effect transistor, said semiconductor device structure comprising:

a body of silicon semiconductor material of P− conductivity type and having at least one planar surface;

a first discrete region of N+ conductivity type lying beneath and extending to said surface of said planar surface;

a second discrete region of P conductivity type lying beneath and extending to said surface of said planar surface;

a third discrete region of N+ conductivity type lying beneath and extending to said surface of said planar surface;

a fourth discrete region of N conductivity type lying beneath and extending to said surface of said planar surface;

a fifth discrete region of N+ conductivity type lying beneath and extending to said surface of said planar surface;

said second region lying between and extending from said first region to said third region;

said fourth region lying between and extending from said third region to said fifth region;

a sixth discrete region of P conductivity type;

said sixth region lying beneath and extending to the surface of said planar surface;

said first, second, third, fourth and fifth regions being wholly encompassed on said planar surface by said sixth region;

a relatively thick insulating layer overlaying said planar surface;

said layer being of substantially uniform thickness except for a relatively thin first area of said layer precisely overlaying said second region, and a relatively thin second area of said layer precisely overlaying said fourth region;

said layer having first, second and third apertures respectively exposing portions of said planar surface in said first, third and fifth regions;

first, second and third electrodes respectively making electrical contact with via said first, second and third apertures with said first, third and fifth regions;

a fourth electrode overlaying said relatively thin first area of said insulating layer to form a capacitive couple to said second region;

a fifth electrode overlaying said relatively thin second area of said insulating layer to form a capacitive couple to said fourth region;

where said first region constitutes the source of said enhancement mode field effect transistor, said second region constitutes the channel of said enhancement mode field effect transistor, said third region constitutes the drain of said enhancement mode field effect transistor and the source of said depletion mode transistor,

said fourth region constitutes the channel of said depletion mode field effect transistor,

said fifth region constitutes the source of said depletion mode field effect transistor,

said fourth electrode constitutes the gate electrode of said enhancement mode field effect transistor,

said fifth electrode constitutes the gate electrode of said depletion mode field effect transistor, and

said sixth region provides field protection for said structure comprising said enhancement mode field effect transistor and said depletion mode field effect transistor.

B 516,564
GATING CIRCUIT FOR THYRISTOR DEFLECTION SYSTEM

Willem den Hollander, Schlieren, Netherlands, assignor to RCA Corporation, New York, N.Y.

Filed Oct. 21, 1974, Ser. No. 516,564

Claims priority, application United Kingdom, Aug. 22, 1974, 369848/74

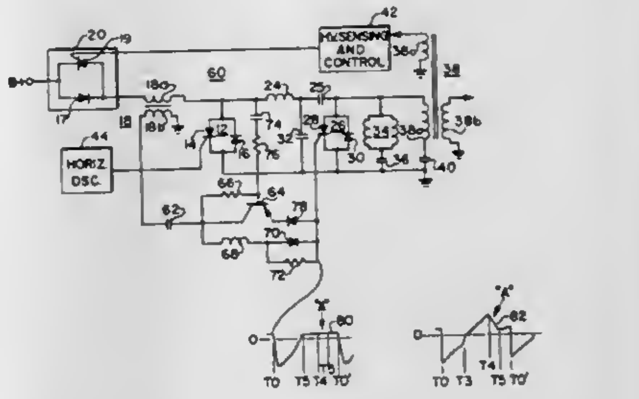
Int. Cl.² H01J *29/70*

U.S. Cl. 315—408 **9 Claims**

References Cited

UNITED STATES PATENTS

3,452,244	6/1969	Dietz	315/408
3,517,253	6/1970	Dietz	315/408
3,638,067	1/1972	Dietz	315/408
3,767,960	10/1973	Ahrens	315/408
3,767,963	10/1973	McArdle	315/408



9. In a deflection system a gating circuit comprising:

a first switching means coupled to a deflection winding for supplying a first quantity of energy to said deflection winding during a trace interval of each deflection cycle;

a commutating means coupled to said deflection winding for supplying a second quantity of energy to said deflection winding during a commutating interval of each deflection cycle;

said commutating means including a second switching means for providing switching to initiate said commutating interval;

first conducting means coupled to said commutating means and to said first switching means for providing a first polarity portion of gating signals developed by said commutating means to said first switching means during said trace interval to enable conduction of said first switching means;

said first conducting means including reactive means for peaking said gating signals to enable conduction of said first switching means at a predetermined point in said trace interval; and

second conducting means coupled in parallel with said first conducting means and to said second switching means for providing a second polarity portion of said gating signals to said first switching means during conduction of said second switching means to enable the turn off of said first switching means during said commutating interval.

B 526,190

METHOD AND MEANS OF MONITORING THE EFFLUENT FROM NUCLEAR FACILITIES

Kenneth R. Lattin, and Gerald L. Erickson, both of Richland, Wash., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Nov. 22, 1974, Ser. No. 526,190

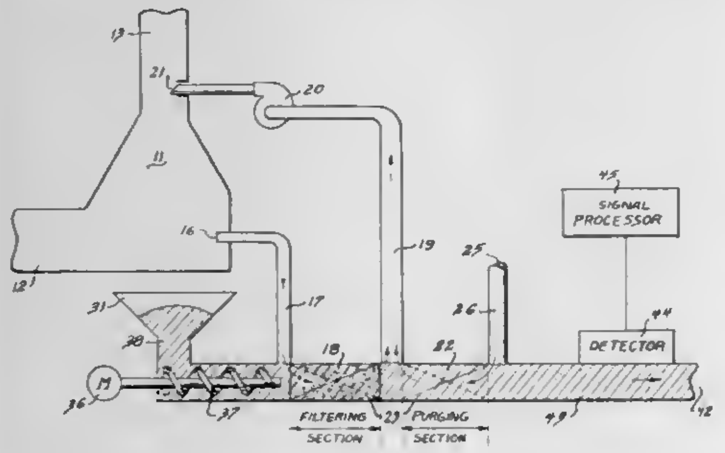
Int. Cl.² G01T *1/20*

U.S. Cl. 250—364 **8 Claims**

References Cited

UNITED STATES PATENTS

3,185,845	5/1965	Lively et al.	250/304
3,590,247	6/1971	Holford	250/304
3,864,574	2/1975	Wilhelm et al.	250/364



1. A method of measuring quantities of adsorbable radioactive materials on a continuous basis in a stream of gas containing nonadsorbable radioactive materials comprising in sequence the steps of:

a. passing the stream of gas through an adsorbent filter;
b. conveying the adsorbent filter through a filter section while passing the stream of gas through the adsorbent filter;
c. conveying the adsorbent filter through a purging section while passing a purging gas through the adsorbent filter;
d. conveying the adsorbent filter to a detecting section; and
e. measuring in the detecting section the radiation emitted by radioactive materials remaining on the adsorbent filter.

B 527,187

CONDITION-INITIATED LOAD CONTROL CIRCUIT

John J. Powers, East Weymouth, and Joseph R. Thibodeau, Dedham, both of Mass., assignors to Sigma Instruments, Inc., Braintree, Mass.

Filed Nov. 26, 1974, Ser. No. 527,187

Int. Cl.² H03H *9/00*

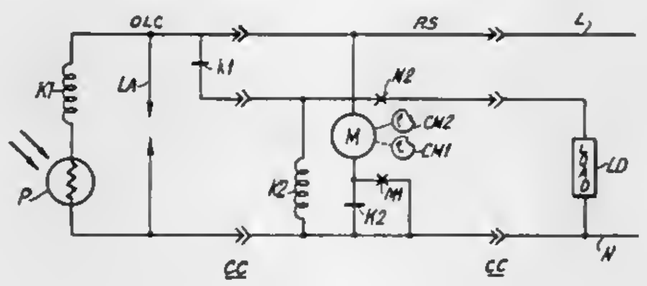
U.S. Cl. 317—124 **24 Claims**

References Cited

UNITED STATES PATENTS

2,697,803	12/1954	Eadie, Jr.	317/124

1. An apparatus for energizing a load from energy carrying conductors, comprising detector means responsive to a cyclically recurring physical condition for exhibiting a first mode in response to the physical condition and a second mode in response to the absence of the condition, control means exhibiting a first mode and a second mode and coupled to said detector means for shifting from the first mode to the second mode while the detector means is in the first mode, and for shifting back to the first mode after a given time less than the period of the cyclically recurring physical condition, and circuit means for coupling the detector means and the conductors and the control means and the load in circuit relationship; said circuit means being responsive to said control means being in the second mode, and said detector means simultaneously being in the second mode in response to the absence of the condition, for connecting the lines across the load.



B 530,813

CLASS AB-DUAL PUSH-PULL AMPLIFIER

David Gene Ross, Red Bank, and Paul Schnitzler, Kendall Park, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 9, 1974, Ser. No. 530,813

Int. Cl.² H03F *3/26*

U.S. Cl. 330—15 **9 Claims**

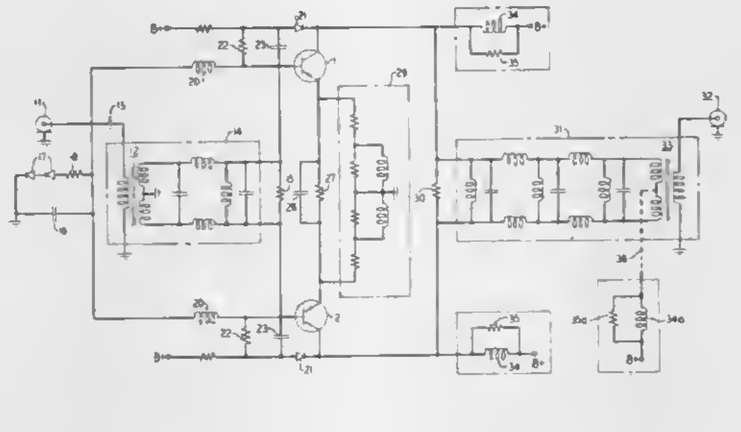
References Cited

UNITED STATES PATENTS

3,239,772	3/1966	Dennis	330/15 X
3,421,099	1/1969	O'Malley	330/15
3,676,613	7/1972	Brewer	179/170 T
3,806,862	4/1974	Chao	330/15 X

FOREIGN PATENTS OR APPLICATIONS

1,178,897	10/1964	Germany	330/118



1. A linear amplifier comprising a pair of transistors each having an emitter, a collector and a base electrode, means for connecting the transistors in push-pull configuration, means for biasing the transistors at or near collector saturation, and means for providing a constant current source for at least short durations.

B 539,746

THERMIONIC CONVERTER

Ned S. Rasor, Sunnyvale, and Edward J. Britt, Cupertino, both of Calif., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 9, 1975, Ser. No. 539,746

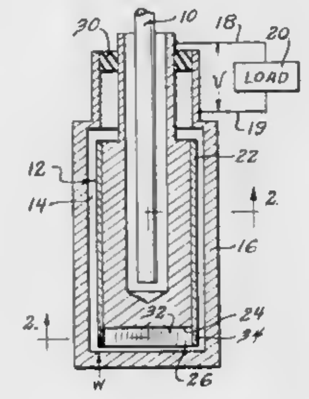
Int. Cl.² A01J *45/00*

U.S. Cl. 310—4 R **7 Claims**

References Cited

UNITED STATES PATENTS

2,510,397	6/1950	Hansell	310/4
3,021,472	2/1962	Hernquist	310/4 X
3,238,395	3/1966	Sense	310/4
3,239,745	3/1966	Hernquist	310/4 X
3,267,308	8/1966	Hernquist	310/4
3,381,201	4/1968	Angello	310/4 X
3,470,393	9/1969	Moncorge	310/4
3,578,992	5/1971	Paine	310/4



1. A gas-filled thermionic converter for generating a current through a load in response to heat applied to the converter from a heat source, comprising, a collector, an emitter coupled to said collector by the load and having a main emitter surface region so positioned with respect to said collector to form a main gap therebetween and having an auxiliary emitter surface region in direct electrical and thermal contact with said main emitter region so that said regions are at about the same temperature, said auxiliary emitter region being so positioned with respect to said collector to form an auxiliary gap therebetween partially isolated from said main gap with access allowed therebetween, and an ionizable gas within said auxiliary gap and said main gap capable of migrating therebetween, with sufficient heat from the heat source applied to said emitter to cause the emission of electrons therefrom, the work function of said auxiliary emitter region being of such value with respect to the sum of the work function of said collector and the voltage across the load that an ignited discharge occurs between the auxiliary emitter and collector in said auxiliary region and the work function of said main emitter region being of sufficient value with respect to the sum of the work function of said collector and the voltage across the load that an unignited discharge occurs in said main gap simultaneously with the ignited discharge in said auxiliary gap, said ignited discharge ionizing a portion of said ionizable gas so that the resulting ionized gas migrates to said main gap to sustain said unignited discharge.

B 548,302

CHARGE CANCELING STRUCTURE AND METHOD FOR INTEGRATED CIRCUITS

Kenneth R. Stafford, and John P. Guadagna, both of San Jose, Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Feb. 10, 1975, Ser. No. 548,302

Int. Cl.² H03K *17/16, 17/60*

U.S. Cl. 307—251 **3 Claims**

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UNITED STATES PATENTS

3,636,378	1/1972	Ohashi et al.	307/251
3,662,356	5/1972	Michon et al.	357/23 X
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3,753,132	8/1973	Hill	307/251 X
3,808,458	4/1974	Mundy et al.	307/251 X
3,859,545	1/1975	Clemons et al.	307/251 X

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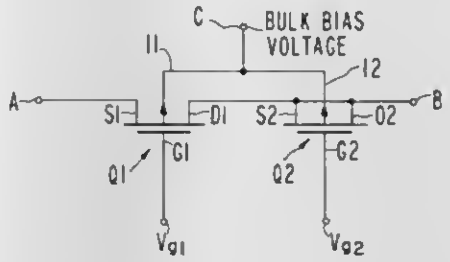
Rossero, "Analog Switch With Gating Spike Suppression;" IBM Tech. Discl. Bull.; Vol. 14, No. 9, pp. 2825–2826; 2/1972.

Crider, "Resetting Circuit;" IBM Tech. Discl. Bull.; Vol. 12, No. 10, pp. 1601; 3/1970.



3. The method of operating a transistor switching circuit comprising a first MOS switching transistor and a second MOS charge cancelling transistor wherein said second MOS charge cancelling transistor possesses a source and drain region each connected to the drain of said first MOS switching transistor, comprising the steps of:

1. applying a first gate voltage to the gate of said first MOS transistor; and
2. simultaneously applying a second gate voltage, the complement of said first gate voltage, to the gate of said second MOS transistor thereby to cancel any charge induced by said first gate voltage in the drain of said first MOS transistor by a charge equal in magnitude but opposite in polarity induced in the source and drain regions of said second MOS transistor.

REISSUES

FEBRUARY 17, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,712

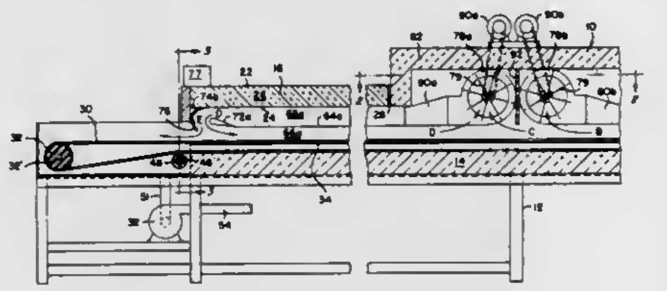
PARALLEL FLOW CRYOGENIC FREEZER

David J. Klee, Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Original No. 3,345,828, dated Oct. 10, 1967, Ser. No. 463,196, June 11, 1965. Application for reissue Aug. 6, 1969, Ser. No. 849,223

Int. Cl.² F25D *3/10*

U.S. Cl. 62—216 **11 Claims**



1. A method for ultra-fast freezing of products with a cryogenic refrigerant including the steps of:

(a) continuously moving said product to be frozen through an insulated tunnel along a predetermined path;
(b) continuously contacting said product with a cryogenic liquid in said tunnel to freeze the product while vaporizing the cryogenic liquid to form a cold gas;
(c) continuously collecting said cold gas resulting from said vaporization in a portion of said tunnel;
(d) continuously recirculating the major portion of said collected gas through a substantially closed path at least one-half of which closed path is parallel to and coincident with said predetermined path along a substantial extent thereof;
(e) continuously adding cold gas resulting from newly vaporized cryogenic liquid to said recirculation path;
(f) continuously removing some of said recirculated gas from said closed path in an amount which is substantially equal to the amount of cold gas continuously added to said recirculation path;
(g) maintaining the velocity of said recirculated gas in said closed path sufficient to cause turbulent flow of the gas in contact with said food product;
(h) collecting a minor portion of said cold gas in a reservoir immediately adjacent the outlet of said tunnel;
(i) detecting the level of said cold gas in said reservoir; and
(j) regulating the amount of recirculated gas which is removed from said substantially closed path as a function of said detected level.

Re. 28,713

HYPODERMIC NEEDLE AND SUPPORT STRUCTURE THEREFOR

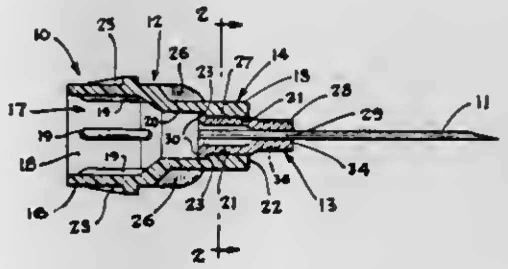
Peter A. Stevens, Middlebury, Conn., and Donald W. Utting, Deland, Fla., assignors to Sherwood Medical Industries, Inc., St. Louis, Mo.

Original No. 3,234,944, dated Feb. 15, 1966, Ser. No. 243,573, Dec. 10, 1962. Application for reissue Oct. 1, 1973, Ser. No. 402,308

Int. Cl. A61m *5/32*

U.S. Cl. 128—221 **4 Claims**

1. A hypodermic needle support structure comprising in combination [;] *:* a plastic main support member having *an inner end, and an outer end portion terminating in an outer end;* a passage extending longitudinally *through said support member to provide* [therethrough which provides] access to the interior of said support member from either end thereof*; said longitudinally extending passage including a smaller diameter portion adjacent said outer end and a larger diameter portion adjacent to said smaller diameter portion; means defining a shoulder between said smaller diameter portion and said larger diameter portion;* [with said support member having at the outer end]*; said outer end portion of said support member including* a rigid support section [,] ; a generally tubular metal eyelet member*; a hypodermic needle cannula; said eyelet member being* disposed in fluid-sealing engagement with said support section and forming a fixed fluid-sealing engagement with [a] *said* hypodermic needle cannula, said eyelet member having *an inner end disposed within said smaller diameter portion of said support member and an outer end extending axially through sid outer end of said support member; a radially outwardly extending skirt section on said inner end of said eyelet member; said skirt section having an outer diameter which is larger than the diameter of said smaller diameter portion of said longitudinally extending passage in said support member and which is in fluid-sealing engagement with said shoulder between said smaller and larger diameter portions of said longitudinally extending passage; said* [at the inner end thereof a] skirt section [with] *having* a diameter larger than the outer diameter of said hypodermic needle cannula and [with] said skirt section forming said fluid-sealing engagement with said support section, and said eyelet member having extending axially from the outer end of said skirt section a tubular stem section which extends longitudinally beyond the end of said support section, and said stem section forming said fixed fluid-sealing engagement with said hypodermic needle cannula at a point spaced axially beyond said outer end of said support section *the diameter of said stem section of said eyelet member being smaller, throughout its entire length, than the smallest diameter portion of said longitudinally extending passage, whereby said eyelet member may be inserted through said inner end of said support member and said stem section may pass through said outer end of said support member until said skirt section engages said shoulder between said smaller and larger portions of said longitudinally extending passage in said support member.*



Re. 28,714

INTERNAL SEAL FOR ROTARY PISTON COMBUSTION ENGINE

Max Ruf, Obereisesheim, Germany, assignor to Audi NSU Auto Union Aktiengesellschaft and Wankel GmbH, both of, Germany

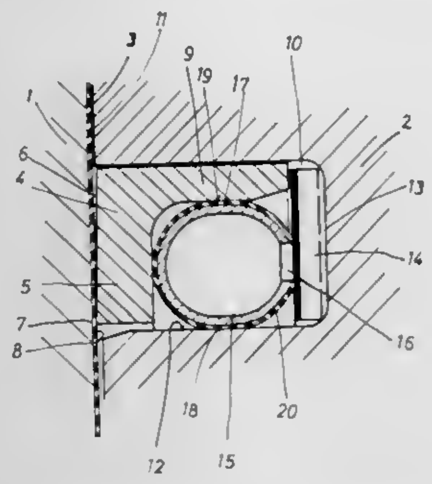
Original No. 3,802,812, dated Apr. 9, 1974, Ser. No. 271,766, July 14, 1972. Application for reissue Aug. 29, 1974, Ser. No. 501,655

Int. Cl.² F01C *19/12*

U.S. Cl. 418—142 **5 Claims**

1. An internal seal for rotary piston combustion engines of the trochoid type having a housing of two end pieces and a multi-arcuate shell in which a polygonal piston is rotatably mounted on an eccentric, the piston having at least one sealing

ring concentric with its axis of rotation in a recess on each of its two end faces the sealing ring being pressed by spring means against the adjoining end piece and sealingly slidable thereon, said sealing ring having **[**a**]** *an inner* surface parallel to *and spaced from* a wall of said recess and means for establishing a seal between said *inner surface of said* sealing



ring and said wall the improvement which comprises as the means for establishing said seal; a spring metal ring, C-shaped in cross-section, interposed *in the space* between said *inner* surface and said wall and abutting each of said *inner* surface and said wall along continuous lines of contact, said C-shaped ring **[**forcing**]** *sealing the space between* said sealing ring *inner* surface **[** against **]** *and* said recess wall.

Re. 28,715

POLYURETHANES, REACTIVE SOLUTIONS AND METHODS AND THEIR PRODUCTION

Paul Stamberger, 552 W. University Parkway, Baltimore, Md. 21210

Original No. 3,383,351, dated May 14, 1968, Ser. No. 389,184, Aug. 12, 1964. Application for reissue Feb. 19, 1974, Ser. No. 443,717

Int. Cl.^{2} C08K *5/06*

U.S. Cl. 260—33.2 R **32 Claims**

1. A method for preparing reactive compositions convertible to elastic polyurethane products **[** by **]** comprising the steps of

(a) dispersing a minor amount of ethylenically unsaturated monomer in a major amount of a solvent medium, said solvent medium consisting essentially of at least one normally liquid polyol essentially free from ethylenic unsaturation and having a molecular weight of at least about 2,000 and a hydroxyl number in the range of about 30 to about **[** 140 **]** *600, said hydroxyl number being appropriate to provide an elastic polyurethane*, and

(b) polymerizing said monomer in said solvent by free radical addition polymerization to a substantially linear polymer having a molecular weight of at least 5,000 to provide a liquid, stable dispersion of polymerpolyol having a viscosity of less than 40,000 cps at 10% polymer concentration.

said *substantially linear* polymer being film-forming and *having radicals reactive with isocyanate radicals*, said reactive composition being convertible to an elastic polyurethane product upon reaction with an organic polyisocyanate.

Re. 28,716

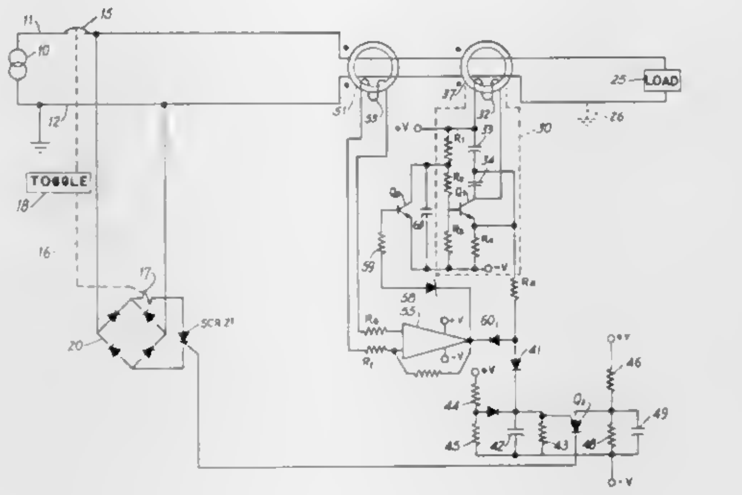
APPARATUS FOR DETECTING A GROUND CONNECTION ON LOAD SIDE OF NEUTRAL CONDUCTOR

James R. Montz, Two Rivers, Wis., assignor to AMF Incorporated, White Plains, N.Y.

Original No. 3,800,189, dated Mar. 26, 1974, Ser. No. 310,184, Nov. 28, 1972. Application for reissue Mar. 21, 1975, Ser. No. 560,852

Int. Cl.^{2} H02H *3/16, 3/28*

U.S. Cl. 317—18 D **23 Claims**



20. A fault protection circuit for use in an electrical supply system to disconnect one or more conductors of the system from the system source in the event of a fault in the system, said circuit comprising

fault sensing means coupled to the conductors between the system source and load for producing an electrical signal in response to a fault condition in the system,

a time constant detection circuit for providing a d.c. voltage, said detection circuit having a given discharge rate in the absence of an input signal thereto,

voltage means for maintaining a d.c. voltage of a first magnitude in said detection circuit in the absence of a fault in said system,

first diode means coupled between said voltage means and said detection circuit and connected to prevent discharge of the time constant detector circuit therethrough,

second diode means having one terminal coupled to said fault sensing means and its other terminal coupled between said voltage means and said first diode means,

said second diode means being rendered conductive by said electrical signal from the fault sensing means,

said second diode means being connected with a polarity to block current flow through said first diode means upon occurrence of said electrical signal from the fault sensing means, whereby the voltage magnitude in said time constant detection circuit will change to a second magnitude,

a semiconductor device having at least two terminals and operable between conducting and nonconducting states,

means for coupling the first terminal of the semiconductor device to said detection circuit,

means for coupling a voltage source to the second terminal of the semiconductor device, the magnitude of the voltage of said voltage source being proportioned with respect to the characteristics and parameters of the semiconductor device to maintain said device in one of its states when the voltage in said detection circuit is at said first magnitude and to transfer said device to its other state when the voltage magnitude in said detection circuit is at said second magnitude, and

means coupled to said semiconductor device for interrupting supply system current on said conductors in response to said semiconductor device transferring to said other state.

PATENTS

GRANTED FEBRUARY 17, 1976

ERRATA

For CLASS	See PATENT NO.
072-104	3,938,374
072-108	3,938,375
222-102	3,938,474
197-176	3,938,644
241-231	3,938,732
267-140	3,938,795
296-154	3,938,856
297-263	3,938,857
297-284	3,938,858
297-385	3,938,859
297-440	3,938,860
297-027	3,938,861
424-309	3,939,253
323-022 T	3,939,399
325-047	3,939,407
357-072	3,939,488

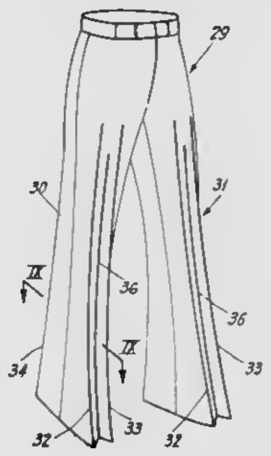
PATENTS

GRANTED FEBRUARY 17, 1976

GENERAL AND MECHANICAL

3,938,196
TROUSERS

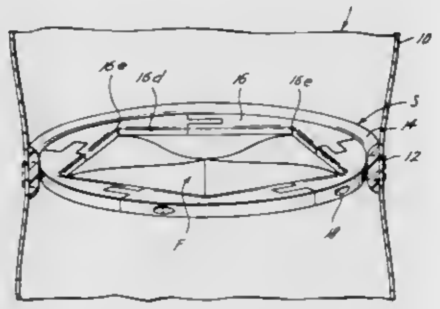
Raymond Zaoul, 11 rue Le Vau, Paris, France
Filed Nov. 9, 1973, Ser. No. 414,325
Claims priority, application France, May 29, 1973, 73.19442
Int. Cl.² A41D *1/10*
U.S. Cl. 2—227 **1 Claim**



1. A pair of trousers comprising a pair of legs, each leg formed of only two side-pieces joined together along a line of stitching at the inseam and the outseam areas, each leg having at least three ribbed creases extending generally longitudinally along its periphery and comprising longitudinally extending ridges, and each leg having at least one inwardly recessed pleat extending generally longitudinally along the trouser leg and located between two adjacent ribbed creases.

3,938,197
CENTRAL FLOW PROSTHETIC CARDIAC VALVE

Simcha Milo, 4/19 Edmond Fleg St., Haifa, Israel
Filed Sept. 3, 1974, Ser. No. 502,306
Int. Cl.² A61F *1/22*
U.S. Cl. 3—1.5 **13 Claims**

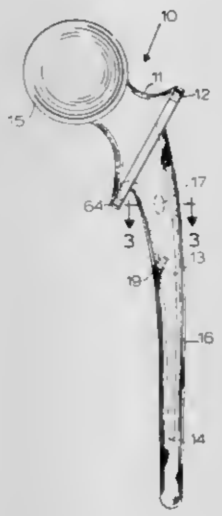


10. In a prosthetic cardiac valve adapted to be disposed within the aortic, mitral, or tricuspid rings, having an annular valve support forming an opening and at least one valve flap pivotally disposed about the annular valve support to close said opening, the improvement residing in the valve flap which comprises:

- a generally flat body of a generally triangular configuration having a base pivotally mounted on the valve support at a hinged portion thereof and an end opposite said base and adapted to close the opening in the annular valve support when in the closed position and to pivot to open the same; and,
- a curved sealing surface formed adjacent said hinged portion of said flap body cooperating with means on said valve support for sealably joining said flap body with the valve support while the valve is in an open or a closed position.

3,938,198
HIP JOINT PROSTHESIS

Paul Kahn, San Francisco, and James A. Stubstad, Lafayette, both of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.
Continuation of Ser. No. 162,936, July 15, 1971, abandoned, and a continuation-in-part of Ser. No. 60,804, Aug. 4, 1970, abandoned. This application Sept. 27, 1973, Ser. No. 401,506
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.912 **6 Claims**

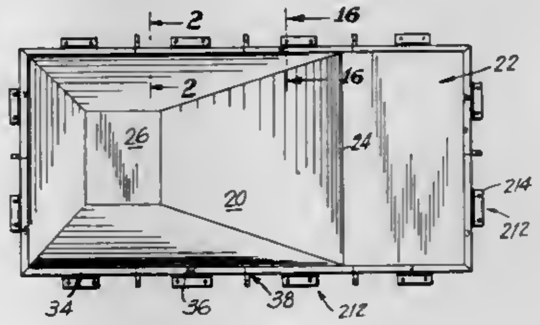


6. A femoral head prosthesis, including in combination:

a. a rigid ball member,
b. a rigid stem core member extending from said ball member and integral therewith,
c. a cushioning coating of elastomer secured to and at least partially enclosing said stem core member, and
d. a surface layer of fibrous material capable of receiving tissue ingrowth secured to at least a portion of said elastomer.

3,938,199
SWIMMING POOL COMPONENTS

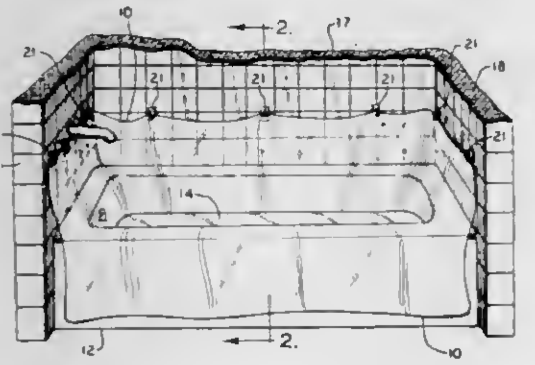
Merrill L. Laven, 4 Marion Ave., Albany, N.Y. 12203
Filed Dec. 27, 1973, Ser. No. 428,882
Int. Cl.² E04H *3/16, 3/18;* **F16L** *21/02*
U.S. Cl. 4—172.19 **38 Claims**



1. In a swimming pool, a plastic liner sheet having an inner surface defining the interior of the pool and an outer surface directed away from the interior of the pool, substantially rigid plastic backing means engaging said sheet at the outer surface thereof and forming a backing for said sheet, and concrete-retaining means operatively connected with an upper region of said plastic backing means and being composed of a plastic sheet material which extends from said upper region of said plastic backing means first upwardly and inwardly and then rearwardly and outwardly where said concrete-retaining means has an upper wall which is inclined slightly downwardly as well as rearwardly with said concrete-retaining means forming a hollow space capable of receiving concrete, and said concrete-retaining means having at the region where it extends upwardly and inwardly from said plastic backing means a wall structure integral with the concrete-retaining means and defining a groove for receiving an upper edge region of said plastic liner sheet.

3,938,200
CONTAMINATION PREVENTION SYSTEM FOR BATHTUB

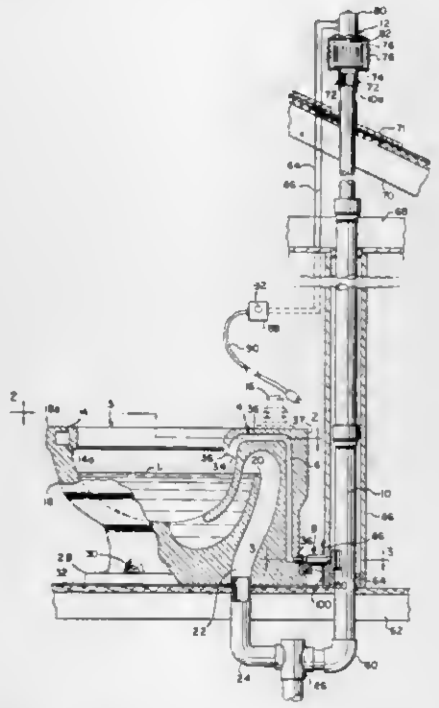
Thomas J. Roberts, Elk Grove, and Donald L. Paulson, Rolling Meadows, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed June 30, 1975, Ser. No. 591,375
Int. Cl.² A47K *13/00*
U.S. Cl. 4—173 R **7 Claims**



1. A contamination prevention system to be installed in conjunction with a bathtub in a bathroom of a health-care institution to prevent the various patients that use the bathtub from cross-infecting each other, where the two ends and the back of the bathtub are built into the bathroom walls, comprising:
   a series of hooks affixed to the three bathroom walls, surrounding the bathtub, at predetermined spaced-apart locations;
   a disposable, flexible, flimsy, water-tight, non-toxic, slip-resistant, biologically-clean, rectangular-shaped liner, made of transparent plastic film, for lining the entire inside of the bathtub, before it is filled with water, to provide a barrier to block the transmission of bacteria between the water and bathtub to preclude cross-infections between patients,
   the peripheral edge portions of said liner adjacent to the bathroom walls having a series of openings at predetermined spaced-apart areas to facilitate hanging of said liner from said hooks, said openings being made by using said hooks to pierce said liner, and the peripheral edge portion adjacent to the front of the bathtub being draped thereover;
   and a series of spaced-apart markers on said liner, each of which corresponds to a respective assigned one of said hooks, to designate the predetermined areas where said liner should be pierced, to make said openings, and hung onto said hooks, thereby aiding the installer in expediting the proper positioning and centering of said liner within the bathtub.

3,938,201
VENTILATOR FOR A TOILET BOWL

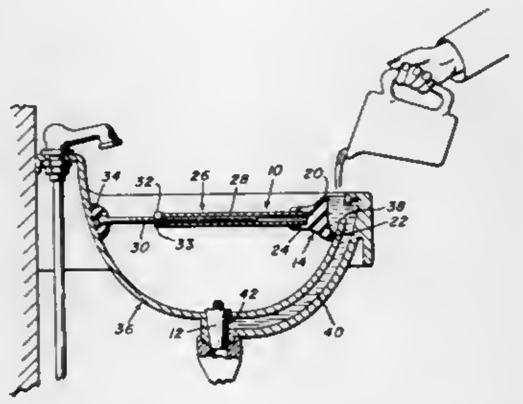
Dan McGrew, 533 Crockett St., Grand Prairie, Tex. 75050
Filed Nov. 4, 1974, Ser. No. 520,663
Int. Cl.² E03D *9/04;* **A47K** *13/00*
U.S. Cl. 4—213 **5 Claims**



1. Ventilating apparatus comprising a toilet bowl having a manifold formed in the upper rear portion thereof, such that a first end communicates with the inner portion of said toilet bowl and the other end communicates with the exterior rear wall of said toilet bowl; a lip formed above and adjacent the first end of the manifold; a vent stack; coupling means to connect said manifold to the vent stack; a flapper valve element pivotally secured to the interior wall of the coupling means, said flapper valve element being movable toward the vent stack by air pressure; a shoulder to limit the movement of said flapper in a direction away from said vent stack; an exhaust fan secured to the upper end of said stack; a time delay opening switch; conductor means to connect said switch to the exhaust fan; a power source connectable to said switch.

3,938,202
ASSEMBLY FOR CLEANING OVERFLOW PASSAGEWAY IN LAVATORY BOWL

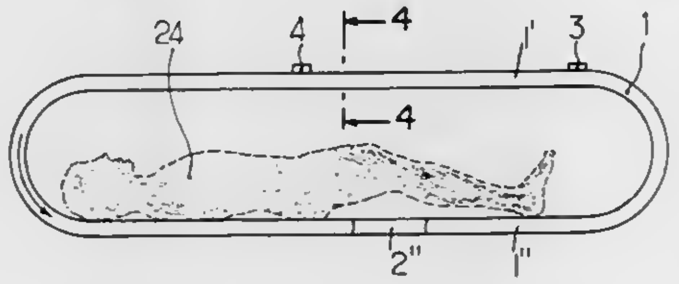
Lucian F. Greer, 1700 N. H St., Midland, Tex. 79701
Filed Aug. 22, 1974, Ser. No. 499,849
Int. Cl.² E03D *11/00*
U.S. Cl. 4—255 **10 Claims**



1. An assembly for cleaning the overflow passage in a lavatory bowl comprising a liquid directing cup-like shield and means for fixing said shield about the inlet to the overflow passage adjacent the upper edge of a lavatory bowl, said shield including an upwardly opening liquid receiving portion and a laterally directed liquid discharging portion for lateral discharge of liquid into an overflow passage inlet.

3,938,203
PATIENT-LIFTER

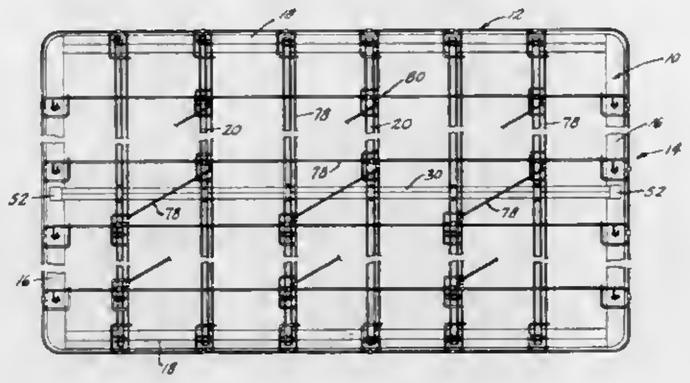
Robert Linard, Nancy, France, assignor to Societe Anonyme dite: SETIM Societe d'Etudes Techniques des Industries Metallurgiques, France
Filed Nov. 1, 1974, Ser. No. 520,351
Claims priority, application France, Nov. 5, 1973, 73.40209
Int. Cl.² A47B *83/04*
U.S. Cl. 5—81 R **9 Claims**



1. Apparatus for supporting and transferring a patient, comprising:
   a framework comprising a pair of closed slideway tracks, said tracks being laterally spaced apart and being disposed in parallel generally vertical planes for positioning the tracks in stationary condition on sides of a flat support surface for a patient, the tracks having upper and lower, normally horizontal track portions and having a terminal track portion interconnecting ends of the horizontal track portions; and
   flexible stretcher means disposed to be guided by said track portions for positioning the flexible stretcher means, along said lower track portion, between the support surface and the patient to transfer the patient onto and from the flexible stretcher means.

3,938,204
FRAME CONSTRUCTION FOR BOX SPRING ASSEMBLIES

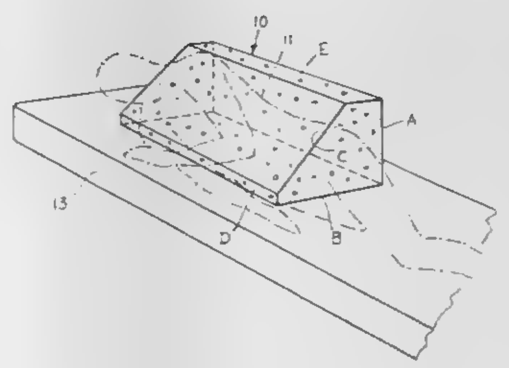
Walter V. Slominski, Ann Arbor, Mich., assignor to Hoover Ball and Bearing Company, Saline, Mich.
Filed Apr. 8, 1971, Ser. No. 132,511
Int. Cl.² A47C *23/04*
U.S. Cl. 5—255 **3 Claims**



1. A box spring assembly comprising a frame having substantially horizontal side and end rails and a plurality of transversely spaced cross rails supported on and extending between said side rails, each of said cross rails being pre-stressed so that it is longitudinally arched and being secured at the ends thereof to said side rails, the longitudinal arch in a cross rail providing for a location of the center portion thereof above the ends thereof, and a center rail extending transversely of said cross rails and secured at the ends thereof to said end rails, said center rail being connected intermediate the ends thereof to said cross rails and being pre-stressed so that it is longitudinally arched and has the center portions thereof disposed above the ends thereof, a plurality of springs forming a spring assembly of substantially uniform height and having a top deck, and means on said cross rails providing for the support of at least some of said springs thereon in predetermined fixed positions so that the top deck is convexly arched in two directions when viewed from above as a result of said arching of said cross rails and said center rail, said cross rails being generally U-shaped in transverse section and each having a base section and upright leg sections, said base sections being formed with downwardly extending tabs arranged in pairs and aligned with said center rail, and said center rail being interlocked with and arranged between the tabs in each pair.

3,938,205
BODY POSITIONER

Donald C. Spann, 5 Ferncreek Court, Greenville, S.C. 29607
Filed Aug. 19, 1974, Ser. No. 498,399
Int. Cl.² A47C *21/00*
U.S. Cl. 5—327 B **1 Claim**



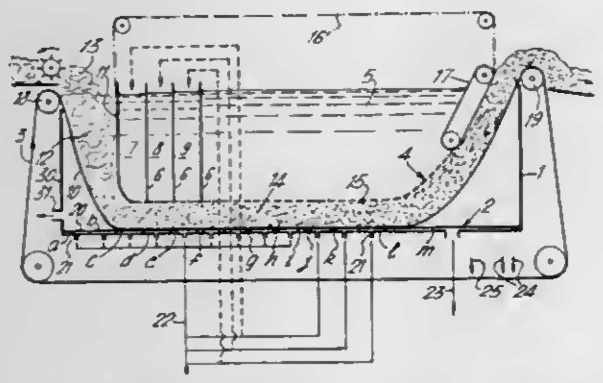
1. A body positioner for providing lateral support for the body of a patient lying upon an operating table, diagnostic examining table, and the like comprising:
   A. an elongated flexible block structure of resilient deformable polyurethane foam material having an unsymmetrical pentagonal cross-section;
   B. a first major planar surface carried by said block;
   C. a second major planar surface at right angles to said first major surface;
   D. a third major planar surface opposite said first and second major surfaces;
   E. a first minor planar surface joining said third major surface with said first major surface;
   F. a second minor planar surface joining said third major surface with said second major surface;
   G. the said structure having a length greater than its width for supporting a substantial portion of the patient's lateral body length extending from about the shoulders to below the waist for increased stability; and
   H. one of said minor surfaces having a width greater than the width of the other minor surface;
   whereby the structure may be variably based on any one of said major surfaces on the table to provide a variety of lateral body support surfaces for adjustably and stably supporting a patient's body in a variety of lateral body positions to obtain a desired patient body position on the table.

3,938,206

METHOD FOR CONTINUOUS DISPLACEMENT WASHING OF LIQUID-CONTAINING PULP MATERIALS

Per Stranger-Johannessen, Minister Ditleffs vei 17a, Oslo 8, Norway

Filed Jan. 8, 1974, Ser. No. 431,734
Claims priority, application Norway, Jan. 10, 1973, 99/73
Int. Cl.² D06B *3/02;* D21C *9/02*
U.S. Cl. 8—156 8 Claims



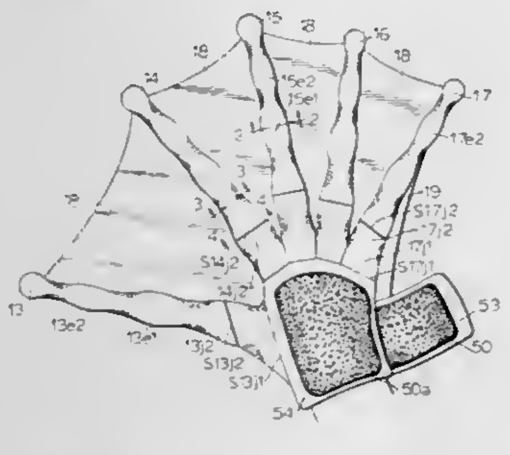
1. A method for the continuous washing of liquid-containing pulp material with a displacement liquid, comprising traversing a filter along a predetermined path, supporting said filter throughout a substantial portion of said path upon a support floor, continuously depositing a mat of liquid-containing pulp material upon said filter for movement therewith, separately supplying displacement liquid to the upper surface of said mat of pulp material and maintaining a predetermined head of said displacement liquid thereon, said head of displacement liquid being sufficient to overcome the resistance to the flow of liquids through said mat offered by the average flow resistance of the mat and the additional resistance to flow offered by a resistance floor which includes at least one of said filter and support floor, whereby the liquids in said pulp material are continuously displaced by said displacement liquid, and recovering the displaced pulp liquids substantially undiluted by said displacement liquid.

3,938,207

SWIMMER'S GLOVE HAVING JOINTS BENDABLE ONLY IN CLOSING DIRECTION OF THE HAND

Gary Clyde Drescher, 1000 Lindbergh Ave., Stroudsburg, Pa. 18360

Filed Oct. 25, 1973, Ser. No. 409,367
Int. Cl.² A63B *31/02*
U.S. Cl. 9—308 31 Claims



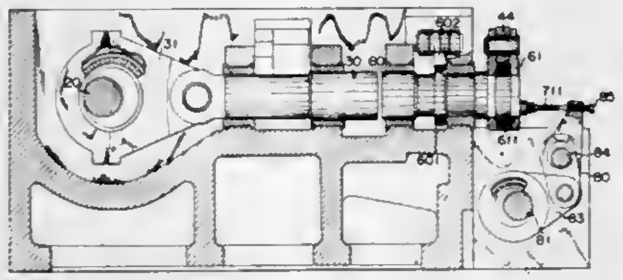
1. A swimmer's glove comprising a hand portion having a palm portion of flexible-non-stretchable material and a back portion, a plurality of partially hollow generally tubular fingers extending from said hand portion in a normal position, joints joining said fingers to said hand portion, one of said fingers being a thumb, at least one joint along each of said fingers other than said thumb outwardly of said hand portion, at least one joint enlargement along each of said fingers other than said thumb outwardly of said and along said thumb outwardly of said joint between said thumb and said hand portion, and flexible webs between adjacent fingers, each joint having a lower portion on the palm side of the glove which is connected with the portions of the glove on either side thereof and having an upper portion projecting at least to the backside of the glove and including means for permitting bending of the joint in the closing direction of the hand and whereby the hand and fingers of the swimmer are reinforced against bending in the opening direction of the hand when force is exerted on the glove from the side toward the closing direction of the hand as the swimmer moves the glove through the water while swimming, and the glove can be bent easily around the lower portions of the joints when the hand of the swimmer is closed.

3,938,208

KNOCKOUT MECHANISM FOR A HIGH-SPEED AUTOMATIC COLD HEADING MACHINE

Yuan Ho Lee, 85, Jen Ho Road, Tainan, China /Taiwan

Filed Aug. 15, 1974, Ser. No. 497,728
Int. Cl.² B23G *11/00;* B21D *45/00*
U.S. Cl. 10—11 E 3 Claims



1. A knockout mechanism for a high-speed automatic heading machine comprising:
- a first eccentric shaft adapted to be driven by a source of power;
- a second eccentric shaft;
- a driving link mounted by bearing means on said first eccentric shaft;
- a rocker arm pivotally connected to said driving link at a location spaced from a connection between said driving link and said first eccentric shaft, said rocker arm also being connected to said second eccentric shaft so that when said first eccentric shaft is driven, said rocker arm continuously oscillates; and
- knockout means secured to said rocker arm for ejecting a blank from a die of the heading machine.

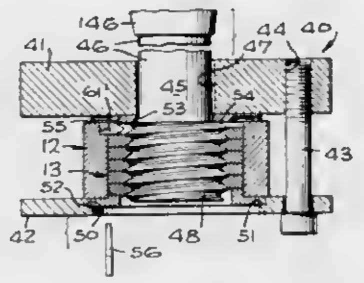
3,938,209

FORMATION OF FASTENERS HAVING THREADS FORMED OF COIL STRUCTURES

Mark Hattan, Newport Beach, Calif., assignor to William P. Green, Pasadena, Calif., a part interest

Continuation of Ser. No. 338,290, March 5, 1973, abandoned, which is a continuation-in-part of Ser. Nos. 229,996, Feb. 28, 1972, abandoned, and Ser. No. 121,817, March 8, 1971, abandoned. This application Nov. 22, 1974, Ser. No. 526,230
Int. Cl.² B21D *53/24*
U.S. Cl. 10—86 A 16 Claims

1. The method of forming a composite nut that includes positioning within a case a separately formed helical coil structure which is formed of metal in work-hardened condition and has a radially inner portion shaped to form an internal thread and a radially outer portion with an outer surface proximate the case; directing a high energy beam generally axially along the inner surface of said case and along said outer surface of the coil structure in a relation forming a fusion bond between said case and said radially outer portion of said coil structure; locally heating said radially outer portion of the coil structure by said high energy beam, during formation of said fusion bond, to a temperature locally adversely affecting the work-hardened condition of said radially outer portion; maintaining said internal thread formed by said inner portion of the coil structure in threaded engagement with an external thread on a highly heat conductive heat sink mandrel during said heating; and conducting heat away from said inner portion of the coil structure through the engaged threads of said heat sink mandrel during said heating and at a rate maintaining said inner portion of the coil structure at a temperature substantially lower than said radially outer portion, and low enough to prevent destruction of its thread shaped configuration, and to prevent as great an adverse effect if any on the work-hardened condition of said inner portion as on said outer portion, and thereby maintain said inner portion and the thread formed thereby substantially harder than said outer portion.

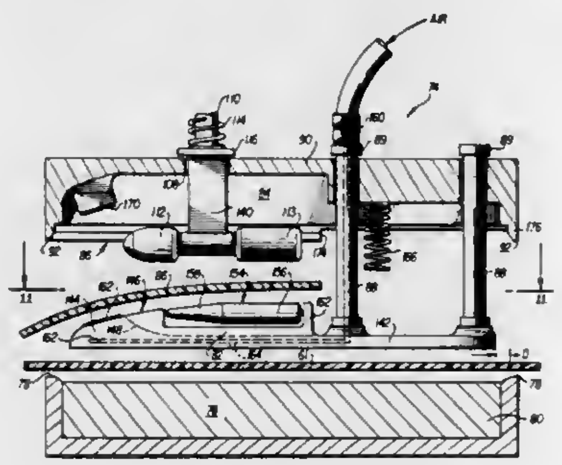


3,938,210

SCUFF SLIPPER AND METHOD AND APPARATUS FOR THE MANUFACTURE THEREOF

James G. Mitchell; Winalee G. Mitchell, both of Perrysburg, and Paul D. Purdy, Waterville, all of Ohio, assignors to James G. Mitchell and Winalee G. Mitchell, both of Perrysburg, Ohio

Filed Jan. 21, 1975, Ser. No. 542,751
Int. Cl.² A43D *00/00*
U.S. Cl. 12—1 W 15 Claims



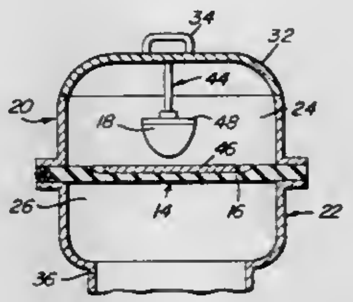
1. Apparatus for making slippers of heat-sealable synthetic polymeric sheeting material, said slippers having a sole with heel, instep and toe portions and an upper with toe and instep covering portions, comprising:
- means for dispensing a first band of said material of a first width greater than a desired length of said slipper sole;
- means for dispensing a second band of said material of a second width narrower than said first width but greater than a desired length of said upper;
- a first heat-seaing die having a first perimetral die face configuration at least for said toe portion of said sole;
- a second heat-sealing die, disposed opposite said first heat-sealing die, having a second perimetral die face configuration for at least for said toe and instep covering portions of said upper, said first and second perimetral die faces being essentially congruent in shape at least around said instep and toe portions;
- means for drawing said first and second bands of material between said first and second heat-sealing dies in a first direction essentially transverse to the length of said perimetral die face configurations, in a position to be contacted simultaneously by by said perimetral die face configurations when said first and second dies are brought together;
- means operatively associated with said first and second dies for providing, as measured across said die faces in said drawing direction, a progressively greater length of said second band from the toe portion to the instep portion of said second heat-sealing die face than of said first band from the toe portion to the instep portion of said first heat-sealing die face, when said dies are brought together; and
- means for bringing said first and second dies together to cause heat-sealing between said first and second bands along at least a portion of said die faces.

3,938,211

FLUID LASTING OF SHOES AND SIMILAR OPERATIONS

Albert Warner Armstrong, 3136 Perry Ave., Bronx, N.Y. 10467

Filed Nov. 27, 1974, Ser. No. 527,743
Int. Cl.² A43D *21/00*
U.S. Cl. 12—145 10 Claims



10. A method for lasting shoes, comprising the steps of:
- a. relieving a portion of an elastic and flexible pad for permitting certain portions of the pad to stretch more than other portions;
- b. placing a last adjacent the pad, with the shank area of the last associated with the relieved portion of the pad;
- c. attaching an insole to the last;
- d. arranging an upper of a shoe between the last and the pad;
- e. applying an equal pressure to the pad and causing the pad to surround the last and wipe the upper over edges of the last and into contact with the insole; and
- f. securing the upper to the insole while the upper is being wiped over the edges of the last.

3,938,212

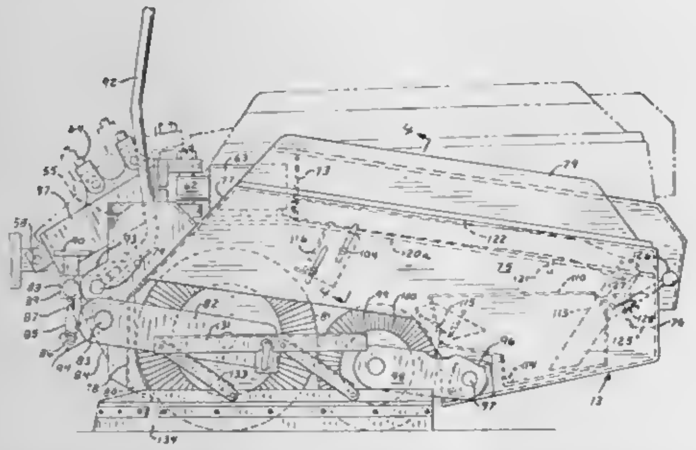
SCRUBBING MACHINE

Keith N. Krier; Neil F. Brown, and Steven J. A. Waldhauser, all of Minneapolis, Minn., assignors to Tennant Company, Minneapolis, Minn.

Division of Ser. No. 255,612, May 22, 1972, Pat. No. 3,824,645. This application July 19, 1974, Ser. No. 490,206
Int. Cl.² A47L *11/292*
U.S. Cl. 15—50 C 7 Claims

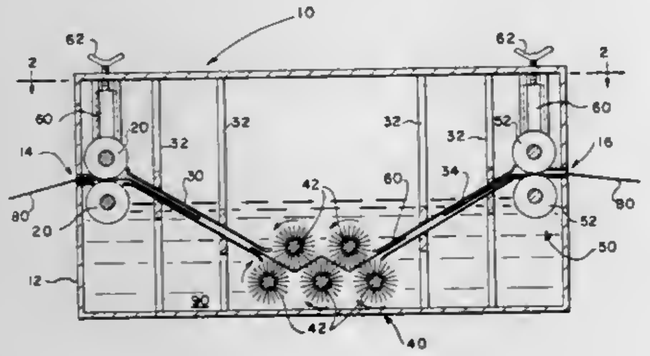
1. A maintenance machine for surfaces such as a floor or the like comprising a vehicle having ground engaging wheels, a frame having a downwardly opening enclosure, means mounting the frame on the vehicle, a power driven rotary maintenance tool, first means for rotatably mounting the tool on the frame to extend within the enclosure, a receptacle within the enclosure to recieve material raised by said tool, said frame having a deflector in overhanging relationship to said tool and receptacle that slopes downwardly toward the receptacle for directing liquid raised by the tool and collecting

on the deflector surface to roll along the surface and drip into said receptacle, means for mounting the receptacle on the frame for movement between a liquid collecting position and a liquid dumping position to empty liquid in direction away from the vehicle and means on the frame for releasably retaining the receptacle in the liqud collecting position, said receptacle having a center of gravity located to constantly urge the receptacle to move to its dumping posiition.



3,938,213
SCORECARD WASHING DEVICE

Dominic DiFede, 25803 Kay Ave., Hayward, Calif. 94545
Filed May 17, 1974, Ser. No. 470,710
Int. Cl.^{2} A46B *13/04*; B08B *1/02*
U.S. Cl. 15—77 **1 Claim**



1. A device for washing and drying scorecards comprising;

a tank having an inlet aperture and an outlet aperture;

means for conveying a scorecard edgewise through said tank, said conveying means including in part a pair of revolving feeder rollers located at said inlet aperture which receive and pull said scorecard into said tank and propel it through a guide means downward into a cleaning fluid disposed in said tank;

a scrubbing station submerged in the cleaning fluid contained in said tank whereby said fluid is supplied to the scorecard during the scrubbing operation, said scrubbing station including multiple revolving cylindrical brushes positioned above and below said scorecard to receive it from said feeder rollers and to propel it as it passes through said scrubbing station, said brushes being disposed in a vertically staggered arrangement which causes the scorecard to undulate as it passes through the brushes and whereby both sides of said scorecard are washed simultaneously, said brushes positioned above said scorecard revolving in a direction opposite to said brushes positioned below said scorecard and propelling said scorecard through said scrubbing station to a second guide means and through said second guide means to a drying station;

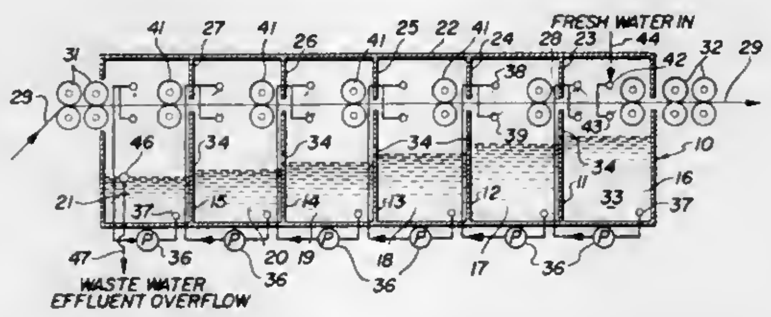
means for drying said scorecard at said drying station comprising a pair of revolving wringer rollers operable to remove said fluid from said scorecard and pull it from said scrubbing station and propel it through said outlet aperture;

means for adjusting the compressive tension of said feeder rollers and said wringer rollers upon said scorecard as it passes between said pairs of rollers; and

means for simultaneously revolving said feeder rollers, cylindrical brushes and wringer rollers whereby said scorecard is continuously conveyed through the machine throughout the washing and drying operation.

3,938,214
CASCADE RINSING SYSTEM AND METHOD

John B. Hodsden, Crown Point; James V. Middleton, Highland, and Edmund W. James, Crown Point, all of Ind., assignors to Inland Steel Company, Chicago, Ill.
Filed Jan. 14, 1974, Ser. No. 431,304
Int. Cl.^{2} A47L *25/00*
U.S. Cl. 15—102 **10 Claims**



1. A cascade rinsing system for rinsing a continuously moving steel strip following a pickling operation or the like, said system comprising;

a plurality of rinse compartments arranged consecutively in the direction of travel of said strip, each compartment being adapted to contain a bath of aqueous rinse solution;

spray means located above the bath in each compartment for spraying the surfaces of strip passing therethrough;

means for continuously supplying rinse solution from the bath contained in each compartment to the spray means associated with said compartment for use in spraying said strip;

wringing means in each compartment for removing excess rinse solution from the surfaces of the strip after it has been sprayed;

means for continuously adding fresh wash water to the last of said compartments in the direction of strip travel;

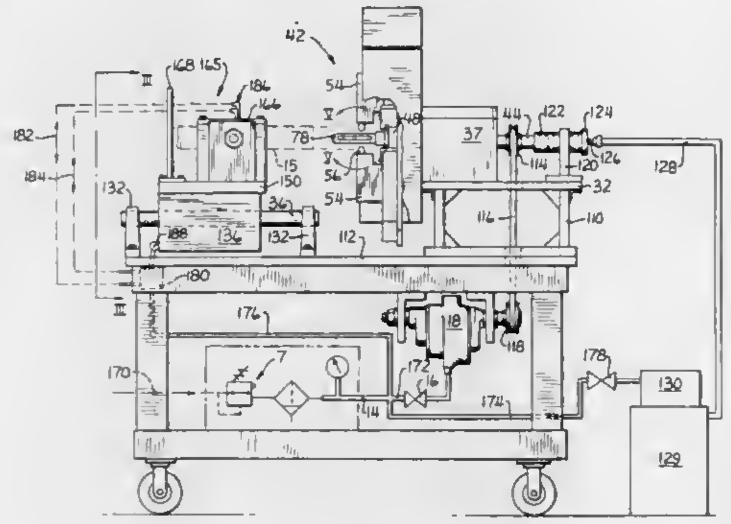
means for continuously conveying rinse solution from each compartment to the adjacent compartment in the upstream direction of strip travel; and

means for removing waste rinse effluent from the first of said compartments.

3,938,215
APPARATUS FOR SKIVING AND CLEANING REINFORCED HOSE

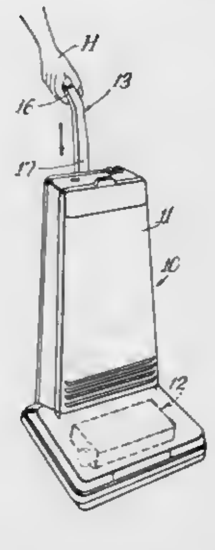
Michael L. Anderson, Marquette Heights; Harold W. Folwer, Brimfield, and David A. McKie, East Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Division of Ser. No. 378,718, July 12, 1973, Pat. No. 3,820,421. This application Feb. 19, 1974, Ser. No. 443,711
Int. Cl.^{2} A47L *5/38*
U.S. Cl. 15—304 **6 Claims**

1. A machine for cleaning the inner portion of a reinforced hose comprising; hollow mandrel means for receiving and supporting said hose during cleaning, clamping means for clamping said hose to be cleaned in a fixed position with respect to said clamping means, travel means for supporting said clamping means and for selectively moving said clamping means and said hose longitudinally toward said hollow mandrel means, a source of vacuum, communication means for communicating said source with said hollow mandrel means and opening means for communicating the interior of said hollow mandrel means with said inner portion of said reinforced hose for vacuum cleaning thereof, said clamping means including gripping means for holding said hose fixed in said clamping means while said clamping means moves longitudinally toward said mandrel means and while said hose is received upon said mandrel means, said gripping means comprising opposed movable members having irregular gripping surfaces for engaging said hose, motor means for actuating at least one of said movable members towards the other of said movable members.



3,938,216
HANDLE MOUNTING MEANS FOR POWER DRIVEN VACUUM CLEANER

Joseph F. Schmitz, St. Paul; Ute K. Malz, Afton, and Erwin Nordeen, St. Paul, all of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Feb. 10, 1975, Ser. No. 548,408
Int. Cl.^{2} A47L *5/00*; B62D *1/00*
U.S. Cl. 15—340 **18 Claims**



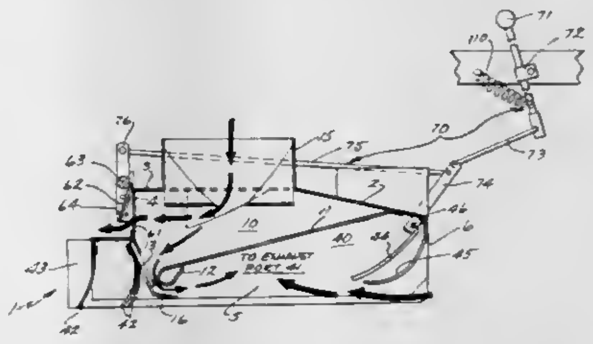
1. In a power driven vacuum cleaner having a bag housing, selectively operable means for reversibly driving the vacuum cleaner, and a manipulating handle, an improved mounting structure for movably mounting the handle for controlling the selectively operable means, said mounting structure comprising:

bearing means movably supporting said handle on said bag housing for reciprocable movement of the handle from and to a central neutral position; and

a biasing assembly for biasing said handle to said neutral position including stop means fixedly retained to said bag housing, means movable with said handle defining a pair of reaction surfaces spaced oppositely from said stop means, a first selectively deflectible spring extending between said stop means and one of said reaction surfaces, and a second selectively deflectible spring extending between said stop means and the other of said reaction surfaces, said springs cooperatively urging said handle to said central neutral position.

3,938,217
SURFACE CLEANING PICKUP HEAD

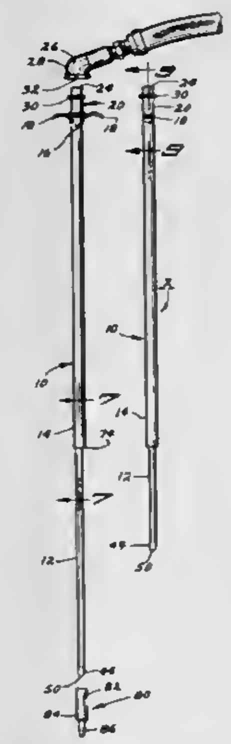
Jack L. Hommes, Muskegon, Mich., assignor to Clarke-Gravely Corporation, Muskegon, Mich.
Filed Nov. 5, 1973, Ser. No. 412,668
Int. Cl.^{2} A47L *5/14*
U.S. Cl. 15—346 **17 Claims**



1. A surface cleaning apparatus comprising: a pickup head defining an exhaust chamber; an air delivery flow circuit operably connected to said exhaust chamber for delivering air under pressure to said exhaust chamber; an air exhaust circuit operably connected to said exhaust chamber for exhausting air therefrom; a vent on said air delivery circuit for venting said air delivery circuit to the atmosphere, said vent being located outside of said exhaust chamber and on the upstream air flow side thereof; said vent being sufficiently large to vent a substantial portion of air under pressure to the atmosphere; closure means on said vent; actuating means operably connected to said closure means and being conveniently located on said apparatus for actuation by an operator operating said surface cleaning apparatus whereby as said pickup head approaches large items of debris, the operator can open said vent by actuating said actuating means, to create a greater negative pressure in said exhaust chamber with respect to the atmosphere whereby the ingestion of large items of debris and litter is facilitated.

3,938,218
EXTENSIBLE CLEANING TOOL

Ferdinando DeAmicis, 6401 Oliver Ave. South, Richfield, Minn. 55423
Filed Nov. 7, 1973, Ser. No. 413,432
Int. Cl.^{2} A47L *9/06*
U.S. Cl. 15—401 **9 Claims**



9. A telescoping cleaning tool adapted to remove debris from timing adjustment scales of an automobile and comprising:

a. an outer tube having open ends of which one is adapted to receive air under pressure from a pressure-actuatable nozzle;
b. an inner tube fitted within said outer tube in sliding engagement therewith, said inner tube having proximal and distal ends with respect to the air-receiving end of the outer tube, said proximal end terminating in an end surface at least partially in the path of the flow of air under pressure through said outer tube, and said distal end terminating in an end transversely crimped and machined at an angle to the tube axis and parallel to the crimp to provide both a debris-scraping chisel edge which is substantially normal to the direction of air flow through said tubes and an elongated orifice therein closely adjacent and aligned with said chisel edge and adapted to direct said air under pressure against debris adjacent the edge;
c. A band rigidly attached circumferentially to the outer surface of said inner tube and having a plurality of spring strips extending therefrom substantially parallel to the direction of air flow, each spring strip being sinuously curved so as to alternately contact juxtaposed walls of the inner and outer tubes to restrain movement tending to displace the coaxial alignment therebetween;

the end of said outer tube opposite said air-receiving end being turned inwardly about its periphery to an extent just sufficient to restrain passage to said band therethrough, said outer tube further having a handle extending laterally outwardly adjacent the air-receiving end thereof and adapted to be held by the fingers of one hand as the palm of that hand urges a pressure-actuated air nozzle into engagement with said air-receiving end.

3,938,219
HINGE MOUNTING DEVICE

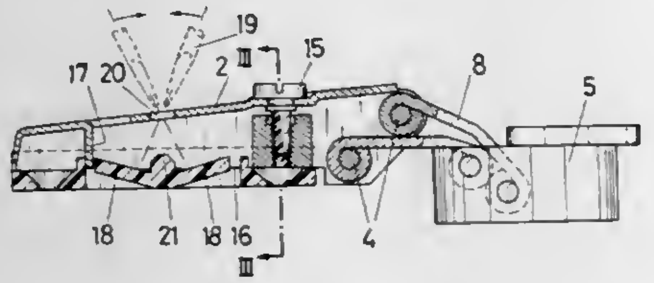
Erich Rock, Hochst, and Bernhard Mages, Dornbirn, both of Austria, assignors to Blum Gesellschaft m.b.H., Hochst, Austria

Filed Oct. 7, 1974, Ser. No. 512,883

Claims priority, application Austria, Oct. 10, 1973, 8639/73; Feb. 26, 1974, 1567/74; Mar. 29, 1974, 2635/74; Apr. 2, 1974, 2745/74

Int. Cl.² E05D *7/04*

U.S. Cl. 16—130 **21 Claims**



1. A hinge mounting device, particularly for use with furniture doors, said device comprising:
- a mounting plate attachable to a wall of a piece of furniture to extend in a depthwise direction thereof;
- a slide piece slidably attached to said mounting plate to slide in said depthwise direction; and
- a hinge arm having thereon means for connection to a door of said piece of furniture, said hinge arm having a first end and a second end with respect to said depthwise direction, said first end being fixed to said slide piece, and said second end being slidably attached to said mounting plate to slide in said depthwise direction.

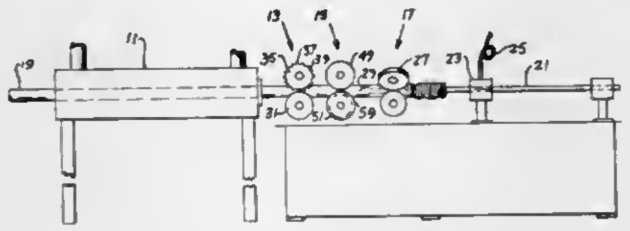
3,938,220
ZONE REGULATION OF CASING INFLATION GAS

Arthur L. Sheridan, Woodridge, and Walter V. Marbach, Palos Heights, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 8, 1974, Ser. No. 468,105

Int. Cl.² A22C *11/02*

U.S. Cl. 17—42 **10 Claims**



1. In a system for the production of flexible film tubing which system includes means for continuously introducing an inflation gas into the interior of the tubing and means for continuously unidirectionally advancing the tubing from a first zone to a second zone, apparatus to maintain a preselected inflation gas pressure differential between the first zone and the second zone comprising, in combination:

A pair of nip rolls disposed in selectably adjustable tube flattening nipping contact on the continuously advancing tubing, at least one of the rolls of said pair having a circumferential surface provided with alternate lands and grooves extending transversely on the width of its circumferential surface, and means to continuously selectably vary the contact pressure exerted on the advancing tubing by said pair of nip rolls, whereby a continuous succession of selectably variable volume inflation gas accumulation chambers is formed, one chamber at a time, in the advancing tubing in said grooves and the successive inflation gas quantities in said accumulation chambers are passed from one of said zones to the other.

3,938,221
MANUFACTURE OF NON-WOVEN MATERIALS

Ronald Edmund Ricketts, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

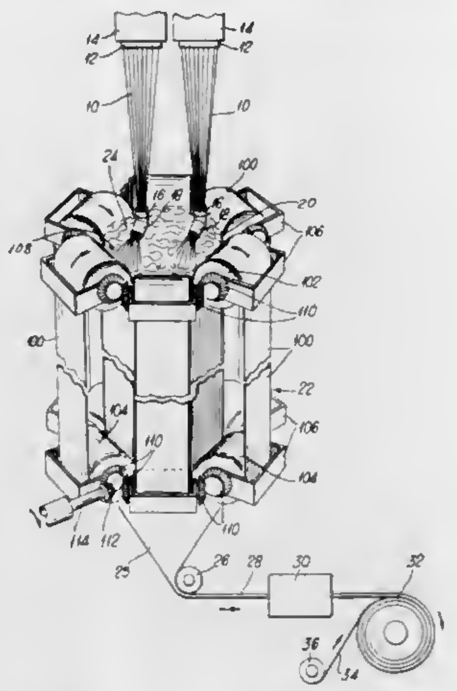
Continuation-in-part of Ser. No. 73,888, Sept. 21, 1970, Pat. No. 3,763,521. This application Aug. 20, 1973, Ser. No. 389,547

Claims priority, application United Kingdom, Oct. 1, 1969, 48196/69. The portion of the term of this patent subsequent to Oct. 9, 1990, has been disclaimed.

Int. Cl.² D01G *5/00*

U.S. Cl. 19—155 **6 Claims**

1. Apparatus for making a non-woven web comprising filament supply means, two or more filament forwarding means and a filament collector, said collector comprising a plurality of vertically arranged continuous belts which are arranged side-by-side so as to define a vertical channel, the inner wall of which provides a collection surface for said filaments, the exit passage at least of said forwarding means being inclined at an angle to the axis of the channel, and means causing preferably uniform relative angular motion between said forwarding means and said channel such that the mean distance between said forwarding means and the surface of said channel remains substantially constant while ensuring that the overall relative angular motion between filament supply means and the inlets at least of the filament forwarding means is at least substantially zero, said forwarding means including a plurality of air injectors mounted upon a tilted non-rotatable plate and means for causing the plane of the tilt of said plate to proceed at a uniform angular velocity, so that said filaments are projected on to said collection surface to form a non-woven web, and means causing said belts to be driven in continuous synchronous manner to convey said non-woven web away from said filament forwarding means.



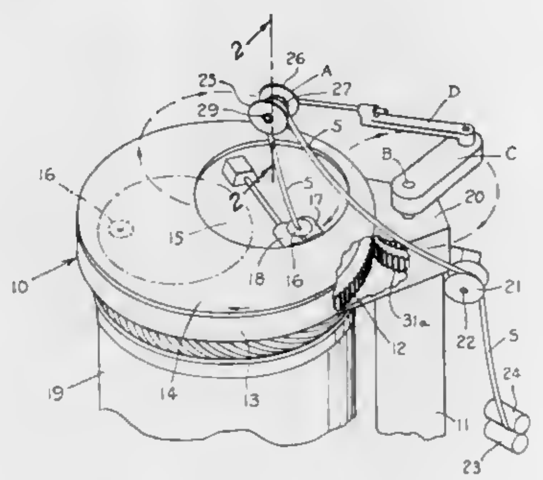
3,938,222
TRACKING GUIDE FOR PLANETARY COILER

Joe Kent Garrison, Piedmont, S.C., assignor to John D. Hollingsworth on Wheels, Inc., Greenville, S.C.

Filed Oct. 7, 1974, Ser. No. 512,450

Int. Cl.² B65H *54/76*

U.S. Cl. 19—159 R **3 Claims**



1. A tracking device for delivering sliver to a planetary coiler, having drive means, and coiler sliver guide means movable in a predetermined arcuate path responsive to said drive means, for delivering sliver in a predetermined pattern for collection in a sliver can comprising:
- a rotatable guide over which said sliver is fed for delivery to said coiler sliver guide means;
- a vertical standard driven for rotation by said drive means;
- a horizontal offset arm carried adjacent a top of said standard;
- means mounting said rotatable guide on said arm for rotation on a horizontal axis in substantial alignment with said sliver and above and in substantial alignment with said coiler sliver guide means; and
- gear means driven by said vertical standard moving said means mounting said rotatable guide in a path approximating the arcuate path of said coiler sliver guide means;
- whereby substantially even tension is exerted at all times on said sliver avoiding attenuation thereof causing thin places in the sliver.

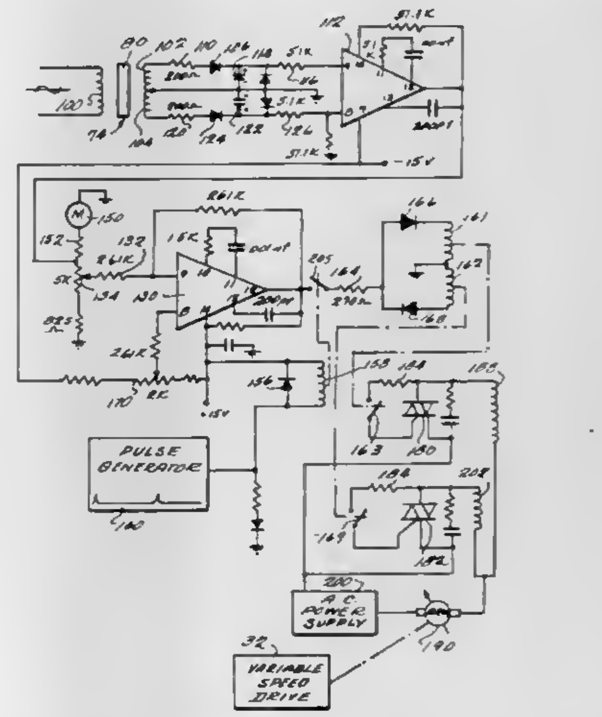
3,938,223
AUTO LEVELER

Karl R. Grice, Honea Path, S.C., assignor to Fiber Controls Corporation, Gastonia, N.C.

Filed Jan. 6, 1975, Ser. No. 538,875

Int. Cl.² D01H *5/38*

U.S. Cl. 19—240 **8 Claims**



1. An apparatus for maintaining the density of sliver strands substantially uniform comprising:
- sensor means having a pair of sensor members mounted for continuously passing therebetween a sliver so that one of the members moves as a function of sliver density,
- core means coupled to said one member for movement therewith,
- transformer means having a primary coil and first and second secondary coils coupled by said core means so that the amplitude of the output voltages by said secondary coils varies as a function of the position of said core means,
- differential amplifier means connected to said transformer means for producing a signal which varies as a function of the difference in amplitude between the voltages at said secondary coils,
- pulse generator means for producing a series of activating pulses,
- further amplifier means connected to said pulse generator means and said differential amplifier means for producing an amplified output only when the pulse generator is producing an activating pulse, and
- means connected to said further amplifier means for causing the sliver thickness to vary as a function of said amplified output.

3,938,224
DEVICES FOR USE IN THE MANUFACTURE OF ARTICLES OF UPHOLSTERY

Regis J. Delahousse, Moze-sur-Louet, and Philippe J. Delahousse, Brissac-Quince, both of France, assignors to Etablissements Delahousse et Bruant, Brissac-Quince, France

Filed Jan. 16, 1974, Ser. No. 433,798

Claims priority, application France, Jan. 16, 1973, 73.01478

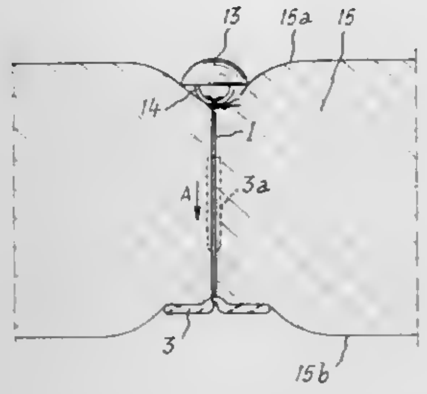
Int. Cl.² A44B *1/24*

U.S. Cl. 24—102 T **8 Claims**

1. A device for use in the production of an upholstered article for securing a button having an eyelet thereon to the face of the article, said device comprising

flexible means defining a loop having a length less than the uncompressed thickness of the article to be upholstered, and

a thin elongated flat and relatively straight bar adapted to be inserted through the eyelet of the button; said bar



including means for engaging and nipping the loop and for maintaining the bar in a relatively fixed position on the loop, said means including a notch extending in a direction normal to the length dimension of the bar,

said loop being secured to the eyelet of the button which will be incorporated on the operative face of the article.

3,938,225

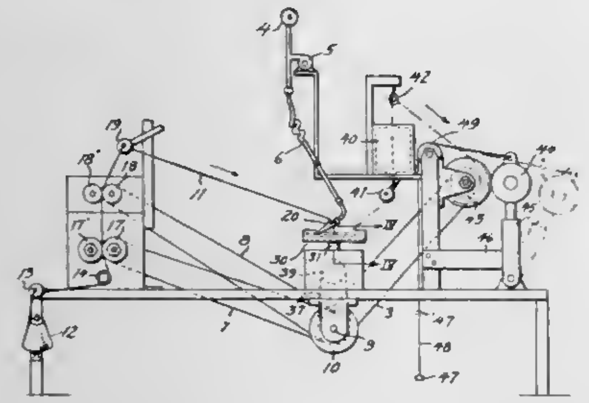
ROTARY APPARATUS FOR CRIMPING STRANDS

Robert K. Stanley, Media, Pa., assignor to Textured Yarn Co., Inc., Kennett Square, Pa.

Continuation of Ser. No. 376,567, July 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 176,029, Aug. 30, 1971, Pat. No. 3,781,951. This application Sept. 3, 1974, Ser. No. 502,493.The portion of the term of this patent subsequent to Jan. 1, 1991, has been disclaimed.

Int. Cl.² D02G *1/12*

U.S. Cl. 28—1.6 5 Claims



1. Strand-crimping apparatus comprising a cylindrical strand-receiving chamber within which the strand undergoes sufficiently forcible lengthwise impact against a wall thereof to buckle it into crimped configuration, including a foraminous cylindrical wall and a pair of relatively flat walls parallel to one another and perpendicular to and flanking the foraminous cylindrical wall, one of the walls having a central opening therethrough, means for propelling a strand to be crimped into and means for withdrawing it crimped from the chamber through the opening, means for rotating the chamber about the axis thereof, and including also separable ring-shaped means adjacent the flat outside of the wall having the central opening therein and adapted to receive crimped strand therebetween in crimp-dephasing rubbing contact therewith upon withdrawal thereof from the chamber, wherein the strand-propelling means and strand-withdrawal means are adapted to forward the strand at relatively fast and slow rates, respectively, whereby the strand piles up temporarily in crimped form therebetween inside the chamber.

3,938,226

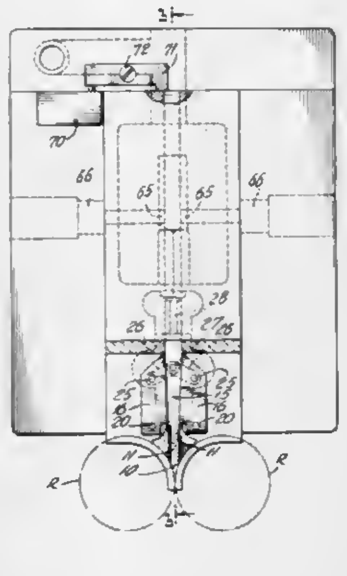
APPARATUS FOR CRIMPING YARN

John S. Roberts, Ellicott, Md., assignor to Kling-Tecs, Inc., Columbia, Md.

Filed Mar. 13, 1974, Ser. No. 446,175

Int. Cl.² D02G *1/12*

U.S. Cl. 28—1.7 8 Claims



1. A crimping head; including means for feeding a yarn end therein and for forming a plug of yarn therefrom, said head comprising a crimp site and plug guiding area of relatively short length defined in part by opposing surface means spaced apart a predetermined distance for contacting opposite sides of the plug for substantially establishing the lateral width of the plug and for guiding the plug downstream, pressure means mounted laterally outwardly of and extending downstream of the downstream end of said guiding area on either side thereof, means for moving the downstream ends of said pressure means inwardly for applying a uniform pressure on opposite sides of the plug adjacent said downstream ends only whereby back pressure in the plug due to lateral plug-surface friction between said guiding area and said downstream end of said pressure means is minimized or greatly reduced.

3,938,227

METHOD OF PRODUCING DEEPLY CREPED FABRIC WITH PARTIALLY BULKED YARN

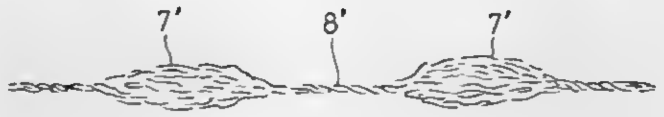
Kentaro Kawasaki, Mino, and Keizo Takizawa, Suita, both of Japan, assignors to Chori Company Limited, Osaka, Japan

Filed Dec. 26, 1973, Ser. No. 427,492

Claims priority, application Japan, Dec. 29, 1972, 47-1859

Int. Cl.² D06C *23/04*

U.S. Cl. 28—72 FT 6 Claims



1. A method of producing a deeply creped fabric comprising imparting an increased number of twists to a partly bulked yarn prepared from a twisting, heat-setting, untwisting process whereby the partly bulked yarn has bulked portions and non-bulked portions arranged alternately along the length of the yarn wherein the number of twists are increased mostly in the non-bulked portions of the yarn thereby making the difference between the bulked and non-bulked portions conspicuous and providing increased retractability for the yarn and manufacturing a fabric from the yarn with the additional twists and subjecting the fabric to a creping treatment.

3,938,228

METHOD OF MAKING A CAPACITOR HOUSING

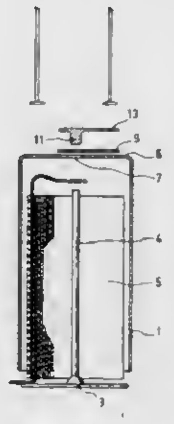
Pieter Kemkers, and Antonius Lambertus Derks, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 25, 1975, Ser. No. 571,539

Claims priority, application Netherlands, May 1, 1974, 7405803

Int. Cl.² H01G *4/32*

U.S. Cl. 29—25.42 6 Claims



1. A method of providing a metal, electrical terminal in an end face of a cylindrical metal capacitor housing, containing a capacitor body with at least two electrodes, one of the electrodes being electrically connected to the capacitor housing, the other electrode being electrically connected to the terminal electrically insulated from the capacitor housing, comprising the steps of

providing a capacitor housing end face made of metal and at least partly covered by an electrically insulating foil;

pushing a portion of said foil through an opening in said end face by means of a pin, thereby providing said terminal through and insulated from said end face;

removing said foil from the end of the pin pressed through said opening; and

connecting one of said electrodes to said terminal.

3,938,229

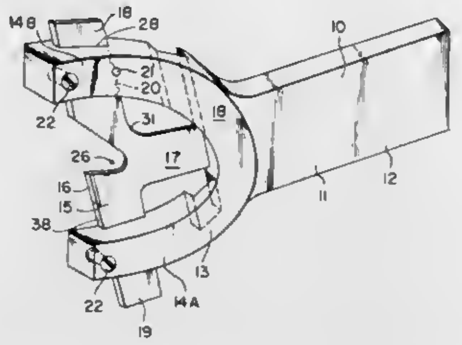
SCREW MACHINE CUT-OFF TOOL

Charles P. Hynes, Rockaway Park, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.; a part interest

Filed Nov. 26, 1974, Ser. No. 527,217

Int. Cl.² B26D *1/00*

U.S. Cl. 29—96 2 Claims



1. A screw machine cut-off tool in which the cutting point of the tool blade is supported in tension, comprising

a removable tool blade, formed with two arm sections joined to a stiffener section,

a blade holder formed with a shank joined to two separated arm members, with fastening means to frictionally mount each arm member of the blade holder to an arm section of the blade,

said tool blade fitted with a cutting point located between the two arm sections of the blade with the stiffener section extending from the rear portion of the blade opposite the cutting point on the forward end of the blade,

said blade holder and said blade fitted with adjustable mating means to positively engage a first arm member of the blade holder with a first arm section of the blade, with the second arm member of the blade holder being frictionally engaged to the second arm section of the blade,

said first arm section of the blade being oriented with respect to the cutting point of the blade in the same direction as the relative direction the cutting point moves toward work to be cut so that the engaged positive said mating means applies a tension force to said first arm section of the blade in use,

said blade holder fitted with bearing means to slidably support the end of the stiffener section of the blade.

3,938,230

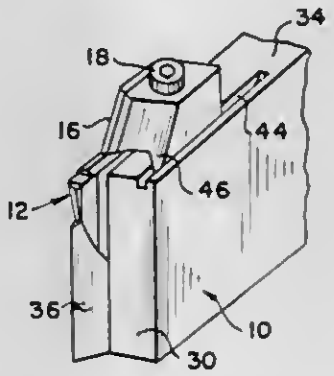
CUTTING TOOL

Gordon L. Rice, Farmington, Mich., assignor to Posa-Cut Corporation, Farmington, Mich.

Filed Aug. 11, 1975, Ser. No. 603,674

Int. Cl.² B26D *1/00*

U.S. Cl. 29—96 1 Claim



1. In a cutting tool having a horizontally elongated, rectangular in cross-section tool holder having a front face, a vertical side face, and an upper face;

an upwardly opening V-shaped recess cut into said side face and forming a flat, vertical recess wall parallel to, but spaced inwardly of the plane of said side face, with one leg of the V extending upwardly and forwardly of the tool holder and terminating at said front face considerably below said upper face so that the recess is open forwardly as well as upwardly and sidewise, and with the other leg of the V extending upwardly and rearwardly of the tool holder and terminating at said upper face;

the edges defining said legs each being flat and uniformly sloped inwardly to form in cross-section a continuous, uniform acute angle inside the recess between the flat recess wall and said edges so that the recess gradually widens from the tool holder vertical side face towards the recess wall;

a replaceable cutting tool insert formed of a flat, substantially equilateral triangular shaped plate of hard, brittle metal, each of whose corners forms a cutting tip;

the improvement wherein the three edges of the insert are tapered and bevelled outwardly at an acute angle from its opposite faces and terminate in a central elongated ridge along each side, said angle corresponding to the shape of the edges defining said legs; whereby said insert is adapted for selective use in right and left hand tool holders;

said edges defining said recess legs being approximately as wide as the thickness of the insert and the two legs intersecting an at angle substantially equal to the angles of intersections between the edges of the cutting tool insert;

said insert being vertically arranged within the recess with said one of its faces in full face to face contact with said recess wall and with the one tapered sides of two of its edges in full face to face contact with the full length of the two edges defining said legs for a portion of the depth of said recess and with one corner thereof being exposed and extending forwardly of the tool holder front face;

a downwardly opening releasable clamp member secured to said upper face and having a narrow clamping edge forming a narrow line contact with the outer tapered upper one edge of the insert, wherein said insert is jammed downwardly and towards and against the recess wall by the clamp and the cooperating sloped and bevelled edges and cutting forces applied to said exposed corner;

and whereby said insert may be released and rotated to successively expose each corner as the corners wear out and may be replaced with a new insert of approximately the same thickness and edge lengths, so that inaccuracies and slight variations of size of the inserts are accommodated by the inserts extending a variable distance outwardly or inwardly of the side, upper and forward openings of the recess.

3,938,231

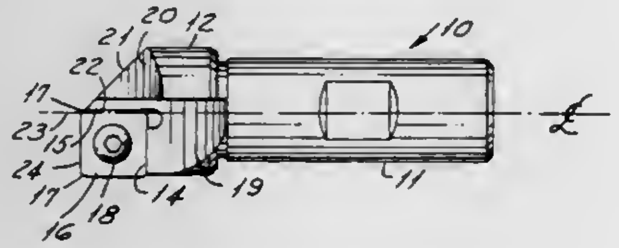
CENTER CUTTING END MILL

David Alan Hopkins, Detroit, Mich., assignor to The Valeron Corporation, Detroit, Mich.

Filed Mar. 11, 1975, Ser. No. 557,397

Int. Cl.^{2} B26D *1/12*

U.S. Cl. 29—103 A **17 Claims**



1. An indexable insert center cutting end mill comprising;

a shank,

a pocket at one end of said shank formed for locating an indexable, polygonal insert,

said pocket having wall means for locating said insert with a cutting edge extending radially, with an inactive radially innermost edge and with the axis of said end mill intersecting an intermediate briding corner joining said edges.

3,938,232

METHOD OF MANUFACTURING CATALYST TYPE EXHAUST GAS PURIFIER

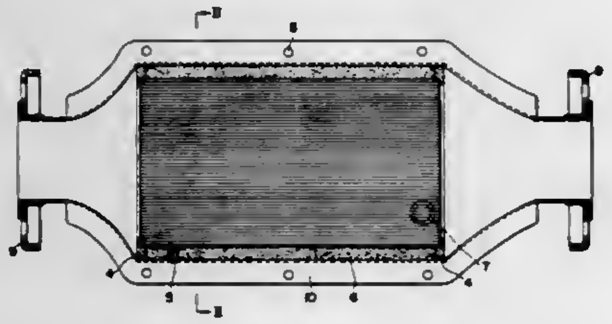
Fumiyoshi Noda, and Mikio Murachi, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 24, 1974, Ser. No. 463,583

Claims priority, application Japan, Apr. 28, 1973, 48-049505

Int. Cl.^{2} B21D *53/00*

U.S. Cl. 29—157 R **4 Claims**



1. Method of manufacturing a catalyst type exhaust gas purifier, which method comprises the steps of:

placing one side of the catalyst near the inner surface of one part of a divisible vessel;

positioning the other part of said divisible vessel near the opposite side of said catalyst while inserting packing means between said parts which keeps said parts separated;

said catalyst being smaller than said vessel so that a space is also left between said vessel and catalyst;

charging a castable refractory into the space between said vessel and catalyst;

solidifying and firing the refractory; and

removing said packing and tightening the two parts of said vessel to compress said refractory, which has some elasticity, against said catalyst.

3,938,233

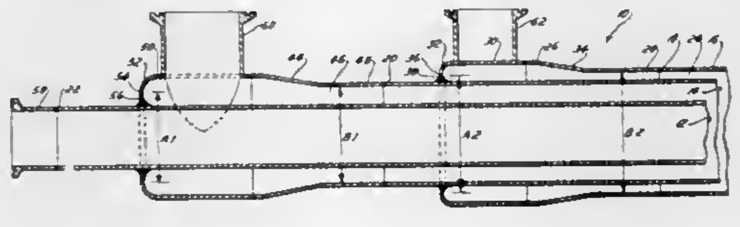
HEAT TRANSFER APPARATUS

Robert B. Cannon, 3056 E. Rocklyn Road, Springfield, Mo. 65804

Filed Aug. 12, 1974, Ser. No. 496,398

Int. Cl.^{2} B23P *15/26*

U.S. Cl. 29—157.3 R **4 Claims**



1. The method of assembling a header for a heat transfer apparatus having a plurality of longitudinally extending, concentrically mounted heat transfer tubes including an outer tube having a first end, an intermediate tube having a first end extending longitudinally beyond said outer tube first end and an inner tube having a first end extending longitudinally beyond said intermediate tube first end, said method comprising the steps of:

a. welding a band member about said intermediate tube, said band member extending radially outwardly along a sanitary radius from said intermediate tube to a free end;

b. cleaning and polishing the band so as to form a smooth continuation of the sanitary radius blending into the intermediate tube;

c. forming an outer tube sealing member comprising a section of tubing of increasing diameter having a first end with a diameter equal to the diameter of said outermost tube and a second end defined by a radially inwardly directed sanitary radius;

d. butt welding the first end of said outer tube sealing member to said outer tube first end;

e. butt welding the second end of said sealing member to said band member free end.

3,938,234

PIPE JOINING METHOD

George Price, 14444 Wicks Blvd., San Leandro, Calif. 94577

Filed July 15, 1974, Ser. No. 488,796

Int. Cl.^{2} B23P *19/04*

U.S. Cl. 29—237 **4 Claims**

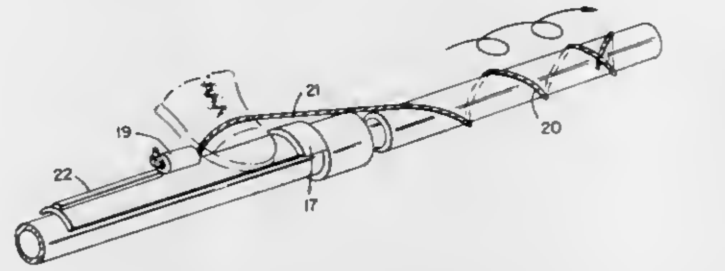
1. An apparatus for rotating a first pipe section while translating the first pipe section into the coupling end of a second pipe section, comprising:

a first member adapted to be supported on the second pipe section and extending longitudinally along the same,

a second member extending flexibly from said first member and releasably secured in convoluted form to said first pipe section, and

lever means for tensioning and pulling said second member toward said first member, **said first member including a longitudinally extending track for supporting and guiding**

said lever means, said lever means including an element for releasably engaging an end portion of said second member whereby movement of said lever effects rotation of said first pipe section and axial movement thereof towards and into said coupling end of said second pipe section.



3,938,235

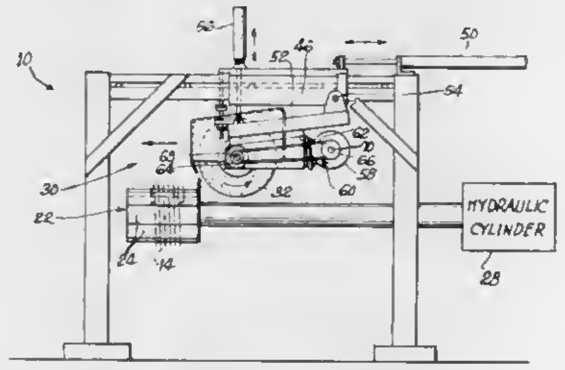
METHOD FOR SEVERING RINGS FROM A COIL

William H. Weodt, III, River Forest, and George D. Krieps, Glenwood, both of Ill., assignors to Chicago Metal Mfg. Co., Chicago, Ill.

Division of Ser. No. 341,304, March 14, 1973, Pat. No. 3,878,654. This application Oct. 17, 1974, Ser. No. 515,535

Int. Cl.^{2} B23P *17/00*

U.S. Cl. 29—412 **1 Claim**



1. A method of forming rings of a predetermined internal circumference, comprising the steps of

coiling resilient bar stock into a resilient helical coil having a plurality of turns with an internal circumference correesponding generally to said predetermined circumference,

forcibly expanding said coil against the resilient resistance thereof to an enlarged internal circumference exceeding said predetermined circumference by a predetermined increment,

forming a cut across and through the turns of said coil at one point around the circumference thereof to sever each turn as a separate ring with a gap therein equal in width to the width of said cut,

said cut being formed with a substantial width which is equal to said predetermined increment,

relaxing the expansion of said rings to allow return movement thereof by their own resilience to said predetermined internal circumference,

said gap in each ring being closed by such return movement thereof,

removing the helical pitch of each ring by flattening it into a single plane and thereby bringing the severed ends of said ring into alignment,

and welding said severed ends of each ring together.

3,938,236

METHOD OF MANUFACTURING BRUSHING APPARATUS

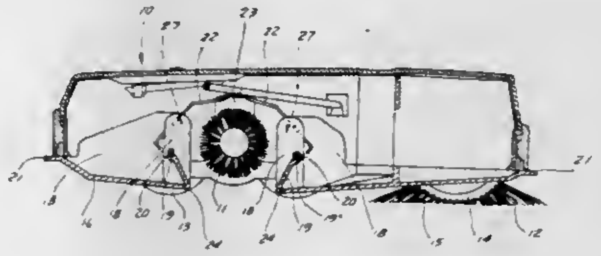
Guenter Leifheit, Nassau, Germany, assignor to Leifheit International Gunter Leifheit GmbH, Nassau, Germany

Division of Ser. No. 302,590, Oct. 31, 1972, Pat. No. 3,815,167. This application Jan. 17, 1974, Ser. No. 433,341

Claims priority, application Germany, Nov. 5, 1971, 2154971

Int. Cl.^{2} A47l *11/08*

U.S. Cl. 29—434 **4 Claims**



1. In a method of making a brushing apparatus for carpets and the like, the steps of producing a dirt-collecting trough having at least an elongated bottom wall, a longitudinal wall, transverse walls and an open top, said producing step including initially forming at least said bottom wall and said longitudinal wall in a flat condition in a common plane and with a flexible wall zone interconnecting the same, and displacing at least said longitudinal wall about said wall zone so that a marginal portion of said longitudinal wall which is parallel to and distant from said wall zone is spaced from said common plane; pivotally mounting said trough on an axle supported in a housing having an open side facing toward a surface to be brushed so that said open top faces oppositely of said open side, engaging said marginal portion of said longitudinal wall permanently with said axle to form a partial bearing for pivoting movement of said longitudinal wall about said axle and to retain said longitudinal wall against movement into the plane of said bottom wall; and installing at least one brush roller in said housing laterally adjacent said trough and projecting in part from said open side of said housing.

3,938,237

METHOD OF SECURING TUBULAR BELLOWS TO A CYLINDER

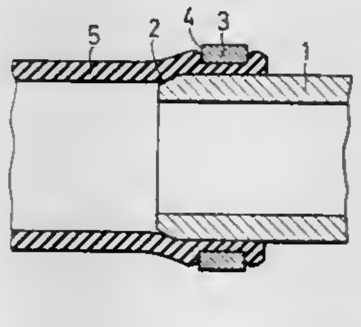
Erwin Dunz, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed July 17, 1974, Ser. No. 489,387

Claims priority, application Germany, Aug. 7, 1973, 2339838

Int. Cl.^{2} B23P *11/02*

U.S. Cl. 29—450 **10 Claims**



1. A method of securing a yieldably resilient first body to a second cylindrical body more rigid than said first body, said bodies having respective axes, and said first body being formed with an axial bore therethrough of smaller cross section in the relaxed condition of said first body than the cross section of said second body, which method comprises:

a. inserting said first body in a clamping ring more rigid than said first body;
  1. the internal cross section of said ring being greater than said cross section of said second body, but not substantially greater than the outer cross section of said first body,
  2. said first body being inserted into said ring until an axially terminal portion of said first body projects beyond said ring,
  3. said portion of said first body being formed with an orifice of said bore, and said second body entering said orifice under said exerted axial pressure;
b. axially juxtaposing said bodies; and
c. exerting axial pressure in opposite respective directions on said ring and on said second body while preventing said first body from moving out of said ring, until an axially terminal portion of said second body enters said bore and is axially coextensive with said ring, whereby a portion of said first body is radially compressed between said ring and said second body.

3,938,238

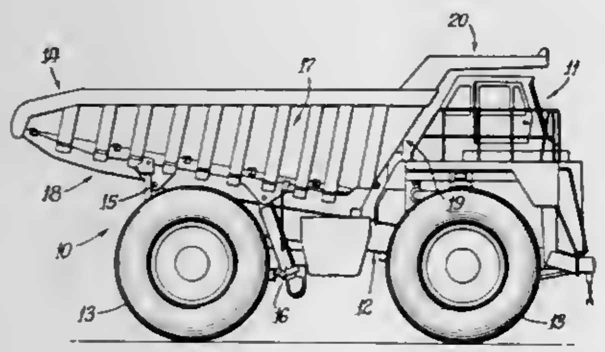
METHOD FOR MAKING A MODULAR TRUCK BODY

Samuel L. Kershaw, and Bernard E. Proeschl, both of Decatur, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 472,709, May 23, 1974. This application Nov. 18, 1974, Ser. No. 524,994

Int. Cl.² B23P *21/00*

U.S. Cl. 29—469 **6 Claims**



1. A method for making a truck body comprising the steps of

prefabricating a plurality of individual truck body modules,
pre-assembling said modules together and retaining them in pre-aligned relationship relative to each other,
securing combined alignment and releasable fastening means adjacent to edges of each respective pair of said modules,
releasably attaching each respective pair of modules together by said combined alignment and releasable fastening means to form a truck body,
releasing all of said fastening means to disassemble said truck body into said modules,
shipping said modules to a remote location,
re-assembling said modules together into said pre-aligned relationship,
again attaching each respective pair of modules together by said combined alignment and releasable fastening means to re-form said truck body, and
welding said modules together to form a structurally integrated truck body.

3,938,239

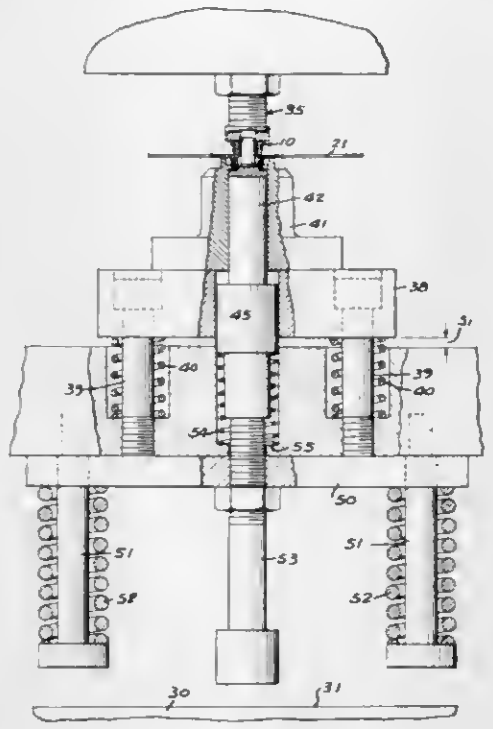
METHOD OF FORMING A SELF-FLANGING NUT JOINT

Corliss Lauth, Windsor, Canada, assignor to Lauth Fasteners Limited, Windsor, Canada

Continuation-in-part of Ser. No. 360,147, May 14, 1973, abandoned. This application Mar. 13, 1974, Ser. No. 450,730

Int. Cl.² B21D *39/00*; B23P *11/00*

U.S. Cl. 29—512 **8 Claims**



6. The method of forming a nut joint which comprises
positioning a sheet metal plate having an opening therein over a locating pin,
positioning a nut over said pin,
said nut comprising a tubular body with a peripheral flange at one end and an opening extending through said body,
said opening having a first portion which is threaded and a second portion of greater diameter defining a riveting flange at the other end of said body,
said riveting flange engaging said plate when said nut is positioned on said pin,
applying an axial force to said nut to cause only said body of said nut to bend the area of the plate surrounding the opening in the plate and thereby define a tubular portion on the plate without substantially changing the cross sectional thickness of the plate,
continuing the application of force until the end of the nut having the flange thereon is substantially flush with the remainder of the plate,
and thereafter applying an oppositely directed axial force to the riveting flange portion of said nut to deform said portion radially outwardly into engagement with the end of the tubular portion that has been formed in the plate.

3,938,240

METHODS OF PROVIDING A TUBE WITH A THREAD RING

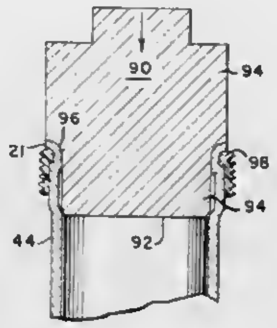
Robert Stuart Holden, 24 Coleman Road, Glastonbury, Conn. 06033

Division of Ser. No. 409,153, Oct. 24, 1973, abandoned. This application Mar. 5, 1975, Ser. No. 555,682

Int. Cl.² B21D *39/00*; B23P *11/00*

U.S. Cl. 29—512 **4 Claims**

1. A method of making a tube having at least one free edge portion formed at one end thereof, said tube having at least one T-shaped projection formed thereon adjacent said free edge, said projection being located with the cross bar thereof extending generally parallel to said free edge and the stem thereof extending from said cross bar towards said free edge and terminating at an end spaced from said free edge; and an annular ring having a threaded outer peripheral surface and an inner surface which mates with the outer surface of said tube at said one end, said ring having a recess formed therein for snugly receiving the stem portion of said projection, thereby to prevent relative rotation between said tube and said ring; said method comprising the steps of punching said T-shaped projections into said tube by inserting an expandable punch axially into said tube, surrounding said free end portion of the tube with an annular collar having at least one recess therein complementary to the stem portion of the projection; expanding said punch to stamp said projection in the tube removing said tube from said punch and collar and sliding said ring over said tube, with the recesses in the ring receiving the stem of said projection, and seating said ring in engagement with the cross bar of said projection.



3,938,241

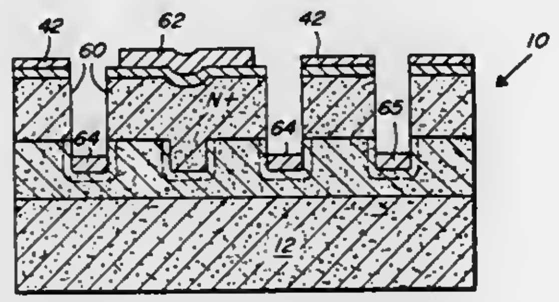
VERTICAL CHANNEL JUNCTION FIELD-EFFECT TRANSISTORS AND METHOD OF MANUFACTURE

William Lloyd George; Robert Guy Hays, and Chongkook John Rhee, all of Scottsdale, Ariz., assignors to Motorola, Inc., Chicago, Ill.

Division of Ser. No. 301,575, Oct. 24, 1972. This application June 24, 1974, Ser. No. 482,528

Int. Cl.² B01J *17/00*

U.S. Cl. 29—571 **12 Claims**



1. A method of field-effect device comprising:
providing a first layer of semiconductor material of a first conductivity type having a selected crystallographic orientation with respect to a first surface thereof;
selectively etching said first surface of said semiconductor material with an anisotropic etchant to remove some of said semiconductor material virtually only in a direction perpendicular to said first surface to thereby provide a plurality of juxta-positioned grooves having U-shaped cross sections in said semiconductor material, each of said grooves having an exposed bottom surface and exposed side surfaces;
diffusing an impurity of the second conductivity type into said bottom and side surfaces of each of said grooves a predetermined distance to provide a plurality of integral juxta-positioned gate portions of the second conductivity type having bottom and side surfaces, the resulting region of said semiconductor material between said side surfaces of adjacent ones of said gate portions providing a channel;
growing a second layer of semiconductor material of the first conductivity type in said grooves and on said first surface of said first layer of semiconductor material, said second layer being integral with said channel; and
depositing and patterning conductive material to provide separate electrical connections to said gate and to portions of said first and second semiconductor materials to form gate, drain and source contact areas.

3,938,242

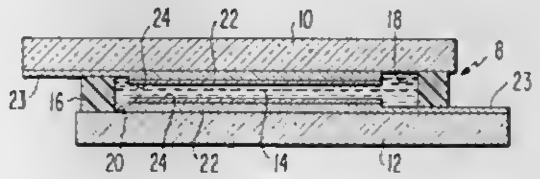
FABRICATION OF LIQUID CRYSTAL DEVICES

Alan Sussman, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,234

Int. Cl.² C23C *13/02*

U.S. Cl. 29—576 R **4 Claims**



1. A method of fabricating a liquid crystal cell comprising:
vacuum depositing a layer of unoxidized metal on a surface of said cell in such manner to provide an oriented structure thereon along which the molecules of a liquid crystal material sympathetically align and,
heating said metal layer in the presence of oxygen to convert said metal to a layer of metal oxide retaining said oriented structure and which is more transparent than said metal layer.

3,938,243

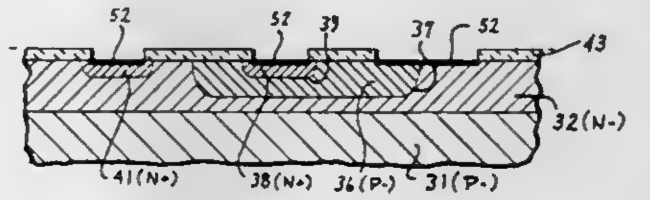
SCHOTTKY BARRIER DIODE SEMICONDUCTOR STRUCTURE AND METHOD

Warren C. Rosvold, Sunnyvale, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Division of Ser. No. 334,022, Feb. 20, 1973, Pat. No. 3,855,612, which is a continuation-in-part of Ser. No. 214,590, Jan. 3, 1972, abandoned. This application May 17, 1974, Ser. No. 470,939

Int. Cl.² B01J *17/00*

U.S. Cl. 29—578 **6 Claims**



1. In a method for fabricating a Schottky barrier diode semiconductor structure, providing a semiconductor body formed essentially of silicon having a surface, forming an active semiconductor device in said semiconductor body having collector, base and emitter regions extending to said surface, forming an insulative coating on said surface with openings exposing portions of said regions, one of said openings extending from the base region to the collector region, forming a ternary alloy of approximately 50% silicon, 37½% to 45% nickel and 5% to 12½% platinum in said openings in ohmic contact with the emitter, base and collector regions and in rectifying contact with the collector region in said one opening, whereby a Schottky barrier diode is formed in said one opening, and adjusting the relative amounts of nickel and platinum in said alloy to provide a predetermined barrier height in the range of approximately 0.64 to 0.835 electron volts.

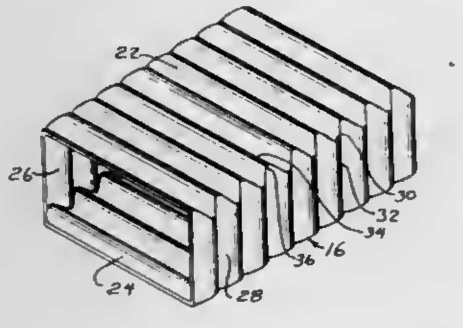
3,938,244
CONTINUOUS CORRUGATED WAVEGUIDE AND METHOD OF PRODUCING THE SAME

Michel Merle, Elmira, N.Y., assignor to Andrew Corporation, Orland Park, Ill.

Continuation-in-part of Ser. No. 315,101, Dec. 14, 1972, abandoned, which is a continuation of Ser. Nos. 235,161, March 16, 1972, abandoned, and Ser. No. 238,458, March 27, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 397,955

Int. Cl.² H01P *11/00, 3/20;* **B21D** *15/04*

U.S. Cl. 29—600 **20 Claims**



1. A method of producing continuous lengths of coilable corrugated waveguide of a rectangular cross-sectional shape having intersecting walls, said method comprising the steps of forming a smooth-wall tube of electrically conductive metal with approximately the desired cross-sectional shape and with a substantially uniform wall thickness along the entire length and around the entire periphery thereof, and transversely corrugating the intersecting walls of said tube along crest and root lines that form a substantially constant perimeter length around any cross-section of the corrugated tube taken perpendicular to the axis of the tube at any point along the length of the tube, the depth of the corrugations being substantially smaller than the internal dimensions of the tube and substantially equal on all sides of the tube.

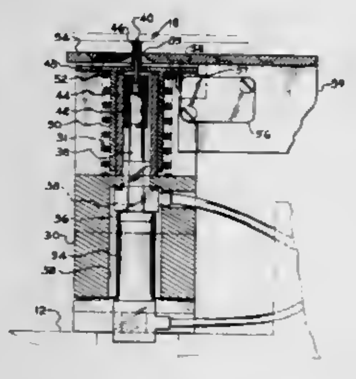
3,938,245
TERMINAL APPLICATOR

Charles Michael Lovendusky, Enola, and Charles William Wallick, York, both of Pa., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed July 23, 1974, Ser. No. 491,045

Int. Cl.² H05K *13/04*

U.S. Cl. 29—626 **19 Claims**



6. An apparatus for applying a terminal into a hole in a circuit board, comprising:
- a frame,
- an anvil mounted on said frame for receiving a circuit board, said anvil including a retractable pin for locating a hole in a circuit board and an actuator member adjacent said pin for engagement by the circuit board when the circuit board is located on said pin,
- means mounted on said frame for inserting a terminal into a hole in a circuit board in axial alignment with said pin,
- means for extending said means for inserting the terminal in the hole in the circuit board toward said anvil,
- means for retracting said pin, and
- control means actuatable by moving the circuit board against said actuator member adjacent said pin for retracting said pin from the hole in said circuit board more rapidly than extending said means for inserting said terminal and positioning a terminal into the hole in the circuit board.

18. A method for positioning a hole in a circuit board for receiving a terminal, comprising the steps of
- positioning the hole in the circuit board over a locating pin,
- depressing the circuit board against an actuator member adjacent the locating pin,
- retracting the locating pin from the hole in the circuit board to vacate the hole,
- inserting a terminal into the vacated hole in the circuit board.

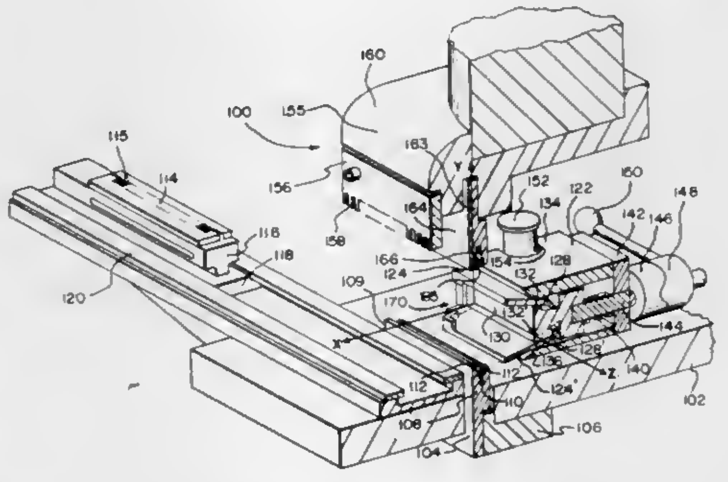
3,938,246
METHOD AND APPARATUS FOR ATTACHING MULTI-ONDUCTOR FLAT CABLE TO AN ELECTRICAL CONNECTOR

William Roderick Over, Harrisburg, and Paul William Gress, Newmanstown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 6, 1975, Ser. No. 547,524

Int. Cl.² H01R *43/04*

U.S. Cl. 29—628 **8 Claims**



8. A method for attaching the individual conductors in two multi-conductor flat cables to the conductor-receiving portions of a multi-contact connector, said conductor-receiving portions consisting of slots in contact terminals which are aligned in first and second oppositely facing rows, said method comprising the steps of:
- punching holes between the conductors in two flat cables at a location adjacent to one end of said cables so that a portion of the insulation is removed,
- positioning said connector in a movable connector holding means,
- aligning said conductors in each of said flat cables with said slots in said first and second oppositely facing rows,
- aligning stuffer pins with said conductors and with said corresponding slots, said stuffer pins being held by a continuous carrier strip,
- locating cutting edges on each side of said connector between said cables and said strips, said cutting edges being parallel to said conductors and positioned to one side of each of said cables with said continuous strip extending across said cutting edges,
- moving a ram containing movable insertion means towards fixed insertion means, said cables, said stuffer pins and said connector being located therebetween, so that said movable insertion means exerts a force on said first row adjacent to said movable insertion means which moves said connector so that said second row abuts said fixed insertion means,
- exerting an additional force on said movable insertion means so that each insertion means moves past the adjacent cutting edge severing said continuous strips and then forcing said conductors and stuffer pins into the aligned slots, whereby

electrical contact is established between said slots and said conductors and said stuffer pins insure continued contact therebetween.

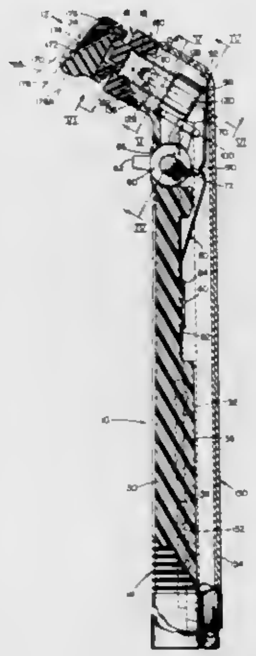
3,938,247
SHAVING SYSTEM WITH PIVOTAL HEAD

Nelson P. Carbonell, Lawrence, and Roger L. Perry, Lynnfield Center, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Mar. 5, 1974, Ser. No. 448,243

Int. Cl.² B26B *21/22*

U.S. Cl. 30—47 **20 Claims**



1. A shaving implement comprising a grip portion,
- a transversely extending support portion at one end of said grip portion, said support portion defining a blade edge position, a connection between said grip portion and said support portion mounting said support portion for angular rotational movement relative to said grip portion during the course of a shaving stroke in a dynamic mode of shaving action about an axis extending transversely of said support portion parallel to and adjacent to said blade edge position, said connection including structure in said transversely extending support portion defining said axis at a point spaced further from said grip portion than portions of said transversely extending support portion,
- and structure for restricting the movement of said support portion relative to said grip portion, said movement restricting structure including a control portion movable between a first position which affords significant restriction of angular rotational movement and a second position which affords less restriction of angular rotational movement.

3,938,248
STRIPPING TOOL FOR A CABLE HAVING COVER MADE OF A SYNTHETIC MATERIAL

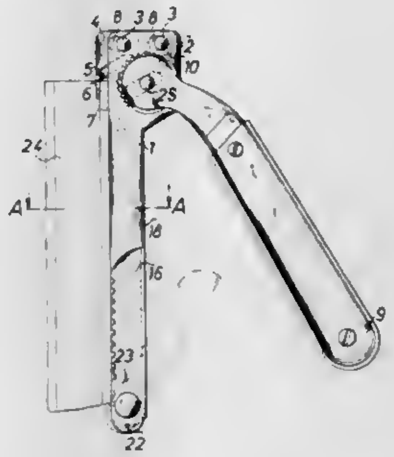
Josef Krampe, Werner Strasse 4, 4711 Herbern, Germany

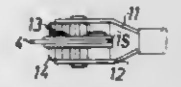
Filed Aug. 29, 1974, Ser. No. 501,758

Claims priority, application Germany, Sept. 12, 1973, 2345938

Int. Cl.² B21F *13/00;* **B26B** *27/00*

U.S. Cl. 30—90.4 **7 Claims**





1. In a stripping tool for cutting the covering of a cable covered with a layer of synthetic material comprising two articulated parts one of which includes a stationary knife and the other which is a handle having at one end a gear wheel non-rotatably fixed thereon and divided in half and with the halves disposed on each side of the handle, the other part being mounted to the one part so that the gear wheels can be rotated by the handle to effect relative motion between the cable and the knife, the knife being introduced between the interior of the cable and the cable covering and including a guide shoe which guides the knife as it cuts into the cable covering, the improvement comprising:
- a. the one part made in the form of an elongated rail to one side of which the cable can be applied, said rail having an enlarged head at one end;
- b. said knife and shoe arrangement projecting from said one side of said elongated rail at said head;
- c. an elongated angled slot formed in said head; and
- d. shaft means passing through the center of the gear halves and said angled slot whereby said gear wheels will be supported for rotation by said handle about the axis of said shaft and wherein said axis can be moved linearly at an angle opposite the point of an engagement of said knife.

3,938,249
SPRINKLER HEAD CLEANING DEVICE

Rene Aragon Chacon, 20225 Sherman Way, Canoga Park, Calif. 91306

Filed Nov. 25, 1974, Ser. No. 526,606

Int. Cl.² B26B *27/00*

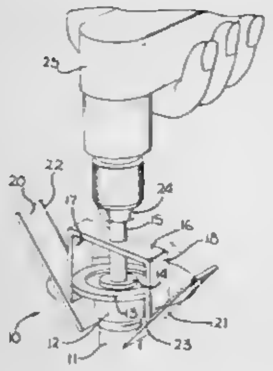
U.S. Cl. 30—300 **5 Claims**

1. In combination with a water sprinkler head having a circular flange supported on a water supply pipe, a cleaning device comprising:
- a shaft;
- a U-shaped member secured to said shaft mid-way between the opposite ends of said shaft and having a pair of parallel legs downwardly depending from the opposite ends of a cross bar and said legs terminating below the underside of said flange;

a pair of cutting blades secured to the respective terminating ends of said U-shaped member legs in an angularly upwardly diverging direction;

stabilizing means for supporting and aligning said cutting blades with respect to said flange whereby said blades travel in a circular path above and beneath said flange;

each of said cutting blades having a lower portion extending angularly downward with respect to said water supply pipe under said circular flange and having an upper portion extending upwardly in coextensive relationship with said lower portion;



said cutting blades having opposing ends terminating in close proximity to the external surface of said water supply pipe; and

power means detachably coupled to a selected end of said shaft for imparting powered rotational force thereto.

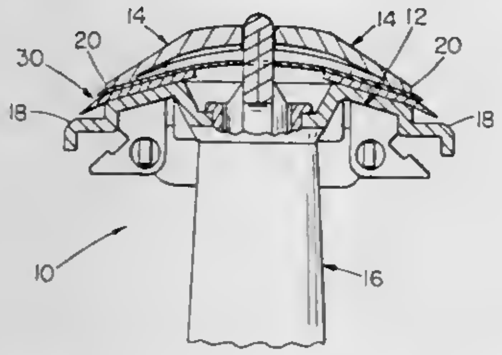
3,938,250
DISPOSABLE BLADE UNIT

Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.

Filed May 15, 1974, Ser. No. 470,224

Int. Cl.² B26B *21/22*

U.S. Cl. 30—346.57 **2 Claims**



1. A disposable blade unit for a safety razor comprising a thin, transversely flexible base blade which is apertured along its longitudinal center line and has two parallel, longitudinal edges that are sharpened to cutting edges, the overall width of the blade between its cutting edges being from 0.8 to 1.0 inch,

a pair of supplemental blades, each said supplemental blade having a planar body portion permanently secured in contact with a planar portion of said base blade, each supplemental blade having a length substantially equal to that of said base blade and a width less than half that of said base blade, each said supplemental blade having a longitudinal edge that is sharpened to a cutting edge positioned parallel to and offset from the adjacent longitudinal edge of said base blade, the edge of each said supplemental blade and the adjacent edge of said base blade defining a set of tandem blade edges, the cutting edges of each said set being spaced apart a distance in the range of 0.03 to 0.08 inch, and

lower surfaces of said blade unit defining planar support surfaces, one planar support surface being associated with each set of tandem blade edges, one sharpened edge of each set of tandem blade edges being disposed below its associated planar support surface and the other sharpened edge of each set of tandem blade edges being disposed above its associated planar support surface, the blade tangent angle of each said other edge being in the range of 22°–28°, and the bisector of the angle between the facet surfaces that defines each sharpened edge being disposed at a downwardly inclined angle of at least 1° to its associated planar support surface.

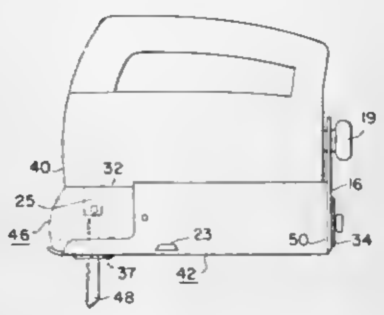
3,938,251
SABER OR JIG SAW WITH DEMOUNTABLE FOOT PLATE AND SHIELD

James Kareman, Bradley Beach, N.J., assignor to The Raymond Lee Organization, Inc., a part interest

Filed Mar. 10, 1975, Ser. No. 556,829

Int. Cl.² B27B *11/02, 19/09*

U.S. Cl. 30—376 **4 Claims**



1. In combination with a saw having a vertically reciprocating vertically elongated cutting blade and a housing with an exposed bottom surface and a rear surface with a threaded hole:

a hollow foot plate having a front opening, spaced openings in its top surface, a horizontal bottom surface and a back having an opening;

bracket means on said bottom surface of the housing detachably engaging said openings in the top surface of the foot plate whereby said back opening overlies said threaded hole;

a threaded key extending through said back opening into the threaded hole to lock the foot plate in place; and

a hollow transparent plastic shield sealed except for aligned top and bottom openings accommodating said blade and a rear opening detachably engagable with the front opening of said foot plate.

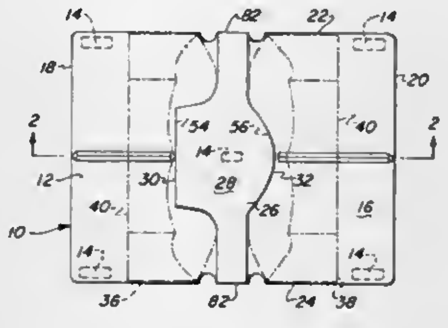
3,938,252
RELATOR FOR DENTAL CASTS

Julio R. Polanco, 1 E. Harriet Ave., Palisades Park, N.J. 07650

Filed Aug. 9, 1974, Ser. No. 496,175

Int. Cl.² A61C *11/00*

U.S. Cl. 32—32 **12 Claims**



1. A relator for use in mounting complementary maxillary and mandibular dental casts in desired occluded arrangement within a pair of shell-like bases, each base having a bottom, side walls, an anterior wall and a posterior wall all integral with the bottom and extending therefrom to establish a cavity, said posterior wall having an external planar surface, an opposite internal surface and a peripheral edge surface between said external and internal surfaces, the peripheral edge surfaces each having a predetermined profile configuration, said relator comprising:

a base plate;

a planar surface on the base plate, said planar surface extending longitudinally between opposite ends and laterally between opposite sides;

locator means on the base plate raised from the planar surface, said locator means including a first altitudinal edge adjacent one of said opposite ends and a second altitudinal edge adjacent the other of said opposite ends;

the first altitudinal edge having a profile configuration at least portions of which are complementary to the predetermined profile configuration of the peripheral edge surface of one of the bases;

the second altitudinal edge having a profile configuration at least portions of which are complementary to the predetermined profile configuration of the peripheral edge surface of the other of the bases; and

said altitudinal edges being spaced apart from one another longitudinally a distance corresponding to the location of the shell-like bases when the peripheral edge surfaces of the bases are engaged with the corresponding altitudinal edges of the locator means and the dental casts are in said desired occluded arrangement.

3,938,253
DENTAL INSTRUMENT HOLDER

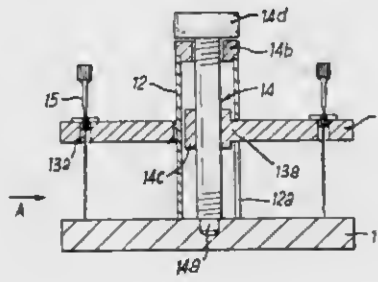
John David William Barnard, East Grinstead, and Peter Frank Kurer, Cheadle, both of England, assignors to Kurer Research & Development, England

Filed Oct. 1, 1974, Ser. No. 511,068

Claims priority, application United Kingdom, Oct. 9, 1973, 47071/73

Int. Cl.² A61C *3/00*

U.S. Cl. 32—40 R **3 Claims**



1. A dental instrument holder for determining the working length for dental root canal instruments comprising

1. a base plate having a flat upper surface forming a datum plane,
2. a post extending upwardly from the base plate,
3. a holding plate having a flat upper surface, the holding plate having an aperture in which the post is received in a manner maintaining the flat upper surface of the holding plate parallel to the datum plane, the flat upper surface of the holding plate having a plurality of spaced parallel apertures extending through the holding plate in which dental root canal instruments can be received, the working length of the instruments being determined by the distance between the datum plane and the flat upper surface of the holding plate,
4. resilient means disposed around the post and acting between the base plate and the holding plate to resiliently support the holding plate for sliding movement on the post, and
5. means for locking the holding plate to the post at a selected level relative to the datum plane.

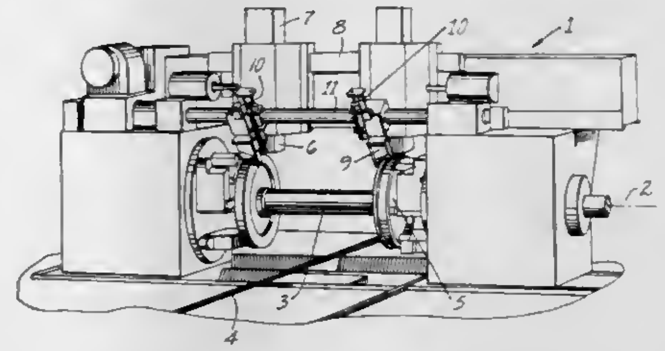
3,938,254
GAGING ASSEMBLY FOR AUTOMATICALLY CONTROLLED WHEEL LATHES

William R. Miller, Jr., Rochester, N.Y., assignor to USM Corporation, Boston, Mass.

Filed Aug. 30, 1974, Ser. No. 502,217

Int. Cl.² B23B *5/28*

U.S. Cl. 33—203.11 **11 Claims**



1. A gage for measuring parameters from the contour of a worn railroad wheel, said wheel contour being defined by tread edge, tread, flange, and flange edge portions and for supplying said parameters to a system for automatically controlling a lathe which is adapted for reclaiming said wheel contour comprising:

A. a support block having means for mounting said block on the lathe at a predetermined radial distance from the turning axis of the lathe, for radial movement toward the wheel contour;

B. first and second contacting members mounted on the support block for movement thereon and also mutually interconnected to allow for limited relative movement between said contacting members, said members being situated on the support to sequentially engage the wheel tread and flange surfaces as the support block moves radially toward the wheel contour, the relative movement between said contacting members being indicative of the new diameter of the railroad wheel which is required to automatically adjust the lathe for the reclaiming operation; and

C. encoder means operatively connected to the support block and contacting member assembly to generate signals relative to the movement thereof and supply said signals to the automatic control system of the lathe.

3,938,255
CANTILEVER-TYPE INCLINOMETER

Henry P. Lichte, Jr., Houston, Tex., assignor to Geolograph Industries, Oklahoma City, Okla.

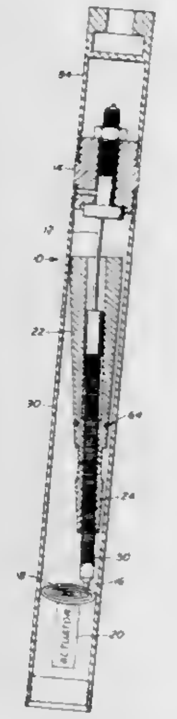
Filed Mar. 7, 1974, Ser. No. 449,228

Int. Cl.² G01C *9/12*

U.S. Cl. 33—311 **1 Claim**

1. Apparatus for determining the inclination of a well bore comprising a flexible rod having an upper end and a lower end, means in said apparatus for rigidly supporting said upper end of said rod, a target means, means for vertically moving said target means needle point means operatively connected with said lower end of said rod and suspended over said vertically movable target means, means responsive to a predetermined condition for moving said target means relatively towards and against said needle point means, an elongated threaded cylinder mounted on said flexible rod above said needle point means, weight means having a threaded opening therein engaging the threads on said elongated threaded cylinder whereby said weight means can be rotated on said elongated threaded cylinder to move said weight means upwardly or downwardly, said weight means causing bending of said rod by cantilever action when said apparatus is in said well bore

and said well bore is inclined with respect to the vertical, and a lock nut means mounted on said elongated threaded cylinder for locking against said weight means to hold said weight means in fixed vertical position on said elongated cylinder.



3,938,256

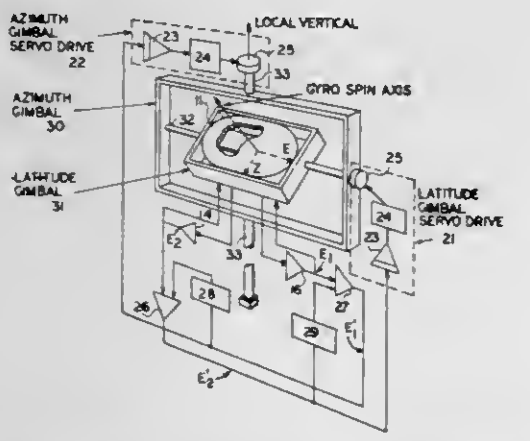
QUICK SETTLING GYROCOMPASS HAVING INTERAXIS DECOUPLING COMPENSATION FOR IMPROVED RESPONSE TIME

Earle B. Crocker, Jr., Pittsfield, Mass., assignor to General Electric Company

Continuation-in-part of Ser. No. 73,163, Sept. 17, 1970, which is a continuation-in-part of Ser. No. 701,690, Jan. 30, 1968, abandoned. This application Feb. 16, 1972, Ser. No. 226,751

Int. Cl. G01c *19/38*

U.S. Cl. 33—324 **9 Claims**



1. A quick settling, accurate gyrocompass comprising a packaged gyroscope having a case and rotor, said rotor having a spin axis and two orthogonal input axes about which motion takes place in aligning the spin axis, said gyroscope also including error signal generators (12, 13) and torquing generators (15, 17) for sensing and causing angular motion of the rotor about each input axis with respect to the spin reference axis of the case; external plural axis gimbal supporting means (30, 31) for supporting the packaged gyroscope with rotational freedom of movement about two said axes (32, 33); gimbal servo drive means (21, 22) for moving the packaged gyroscope about each said gimbal axis (32, 33); a torquing amplifier (14, 16) operatively coupled between the error signal generator and the torquing generator for motion about each input axis of said gyroscope for amplifying the error signals and for transmitting those signals to the torquing generator (15, 17) to drive the gyroscope rotor about said input axes to maintain alignment of the rotor and the gyroscope case to null any error signal due to a difference in alignment between the rotor spin axis and the spin reference axis of the case; a signal summing means (26, 27) coupled to the output of each torquing amplifier (14, 16); said gimbal servo drive means (21, 22) including motors (25) for driving said gimbal means and circuit means coupled to the output of each summing means (26, 27) for deriving signals of suitable polarity and magnitude for driving said motors to align the gyro spin axes with the earth's axis; and compensation circuit means (28, 29) connected between the output of each summing means (26, 27) and the input of the other summing means to cause said summing means to subtract from the torquing amplifier output a signal representing that component of the rate of rotation of the packaged gyro about its input axes which is due to gimbal rotation.

3,938,257

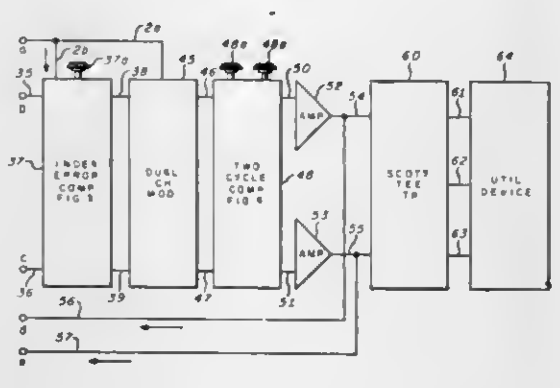
TWO-CYCLE COMPENSATOR FOR FLUX VALVE HEADING REPEATER SYSTEM

James R. Erspamer, Phoenix, Ark., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 2, 1974, Ser. No. 528,758

Int. Cl.^{2} G01C *17/28*

U.S. Cl. 33—361 **7 Claims**



1. In a magnetic compass data transmission system for navigable craft having generator means responsive to the earth's magnetic field for generating first and second alternating output signals proportional to $\sin \psi$ and $\cos \psi$ representative of said earth's magnetic field direction ψ with respect to said craft and substantially independent of the magnitude thereof, said generator means inherently producing two-cycle data transmission errors in the presence of an element distorting the earth's magnetic field in the vicinity of said generator means, the combination for correcting two cycle data transmission errors comprising:

amplifier circuit means having first and second input means,
first summation means for coupling said signals proportional to $\sin \psi$ and $\cos \psi$ from said generator means to said first input means,
second summation means for coupling said signals proportional to $\sin \psi$ and $\cos \psi$ from said generator means to said second input means,
variable impedance means coupled in parallel relation with said second input means for controlling the magnitude of the effective gain γ of said amplifier circuit means in proportion to said two cycle data transmission error thereby supplying at the output of said amplifier circuit means in cooperation with said first and second summation means a signal representative of $(-\gamma (\sin \psi + \cos \psi)$, and third and fourth summation means responsive to said amplifier circuit means output for producing respective corrected data transmission signals proportional to $\sin \psi + \gamma (\sin \psi + \gamma \cos \psi)$, and to $\cos \psi + \gamma (\sin \psi + \cos \psi)$.

3,938,258

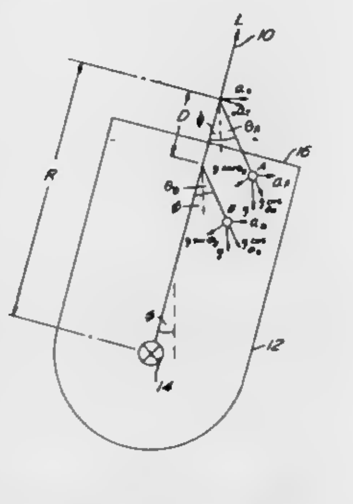
VERTICAL REFERENCE DEVICE

James K. Zook, Moorestown, N.J., assignor to All Systems, Inc., Moorestown, N.J.

Filed Jan. 8, 1974, Ser. No. 431,640

Int. Cl.^{2} G01C *9/08*

U.S. Cl. 33—366 **15 Claims**



1. A vertical reference device comprising:

first and second pendulum means mounted on a body which is susceptible to angular motion about a horizontal axis, said first and second pendulum means being mounted at different vertical distances from said axis;
transducer means for generating signals proportional to the angular positions of said first and second pendulum means;
means for combining said signals and multiplying the same by a predetermined factor whereby said device can generate a signal proportional to the actual angular position of said body about said axis.

3,938,259

PROCESS FOR CONTINUOUS DRYING OF CHEMICAL PRODUCTS BY MILLING-FLUIDISATION

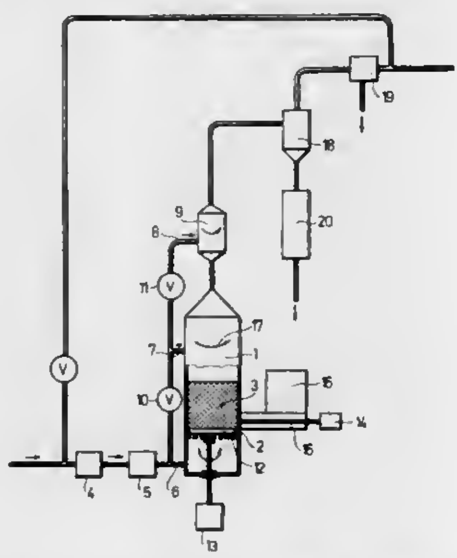
Zoltán Ormós; Béla Csukás, both of Veszprem; Béla Stefkó, Budapest; Karoly Pataki, Veszprem; Tibor Blickle, and József Felméri, both of Budapest, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest and Magyar Tudomanyos Akademia Muszaki Kemiai Kutato Intezete, Veszprem, both of, Hungary

Filed Dec. 16, 1974, Ser. No. 533,087

Claims priority, application Hungary, Dec. 22, 1973, RI 532

Int. Cl.^{2} F26B *3/08*

U.S. Cl. 34—10 **6 Claims**



1. A process for continuously drying chemical products by milling fluidization, comprising introducing a wet paste of the chemical product to be dried into a fluidized layer of particles of an inert carrier, introducing gas into the fluidized layer to agitate the fluidized layer so as uniformly to distribute said paste on the surface of the particles of the inert carrier, maintaining the flow of gas into said fluidized layer at a rate insufficient to remove said carrier particles from the fluidized layer but sufficient to separate dried particles of said chemical product from the particles of the inert carrier and to remove said dried particles of said product from said layer, and removing said particles of dried product from gas that has left said layer.

3,938,260

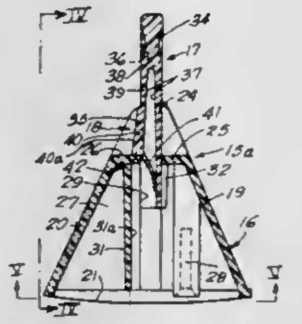
ADJUSTABLE BAFFLE FOR APPLIANCE

Robert A. Brenner, St. Joseph, and Victor W. Cuthbert, Sodus, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 11, 1974, Ser. No. 531,789

Int. Cl.^{2} F26B *9/04*

U.S. Cl. 34—108 **11 Claims**



1. A clothes dryer having a drum rotatable about an axis for tumbling clothes being dried and an adjustable baffle, said adjustable baffle comprising:

a body portion attached to an interior wall of the drum parallel to said axis;
a blade portion in said body portion and slidably movable with respect thereto; and
resiliently biased detent means selectively releasable between said blade portion and said body portion and operative to lock said blade portion in either extended or retracted positions,
whereby tumbling characteristics of clothes within the drum are affected by the position of the blade with respect to the body portion of the baffle.

3,938,261

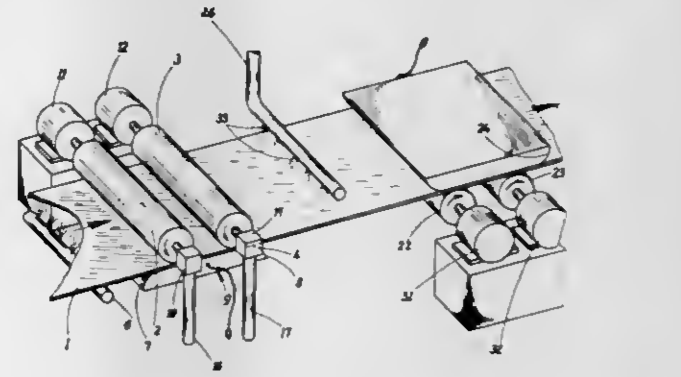
APPARATUS FOR IMPROVING PRINTING SURFACE OF PRINTING MATERIAL

James K. Anderson, 1110 Rostrevor Circle, Louisville, Ky. 40205

Continuation-in-part of Ser. No. 312,561, Dec. 6, 1972, Pat. No. 3,826,016. This application Feb. 27, 1974, Ser. No. 446,307

Int. Cl.^{2} F26B *11/02*

U.S. Cl. 34—114 **12 Claims**



1. An apparatus for improving the surface of a continuously moving web of printing material in combination with a printing press, said apparatus being disposed at the feed end of said printing press and comprising: a first treating zone including:

(1) at least one rotatably mounted pressure roller, (2) a first treating surface having a heat means as an integral part thereof and (3) a heating and moistening means prefacing said roller and treating surface, said rotatably mounted roller being disposed to contact said treating surface, said roller and treating surface being adapted to receive a web of material in contacting relationship therebetween under a preselected pressure with said surface of said web to be treated contacting said treating surface means rotating said roller at a surface speed at least equal to said surface speed of said web material and at a positive speed relative to said treating surface and exerting a preselected pressure upon said web of material thereby dragging said material under pressure across said treating surface.

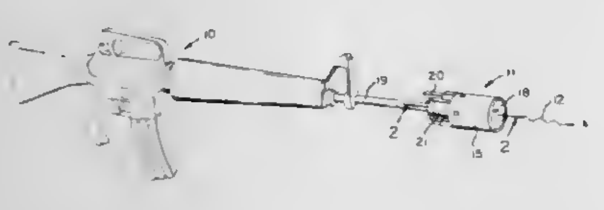
3,938,262
LASER WEAPON SIMULATOR

Richard A. Dye, Santa Barbara, and Donald A. Rowley, Goleta, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 17, 1974, Ser. No. 515,809

Int. Cl.² F41G *3/06*

U.S. Cl. 35—25 **4 Claims**



1. A laser weapon simulation comprising:

piezoelectric means providing the sole source of electrical power and control signals to a laser transmitter in response to the mechanical force generated by the firing pin of a weapon, said piezoelectric means being disposed in the breach of a weapon;

laser transmitter means coupled to said piezoelectric means, said laser transmitter means providing an output signal in response to said power and control signals and being coaxially aligned with the barrel of a weapon; and

circuit means coupling said piezoelectric means and said laser transmitter means.

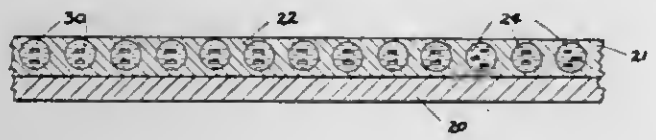
3,938,263
COMPARTMENTALIZED MICROMAGNET DISPLAY DEVICE

Clarence R. Tate, Fairfield, Ill., assignor to Thalatta, Inc., Fairfield, Ill.

Continuation-in-part of Ser. No. 756,711, Aug. 6, 1968, abandoned, which is a continuation-in-part of Ser. No. 553,086, May 26, 1966, abandoned. This application Mar. 27, 1970, Ser. No. 23,424

Int. Cl.² B43L *1/12;* H01F *3/00*

U.S. Cl. 35—66 **10 Claims**



1. A method of forming a sheet adapted to provide a visual display when acted on by exteriorly applied magnetic forces comprising

- a. providing micromagnets of a size range from about 25μ to about 1000μ, said micromagnets having a constant magnetization vector and surface color zones of contrasting colors;
- b. suspending said micromagnets in a transparent carrier liquid of a density and viscosity sufficient to hold the said micromagnets in suspension at least a period of minutes;
- c. suspending droplets of said carrier liquid containing said micromagnets in a liquid organic film-former, the density of the film-former liquid being about equal to or slightly less than that of said carrier liquid so that said droplets do not rise out of the film-former liquid;
- d. forming the resulting suspension into a thin layer; and
- e. hardening said film-former into a transparent organic polymeric film containing said droplets as fluid inclusions.

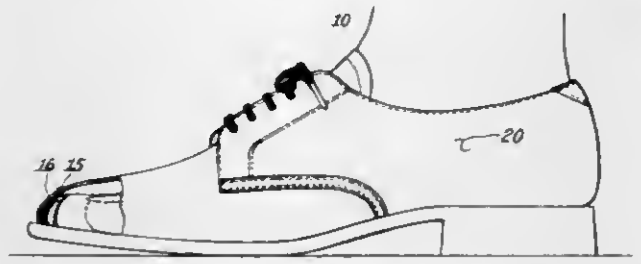
3,938,264
SOCK AND SHOE

Julius W. Burrell, Montebello, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 15, 1975, Ser. No. 541,231

Int. Cl.² A43B *00/00*

U.S. Cl. 36—1 **3 Claims**



1. A shoe fitted with a section of Velcro material in the inside forward toe section of the shoe for the purpose of engaging the forward section of the sock of a wearer of the shoe, said Velcro material being fixed to a forward toe section of the shoe that is inclined generally perpendicular to the plane of the sole of the said shoe.

3,938,265
MOCASSIN-TYPE SHOE

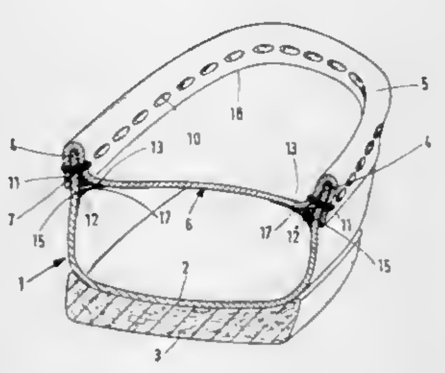
Robert Pröbstl, Walheim; Robert Reiter, Schrozberg, and Karl Vogelmann, Besigheim, all of Germany, assignors to Messrs. Sioux Schuhfabriken Peter Sapper, Walheim, Germany

Filed Mar. 12, 1975, Ser. No. 557,767

Claims priority, application Germany, Mar. 14, 1974, 2412206

Int. Cl.² A43B *3/14*

U.S. Cl. 36—11 **8 Claims**



1. A mocassin type shoe comprising an upper having upwardly turned edge portions, a row of holes adjacent said edge in the forward part of the shoe, a vamp apron rolled over said forward part of the edge of the upper, an inner and an outer substantially parallel row of holes in the border region of said vamp apron, a sealing strip of resilient compressible material inserted between the inner row of holes of the vamp apron and the row of holes on the upper, and a stitching seam passing through the resilient strip and through the holes of the upper and the holes of the inner and outer rows of the vamp apron, and compressing the strip between the vamp apron and the upper.

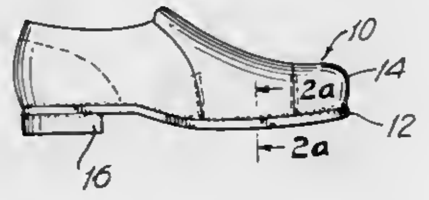
3,938,266
ADHESIVE SYSTEM

Melvin S. Cook, Saddle River, N.J., assignor to Holobeam, Inc., Paramus, N.J.

Filed Dec. 13, 1973, Ser. No. 424,274

Int. Cl.² A43B *9/12;* B32B *00/00*

U.S. Cl. 36—19.5 **1 Claim**



1. An adhesive system for bonding two items comprising an adhesive material having permanent adhesive characteristics and which loses adhesive strength when heated, electro-magnetic energy absorbing elements in the form of metal particles imbedded in said material, capsules for enveloping said elements and an adhesive weakening solvent disposed within said capsules with said elements, said energy enabling weakening of said adhesive characteristics to break said bond.

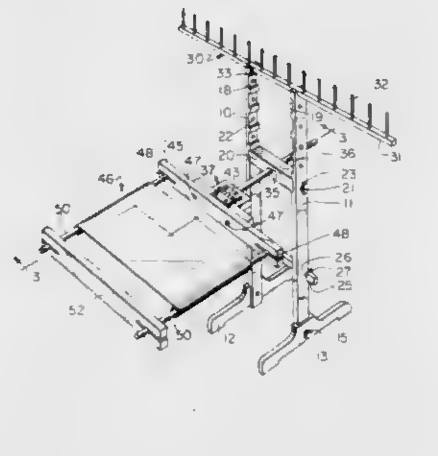
3,938,267
FANCY STITCHERY WORKING FRAME SUPPORT

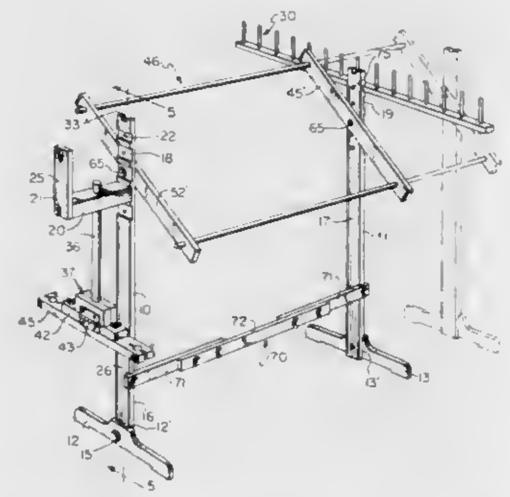
Donald I. Bard, 7901 College Lane, Annandale, Va. 22003

Filed Sept. 3, 1974, Ser. No. 502,683

Int. Cl.² D06C *3/08*

U.S. Cl. 38—102.1 **12 Claims**





1. An apparatus for adjustably supporting a fancywork frame in a plurality of positions, comprising a pair of upright posts, a spacer member, means for mounting the spacer member at a selected height between said posts, rod means carried by said spacer member and extending transversely thereof and being longitudinally and rotatably adjustable relative thereto, support means connected to said rod means, and means for mounting the fancywork frame on said support means, whereby said posts may be disposed in side-by-side relationship and the fancywork frame selectively cantilevered from the spacer member and angularly adjusted relative to said posts.

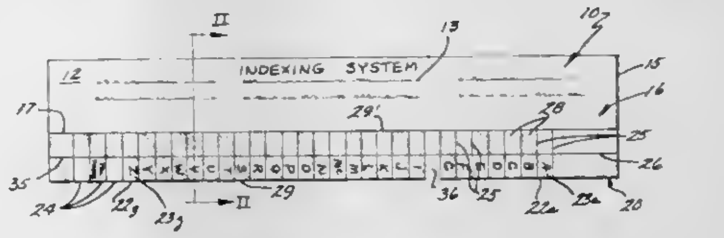
3,938,268
INDEX SYSTEM

Harry C. Gilhula, 2802 Robinson Road, SE., Grand Rapids, Mich. 49506

Filed Jan. 31, 1974, Ser. No. 438,296

Int. Cl.² G09F *3/16;* B42F *21/00*

U.S. Cl. 40—23 A **7 Claims**



1. An index tab assembly comprising:

a tab strip, initially free of adhesive, defining a plurality of tabs;

an adhesive transfer strip comprising a base strip made of a material from which adhesive is readily removeable and an adhesive film initially adhered to said base strip, said adhesive transfer strip being adhered to and extending from said tab strip spaced from an edge thereof for transferring a pressure-sensitive adhesive from said adhesive transfer strip to a portion of each tab of said tab strip as the tabs are removed from said adhesive transfer strip.

3,938,269
CASE FOR DISPLAYING NOTICES

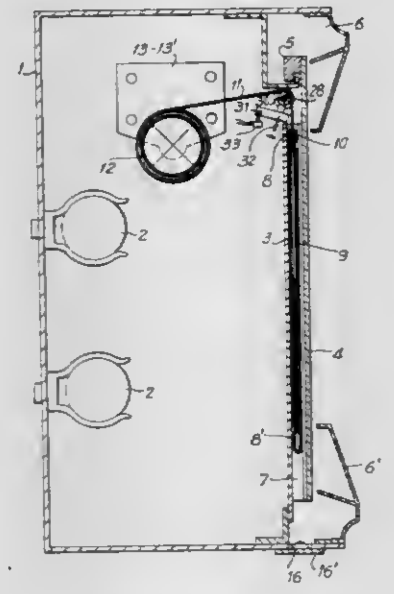
Jean Catteau, 10, rue de Mora, Enghien-les-Bains (Val d'Oise), France

Continuation-in-part of Ser. No. 247,631, April 26, 1972, abandoned. This application Apr. 1, 1974, Ser. No. 457,135

Claims priority, application France, Apr. 30, 1971, 71.15505

Int. Cl.² G09F *11/00*

U.S. Cl. 40—30 **5 Claims**



1. A case for displaying notices, comprising, in combination:

a parallepipedal body of the type including

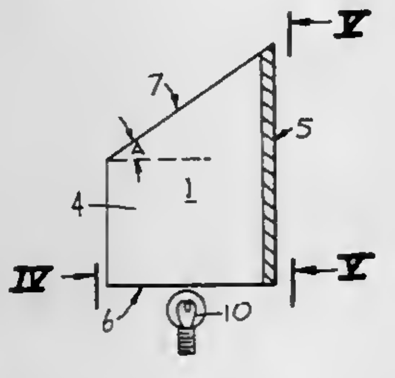
bottom, rear, side and top wall parts and

an at least translucent, non-removably mounted front face in
a substantially vertical, opaque frame, constituting
a front wall part; said wall parts being sealingly interconnected; said bottom wall part having therein
a single access opening substantially below said front wall part, including
a removable shutter and
means for sealing the latter in a substantially water- and dust-proof manner when closed; said body including in its
upper inner space and behind
the upper edge of said front face
at least one rotatable drum in substantially parallel alignment with said upper edge of the front face and with said access opening;
at least one flexible element haivng
two ends, one by which said flexible element is removably attached to said drum along a generatrix of the latter, and another, free end, and having
a length greater than a path that runs from the generatrix of said drum to said access opening, when said flexible element is passed from said drum about said upper edge of the front face and thence along the inside of the latter, substantially vertically down toward said access opening;
means for attaching at least one notice to said free end of the flexible element so that the notice is suspended as an extension of and lengthwise beyond said flexible element;
said access opening having a width and a length that allow at least the notice and said attaching means to pass therethrough by gravity, upon rotation of said drum in a first direction;
drive means for selectively rotating said drum in the first direction, which corresponds to the unwinding of said flexible element attached thereto, with said free end moving downward along said inside of the front face and toward said access opening, and in a second direction which corresponds to winding up said flexible element onto said drum; and
means for arresting said drive means, on the one hand, when said attaching means have just passed beyond said bottom wall toward the outside through said access opening, the notice being then entirely on the outside; and,
on the other hand, when said attaching means have attained a height just below said upper edge of the front face, the notice being then fully exposed through said translucent front face, said arresting means also constituting
means for preventing the notice from ever reaching, and being rolled up even partly on, said drum.

3,938,270

VISUAL DISPLAY DEVICE

Danilo J. Santini, Chicago, Ill.
Filed Apr. 15, 1974, Ser. No. 460,671
Int. Cl.² G09F *13/18*
U.S. Cl. 40—130 K **1 Claim**

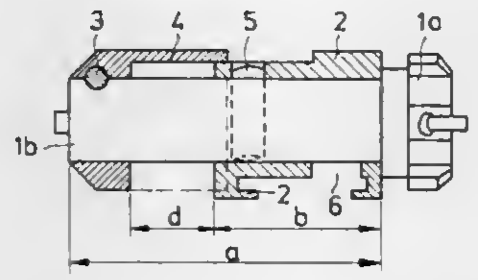


1. A visual display device, comprising
a plurality of blocks in next-adjacent side by side relation, each block being of substantially equilateral triangular cross-section and having two opaque sides of trapezoidal configuration, a third at least translucent, colored side of rectangular configuration, an at least translucent base of equilateral triangular configuration and an opaque top of isosceles triangular configuration, the base being substantially perpendicular to the three sides and the top triangle being at an angle of inclination with the base and having an angle at the corner joining the two sides of trapezoidal configuration and an opposite side coincident with the top edge of the third side and farther from the base than the angle; and
a plurality of light means each at the base of a corresponding one of the blocks, said blocks being arranged with said third side of at least one of said blocks adjacent a trapezoidal side of another of said blocks, such that light is transmitted only through said translucent third side, so that an opaque top of a given block derives colored light from adjacent blocks and not directly from the light means at its base, said translucent colored third side of at least one block being of varying color with respect to other third sides of said plurality of blocks.

3,938,271

EJECTION PORT CLOSURE FOR FIREARMS

Timo Hyytinen, Jyvaskyla, Finland, assignor to Valmet Oy, Finland
Filed Mar. 29, 1974, Ser. No. 456,377
Claims priority, application Finland, Apr. 5, 1973, 1060/73
Int. Cl.² F41C *27/08, 11/00*
U.S. Cl. 42—16 **5 Claims**

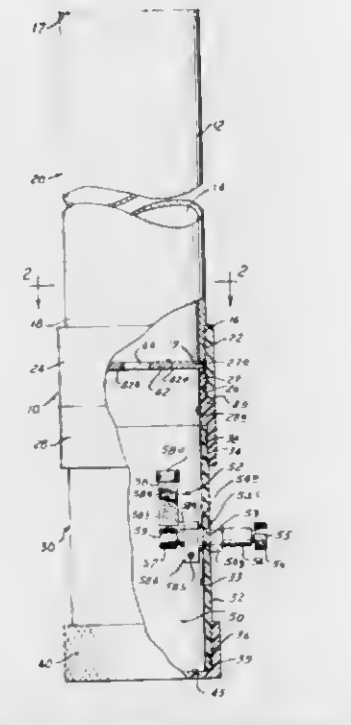


1. In a firearm, receiver means formed with an ejection port through which a cartridge case of a spent cartridge is ejected, elongated bolt means situated in said receiver means for longitudinal movement between a forward firing position and a rear retracted position where said port is uncovered to an extent sufficient for ejection of a cartridge case, said bolt means also being supported in said receiver means for rotary movement between locked and unlocked positions, sleeve means surrounding said bolt means and operatively connected thereto for rotating said bolt means between said locked and unlocked positions thereof in response to longitudinal movement of said sleeve means with respect to said bolt means, said sleeve means having a length substantially shorter than said bolt means and said sleeve means extending across and partially covering said port when said bolt means is in said forward position thereof, said sleeve means moving rearwardly with said bolt means when the latter is displaced from said firing to said retracted position thereof for uncovering said port, and cover means situated in said receiver means for covering that part of said port which is not covered by said sleeve means when said bolt means is in said firing position thereof, said cover means being operatively connected with at least one of the other of said means for responding to movement of said bolt means from said firing to said retracted position to assume a position uncovering said port when said bolt means is in said retracted position thereof, said sleeve means covering a front portion of said port and said cover means covering a rear portion of said port when said bolt means is in said firing position thereof, said cover means being fixed to a rear portion of said bolt means for rotary and longitudinal movement with said bolt means.

3,938,272

TOY CANNON

Donald R. Ditto, and Kenneth H. Hare, both of 3129 Maple Leaf Lane, Dallas, Tex. 75233
Filed Mar. 28, 1974, Ser. No. 455,854
Int. Cl.² F41F *1/00*
U.S. Cl. 42—55 **4 Claims**

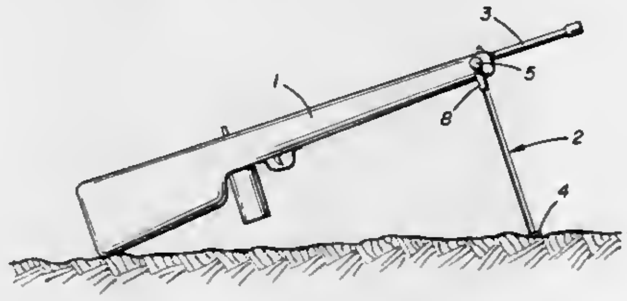


1. Apparatus to launch a resilient projectile comprising: a tubular barrel having a longitudinally extending bore open at one end; a combustion chamber adjacent an end of said bore, said combustion chamber having a volume approximately one-third the volume of the bore of the tubular barrel; said combustion chamber having an end cap removeably secured thereto to allow ventilation of the combustion chamber and the addition of a fresh charge of liquid hydro-carbon fuel upon removal; a partition plate having an aperture formed therein, said plate being positioned between the barrel and combustion chamber; ignition means in said combustion chamber to ignite the fuel; and a resilient projectile positionable in said bore, said projectile being larger than the diameter of said bore such that movement of said projectile through said bore towards said partition plate compresses a fuel-air mixture in said combustion chamber to increase the compression ratio of the fuel-air mixture, such that the position of the projectile relative to the partition plate determines the compression ratio of the fuel-air mixture.

3,938,273

FIREARM HAVING TWO PIVOTED PROPS

Paul E. Teille, 20, rue Bergson, 42000 St. Etienne, France
Filed May 17, 1974, Ser. No. 470,857
Claims priority, application France, June 1, 1973, 73.19959
Int. Cl.² F41C *29/00*
U.S. Cl. 42—94 **9 Claims**

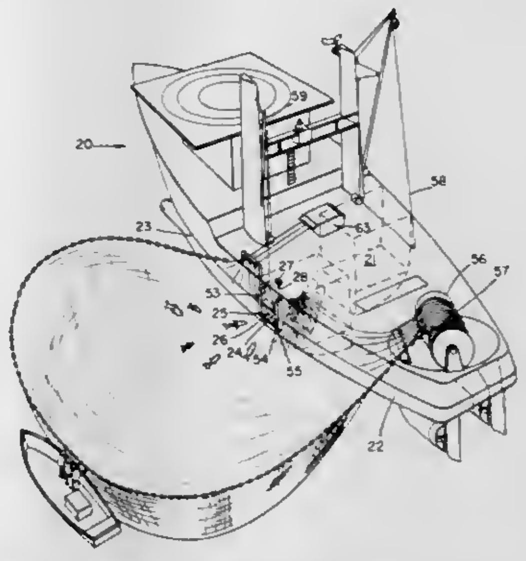


1. A firearm of the type having two props having feet, said props being pivoted to its front portion about two respective laterally protruding trunnions, said props being adapted to occupy at least one active position in which, their feet resting on the ground, they serve as support for the front portion of the firearm so as to maintain it elevated, and an inactive position in which they are swung back along the firearm, each prop comprising:
a prop rod, said prop rod having a foot, a head having a blind hole by means of which it can be engaged over the laterally protruding trunnion on the firearm, and said head having a radial extension, a bore in said radial extension, said bore slidably receiving the end of the prop rod which is opposite its foot,
means for axial retention of the head on the trunnion, and within the head, means for the automatic locking of said end on the trunnion in the two aforementioned positions, said means being unlockable under the effect of a pull exerted on the rod in the direction of its axis.

3,938,274

OCEANIC FISHING SYSTEM

David J. Seymour, Daly City, Calif., assignor to Anthony M. Ursich, Del Mar, Calif.
Filed Mar. 3, 1975, Ser. No. 554,445
Int. Cl.² A01K *73/12*
U.S. Cl. 43—4.5 **6 Claims**



1. An oceanic fishing system, including in combination:
a ship having an opening through its hull below waterline on the port side,
a fish entry tank in said ship on the port side and connected to said opening by a conduit,
closure means for said opening so that it can be shut or open as desired,
compensating heel and trim tank means in said ship on the opposite side of said ship from said fish entry tank for offsetting the heel, list, and trim effects of entry of water into said hold compartment,
means inside said fish entry tank for separating the fish from the water and removing the fish,
first pumping means for drawing water into said fish entry tank through said opening, carrying fish therewith, and for returning the sea water to the sea, and
second pumping means for transferring water from the sea rapidly into said heel and trim tank means quickly while said fish entry tank is being flooded.

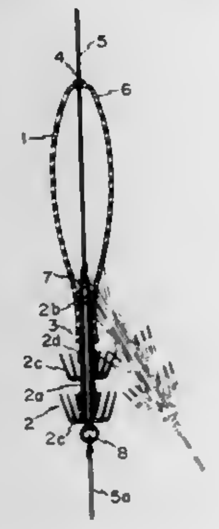
3,938,275

LURE FOR CATCHING SQUID AND THE LIKE

Juzo Fukushima, 12-13, Omiya, Sasebo, Nagasaki, Japan
Filed Oct. 24, 1974, Ser. No. 517,715
Int. Cl.² A01K *85/00, 83/00*
U.S. Cl. 43—42.24 **3 Claims**

1. A lure for catching squid and the like comprising a hollow elastic body, said hollow elastic body being elongated and having boles on each longitudinal end, a hook device disposed at one end of said elastic body, said hook device including a longitudinally contiguous core and shank, one or more um-

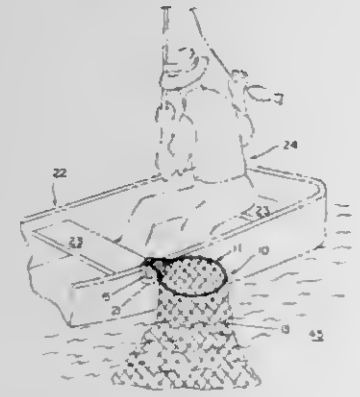
brella-type hook elements disposed on said core, ring means disposed about said hook elements and said core to prevent the hook elements from sliding on said core, said shank passing through one of said holes at the longitudinal end of said hollow elastic body and extending into said hollow elastic body, said core being disposed outside said hollow elastic body adjacent to said one hole at the longitudinal end of said elastic body, said umbrella-type hook elements having first radial portions extending radially outwardly from said core and second longitudinal portions extending longitudinally toward said hollow elastic body, said core having a connector extending on the side of said radial portions opposite said elastic body, and means connecting said shank and said connector to a fishing line such that a plurality of lures may be connected in series and each elastic body is adapted to be compressed to facilitate catching squid or the like on said hook device when the fishing line having the series-connected lures is pulled up.



3,938,276
QUICK-LOCK FISH BAG

Charles W. Mettler, 1120 7th Ave. S., South St. Paul, Minn. 55075

Filed Apr. 28, 1975, Ser. No. 572,408
Int. Cl.² A01K *97/04*
U.S. Cl. 43—55 **1 Claim**



1. A fish bag intended for use with an oarlock hole of a fishing boat, the bag comprising, in combination:

a ring member of an elongated continuous endless band having a circular cross-sectional configuration;

a plurality of S-hooks suspended from the ring member and extending downwardly therefrom;

a net having its open mouth end suspended from the S-hooks completely about the ring the net being manufactured of woven wire having an open mouth end, a closed bottom end, and side wall surfaces, the open mouth end being suspended generally parallel to the plane of the ring and spaced slightly downwardly therefrom by the S-shaped hook;

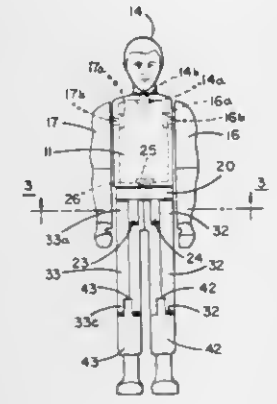
a bracket affixed to the ring and extending radially outward therefrom, the bracket being of a winged V-shaped configuration having the wings permanently affixed to the ring and with the vertex of the V projecting radially outwardly from the ring, the bracket lying coplanar with the plane of the ring and having its vertex end extending furthest outwardly from the periphery of the ring; and

a cylindrical post affixed to the bracket and extending downwardly therefrom in a direction normal to the plane of the ring and adapted to be fit into the oarlock hole of a boat for securing the bag thereto, the post being of an elongated cylindrical configuration having a top end and a bottom end and cylindrical side walls, the top end of the post being positioned inwardly of the vertex portion of the bracket and being permanently affixed thereto with the post extending normal to the bracket in the same direction in which the net is suspended from the ring.

3,938,277
ARTICULATED TOY FIGURE

Adolph E. Goldfarb, Tarzana; Erwin Benkoe, Encino; Delmar K. Everitt, Woodland Hills; Ronald F. Chesley, La Crescenta, and Richard D. Friedrich, Canoga Park, all of Calif., assignors to Adolph E. Goldfarb and Erwin Benkoe, both of Northridge, Calif., a part interest

Filed Feb. 19, 1974, Ser. No. 443,774
Int. Cl.² A63H *3/20*
U.S. Cl. 46—161 **8 Claims**



1. A toy figure comprising:

a three dimensional torso portion having a longitudinal axis extending generally vertically, said torso portion having an upper end and a lower end which defines a generally flat downwardly facing contact surface,

a head portion supported at said upper end of said torso portion,

a pair of arm portions pivotally attached to said torso portion,

a hip plate portion attached to said lower end of said torso portion for pivotal motion about the longitudinal axis of said torso portion, said hip plate portion being in the form of a flat plate baving a power surface and a generally flat upper contact surface, said flat plate extending transversely to said torso axis with said plate upper contact surface juxtaposed to and in slidable mating contact with said torso portion lower end contact surface, said plate having tab means extending downwardly from the lower surface thereof, one of the downwardly facing contact surfaces of said torso portion and the upper contact surface of said plate having a locking recess therein and the other thereof having a locking knob extended into and locked within the recess to permit pivotal motion of the hip plate portion relative to the longitudinal axis of the torso portion, and

a pair of leg portions pivotally attached to said tab means.

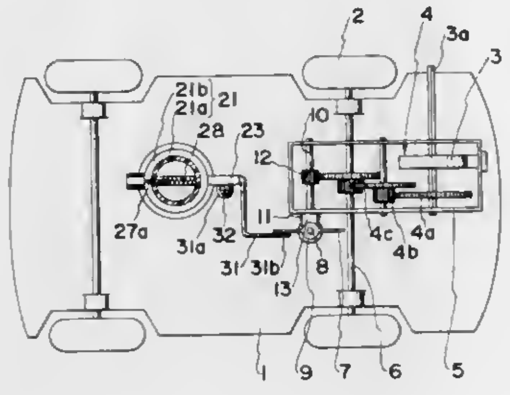
3,938,278
STARTER DEVICE FOR TOYS

Yasuo Nakamori, Matsudo, Japan, assignor to Sanyo Onkyo Seiki Co. Ltd., Tokyo, Japan

Filed Dec. 20, 1974, Ser. No. 534,705

Claims priority, application Japan, Aug. 29, 1974, 49-103530

Int. Cl.² A63H *17/00*
U.S. Cl. 46—202 **6 Claims**



1. A toy comprising:

a. a body;

b. a shaft mounted on said body;

c. a wheel mounted on said body and operatively connected to said shaft for joint rotation;

d. drive means mounted on said body and connected to said shaft for rotating the shaft;

e. a mounting member on said body defining a path for an auxiliary toy toward and away from a mounting position on said body;

f. an operating element movably secured to said mounting member;

g. biasing means yieldably biasing said element toward a position in which a portion of said element extends into said path for displacement of said element by said auxiliary toy during movement of said toy in said path toward said position; and

h. stop means movably mounted on said body and operatively interposed between said element and said shaft for stopping said shaft in response to displacement of said engagement portion.

3,938,279
GROWTH MEDIUM TO COVER THE SURFACE OF THE GROUND

Gunnar Johan Fonne, Porsgrunn, Norway, assignor to Norsk Hydro A. S., Oslo, Norway

Filed Feb. 8, 1974, Ser. No. 440,840
Int. Cl.² A01C *1/00;* C04B *13/22*
U.S. Cl. 47—9 **3 Claims**

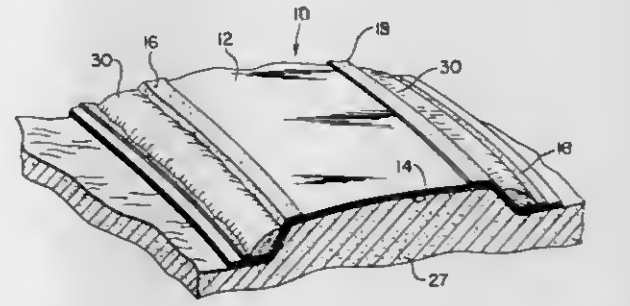
1. A growth medium for covering the surface of ground which comprises a mixture of Portland cement, an organic fibrous material and fertilizer in a weight ratio of 10–40:5–20-:5–15.

3,938,280
MULCH AND METHODS OF MANUFACTURING AND UTILIZING THE SAME

Joseph S. Vandemark, Urbana, Ill., and Robert T. Seith, Tuscaloosa, Ala., assignors to Gulf States Paper Corporation, Tuscaloosa, Ala.

Division of Ser. No. 470,910, May 17, 1974. This application June 23, 1975, Ser. No. 589,354
Int. Cl.² A01G *7/00*
U.S. Cl. 47—9 **4 Claims**

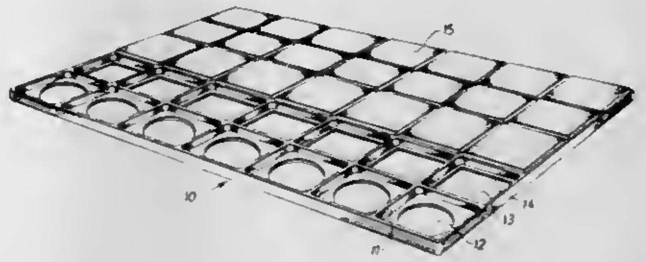
1. A method of providing a mulch, which comprises providing a supply of paper sheet covered substantially completely on one side thereof with a water-impervious material, feeding said sheet from said supply, laying said sheet upon the ground with said material against the ground as the sheet is fed from the supply, treating marginal regions only of the opposite side of said sheet adjacent to opposite longitudinal edges thereof with a water-insoluble fungicide, and placing soil or the like substantially upon the treated regions only in order to hold down the sheet upon the ground, without substantial deterioration of the sheet, for a protracted period.



3,938,281
GERMINATION AND SEEDLING PROMOTING ASSEMBLY

Sven Ake Ingerstedt, Simrishamn, and Arne Nils Lantz, Asbro, both of Sweden, assignors to Hasselfors Bruks Aktiebolag, Hasselfors, Sweden

Filed Feb. 21, 1974, Ser. No. 444,308
Int. Cl.² A01C *11/00*
U.S. Cl. 47—37 **5 Claims**



1. A germination and seedling promoting assembly comprising:

a. a plurality of individual moisture-absorbent bodies having a water content too low to initiate seed germination;

b. at least one ungerminated seed disposed in each of said bodies;

c. a support member having a plurality of shallow pockets respectively snugly receiving at least the lower portion of said bodies, the bottom of each said pocket being apertured to expose more than half but less than all of the under surface of its said body to atmosphere, said pockets being in proximity to the adjacent ones of said pockets;

d. a rectilinear support frame having four side portions of equal height, a pair of opposite ones of said portions being vertically offset from the other pair of said portions; and

e. means secured to certain of said portions for supporting said support member with said bodies thereon, out of contact with the surface that the lower of said pair is resting;

whereby another similar support frame may be supported on the upper side of said lower pair, and whereby said side portions of a plurality of stacked support frames jointly define a substantially closed box-like structure.

3,938,282

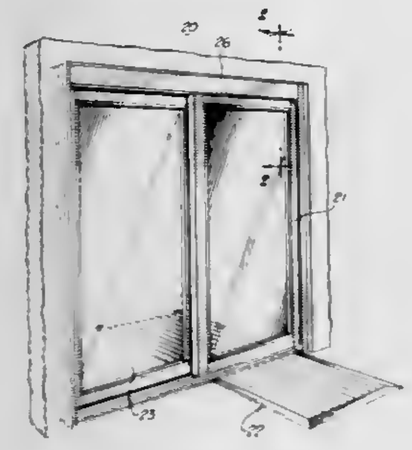
SLIDING DOOR OPERATOR

Raghbir C. Goyal, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.

Filed Feb. 1, 1974, Ser. No. 438,593

Int. Cl.² E05F *15/02*

U.S. Cl. 49—137 **8 Claims**



1. An automatic door operator used in opening and closing a door which is mounted upon a door frame for sliding movement in a vertical plane between open and closed positions in response to movement of traffic adjacent the door, said door operator comprising:

a drive cylinder for mounting relative to said door frame having first and second fluid inlets;

a piston slideably movable within said drive cylinder through door opening and door closing strokes between said first and second fluid inlets;

a drive means for connecting said piston to a door to drive the door through the door opening and door closing strokes;

a means for supplying pressurized fluid from a suitable source thereof connected to said first and second fluid inlets and operable to supply pressurized fluid to either of said first and second fluid inlets;

control means interconnecting said supplying means with said first fluid inlet and connecting said second fluid inlet to exhaust continuously throughout an opening stroke and connecting said supplying means to said second fluid inlet and connecting said first fluid inlet to exhaust continuously throughout a closing stroke;

said control means including means for reducing the pressure of fluid acting on said piston from a side thereof in communication with one of said fluid inlets connected for supplying pressurized fluid to said cylinder after said piston has moved part way along on a stroke; and

exhaust metering means metering the exhaust flow of fluid at least as the door approaches the end of its stroke.

3,938,283

DUST BAG SUPPORT

James A. Keith, Jr., Pickens, S.C., assignor to The Singer Company, New York, N.Y.

Filed Feb. 24, 1975, Ser. No. 552,467

Int. Cl.² B24B *23/00, 55/06*

U.S. Cl. 51—170 R **4 Claims**

1. A portable sanding tool having a motor driven oscillating platen carried by a housing, and means for discharging from the housing dust-laden air created by the use of the tool upon a work surface comprising:

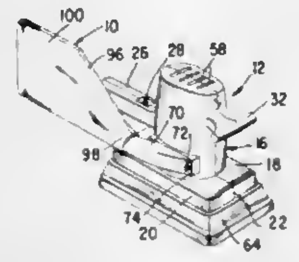
a. a discharge conduit rigidly connected to the housing,

b. at least one radial flange formed on the outer periphery of the discharge conduit,

c. notch means formed in the flange of the discharge conduit,

d. a support rod including an arcuate section defining an expandable throat, and a straight section,

e. the straight section of the support rod disposed in the notch means of the flange to permit the arcuate section of the support rod to encircle the discharge conduit adjacent the flange, and



f. a dust bag detachably connected to the discharge conduit and supported by the support rod.

3,938,284

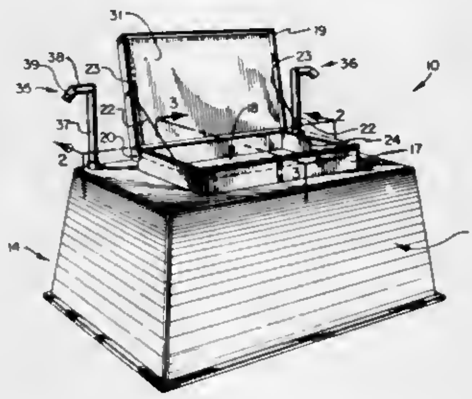
ROOT CELLAR

Lynn C. Broadbent, Box 267, Alpine, Utah 84033, and William B. Thomas, 8335 S. 10th East, Sandy, Utah 84070

Filed Oct. 29, 1974, Ser. No. 518,465

Int. Cl.² E04H *7/22*

U.S. Cl. 52—20 **7 Claims**



1. A pre-built, transportable root cellar comprising

a top wall having a layer of insulating material formed therein;

spaced apart front and rear walls interconnected by said top wall and extending downwardly therefrom;

spaced apart side walls interconnected by said top and front and rear walls whereby said walls form a shell having an open bottom;

an opening formed through the top wall large enough for a person to pass through;

a flange surrounding the opening and projecting upwardly from the top wall, said flange including a layer of insulation extending from an inner face of the top wall to the top of the flange;

a lid pivotally connected to the flange and adapted to be pivoted between an open position overlying the flange and closing the opening, said lid including a layer of insulating material arranged to fully overlie the flange when the lid is in the closed position; and

air vent means through the top wall.

3,938,285

MANHOLE AND METHOD OF MANUFACTURE

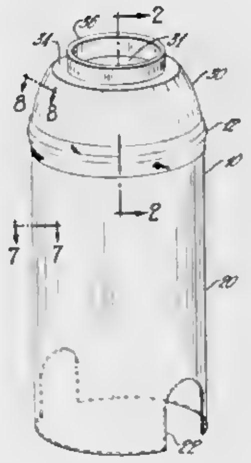
Agnar Gilbu, Conroe, Tex., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 322,344, Jan. 10, 1973, abandoned. This application Jan. 6, 1975, Ser. No. 538,984

Int. Cl.² E02D *29/14*

U.S. Cl. 52—20 **9 Claims**

1. A preformed manhole enclosure suitable for use underground and made of glass fiber reinforced plastic, the manhole enclosure comprising a tubular body and a dome at an upper end of the tubular body, the dome including a wall of continuous double curvature and having a manway providing access to the interior of the tubular body, the dome further including a load bearing shoulder and an integral stiffening collar, the load bearing shoulder circumscribing the manway and presenting a generally planar, upwardly facing annular surface for supporting a load, the stiffening collar extending generally perpendicularly upwardly from an inner edge of the shoulder and being effective to stiffen the shoulder against deflection due to externally applied loads, and a central vertical section through the dome being defined on each of opposite sides of the manway by a downwardly concave curved section of the wall extending upwardly from the tubular body and curving radially inwardly of the dome in a downwardly concave curve, a section of the load bearing shoulder extending radially inwardly of the dome from an upper end of the downwardly concave section of the wall, and a section of the stiffening collar extending upwardly from an inner end of the section of the load bearing shoulder.



3,938,286

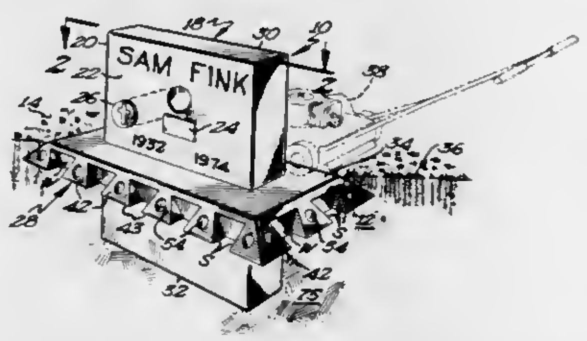
GRAVE MARKER

Frank N. Mochinski, 708 Adams St. NE., Minneapolis, Minn. 55413

Filed Dec. 18, 1974, Ser. No. 533,965

Int. Cl.² E04H *13/00;* **E04F** *19/02*

U.S. Cl. 52—103 **7 Claims**



1. An improved grave marker, resistant to tipping and usable on a cemetery lawn to permit easier trimming of grass adjacent the marker by a standard lawnmower having wheels at ground level, comprising:

an integral body including a generally upright member with a top and bottom and having a decorative exterior bearing identifying indicia;

said integral body further including a generally horizontal apron affixed to and extending about said upright member, extending outwardly therefrom, and positioned between said top and bottom of said member, said apron including upper and lower surfaces with said upper surface defining a substantially flat runway adjacent said upright member and positionable at substantially ground level to permit a wheel of the lawnmower to roll on said flat runway, thereby trimming grass adjacent said apron, said bottom of said upright member being positionable below ground level and cooperating with the outwardly extending apron to resist tipping of the marker;

said apron further including an earth-engaging ramp extending about said apron and positioned between said upper and lower surfaces of said apron and spaced outwardly from said upright member to define the outer periphery of said apron, said ramp being inclined outwardly and downwardly from said upper surface toward said lower surface and positionable below ground level to receive and direct roots of grass growing above said ramp outwardly and downwardly along said ramp and clear of said ramp so grass growing above said ramp will wrap its roots about said outer periphery of said apron to anchor said apron to the ground and to direct the roots toward deeper, more moist ground for improved grass sustenance; and

said outer periphery of said apron being crenellated to provide a plurality of alternating crenels and merlons permitting grass above said merlons to send roots through said crenels to further anchor said ramp to the ground and further improve grass sustenance.

3,938,287

MAUSOLEUM

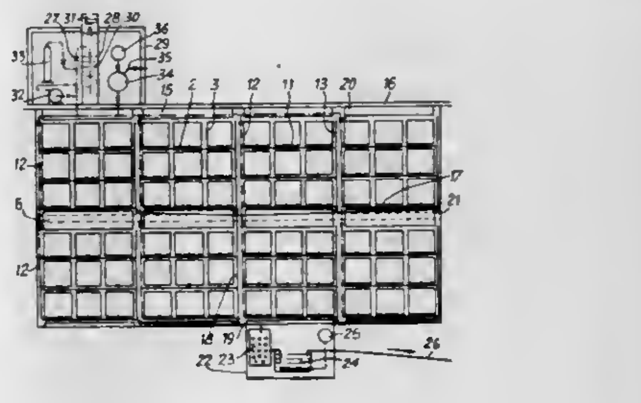
Fernand Gauchard, Parc du Beau, Santeny (Val de Marne), France

Filed Dec. 19, 1974, Ser. No. 534,449

Claims priority, application France, Dec. 28, 1973, 73.46933

Int. Cl.² E04H *13/00*

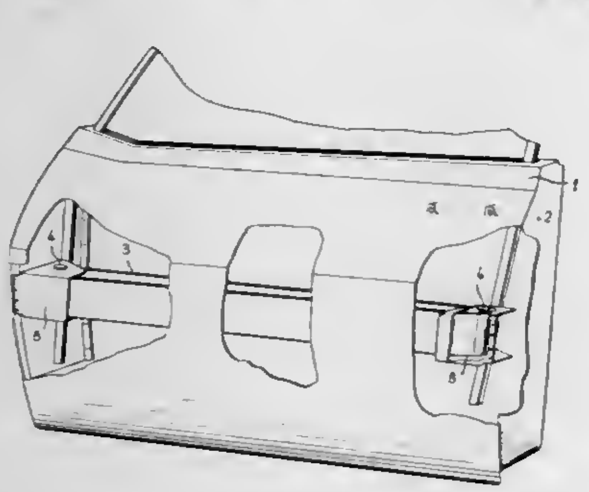
U.S. Cl. 52—134 **5 Claims**



1. A mausoleum comprising a plurality of prefabricated concrete modules each comprising a plurality of vaults separated by horizontal bottom walls and vertical side walls, coffins in at least some of said vaults, vertical and horizontal tubes embedded in said vertical and horizontal walls, respectively, risers connected to the tubes embedded in the horizontal bottom walls and opening in each vault, coupling means connected between a said riser and a coffin in the corresponding vault, a valve in said coupling means allowing the passage of liquid from the coffin to within the riser and of gases in both directions but preventing overflowing of liquids from the riser into the coffin, said tubes in said horizontal walls being inclined upwardly toward and connecting with said vertical tubes at one end of said horizontal tubes thereby to prevent the flow of liquid from said horizontal tubes into said vertical tubes at said one end, and means for removing gas from the vertical tubes at said one end of said horizontal tubes, said horizontal tubes communicating with other said vertical tubes at the other ends of said horizontal tubes, and means for removing liquid from said other vertical tubes.

3,938,288
REINFORCING DEVICE FOR AUTOMOBILE BODY

Pierre Roubinet, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France
Filed Mar. 5, 1974, Ser. No. 448,199
Claims priority, application France, Mar. 6, 1973, 73.07882
Int. Cl.² E04C *2/08*
U.S. Cl. 52—615 **8 Claims**



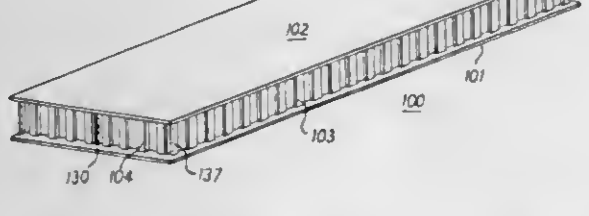
1. A reinforced motor vehicle door for protecting a motor vehicle against lateral impact comprising:

spaced apart main door panels forming inner and outer walls of the motor vehicle door and secured to rigid door frame members;

protecting means mounted on said frame members disposed between said main door panels for imparting lateral protection to the motor vehicle door, said protecting means including a structure comprising a rigid strip having inner and outer walls and which is in the form of a sleeve having an oval-like longitudinal cross-section and mounted on the motor vehicle door for pivotal movement therewith with said longitudinal axis oriented essentially parallel to the general longitudinal direction of the motor vehicle, a core in reinforcing engagement with said inner walls of said rigid strip and a peripheral winding of filamentary material about said core constituting said rigid strip and comprising resin impregnated glass fibers under tension, said peripheral winding being composed of approximately 50 to 80% glass yarn and the remainder resin.

3,938,289
CONSTRUCTION ELEMENTS AND SHEET METAL WEB STRIPS THEREFOR

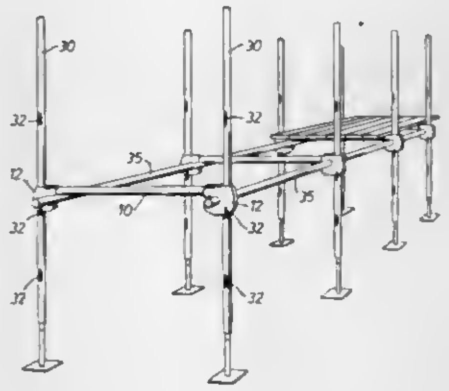
Johan Caspar Falkenberg, Fjordveien 59C, N-1322 Hovik, Norway
Continuation-in-part of Ser. No. 327,924, Jan. 30, 1973, Pat. No. 3,872,641. This application Aug. 15, 1974, Ser. No. 497,828
Claims priority, application Norway, Jan. 31, 1972, 228/72; June 29, 1972, 2328/72
Int. Cl.² E04B *2/28*
U.S. Cl. 52—618 **12 Claims**



1. A construction element comprisng two parallel plates of nailable material and at least one web element disposed between and perpendicular to said plates for interconnecting said plates in spaced apart relationship, said web element comprisng an elongated metal sheet having substantially trapezoidal corrugations with parallel sharp bends extending throughout the width thereof, said sheet having a plurality of spaced teeth lying in the same plane as said sheet and extending outwardly of opposite side edges thereof and embedded in said respective plates, said teeth along one of said edges being in transverse alignment with the teeth along the other of said edges, said sharp bends of said sheet extending into said teeth, and each said teeth having at least two sharp reverse bends extending likewise through the width of said sheet and being located at the transverse sections and at a portion of the longitudinal sections of the trapezoidal corrugations thereby forming teeth of Z-shaped cross-section.

3,938,290
SCAFFOLDING

Cyril F. Wyatt, Devon, England, assignor to Tower Scaffolding (Bristol) Limited, Bristol, England
Filed Feb. 4, 1974, Ser. No. 439,686
Int. Cl.² F04G *1/06*
U.S. Cl. 52—646 **18 Claims**



1. A scaffolding framework comprising:

a. a plurality of spaced, vertical scaffolding poles, each having at least one pair of diametric lugs extending transversely therefrom at opposite side thereof and intermediate the ends thereof,

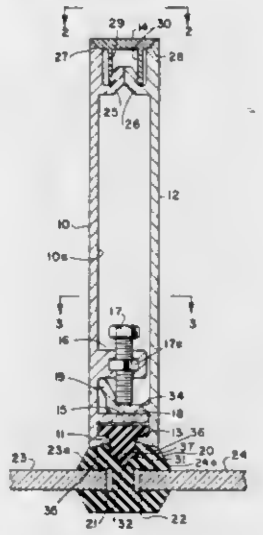
b. at least one horizontal pole having a scaffolding joint at each end thereof for engaging respective of said vertical poles,

c. each scaffolding joint comprising a pair of vertically disposed cheek plates spaced from each other and projecting beyond said end of said horizontal pole and forming an open-sided vertical channel therebetween receiving an intermediate part of an adjoining vertical pole, the width of the opening in the side of the channel being sufficient for said vertical pole to pass laterally therethrough and each of said cheek plates having a downwardly open recess therein engaging one of said pair of lugs on the adjoining vertical pole,

d. whereby said horizontal pole is supported against axial movement by the lugs and may be lowered and raised to cause said open recesses in said pair of cheek plates to engage and disengage respectively said pair of lugs and, when raised, may be moved horizontally towards and away from said vertical pole to cause the intermediate part of said vertical pole to pass through the opening in said vertical channel.

3,938,291
GLAZING PANEL SUPPORT SYSTEM

Homer C. Criswell, 2608 Black Oak Lane, Arlington, Tex. 76012
Filed Sept. 3, 1974, Ser. No. 502,766
Int. Cl.² E04C *3/30*
U.S. Cl. 52—731 **4 Claims**



1. An interlocking mullion comprising

a. a first plate having an inner surface and an outer surface, a leg extending from one end of the inner surface for mating with a support groove in a gasket, first and second parallel bosses extending from said inner surface and spaced from said leg, and an end face receiving means extending from said inner surface near the end opposite said leg;

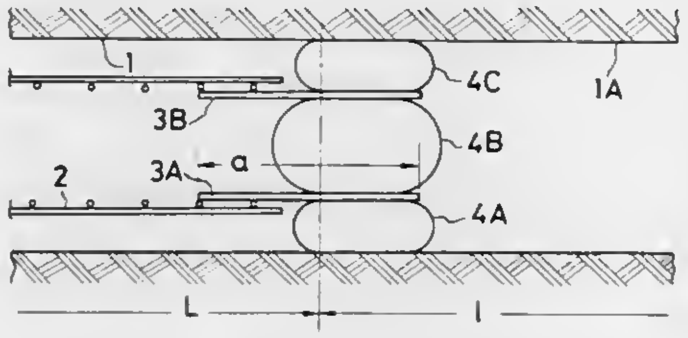
b. a second plate having an outer surface and an inner surface positioned adjacent and parallel with said first plate means, a leg extending from one end of the inner surface for mating with a support groove in a gasket, a lug extending from said inner surface and between said first and second bosses, and an end face receiving means extending from said inner surface near the end opposite said leg;

c. stud means threadedly mounted in said first boss and mating with said lug to secure said first and second plates in a fixed relationship; and

d. end face means mating with the ends of said first and second plates opposite said legs.

3,938,292
PROCESS FOR REINFORCED CONCRETE WALL FORMING

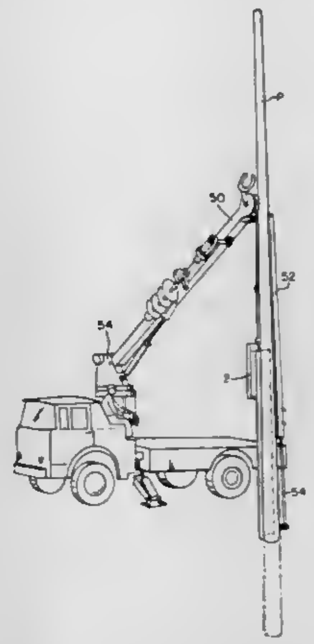
Takato Kawasaki, and Yuko Ikuta, both of Yokohama, Japan, assignors to Takenaka Komuten Company, Ltd., Japan
Filed June 29, 1971, Ser. No. 157,864
Claims priority, application Japan, July 2, 1970, 45–58168
Int. Cl.² E04G *21/02*
U.S. Cl. 52—742 **2 Claims**



1. A process for the sequential segmental construction of a reinforced concrete unit comprising sequentially: (1) preparing a trench of dimensions at least equal to a selected portion of the total section to be constructed and having a length greater than an incremental segment to be constructed; (2) positioning a primary segment reinforcing cage in said trench; (3) positioning intersegmental perforate plate reinforcing partially overlapping said primary segment reinforcing cage; (4) positioning sealing means to define a segmental volume from which said plate reinforcing partially protrudes and effective to prevent concrete from flowing out of said segmental volume; and (5) pouring concrete into said segmental volume.

3,938,293
POLE REINFORCEMENT INSTALLATION

James E. Warjone, Seattle, Wash., and Albert C. Wilkison, New Westminster, Canada, assignors to Truckweld Equipment Company, Seattle, Wash.
Division of Ser. No. 249,249, May 1, 1972, Pat. No. 3,847,231. This application June 28, 1974, Ser. No. 483,944
Int. Cl.² E02D *7/06*
U.S. Cl. 52—742 **4 Claims**



1. The method of installing pole splints comprising the steps:

providing a splint driving mechanism movable between supply and driving locations,

engaging the splint at the supply location by securing the splint to the driving mechanism,

moving the driving mechanism with splint attached to the driving location,

unsecuring the splint from the driving means at the driving location, and

driving the splint into the ground with the driving mechanism.

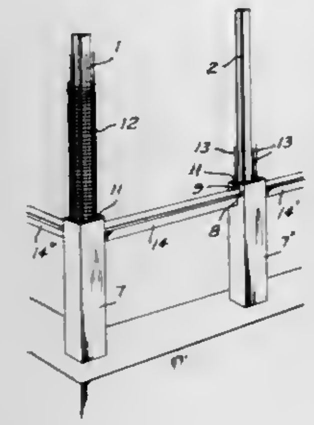
3,938,294
METHOD OF ERECTING A FRAME STRUCTURE FOR BUILDINGS

Leon Battista Gaburri, Piazza Partigiani, 29 - Alassio (Savona), Italy
Division of Ser. No. 84,325, Oct. 27, 1970, which is a continuation-in-part of Ser. No. 763,123, Sept. 27, 1968, abandoned. This application May 8, 1974, Ser. No. 467,994
Claims priority, application Italy, Mar. 30, 1968, 14667/68
Int. Cl.² E04B *1/00*
U.S. Cl. 52—743 **4 Claims**

1. A method of erecting a frame structure for a building which frame structure is highly resistant to wind pressure and seismic shocks while being erected and when being completed, said method comprising the steps of:

first anchoring prefabricated studs in upright position and spaced apart in a foundation;

then fitting upon each stud a prefabricated one-piece tubular concrete casing member with an inner cross-sectional area larger than the outer cross-sectional area of the studs and having joining means including at least one receiving recess at the upper end of the casing member;



then filling the remaining space between each casing member and the stud therein with an initially flowable but hardening cementitious mass; and

then inserting into each of said recesses of the joining means an end of a cross beam of a length spanning two adjacent casing members to locate and support said cross beam in horizontal position.

3,938,295

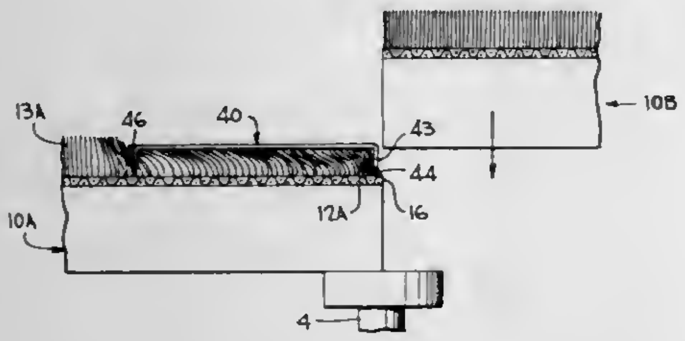
METHOD FOR ASSEMBLING AN ACCESS FLOOR SYSTEM

Donald L. Tate, 46 St. Andrews Road, Severna Park, Md. 21146

Continuation of Ser. No. 326,060, Jan. 23, 1973, abandoned. This application Feb. 27, 1975, Ser. No. 553,630

Int. Cl.² E04G *21/14*

U.S. Cl. 52—747 **4 Claims**



1. A method of assembling a surface covering having a plurality of covering elements, each element having a face covered with pile fibers of a type that extend beyond the edges of said element unless restrained, comprising the steps of:

applying a pile restraining tool at the free ends of the pile at an edge of an installed element that is adjacent to the location wherein an additional element is to be installed, said pile fibers extending forwardly of said edge and into said location to a first position and said tool being applied to said fibers at said first position,

manipulating said tool rearwardly in a direction away from said location and said first position to a second position slightly inwardly of said installed element edge so as to restrain said pile and prevent it from extending into said location, and

inserting said additional element into said location such that said restrained pile is prevented from being pinched between adjacent elements during said assembling.

3,938,296

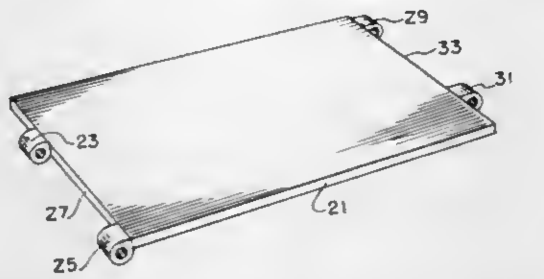
ELEMENTS FOR CONNECTING BOARDS OR PLATES

Gil Weiss, 229 Nir-Zvi, Ramle, Israel

Continuation-in-part of Ser. No. 310,316, Nov. 29, 1972, abandoned. This application May 13, 1974, Ser. No. 469,151

Int. Cl.² F16B *12/12*

U.S. Cl. 52—753 C **14 Claims**



1. An element for connecting boards or plates, with one another, said element comprising a ring having a cross-section of three-quarter of a circle with a right angular point, the straight sides thereof tangentially joining the ends of the three-quarter circle, said element including a throughgoing opening co-axial with the ring, for receiving a rod for enabling said straight sides of at least one connector element to be abuttingly attached to an edge of the board and to enable said round part to rotate said board into any angular position for connecting same to another board to which at least one other connecting element is abuttingly engaged.

3,938,297

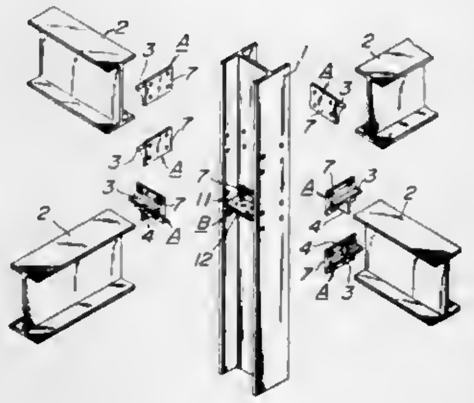
FITTINGS FOR CONNECTING COLUMNS AND BEAMS OF STEEL FRAME CONSTRUCTION

Kuniaki Sato, Hiratsuka; Kozo Toyama, Tokyo; Eiji Matsushita, Fujisawa; Akio Tomita, and Shuei Suzuki, both of Tokyo, all of Japan, assignors to Kajima Corporation, Tokyo, Japan

Filed Feb. 21, 1975, Ser. No. 551,914

Int. Cl.² F16B *7/00*

U.S. Cl. 52—758 F **3 Claims**



1. Fittings for connecting columns and beams of a steel frame construction, comprising an upper flange fitting and a lower flange fitting, said upper flange fitting comprising a substantially rectangular base plate to be connected to said column having centrally a horizontally continuous thicker portion from which the base plate is tapered, a horizontal protrusion projecting from said thicker portion in opposition to a flange of said beam, a vertical protrusion in opposition to a web of said beam and projecting from said base plate to form with said horizontal protrusion a T-shaped protrusion, and seats formed on the base plate and formed with holes for bolts, and said lower flange fitting comprising a substantially rectangular base plate to be connected to said column having centrally a horizontally continuous thicker portion from which the base plate is tapered, a horizontal plate projecting from said thicker portion for supporting a lower flange of said beam and formed with holes for bolts, a vertical reinforcement plate vertically extending downwardly from the horizontal plate to form therewith a T-shaped shelf, and seats formed on said base plate and formed with holes for bolts.

3,938,298

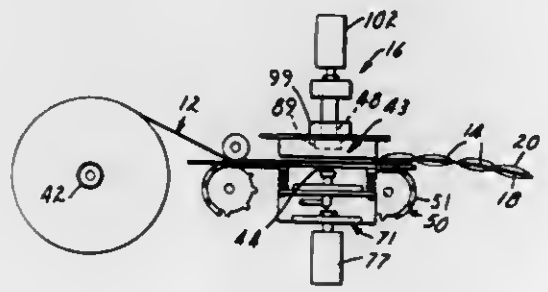
SYSTEM FOR INFLATION AND SEALING OF AIR CUSHIONS

Robert A. Luhman, Township of Cylon, County of St. Croix, Wis., and John R. Ward, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 20, 1974, Ser. No. 471,689

Int. Cl.² B65B *31/04*

U.S. Cl. 53—7 **11 Claims**



11. A method for inflating and sealing an inflatable cushion comprising the steps of:

providing a cushion having two thin flexible films, each film comprising a heat sealable thermoplastic forming at least one surface of the film, one of said films having an opening, and said films being positioned with their thermoplastic surfaces in face-to-face contact and being fused together in discrete areas to define a plurality of inflatable chambers between the films disposed around and each having a separate inlet passageway communicating with the opening;

positioning a nozzle having a terminal end into the opening of the cushion with the terminal end of the nozzle contacting the portion of the film extending across the opening;

tensioning the cushion around the nozzle to provide a predetermined conical shape for a portion of the cushion around said nozzle;

smoothing the predetermined conical shaped portion of the cushion around said nozzle;

applying a source of air under greater than atmospheric pressure through said nozzle so that the air will be evenly deflected by the film across said opening simultaneously into all of the inlet passageways to inflate the chambers of the cushion;

allowing the edges of said tensioned cushion to move toward said nozzle while maintaining said tensioning of the cushion as the edge to edge dimensions of the cushion decrease during the inflation thereof; and

applying heat and pressure to seal shut the inlet passageways of the chambers around the opening subsequent to inflation of the cushion.

3,938,299

PACKAGING SYSTEM AND METHOD

Bernard Lerner, Hudson, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

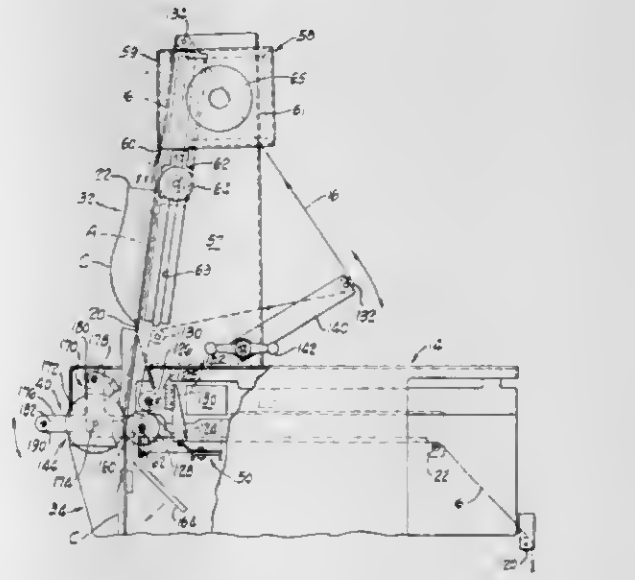
Continuation-in-part of Ser. No. 336,560, Feb. 28, 1973, which is a continuation-in-part of Ser. No. 139,453, May 3, 1971, Pat. No. 3,815,318. This application May 7, 1974, Ser. No. 467,791

Int. Cl.² B65B *31/00, 5/00, 7/06*

U.S. Cl. 53—22 B **11 Claims**

7. A method of packaging articles in a web-like container strip defining a series of container portions comprising:

a. stationing a container strip at a supply station;
b. providing a loading station at which articles to be packaged are inserted into successive container portions;
c. establishing a work station at a location generally below the loading station and at which an operation is performed on successive loaded container portions;
d. stationing a container strip feeding means at a location generally above the level of the work station and below the level of the loading station with at least part of said strip feeding means interposed between said work and loading stations;
e. feeding the container strip from said supply station through said loading and work stations including:
    i. advancing the container strip along a path of travel extending from said supply station to said feeding means;



    ii. moving the container strip upwardly from said feeding means in a loop-like path of travel which extends past said loading station and proceeds downwardly toward said work station to said feeding means;
    iii. advancing the container strip through said feeding means to said work station;
f. supporting the container strip at said loading station along a relatively rigid surface which extends along a a portion of said loop-like path of travel through a length at least equal to the length of the container portions of the container strip;
g. loading articles into container portions of the container strip supported at said loading station; and,
h. closely conforming loaded container portions to articles therein to expel air from the container portions as each successive container portion passes through said feeding means proceeding toward said work station.

3,938,300

ARRANGEMENT IN REFUSE CHUTES

Karl Bo Lennart Lovqvist, Nyvallsvagen 13, 802 39 Gavle, Sweden

Continuation of Ser. No. 339,686, March 9, 1973. This application Mar. 20, 1975, Ser. No. 560,655

Claims priority, application Sweden, Mar. 9, 1972, 3019/72

Int. Cl.² B65B *1/20*

U.S. Cl. 53—124 E **10 Claims**

1. An arrangement for collecting refuse, comprising in combination:

a. a refuse collection room having walls including a floor and a ceiling,
b. a vertically disposed refuse discharge chute extending vertically upwardly through the ceiling of said refuse collection room, the lower end of said chute opening into said room at a point near the ceiling of said room,
c. a magazine of hose-like impervious material which is to form a single elongated tubular receptacle for refuse, said impervious material being disposed in a folded condition,

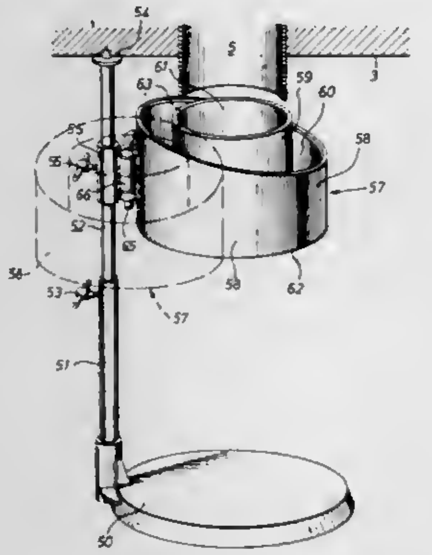
wherein the folds extend substantially in a circumferential direction,

d. magazine holder means for confining said magazine of impervious material in an essentially ring-formed column that has a vertical axis that substantially coincides with the vertical axis of the outlet of said vertically disposed discharge chute,

e. said magazine holder means and said magazine forming a substantially vertical passageway for receiving refuse discharged from said discharge chute and

f. support means in said refuse collection room for supporting said magazine holder near the lower end of the refuse chute so as to leave between the lower end of said chute and the upper end of said magazine a passage allowing air to enter the refuse chute pipe while allowing the hose-like impervious material to be inflated by the action of refuse discharged from said refuse discharge chute,

g. said magazine holder means being supported by said support means so that in a first position there will be a general axial alignment of the inlet of said ring-formed column with said discharge chute, and so that in a second position the said ring-formed column means will be wholly removed from alignment with said discharge chute.



3,938,301

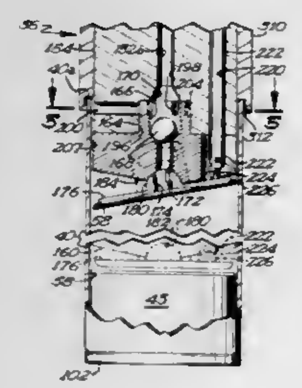
APPARATUS FOR INSERTING SEPARATOR PLATES IN CANS AND TAMPING THEM IN PLACE

Jack J. Rejsa, and Francis R. Reid, both of Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Apr. 4, 1975, Ser. No. 564,238

Int. Cl.² B65B *61/20, 61/22*

U.S. Cl. 53—157 **7 Claims**



2. A placer and tamper for a can separator plate comprising:

a. a supporting framework,

b. a separator inserter head having a longitudinal axis and a free end adapted to hold one of said separator plates,

c. means for aligning a can body having a longitudinal axis with the longitudinal axis of the inserter head,

d. a means for establishing relative motion between the can body and the head along the axis of the can body and along said longitudinal axis of the head in a direction adapted to place the separator within the can body,

e. a vacuum duct means extending through the head and communicating through openings at the free end of the head to thereby establish suction at the free end of the head when the vacuum is applied to hold one of said separator plates thereagainst to reduce the air pressure within the can to prevent the accumulation or pressurization of air under the separator plate,

f. valve means for turning the vacuum on when the head is aligned with the plate to hold the separator plate on the head, and

g. a means for turning the vacuum off after the head has been placed in the can body to allow withdrawal of the inserter head without removing the separator thus introduced.

3,938,302

MACHINE FOR AUTOMATICALLY PRODUCING OPTIONALLY EMPTY OR FILLED PACKAGING CONTAINERS MADE OF THERMOPLASTIC FILM MATERIAL

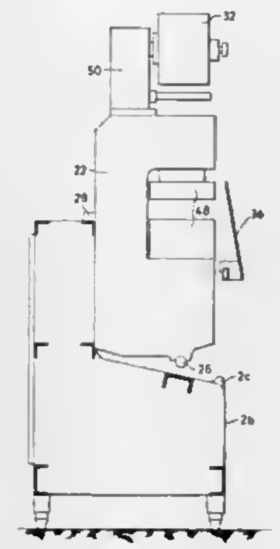
Henry Donnet, Falaise, France, assignor to Ste. d'Application Plastique Mecanique et Electronique Plastimecanique, Courbevoie, France

Filed Nov. 6, 1973, Ser. No. 413,193

Claims priority, application Germany, Nov. 9, 1972, 2254738

Int. Cl.² B65B *3/02, 43/08, 59/04*

U.S. Cl. 53—167 **8 Claims**



1. For use with an apparatus for producing containers from a web of thermoplastic film said apparatus comprising means for feeding said film from a supply roll and passing said film successively through processing devices, including heating, shaping, sealing and stamping units, the hereinafter defined invention comprising an improved, combined supporting structure and housing for said apparatus formed of structural metal sections and a sheet metal covering wherein there is provided:

1. an initial compartment having a generally cubic configuration adapted to support and enclose therein at one side thereof the said supply roll and associated feed means, said compartment having a removable cover to afford access to the supply roll and feed means; the other side of said compartment serving as an enclosure for the control mechanisms of the various process devices;
2. an elongated compartment which is L-shaped in transverse section and which is generally coextensive with the length of the remainder of the apparatus and which forms a continuation of the cubical compartment, the horizontal leg of the L-shape being in longitudinal alignment with the said one side of the cubical compartment and the vertical leg of the L-shape being in line with the said other side of the cubical compartment; the horizontal leg of the L-shaped compartment having a transversely inclined sheet metal covering which slopes downwardly and outwardly from the vertical leg toward the forward terminal end of the horizontal leg; and
3. a plurality of spaced apart, forwardly and outwardly facing generally C-shaped housings supported in the angle of the elongated L-shaped compartment, the lower limb of each of said C-shaped housings overhang, in spaced relation thereto, the sloping top of the horizontal leg of the L-shaped compartment, each of said C-shaped housings adapted to enclose and protect in its upper and lower limbs the operating mechanism of a respective processing device.

3,938,303

COIN PACKAGING APPARATUS

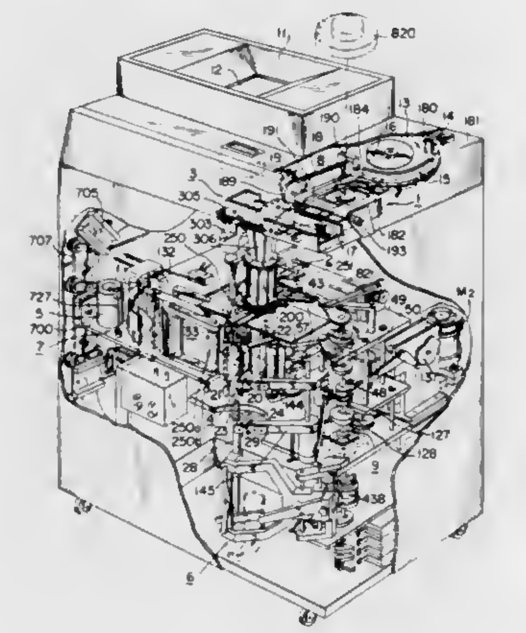
Masatoshi Ushio; Kazuto Asami, and Matono Hirokuni, all of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Himeji, Japan

Filed May 28, 1974, Ser. No. 474,150

Claims priority, application Japan, May 25, 1973, 48-58952; June 8, 1973, 48-64973

Int. Cl.² B65B *11/04*

U.S. Cl. 53—212 **4 Claims**



1. In a coin packaging apparatus for packaging a preselected number of coins of the same denomination in the form of a neat stack, the apparatus having a rotary disc adapted to receive a batch of coins to be packaged and to send out outward said received coins by utilization of centrifugal force of the disc, a wall member provided at the peripheral part of said rotary disc the height of which above the disc is adapted to be regulated in accordance with the thickness of coins, a coin passageway extending from said rotary disc at said wall member so that the coins on said rotary disc are thereby centrifugally sent out one by one into said coin passageway, at least one wall composing said passageway being adjustably spaced from the other wall of said passageway, conveyor means provided above said passageway and adapted for conveying the coins passed under said wall member and thence sent into said passageway; coin counting means provided intermediate the length of said passageway and provided with means adapted to block passage of coins when a preselected number of coins has passed through said passageway, a coin take-out passage provided adjacent the end of said coin passageway for taking out the counted coins, therefrom, a coin guiding passage provided adjacent the end of said coin passageway for guiding the coins to a position adapted for stacking the coins, a change-over mechanism on which said coin guiding passage and said coin takeout passage are mounted and comprising a change-over member movable between a coin stacking mode position and a coin counting mode position, the coin take out passage being aligned with the end of said coin passageway when said changeover mechanism is in the coin counting mode position and said coin guiding passage being aligned with the end of said coin passageway when said changeover mechanism is in the coin stacking mode position, coin stacking means disposed so as to be communicated with said coin guiding passage when said coin passageway is communicated with the coin guiding passage when said change-over member is in the coin stacking mode position and adapted for aligning in a stack the preselected number of coins counted by said counting means, coin wrapping means including at least three wrapping rolls and roll transferring means for transferring at least one of said rolls toward or away from the coin stack, said wrapping rolls being adapted to approach around the coin stack after the stack of coins stacked at said coin stacking part is introduced between said rolls and then to wrap a wrapper sheet around the coin stack while rotating said coin stack, a coin stack guiding mechanism provided with a guide lever adapted to guide the coin stack into the space surrounded by the wrapping rolls, wrapper sheet feeding means for feeding a piece of the wrapper sheet conformed to the size of the coin stack toward the peripheral surface of said coin stack and rotated in the coin wrapping position, and fold-crimping means comprising a pair of crimping hooks adapted to fold-crimp and lateral edges of said sheet of wrapper over the opposite ends, respectively of the coin stack after said sheet of wrapper has been wound around said coin stack; the improvement comprising, in combination, first cam means operatively associated with said wall member for setting the vertical position of said wall member, second cam means operatively associated with the movable wall of said coin passageway for setting the position of said adjustably movable wall to set the width of said passageway so as to correspond to the width of the coins to be stacked, at least one first adjustable shaft means for adjusting the apparatus to operate in the counting mode and coupled to said first and second cam means for actuating said cam means to set the positions of said wall member and adjust the width of the coin passageway in accordance with the coins being handled, cylinder diameter selecting means coupled to said coin stacking means for selecting the inside diameter of the stacking space in said coin stacking means, third cam means operatively associated with the movable roll of said wrapping rolls for moving the movable roll to a position corresponding to the diameter of coins in a stack and for guiding the coin stack into the coin wrapping position, fourth cam means operatively associated with said fold-crimping means for setting the fold crimping means to a position corresponding to the denomination of the stack of coins to be wrapped, setting means adapted operatively associted with said wrapper sheet feeding part for driving said feeding part for feeding a wrapper sheet corresponding to the denomination of the coins of the coin stack to be wrapped, second adjustable shaft means for adjusting the apparatus to operate in the wrapping mode and coupled to said cylinder diameter selecting means, said third cam means, said fourth cam means, and said setting means for setting said wrapper sheet feeding part, coin denomination selecting means, and control means coupled between said denomination selecting means and said adjustable shaft means for driving only said first adjustable shaft means when the apparatus is in the counting mode and for driving both said first and second adjustable shaft means when the apparatus is in the wrapping mode.

3,938,304
WRAPPING DEVICE

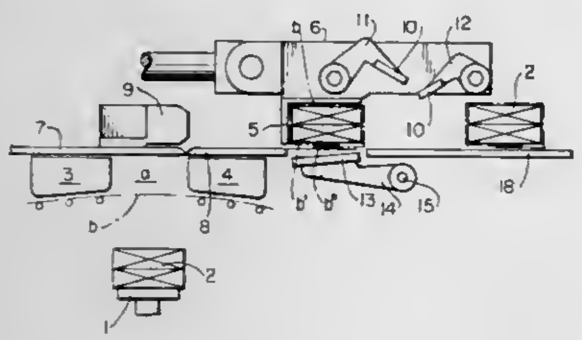
Yoshikazu Utsumi, 47 Higashiura-cho Daigo Misasagi, Fushimi, Kyoto, Kyoto, Japan

Filed Aug. 27, 1973, Ser. No. 391,778

Claims priority, application Japan, July 19, 1973, 48-81500

Int. Cl.² B65B *11/26*

U.S. Cl. 53—229 **2 Claims**



1. A device for tightly wrapping an object in a wrapping paper said device comprising

- a. pusher means for pushing said object such that the top of said object engages said wrapping paper and the ends of the wrapping paper extend below the object along the sides thereof;
- b. suction means positioned below said object, after it has been pushed, for holding the ends of said wrapping paper such that said wrapping paper is tensioned over the top of said object;
- c. plate means positioned over said suction means and below the level of the bottom of said object;
- d. means to move one of said plate means relative to said object;
- e. holding means for holding said object after said wrapping paper has been tensioned thereon as said plate means is moved and for moving said object relative to the other plate means whereby the wrapping paper is folded under the object, said holding means comprising an angle plate for engaging the top and one side of the object and a first turning arm means for engaging the other side of said object;
- f. a second turning arm means positioned to engage the bottom of said object after it has been wrapped and while it is engaged by said holding means; and
- g. means for simultaneously turning said first and second turning arm means away from said object so that the bottom of said object remains in contact with said second turning arm means and is disengaged from said holding means.

3,938,305
APPARATUS FOR SEALING CONTAINERS

Helmut Jansen, and Klaus Vollmer, both of Viersen, Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

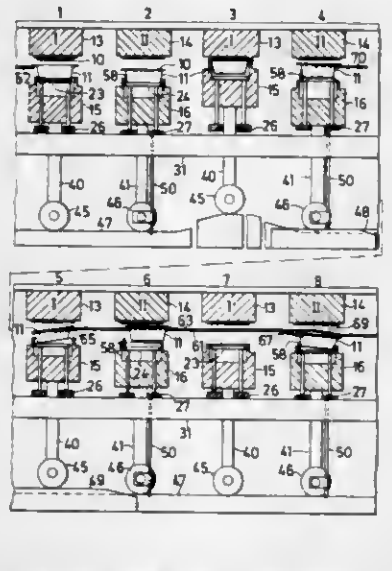
Filed Feb. 18, 1975, Ser. No. 550,736

Claims priority, application Germany, Feb. 18, 1974, 2407637

Int. Cl.² B65B *7/28, 51/14*

U.S. Cl. 53—300 **7 Claims**

1. In an apparatus for sealing packing containers consisting at least partially of a bondable material under the action of pressure and heat using a first and a second bonding unit, the improvement comprising an endless rotatable conveyor, means for rigidly disposing said first and second bonding units with mutual spacing on said endless rotatable conveyor, and means disposed on a common path of rotation of said first and second bonding units for removing a container sealed with a first bonded seam from the operating zone of said first bonding unit and for transferring this container to the operating zone of said second bonding unit.



3,938,306
SPINNING AND WINDING OF YARNS

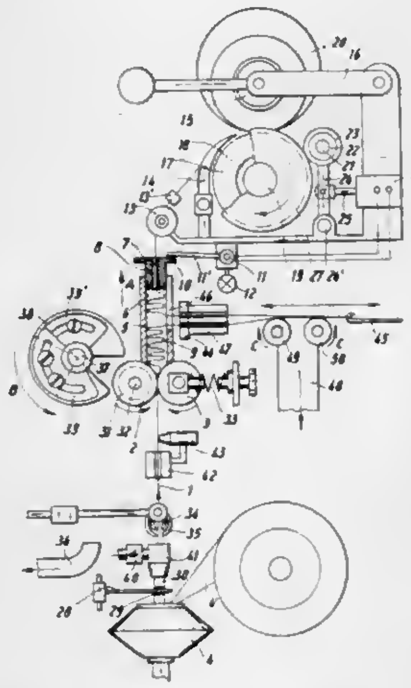
Karl Bous, Sternstr. 74, 56 Wuppertal 2, Germany

Filed Aug. 20, 1973, Ser. No. 390,165

Claims priority, application Germany, Aug. 26, 1972, 2242151

Int. Cl.² D01H *15/00*

U.S. Cl. 57—34 R **13 Claims**



1. An apparatus for continuously spinning and subsequently winding yarn which comprises at least one yarn-spinning means, yarn-winding means for receiving and winding the spun yarn, yarn storage means located between said spinning means and said winding means, means adapted to selectively feed yarn to and from said storage means, adjustable control means located between said spinning means and said winding means adapted to govern the rate of removal of yarn from said yarn storage means, means for detecting a fault in the yarn disposed in the path of said yarn passing from said yarn-spinning means to said storage means, yarn-marking means actuated by the fault-detecting means and located adjacent said yarn path and adapted to mark the yarn adjacent the detected fault, means sensitive to the mark made by said fault-detecting means disposed adjacent said yarn path, a yarn knotter and cooperating thread clamp actuated by the sensitive means upon sensing a mark made by said fault-detecting means, said knotter and clamp joining yarn portions adjacent the yarn portion containing said fault, and means for engaging and removing the yarn fault-containing portion from the joined yarn portions after actuation of said knotter and clamp.

3,938,307
DRAWING AND TEXTURING BY FALSE TWIST CRIMPING OF SYNTHETIC TEXTILE FILAMENT

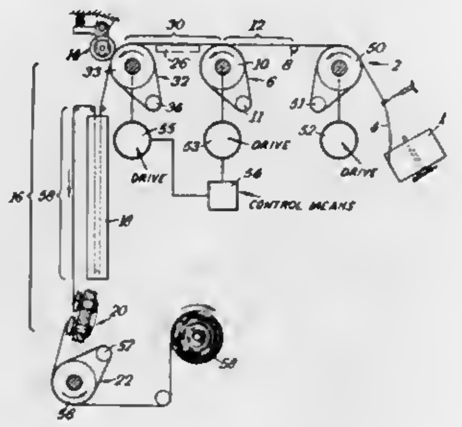
Norbert Hooper, Castleton near Rochdale, England, assignor to Platt International Limited, Lancashire, England

Filed Mar. 28, 1974, Ser. No. 455,876

Claims priority, application United Kingdom, Apr. 2, 1973, 15697/73

Int. Cl.² D01H *13/02;* **D02G** *1/02;* **D01H** *13/28*

U.S. Cl. 57—34 HS **8 Claims**



3. In an apparatus for drawing and texturing by false twist crimping a synthetic filament yarn comprising first feed roller means for forwarding yarn from a yarn supply at a first speed to a draw zone, second feed roller means for withdrawing yarn from the draw zone at a second speed greater than the first speed to effect drawing of the yarn in the draw zone, texturing means for receiving the drawn yarn and including yarn heating means for heating the yarn, a cooling zone in which the heated yarn is cooled and a false twist crimping means for inserting false twist into the yarn to run back through the cooling zone to the heating means and withdraw feed roller means for withdrawing yarn from the texturing zone, the improvement comprising third feed roller means for receiving yarn from said second feed roller means and for engaging and positively driving the yarn at the rate of rotation of the said third feed roller means to feed the yarn to said texturing means at a speed less than the speed of said second feed roller means to allow the yarn to contract between the second and third feed roller means whereby the tension of the drawn yarn received by the texturing means is controlled.

3,938,308
METHOD AND DEVICE FOR TRANSFERRING FRESH BOBBINS FROM A BOBBIN SUPPLY DEVICE TO A CONVEYER BELT OF A TEXTILE MACHINE

Ikuo Komura, Toyota; Hideo Tamai, Kariya; Takayuki Morita, Obu, and Masanao Kobayakawa, Anjyo, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

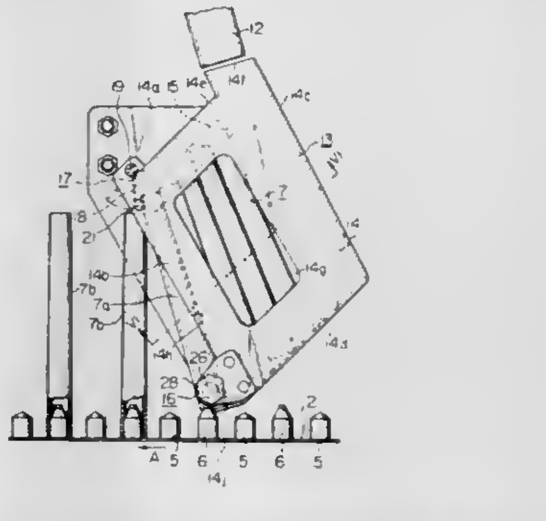
Filed Dec. 20, 1974, Ser. No. 534,723

Claims priority, application Japan, Dec. 26, 1973, 49-2498[U]

Int. Cl.² D01H *9/18*

U.S. Cl. 57—52 **5 Claims**

2. In a textile machine provided with a doffing and donning apparatus utilizing a conveyer belt for temporarily supporting full size yarn packages doffed from said textile machine and fresh bobbins thereon, and a fresh bobbin supply device disposed at an outend frame thereof, said conveyer belt provided with a plurality of first pegs for supporting said full size yarn packages doffed from said textile machine and a plurality of second pegs for supporting said fresh bobbins supplied from said fresh bobbin supply device, said fresh bobbin supply device provided with a chute for discharging said fresh bobbins toward said second pegs one by one; a fresh bobbin transferring device disposed at an intervening position between said chute of said fresh bobbin supply device and an end portion of said conveyer belt, said transferring device comprises a first means for temporarily reserving a plurality of fresh bobbins in substantially upright condition and supplying said fresh bobbins onto said second pegs one by one when said conveyer belt is driven before carrying out the donning operation, a second means for regulating motion of mounting said fresh bobbins onto said second pegs, said first means comprising a casing provided with an inlet aperture facing said chute of said bobbin supply device and a discharging outlet for permitting free passage of said fresh bobbins therefrom and a bottom guide plate inclined downward from a side of said inlet aperture to a side of said discharging outlet; said bottom guide plate provided with a forwardly extended portion for standing a fresh bobbin thereon, said forwardly extended portion provided with a cut-out portion which permits free passage of said second pegs when said second pegs approach along a passage thereof inclined to said forwardly extended portion, said regulating means disposed on said casing at a position adjacent to said forwardly extended portion.



3,938,309
SPINNING APPARATUS FOR GLASS-FIBER YARN

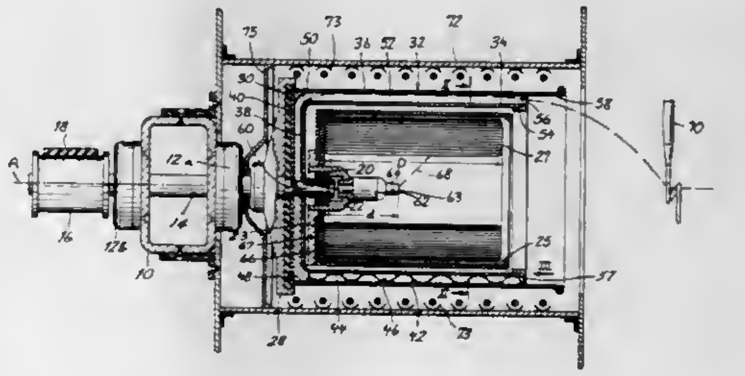
Aloys Greive, Munster, Germany, assignor to Hamel G.m.b.H., Zwirnmaschinen, Munster, Germany

Filed May 29, 1973, Ser. No. 364,552

Claims priority, application Germany, May 30, 1972, 2226284

Int. Cl.² D01H *7/86, 7/22*

U.S. Cl. 57—58.86 **21 Claims**



1. A yarn-spinning apparatus especially for low tensile strength multithread yarn comprising:

- a spindle lying along and rotatable about an axis;
- a flyer having a base attached to said spindle and a sleeve extending axially from said base, said spindle and said flyer being formed with a passage opening axially at one end away from said base at said axis and opening axially

at the other end away from said base at a location offset from said axis on said sleeve;

a yarn holder carried on and rotatable relative to said spindle and including an axially open cup snugly receiving an annular coreless yarn package and a tube lying along said axis in line with said one end of said passage and having a mouth opening away from said base and lying within said package;

means for preventing said holder from rotating about said axis;

a thread brake in said tube;

a bell cover engageable with the end of said sleeve remote from said base and formed with a hole lying on said axis and a neck surounding said hole;

a frame supporting said spindle;

an arm pivotal on said frame; and

bearing means on said arm surrounding said neck for rotation of said cover with said sleeve about said axis.

3,938,310

APPARATUS FOR SEPARATING FIBERS IN OPEN-END SPINNING MACHINES

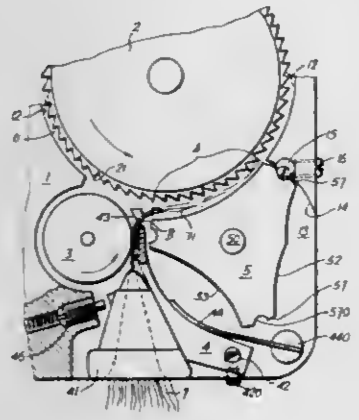
Stanislav Didek; Jaroslav Storek; Miloslav Kubovy; Zdenek Svec; Jan Hrdina, and Jaromir Kasparek, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Mar. 4, 1974, Ser. No. 448,010

Claims priority, application Czechoslovakia, Mar. 8, 1973, 1655-73

Int. Cl.^{2} D01H *1/12*

U.S. Cl. 57—58.91 **18 Claims**



1. In an apparatus for separating fibers in open-end spinning machines, comprising a housing having a cavity, a combing-out cylinder mounted in the cavity and having on its periphery a card clothing by which a fibrous sliver supplied by a feeding device is separated, and means including an insert disposed in the cavity and positionable adjacent the periphery of the combing-out cylinder for defining with said periphery a combing-out zone, the cross-section of a portion of said zone decreasing in the fiber flow direction, the improvement wherein the insert defines, with the adjacent portion of the cylinder periphery, an input portion only of the combing-out zone, and wherein the insert comprises, in combination, at least two peripherally spaced concave operating faces cooperable with the cylinder periphery for providing different combing-out zones therebetween, means for peripherally adjusting said insert into positions in which any desired one of said concave operating faces cooperates with the cylinder periphery to provide the combing-out zone, and means for holding the insert in its adjusted position.

3,938,311

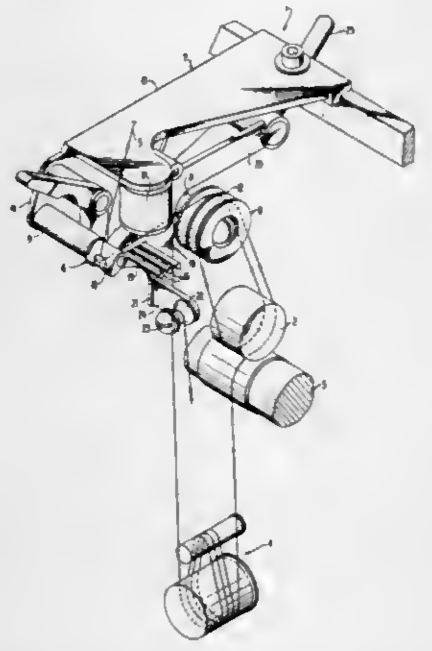
YARN STOP-MOTION DEVICE

Charles M. Rice, Candler, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed May 23, 1974, Ser. No. 472,829

Int. Cl.^{2} D01H *13/16*

U.S. Cl. 57—87 **14 Claims**



1. A yarn stop-motion device for use with a yarn-processing apparatus, which comprises a single yarn break-detector means and yarn-severing means positioned close to each other, the point at which a yarn break is detected by the yarn break-detector means and the point at which the yarn is severed by the yarn-severing means being positioned above or on the same side of the yarn-processing apparatus, and said yarn break-detector means detecting yarn breaks occurring along the entire yarn path of the yarn passing through the yarn-processing apparatus and being positioned to contact the yarn in the yarn path downstream of the yarn-processing apparatus.

3,938,312

YARN SPINNING APPARATUS

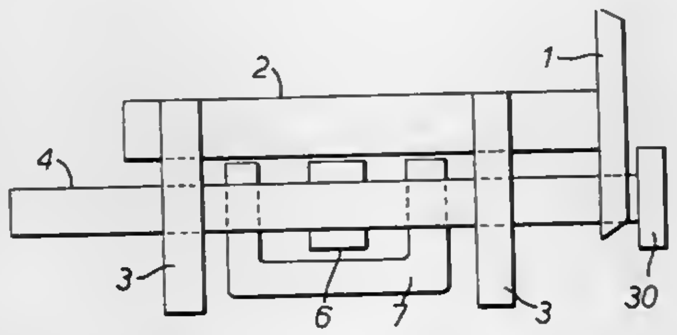
John Michael Noguera, 1 Greville House, Kinnerton St., London S.W. 1, England

Filed Sept. 20, 1974, Ser. No. 507,985

Claims priority, application United Kingdom, Sept. 21, 1973, 44502/73

Int. Cl.^{2} D01H *1/12, 1/20, 1/24*

U.S. Cl. 57—103 **1 Claim**



1. An open end yarn spinning apparatus comprising a member having a collecting surface that, in operation, is adapted to be rotated while having deposited thereon fibers to be spun into yarn, said member including a first shaft, two pairs of rollers engaging and supporting said first shaft at portions of the latter, said rollers being of substantially greater diameter than the diameter of the portions of the first shaft engaged thereby, second and third shafts, one roller of each said pair being mounted on said second shaft and the other roller of each said pair being mounted on said third shaft; an opening roller mounted on one of said second and third shafts to rotate therewith; and an electric motor, said third shaft is drivingly engaged with said electric motor to be driven thereby to drive said second shaft via the rollers mounted on said third shaft, the first shaft and the rollers mounted on the second shaft.

3,938,313

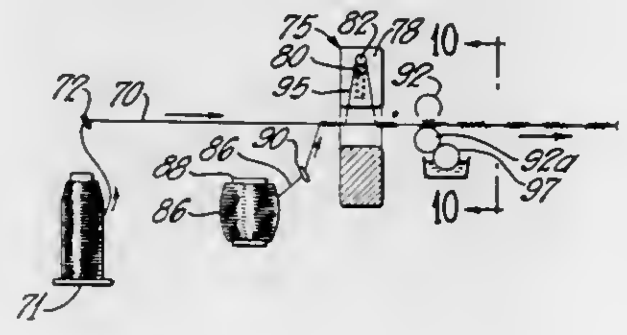
REINFORCEMENT FOR TIRES AND METHOD OF MAKING SAME

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 312,003, Dec. 4, 1972, Pat. No. 3,857,229, which is a division of Ser. No. 107,193, Jan. 18, 1971, Pat. No. 3,776,293, which is a division of Ser. No. 664,020, Aug. 29, 1967, Pat. No. 3,631,667. This application May 14, 1974, Ser. No. 469,722

Int. Cl.^{2} D02G *3/38, 3/40, 3/48*

U.S. Cl. 57—149 **10 Claims**



1. A composite cord construction comprising a substantially or essentially continuous core yarn and a continuous wrap of a second yarn, said second yarn being longer per unit length of said core yarn, said excess length of second yarn being present along said core yarn in spaced islands or regions along the length of said core yarn, said islands each comprising a given length of said second yarn in the form of a loop, initially starting at the core yarn, proceeding laterally outwardly to a midpoint and thence back to the core yarn, which described loop is wrapped about said core yarn so that the length of yarn in one-half of said loop proceeds in one spiral direction about said core yarn and the length of said yarn in the other half of said loop proceeds in the opposite spiral direction, and means for securing said second yarn about said core yarn.

3,938,314

FALSE-TWIST TEXTURING PROCESS WITH HOLLOW FRICTION TWIST TUBES

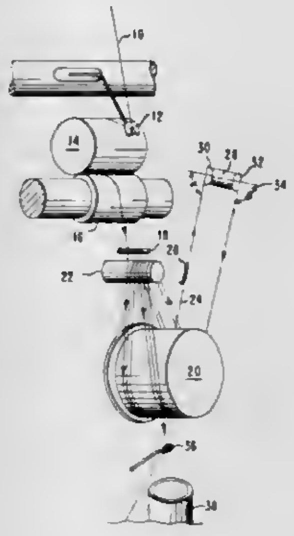
George Roy Trammell, Martinsville, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 10, 1974, Ser. No. 468,684

Int. Cl.^{2} D02G *1/02*

U.S. Cl. 57—157 TS **6 Claims**

1. In the false-twist texturing process wherein synthetic thermoplastic yarn is passed continuously through a heating zone and through one or more hollow friction-twist tubes fitted with toroidal bushings to heat-set latent crimp in the yarn; the improvements which comprise feeding the yarn under a tension T_1 from the heating zone over a high friction toroidal surface of a synthetic elastomer located at an end of a friction-twist tube at an angle α of at least 85° to the yarn path, then passing the yarn over a low friction toroidal surface of an extremely hard material located at an end of a friction-twist tube at an angle β of 50° to 80° to the yarn path and having a surface velocity no greater than that of the high friction surface, and withdrawing the yarn from the friction-twist tube under a tension T_2 where T_2/T_1 has a value of 1 to 2.



3,938,315

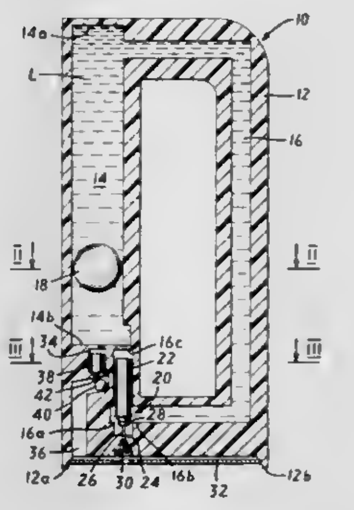
ADJUSTABLE INTERVAL TIMER

Miklos Von Kemenczky, Greenbrook, N.J., assignor to Paul Guilden, New York, N.Y.

Filed June 20, 1974, Ser. No. 481,140

Int. Cl.^{2} G04F *1/04, 1/08*

U.S. Cl. 58—1 R **16 Claims**



1. Timing apparatus comprising a housing containing a fluid, conduit means in said housing for circulating said fluid, body means in said conduit means for gravity-induced movement between first and second preselected locations in said housing and means for controlling circulation of fluid in said conduit means, thereby controlling the time elapsed in said gravity-induced movement of said body between said first and second locations, said fluid circulation control means comprising a valve having a fluid conducting element slidably supported in said conduit means, closure means for closing said fluid conducting element, and adjustable means for supporting said fluid conducting element in engaging relation with said closure means when said housing is in upstanding disposition whereby fluid flow in said conduit means is adjustably restricted in a first circulating direction, said fluid conducting element sliding from said engaging relation with said closure means when said housing is inverted from said upstanding disposition thereof whereby fluid flow in said conduit means is substantially unrestricted in a second circulating direction opposite to said first circulating direction.

3,938,316

TEMPERATURE COMPENSATED ELECTRONIC TIMEPIECE

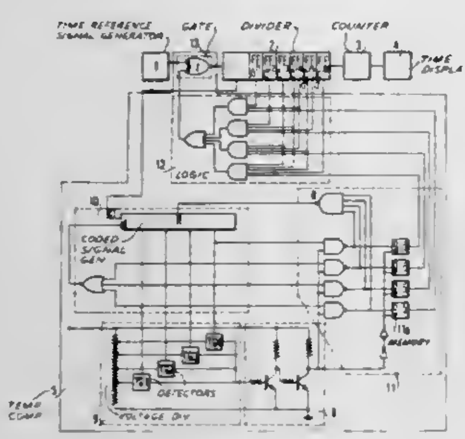
Shigeru Morokawa, Tokorozawa; Yukio Hashimoto, Niiza, and Yasuhiko Nishikubo, Iruma, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1974, Ser. No. 440,240

Claims priority, application Japan, Feb. 10, 1973, 48-16720; July 13, 1973, 48-79084; July 25, 1973, 48-83848; Nov. 23, 1973, 48-132380

Int. Cl.^{2} G04C *3/00*

U.S. Cl. 58—23 R **2 Claims**



1. An electronic timepiece comprising:

an oscillator having an output frequency variable with temperature and forming a time reference signal generator for generating a time reference signal at the oscillation frequency;

a time-count unit-signal former connected to said generator for dividing said time reference signal to form time-count unit-signal;

a time counter for counting said time-count unit-signals to form a time-indicating signal;

a display connected to said counter for providing a visual representation of time in response to said time-indicating signal;

a temperature compensating device connected between the time reference signal generator and the time count unit-signal former for receiving a signal from the time count unit-signal former;

the temperature compensating device having a temperature sensitive means, a voltage generator, a coded signal generator, a temperature coded signal discriminator, a frequency control circuit, and a frequency addition circuit;

in the temperature sensitive means the emitter of a transistor is connected to one electrode of a constant voltage supply source and the collector is connected through a resistor to the other electrode of said constant voltage supply source and delivering a digital signal reversed from an initial state if the base-emitter voltage of the transistor becomes equal to the threshold value of the transistor at a given temperature when the change of a voltage-current characteristic is effected by the temperature change at the base-emitter junction;

the voltage generator for supplying different voltages to the base-emitter of the temperature sensitive device by changing-over with an electronic switch such as a transmission one wherein a resistor is connected in series between one and the other electrodes of the said constant voltage supply source;

the coded signal generator comprising a shift register receiving an input clock signal from the time-count unit-signal former, controlling the electronic switch of the voltage generator and delivering a signal as the standard of a temperature coded signal;

the temperature coded signal discriminator discriminating the temperature coded signal from the output signal of the temperature sensitive means and that of the coded signal generator by an NAND gate and memorizing it until the next temperature coded signal;

the frequency control circuit forming a thin pulse from the output of the temperature coded signal discriminator and that of the time-count unit-signal former; and

the frequency addition circuit comprising an EXCLUSIVE-OR GATE circuit adding the output signal of the frequency control circuit to the time reference signal generator, whereby it compensates the change of the oscillating frequency in the time reference signal generator caused by the temperature change.

3,938,317

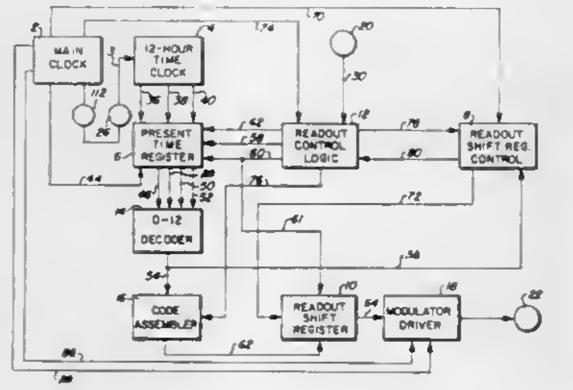
SERIAL TIME READ OUT APPARATUS

John D. Spano, 8220 E. Garfield Apt. M-23, Scottsdale, Ariz. 85257

Filed Aug. 10, 1974, Ser. No. 498,553

Int. Cl.^{2} G04C *3/00;* **G04B** *19/06*

U.S. Cl. 58—23 R **10 Claims**



1. Apparatus for serially reading out time comprising, in combination:

clock means for providing clock pulses;

counter means for counting pulses from the clock means and for providing output pulses in terms of minutes, 10 minutes, and hours,

register means connected to the counter means for storing and shifting pulses representing time information in terms of minutes, 10 minutes, and hours;

encoding means connected to the register means for serially encoding the pulses representing time information into pulses of varying time lengths;

control means for controlling the storing, shifting, and encoding of pulses; and

output means for providing a serial output of the encoded time information.

3,938,318

WRIST WATCHES

Dean Robert Collins, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 68,207, Aug. 31, 1970, abandoned. This application June 8, 1973, Ser. No. 368,372

Int. Cl.^{2} G04C *19/02;* **H02J** *3/14*

U.S. Cl. 58—50 R **6 Claims**

1. A timing device comprising in combination:

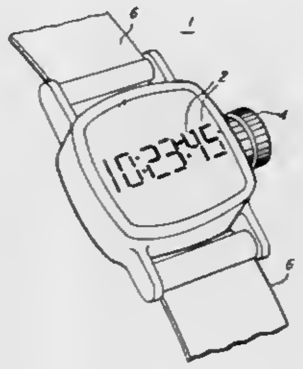
a case,

a plurality of liquid crystal display cells mounted in said case, each cell comprising a pair of spaced-apart substrates and a film of liquid crystalline material interposed therebetween, at least one of said substrates being optically transmissive and having an optically transmissive and electrically conductive layer formed on one surface thereof, the other substrate having first and second major surfaces on opposite sides thereof, a plurality of electrodes formed on said first surface of said other substrate, said plurality of electrodes being arranged to effect a preselected display in response to energization of selected ones thereof,

light generating means positioned within said case for directing light upon said cells,

a voltage source connected to said light generating means for energization thereof, and

CMOS circuit means within said case and operable to apply an electric field between selected electrodes of each of said cells and said electrically conductive layer to thereby cause said liquid crystalline material between said selected electrodes and said electrically conductive layer to scatter light emanating from said light generating means, said CMOS circuit means including a timing source operable to produce a chain of pulses defining a reference frequency, a countdown chain of CMOS divide by two logic gates electrically connected to said timing source and operable to reduce said reference frequency to a preselected pulse rate, a CMOS logic circuit electrically connected to the output of said countdown chain, said logic circuit being operable to select according to a preselected pattern the appropriate electrodes of said cells required to be energized in order to effect a display of the desired information, and a CMOS driver circuit electrically connected to the output of said logic circuit and operable to apply a voltage from said voltage source across the liquid crystalline material between electrically conductive layers and selected electrodes indexed by said logic circuit.



3,938,319

METHOD OF AND APPARATUS FOR PREVENTING COMPRESSOR STALL IN A GAS TURBINE ENGINE

Faulkner C. Thomson, Camp Springs, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 13, 1974, Ser. No. 497,017

Int. Cl.^{2} F02C *9/08*

U.S. Cl. 60—39.03 **5 Claims**

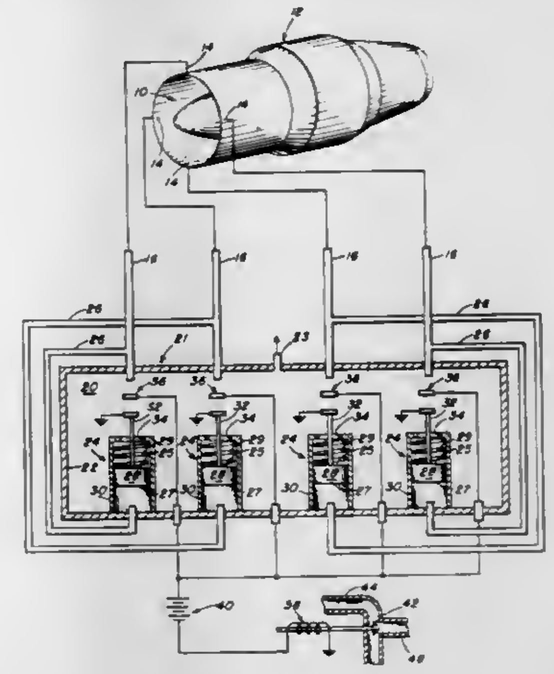
4. A method of anticipating and preventing compressor stall caused by air distortion in the air inlet of a gas turbine engine comprising the steps of:

sensing the total air pressure at a plurality of spaced locations about the periphery of said inlet;

producing a reference pressure proportional to the steady state pressure in said inlet;

generating a signal when the differential pressure between the pressure at any one of said spaced locations exceeds said reference pressure by a predetermined magnitude, said predetermined magnitude being indicative of air distortion in said inlet sufficient to cause compressor stall; and

altering the operating conditions of said gas turbine engine in response to said signal to thereby prevent compressor stall.



3,938,320

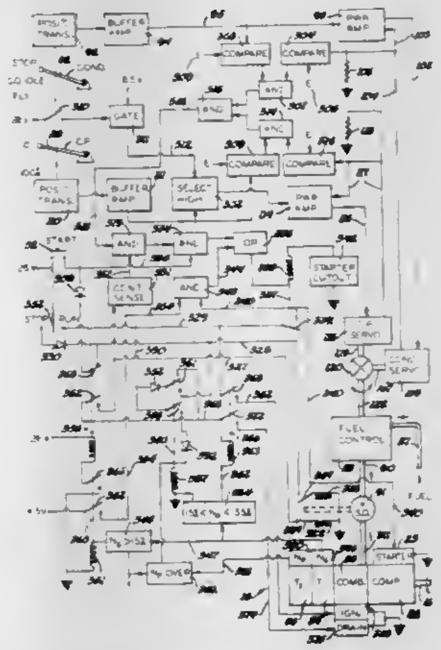
STARTING SYSTEM FOR A HELICOPTER POWER PLANT CONTROL

Robert E. Nelson, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed July 17, 1974, Ser. No. 489,264

Int. Cl.^{2} F02C *7/26, 9/04*

U.S. Cl. 60—39.14 **3 Claims**



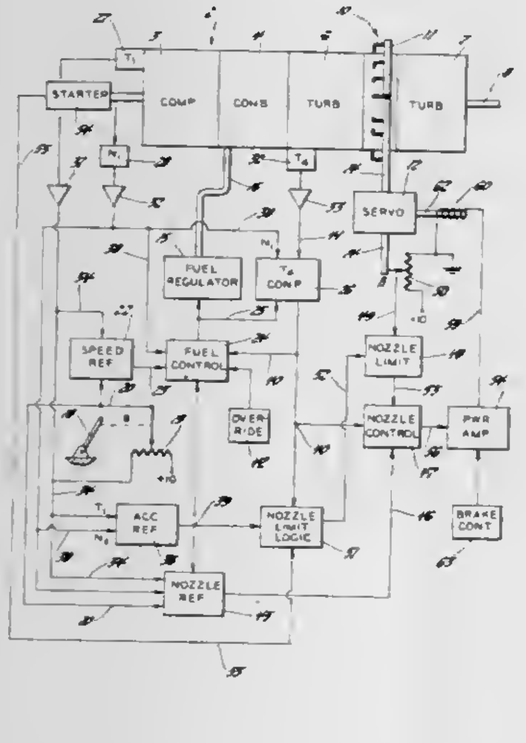
1. A control system for a combustion engine adapted for remote power control and starting and stopping of the engine comprising, in combination, engine control means generating a power output level command signal, load control means generating a load control signal effective to vary the power requirement of the load driven by the engine, fuel control means for the engine effective to meter fuel to the engine to control engine power level, a first servomechanism operative to adjust the fuel control means in response to the power output level command signal, a second servomechanism operative to adjust the fuel control means in response to the load control signal, means responsive to the power output command signal effective to transmit a first driving signal to the first servomechanism, means responsive to the load control signal effective to transmit a second driving signal to the

second servomechanism; starting means connected to the engine operable to start the engine; and a fault detecting logic system connected to the two said signal generating and the two said signal transmitting means so as to receive the four said signals operative to compare the level of each of the four said signals with a corresponding preset signal level and connected to the starting means so as to inhibit starting of the engine upon detection of an undesired level of any of the four said signals.

3,938,321
GAS TURBINE CONTROL

James L. Davis; Edward L. Lopke, both of Kokomo, Ind., and Louis W. Huellmantel, Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 4, 1974, Ser. No. 447,847
Int. Cl.² F02C *9/02*
U.S. Cl. 60—39.25 **7 Claims**

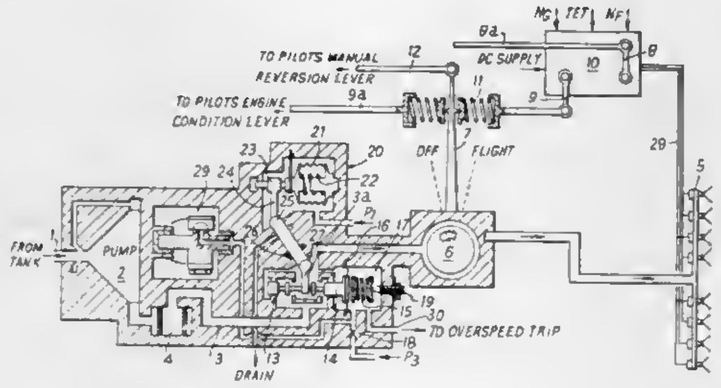


1. A system for control of a variable area power turbine nozzle of a gas-coupled gas turbine engine including a gas generator and a power turbine, the system including means responsive to a variable temperature reference signal and to turbine motive fluid temperature normally operative to vary the nozzle area to control turbine motive fluid temperature by opening the nozzle in response to excess of motive fluid temperature over the temperature reference signal; the system including means for generating a signal of a first upper limit to nozzle area at the initiation of gas generator acceleration in the normal operating speed range of the gas generator and means for generating a signal of a second upper limit to nozzle area larger than the first limit during gas generator acceleration below the normal operating speed range of the gas generator, the limit signal generating means being coupled to the means to vary the nozzle area so as to limit increase in opening of the nozzle in response to the temperature reference signal and the motive fluid temperature.

3,938,322
DEVICES FOR THE METERED SUPPLY OF LIQUID FUEL TO COMBUSTION ENGINES, MORE PARTICULARLY TO AIRCRAFT GAS-TURBINE ENGINES

Horace George Turner, Chandlers Ford, England, assignor to Plessey Handel und Investments, A.G., England

Filed Jan. 30, 1974, Ser. No. 438,142
Claims priority, application United Kingdom, Feb. 15, 1973, 7469/73
Int. Cl.² F02C *9/08, 9/10, 9/06*
U.S. Cl. 60—39.28 R **5 Claims**



1. Apparatus for supplying a controlled amount of fuel to a gas-turbine engine of an aircraft, said gas-turbine engine having a compressor, said apparatus comprising in combination:

1. a fuel tank for containing fuel for said engine;
2. a pump for delivering said fuel under pressure to said engine;
3. throttle means for enabling a pilot of said aircraft to adjust the flow of said fuel passing through said throttle means and destined for said engine;
4. a plurality of nozzles which are electrically energisable with such a mark/space ratio of energisation that they inject fuel into said engine in a rapid sequence of short uniformly time-spaced pulses;
5. electronic controller means for controlling said mark/space ratio of energisation of said nozzles by varying the ratio of the length of said pulses in relation to the length of the intervals between said pulses; and
6. fuel flow control means responsive to the difference in pressure between the fuel pressure at said throttle means and delivery pressure of said compressor, said flow control means being operative to maintain this pressure difference constant whereby the rate of said fuel delivery to said engine at any given setting of said throttle means is dependent only upon said mark space ratio set by said electronic controller means.

3,938,323
GAS TURBINE COMBUSTOR WITH CONTROLLED FUEL MIXING

Harold T. Quigg, and Robert M. Schirmer, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 208,247, Dec. 15, 1971, Pat. No. 3,826,079. This application Apr. 11, 1974, Ser. No. 459,937
Int. Cl.² F02G *3/00;* **F02C** *7/22*
U.S. Cl. 60—39.65 **18 Claims**

1. A combustor, comprising, in combination:

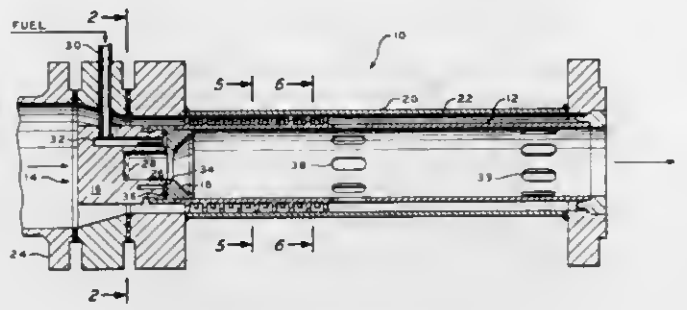
an outer casing;

a flame tube disposed within said casing and spaced apart therefrom to form an annular chamber between said flame tube and said casing;

a plurality of fins extending from the external surface of said flame tube into said annular chamber;

inlet means for introducing a swirling stream of air flowing in a downstream direction into the upstream end portion of said flame tube as the sole stream of air introduced into said upstream end portion of said flame tube; and

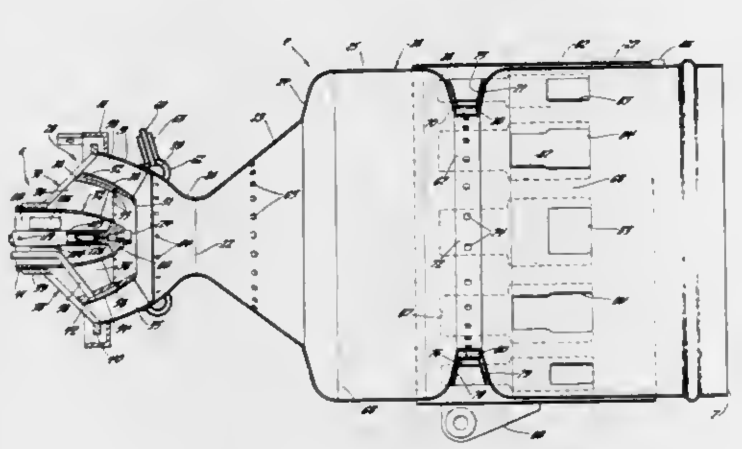
fuel inlet means for forming a sole annular stratum of fuel around said stream of air flowing into said flame tube by introducing said fuel in a direction toward and which is from tangential to less than perpendicular, but non-parallel, to the periphery of said stream of air to effect controlled mixing of said fuel and air at the interface therebetween and produce a sole annular fuel-air mixture for introduction into said upstream end portion of said flame tube.



3,938,324
PREMIX COMBUSTOR WITH FLOW CONSTRICTING BAFFLE BETWEEN COMBUSTION AND DILUTION ZONES

Dean C. Hammond, Jr., Warren, Mich., and Ronald E. Quinn, Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 12, 1974, Ser. No. 531,874
Int. Cl.² F02C 7/22
U.S. Cl. 60—39.65 **4 Claims**

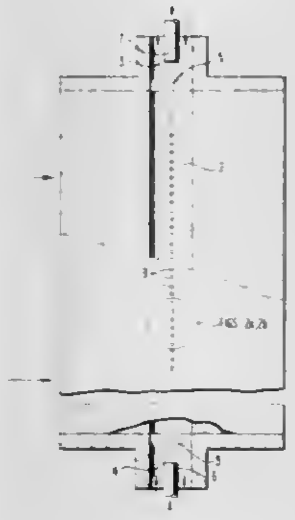


1. A combustion apparatus comprising, in combination, a housing providing a conduit for compressed air and a combustion liner in the housing, the liner being defined by wall means extending from an upstream end providing an inlet for combustion air to a downstream end providing an outlet for combustion products; the liner defining in flow sequence from the upstream to the downstream end a fuel introduction zone, a reaction zone, and a dilution zone; in which the improvement comprises barrier means extending into the liner from the wall means providing a constricted passage between the reaction zone and the dilution zone; and means providing continually open air entrance means between the said air conduit and the barrier means for entrance of cooling air into the barrier means; the barrier means defining distributed outlets for the cooling air from the barrier means into the interior of the liner.

3,938,325
AERODYNAMIC FLAME HOLDER

Wolfgang Bergt, Munich, Germany, assignor to Motoren- und Turbinen-Union Munchen GmbH, Germany

Filed Nov. 12, 1973, Ser. No. 415,003
Claims priority, application Germany, Nov. 11, 1972, 2255306
Int. Cl.² F02G *3/00;* **F02K** *3/10*
U.S. Cl. 60—39.72 R **18 Claims**



1. Flame holder apparatus for a burner in a high velocity gas stream of an air-breathing jet engine; said apparatus comprising:

flame holder body means extendible spanwise across a high velocity gas stream of an engine, said flame holder body means having an aerodynamically streamlined external configuration with respect to the flow of said gas stream therearound,

mixing chamber means formed inside said flame holder body means,

fuel supply means opening into said mixing chamber means for supplying atomized fuel thereto,

air supply means opening into said mixing chamber means for supplying air thereto,

said mixing chamber means including means for premixing the atomized fuel and air supplied thereto to form a premixed fuel-air mixture inside said mixing chamber means.

and outlet means leading from said mixing chamber to the surface of said flame holder body means for supplying said fuel-air mixture under pressure to the gas stream flowing over said flame holder body means to support combustion in said gas stream,

wherein said fuel supply means includes means for supplying all fuel for supporting combustion in said burner by way of said mixing chamber such that all fuel is supplied through said, outlet means in a premixed condition ready for ignition,

wherein said mixing chamber means is formed as a hollow space having a longitudinal axis extending in the spanwise direction at right angles to the flow of said gas stream over the entire span of the flame holder body means,

wherein inlet duct means are provided at at least one spanwise end of said flame holder body means, and

wherein said fuel supply means and said air supply means both open into each of said inlet duct means in the direction of the longitudinal axis of said hollow space such that the fuel is atomized and partially admixed with the air from said air supply means within said inlet duct means at a position upstream of the mixing chamber means.

3,938,326

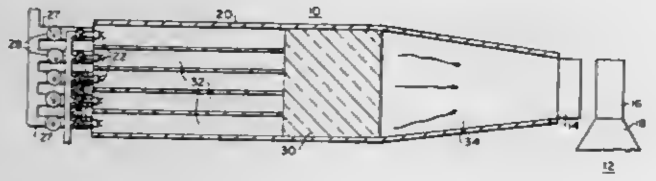
CATALYTIC COMBUSTOR HAVING A VARIABLE TEMPERATURE PROFILE

Serafino M. DeCorso, Media, and Clifford E. Segiem, Wallingford, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 25, 1974, Ser. No. 482,911

Int. Cl.² F02C *7/22*

U.S. Cl. 60—39.74 R **4 Claims**



1. A combustor arrangement including:

a combustor shell having an upstream portion and a discharge end;

means for delivering fuel to said upstream end of said combustor shell said means including a plurality of fuel injector elements and means for controlling the flow of fuel therethrough;

means for delivering air to said upstream end of said combustor shell, said means including a plurality of air inductor elements and means for controlling the flow of air therethrough;

a catalytic member disposed within said shell intermediate said upstream portion and said discharge end;

a plurality of passageways providing confined fuel-air communication between each of said fuel injector elements and associated air inductor elements and said catalytic member, said passageways permitting delivery of various fuel-air mixtures to discrete portions of said catalytic member without intermixing thereof, the plurality of controllable fuel-air mixtures delivered to said catalytic member permitting a regulatable temperature output from each discrete portion thereof.

3,938,327

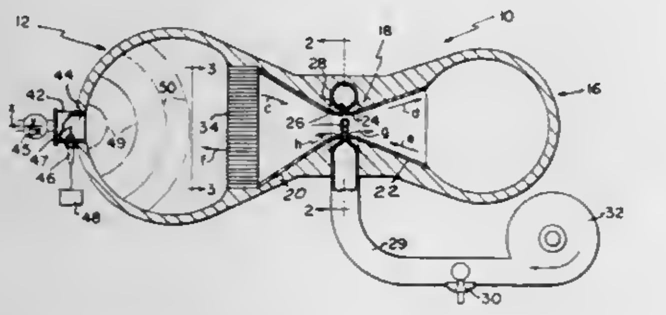
GAS GENERATOR

Leo L. Bailey, and David R. Kimmel, both of Green Acres Mobile Estates, Lot 58, Avenue F, Lake Worth, Fla. 33460

Filed Feb. 4, 1974, Ser. No. 439,421

Int. Cl.² F02K *7/02, 7/04*

U.S. Cl. 60—39.77 **5 Claims**



1. A gas generator of the pulse jet type having at least one combustion chamber with an ignition device and an exhaust opening, the combustion chamber being connected to another chamber by a reduced venturi member for creating pulsed pressure and velocity differentials between the chambers due to the flow of partially combusted gases therethrough in phased relation so as to cause a fuel/air mixture to be introduced into at least one of the chambers through inlet port means located in the venturi member and mixed with the partially combusted gases, and so as to cause an exhaust of combusted gases through the exhaust opening, the improvement comprising: heat exchange means disposed in the combustion chamber adjacent the venturi member and remote from the exhaust opening for removing heat from the partially combusted gases as they move from the combustion chamber through the venturi portion into the other chamber, said inlet port means being disposed in the venturi member between the heat exchange means and the other chamber, the heat removed being sufficient to bring the temperature of the partially combusted gases below the flash point of the fuel/air mixture being introduced into one of the chambers through the venturi member.

3,938,328

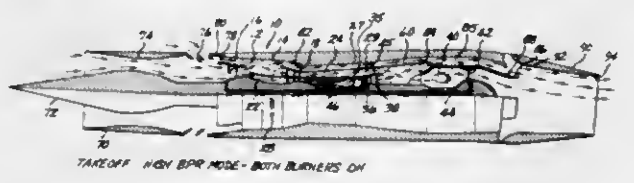
MULTICYCLE ENGINE

Garry W. Klees, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 196,422, Nov. 8, 1971, Pat. No. 3,779,282, and a continuation-in-part of Ser. No. 226,850, Feb. 16, 1972, Pat. No. 3,792,584, and a continuation-in-part of Ser. No. 329,768, Feb. 5, 1973, Pat. No. 3,854,286. This application Dec. 17, 1973, Ser. No. 425,586

Int. Cl.² F02K *3/06*

U.S. Cl. 60—262 **12 Claims**



1. A turbine engine comprising: an inlet for guiding ambient fluid into said engine; a forwardly located compression means having blade elements for compressing fluid passing through said inlet; a centrally located core gas generator including compression, combustion and turbine stages; an aft turbine driveably connected to said forward compression means, and located downstream of said core gas generator for acting on fluid passing through said inlet; a first fluid flow control system positioned to receive fluid from said inlet and said blade elements and defining two adjacent annular flow patterns; and a second fluid flow control system positioned to receive fluid from said first fluid flow control system and said core gas generator and defining two adjacent annular flow patterns; said first and second fluid flow control systems each comprising means for inverting the respective positions of said two adjacent annular flow patterns between the entrance and exit ends of its system and within the confines of a passageway having an area substantially equal to the combined area of the two adjacent annular flow patterns at substantially all positions along its length between said entrance and exit ends.

3,938,329

EXHAUST GAS DETOXICATION SYSTEM FOR A MOTOR VEHICLE COMBUSTION ENGINE

Richard van Basshuysen, Bad Wimpfen, Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm, Germany

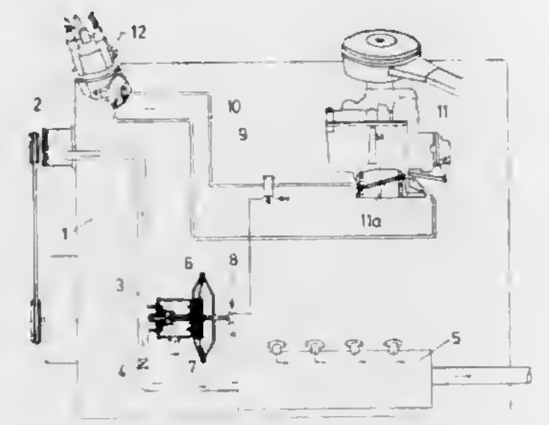
Filed Apr. 10, 1974, Ser. No. 459,663

Claims priority, application Germany, Apr. 14, 1973, 2318926

Int. Cl.² F02B *75/10*

U.S. Cl. 60—284 **1 Claim**

1. An exhaust gas detoxication system for a motor vehicle combustion engine with external ignition comprising a distributor, an intake system comprising a carburetor with a throttle and an exhaust system with a reactor, said detoxication system having an air pump driven by the engine to deliver secondary air into the exhaust system, a blowoff valve arranged in the delivery line and having a valve body executing a stroke for opening a blowoff port when engine speed exceeds a certain value to regulate the flow of air supplied to the exhaust system, a means to shift the ignition time to retarded ignition during the warm-up phase of the reactor, said means comprising a suction line between the carburetor downstream from the throttle and the distributor, an electrically-actuated valve in said suction line for shifting the ignition time to advanced ignition at an engine speed of above said value, a switch in the electrical connection of said electrically-actuated valve, said switch being actuated by said valve body of the blowoff valve at said certain engine speed.



3,938,330

EXHAUST MANIFOLD WITH SLUICE VALVE

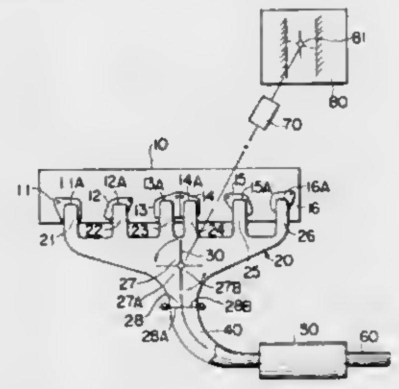
Yasuo Nakajima, Yokosuka; Yoshimasa Hayashi, Yokohama, and Tadahiro Yamamoto, Yokosuka, all of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed July 17, 1974, Ser. No. 489,110

Claims priority, application Japan, July 18, 1973, 48-81854

Int. Cl.² F02B *75/10*

U.S. Cl. 60—294 **3 Claims**



1. In an exhaust system of a motor vehicle which has an internal combustion engine of the straight-type six or more cylinders, the engine having a carburetor with an induction passageway, the system having an exhaust manifold and means arranged downstream of the exhaust manifold for converting unburned hydrocarbons and carbon monoxide contained in the exhaust gas of the engine into harmless substances before emission into the atmosphere, said exhaust manifold having at least six inlet branches each communicating respectively with each of the engine cylinders, the inlet branches being arranged generally in lateral alignment and divided into two adjoining groups of equal number, and an exhaust outlet communicating with said means, said outlet being divided into two passageways communicating with the two groups of inlet branches, respectively, the firing sequence of the engine being such that each cylinder communicating with the inlet branch of one group is fired alternately to each cylinder communicating with the inlet branch of the other group, the improvement comprising: the exhaust manifold defining a central space between all the inlet branches and the two passageways in such an arrangement that all the inlet branches communicate with the outlet through said space; the exhaust manifold further having a sluice valve rotatably disposed within said space such that said sluice valve normally occupies a position to partition said space into two half sections each communicating with one of the two groups of inlet branches and one of the two passageways, the exhaust system further having moving means selectively operable to move said sluice valve to another position wherein said two groups of inlet branches communicate with each other and with both of the two passageways, and control means detecting the engine speed and operating the moving means when the engine speed falls below a predetermined value.

3,938,331

HYDROSTATIC SERVOMECHANISM WITH ARTIFICIAL FEEDBACK

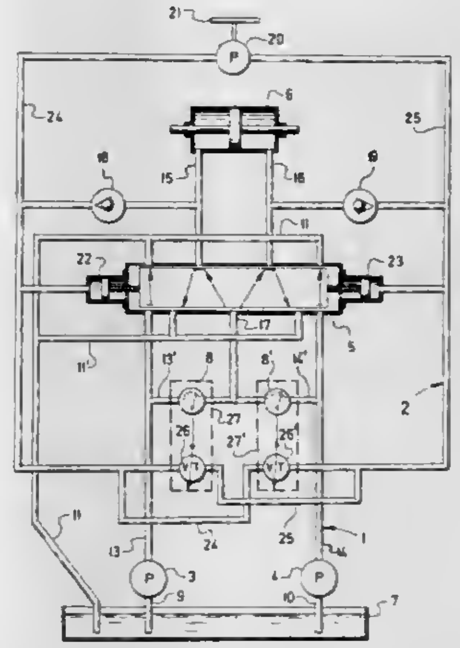
Bohumil Polacek, Brno, Czechoslovakia, and Semen Marsao, Moscow, U.S.S.R., assignors to Zavody tazkeho strojarstva, generalne riaditelstvo, Martin, Martin, Czechoslovakia

Filed Aug. 20, 1974, Ser. No. 498,918

Claims priority, application Czechoslovakia, Aug. 20, 1973, 5831-73

Int. Cl.² F15B *9/02, 13/16*

U.S. Cl. 60—385 **7 Claims**



1. In a hydrostatic servomechanism adapted for controlling the direction of vehicles and selfpropelled machines, said servomechanism including a power circuit comprising at least one servopump, at least one servomotor, a distributor and connecting piping and a control circuit comprising a measuring pump actuated by a command element, the control circuit having control branches, and reset mechanism for the distributor, the servomechanism being connected by the control branches to the reset mechanism of the distributor, the improvement which comprises at least one feedback simulator, the feedback simulator comprising a flow meter, a power circuit, and a controllable throttle means mechanically connected to the flow meter, the feedback simulator being incorporated between the control branches of the control circuit.

3,938,332

HYDRAULIC COUPLING MECHANISM

Rafael Tuti Roces, 1846-C F. Agoncillo St., Ermita, Manila, Philippines

Filed Apr. 29, 1974, Ser. No. 465,098

Claims priority, application Philippines, Dec. 27, 1973, 15360

Int. Cl.² F15B *7/02*

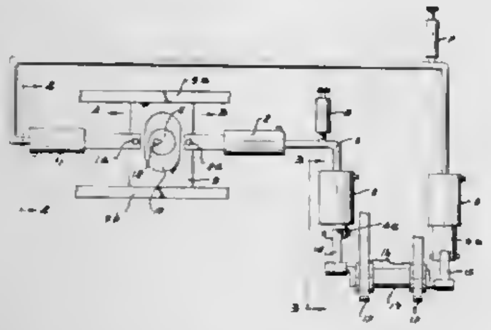
U.S. Cl. 60—536 **1 Claim**

1. A hydraulic coupling mechanism for bicycles comprising:

at least a pair of opposed spaced apart channel members;

a rectangular member having a pair of opposed sides which are disposed slidably along said opposed channel members and a pair of opposed free sides, said rectangular

member having a generally elliptical opening at the middle thereof;
a drive shaft disposed normally through said elliptical opening in said rectangular member;
means for rotating said drive shaft;
a cam disposed eccentrically on said drive shaft and within said elliptical opening to reciprocate said rectangular member upon rotation of said shaft;
a pair of transmitting hydraulic cylinders disposed in close proximity to the opposed free sides of said rectangular member, each of siad transmitting hydraulic cylinders having a corresponding piston rod the outer end of which is connected to the adjacent free opposed side of said rectangular member;
a pair of hydraulic receiving cylinders operably and synchronously connected to said transmitting hydraulic cylinders each of said hydraulic receiving cylinders having a corresponding piston rod; and
a crankshaft operably connected to said piston rods of said hydraulic receiving cylinders, said crankshaft serving as the shaft of the rear wheel of said bicycle.



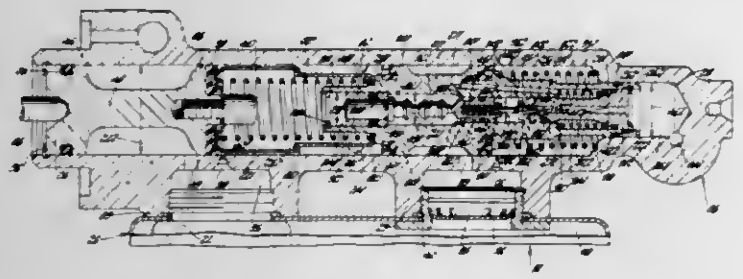
3,938,333
MASTER CYLINDER

Thomas P. Mathues, Miamisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 10, 1975, Ser. No. 548,356

Int. Cl.^{2} B60T *11/08*

U.S. Cl. 60—574 **4 Claims**



1. A master cylinder assembly comprising:
a housing having reservoir chamber means and a fluid pressurization bore communicating with said reservoir chamber means, said bore having an open end and a closed end;
fluid pressurizing means reciprocably received in said bore and including a primary piston assembly and a secondary piston assembly in tandem relation, said assemblies each including a pressurizing piston and defining in said bore a primary fluid pressurizing chamber between said pressurizing pistons and a secondary pressurizing chamber on the opposite side of said secondary pressurizing piston from said primary fluid pressurizing chamber and toward said bore closed end, each of said fluid pressurizing chambers having an outlet for delivering pressurized fluid to brakes to be actuated, said secondary pressurizing piston having a bore extending axially therethrough;
a fluid pressure proportioner assembly mounted in said last named bore fluidly intermediate said secondary fluid pressurizing chamber and its outlet and responsive to fluid pressure generated in said secondary fluid pressurizing chamber and fluid pressure at said secondary fluid pressurizing chamber outlet to proportion fluid pressure at a predetermined pressure ratio from said secondary fluid pressurizing chamber to its outlet above a predetermined pressure at said secondary pressurizing chamber outlet;
and a shuttle piston assembly reciprocably mounted in said secondary pressurizing piston bore and having opposed areas respectively responsive to fluid pressure generated in said primary and secondary fluid pressurizing chambers and acting upon a predetermined relative pressure loss in said primary fluid pressurizing chamber to move toward said primary fluid pressurizing chamber and open said proportioner assembly to render the same inoperative to proportion fluid pressure and to permit fluid pressure generated in said secondary fluid pressurizing chamber to be delivered to its outlet without being proportionally modified by said proportioner assembly.

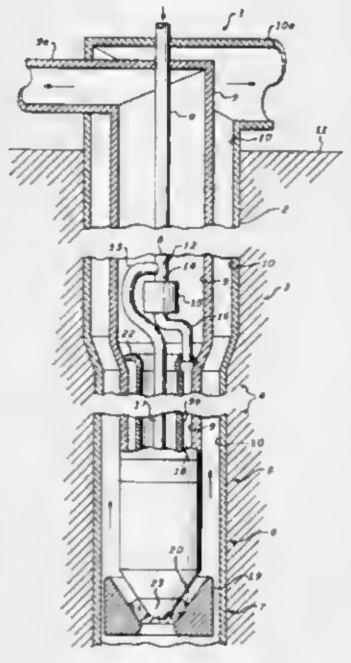
3,938,334
GEOTHERMAL ENERGY CONTROL SYSTEM AND METHOD

Hugh B. Matthews, Acton, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 10, 1974, Ser. No. 487,405

Int. Cl.^{2} F03G *7/00;* **F01K** *23/00*

U.S. Cl. 60—641 **4 Claims**



1. In geothermal deep well pump apparatus of the kind including pump means for pumping a first fluid always in liquid state for flow in cooperative energy exchanging relation with respect to a second fluid:
first, second, and third conduit means respectively for transmission of said first and second fluids and a third fluid and having first common wall means between said first and second conduit means and second common wall means between said second and third conduit means,
  said first and second common wall means being disposed one within the other in substantially vertical concentric relation,
  said first fluid being hotter than said second fluid and said second fluid being hotter than said third fluid, and
deflector means within said second conduit means for urging said second fluid into effecient proximate thermal energy exchange relation with said first common wall means and away from said second common wall means.

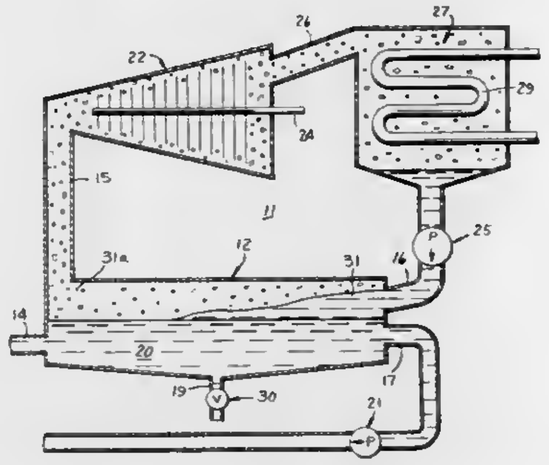
3,938,335
HEAT ENGINES

Edward F. Marwick, 5149 W. Morse Ave., Skokie, Ill. 60076

Filed July 30, 1973, Ser. No. 383,828

Int. Cl.^{2} F01K *25/00;* **F04B** *17/00*

U.S. Cl. 60—673 **10 Claims**



1. A heat engine comprising a reaction chamber having an upper portion and a lower portion separated by float means, a substantially non-volatile liquid and a volatile working fluid substantially chemically non-reactive with the non-volatile liquid in the upper portion, liquid introducing means for transporting the non-volatile liquid from a source of heat to the reaction chamber, fluid introducing means for introducing the volatile working fluid into the reaction chamber in direct physical contact with the non-volatile liquid for conversion of the volatile working fluid into a vapor, vapor removal means for removing the vapor from the chamber, liquid removal means connected to reservoir means physically elevated with respect to the reaction chamber for removing the non-volatile liquid from the chamber, each of said liquid introducing means, said fluid introducing means, said liquid removal means and said vapor removal means including valve means to control pressurization of the reaction chamber for forcing the non-volatile liquid through the liquid removal means, an additional liquid contained in the lower portion, additional liquid introducing means for transporting the additional liquid to the reaction chamber and valve means for selectively controlling the flow therein, additional liquid removal means for removing the additional liquid from the chamber and valve means for selectively controlling the flow therefrom, and energy conversion means connected between said vapor removal means and said fluid introducing means for utilization of heat energy from said vapor.

3,938,336
TURBINE WITH HEATING AND COOLING

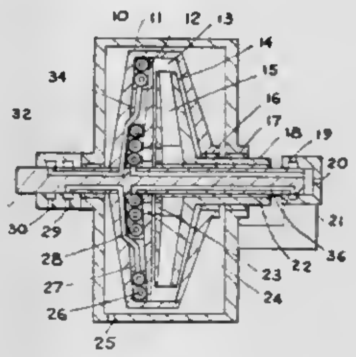
Michael Eskell, 7994-41 Locke Lee, Houston, Tex. 77042

Continuation-in-part of Ser. No. 408,381, Oct. 23, 1973, Pat. No. 3,834,179. This application Feb. 28, 1974, Ser. No. 446,692

Int. Cl.^{2} F01K *25/02;* **F25B** *3/00*

U.S. Cl. 60—682 **1 Claim**

1. An improvement in a turbine for generating power, said turbine comprising:
  a. a casing for supporting rotor shafts;
  b. shafts journalled in bearings in said casing for rotation;
  c. a rotating first rotor mounted on a shaft so as to rotate therewith, said first rotor being of circular configuration, and having an entry port for a first fluid near the center of said first rotor and having a radially outwardly extending passageway for said first fluid for effecting acceleration and centrifugal compression of said first fluid; said radially extending passageway being provided with a heat exchanger for adding heat to said first fluid during and after compression; said radially extending passageway being provided with a set of nozzles at its downstream end for passing said first fluid with said nozzles oriented to discharge said first fluid in forwardly tangential direction;
  d. a rotating second rotor mounted on a shaft so as to rotate therewith; said second rotor having an entry for said first fluid adjacent to said first rotor nozzles for receiving said first fluid, with inward extending first fluid passageway for expansion of said first fluid and for receiving by said rotor the work associated with deceleration of said first fluid; said second rotor having an exit port for said first fluid near the center of said rotor for passing said first fluid into said first rotor;
  e. a heat removal heat exchanger being provided to cool said first fluid before and during early part of compression, said heat removal heat exchanger being within said first rotor and being in heat exchange relationship with said first fluid.



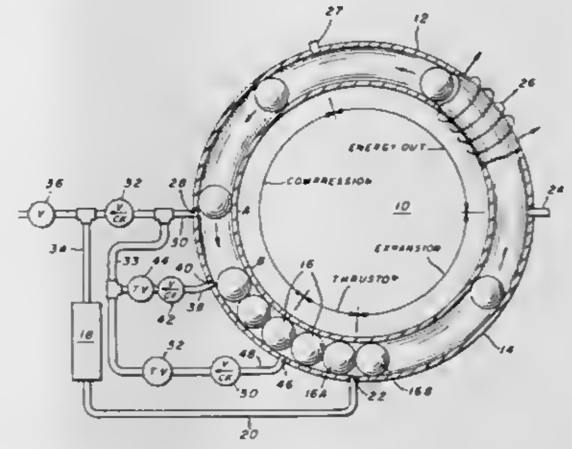
3,938,337
APPARATUS FOR CONVERTING ONE FORM OF ENERGY INTO ANOTHER FORM OF ENERGY

Sherwood L. Fawcett, Columbus, and James N. Anno, Cincinnati, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Jan. 17, 1975, Ser. No. 541,788

Int. Cl.^{2} F01K *25/02*

U.S. Cl. 60—682 **8 Claims**



1. Apparatus for converting a first form of energy to a second form of energy comprising:
  a. a continuous loop passageway having a compressor section followed by a thrustor section,
  b. a plurality of freely movable, unrestrained pistons disposed within said passageway for movement therearound,
  c. a first conduit means connected to said compressor section for leading out compressed gas from said passageway as successive ones of the pistons move into the compressor section,
  d. means for adding energy to the gas fed from the compressor section,
  e. second conduit means for feeding gas, after the addition of energy thereto, back to the expander section to propel successive ones of said bodies around the passageway by expansion of the gas, and

f. means for regulating the pressure in said passageway between the connections thereto of said first and second conduit means.

3,938,338

COVERING OR BLANKETING LIQUID SURFACES AND FLOAT MEMBERS FOR EFFECTING SAME

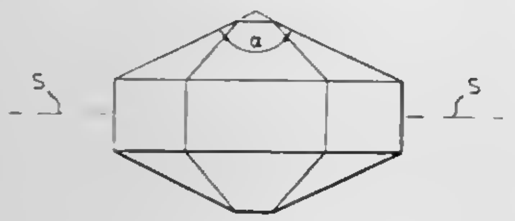
Arthur Prosper Cullen, 1 Cavendish Drive, Claygate, Surrey, England

Filed Nov. 11, 1974, Ser. No. 522,783

Claims priority, application United Kingdom, Nov. 9, 1973, 52177/73

Int. Cl.² E02B *3/00*

U.S. Cl. 61—1 R **16 Claims**



1. A float member, for side-by-side nesting relationship with similar float members for substantially completely blanketing or covering the surface of a liquid for reducing evaporation loss of the liquid and for reducing transfer of thermal energy between the liquid and atmosphere, the member comprising a body having a peripheral wall at its midportion of hexagonal shape and having a maximum transverse dimension of about 4.0 inches and a depth of at least about 0.2 inches, and wherein the hexagonal wall is located between opposed integral elements each of identical protuberant shape, the protuberance in each element terminating in the hexagonal wall and tapering inwardly away therefrom such that each protuberance presents sloping sides terminating at the wall, the sloping sides defining an angle to the horizontal of less than about 45° so that wind blowing across the member tends to urge it downwardly, and wherein the depth of the hexagonal wall is at least one-eighth of the total thickness of the float member measured in the direction axially of the hexagonal wall and said depth being between 12.5% and 40% of the maximum dimension across the hexagonal configuration of the float member, and said float member having a weight in relation to its size such that its hexagonal wall is disposed at the surface level of, and partially immersed in, the liquid.

3,938,339

MEANS FOR SHOWING AND/OR DETOURING WATER CURRENTS AND THE PREPARATION THEREOF

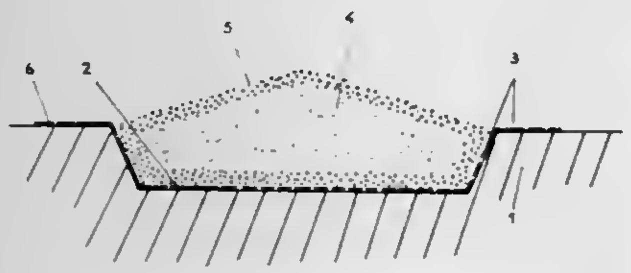
Yves Gaudard, Lyon, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed July 29, 1974, Ser. No. 492,825

Claims priority, application France, Aug. 3, 1973, 73.28757

Int. Cl.² E02B *3/02, 3/06*

U.S. Cl. 61—4 **8 Claims**



1. A jetty arranged angularly in relation to the edge of a body of water, to slow down and/or detour currents, comprising

a. a non-woven porous web of randomly arranged continuous filaments lining an excavation and having edges extended beyond the excavation,
b. a pile of fill in said excavation and extending upwardly therefrom to form a surface outside of the excavation,
c. said extended edges of said non-woven web being wrapped back against the outside surface of the pile to surround said pile of fill, and
d. a layer of wave-breaking elements superimposed on said wrapped edges of the non-woven web.

3,938,340

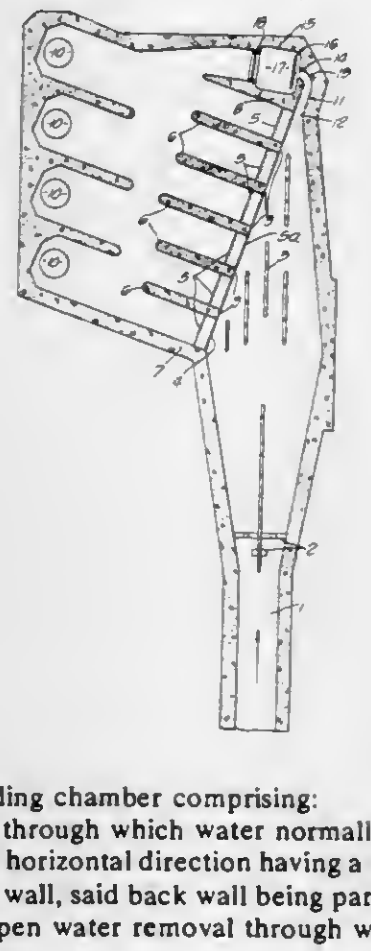
FISH HOLDING CHAMBER

Dallas I. Downs, Montrose, Calif., assignor to Southern California Edison Company, Rosemead, Calif.

Filed Jan. 23, 1974, Ser. No. 436,010

Int. Cl.² E02B *8/08*

U.S. Cl. 61—21 **17 Claims**



1. A fish holding chamber comprising:

an enclosure through which water normally flows substantially in the horizontal direction having a pair of side walls and a back wall, said back wall being partially defined by normally open water removal through which water exits the chamber;

means for creating substantially equal horizontal currents of water flowing along each of said side walls and substantially equal but opposite horizontal currents of water flowing across said back wall, said latter currents being strong relative to the horizontal flow of water through said water removal means; and

a relatively quiet water area substantially free of constant horizontal water currents in said enclosure, said area being defined by said currents.

3,938,341

STORAGE DEVICE FOR LIQUIDS

Theodorus Prins, Rivierdijk 655, Sliedrecht, Netherlands

Filed June 28, 1972, Ser. No. 267,037

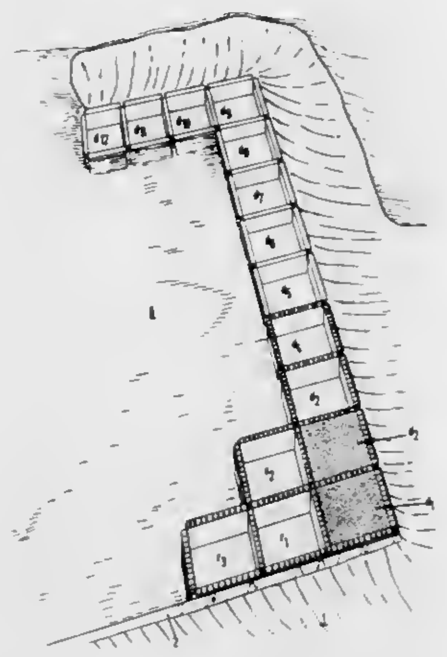
Claims priority, application Netherlands, Aug. 5, 1971, 7110804

Int. Cl.² B65G *5/00;* **E02B** *3/04;* **E02D** *5/00*

U.S. Cl. 61—46 **5 Claims**

1. A method of manufacturing out of a plurality of caissons an installation for storing petroleum products or the like in a water mass near a shore, each caisson comprising a pair of vertically upstanding horizontally spaced walls with a plurality of cross members therebetween, said method comprising the steps of:

a. levelling a bottom surface of a water mass at a predetermined depth to form a level surface;
b. arranging four of said caissons in edge to edge relationship, adjacent caissons perpendicular to each other, on said levelled surface;
c. interconnecting said four caissons at upright edges thereof both above and below the water surface to form a first box-like rectangular or square compartment;
d. filling the area between the spaced upstanding walls of each of said caissons and said first box-like compartment with sand;
e. building a second box-like rectangular or square compartment attached to said first compartment by means of three additional caissons so that said first and second compartments have a common wall;



f. filling the spaces between the upstanding walls of each of said additional caissons and said second compartment with sand;
g. repeating steps (a) – (f) until a dam wall extending generally parallel to said shore is completed;
h. repeating steps (a) – (f) until two rectangular side walls are formed extending a predetermined distance from said dam wall toward the shore so that a U-shaped storage region is formed; and
i. erecting a plurality of box-like rectangular or square storage compartments within said storage region by arranging a plurality of caissons on a levelled bottom surface of said storage region in edge to edge relationship, having common caisson-walls with said dam wall and said side walls and with each other, and filling with sand the area between the spaced upstanding walls of each of said caissons.

3,938,342

METHOD AND A DEVICE FOR BUILDING IMMERSED FOUNDATIONS

Jean Aubert, 8 rue la Boetie, Paris 8, (Seine), France

Filed June 4, 1973, Ser. No. 366,354The portion of the term of this patent subsequent to Mar. 13, 1990, has been disclaimed.

Int. Cl.² E02B *3/06, 7/00*

U.S. Cl. 61—46 **17 Claims**

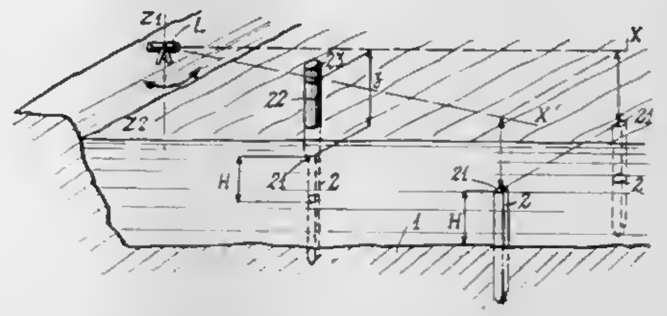
1. A method for building immersed foundations on a prepared bed without preliminary unwatering by means of a platform which has on its underface downwardly extending anchoring means and which serves as a cover for the concrete employed in the construction of the foundation and which defines a seating surface for the final structure, comprising

positioning in the underwater bed a support constituted by at least three bearing points which project from said bed;

adjusting the height of the bearing points as a function of the depth selected for the seating plane;

lowering said platform underwater so as to rest on the bearing points;

enclosing the space between the foundation bed and the platform;



pouring a plastic material which is capable of setting and hardening into the said enclosed space in sufficient quantity to ensure that said platform anchoring means are imprisoned therein, without reaching the underface of the platform;

and then, after a sufficient time for the plastic material to set and harden, so that it constitutes with the platform a rigid and leaktight hollow body, filling the said hollow body with material in the plastic state, capable of setting and hardening.

3,938,343

PLATFORM STRUCTURE FOR MARITIME INSTALLATION

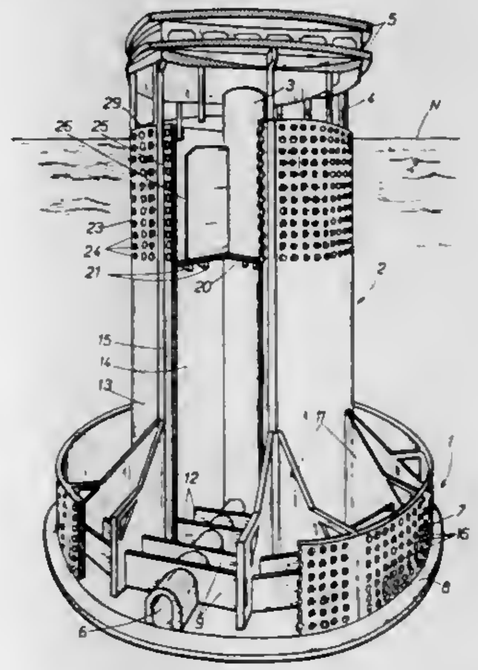
Jacques Edouard Lamy, Fontenay-aux-Roses, France, assignor to C. G. Doris, Paris, France

Filed Nov. 5, 1974, Ser. No. 521,075

Claims priority, application France, Nov. 13, 1973, 73.40272; May 20, 1974, 74.17478

Int. Cl.² E02B *17/00, 3/04*

U.S. Cl. 61—46.5 **21 Claims**



1. An off-shore gravity-type platform for supporting a processing installation above the surface of a body of water and for housing processing components, comprising a base structure resting upon the bed of the body of water, a tower structure integrally connected to the base structure to be supported by the same and extending therefrom up to above said water surface, a deck supported on the upper end of the tower structure for supporting the processing installation, a pressure-resisting watertight hollow shaft having an open bottom

end open, incorporated within the tower structure and extending from the base structure to the deck for housing said components, a pressure-resisting watertight tubular skirt having both ends open, received telescopically in the shaft, and means for driving the tubular skirt pile-like into the bed of the body of water through said wide open bottom end, to give access to an underwater layer of said bed through said shaft and said tubular skirt.

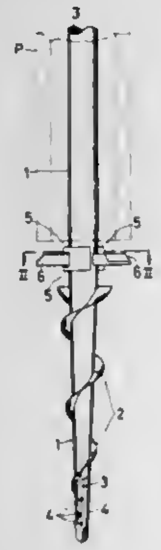
3,938,344
EARTH AUGER AND METHOD FOR DRIVING PILES AND THE LIKE BY MEANS OF SAID EARTH AUGER

Kingo Asayama, Hirakata, Japan, assignor to Kabushiki Kaisha Takechi Koumusho, Osaka, Japan

Filed Apr. 29, 1974, Ser. No. 465,091

Int. Cl.² E02D *5/34, 5/74*

U.S. Cl. 61—53.66 **4 Claims**



1. The method of setting and anchoring a tubular piling including the steps of placing the piling in the ground; inserting an auger having a ground formation boring head through the piling until the head is below the lower end of the piling; rotating the auger and expanding the diameter of the ground cutting elements to a diameter substantially greater than that of the piling and while the cutting elements are so expanded boring a hole larger than said piling and progressively lowering both the piling and the auger until the desired depth of ground penetration of the piling has been obtained; then while holding the piling stationary forming an enlarged cavity beneath the lower end of the piling, injecting a mortar-like substance into and filling the cavity and injecting additional quantities of the mortar-like substance in the annular space between the walls of the bore in the ground and the piling until the annular space is filled; withdrawing the auger through the piling while the cutter elements are contracted.

3,938,345
COOLING METHOD BY USE OF CORONA DISCHARGE

Joji Yamaga, and Morio Jido, both of Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

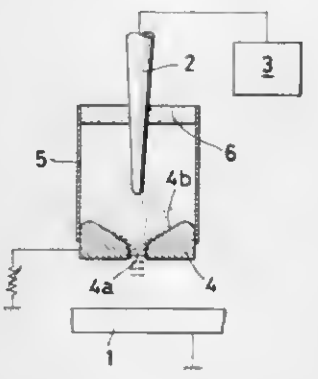
Filed Oct. 3, 1974, Ser. No. 511,725

Claims priority, application Japan, Oct. 6, 1973, 48-112559

Int. Cl.² F25B *21/02*

U.S. Cl. 62—3 **2 Claims**

1. In a method for cooling an article subjected to cooling by utilizing corona discharge caused by placing the article opposite a high-potential electrode and applying high electric potential between the article and the electrode, the improvement which comprises interposing between the article and the high-potential electrode a corona focusing ring possessed of a central hole defining a centrally inclined upper face and applying high electric potential between said electrode and said corona focusing ring and the article subjected to cooling to generate corona discharge therebetween, whereby the avalanche of ions generated in consequence of the corona discharge is focused in the direction of the central hole by the inclined face of said corona focusing ring and released past the central hole onto the article to effect local cooling of the article.



3,938,346
CRYOSTAT

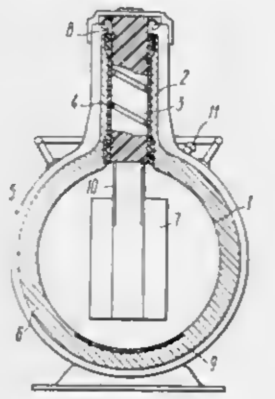
Viktor Sergeevich Ovchinnikov, Yaroslavskoe shosse, 28, kv. 16; Eduard Ivanovich Grigorov, prospekt Mira, 90, kv. 78; Arkady Lukyanovich Magdesian, ulitsa Zheleznodorozhnaya, 3, kv. 4; Vladimir Ivanovich Gorelikov, Serpukhovsky val, 19/43, kv. 184; Andrei Vasilievich Bermishev, ulitsa Grishina, 8, kv. 44; Alexandr Stepanovich Utkin, ulitsa Stroitelei, 10, kv. 285; Viktor Konstantinovich Fedotov, ulitsa Khalturina, 14, korpus 2, kv. 34, and Vladimir Yakovlevich Volkov, Arbatskaya ploschad, 6, kv. 39, all of Moscow, U.S.S.R.

Filed Oct. 18, 1974, Ser. No. 515,979

Claims priority, application U.S.S.R., Oct. 25, 1973, 1966792

Int. Cl.² F17C *7/02*

U.S. Cl. 62—50 **8 Claims**



1. A cryostat comprising a thermally insulated vessel for storing cryogenic products including a neck, said vessel being made of a material with a heat conductivity not exceeding 0.35–0.4 W/m degree and a tensile strength of 10–20 kg/mm²; a non-metallic stopper having a solid cross-sectional area made of a material having a heat connductivity not exceeding 0.03–0.05 W/m degree and a tensile strength of 5–15 kg/mm², said stopper being tightly fitted into said neck of said thermally insulated vessel; a helical channel being formed between said stopper and the inner surface of said neck, said channel beginning at one end of said stopper and terminating at the other end thereof for removing vapor of the evaporating cryogenic products into the ambient atmosphere, the ratio of the length of said channel to the cross-sectional area being such that excessive vapor pressure of the evaporating cryogenic products in said vessel is eliminated, while the temperature of said vapor at the outlet of said neck corresponds to the temperature of the ambient atmosphere.

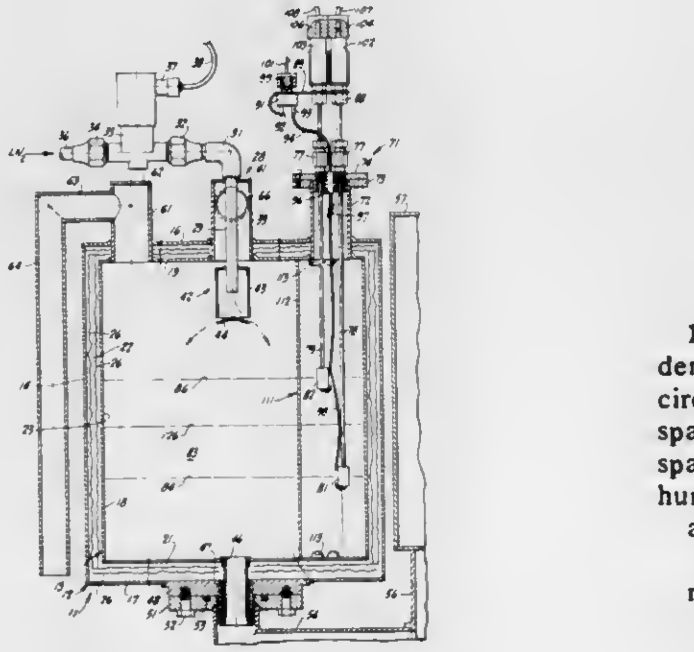
3,938,347
LEVEL CONTROL APPARATUS AND METHOD FOR CRYOGENIC LIQUIDS

Hans J. Riedel, Petaluma, and Vernon C. Spellman, Santa Rosa, both of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Apr. 12, 1974, Ser. No. 460,376

Int. Cl.² F17C *7/02*

U.S. Cl. 62—55 **7 Claims**



1. In a level control apparatus for a cryogenic liquid, a source of cryogenic liquid, an insulated flask having a chamber for holding a cryogenic liquid, inlet means mounted on the flask for introducing a cryogenic liquid into the chamber, outlet means mounted on the flask for permitting cryogenic liquid to be removed from the flask, first and second probe assemblies mounted in the flask and having their lower extremities at different elevations within the chamber which are adapted to be covered by the cryogenic liquid within the chamber, each of said probe means including thermocouple means for generating a voltage in response to temperature and heating means for generating heat and supplying the same to the thermocouple means whereby the thermocouple means produces a signal of one type when the heating means is in contact with the cryogenic liquid and a signal of a different type when at least a portion of the heating means is out of contact with the cryogenic liquid, and means responsive to the signals from said thermocouple means of the first and second probe assemblies for automatically controlling the flow of cryogenic liquid from said source into said inlet means, said means responsive to the signals from said thermocouple means in said first and second probe assemblies including a meter relay having upper and lower set points corresponding to two temperatures, one hot and one cold, with the hot temperature being reached when the heating means for both of said first and second probe assemblies are no longer covered by the cryogenic liquid and with the cold temperature being reached when the heating means for both of said first and second probe assemblies are substantially covered by said cryogenic liquid, solenoid operated valve means connected between the source and the inlet for controlling the flow of cryogenic liquid from said source to said inlet and relay means responsive to the meter relay for controlling operation of said solenoid operated valve means whereby filling of chamber with cryogenic liquid from said source is started when the upper set point is reached and continues until the lower set point is reached.

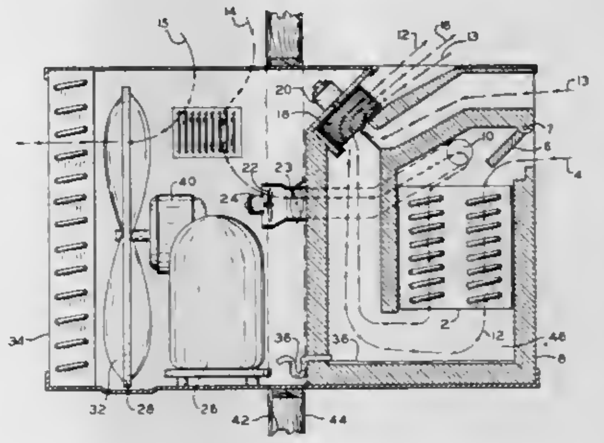
3,938,348
VENTILATING AND/OR COOLING DEHUMIDIFIER

Glenn E. Rickert, Community State Bank Bldg., Huntington, Ind. 46750

Filed Oct. 15, 1974, Ser. No. 514,501

Int. Cl.² F25D *17/06*

U.S. Cl. 62—97 **11 Claims**



1. In a refrigeration system having a compressor, a condenser, and an evaporator connected in a series refrigerating circuit, the improvement for supplying fresh outside air to a space to gradually displace stale inside air, and to maintain the space near a desired temperature and near a desired relative humidity comprising:

a chamber containing the evaporator coil and having a fresh air inlet, a recirculating air inlet, and an air outlet;

means for substantially continuously supplying fresh outside air to the fresh air inlet whereby the fresh air may pass the evaporator coil, be cooled to condense excess moisture therefrom, and pass into the space through the air outlet; and

means for intermittently supplying space air to the recirculating air inlet so that the space air may pass the evaporator, be cooled, and pass back into the space through the air outlet to maintain the space near a desired temperature.

3,938,349
REFRIGERATING APPARATUS WITH SUPERHEAT CONTROL

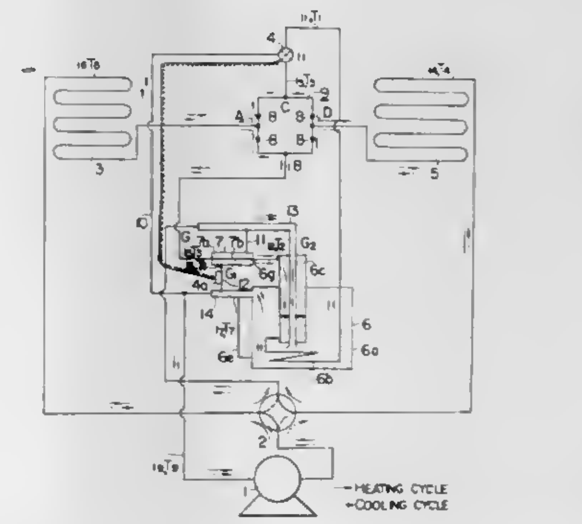
Takeo Ueno, Sennan, Japan, assignor to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Sept. 5, 1974, Ser. No. 503,507

Claims priority, application Japan, Sept. 21, 1973, 48-107206; Sept. 21, 1973, 48-107207

Int. Cl.² F25B *13/00*

U.S. Cl. 62—197 **12 Claims**



1. A refrigerating apparatus comprising a refrigeration circuit in which a compressor, an outdoor heat exchanger, a

receiver, a temperature sensing automatic expansion valve, a room heat exchanger and an accumulator are connected together in the indicated order, said receiver and said accumulator being capable of performing heat exchange; a pilot heat exchanger disposed in parallel with said accumulator and connected to said refrigeration circuit such that a portion of a refrigerant under lower pressure disposed at an outlet of said room heat exchanger functioning as an evaporator bypasses said accumulator and passes through said pilot heat exchanger where said portion of the refrigerant under lower pressure is subject to heat exchange with other heat source and then returned to the compressor after being combined with the refrigerant under lower pressure at an outlet of said accumulator; detection means mounted at an outlet of said pilot heat exchanger to detect the temperature of said one portion of the refrigerant under lower pressure at the outlet of said pilot heat exchanger before being combined with the refrigerant under lower pressure at the outlet of said accumulator, means connecting said expansion valve with said detection means so that the degree of opening of said expansion valve is adjusted in accordance with the degree of superheating of the refrigerant so as to adjust the volume of the refrigerant moving through the refrigeration circuit, whereby the room heat exchanger can be made to operate in humid condition at all times regardless of changes in the load and the humid refrigerant can be subjected to heat exchange with a refrigerant under higher pressure in said accumulator so as to return to said compressor of a refrigerant in a saturated gaseous state.

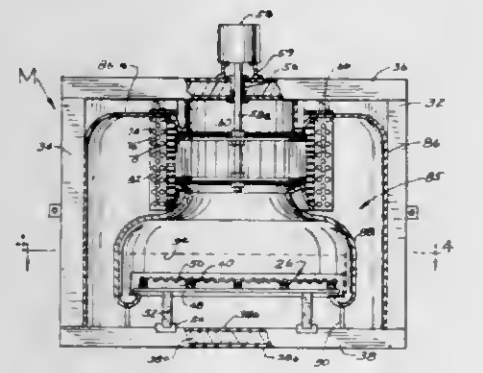
3,938,350
FREEZE TUNNEL

Patrick S. Martin, and Barron M. Moody, both of Dallas, Tex., assignors to Cryogenics Corporation of America, Dallas, Tex.

Continuation-in-part of Ser. No. 250,616, May 5, 1972, Pat. No. 3,802,212. This application Dec. 10, 1973, Ser. No. 423,333

Int. Cl.² F25D *21/06*

U.S. Cl. 62—156 **11 Claims**



1. Freezer apparatus comprising: first and second heat exchanger means having inlets and outlets; means to deliver coolant to the inlet of the first exchanger means; a conduit connecting the outlet of the first exchanger means to the inlet of the second heat exchanger means; an exhaust line connected to the outlet of the first exchanger means; signal responsive valve means in said conduit and in said exhaust line; means to heat said second heat exchanger mean; sensor means positioned in heat exchange relation with coolant discharged from second heat exchanger; signal generator means operably connected to said sensor means and to said signal responsive valve means and to said heater means, said signal generator means being adapted to generate signals to actuate said valve means such that flow of coolant is diverted from the first heat exchanger to the exhaust line and the heater means is energized when temperature of coolant exhausted from said second heat exchanger is less than a predetermined temperature.

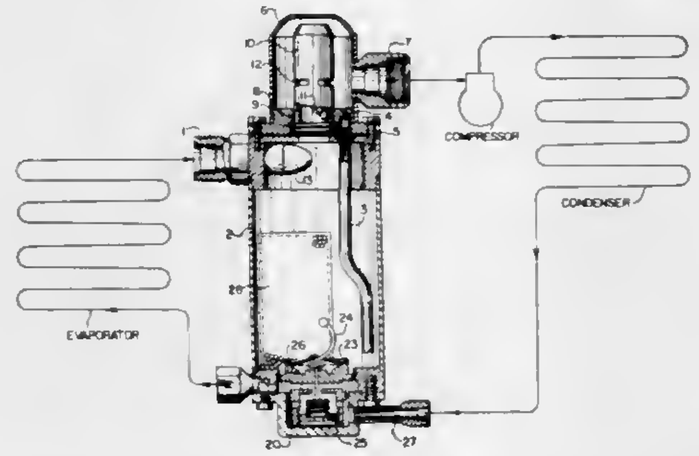
3,938,351
COMBINATION LIQUID TRAPPING SUCTION ACCUMULATOR AND EVAPORATOR PRESSURE REGULATOR DEVICE INCLUDING A CARTRIDGE TYPE EXPANSION VALVE

Ernest W. Schumacher, Portsmouth, Va., assignor to Virginia Chemicals, Inc., Portsmouth, Va.

Division of Ser. No. 388,281, Aug. 14, 1973, Pat. No. 3,858,407. This application Oct. 30, 1974, Ser. No. 519,304

Int. Cl.² F25B *41/04, 43/00*

U.S. Cl. 62—217 **3 Claims**



1. A liquid trapping suction accumulator adapted for insertion in a vapor-compression refrigeration system between the evaporator and compressor comprising:

A. an accumulator chamber defined by a casing vertically extending and having a top and a bottom;

B. inlet and outlet ports opening into the top of said chamber and respectively adapted for operative connection to said evaporator and said compressor;

C. an evaporator pressure regulator chamber interposed between said inlet and outlet ports in communication with said accumulator chamber, said chamber including:

   i. a pressure responsive evaporator pressure regulator device, vertically positioned in said evaporator pressure chamber proximate said outlet port so as to gauge admission of vapor from said accumulator chamber into said evaporator pressure regulator chamber and through said outlet;

D. an eductor tube vertically extending independently from the bottom of said accumulator chamber into said evaporator pressure regulator chamber;

E. a cartridge type expansion valve assembly mounted within the bottom of said accumulator chamber said assembly having an entrance port connected to the condenser in said system with said cartridge type expansion valve mounted within and proximate the bottom of said accumulator casing and including an equalizing port for direct communication between said accumulator bottom and said expansion valve; a wire mesh strainer located in said entrance port and a desiccant bag supported within said accumulator chamber adjacent said expansion valve.

3,938,352
WATER TO AIR HEAT PUMP EMPLOYING AN ENERGY AND CONDENSATE CONSERVATION SYSTEM

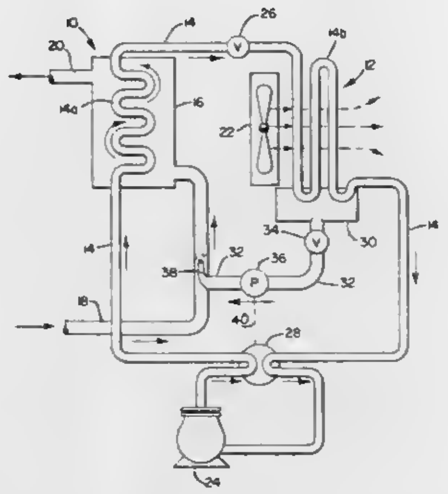
A. Carl Schmidt, Fort Lauderdale, Fla., assignor to Well-McLain Company, Inc., Dallas, Tex.

Filed July 10, 1974, Ser. No. 487,251

Int. Cl.² F25D *47/00*

U.S. Cl. 62—279 **14 Claims**

1. A water to air heat pump comprising a first heat exchanger including a coil and means for passing air over said coil; a second heat exchanger including a coil and a jacket enclosing said coil, said jacket having an inlet for receiving water from an external source and an outlet for discharging said water back to said source, said water being continuously circulated through said jacket and over said coil; conduit means for circulating a heat exchange fluid between said coils, said first heat exchanger adapted to act as an evaporator and evaporate said fluid and cool said air, and said second heat exchanger adapted to act as a condenser and condense said fluid; means for collecting the condensate from said air at said first heat exchanger; and means for passing said condensate to said jacket for mixing with said water and circulating over the coil associated with said second heat exchanger.



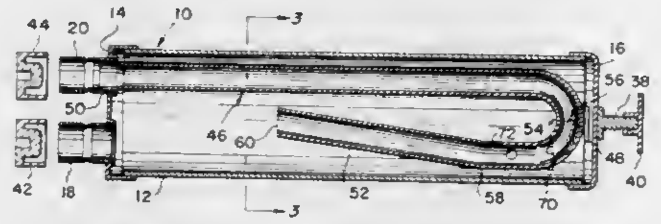
3,938,353
LIQUID TRAPPING SUCTION ACCUMULATOR

George T. Wrenn, Jr., Crittenden; Hugh W. Mann, Portsmouth, and Krishna R. K. Sarma, Chesapeake, all of Va., assignors to Virginia Chemicals, Inc., Portsmouth, Va.

Continuation-in-part of Ser. No. 359,569, May 11, 1973, abandoned. This application Dec. 12, 1974, Ser. No. 532,106

Int. Cl.² F25B *43/00*

U.S. Cl. 62—503 **4 Claims**



1. A liquid trapping suction accumulator adapted for insertion in a vapor-compression refrigeration system between the evaporator and compressor, comprising:

A. an accumulator chamber defined by a casing having a top and a bottom;

B. inlet and outlet ports in said opening into said chamber and respectively adapted for operative connection to said evaporator and said compressor; and

C. an outlet connector mounted in said outlet port;

D. a J-shaped tube mounted within said casing; and

   i. the long leg thereof extending into and terminating in said outlet connector centrally positioned within and in peripherally spaced relationship from the internal surface of said outlet port;

   ii. inwardly extending dimples spacedly positioned about the inner periphery of said outlet connector and providing an interference fit with the outer diameter of said J-tube outlet end for rigid support thereof in said connector, the spacing between the dimples creating a predetermined open area therebetween for exiting gas;

   iii. the outlet end of said J-tube being outwardly flared to a controlled diameter for coacting with said dimples in an interference fit therewith; and

   iv. a short inlet leg thereof extending a substantial distance above the chamber bottom, and said short leg having a bend therein angularly displacing the inlet opening from direct vertical alignment with said inlet port, wherein the distal end of said short leg extends above the vertical midpoint of said accumulator chamber, distal short leg further including a liquid feedback port at the bend of said J-tube with a plurality of additional liquid feedback orifices of increasing diameter in said short leg, said orifices being of increasing diameter towards said distal end.

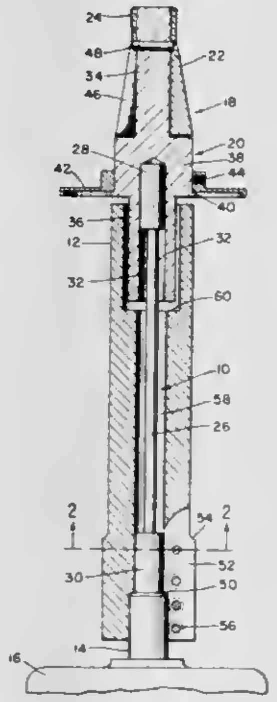
3,938,354
APPARATUS FOR TRANSMITTING ROTATIONAL ENERGY FROM A MOTOR TO THE ROTOR OF A CENTRIFUGE

Ivan L. Lehman, Contoocook, N.H., assignor to Damon Corporation, Needham Heights, Mass.

Continuation-in-part of Ser. No. 201,069, Nov. 22, 1971, Pat. No. 3,779,451. This application Mar. 20, 1973, Ser. No. 343,042

Int. Cl. F16c *1/00*

U.S. Cl. 64—1 V **11 Claims**



1. A construction for a centrifuge of the type which includes a flexible shaft to transmit the rotational motion of a motor shaft to a rotor, said flexible shaft having upper and lower connectors separated by a relatively long, thin central member, wherein the improvement comprises a shaft protector enclosing the central member of said flexible shaft, said shaft protector defining a lumen of a configuration such that the central member of the flexible shaft is free to flex within the lumen but which is sufficiently confining so as to prevent bending of the central member of the flexible shaft to a point which would result in permanent deformation of the flexible shaft, and a rotor adapter with the upper connector of the flexible shaft inserted in the rotor adaptor and the lower connector of the flexible shaft coupled to a motor shaft, and wherein there is a clearance between the rotor adapter and the shaft protector, which clearance governs the radial movement of the rotor adapter relative to the axis of rotation of the motor shaft and prevents the shaft from breaking due to a mechanical stress on the rotor.

3,938,355
METHOD OF KNITTING A PLURALITY OF CONVERGENT TUBULAR PORTIONS AND RESULTING ARTICLE

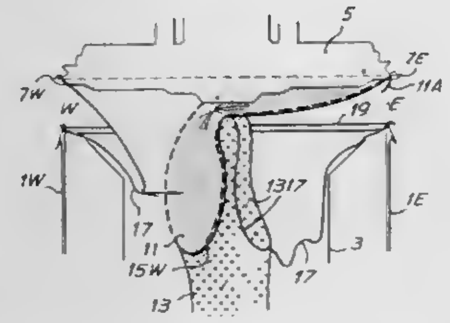
Paolo Conti, Florence, Italy, assignor to Billi, S.p.A., Florence, Italy

Filed Aug. 10, 1973, Ser. No. 387,515

Claims priority, application Italy, Aug. 12, 1972, 9641/72; Nov. 16, 1972, 9758/72

Int. Cl.² D04B *9/42*; A41B *9/00*

U.S. Cl. 66—95 12 Claims



1. A process of knitting on a circular knitting machine having a needle cylinder and a dial plate with hooks, said method comprising the steps of knitting a first tubular portion on first selected needles spaced circumferentially around the needle cylinder, projecting the dial hooks to receive the first tubular portion, supporting the first tubular portion on said dial hooks, knitting a second tubular portion on second selected needles spaced circumferentially around the needle cylinder, transferring a first continuous segment of the stitches of said first tubular portion from said hooks to corresponding ones of said needles while retaining a second segment of the stitches of said first tubular portion on said hooks, joining said first segment of transferred stitches from said first tubular portion to the corresponding arc of said second tubular portion, knitting an anti-ravel tab conextensive with the arc of said first segment, pressing off from the knitting needles the anti-ravel tab between said first and second tubular portions, knitting an initial course of a third tubular portion on third selected needles spaced circumferentially around the needle cylinder, projecting a segment of the dial hooks to receive a segment of said initial course of the third tubular portion from a corresponding segment of the knitting needles and then continuing knitting said third tubular portion on all of said third selected needles spaced circumferentially around the needle cylinder until said third tubular portion reaches a desired length, pressing off the terminal course of said third tubular portion on the knitting needles, transferring the segment of stitches in said initial course of the third tubular fabric from the dial hooks to a corresponding segment of the knitting needles, transferring said second segment of stitches of said first tubular portion from the dial hooks to a corresponding segment of said knitting needles, and knitting a fourth tubular portion on all of said knitting needles spaced circumferentially around the cylinder.

3,938,356
WEB FINISHING MACHINES

Hans F. Arendt, Bleichinsel, 712 Bietigheim, Wurttemberg, Germany

Filed Sept. 26, 1973, Ser. No. 400,911

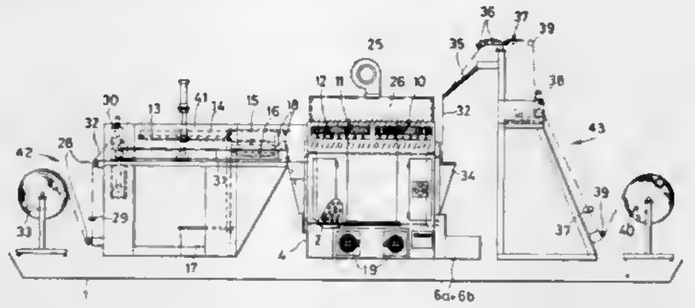
Claims priority, application Germany, Sept. 27, 1972, 2247320

Int. Cl.² D06B *3/02, 21/00*; C14C *15/00*

U.S. Cl. 68—5 D 11 Claims

1. A machine for continuously finishing a web of material comprising the combination of

a casing, a drum mounted for rotation within the casing, web feeding means for introducing the web into the drum, the web traveling continuously through the interior of the drum, web withdrawal means for withdrawing the web from the drum and casing, ventilating means fixed to the casing for removing air from and introducing fresh air to the drum and casing, steam spraying means fixed to the casing for spraying steam into the drum, a heater mounted within the casing and above the drum for directing heat and infrared radiation to the drum,



the web feeding means further comprising a housing attached to the casing through which the web travels, direct radiation means within the housing for directing infrared radiation onto the web, and moistening means within the housing and following the direct radiation means for moistening the web prior to its introduction into the drum.

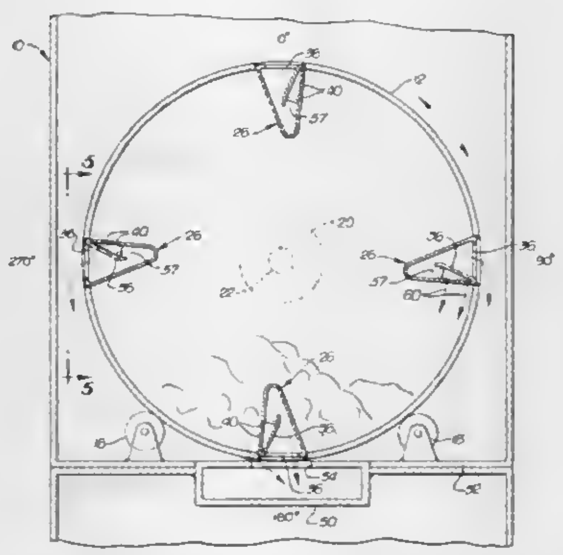
3,938,357
CLEANING MACHINE UTILIZING NON-LIQUID CLEANING AGENTS

Joseph Leib, 4835 W. Jefferson Blvd., Los Angeles, Calif. 90016

Filed July 1, 1974, Ser. No. 484,816

Int. Cl.² C14B *15/00*

U.S. Cl. 69—23 5 Claims



5. In a cleaning machine for use with powdered and/or granular cleaning agents:

a. a cleaning drum having a circular edge forming front air influent opening;

b. means supporting the cleaning drum for angular movement about a substantially horizontal axis;

c. means forming an enclosure for the drum, and having a frontal opening registering with and surrounded by said drum opening, the said circular edge of said drum located in close proximity to said enclosure to form a substantially sealed relationship thereto;

d. an access door for said enclosure opening, and itself having air passages therethrough for entry of air into the drum;

e. an air pump operable to exhaust air from said enclosure following a cleaning cycle;

f. a plurality of tumble vanes in the drum of generally triangular cross-sectional configuration, each tumble vane having surfaces on opposite sides, one of which is provided with an array of openings for entry of air into the tumble vane;

g. said drum having effluent openings at the periphery thereof and located at the bases of said tumble vanes for registry with the interior spaces thereof;

h. and a baffle plate for each tumble vane and located behind the array of openings to form a trap for cleaning agent entering the tumble vane, and having a distal edge located to prevent direct movement of cleaning agent to corresponding effluent opening; said baffle forming a trough at the periphery of the drum when the tumble vane is near the top of the drum, the distal edge of the baffle ensuring shuttling of cleaning agent across the openings inside the tumble vane upon rotation of the tumble vane for return of cleaning agent to the drum.

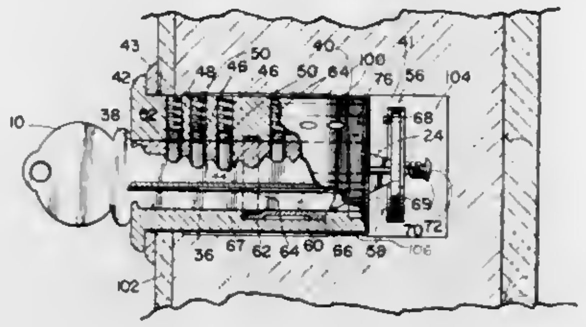
3,938,358
PICK-PROOF LOCK

David Doyle, 1768 Horatio Ave., N. Merrick, N.Y. 11566, and Murray M. Shtulman, 163-35 130th Ave., Jamaica, N.Y. 11434

Continuation-in-part of Ser. No. 199,984, Nov. 18, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,821

Int. Cl.² E05B *27/06*

U.S. Cl. 70—358 16 Claims



1. A key-operated locking mechanism for use in conventional latch-operated doors having a conventional cylinder plug housing said mechanism comprising a cylinder plug comprising said latch and having a keyway, a shell aligned with and adapted to receive and hold said cylinder plug, said cylinder plug and shell assembly adapted to fit within said conventional plug housing so as to be a replacement for a standard cylinder assembly, said cylinder plug being axially rotatable within said shell, a plurality of bores located in said shell, a plurality of bores located in said cylinder plug axially aligned with said bores in said shell, a plurality of sets of movable pin tumblers carried in said shell and cylinder plug bores connecting said shell to said cylinder plug and intersecting the clearance between said shell and cylinder plug, said pin tumblers blocking said axial rotation of said cylinder plug in said shell, said pin tumblers being movable within said bores by respective cuts in a key to clear said clearance between said shell and said cylinder plug and provide a shear line clearance permitting axial rotation of said cylinder plug within said shell, a latching means connected to said cylinder plug, coupling means coupling said axial rotational movement of said cylinder plug to operate said latching means, a plate, blocking pin means carried on said plate, a recess at the rear of said shell for receiving said blocking pin means, a pair of guide pins having one end respectively attached to the rear of said plug, spring members bearing against said plate and attached to said guide pins to force said blocking pin means into said recess, said plate being directly moved by the front end of the key to move said blocking pin out of engagement with said recess.

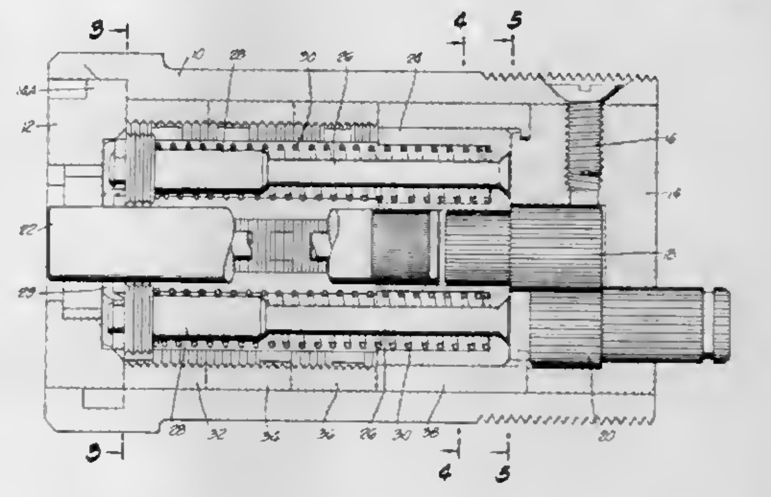
3,938,359
LOCK ASSEMBLY

James A. Millett, Fountain Valley, and James W. Raymond, Newport Beach, both of Calif., assignors to James W. Raymond, Calif.

Filed Aug. 19, 1974, Ser. No. 498,269

Int. Cl.² E05B *27/06*

U.S. Cl. 70—363 17 Claims



1. A lock assembly comprising: a cylindrical shaped outer casing; a plurality of annular logic members mounted in said casing tandem to one another coaxially with the central axis of the casing; an annular clutch member mounted in said casing adjacent to one end of the logic members and coaxial with the central axis of the casing; a drive shaft mounted in said casing and extending along the central axis thereof; a tumbler carrier keyed to said drive shaft and mounted on the end thereof in nested concentric relationship with respect to said annular clutch member; a plurality of elongated tumbler shafts mounted on said carrier and extending along respective axes radially spaced from the central axis of the casing and parallel thereto; a corresponding plurality of tumblers mounted on respective ones of said tumbler shafts to be moved axially along the respective axes to selected axially aligned positions with respect to the annular logic members; and resilient means biasing said tumblers toward the forward end of the casing.

3,938,360
SHAPE CONTROL METHOD AND SYSTEM FOR A ROLLING MILL

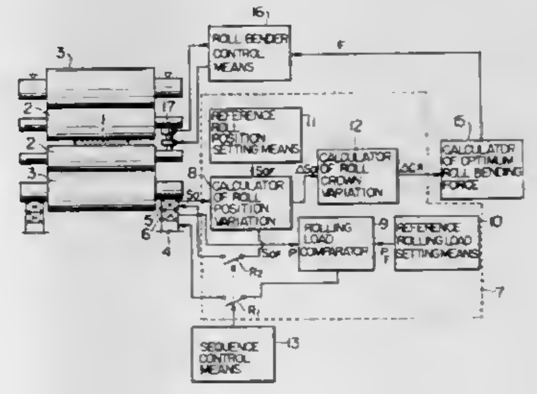
Shigeru Shida; Kenichi Yasuda; Hiroshi Awazuhara, all of Hitachi, and Sukebumi Tsumura, Mito, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 30, 1974, Ser. No. 465,577

Claims priority, application Japan, May 2, 1973, 48-48509; Nov. 21, 1973, 48-130232

Int. Cl.² B21B *37/08*

U.S. Cl. 72—8 11 Claims

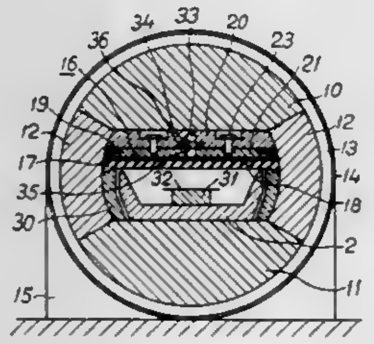

16
ROLL BENDER CONTROL MEANS
F
3
2
17
REFERENCE ROLL POSITION SETTING MEANS
11
12
15
2
3
8
CALCULATOR OF ROLL CROWN VARIATION
CALCULATOR OF OPTIMUM ROLL BENDING FORCE
CALCULATOR OF ROLL POSITION VARIATION
5
6
4
ROLLING LOAD COMPARATOR
9
REFERENCE ROLLING LOAD SETTING MEANS
10
R2
R1
7
SEQUENCE CONTROL MEANS
13

1. A shape control system for use with a rolling mill, the system comprising means for detecting the rolling load and roll position, means for determining the variation roll position

ΔS_e from the detected rolling load and roll position; means for calculating the roll crown variation ΔC_R from said variation ΔS_e in accordance with a preselected functional relation; and means for controlling the roll bending means in response to the output from means for said calculator.

3,938,361
PRESS CONTAINING A PRESSURE CELL WITH A FLEXIBLE DIAPHRAGM AND A FORMING PAD INFLUENCED BY SAID DIAPHRAGM

Harry Claesson, and Anders Traff, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Dec. 5, 1974, Ser. No. 529,892
Claims priority, application Sweden, Dec. 6, 1973, 7316456
Int. Cl.² B21D *22/12*
U.S. Cl. 72—63 2 Claims

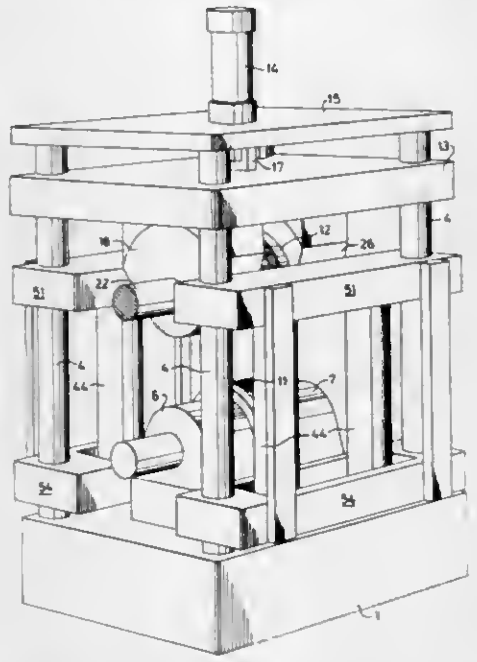


1. Hydraulic press comprising a pressure cell with a diaphragm (18) of flexible material having an opening and an inwardly directed annular bead (19) around the opening, two disc-shaped attachment members (20,21) for the diaphragm which form between them a first annular groove fitting to the bead, and a pad of flexible material influenced by the pressure cell for forming plates which are placed on forming pieces in a working space below the pad, said two attachment members and the bead of the diaphragm together forming a second closed annular groove and at least one sealing ring (25) of elastic material arranged in said second groove.

3,938,362
APPARATUS FOR THE PLASTIC WORKING OF MATERIAL

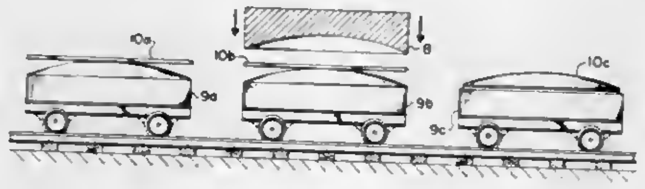
Curt Gunnar Falk, Sollentuna; Per-Olof Strandell, Taby, and Karl Lennart Sundberg, Spanga, all of Sweden, assignors to AB Metalform, Stockholm, Sweden
Filed Feb. 12, 1974, Ser. No. 441,819
Claims priority, application Sweden, Feb. 12, 1973, 7301951
Int. Cl.² B21B *13/10, 31/02*
U.S. Cl. 72—225 10 Claims

1. An apparatus for plastic working of material, comprising in combination a lower portion carrying a lower working roll and upstanding bars; and upper portion in the form of a carriage mounted on the bars for gliding movement along said bars and carrying an upper working roll intended for co-action with the lower working roll; means for displacing the carriage along the bars; and expander sleeves surrounding the bars and carried by the carriage, the expander sleeves being actuable to clamping engagement with the bars for fixing the carriage to the bars in an optional position of displacement.



3,938,363
FORMING METAL PLATE

Ronald A. Kelsey, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Nov. 9, 1973, Ser. No. 414,381
Int. Cl.² B21D *11/00*
U.S. Cl. 72—364 5 Claims

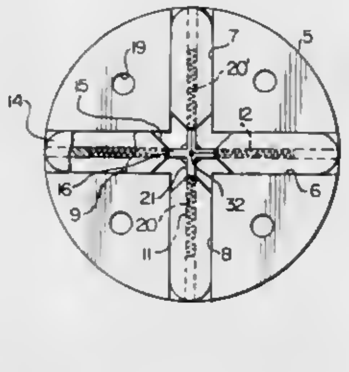


1. A metal forming method comprising the steps of heating a metal plate to a temperature below the temperature at which grain boundary melting occurs, placing the plate on a bottom die of temperature lower than plate temperature, lowering a top die of temperature lower than plate temperature onto the plate, the temperature of the plate when the top die first contacts it in the step of lowering being at least high enough to maintain springback at less than ⅛-inch in 25-feet if the plate were allowed after being formed to cool naturally between the dies to 125°F, the top die having sufficient weight such that the plate is deformed to conform to the dies in the step of lowering, the weight of the top die bearing on the plate, after it has conformed to the dies, with a pressure up to 100 pounds per square inch, leaving the plate between the dies until the plate time and temperature history following the lowering of the top die is such that a springback of less than ⅛-inch in 25-feet is experienced on opening the dies, and then opening the dies for removal of the plate.

3,938,364
WRAPPING POST SWAGING APPARATUS

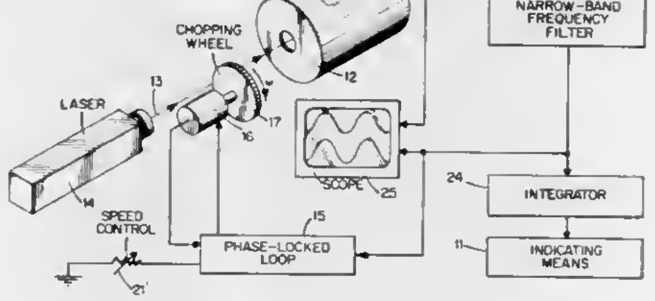
Phillip Anthony Ragard, Binghamton, and Keith Alan Young, Maine, both of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.
Filed Aug. 13, 1974, Ser. No. 497,083
Int. Cl.² B21J *17/16*
U.S. Cl. 72—403 6 Claims

1. An apparatus for producing a continuous length of wrapping post material having a series of equally spaced weakened portions therealong, said apparatus comprising a work holding means having an aperture for receiving a length of said material, a plurality of sets of swaging means slidably mounted to said holding means for forming said equally spaced weakened portions on said material, said swaging means are equally spaced about said aperture, a pressure means rotatably mounted to said holding means for sequentially operating said plurality of sets of swaging means to deform said material one set at a time, said pressure means includes a plurality of sets of camming means corresponding to said plurality of sets of swaging means wherein members of said sets of camming means are equally spaced about said aperture and said sets of camming means are unequally spaced relative to each other about said aperture to produce a sequential operation of said sets of swaging means.



3,938,365
DETECTING TRACE GASEOUS SPECIES ACOUSTICALLY IN RESPONSE TO RADIATION FROM AN INTENSE LIGHT SOURCE

C. Forbes Dewey, Jr., Belmont, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Nov. 29, 1973, Ser. No. 420,130
Int. Cl.² G01N *29/02*
U.S. Cl. 73—24 16 Claims



1. Apparatus for detecting the presence of a species in a medium comprising,

means defining a sample chamber for receiving said medium,

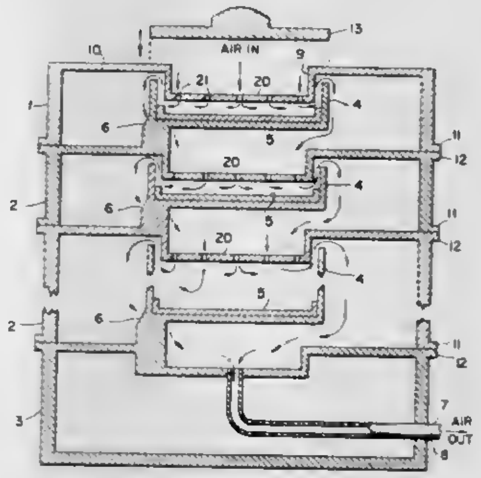
a source of a beam of radiant energy incident upon said sample chamber for producing pressure waves therein of intensity related to the degree of absorption by said medium,

means modulating said beam at a rate corresponding to a predetermined resonant frequency of said means defining a sample chamber,

and acoustical detecting means for detecting the pressure wave signals produces in said sample chamber to provide an output signal representative of the degree of absorption of the medium in said sample chamber.

3,938,366
AEROSOL ANALYZER

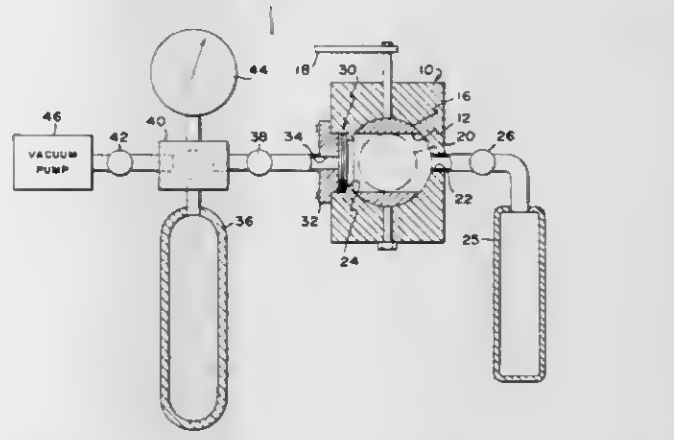
Paul Terence Wertlake, Los Angeles, Calif., and James Steele Harrison, Ringwood, N.J., assignors to Applied Bioscience, Fairfield, N.J.
Filed Oct. 29, 1974, Ser. No. 518,229
Int. Cl.² G01N *15/06*
U.S. Cl. 73—28 6 Claims



1. Apparatus for separating particles from a fluid, comprising a housing, means for flowing a fluid through said housing, a plurality of parallel perforated plates supported in said housing spaced from one another in the direction of fluid flow, the perforations of each plate being of the same size with the number of perforations per plate being fewer in the direction of fluid flow, sample-holding means immediately downstream of each perforated plate, and conduit means for establishing a path of fluid flow through each said plate onto its associated sample-holding means and thence around said sample-holding means to the next downstream plate, said inner wall of said housing being spaced from said path at least sufficient to substantially avoid contact with fluid flowing along said path.

3,938,367
SAMPLER OF GAS BORNE PARTICLES

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Charles G. Miller, Pasadena, and James B. Stephens, La Crescenta, both of Calif.
Filed Mar. 28, 1975, Ser. No. 563,283
Int. Cl.² G01N *15/00*
U.S. Cl. 73—28 10 Claims



1. A system for extracting at least some particles borne in a gas from said gas, comprising:

valve means including a chamber for receiving a preselected amount of gas containing particles in said chamber;

filter means disposed at one end of said chamber and including a single filter element with straight-through holes of preselected diameters; and

drive means for establishing a pressure differential across said filter element which is just below the rupture pressure of said filter element and including a carrier gas of low molecular weight in communication with said chamber for forcing said gas containing said particles through the holes of said filter element at a velocity, whereby particles of dimensions less than the holes' diameters become separated from the gas, as the latter's stream line changes direction to pass through the holes, with the separated particles being bound to an exposed surface of the filter element.

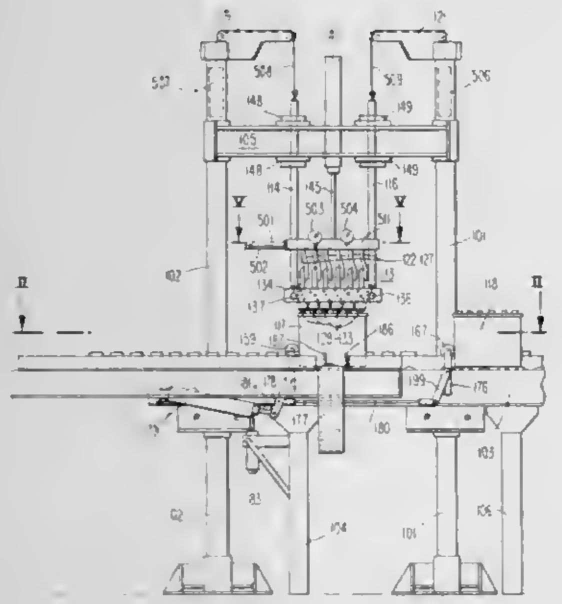
3,938,368
AUTOMATIC AIR LEAK TESTING APPARATUS

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed May 31, 1974, Ser. No. 475,273

Int. Cl.² G01M *3/26*

U.S. Cl. 73—45.1 **8 Claims**



1. Automatic leak testing apparatus for battery cells comprising:

a. a nozzle assembly movable to mate with at least one cell outlet of a battery;
b. means for periodically coupling and decoupling said nozzle assembly from said battery;
c. first conveyor means having a position for coupling said nozzle assembly to batteries as aforesaid;
d. means for introducing a predetermined amount of gas into a cell through said nozzle assembly;
e. meter means for monitoring the gas pressure in said cell; and
f. a reject mechanism, operable in response to said meter means, for isolating leaky batteries, comprising second conveyor means, and means, responsive to said meter means, for removing leaky batteries from said first conveyor means, and transferring said leaky batteries to said second conveyor means, said means for removing comprising:
i. continuous cable means between said first and second conveyor means; and
ii. a push rod connected to said cable and positioned contiguous to batteries at said position, said meter means energizing motion of said cable whereby said push rod moves a leaky battery to said second conveyor means.

3,938,369
ARRANGEMENT FOR CONTROLLING THE VISCOSITY OF A FLUID

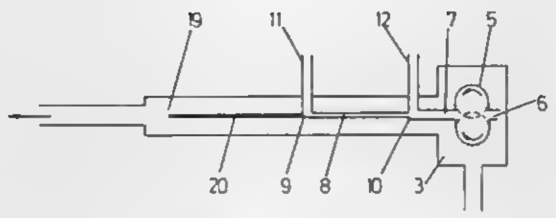
Adriaan de Bok, Leerdam, Netherlands, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 24, 1974, Ser. No. 463,703

Claims priority, application Netherlands, May 4, 1973, 7306289

Int. Cl.² G01N *11/04*

U.S. Cl. 73—55 **9 Claims**



1. A system for controlling the viscosity of a fluid, comprising:

a constant output pump for pumping at least a portion of the fluid;
a measuring capillary tube through which the output of the pump is forced to develop a differential pressure along said measuring capillary tube;
means for sensing the differential pressure in said capillary tube and for developing a control signal for controlling the viscosity of said fluid;
a second capillary tube associated with the measuring capillary tube for receiving the fluid discharged therefrom; and
means for providing an elastic fluid space connected to a point between the measuring capillary tube and the second capillary tube, whereby said elastic fluid space cooperates with the resistance of the second capillary tube to dampen variations in the static pressure of the fluid so that the differential pressure in the measuring capillary tube is not effected thereby.

3,938,370
DEVICE FOR MEASURING SEDIMENTATION RATES

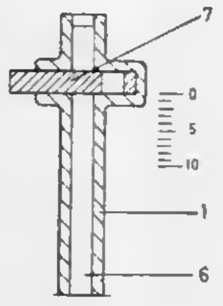
Ulrich Kirsch, Melsungen, and Wolfgang Buhler, Obermelsungen, both of Germany, assignors to Intermedicat GmbH, Lucerne, Switzerland

Filed Feb. 20, 1974, Ser. No. 444,107

Claims priority, application Switzerland, Feb. 28, 1973, 2948/73

Int. Cl.² G01N *15/04*

U.S. Cl. 73—61.4 **9 Claims**



1. A sedimentation tube for use in measuring the sedimentation rates of erythrocytes in blood plasma, said tube having open upper and lower ends, a scale with a zero point adjacent the upper end of the tube and extending therefrom along the tube for use in determining said sedimentation rate; and means for selectively opening and closing said tube adjacent said upper end, said means having a surface portion extending across the tube when the tube is closed, which surface portion is located precisely at said zero point on the scale whereby filling of said tube with a liquid to said surface portion precisely locates the zero point of the column of liquid while said means allows the interior of the tube to be opened to the atmosphere to permit escape of air bubbles which may form in the tube between the column of liquid and said means during filling.

3,938,371
DEPTH MEASURING APPARATUS USING REFLECTED ULTRASONIC BEAMS

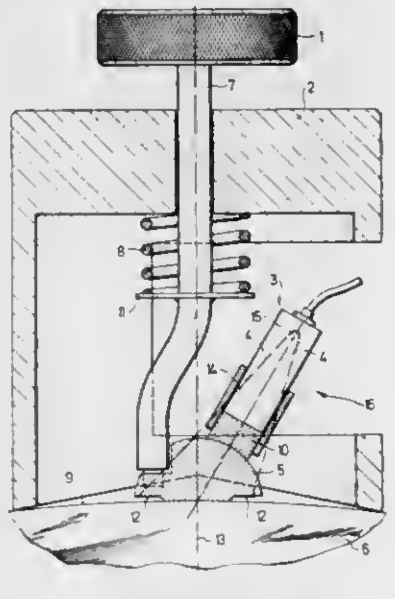
Mamiliano Dini, Island of Elba, Italy, assignor to European Rotogravure Association, Germany

No Drawing. Filed Sept. 27, 1973, Ser. No. 401,381

Claims priority, application Germany, Oct. 3, 1972, 7236314[U]

Int. Cl.² G01B *15/00*; G01N *29/00*

U.S. Cl. 73—67.8 S **24 Claims**



1. An apparatus for measuring the depth of cells formed in the surface of a material layer comprising:

an ultrasonic sensing head;
adjustable mounting means for adjustably mounting said ultrasonic sensing head comprising;
means for displacing said ultrasonic sensing head at a desired acute angle of substantial magnitude with respect to a perpendicular from said surface of the material layer and
said adjustable mounting means including a housing having means for maintaining the adjustable mounting means in contact with the surface, and
said adjustable mounting means comprising a coupling element having a matched abutment surface contacting said material layer surface and including means rotatably mounted in said housing, and being adjustably mounted to said coupling element whereby said coupling element is moved transversely of said perpendicular upon rotation of said means, and
said coupling element having an additional abutment surface of a predetermined geometric configuration, and including tensioning retainer elements for securing said ultrasonic sensing head to said additional surface of predetermined geometric configuration.

3,938,372
VARIABLE ANGLE ULTRASONIC TRANSDUCER FOR SHEAR WAVES

Donald Orr Sproule, London, England, assignor to Videoson Limited, London, England

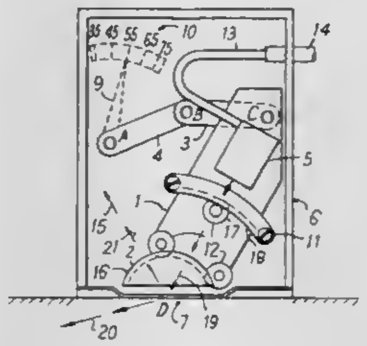
Filed Aug. 26, 1974, Ser. No. 500,692

Claims priority, application United Kingdom, Sept. 7, 1973, 42087/73

Int. Cl.² G01N *29/04*

U.S. Cl. 73—67.8 S **10 Claims**

1. An ultrasonic probe, particularly for non-destructive testing of a test piece of known material by generation of ultrasonic shear waves therein, comprising a liquid-retaining cell containing an immersed ultrasonic transducer, the cell having a window in a wall thereof, for placing on a surface of the test piece, the said transducer being mounted for angular movement substantially about a centre located at the cell window, whereby ultrasonic energy is transmitted through the said window to generate shear waves in the said test piece, an attenuating medium being provided within the cell to attenuate reflected ultrasonic waves therein, a settable scale and pointer combination, said scale being graduated directly in units related to angle of refraction of said shear waves in the test piece and a mechanical linkage for providing an angular positioning of the transducer according to said scale and pointer setting.



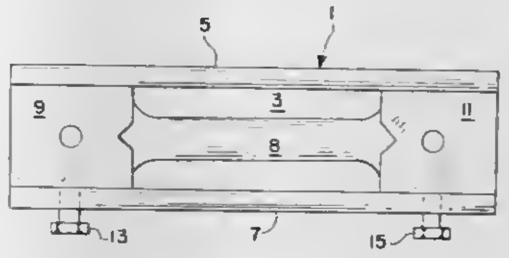
3,938,373
METHOD AND APPARATUS FOR TENSILE TESTING OF METAL FOIL

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of and Orval W. Wade, Littleton, Colo.

Filed June 27, 1974, Ser. No. 483,858

Int. Cl.² G01N *3/28*, *3/08*

U.S. Cl. 73—95 **9 Claims**



1. An aligning apparatus for use in the tensile testing of metal foil specimens which comprises an alignment box comprising a longitudinal bottom wall and two upright side walls integral with said bottom wall, a first removable grip end member disposed at one end of said alignment box between said upright sides, a second removable grip end member disposed at the opposite end of said alignment box, a first means for securing said first grip end member within said box, a second means for securing said second grip end member within said box, said first and second grip end members being provided with means for receiving opposite end portions of the test specimen and for aligning the test specimen parallel to the sides of said grip end members adjacent the upright sides of said box, said first and second grip end members each having on the sides facing each other female member means for receiving matching male member means; each of said female member means being in a plane located on either side of and perpendicular to the flat plane of the specimen and parallel to the sides of the grip end members.

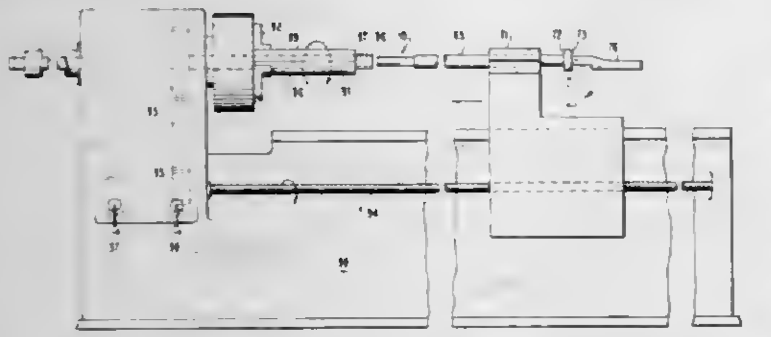
3,938,374
TOOL FOR FORMING INTERNAL THREADS

Gilbert A. Wadsworth, Jr., Cockeysville, Md., assignor to Dynatherm Corporation, Cockeysville, Md.

Filed Feb. 6, 1975, Ser. No. 547,487

Int. Cl.² B21H *3/08*

U.S. Cl. 72—104 **7 Claims**



1. In a tool for forming grooves on the internal surface of a pipe comprising a housing having a bore extending from a groove-forming end portion to a supporting end portion, said housing comprising at least one flexible segment having a radially movable end portion at said forming end portion,
   rotatable groove-forming means mounted for rotation in said radially movable end portion of the segment,
   forcing means in the bore operative to force said segment end portion radially outwardly so that said groove-forming means may operatively engage the internal surface of a pipe positioned radially outwardly thereof, and actuating means extending from said bore through said supporting end portion for actuating said forcing means to render the latter operative and for releasing such forcing means to render the same inoperative.
   the improvement comprising movable lever means pivotally attached to said actuating means at a point outside of and spaced from said bore for moving the actuating means, and thereby the forcing means, back and forth through a limited distance,
   and cam means associated with said lever means for moving and holding the actuating means, and thereby the forcing means, in operative groove-forming position and also for releasing the same from said position.

3,938,375
PROCESS AND APPARATUS FOR ROLLING FORMING A CYLINDRICAL MEMBER HAVING A REDUCED DIAMETER PORTION AT ITS INTERMEDIATE PORTION

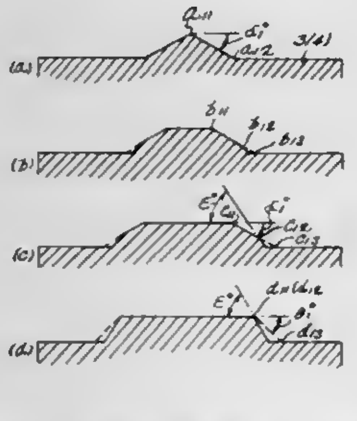
Mokuji Koizumi; Yukitsugu Kobayashi; Hidehiko Tsukamoto, and Nobutaka Maeda, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1974, Ser. No. 433,562

Claims priority, application Japan, Dec. 18, 1972, 47-126184

Int. Cl.² B21H *1/00*

U.S. Cl. 72—108 **2 Claims**



1. In apparatus for rolling forming a cylindrical member having a reduced diameter cylindrical portion at its intermediate portion connected to the opposite ends of said member by conical surfaces by using a cross-rolling forming apparatus in which a pair of rolls are arranged in parallel to each other with a clearance held therebetween for locating the member to be worked therein and driven in the same rotational direction with each other, said rolls being provided with forming dies cooperating with each other each having a top surface and beveled side surfaces extending in the circumferential direction of the respective roll with the width in cross-section of the respective top surfaces cooperating with each other being continuously increased as said rolls rotate, so that said reduced diameter cylindrical portion and said conical surfaces are formed in said cylindrical member by said dies when said cylindrical member is inserted between said rolls so as to be worked thereby, the improvement wherein the width in cross-section each of said beveled side surfaces of said dies is gradually reduced by providing a clearance surface formed in the respective beveled side surface at an appropriate escape angle, thereby permitting the portion of each of said conical surfaces having been formed by the preceding portions of said beveled side surfaces of said dies to be clear of the remaining portions of said beveled side surface of said dies as said rolls rotate so that the reduction ratio of diameter during the working of said member is increased to facilitate the working although the resultant reduction ratio of diameter as a whole can be made low while the taper angle of said conical surfaces of said member can be varied from the wedge angle of said beveled side surfaces of said die.

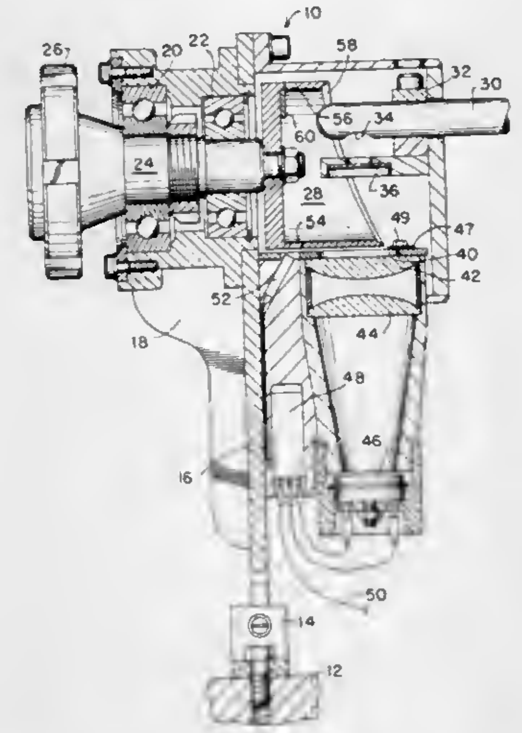
3,938,376
VOLUME SIGNAL GENERATOR FOR THERMODYNAMIC CYCLE ANALYZERS

Richard C. Bell, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 4, 1974, Ser. No. 520,242

Int. Cl.² G01M *15/00*

U.S. Cl. 73—115 **1 Claim**



1. A volume signal generator for thermodynamic cycle analyzers including a light path and apparatus for mechanically varying the amount of light passing through said path in proportion to the instantaneous volume of the combustion chamber of an engine under analysis, comprising:

a. uniformly illuminated, elongated slot means positioned in said light path;

b. axially rotating cam means including a hollow truncated cylinder positioned adjacent to said slot means so as to obscure a portion of said slot means proportional to the axial height of that portion of the cylinder which is closest to said slot means at any given moment at the cylinder's rotation, the truncated surface of said cylinder being so shaped that the axial length of the cylinder wall at any point is proportional to the volume of the combustion chamber of the engine under analysis when that point is nearest said slot means;

c. light source means for said light path located inside said hollow cylinder, said cylinder wall having at least one opening formed therein; and

d. photoelectric means positioned adjacent said cylinder for receiving light impulses through said opening in said cylinder wall at a predetermined point in the rotation of said cylinder, said light source being a single light source illuminating both said slot means and said opening.

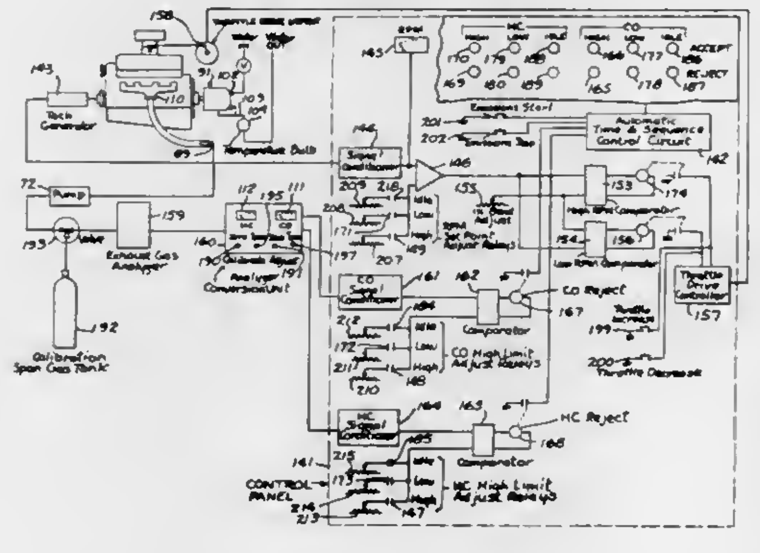
3,938,377
METHOD AND APPARATUS FOR PRODUCTION HOT TESTING OF ENGINES UNDER LOAD

Vernon G. Converse, III, Franklin, Mich.; Edwin L. Cline, Pasadena, and Leland P. Tinkham, Desert Hot Springs, both of Calif., assignors to Scans Associates, Inc., Livonia, Mich. and Clayton Manufacturing Co., El Monte, Calif., part interest to each

Filed Jan. 7, 1974, Ser. No. 431,299

Int. Cl.² G01L *5/13*

U.S. Cl. 73—117 **42 Claims**



1. A method of production hot testing assembled internal combustion engines before installation in a motor vehicle to reveal malfunctions therein by an analysis of said engine's exhaust gas emissions, said method including the steps of providing a suitable testing apparatus in which said engines can be run, placing said engine in said testing apparatus, providing means to load the engine based on its cubic displacement which provides as closely as possible a torque load on the engine which is the same as the engine would experience if said engine were installed in a motor vehicle of a suitable weight class, connecting the engine to said loading means, starting the engine and withdrawing an exhaust sample from the exhaust system of the engine, operating the engine in more than one test mode at which malfunctions of the engine are likely to occur, with a test in the high cruise mode occurring first regardless of the number of other tests performed so that the effects of new engine tolerances and initial startup, as well as warm-up effects such as those presented by the choke will not affect said test modes, and measuring the value of CO and HC in the exhaust sample at each mode of operation, comparing the measured value of the CO and HC found in the exhaust at each mode of operation with permissable levels of CO and HC for each mode for the particular engine being tested, and indicating by any suitable means which, if any, test values exceed the prescribed permissable values.

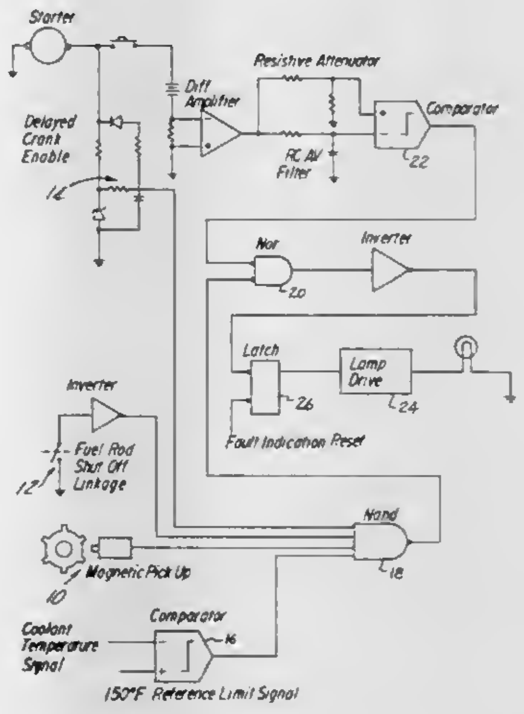
3,938,378
ENGINE COMPRESSION TESTING

Howard E. Fineman, Newton Centre; Steven M. Schlosser, Peabody; Lawrence M. Hill, Acton, and Richard E. Hanson, Winchester, all of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 26, 1974, Ser. No. 500,418

Int. Cl.² G01M *15/00*

U.S. Cl. 73—117.2 **1 Claim**



1. A method of testing compression capabilities of multicylinder engines: said method comprising the step of cranking the engine with an electrically-energized starter motor; providing a first analog signal representative of instantaneous peak starter motor current; providing a second analog signal representative of average starter motor current; applying the first and second signals to a comparator; providing a NAND gate; applying to the NAND gate a third signal representative of engine operating temperature; applying to the NAND gate a fourth signal representing combustion inhibition; applying to the NAND gate a fifth signal representative of piston position in the engine cylinder; applying to the NAND gate a sixth signal representing the attainment of steady state starter motor operation; applying the outputs of the comparator and NAND gate to a NOR gate; and applying the output of the NOR gate to an indicator mechanism.

3,938,379
ELECTROMECHANICAL TRANSDUCER

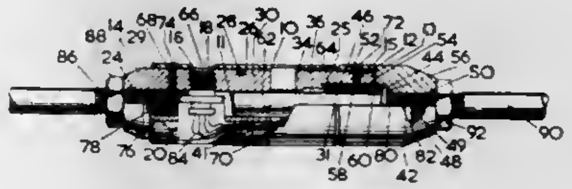
Rowland Hardy Bingham, Littlehampton, England, assignor to National Research Development Corporation, London, England

Filed Jan. 10, 1974, Ser. No. 432,394

Claims priority, application United Kingdom, Jan. 12, 1973, 1674/73

Int. Cl.² G01L *1/22*

U.S. Cl. 73—141 A **22 Claims**



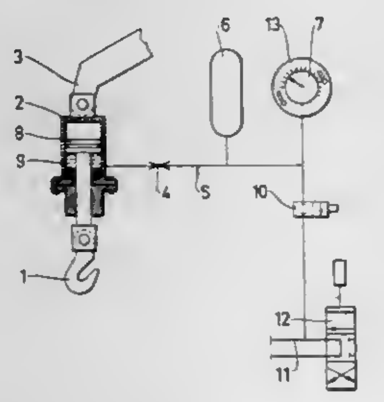
1. An electro-mechanical transducer including a substantially cylindrical main body disposed about a longitudinal central axis, said main body including:

two end portions, each of said end portions having a longitudinal axial bore extending at least part way therethrough,
- a flexure element disposed in a plane normal to said central axis, said flexure element having a pair of mutually parallel surfaces connected by a rim,
- at least one strain gauge mounted on said parallel surfaces of said flexure element,
- at least one first pillar extending in a direction parallel to the longitudinal central axis of the main body and connecting said flexure element with one of said end portions,
- at least one second pillar extending in a direction parallel to the longitudinal central axis of the main body and connecting said flexure element with the other of said end portions, and
- a rod located in said bore to reduce bending of said transducer.

3,938,380

HYDRAULIC LOAD SENSING DEVICE

Einar Karlsson, 5 Vinkelgatan, Burtrask, Sweden (S-930 20)
Filed July 10, 1974, Ser. No. 487,162
Claims priority, application Sweden, July 12, 1973, 7309779
Int. Cl.^{2} G01L *1/02*
U.S. Cl. 73—141 R **2 Claims**



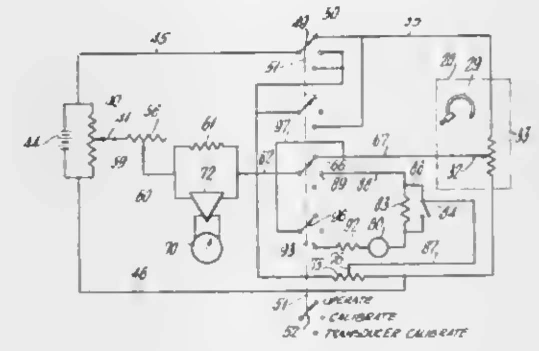
1. An hydraulic load-sensing arrangement interposed between a load carrying device and a hoisting device which is comprised of a hydraulic piston and cylinder unit, said cylinder being secured to said hoisting device and said load carrying device being secured directly to the piston rod which extends through the lower end of said cylinder thereby effecting an application of pressure to the hydraulic medium located between the piston and cylinder proportional to the weight of the load, and conduit means including a throttling point connecting the hydraulic medium within said cylinder to a closed hydraulic system including an accumulator and a pressure gage.

3,938,381

SENSITIVE DEEP-WELL-DRILLING HOOK LOAD MEASURING SYSTEM

Herbert A. Rnodell, and Russell W. Hall, Jr., both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Filed Aug. 19, 1974, Ser. No. 498,332
Int. Cl.^{2} G01L *5/10*
U.S. Cl. 73—143 **2 Claims**

1. In a deep-well-drilling combination employing a derrick having a crown block for supporting a sheave, a traveling block with pulley for supporting a hook to support a drill string and a bit at the lower end thereof, and a cable passing over said sheave and pulley, said cable being anchored at one end with a weight transducer for measuring the hook load, the improvement comprising in combination
- a potentiometer having a sliding contactor actuated by said transducer in proportion to said hook load,
- means for applying an electromotive force to said potentiometer,
- a second potentiometer connected to said electromotive force and having a sliding contactor,
- circuit means for connecting said sliding contactors to measure the difference in electric potential,
- said circuit means comprising
  - a variable resistor,

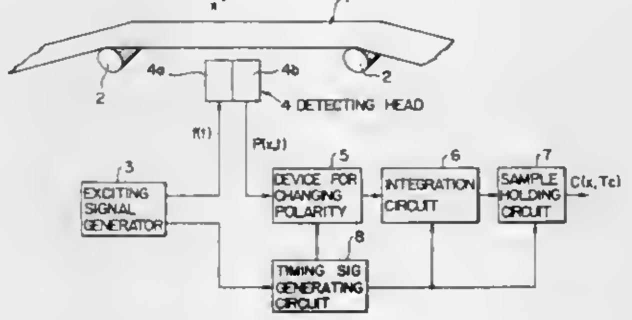


  - a meter for measuring said difference in potential,
  - a fixed resistor, and
  - amplifier means connected across said fixed resistor for amplifying the input to said meter,
- a precision third potentiometer,
- a null meter, and
- additional circuit means including switch means for calibrating said first and said second potentiometers.

3,938,382

METHOD AND APPARATUS FOR DETECTING SHAPE OF FLAT PRODUCTS

Tsutomu Takada; Toshio Toyota; Akinobu Ogasawara, and Syunsuke Yamato, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Sept. 24, 1973, Ser. No. 400,121
Claims priority, application Japan, Sept. 29, 1972, 47-97816
Int. Cl.^{2} G01L *5/10*
U.S. Cl. 73—144 **7 Claims**

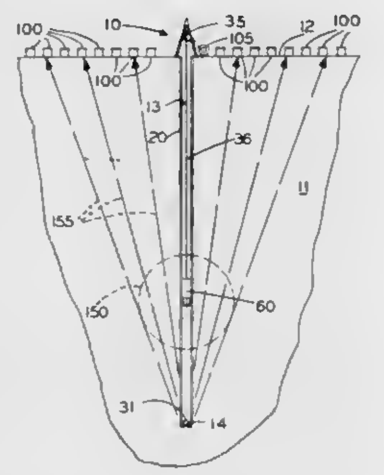


1. A method of detecting the shape of flat products, which comprises:
- applying, through an exciter, a time varying exciting signal generated in an exciting signal generator to an object along the width thereof, as an exciting force;
- concurrently detecting the deflection of said object taking place due to the application of said exciting force at a plurality of points along the width of said object; and
- correlating the exciting signal and the detected values of deflection in a signal processing circuit for determining the tension at respective points on said examined object, so as to develop the tension distribution along the width of said examined object, whereby the shape of said examined object may be determined.

3,938,383

METHOD AND APPARATUS FOR DETECTING THE THERMAL CHARACTERISTICS OF A SUBSURFACE FORMATION IN SITU

Wayne L. Sayer, 2851 N. Inyo St., Bakersfield, Calif. 93305
Filed Sept. 19, 1974, Ser. No. 507,275
Int. Cl.^{2} E21B *47/06*
U.S. Cl. 73—154 **29 Claims**

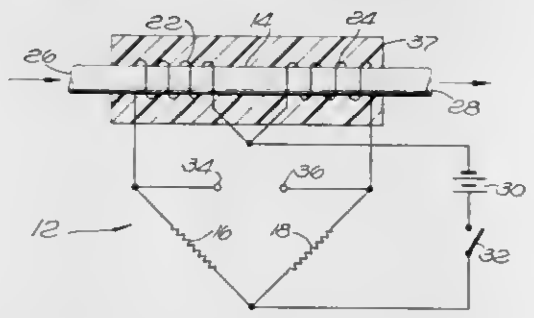


1. A method for detecting the thermal characteristics of a subsurface formation in situ comprising inserting cryogenic material into said formation to a predetermined position to produce a zone of cooling thereabout; conducting a plurality of paths of test energy, subject to detectable alteration by passage through a cooled medium, from a predetermined position spaced from the zone of cooling through and laterally of said zone of cooling; and individually detecting the paths along which said energy has been altered by passage through the zone of cooling to determine the size of said zone of cooling from such detection and the known position of energy discharge relative to the position of the cryogenic material to detect the thermal conductivity of the formation.

3,938,384

MASS FLOW METER WITH REDUCED ATTITUDE SENSITIVITY

Richard F. Blair, Palos Verdes Peninsula, Calif., assignor to Tylan Corporation, Torrance, Calif.
Continuation-in-part of Ser. No. 297,549, Oct. 13, 1972, abandoned. This application July 23, 1973, Ser. No. 381,455
Int. Cl.^{2} G01F *1/68;* **G01P** *5/10*
U.S. Cl. 73—204 **5 Claims**

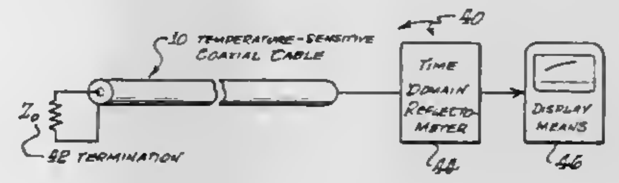


1. A mass flow meter for measuring the flow rate of a fluid flowing in the interior of a sensing conduit, comprising:
- a plurality of self-heating sensor element coils comprising two coils having adjacent ends positioned along the flow path of said fluid externally of said sensing conduit one of said sensor elements being closer to one end of said sensing conduit than another of said sensor elements, said sensor element coils being formed of temperaturesensitive resistant wire wound around the outer surface of said sensing conduit and sensing their own temperature modified by said fluid flow;
- means for heating said sensor elements;
- means for detecting the temperature differential of said sensor elements; and
- open cell foam material encasing said sensor elements to provide reduced attitude sensitivity.

3,938,385

DISTRIBUTED TEMPERATURE SENSOR

Tibor G. Horwath, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 24, 1974, Ser. No. 473,251
Int. Cl.^{2} G01K *1/02, 3/00, 7/00;* **G01R** *27/04*
U.S. Cl. 73—342 **6 Claims**


10 TEMPERATURE-SENSITIVE COAXIAL CABLE
40
TIME DOMAIN REFLECTOMETER
DISPLAY MEANS
Z0
32 TERMINATION
44
46

1. A distributed temperature sensor, in the form of a coaxial cable, comprising:
- a central, metallic, conductor;
- a cylindrical, flexible, nonconductive, material, surrounding the material, comprising:
  - a plastic foam isolator, having voids randomly interspersed throughout its volume; and
  - a liquid dielectric having a high ratio of dielectric constant to change in temperature, filling the voids of the isolator; and
- an outer conductor surrounding the nonconductive material.

3,938,386

METHOD AND APPARATUS FOR MONITORING TEMPERATURES DURING CATALYTIC REGENERATION FROM A CONTINUOUSLY MOVING INFRARED SCANNING AND DETECTION UNIT FIXEDLY MOUNTED ABOARD AN AIRCRAFT

Armand C. Comfort, Belmont, and Harold D. Messner, Fremont, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Filed Mar. 15, 1973, Ser. No. 341,649
Int. Cl.^{2} G01J *5/08;* **B01J** *37/08;* **G01N** *25/48*
U.S. Cl. 73—355 R **3 Claims**

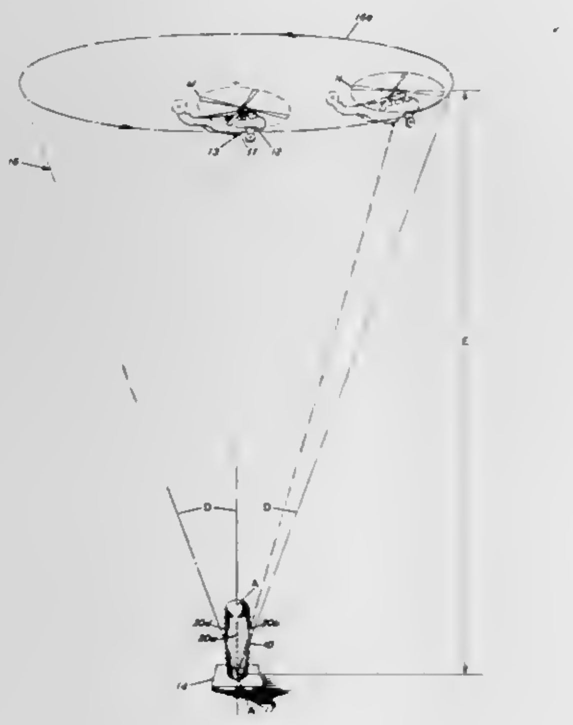
1. In the regeneration of a catalyst located interior of an insulation-clad vessel having an axis of symmetry, by elevating the temperature of said catalyst only after production of hydrocarbon products such as petrochemicals, gasolines, light-fuel oils and the like, has been terminated, the method of monitoring the efficiency of such regeneration process comprising the steps of:
- i. prior to operation of said vessel and either production or regeneration processing modes, affixing a plurality of metallic stud members to the metallic sidewall of said vessel, said plurality of metallic stud members extending through said insulation of the vessel, and being associated with a set of imaginary laterally offset spatial positions interior of said vessel for identifying full top-to-bottom interior temperature readings within each catalyst bed when said vessel undergoes regeneration,
- ii. during regeneration of said catalyst, monitoring from an aircraft having known geographical coordinates with respect to said vessel at the earth's surface, infrared energy—in real time—being emitted from said plurality of metallic stud members defining a viewable space of said stud members in a frequency range greater than 300×10^9 but less than 10^{15} Hertz,

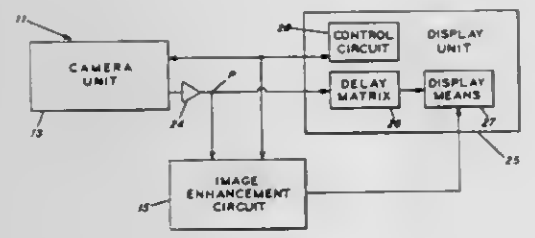
iii. converting said detected infrared energy to electrical signals,

iv. enhancing those portions of said electrical signals based on whether the detected energy represented thereby radiated from all sources including that from said stud members remains stationary during two adjacent scanning cycles as said aircraft overflies said vessel,

v. dynamically indicating temperatures of said catalyst interior of said vessel for the purpose of optimizing said regeneration process by displaying said enhanced signals as a function of geometric and time variables associated with said stud members as viewed from said aircraft, and

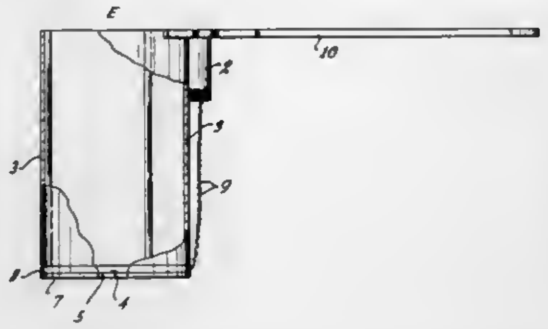
vi. cyclically repeating the scanning sequence as said aircraft overflies said vessel on a flight pattern of sufficient height so that, between said scanning cycles, said stud members appear to be stationary with respect to said aircraft.





3,938,387
PRECISION TEMPERATURE TRANSDUCER FOR MEASURING THE SURFACE TEMPERATURE OF THE HUMAN AND ANIMAL SKIN

Udo Flesch, Wegschelder Str. 3-4/D-I-20, Berlin, Germany
Filed Sept. 19, 1974, Ser. No. 507,599
Claims priority, application Germany, Mar. 21, 1974, 2414048
Int. Cl.^{2} G01K *1/20, 7/00*
U.S. Cl. 73—359 **3 Claims**



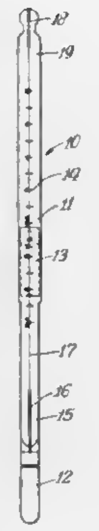
1. An apparatus for measuring surface temperature, comprising:

a temperature sensing means; and

an enclosure for placement adjacent to said surface, the temperature sensing means being disposed in the enclosure, said enclosure being transparent to thermal radiation but preventing convective air flow in the immediate environment of said sensing means, inside of the enclosure, when said sensing means in the enclosure has disposition adjacent to said surface.

3,938,388
THERMOMETER

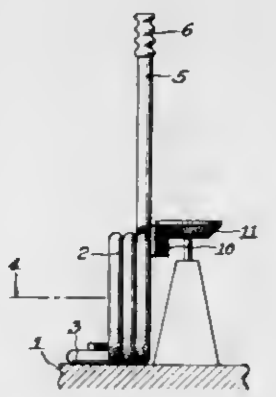
Josef F. Klingler, Wilmette, Ill., assignor to Thermex, Inc., Chicago, Ill.
Filed Apr. 6, 1973, Ser. No. 348,589. The portion of the term of this patent subsequent to June 19, 1990, has been disclaimed.
Int. Cl.^{2} G01K *5/08*
U.S. Cl. 73—371 **17 Claims**



1. In a thermometer adapted to be subjected to temperatures above the normal reading temperature range thereof without adversely affecting the accuracy of the thermometer in subsequent use thereof at reading temperatures, said thermometer having a stem provided with a longitudinal capillary through-bore, means defining a reservoir chamber at an inner end of the bore, scale means on the stem for indicating reading temperatures, and indicator liquid in said chamber and expandable as an incident of subjecting of the thermometer to reading temperatures to extend outwardly through said bore to adjacent said scale for providing a reading of the temperature, the improvement comprising means defining an expansion chamber communicating with said bore outwardly of the scale means and defining an open outlet at its outer distal end having a capillary cross section precluding gravitational flow of the indicator liquid outwardly therethrough, said expansion chamber being arranged to accommodate a preselected volume of indicator liquid thermally expanded into said expansion chamber thereby to preclude loss of indicator liquid from the thermometer by thermal expansion through said outlet notwithstanding the subjecting of the thermometer to elevated temperatures substantially above said reading temperatures and permitting return of substantially all of the preselected volume of expanded indicator liquid upon lowering of the subjected temperature.

3,938,389
HAND AND ARM STRENGTH MEASURING DEVICE

Harry Y. Kella, San Diego, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Feb. 27, 1975, Ser. No. 553,563
Int. Cl.^{2} G01L *5/06*
U.S. Cl. 73—381 **2 Claims**



1. A hand and arm strength measuring device, comprising

a support platform;

a substantially helical spring having one end extending at substantially right angles to the axis of the spring and affixed to the platform and another end extending at substantially right angles to the axis and at substantially right angles to the one end and substantially perpendicularly to the plane of the platform;

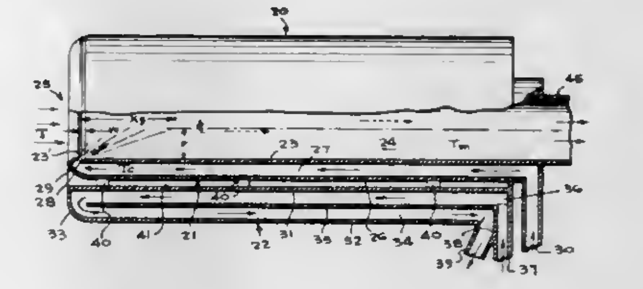
a handle at the other end of the spring; and

meter means coupled to the spring at the other end thereof in a manner whereby when the handle is gripped manually and moved in a direction about the axis of the spring in a plane substantially perpendicular to said axis the meter means indicates the force applied to the handle and therefore measures the strength of the hand and arm applying the force.

3,938,390
HIGH TEMPERATURE GAS SAMPLING APPARATUS AND METHOD

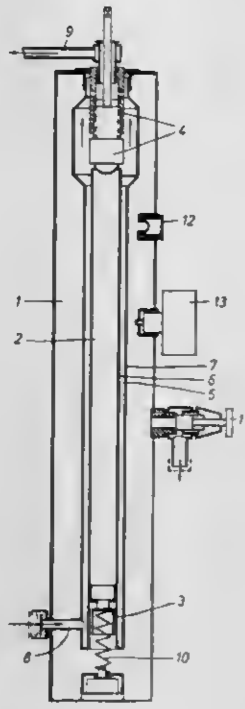
Jerry Grey, 359 W. 21st St., New York, N.Y. 10011
Filed Sept. 5, 1974, Ser. No. 503,916
Int. Cl.^{2} G01N *1/24*
U.S. Cl. 73—421.5 R **16 Claims**

1. A process for sampling a high temperature gas mixture for minimizing chemical changes in the sample during cooling of the sample to provide a cooled sample of the mixture having a chemical composition very close to the original chemical composition of the high temperature gas mixture and for forming spheroids of the condensable constituents, said process comprising the steps of extracting a gas sample of the high temperature gas mixture, directing the sample along a passageway, expanding a relatively cool diluent fluid at or above sonic velocity and directing the expanded diluent fluid into the passageway as a conical shaped curtain of diluent fluid with the apex of the cone directed in the direction of the flow of diluent fluid and with the apex of the cone formed generally at the center of the passageway to rapidly mix the cool diluent with the high temperature gas mixture as the gas sample is extracted along the passageway.



3,938,391
SAMPLING DEVICE FOR LIQUEFIED GASES

Dietmar Winkler, Munich, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany
Filed Feb. 19, 1975, Ser. No. 551,139
Claims priority, application Germany, Feb. 23, 1974, 2408845
Int. Cl.^{2} G01N *1/22*
U.S. Cl. 73—421.5 R **14 Claims**



11. A method for transferring a sample of a liquid from a receptacle to a compressed-gas vessel comprising the steps:

providing a double-walled sample-receiving container with the compressed-gas vessel;

insulating the sample-receiving container with the atmosphere of the compressed-gas vessel;

venting said liquid between the double walls of the sample-receiving container until the sample-receiving container is cooled at least to the boiling point of the said liquid;

filling the cooled sample-receiving container with the said liquid;

releasing at least a portion of said liquid from the sample-receiving container into the compressed gas vessel; and

evaporating said released liquid in the compressed-gas vessel.

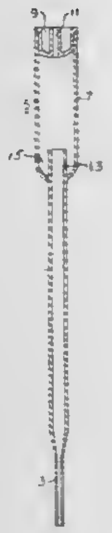
3,938,392
PIPETTE

John J. Rodrigues, Orinda, Calif., assignor to Rodrigues Associates, Inc., Oakland, Calif.

Continuation of Ser. No. 3,398, Jan. 16, 1970, abandoned. This application Sept. 20, 1973, Ser. No. 398,956

Int. Cl.² B01L ***3/02***

U.S. Cl. 73—425.6 11 Claims



1. A pipette comprising a tube of plastic and a bulb of flexible plastic, said bulb including a bottom extension of smaller diameter and being integrally united to said tube at the lower end of said bottom extension.

3,938,393
MEASURING INSTRUMENTS

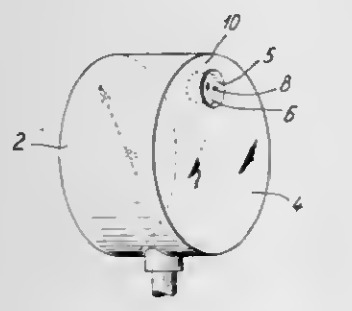
Rasmus Langballe Mogensen, Aarhus V, and Hans Erik Sallerup, Viby J., both of Denmark, assignors to Tempress A/S, Viby J., Denmark

Filed Dec. 24, 1974, Ser. No. 536,241

Claims priority, application United Kingdom, Dec. 28, 1973, 60066/73

Int. Cl.² G01P ***1/02;*** **G01L** ***19/14***

U.S. Cl. 73—431 6 Claims



1. A measuring instrument comprising a rigid instrument casing having an opening in a wall portion thereof and a security disc or stopper member sealingly inserted in said opening so as to be able to be blown out from the opening by an excessive overpressure inside the casing, said instrument further having a pressure equalizing bellow member located inside the casing and the interior of which is connected to the atmosphere outside the casing through vent hole means in the wall of the casing, characterized in that the bellow member is mounted in connection with the blow out member, the said vent hole means being provided in the blow out member.

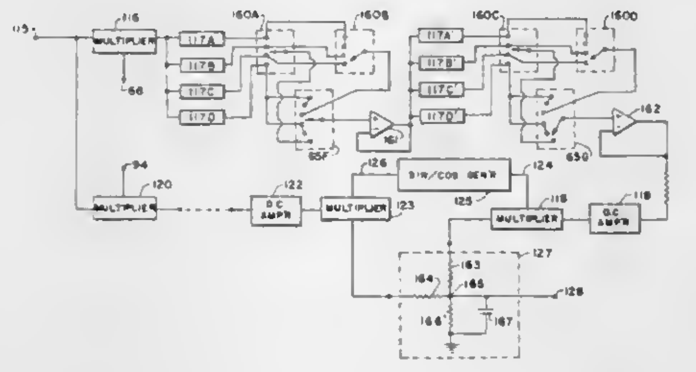
3,938,394
COMBINATION BALANCE ANALYZER AND VIBRATION SPECTRUM ANALYZER

Robert S. Morrow, Columbus, and Lloyd D. Peon, Johnstown, both of Ohio, assignors to IRD Mechanalysis, Inc., Columbus, Ohio

Filed Nov. 30, 1973, Ser. No. 420,594

Int. Cl.² G01M ***1/16***

U.S. Cl. 73—462 5 Claims



1. In an electro-mechanical apparatus for detecting instantaneous amplitude of harmonic vibrations of a rotating body including:

- an electromagnetic transducer for converting instantaneously some function of harmonic displacement into a complex electrical signal having a fundamental frequency corresponding to the instantaneous rotational velocity of said rotating body, the improvement comprising:
- independent means for generating a reference signal having uniformly increasing frequency said means being distinct from the said rotating body and also being distinct from said electromechanical transducer;
- signal filter means connected to receive the said complex electrical signal;
- signal filter means being responsive to said reference signal for instantaneously producing a resultant signal substantially free of components of the said complex electrical signal other than those at the existing instantaneous frequency of the said reference signal.

3,938,395
BICYCLE SPEEDOMETER TIRE DRIVE GEAR ADAPTOR ASSEMBLY

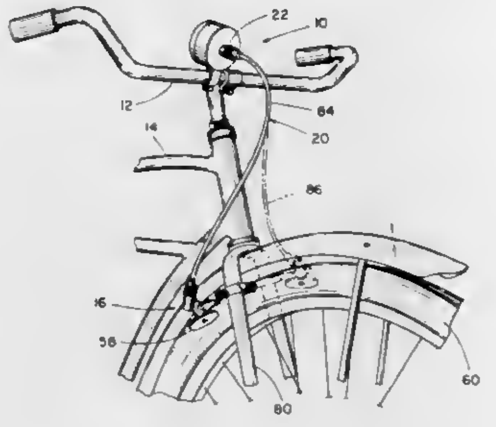
Charles F. Henecke, Oak Park, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

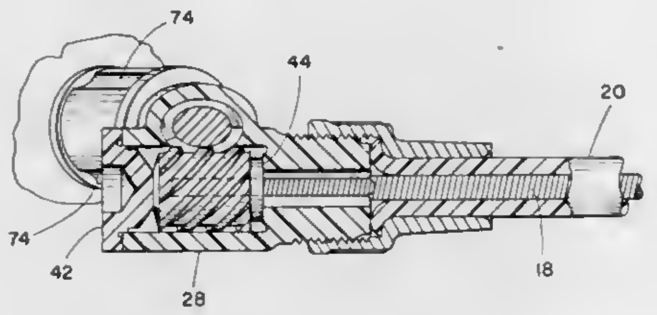
Filed Jan. 31, 1974, Ser. No. 438,225

Int. Cl.² F16H ***37/00***

U.S. Cl. 74—12 6 Claims

1. A bicycle speedometer and drive assembly, comprising; a speedometer having a rearwardly projecting boss extending on a first axis, a flexible shaft connected to said speedometer boss, an integrally formed housing having a pair of passageways therein with the axes of said passageways arranged at an obtuse angle to each other and offset from each other, bracket means for connecting said housing to a bicycle fork, a helical gear in each passageway, an opening in said housing communicating said pair of passageways with each other for enabling engagement between said helical gears, each of said gears having teeth, a shaft extending axially from one of said gears, and a tire drive wheel for engaging the side of the tire of said bicycle and fixed to said shaft on said one gear for rotating said gears and flexible shaft in response to rotation of said tire for operating said speedometer, the axes of the drive wheel being substantially perpendicular to the speedometer boss first axis so that the flexible shaft does not have any significant bend, one of said gears being rotatably supported in the housing by engagement between the teeth and the associated passageway, said one gear having an opening therein, said flexible shaft being received in said opening in said one gear.





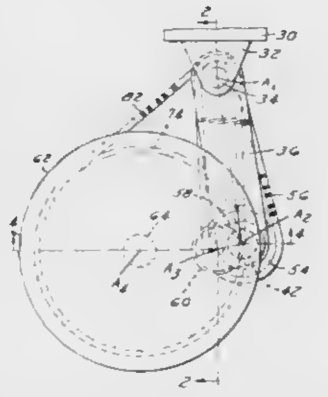
3,938,396
PROGRAMMABLE MULTIPLE STEP INDEXING DRIVE MECHANISM

John Henry Brems, 32867 White Oaks Trail, Birmingham, Mich. 48010

Filed Sept. 26, 1974, Ser. No. 509,407

Int. Cl.² F16H ***25/08***

U.S. Cl. 74—55 7 Claims



1. In a basic intermittent indexing mechanism comprising a frame, an input member, an output member and a plurality of intermediate driving members having a driving connection between each adjacent pair of said members, of the type which generates a periodic dwell interval of said output member through the kinematic superposition of substantially linear and substantially harmonic oscillating motion components including those which include multiple harmonic components, a dwell extension mechanism which comprises:

- a. timing means driven by said input member with substantial proportionality,
- b. means for engaging and disengaging one of said driving connections,
- c. actuator means connecting said timing means and said means for engaging and disengaging, said actuator means being synchronized to effect said disengagement with one of said periodic dwell intervals of said basic intermittent indexing mechanism and re-engagement within another of said periodic dwell intervals.

3,938,397
POWER TRANSMITTING MECHANISM

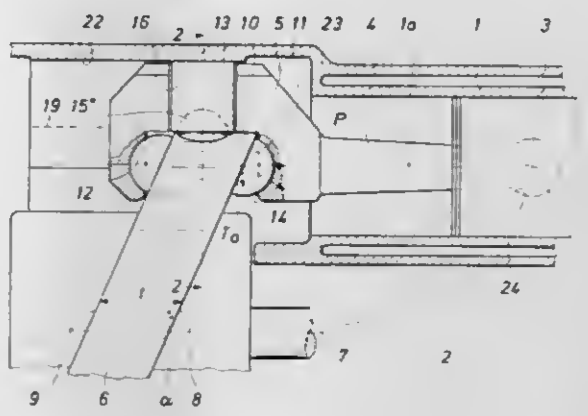
Gunnar Olaf Vestergaard Rasmussen, Odense, Denmark, assignor to Havera Development Ltd., London, England

Filed July 30, 1974, Ser. No. 493,144

Claims priority, application Denmark, Aug. 15, 1973, 4491/73

Int. Cl.² F16H ***23/00;*** **F22B** ***9/08;*** **F04B** ***1/12***

U.S. Cl. 74—60 4 Claims



1. A reciprocation-piston device such as an engine or pump and power transmitting mechanism therefor comprising a plurality of cylinders arranged circumferentially around the main axis of the device, the cylinder axes being parallel to the said main axis, each piston being connected to a claw-shaped crosshead by way of a piston rod, said crosshead being rotatable about its longitudinal axis and adapted to receive a swash-plate in a recess therein to operatively connect said crosshead and swash-plate, said swash-plate being fixedly secured to said main shaft at one end thereof and positioned between a main thrust block and a rear thrust block at the other end thereof, said main and rear thrust blocks being mounted eccentrically within said crosshead relative to the longitudinal axis of said crosshead, an axially extending guide slot within the housing for said cylinders, a semi-circular outwardly facing bearing surface provided on said crosshead slidable within said guide slot, a pair of second thrust blocks mounted symmetrically in said crosshead on opposite sides of a vertical longitudinal plane of said crosshead for absorbing the force components perpendicular to said main shaft whereby said crosshead is pivotally journalled around its longitudinal axis, the centres of said second thrust blocks being arranged in a plane perpendicular to the longitudinal axis of the crosshead and in the middle of said recess of the crosshead, the two second thrust blocks being adapted to slide on the end surface of said swash-plate within said recess, said end surface of the swash-plate and the overlying surfaces of said second thrust blocks being arcuate and complementary so that said second thrust blocks and said outwardly facing bearing surface of the crosshead absorb the transverse components of the rotational force developed.

3,938,398
TORQUE-TRANSMITTING DEVICES

Joseph Louis Bloom, Droitwich, and Harry Simister Bottoms, Solihull, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 3, 1974, Ser. No. 485,454

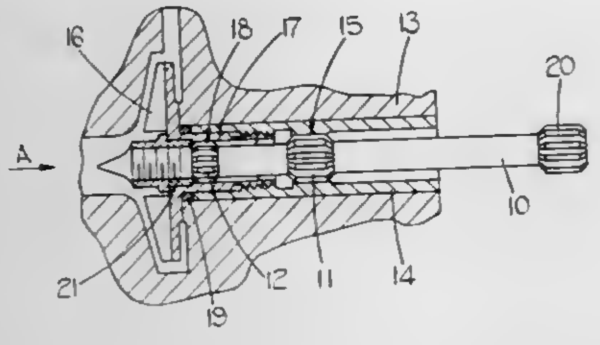
Claims priority, application United Kingdom, July 9, 1973, 32665/73

Int. Cl.² F16H ***21/12***

U.S. Cl. 74—63 5 Claims

1. A torque-transmitting device, comprising a shaft having two axially-spaced sets of external splines, a first member surrounding said shaft and formed with internal splines for

engagement with one of said sets of external splines, a second member threadedly engaged with said first member and surrounding said shaft, said second member being formed with internal splines engaged with the other of said sets of external



splines, and means for adjusting the relative angular positions, about the axis of said shaft, of said first and second members so that the portion of said shaft between said sets of splines is subjected to torsional stress in a sense tending to increase the threaded engagement between said first and second members.

3,938,399
ACCESSORY ANNULAR ELEMENTS FOR TEXTILE MACHINERY AND RELATIVE MANUFACTURING PROCESS

Lucio Delfiol, Milan, and Luigi Marizzoli, Siziano (Pavia), both of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Sept. 25, 1973, Ser. No. 400,697
Claims priority, application Italy, Dec. 29, 1972, 33880/72
Int. Cl.² D04R *3/02*
U.S. Cl. 74—232 **2 Claims**

1. In an annular element adapted to be used as a part for textile machinery, comprising a layer of cross-linked elastomeric composition based on an elastomer selected between nitrile and polyurethane rubber, constituting the outer surface of said annular element, a helically wound textile reinforcement, and a second layer of cross-linked elastomeric composition based on an elastomer selected between nitrile and polyurethane rubber, constituting the inner surface of said annular element, the improvement consisting essentially in that the helically wound textile reinforcement is constituted by a plurality of wound layers of a non-woven fabric of synthetic fibers selected between polyamide and polyester fibers, impregnated by a cross-linked elastomeric composition based on an elastomer selected between nitrile and polyurethane rubber, said non-woven fabric having prior to its impregnation by said elastomeric composition a weight ranging between 10 and 50 g/m², said plurality of wound layers of non-woven fabric being also able to constitute the inner surface of said annular element.

3,938,400
SINGLE LEVER FORWARD-REVERSE CONTROL

Peter P. Kooyha, Port Washington, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

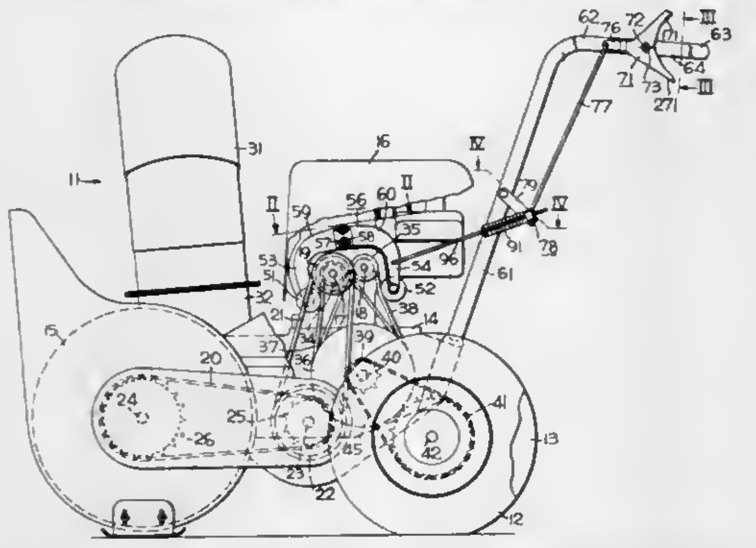
Filed Oct. 2, 1974, Ser. No. 511,384
Int. Cl.² F16H *7/12, 7/00;* B62D *11/00*
U.S. Cl. 74—242.1 R **8 Claims**

1. A forward-reverse control for a vehicle of the type having a power unit and drive means including forward and reverse drive belts connected in driven relation to said power unit, said control comprising:

a belt tightener pivotally mounted on said vehicle having forward and reverse idler pulleys in confronting relation to said forward and reverse belts, respectively, whereby pivotal movement of said tightener in one direction effects forward drive and pivotal movement in the opposite direction effects reverse drive,

a control handle,

a control lever pivotally connected to said control handle on a horizontal axis including a pair of angularly disposed grip portions extending radially from said horizontal axis whereby said grip portions may alternately be pivoted toward said handle with a single hand without requiring



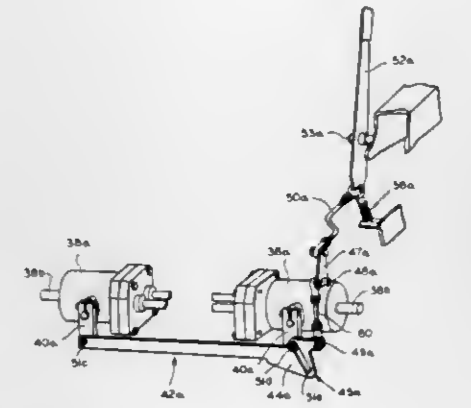
said hand to be completely removed from said handle, and

a linkage interconnecting said control lever and said belt tightener whereby pivoting one of said grip portions toward said handle effects forward drive and pivoting the other of said grip portions toward said handle effects reverse drive.

3,938,401
TWO-SPEED MOTOR CONTROL FOR DUAL HYDROSTATIC TRANSMISSIONS

James J. Bauer, Lisbon, N. Dak., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Sept. 24, 1973, Ser. No. 400,462
Int. Cl.² G05G *9/00*
U.S. Cl. 74—471 R **6 Claims**

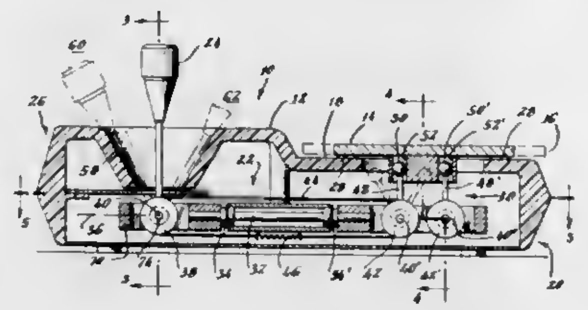


1. A two-speed control for dual hydrostatic motors each having a rotating piston group and a swash plate inclinable to a high or low speed position of piston displacement comprising a shift lever interconnecting the swash plates of the motors operable in one direction to cause both swash plates to be shifted to one position and vice versa, a manual control member movable between high and low speed positions, and a linkage connecting the manual control member and shift lever operable upon movement of the manual control member to move the shift lever in one or the other of said positions corresponding to either the high or low speed positions of the swash plates, and wedging means acting to yieldably hold said lever in the position selected against the returning force acting on the swash plates by said piston groups including a slot formed in the shift lever at one end adjacent one motor, a swash plate control arm associated with the swash plate of said motor, guide means received in said slot connected to said swash plate control arm and another swash plate control arm associated with the swash plate of the other motor pivotally connected to the opposite end of said lever, said slot inclined relative to the shift direction of said shift lever producing a wedging action on said guide means acting to hold the swash plate control arms firmly against the returning force in either of said shifted positions of the shift lever.

3,938,402
MANIPULATOR

Paul Citrin, Danbury, Conn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 14, 1974, Ser. No. 497,308
Int. Cl.² G05G *7/10*
U.S. Cl. 74—491 **14 Claims**



1. A manipulator for moving a platform in an accurate manner to desired positions in a plane comprising

a housing and a platform supported on the housing to enable movement of the platform in a plane;

an actuator mounted to the housing for rotation about an actuator axis which is generally parallel to the plane;

a control lever mounted to the actuator for pivot motion about a lever pivot axis which is generally transverse to the actuator axis;

coupling means mounted to the actuator with pivot movement about a coupler axis which is parallel to the lever pivot axis for effectively slidingly engaging the platform to drive it for movement in the plane in response to pivot motion of said means about the coupler axis and rotational movement of the actuator about its actuator axis; and

means mounted on the actuator for connecting the control lever to the coupling means to impart movement thereof about the coupler axis in response to control lever movement about its pivot axis,

whereby the platform responds with movement in the plane when the control lever is actuated to rotate the actuator or pivot the coupling means.

3,938,403
MULTIRATIO POWER TRANSMITTING DEVICE

James M. Donaldson, Fort Wayne, Ind., assignor to Bowmar Instrument Corporation, Fort Wayne, Ind.

Filed Feb. 27, 1974, Ser. No. 446,154
Int. Cl.² F16H *55/30, 55/52*
U.S. Cl. 74—217 CV **14 Claims**

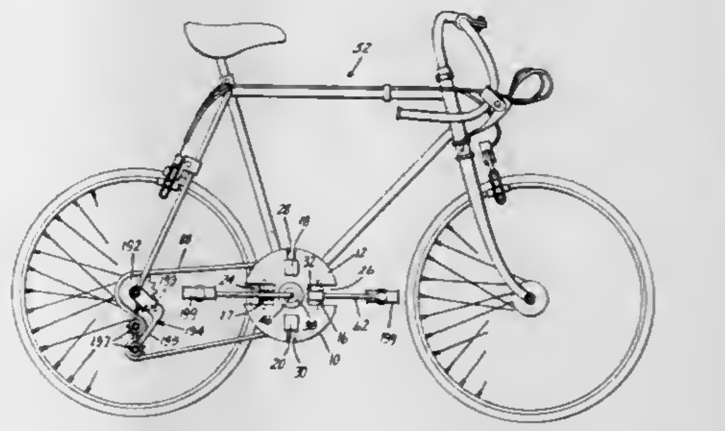
1. A multiratio drive comprising:

a. a drive plate mounted for rotation about an axis and means for drivingly coupling said drive plate to a source of motive power,

b. an even numbered plurality of driven elements mounted to said drive plate for sliding movement radially of said axis, said driven elements being disposed in a generally circular array, alternate ones of said driven elements including means for drivingly engaging an endless drive element, the remaining ones of said driven elements being in slidable contact with said endless drive element,

c. cam means mounted for rotation about said axis and operatively engaging said driven elements for positioning said driven elements at selected ones of a plurality of radially spaced-apart positions in response to relative rotational movement between said driven elements and said cam means,

d. detent means coupled between said driven elements and said cam means for restraining same against relative movement, and

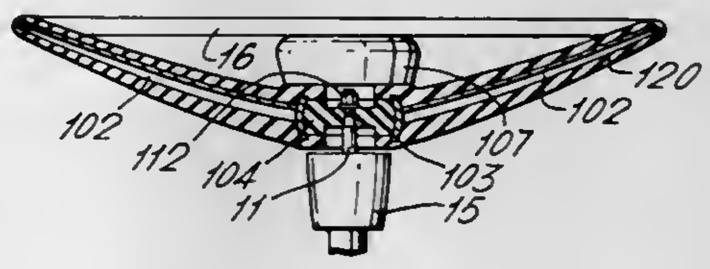


e. shift means for causing selected rotational movement between said driven element and said cam means to thereby alter the relative rotational positions thereof, the radial displacement of all said driven elements from said axis being generally equal for all relative positions of said driven elements and said cam means.

3,938,404
ENERGY ABSORBING STEERING ASSEMBLY

Genyo Murase, Nagoya; Hisahai Mineda, and Yozo Yamaguchi, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 256,872, May 25, 1972, Pat. No. 3,822,608. This application Apr. 17, 1974, Ser. No. 461,734
Claims priority, application Japan, May 25, 1971, 46-35819; May 28, 1971, 46-37156; May 31, 1971, 46-37678
Int. Cl.² B62D *1/10*
U.S. Cl. 74—492 **6 Claims**



1. A steering wheel mounting apparatus comprising:

a hub member securely mounted on the top end of a steering shaft of a vehicle and provided with a convex spherical periphery;

a supporting member connected to the spokes of a steering wheel and provided with a concave spherical inner circumference corresponding with said convex periphery of said hub member; and

radially extending connecting means for shearably connecting said hub member and said supporting member coupled to each other.

3,938,405

ACTUATING MECHANISM FOR BOWDEN CABLES OF A HAND BRAKE

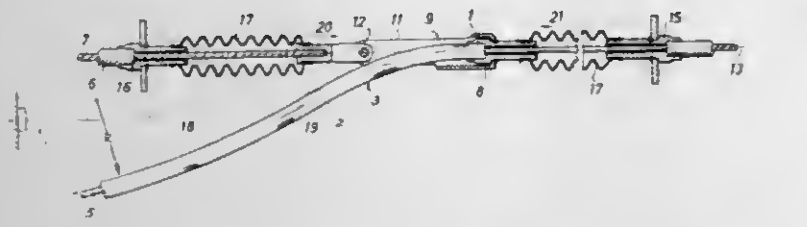
Karl Sommerer, Stuttgart-Zuffenhausen, Germany, assignor to Dr.-Ing. H.c.F. Porsche Aktiengesellschaft, Firma, Germany

Filed May 17, 1974, Ser. No. 471,051

Claims priority, application Germany, May 17, 1973, 2324871

Int. Cl.^{2} F16C *1/10*

U.S. Cl. 74—501 R **12 Claims**



1. An actuating installation for the Bowden cables of hand brakes which includes a first Bowden cable means starting from the hand brake, said first Bowden cable means having a fixed support as regards its casing with its end facing the hand brake and being movably supported with its casing end opposite the hand brake, and the first Bowden cable means being operatively connected with a second Bowden cable means by way of a transmission means, characterized in that the transmission means includes an adjusting means operatively connected with the free end of the casing of the first Bowden cable means, the adjusting means being secured at the core of the second Bowden cable means, and the adjusting means includes a support freely movable in such a manner that during a brake actuation the cores of the two Bowden cable means are movable in directions opposite one another.

3,938,406

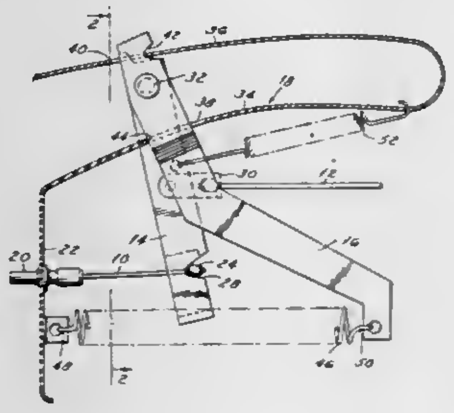
FORCE LIMITING DEVICE FOR A MOTOR VEHICLE PARKING BRAKE

Kenneth J. Nisbet, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 28, 1974, Ser. No. 501,420

Int. Cl.^{2} G05G *1/14, 1/04*

U.S. Cl. 74—512 **3 Claims**



1. A force limiting device for a cable actuated mechanism comprising a cable constructed to be connected to said mechanism,

an actuator member connected to said cable and displaceable between a cable tension released position and a cable tension applied position,

a movable fulcrum member and said actuator member being pivotally supported on said fulcrum member,

a support structure and said fulcrum member being mounted on said support structure and displaceable relative to said support structure between a normal support position and a force limiting position,

spring means urging said fulcrum member to said normal support position,

said actuator member being constructed to transmit a tension force from said cable to said fulcrum member that urges said fulcrum member from said normal support position to said forced limiting position,

said fulcrum member being displaceable from said normal support position to said force limiting position in response to a level of tension in said cable that exceeds a predetermined amount.

3,938,407

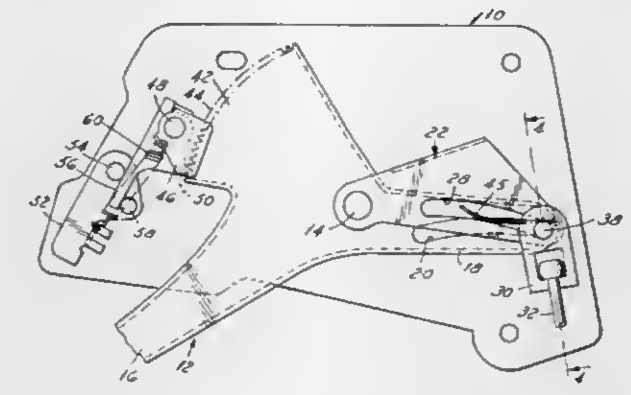
VARIABLE RATIO PARKING BRAKE CONTROL

Kenneth J. Nisbet, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 28, 1974, Ser. No. 501,422

Int. Cl.^{2} G05G *1/04*

U.S. Cl. 74—516 **2 Claims**



1. A variable ratio brake control for a vehicle brake;

said control including a pivotally supported manually operated lever having a cam surface;

said lever being angularly displaceable from a brake released position to a brake applied position;

said cam surface having an outer end remote from the pivot axis of said lever and an inner end closer to said pivot axis than said outer end;

a force transmitting device slidably engaging said cam surface and constructed to be coupled to a wheel brake;

a spring means engaging said device and urging said device to said outer end of said cam surface;

said device being displaced from said outer end to said inner end in response to displacement of said lever from said brake released position to said brake applied position and a brake applying load on said force transmitting device that exceeds a predetermined amount.

3,938,408

DIFFERENTIAL DRIVE MECHANISM

Jerry F. Baremor, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 374,532, June 28, 1973, abandoned. This application Feb. 10, 1975, Ser. No. 548,711

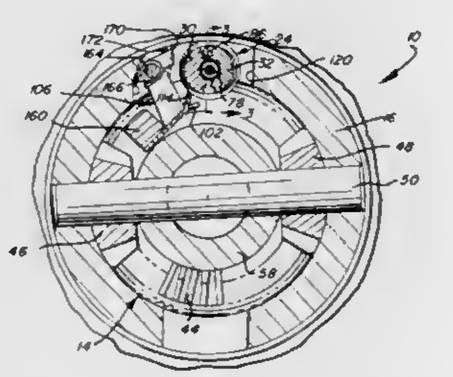
Int. Cl.^{2} F16H *1/44;* **F16D** *23/10*

U.S. Cl. 74—711 **13 Claims**

1. A drive mechanism for interconnecting rotatable driving and driven members, said drive mechanism comprising: gear means for transmitting drive forces between said driving and driven members and for enabling relative rotation to occur between said driving and driven members; main clutch means operable between an engaged condition in which said main clutch means is effective to retard relative rotation between said driving and driven members and a disengaged condition; and actuator means for effecting operation of said main clutch means from the disengaged condition to the engaged condition in response to a predetermined rate of relative rotation between the driving and driven members, said actuator means including a flyweight, an axially extending member mounted for rotation, drive means for rotating said axially extending member about its axis at an angular velocity which varies as

a function of the relative rotation between the driving and driven members, a stop member mounted on said axially extending member for rotation therewith, support means for pivotally supporting said flyweight on said stop member for rotary movement therewith and for radially outward movement of at least a portion of said flyweight relative to said stop member away from the axis of rotation of said axially extending member under the influence of centrifugal force, means for effecting operation of said main clutch means from the disengaged condition to the engaged condition upon outward movement of said flyweight to a predetermined position, and stop means on said stop member for engaging said portion of said flyweight and limiting the extent of outward movement of said portion of said flyweight beyond said predetermined position to absorb at least a portion of the loading on said pivotal support.

13. A drive mechanism for interconnecting rotatable driving and driven members, said drive mechanism comprising: gear means for transmitting drive forces between said driving and driven members and for enabling relative rotation to occur between said driving and driven members; main clutch means operable between an engaged condition in which said main clutch means is effective to retard relative rotation between said driving and driven members and a disengaged condition; and actuator means for effecting operation of said main clutch means from the disengaged condition to the engaged condition in response to a predetermined rate of relative rotation between the driving an driven members, said actuator means including a flyweight, an axially extending member mounted for rotation, drive means for rotating said axially extending member about its axis at an angular velocity which varies as a function of the relative rotation between the driving and driven members, support means for pivotally supporting said flyweight for rotation with said axially extending member and for radially outward movement of at least a portion of said flyweight away from the axis of rotation of said axially extending member, means for effecting operation of said main clutch means from the disengaged condition to the engaged condition upon outward movement of said flyweight to a predetermined position, and stop means for engaging said portion of said flyweight and for rotatably moving with said flyweight to limit the extent of said radially outward movement of said portion of said flyweight beyond said predetermined position to absorb at least a portion of the loading on said pivotal support and to prevent retardation of rotation of said flyweight by said stop means when said radially outward movement is thereby limited.



3,938,409

CONTROL SYSTEM FOR AUTOMATIC TRANSMISSIONS OF AUTOMOTIVE VEHICLES

Sumio Uozumi, Aichi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

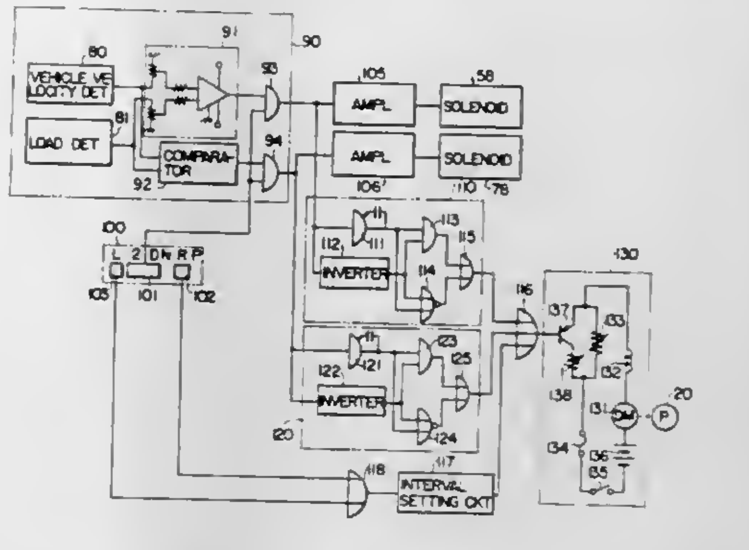
Filed Sept. 4, 1973, Ser. No. 393,881

Claims priority, application Japan, Sept. 8, 1972, 47-89518

Int. Cl.^{2} B60K *41/18;* **F16H** *3/74;* **F04B** *49/00*

U.S. Cl. 74—866 **7 Claims**

1. A control system for controlling hydraulic pressure in a hydraulic control circuit for an automotive vehicle automatic transmission, said hydraulic control circuit including means for automatically shifting gear ratios in said automatic transmission and means for manually selecting an operating range for said transmission, said transmission including clutch and brake means for determining gear ratios for said transmission, hydraulic servo means responsive to hydraulic pressure for operating said clutch and brake means, and conduit means for transmitting hydraulic fluid from said hydraulic control circuit to said servo means, said control system comprising a pump for supplying hydraulic fluid under pressure to said hydraulic control circuit, means for driving said pump, and a pump drive control circuit for controlling said pump drive means to vary the output of said pump in accordance with operation of said automatic transmission, said pump drive control circuit including means for maintaining said pump output at a lower level when no gear ratio shifting and no range shifting is occurring in said transmission, and means increasing the output of said pump to a higher level for a time period during operation of said servo means when gear ratio shifting or range shifting are occurring.



3,938,410

HYDRAULIC ACTUATING SYSTEM FOR A PAIR OF CONCURRENTLY OPERATING CLUTCHES OR BRAKES

Hansjörg Dach; Horst Furtner, both of Friedrichshafen, and Robert Marion, Lindau, all of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany

Filed Sept. 7, 1973, Ser. No. 395,364

Claims priority, application Germany, Sept. 8, 1972, 2244193

Int. Cl. F16h *3/44;* **B60k** *41/18*

U.S. Cl. 74—869 **10 Claims**

1. In a fluid-operated load-control system, in combination:

first, second and third fluid-actuatable drive-establishing means for controlling the torque ratio of a vehicular transmission;

a supply line;

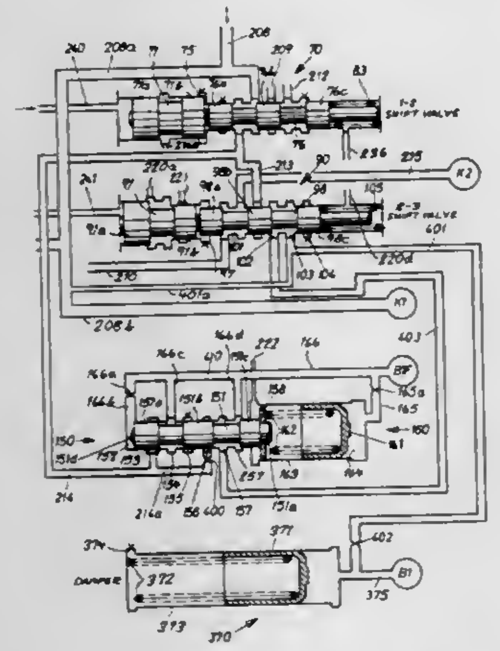
first valve means for connecting said supply line to a source of high-pressure fluid in a basic position and to a drain in an alternate position;

further valve means in tandem with said first valve means controlling the admission of fluid from said supply line to said first drive-establishing means;

second valve means in tandem with said first valve means controlling, jointly with said further valve means, the admission of fluid from said supply line to said second drive-establishing means, said further valve means being effective in a normal position to admit fluid at a relatively high rate from said supply line to said first and second drive-establishing means, said further valve means being effective in an off-normal position to throttle the fluid flow from said supply line to said first and second drive-establishing means, said second valve means having a downshifting position for cutting off the fluid flow to said third drive-establishing means and an upshifting position for cutting off the fluid flow to said second drive-establishing means;

fluid-feedback means extending from said first drive-establishing means to said further valve means for displacing same from said normal to said off-normal position upon incipient pressure buildup in said first drive-establishing means;

biasing means opposing displacement of said further valve means by said fluid-feedback means;



throttled conduit means extending from said first drive-establishing means to said biasing means for exerting thereon a force-increasing action re-establishing said normal position upon a predetermined rise in the pressure of the fluid admitted to said first drive-establishing means; and

drain means for said second drive-establishing means effective in said upshifting position of said second valve means independently of the position of said further valve means for preventing concurrent pressurization of all said drive-establishing means.

3,938,411

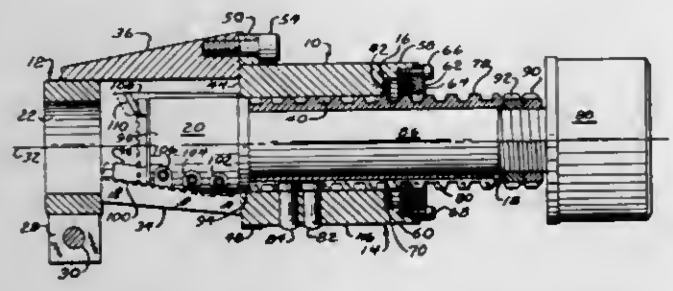
PIPE AND TUBE END PREPARATION APPARATUS

Robert E. Jonelis, Barrington; Dieter Christoph, Streamwood, and Siegfried Schulz, Rolling Meadows, all of Ill., assignors to Midwest Power Corporation, Palatine, Ill.

Filed Dec. 30, 1974, Ser. No. 537,077

Int. Cl.^{2} B23B *3/22*

U.S. Cl. 82—4 C **7 Claims**



1. A portable tube end preparation apparatus for preparing a tube end for welding comprising: a tube holder adapted for being fixedly mounted on the tube end to be prepared; a housing connected to said tube holder; said tube holder and said housing having a common central axis; a head carriage mechanism connected to said housing, said head carriage mechanism being movable with respect to said housing parallel to said central axis; a drive train rotatably supported by the head carriage mechanism and movable therewith, said drive train being rotatable about the central axis; and a cutter head assembly connected to said drive train for rotation about the central axis by said drive train, said cutter head assembly having a pair of diametrically opposed chamfer cutters, one chamfer cutter of said pair being adapted for forming an inside chamfer on the tube end, and the other chamfer cutter of said pair being adapted for forming an outside chamfer on the tube end.

3,938,412

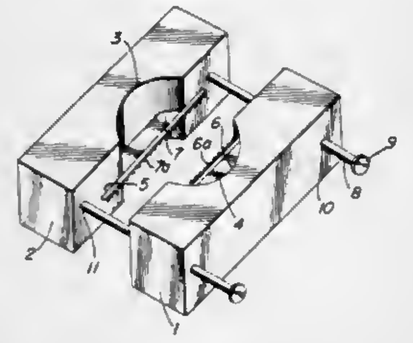
AMPULE SCORER

Meyer Ushkow, West Palm Beach, Fla., assignor to David E. Ushkow, Flushing, N.Y.

Filed June 4, 1973, Ser. No. 366,716

Int. Cl.^{2} B26D *3/08*

U.S. Cl. 83—11 **1 Claim**



1. A device for scoring ampoules for subsequent breakage comprising two elongated body portions formed with facing semi-circular recesses, secured within the recesses are relatively thin files members lying in the same plane whose teeth are faced in opposite directions such that a contra-rotating motion imparted to the ampoule will evenly score the neck for subsequent breakage, said recesses shaped to accomodate various dimensioned ampoule tip bulges and body portions on opposite sides of said file members.

3,938,413

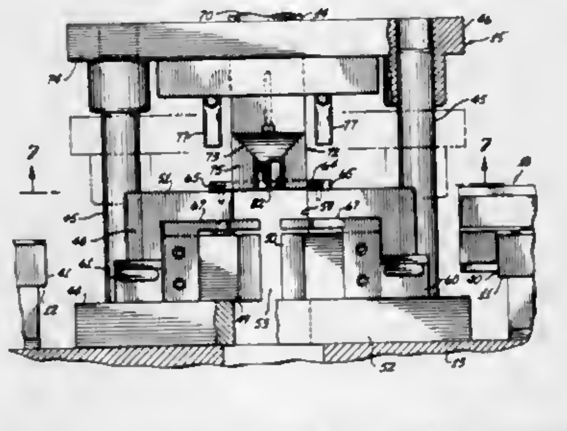
EXTRUSION PREPARATION APPARATUS

Robert J. Goettel; Richard J. Goettel, both of 2727 W. Weldon Ave., Phoenix, Ariz. 85017, and Willis D. Smith, 4050 W. Palo Verde Drive, Phoenix, Ariz. 85019

Filed Aug. 12, 1974, Ser. No. 496,567

Int. Cl.^{2} B26D *7/06*

U.S. Cl. 83—145 **5 Claims**



1. An apparatus for punching an elongated multiflanged workpiece comprising:

a. a support plate;

b. die set means carried on said support plate for punching an elongated multiflanged workpiece when that workpiece is positioned therein, said die set means including a fixture die means having a workpiece supporting and movement path formed therethrough and cutting die means reciprocally movable in a path transverse to the workpiece supporting and movement path formed through the fixture die means;

c. the fixture die means of said die set means having a pair of support dies spaced apart with respect to each other to form a gap therebetween into which a portion of the cutting die means of said die set means is reciprocally movable, said pair of support dies each having an upper surface upon which portions of the multiflanged workpiece are slidingly movable in a path transverse to the gap between said pair of support dies, each of the upper surfaces of said pair of support dies having a horizontally extending vertical channel formed therein in which a portion of the multiflanged workpiece is slidingly movable in a path transverse to the gap between said pair of support dies;

d. the fixture die means of said die set means also having a backup die spaced from said pair of support dies to provide a horizontally extending vertical passage therebetween in which a portion of the multiflanged workpiece is slidingly movable in a path transverse to the gap between said pair of support dies, said backup die having a vertical channel formed therein which aligns with the gap between said pair of support dies and into which a portion of the cutting die means of said die set means is reciprocally movable;

e. input channel means on which the elongated multiflanged workpiece is slidably movable, said input channel means adjacent one side of said support plate and in workpiece directing alignment with the workpiece supporting and movement path formed through the fixture die means of said die set means;

f. output channel means on which the elongated multiflanged workpiece is slidably movable, said output channel means adjacent the opposite side of said support plate and in workpiece receiving alignment with the workpiece supporting and movement path formed through the fixture die means of said die set means; and

g. punch press means coupled to said die set means for reciprocally moving the cutting die means thereof.

3,938,414

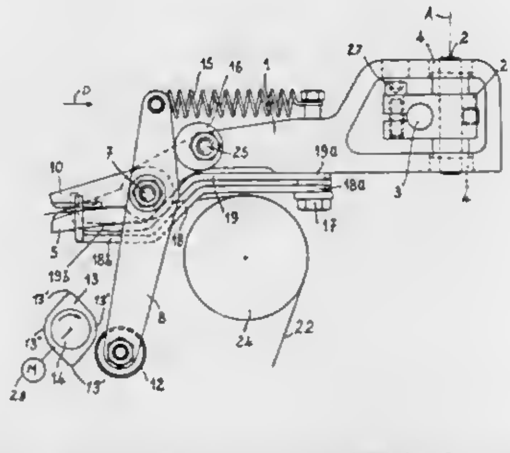
SCISSOR-TYPE SHEAR FOR LOOM

Pierre Remond, Bourgoin-Jallieu, France, assignor to Saurer-Diederichs S.A., Bourgoin-Jallieu, France

Filed Mar. 27, 1975, Ser. No. 562,857

Int. Cl.^{2} B26D *5/00*

U.S. Cl. 83—368 **10 Claims**



1. A device for cutting a fabric lengthwise between a pair of warp filaments as it is advanced continuously, said device comprising:

a support carrying a first blade;

a pivot defining a vertical pivot axis for said support;

guide means including at least one feeler engageable with at least one of said pair of warp filaments for pivoting said support about said axis and thereby positioning said blade between said filaments;

a second blade pivoted on said support; and

means for oscillating said second blade relative to said first blade for shearing said fabric between said pair of filaments.

3,938,415

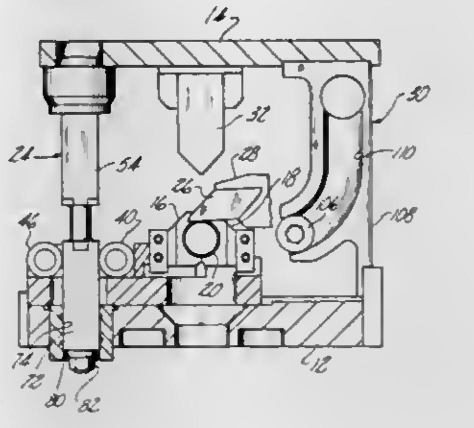
TUBE CUTOFF APPARATUS

Alexander Borzym, 6841 Oakman, Dearborn, Mich. 48126

Filed Dec. 19, 1973, Ser. No. 426,087

Int. Cl.^{2} B26D *5/42*

U.S. Cl. 83—385 **9 Claims**



1. Apparatus for severing a tubular workpiece comprising: a base for receiving the workpiece; a ram assembly reciprocable vertically and cyclically displaceable relative to the base; a severing blade carried by said ram assembly; workpiece clamping means on said base; actuator means operatively connected between said base and ram assembly for causing said clamping means to clamp the workpiece during a cycle of ram assembly displacement; slide means on said base carrying a slotting blade and having a work stroke in the plane of the severing blade and transversely of the workpiece for slotting an upper wall of the workpiece; cam follower means on said slide means; and, a vertically depending cam carried by said ram and engaging said follower means and being so configured to advance said slide means toward said workpiece only during vertical displacement of the ram assembly away from the workpiece, said workpiece clamping means comprising a pair of complemental die jaws, first and second slide means carrying respective jaws for sliding displacement relative to the base, and first and second cam follower means on respective slide means; the actuator means comprising a two-part lost motion cam assembly operatively interconnected between the ram and base and engageable with the first and second cam follower means to close the jaws on the workpiece, and stop means on the base and engaging one of the slide means when the die jaws are closed to react against force produced by the work stroke of the slotting blade and transmitted to the one slide means via the die jaw, the other slide means, the cam follower means, and cam assembly.

3,938,416

PUNCHING OR NIBBLING PRESSES HAVING A TURRET

Philippe L. Beauplat, 44 rue de Montmocency, 95230 Soisy-sous-Montmorency, France

Filed Sept. 5, 1974, Ser. No. 503,264

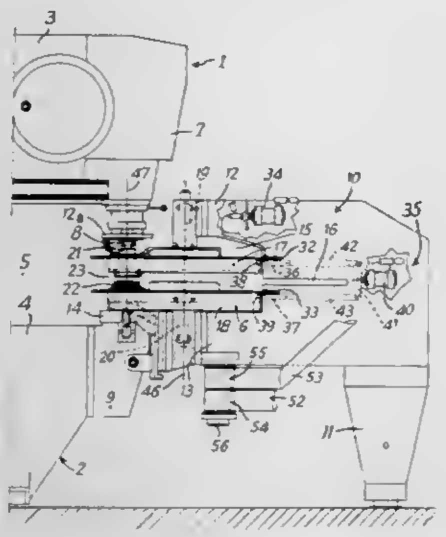
Claims priority, application France, Sept. 12, 1973, 73.32803

Int. Cl.^{2} B26D *5/08*

U.S. Cl. 83—552 **5 Claims**

1. A punch press apparatus comprising a punch press unit and a tool exchange unit fixedly connected to said punch press unit for operation therewith; said punch press unit having a C-shaped frame, an anvil supported by said frame, and a ram supported by said frame in opposite spaced-apart relation to the anvil and moveable relative thereto along a given path; said tool exchange unit having a C-shaped frame disposed in laterally spaced relation to the C-shaped frame of the punch press unit, the openings of said C-shaped frames being in generally facing relation to each other, said tool exchange unit

having turret means supported by the frame of such unit for rotation relative thereto about a fixed axis to selectively position punch and die sets carried by the turret means into registry with said ram and anvil.



3,938,417

NOISE-SUPPRESSED CIRCULAR SAW BLADE

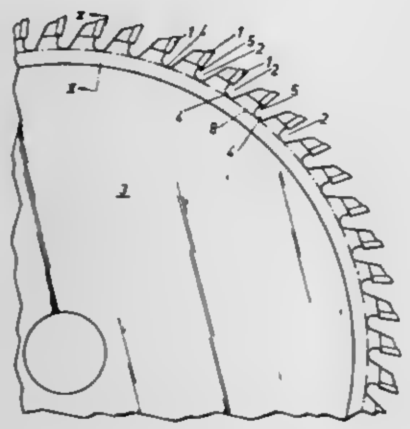
Hans Ludvig Nedsten, Trollhattan, Sweden, assignor to AB Stridsberg & Biorck, Trollhattan, Sweden

Filed Nov. 14, 1974, Ser. No. 523,983

Claims priority, application Sweden, Nov. 28, 1973, 73160509

Int. Cl.² B27B *33/08*

U.S. Cl. 83—835 **4 Claims**



1. An improved noise-suppressed circular saw blade comprising teeth welded to said blade, gaps formed between subsequent ones of said teeth, the bottom portion of said gaps extending to a point closer to the saw blade centre than the radially inner end of said teeth, the improvement comprising a circumferential zone in the core disc of said saw blade, said zone positioned radially inside said teeth and having a thickness less than the thickness of said core disc and wherein a groove is formed in at least one of the surfaces of said saw blade, the bottom portion of said groove forming said zone and wherein the longitudinal medium line of said groove is essentially tangent to said bottom portion of said teeth gaps.

3,938,418

CIRCULAR SAW BLADE

Roderich Orendl, Sondelfingen, Germany, assignor to Gustav Wagner Maschinenfabrik, Reutlinger, Germany

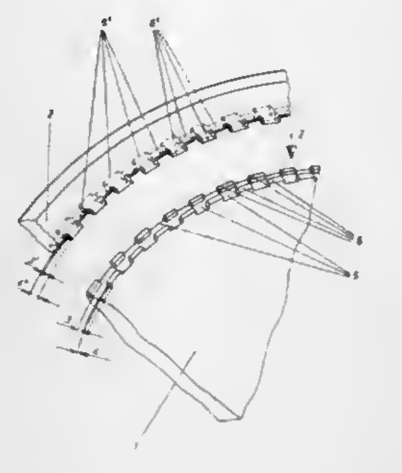
Filed Dec. 6, 1974, Ser. No. 530,370

Claims priority, application Germany, Dec. 14, 1973, 2362319

Int. Cl.² B27B *33/08, 33/12*

U.S. Cl. 83—839 **6 Claims**

1. In a circular saw blade having a center disk with a circumference and a plurality of teeth segments with radially inwardly facing edges secured to said circumference of the center disk, the improvement comprising two rows of first and second lands extending along the circumference of the center disk and two similar rows of third and fourth lands extending along the inwardly facing edges of said teeth segments, gaps between adjacent lands in each of the rows, whereby the lands are circumferentially spaced from each other, said first lands axially registering with the gaps between the second lands and vice versa, said third lands axially registering with the gaps between the fourth lands and vice versa, said first and second lands radially registering along common interfaces with the third and fourth lands, and welding seams between the lands on the center disk and the lands on the teeth segments.



3,938,419

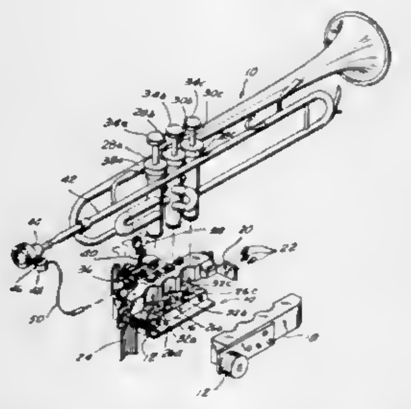
ELECTRONIC MUSICAL INSTRUMENT

David De Rosa, Box 193, West Sand Lake, N.Y. 12196

Filed May 20, 1974, Ser. No. 471,288

Int. Cl.² G10H *1/00, 5/00*

U.S. Cl. 84—1.14 **9 Claims**



1. In combination: a music synthesizer of the type including a voltage controlled oscillator to produce an output signal of a frequency determined by the voltage applied thereto, the frequency range of said output signal being controlled by the value of a capacitance circuit comprising a portion of said synthesizer;

a musical wind instrument of the type having a plurality of valves, the opening and closing of which is normally used to control the frequency of the note produced by said instrument when said instrument is played in a conventional manner; a voltage source connected to said synthesizer; means connected to said voltage source and said valves to control the voltage applied to said oscillator in response to the opening and closing of said valves;

a plurality of capacitance circuits, the value of each of said circuits being such as to produce a different frequency range for said synthesizer when interconnected to form said portion of said synthesizer; and

multiposition switch means interconnecting said plurality of capacitance circuits with said synthesizer whereby in each position of said switch a different capacitance circuit is interconnected with said synthesizer to comprise said portion of said synthesizer.

3,938,420

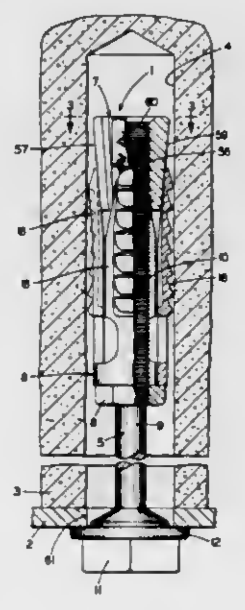
MINE ROOF BOLT ANCHOR CONSTRUCTION

Wayne A. Draa, Alliance, Ohio, assignor to Gottschall Tool & Die, Inc., Salem, Ohio

Filed June 27, 1974, Ser. No. 483,790

Int. Cl.² F16B *13/06*

U.S. Cl. 85—76 **11 Claims**



1. Mine roof bolt anchor construction including:

a. a bolt having a threaded shank portion;

b. a camming plug threadably engaged with said bolt for advancement along the threaded shank portion;

c. an expansion shell mounted on the bolt;

d. the expansion shell including a plurality of metal fingers surrounding the bolt and engageable with the camming plug;

e. the fingers each having a free end and outer, inner and side surfaces;

f. a series of teeth coined in each of said fingers and projecting outwardly from the outer finger surface;

g. each finger inner surface having a pair of spaced generally planar bearing strips extending longitudinally adjacent the finger side surfaces engageable with the camming plug, and a single rectangular planar surface extending between said bearing strips;

h. the rectangular planar surface being tapered from the finger free end outwardly away from the bearing strips, and the teeth being coined from finger material displaced in forming said tapered planar surface, with the rectangular planar surface constituting a smooth back surface for the series of teeth and forming the entire area between the spaced bearing strips;

i. the majority of the teeth include major planar facets extending outwardly downwardly with respect to the outer finger surface and minor planar facets extending outwardly upwardly with respect to the outer finger surface;

j. and tooth crests being formed by the junctions of said major and minor planar facets and extending transversely with respect to the shell fingers.

3,938,421

RAMMER FOR PROJECTILES

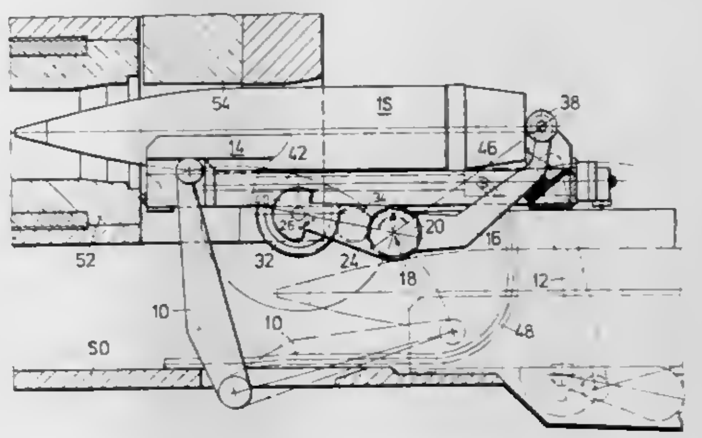
Adolf Nordmann, Hochdahl, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany

Filed Apr. 11, 1974, Ser. No. 460,138

Claims priority, application Germany, Apr. 21, 1973, 2320398

Int. Cl.² F41F *17/16*

U.S. Cl. 89—47 **5 Claims**



1. A shell loading tray for the loading chamber of a gun having a barrel axially aligned with said loading tray swingably mounted behind said chamber for carrying a shell into a position in which said shell is axially aligned with said barrel;

a pivot mounted on said loading tray for circular movement relative thereto about an axis offset from the axis of said pivot;

a ramming lever mounted on said pivot for circular movement about the axis of said pivot, said lever having a finger engaging behind said shell for displacing same in free flight through said chamber;

guide means for said pivot and said lever imparting substantially linear movement to said finger parallel to the axis of said barrel upon rotation of said pivot and said lever; and

drive means for swinging said lever about said pivot and for swinging said pivot about said axis offset therefrom to propel said shell through said chamber.

3,938,422

AUTOMATIC FIREARMS HAVING A BOLT ASSISTED BY AN ADDITIONAL MASS

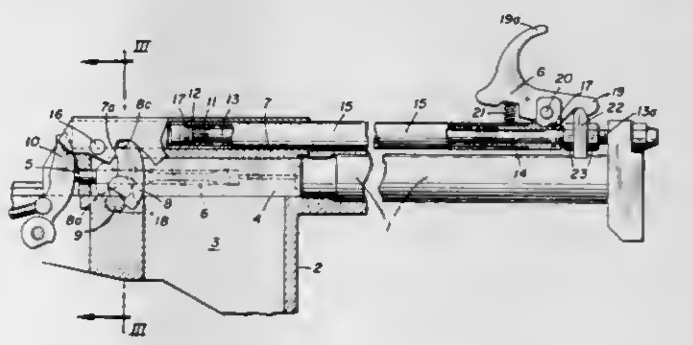
Paul E. Tellie, 20, rue Bergson, 42000 St. Etienne, France

Filed May 17, 1974, Ser. No. 470,839

Claims priority, application France, June 1, 1973, 73.19974

Int. Cl.² F41D *5/02, 11/00*

U.S. Cl. 89—169 **11 Claims**



1. An automatic firearm comprising:

a bolt which recoils upon each slot against the action of return means,

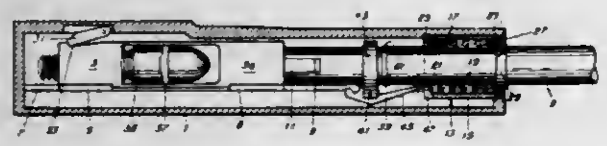
an additional mass,

an amplifying lever pivotally mounted on said bolt by a transverse pin, said amplifying lever having a resting surface adapted to come into contact with a fixed stop surface at the start of the recoil stroke of the bolt,

- said additional mass being mounted for sliding parallel to said bolt and being fastened to said bolt by said amplifying lever, and
- said amplifying lever, in the direction of the axis of firing, being symmetrical with respect to a central plane perpendicular to its axis of pivot and being in the shape of an H the horizontal cross bar of which is said transverse pin and the two uprights of which are two symmetrical parallel unit amplifying levers each capable of assuring a correct fastening of the bolt and the additional mass so that firing may be continued upon breaking of one of the two unit amplifying levers.

3,938,423
RECOIL OPERATED FIREARM WITH UNITARY BARREL AND BREECH BOLT LOCK MEMBER

Charles J. Schertz, Bettendorf, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed June 6, 1974, Ser. No. 476,807
Int. Cl.^{2} F41D *1/02, 3/00*
U.S. Cl. 89—176 **6 Claims**

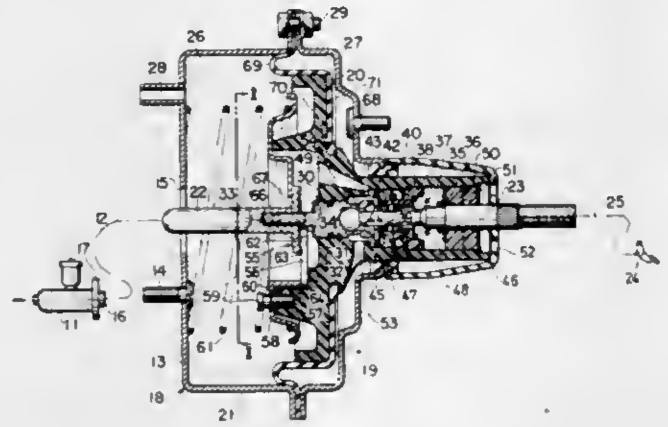


1. A short-recoil-operated automatic firearm comprising:
- a receiver or frame;
- a barrel slidably mounted on said receiver for reciprocation between a forward position and a rearward position;
- a breech bolt slidably mounted on said receiver for reciprocation between a forward position, a rearward ejecting and loading position, and an intermediate position; and
- a single lock element mounted on said barrel and alternately engageable with portions of said breech bolt and said receiver for (1) locking said breech bolt to said barrel in said forward positions while permitting the locked barrel and breech bolt to recoil on firing, and (2) locking said barrel to said receiver in said rearward barrel position while releasing said breech bolt to continue its recoil motion; said single lock element being a lever pivoted intermediate its ends on said barrel and comprising a forward end engageable with a rearwardly-facing abutment on said receiver and a rear end with a lateral locking notch engageable with a complemental lateral locking projection on said breech bolt.

3,938,424
BRAKE SERVO-MOTOR

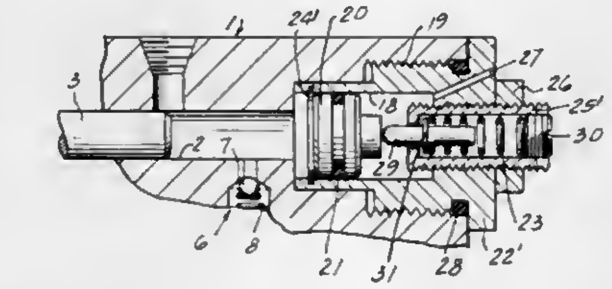
Atsushi Ohmi, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Nov. 27, 1973, Ser. No. 419,274
Claims priority, application Japan, Nov. 29, 1972, 47-137202
Int. Cl.^{2} F15B *9/10*
U.S. Cl. 91—369 B **5 Claims**

1. A differential servomotor mechanism for use with a master cylinder and in which manual force is supplemented by power assistance, said mechanism comprising a housing **18**, a pressure responsive wall **20, 69** in said housing, valve means **42, 43, 44, 45, 30** associated with said wall and being movable relative thereto to control the differential pressure acting on said wall, an output member **55,22** operatively connectable to the master cylinder **11** for delivering pressurized braking hydraulic fluid, restoring means including a retainer **58** and a resilient element **61** for normally urging said wall toward its rest position, said retainer and said wall being permitted a slight axial relative movement therebetween, reaction means **56** interposed between said output member and said wall and having first **57**, second **64**, third **63**, and fourth **66** points spaced radially from outward to inward direction, said first, second, and third points being continuously held in contact with said retainer, wall and output member respectively, said fourth point engaging said valve means when braking is actually performed, said wall being initially movable to transmit force through said second point in assocation with said resilient element to said output member without affecting said valve means, said resilient element therely normally acting on said reaction means through said first point thereof and being distorted during initial movement of said wall in response to resistance of said output member to engage said reaction means with said valve means through said fourth point of said reaction means thereby transmitting both movements of said valve means and said wall to said output member through said third point of said reaction member.



3,938,425
PUMP STROKE ADJUSTMENT DEVICE

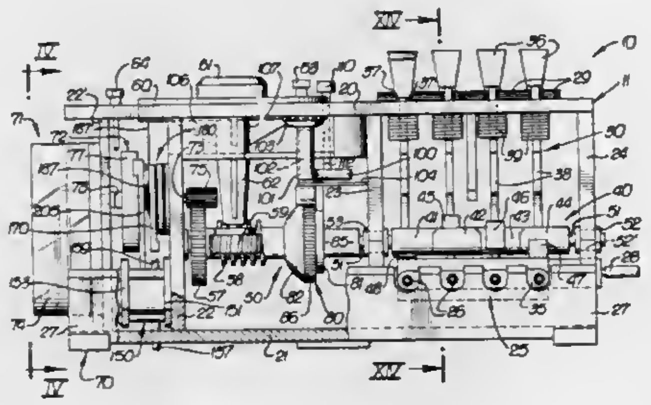
Kenneth K. Kroffke, Cleveland, Ohio, assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Apr. 15, 1974, Ser. No. 460,907
Int. Cl.^{2} F01B *31/14*
U.S. Cl. 92—60.5 **2 Claims**



1. In an adjustable positive displacement pump for discharging a selectively variable volume of fluid and having a pump body with a cylindrical wall forming a bore therein, a fluid displacement piston in said bore movable back and forth between a retracted position and an advanced position, a fluid inlet port and a fluid outlet port communicating with said bore, means including a control piston forming a fluid expansion chamber in communication with said bore adjacent said fluid outlet port, said control piston being movable to vary the volume of said fluid expansion chamber, externally adjustable abutment means engageable with said control piston for selectively limiting the movement thereof in a volume-increasing direction, means biasing said control piston in a volume-decreasing direction, check valve means in communication with said fluid outlet port for permitting fluid flow therethrough only when the fluid pressure in said bore exceeds a predetermined minimum outlet pressure, said control piston biasing means being operative to exert a force on said control piston which is less than said predetermined minimum outlet pressure whereby fluid will flow through said outlet port only after said control piston has engaged said abutment means, with the volume of fluid flow through said outlet port being determined by the effective volume of said expansion chamber in dependence upon the adjustment setting of said abutment means, wherein the improvement comprises the relationship between said inlet port and said fluid displacement piston whereby communication between said inlet port and said bore is established by said fluid displacement piston only when the latter is in its retracted position, whereby a vacuum condition is produced in said bore and in said expansion chamber as said displacement piston moves from its advanced to its retracted position to subject the control piston to a vacuum-created bias in a volume-decreasing direction to evacuate said expansion chamber and to draw fluid into said bore after said displacement piston has moved to its retracted position, and communication between said inlet port and said bore is blocked by said fluid displacement piston when the latter moves from its retracted position toward its advanced position.

3,938,426
WATER POWERED DRIVE FOR AUTOMATIC CONTROLLERS

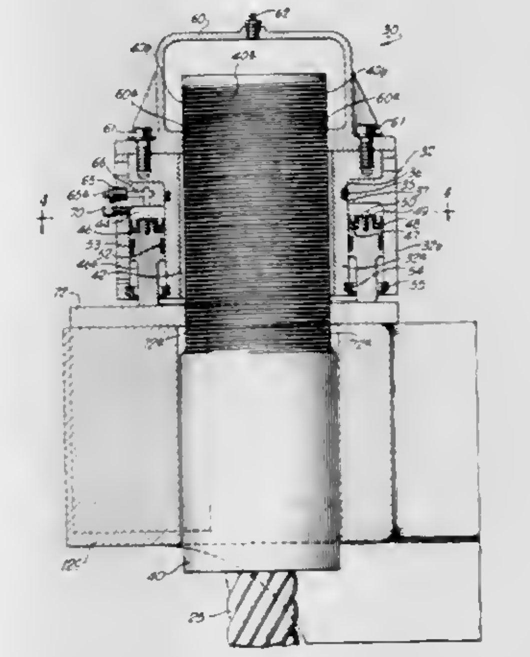
Edwin J. Hunter, Riverside, Calif., assignor to The Toro Company, San Marcos, Calif.
Division of Ser. No. 190,528, Oct. 19, 1971. This application Nov. 23, 1973, Ser. No. 418,309
Int. Cl.^{2} F01B *9/00, 31/00, 25/06*
U.S. Cl. 92—140 **8 Claims**



1. A drive means for operating an automatic controller apparatus having a power input shaft, comprising:
- water powered means for receiving water under varying pressure from a source thereof and having a member driven by the force of said water thereon, said water powered means including means for supplying water to and exhausting water therefrom;
- power transmission means for driving said controller apparatus shaft in response to movement of said member under the action of said water; and
- speed control means for automatically controlling the speed of driving of said controller apparatus shaft under the force of said water powered means acting through said power transmission means to a predetermined rate, said speed control means including an escapement mechanism having a shaft having a maximum speed, means for driving said escapement mechanism shaft from said power transmission means responsive to the speed thereof, and control means movable in response to speed of said transmission means in excess of the maximum speed determined by the escapement mechanism.

3,938,427
PERCUSSION HAMMER

Henry G. Warrington, Delray Beach, Fla., assignor to Vulcan Iron Works, Inc., Chattanooga, Tenn.
Continuation-in-part of Ser. No. 273,164, July 19, 1972, abandoned. This application Feb. 11, 1974, Ser. No. 441,027
Int. Cl.^{2} E21B *19/00;* **E01B** *31/00*
U.S. Cl. 92—107 **9 Claims**



1. A percussion hammer for driving piles and the like comprising:
- a housing having a cylinder portion and a lower portion;
- a ram slidably mounted within said housing;
- piston means slidably received within said housing and connected to reciprocate said ram;
- a plurality of tie members interconnecting said cylinder portion and said lower portion, each of said tie members terminating in an externally threaded portion; and
- a cable tensioning jack mounted on a portion of said housing for tensioning each of said tie members relative to said cylinder portion, each of said cable tensioning jacks including:
- a jack body having an internally threaded central opening threaded on the externally threaded portions of its respective tie member and having concentrically therewith an annular groove defining a jack cylinder closed at one end and open at the other;
- an annular jack piston slidably received within said jack cylinder and including a portion projectable through the open end thereof bearing relative to said cylinder portion;
- pressurizing means for connection to a high pressure fluid source in communication with the closed end of said cylinder above said piston to provide for admission of pressurized fluid into said cylinder and preventing escape of fluid therefrom; and
- a manual jack mounted on each of said tie members, each manual jack including a jack plate having a central opening, said externally threaded portions of each of said tie members being threaded into said central opening of one of said jack plates, said jack plates also having a plurality of jack screws in abutting engagement with said jack plate and said housing portion and concentrically positioned relative to said central opening of the respective jack plate radially outwardly of the respective cable tensioning jack.

3,938,428

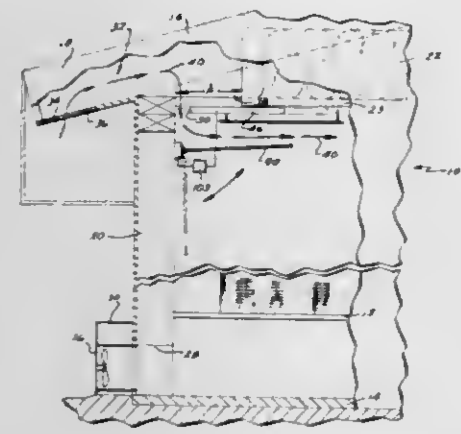
ANIMAL ENCLOSURE WITH PRESSURE CONTROLLED VENTILATION INLET AND DEFLECTION MEANS

Robert L. Van Huis, Zeeland, Mich., assignor to U. S. Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 308,692, Nov. 22, 1972, Pat. No. 3,808,960. This application Mar. 11, 1974, Ser. No. 449,625

Int. Cl.² B64D *13/00;* **F24F** *13/06*

U.S. Cl. 98—1.5 **12 Claims**



1. Apparatus for controlling and circulating the flow of ventilating air through an enclosed room in a building comprising, in combination: air inlet and outlet means from outside said building into said room, said inlet means comprising an opening extending substantially the entire length of at least one side of said room; exhaust means causing air outside the building to flow into said room through said inlet means and out said outlet means; valve means associated with said inlet means and operable between a generally open and generally closed position to admit or prevent flow through said inlet means, said valve means also being operable to positions intermediate said open and closed positions; deflection means adjustable relative said air inlet means to cause even distribution of air flowing through said inlet means through said room; sensing means for sensing the pressure differential between the ambient pressure outside said building and the pressure within said room; and control means responsive to said sensing means for actuating said valve means and deflection means to maintain a preselected pressure differential, said control means adjusting said deflection means in cooperative relationship to the position of said valve means to provide continuous and even distribution of air circulation through said room.

3,938,429

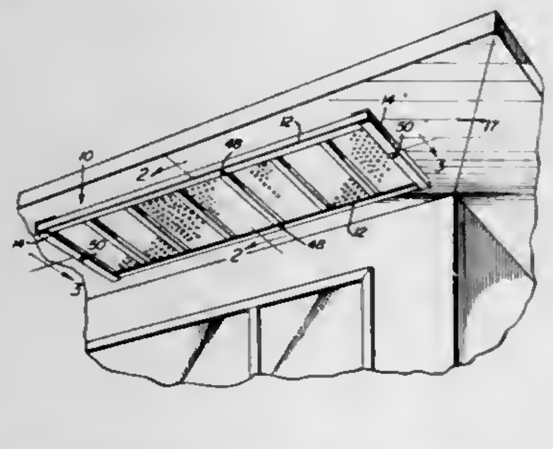
ROOF AIR VENT

Raymond S. B. Perry, Miami, Fla., assignor to Plastic Components, Inc., Miami Springs, Fla.

Filed Sept. 19, 1971, Ser. No. 507,616

Int. Cl.² F24F *13/18*

U.S. Cl. 98—37 **4 Claims**



1. A roof air vent, comprising, in combination:

a. rails mountable about an opening in a roof for forming a support bracket; and

b. a perforated panel arrangeable in the rails for covering the opening, the rails including a pair of side rail forming, parallel tracks, each of the tracks having a web and a pair of spaced, parallel legs extending codirectionally from the web, with one of the legs being longer than the other of the legs for providing a surface attachable to a building structure, the rails further including a pair of end rails similar in construction to the side rail forming tracks and arrangeable across the ends thereof, the panel consisting of a perforated planar median portion bracketed by a pair of oppositely directed substantially planar parallel flanges connected to the median portion in offset relationship thereto by transition portions.

3,938,430

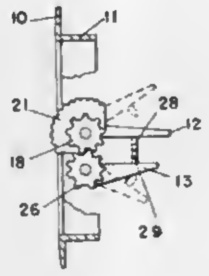
AIR VENTS

Ronald N. Koppang, 9537 Pitch Pine Drive, Shreveport, La. 71108

Continuation of Ser. No. 254,380, May 18, 1972, abandoned. This application Feb. 1, 1974, Ser. No. 438,564

Int. Cl.² F24F *13/06*

U.S. Cl. 98—103 **8 Claims**



1. A molded plastic air register adapted to be mounted in a wall or floor opening, comprising:

a frame member provided with an open gridwork for the passage of air therethrough and a continuous integrally molded strip about said gridwork extending from one side of said frame member, and

a pair of vane members pivotally mounted on said frame member between opposing sides of said strip member by extensions integrally molded to said vane members to permit said vane members to move between positions providing a different restriction to the flow of air through said gridwork, said vane members including actuating means integrally molded therewith for moving said vane members between said positions, said actuating means including a gear integrally molded to the same end of each of said vane members, and an actuator integrally molded with one of said gears and extending into said gridwork to be actuated from the side of said frame opposite to that on which the vane members are mounted.

3,938,431

ELECTRIC GRILL APPLIANCE

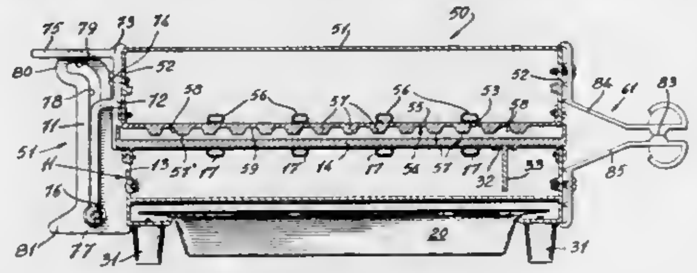
Alfred M. Potvin, 155 Denavare St., St. Lambert, Quebec, Canada

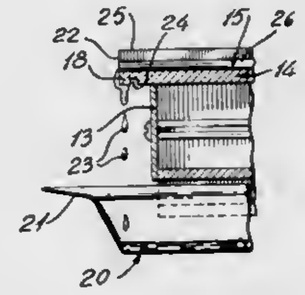
Filed Dec. 6, 1974, Ser. No. 530,073

Int. Cl.² A47J *37/06*

U.S. Cl. 99—425 **10 Claims**

1. An electric grill appliance comprising a main body having a bottom wall, opposed side walls and a top horizontal plate of heat conductive material, said top plate having an outer cooking surface and an undersurface facing said bottom wall, at least one resistive heating element secured directly to said undersurface for heating said top plate, said body being supported above a horizontal plane by support means, a container removably secured under said bottom wall and having a liquid collecting flange extending outside one of said opposed side walls, a slot formed along a portion of an outside edge of said top plate extending beyond an opposed side wall, said slot being located in said undersurface adjacent the outer edge of said extension whereby hot liquid flowing on and about said outer edge will be caused to flow to the outer edge undersurface and be arrested to collect in droplets and fall by gravity onto said collecting flange and directed into said container under said bottom wall of said main body.





3,938,432

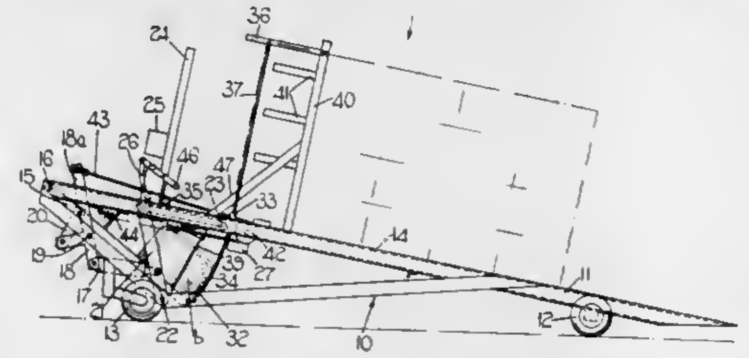
APPARATUS FOR FORMING A PLURALITY OF BALES INTO A STACK OF PREDETERMINED SIZE

Richard William Jones, Newhouse Farm, Saint Michaels, Tenbury Wells, Worcestershire, England

Filed Apr. 29, 1974, Ser. No. 465,338

Int. Cl.² B65B *13/02;* **B65G** *57/30*

U.S. Cl. 100—7 **9 Claims**



1. Apparatus for forming a quantity of bales into a stack of predetermined size comprising in combination a support, a slideway on the support, a bale receiving platform pivotally mounted on the support between a raised bale discharge position in alignment with the slideway and a position in alignment with a baling machine for receiving a bale therefrom means for automatically raising said bale receiving platform to the bale discharge position each time a bale is received thereby, catch means on the support in position to engage the bale at the bale discharge position for retaining a bale in the position to which it is raised by the bale receiving platform into engagement therewith until it is raised further by a successive bale being raised by the bale receiving platform, means for automatically lowering the platform after the bale is engaged by the catch means for receiving a further bale, means for automatically moving laterally onto the slideway at least one vertical row of bales in response to the raising of a predetermined number of bales by the bale receiving platform and to permit further vertical rows of bales to be formed by the bale receiving platform, means for automatically drawing a binding element in response to the completion of a predetermined number of vertical rows and for automatically securing the binding element around the predetermined number of rows to form a stack after said predetermined number of rows have been moved onto the slideway.

3,938,433

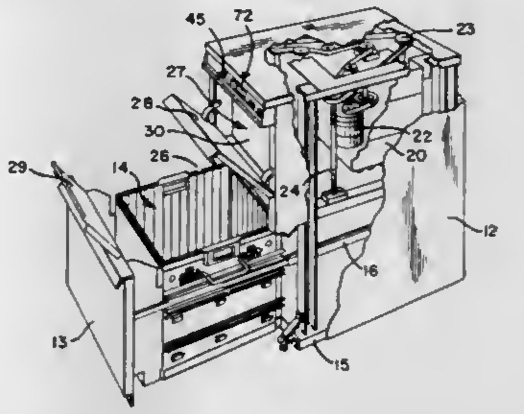
TRASH COMPACTOR WITH CLOCK TIMER CONTROL

Charles J. Borum, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Sept. 17, 1974, Ser. No. 506,696

Int. Cl.² B30B *15/14*

U.S. Cl. 100—51 **3 Claims**



1. A control for a compacting machine having a receptacle for trash material and a ram mounted for compacting movement in a compacting stroke entering said receptacle and an opposite retracting stroke to a retracted starting position, a power supply, a reversible motor connected to drive said ram, a manually initiated cycle control circuit for said motor including a directional switch connected to cause forward and reverse operation of said motor in a cycle corresponding to the compacting and retracting strokes of said ram and a starting switch for operatively connecting said directional switch with said power supply;

the improvement comprising a timer unit having control means connected in said circuit to start said motor and to operate said ram independent of manual initiation through a compacting stroke at a predetermined time, to stop said ram upon completion of the compacting stroke, and to delay the retracting stroke of said ram for a substantial period of time.

3,938,434

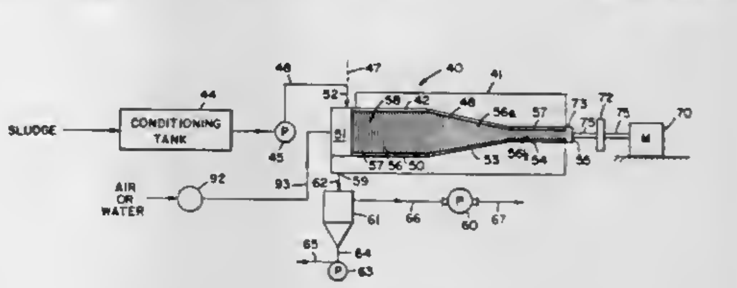
SLUDGE DEWATERING

Clyde H. Cox, 12723 Gaylawood Drive, Houston, Tex. 77066

Continuation-in-part of Ser. No. 342,772, March 19, 1973, abandoned. This application June 10, 1974, Ser. No. 477,797

Int. Cl.² B30B *9/14*

U.S. Cl. 100—117 **48 Claims**



1. A device for dewatering sludge, including in combination:

a filter-dewatering shell having an initial portion, a succeeding portion and a terminal portion, each comprising means for exit of fluid and retention of solid particles,

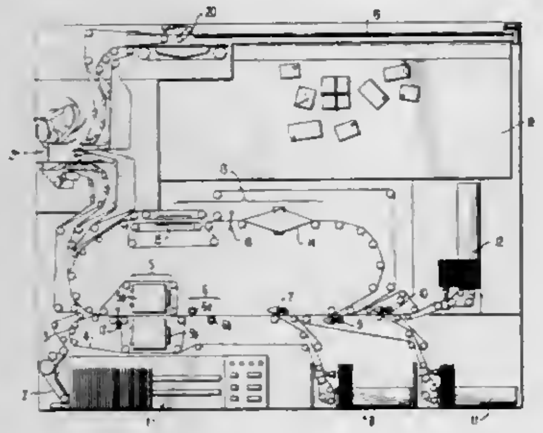
filtrate collection means outside said shell and spaced therefrom for collecting filtrate,

central shaft means along the axis of said filter-dewatering shell, the distance between said shaft means and said shell

being a constant maximum distance in said initial portion and decreasing in said succeeding portion to a minimum in said terminal portion,
wiping, compressing, and filter-cake-discharging means secured to said shaft means and wiping the inner surfaces of said shell,
power means for rotating said shaft means,
nozzle means on the outer edge of said wiping, compressing, and filter-cake-discharging means facing said shell, and
fluid supply means for supplying said nozzle means with fluid for cleaning out said means for exit.

3,938,435
AUTOMATIC MAIL PROCESSING APPARATUS

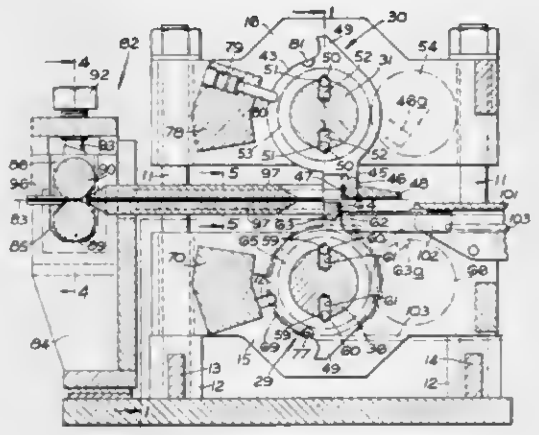
Kazuyoshi Suda; Tomoyuki Isono, and Teruo Yashima, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1974, Ser. No. 434,335
Claims priority, application Japan, Jan. 19, 1973, 48-9074
Int. Cl.² B41F *21/00, 10/00*
U.S. Cl. 101—2 7 Claims



1. A mail processing apparatus comprising:
means defining a mail transport path along which said mail is transported;
means for feeding said mail piece-by-piece to said mail transport path;
a pair of postage stamp detectors provided on both sides of said mail transport path;
a first light coupler provided in said mail transport path upstream of said postage stamp detectors and adapted to sense each piece of said mail passing thereby;
a pair of cancelers provided on both sides of said mail transport path downstream of said postage stamp detectors, each of said cancelers being adapted to be actuated at a predetermined time after each piece of said mail is sensed by said first light coupler;
means defining a return path;
means responsive to a failure of said postage stamp detectors to detect a postage stamp on each piece of said mail for switching said piece of mail from said transport path to said return path at another predetermined time after said piece of mail is sensed by said first light coupler;
means provided in said return path for reversing each piece of said mail;
a second light coupler provided in said return path to sense each reversed piece of said mail passing thereby;
means for aligning the lower sides of the reversed pieces of said mail with each other;
means for switching said reversed mail in said return path back to said mail transport path;
means for controlling the operation of said feeding means in response to each piece of said mail being sensed by said second light coupler; and
means responsive to a failure of said postage stamp detectors to detect a postage stamp on the reversed piece of said mail for removing said piece of mail from said mail transport path.

3,938,436
SELECTIVE EMBOSSING PRESS WITH DRUM STOP MEANS

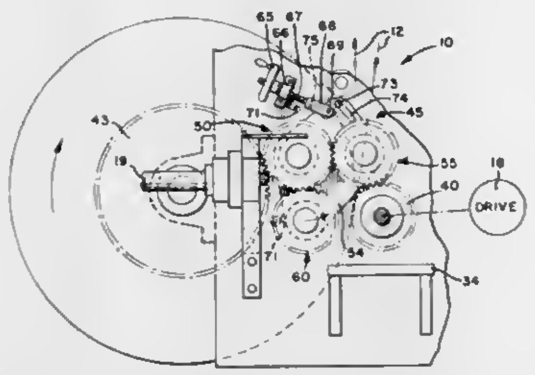
Eric Douglas Woodhouse, East Kilbride, Scotland, assignor to Hilti Aktiengesellschaft, Liechtenstein
Filed Apr. 16, 1974, Ser. No. 461,423
Claims priority, application United Kingdom, Apr. 18, 1973, 18610/73
Int. Cl.² B41J *3/38;* **B44B** *5/00*
U.S. Cl. 101—18 8 Claims



1. An embossing press comprising a pair of oppositely disposed embossing rolls, each said embossing roll comprising a shaft, a plurality of indicia drums mounted on said shaft with each said drum mounted opposite a corresponding said drum on the other said shaft, means for releasably coupling said indicia drums to said shaft for rotation of said drums with said shaft, said means permitting the uncoupling of said drums and said shaft on the application of a sufficient force, upstanding indicia mounted on and spaced angularly apart on the outer periphery of said drums of one said shaft, and complementary indented indicia mounted on and spaced angularly apart on the outer periphery of said drums of the other said shaft, shaft drive means operatively connected to each said shaft for rotating each said shaft and said drums thereon from an initial rest position through a predetermined angle of rotation so that all of the indicia on each said drum can be moved into an operative position confronting the corresponding indicia on the corresponding drum on the other said shaft, arrestor means for holding each of said drums in position, each said drum having a plurality of grooves formed therein to provide an interengagement location with said arrestor means for each indicia on said drum, said arrestor means being selectively engageable with said grooves for arresting each said drum with a selected indicia thereon in the operative position and confronting the corresponding said indicia on the corresponding said drum on the other said shaft, pressure means for urging the oppositely disposed embossing rolls toward one another under pressure for embossing with said indicia located in the operative positions, severing means operatively connected to said pressure means to permit individual sections of material to be severed from a continuous length of sheet material fed to the press for embossing so that individual embossed elements or plates can be produced after the embossment of the individual sections, said severing means comprising a pair of shearing bars, one of said shearing bars being mounted on one of said shafts and the other said shearing bar being mounted on the other said shaft so that said shearing bars are displaceable between their operative positions wherein they cooperate with one another, when the shaft are rotated forwardly from their initial positions, so that they will not obstruct the embossing operation and are returned to their operative positions upon return of said shaft to the initial rest position, bearings disconnectedly mounted on each said shaft for rotation therewith so that relative rotation between said bearings and said shaft can be accomplished, each said shearing bar is connected to said bearings for mounting said shearing baroon said shaft with which it is associated, and stop means arranged for defining an inoperative position of each said shearing bar.

3,938,437
VARIABLE SPEED UNWIND CONTROLLER DRUM

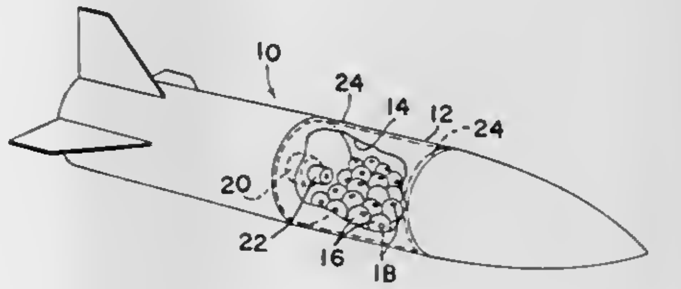
Dinesh Gulabrai Punater, Kettering, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Feb. 27, 1974, Ser. No. 446,138
Int. Cl.² B65H *77/00, 23/18;* **B41F** *13/02*
U.S. Cl. 101—228 12 Claims



1. In a web infeed system for a rotary printing press having
a printing couple including a pair of cylinders adapted to print the web under pressure and drive the web through a nip formed by said cylinders,
drive means for driving said printing couple,
a web supply roll,
means supporting said supply roll for paying out the web on demand related to the requirements of said printing couple, and
a metering drum intermediate said web supply and said printing couple for unwinding the web from said supply and feeding it to said nip,
the improvement comprising:
drive train means connected to said metering drum with direct gearing from said printing couple drive means at independently selectable different speeds the outputs of which differ in relation to the input speed from said drive means generally within .05% of one another, said drive train means including:
a. an imput drive gear driven by said drive means,
b. a metering drum drive gear connected to rotate said metering drum,
c. one of said input and metering drum drive gears being a first drive gear and the other being a second drive gear,
d. a first idler set having at least two gears and being mounted adjacent said first drive gear with a first gear of said first idler set meshed with said first drive gear,
e. a second idler set having at least two gears and being mounted with a first gear thereof meshed with a second gear of said first idler set,
f. a third idler set having at least two gears and being mounted with a first gear thereof meshed with said second gear of said first idler set, said third idler set being free of driving contact with said second idler set,
g. means mounting said second drive gear adjacent the second gears of said second and third idler sets,
h. means for alternatively meshing said second drive gear with one or the other of the second gears of said second and third idler sets, and
i. one of said first and second idler sets providing a speed increasing ratio and the other a speed decreasing ratio to provide a net speed change which is the product of their ratios and is an increase or decrease of generally less than 0.5%.

3,938,438
PRESSURE-ARMED EXPLOSIVE APPARATUS

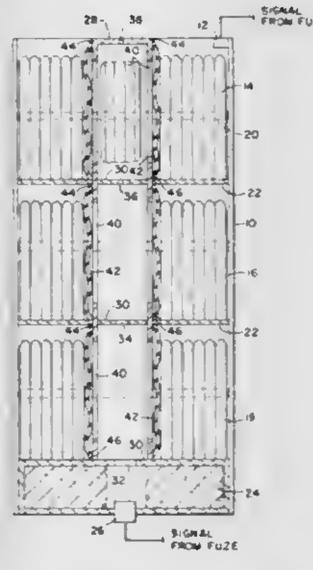
Matthew E. Anderson, Ontario; Stephen L. Redmond, China Lake, both of Calif.; John W. Horky, Naperville, and Leo V. Krolak, Northbrook, both of Ill., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 12, 1971, Ser. No. 133,364
Int. Cl.² F42B *25/16;* **F42C** *15/12*
U.S. Cl. 102—7.2 5 Claims



1. An air-droppable sealed warhead cannister containing a plurality of bomblets each having a pressure sensitive explosive fuze provided with a fluid inlet port:
means including a power source connected to the cannister for pressurizing said cannister in flight with a fluid at a predetermined event by admitting fluid pressure through said port to activate the fuzes to commit-to-arm condition;
means for fragmenting said cannister at a second predetermined event to disperse said bomblets into the atmosphere, and exhaust said pressure in the fuze to the atmosphere through said inlet port;
means for advancing the fuzes to an armed position when said pressure is exhausted;
whereby all of said fuzes can be committed-to-arm simultaneously after the cannister has reached a safe distance from the launching platform, the fuzes being advanced to armed conditions when said cannister is fragmented and the bomblets dispersed.

3,938,439
CHARGE DEPLOYMENT DEVICE

John E. Walton, Camillus, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed June 21, 1974, Ser. No. 481,950
Int. Cl.² F42B *25/16*
U.S. Cl. 102—7.2 3 Claims

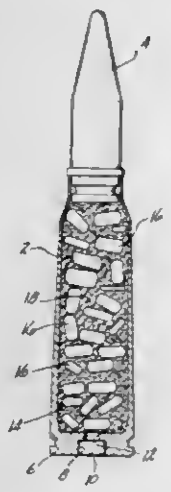


1. A device for deploying multi-tiered charged rounds into radial patterns expanding at different rates therefrom, said device comprising: a sectional enclosing case; stops in said

device to separate each tier of charged rounds from a succeeding tier; a gas generator associated with said case for producing gas; a tube disposed on said generator, said tube being provided with a plurality of lateral openings spaced longitudinally of said tube; a plurality of cylindrical resilient diaphragms, each diaphragm being attached to the tube at points enclosing a horizontal set of lateral tube openings and a plurality of internal restrictions in said tube that provide progressively sized horizontal orifices for developing the controlled forces to deploy said tiered rounds into radially expanding patterns.

3,938,440
MIXED PROPELLANT CHARGE

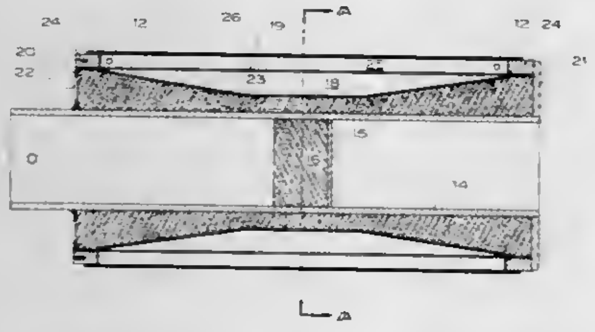
James K. Dooley, and Ralph L. Cook, both of Tallahassee, Fla., assignors to Olin Corporation, New Haven, Conn.
Continuation of Ser. No. 324,699, Jan. 18, 1973, abandoned. This application Mar. 14, 1974, Ser. No. 450,961
Int. Cl.^{2} F42B *5/16*
U.S. Cl. 102—38 **8 Claims**



1. A propellant charge for use in a cartridge, said propellant charge comprising a first constituent of compacted nitrocellulose base smokeless powder and a second constituent of loose granular nitrocellulose base smokeless powder, said propellant charge having a maximum packing density which is greater than about 1.0 gm/cc.

3,938,441
TERRAIN CLEARING DEVICE AND METHOD

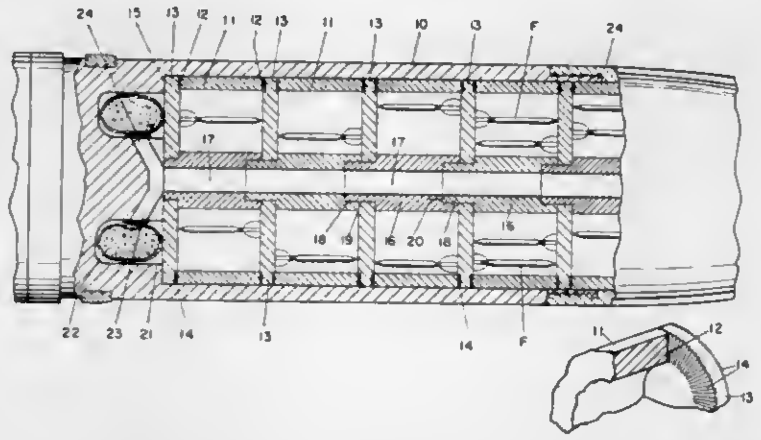
Robert G. S. Sewell, and Carl C. Halsey, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 2, 1971, Ser. No. 168,359
Int. Cl.^{2} F42B *13/48*
U.S. Cl. 102—67 **3 Claims**



1. Apparatus for terrain clearance which comprises:
a. a shaped explosive charge contained around its outer surface by a liner which gives the desired shape to said charge;
b. a continuous rod bundle which can be collapsed and expanded and which is fabricated from ribbon shaped rods plug welded together at alternate ends, said rod bundle being disposed in its collapsed configuration around the periphery of said shaped explosive charge in a tube, there being air space between the interior of said tube and said form which gives the desired shape to said charge; and
c. means for detonating said shaped explosive charge.

3,938,442
SERRATED SUPPORTING KEYING SYSTEM FOR A BEEHIVE PROJECTILE

Vincent J. Donadio, Pompton Plains, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sept. 27, 1971, Ser. No. 183,888
Int. Cl.^{2} F42B *13/48*
U.S. Cl. 102—67 **13 Claims**



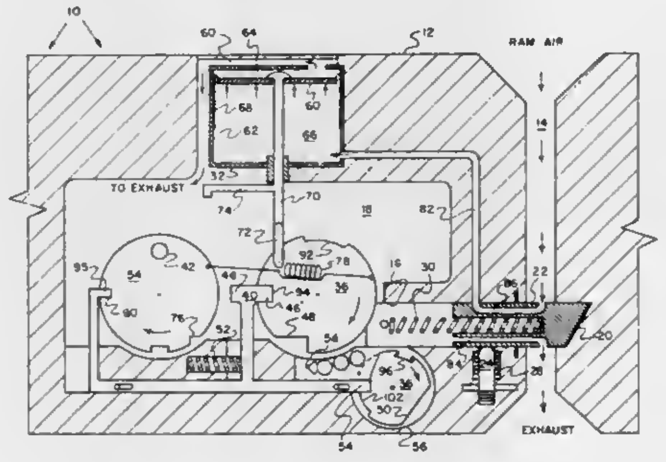
1. In combination with a spin-stabilized projectile including a divided payload; a keying system for said payload comprising a series of axially aligned spacing members, each said spacing member housing a portion of said payload, a series of axially aligned supporting members disposed, one each, between a pair of said spacing members, engraving means on at least one end of each said supporting member, at least one end with engraving means being in contact with each spacer, and means for locking said supporting members to the projectile, whereby setback force generated by firing of said projectile causes said supporting members to engrave the ends of said spacing members and interlock said divided payload against rotational movement during projectile spin.

3,938,443
LOGIC MODULE

Raymond A. Wolski, New Britain, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed June 17, 1974, Ser. No. 479,936
Int. Cl.^{2} F42C *15/00*
U.S. Cl. 102—76 P **4 Claims**

3. A control mechanism comprising:
environmental sensing means having an energy output;
actuation initiation means;
time delay means;
first, second and third cam means movable from an initial position to a final actuation position;
plunger means coacting with said first and second cam means and movable from an initial position blocking movement of said third cam means;
said first cam means being driven under control of said time delay means from an initial position blocking movement of said plunger means to an actuation position allowing finite travel of said plunger means;
said second cam means being driven by energy developed by said environmental sensing means from an initial position blocking movement of said plunger means to an actuation position allowing full travel of said plunger means;

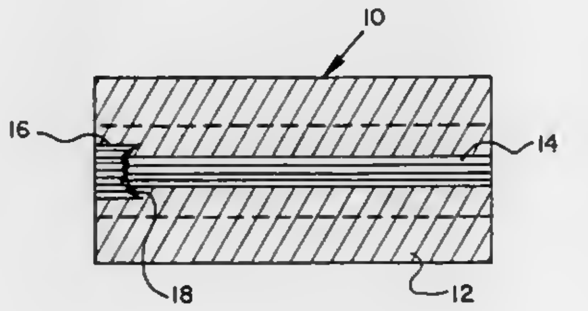
said third cam means carrying said actuation initiation means and being connected to said second cam means through an energy storage means;
said plunger means blocking movement of said third cam means until energy has been stored in said energy storage means;
whereby, when said first and second cam means move into the actuated position, said plunger will move into a position unlocking said third cam means and allowing said third cam means to move into the actuation initiation position;
said plunger means having first and second contoured portions and an intermediate relieved portion; and



said third cam means having first and second surfaces coacting with said contoured portions respectively of said plunger means;
so that said third cam means is initially prevented from movement by coaction of said first contoured surface of said plunger and said first surface of said third cam means; and
said third cam means, when activated, is locked in actuated position by coaction of said second contoured surface of said plunger and said second surface of said third cam means.

3,938,444
FLARE CARTRIDGE

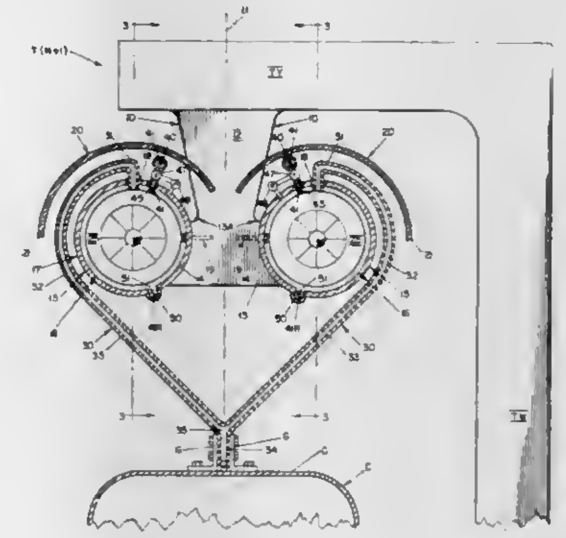
Kenneth R. Foote, and Michael Mamula, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed July 5, 1974, Ser. No. 486,922
Int. Cl.^{2} F42B *4/26*
U.S. Cl. 102—99 **7 Claims**



4. A flare grain comprising:
a hollow segment of pyrotechnic material having a longitudinal bore;
a partial counter bore in one end of said segment; and a plurality of cut curled protuberences in said counter bore.

3,938,445
TRACKWAY FOR OVERHEAD TRANSPORTATION SYSTEM

James A. Hughes, 3815 Avenue E, Kearney, Nebr. 68847
Filed Dec. 5, 1974, Ser. No. 529,731
Int. Cl.^{2} E01B *25/22;* **B61B** *13/08*
U.S. Cl. 104—124 **6 Claims**



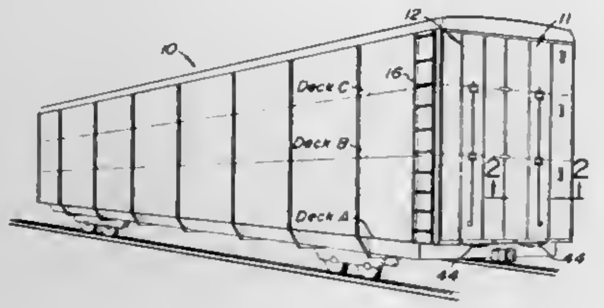
1. A trackway for an overhead transportation system of the general class comprising at least one car as a vehicle means depending from and longitudinally traversible along a trackway that is located above the earth's surface including a series of spaced pillars and each pillar having a post depending downwardly therefrom along a vertical post-axis, said transport system trackway comprising:
A. a pair of substantially parallel and co-elevational tubular conduits attached to a series of pillar posts and located on opposite sides of the vertical post-axis, the upper-hemiside of each conduit being longitudinally slottedly vented therethrough;
B. a pair of protective shields attached to the respective pillar posts and located on opposite sides of the vertical post-axis, each of said protective shields being longitudinally coextensive along and protectively overlying the upper-hemiside vent slots of the respective tubular conduits;
C. at least one lubeline coextensive along the outerwall of the respective tubular conduits and having serially spaced nozzles for high-pressure injection of lubricant fluid from each nozzle-station toward the conduit innerwall and operatively synchronizeable with the approaching vehicle;
D. a troughline coextensive along the lower-hemiside of and communicating with the innerwall of the respective tubular conduit for collection of the lubricant; and
E. means for recycling the lubricant fluid from the troughline back to the lubeline, said recycling means including a lubricant reservoir along the troughline and pump means for reintroducing the lubricant under high pressure into the lubeline.

3,938,446
DOOR ASSEMBLIES FOR CLOSING RAIL CAR END OPENINGS

Robert F. Seitz, Hazelcrest; William E. Fritz, Hinsdale, and Thorvald Madland, Arlington Heights, all of Ill., assignors to The Youngstown Steel Door Co., Cleveland, Ohio
Filed Sept. 6, 1974, Ser. No. 503,747
Int. Cl.^{2} B65J *1/22*
U.S. Cl. 105—368 R **29 Claims**

1. In a rail car having an interior cavity defined partially by rail car side walls and an end opening for loading and unloading lading:

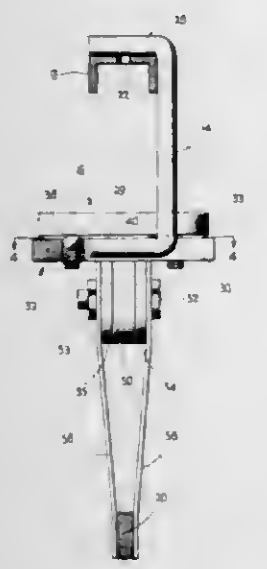
a door assembly including panels for closing at least a portion of said end opening,
pivoted mounting means for moving said door assembly between an open position and a closed position,



means including guide means for moving said pivoted mounting means transversely in directions toward and away from the intermediate portion of said rail car to permit storage of at least a portion of said door assembly along said rail car side wall and means for selective removal of said portion therefrom.

3,938,447
ARTICLE TRANSPORTING APPARATUS

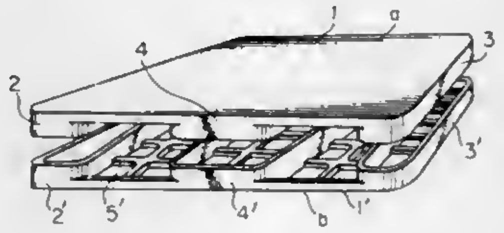
Robert E. Veale, Hollis, N.H., assignor to Brodie, Inc., Woburn, Mass.
Filed June 17, 1974, Ser. No. 479,593
Int. Cl.² B61B *3/00*
U.S. Cl. 105—156 15 Claims



1. An article transporting apparatus supported by a trolley member and comprising;
support means including means for receiving said trolley member so that said support means may travel with the trolley member and a plate means having a hole therein,
and a swivel support assembly including a cap member having means for engagement with a top surface of the plate means, means slidable in the hole and a lower end extending below the plate means, a support bar means for pivotally supporting the bar from the lower extending end of the cap member, and resilient means disposed between the means for pivotally supporting and the lower extending end of the cap member for dampening rotation therebetween,
whereby the cap member is capable of movement relative to the plate means to permit relative turning therebetween.

3,938,448
PLASTIC PALLET

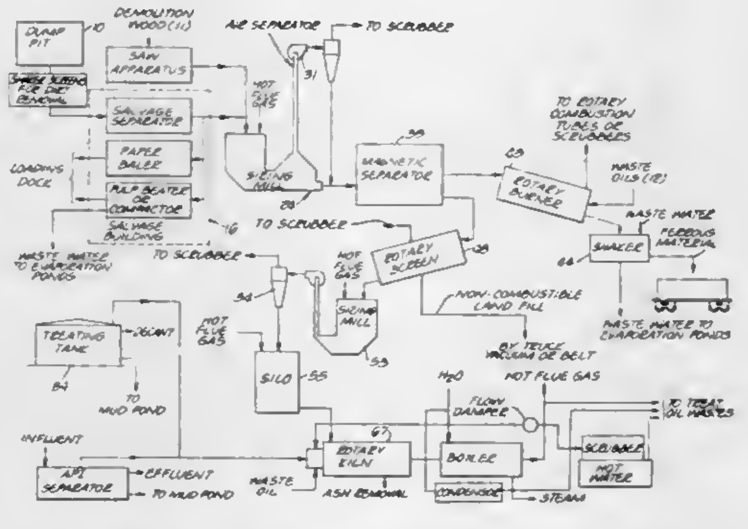
Kiyoshi Nishitani, Yokohama; Kimihiro Kawada; Riyuzo Ebina, both of Tokyo, and Katsunori Miyoshi, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 102,595, Dec. 30, 1970, abandoned. This application July 6, 1973, Ser. No. 377,110
Claims priority, application Japan, Apr. 9, 1973, 48-39440
Int. Cl.² B65D *19/18*
U.S. Cl. 108—58 13 Claims



1. A pallet of thermoplastic resin material for use with a fork lift comprising:
a pair of like component parts each having a deck board having an outer smooth and continuous planar surface whereby said pallet is reversible,
at least one girder integrally formed on each of said deck boards along each of a pair of opposite edge portions thereof and on the deck surface between said edge portions,
multiple reinforcing ribs integrally formed on said deck board and projecting therefrom a lesser distance than said girders,
said component parts being secured together by melt adhesion, with the girders of one being melt adhered to the corresponding girders of the other, and
wherein each of said girders comprises an oblong ring, said reinforcing ribs being disposed within and between said girders.

3,938,449
WASTE DISPOSAL FACILITY AND PROCESS THEREFOR

James O. Frisz, Los Angeles, and Harold A. Price, Anaheim, both of Calif., assignors to Watson Industrial Properties, Los Angeles, Calif.
Filed Mar. 18, 1974, Ser. No. 451,859
Int. Cl.² F23G *5/12, 5/06*
U.S. Cl. 110—8 C 13 Claims



1. Process for non-polluting disposal of solid wastes collected at a first location, which comprises:
moving said wastes along a predetermined path to a first station;
reducing the size of said wastes to a predetermined maximum in said first station;

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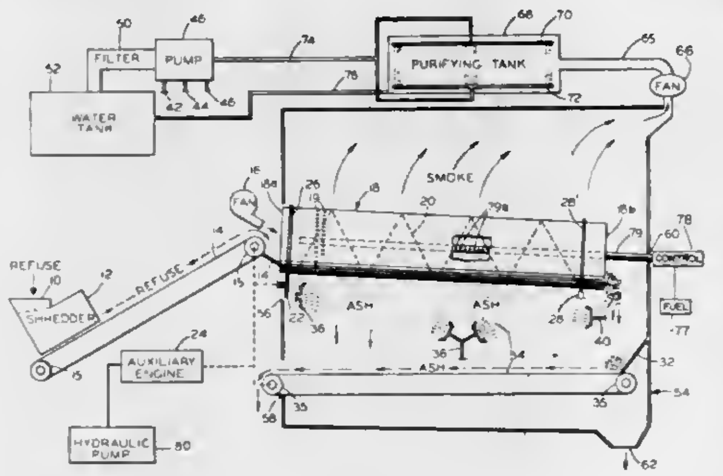
firing said sized wastes in a reduced oxygen atmosphere at a temperature below about 2200°F;
firing said materials a second time in an oxygen-rich atmosphere; and
feeding back hot gases components obtained from said second firing to selected points along the path of movement of said wastes prior to firing for dehydrating said wastes.

3,938,450
MOBILE FURNACE VEHICLE

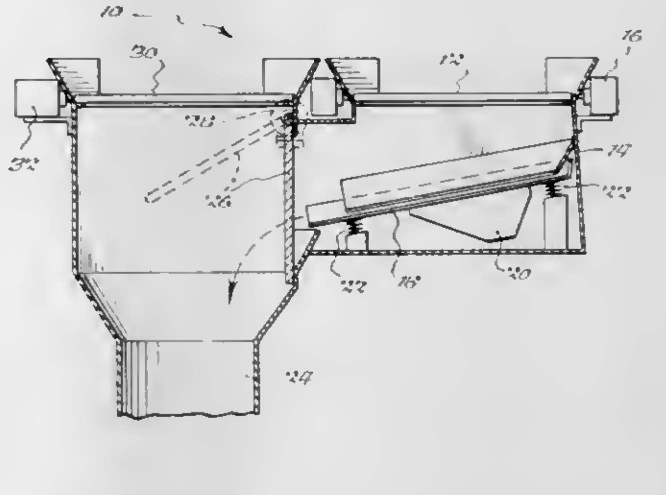
John C. Jaronko, and John T. Jaronko, both of New Britain, Conn., assignors to Nutmeg Sanitation Inc., New Britain, Conn.
Division of Ser. No. 393,021, Aug. 30, 1973. This application Aug. 27, 1974, Ser. No. 501,061
Int. Cl.² F23G *5/12*
U.S. Cl. 110—8 C 1 Claim



1. A mobile apparatus for collecting and burning refuse comprising:
a chassis having wheels for movement between collection and disposal points and having thereon the following structures:
a hopper disposed on said chassis for receiving refuse;
a shredder communicating with said hopper for reducing the size of the refuse received by said hopper to particles suitable for burning;
a first transfer means for receiving refuse conditioned by said shredder;
a conveyor belt having a perforate generally planar surface for allowing passage of ash therethrough and having first and second ends, said first end communicating with said transfer means for receiving said refuse;
a fan communicating with said conveyor belt generally planar surface for supplying air;
a hollow tube disposed generally parallel with respect to said conveyor belt and having a plurality of apertures disposed substantially uniformly about the circumference being size for burning fuel;
a fuel supply and control means for supplying fuel to said hollow tube;
a liquid supply and a liquid spray means for wetting ash passing out of said conveyor belt through said perforate surface and said second end of said conveyor belt;
second transfer means for moving ash from said conveyor belt;
an ash receiving means disposed in communication with said second transfer means;
a substantially closed housing mounted on said chassis and enclosing said conveyor belt, liquid spray means, second transfer means and at least a portion of said hollow tube;
a second fan in fluid communication with said substantially closed housing for directing smoke from the area of said conveyor belt; and
a purifying tank for washing the smoke conducted by said second fan and in fluid communication therewith.

3,938,451
GASIFIER CHARGING SYSTEM

Theodore W. Lucas, Jr., Williamsville, N.Y., assignor to Andco Incorporated, Buffalo, N.Y.
Filed Jan. 3, 1975, Ser. No. 538,344
Int. Cl.² F23K *3/16*
U.S. Cl. 110—109 8 Claims



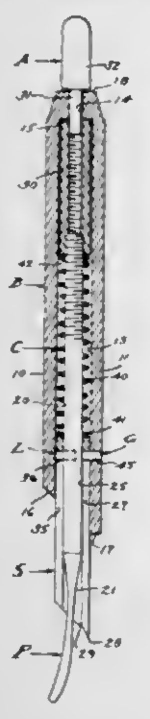
1. A refuse feeder for a solid waste destruction system having a gasification chamber and conduit means for conveying solid waste materials to the gasification chamber in which the flame temperature of the waste materials is reached so as to reduce the waste materials to a molten condition with resulting gases and vapors being produced, and means for removing the molten waste material, resulting gases, and vapors from the system; said refuse feeder comprising:
a storage hopper means for receiving solid waste material wherein said storage hopper is adapted to communicate with said conduit means so as to urge waste material toward said conduit means,
first sealing door means movable between open and closed positions and being mounted on said storage hopper, said first sealing door means being normally in a closed position to seal the interior of said storage hopper means from the ambient atmosphere and being in an open position for filing of said hopper means with waste material, and
second sealing door means movable between open and closed positions and being mounted intermediate to said storage hopper means and said conduit means whereby said second sealing door means is in a normally closed position to seal said conduit means from said ambient atmosphere when said first sealing door means is in an open position.

3,938,452
ADJUSTABLE POINT LOOPING TOOL FOR RUG MAKING

Michael J. Windle, 45131 28th St. E., Lancaster, Calif. 93534
Filed Aug. 16, 1974, Ser. No. 497,920
Int. Cl.² D05C *15/06*
U.S. Cl. 112—80 22 Claims

1. A pointer for looping yarn in the building of rugs and the like upon backings comprised of a multiplicity of apertures in checkerboard pattern defined by crossed members, and including; an elongated body having a lower terminal end, a probe fixedly positioned to extend from the lower terminal end of the body and having a concaved notch at its lower terminal end spaced from the lower terminal end of the body, a retractile stop normally projected to an extended position with a shoulder positioned intermediate the lower terminal ends of the probe and body respectively, and spring means engaged with and operable between the stop and a face in the body to yieldingly urge the stop to said extended position,

whereby said shoulder of the stop is retractile to the lower terminal end of the body when engaged to hold against the entry leg of a loop of yarn while the exit leg of said loop is being fully extended.



3,938,453
APPARATUS FOR ADVANCING THE FEED FRAME OF AN AUTOMATIC EMBROIDERY MACHINE

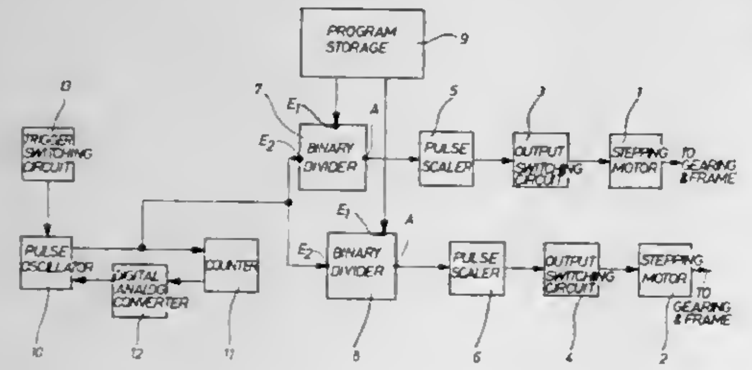
Arno Muller, Mellen, Switzerland, assignor to Omni Ray AG, Zurich, Switzerland

Filed July 23, 1974, Ser. No. 490,964

Claims priority, application Switzerland, July 30, 1973, 11090/73

Int. Cl.² D05C *3/02*

U.S. Cl. 112—102 **6 Claims**



1. An apparatus for feeding the embroidery frame of an automatic embroidery machine, comprising two stepping motors drivingly connected with the embroidery frame, each of said stepping motors bringing about a feed of the embroidery frame in one direction, a control mechanism operatively connected with said stepping motors, said control mechanism generating control pulses for each stepping motor as a function of the momentarily required feed displacement of the embroidery frame in each direction, said control mechanism comprising two switching circuits, each switching circuit being operatively connected with one of the stepping motrs, a program storage operatively connected with said switching circuits, said switching circuits generating output pulses, the number of which is proportional to the number of pulses delivered to each switching circuit by said program storage and by means of which there is determined the magnitude of the momentarily required feed displacement in the corresponding direction, said switching circuits comprising programable binary dividers, each binary divider comprising a rate multiplier and having a pair of inputs, a pulse oscillator, one input of each binary divider being operatively coupled with the program storage and the other input with the pulse oscillator, and a trigger switching circuit and a counter, the pulse oscillator being operatively connected with said trigger switching circuit and said counter, said trigger switching circuit generating a trigger signal for turning-on the pulse oscillator and said counter serving to switch-off the pulse oscillator after generating a predetermined number of pulses, and said pulse oscillator generating pulses of a first frequency upon the arrival of the trigger signal and continually increasing the frequency of the generated pulses up to a second value.

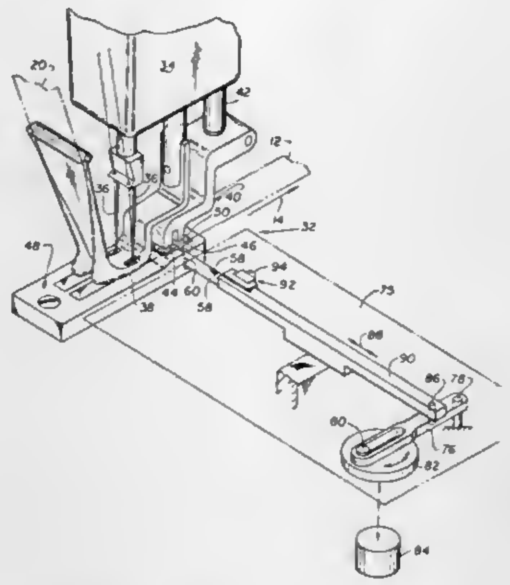
3,938,454
SEWING MACHINE CUTTING DEVICE

Ronald J. Boser, 19 Branwood Drive, Dix Hills, N.Y. 11746

Filed Nov. 8, 1973, Ser. No. 413,847

Int. Cl. D05b *37/04*

U.S. Cl. 112—130 **3 Claims**



1. The combination with a sewing machine having a work surface and means defining a feed path along said work surface for work being sewn by said sewing machine of a cutter for severing said work at the termination of the sewing interval, said cutter comprising wall means bounding a cutting compartment below said work surface and along said feed path, crank means located adjacent said feed path and extending into said cutting compartment, a blade operatively connected to be continuously reciprocated by said crank means disposed in said cutting compartment, a work-positioning member mounted on said sewing machine for selective descending movement into said cutting compartment for moving said work therewith into said cutting compartment, and depending bifurcated extensions on said work-positioning member adapted to urge and hold said work in spanning relation therebetween in cutting contact with said continuously reciprocating blade, whereby a severing cut is produced in said work for the length thereof in said spanning relation between said depending extensions.

3,938,455
METHOD OF FORMING AND A CONSTRUCTION FOR A DIGITALLY OPENABLE CONTAINER CLOSURE

Hugh C. Urmston, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

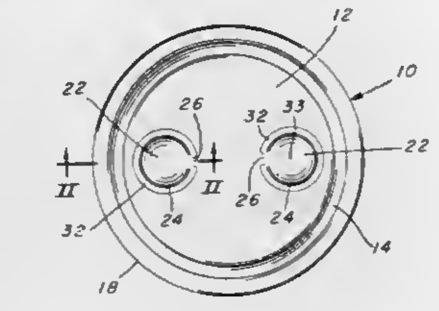
Division of Ser. No. 357,937, May 7, 1973, which is a continuation-in-part of Ser. No. 281,541, Aug. 17, 1972, abandoned. This application Nov. 7, 1974, Ser. No. 521,692

Int. Cl.² B21D *51/26*

U.S. Cl. 113—121 C **10 Claims**

1. In the formation of a sheet metal container component having at least one inwardly displaceable opening panel and an outwardly projecting deflectable portion disposed in integral interconnected relation therewith by a selectively shaped, residually stressed, fracturable web, the steps of introducing a sheet of metal intermediate a first die member having a first

substantially planar surface and a second and angularly disposed substantially planar metal extruding surface defining therewith a first obtuse corner at the locus of intersection therebetween and a second and correspondingly shaped die member having a first substantially planar base surface and a second and angularly disposed substantially planar metal extruding surface defining therewith a second obtuse corner at the locus of intersection therebetween, and with auxiliary die means disposed on the same side of the sheet as said first die member having a metal shaping base surface facing the same general direction as does said first surface of said first die member and in laterally spaced relation with said first surface of said second die member; lineally displacing said first die member towards said second die member to selectively move said first and second surfaces of said first die member into operative proximity with said second and first surfaces respectively of said second die member with said first and second corners of said die members laterally spaced from each other, and thereby engage said sheet to displace portions of the surface of said sheet at substantially right angles to the initially undisplaced surface thereof by action of said first planar surface of said first and second die members, and laterally extrude portions of said sheet within the locus of displacement thereof through the conjoint action of said first and second surfaces of said first and second die members to form said fracturable web, stopping said die member displacement when said first planar surface of said first die member is disposed substantially coplanar with said first planar surface of said second die member, and lineally displacing said auxiliary die means towards said second die member to selectively move said base surface thereof into predetermined longitudinally offset relation with said first surface of said second die member in the direction of die displacement to form said deflectable portion by the conjoint action thereof.



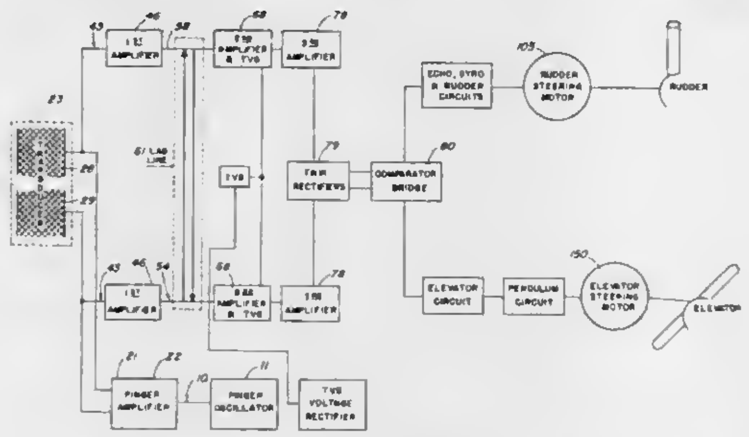
3,938,456
AUTOMATIC STEERING SYSTEM FOR A TORPEDO

Paul C. Gardiner, Scotia, N.Y.; Robert S. Gardner, Key West, Fla.; Clifford Mannal, Schenectady, and John H. Payn-, Ballston Spa, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 4, 1950, Ser. No. 188,468

Int. Cl.² F42B *19/01*

U.S. Cl. 114—23 **12 Claims**



1. In an automatic steering system for directing a moving body, said system being provided with reversibly-motorized depth steering gear including two motor reversing circuits, one, upon energization, setting said gear for climb and another, upon energization, setting said gear for dive, a pendulum mounted for swinging movement in either of two directions relative to said body and having contacts adapted to close one of said climb and dive circuits depending on the direction of said relative swinging movement, and a follow-up link transmitting steering movement of said motorized gear to said pendulum contacts thereby affecting the energization of said circuit.

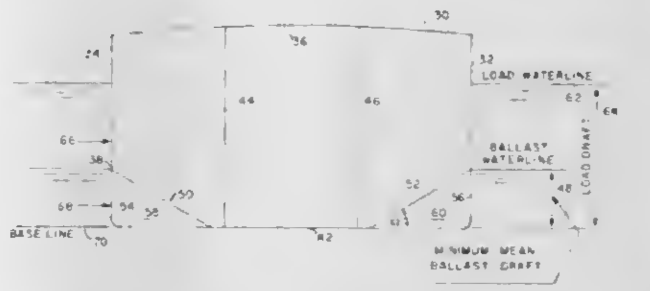
3,938,457
TANKER HULL MODIFICATION

Stanley J. Dwyer, Tredyffrin Township, Pa., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Dec. 30, 1974, Ser. No. 537,567

Int. Cl.² B63B *1/00, 25/08*

U.S. Cl. 114—56 **6 Claims**



1. A tanker vessel having a hull and a minimum mean ballast draft depth line on said hull which is defined by a change in width of said hull along the midbody of the hull, the volume enclosed by said hull above said minimum mean ballast draft depth line being substantially greater than the volume enclosed by said hull below said minimum mean ballast draft depth line, the width of the midbody of said hull being substantially uniform above said minimum mean ballast draft depth line and the width of the midbody of said hull progressively decreasing from said mean ballast draft depth line to the bottom of said hull, the interior of said hull partitioned to define a plurality of separate compartments, some of said compartments designated for cargo and others of said compartments designated only for water ballast, the volume enclosed by said hull below said mean ballast draft depth line being substantially the sum of the volume of water displaced by the weight of the vessel plus the volume of the water in said water ballast compartments.

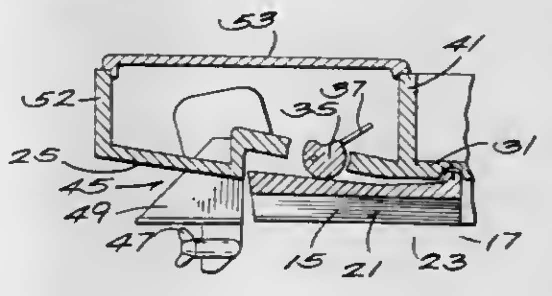
3,938,458
ADJUSTABLE BOAT HULL

Finn T. Irgens, Wauwatosa, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 23, 1974, Ser. No. 536,000

Int. Cl.² B63B *1/22*

U.S. Cl. 114—66.5 P **6 Claims**



1. A boat including a hull comprising a transom, a bottom surface extending forwardly from said transom and including an opening located in forwardly spaced relation from said transom and having leading and trailing edges, a forward bottom surface portion which curves upwardly and forwardly from adjacent to said leading edge of said opening, and a

rearward bottom surface portion which curves upwardly and rearwardly to said transom from adjacent to said trailing edge of said opening, a panel having leading and trailing edges, means pivotally mounting said panel to said boat hull for movement relative to said opening about a transverse axis between a first position wherein said leading and trailing edges of said panel merge with said forward and rearward portions of said bottom surface so as to provide a continuously smooth sailing hull, and a second position wherein said panel leading edge merges with said forward portion of said bottom surface and said panel trailing edge is spaced below said rearward portion of said bottom surface so that said panel forms part of a planing surface, and means for pivotally displacing said panel between said positions.

3,938,459

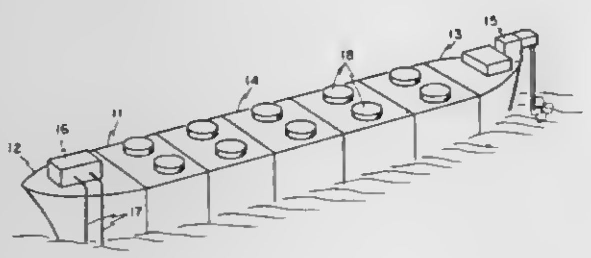
MINESWEEPER

Edward A. Wilbanks, and Vordaman H. Van Bibber, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 26, 1972, Ser. No. 268,224

Int. Cl.² B63B *3/02*

U.S. Cl. 114—77 R **10 Claims**



1. A marine minesweeper, comprising in combination:
a hull, having a plurality of unitary compartmental sections disposed along the longitudinal axis thereof, with adjacent ones thereof configured for complementary fits therebetween, adapted for being floated along a watercourse suspected of being mined with marine mines, the plurality of unitary compartmental sections of said hull including a bow section, a stern section, and at least one intermediate section connected between said bow and stern sections, with said at least one intermediate section having a foam plastic hull-configured intermediate portion containing cells of air bubbles and having a plurality of compartments separated by bulkheads, a first plate securely connected to the forward end of said foam plastic hull-configured intermediate portion parallel to the transverse axis thereof, and a second plate securely connected to the rearward end of said foam plastic hull-configured intermediate portion parallel to the transverse axis thereof;
means connected between adjacent ones of said plurality of unitary compartmental hull sections for the fastening thereof together in a secure abutting manner;
means disposed between and substantially around the periphery of said adjacently fastened hull sections for effecting a watertight seal thereat; and
ballast means of predetermined mass disposed in each of the plurality of unitary compartmental hull sections for effecting a predetermined draft of said hull within the aforesaid watercourse, as it is floated therealong.

3,938,460

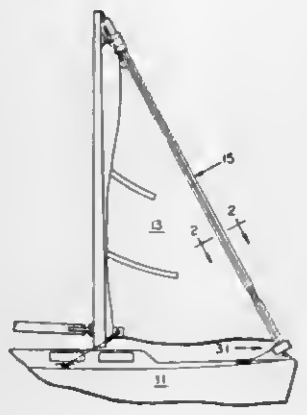
SAIL-RAISING SYSTEM

Walter M. Wales; Donald K. Mitchell, both of Marblehead, and Kenneth C. Smalley, Beverly, all of Mass., assignors to Hood Sailmakers, Inc., Marblehead, Mass.

Filed Mar. 4, 1974, Ser. No. 447,497

Int. Cl.² B63H *9/04*

U.S. Cl. 114—106 **4 Claims**



1. Jib-setting apparatus comprising:
a wire tension member;
a series of similar tubular extrusions adapted to fit over said wire, each of said extrusions being grooved on opposite sides thereof;
on one side of said series of tubular extrusions, a first series of extrusions each having a portion of generally C-shaped cross-section forming an elongate slot, the extrusions in said first series being grooved to engage and lock onto the grooves on said one side of the tubular extrusion with the abutting ends of extrusions in said first series being staggered with the abutting end of said series of tubular extrusions; and
on the opposite side of said series of tubular extrusions, a second series of extrusions each having a portion of generally C-shaped cross-section forming an elongate slot, the extrusions in said second series being grooved to engage and lock onto the grooves on said other side of the tubular extrusion with the abutting ends of extrusions in said second series being staggered with the abutting end of said series of tubular extrusions.

3,938,461

FLEXIBLE CONNECTION FOR ARTICULATING VESSELS

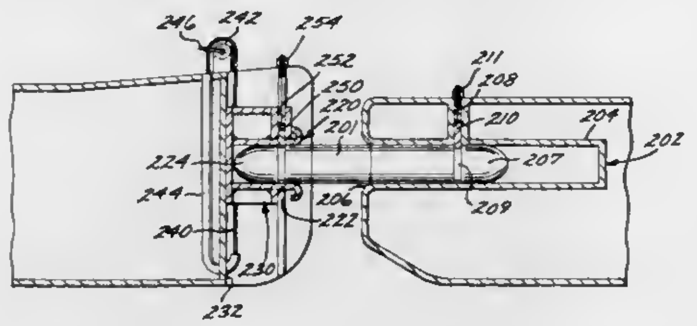
John E. Marriner, 555 East Ocean Blvd., Long Beach, Calif. 90802

Continuation-in-part of Ser. No. 399,423, Sept. 21, 1973, Pat. No. 3,822,667, which is a division of Ser. No. 251,021, May 8, 1972, Pat. No. 3,799,100, which is a continuation-in-part of Ser. No. 88,938, Nov. 12, 1970, abandoned. This application Apr. 29, 1974, Ser. No. 464,746. The portion of the term of this patent subsequent to July 9, 1991, has been disclaimed.

Int. Cl.² B63B *21/56*

U.S. Cl. 114—235 R **6 Claims**

1. Force-transfer coupling apparatus interposed between two closely adjoining vessels, comprising:
post means having a generally elongated body formed of resilient material, said post means normally extending horizontally and longitudinally in a cantilever fashion relative to said vessels;
horizontally and longitudinally extending attachment means on the facing bow and stern portions of said vessels that receive the ends of said post means, the body of resilient material bridging the gap between said vessels;
means operatively associated with said attachment means securing said post means therewithin;
with said resilient material being free to undergo bending, compression and tension in transferring compressive and tensive forces between said vessels; and
means operatively associated with one of said attachment means to adjust the vertical position thereof relative to its respective vessel thereby affording draft compensation between said vessels.



3,938,462

BOAT MOORING APPARATUS

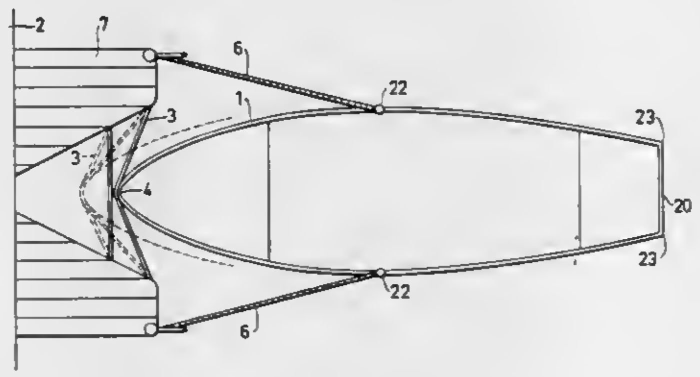
Bertil Brandt, 6, Rue Alfred de Vigny, Paris, France

Filed Mar. 26, 1974, Ser. No. 454,987

Claims priority, application Sweden, Mar. 27, 1973, 7304277

Int. Cl.² B63B *21/00*

U.S. Cl. 114—230 **3 Claims**



1. Apparatus for mooring boats and being of the type which fixedly secures one end of the boat while simultaneously preventing pivoting of the boat about said one end in response to wind and wave forces acting on the boat comprising:
a fixed support platform including a pair of spaced support elements, said support elements being rigidly affixed to said support platform
at least one stretchable elastic member supported between said spaced support elements and against which said one end of the boat is positioned upon mooring and with the logitudinal axis of the boat at approximately a right angle to said elastic member,
a pair of support members mounted on said support elements and positioned so as to respectively lie on opposite sides of said boat and with a spacing therebetween greater than the maximum expected beam of a boat to be moored at said apparatus,
and lines extending under tension from each of said support members to said boat on opposite sides thereof and at locations remote from said one end of said boat to provide force components which respectively act parallel to the longitudinal axis of the boat to resiliently urge said one end of the boat against said at least one elastic member to thereby distend said member and provide a recess therein for embracing and fixedly securing said one end of the boat while simultaneously the force components acting transversely of said longitudinal axis prevent pivoting of the boat with respect to said fixed support platform about its said one end.

3,938,463

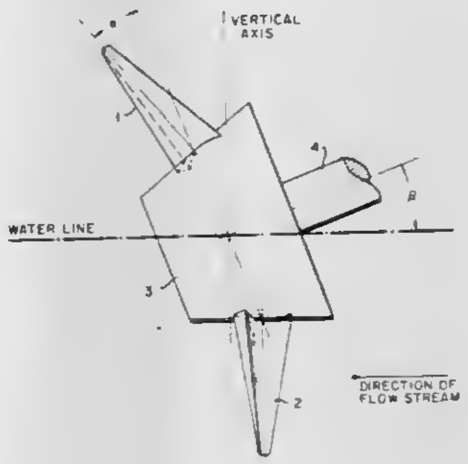
INCLINED RAKED PARTIALLY SUBMERGED PROPELLERS

Richard Hecker, Germantown, Md., and Edward A. Butler, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 4, 1973, Ser. No. 357,299

Int. Cl.² B63H *1/28*

U.S. Cl. 115—34 R **2 Claims**



1. A method for propelling a surface ship with an inclined shaft raked multi-blade supercavitating screw propeller, comprising:
rotating a screw propeller in the range of 30 to 50% submergence in water;
producing a substantially horizontal thrust from blade interaction with water only during the lower 180° of the circle of rotation of each blade;
producing a positive transverse thrust component during the first half of the duration of a blade's engagement with water; and,
producing a retarded flow and high negative transverse thrust component during the second half of the duration of a blade's engagement with water which is substantially equal to said positive transverse force.

3,938,464

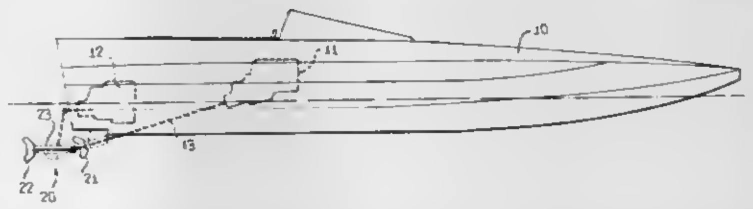
CONTRA-ROTATING PROPELLER DRIVE SYSTEM

John D. Gill, Foot of Sixth St., Annapolis, Md. 21403

Filed Mar. 27, 1974, Ser. No. 455,229

Int. Cl.² B63H *5/10*

U.S. Cl. 115—34 C **13 Claims**

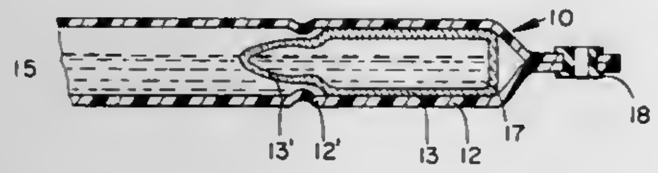


1. A contra-rotating propulsion system for a water craft having a hull defined along its bottom by a keel, said system comprising:
a forward propeller having blades disposed about a first axis of rotation;
an aft propeller having blades disposed about a second axis of rotation;
said first and second axes of rotation being vertically co-planar;
means for supporting said forward and aft propellers one behind the other below the depth of said keel in a manner to permit independent movement of at least one of said propellers relative to the other;
a first engine located in said hull;
first drive means coupling said first engine to said forward propeller for imparting forward motion to said craft by

rotating the blades of said first propeller about said first axis of rotation;
a second engine located in said hull; and
second drive means entirely independent of said first drive means coupling said second engine to said aft propeller for imparting forward motion to said craft by rotating the blades of said second propeller about said second axis of rotation in contra-rotation to said forward propeller.

3,938,465
SIGNAL DEVICE

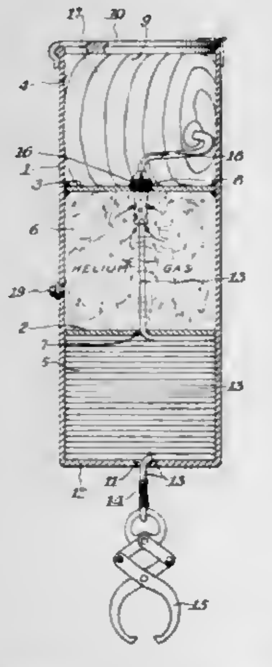
John H. Lyons, 351 Rancho, Ridgecrest, Calif. 93555
Filed Mar. 26, 1974, Ser. No. 454,876
Int. Cl.² E01F *9/00;* **F21V** *9/16*
U.S. Cl. 116—63 P **5 Claims**



1. For use as a signal device to be deployed upon a supporting surface, the combination comprising:
an elongated light member comprising a plastic tube containing chemiluminescent material means;
support means comprising at least one configured piece of resilient plastic sheet material, at least one edge portion of said plastic sheet material cooperating with said plastic tube to maintain said tube at approximately a 45° angle to the surface upon which it is deployed;
said plastic tube being relatively compressible and said support means having a non-circular central opening fitting on said tube with sufficient friction to maintain said tube and said holder assembed with the holder intermediate the ends of said tube and orthogonal to the longitudinal axis thereof.

3,938,466
LOCATION INDICATING DEVICE

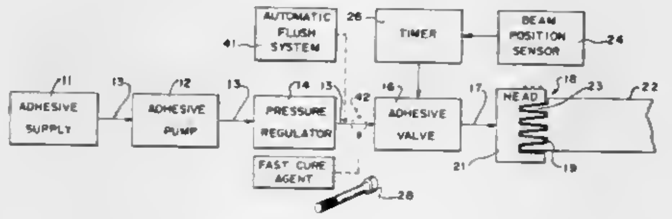
Jay W. Crissman, Rosemead, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Oct. 7, 1974, Ser. No. 512,555
Int. Cl.² B64B *1/52*
U.S. Cl. 116—124 R **1 Claim**



1. A location indicating device, comprising
a container having two partitions therein forming three compartments, each of the partitions having a hole therethrough, the container being open at one end at a first of the compartments and having a selectively openable cap covering the open end thereof and a hole formed through another end thereof at a second of the compartments, the third compartment being between the first and second compartments;
cord in the second of the compartments extending at one end through the hole in the container;
grappling means affixed to the end of the cord passing through the hole in the container for clamping to an object;
valve means in the hole through the partition between the first and third compartments;
a collapsed balloon in the first compartment, the balloon having a neck part connected to the valve means, the cord extending through the hole through the partition between the second and third compartments and being affixed to the valve in the third compartment; and
a valve in the container extending into the third compartment for filling said compartment with buoyant gas for filling the balloon via the valve means when the cap of the container is opened.

3,938,467
END JOINTED BEAM AND LAMINATED BEAM ADHESIVE APPLICATION SYSTEM AND HEAD FOR USE THEREIN

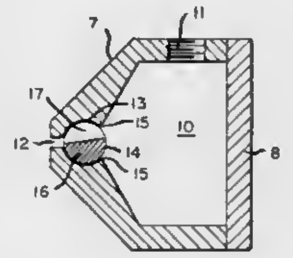
Richard D. Radowicz, 25860 Rancho Alto, Carmel, Calif. 93921
Filed Jan. 17, 1974, Ser. No. 434,087
Int. Cl.² B65C *11/04*
U.S. Cl. 118—2 **13 Claims**



1. A system for applying adhesive to surfaces to be bonded having specific contours comprising means for containing a supply of adhesive, an outlet line connected to said supply of adhesive, a pump for urging the adhesive to flow through said outlet line, an adhesive valve for receiving and metering the adhesive, means for controlling said adhesive valve to pass adhesive flow for a predetermined time, whereby a predetermined quantity of adhesive is passed therethrough, an adhesive dispensing head mounted for relative movement with the surfaces to be bonded and connected to receive said predetermined quantity of adhesive, application surfaces on said dispensing head being formed of intersecting planar surfaces having parallel lines of intersection and closely matching the contours of the surfaces to be bonded, said adhesive dispensing head having a plurality of channels therein for conveying said predetermined quantity of adhesive therethrough to be dispensed at said application surfaces, and including a plenum chamber for receiving said predetermined quantity of adhesive, said plurality of channels including at least one separate channel for said plenum chamber to each of said planar surfaces and means for sensing when said application surfaces are in a predetermined proximate position relative to the surfaces to be bonded, said last named means being connected to actuate said means for controlling, whereby the surfaces to be bonded receive said predetermined quantity of adhesive along a predetermined length thereof while adjacent surfaces are maintained free of adhesive.

3,938,468
APPARATUS FOR WIPING LIQUID FROM A STRIP

James B. Kirschner, Moundsville, W. Va., assignor to Wheeling-Pittsburgh Steel Corporation, Pittsburgh, Pa.
Filed Apr. 29, 1970, Ser. No. 32,826
Int. Cl.² B05C *11/00, 13/00, 13/02*
U.S. Cl. 118—63 **6 Claims**



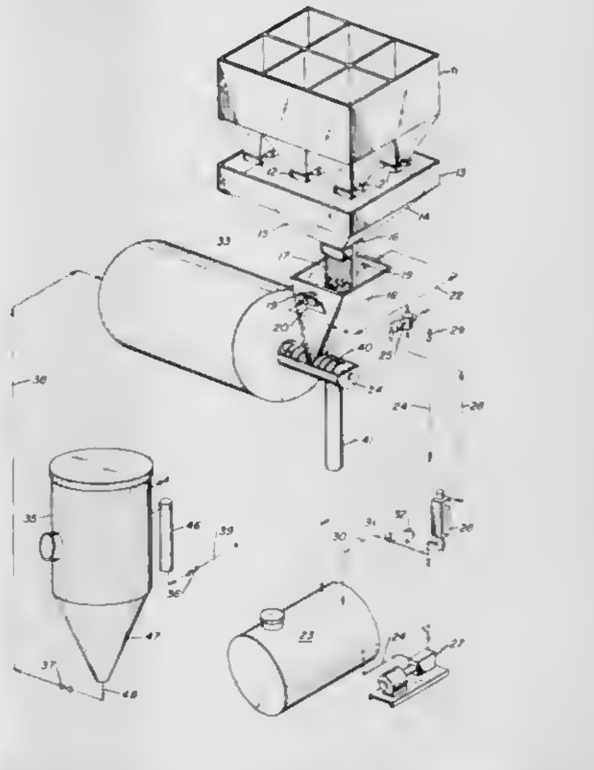
1. In an apparatus for wiping liquid from the surface of a moving strip without contacting the strip and including an enclosure in proximity to the pass line of the strip and adapted to receive wiping fluid under pressure and orifice means formed in the enclosure and directed toward the strip, the improvement which comprises elongated valve means adjacent to and behind said orifice and coextending with at least a substantial portion of said orifice means.

3. Apparatus for wiping liquid, molten metal from the surface of moving metallic strip comprising:
an enclosure extending transversely of the strip to be wiped;
fluid supply means to said enclosure adapted for connection to a source of wiping fluid under pressure whereby wiping fluid is delivered inside said enclosure under pressure;
elongated fluid orifice means in said enclosure extending transversely across the strip positioned in proximity to the strip and disposed to direct wiping fluid issuing from the orifice against the strip moving past the enclosure;
fluid valve means within the enclosure disposed between the orifice and the fluid supply means to control passage of wiping fluid through the orifice means, said valve means comprising a rotatable member of irregular cross section placed in close proximity to the orifice and extending substantially parallel to the orifice from end to end of the orifice, incremental sections of the valve means thereby restricting flow through incremental lengths of the orifice, whereby in one position the valve means opens greater area between the fluid supply means and orifice than in another position of the valve means.

3,938,469
APPARATUS FOR COATING PARTICULATE MATERIAL WITH FINELY DIVIDED SOLIDS

Harold Henry Nau, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of Ser. No. 230,016, Feb. 28, 1972, abandoned, which is a division of Ser. No. 149,350, June 2, 1971, Pat. No. 3,666,523, and a continuation-in-part of Ser. No. 804,621, March 5, 1969, abandoned. This application Sept. 14, 1973, Ser. No. 397,551
Int. Cl.² B05C *5/00*
U.S. Cl. 118—303 **1 Claim**

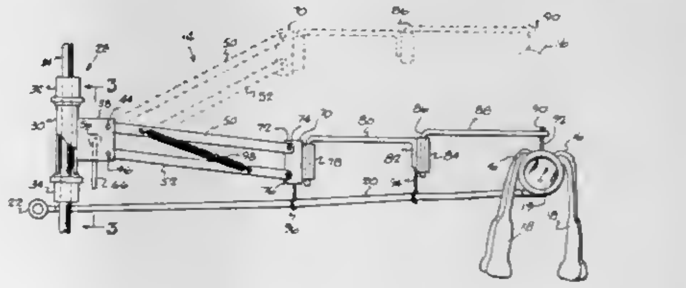
1. An apparatus for uniformly coating a granular fertilizer with a small amount of a finely divided nutrient material having an average bulk density above about 1.2 g./ml. selected from the group consisting of micronutrients, secondary nutrients and mixtures thereof comprising, in combination:
a. a hopper for storing granular fertilizer;
b. a control gate adapted to produce a metered flow of fertilizer from said hopper in the form of a falling curtain;
c. a storage vessel adapted to contain a binder solution;
d. nozzles disposed so as to provide spray of said binder solution below said gate, at opposite sides of said curtain so as to produce uniformly sprayed granular fertilizer;
e. conduits adapted with valve means so as to convey the binder solution at a desired pressure from said storage vessel to said nozzles;
f. a mixing chamber comprising a tumbling drum adapted to blend said sprayed fertilizer with said nutrient material;
g. a conveyor adapted so as to receive said sprayed granular fertilizer below said nozzles and to convey the fertilizer received into and from said tumbling drum;



h. a blow case equipped with a pressurizing means adapted to receive said nutrient material; and
i. a conduit adapted to inject said nutrient material into said tumbling drum under superatmospheric pressure from said blow case to form a cloud of nutrient material after said chamber is sealed with the sprayed granular fertilizer.

3,938,470
MOVABLE SUPPORTING DEVICE FOR MILKING APPARATUS

J. Don Pace, 1420 Brown Circle, Boulder, Colo. 80303
Filed Mar. 25, 1974, Ser. No. 454,571
Int. Cl.² A01J *7/00*
U.S. Cl. 119—14.1 **19 Claims**



1. A movable supporting device for milking apparatus having a milking claw, said device comprising:
a stationary support column;
a first pivot means having a collar portion and a plate portion;
a first arm having one end connected to said plate portion of said first pivot means so that said first arm pivots about a first predetermined axis;
a second pivot means connected to the other end of said first arm;
additional arm means having one end receiving and supporting said milking claw and the other end connected to said second pivot means to that said additional arm means pivots about a second predetermined axis that is substan-

tially normal to said first predetermined axis regardless of movement of said first arm; and

actuating means connected with said first and additional arms to control movement of the arms in at least one direction.

3,938,471
BEDDING RETAINER WITH DRAINAGE FACILITY

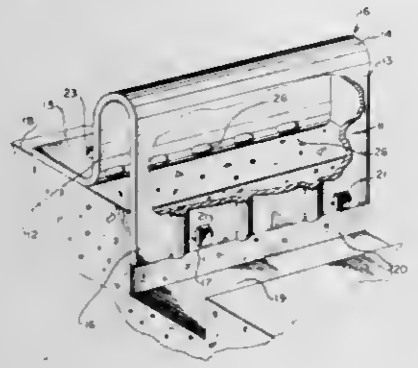
Adrian Veldman, Embro, Canada, assignor to Wildwood Farm Services International Inc., St. Pauls, Canada

Filed Aug. 2, 1974, Ser. No. 494,183

Claims priority, application Canada, July 26, 1974, 205752

Int. Cl.^{2} A01K *1/00*

U.S. Cl. 119—28 **8 Claims**



1. A device for use in retaining bedding in an animal stall while permitting drainage of liquids from the stall, the stall having a floor bounded by a gutter, the device comprising a horizontally elongated upright portion adapted to extend above the floor of the stall, a flange integral with the upright portion and extending laterally therefrom in the plane of the floor, a skirt depending from the upright portion that extends below the plane of the floor, the improvement comprising at least one passage extending through the upright portion to permit the flow of liquids to pass through the upright portion.

3,938,472
EGG INCUBATOR OF THE TUNNEL TYPE

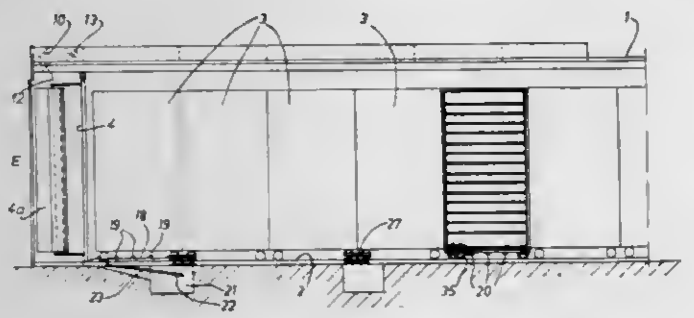
Francois Jauoeaud, Indre-et-Loire, France, assignor to Bekoto, Indre-et-Loire, France

Filed July 8, 1974, Ser. No. 486,429

Claims priority, application France, July 12, 1973, 73.25662

Int. Cl.^{2} A01K *41/00*

U.S. Cl. 119—37 **8 Claims**



1. In an egg incubator of the tunnel type comprising an inlet chamber at one end and an outlet chamber at the other and two sets of parallel rails adapted to receive two rows of trolleys carrying egg drawers which tip under the action of tilting parallelograms, two sliding panels equipped with fans, each placed opposite a different row of trolleys, one at the inlet chamber, the other at the outlet chamber so as to create a longitudinal flow of circulating air capable of being reversed by changing the positions of the panels, each panel then changing its row, at least one curtain forming two passages in each of which said longitudinal flow of air is established, the tilting parallelograms being mounted on said trolleys in such manner that only the edge of the drawers opposes said longitudinal flow of air thus obtaining a constant section of passage with a minimum loss of pressure and in consequence a fairly high speed of passage in order to render the temperatures homogeneous.

3,938,473
STEAM GENERATOR HAVING FEED-WATER PREHEATER

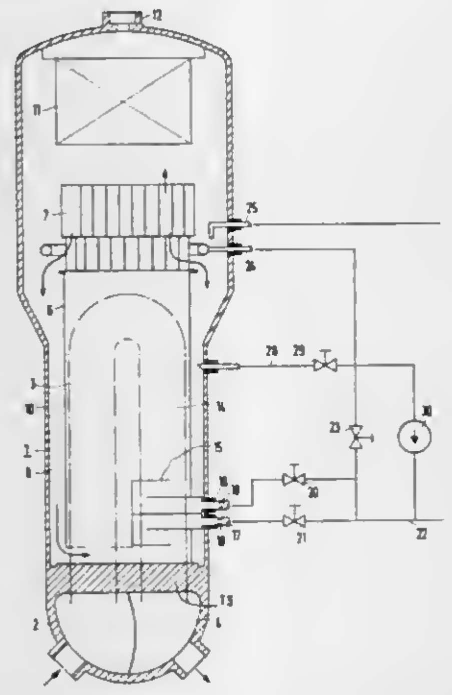
Hans Mayer, Bubenreuth, and Werner Nieschler, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 17, 1974, Ser. No. 434,359

Claims priority, application Germany, Jan. 26, 1973, 2303875

Int. Cl. F22b *1/06*

U.S. Cl. 122—32 **3 Claims**



1. A steam generator having an upstanding feed-water casing with a steam output outlet and enclosing an upstanding heat exchanger radially enclosed by a shroud forming a feed-water descent space by being spaced from the inside of said casing and having top and bottom openings so feed-water in said casing circulates by rising within said shroud and descending via said descent space, a feed-water preheater being heated by a lower portion of said heat exchanger and discharging into said shroud, and a feed-water input pipe line for said preheater extending through said casing for connection with an external source of feed-water; wherein the improvement comprises means for removing feed-water from said descent space at a location above said preheater and introducing it to said feed-water input pipe line to increase the temperature and flow rate of feed-water fed to said preheater and thereby lower the rate of heat exchanged thereto from said heat exchanger.

3,938,474
DISPENSER FOR COLLAPSIBLE TUBES

Harford E. Goings, P.O. Box 64, Manassas, Va. 22110

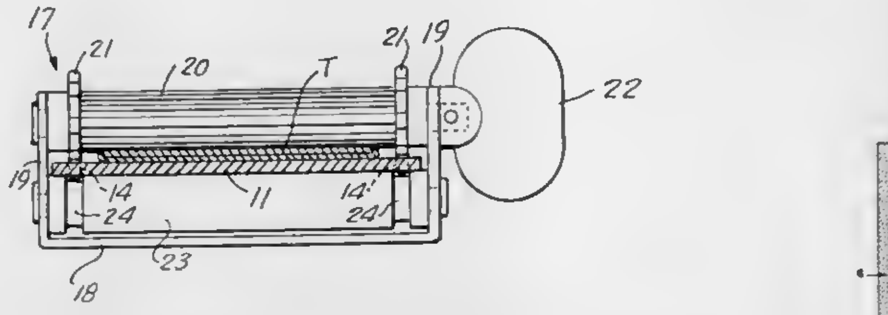
Filed Dec. 13, 1974, Ser. No. 532,585

Int. Cl.^{2} B65D *35/28*

U.S. Cl. 222—102 **1 Claim**

1. A collapsible tube dispenser comprising an elongate flexible plastic member for supporting a collapsible tube thereon, a frame, a plurality of rack forming apertures formed in a row down each of the opposite side edges of said flexible member, a pair of squeeze rollers journalled in said frame for engaging over the flexible member with the collapsible tube positioned thereagainst for squeezing the collapsible tube against the flexible member, hand rotatable spur gears rigidly

mounted on one of said squeeze rollers for rotating said rollers to move said frame as said spur gears engage the rack apertures, a hand key rigidly secured to the roller carrying said spur gears, and annular grooves adjacent opposite ends of the second of said rollers with the spur gears on the other of said rollers engaging in said annular grooves.



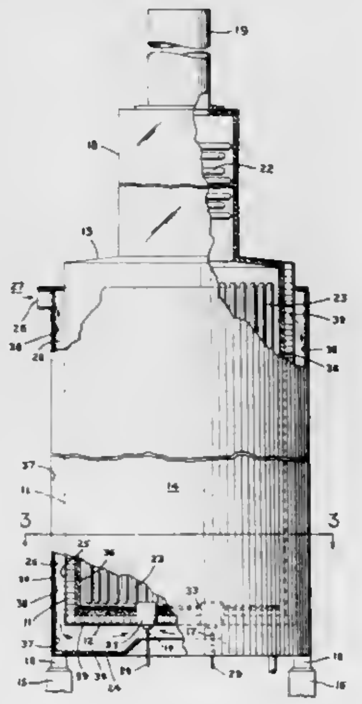
3,938,475
FIRED HEATER WITH DOUBLE CASING

Thomas F. O'Sullivan, Montclair, N.J., and Henricus J. Knol, Voorburg, Netherlands, assignors to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 470,937, May 17, 1974, abandoned. This application Mar. 12, 1975, Ser. No. 557,753

Int. Cl.^{2} F22B *21/00, 21/30*

U.S. Cl. 122—333 **7 Claims**



1. A direct fired heater comprising in combination: an inner casing enclosing a combustion chamber and having a first end, at least one burner communicating with the combustion chamber and penetrating the casing via the first end, and an outer casing spaced from the first end to form a passage in flow communication between atmosphere and the burner, said passage being provided with an acoustic and insulative surface.

3,938,476
TUBE SUPPORT

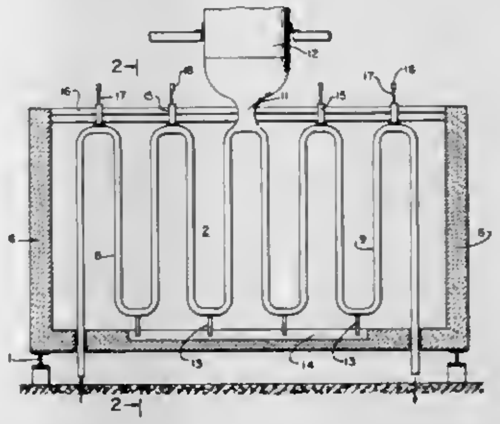
Robert F. Kaupp, Willow Grove, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed Dec. 30, 1974, Ser. No. 537,435

Int. Cl.^{2} F22B *37/24*

U.S. Cl. 122—510 **3 Claims**

1. A tube heater including structure forming a heating chamber having oppositely disposed side walls, a floor and a roof, said roof having a slot extending lengthwise thereof substantially midway between said side walls, burners to heat said chamber, a coil having vertically disposed convolutions located substantially midway between said side walls, a support having a vertically movable portion above said slot, one end of said coil extending through said slot and being fixedly attached to said movable portion, a bracket attached to the upper end of each convolution and extending through said slot, and movable means to support a convolution of the coil connected with each bracket whereby the coil is supported to move as a whole and with each convolution being able to move separately.



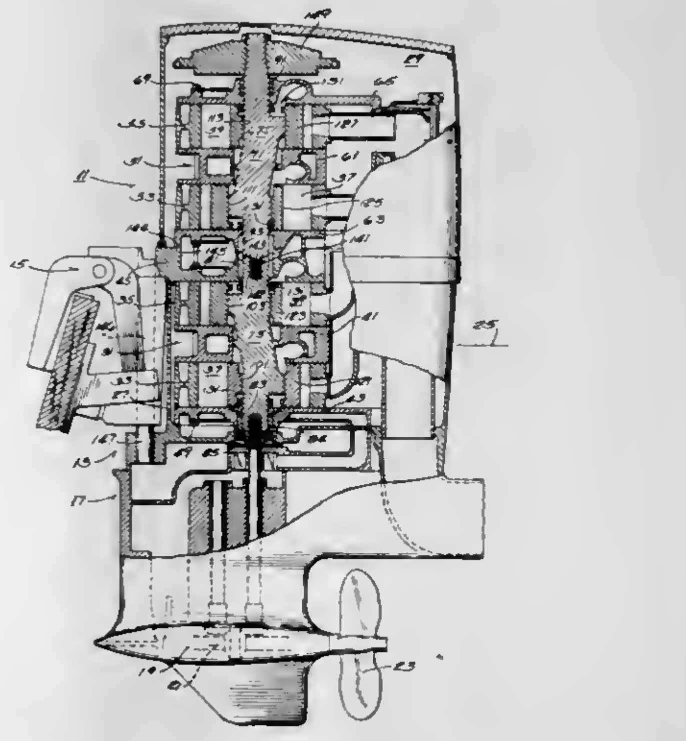
3,938,477
THRUST BEARING ARRANGEMENT FOR A ROTARY PISTON INTERNAL COMBUSTION ENGINE HAVING A VERTICAL CRANKSHAFT

George E. Miller, Libertyville; Michael J. Griffith, Waukegan, both of Ill., and Russell J. Van Rens, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 20, 1974, Ser. No. 444,051

Int. Cl.^{2} F02B *53/00*

U.S. Cl. 123—8.07 **6 Claims**

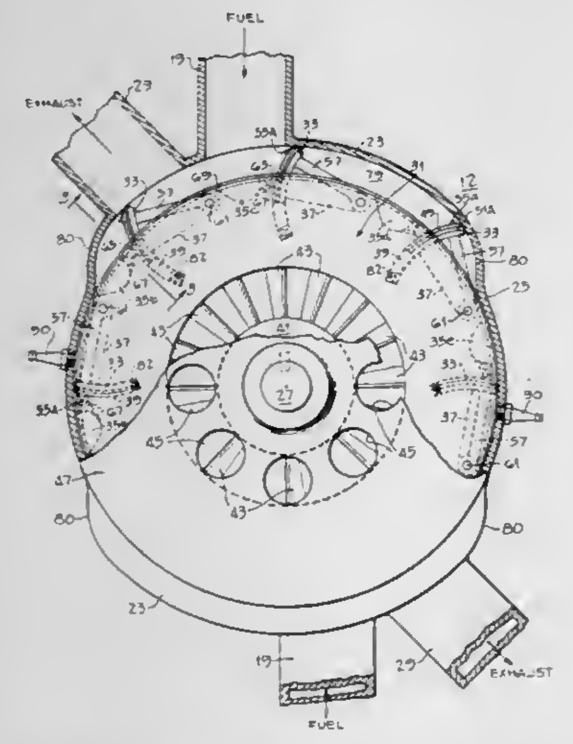


1. An internal combustion engine comprising a lower housing assembly including first and second trochoid shaped rotor cavities in aligned relation to each other, said lower housing assembly also including a thrust bearing, an upper housing assembly including third and fourth trochoid shaped rotor cavities in aligned relation to each other and to said first and second cavities, a crankshaft including, in series, first, second, third, and fourth eccentric portions respectively extending through said first, second, third, and fourth cavities, said crankshaft including a lower portion rotatably supported in said lower housing assembly and including first and second eccentric portions located at 180° from each other, said lower

crankshaft portion also including an annular shoulder engaged with said thrust bearing to transmit axial loading from said lower crankshaft portion to said lower housing assembly and constituting the sole axial support for said crankshaft and an upper crankshaft portion rotatably supported in said upper housing assembly and including said third and fourth eccentric portions located at 180° from each other, and coupling means on said upper and lower crankshaft portions for connecting said upper and lower crankshaft portions with said first and fourth eccentric portions in alignment with each other and with said second and third eccentric portions in alignment with each other and for transmitting axial loading from said upper crankshaft portion to said lower crankshaft portion, first, second, third, and fourth rotors respectively rotatably mounted on said first, second, third and fourth crankshaft portions and respectively rotatable in said first, second, third, and fourth cavities so as to respectively provide first, second, third, and fourth rotating chambers in which combustion takes place, said rotors and said eccentric crankshaft protions being angularly related to each other so as to provide rotational balance without counterweighting, and gear means on said housing means and on said rotors for effecting relative rotation between said rotors and said crankshaft and between said crankshaft and said housing means in response to combustion in said chambers.

3,938,478
ROTARY INTERNAL COMBUSTION ENGINE

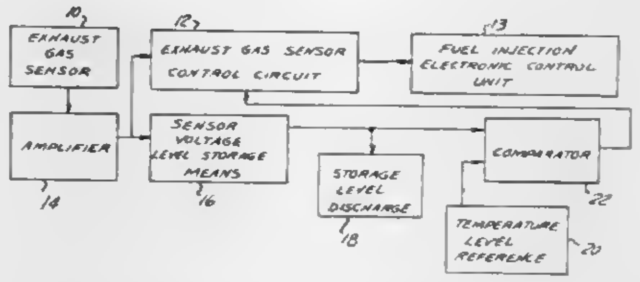
Jack N. Piper, 103 Collins Ave., Pleasantville, N.J. 08232
Filed Apr. 29, 1974, Ser. No. 464,909
Int. Cl.² F02B *53/00*
U.S. Cl. 123—8.33 **15 Claims**



14. In a valveless, concentric, rotary internal combustion engine having a housing, a cylindrically shaped piston mounted for rotary movement in said housing, combustion pockets in the piston's peripheral wall surface opposed to the inner wall surface of the engine's housing, a variable volume working chamber defined by the inner surface of the engine's housing on one side and opposite thereto the piston's wall surface, said working chamber providing the space necessary for receiving the fuel and alternate compression of gases after the gases are ignited followed by exhaustion of the gases from the chamber, gate members pivotably mounted on said piston for substantially frictionless reciprocatable movement so as alternately to compress combustion gases in the piston's combustion pockets and permit the gases to be released therefrom, said gate members each having extending substantially perpendicular thereto an arm which is secured at the arm's other extremity to the rotary piston, at least one projecting lip near the radially outward extremity of the gate member which serves to trap gases emerging from the combustion pockets in a manner which supplements centrifugal force in a radially outward direction, elongated slots within the peripheral surface of the rotary piston to receive the gate member's arms, and elongated recesses each associated at one of its ends with an adjacent combustion pocket whereby combustion gases issuing from the pocket are readily directed by a connecting passageway through the recess and slot to the gate member's projecting lip.

3,938,479
EXHAUST GAS SENSOR OPERATING TEMPERATURE DETECTION SYSTEM

Allan L. Oberstadt, Rochester, Mich., assignor to The Bendix Corporation, Southfield, Mich.
Filed Sept. 30, 1974, Ser. No. 510,276
Int. Cl.² F02B *3/00*
U.S. Cl. 123—32 EA **7 Claims**


10
EXHAUST GAS SENSOR
12
EXHAUST GAS SENSOR CONTROL CIRCUIT
13
FUEL INJECTION ELECTRONIC CONTROL UNIT
AMPLIFIER
14
SENSOR VOLTAGE LEVEL STORAGE MEANS
16
STORAGE LEVEL DISCHARGE
18
COMPARATOR
22
TEMPERATURE LEVEL REFERENCE
20

1. In a fuel management system for an internal combustion engine having an exhaust gas sensor for supplying a control signal to the fuel management control, a detection system for detecting when the temperature of the sensor is at its operating temperature to provide an enabling signal to the fuel management control system, said system comprising:

an exhaust gas sensor operable at a high sensor temperature for generating a first voltage signal in response to the absence of a predetermined constituent gas in the exhaust gas and for generating a second voltage signal in response to the presence of the predetermined constituent gas in the exhaust gas, said sensor having an internal impedance varying inversely with the temperature of said sensor from a very high impedance at its low, nonoperable temperature to a very low impedance at its high operating temperature;

an exhaust gas sensor amplifier circuit means electrically connected to said sensor, the output signal of said circuit means normally having a first voltage level when said sensor's internal impedance is very high corresponding to the low temperature of said sensor and said circuit means adapted to switch said output signal between said first voltage level and a second voltage level in response to said first and second voltage signals from said sensor;

storage means electrically responsive to said first voltage level from said circuit means for storing at a predetermined charging rate a voltage magnitude representing the temperature of said gas sensor;

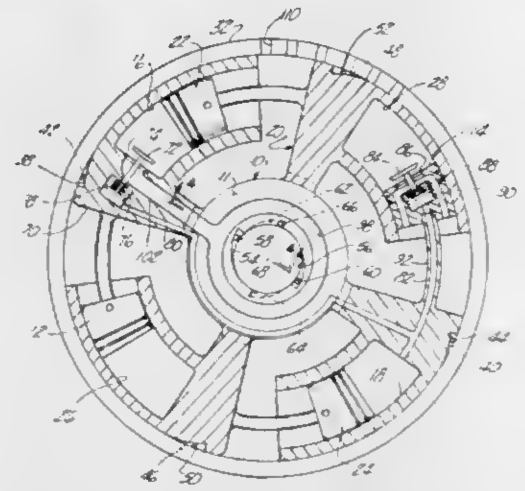
storage discharge means electrically connected to said storage means and operable for discharging said storage means at a predetermined discharging rate, in response to said second voltage level from said circuit means;

temperature reference signal means for generating a threshold voltage level representing the normal operating temperature of said sensor; and

a comparator having one input electrically connected to said storage means and another input electrically connected to said temperature reference signal means, the output of said comparator being an enabling signal when the magnitude of the voltage level of said storage means is greater than said threshold voltage level.

3,938,480
INTERNAL COMBUSTION ENGINE

Leon M. Yanda, Rte. No. 1, Box 45A, Augusta, Kans. 67010
Filed Feb. 4, 1974, Ser. No. 439,384
Int. Cl.² F02B *57/00*
U.S. Cl. 123—43 B **18 Claims**



1. A reciprocating piston device comprising:

a. a shaft;

b. a plurality of rotor members mounted on said shaft for successive alternate rotational movements around said shaft;

c. a pair of oppositely disposed cylinders as a part of each said rotor;

d. a pair of oppositely disposed pistons as a part of each said rotor, each piston of one rotor being positioned for reciprocal movement within a cylinder of another rotor to form a circular arrangement of piston-cylinder assemblies;

e. inlet valve means for the introduction of fluid into each said cylinder;

f. outlet valve means for the removal of fluid from each said cylinder;

g. means for imparting said alternate movements to said rotors;

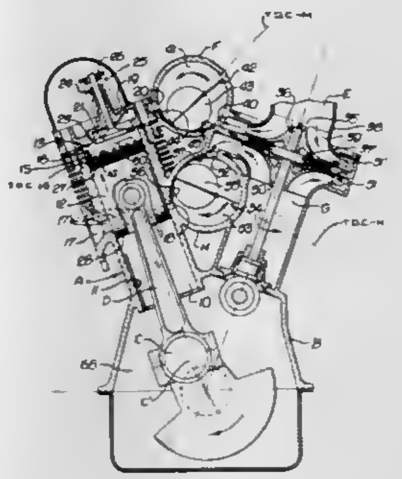
h. means for preventing rotation of a rotor in an angular direction opposite to that of the rotation of another rotor; and

i. conduit means extending from each said assembly and establishing respectively fluid connection with said valve inlet means of the cylinder oppositely disposed to said assembly and with said outlet means of the cylinder following said assembly in said circular arrangement to effect the opening of both said valve means in response to an increase in fluid pressure in the cylinder of said assembly.

3,938,481
TWO-STROKE INTERNAL COMBUSTION ENGINE

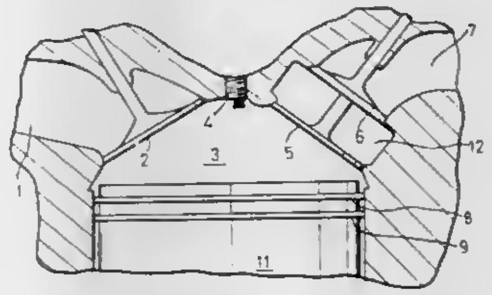
Clyde M. Morton, 11525 S. Ramona, Hawthorne, Calif. 90250
Filed Feb. 7, 1975, Ser. No. 547,790
Int. Cl.² F02B *1/08*
U.S. Cl. 123—69 R **22 Claims**

1. In a reciprocating two-stroke multiple cylinder internal combustion engine having a housing, a cylinder having a piston reciprocably mounted in the cylinder for movement alternately through compression and power strokes, said piston forming one end of a combustion chamber area when the piston is at top dead center, said cylinder having multiple exhaust ports through said cylinder wall and multiple scavenging air ports into said cylinder chamber, a supply port to said cylinder chamber for a fuel-air mixture, a pressure retaining chamber between said supply port and said cylinder chamber, and a pressure retaining valve means between said pressure retaining chamber and said cylinder chamber biased normally to closed position against pressure in said pressure retaining chamber, a fuel-air mixture supply line to said supply port including means for keeping said supply line under pressure, a continuously acting rotary metering pressure booster in said supply line having a metered capacity sufficient to fill said cylinder chamber when said piston is at the bottom of the stroke, a scavenging air line to said multiple scavenging ports including means for keeping said scavenging air line under pressure and a continuous acting rotary metering pressure booster in said scavenging air line having a metered capacity slightly in excess of said cylinder chamber when said piston is at bottom end of stroke, said second recited means being operable to cyclically supply scavenging air to said cylinder chamber at the end of the power stroke, said multiple exhaust and multiple scavenging ports being subject to opening and closing in response to movement of said piston, said rotary metering pressure boosters and said piston being operable in timed sequence to feed fuel-air mixture and scavenging air to said cylinder chamber sequentially.



3,938,482
INTERNAL COMBUSTION ENGINE WITH A PLURALITY OF EXHAUST VALVES

Hideaki Akamatsu, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan
Filed Nov. 27, 1973, Ser. No. 419,238
Claims priority, application Japan, Oct. 16, 1973, 48-116190
Int. Cl.² F02B *75/02*
U.S. Cl. 123—75 C **6 Claims**



1. A four-stroke cycle internal combustion engine of the type having a combustion chamber, carburetor means for introducing a combustible mixture of fuel and air into the chamber, a cyclically movable power member fitted in the chamber for expanding the effective volume of the chamber from a minimum value to a maximum value in response to combustion of the mixture, a fixed volume exhaust passage opening from the chamber, an exhaust manifold connected to the exhaust passage for conducting the exhaust gases from the combustion chamber to the outside atmosphere, a first exhaust valve postioned in the opening of the exhaust passage for passing all of the gases exhausted from the chamber into the exhaust passage, and means for opening the first exhaust valve during a predetermined portion of each cycle of power member movement commencing prior to the completion of

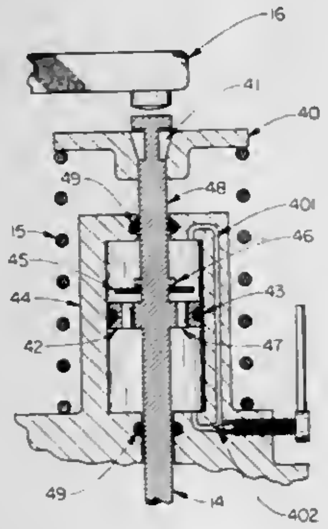
the expansion stroke of the power member, wherein the improvement comprises:

a second exhaust valve arranged in the exhaust passage and spaced downstream from the first exhaust valve by a distance sufficient to form a fixed volume secondary combustion chamber in the exhaust passage sized smaller than the combustion chamber to hold a predetermined initial fraction of the flow of the exhaust gases from the combustion chamber that contain a high proportion of unburned and partially burned fuel components from the region adjacent to the walls of the combustion chamber and

means for opening the second valve to pass all of the gases admitted to the exhaust passage through the first valve to the exhaust manifold at a predetermined time after the opening of the first valve, said predetermined time being sufficient to permit further combusting of the unburned and partially burned components of the hot exhaust gases in the secondary combustion chamber.

3,938,483
GASOLINE ENGINE TORQUE REGULATOR

Joseph Carl Firey, 1554 NE. 95th St., Seattle, Wash. 98115
Division of Ser. No. 389,715, Aug. 20, 1973, Pat. No. 3,855,526. This application Dec. 23, 1974, Ser. No. 536,969
Int. Cl.² F01L *9/02*
U.S. Cl. 123—90.12 **13 Claims**

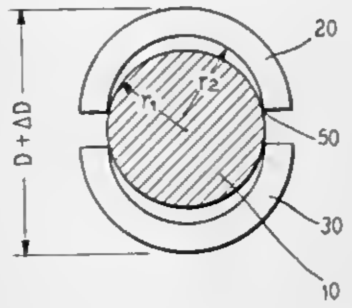


1. The combination of a four stroke cycle gasoline engine, complete with engine intake valves, intake valve closing springs, intake valve operating cams and linkage, wherein the improvement comprises connecting between each such engine intake valve and the frame of the engine a dashpot, one such dashpot for each intake valve;

said dashpot comprising a sealed end cylinder element, a piston element fitted snugly within said cylinder, said piston and said cylinder being moveable with respect to one another and one of them being secured to the engine frame with the other being secured to the engine intake valve, the two chambers of the cylinder created by the presence of the piston therein being filled with fluid and being sealed against leakage and being connected to each other by two flow passages, in one of which flow passages a one way check valve is placed and in the other of which flow passages an adjustable flow restriction is placed, said one way check valve opening fully to allow ready fluid flow between the two chambers of the cylinder when the engine intake valve is being opened by the intake valve operating cams and linkage but closing fully to stop fluid flow in the check valve equipped flow passage when the engine intake valve is being closed by the force of the valve closing spring so that fluid flows between the two chambers of the cylinder during the closing of the valve only through the flow passage containing the adjustable flow restriction; the closing of the engine intake valve being thus adjustably delayed, by delay of fluid flow through the flow restriction, beyond the usual intake valve closing time, said closing of the engine intake valve not to be delayed beyond the time of firing of the engine ignition spark by providing a minimum available restriction area in the flow restriction.

3,938,484
VALVE STEM RETAINER

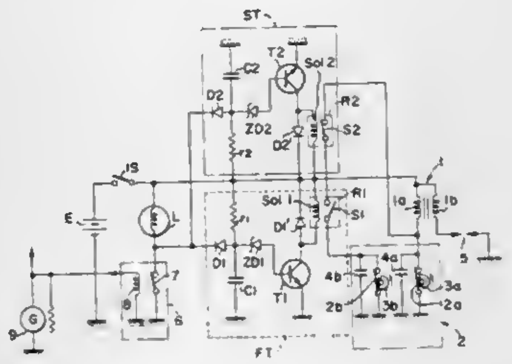
Reinhard Müeller, Lauenau Copenbrugger, Germany, assignor to Teves-Thompson GmbH, Germany
Filed May 20, 1974, Ser. No. 471,185
Int. Cl.² F01L *3/10*
U.S. Cl. 123—90.67 **3 Claims**



1. A valve lock retainer assembly comprising a pair of valve retainer lock segments, each of said segments having a radius of curvature less than the radius of curvature of a valve stem about which segments are to be received, at least one of said segments being deformed into mating engagement with said valve stem and providing frictional engagement as a result of elastically stored strain energy in said segment, each of said segments having a radius of curvature greater than 0.98 times but less than 0.995 times the radius of said valve stem.

3,938,485
IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

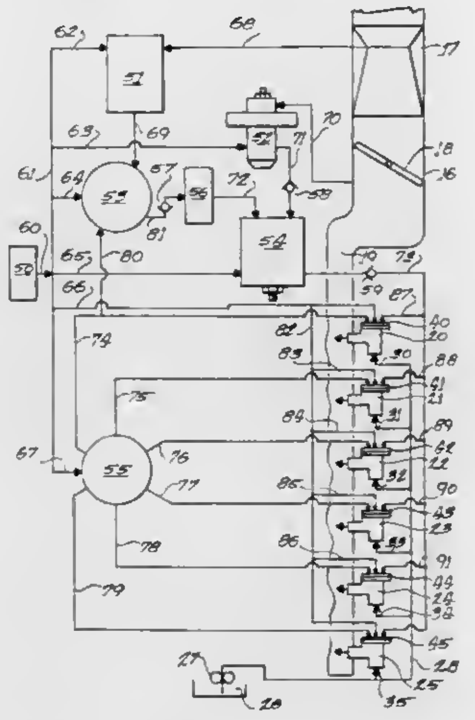
Koji Yoshizu, and Kingo Okitsu, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Japan
Filed Apr. 17, 1974, Ser. No. 461,801
Claims priority, application Japan, Apr. 24, 1973, 48-48878[U]
Int. Cl.² F02P *5/04*; F02N *17/00*
U.S. Cl. 123—117 R **4 Claims**



1. An ignition system for an internal combustion engine having ignition coil means including a primary and a secondary coil, ignition plug means connected with the secondary coil of the ignition coil means, an electric power supply means connected with one end of the primary coil of the ignition coil means, and breaker means connected at one end with the other end of the primary coil, the other end of the breaker means being grounded, the breaker means including at least two breaker contacts connected in parallel to the other end of the primary coil, one of the contacts being opened at a normal engine ignition timing and the other being opened at a timing later than the one breaker contact by a preselected time to retard engine ignition, comprising: a first time delay circuit means including a normally open switch contact means, means for connecting said normally open contact means to the power supply to energize said normally open switch contact means for closing same after a first predetermined time delay; a second time delay circuit means including a normally closed switch contact means, means for connecting said normally closed contact switch means to the power supply to energize said normally closed switch for opening same after a second predetermined time delay, said second predetermined time delay being longer than said first predetermined time delay; means for detecting that the engine is started and producing an engine start signal; and means for receiving said engine start signal from said detecting means and simultaneously energizing said first and second time delay circuit means, said switch contact means of said first and second time delay circuit means being disposed in the series between the primary coil of the ignition coil means and the other breaker contact, whereby after engine start, said first and second circuit means are simultaneously energized and the primary coil is connected in a series with the one breaker contact to produce engine ignition at the normal ignition timing during said first predetermined time delay after which said normally open contact means is closed to establish a series connection between the primary coil and the other breaker contact to produce engine ignition at a delayed timing for a time until said second predetermined time delay has elapsed, which time is the difference between said first and second predetermined time delays, and thereafter said normally closed switch contact means is opened to again establish a series connection between the primary coil and the one breaker contact to again produce engine ignition at the normal ignition timing.

3,938,486
PNEUMATICALLY CONTROLLED FUEL INJECTION SYSTEM

Cecil D. Oglesby, Manchester, Mo., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Apr. 18, 1974, Ser. No. 461,829
Int. Cl.² F02B *33/00*
U.S. Cl. 123—119 R **3 Claims**



1. A pneumatically controlled fuel injection system for an internal combustion engine having air induction passages defining a venturi portion and a manifold portion, said system including,

a pneumatic fluid source,

a pneumatically actuated fuel injector connected to said pneumatic source and in fluid communication with a source of fuel and with said manifold portion of said engine, said injector being operable to admit fuel to said manifold portion in response to a pneumatic control pulse,

a control device communicating with said pneumatic source and with said injector including means for initiating said control pulse in response to a trigger signal and for sustaining said control pulse for a time interval inversely proportional to a bias pressure,

trigger signal generating means connected to said engine and communicating with said pneumatic source and with said control device providing a train of trigger signals having a frequency related to engine speed, and

bias pressure generating means communicating with said pneumatic source and with said control device including;

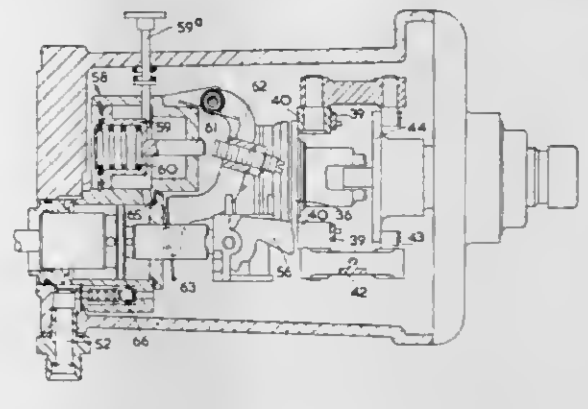
a first pneumatic circuit portion connected to receive a signal from said venturi portion and adapted to provide a first output signal indicative of fuel requirement,

a second pneumatic circuit portion connected to receive a signal from said manifold portion and adapted to provide a second output signal indicative of fuel requirement, and

comparator means connected to said first and second circuit portions and to said control device providing said bias pressure proportional to one of said first or second output signals indicative of fuel requirement.

3,938,487
LIQUID FUEL PUMPING APPARATUS

Pierre Henri Peltret, London, England, assignor to C.A.V. Limited, Birmingham, England
Filed Jan. 25, 1974, Ser. No. 436,813
Claims priority, application United Kingdom, Feb. 3, 1973, 5467/73
Int. Cl.² F02M *59/42*
U.S. Cl. 123—139 ST **5 Claims**



1. A liquid fuel pumping apparatus for supplying fuel to an internal combustion engine, comprising an injection pump operable in time relationship with an associated engine, a fuel control rod movable to effect adjustment of the quantity of fuel supplied at each injection stroke, governor mechanism including a governor weight which is driven at a speed dependent upon the speed of the associated engine, a member movable by the weight, a governor spring for opposing movement of the member as the speed of the engine increases, operator adjustable means for adjusting the force exerted by the spring, link means connecting said member with the fuel control rod whereby for a given setting of the operator adjustable means, as the engine speed increases, the fuel control rod will be moved to reduce the amount of fuel supplied to the apparatus, a releasable actuator which, when released, acts to effect movement of the control rod to an excess fuel position, said actuator including a coiled compression spring, a piston which can be subjected to fluid pressure in order to compress the spring, a spring loaded pin to retain the piston, with the pin being operable from the exterior of the apparatus when excess fuel is required, a pivotal arm which can be engaged by said piston when said pin is released, with said arm pivoting under the action of said compression spring and engaging with part

of said link means to effect movement of the control rod to the excess fuel position, a maximum fuel stop which acts to limit the movement of the control rod in the direction of increasing fuel during normal operation of the apparatus, and said pivotal arm having means for rendering said maximum fuel stop inoperative prior to the engagement of the arm with said part of the link means.

3,938,488
DIESEL ENGINE FUEL INJECTION PUMP GOVERNOR

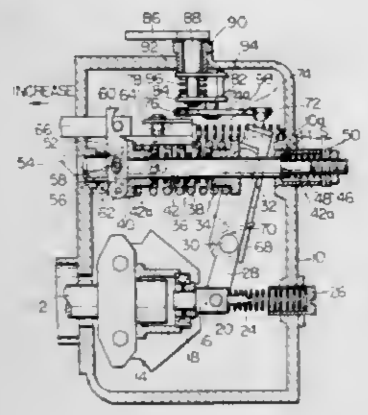
Hachiro Aoki, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed May 22, 1974, Ser. No. 472,330

Claims priority, application Japan, June 1, 1973, 48-63929

Int. Cl.² F02D *1/04*

U.S. Cl. 123—140 R **11 Claims**



1. A governor for an engine fuel injection pump comprising:
a fuel control rod adapted to be connected to the fuel injection pump to control the fuel injection volume;
flyweights;
governor spring means;
a manual engine speed control member; and
a first linkage operatively connecting the flyweights and the control member to the control rod, the first linkage comprising a tension lever having an intermediate fulcrum and being pivotally connected at one end to the flyweights and engagable at its other end with the governor spring means to connect the flyweights to the governor spring means in such a manner that the flyweights move against the force of the governor spring means as the engine speed rises, a guide lever pivotal about the same point as the tension lever, a floating lever rotatably connected at an intermediate point to the control member, the floating lever being pivotally connected at one end to the end of the guide lever and being pivotally connected at its other end to the control rod, and biasing means urging the guide lever to rotate with the tension lever, the biasing means normally operatively maintaining the guide lever in engagement with the tension lever and being arranged to yield and allow the tension lever to disengage from the guide lever when the control member is in a low engine speed demand position and the engine speed is above a predetermined value.

3,938,489
IGNITION SYSTEM FOR TWO-CYLINDER ENGINES

Yoshiaki Takeda, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

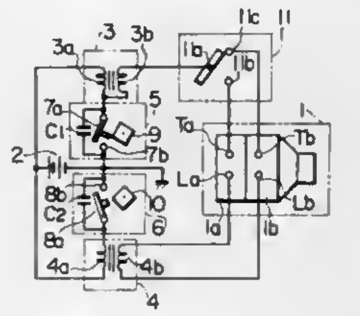
Continuation-in-part of Ser. No. 382,112, July 4, 1972, abandoned. This application Nov. 15, 1973, Ser. No. 416,279

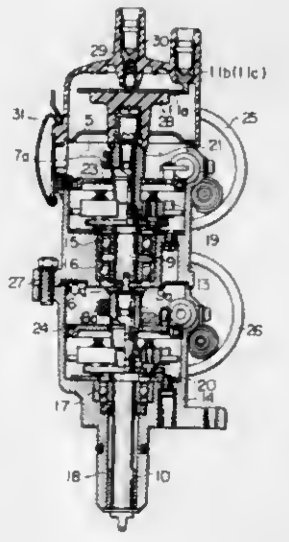
Claims priority, application Japan, July 31, 1972, 47-77158

Int. Cl.² F02P *7/10, 15/02;* F02B *53/12*

U.S. Cl. 123—148 DS **7 Claims**

1. An ignition system for a two-cylinder engine comprising a first ignition signal generator, a first ignition coil controlled by said first ignition signal generator, a first pair of spark plugs connected in series with said first ignition coil, a second ignition signal generator operable independently of said first ignition signal generator to generate ignition signals at time instants different from those of said first ignition signal generator, a second ignition coil controlled by said second ignition signal generator, a second pair of spark plugs connected in series with said second ignition coil,
a first ignition time control means including a first centrifugal advance device operable in response to the number of rotations of the engine and a first vacuum advance device operable in response to an intake negative pressure, said first centrifugal advance device and said first vacuum advance device being coupled to said first ignition signal generator for varying the time of ignition signal generation by said first ignition signal generator in accordance with the number of rotations of the engine and the intake negative pressure, and
second ignition time control means being adapted to operate entirely independent from said first ignition time control means and including a second centrifugal advance device operable in response to the number of rotations of the engine and a second vacuum advance device operable in response to the intake negative pressure, said second centrifugal advance device and said second vacuum advance device being coupled to said second ignition signal generator for independently varying the time of ignition signal generation by said second ignition signal generator in accordance with the number of rotations of the engine and the intake negative pressure.





3,938,490
INTERNAL COMBUSTION ENGINE IGNITION SYSTEM FOR GENERATING A CONSTANT IGNITION COIL CONTROL SIGNAL

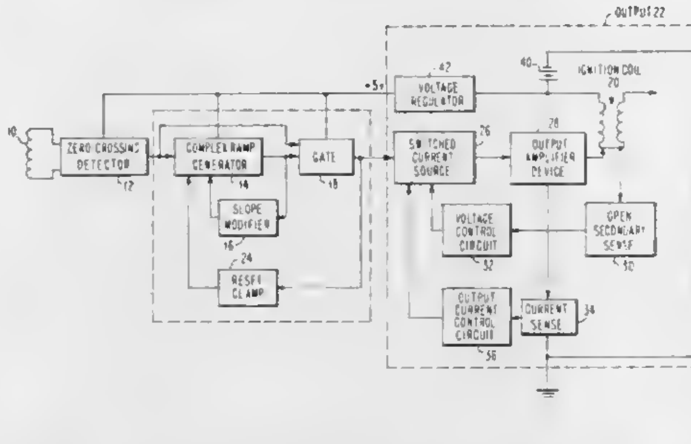
Larry D. Snyder, San Jose, and Robert B. Hood, Los Altos, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed July 15, 1974, Ser. No. 488,883

Int. Cl.² F02P *1/00*

U.S. Cl. 123—148 E **10 Claims**

1. In combination with an engine having an ignition coil and a distributor for supplying an alternating signal, an ignition system comprising:
first means responsive to said alternating signal and operative to generate a first timing signal;
second means responsive to said first timing signal and operative to generate a second timing signal;
third means responsive to said first and second timing signals and operative to generate a constant ignition coil control signal over the normal operating range of said engine so as to effectively minimize the power expended by said ignition system, said control signal having a start transition controlled by said second timing signal and an end transition controlled by said first timing signal; and,
fourth means responsive to said control signal and operative to control the charging and discharging of said ignition coil.



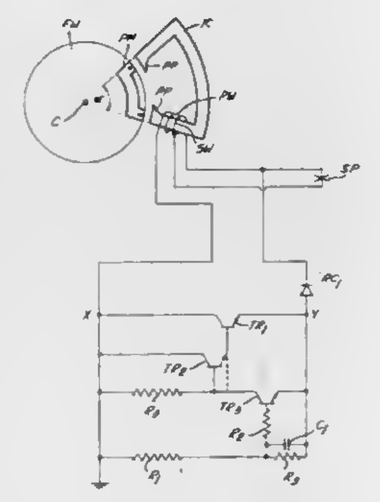
3,938,491
SWITCHING CIRCUIT FOR IGNITION SYSTEM

Benito Marcel Mazza, Ville St. Laurent, Canada, assignor to Terry Industries, Pointe Claire, Canada

Filed Apr. 29, 1974, Ser. No. 464,904

Int. Cl.² F02P *1/02*

U.S. Cl. 123—149 C **7 Claims**



1. An ignition system for internal combustion engines comprising:
a. sparking means for firing in response to said ignition system;
b. ignition coil means for generating a high voltage, said ignition coil having a primary winding and a secondary winding, said secondary winding being connected to said sparking means;
c. magnetic means for linking magnetically with said ignition coil means, said magnetic means being adapted to be moved relative to said ignition coil means and thereby to induce a voltage and current in said primary winding;
d. a first controlled electronic switching means having a controlled electrode for controlling current flow through a first switching path of said first switching means, said first switching path being in the circuit of said primary winding;
e. a second controlled electronic switching means having a controlled electrode for controlling current flow through a second switching path of said second switching means, said second switching path being connected to the controlled electrode of said first controlled electronic switching means;
f. a conduction path through said second switching means between said controlled electrode of said second controlled electronic switching means and one side of said second switching path;
g. a first resistor, having two terminals, connected, at one terminal thereof, to said controlled electrode of said second controlled electronic switching means;
h. a second resistor and a capacitor, connected in parallel arrangement between a second terminal of said first resistor and said one side of said second switching path; and
i. a third resistor connected between said second terminal of said first resistor and a ground point;
whereby, said first controlled electronic switching means will be biased into conduction at the onset by said induced voltage, and the second controlled electronic switching means will be non-conductive;
and said capacitor will be charged by said induced voltage through said third and second resistors to bias said second controlled electronic switching means on after a first time interval which is dependent on the time constant formed by said third resistor, said second resistor and said capacitor, the change in state of said second controlled electronic switching means when it is turned on causing said first controlled electronic switching means to be turned off;
said capacitor being discharged, when said second controlled electronic switching means is turned on, through said first resistor and said conduction path of said second controlled electronic switching means, so that the voltage of said capacitor drops to a level such that said second controlled electronic switching means is no longer conductive, whereby said second controlled electronic switching means is turned off, after a second time interval which is dependent on the time constant formed by the first resistor, the resistance of the conduction path of the second controlled electronic switching means and the capacitor, the first controlled electronic switching means being no longer turned off when the second controlled electronic switching means is turned off.

3,938,492
OVER THE WHEEL DRESSER

Norman Joseph Mercer, Jr., Hillsdale, Ill., assignor to Boyar Schultz Corporation, Broadview, Ill.

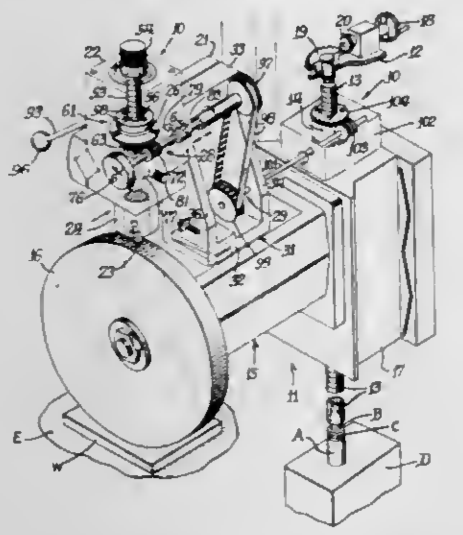
Division of Ser. No. 394,506, Sept. 5, 1973. This application June 17, 1974, Ser. No. 479,603

Int. Cl.² B24B *53/04*

U.S. Cl. 125—11 R **3 Claims**

1. A wheel dresser assembly for a surface grinder, said assembly comprising a dresser elevation head, an elevating screw held in said head and having means for receiving and holding a dressing tool, means holding said screw in said head against rotation but permitting longitudinal dressing tool adjusting movement of the screw in said head, coarse adjusting means for moving the screw longitudinally to effect a first adjustment of the position of the tool, fine-feed adjusting means movable into and out of effective position for a fine longitudinal adjustment of the screw, and means included in the fine-feed adjusting means for disabling the coarse adjusting means when the fine-feed adjusting means is in its effective position, wherein the screw is held in said head by a nut through which the screw is threaded; a worm wheel secured

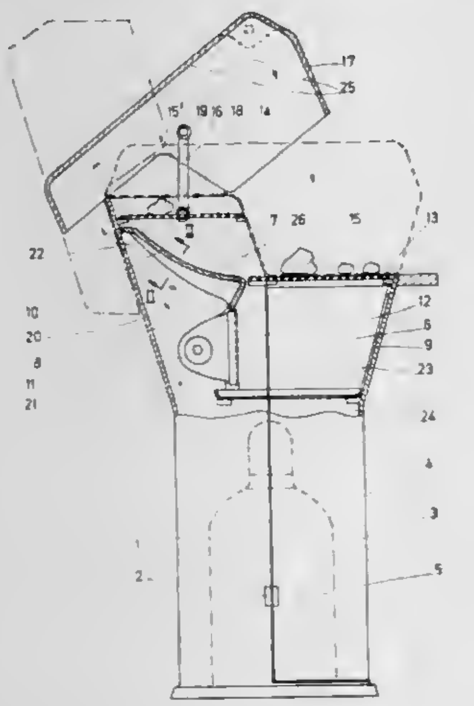
to the nut, a gearing assembly included in the fine-feed adjusting means, said gearing assembly having a worm, and means mounting the assembly for movement to bring the worm into and out of engagement with the worm wheel.



3,938,493

APPARATUS FOR GRILLING WITH HEAT STORING ARRANGEMENT

Hans Bauer, Gutenbergerstr, 20, 7311 Dettingen, Germany
Filed Jan. 28, 1974, Ser. No. 437,211
Claims priority, application Germany, Feb. 9, 1973, 2306347
Int. Cl.² A47J *37/00;* **F24B** *3/00*
U.S. Cl. 126—41 R **3 Claims**

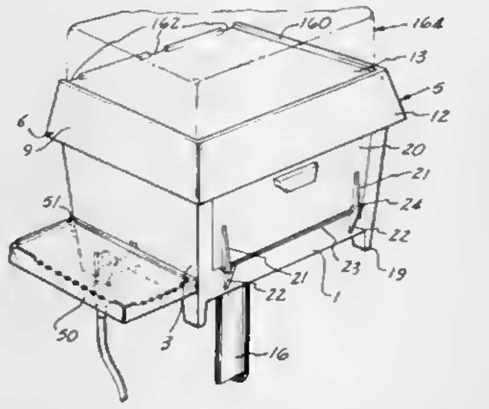


1. In a grilling apparatus which includes (a) a grill basin having forward and rear walls, (b) a heating element, grilling grate and heat-retaining warming storage grate operatively associated in the grill basin, (c) a hood having depending forward and rear walls defining a hollow channel opening toward the grill basin, and (d) means for pivotally mounting the hood to the grill basin for movement between a closed position and a fully open position with respect to the grill basin, the pivotal mounting means being located so that the rear wall of the hood overlaps the rear wall of the grill basin when the hood is pivoted away from the closed position, the pivotal mounting means comprising means for stably supporting the hood in a desired position intermediate the closed position and a fully open position, the improvement wherein the rear wall of the grill basin has openings therethrough for passage of a heated air stream out of the grill basin, whereby the overlapping portion of the hood chamber receives the heated air stream exiting from the rear wall of the grill basin via at least one of the openings therein when the hood is in an open position.

3,938,494

COOKING APPARATUS

Morton L. Clark, Bradenton, Fla., assignor to Guaranteed Weather, Inc., Bradenton, Fla.
Continuation of Ser. No. 265,296, June 22, 1972, abandoned. This application June 12, 1974, Ser. No. 478,695
Int. Cl.² A47J *37/06*
U.S. Cl. 126—41 R **42 Claims**



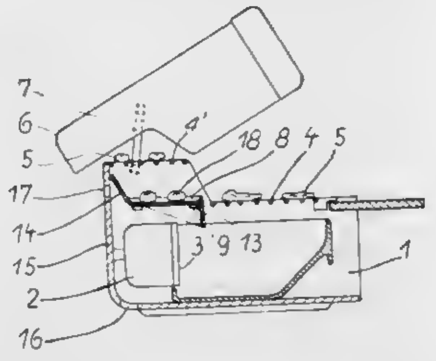
1. A cooking device comprising in combination an enclosure having upright walls defining a chamber having a top and a bottom, burner means in said chamber above said bottom, a perforate grate above said burner means, a layer of perforate incombustible material disposed on said grate adapted to be heated by said burner means to incandescence in at least a narrow portion thereof directly over said burner means, a cover for closing the top of said chamber, means for supporting food to be cooked above said grate and adapted to allow heated air to rise past the food, gaseous fluid outlet means extending along said upright walls of said enclosure spaced below the uppermost portion of said cover and above said food support means whereby said device is vented to atmosphere through said outlet means, and air inlet means in the vicinity of said bottom of said enclosure having an area greater than that of said outlet means and correlated therewith and said burner means such that atmospheric air is inducted from the outside atmosphere via said air inlet means solely by convection currents generated by operation of said burner means and is heated as it flows freely upwardly sequentially past said burner means and said layer of material, the heated air thence flowing upwardly past said food support means and outwardly via said outlet means to atmosphere, said inlet-outlet-burner correlation being such that said inducted air flows at low velocity but in sufficiently high volume to cause a constant circulation of heated air around the food cooking on said food support means whereby any stagnant cold layer of air adjacent the food is stripped away by said flowing air to thereby effect more efficient radiant and convection heating of the food.

3,938,495

GRILLING APPARATUS WITH SUPPORTING SURFACE

Hans Bauer, Dettingen, Germany, assignor to Hans Bauer, Dettingen, Germany
Filed Sept. 11, 1974, Ser. No. 505,001
Claims priority, application Germany, Sept. 14, 1973, 7333356
Int. Cl.² A47J *37/00;* **F24B** *3/00*
U.S. Cl. 126—41 R **3 Claims**

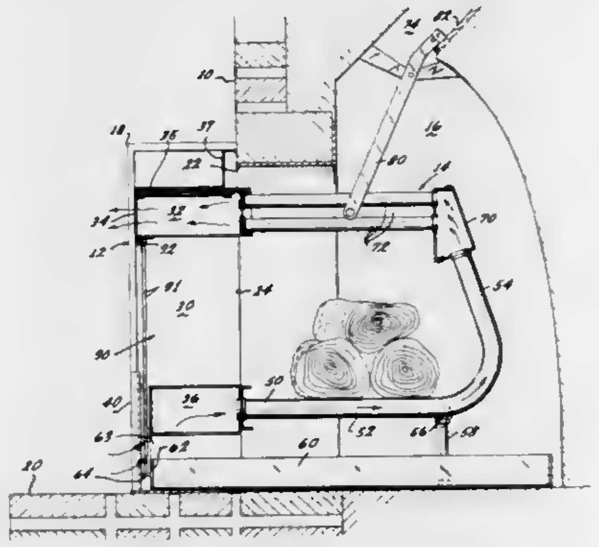
1. In a grilling apparatus, a grill tub containing a heating element, a grilling element supported transversely to and above the heating element and forwardly thereof, a bowl have a closed, food supporting bottom surface exhibiting a pattern of indentations and mounted independently, directly above the heating element and transverse to the grilling element, the bottom surface of the bowl being directly heated by a first portion of the radiation from the heating element, means for deflecting a second portion of the radiation from the heating element toward the grilling element, a hood adjustably positioned above the grill tub for deflecting radiation incident thereon downwardly toward the bowl, and means including an aperture in one wall of the grill tub for directing a flow of heated air from the heating element toward the hood.



3,938,496

FIREPLACE FORCED AIR CIRCULATION MEANS

William M. Kampf, Rancho Santa Fe, and Denny B. Law, San Marcos, both of Calif., assignors to Aquappliances, Inc., San Marcos, Calif.
Filed Dec. 26, 1974, Ser. No. 536,566
Int. Cl.² F24B *7/00*
U.S. Cl. 126—121 **7 Claims**



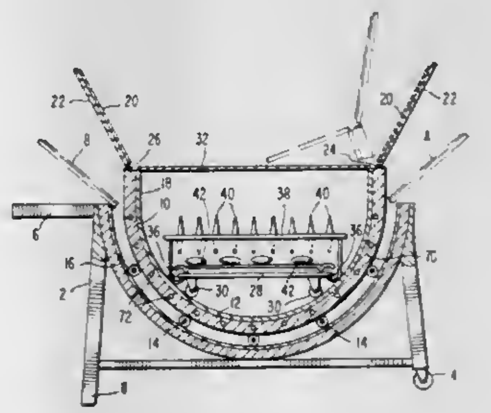
1. Forced hot air circulation means to be installed in a room having a convention fireplace of the type having a firebox, having a hearth extending from inside the firebox to an outside hearth area in front of and wider than said firebox to extend to each side of said firebox, and having facings above and to the sides of said firebox, comprising:

a. a generally box-shaped sheet metal outer housing resting on said outside hearth area in front of said firebox and lapping at least the margins of said facings above said firebox and said facings to the sides of said firebox,
b. said housing having sidewalls aligned with and disposed in vertical planes normal to said facings to the sides of said firebox,
c. said housing having means supported between said sidewalls in the upper portion of said housing including a chamber located at least mostly outside of said firebox with air outlet means at its front to exhaust air into said room,
d. said housing having means supported between said sidewalls in the lower portion of said housing including an air ingress manifold located at least mostly outside of said firebox, and at least one blower located outside of said firebox having an inlet for room air and exhausting into said air ingress manifold,
e. said housing having an open central housing portion in front of said firebox and located between said chamber and said manifold and between said sidewalls and providing access to and viewing of said firebox, and
f. spaced, juxtaposed tubular means connected to said housing and including first lower generally horizontally disposed tubular portions connected to said manifold at their forward ends to receive air therefrom and extending rearwardly into said firebox defining a grate, second air transferring means connecting to the rear ends of said first tubular portions and extending upwardly to the upper portion of said firebox, and third upper tubular portions connecting to the upper end of said second air transferring means and extending forwardly and connecting to the rear of said chamber for exhausting of air to said room, thereby delivering a flow of heated air when a fire burns in said firebox.

3,938,497

APPARATUS FOR SOLAR COOKING

Stella Andrassy, Ridge Road, Kingston, N.J. 08528
Filed Dec. 10, 1974, Ser. No. 531,279
Int. Cl.² F24J *3/02*
U.S. Cl. 126—270 **4 Claims**



1. A solar cooking oven comprising
a. a frame;
b. an oven of concave configuration tiltably mounted on said frame to afford maximum exposure of the interior of the oven to solar radiation;
c. an article support located in said oven adjacent the center thereof;
d. and rollers located between said oven and article support to permit movement of said support to a horizontal position in any tilted position of said oven.

3,938,498

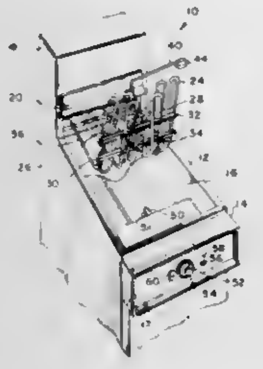
CONTROL SYSTEM FOR FRYING APPARATUS

George M. Price, Shreveport, La., assignor to The Frymaster Corporation, Shreveport, La.
Division of Ser. No. 479,661, June 17, 1974, Pat. No. 3,870,859. This application Feb. 18, 1975, Ser. No. 550,350
Int. Cl.² A47J *27/00*
U.S. Cl. 126—374 **1 Claim**

1. In a food frying system the combination comprising:
a plurality of heater elements adapted for connection to a power source for heating cooking fluid in said system, said elements being pivotally attached to said system to rotate from a first position in said cooking fluid to a second position out of said fluid,
a first thermostat selectively electrically connected to said heating elements for maintaining said heating elements at a selected cooking temperature,

a second thermostat attached to and in selective electrical connection with said heating elements for turning off said elements when said elements reach a first predetermined temperature while in said first position,

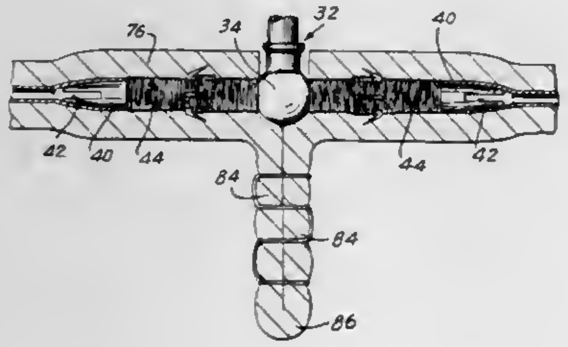
a third thermostat attached to and in electrical connection with said heating elements for turning off said elements when said elements reach a second predetermined temperature while in said second position,



a thermal delay relay selectively connected to said heating elements for cycling said heating elements off and on while said elements are in said second position; and

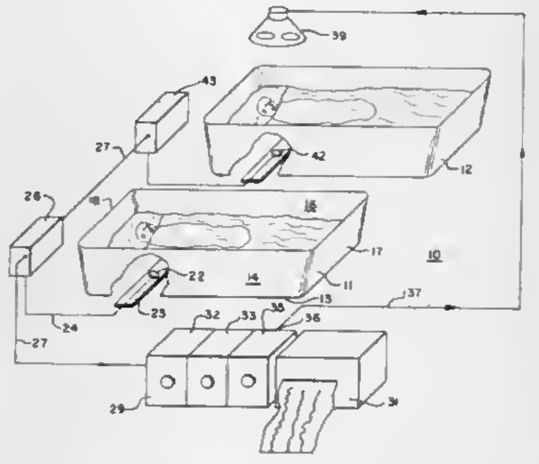
a switch in said system for alternately connecting said first and second thermostats to said heating elements and disconnecting said thermal delay relay from said heating elements when said elements are in said first position and for connecting said thermal delay relay to said heating elements and disconnecting said first and second thermostats from said heating elements when said elements are in said second position.

3,938,499
IMPLANT AND IMPLANTING METHOD AND TOOL
Louis Bucalo, 155 Roberts St., Holbrook, N.Y. 11741
Division of Ser. No. 359,429, May 11, 1973, Pat. No. 3,815,578. This application Feb. 5, 1974, Ser. No. 439,836
Int. Cl.² A61B *17/11, 19/00*
U.S. Cl. 128—1 R **1 Claim**



1. In a method for introducing a valve having an intermediate portion and tubular extensions respectively extending in opposite directions from said intermediate portion into a vas deferens of a living being, the step of removing a part of the vas deferens extending outwardly from the lumen thereof at only one side of the lumen so as to leave at the vas deferens a continuous portion extending between free ends of the lumen which are exposed by removing said part thereof, introducing the tubular extensions into the free ends of the lumen, respectively, deflecting the continuous portion of the vas deferens away from the lumen thereof to advance the free ends of the lumen toward the intermediate portion of the valve for pulling the vas deferens onto the opposite tubular extensions, forming from the deflected continuous portion of the vas deferens a pair of flaps which engage each other, which remain connected to each other at their outer ends which are distant from the lumen, and which project laterally from the lumen, and fastening the flaps together so that they will grow together and maintain the free ends of the lumen adjacent the intermediate portion of the valve.

3,938,500
AUTOMATED NEWBORN HEARING SCREENING APPARATUS AND METHOD
F. Blair Simmons, Portola Valley, Calif., assignor to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.
Filed Aug. 19, 1974, Ser. No. 498,450
Int. Cl.² A61B *5/12*
U.S. Cl. 128—2 Z **9 Claims**



1. In a hearing screening apparatus of the type for measuring hearing of a human subject by measuring the change in subject motor activity in response to an unexpected auditory stimulus, the apparatus comprising,

an audio signal reproducer disposed to stimulate the subject with audio energy,

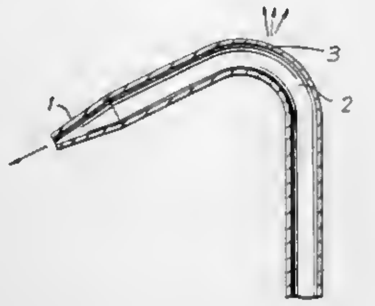
means for supporting said human subject,

a motion transducer coupled to said support means serving to provide an electrical output signal responsive to movement of the support means responsive to movement of the human subject,

means for recording the transducer output as a function of time,

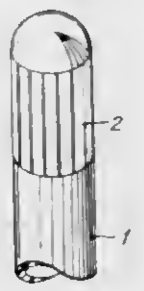
control means for recording a signal for the subject's baseline motor activity and at a predetermined time simultaneously transmitting an auditory test signal stimulus via said reproducer and recording a signal for the subject's motor activity response to said test signal stimulus.

3,938,501
CATHETER FOR RADIOLOGICAL RENAL AORTOGRAPHY AND SELECTIVE ARTERIOGRAPHY
Uno Eugen Erikson, Uppsala, Sweden, assignor to Siemens Aktiengesellschaft, Germany
Filed Nov. 1, 1973, Ser. No. 411,815
Claims priority, application Sweden, Nov. 3, 1972, 253/72
Int. Cl.² A61B *6/02*
U.S. Cl. 128—2 A **5 Claims**



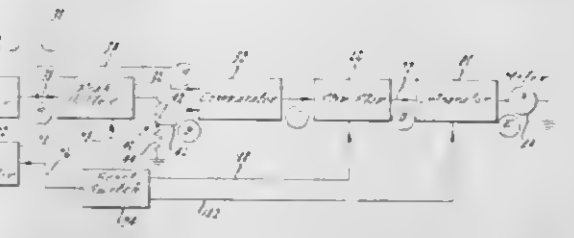
1. Catheter for the injection of liquid X-ray contrast media into the vascular system of a patient for the implementation of renal aortography and selective arteriography comprising a flexible tubular catheter member, one end of said catheter member terminating into a tapered point having an opening communicating with the interior of the catheter and adapted to be introduced into the patient, said catheter member being bent through a predetermined angle in proximity to said point end so as to form a first short linear portion between said tapered point and the bend and a second lengthier linear tubular portion, said first and second linear tubular portions subtending an acute angle therebetween, and through aperture means being formed in said catheter member in the central region of its bend intermediate said first and second linear tubular portions, said aperture means being dimensioned to facilitate flow therethrough of approximately one-seventh the quantity of the contrast media flowing through said catheter, and said first short linear portion being of a length so as to provide a predetermined distance between said opening at the tapered point and said aperture means whereby said catheter is adapted to be positioned in the renal artery of the patient for concurrently effecting renal aortography and selective arteriography.

3,938,502
APPARATUS WITH A CATHETER FOR EXAMINING HOLLOW ORGANS OR BODIES WITH THE ULTRASONIC WAVES
Nicolaas Bom, Weidebloemstraat 33, Berkenwoude (Z.H.), Netherlands
Division of Ser. No. 334,300, Feb. 21, 1973, Pat. No. 3,827,115. This application May 9, 1974, Ser. No. 468,544
Claims priority, application Netherlands, Feb. 22, 1972, 7202282; Mar. 10, 1972, 7203176
Int. Cl.² A61B *10/00*
U.S. Cl. 128—2 V **19 Claims**



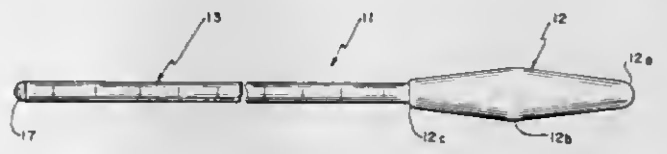
1. A device for examining a hollow organ, such as the heart, said device comprising a catheter having an axis and adapted to be placed inside the follow organ and including at an end, at least four circumferentially arranged, equidistantly distributed elements, each of which is adapted for the transmission and the reception of ultrasonic waves in successive transmission-reception periods, each of said elements having a width in a plane perpendicular to the axis of the catheter which is smaller than the wavelength of the ultrasonic waves such that they show substantially no directivity in a plane perpendicular to the axis of the catheter, the elements haveing axial dimensions which are larger than said wavelength, such that they do show directivity in a plane containing the said axis; an excitation device which successively excites groups of adjacently arranged elements at a rate of at least 25 times per second, each group having a center line; time delays for delaying the pulses transmitted and received during a transmission-reception period by the elements of a group so that the differences in travel times among the elements for the pulses to or from a plane perpendicular to the center line of the group are compensated; an adder for the summation of the echo pulses brought into coincidence by the time delays; and means controlled by the adder, for visually displaying the part of the examined hollow organ surrounding the catheter.

3,938,503
ACHILLES REFLEX TEST SYSTEM
Vincent A. Vis, Brighton, Mich., assignor to J. M. Richards Laboratories, Grosse Pointe, Mich.
Filed Sept. 3, 1974, Ser. No. 502,718
Int. Cl.² A61B *5/16*
U.S. Cl. 128—2 N **24 Claims**



1. A system for sensing the lapse of time between the peak contraction and the one-half relaxation point on a curve created by sensing the displacement of a foot in response to tapping the achilles tendon of the foot, the resulting curve having at least a first and second peak component having first and second peaks, the system comprising transducer means positioned to respond to the displacement of the foot and generating the curve, means connected to said transducer means for detecting a characteristic of the first peak of the curve and generating a first signal in response thereto and detecting the same characteristic of the second peak and generating a second signal in response thereto, said characteristic being relaxation points defined by a ratio of the characteristic point amplitude to the peak amplitude of said first and second peak components, bi-stable circuit means connected to said detector means having a first and second stable state, said bi-stable circuit means being in said first state in response to said first signal and being switched to said second state in response to said second signal, integrator circuit means including output means connected to said bi-stable circuit means and responsive to said first and second stable states, said integrator circuit means timing the period between said first and second characteristic and providing an output thereof, and reset circuit means connected to said detector means, bi-stable circuit means and said integrator circuit means for resetting said various means subsequent to the occurrence of said second characteristic.

3,938,504
METHOD FOR MEASURING VAGINA DIMENSIONS
Ben Wade Oakes Dickinson, III, 2125 Broderick St., San Francisco, Calif. 94115, and Robert Wayne Dickinson, 40 Maplewood Drive, San Rafael, Calif. 94901
Filed Oct. 30, 1974, Ser. No. 519,081
Int. Cl.² A61B *5/10*
U.S. Cl. 128—2 S **1 Claim**

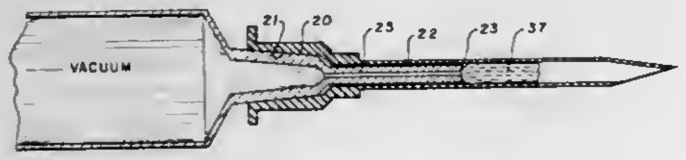


1. In a trial and error method for measuring the effective diameter of the vaginal sphincter muscle of an animal of the type having a vagina terminating at the posterior end in a normally closed vulva and at the anterior end in a normally closed cervix and having a vaginal sphincter muscle therebetween using a device with a nose cone portion having a rounded blunt free end mounted to an elongate handle, said nose cone portion including an intermediate ring of maximum diameter, the steps of

a. grasping one of said measuring devices by the handle and inserting the nose cone portion through the animal's vulva into the animal's vagina until said intermediate ring passes anterior to said sphincter muscle, and

b. repeating step (a) with different measuring devices having intermediate rings of successively increased diameters until a measuring device is tried which causes a marked build-up of resistance against anterior movement of the device upon contact of said intermediate ring with the sphincter muscle and a distinct release of the resistance after passage through the muscle.

3,938,505
SOFT TISSUE BIOPSY ASPIRATING DEVICE
Khosrow Jamshidi, 610 Winston Court, St. Paul, Minn. 55118
Continuation of Ser. No. 497,903, Aug. 16, 1974, abandoned, which is a continuation-in-part of Ser. No. 330,320, Feb. 7, 1973, abandoned, which is a continuation-in-part of Ser. No. 261,818, June 12, 1972, abandoned. This application Mar. 27, 1975, Ser. No. 562,915
Int. Cl.² A61B *10/00*
U.S. Cl. 128—2 B **6 Claims**



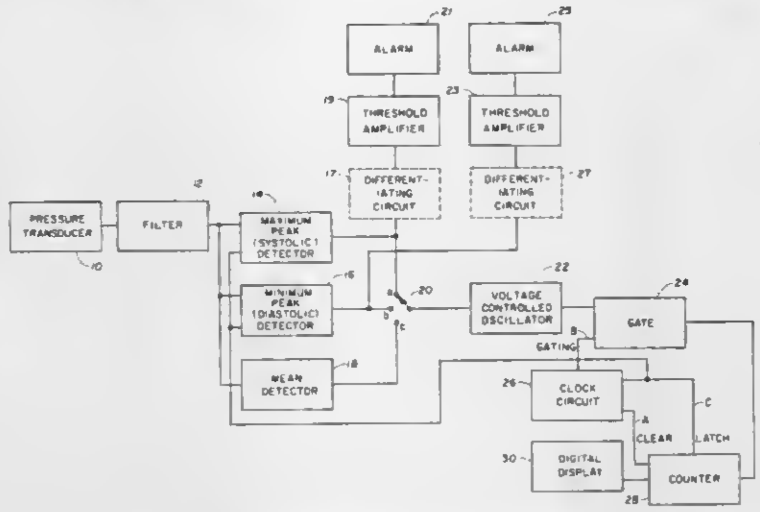
1. Biopsy aspirating means for gathering soft tissue samples comprising:

a. syringe means having a barrel having a proximate end and a tip end, a plunger sealingly received within such barrel and forming a controllably variable volume chamber, an elongated sample-receiving hollow needle mounted upon said barrel, with said needle having a sharpened piercing tip at the outer end and a mounting hub at the inner end thereof, and needle mounting boss means formed integrally in one piece with said barrel as an extension thereof and being disposed at the tip end of said barrel and having a shank portion extending from the tip end of said barrel and having a means for receiving the mounting hub of said sample-receiving needle adjacent the tip end of said barrel;

b. a gripping shaft coupled to said plunger and extending outwardly from the proximate end of said barrel, guide plate means disposed at the proximate end of said barrel and having an opening formed therein to receive said gripping shaft, said gripping shaft having locking lug means formed thereon and arranged to releasably engage the outer surface of said guide plate means for restraining inward travel of said plunger when disposed at a position removed from said barrel tip end;

c. said needle mounting boss means terminating in an axially disposed sample abutment surface, an axial bore formed within said needle mounting boss and providing communication between the variable volume chamber of said barrel and the bore of said hollow needle shaft, said axially disposed abutment surface being received within the bore of said hollow needle and being disposed along said needle shaft at a point inwardly from the piercing tip end of said needle and toward the inner end thereof.

3,938,506
BLOOD PRESSURE MONITORING SYSTEM
Michael R. Birnbaum, New Brighton, and Louis C. Cosentino, Wayzata, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Aug. 5, 1974, Ser. No. 495,072
Int. Cl.² A61B *5/02*
U.S. Cl. 128—2.05 A **5 Claims**



1. A system for monitoring the blood pressure of a patient, said system comprising:

a. transducer means adapted to be coupled to the vascular system of the patient for providing an output indicative of the patient's blood pressure;

b. filter means having a variable limit set in accordance with the patient's heartbeat for removing a high portion of the undesired frequency components from the output of said transducer means, the set limit being high with respect to the patient's heart rate, said filter means passing a high portion of the signal components of a frequency corresponding to the patient's heart rate;

c. systolic detector means responsive to the output of said transducer means for providing a first output indicative of the maximum magnitude of the patient's blood pressure;

d. diastolic detector means responsive to the output of said transducer means for providing a second output indicative of the minimum magnitude of the patient's blood pressure;

e. display means for displaying an indication of the patient's blood pressure;

f. switch means for selecting one of the first and second outputs to be displayed; and

g. processing means responsive to the magnitude of the selected output for providing an output indicative thereof for a selected period to said display means.

3,938,507
PORTABLE HEART MONITOR
Stanley J. Sarnoff, Bethesda; Herbert E. Reinhold, Jr., and Allan M. Wolfe, both of Rockville, all of Md., assignors to Survival Technology Incorporated, Bethesda, Md.
Filed Nov. 1, 1973, Ser. No. 411,843
Int. Cl.² A61B *5/04*
U.S. Cl. 128—2.06 B **32 Claims**

32. Heart monitoring apparatus for use by a human user comprising:

a housing adapted in size and shape for holding by a human hand of said user,

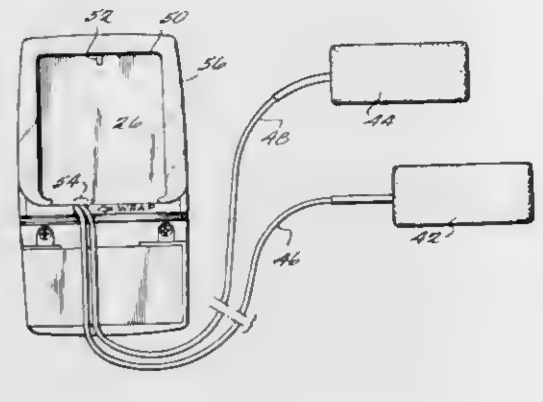
two electrodes physically connected via electrical leadwires with said housing, said electrodes being adapted for electrical contact at two respectively corresponding spaced-apart body areas of said human user,

circuit means disposed within said housing for receiving and processing electrical signals taken from the body of said user via said electrodes, said signals representing the functioning of a heart beating within the user's body and including output means for providing a sensible output indication corresponding to a predetermined characteristic of said electrical signals,

said circuit means including at least one differential amplifier means having two differential inputs respectively connected to receive electrical signals from a corresponding one of said electrodes,

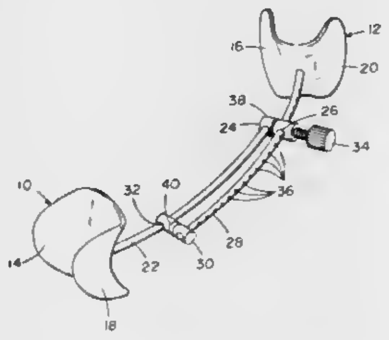
said differential amplifier means also having a reference input for providing suppression of common mode noise appearing on said differential inputs when connected with a suitable reference electrical potential, and

an electrically conducting area disposed on the outside of the housing in a position normally in contact with said human hand when held thereby,



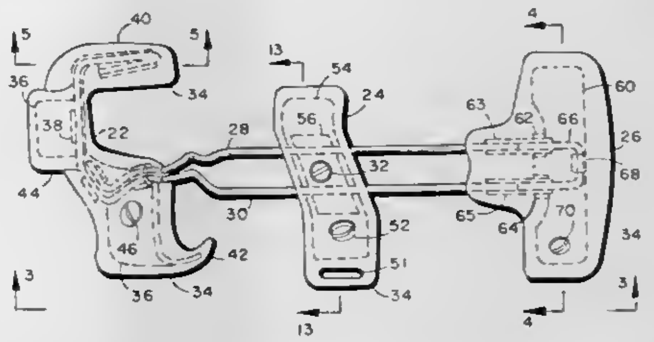
said electrically conducting area constituting a third electrode being electrically connected to said reference input for said circuit means whereby the user's body associated with said hand effectively becomes a source of electrical ground or reference potential when the housing is held in said hand thereby facilitating the suppression of spurious common mode electrical signals in said circuit means from said signals representing the functioning of a heart beating within the user's body.

3,938,508
ORAL APPLIANCE FOR BURN PATIENTS
Horst E. Buckner, R.R. No. 1, Iowa City, Iowa 52240
Filed July 26, 1974, Ser. No. 492,147
Int. Cl.² A61F *5/08*
U.S. Cl. 128—76 R **8 Claims**



1. An oral appliance for treating patients with facial burns, said appliance comprising a pair of spaced-apart end members each having an outer wing and an inner wing joined together along a edge to form a concave-shaped end member with the wings extending outwardly away from the outwardly extending wings of the other end member, said end member being of a size to engage and fit the patient's lips only at opposite corners at the sides of the opening of the patient's mouth, and adjustable means connected to said end members at a place centrally of each of them and providing for adjustable relative movement between said end members to vary the distance between them, said adjustable means terminating at the place of connection to each said end member and lying entirely between said end members regardless of the relative position of said end members.

3,938,509
HAND SPLINT
Lois M. Barber, 5128 E. Ocean Blvd., Long Beach, Calif. 90803
Filed Dec. 9, 1974, Ser. No. 530,819
Int. Cl.² A61F *5/10*
U.S. Cl. 128—77 **9 Claims**



1. A hand splint comprising:

a manually bendable support medium formed of a framework of metal, and having a pliant cushioning material enclosing at least the major portions of said framework;

said splint including as major pieces,

a palm piece, a distal piece and a proximal piece;

said palm, distal and proximal pieces being substantially arcuate in shape; and wherein,

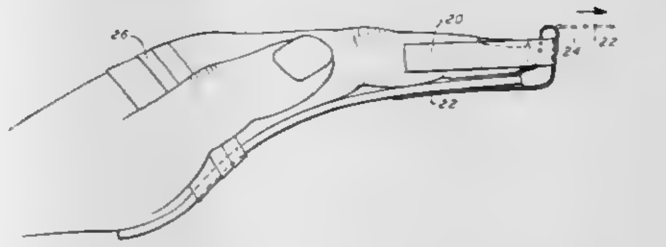
said palm piece includes a palm support portion which is adapted to lie proximally to the distal palmar crease; and wherein;

said distal piece is angularly oriented relative to the longitudinal axis of an arm, is adapted to provide radial and ulnar contact, the radial contact being closer to the hand than the ulnar contact;

at least one longitudinally oriented connecting wires joining said major splint pieces; and,

straps attached to said hand splint to secure it to a hand and forearm.

3,938,510
FINGER SPLINT WITH TRACTION MEANS
Edward M. Gerber, 12 Carriage Drive, Lexington, Mass. 02173
Filed Aug. 5, 1974, Ser. No. 494,525
Int. Cl.² A61F *5/04*
U.S. Cl. 128—85 **11 Claims**



1. An article for use in the treatment of an injured finger or the like comprising:

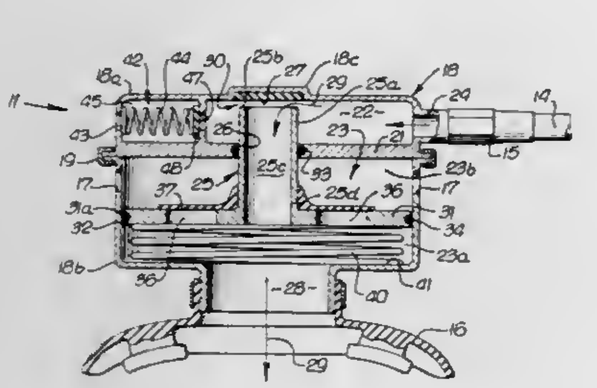
an elongate splint having an outer forwardly extending end;

an attachment member having a first portion attached to the outer end of the splint, said member including an upwardly extending end portion extending from said first portion of said attachment member, said member being flexible to enable said end portion to be flexed with respect to said first portion of the member and splint in a direction which is forwardly and away from the end of said finger;

finger attaching means connected to the upwardly extending end portion of said member and adapted to extend generally rearwardly therefrom for attachment to said finger; and means for urging the upwardly extending end of the member in a generally forward direction and away from the end of the finger to a tensioned position.

3,938,511
MOUTHPIECE REGULATOR FOR AN UNDERWATER BREATHING APPARATUS

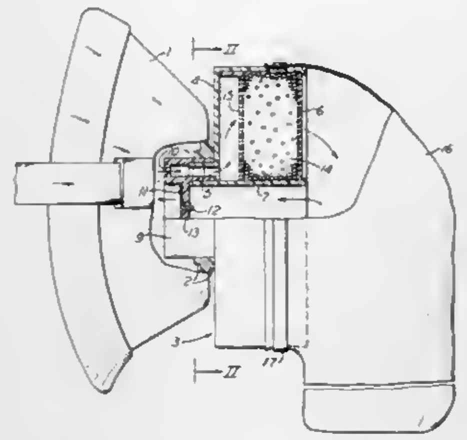
Robert E. Roberts, Torrance, Calif., assignor to Under Sea Industries Of Delaware, Inc., Compton, Calif.
Filed July 26, 1974, Ser. No. 492,058
Int. Cl.² A62B *7/04*
U.S. Cl. 128—142.2 5 Claims



1. In the second stage regulator for scuba diving equipment:
a. a housing;
b. said housing having a partition dividing said housing into two compartments, namely, an inlet compartment and a control compartment;
c. a movable wall in the control compartment and dividing said control compartment into two separate chambers, namely an ambient chamber and a breathing chamber, the ambient chamber adjoining the inlet compartment;
d. a mouthpiece in open communication with the breathing chamber;
e. said movable wall having a relatively rigid tubular part open at both ends and fixedly, secured to said wall, one end of said tubular part being in continuous communication with said breathing chamber; said tubular part projecting through said ambient chamber through said partition and into said inlet compartment;
f. first seal means between said partition and said tubular part;
g. said housing having ports for admitting ambient fluid into said ambient chamber for exertion of pressure upon said movable wall;
h. spring means acting upon the wall and opposing the fluid pressure of said ambient chamber for urging said wall in a direction to project said tubular part through said partition; said spring means yielding to said ambient pressure upon a reduction of pressure in said breathing chamber;
i. second seal means in said inlet compartment and engaged by the other end of said tubular part to seal the tubular part;
j. means conducting breathable gases under pressure to said inlet compartment for passage through said tubular part and into said breathing chamber upon movement of said wall in a direction to move said tubular member from said second seal means;
k. means forming an exhalation valve from said ambient chamber;
l. said breathing chamber being otherwise sealed to confine flow to the tubular part, the mouthpiece, and the exhalation valve.

3,938,512
EMERGENCY BREATHING APPARATUS

John W. Mausteller, Evans City; Miles J. McGoff, Warrendale, and Daniel L. Thiebaud, Zelienople, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.
Division of Ser. No. 447,855, March 4, 1974, Pat. No. 3,893,459. This application Mar. 27, 1975, Ser. No. 562,866
Int. Cl.² A62B *7/08*
U.S. Cl. 128—191 R 2 Claims



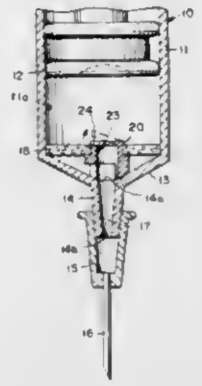
1. Emergency breathing apparatus comprising a mask having an open inner side and a closed outer side and provided with a breathing opening in said outer side, a chemical cartridge outside the mask provided with a side wall and with a rear wall having an opening therein surrounded by tubular means extending into said breathing opening and tightly engaging the surrounding mask for supporting the cartridge therefrom, said tubular means being formed from a tubular flange and a tubular boss having an outer wall, said outer wall and flange being disposed in tight overlapping engagement with each other, the flange extending from the rear wall of the cartridge into said breathing opening, a breathing bag provided with an opening receiving said cartridge, the bag being sealed to the side wall of the cartridge, the cartridge having an inhalation passage therethrough connecting the inside of the bag with said breathing opening, said passage having a side wall spaced radially inwardly from said cartridge side wall, the inside of the cartridge around the inhalation passage forming an exhalation passage provided with an inlet adjacent the inner end of the inhalation passage and with an outlet inside the bag, said boss having an inner wall inside its outer wall and spaced therefrom to form part of the exhalation passage, the side wall of the inhalation passage including said inner wall of the boss and a tube extending through the cartridge and tightly engaging said inner wall, a check valve in said inhalation passage preventing exhalation through that passage, and a carbon dioxide removing and oxygen generating chemical in said exhalation passage and extending across the space between the side walls of the inhalation passage and cartridge in the path of air exhaled through the cartridge.

3,938,513
SYRINGE FILTER AND VALVE COMBINATION

Thomas S. Hargest, 1078 Winslow Drive, Charleston, S.C. 29412
Filed Jan. 3, 1974, Ser. No. 430,418
Int. Cl.² A61M *5/00*
U.S. Cl. 128—218 R 11 Claims

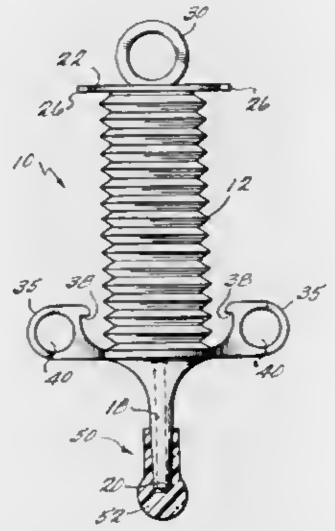
1. A syringe having a barrel and a plunger slidable therein, said barrel having a cylindrical bore and having a bottom wall provided with an axially and downwardly projecting neck portion for rigid attachment to an injection needle, said neck portion having an axial flow passage communicating with said bore, wherein the improvement comprises

an annular filter element fixed within said bore adjacent said bottom wall, said filter element being formed from foraminous material capable of filtering objectionable particulate matter from injectable fluids, said filter element having a central opening extending therethrough, and a tubular valve body secured within said central opening having an axial valve passage and having a normally-closed one-way valve closure element disposed at the upper end of said valve passage and spaced a substantial distance upwardly from said neck portion, said closure element being flexible between an open position and a normal closed position, and means bracing said closure element in said closed position and preventing movement of said closure element into said open position in response to greater fluid pressures above said filter element than below the same, whereby, said closure element and said bracing means cooperate to block downward flow through said passage when said plunger is urged downwardly and to permit upward flow through said passage when said plunger is raised.



3,938,514
BLADDER WASH METHOD AND APPARATUS

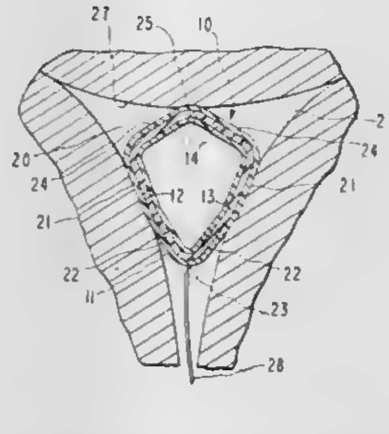
Lionel J. Boucher, 747 Thibault, Sainte Therese, Quebec, Canada
Filed July 18, 1974, Ser. No. 489,717
Int. Cl.² A61M *1/00*
U.S. Cl. 128—232 12 Claims



1. Apparatus for aseptically washing the bladder of an individual having an indwelling catheter, said apparatus comprising
a. means for aseptically washing a bladder, for facilitating mechanical washing action of liquid in washing a bladder, and for preventing removal of too much liquid from a bladder, said means comprising (i) a hollow body member having the interior thereof prefilled with a predetermined amount of liquid for washing a bladder, and having first and second ends thereof, (ii) a tubular tip portion extending from said hollow body member at the first end thereof and adapted to be attached to said catheter to allow liquid communication between the bladder and the hollow body member but to prevent air from being admitted thereto, (iii) means for contracting and expanding the volume of said body member from a first position wherein said body member is prefilled with liquid, to a second position wherein substantially all of said liquid is expelled from said body member, to a third position wherein said liquid is drawn back into said body member and said body member is substantially filled, and (iv) means for releasably locking said body member in said second position thereof wherein said volume thereof is contracted and the prefilled liquid therein is substantially expelled therefrom, said means including a plate having a pair of projections thereon, said plate terminating the second end of said body member and located exteriorly of said body member, and a pair of locking surfaces, said locking surfaces being spaced from but adjacent to the first end of said body member, said locking surfaces being disposed in the path of movement of said projections of said plate as said body member is moved from said first to said second position, said body member being twistable so that said projections may be moved out of interferring relationship with said locking surfaces, and after having moved past said locking surfaces said body member being twistable back into its normal path of movement so that said plate projections abut said locking surfaces whereby said body member assumes said second position whereby movement of said body member from said second position to said third position is prevented, and
b. means for maintaining said prefilled volume of liquid within said body member until use thereof.

3,938,515
NOVEL DRUG PERMEABLE WALL

Harold M. Leeper, Mountain View, and Alan S. Michaels, Atherton, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.
Continuation-in-part of Ser. No. 209,782, Dec. 20, 1971, abandoned. This application Oct. 19, 1973, Ser. No. 408,233
Int. Cl.² A61F *5/46, 13/20;* A61M *31/00*
U.S. Cl. 128—260 7 Claims



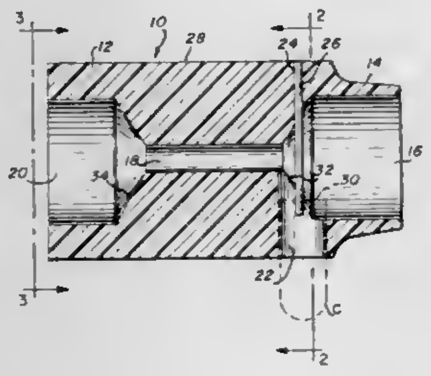
1. In a drug delivery device for continuously administering a drug at a controlled rate for a prolonged period of time to a body site, said device comprising a reservoir containing said drug and a carrier permeable to said drug, the amount of said drug being sufficient to maintain saturation within said carrier during said prolonged period, and a wall surrounding said reservoir which is permeable to the drug but at a rate less than that of the carrier, whereby the drug is released from the reservoir by diffusion through the wall in which the drug dissolves in the material forming the wall and moves therethrough in the direction of lower chemical potential, the improvement comprising forming the wall from a composition comprising a mixture of:
A. a polymer which is rubbery with a glass transition temperature below about 20°C, or is glassy having a glass transition temperature between about 20°C and about 150°C, or has a crystallinity between about 5% and about 95%; and
B. a polymeric additive which is essentially insoluble in body fluids, is nonvolatile and nonleachable and nonextractable from the polymer under the use conditions of

the composition and is selected from the group consisting of:

a. essentially linear olefinically saturated polyesters having a number average molecular weight of about 500 to about 8,000 of a diol of 2 to about 7 carbon atoms or polyethylene glycol and a dibasic carboxylic acid of about 6 to about 15 carbon atoms in which the terminating group is a carboxyacyl group of about 2 to about 18 carbon atoms or an alkoxy group of about 3 to about 15 carbon atoms;
b. polyethylene glycols of about 200 to about 1,500 molecular weight;
c. ethylene-vinyl acetate copolymers of about 20% to about 40% by weight vinyl acetate and about 20,000 to about 30,000 number average molecular weight;
d. chlorinated polyethylene of about 25% to 45% by weight chlorine and about 20,000 to about 30,000 number average molecular weight;
e. ethylene-ethylacrylate copolymers of about 20% to about 40% by weight ethylacrylate and about 20,000 to about 30,000 number average molecular weight; and
f. ethylene-vinyl chloride copolymers of about 25% to about 45% by weight chlorine and about 20,000 to about 30,000 number average molecular weight, the amount of additive in the mixture being sufficient to make the permeability of the composition of the drug substantially different than the permeability of the polymer to drug but less than the permeability of the carrier to drug, said composition being biologically compatible with the site, essentially non-erodible, essentially insoluble in body fluids, and, if the drug is highly water soluble, substantially impermeable to water to essentially prevent dilution of the drug by absorption of body fluids into the reservoir.

3,938,516
INHALATION DEVICE

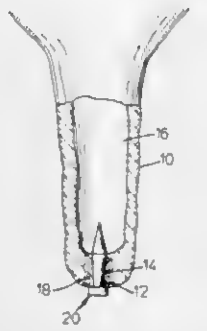
Stanley Mathes, Mountain View, Calif., assignor to Syntex Puerto Rico, Inc., Humacao, P.R.
Filed Jan. 13, 1975, Ser. No. 540,917
Int. Cl.^{2} A61M *13/00*
U.S. Cl. 128—266 **28 Claims**



1. An inhalation device comprising an elongate housing having a passageway for the movement of air therethrough, one end of said housing being an output end adapted for insertion into the mouth or nasal passages of a user thereof; said passageway terminating in an emptying chamber adjacent the output end of said housing, the cross-sectional area of said passageway being less than the cross-sectional area of said emptying chamber; means for receiving a medicament-holding container; and hollow means for directing a stream of air drawn therethrough during inhalation into an open medicament-holding container positioned within said container receiving means, whereby air drawn through said passageway and through said hollow means cooperate to cause the medicament in the medicament-holding container to be dispensed therefrom.

3,938,517
TEAT CAUTERY BULLET

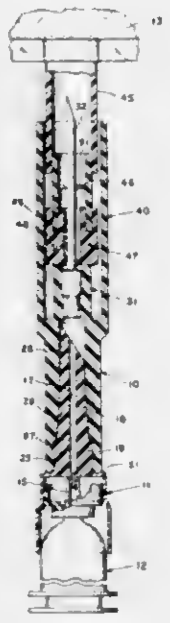
Carsten D. Anderson, 1307 N. Summer Range Road, DePere, Wis. 54115
Filed Mar. 14, 1975, Ser. No. 558,314
Int. Cl.^{2} A61M *35/00, 31/00*
U.S. Cl. 128—271 **26 Claims**



1. A teat cautery bullet shaped device for insertion through a teat orifice and into the papillary duct of an injured teat of a dairy cow or similar animal to control hemorrhaging and prevent formation of blood clots in the papillary duct, said device being formed of solid material having astringent and styptic qualities which is soluble by liquid in said teat to control such hemorrhaging and clotting, said device comprising a nose portion shaped to facilitate insertion, an integral neck portion shaped to facilitate retention by the teat sphincter muscles surrounding said papillary duct, and an integral base portion shaped to facilitate manual insertion and removal and to prevent passage or loss of the device upward into the teat sinus.

3,938,518
SYRINGE ATTACHMENT DEVICE

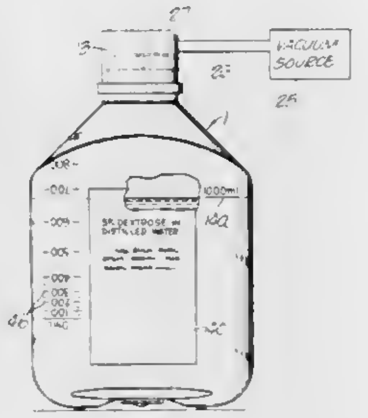
Edward A. Tischlinger, Niantic, Conn., assignor to Astra Pharmaceutical Products Inc., Worcester, Mass.
Filed Jan. 15, 1975, Ser. No. 541,205
Int. Cl.^{2} A61J *1/00*
U.S. Cl. 128—272 **4 Claims**



1. An attachment unit for medicinal syringes equipped with a transfer spike comprising first and second elongated tubular portions connected together at their inner ends and extending from such connection in axially aligned, opposed directions so that said first tubular portion provides at one end of the unit an entry passage for a syringe spike and said second tubular portion provides at the other end of the unit an entry passage for a tubular entry port of the plastic bag for medicinal material, the bore of said first tubular portion being formed at its outer end portion to provide a first seat snugly receiving one part of a syringe spike and adjacently to said outer end portion being formed to provide a second seat for another part of the spike, an internal shoulder formed in such bore between said first and second seats to properly register said spike parts on said seats, the bore of said first tubular portion having a length greater than the length of the spike insertable thereinto, tubular means providing a reduced passageway axially aligned with the bores of said first and second tubular portions and communicating at one end with the inner end of the bore in said first tubular portion, a needle cannula having one end located in said reduced passageway with its bore in communication with said first tubular portion bore, means for mounting said one end of the needle cannula in liquid-tight relation in said reduced passageway and with the remainder of said needle extending outwardly therefrom axially through the bore of said second tubular portion, the bore of said second tubular portion being formed to receive the tubular entry port of a plastic medicinal bag with such remainder of the needle extending through the bore of such port, and the outer end of said tubular means providing a stop seat for the terminal outer end of such entry port.

3,938,519
MEDICAL LIQUID CONTAINER WITH A TOGGLE FILM LEAK TESTER AND METHOD OF LEAK TESTING WITH SAME

Charles J. McPhee, Sylmar, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Feb. 26, 1974, Ser. No. 445,849
Int. Cl.^{2} A61J *1/00*
U.S. Cl. 128—273 **13 Claims**

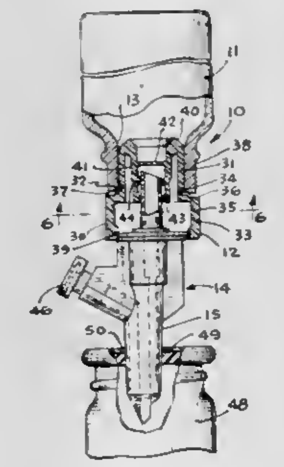


1. A medical liquid container with a puncturable tubular connector for joining the container to a fluid transferring device, wherein the improvement comprises:

a combined connector and toggle leak tester that includes an upstanding thermoplastic tube with a passage and an outer end surface; a first thermoplastic barrier integrally formed with the tube and sealing off the tube's passage at a location spaced inwardly from the tube's outer end surface; a flexible film bonded at a manually peelable joint to the tube's outer end surface and forming a second barrier, said film being in a deformed state with one convex surface and one concave surface for toggling when a pressure differential is applied across the film, whereby the film can function as a leak tester and also be isolated from contact with the container's contents.

3,938,520
TRANSFER UNIT HAVING A DUAL CHANNEL TRANSFER MEMBER

Henry Scislowicz, Lake Bluff, Ill., and Thomas A. Frazier, Williamsport, Pa., assignors to Abbott Laboratories, North Chicago, Ill.
Filed June 10, 1974, Ser. No. 477,876
Int. Cl.^{2} A61J *01/08*
U.S. Cl. 128—272.3 **16 Claims**



1. A transfer unit for transferring a material from a first container to a second container, said transfer unit comprising:

a container having an opening for storing the material to be transferred, a closure sealing the opening in the container and a transfer member constructed and arranged for opening of the closure to permit transfer of the material from the first container to the second container;

said closure including a diaphragm section sealing the opening in the container with means affixing the closure to the container;

and means operatively associated with said closure or said container and said transfer member affording retentive movement of said transfer member toward said sealing diaphragm section of said closure and ready release of said transfer member from said closure;

said transfer member comprising an elongated body portion having two channels therein, one channel extending longitudinally the length of the body to provide a passageway for the transfer of the material between said containers, the other channel extending along said body and terminating outside of said closure to provide a passageway for the entry of air therethrough, the body of the transfer member including a piercing end on the end of the body projecting from the closure and a cutting element extending from the end opposite the piercing end of said body and receivable within the closure to open the closure and permit transfer of material between said containers, said cutting element disposed adjacent the end of said one channel and adapted to receive the tip of a syringe.

3,938,521
COLLECTING BAG

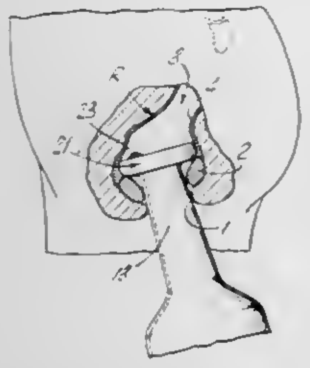
Michael C. Ritota, Newark, and L. Phillip Manciol, Bricktown, both of N.J., assignors to M.E.D.S. Corporation, Newark, N.J.
Continuation-in-part of Ser. No. 265,343, June 22, 1972, abandoned. This application Sept. 23, 1974, Ser. No. 508,158
Int. Cl.^{2} A61F *5/44*
U.S. Cl. 128—283 **18 Claims**

1. A collecting bag for use in the collection of excretions from body openings, comprising

a. an inflatable collar for insertion into said body opening, said inflatable collar including an inner surface and an outer surface, thereby forming a closed annular space between said inner and outer surfaces,
b. a continuous elongated tubular member having a first end and a second end, said first end being sealingly attached

to said inner surface of said inflatable collar, so that the inner surface of said inflatable collar is attached to a portion of the continuous surface of said elongated tubular member,

c. bag means associated with the second end of said elongated tubular member remote from said inflatable collar, so that said bag means is disposed exterior to said body opening upon insertion of said inflatable collar into said body opening,



d. means for inflating said collar from a point external to said body opening when said inflatable collar has been inserted into said body opening, and

e. channel means for connecting said means for inflating said inflatable collar, the channel means being located along the interior of said bag means and said elongated tubular member so that said channel means does not contact said body opening upon insertion of said inflatable collar into said body opening.

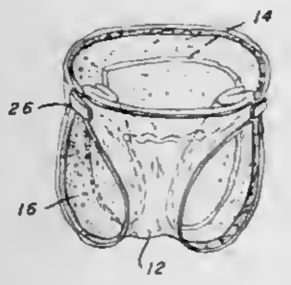
3,938,522
DISPOSABLE DIAPER

Virginia L. Repke, Oak Forest, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 266,013, June 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 187,239, Oct. 7, 1971, abandoned. This application Sept. 11, 1973, Ser. No. 396,242

Int. Cl.² A61F *13/16*

U.S. Cl. 128—287 **39 Claims**



1. A multi-layer diaper comprising: a porous facing layer in the form of a water-wettable bonded web of mixed long and short fibers; a highly porous, loosely compacted, cellulosic fibrous batt in face-to-face juxtaposition to said facing layer and having greater wettability to water than said facing layer; a paper-like, densified compacted cellulosic fibrous layer of relatively high wettability and relatively high fluid retentivity integral with said loosely compacted batt on the face thereof opposite the face in juxtaposition to said facing layer, said densified layer extending continuously over a given area of said batt and being of greater thickness dimension in selected regions, said regions of greater thickness dimension cooperating with the adjacent unthickened portions of said continuous densified layer to increase the fluid handling capacity of the densified layer and to direct the flow of fluid to selected areas of the densified layer, said regions of greater thickness dimension being integral with said densified layer and projecting into said loosely compacted batt to reinforce the same; and a water-impervious backing sheet adhered to said densified layer.

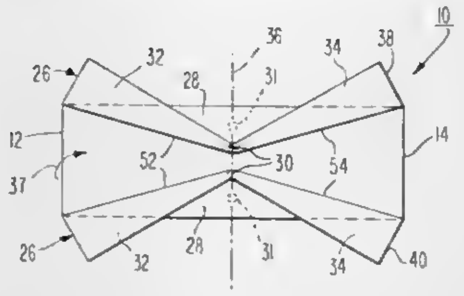
3,938,523
PREFOLDED AND PACKAGED DISPOSABLE DIAPER

Barbara Faye Gilliland, Blackwood, N.J., and Christine Arentzen Henlsee, West Chester, Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Oct. 17, 1974, Ser. No. 515,699

Int. Cl.² A61F *13/14;* A41B *13/02*

U.S. Cl. 128—287 **5 Claims**



1. A prefolded and packaged disposable diaper which, in an unfolded condition, has a substantially rectangular configuration including a longitudinal dimension defined between end margins and a shorter transverse dimension defined between side margins, said prefolded and packaged diaper including:

A. a double-pleat fold on each side of the diaper; each double-pleat fold including an inner panel overlying a central section of the diaper and an outer panel overlying said inner panel, each outer panel including two wing sections extending outwardly beyond its underlying inner panel, one of said wing sections being disposed on each side of a transversely extending medial line of the diaper; the wing sections of both outer panels which are disposed on the same side of the transversely extending medial line diverging from each other in a direction from the transversely extending medial line to an end margin of said diaper; and

B. said disposable diaper being folded upon itself along the transversely extending medial line to dispose the wing sections of each outer panel in engagement with each other.

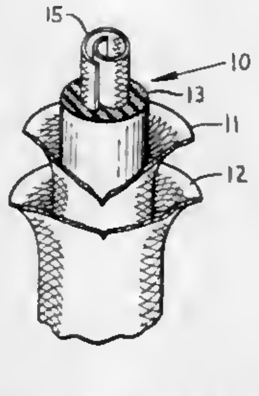
3,938,524
COMPLIANT MANDREL AND MANDREL ASSEMBLY FOR GROWING GRAFT TUBES

Charles Howard Sparks, deceased, late of Portland, Oreg., and by Margaret J. Sparks, executrix, 3725 SE. Martins St., Portland, Oreg. 97202

Continuation-in-part of Ser. No. 368,811, June 11, 1973, Pat. No. 3,866,609, which is a continuation of Ser. No. 241,189, April 5, 1972, abandoned, Division of Ser. No. 101,031, Dec. 23, 1970, Pat. No. 3,710,777. This application Sept. 16, 1974, Ser. No. 506,214

Int. Cl.² A61B *17/00;* A61F *1/24*

U.S. Cl. 128—303 R **11 Claims**



1. A mandrel assembly for growing a graft tube with living tissue, comprising an elongated compliant mass of material which may not have sufficient tensile strength for withdrawing the mandrel from said mandrel assembly after said graft tube has been grown, and a compliant tension element extending throughout the length of the mandrel and forming an integral part thereof for pulling the mandrel out of said mandrel assembly after said graft tube has been grown, an outer fabric tube on said mandrel, and an inner layer of porous material holding said fabric tube spaced away from said mandrel.

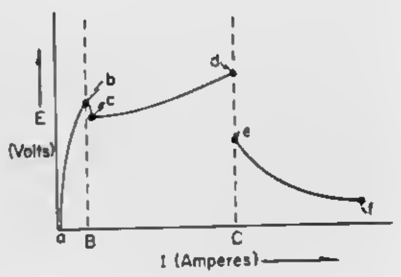
3,938,525
PLASMA SURGERY

Robert G. Coucher, Salt Lake City, Utah, assignor to Hogle-Kearns International, Salt Lake City, Utah

Filed May 15, 1972, Ser. No. 253,494

Int. Cl.² A61N *1/44*

U.S. Cl. 128—303.1 **6 Claims**



1. A method for cauterizing tissue adjacent a surgical incision, which comprises:

establishing and maintaining an electrically neutral, D.C.-induced cold plasma of sufficiently small cross section to permit a narrow region of contact between the plasma and tissue; and

applying the plasma to tissue adjacent a surgical incision to cauterize the same.

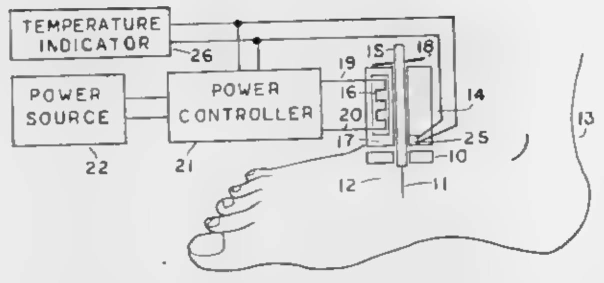
3,938,526
ELECTRICAL ACUPUNCTURE NEEDLE HEATER

Weston A. Anderson, 763 La Para Ave., Palo Alto, Calif. 94306, and Bruce E. Waller, 533 Pall Drive, Long Beach, Calif. 90805

Filed May 20, 1974, Ser. No. 471,649

Int. Cl.² A61H *39/06*

U.S. Cl. 128—303.1 **21 Claims**



1. The method of heating an inserted acupuncture needle comprising the steps of:

thermally coupling said acupuncture needle to an electrical heating means,

detachably coupling said electrical heating means to said acupuncture needle for support and positioning, of said electrical heating means by said needle,

supplying electrical power to said electrical heating means thereby to generate heat,

controlling said electrical power supplied to said electrical heating means to control the amount of heat generated.

3,938,527
INSTRUMENT FOR LAPAROSCOPIC TUBAL CAUTERIZATION

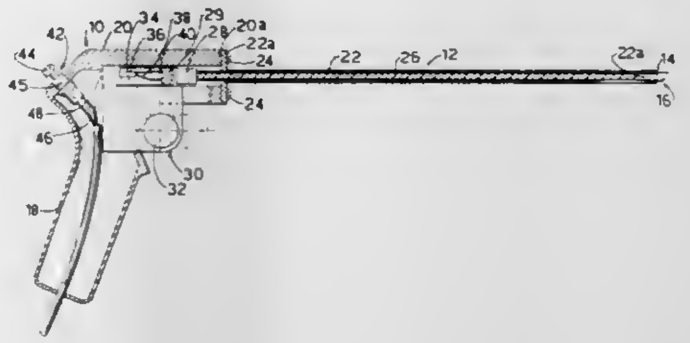
Jacques E. Rioux, Quebec; Gerald Turp, Dollard des Ormeaux, and Francois Jacques, Mascouche, all of Canada, assignors to Centre de Recherche Industrielle de Quebec, Quebec, Canada

Filed July 13, 1973, Ser. No. 378,935

Claims priority, application Canada, July 4, 1973, 175625

Int. Cl.² A61B *17/36*

U.S. Cl. 128—303.17 **9 Claims**



1. Instrument for laparoscopic tubal cauterization by intra-abdominal cavity penetration comprising: a grip member; an elongated narrow probe element having one end removably attached to said grip member whereby said probe element may be disposed of after use; said probe element including a sleeve member; said sleeve member being shaped to be easily insertable through a small cut in the abdominal wall of said cavity and to reach a fallopian tube therein; a pair of electrically conductive bi-polar elements carried by said probe element within said sleeve member in such spaced relationship to one another as to avoid electrical short therebetween and longitudinally displaceable within said sleeve member; said elements having cooperating extremities defining tube-grasping portions; said extremities cooperating with the open end of said sleeve member for causing a strong squeezing action by said extremities externally on said tube being grasped; means on said grip member connecting each said member connecting each said bi-polar elements to an external power source and allowing a current discharge between the tube-grasping portions externally on the squeezed tube for complete coagulation of said tube.

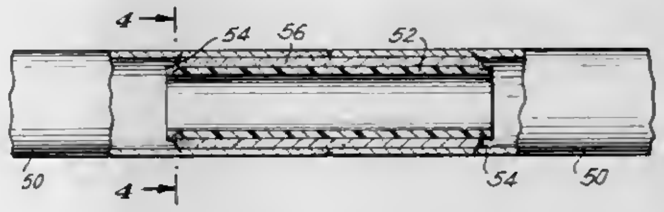
3,938,528
IMPLANTING AND SPLICING ARTICLES AND METHODS FOR LIVING BEINGS

Louis Bucalo, Holbrook, N.Y., assignor to Investors in Ventures, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 359,429, May 11, 1973, Pat. No. 3,815,578. This application Aug. 23, 1973, Ser. No. 390,926

Int. Cl.² A61B *17/11*

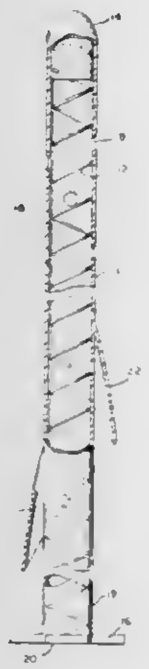
U.S. Cl. 128—334 C **14 Claims**



1. In an implanting method, the steps of introducing an implant into a body cavity which is lined with mucosa while simultaneously removing mucosa from at least part of the cavity and placing in engagement with an inner surface of the cavity from which the mucosa has been removed a means carried by the implant for promoting the ingrowth of tissue.

3,938,529
INDWELLING URETERAL CATHETER

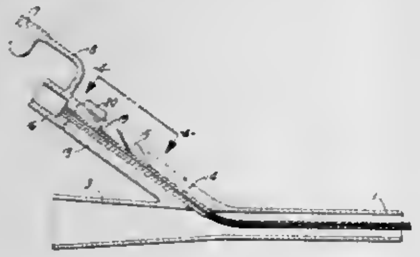
Robert P. Gibbons, 7310 Mercer Terrace Drive, Mercer Island, Wash. 98040
Filed July 22, 1974, Ser. No. 490,573
Int. Cl.² A61M *25/00*
U.S. Cl. 128—349 R 6 Claims



1. An indwelling ureteral catheter comprising a medical-grade, flexible tube of sufficient strength to minimize collapse of the walls of the tube, a plurality of apertures adjacent opposite ends of the tube, and a plurality of circumferentially and longitudinally spaced, flexible, directional anchoring means provided generally adjacent the longitudinal center of the tube for allowing movement of the tube in one direction but resisting movement of the tube in the opposite direction, said anchoring means including soft, flexible, resilient, laterally and axial outwardly directed tips of a length sufficient to span the distance between the tube and the sidewall of the ureter and flexed radially outwardly with sufficient force to wedge against the sidewall of the ureter and hold the tube against axial outward movement caused by gravity or peristaltic activity, said tips having sufficient flexibility and softness to flatten outwardly against the tube during intentional outward movement of the tube during withdrawal so as not to penetrate the sidewall of the ureter, whereby the tube can be inserted into the ureter in one direction, remain lodged against outward movement caused by peristaltic activity, but be safely removed when required.

3,938,530
CATHETER

Louis S. Santomieri, 4517 San Marino Drive, Davis, Calif. 95616
Filed Nov. 15, 1974, Ser. No. 524,241
Int. Cl.² A61M *25/00*
U.S. Cl. 128—349 R 4 Claims



2. In a soft, flexible, retention-type catheter which includes a primary tube having an outer-end tip, an initially contracted but expandable retainer formed in the primary tube adjacent the tip and adapted to be expanded and contracted by rearward and forward movement, respectively, of said tip, a relatively small diameter secondary tube disposed within the primary tube in longitudinally movable relation, the forward end of the secondary tube being secured to the tip and open thereat, and the rear end of the secondary tube exteriorly of the primary tube being adapted for manipulation to impart such rearward and forward movement to the tip through the medium of said secondary tube serving as a pull-push element; the improvement characterized by an internal tip formed in the primary tube adjacent but short of the outer-end tip, the internal tip having a central opening therein through which the secondary tube extends in slidable, guided relation.

3,938,531
SMOKING MATERIAL AND THE PROCESS OF MAKING THE SAME

Hans von Castelmur, Basel, Switzerland, assignor to Tamag Basel AG., Basel, Switzerland
Filed Dec. 17, 1973, Ser. No. 425,115
Claims priority, application Luxemburg, Dec. 28, 1972, 66773; Feb. 14, 1973, 67028
Int. Cl.² A24B *13/00, 15/08*
U.S. Cl. 131—17 A 5 Claims

1. A smoke-generating material, especially as synthetic or regenerated tobacco, which consists essentially of: 40 to 60% by weight of comminuted botanicals in the form of cereal-grain, nut, and tobbaco scraps and waste;

12 to 28% by weight of inorganic and organic fillers and compounds selected from the group which consists of magnesium formate, tartaric acid, potassium nitrate, ammonium phosphate and calcium carbonate;

6 to 16% by weight of cellulosic substances and pectin binders;

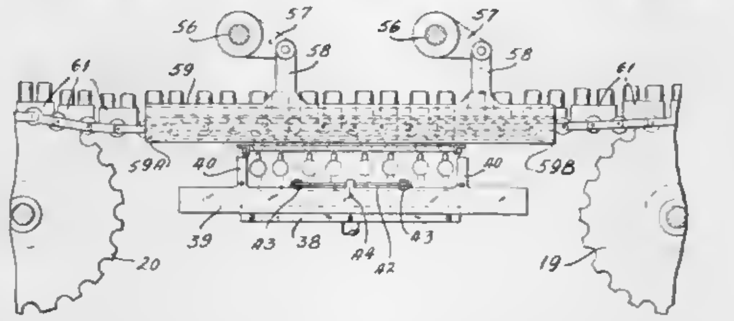
7 to 21% by weight of ethylene glycol and glycerol as plasticizers;

5 to 15% by weight of flavorings; and

0.03 to 1% by weight of a vanillin compound of urea selected from the group consisting of vanillylidene-urea $C_9H_{10}N_2O_3$ and divanillylidene-urea $C_{17}H_{16}N_2O_5$.

3,938,532
CONTAINER CLEANING APPARATUS

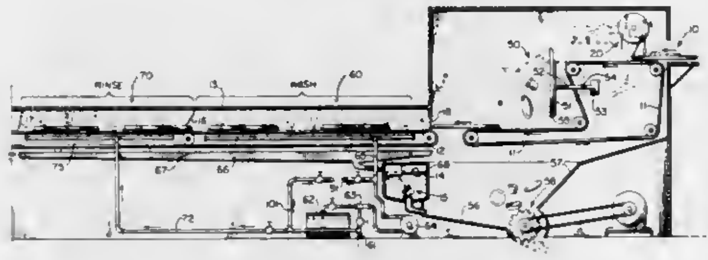
Momir Babunovic, Des Peres, Mo., assignor to Barry-Wehmiller Company, St. Louis, Mo.
Filed Feb. 10, 1975, Ser. No. 548,538
Int. Cl.² B08B *3/02*
U.S. Cl. 134—43 10 Claims



1. Container cleaning apparatus comprising a plurality of pocketed carriers for the containers to be cleaned, conveying means to move said carriers continuously through the apparatus, means defining a linear path of movement for said conveying means, fluid jet spray means adjacent said linear path, movable means operably supporting said spray means for forward and reverse movement in a generally horizontal path, drive means operably connected to said movable means to effect the forward and reverse movement of said spray means, and an operating connection between said drive means and said linear path defining means for periodically raising and lowering said carriers, said drive means and operating connection coordinating said forward movement of said spray means with lowering of said carriers and reverse movement of said spray means with raising of said carriers.

3,938,533
AUTOMATIC SCULLERY SYSTEM

Wilton Richard, Rte. 1, Box 359-1/2, Shreveport, La. 71105
Filed Oct. 29, 1973, Ser. No. 410,482
Int. Cl.² B08B *3/02, 3/10*
U.S. Cl. 134—63 15 Claims



1. Automatic scullery apparatus which comprises:

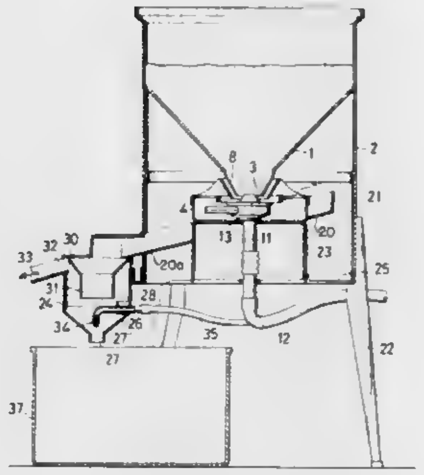
conveyor means for conveying carrying trays having thereon, inter alia, magnetically responsive culinary items;

means for selectively magnetically removing magnetically responsive culinary items from trays on said conveyor means while leaving nonmagnetically responsive residual contents on said trays; and

means for collecting and cleansing the removed culinary items.

3,938,534
APPARATUS FOR WASHING CEREALS

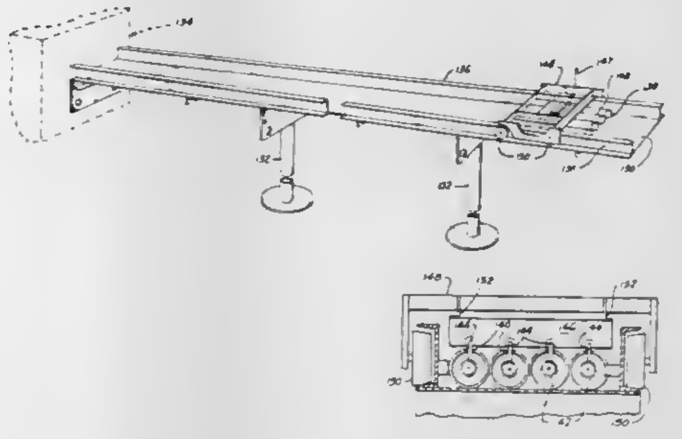
Nobuo Akizawa, Horinouchi 3-44-7, Suginami, Tokyo, Japan
Filed Aug. 1, 1974, Ser. No. 493,700
Int. Cl.² B08B *3/02*
U.S. Cl. 134—104 7 Claims



1. An apparatus for washing cereals comprising in combination, a hopper of reduced size at the lower part thereof, and having an opening at its bottom, a cereal washing tank positioned under the opening and larger than the opening, the said opening being no lower than that of a cover on the tank, which cover has an opening therein, a hollow water supply tube projecting into the cereal washing tank, and a hollow rotor on said tube and connecting to said tube, the rotor having an upper vertically extending flange plate with a notch at the upper edge thereof and having a jet hole in the rotor for water discharge to rotate the rotor, and the top of the rotor extending into the opening in the lower part of the hopper to reduce the discharge area thereof.

3,938,535
TUBE CLEANING DEVICE

Robert R. Cradeur, Sulphur, and John E. Cardone, Lake Charles, both of La., assignors to Browning-Ferris Industries, Inc., Houston, Tex.
Division of Ser. No. 278,565, Aug. 7, 1972. This application June 10, 1974, Ser. No. 477,848
Int. Cl.² B08B *3/02, 9/02*
U.S. Cl. 134—167 C 4 Claims



1. A tube cleaning device, comprising:

at least one water jet lance,

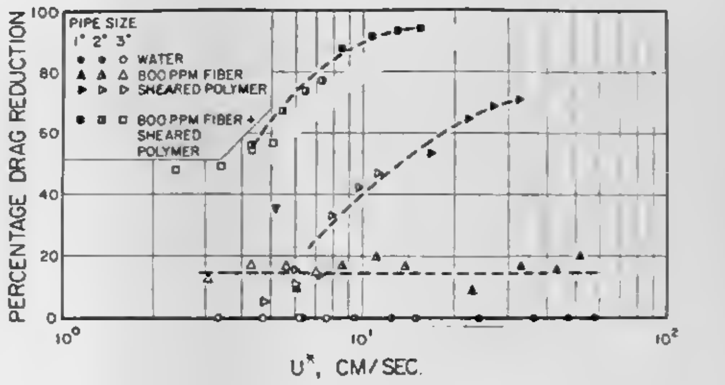
means for extending and retracting said lance,

support means for said lance including an elongated slotted hollow member in which said lance is slidably positioned therein to prevent bending collapse of said lance when subjected to end loading, and

means for supplying water under pressure to said lance, said water supply means including a manifold block having means therewith for distributing said pressurized water to said lance and a duct mounted with said manifold block and said lance for conducting said pressurized water therebetween, wherein said elongated slotted hollow member having a slot formed therein slidably receives said duct adjacent thereto said slot.

3,938,536
PROCESS FOR REDUCING THE TURBULENT DRAG IN CONDUITS AND AROUND SUBMERGED OBJECTS

Arthur B. Metzner, Wilmington, Del.; Raymond C. Vaseleski, Charleston, W. Va., and Wei-Kuo Lee, Millburn, N.J., assignors to The University of Delaware, Newark, Del.
Filed Oct. 11, 1974, Ser. No. 514,115
Int. Cl.² F17D *1/16*
U.S. Cl. 137—13 5 Claims



1. A process for reducing the turbulent drag of a fluid in a conduit or around a submerged object which comprises adding to the fluid a soluble polymer and a dispersable non-soluble fibrous substance having an aspect ratio of at least 100.

3,938,537

METHOD OF PREPARING LIQUID MIXTURES OF PREDETERMINED COMPOSITION

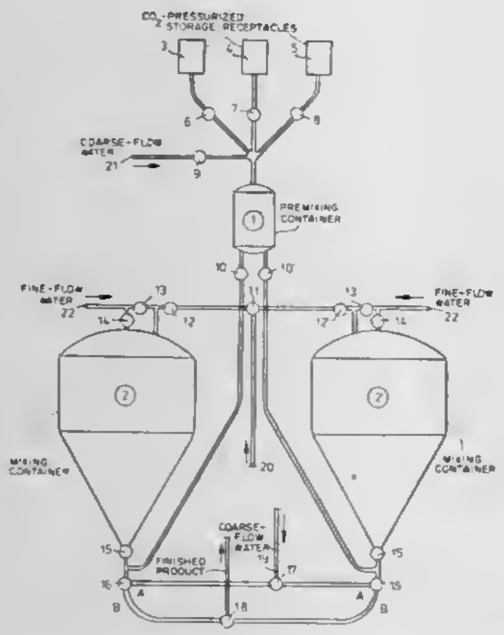
Jürgen Kalko, and Wolfgang Cruil, both of Heilbronn a. N., Germany, assignors to Lucca GmbH, Heilbronn a. N., Germany

Continuation of Ser. No. 353,723, April 23, 1973, abandoned. This application Nov. 4, 1974, Ser. No. 520,915

Claims priority, application Germany, Apr. 25, 1972, 2220224

Int. Cl.² B01F *15/04*

U.S. Cl. 137—14 **1 Claim**



1. A method of preparing a beverage consisting predominantly of water and including a plurality of other components, said method comprising the steps of:

a. metering quantities of each of said other components by weight into respective storage receptacles and pressuring each of said storage receptacles with CO_2;

b. evacuating a premixing container and a mixing container simultaneously to a pressure of at most 0.5 atm. abs.;

c. successively communicating at least two of said storage receptacles with said premixing container to induce the respective components to pass by suction from said storage receptacles into said premixing container;

d. connecting said premixing container to said mixing container to induce by suction the contents of said premixing container to empty into said mixing container;

e. thereafter drawing water by the suction in said mixing container into the latter and at least in part through said premixing container for mixture with said components in said mixing container; and

f. discharging the mixture of said components with water from said mixing container.

3,938,538

CONTROL VALVE APPARATUS

Thomas H. Putman, Pittsburgh, Pa., and William O. Osbon, Griffith, Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 28, 1974, Ser. No. 437,448

Int. Cl.² B60T *8/14*

U.S. Cl. 137—39 **10 Claims**

1. Valve apparatus comprising, in combination:

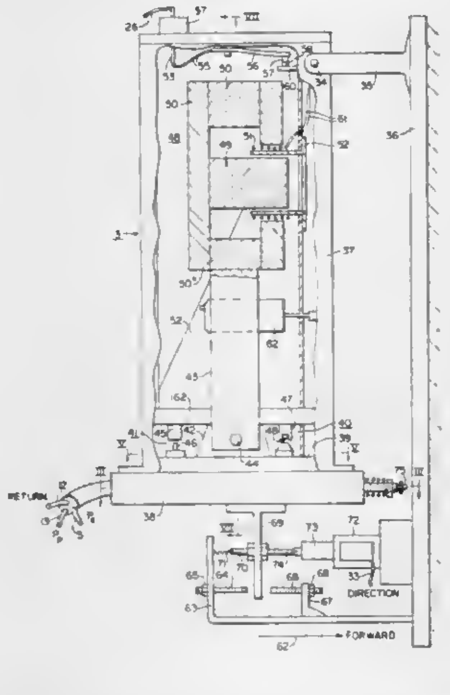
a base member;

first and second fluid input ports seated in said base member;

first and second fluid output ports seated in said base member;

first and second valves seated in opposite ends of said base member, with said first valve connected to said first fluid input port and said first fluid output port, and with said second valve connected to said second fluid input port and said second fluid output port;

a pendulum rotatably attached at one end thereof to said base member, and including an arm attached thereto at an angle with respect to the longitudinal axis of said pendulum, including first and second valve occluding means attached to the respective ends of said arm and aligned with said first and second valves respectively for being seated in or unseated from said first and second valves respectively as said pendulum rotates in one direction and the opposite direction respectively;



a magnet attached to the other end of said pendulum; and

a coil situated adjacent said magnet which when energized produces a magnetic field which either attracts or repels said magnet such that said pendulum rotates in either said one or said opposite direction.

3,938,539

APPARATUS FOR LEADING OFF AIR IN CONNECTION WITH THE MEASURING OF THE FLOW OF A LIQUID

Lennart Strouth, Bondegatan 5, 582 62 Linkoping, and Claes Björkman, Grev Magnigatan 9 III, 114 55 Stockholm, both of Sweden

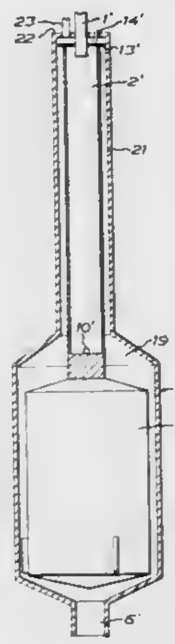
Filed June 14, 1974, Ser. No. 479,691

Claims priority, application Sweden, June 15, 1973, 73084238

Int. Cl.² A61M *5/14*

U.S. Cl. 137—202 **6 Claims**

1. For use in a closed-circuit pressurized conduit system through which blood is pumped from a patient through an artificial kidney or like treatment apparatus and returned to the patient, an apparatus for leading off air and preventing the build-up of air pressure in the system and for measuring the flow of blood through the system, said apparatus comprising an inlet chamber and an outlet chamber, inlet means adapted to be connected in the conduit system for directing the blood being pumped therethrough into said inlet chamber and outlet means adapted to be connected in the conduit system for directing blood from said outlet chamber into the conduit system, orifice means in the bottom portion of said inlet chamber providing a flow path from said inlet chamber into said outlet chamber, normally open vent means for venting said outlet chamber to atmosphere, said vent means including valve means operable between an open and a closed position, valve actuating means responsive to the level of blood in one of said chambers for moving said valve means to the closed position to permit build up of system pressure in said outlet chamber and to move said valve to the open position to vent said second chamber to atmosphere upon the blood level in said one chamber dropping below a predetermined level, and blood level measuring means carried by said inlet chamber indicating the level of blood above said orifice means and thereby providing a visible flow rate indication.



3,938,540

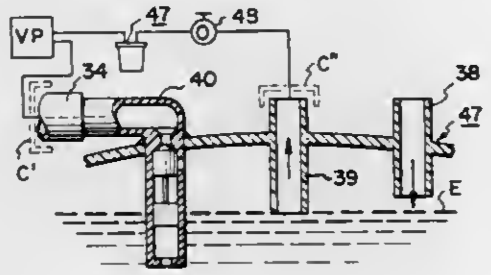
VACUUM-OPERATED FLUID BOTTLE FOR TANDEM SYSTEMS

Legrand K. Holbrook, and David S. Ostler, both of Salt Lake City, Utah, assignors to Medical Development Corporation, Salt Lake City, Utah

Continuation of Ser. No. 187,275, Oct. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 876,438, Nov. 13, 1969, Pat. No. 3,620,408. This application Oct. 2, 1973, Ser. No. 402,788

Int. Cl.² A61M *1/00*

U.S. Cl. 137—205 **3 Claims**



1. A vacuum-fillable, liquidcollection bottle having an upper region and a fluid inlet port, and overflow port, a vacuum port at said upper region, said vacuum port being provided with fluid-level operated valve means for automatically shutting off air communication solely through said vacuum port when liquid within said bottle reaches a predetermined level, said overflow port having a depending, liquid-receiving extremity disposed at said predetermined level, said fluid inlet port being disposed above said predetermined level and above said overflow port extremity, and a vacuum pump connected to said vacuum port and selectively coupled to said overflow port, said overflow port being constructed for selective closure and, therefore, selective uncoupling from said vacuum pump.

3,938,541

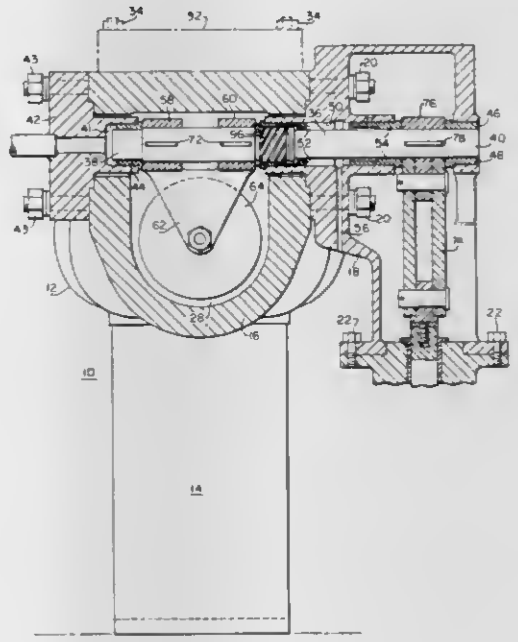
SHAFT SEAL FOR A CHECK VALVE

James R. Polacheck, Wayne, and Gilbert F. Hyde, Swarthmore, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 25, 1974, Ser. No. 436,590

Int. Cl.² F16K *41/16*

U.S. Cl. 137—239 **9 Claims**



1. A check valve comprising:

a valve casing,

a valve shaft rotatably disposed within said valve casing,

said casing having a first axial portion having a first predetermined tolerance fit with said shaft, said casing having a second axial portion having a second predetermined tolerance fit with said shaft, said second axial portion being contiguous with said first axial portion, said second tolerance fit being of a dimension greater than said first tolerance fit, and,

sealing means for providing a seal between said casing and said rotatable shaft, said sealing means being disposed adjacent said second axial portion of said casing,

said casing having a valve chamber defined therein and said shaft having a groove disposed on the surface thereof, said groove having a sharp edge thereon, said groove having a first end and a second end, said first end of said groove communicating with said valve chamber, and said second end of said groove being disposed on said shaft at a point other than those points on said shaft lying within said first axial portion of said valve casing.

3,938,542

PLURAL RANGE PRESSURE REGULATOR CONSTRUCTION AND CAP ASSEMBLY THEREFOR

John J. Bolha, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

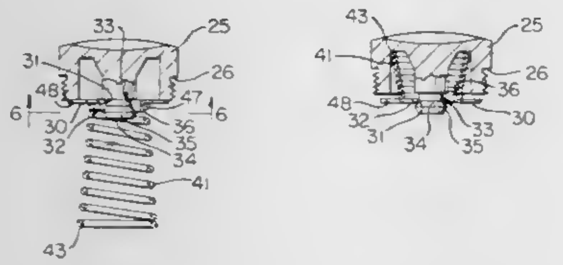
Filed Nov. 8, 1974, Ser. No. 522,320

Int. Cl.² F16K *31/12*

U.S. Cl. 137—271 **16 Claims**

1. In a plural range pressure regulator construction having a spring means for acting on a flexible wall of said construction to provide one pressure range for said regulator construction when said spring means is in a certain position whereof and for being stored in a removable cap of said construction so that said spring means will be in another position thereof and will not act on said wall so as to permit said regulator construction to provide another pressure range thereof, the improvement comprising securing means for securing said spring means to said cap when said spring means is in either

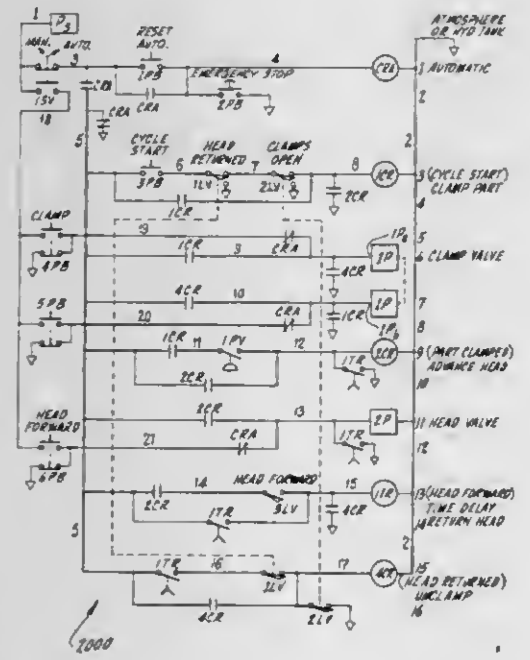
of said positions thereof whereby said spring means is adapted to be removed from the housing of said construction in unison with said cap when said cap is removed therefrom and said spring means is in either of said positions thereof.



3,938,543

FLUID CONTROL SYSTEM

Gerald T. Sorenson, 3440 Nagawicka, Hartland, Wis. 53029
Filed May 21, 1973, Ser. No. 362,456
Int. Cl.² F16K *31/143, 51/00*
U.S. Cl. 137—312 **11 Claims**



1. A fluid control system, comprising:

a source of fluid under pressure,

first and second pilot operated relay valves each having a pilot port for receiving fluid under pressure from said source to operate the relay valve,

first valve means in its blocked state connected between said source and said pilot port of said first relay valve,

said first valve means including vent means effective to vent fluid under pressure from said source which would otherwise leak through said valve to said pilot port while said first valve means is in its blocked state,

actuating means for changing the state of said first valve means to a passing state,

second valve means in its blocked state connected between exhaust means and said pilot port of said first relay valve,

actuating means for changing the state of said second valve means to a passing state,

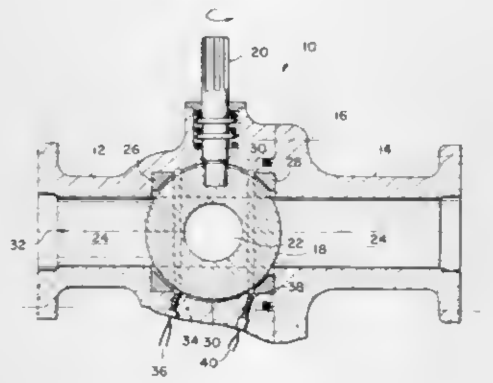
said first relay valve having at least one pair of inlet and outlet control ports normally in the blocked state, with the inlet port connected to the source of fluid and the outlet port operably connectable to the pilot port of the second pilot operated relay valve, and

said first relay valve including vent means effective to vent fluid under pressure from said source which would otherwise leak through said valve to said outlet port while said control ports are in the normally blocked state.

3,938,544

VALVE WITH HEAT TRANSPORT MONITOR FOR LEAKAGE DETERMINING RATE

Henry J. Bernaerts, R.F.D. 10, Box 1610, Laurel Lane, Annapolis, Md. 21401
Filed May 28, 1974, Ser. No. 473,853
Int. Cl.² F16K *49/00;* **G01F** *1/68*
U.S. Cl. 137—334 **5 Claims**



1. A valve comprising:

a body;

a closure element within said body;

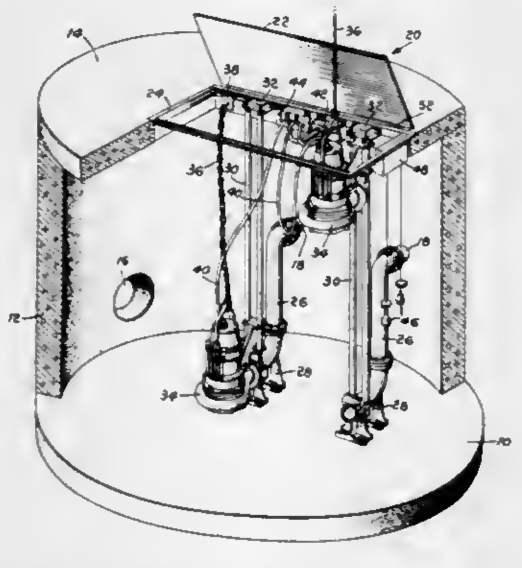
sealing members between said valve body and said closure element; and

means within said valve body for determining the leakage of the fluid of the main fluid flow controlled by said valve, between said closure element and said sealing members.

3,938,545

ACCESS COVER WITH MOVEABLE ATTACHING DEVICES FOR UNDERGROUND PUMPING STATIONS AND OTHER INSTALLATIONS

Nicholas Nagy, Westport, and Clinton F. Egerton, Stamford, both of Conn., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Nov. 15, 1974, Ser. No. 524,098
Int. Cl.² E02D *29/14*
U.S. Cl. 137—363 **16 Claims**



1. An underground pumping station, comprising:

a sump basin including a liquid inlet, a liquid outlet and a top having an access opening;

a pump disposed in said basin and having a discharge outlet connected to the liquid outlet of the basin;

a cover frame fixedly mounted in the top of the basin and extending about the periphery of the access opening;

a support member attached to said cover frame and extending about the periphery of the access opening;

a cover hingedly attached to one of said cover frame and support member for closing said access opening;

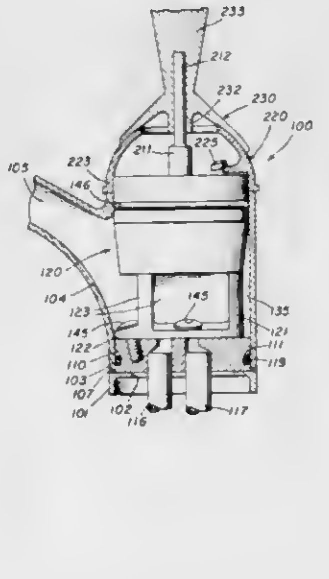
attaching members slidably mounted to said support member whereby the attaching members may be positioned to any desired location on the support member; and

fastening means for engaging said attaching members and accessories to be mounted in the pumping station whereby said attaching members are fixed at a desired location on the support member and the accessories are attached thereto in the preferred location for a particular pumping station.

3,938,546

FAUCET WITH VALVE CARTRIDGE

Gerald J. Farrell, Elmhurst, Ill., assignor to Elkay Manufacturing Company, Broadview, Ill.
Division of Ser. No. 313,824, Dec. 11, 1972, Pat. No. 3,854,493. This application Oct. 15, 1974, Ser. No. 514,607
Int. Cl.² F16K *51/00*
U.S. Cl. 137—454.2 **5 Claims**

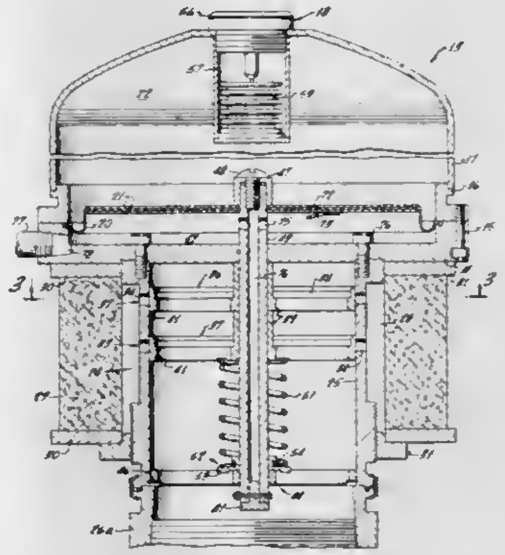


1. A faucet comprising a faucet base, a hollow casing mounted on said faucet base, a cover for said casing, a spout carried by said casing and having a passageway therethrough communicating with the interior of said casing, and said faucet base having at least one fluid inlet, and a valve cartridge in said casing and including a generally cylindrical housing having a chamber therein, inlet and outlet ports in said housing for said chamber, valve means in said chamber for controlling the quantity of fluid delivered from said inlet port to said outlet port, control means extending from one end of said housing for controlling said valve means, said housing having a valve base portion at the other end thereof, the maximum outer diameter of said valve base portion being no greater than the maximum outer diameter of any other portion of said housing, said valve base portion having a plurality of recesses extending laterally thereinto and defining flange means at the adjacent end of said housing, said flange means having at least one opening extending therethrough, means passing through said opening from said recess for attaching said flange means to said faucet base, said inlet port being in registration with the fluid inlet of said faucet and said outlet port being in communication with the interior of said casing.

3,938,547

PRESSURE REGULATOR

Leon Jones, 15081 Moran St., Westminster, Calif. 92683
Division of Ser. No. 336,186, Feb. 27, 1973, Pat. No. 3,811,467. This application Apr. 15, 1974, Ser. No. 460,954
Int. Cl.² F16K *15/00, 31/12*
U.S. Cl. 137—488 **21 Claims**



1. A pressure regulator for Tee connection to the line which extends between the vacuum pump and the milking machine of a cow milking machine system, said pressure regulator comprising:

a. air valve means to admit atmospheric air into said line,

b. a diaphragm connected to said air valve means,

c. spring means connected to said air valve means and biasing the same toward closed condition,

d. means to define a dome chamber on one side of said diaphragm,

said one side of said diaphragm being such that an increase in the air pressure in said dome chamber relative to the air pressure on the other side of said diaphragm causes said diaphragm to oppose said spring means and to open said air valve means, and a decrease in the air pressure in said dome chamber relative to the air pressure on said other side of said diaphragm causes said diaphragm to aid said spring means in closing said air valve means,

e. means to admit atmospheric air into said dome chamber and to maintain the air pressure in said dome chamber at a predetermined constant value substantially below atmospheric pressure,

f. means to bleed air from said dome chamber to said line, and

g. means to subject said other side of said diaphragm to the air pressure of said line,

whereby said air valve means is caused to admit into said line sufficient atmospheric air that the pressure in said line remains substantially constant.

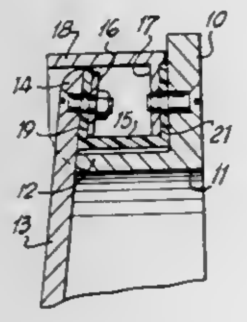
3,938,548

FLUID FLOW CONTROL VALVES

Bernard Francis Hope, Birmingham, England, assignor to Coplastix Limited, England
Filed Apr. 16, 1974, Ser. No. 461,310
Claims priority, application United Kingdom, May 2, 1973, 20942/73
Int. Cl.² F16K *15/03*
U.S. Cl. 137—527.8 **12 Claims**

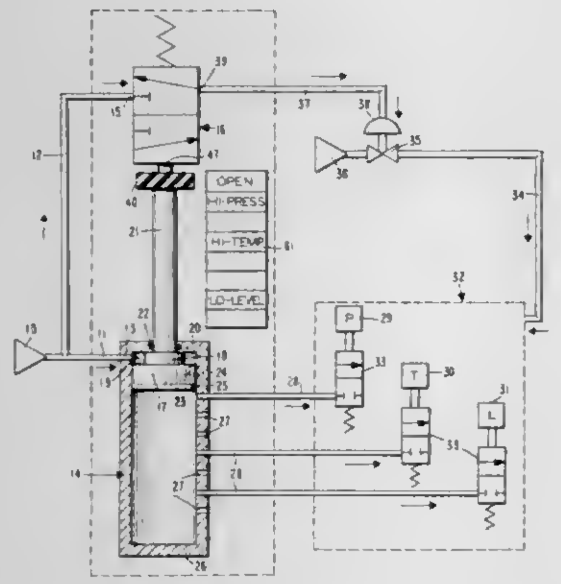
1. A tidal flap valve comprising a frame defining a flow opening and adapted to be fixedly mounted over a registering opening in a substantially vertical wall, a closure member for said flow opening, a flexible hinge interconnecting an upper part of said closure member to said frame at an upper part of said flow opening, and a casing member projecting from said frame at said hinge, said frame and casing members and the upper portion of said closure member being cooperatively

formed for defining a substantially enclosed space wherein said hinge is disposed for protection against damage and undesired access while permitting operational movement of said closure member about said hinge.



3,938,549
TATTLETALE ANNUCIATOR AND SHUT-DOWN CONTROL FOR COMPRESSORS OR LIKE EQUIPMENT

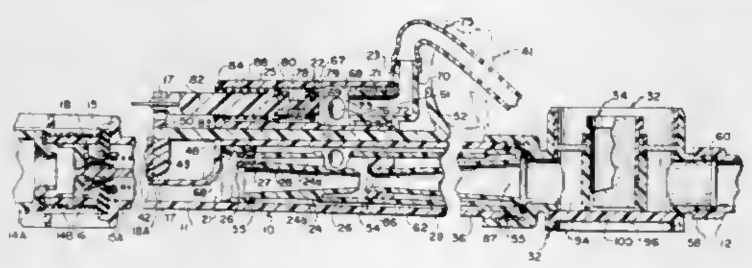
J. David Nunneley, Tulsa, Okla., assignor to Frank W. Murphy Manufacturer, Inc., Tulsa, Okla.
Filed Dec. 16, 1974, Ser. No. 533,214
Int. Cl.² G08B *1/04*
U.S. Cl. 137—557 **10 Claims**

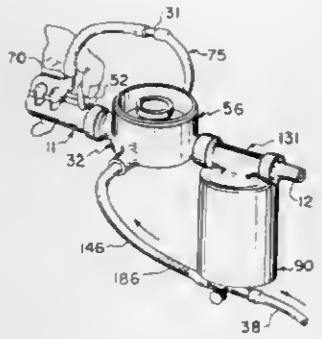


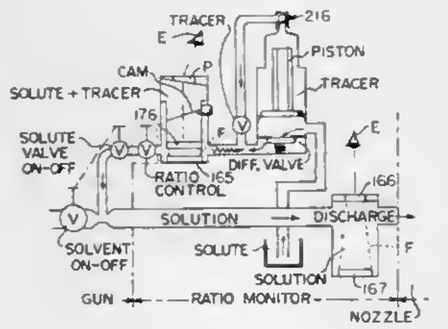
1. An annunciator and shut-down control for machines equipped with malfunction sensors of the fluid venting type, comprising a cylinder body having a working fluid inlet near one end thereof and plural side wall malfunction sensing ports communicating with the chamber of the cylinder body and adapted for connection with automatic venting means of said malfunction sensors, a piston within the bore of the cylinder body having differential areas on the opposite sides thereof in said bore, said piston having an orifice communicating with said differential areas whereby fluid pressure on opposite sides of the piston in said bore may be equalized, a piston rod secured to the piston and extending beyond one end of the cylinder body and having a position indicator secured thereto for movement therewith, a malfunction indicia means positioned near said rod and indicator and cooperating with the indicator when the piston is stopped in said bore at a particular malfunction indicating position to indicate directly the nature of the malfunction and where located relative to the cylinder body and said sensing ports, a machine start-up and shut-down control valve including an actuator button located in the path of movement of said piston rod and adapted to be engaged by the latter, said control valve having in and out ports for connection respectively with a working fluid supply and a conduit leading to a supply valve for a machine being monitored, said working fluid inlet of the cylinder body adapted for connection with said working fluid supply.

3,938,550
CONTINUOUS FLOW RATIO MONITOR

Valentine Hechler, IV, 26 Meadow View Road, Northfield, Ill. 60093
Filed June 24, 1974, Ser. No. 482,353
Int. Cl.² G01N *1/20, 21/02*
U.S. Cl. 137—559 **23 Claims**





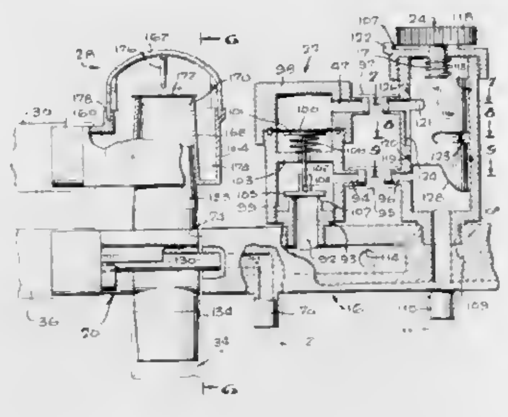


1. A solution dispensing system comprising:
- means for supplying solvent under a pressure differential in a confined flowing stream;
- means for supplying solute under a pressure differential in a confined flowing stream having an energy transmissivity different from that of the solvent;
- means for continuously mixing said streams in a proportioned ratio to dispense a stream of flowing solution; and
- means for monitoring said proportioned ratio including chambers having different depths disposed in close proximity for comparing the energy radiation transmissivity of said flowing streams of solute and solution at relative radiation transmitting depths related to a desired percentage of solute in the solution.

3,938,551
ANESTHESIA REBREATHING APPARATUS

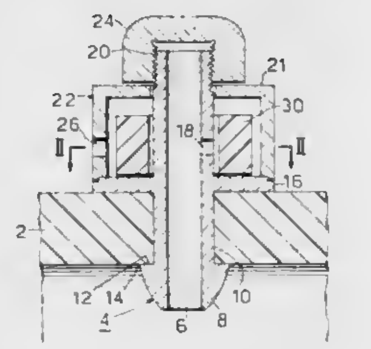
Melvyn L. Henkin, 19640 Greenbriar Drive, Tarzana, Calif. 91356
Division of Ser. No. 218,337, Jan. 17, 1972, Pat. No. 3,814,091. This application Mar. 7, 1974, Ser. No. 448,816
Int. Cl.² F16K *51/00*
U.S. Cl. 137—613 **5 Claims**

1. Overflow valve means useful in a general anesthesia rebreathing system including a breathing circuit, for exhausting gas therefrom, said overflow valve means comprising:
- a valve housing having an input port, a control port, and an exhaust port and including means for communicating said input port with the gas pressure in at least a portion of said circuit;
- valve element means in said housing normally operative to permit gas flow from said input port to said exhaust port in response to a positive differential pressure thereacross exceeding a first threshold;
- means responsive to a control pressure applied to said control port exceeding a second threshold for closing said valve element means and preventing said normal operation thereof; and
- controller means for selectively coupling different pressure sources to said control port, said controller means including at least first and second input ports and an output port;
- means coupling said controller means output port to said valve housing control port;
- said controller means further including manually actuatable means movable between first and second positions for respectively communicating said first and second input ports with said output port and means responsive to said manually actuatable means for varying the rate of gas flow through said valve housing exhaust port.



3,938,552
REGULATED FLUID TAP PARTICULARLY USEFUL AS WATER TRICKLER NOZZLE

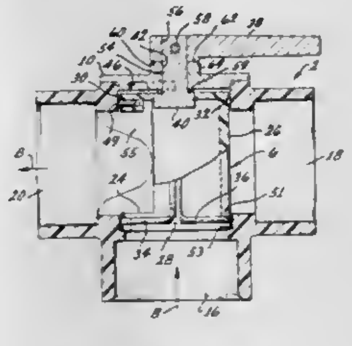
Peretz Rosenberg, Moshav Beit Shearim, Israel
Filed May 25, 1973, Ser. No. 364,049
Claims priority, application Israel, June 2, 1972, 39593; Aug. 25, 1972, 40202
Int. Cl.² B05B *1/08*
U.S. Cl. 137—624.14 **9 Claims**



1. A fluid-flow control device comprising a conduit member connectable to a source of pressurized fluid to be controlled and including an inlet opening, an axial passageway, and an outlet opening through which the fluid flows, and a regulating member movable towards and away from the conduit member outlet opening to close and open same and thereby to control the flow of fluid therethrough; the regulating member being unattached and freely supported by the device so as to be freely movable within limit positions with respect to the conduit member; the face of the conduit member in which the outlet opening is formed being curved, and the face of the regulating member closing the outlet opening also being curved but with a different curvature from that of the conduit member face, such that in said limit positions of the regulating member, its curved face diverges from the curved conduit member face outwardly from the periphery of the outlet opening formed in the latter face to provide a spacing between the two curved faces which increases from the periphery of the outlet opening outwardly thereof, whereby as the regulating member moves away from the conduit member outlet opening to permit the fluid to flow therethrough, a pressure gradient is produced which is lower at the periphery of said opening than outwardly thereof, and which therefore tends to move the regulating member towards the conduit member outlet to close same, said pressure gradient acting with the fluid force to set the regulating member into rapid vibratory movement towards and away from the conduit member outlet opening during the flow of fluid therethrough.

3,938,553
VALVE CONSTRUCTION

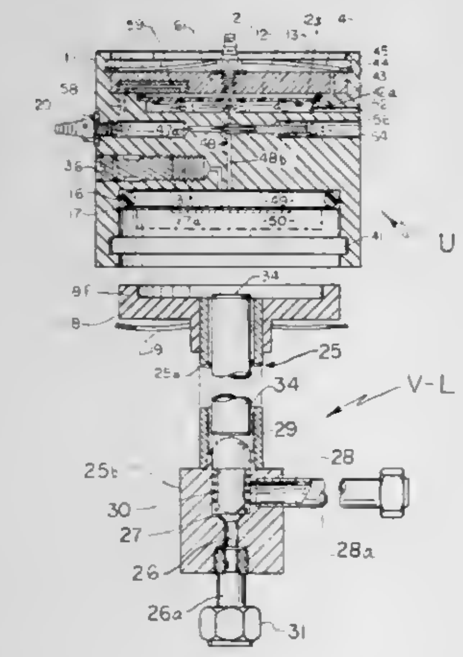
Robert Ortega, 18194 Aztec Court, Fountain Valley, Calif. 92708
Filed Nov. 8, 1973, Ser. No. 413,841
Int. Cl.² F16K *11/085*
U.S. Cl. 137—625.47 **6 Claims**



1. A valve comprising:
- a valve body having a cavity, a first opening, a second opening and a third opening;
- a valve member rotatably positioned within said cavity;
- said valve member having a generally cylindrical exterior surface and a hollow configuration with an end opening in alignment with said first opening;
- a side opening in said valve member positioned at substantially a right angle with respect to said end opening with the valve member positioned for rotation about a cylindrical axis to bring the side opening into or out of alignment with the second opening or the third opening so as to establish flow communication between said first and second openings or between said first and third openings;
- said side opening having a width which is sufficient to span the distance between said second and third openings such that the valve is always open with flow communication being provided between said first opening and both said second and third openings when the valve member is in an intermediate position in which said side opening is out of alignment with said second opening and out of alignment with said third opening;
- a first groove in said exterior surface positioned in a substantially uniform spaced relation with respect to said end opening;
- a second groove in said exterior surface positioned in a substantially uniform spaced relation to said side opening;
- a portion of said second groove positioned at substantially a right angle to said first groove and a portion of said second groove being common to said first groove;
- a third groove in said exterior surface;
- said third groove positioned in a substantially uniform spaced relation about said third opening when said side opening is in alignment with said second opening;

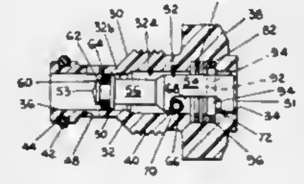
said third groove positioned in a substantially uniform spaced relation about said second opening when said side opening is in alignment with said third opening;
said second groove positioned in a substantially uniform spaced relation about said third opening when said side opening is in alignment with said third opening;
a portion of said third groove positioned at substantially a right angle to said first groove;
a portion of said third groove being common to said first groove;
seal means retained in said first, second and third grooves;
the portion of said second groove which is substantially perpendicular to said first groove being common to the portion of said third groove which is substantially perpendicular to said first groove;
the seal means in the common portion of said second and third grooves performing a dual function of forming a positive seal about said side opening and also forming a positive seal between said second and third openings;
the seal means in the common portion of said first and second grooves serving a common function of maintaining a positive seal about both said end opening and said side opening;
the seal means in the common portion of said first and third grooves serving a common function of maintaining a positive seal about said end opening while maintaining a positive seal about said second or said third openings depending upon the rotational position of the valve member, and
said common portion of said second and third grooves being positioned approximately midway between said second and third openings when said valve member is rotated to a position in which said side opening is in alignment with either said second or said third openings.

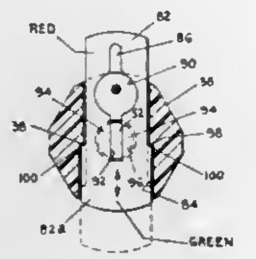
3,938,554
CRYOGENIC CONTROLLER DEVICE
W. Edward Samuels, 3119 Essex Road, Cleveland Heights, Ohio 44118
Filed June 24, 1974, Ser. No. 482,338
Int. Cl.² F16K *31/385, 11/07*
U.S. Cl. 137—625.61 27 Claims



1. A gas energized fluidic controller unit responsive to gas pressure signals to produce a mechanical motion output, said controller unit comprising:
a housing including a body and providing
a first chamber for a sensor diaphragm, and
a second chamber for a power diaphragm;
a sensor diaphragm mounted in the body and spanning said first chamber to define
a sensor gas space on one side of the sensor diaphragm;
a sensor signal gas line connection on the housing communicating with said sensor gas space
to shift the sensor diaphragm responsively to sensor signal gas pressure;
a power diaphragm mounted in the body and spanning said second chamber to define on one side of the power diaphragm
a power diaphragm operating gas space;
an energizing gas connection on the body as a gas inlet and in constant communication with said operating gas space and sensor gas space a venting passageway in said body from said operating gas space to atmosphere;
venting controlling means including said sensor diaphragm for controlling flow of gas through said venting passageway to atmosphere responsive to sensor signal gas pressure thereby varying gas pressure in said operating gas space to shift the power diaphragm;
means supported by said housing including a shiftable element opposed to the said other side of the power diaphragm and shiftable by the power diaphragm for the mechanical motion output of the unit.

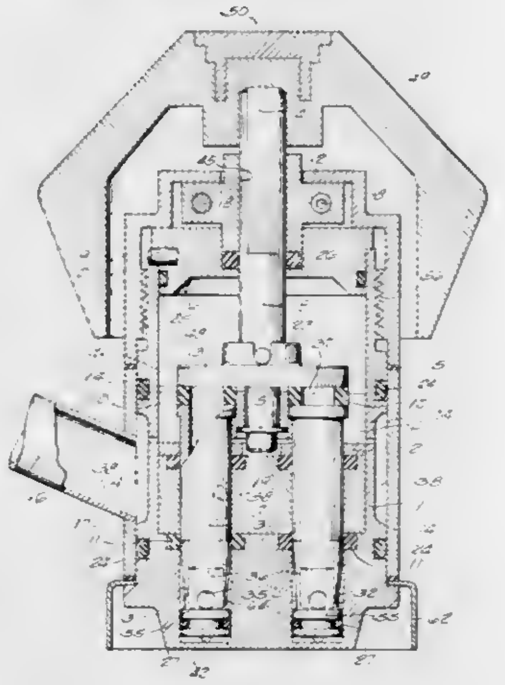
3,938,555
VALVE OVERRIDE APPARATUS
Louis A. Swickley, Cuyahoga Falls, Ohio, assignor to International Basic Economy Corporation, New York, N.Y.
Filed Mar. 21, 1974, Ser. No. 453,435
Int. Cl.² F16K *1/32;* **F15B** *15/26*
U.S. Cl. 137—625.67 22 Claims





1. A fluid valve means for manually controlling the operation of another fluid valve comprising: a valve body portion having a first passageway terminating at one end at a surface and at the other end adapted to communicate with a fluid source; a second fluid passageway intersecting said first passageway and adapted to communicate with a fluid passageway of the fluid valve it is adapted to control; a plunger axially movably mounted in said first passageway and being movable between a first axial position in which one of its ends is contained within said first passageway adjacent to the said surface of said valve body and a second axial position in which said one end is recessed behind said surface of said body; said plunger in said first axial position permitting fluid flow between said other end of said first passageway and said second passageway, and said plunger in said second axial position preventing fluid flow between said other end of said first passageway and said second passageway; positioning means for holding said plunger in said second axial position; and axial movement limiting means for preventing said plunger from extending out of said first passageway; said positioning means including an elongated member slidably mounted for movement between first and second positions across the path of axial movement of said plunger; said member including a pair of apertures, one of said two apertures having a width less than the width of said plunger, said one aperture being in axial alignment with said plunger when said member is in said second position and said plunger is in said second axial position, the other of said two apertures being in alignment with said plunger when said member is in said first position and said plunger is in said first axial position.

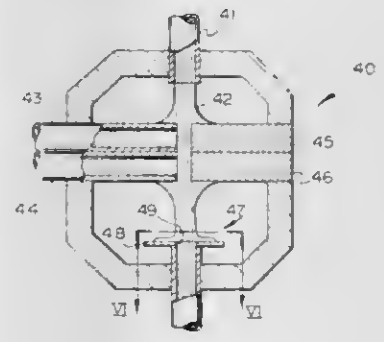
3,938,556
FAUCET
Glenn W. Hicks, 2749 N. 75th St., Milwaukee, Wis. 53210
Filed Dec. 12, 1973, Ser. No. 423,914
Int. Cl.² F16K *11/18*
U.S. Cl. 137—636.4 17 Claims



12. A mixing valve comprising:
means defining a hollow housing,
means within said housing defining a pair of cylindrical valve chambers closed at their lower ends and open at their upper ends to the interior of said housing, one of said chambers having a cold water inlet port formed intermediate the ends thereof and the other of said chambers having a hot water inlet port formed intermediate the ends thereof,
hollow cylindrical valve spool means slidably disposed within each chamber, said spool means being closed at their lower ends and open at their upper ends to said housing interior and each having at least one lateral opening therethrough coupling its associated chamber with said spool means interior, each said spool means closing one of said water inlet ports to fluid flow when in a first lowered position and the lateral opening in each spool permitting flow through its associated port when said spool means is in a second raised position,
rotatable body means disposed within said housing for selectively opening and closing said open ends of said spool means to fluid flow,
means engaging said spool means for moving said spool means from said first to said second position; and
outlet port formed in said housing.

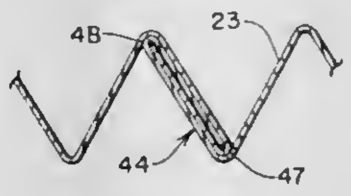
3,938,557
LIQUID FLUIDIC DEVICE
J. Douglas Malcolm, St. John's, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada
Filed Mar. 20, 1975, Ser. No. 560,243
Int. Cl.² F15G *1/14*
U.S. Cl. 137—834 14 Claims

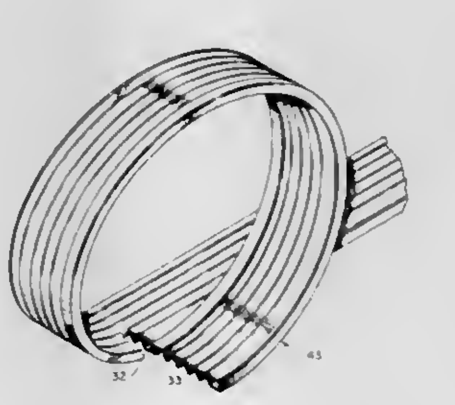
1. A liquid fluid operated control device comprising:
a. an emitter nozzle for coupling to a liquid supply source and operative to issue a free liquid emitter jet having a Weber number of from 8 to 70;
b. control means comprising a control nozzle disposed such that one end thereof terminates within the emitter jet, said nozzle being disposed a distance of less than five emitter jet diameters downstream from the emitter nozzle, said nozzle being operative to issue a control jet for deflecting the emitter jet; and



c. receiver means spaced downstream from the emitter for receiving the emitter jet.

3,938,558
FLEXIBLE CYLINDRICAL METAL TUBE
Leroy E. Anderson, Detroit Lakes, Minn., assignor to Manufacturers Systems, Inc., Detroit Lakes, Minn.
Filed Oct. 26, 1973, Ser. No. 410,234
Int. Cl.² F16L *11/00, 11/16*
U.S. Cl. 138—122 8 Claims



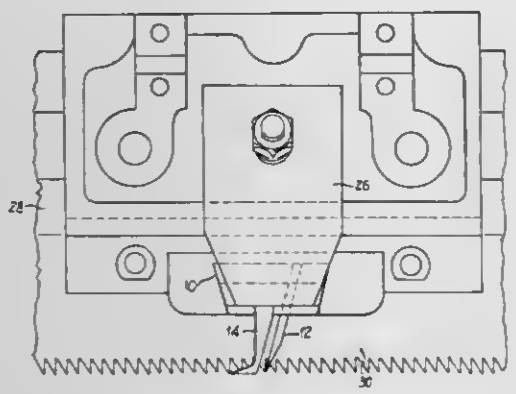


1. A corrugated cylindrical tube comprised of a strip of formable material helically wound into contiguous convolutions and defining a tube having adjacent circumferentially extending corrugations therein, said corrugations each having a bottom bounded by opposed radially extending legs, said strip having marginal portions each with a free edge supported at opposite sides thereof and reversed upon itself in opposite directions to form a U-shaped seam element at each side thereof having opposed legs, the free edge of each of said marginal portions being received between the legs of one of said seam elements of the convolution of said strip contiguous thereto and thereby cooperatively defining a radially extending seam and comprising a common leg of a corrugation for the contiguous convolutions of said strip, each of said seam elements extending into the bottom of the adjacent corrugation of the contiguous convolution of said strip and abutting against the other leg of said adjacent corrugation in locked-in relation.

3,938,559
METHOD OF MAKING PILE FABRICS AND THE PILE FABRIC MADE THEREBY

Geoffrey Wilson Dewhirst, Broughty Ferry, Scotland, assignor to Thomson Shepherd and Company Limited, Angus, Scotland

Filed Nov. 29, 1974, Ser. No. 528,130
Int. Cl.² D03D *39/02*
U.S. Cl. 139—7 R **7 Claims**



1. A method of increasing the tuft length in an Axminster gripper loom having yarn carriers and a gripper associated with each carrier, comprising the steps of:

a. gripping a plurality of yarns in the grippers,
b. drawing yarn off the yarn carriers by relative movement between the carriers and grippers,
c. moving a cutting knife across the yarns to cut them, and
d. moving a finger across the yarns simultaneously with movement of the cutting knife, the finger engaging each yarn and drawing additional yarn off its respective carrier prior to cutting of that yarn by the cutting knife.

3. In an Axminster gripper loom having relatively movable yarn carriers and grippers for drawing lengths of yarn from the yarn carriers, an assembly comprising:

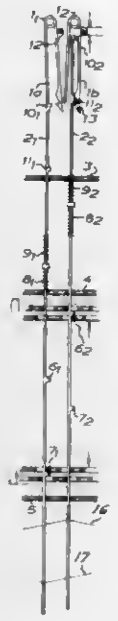
a. a cutting knife movable across the yarns to cut them, and
b. a finger spaced forwardly of said cutting knife with respect to the direction of movement of the knife during cutting, said finger being movable with said cutting knife for engaging each yarn, to draw additional yarn off its respective carrier, before said cutting knife engages and cuts that yarn.

3,938,560
APPARATUS FOR THE MECHANICAL OPERATION OF THREAD OR YARN GUIDES

William Eger Nyboe Lauritsen, Strandvagen 22, 443 00 Lerum, Sweden

Filed Feb. 26, 1974, Ser. No. 446,042
Claims priority, application Sweden, Mar. 5, 1973, 7302989
Int. Cl.² D03C *3/00*
U.S. Cl. 139—59 **9 Claims**

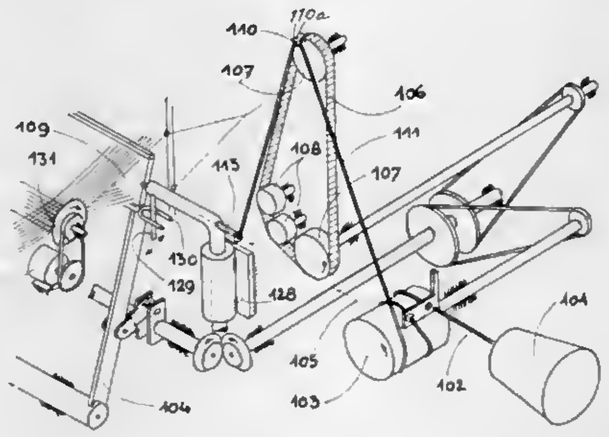
1. An apparatus for the mechanical operation of yarn guides comprising, selectors mounted at one end of the yarn guides, said selectors being operable in response to external pulses to respectively permit and prevent shifting of the said yarn guides from given positions, a pair of locking studs on each of said yarn guides, operating means continuously reciprocating between extreme dead center positions for shifting said yarn guides, said operating means including means for engaging said locking studs for positively shifting said yarn guides in both directions into and out of two extreme positions and a central position, spring means tending to move said yarn guides from said extreme positions, cooperating catch means on said yarn guides and on said selectors for releasably retaining said yarn guides in said extreme positions, said locking studs being adapted in response to the position of the associated selector to be respectively locked to and left unlocked from said operating means, the distance between said catch means on said yarn guides and said locking studs and the distance between said dead center positions of said operating means and said catch means on said selectors being such that as said operating means reaches said dead center positions, said yarn guides are moved a short distance against the action of said spring means whereby a form-closed engagement between said studs and selectors is canceled, said yarn guides being carried along by said operating means in the event that the position of the selector has been changed by an external pulse, while the locking engagement between the yarn guide and selector is only momentarily interrupted and the operating means returns without actuating the respective yarn guides when the selector position remains unchanged.



3,938,561
DEVICE FOR DRAWING OFF WEFT THREAD

Walter Scheffel, Industriestrasse 53, Weissenburg, Bavaria, Germany

Division of Ser. No. 200,955, Nov. 22, 1971, abandoned. This application Aug. 31, 1973, Ser. No. 393,402
Claims priority, application Germany, Apr. 10, 1971, 2117705
Int. Cl.² D03D *47/36, 47/28*
U.S. Cl. 139—122 H **3 Claims**

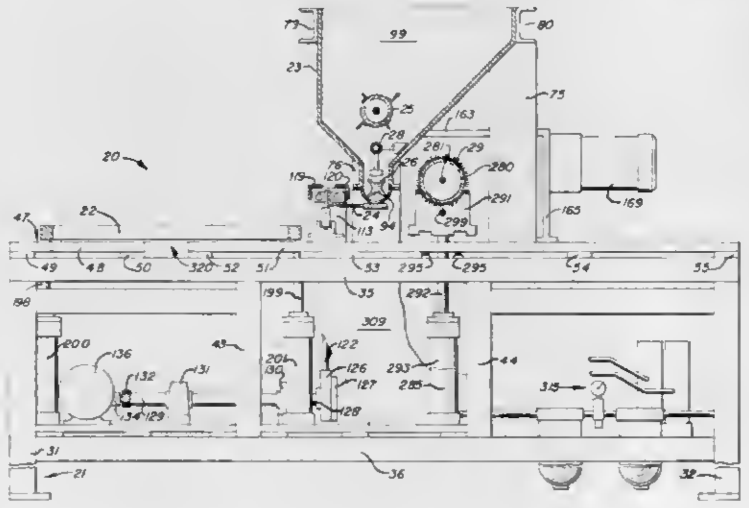


1. In a loom provided with weft thread supply bobbin means for weft thread and a warp shed into which constant lengths of weft thread are to be inserted, continuously operated draw roller means for drawing the weft thread from the supply bobbin means, fluid-pressure, weft inserting means for fluid-expressing and inserting weft thread in the warp shed, said draw roller means and said fluid-pressure weft inserting means defining a rectilinear path of travel therebetween, and continuously operated weft thread deflecting means located between said draw roller means and weft thread inserting means continuously forming a weft loop of variable size for storage and supply purposes, said weft thread deflecting means including endless belt means having a path of travel movable substantially transversely from and beyond the rectilinear weft thread path of travel between the continuously-operated draw roller means and the weft thread inserting means, a deflecting member on the endless belt means movable therewith and engaging with the weft thread during movement of the endless belt means both toward and away from the rectilinear path of travel of said weft thread thereby positively controlling the variable size weft thread loop during both formation of the loop and insertion of the weft thread into the warp shed.

3,938,562
METHOD AND APPARATUS FOR THE DISTRIBUTION OF NON FREE-FLOWING COMPOSITE MIXTURES

Daniel R. McGillvary, Massillon, and Joseph E. Sumerak, Cuyahoga Falls, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jan. 17, 1975, Ser. No. 541,966
Int. Cl.² B65B *1/04*
U.S. Cl. 141—1 R **18 Claims**



14. A method for the distribution of composite mixtures onto a collection surface from a reservoir having a plurality of apertures comprising the steps of:

cavitating the mixture within said reservoir;
comminuting agglomerations of the mixture within said reservoir;
feeding the mixture through said apertures;
further comminuting and distributing the mixture as it exits from said apertures; and,
moving the collection surface relative to said reservoir to receive the mixture fed therefrom.

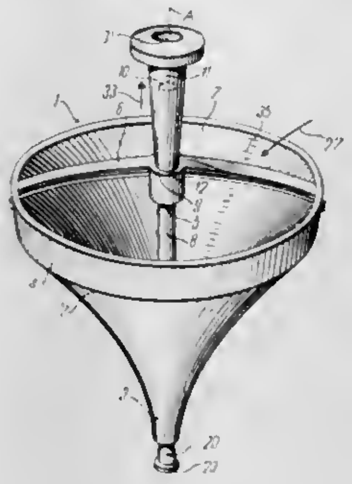
3,938,563
FUNNEL WITH AUTOMATIC AIR BLEEDING AND VALVED OUTLET

Kurt Gall, Wellenstrasse 22, 7 Stuttgart-Birkach, Germany

Filed June 24, 1974, Ser. No. 482,635
Claims priority, application Germany, June 26, 1973, 2332359; Aug. 4, 1973, 2339585
Int. Cl.² B65B *39/04*
U.S. Cl. 141—298 **7 Claims**

1. A funnel comprising:

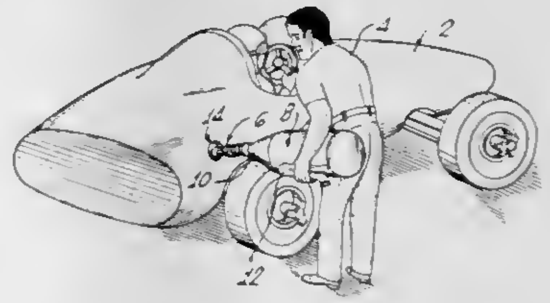
a downwardly tapered shell having a narrow lower outlet and a wide upper mouth;
a tube extending substantially through said shell and having an open lower end adjacent said outlet and an upper end above said mouth, said tube being straight and formed between said ends with a lateral opening;
a support on said shell spanning said mouth holding said tube around said upper end thereof; and
a downwardly extending tubular annular skirt on said support spacedly surrounding said tube at the level of said opening whereby fluid rising in said tube and issuing from said opening is deflected by said shield into said shell.



3,938,564
QUICK-RELEASE FUEL COUPLING FOR RACING CARS

Kendall Jones, North Hollywood, Calif., assignor to Kaiser Aerospace and Electronics Corporation, Irvine, Calif.

Filed Jan. 6, 1975, Ser. No. 538,736
Int. Cl.² B65B *3/07*
U.S. Cl. 141—352 **6 Claims**



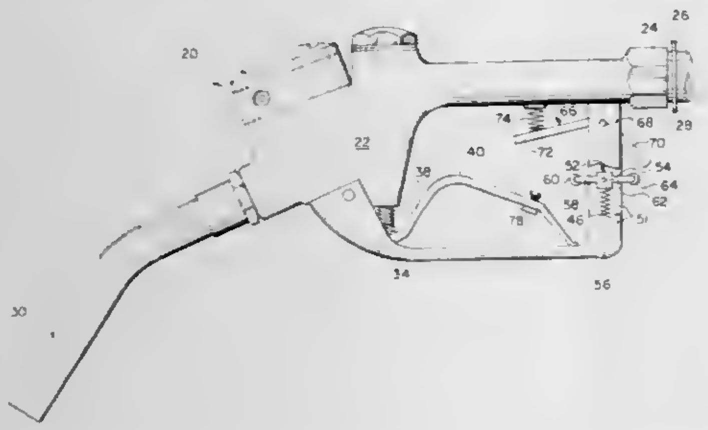
1. A releasable coupling for connecting a fluid supply unit to a fluid receiving unit to minimize spillage of fluid during coupling and uncoupling, comprising:

a housing connected with one of the units;
a passage in said housing communicating with the one unit and having an open end;
a valve seat in said passage having upstream and downstream sides facing toward and away from the open end thereof, respectively;
a plunger resiliently biased against the downstream side of said valve seat to close the same;
a tubular probe connected at one of its ends with the other of the units;
a nose;
a stem connected to said probe supporting said nose in concentric, spaced adjacent relation to the opposite end of said probe;
a sliding sleeve surrounding said probe resiliently biased into sealing contact with said nose at one end of said sleeve to prevent fluid flow outwardly of said probe, said probe being insertable into said passage to move said nose against said plunger thereby unseating the same from said valve seat, insertion of said probe seating an outer peripheral surface of said sleeve against the upstream side of said valve seat, further inward movement of said nose through said valve seat separating said sleeve from said nose to enable fluid flow through said probe and said valve seat; and
joint means mounted in said stem for enabling said nose to move freely out of concentric alignment with said probe

thereby enabling said nose to move out of a trapped position against the downstream side of said valve seat when said probe is withdrawn in a condition of axial misalignment relative to said passage.

3,938,565
FLUID DISPENSING NOZZLE INCLUDING TRIGGER RETAINING MECHANISM

George Dennis Robinson, Jr., Greensboro, and Hal Craig Hartsell, Jr., Kernersville, both of N.C., assignors to Gilbert & Barker Manufacturing Company, Greensboro, N.C.
Filed June 17, 1974, Ser. No. 480,156
Int. Cl.² B65B *3/04*
U.S. Cl. 141—392 **10 Claims**



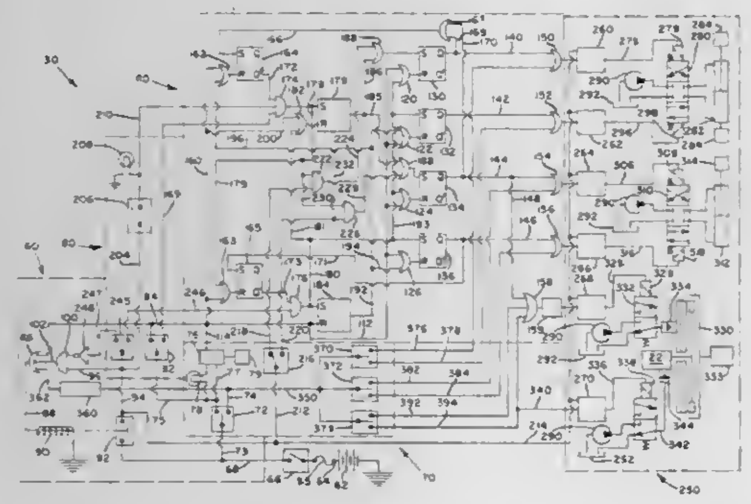
1. In combination with a manually operable fluid dispensing nozzle including a valve to control the flow of fluid through the nozzle:

a trigger member mounted on the nozzle for movement by a relatively high manual force between an inoperative position and an operative position to actuate the valve and control the fluid flow through the nozzle; and

retaining means operable by a continuous relatively low manual force for holding said trigger member in its operative position and for automatically releasing said trigger member for return to its inoperative position upon termination of the relatively low manual force.

3,938,566
TREE HARVESTER DELIMBING CONTROL

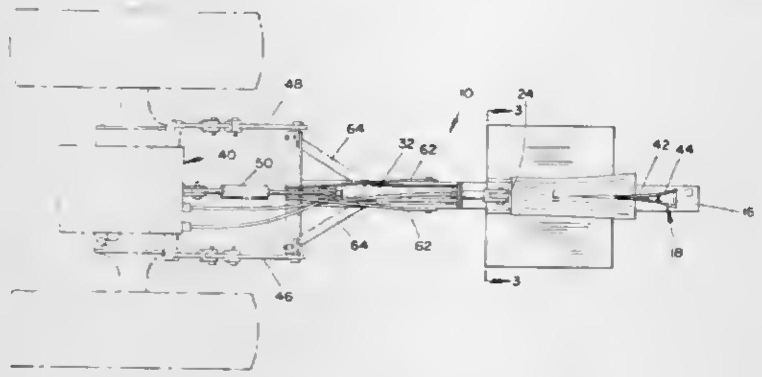
Garn Farley Penfold, East Moline, Ill., and Andrew Paul Redman, Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Apr. 21, 1975, Ser. No. 570,203
Int. Cl.² A01G *23/08;* **B27L** *1/00*
U.S. Cl. 144—2 Z **28 Claims**



15. In a tree harvesting machine having main frame means elongated in a normal fore-and-aft direction of travel supported by ground engaging means, delimber means mounted on the forward end portion of said frame means and including fluidly actuated knife means for receiving and encircling and delimbing a tree as the latter is fed endwise therethrough, feed means mounted on said frame means behind said delimber means and fluidly movable for receiving and engaging a tree and including rotatable roll means engageable with main drive means for propelling a tree through said delimber means, and extendable and retractable tree handling means mounted on said frame means for manipulating a tree into a position for introducing the butt end portion thereof into said delimber and feed means, a control system comprising: a source of electrical energy; automatic control means connected to the source for producing a start and reset signals; logic circuitry means connected to the source including means responsive to the start signal for selectively providing sequentially a close-delimber, close-feed, and engage-drive electrical outputs and the close-feed, engage-drive, and close-delimber electrical out-puts and including means responsive to the reset signal to block the close-delimber, close-feed and engage-drive electrical outputs and to provide and subsequently to block an open-delimber and open-feed electrical outputs, delimber actuator means operatively associated with the logic means and the delimber means including driver means responsive to the close- and open-delimber electrical outputs to selectively connect the source to solenoid means for actuating valve means to connect a source of fluid pressure to actuate means to fluidly actuate the knife means between its respective encircling and receiving positions; feed actuator means operatively associated with the logic means and the feed means including driver means responsive to the close- and open-feed electrical outputs to selectively connect the source to solenoid means for actuating valve means to connect the source of fluid pressure to actuator means to fluidly move the feed means between its respective engaging and receiving positions; and feed drive means operatively associated with the logic means and the roll means including driver means responsive to the engage-drive electrical output to selectively connect the source to solenoid means for actuating valve means to connect the source of fluid pressure to actuator means to engage the roll means to the main drive means for rotating the roll means to propel a tree trunk through said delimber means.

3,938,567
TRACTOR MOUNTED LOG SPLITTER

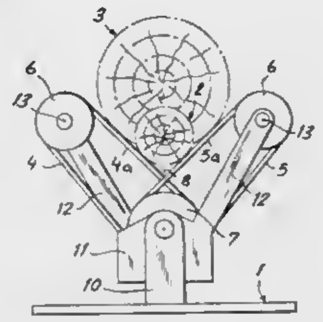
Arnold D. Dircksen, and David H. Dircksen, both of Rte. 1, Spring Valley, Ohio 45370
Filed Mar. 29, 1974, Ser. No. 456,005
Int. Cl.² B27L *7/00*
U.S. Cl. 144—193 A **6 Claims**



1. A log splitter adapted to be supported by and operated from a tractor comprising an I-beam providing a base member adapted to support a log to be split, a connector frame at one end of said base member to effect cantilevered support of said base member from a tractor, log abutment means slidably mounted on said base member adapted to engage one end of a log, a wedge-shaped member on said base in opposed relation to said abutment means and adapted to engage the opposite end of a log, drive means on said base having power transfer means connectable to a tractor power system and operatively connected to said abutment means for sliding said abutment means on said base member to thereby effect relative movement between said abutment means and said wedge-shaped member to force said wedge-shaped member through a log, and ramp means connected to the web of said I-beam and extending outwardly and downwardly therefrom to facilitate the rolling of a log onto said base member and to stabilize the base member when resting on the ground.

3,938,568
APPARATUS FOR DEBARKING LOGS

Wilhelm Härdtle, Poststrasse 21, 7959 Wain, Krs. Biberach an der Riss, Germany
Filed Feb. 5, 1975, Ser. No. 547,373
Claims priority, application Germany, Feb. 6, 1974, 2405639
Int. Cl.² B27L *1/00;* **B65G** *47/00, 15/14*
U.S. Cl. 144—208 F **14 Claims**



1. An apparatus for rotating a log for removal therefrom by a tool of bark and the like, said apparatus comprising:

at least two longitudinally and horizontally spaced frames;

a pair of horizontally and transversely spaced upper wheels on each of said frames;

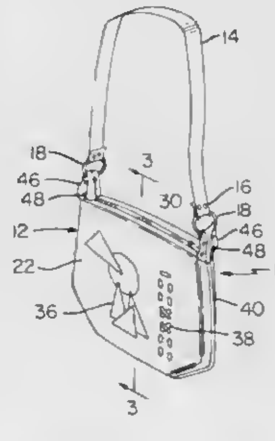
at least one lower wheel on each frame below and between the respective upper wheels;

at least one endless conveyor element spanned over the wheels on each frame and having a pair of inner stretches defining a V in line with the inner stretches on the other frame and forming with the other inner stretches a log-receiving cradle;

drive means for displacing said element to rotate a log received in said cradle, two such lower wheels and two such conveyor belts each being spanned over a respective upper wheel and a respective lower wheel are provided on each frame, said lower wheels of each frame being coaxially coupled.

3,938,569
HANDBAG

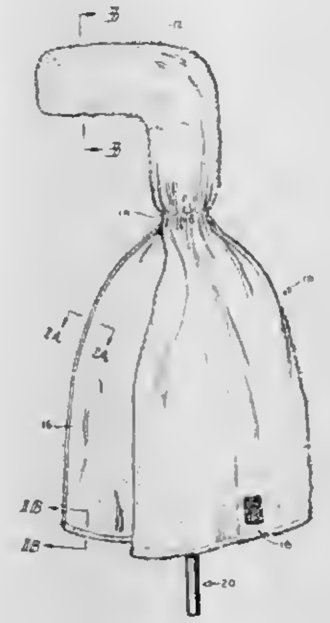
Lawrence E. Hill, 5815 Robison, Cincinnati, Ohio 45213
Filed Apr. 15, 1974, Ser. No. 460,943
Int. Cl.² A45C *3/06*
U.S. Cl. 150—33 **1 Claim**



1. A combination handbag and cushion comprising first and second outside wear-resistant covers forming the exterior sides thereof, a one piece U-shaped liner comprising a closed lower portion and first and second side portions, said first liner side portion having its upper peripheral edge secured to the upper peripheral edge of said first outside wear-resistant cover, said second liner side portion having its upper peripheral edge secured to the upper peripheral edge of second outside wear-resistant cover, a zipper fixedly secured between the upper peripheral edges of said first and second outside wear-resistant covers to provide access to the interior of said handbag, allowance edged being provided on the remaining peripheral edges of said first and second outside wear-resistant covers, said allowance edges of said first and second outside wear-resistant covers being secured together, piping means contained within said secured allowance edges, cushioning means for protecting objects carried within said handbag from damage when the article is used as a cushion and further providing comfort for the user when seated thereon, said cushioning means comprising a first cushion pad fixedly secured to said first outer wear-resistant cover between said first outer wear resistant cover and said first liner side portion, and a second cushion pad fixedly secured to said second outer wear-resistant cover and said second liner side portion, said cushion pads covering the entire area of said outside wear-resistant covers, a level central bottom portion, substantially parallel to said upper peripheral edge, said bottom portion having upwardly and outwardly extending end portions connected with substantially vertical side edges whereby objects placed within said handbag will fall to the bottom and be directed by said upwardly outwardly extending portions toward said level central bottom portion thereby concentrating said objects in a smaller area and facilitating locating said objects by the user, and a strap secured to said device for transporting the device when used as handbag.

3,938,570
DUAL PURPOSE CLUB HEAD COVER

Edra J. Stewart, 1404 Paula Drive, Apopka, Fla. 32703
Filed June 28, 1974, Ser. No. 484,343
Int. Cl.² A63B *57/00;* **B65D** *65/02*
U.S. Cl. 150—52 G **6 Claims**

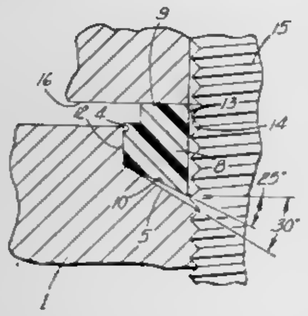


1. A dual purpose club head cover serving not only to protect the club, but also providing a means readily available to the golfer for wiping the ball and club prior to play, said cover comprising a head-engaging portion, an elasticized waist portion below said head-engaging portion adapted to grasp the shaft of the club, and a skirt portion extending below said waist portion for a considerable extent, said head-engaging, waist, and skirt portions being made from a single piece of absorbent material, said skirt portion being of a length approximately equal to or greater than the length of the head-engaging portion of said cover, thereby providing the golfer as easily available ball wiping surface, said skirt portion being of suffi-

cient lateral dimension as to extend loosely around the shaft of the club, and means for enabling a user to secure said skirt portion in a furled condition about the shaft of the club.

3,938,571
NUT WITH SEALING INSERT

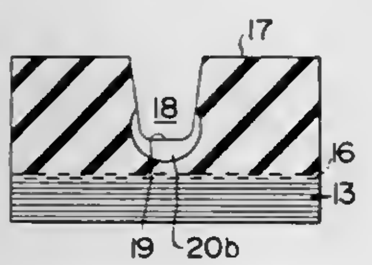
Robert N. Heighberger, c/o Jos. Dyson & Sons, Inc., 33300 Lakeland Blvd., Eastlake, Ohio 44094
Filed July 15, 1974, Ser. No. 488,269
Int. Cl.² F16B *39/34*
U.S. Cl. 151—7 **1 Claim**



1. In sealing and locking means of the class described, in combination, a nut body having threads internally thereof, a male threaded device engaging the internal threads, an insert cavity in one end of said body, said cavity including a cylindrical section and a conical portion extending inwardly toward the axis of the body from the inner end of the section at a first angle, said section being knurled, and an insert of material having an excellent elastic memory and lubricity in said cavity with a conical portion at one end lying at a lesser angle than that of the cavity conical portion mentioned for the entire peripheral extent thereof, the planes of said portion and section intersecting at the inner end of the section aforesaid, the conical section of the insert comprising the locking element thereof, said insert having a central opening defining a cylindrical inner surface, the diameter of said inner surface being slightly greater than that of the root diameter of the internal threads, said insert extending from the cavity, a sealing collar integral with the insert extending oppositely from the conical portion, said collar being cylindrical with the inner surface thereof being axially aligned with said inner surface of said insert and of a wall thickness of the order of magnitude of one-half the wall thickness of the insert, and of substantially less longitudinal extent than the body of said insert, the end surface of said collar and a surface on said male threaded device having engaging complimentary flat surfaces, each normal to the axis of the body.

3,938,572
CRACK PREVENTION FOR PNEUMATIC TIRE

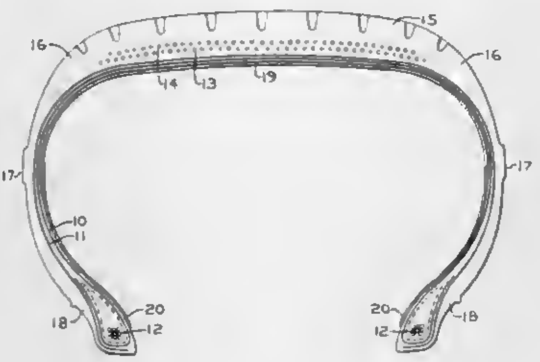
Takuji Nishi, Isehara; Kenhachi Mitsuhashi, and Tadanobu Nagumo, both of Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co. Ltd., Japan
Filed Dec. 6, 1974, Ser. No. 530,283
Claims priority, application Japan, Dec. 31, 1973, 48-1337
Int. Cl.² B60C *11/12*
U.S. Cl. 152—209 R **3 Claims**



1. A pneumatic tire provided with a tread defined by walls having grooves therein and a reinforcing layer placed under said tread, characterized in that said grooves are provided with a plurality of slots in their bottom portions, said slots extending in the direction at a right angle to the lengthwise direction of said grooves, said slots extending completely about the bottom of said grooves up to the mid-point of the walls of said groove through corner and center portions of the bottom portion of the groove for preventing the growth of cracks created in said bottom portion, the depth of said slots being not more than 4/5 the distance covering from the bottom surface of said groove to the top boundary of said reinforcing layer but not less than 1 mm, the width of said slots being not more than 2 mm, and the pitch of said slots being not more than 20 mm but not less than 5 mm.

3,938,573
RUN FLAT TIRE AND WHEEL ASSEMBLY

Victor L. Hallenbeck, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio
Filed Apr. 11, 1974, Ser. No. 459,872
Int. Cl.² B60C *17/00, 21/08*
U.S. Cl. 152—330 RF **4 Claims**



1. A combination comprising:

a. a wheel having a tire-mounting rim with axially spaced bead seats;

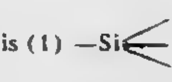
b. a pneumatic tire mounted on the rim having
   1. a carcass reinforced with radially extending cords, the carcass having
      i. two axially spaced bead portions in which the carcass terminates
      ii. two axially spaced sidewall portions, one adjacent to each bead portion, and
      iii. a crown portion intermediate the sidewall portions,
   2. a circumferentially extending restrictive belt radially outwardly of said carcass at the crown portion,
   3. a tread radially outwardly of said belt, and
   4. a layer of closed cell cellular elastomeric material
   5. a layer of substance on the radially inner side of said cellular elastomeric material said layer of substance having a coefficient of friction sufficient to prevent tearing, chafing or heating of the internal sidewall and bead portions of the tire when run in a completely deflated condition, in which the tire is flattened against the rim and portions of the internal surface of each sidewall are folded axially outwardly into contact under the weight resting on the tire and both said layers covering the entire inner surface of the bead portions, sidewall portions and crown portion;

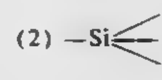
c. an adhesive cementing the bead portions of said tire to the bead seats of said rim to prevent separation of the beads and rim when the tire is run in the completely deflated condition.

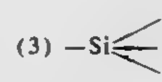
3,938,574
VULCANIZABLE RUBBER MIXTURE FOR TIRE TREADS HAVING IMPROVED SKID RESISTANCE

Kurt Burmester, Overath-Steinenbruck; Siegfried Wolff, Boroheim-Merten; Erhard Klotzer, Putzbrunn-Solalinden, and Friedrich Thurn, Rodenkirchen, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany
Continuation-in-part of Ser. No. 514,318, Oct. 11, 1974, abandoned. This application Nov. 21, 1974, Ser. No. 526,063
Claims priority, application Austria, Oct. 11, 1973, 8692/73
Int. Cl.² B60C *5/00, 11/14;* **C08K** *5/01;* **C08L** *7/00*
U.S. Cl. 152—330 R **23 Claims**

1. A vulcanizable rubber mixture suitable for skid resistant tire treads comprising (1) a rubber, 20 to 100% of the total rubber being polybutadiene rubber and 80 to 0% of the rubber being a sulfur vulcanizable synthetic rubber other than polybutadiene or being natural rubber, (2) silica filler in an amount of 20 to 200 parts by weight per 100 parts of rubber with the proviso that if carbon black is also present the amount of silica is 40 to 200 parts by weight per 100 parts of rubber, (3) plasticizer oil in an amount of 40 to 100 parts by weight per 100 parts of rubber, (4) sulfur or a sulfur donor in an amount of 0.2 to 8 parts by weight per 100 parts of rubber, (5) an accelerator in an amount of 0.1 to 8 parts by weight per 100 parts of rubber, and (6) 0.1 to 25 parts by weight per 100 parts of rubber of a sulfur containing organosilane having the formula $Z—alk—S_n—alk—Z$ in which

Z is (1) 
$$-\mathrm{Si}\begin{matrix}R_1\\R_1\\R_2\end{matrix},$$

(2) 
$$-\mathrm{Si}\begin{matrix}R_1\\R_2\\R_2\end{matrix}, \text{ or}$$

(3) 
$$-\mathrm{Si}\begin{matrix}R_2\\R_2\\R_2\end{matrix}$$

in which R_1 is alkyl of 1 to 4 carbon atoms, cycloalkyl of 5 to 8 carbon atoms or phenyl, R_2 is alkoxy of 1 to 8 carbon atoms or cycloalkoxy of 5 to 8 carbon atoms, alk is a divalent hydrocarbon group of 1 to 8 carbon atoms, and n is a number of 2 to 6.

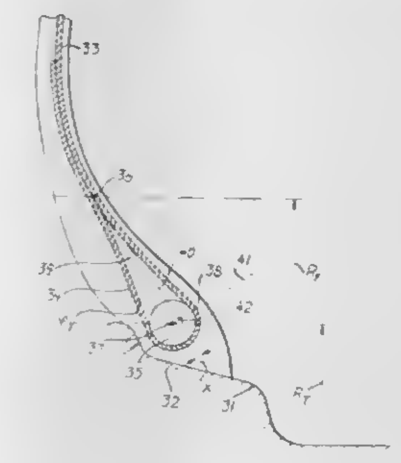
3,938,575
PNEUMATIC TIRES

Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, France
Filed Apr. 9, 1975, Ser. No. 566,280
Claims priority, application France, Apr. 11, 1974, 74.12898
Int. Cl.² B60C *15/00, 9/02*
U.S. Cl. 152—362 R **5 Claims**

1. In a pneumatic tire with a crown reinforcement formed of at least two crossed oblique plies of cables and a carcass reinforcement comprising at least one ply of radial cables the portion of which folded around the bead ring terminates in a part which is parallel to the carcass reinforcement, the improvement which comprises:

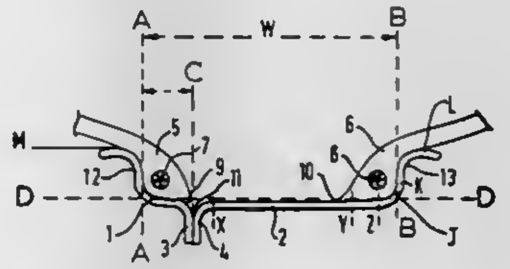
a. the equilibrium curve of the carcass reinforcement passes between the center of gravity of the radial section of the bead ring and the point of contact of the carcass ply with the radial cross section of the bead ring, and

b. the end of the radius from which the folded-over portion assumes an arrangement parallel to the carcass reinforcement is located at a distance from the center of gravity of the radial section of the bead ring of between 1/5 and ⅓ of the height of the pneumatic tire on its rim.



3,938,576
RIMS FOR PNEUMATIC TIRES

William Eric Mitchell, Coventry, England, assignor to Dunlop Limited, London, England
Filed Dec. 14, 1973, Ser. No. 424,827
Claims priority, application United Kingdom, Dec. 15, 1972, 58156/72
Int. Cl.² B60B *25/00*
U.S. Cl. 152—379 R **6 Claims**



1. A rim for a pneumatic tire and rim assembly which may be used when the tire is in a deflated state comprising an outboard rim part and an inboard rim part detachably secured together, the profile of the outboard rim part considered in a plane containing the axis of the rim comprising, in sequence, a radially extending bead retaining flange having a radially outer edge which is turned axially outwardly of the rim to provide a support surface of substantial axial width for the sidewall of a pneumatic tire, a curved seating region for the heel of a tire bead extending into a frusto-conical bead seating region tapering radially inwardly towards the axially inner region of the rim and extending axially inwardly to a radially inwardly curving bead toe seating region having a radius of curvature in the range 5 to 9 millimeters; the curved toe seating region terminating in a plane spaced axially at a distance in the range 18 to 20 millimeters from the plane of the inner surface of the bead retaining flange, the inboard rim part being joined to the outboard rim part in the plane of termination of the said curved toe seating region and when considered in a plane containing the axis of the rim having a profile adjacent said plane of termination which substantially mirrors that of said curved toe seating region and leads into an axially extending base portion having a diameter lying in the range 2 to 3 millimeters less than the nominal rim diameter as measured at the point where the plane of the inner surface of the bead retaining flange joins a line tangential to the inclined bead seating portion, the base portion terminating in a second frusto-conical bead seating region which increases in diameter towards the end remote from the outboard rim part, the sec-

ond bead seating region terminating in a curved heel seating region and tire bead retaining flange the profiles of which considered in a plane containing the axis of the rim substantially mirror the corresponding profiles of the outboard rim part, the bead seating region of each rim part being inclined radially inwardly at an angle of 5°to the axis of the rim.

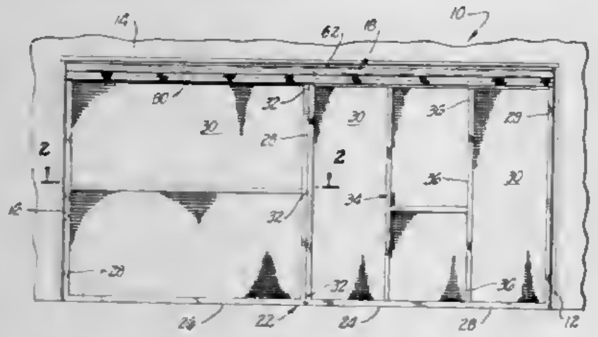
3,938,577
DOOR STRUCTURE EMPLOYING AN AUXILIARY DOOR

Stanzer Richards, 7791 24th St., Westminster, Calif. 92683

Filed Apr. 9, 1975, Ser. No. 566,297

Int. Cl.² E06B *9/01*

U.S. Cl. 160—90 11 Claims



1. In the combination of a principal door, first mounting means for supporting said principal door, a door frame defining a door opening, said first mounting means supporting said principal door so that it is capable of being moved between a substantially vertical closed position in which it extends across said door opening and a substantially horizontal opened position adjacent to the top of said door opening, an auxiliary door, an auxiliary mounting means for supporting said auxiliary door, said auxiliary mounting means supporting said auxiliary door so that it is capable of being moved between a substantially vertical closed position in which it extends across said door opening and an opened position in which it does not extend across said door opening, the improvement comprises:

said auxiliary mounting means serving to support said auxiliary door on said principal door so that said auxiliary door is moved concurrently with said principal door when said principal door is moved between its closed and opened positions,

said auxiliary mounting means also supporting said auxiliary door on said principal door so that when said principal door is in its opened position said auxiliary door can be moved relative to said principal door from an opened position adjacent to said principal door to said closed position of said auxiliary door.

3,938,578
METHOD FOR MAKING FOUNDRY MOULDS AND CORES UTILIZING A GAS CATALYST

David Epstein; Leslie A. Watkins, and John W. J. Bugg, all of London, England, assignors to The White Sea & Baltic Company Limited, London, England

Filed Feb. 13, 1974, Ser. No. 442,302

Claims priority, application United Kingdom, Feb. 20, 1973, 8388/73

Int. Cl.² B22C *9/12*

U.S. Cl. 164—16 6 Claims

1. A method for making foundry moulds or cores comprising putting a mixture of foundry sand and a binder hardenable by use of an acidic catalyst into a mould or core box, passing an acidic gas through the mixture thereby causing the binder to harden, removing the mould or core from the box and applying to the surface of the mould or core a composition comprising a material which will neutralise acidic gases or which will adsorb such gases, said composition being applied in an amount effective to neutralise or adsorb at least a substantial proportion of the acidic gases released from the mould or core before and during casting.

3,938,579
METHOD OF PRODUCING COMPOSITE BEARING MATERIALS

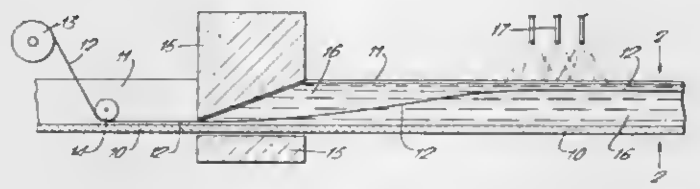
Charles Fraser Old; Michael George Nicholas, both of Wantage, England, and Brian Wilfred Howlett, deceased, late of Newbury, England, by Margaret Howlett, administratrix, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Sept. 10, 1971, Ser. No. 179,341

Claims priority, application United Kingdom, Sept. 10, 1970, 43459/70

Int. Cl.² B22D *11/00*

U.S. Cl. 164—87 8 Claims



1. A process for the continuous manufacture of carbon fiber reinforced shell bearings which process comprises:

a. providing a continuous casting furnace and spaced therefrom, a cooling station comprising a water quench;

b. supplying continuously to said furnace a continuous trough of a backing material;

c. supplying longitudinally of the internal base of said trough in said furnace continuous carbon fibers in the form of a tow, the fibers of said tow being supplied across the width of said trough;

d. supplying in said trough in said furnace, molten bearing metal at a temperature at which it wets said carbon fibers, whereby said carbon fibers are incorporated in said molten bearing metal;

e. passing said trough containing said molten bearing metal and incorporated carbon fibers from said furnace to said cooling station, during which passage the carbon fibers rise through said molten bearing metal to approach the surface of said molten bearing metal; and

f. cooling and solidifying said molten bearing in said cooling station by quenching with water to form the shell bearing product in the form of a continuous strip of bearing metal containing incorporated therein continuous carbon fibers concentrated near the surface of said bearing.

3,938,580
CONTINUOUS METAL CASTING PLANT WITH CONTROLLED BAND-TENSIONING

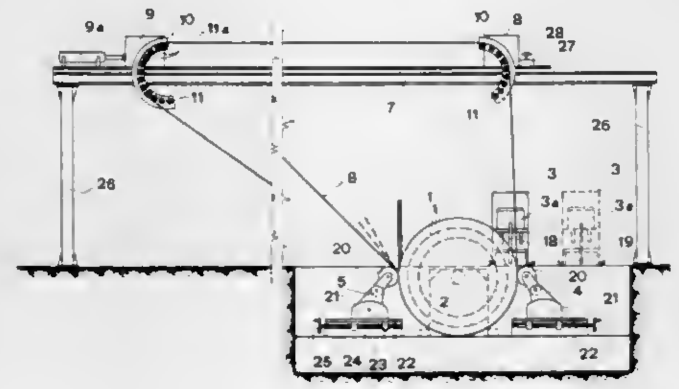
Enrico Donini, C.so Indipendenza 6, 20129 Milan, Italy

Filed June 26, 1974, Ser. No. 483,439

Claims priority, application Italy, June 28, 1973, 25990/73

Int. Cl.² B22D *11/06*

U.S. Cl. 164—154 11 Claims



1. In a system for the continuous casting of elongated metal elements from hot molten metal, a combination comprising a casting wheel having an axis and a peripheral groove; a metallic endless band entrained about a portion of the circumference of said wheel so as to overlie said groove in said portion and define a casting chamber therewith; crucible means including a nozzle for admitting hot molten metal into said casting chamber; band-tensioning means including a horizontal track and a pair of band-supporting members slidable on said track and each having roller means for entraining said band at locations spaced from said wheel, said band-tensioning means also having means for fixedly securing one of said members to said track and control means for moving the other of said members along said track, said control means including sensor means for sensing the tension of said band and piston means connected with said other member and cooperating with said sensor means to move said other member away from said one member and thereby maintain said band tensioned; and a pair of band-presser means disposed on opposite sides of said axis for respectively pressing said band against the circumferential surface of said wheel, each of said band-presser means having a movable carriage, a multi-hinged arm and a pulley on said arm.

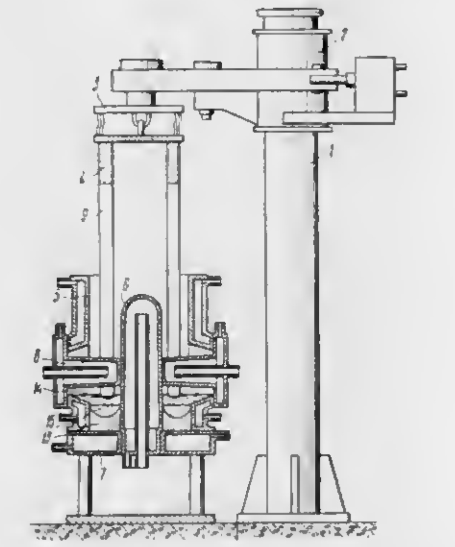
3,938,581
PLANT FOR ELECTROSLAG MELTING OF HOLLOW METAL INGOTS

Volf Iudovich Rabinovich, ulitsa Gagarina, 74, kv. 27; Jury Nikolaevich Kriger, ulitsa Oktyabrskaya, 38, kv. 59, both of Chekhov, Moskovskoi oblasti; Igor Alexandrovich Svitenko, Teply stan, 5 mikroraion, korpus 61, kv. 149, Moscow, and Vladimir Alexeevich Karpov, ulitsa Gagarina, 43, kv. 39, Chekhov, Moskovskoi oblasti, all of U.S.S.R.

Filed June 28, 1974, Ser. No. 484,226

Int. Cl.² B22D *27/02*

U.S. Cl. 164—252 10 Claims



1. A plant for electroslag melting of hollow metal ingots, comprising: a supporting structure; a carriage mounted on said supporting structure movably in the vertical direction; an electrode holder fastened on said carriage; means for casting a hollow metal ingot including a base plate, a mold arranged on said base plate, and a core secured on said mold; at least one side core for shaping a cavity opening to the external side surface of the ingot, said core being inserted through the mold; a hollow consumable electrode having at least one through slot along its length, which slot having a width and length sufficient to accommodate said side core with a clearance.

3,938,582
ARRANGEMENT FOR CONTINUOUS MANUFACTURE OF METAL INGOTS IN A MOLD WITH OPEN BOTTOM

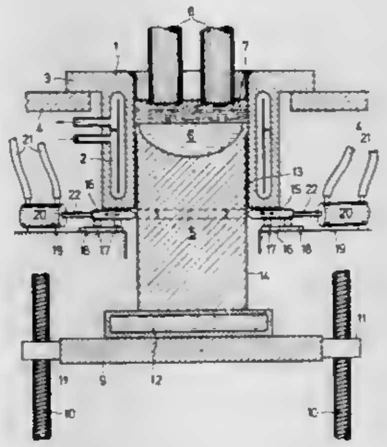
Wolfgang Schwartz-Domke, Bornheim-Roisdorf; Helmut Gröf, Bruchkobel, and Anton Wamser, Hanau am Main, all of Germany, assignors to Leybold Heraeus GmbH & Co. KG, Cologne, Germany

Filed Sept. 12, 1974, Ser. No. 505,485

Claims priority, application Germany, Sept. 13, 1973, 2346038

Int. Cl.² B22D *27/02*

U.S. Cl. 164—252 11 Claims



1. An arrangement for continuous production of metal ingots by progressive crystallization below a slag layer in a mold comprising, in combination, a mold having an open bottom; and a plurality of blocking elements immediately below the bottom edge of the mold and distributed along the periphery of the mold, said blocking elements being moveable in the direction of the ingot surface, the edges and surfaces of said blocking elements facing the ingot being adapted to the shape of the ingot cross section, an annular gap prevailing between the ingot surface and the hollow space in the mold, said annular gap being substantially tightly sealed by said blocking elements.

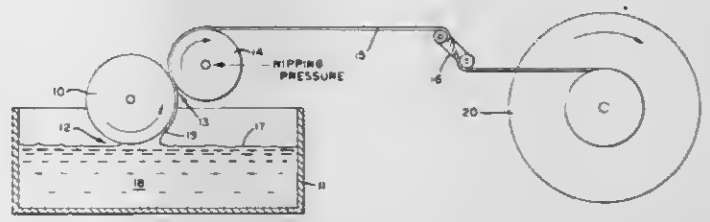
3,938,583
APPARATUS FOR PRODUCTION OF CONTINUOUS METAL FILAMENTS

Sheldon Kavesh, Whippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 348,814, April 6, 1973, Pat. No. 3,856,074. This application Oct. 17, 1974, Ser. No. 515,740

Int. Cl.² B22D *11/06*

U.S. Cl. 164—276 4 Claims



1. In an apparatus for the production of a solid metal filament from a molten source using a quenching wheel as a quenching element, the improvement which comprises a pressure exerting means for pressing the metal filament against the quenching wheel at a point just beyond the point of solidification of the filament on the quenching wheel, thereby creating a tension-free zone and inhibiting premature detachment of the filament from the quenching wheel.

3,938,584

APPARATUS FOR COOLING CONTINUOUS CASTINGS

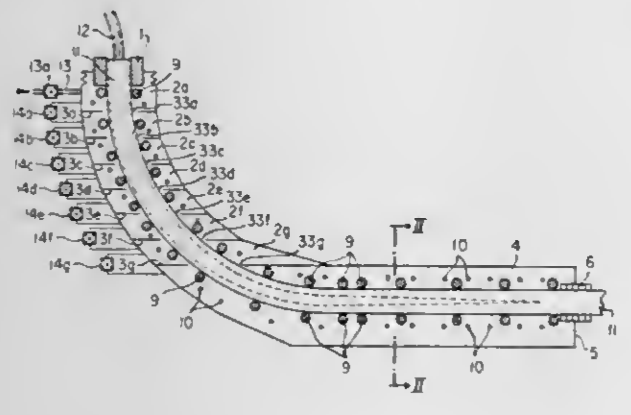
Jean-Luc Charles Meylan, 45, Chemin Moise-Duboule, 1211 Geneva, Switzerland

Division of Ser. No. 260,773, June 8, 1972, Pat. No. 3,848,656. This application Sept. 5, 1974, Ser. No. 503,358

Claims priority, application Switzerland, June 9, 1971, 8423/71

Int. Cl.² B22D *11/12*

U.S. Cl. 164—283 S **13 Claims**



1. In an apparatus for continuous casting of strands, particularly steel strands, including a mould, mould cooling means, a set of guide rollers arranged to guide the strand coming out of the mould along a desired path, and means for cooling and advancing the strand along its path, an improvement wherein at least in a portion of the zone of solidification of the strand after the mould, the set of guide rollers is arranged in an airtight chamber provided with injection nozzles for cooling liquid, the chamber having opposite ends with a seal at each end and at least one outlet opening equipped with flow control valve means, said guide rollers being arranged to guide the strand coming out of the mould along a first path in which the strand has a vertical component of travel and then along a second substantially horizontal path, said airtight pressurized chamber surrounding the rollers in said first path being divided into compartments separated from one another by horizontal partitions each provided with an opening for the passage of the strand, each compartment being provided on both sides of said path with at least one said injection nozzle for cooling liquid, said compartments being connected to one another through pressure control valve means.

3,938,585

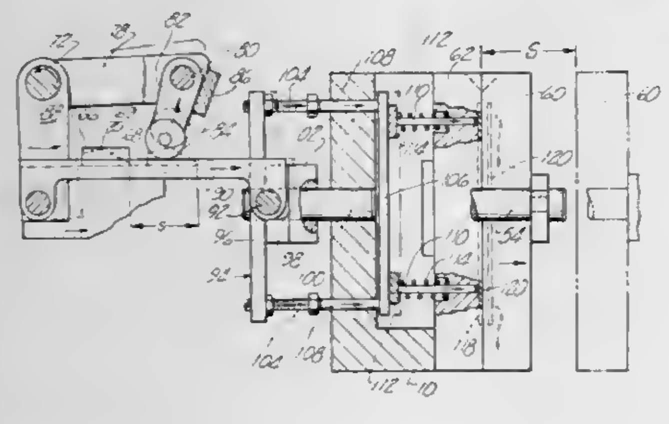
GRID EJECTION MECHANISM FOR A BATTERY GRID CASTING MACHINE

Robert R. Rader, Port Huron, Mich., assignor to Wirtz Manufacturing Company, Inc., Port Huron, Mich.

Filed Jan. 4, 1974, Ser. No. 430,887

Int. Cl.² B22D *17/22, 29/00*

U.S. Cl. 164—347 **20 Claims**



1. In a battery grid casting machine which includes a stationary mold member and a movable mold member movable through a predetermined distance toward and away from the stationary mold member to open and close the mold, the combination comprising, a reciprocating mechanism connected to the movable mold member and movable through said predetermined distance to open and close the mold, said stationary mold member having a plurality of reciprocable grid knock-out pins thereon movable from a retracted to a projected position for ejecting a cast grid from the stationary mold member, means for actuating said pins and means operatively interconnecting said reciprocating mechanism with said actuating means and operable during the first half to three-quarters of the mold opening stroke to shift said pins to the fully projected position within said fraction of the mold opening stroke and thereby eject the grid.

3,938,586

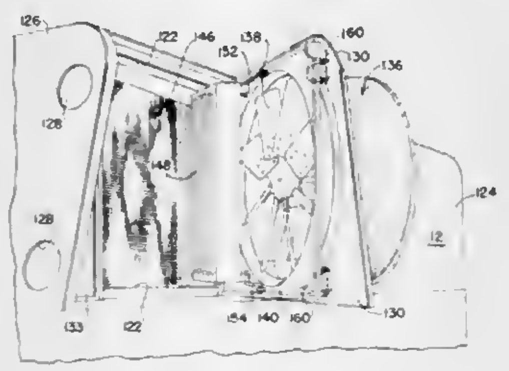
SWINGABLE ROTARY SCREEN

G. Benjamin Barlow, East Moline, and Chester G. Wolfe, Moline, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed June 29, 1973, Ser. No. 375,192

Int. Cl.² F01P *3/04*

U.S. Cl. 165—51 **2 Claims**



1. In a vehicle having a body provided with a generally rectangular air intake opening, said vehicle embodying an internal combustion engine having a fixed heat exchange radiator, and an air conditioning system including a movable heat exchange condenser core, said radiator being fixedly mounted within said body in the vicinity of said opening and said core being normally disposed outwardly of the radiator immediately behind said opening and within said body, a generally rectangular panel having one edge thereof hingedly connected to said body and capable of swinging movement between a normally closed position wherein it covers the opening and an open extended position wherein it uncovers the opening, said core being pivotally mounted on said body for swinging movement between its normal position and an extended position wherein it projects outwardly of said opening, said panel being formed with a relatively large central opening therein, a rotary air screen of the blanking baffle type carried by said panel and cooperating with said central opening, and means operatively connecting said panel and condenser core for swinging movement in unison between their normal and extended positions, said means comprising at least one tie rod pivotally connected at one end to the panel and at the other end to the outer edge region of the core, and wherein the panel and condenser core are pivoted to the vehicle body for swinging movement about respective closely spaced parallel axes and the portion of the body which extends between said axes, in combination with said core, panel and tie rod, define, in effect, an elongated four-bar linkage which, when the panel and core are in their normal positions is substantially collapsed, and when the panel and core are extended define a trapezoid.

3,938,587

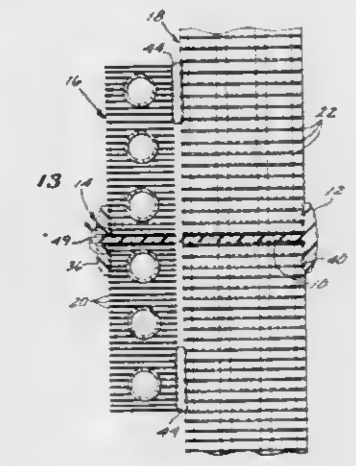
COOLER FASTENING SYSTEM

David R. Vian, Rialto, Calif., assignor to Hayden Trans-Cooler, Inc., Corona, Calif.

Filed Jan. 6, 1975, Ser. No. 538,574

Int. Cl.² F28F *7/00*

U.S. Cl. 165—76 **19 Claims**



1. In a power system having an engine, heat exchanger structure comprising at least one generally flat heat exchanger mounted in fixed relationship to said engine for cooling liquid associated with said engine, and a generally flat oil cooler structure for cooling oil associated with said engine, said structures being of the type having fins and perforations arranged generally normal to the general planes thereof,

a fastening system for mounting said oil cooler structure in stacked relationship on one side of said heat exchanger structure, which comprises

an elongated, thin, generally straight tension member which is sufficiently long and thin to extend through perforations in said structures and to project beyond the free sides of the structures in stacked relationship,

said tension member having substantial column strength and being generally rigid against gross lateral bending in all lateral directions so as to enable it to be pushed through said structures in stacked relationship,

a pair of abutment members adapted to be secured at spaced positions along the length of said tension member on opposite free sides of said structure in stacked relationship,

at least one of said abutment members being longitudinally movable on said tension member toward the other abutment member into a tensioning position of the fastening system wherein said tension member is placed under tension between said abutment members,

and locking means engageable between said movable abutment member and said tension member for locking them in said tensioning position.

3,938,588

DEAERATING FEEDWATER HEATER

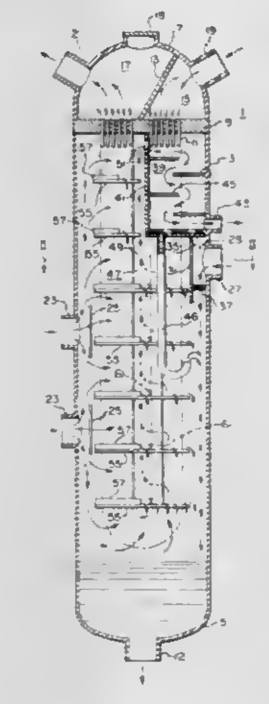
Roland L. Colt, Swarthmore, and Robert G. Slebodnick, Collingdale, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 18, 1973, Ser. No. 407,723

Int. Cl. F28b *1/02, 9/10*

U.S. Cl. 165—113 **8 Claims**

1. A feedwater heater adapted to remove non-condensible gases from condensate drain fluid fed thereto, said heater comprising a tubular shell portion; a plurality of tubes forming a tube bundle so disposed in said shell portion that feedwater flows through the tubes when the heater is operating to form a cold leg portion and a hot leg portion; a steam inlet nozzle disposed in said shell; a condensate drain fluid inlet nozzle disposed in said shell; impingement protecting means disposed adjacent said condensate drain fluid inlet nozzle for protecting the tubes against the direct impingement of said influent condensate drain fluid; means for dispersing said influent condensate drain fluid; said dispersing means being so disposed to effectuate admixing of the dispersed condensate drain fluid with influent steam; vent condensing means disposed to encompass a portion of the cold leg and having baffles disposed therein to cause the fluid flowing therethrough to follow a sinuous path over the tubes in order to condense steam from non-condensible gases and means for venting the non-condensible gases therefrom; and a single U-shaped trough generally centrally disposed with respect to the tube bundle and generally extending lengthwise along the entire length of the tube bundle, said trough being in direct fluid communication with the vent condensing means and with the cold leg portion of the tube bundle, said trough having leg portions each of which extend into the cold leg portion of the tube bundle, subtending a portion of the tubes therein, whereby, when the heater is operable influent steam advixes with the dispersed condensate drain fluid driving the non-condensible gases out of solution, and the steam and non-condensible gases must flow over tubes of the cold leg portion to enter the trough and then flow via the trough to the vent condensing means, wherein steam is condensed and non-condensible gases are vented from the feedwater heater.



3,938,589

DRILLING TOOL

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

Division of Ser. No. 201,878, Nov. 24, 1971, Pat. No. 3,783,942. This application Oct. 3, 1973, Ser. No. 403,204

Int. Cl.² E21B *43/12;* **F16K** *17/00*

U.S. Cl. 166—224 A **18 Claims**

1. A drilling tool apparatus adapted for connection in a drilling string to control undesired flow through the bore of the drill string including:

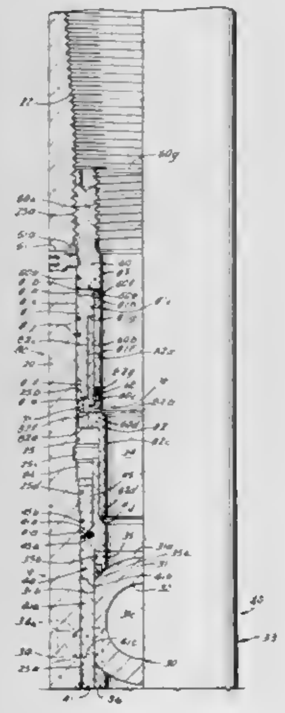
a tubular member having a longitudinal bore extending therethrough and means for connection at its upper and lower ends in a drill string with said longitudinal bore in alignment with the bore of the drill string for forming a longitudinal flow passage through said tubular member;

bore closure means movably disposed in said bore of said tubular member for movement to and from an open position for enabling flow of fluid through said longitudinal bore of said tubular member and a closed position for blocking flow of fluid through said longitudinal bore of said tubular member;

means operably connected with said bore closure means for effecting movement of said bore closure means to the open and closed positions, said means including:

piston means forming a longitudinally extending flow passage aligned with said longitudinal bore of said tubular member for providing a longitudinal flow path through the drilling tool and having a first pressure responsive surface exposed to fluid pressure in said bore of said tubular member above said bore closure means for urging on said first pressure responsive surface to effect movement of said piston means in a first direction for moving said bore closure means to the open position to enable flow of fluid through said longitudinal bore;

means sealing with said first pressure responsive surface for increasing the pressure responsive surface area exposed to the fluid pressure as said piston means commences to move in a first direction to move said bore closure means from said closed to said open position for moving said bore closure means in said bore to control flow of fluid through said bore wherein the fluid pressure in said bore effects positive movement of said bore closure means to the open position;



said piston means having a second pressure responsive surface for urging movement of said piston means in a second direction for moving said bore closure means to the closed position;

a flow channel formed in said tubular member and extending from a location on an exterior surface of said tubular member to communicate the pressure adjacent said tubular member with said second pressure responsive surface wherein the pressure adjacent said tubular member urges said piston means to move in the second direction and said bore closure means to move to block flow through said bore of said drill string;

means mounted with said tubular member for urging movement of said piston sleeve in the second direction to move said bore closure means to the closed position to predetermine the pressure in said bore of said tubular member exceeding the pressure adjacent the exterior of said tubular member communicated into said expansible chamber to commence to move said piston means in the first direction; and

said piston means carrying said bore closure means when moving in the first direction for effecting movement of said bore closure means relative to said piston means to move said bore closure means to the open position.

3,938,590

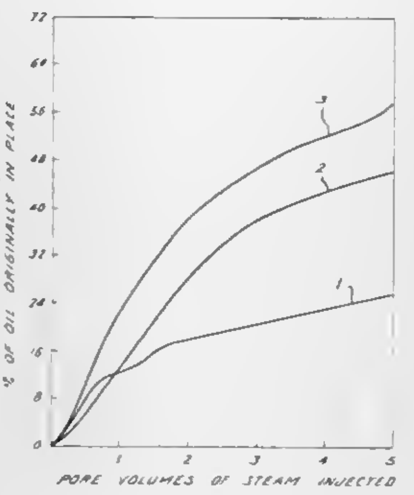
METHOD FOR RECOVERING VISCOUS ASPHALTIC OR BITUMINOUS PETROLEUM

David A. Redford, Fort Saskatchewan, and David L. Mitchell, Edmonton, both of Canada, assignors to Texaco Exploration Canada Ltd., Calgary, Canada

Filed June 26, 1974, Ser. No. 483,173

Int. Cl.² E21B *43/22, 43/24, 43/26*

U.S. Cl. 166—270 11 Claims



1. A method of recovering viscous, asphaltic or bituminous petroleum from a permeable, subterranean, viscous asphaltic or bituminous petroleum-containing formation including a tar sand deposit, penetrated by at least one well in fluid communication with the formation comprising:

a. forming a zone of increased permeability in at least a portion of the formation,

b. introducing chlorine gas into said zone of increased permeability to oxidize labile groups on the bituminous petroleum, to form surface active agents in the formation,

c. introducing an alkalinity agent into said zone of increased permeability to neutralize oxidized groups generated by action of the chlorine gas,

d. introducing into the formation a recovery fluid selected from the group consisting of steam, a mixture of steam and an oxygen containing gas including air, a mixture of steam and ammonia, or a mixture of steam, ammonia and an oxygen containing gas, and

e. recovering formation petroleum from the formation.

3,938,591

INTERMEDIATE FLUID SYSTEMS FOR LONG DISTANCE OIL DISPLACEMENT

Paul S. Ossip, Denver, and Karl D. Dreher, Littleton, both of Colo., assignors to Marathon Oil Company, Littleton, Colo.

Filed Mar. 7, 1975, Ser. No. 556,514

Int. Cl.² E21B *43/22*

U.S. Cl. 166—275 9 Claims

1. In a process for recovery of petroleum from formations by drilling into said formations at least one injection well and at least one production well spaced a distance from said injection well, and injecting fluids into said injection well to displace petroleum toward said production well and recovering petroleum from said production well, the improvement comprising injecting displacement fluids comprising intermediate micellar systems which substantially are immiscible with oil and water in the formation, said micellar systems having electrical conductivities in the range of from about 10^{-6} to about 0.04 ohm^{-1} $centimeters^{-1}$, in an amount equivalent to from about 1 to about 25 percent of the pore volume of said formation.

3,938,592

ROCK-EXPLOITATION METHOD BASED ON THERMODYNAMIC CYCLES UTILIZING IN-SITU ENERGY SOURCE

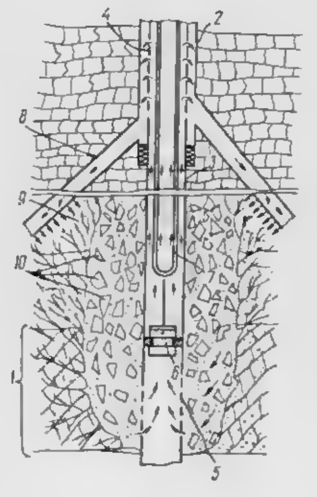
Ivan Timofeevich Aladiev, ulitsa Georiu-Dezh, 3, kv. 11; Kirill Dmitrievich Voskresensky, Komsomolsky prospekt, 14/1, kv. 79, both of Moscow; Gennady Petrovich Gukov, ulitsa Lesneya, 6, kv. 13, Moskovskaya, poselek Vidnoe; Evgeny Valentinovich Saperov, poselok Moskvorechie, 52, kv. 4, and Valery Kombolatovich Fardzinov, Strastnoi bulvar 13-A, kv. 42, both of Moscow, all of U.S.S.R.

Continuation of Ser. No. 122,483, March 9, 1971, abandoned. This application Nov. 12, 1973, Ser. No. 414,772

Claims priority, application U.S.S.R., Mar. 23, 1970, 1416581

Int. Cl.² E21B *43/26, 43/24;* **F28D** *21/00*

U.S. Cl. 166—299 8 Claims



7. A rock-exploitation method based on thermodynamic cycles utilizing an in-situ energy source, comprising: sinking at least one well as far down as a producing horizon; admitting stratal fluid into said well, said fluid being contained in the rock and being in contact therewith; discharging said fluid from the well above the producing horizon into a fluid permeable rock mass, said fluid being utilized as a heat-carrying medium in an underground circuit which includes means for admission of fluid into the well; a section of the well between the fluid inlet and the fluid outlet, and the fluid-permeable rock mass adjacent to said well section; injecting a heat-carrying agent into said well where it circulates, the temperature of said heat-carrying agent being higher than the temperature of said fluid containing in the rock of said producing horizon; said heat-carrying agent being cooled by said fluid within said well section.

3,938,593

PROCESS FOR TREATMENT OF WELLS WITH ACID HALIDES

Robert H. Friedman, Houston, Tex., assignor to Getty Oil Company, Los Angeles, Calif.

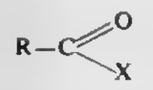
Filed Mar. 11, 1974, Ser. No. 449,771

Int. Cl.² E21B *43/27*

U.S. Cl. 166—307 10 Claims

1. A process for chemical treatment of wells comprising:

providing an acidizing composition which includes an acid halide of the formula



$$R-C{\overset{O}{\underset{X}{\lessgtr}}}$$

where X is a halogen and R is selected from the group consisting of methyl, ethyl, propyl and butyl;

injecting said composition through the well bore, into the subterranean formation surrounding the well;

said composition reacting with the water in situ in said formation to form a mixture of two acids, RCOOH and HX, which mixture is effective to chemically react with formation materials to increase the permeability of the formation.

3,938,594

FRACTURING FLUID

John S. Rhudy, and Bruce L. Knight, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Apr. 8, 1974, Ser. No. 458,740

Int. Cl.² E21B *43/26*

U.S. Cl. 166—308 18 Claims

1. A process for fracturing a subterranean formation penetrated by at least one injection well wherein an aqueous fracturing fluid comprised of a high molecular weight polyacrylamide polymer is injected into the formation, the steps comprising injecting into the formation at sufficient rate and pressure to fracture the formation an aqueous solution of a high molecular weight polyacrylamide polymer that is gelled in the presence of chromic ion prior to injection of the polymer into the formation.

3,938,595

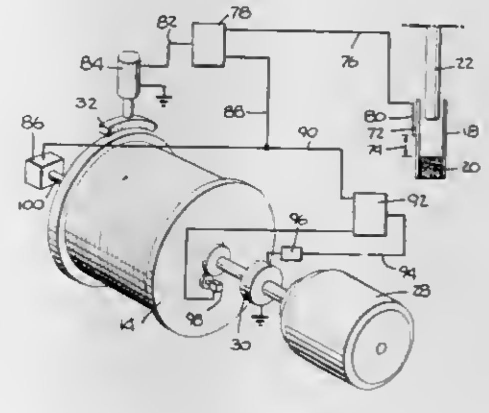
APPARATUS AND METHOD FOR DRIVING BULB PILES

William J. Swenson, Houston, Tex., assignor to Raymond International, Inc., Houston, Tex.

Filed Sept. 19, 1974, Ser. No. 507,558

Int. Cl.² E21B *1/04*

U.S. Cl. 173—1 12 Claims



10. A method of forming a pile with a pile hammer rig including a crane having a hoisting drum, a clutch, driving means for said drum through said clutch, braking means for the drum, a drop-weight, a hoisting rope leading from said drum to said drop-weight, said method comprising the steps of engaging said clutch means to lift said drop-weight to a preselected height by winding the rope on the drum, disengaging said clutch means for releasing said drop-weight to start its free fall, automatically sensing when the drop-weight approaches the bottom of its stroke, and transmitting a signal for engaging said braking means, automatically sensing the rotation of said drum and transmitting a signal when the rotation of said drum terminates for releasing said braking means and for re-engaging said clutch means.

3,938,596

TURBO-DRILL

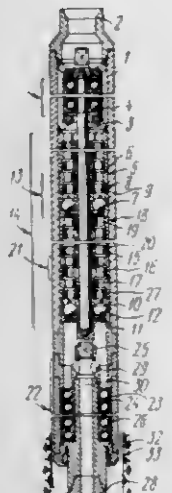
Evgeny Illarinovich Ivanov, 2 Setunsky proezd, 4, kv. 150, Moscow; Viktor Semenovich Olthow, ulitsa Karla Marksa, 30, kv. 8, Perm; Evgeny Dmitrievich Kostyrya, ulitsa Truda, 43, kv. 75, Perm, and Nikolai Dmitrievich Derkach, ulitsa Stakhaoova 40, kv. 66, Perm, all of U.S.S.R.

Continuation of Ser. No. 341,115, March 14, 1973, abandoned. This application May 14, 1974, Ser. No. 469,901

Claims priority, application U.S.S.R., Mar. 15, 1972, 1759137. The portion of the term of this patent subsequent to Aug. 28, 1990, has been disclaimed.

Int. Cl.^{2} F01D *15/12*

U.S. Cl. 173—73 **2 Claims**



1. A turbo-drill comprising: a housing including means at its upper end for connection to the lower end of a string of drill pipes; a shaft disposed in said housing on supports including means for mounting a drill bit; a supporting unit to transmit the force to the drilling bit from said string of drill pipes, said supporting unit being arranged under said housing with said shaft arranged therein and connecting the shaft to the drilling bit; stators secured in said housing and provided with races and vanes forming guiding channels for passing therethrough a flushing fluid pumped from the surface through said string of drill pipes to activate said turbo-drill, said flushing fluid flowing throughout the entire lenght of said turbo-drill and through said drilling bit to a hole bottom being drilled, and the fluid returning upward through a space around the pipes; rotors mounted on said shaft for relative rotation with respect to said shaft, said rotors having races and vanes facing in a direction opposite to that of said vanes of the stators for transforming the translational motion of said flushing fluid into rotational motion of said rotors; carriers with rolling bodies disposed therein which are located between said races of said stators and rotors and connected to said shaft, said rolling bodies being disposed between said races of the stators and rotors and forming, together with said carriers, stators and rotors, reduction stages of an axial reduction turbine wherein said rotors form a driving inner wheel, said stators forming an outer wheel, and said rolling bodies forming idlers, said races of the rotors being located in an operative position above the respective races of the stators, as a result of which downward axial force developing on said rotors during the translational motion of the flushing fluid through said reduction stages presses said rolling bodies against said races of the stators and rotors so that contact friction forces are generated between said rolling bodies and said races of the stators and rotors and transmit torque through the idler elements to the drilling bit, the stator vanes forming channels for the passage of flushing fluid, and the rotors having vanes face in a direction opposite to that of said vanes of the stators, forming reductionless stages of the turbine and are mounted between and above said reduction stages so that the stators are fixedly positioned in said housing, and the rotors are mounted on the shaft and adapted to move axially so as to be pressed with their lower end faces, under the effect of the downward axial force generated during the translational motion of the flushing fluid on the vanes of said rotors of the reductionless stages of the turbine to the upper end faces of the rotors of the underlying reduction stages, thereby increasing the force with which said rolling bodies are pressed against said races of the stators and rotors of the reduction stages.

3,938,597

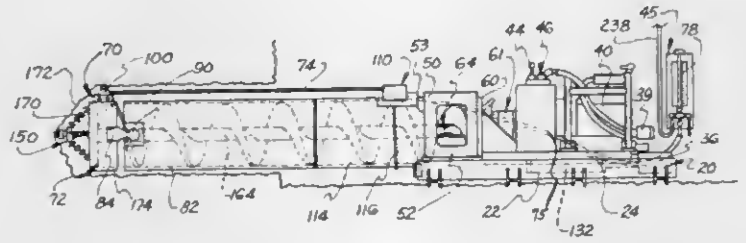
PORTABLE EARTH BORING MACHINE

Albert R. Richmond, West Salem, and William S. Appleman, Ashland, both of Ohio, assignors to The Richmond Manufacturing Company, Ashland, Ohio

Continuation-in-part of Ser. No. 471,440, May 20, 1974. This application Nov. 29, 1974, Ser. No. 528,464

Int. Cl.^{2} E21B *7/10*

U.S. Cl. 175—24 **8 Claims**



1. In an earth boring apparatus of the type that forms horizontal holes and pushes sections of casing into said holes, the combination of casing means including a lead casing section including a first longitudinal axis; a second casing section rearwardly adjacent to said lead casing section and including a longitudinal axis normally aligned with said first longitudinal axis; pivot means connecting said lead casing section to said second casing section; actuating means connected to said lead casing section for varying the angle of said first longitudinal axis of said lead casing section relative to said second longitudinal axis of said second casing section; sensing means for progressive extension into the earth fill; gauge means for location adjacent the earth fill and connected to the sensing means, said gauge means including read-out indicia for informing the operator of grade deviations of the sensing means; and automatic control means for energizing said actuating means responsive to sensing of a deviation in grade by said sensing means.

3,938,598

BELLING APPARATUS

James P. Watts, 6930 E. Pinchot Ave., Scottsdale, Ariz. 85251

Filed May 14, 1975, Ser. No. 577,300

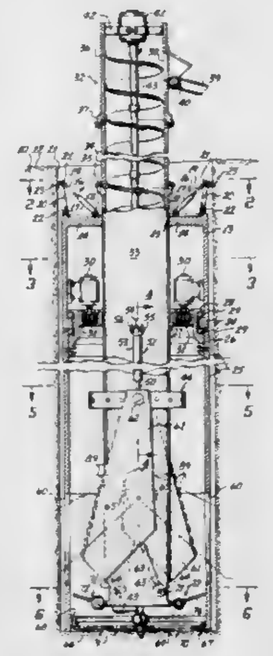
Int. Cl.^{2} E21B *3/08;* **E02D** *17/14*

U.S. Cl. 175—99 **12 Claims**

1. In apparatus for cutting a bell shaped recess in an earth formation in the lower end of a cylindrical pier bore which enters said formation from the ground surface;

a. an upper fixed cylindrical housing in the upper portion of said pier bore,
b. anchoring devices on said housing for holding the housing against rotation relative to the pier bore,
c. a lower rotating housing connected to the lower end of said upper housing and extending substantially to the bottom of said pier bore, said lower housing being formed with a slot adjacent to its lower end,
d. drive means for rotating said lower housing under power,
e. an auger casing coaxial with said housing, spaced therefrom and extending from a point above the ground surface to a level a small distance above the bottom of the pier bore,
f. a discharge port in said auger casing above said ground surface;

g. an auger in said auger casing
h. power means for rotating said auger,
i. a collar rotatably and axially moveable on said auger casing,
j. power means for moving said collar axially on said auger casing,
k. a blade having its upper end pivoted to said collar in a position in which the lower portion of the blade may be swung through the slot in the rotating housing,
l. an eccentric link having an upper end pivoted to said blade between the ends thereof and a lower end pivoted to said rotating housing whereby downward movement of said collar causes the lower portion of said blade to be swung outwardly through said slot;
m. a feed port in the lower end of said auger casing and a feeding device on said auger casing at said feed port for feeding spoil from said slot through the feed port to the auger.



3,938,599

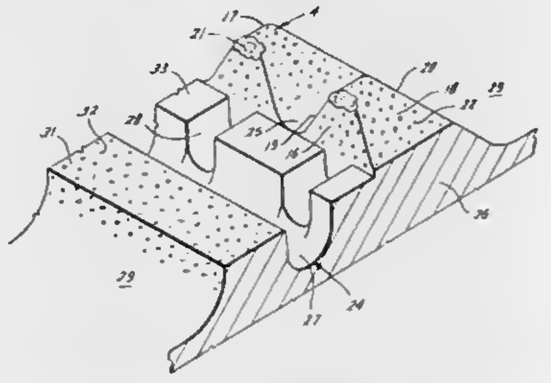
ROTARY DRILL BIT

Curtis L. Horn, Houston, Tex., assignor to Hycalog, Inc., Houston, Tex.

Filed Mar. 27, 1974, Ser. No. 455,339

Int. Cl.^{2} E21B *9/36*

U.S. Cl. 175—329 **11 Claims**



1. In a rotary bit, a body having a lower face and a central passage means for receiving a drilling fluid; a plurality of discrete cutting "teeth" disposed on said face and arranged in circumferentially spaced generally radially extending rows, each of said teeth having a leading face and a tip and adjacent ones of the teeth having a valley therebetween, each of said teeth having a diamond-like element in its leading face and at least at its tip; and fluid courses extending from said passage means along the leading faces of said teeth and arranged to discharge fluid along the leading faces of said teeth, the fluid courses including primary grooves in said face spaced circumferentially ahead of a row of teeth and a plurality of secondary grooves extending from the primary grooves to the leading faces of the teeth.

3,938,600

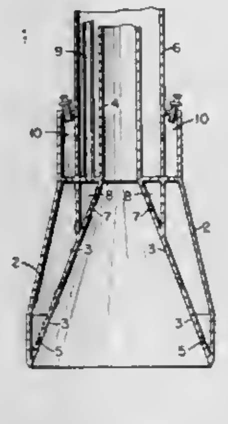
HYDRAULIC MINING NOZZLE-AIR LIFT DEVICE

Donald E. Essmeier, New Orleans, La., assignor to Continental Oil Company, Ponca City, Okla.

Division of Ser. No. 379,671, July 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 181,896, Sept. 20, 1971, abandoned. This application Feb. 26, 1975, Ser. No. 553,386

Int. Cl.^{2} E21B *7/18*

U.S. Cl. 175—422 **7 Claims**



1. A hydraulic nozzle for setting a hollow piling in a subsurface soil formation comprising:

a. a cutting envelope formed by a sheath of generally circular cross section open at its front end and partially closed at its rear end by an annular partition;
b. an evacuation conduit extending rearwardly of said annular partition and providing fluid communication from the interior of said cutting envelope through said annular partition;
c. first hydraulic jet means adapted to project hydraulic fluid toward the front opening of said sheath;
d. first hydraulic fluid conduit means for supplying hydraulic fluid to said first hydraulic jet means;
e. reverse hydraulic jet means projecting rearwardly from said nozzle and adapted to remove soil from above and maintain clearance behind said nozzle; and
f. secondary hydraulic fluid supply means for providing hydraulic fluid to said reverse hydraulic jet means.

3,938,601

WEIGHING METHOD AND APPARATUS

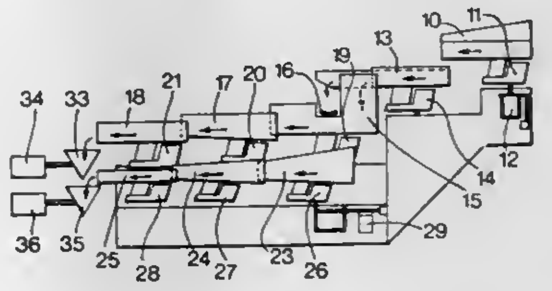
Jack Hobart, Leamington Spa, England, assignor to Hobart Engineering Limited, England

Filed July 17, 1974, Ser. No. 489,833

Claims priority, application United Kingdom, July 17, 1973, 34038/73

Int. Cl.^{2} G01G *13/02*

U.S. Cl. 177—1 **9 Claims**



1. A method of weighing a product made up of irregular pieces into a batch of predetermined weight, including grading a flow of the irregular pieces to separate smaller-sized pieces from the flow, conveying the remaining flow of pieces towards a weighing device, delivering pieces from the remaining flow

to a first weighing station of the weighing device until a batch of the product is accumulated having a weight slightly less than said predetermined weight, subsequently transferring the batch to a second weighing station of the weighing device for determining when the batch just achieves the said predetermined weight, and adding the smaller-sized pieces to the second weighing station whilst pieces are being delivered from the remaining flow to the first weighing station for accumulating the next batch.

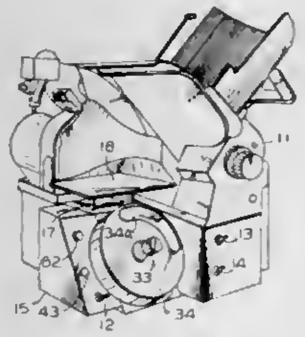
3,938,602
SLICING SYSTEM WITH AUTOMATIC PORTION WEIGHT CONTROL

Eugene L. Sly, P.O. Box 19545, Portland, Oreg. 97219, and Dean R. Salmans, 5007 Wildwood Drive, North Bend, Oreg. 97459

Filed July 19, 1974, Ser. No. 490,419

Int. Cl.² G01G *13/02, 21/10;* B26D *7/00, 7/06*

U.S. Cl. 177—116 **3 Claims**



1. In a system for slicing food products into accurately controlled individually sized portions of preselected weight, the combination comprising:

a. automatic slicing means for slicing a food product into a number of slices to constitute an individually sized portion,

b. electric motor means operably connected to said slicing means for operating the same,

c. electric circuit means for connecting said electric motor means to a source of electric power,

d. scale means operably associated with said slicing means for weighing said slices of food product, said scale means comprising a movable receiving platform disposed below the slicing means for receiving said slices dropped thereonto by gravity from the slicing means, and a movable pointer for indicating the weight of said slices received on said receiving platform,

e. electric motor control switch means in the electric circuit means of the motor means for selectively opening and closing said circuit means for activating and deactivating the motor means,

f. electric actuator means for said switch means, the actuator means having an electric control circuit,

g. photosensitive switch means in said electric control circuit disposed adjacent the path of said movable pointer for detecting the proximity of the same at a preselected location corresponding to said preselected weight and for opening said electric control circuit and switch means to stop said automatic slicing means,

h. means to adjust the position of the photosensitive means relative to said movable pointer for causing said electric control circuit to open at said preselected location of said pointer, and

i. time delay means in the electric control circuit for delaying actuation of the electric motor control switch means by the photosensitive switch means for a period of time sufficient to allow recovery of pointer oscillation beyond said preselected location resulting from the dropping of food slices onto the receiving platform.

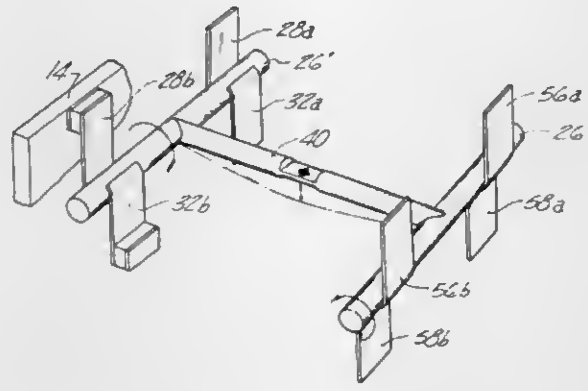
3,938,603
CONSTANT MOMENT WEIGH SCALE WITH FLOATING FLEXURE BEAM

Ralph S. Shoberg, Farmington Hills, and Thomas A. Ulicny, Dearborn, both of Mich., assignors to GSE Inc., Farmington Hills, Mich.

Filed Dec. 30, 1974, Ser. No. 537,090

Int. Cl.² G01G *3/14*

U.S. Cl. 177—211 **18 Claims**



1. Floating beam weigh scale apparatus comprising: a base, a load receiving member spaced from the base, first and second pivot members disposed between the base and load receiving members, load transmitting means interconnecting the pivots, the base, and the load receiving member to produce moments in the pivots of opposite sense and about spaced axes, a substantially rigid beam connected to and extending between the pivots, and means carried by the beam for producing a signal related to the bending stress therein over the elastic bending range thereof.

3,938,604
SYSTEM FOR STEERING AND DRIVING A FULL-TRACK VEHICLE

Artur Kugler, Hainhofen, near Augsburg, and Franz Xaver Zaunberger, Augsburg, both of Germany, assignors to Zahnraderfabrik Renk Aktiengesellschaft, Augsburg, Germany

Filed Mar. 17, 1975, Ser. No. 559,229

Claims priority, application Germany, Mar. 15, 1974, 2412562

Int. Cl.² B62D *11/10*

U.S. Cl. 180—6.44 **10 Claims**

1. A steering and drive system for a tracked vehicle having an engine connected to a pair of tracks through a pair of differentials interconnected by a steering shaft rotatable in one sense to advance one track faster than the other and in another sense to advance said other track faster than said one track, said system comprising:

a three-part right-turn planetary gear assembly having one part connected to said engine;

a three-part left-turn planetary gear assembly having one part connected to said engine;

a right-turn brake operable on another part of said right-turn assembly;

a left-turn brake operable on another part of said left-turn assembly;

a link interconnecting yet another part of said right-turn assembly with yet another part of said left-turn assembly;

a variable-speed transmission having an input side connected to said engine and an output side;

a three-part primary planetary gear assembly having one part connected to said steering shaft and another part connected to said output side;

a primary brake operable on yet another part of said primary assembly;

a three-part intermediate planetary gear assembly having one part connected to said steering shaft, another part connected to said output side, and yet another part connected to said link; and

control means for steplessly increasing the transmission ratio of said transmission from a minimum speed to a maximum speed while holding said primary brake closed on the respective part of said primary assembly and for thereafter decreasing said transmission ratio and releasing said primary brake and selectively closing either of said turn brakes on the respective part.

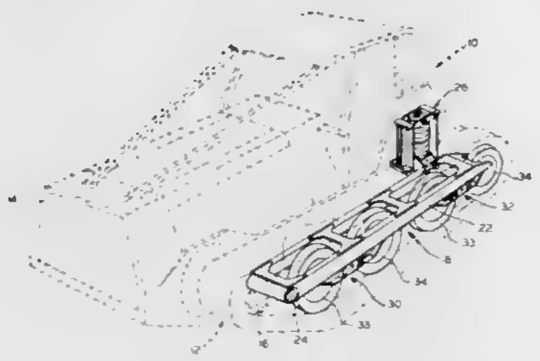
3,938,605
TRACK SUSPENSION

Stanislaus H. Koch, London, Canada, assignor to Clark Equipment Company, Buchanan, Mich.

Filed June 24, 1974, Ser. No. 482,408

Int. Cl.² B62D *55/10*

U.S. Cl. 180—9.5 **7 Claims**



1. A track-laying vehicle comprising

a frame,

a pair of endless tracks, one on each side,

a pair of drive sprockets rotatably supported on the frame, one on each side, drivingly engaging the tracks at the front of the track loop,

a plurality of bogie wheels rotatably engageable with the lower portion of each track,

a pair of elongated main suspension beams each independently pivoted at opposite ends of an axis rearward of the axis of said drive sprockets and forward of the bogie wheels,

a suspension for said bogie wheels on each suspension beam including a truck frame providing a journal intermediate adjacent pairs of bogie wheels,

a bogie wheel suspension beam pivoted on said journal having fore and aft extending arms supporting a bogie wheel at each end thereof, and

a pair of spring units extending between the vehicle frame and the suspension beams adjacent the rear ends thereof each having a vertical axis of deflection for independently absorbing oscillations of each suspension beam.

3,938,606
TRACK-IDLER RECOIL SUSPENSION MECHANISM

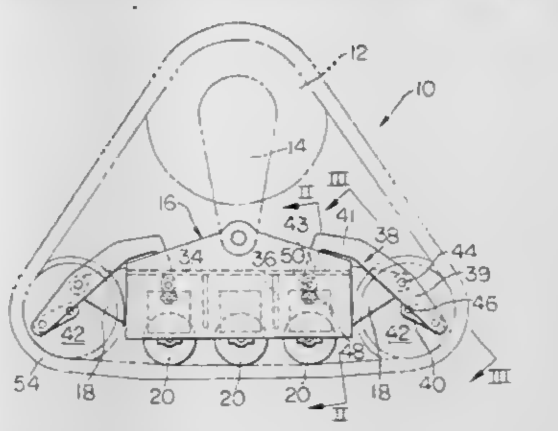
John W. Yancey, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 4, 1974, Ser. No. 520,459

Int. Cl.² B62D *55/12*

U.S. Cl. 180—9.5 **11 Claims**

1. In a vehicle having frame means, a rotatable member, a crank member pivotally mounted to said frame means, a link member pivotally mounted to said crank member, and to which the rotatable member is rotatably mounted, said link member being positioned relative to the vehicle to allow a degree of upward and downward motion of the rotatable member through pivotal movement of the link member relative to the crank member, wherein one portion of the crank member extends on one side of the crank member-frame means pivot axis beyond the axis of rotation of the rotatable member, and the link member is pivotally mounted to said one portion of the crank member beyond the axis of rotation of the rotatable member in said extended direction, and comprising track means in contact with a portion of the rotatable member, the link member having its longitudinal axis aligned generally parallel with a resultant force placed on the rotatable member by said track means.



3,938,607
VEHICLE STEERING APPARATUS

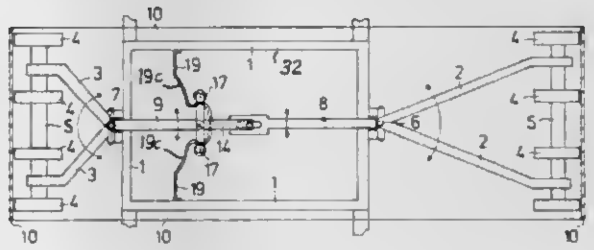
Jorma Toivo Tapani Pohjola, Vaskitie 8, 90250 Oulu 25, Finland

Filed Jan. 23, 1974, Ser. No. 435,750

Claims priority, application Finland, Jan. 26, 1973, 231/73

Int. Cl.² B62D *11/20*

U.S. Cl. 180—9.44 **3 Claims**



1. In a vehicle, endless track means, front and rear roll means around which front and rear ends of said endless track means are respectively guided, front support means supporting said front roll means for swivelling movement about a substantially upright axis, turning means operatively connected with said front support means for turning the latter about said axis for steering the vehicle at least in a turning range having turning radii substantially larger than a given minimum radius of turning of the vehicle, transmission means operatively connected to said rear roll means for automatically limiting turning thereof at least during turning of said front support means in said turning range to a degree which is substantially less than the degree of turning of said front support means, said transmission means including a rear support means supporting said rear roll means for swivelling movement about a substantially upright axis situated to the rear of the swivelling axis of the front roll means, and said transmission means also including structure connected between said front and rear support means for transmitting turning to said rear support means and said rear roll means therewith only after said front support means and said front roll means therewith have turned through a given angle, said transmission means including a front roller and a pair of rear rollers respectively situated at the corners of a triangle, said front support means being formed with a slot receiving said front roller for transmitting turning of said front support means to said transmission means, the latter being swingably connected to said rear support means at a point between said pair of rear rollers, and guide means guiding said rear rollers for turning along a circle whose center is in said point during turning of said front support means within said given angle and for then guiding said rear rollers for movement transversely of the vehicle for laterally shifting said point to swing said rear support means after said front support means has turned through said given angle.

3,938,608

WHEELED VEHICLE ADAPTED TO TURN ON THE SPOT

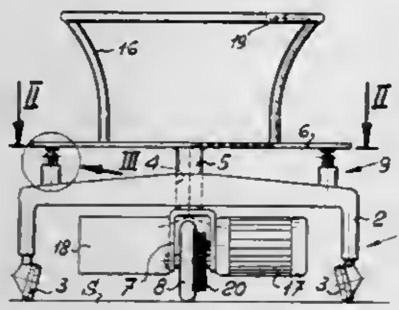
Gian Matteo Folco-Zambelli, Ca Chioare 13, Vicenza, Italy

Filed Jan. 18, 1974, Ser. No. 434,571

Claims priority, application Italy, Jan. 23, 1973, 19491/73; Jan. 23, 1973, 20496/73

Int. Cl.² B62D *61/00*

U.S. Cl. 180—21 **12 Claims**



1. A vehicle comprising:

a load-carrying body forming a driver's seat;

a base provided with at least three swivelable support wheels angularly spaced about a vertical axis, said body having a shaft in line with said axis journaled in said base;

a central guide wheel mounted on the lower end of said shaft for rotation in a vertical plane having an invariable orientation with reference to said body;

steering means for rotating said body relatively to said base about said axis;

drive means coupled with said guide wheel for propelling said base over said surface in a direction determined by the orientation of said guide wheel, said drive means including a battery mounted on said body beneath said driver's seat and a motor powered by said battery; and

cushioning means in said base supporting said body while letting said guide wheel come to rest on said surface with sufficient force to exert traction at least under load.

3,938,609

TRICYCLE

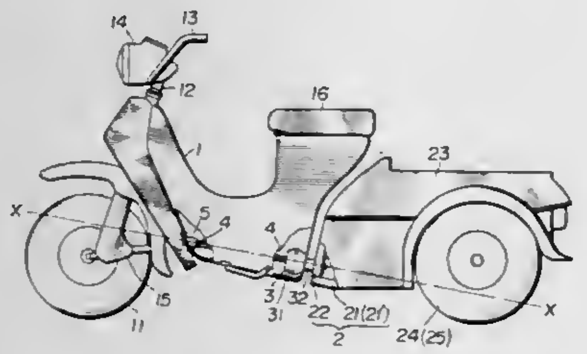
Yano Kenzaku, Kawanishi; Kurose Makoto, Toyonaka, and Nagamitsu Toshiaki, Ikeda, all of Japan, assignors to Daihatsu Motor Company Limited, Osaka, Japan

Filed Jan. 17, 1975, Ser. No. 541,940

Claims priority, application Japan, Jan. 28, 1974, 49-12111; July 15, 1974, 49-81505

Int. Cl.² B60G *9/02, 11/60*

U.S. Cl. 180—27 **19 Claims**



1. A tricycle having one front wheel and two rear wheels, comprising,

a. a front frame which is supported with said front wheel, said front frame having an operating handle for the front wheel and a seat for a rider,

b. a rear frame which is supported with said two rear wheels, said rear frame being provided with a driving equipment for driving at least one of said rear wheels,

c. connecting means for swingingly movably connecting said front frame and said rear frame with each other, said connecting means being directed in the axis line extending longitudinally of a tricycle body comprising said front frame and said rear frame,

d. an elastic member insertibly mounted to be supported between said front frame and said rear frame, said elastic member serving to restore the front frame from being leaned with respect to the rear frame, and

e. a first and a second supporting means for supporting both ends of said elastic member to said front and rear frame respectively, said first supporting means fixing one end of said elastic member to one of said front and rear frame, said second supporting means allowing the other end of said elastic member to be movable relatively to the other frame in a given range, said elastic member being substantially not elastically distorted within the given range but elastically distorted over the same range.

3,938,610

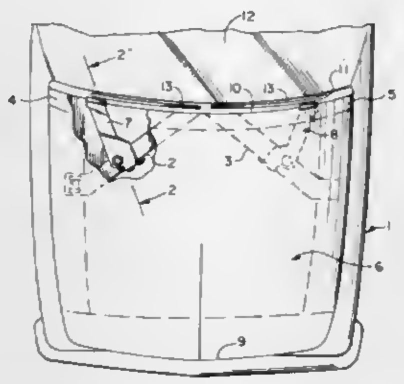
AUTOMOTIVE HOOD SAFETY DEVICE

Eugene V. Harman, 12649 N. 22nd St., Phoenix, Ariz. 85022

Filed Feb. 10, 1975, Ser. No. 548,534

Int. Cl.² B62D *25/10*

U.S. Cl. 180—69 C **6 Claims**



1. A safety device attachable to the frame of an automobile for preventing horizontal rearward movement of an automobile hood, said safety device comprising:

a. a base attachable to the frame of the automobile;

b. a retaining arm extending rearwardly of said base; and

c. a forwardly opening channel disposed at the rear of said retaining arm for slidably receiving the rear edge of the automobile hood when the hood is in the closed position, said channel including a further base and a lip and having the spacing intermediate said further base and said lip varying non-linearly from one end of said channel to the other end of said channel.

3,938,611

INTAKE MANIFOLD VALVE THROTTLE CONTROL FOR SPIN CONTROL SYSTEM

Robert B. Bertolasi, Rockford, Ill., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Nov. 23, 1973, Ser. No. 418,557

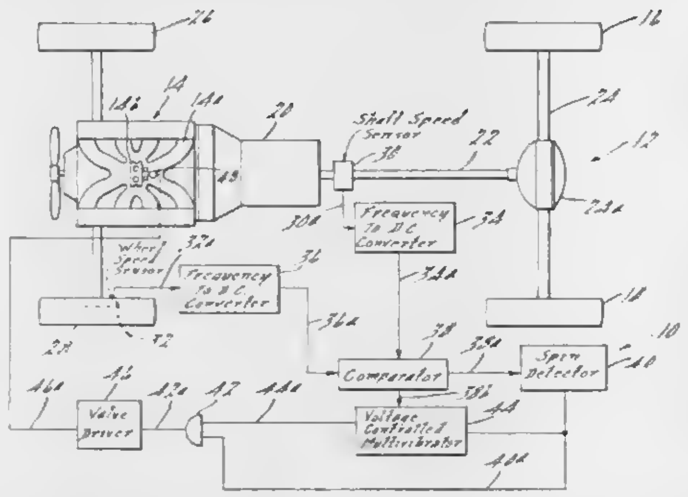
Int. Cl.² B60K *31/00*

U.S. Cl. 180—77 R **17 Claims**

1. A spin control system for a multi-wheeled vehicle having one of the wheels thereof driven from a fuel-consuming engine having throttle valve means for supplying a fuel/air mixture and an intake manifold for communicating said fuel/air mixture to said engine in which a vacuum is produced when power is supplied by said engine to said one wheel for driving said one wheel, said system comprising:

sensing means for sensing an incipient wheel spin at said one wheel and for generating a spin signal comprising a series of pulses indicative of the magnitude of said incipient spin; and

valve means in addition to said throttle valve means communicating with said intake manifold and receiving said spin signal, said valve means being capable of venting the intake manifold of said engine in response to said spin signal to sufficiently lower the intake manifold vacuum to thereby sufficiently reduce the power supplied by said engine to said one wheel to counteract an incipient spin,



said valve means reducing said engine intake manifold vacuum in accordance with said series of pulses so that the power supplied by said engine is reduced in accordance with the magnitude of said incipient spin.

3,938,612

ANTI-SKID SYSTEM FOR THE DRIVING WHEELS OF AUTOMOTIVE VEHICLES

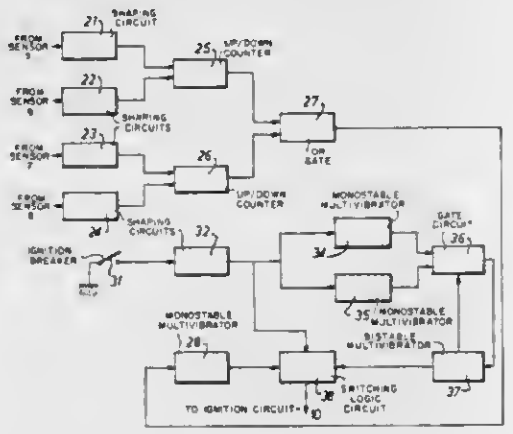
Jean-Claude Boudeville, and Jacques Gelin, both of Billancourt, France, assignors to Regie Nationale des Usines Renault and Automobiles Peugeot, both of, France

Filed Apr. 24, 1973, Ser. No. 353,936

Claims priority, application France, May 3, 1972, 72.15714

Int. Cl.² B60K *31/00*

U.S. Cl. 180—82 R **7 Claims**



1. An anti-skid system for a motor vehicle having an ignition system, a driving wheel and a non-driving wheel, said anti-skid system protecting the driving wheel from skidding, said anti-skid system comprising a first sensor for generating a number of pulses proportional to the peripheral distance traveled by the driving wheel, a second sensor for generating a number of pulses proportional to the peripheral distance traveled by the non-driving wheel, the second sensor generating a higher number of pulses than the first sensor for the same peripheral distance traveled by the respective driving and non-driving wheels, and a calculating unit means, responsive to the signals generated by said first and second sensors, for detecting the difference in peripheral distance traveled by the driving and non-driving wheels independently of time, said detecting means including means for producing a delay in the ignition system when said difference in peripheral distance traveled is greater than a predetermined value to adjust engine torque and to maintain optimum road adherence of the wheels and wherein said detecting means includes means for constantly comparing the pulses generated by the first sensor and the pulses generated by the second sensor, said comparing means including a counter connected to said first and second sensors wherein when the number of pulses generated by said second sensor exceeds the number of pulses generated by said first sensor, said counter is in a zero condition and when said counter receives a number of pulses from said first sensor which is greater by a predetermined amount than the number of pulses received from said second sensor, said counter generates a first signal, said detecting means also including a first monostable multivibrator for receiving said first signal, an ignition signal shaping circuit for generating an ignition signal, a time lag circuit, connected to said ignition signal shaping circuit, for generating a delayed ignition signal, and a switching logic circuit having inputs connected to each of said first monostable multivibrator, said ignition signal shaping circuit and said time lag circuit, said switching logic circuit being controlled by said delayed ignition signal when said first signal is applied to said first monostable multivibrator.

3,938,613

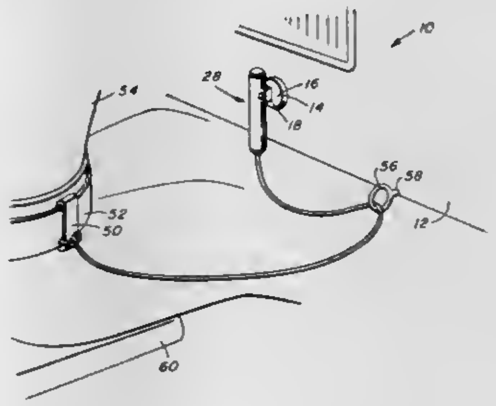
MOTOR KILL SWITCH WITH OPERATOR ATTACHED TETHER

Eldridge W. Raborn, Sherman, Tex., assignor to Robert A. Gordon, Sherman, Tex.

Filed Oct. 1, 1974, Ser. No. 511,037

Int. Cl.² B60K *27/08;* **H01H** *27/06*

U.S. Cl. 180—99 **6 Claims**



1. In combination a vehicle having a dashboard panel of the type including an outer surface opposing a location on the vehicle to be occupied by the operator of the vehicle, an ignition switch mounted on said panel, said ignition switch being of the type including a lock barrel opening outwardly of said surface and oscillatable about a predetermined axis disposed generally normal to said surface, an elongated key including a blade end portion and an opposite end portion, said blade portion being removably insertable within said barrel to release the latter for oscillation between predetermined off and on positions thereof angularly displaced less than 180° relative to each other, an ignition switch cut-off safety device for angularly displacing the key and thus the barrel from its on position toward its off position, said safety device including an elongated body secured at one end to said opposite end portion of said key with said body extending transversely of the longitudinal extent of said key, a guide eye mounted on said panel in spaced relation relative to said switch, outwardly from said surface and on a path extending across said panel away from said switch in the direction in which the other end of said body extends when said lock barrel is in said off position, an elongated flexible tether member, first anchor means anchoring one end of said tether member to said other end of said body, second anchor means on the other end of said tether member for attachment to the operator of an associated vehicle, the midportion of said tether member being guidingly engaged through said guide eye for lengthwise shifting of said tether member relative to said guide eye, said first anchor means comprising an anchor member mounted on said one end of said tether member, said anchor member and said other end of said body including

coacting means supporting said anchor means from said body for separation therefrom in response to a thrust in excess of a predetermined value being applied to said anchor member in a direction extending endwise outwardly of said other end of said body, said anchor member being of a size to pass freely through said guide eye.

3,938,614

CUSHION MEMBER FOR SOUND-PROOF SEALING

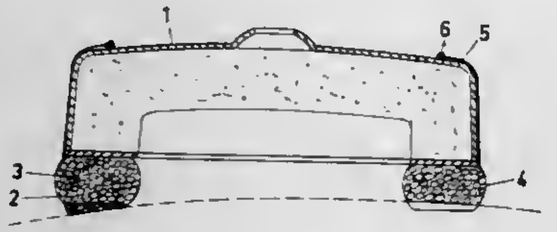
Inge Wilgot Ahs, Koppom, Sweden, assignor to Aktiebolaget Lennartsfors Mekaniska Verkstad, Lennartsfors, Arjang, Sweden

Filed June 20, 1973, Ser. No. 371,650

Claims priority, application Sweden, June 20, 1972, 8110/72

Int. Cl.^{2} H04R *25/00, 1/10*

U.S. Cl. 181—129 **10 Claims**



1. In a cup-shaped, ear-covering device having an annular flange adapted to contact the head of the wearer around the ear, the improvement comprising a sound-barrier structure including an annular, hollow casing having a generally-cylindrical cross-section in an unsqueezed condition, formed of a soft, pliable material and shaped to fit against said annular flange between said annular flange and said head of said wearer, a plurality of freely-moveable, small balls disposed in the interior of said casing, whereby said structure deforms and conforms to the surface of said annular flange and said head of said wearer when said structure is squeezed against said head of said wearer by said ear-covering device, and holding means for detachably holding said structure against said ear-covering device.

3,938,615

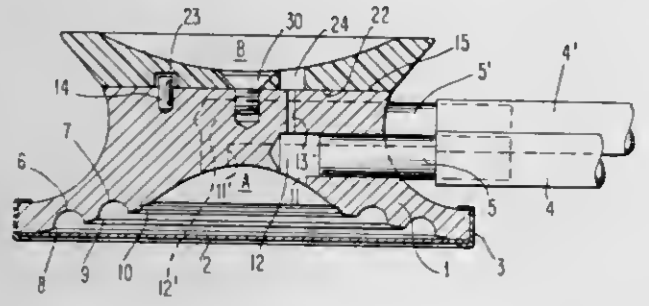
STETHOSCOPE CONSISTING OF A STETHOSCOPE CHEST PIECE AND A SOUND MIXER

Jacob Bodenger, 3564 Chimney Swift Drive, Huntingdon Valley, Pa. 19006

Filed July 11, 1974, Ser. No. 487,590

Int. Cl.^{2} A61B *7/02*

U.S. Cl. 181—131 **15 Claims**



1. An improved stethoscope chest piece having two cavities therein, each of said cavities forming respectively a first and second sound chamber in said chest piece, a first one of said two sound chambers having a flat, substantially rigid diaphragm disposed in a planar relationship with said first sound chamber so as to form a closed sound chamber, said chest piece further having means for providing for both optionally selectable acoustic insulation of said second sound chamber from said first sound chamber and optionally selectable acoustic communication of said first and second chambers.

3,938,616

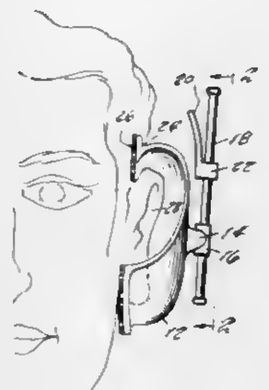
SOUND MULTIPLIER

Swayze W. Brownfield, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Nov. 27, 1973, Ser. No. 419,267

Int. Cl.^{2} G10K *11/10*

U.S. Cl. 181—136 **1 Claim**



1. A sound amplifier comprising a pair of similar cups adapted to fit over a persons ears, in combination with a fitting adapted to be mounted on a persons head wherein each cup comprises a flat flange of spiral contour adapted to fit sealingly about a persons ear, wherein said flange has an upper end and a spaced lower end connected with an intermediate portion of spiral contour, including an integral outer shell of spiral contour extending outwardly from the flange having a transverse oval curvature providing an enclosure for the ear, said shell having an outer periphery terminating at the ends of the flange and a side opening between the said ends bounded by curved edges, wherein said fitting includes a curved member adjustably mounted on spaced vertical bars, including vertical sleeves projecting from the shells mounted movably on said bars.

3,938,617

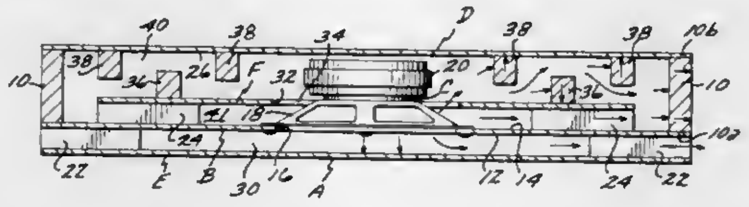
SPEAKER ENCLOSURE

Lonnie R. Forbes, Albuquerque, N. Mex., assignor to Fort Enterprises, Limited, Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 434,188, Jan. 17, 1974, abandoned. This application Feb. 7, 1975, Ser. No. 546,315

Int. Cl.^{2} G10K *13/00;* **H04R** *1/28*

U.S. Cl. 181—155 **7 Claims**



1. A loud speaker acoustic enclosure sufficiently thin as to be supported from a vertical wall and concealed by a wall mounted picture disposed forwardly thereof, said acoustic enclosure including:

a. a multi-sided resonator frame having forward and rearward edges;

b. forward and rearward resonance boards bonded to said forward and rearward edges of said frame to cooperate with the latter to define an enclosed volume, said forward resonance board having a first aperture therein that is sized for mounting a large diameter end of an electrical speaker therein, said forward and rearward resonance boards each having forward and rearward surfaces;

c. a plurality of spaced first and second blocks secured to said forward and rearward surfaces of said forward resonance board adjacent said frame;

d. a cover board rigidly secured to said first blocks and disposed forwardly of said forward resonance board and cooperating with the latter to define a transversely extending first passage;

e. a baffle sheet of smaller transverse area than the interior of said frame that is transversely spaced from the latter and disposed in said enclosed volume, said baffle sheet supported from said second blocks parallel to said forward and rearward resonance boards, said baffle sheet having a second aperture therein through which the magnet end of the electrical speaker may extend, said magnet end and second aperture defining an annulus space therebetween said baffle sheet having forward and rearward surfaces;

f. a plurality of elongate spaced first baffles secured to said rearward surface of said baffle sheet and on opposite sides of said second aperture, with forwardly directed sound from said speaker travelling transversely through said first passage to emanate radially from all sides thereof, and rearwardly directed sound from said speaker to said resonator frame both through a second transverse passage defined between said rearward surface of said forward resonance board and forward surface of said baffle sheet as well as through said annulus and a transverse labyrinth defined by said first baffles, said forward surface of said rear resonance board and said rearward surface of said baffle sheet, and rearwardly directed sound also traveling through said rearward resonance board to said wall to resonate the latter; and

g. means for supporting said enclosure from said wall with said rearward resonance board in abutting contact with the latter.

3,938,618

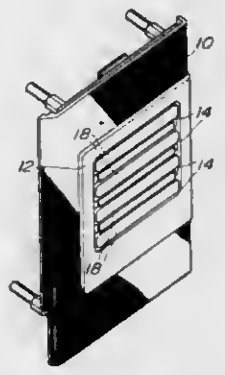
SPEAKER GRILLE SCREEN AND MOUNTING STRUCTURE

Pasquale Ambruoso, Sr., Coral Springs, Fla., assignor to Motorola, Inc., Chicago, Ill.

Filed Mar. 18, 1975, Ser. No. 559,618

Int. Cl.^{2} H05K *5/00*

U.S. Cl. 181—155 **12 Claims**



1. A protective structure for a sound translating device which provides sound transmission from the device, including in combination:

a plate of high strength material having an opening therein,

a rigid grille screen having a projection formed therein which is shaped to extend into said opening, said projection having an aperture therein adjacent an edge of said opening for the passage of sound, and

means securing said screen to said plate.

3,938,619

STANCHION

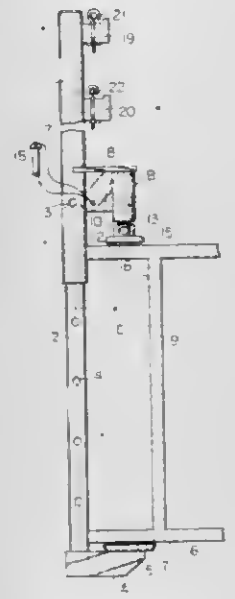
Kinji Kurabayashi, Kawasaki, and Tatsuo Ono, Tokyo, both of Japan, assignors to Nisso-Sangyo Co. Ltd., Japan

Filed Aug. 15, 1972, Ser. No. 280,765

Claims priority, application Japan, Nov. 12, 1971, 46-105765

Int. Cl.^{2} E04H *17/14;* **E04G** *1/26*

U.S. Cl. 182—113 **1 Claim**



1. A stanchion construction for clamping to a scaffold plate, comprising vertical support means including first and second vertically extending tubular support members, means for fixing said first and second support members in an adjusted telescopic position with one of said members extending outwardly from the other of said members by a predetermined amount, clamping means carried by said first and second tubular support members including a threaded cylinder on said first tubular support member, a bolt threaded into said cylinder and having an outer end with a first flat engagement surface, a second flat clamping surface carried by said second tubular member and parallel to and opposed to said first clamping surface, said bolt being threadably adjustable to move said first clamping surface toward and away from said second clamping surface, said first tubular member having a hand rail and at least one fitting extending outwardly from said first tubular member and having means thereon for supporting said hand rail at a spaced location above said first clamping surface.

3,938,620

ROPE CLIMBER

Paul J. Nothiger, 2964 Hope, Klamath Falls, Oreg. 97601

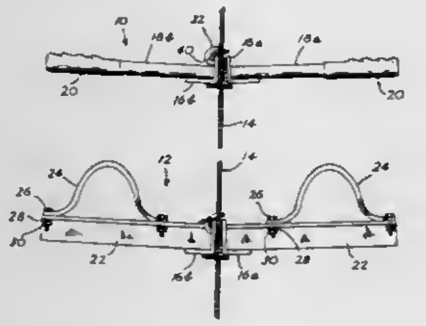
Filed July 19, 1974, Ser. No. 490,137

Int. Cl.^{2} A62B *1/06*

U.S. Cl. 182—135 **4 Claims**

1. A rope climbing device consisting of complementary pedal and handle units, each unit consisting of two connected, relatively rockable members, adapted to be manually rocked together to grip the rope and apart to release the rope, said members having confronting faces formed with interdigitally arranged, horizontally disposed, smoothly rounded projections cooperative to kink the rope sharply in opposite directions and thereby to bind it smoothly but firmly and dependably against slipping, the confronting portions of opposed rockable members being substantially coterminous at their upper ends, and one of them being equipped at its upper end

with spaced rope guiding devices which span the space between the confronting portions and serve also as stops for



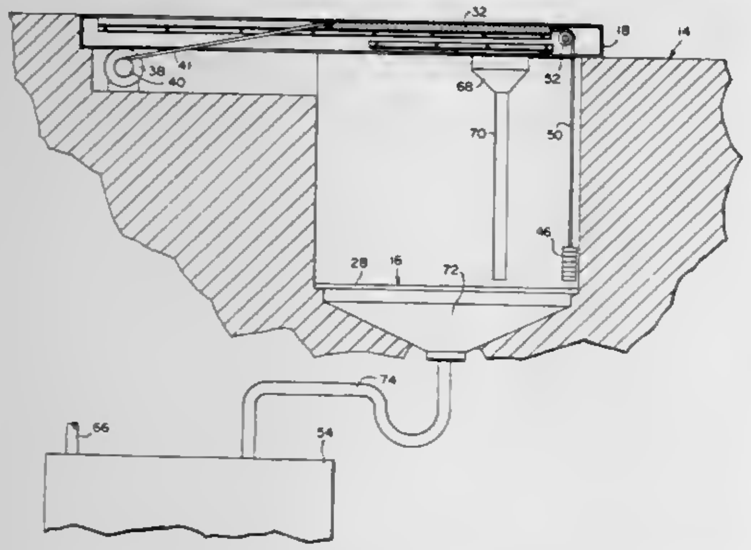
intercepting the other member, to limit rocking separation of such members.

3,938,621
VEHICLE SERVICING SYSTEM

William C. Bobbitt, Jr., Philadelphia, Pa., assignor to Rudolph Hafner and John Hafner, both of Southampton, Pa., part interest to each

Filed June 6, 1973, Ser. No. 367,454
Int. Cl.² F16C *3/14*

U.S. Cl. 184—1.5 **2 Claims**



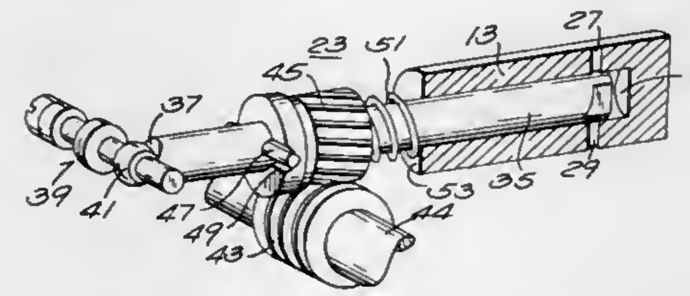
1. A vehicle servicing system comprising:
a. vehicle housing means having an upper level and a lower level, said lower level having a first floor member vertically displaced from and passing substantially parallel to a horizontal plane of said upper level, said first floor member being grated to permit passage of oil therethrough, said lower level further having a second floor member under said lower level first floor member adapted to transport said oil passing through said grated first floor member to a drain tank, said second floor member being inclined downwardly with respect to said first floor member, said second floor member being connected to said drain tank positioned below said second floor member at an area being substantially maximally displaced from said grated first floor member;
b. means for positioning at least one vehicle in a predetermined location within said upper level of said vehicle housing means;
c. removeable door means between said upper and lower levels of said vehicle housing means, said door means being located under said vehicle when said vehicle is in said predetermined location, said door means being removeable from under said vehicle responsive to an operator's control for servicing said vehicle from said lower level of said vehicle housing means;
d. means for draining oil from said vehicle within said vehicle housing means, said oil being drained from said vehicle to be collected in said drain tank through gravity assist; and,
e. a moveable drain pan being positionally locatable under said vehicle, said drain pan being operatively connected to said drain tank to permit oil passage thereto through gravity assist, said moveable drain pan further including conduit means passing substantially in a vertical manner from said drain pan on one end to said grated floor member on a second end for transporting said oil from said vehicle through said conduit, said grated floor member and into said drain tank.

3,938,622
CHAIN SAW OIL PUMP WITH OVERLOAD PROTECTION

Ulrich O. Densow, Peterborough, Canada, assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 17, 1974, Ser. No. 515,668
Int. Cl.² F16N *7/36, 13/02, 25/02, 25/04*

U.S. Cl. 184—15 R **13 Claims**



1. A chain saw comprising a frame, an engine supported by said frame, wall means on said frame defining a pumping chamber including an inlet port and an outlet port, a pumping member rotatable in said pumping chamber relative to said inlet and outlet ports so as to effect pumping operation incident to such rotation, a shaft rotatably supported by said frame and driven by said engine and including thereon a first gear, a second gear meshed with said first gear for rotation thereof in response to first gear rotation and carried for rotary and axial movement relative to said pumping member, a projection radially extending from said pumping member, a notch formed on said second gear and adapted to releasably receive said projection so as to effect rotary driving of said pumping member by said second gear in response to engagement of said projection in said notch, and means in addition to said second gear and said projection yieldably biasing one of said second gear and said projection toward the other.

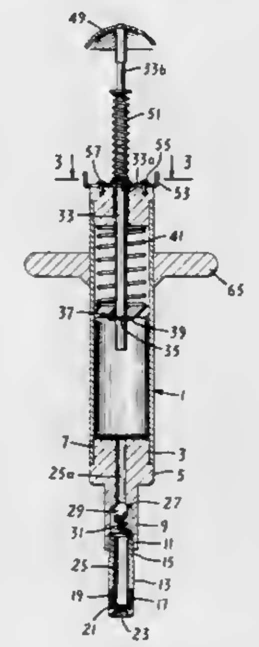
3,938,623
GREASE GUN

Richard C. Winston, 139 Rolling Hills Road, Thornwood, N.Y. 10594, and Leonard J. Vallender, 11 Clover Road, Valhalla, N.Y. 10595

Filed Jan. 16, 1975, Ser. No. 541,626
Int. Cl.² F16N *3/12, 13/08*

U.S. Cl. 184—38 R **2 Claims**

1. A grease gun comprising, in combination, a hollow cylindrical body closed at one end and having a removable delivery nozzle at the other end, said closed end having a central aperture, and a vent means in spaced relation therewith, a plunger means within said cylindrical body having a central aperture, a rod member slidable through said central aperture of said plunger means, said rod member having retaining means to prevent said plunger means sliding off of said rod, said rod member having a circumferentially recessed groove and an elongated detent portion in spaced relationship with each other, said rod member extending through said central aperture of said closed end of said cylindrical body and terminating exteriorly of said closed end, spring means around said rod member interiorly of said cylindrical body between said closed end and said plunger means adapted to force said plunger means towards said delivery nozzle, a central bore within said removable delivery nozzle, means within said central bore to be biased to permit the one way passage of grease from said cylindrical body through said central bore, a lock slide member slidably secured to said closed end of said cylindrical body, said lock slide member having a central aperture for passage of said rod member with a laterally reduced extension adapted to engage with said circumferentially recessed groove



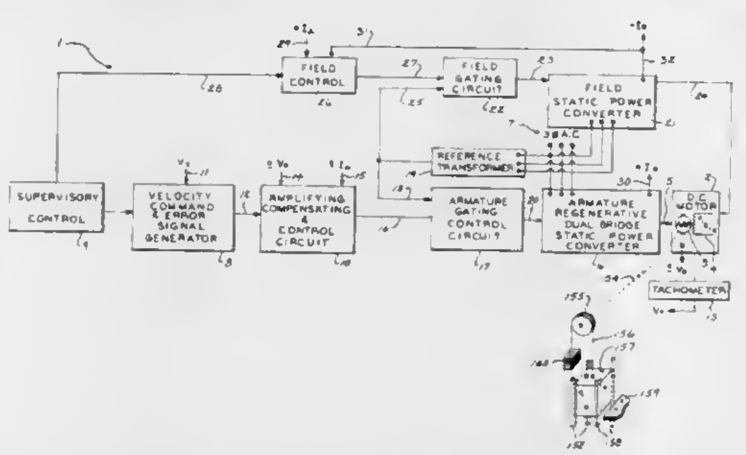
of said rod member when said rod member is withdrawn to said groove position, and with said elongated detent portion of said rod member when said rod member is in normal release position with the elongated detent portion controlling the stroke of said rod member.

3,938,624
TRANSPORTATION SYSTEM WITH MOTOR FIELD CONTROL

John T. Maynard, New Berlin, Wis., assignor to Armor Elevator Company, Inc., Louisville, Ky.

Filed May 10, 1974, Ser. No. 468,864
Int. Cl.² H02P *5/16*

U.S. Cl. 187—29 R **20 Claims**


FIELD CONTROL
FIELD GATING CIRCUIT
FIELD STATIC POWER CONVERTER
REFERENCE TRANSFORMER
SUPERVISORY CONTROL
VELOCITY COMMAND & ERROR SIGNAL GENERATOR
AMPLIFYING COMPENSATING & CONTROL CIRCUIT
ARMATURE GATING CONTROL CIRCUIT
ARMATURE REGENERATIVE DUAL BRIDGE STATIC POWER CONVERTER
D.C. MOTOR
TACHOMETER

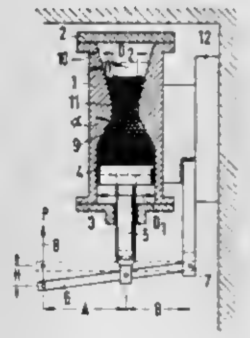
1. A transportation system having a guide path structure and a plurality of spaced landings and transportation means comprising a transport vehicle, means mounting said vehicle for movement relative to said structure in a path extending adjacent each of said landings, motive means including a D.C. motor having a field circuit coupled to a source of polyphase energy and moving said vehicle relative to said structure, and control means controlling the amount of energy flowing between said source and said motive means including gated rectifying means connected to said source and to said field circuit and to gating control means, said gating control means including phase means having a first input circuit providng an alternating reference signal varying in response to said varying source energy and reference means having a second input circuit providing a constant reference signal and command means having a third input circuit selectively providing a field energy command signal in response to commanded vehicle movement and summing means including a common summing point connected to said first, second and third circuits and providng an output in response to the voltage and current summation of said alternating and constant reference signals and said command signal and operatively controlling the operation of said gated rectifying means and selectively supplying varying amounts of uni-directional energy to said field circuit.

3,938,625
VIBRATION DAMPING DEVICE, ESPECIALLY FOR PROTECTING PIPELINES FROM EARTHQUAKES

Gunter Radermacher, Rosrath, and Karl Alexander Busch, Bensberg-Herkenrath, both of Germany, assignors to Interatom, Internationale Atomreaktorbau GmbH, Bensberg, Cologne, Germany

Filed Mar. 14, 1974, Ser. No. 451,187
Claims priority, application Germany, Mar. 19, 1973, 2313483
Int. Cl.² F16F *9/30*

U.S. Cl. 188—1 B **7 Claims**



1. Device for damping abrupt movements of equipment such as pipelines wherein vibrations caused by earthquakes or ship movements or the like are excited, while movements resulting from thermal expansion of parts of the equipment are not hindered, comprising a cylinder having a substantially vertical longitudinal axis, said cylinder comprising a lower cylindrical chamber and an upper chamber having an upwardly reducing cross section communicating with said lower cylindrical chamber, a piston displaceable in said lower cylindrical chamber, displaceable damping medium comprising a multiplicity of small, solid rollable bodies received in said cylinder above said piston, and means located below said lower cylindrical chamber for connecting said piston to the equipment, the abrupt movements of which are to be damped, said piston being displaceable upwardly in said lower cylindrical chamber against gravity force exerted by said rollable bodies, upon transmission of an abrupt movement from the equipment through said connecting means to said piston.

3,938,626
VIBRATION DAMPING ASSEMBLY

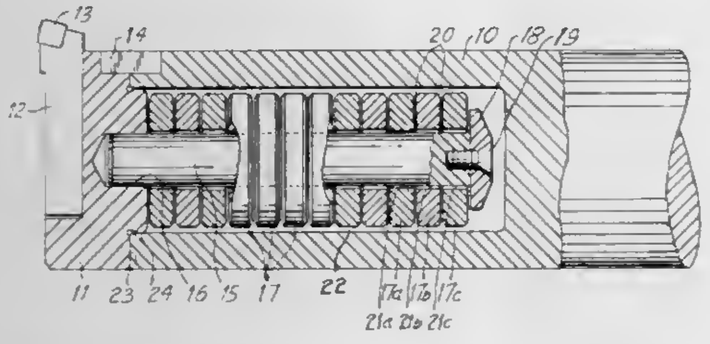
David Alan Hopkins, Detroit, Mich., assignor to The Valeron Corporation, Detroit, Mich.

Filed Sept. 3, 1974, Ser. No. 502,365
Int. Cl.² F16F *7/10*

U.S. Cl. 188—1 B **20 Claims**

1. Tool vibration damping means for a tool, such as a boring bar, having a longitudinal extension subject to cutting action induced vibration, characterized by a longitudinally extending internal reaction member with means for rigid cantilever mounting within and to said extension, and reactor means mounted on said member with transverse clearance relative thereto and greater transverse clearance relative to the sur-

rounding wall of said tool extension, whereby oscillatory vibration damping impact between said reactor means and said



reaction member will be imparted to and concentrated at said cantilever mounting.

3,938,627
MECHANICAL ENERGY ABSORBING DEVICE AND SAFETY HARNESS USING THE SAME

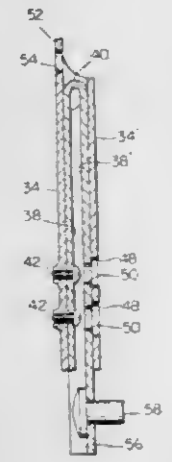
Yasuo Nagazumi, Tokyo, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Continuation of Ser. No. 323,262, Jan. 12, 1973. This application Jan. 24, 1975, Ser. No. 543,944

Claims priority, application Japan, Jan. 12, 1972, 47-6710[U]; Jan. 12, 1972, 47-6711[U]; Jan. 12, 1972, 47-6712[U]

Int. Cl.² F16F *7/12*

U.S. Cl. 188—1 C **2 Claims**



1. In a safety harness, a mechanical energy absorbing device comprising an elongated casing having a rigid construction, said elongated casing having two spaced, substantially parallel inner surfaces which face with each other; and a deformable strip of substantially U-shaped form disposed between said two inner surfaces, said strip having one leg and other leg which is rigidly secured at an end portion thereof to the adjacent surface of one of said two inner surfaces; said mechanical energy absorbing device being connected to the safety harness so that a tension force is applied between said elongated casing and said one leg of said deformable strip, said one leg being formed at both sides thereof with guide flanges extending between said two surfaces.

3,938,628
DISC BRAKE ASSEMBLY

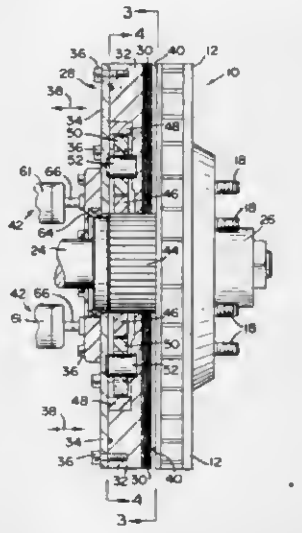
Antonio Casas Figueroa, Apartado 3210, San Jose, Costa Rica

Filed Dec. 12,·1974, Ser. No. 532,168

Int. Cl.² B60T *1/06;* **F16D** *55/40*

U.S. Cl. 188—18 A **4 Claims**

1. A disc brake assembly of the type primarily designed to brake a wheel assembly or like object, said brake assembly comprising: disc means connected to the wheel assembly, lining assembly including lining means disposed in engagable position relative to said disc means, lining support means disposed in interconnecting relation between said lining assembly and said disc means, said lining support means further comprising hub means, operative means connected to said lining assembly and positioned to movably dispose said lining means into and out of frictional engagement with said disc means, lining movement means rotatably interconnected between said lining assembly and said lining support means, said lining movement means comprising gear means including a hub gear mounted on said hub means to rotate therewith, ring gear means fixedly secured to said lining means so as to rotate therewith, satelite gear means interconnected therebetween in an intermeshing engagement with both said ring gear means and said hub gear, whereby rotation of said hub gear causes rotation of said lining means in the direction opposite to that of said hub means and said connected disc means.



3,938,629
RAILWAY TRACK BRAKE

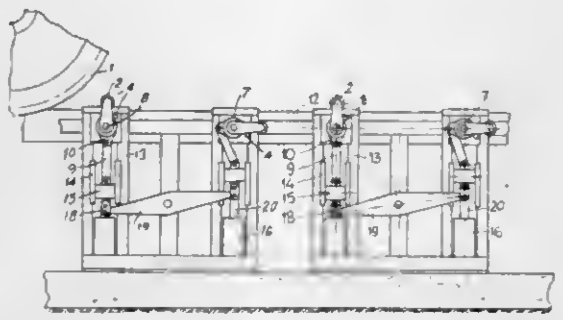
Leszek Marszalek; Tadeusz Lorenc, both of Rybnik, and Andrzej Hodbod, Katowice, all of Poland, assignors to Centralny Osrodek Badan i Rozwoju Techniki Kolejnictwa, Warsaw, Poland

Filed Aug. 8, 1974, Ser. No. 495,841

Claims priority, application Poland, Aug. 10, 1973, 164594

Int. Cl.² B61K *7/02*

U.S. Cl. 188—62 **6 Claims**



1. A railway track brake comprising a plurality of pairs of brake segments disposed transversely between rails for braking the wheels of a vehicle traveling on the rails, each segment comprising a rotatable top beam, a shaft rotatably supported by said top beam and having ends with projecting arms, contact means on said arms for being contacted by the wheels of the vehicle to be braked to cause rotation of said arms, means for producing rotation of said top beam in accordance with rotation of said arms, a displaceable bottom beam, means guidably supporting the bottom beam for linear displacement, a crank secured for rotation with said top beam, a connecting rod pivotably connected to said crank and to said bottom beam to displace the latter upon rotation of said crank, energy absorber means coupled to said bottom beam for resisting displacement thereof, and a double arm lever having ends pivotably interconnecting the bottom beams of each pair of brake segments so that said bottom beams move in opposite directions.

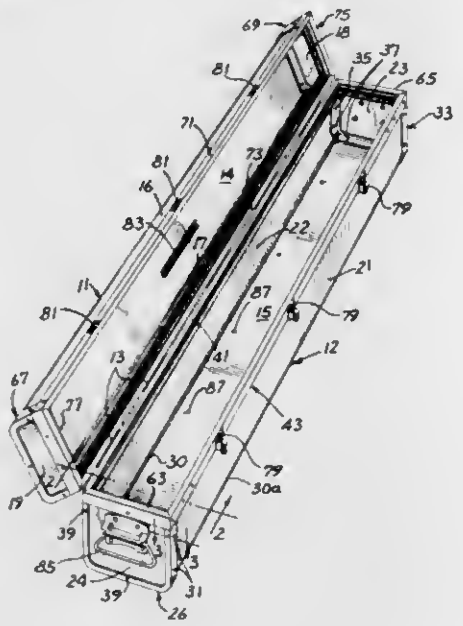
3,938,630
FABRICATED CASE

Joseph E. March, Chicago, Ill., assignor to Platt Luggage, Inc., Chicago, Ill.

Filed Feb. 6, 1975, Ser. No. 547,472

Int. Cl.² A45C *13/00*

U.S. Cl. 190—24 **11 Claims**



1. A case suitable for carrying relatively heavy objects, comprising, two opposed concave shells and means pivotally mounting said shells for movement between a closed position in which said shells enclose a volume to an open position in which the concavities of said shells are exposed, each of said shells including a back wall and four side walls, at least three of said walls in at least one of said shells being a single sheet of semi-rigid material bent to form the separate walls and defining at least two integral corners joining said walls, said sheet having a continuous edge lying in the planes of all of said walls formed thereby, a frame section means substantially coextensive with said continuous edge and having a channel portion and an integral flange portion extending therefrom, said flange portion being disposed against the outer sides of said walls at said continuous edge with said channel portion extending transversely across said continuous edge, an elongated clamping member disposed against the inner side of said walls opposite said flange portion, and means attaching said clamping member and said flange portion to said walls therebetween to add rigidity to said case and to retain said walls in a predetermined relationship to each other.

3,938,631
GEARING WITH SPEED RESPONSIVE STARTING CLUTCHES

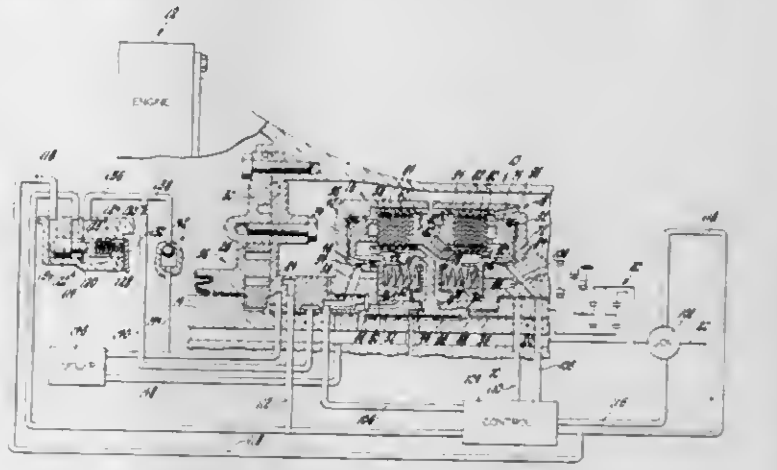
Lyle B. Smith, Westland, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 8, 1974, Ser. No. 486,525

Int. Cl.² F16H *3/74, 5/36;* **F16D** *25/10*

U.S. Cl. 192—3.52 **1 Claim**

1. A drive arrangement for an engine driven vehicle comprising; an input shaft driven by the engine; fluid pump means driven by said input shaft for supplying fluid flow proportional to engine speed; forward and reverse fluid operated starting clutch means each having an input member driven by said input shaft and an output member; planetary gear means drivingly connected to said output members and being selectively operable for providing forward and reverse drive ratios for the vehicle, control means in fluid communication with said pump means for controlling the operation of said planetary gear means and said clutch means; control valve means and restriction means in fluid communication with said pump means for controlling the fluid pressure output of said pump means proportional to engine speed only when the vehicle speed is below a predetermined value, said restriction means being downstream of said control valve means; and vehicle speed signal means for supplying a pressure signal proportional to vehicle speed for operating said control valve means in response to vehicle speed only to discontinue fluid communication between said pump means and said restriction means.



3,938,632
OVERRUNNING CLUTCH

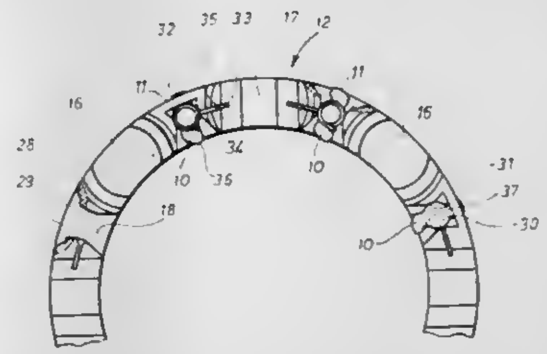
Emil Giese, and Ruprecht Maurer, both of Bad Homburg vor der Hohe, Germany, assignors to Ringspann Albrecht Maurer K. G., Bad Homburg vor der Hohe, Germany

Filed Jan. 22, 1975, Ser. No. 542,892

Claims priority, application Germany, Jan. 23, 1974, 24030715

Int. Cl.² F16D *41/07*

U.S. Cl. 192—41 A **13 Claims**



1. In a combination of a sprag clutch with a deep-groove ball bearing having inner and outer races having circumferential grooves and axial shoulders defining a raceway; a plurality of bearing balls disposed in the raceway in alignment with the common central radial plane of the races; a plurality of sprags disposed in pairs in the raceway, the sprags of each sprag pair being situated axially adjacent on one and the other side of the raceway occupied by the bearing balls; the bearing balls and the sprag pairs being arranged alterantely in the circumferential direction; spring means for urging each sprag into coupling engagement with the race shoulders; and a cage ring disposed in the raceway for supporting the balls and the sprags and maintaining a spacing therebetween; the improvement comprising two identical radial cage ring halves abutting one another in and along the zone of said radial running plane to constitute said cage ring; each cage ring half having:

a. a continuous circumferential terminal wall disposed spaced from the abutting faces of the two cage ring halves, said terminal wall having an outer face constituting the outer radial edge face of said cage ring half;

b. means defining a plurality of circumferentially spaced first recesses, each receiving and pivotally supporting a sprag and its associated spring means;

c. means defining a plurality of circumferentially spaced pockets, each receiving a bearing ball; the number of said pockets being one half the number of said bearing balls;

each pocket being formed as a jaw surrounding the associated bearing ball over more than one half of its circumference; and

d. means defining a plurality of circumferentially spaced second recesses, each receiving a bearing ball; the number of said second recesses being one half the number of said bearing balls; said pockets and said second recesses being arranged alternately;

the two identical cage ring halves being staggered with respect to one another by the extent of one ball pitch, whereby with each said pocket provided on either cage ring half there is axially aligned one of said second recesses in the other cage ring half.

3,938,633
MOTOR CHAIN SAW

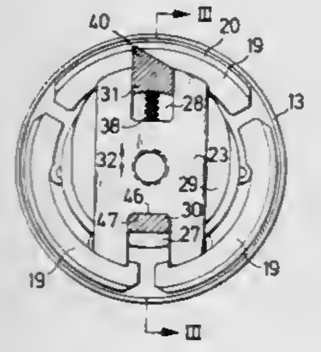
Gunter Dietzsch, Schmiden; Gerd Frers, Neustadt, and Dieter Wieland, Neckarrems, all of Germany, assignors to Andreas Stihl Maschinenfabrik, Germany

Filed Feb. 14, 1973, Ser. No. 332,259

Claims priority, application Germany, Feb. 2, 1972, 2207088; May 13, 1972, 2223472

Int. Cl.² F16D ***47/00***

U.S. Cl. 192—48.3 **29 Claims**



1. A clutch arrangement especially for connecting the motor of a chain saw to a sprocket that drives the chain of the saw and comprising: a first centrifugal clutch and a second manually controllable clutch in series between the motor and the sprocket, said second clutch comprising a first member and a second member both rotatable about the clutch axis, said second member being movable in one direction into engaged position with said first member in complementary relationship and in the other direction into disengaged position from said first member, said second member being subject to centrifugal force when said second clutch rotates, said centrifugal force in at least disengaged position of said second member urging said second member toward the respective position thereof, said first clutch comprising weight means which move radially outwardly to cause engagement of said first clutch, said weight means having radial slot means forming the said first member of said second clutch and said second member having tooth means engageable with said slot means in engaged position of said second member, cam element means operatively connected to said second member and adapted for engagement by abutment means interposed in the path of travel of said cam element means to move said second member in at least one of said directions during rotation of said second clutch.

3,938,634
CLUTCH MECHANISM

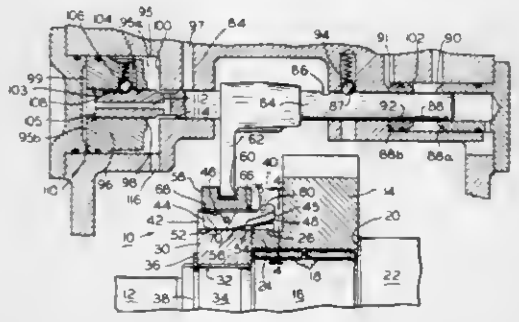
Barry L. Frost, Jackson, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Jan. 22, 1975, Ser. No. 543,089

Int. Cl.² F16D ***43/20***

U.S. Cl. 192—56 F **13 Claims**

1. In a clutch having a rotatable driving member and a rotatable driven member, a carrier fixed to one of said members, axial slots in the periphery of said carrier, rockers in said slots having normally self-disengaging clutching portions on at least the end adjacent to the other of said members, corresponding normally self-disengaging clutching portions on the adjacent end of the other of said members for receiving the clutching portions of said rockers, cam surfaces on said rockers, an axially shiftable collar on said carrier to engage said cam surfaces for rocking said rockers selectively into and out of engagement with said clutching portions of the other of said members, said axially shiftable collar having locked neutral and locked engaged positions on said carrier, wherein the improvement comprises means for axially shifting said collar to an unlocked engaged position intermediate said locked neutral and locked engaged positions and yieldingly maintaining said collar in said unlocked engaged position at a predetermined torque level, with said collar being axially shifted back into locked neutral position by the cam surfaces of said rockers, as a result of the separation of the selfdisengaging clutching portions of both said rockers and the other of said members, when said predetermined torque level acting on said collar is exceeded by the torque transfer between said driving and driven members.



3,938,635
DRIVEN PLATES FOR FRICTION CLUTCHES

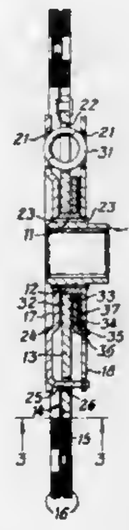
David Aubrey Davies, and Dennis Sydney Johnson, both of Leamington Spa, England, assignors to Automotive Products Co., Ltd., Leamington Spa, England

Filed Feb. 11, 1974, Ser. No. 441,622

Claims priority, application United Kingdom, Feb. 21, 1973, 8516/73

Int. Cl.² F16D ***3/14***

U.S. Cl. 192—106.2 **15 Claims**



1. A clutch driven plate comprising an annular friction facing carrier mounted for limited rotational movement on a hub, two radially extending annular disc-like members, each annular disc-like member being fixed directly and non-rotatably to the hub, registering openings formed in said annular friction facing carrier and in said disc-like members, resiliently compressible members mounted in said registering openings to oppose said limited rotational movement, and a stop which is carried by one of said annular disc-like members and which projects into a circumferentially elongated slot in said annular friction facing carrier to limit rotational movement of said annular friction facing carrier relative to the hub, wherein the improvement comprises said stop being constituted by a bent-over tongue, which is integral with said one annular disc-like member, and locating means which are defined by the other annular disc-like member and which are engaged with a co-operating part of said tongue so as to co-act with the co-operating tongue part to resist circumferential deflection of said tongue relative to said one annular disc-like member.

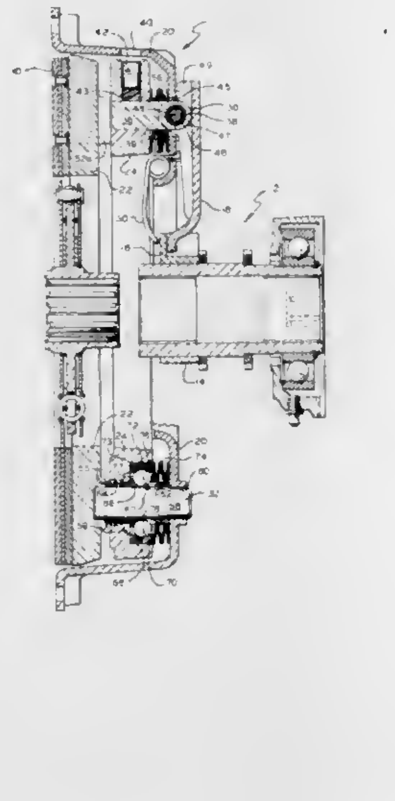
3,938,636
SELF-ADJUSTING COVER ASSEMBLY FOR FRICTION CLUTCHES IMPROVEMENT

Karl Nerska, Seneca Falls, N.Y., assignor to Lipe-Rollway Corporation, Syracuse, N.Y.

Filed Mar. 13, 1974, Ser. No. 450,596

Int. Cl.² F16D ***13/75***

U.S. Cl. 192—111 A **6 Claims**



1. In a friction clutch for connecting driving and driven shafts, the clutch having a release lever actuated by a release mechanism, a friction disc, a clutch cover and a pressure plate; the improvement comprising a self-adjusting means associated with the release lever and the pressure plate, said self-adjusting means including:

a first connecting means operably connected to the release lever and having at least one facing surface, said connecting means including a secondary pressure plate, the facing surface in the connecting means being in an aperture in said secondary pressure plate;

a second connecting means secured to the pressure plate and having at least one facing surface, at least one facing surface of said first connecting means confronting at least one facing surface of the second connecting means;

the confronting facing surfaces being spaced from one another to define a cavity, said cavity having at least one inclined surface therein; and

at least one jamming ball positioned in said cavity, said ball being dimensioned to roll when in one part of the cavity and to be bound between a part of said inclined surface and one of said confronting facing surfaces.

3,938,637
CONTROL SYSTEM FOR FORWARD-REVERSE CLUTCHES AND LOW PRESSURE SUPPLY LINE

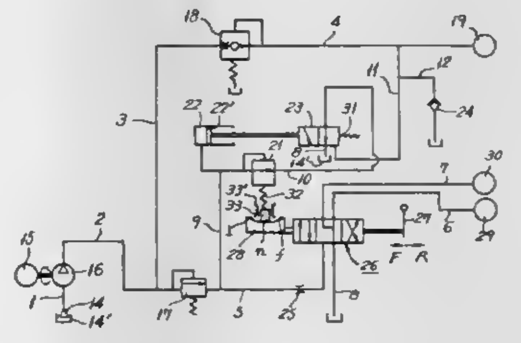
Kiyoharu Murakami, Neyagawa, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Feb. 21, 1975, Ser. No. 551,987

Claims priority, application Japan, Mar. 19, 1974, 49-31816

Int. Cl.² F16D ***25/10***

U.S. Cl. 192—113 R **4 Claims**



1. For use in a vehicle or a vessel having a fluid-actuated forward clutch and a rearward clutch, a source of fluid under pressure, and a forward-rearward select valve therebetween, the combination of single lever clutch control system for selectively controlling actuation of the clutch comprising:

a pressure preserve valve (17);

a first passageway (2) between said source of pressurized fluid and said valve (17);

a second passageway (5) between said valve (17) and said select valve (26);

a one-way control valve (18);

a third passageway (3) between said passageway (2) and said valve (18);

a fourth passageway (4) between valve (18) and lubricating parts (19);

an inching valve (21) the setting pressure of which is regulated in proportion to the extent of action of select valve (26);

a fifth passageway (9) between passageway (5) and inching valve (21):

a drain valve (23);

a sixth passageway (10) between inching valve (21) and drain valve (23); and

a seventh passageway (11) between drain valve (23) and said fourth passageway (4); said drain valve (23) being adapted to place said sixth passageway (10) in communication with said seventh passageway (11) when the fluid pressure in fifth passageway (9) increases beyond a predetermined value whereby inching valve (21) and select valve (26) are operated by a single select lever (27).

3,938,638
APPARATUS FOR RECEIVING AND ACKNOWLEDGING THE RETURN OF A VEHICLE AT A CHECK-IN STATION

Richard D. Moule, South Pasadena, Calif., assignor to Franklin Electric Subsidiaries, Inc., Bluffton, Ind.

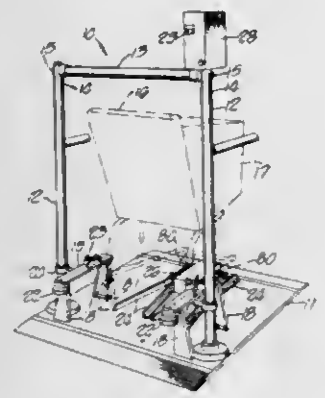
Filed Dec. 17, 1973, Ser. No. 425,107

Int. Cl.² G07F ***7/06***

U.S. Cl. 194—4 C **40 Claims**

1. Apparatus for receiving and acknowledging the return of a wheel-supported vehicle at a check-in station, said apparatus having passageway means for accommodating a returning vehicle, a plurality of sensors adjacent said passageway means operable in preselected sequence in response to the movement of a returning vehicle therethrough in a predetermined direction, means responsive to the proper sequential operation of said sensors to acknowledge the return of a vehicle

through said passageway means, and said sensors including means effective to thwart efforts of unauthorized persons to operate said sensors in the proper sequence to simulate the return of a vehicle and obtain a false acknowledgment thereof.



3,938,639

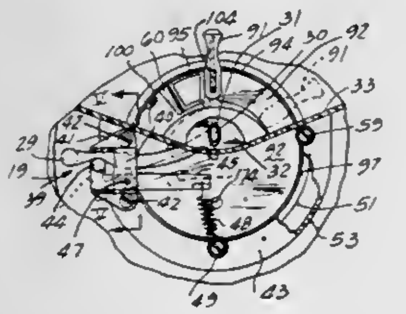
PORTABLE DISPENSER FOR MIXED BEVERAGES

Peter Leslie Birrell, Delta, Canada, assignor to The Cornelius Company, Minneapolis, Minn.

Filed Nov. 28, 1973, Ser. No. 419,872

Int. Cl.^{2} G07F *13/00*

U.S. Cl. 194—87 19 Claims



13. A dispenser comprising:

dispensing means for supporting a supply of flowable material to be dispensed, and having movable metering means for selectively dispensing metered quantities of the material;

a manually movable operating device mounted on the dispenser adjacent to said dispensing means and adapted for normally free movement relative to the dispensing means;

means on said operating device and on said metering means for receiving and engaging a coin vertically on edge releasably therebetween as a coupling so that manual movement of the operating device effects material dispensing movement of the metering means; and

means for vertically adjusting the effective height of said coin receiving and engaging means to receive coins of a selected size for operating the dispenser.

3,938,640

COIN OPERATED LOCK

Wells F. Stackhouse, Ashville, and Douglas A. Barth, Sinclairville, both of N.Y., assignors to American Locker Company, Inc., Jamestown, N.Y.

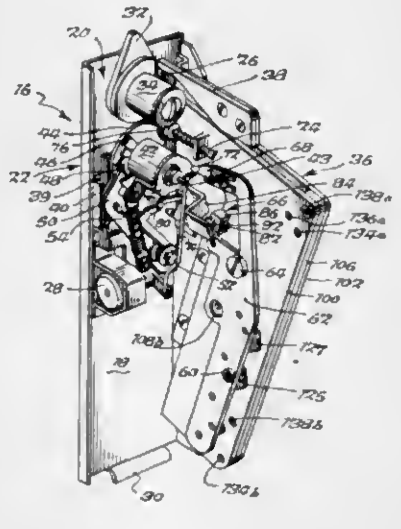
Filed Mar. 5, 1975, Ser. No. 555,701

Int. Cl.^{2} G07F *1/04*

U.S. Cl. 194—92 2 Claims

1. In a coin operated lock of the type having a coin chute formed with vertically spaced coin inlet and discharge ends and constraining coins to move on edge downwardly therethrough, an intercepting finger arranged relatively adjacent said discharge end for releasably retaining a coin deposited in said chute and a coin feeler arranged relatively adjacent said inlet end and being removably insertable into said chute for sensing the presence of a coin retained therein by said intercepting finger, characterized in that operation of said lock may be effected only upon sensing of the presence of a coin by said coin feeler whereafter the sensed coin is released by said intercepting finger for discharge through said discharge end, the improvement for permitting said lock to be operated by a proper grouping of coins consisting of two or more coins of a given denomination of a given currency successively deposited in said coin chute and setting edge on edge therewithin, which comprises:

said coin chute being vertically bounded by a downwardly facing guide surface and an upwardly facing coin edge supporting surface arranged essentially parallel to said guide surface and spaced therefrom through a distance corresponding essentially to the diameter of the coin of said given denomination while permitting free movement of said coin of said given denomination downwardly through said chute, said surfaces being inclined at an angle to the horizontal affording gravity feed of coins through said chute while preventing a second or subsequently deposited coin from moving away from supporting engagement with said supporting surface by rolling over a previously deposited coin in a direction towards the guide surface, said coin feeler being arranged immediately adjacent said guide surface, said supporting surface having a coin receiving recess opening therethrough in a facing relationship with said coin feeler, said intercepting finger cooperating with one of said guide and supporting surfaces to releasably retain a first deposited coin of said given denomination within said coin chute while permitting previously deposited coins of other denominations of said given currency having a diameter less than said diameter to freely pass downwardly through said discharge end, said intercepting finger being spaced from said coin feeler through a distance insuring the positioning of a portion of a last deposited coin of said proper grouping for sensing by said coin feeler, said coin receiving recess having a lower end thereof arranged immediately above a point along said supporting surface at which said last deposited coin would be unsupported by said supporting surface and move into said coin receiving recess and away from a position thereof in which it can be sensed by said coin feeler, characterized in that the positioning of said intercepting finger relative to said coin feeler and the presence of said coin receiving recess prevents sensing of any coin by said coin feeler when a second or subsequently deposited coin of said given currency includes a coin of a denomination other than said given denomination.



3,938,641

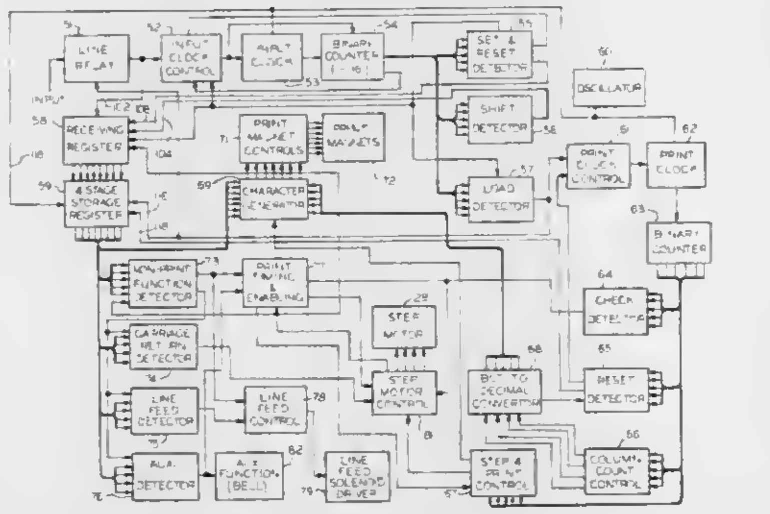
CONTROL SYSTEM FOR HIGH SPEED PRINTER

John R. Fulton, Brookfield, Ill., assignor to Extel Corporation, Northbrook, Ill.

Continuation-in-part of Ser. No. 349,438, April 9, 1973, abandoned, and a continuation of Ser. No. 528,447, Nov. 29, 1974. This application May 7, 1975, Ser. No. 575,370

Int. Cl.^{2} B41J *25/00*

U.S. Cl. 197—1 R 13 Claims



1. An electronic print rate control system for a high-speed column-sequential dot matrix printer actuated in accordance with a permutation code signal of given pulse rate in which each code word, representative of a character to be reproduced or of a non-print function, includes a given number of data pulses, the printer comprising a print head, print head drive means for stepping the print head through a plurality of column movements in each spacing character cycle, a print timing oscillator having an operating frequency f much higher than the pulse rate of said permutation code signal, a plural-stage FIFO storage register, each stage having a capacity sufficient to record a code word, means for recording each code word in the storage register, and means for reading out the code words from the storage register in the same order as received, the print rate control system comprising:

first countdown means, coupled to the print timing oscillator, for developing a normal print rate signal having a frequency f/n;

second countdown means, coupled to the print timing oscillator, for developing a fast print rate signal having a frequency f/m, where n and m are integers and $n>m$;

and print rate selection means for selectively applying one of the print rate signals to the print head drive means to control the rate of column movements, in each spacing character cycle, in accordance with the presence or absence of a code word recorded in a given stage of the storage register.

3,938,642

MAGNETIC KEY TOUCH CONTROL

Jaap Van Rumpt, Albertusstraat 16, Vught, and Joop A. Spermon, van Lennephof 57, Oss, both of Netherlands

Filed May 17, 1974, Ser. No. 470,980

Int. Cl.^{2} B41J *5/08*

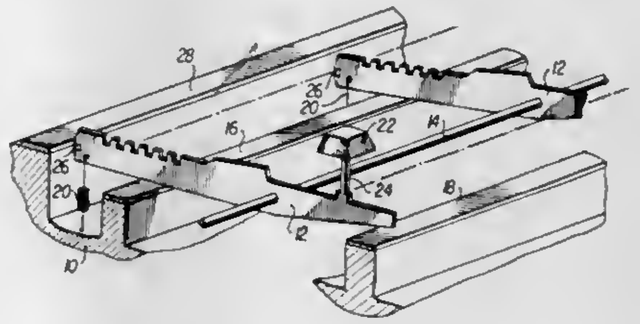
U.S. Cl. 197—98 6 Claims

1. In a keyboard having a key lever pivoted intermediate its ends, a bias means pivoting said key lever in one direction toward a home position, and a manually depressible key means for pivoting the key lever in the opposite direction away from said home position toward a limit position, the improvement comprising:

a first permanent magnet attached to said key lever at one end thereof whereby said magnet travels an arcuate path between first and second positions as said key lever moves between said home and limit positions; and,

a second permanent magnet disposed adjacent a point on said arcuate path that is between said first and second positions,

said magnets being poled such that the magnetic fields of said magnets create a force that aids said bias means as said first magnet moves toward said point from said first position, and opposes said bias means as said first magnet moves away from said point toward said second position.



3,938,643

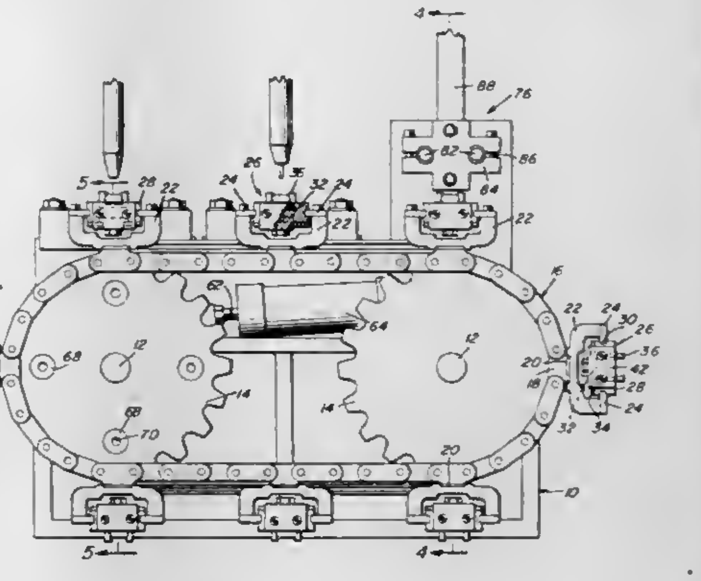
MECHANISM FOR FEEDING AND TRANSPORTING BRUSH BLANKS

Russell H. R. Parker, Cleveland, Ohio, assignor to Universe Machine Company, Inc., Cleveland, Ohio

Filed May 1, 1974, Ser. No. 466,071

Int. Cl.^{2} B23Q *7/03*

U.S. Cl. 198—19 18 Claims

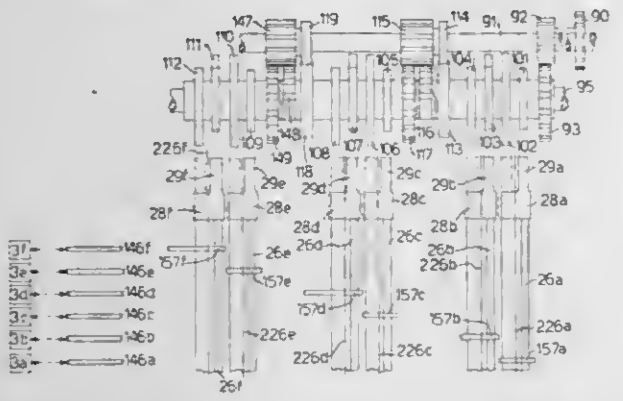


1. Brush blank handling apparatus comprising a transport unit for receiving and transporting brush blanks, and a plurality of work stations positioned adjacent the transport unit at spaced points therealong, said transport unit including a carrier mounted for travel along an endless path past said stations, indexing means for moving said carrier along said path in a stepped manner, a series of work holders, each work holder adapted to receive and mount a brush blank, mounting means mounting each holder to said carrier for sequential presentation at the work stations upon an indexing of said carrier, and transfer means at one or more of said stations, said transfer means being selectively engageable with an aligned work holder for a transfer to and subsequent return from the work stations, each work station having transfer means associated therewith including secondary work receiving holders mounted for movement in one or more directions independently of the transport unit, said secondary work receiving holders being adapted for transfer of brush blank holders from and subsequently to the transport unit.

3,938,644
HORIZONTAL TABULATION APPARATUS FOR ACCOUNTING MACHINES OR THE LIKE

Adriano Zambolin, Ivrea (Turin), and Gianfranco Delalco, Samone (Turin), both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed June 5, 1974, Ser. No. 476,434
Claims priority, application Italy, June 12, 1973, 25091/73
Int. Cl.² B41J *21/04*
U.S. Cl. 197—176 10 Claims

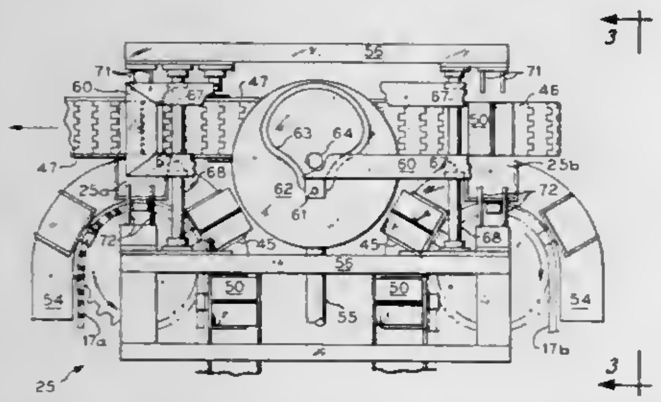


1. Horizontal tabulation apparatus for accounting machines or the like, having a frame, a platen and a carriage having relative motion with respect to said platen for reaching predetermined tabulation positions, comprising:
- means for moving said carriage,
- a plurality of sensing means movable from a first to a second of two positions for defining code combinations corresponding to the predetermined tabulation positions,
- a first shaft fixed to said frame,
- a plurality of cams rotatable on said first shaft, said rotation being actuated by said carriage moving means, said cams being divisible into groups for cooperation with said sensing means, each group being associated with at least a portion of a corresponding code combination,
- stopping means actuated by said plurality of sensing means for deactivating said moving means when said groups of cams rotate to positions defined by the positions of said sensing means to generate one of said code combinations corresponding to one of said predetermined tabulation positions,
- a control unit for generating said code combinations; and
- a plurality of corresponding electromagnets responsive to said control unit generated code combinations for moving said sensing means to said first or second positions to reoresent said one predetermined tabulation position.

3,938,645
GABLE-TOP CARTON TRANSFER APPARATUS AND METHOD

Silvio T. Farfaglia, Fulton, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 7, 1973, Ser. No. 395,030
Int. Cl.² B65G *47/68*
U.S. Cl. 198—20 R 16 Claims

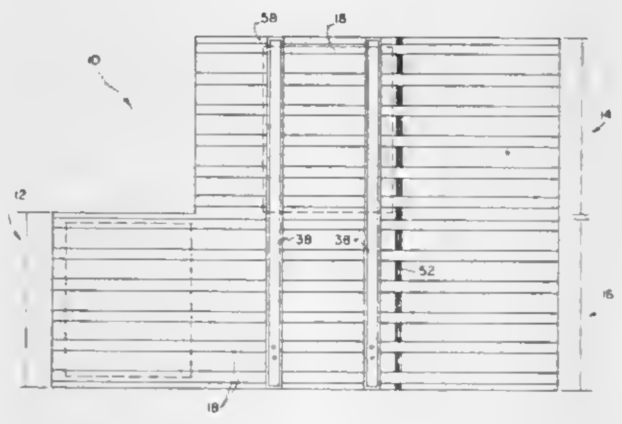


1. Transfer means for moving a container from a first station to a second station, said transfer means comprising:
- clamp means comprising first and second jaw means rotationally and longitudinally movable on respective first and second supporting shafts, each said jaw means having a cam follower means operably attached thereto,
- means for moving said clamp means between said first and second stations,
- an actuating shaft means having a smaller diameter first segment and a larger diameter second segment,
- means for closing said clamp means at said first station to grasp the top of a container, said means for closing comprising means for forcing longitudinal movement of said first and second jaw means along said first and second supporting shafts thereby bringing each of said cam follower means in contact with one of said first and second segments of said actuating shaft means, and
- means for opening said clamp means at said second station to release said container, said means for opening comprising means for forcing longitudinal movement of said first and second jaw means along said first and second supporting shafts thereby bringing each of said cam follower means in contact with the other of said first and second segments of said actuating shaft means.

3,938,646
METHOD AND APPARATUS FOR DEVIATING OBJECTS TRANSPORTED ALONG A CONVEYOR

Umberto Brasa, Uguccione da Pisa, N° 6, Milan, Italy

Filed Jan. 14, 1974, Ser. No. 432,861
Int. Cl.² B65G *47/26*
U.S. Cl. 198—31 R 7 Claims

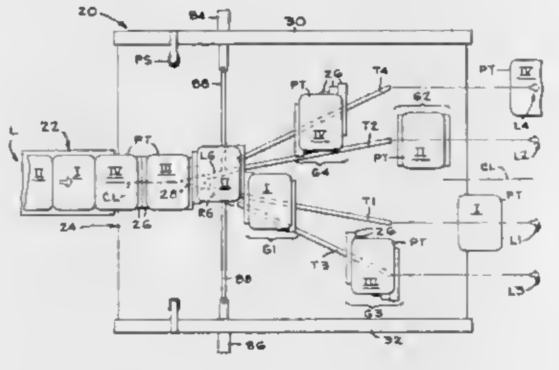


1. Apparatus for deviating the path of travel of sheet members traveling sequentially from a printing machine to a pair of side by side laterally arranged driers in a first direction along a conveyor reach traveling in the first direction and positioned between the printing machine and the driers; elongated means arranged transversely of said first direction for intercepting and stopping a first to arrive sheet member at a predetermined location along said first conveyor reach, a second conveyor reach generally coplanar with the first conveyor reach, said second conveyor reach traveling in a second direction transverse of said first direction and capable of being raised and lowered selectively to engage said first to arrive sheet member for displacing same from its stopped position to a transversely offset position along said first conveyor reach, said intercepting and stopping means being operable upon the next to arrive sheet member holding same against movement in the first direction while maintaining said displaced first to arrive sheet member against movement in said first direction and means for releasing said intercepting and stopping means to enable continued travel of said first to arrive and next to arrive sheet members side by side simultaneously in the first direction to the driers.

3,938,647
ARTICLE FEEDING SYSTEM

Glen F. Raque, Louisville, Ky., assignor to FMC Corporation, San Jose, Calif.

Filed July 16, 1973, Ser. No. 379,668
Int. Cl.² B65G *47/26*
U.S. Cl. 198—31 AA 2 Claims



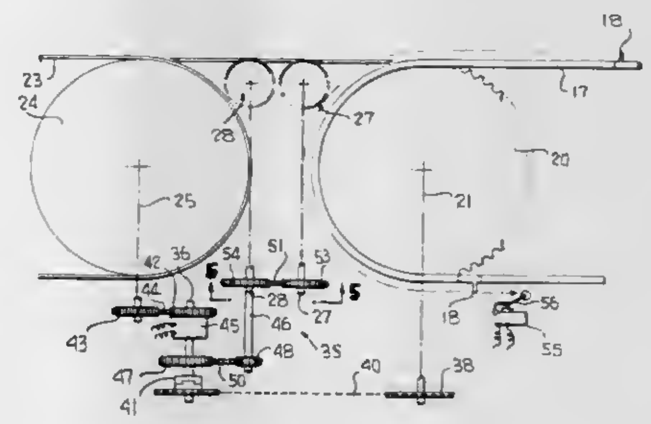
1. In an article feeding mechanism for continuously dividing one lane of articles into four lanes including an endless driven conveyor having an upper and lower reach, said conveyor comprising a series of laterally shiftable article carriers, each of said carriers having a single fixed switch pin, and guide means at the upper reach for engaging the carrier switch pins for diverting a single lane input of carriers on the upper reach into a multiple lane output of carriers, lower cam means at said lower reach for arranging the carriers into alternate separate groups so that when the carriers of one group reaches the upper reach its switch pins are laterally offset from the switch pins of the carriers of the following group, the switch pins of alternate groups thereby being disposed in separate lanes at the upstream end of said upper reach, said guide means at the upper reach comprising fixed upper cam means having an apex that is straddled by the pins of alternate groups, the pins of successive groups alternately engaging opposite sides of said fixed upper cam means to laterally shift the carriers of one group into one intermediate lane and to laterally shift the carriers of the following group into another intermediate lane, two diverging discharge lanes for each intermediate lane, a single movable gate for each of said intermediate lanes for diverting the carriers in each intermediate lane to one or the other of the associated discharge lanes; the improvement wherein said lower cam means is a fixed cam, means for sensing the presence of an article on each group of carriers at the inlet end of said upper reach, and control circuit means connected to said sensing means, said control circuit means comprises means for alternately actuating said gate means for said intermediate lanes, in response to the sensing of an article on alternate groups of said carriers by said sensing means.

3,938,648
PACKAGE TRANSFER UNIT

Robert H. Ganz, 8 Ridge Crest Road, Saddle River, N.J. 07458

Filed June 21, 1974, Ser. No. 481,871
Int. Cl.² B65G *47/26*
U.S. Cl. 198—34 14 Claims

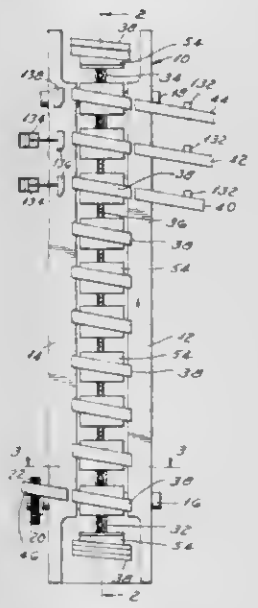
1. An accelerating transfer unit for transferring articles from a first conveyor to a faster moving second conveyor, said accelerating transfer unit comprising a conveying member and drive means for selectively driving said conveying member at first and second surface speeds, said drive means including a first drive unit incorporating first drive element means for coupling to a first conveyor drive for the first conveyor to be driven at a first speed, overrunning clutch means between said first drive element means and said conveying member to drive said conveying member at a first speed, and a second drive unit incorporating second drive element means for coupling to a second conveyor drive for the second conveyor to be driven at a second speed, and selectively actuated clutch means for coupling said second drive element means to said conveying member in driving relation.



3,938,649
WORKPIECE ELEVATOR

William F. Bell, Mt. Clemens, and Walter H. Van Deberg, Berkley, both of Mich., assignors to F. Jos. Lamb Company, Warren, Mich.

Filed Nov. 29, 1974, Ser. No. 528,287
Int. Cl.² B65G *43/00*
U.S. Cl. 198—38 16 Claims



1. In a workpiece elevator the combination of a vertically extending support, endless chain means mounted on said support to travel in an endless path lying in a generally vertical plane, a plurality of workpiece carriers mounted on said chain means at regularly spaced intervals, said carriers having a workpiece supporting surface inclined to the horizontal and having an inlet at the upper end and an outlet at the lower end of said supporting surface, a workpiece inlet chute adjacent the lower end of the support and a series of regularly spaced outlet chutes adjacent the upper end of the support, means for driving said chain means in said endless path with an intermittent motion so that the inlets of successive carriers are periodically aligned with said inlet chute to receive workpieces therefrom and the outlets of the successive carriers are periodically aligned with the successive outlet chutes, workpiece control means mounted on each carrier adjacent the outlet thereof, said control means being movable from a first position blocking said outlet to prevent discharge of workpieces from the carrier to a second position clearing said outlet to permit workpieces to be discharged from the carrier by gravity, retaining means for releasably locking said control means in said first position as the carriers travel between the successive outlet chutes, and release means on said support associated with each outlet chute for actuating said retaining means as

the carrier moves into alignment with an outlet chute to unlock said control means and cause the same to assume said second position clearing said outlet.

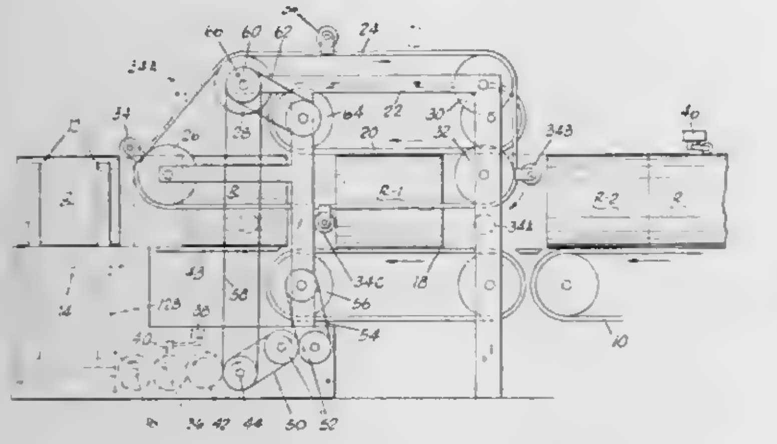
3,938,650
INDEXING ARTICLE SEPARATING AND FEEDING CONVEYOR

Ronald Holt, Battle Creek, Mich., assignor to Franklin Electric Subsidiaries, Inc., Bluffton, Ind.

Filed Feb. 27, 1975, Ser. No. 553,475

Int. Cl.^{2} B65G *37/00, 15/16*

U.S. Cl. 198—76 **13 Claims**



1. In combination with a pair of side-by-side article delivery belts and a wrapping machine conveyor extending transversely across the delivery ends of said belts and in spaced relation to the ends thereof, article indexing and advancing mechanism comprising:

upper and lower opposed accelerator belts positioned to receive pairs of articles from said delivery belts,

a fixed dead plate positioned to support a pair of articles between the outlet ends of said accelerator belts and said wrapping machine conveyor,

a pair of carrier loops positioned in upright planes along side of said accelerating belts and said dead plate,

a plurality of transverse bars carried in equally spaced relation around said loops and advanced thereby into blocking positions between the delivery ends of said delivery belts and the receiving ends of said accelerator belts, and between said accelerator belts across said dead plate to article delivering position along side of said wrapping machine conveyor,

and drive means including an intermittent cycling drive connected to be driven from said wrapping machine conveyor and to concurrently drive said accelerator belts and said carrier loops at equal linear speeds greater than the speed of said delivery belts,

said intermittent cycling drive being arranged to provide a dwell and stop period with one of said cross bars in blocking relation in front of and closely adjacent the nip at the inlet ends of said accelerator belts.

3,938,651
SELF-SUPPORTING SPIRAL CONVEYOR

P. Allan Alfred, Hittarp; Sven-Olle H. Rothstein, Raa, and Stig Vilhelm Popoff, Landskrona, all of Sweden, assignors to Frigoscandia Contracting AB, Helsingborg, Sweden

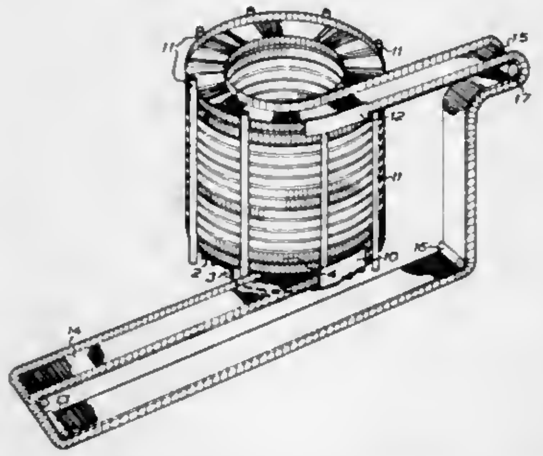
Filed Mar. 1, 1974, Ser. No. 447,375

Claims priority, application Sweden, Mar. 7, 1973, 7303179

Int. Cl.^{2} B65G *15/00*

U.S. Cl. 198—136 **9 Claims**

1. A conveying device with an endless conveyor belt for the conveyance of products, in which device a portion of the length of said conveyor belt is arranged to follow a path consisting of a number of superimposed, helically extending tiers, said conveyor belt comprising mutually articulated and interadjustable link means and a bottom part and, disposed at the ends of said bottom part, said link means including links forming the two sides of the conveyor belt, wherein said links on either side of said endless conveyor belt are articulated and interadjustable and are formed as spacers whose upper edge portions are arranged to bear against lower transverse edge portions of said links forming such spacers on either side of the overlying tier of said endless conveyor belt, in order that such an overlying belt tier be supported by the immediately underlying tier of said conveyor belt.



3,938,652
FEEDER RAKE WITH AN OVERLOAD PROTECTION DEVICE FOR AGRICULTURAL PICK-UP AND OTHER BALERS

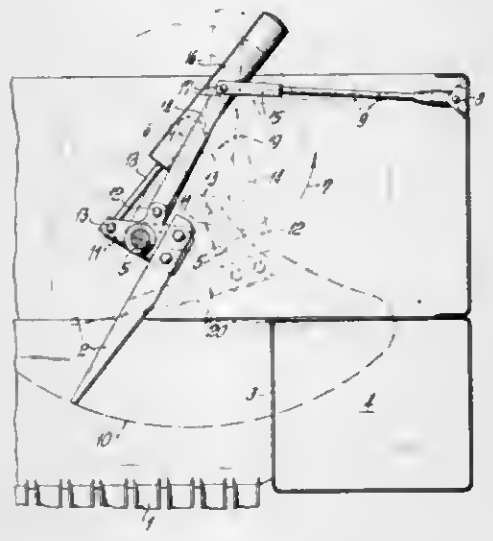
Hans Otto Sacht; Joost Honhold, and Uwe Elert, all of Wollenbuttel, Germany, assignors to Gebrueder Welger, Wollenbuettel, Germany

Filed May 22, 1974, Ser. No. 472,175

Claims priority, application Germany, May 28, 1973, 2327166

Int. Cl.^{2} B65G *25/08*

U.S. Cl. 198—223 **8 Claims**



1. In a feeder rake device for an agricultural pickup and other balers mobile and stationary, a carrier of tines, crank means mounting said carrier for rotation about a fixed first axis, and for pivoting about a second axis radially offset from said first axis, tines having one end fixed to said carrier and pivotable therewith about said second axis, between a first and material-moving position and a second position ineffective to move material, link means connected to said carrier, fluid pressure means connected to said link means for urging said tines into said first position, movement of said tines to said second position increasing the pressure in said fluid pressure means, said fluid pressure means comprising a cylinder and a piston reciprocable therein, said link means comprising a piston rod fixed at one end to said piston and at its other end pivoted to said carrier, said link means also comprising a lever pivoted at one end on a third axis fixed with and offset from said first axis, and at its other end to a trunnion on said cylinder, and a link pivoted at its end on said trunnion and said carrier, respectively.

3,938,653
APPARATUS FOR CONVEYING AND TURNING ARTICLES

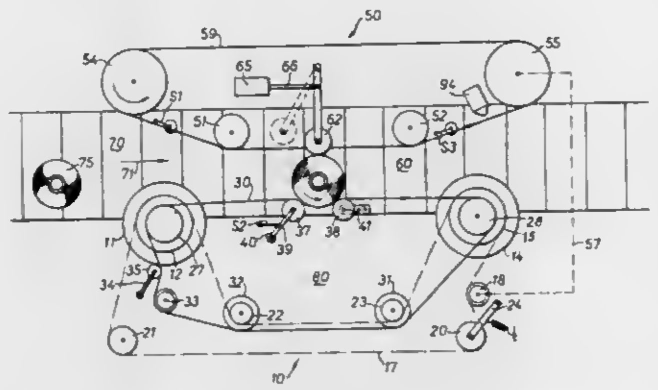
Edmund Senger, Buttwil, Switzerland, assignor to Emhart Zurich S.A., Zurich, Switzerland

Filed Mar. 10, 1975, Ser. No. 556,993

Claims priority, application Switzerland, Mar. 11, 1974, 3344/74

Int. Cl.^{2} B65G *47/24*

U.S. Cl. 198—283 **6 Claims**



1. Apparatus for conveying articles proceeding on a line conveying device to a testing station and for rotating the articles at the testing station, comprising:

a conveyor belt disposed laterally of the line conveying device;

means for driving said conveyor belt;

a through belt disposed laterally of the line conveying device and spaced from said conveyor belt and cooperating therewith to define a track for conveying the articles at spaced intervals from one another to the testing station;

means for driving said through belt;

a control roller disposed on one side of said track, said control roller being displaceable between an operating position in which a portion of its periphery extends over said through belt and into said track, and a rest position in which its periphery lies outside said track;

a first pressing roller disposed adjacent the side of said track opposite that of said control roller, said first pressing roller being pivotable transversely with respect to said track; and

a second pressing roller disposed adjacent the side of said track opposite that of said control roller and downstream of said first pressing roller, said second pressing roller being rotatably disposed on a fixed shaft, said control roller and said first and second pressing rollers cooperating to interrupt the passage of articles proceeding through said track and to rotate each article at least one about the axis of the article at the testing station.

3,938,654
METHOD AND MACHINE FOR CONVEYING AND ALIGNING ROD-SHAPED FASTENERS

Johannes Mohr, Oberboihingen, Germany, assignor to Karl M. Reich Maschinenfabrik, Nuertingen, Germany

Filed Mar. 27, 1972, Ser. No. 238,635

Claims priority, application Germany, Apr. 2, 1971, 2116269

Int. Cl.^{2} B65G *47/14*

U.S. Cl. 198—287 **8 Claims**

1. A machine for conveying rod-shaped fasteners from a supply of unaligned fasteners into alignment in at least one row behind each other and to at least one fastener treating mechanism having a certain working output, comprising, in combination, (a) means for guiding said fasteners from said supply to said fastener treating mechanism; (b) a plurality of successive fastener conveying means operatively associated with said guide means and each having a conveying output at least equal to said working output of said fastener treating mechanism, one of said conveying means comprising a conveyor belt of a non-magnetizable material movable within a vertical plane, said belt having a conveying strand movable upwardly and further having a conveying side and a rear side, and lower and upper uniformly magnetized magnet poles mounted in fixed positions at said rear side and separated by a gap from each other, another one of said conveying means having an outlet for delivering fasteners to a lower part of the conveying side of said belt underneath said gap, first means for controlling the quantity of said fasteners adhering to and conveyed upwardly by said conveying strand, said first control means comprising an electromagnet mounted in said gap, and means for varying the field intensity of said electromagnet and for thus determining the thickness of the layer of fasteners conveyed by said conveying strand upwardly beyond said electromagnet; (c) means for indicating on said guide means at the inlet side of a further one of said conveying means the accumulation of a certain quantity of fasteners coming from a preceding one of said conveying means in excess of the actual conveying output of said further conveying means; (d) second means responsive to said indicating means for controlling the operation of said preceding conveying means; and (e) return means actuated by said second control means for returning at least some of said accumulated fasteners to a position of said guide means at the rear of said preceding conveying means.

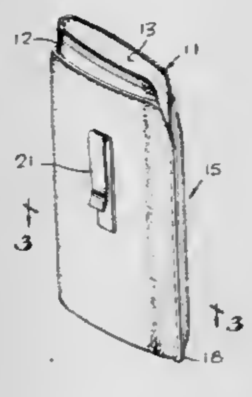
3,938,655
REMOVABLE STIFFENER FOR SPECTACLE CASES

Abraham Romolt, North Hollywood, Calif., assignor to Master Specialty Products, North Hollywood, Calif.

Filed Sept. 9, 1974, Ser. No. 504,132

Int. Cl.^{2} A45C *11/04*

U.S. Cl. 206—5 **5 Claims**



1. A two-piece spectacle case comprising in combination:

an elongated tubular outer sheath of flexible material having one end thereof open to receive a pair of spectacles inserted axially into said sheath coaxially therewith; and

an elongated longitudinally rigid stiffener removably disposed within said sheath and defining a spectacle-receiving channel of generally U-shaped cross-section having opposed, spaced, resiliently connected front and rear walls, said stiffener being inserted slidingly into said sheath axially through said open end with the walls of said stiffener spaced apart a certain distance and exerting an outwardly directed force against said sheath to maintain said sheath in substantial conformity with the cross-sectional shape of said spectacles.

3,938,656

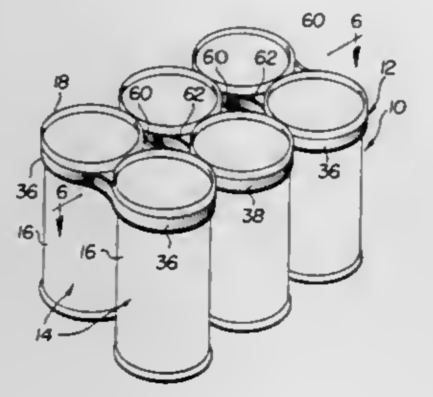
CONTAINER CARRIER AND METHOD OF MAKING SAME

Ronald Charles Owen, Harwood Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 2, 1974, Ser. No. 528,851

Int. Cl.^{2} B65D *71/02, 63/10, 85/62;* **B26D** *3/00*

U.S. Cl. 206—150 **9 Claims**



1. A carrier for a plurality of articles such as containers and the like comprising a set including a pair of adjacently disposed annular sections of flexible material each having an upstanding wall having a height greater than its thickness and upper and lower margins, said annular sections having an area of closest proximity to each other, and elements extending between said annular sections at opposite sides of said area and providing handle means for facilitating handling of the carrier.

3,938,657

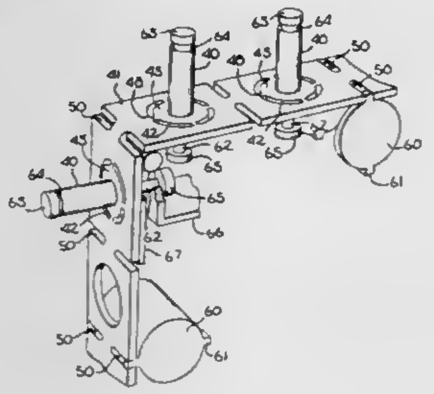
BLIND RIVET ASSEMBLY

Melvin J. David, 16221 Quemada Road, Encino, Calif. 91316

Division of Ser. No. 307,119, Nov. 16, 1972. This application Apr. 26, 1974, Ser. No. 464,447

Int. Cl.^{2} B65D *85/24*

U.S. Cl. 206—343 **5 Claims**



1. In a blind rivet assembly, a blind rivet carrier element comprising a malleable metallic strip having said plurality of rivet bodies uniformly disposed thereon, said rivet bodies comprising a preformed rivet head having a top and bottom surface coplanar with the top and bottom surfaces of said blind rivet carrier strip, said preformed rivet head being coupled to said carrier strip by breakable bridging elements therebetween, said preformed rivet head being depended into a cylindrical body having a uniform inner and outer diameter, said inner diameter being extended through said preformed rivet head and the end of said cylindrical body opposite said preformed rivet head being countersunk downwardly from the outer to the inner diameter thereof, said carrier element further including registration means for aligning said rivet bodies being disposed in opposition to one another along the transverse edges of said strip intermediate said rivet bodies and including perforation means for bending said carrier element interposed between said opposed registration means.

3,938,658

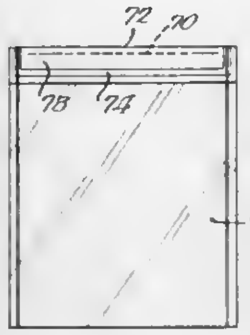
STERILE POUCH

William A. Rohde, Arlington Heights, Ill., assignor to Tower Products, Inc., Mundelein, Ill.

Filed Dec. 17, 1973, Ser. No. 425,306

Int. Cl.^{2} A61D *19/02*

U.S. Cl. 206—439 **4 Claims**



1. A pouch comprising a folded flexible thermoplastic film comprising opposed walls with a fold at one edge connecting said walls, a folded porous sheet engaged over said edge and portions of both of said walls, a continuous line of seal between said porous sheet and the underlying portions of said edge and said walls, said line of seal extending over said edge and into both of said opposed walls and defining within said line an enclosed area between said film and said sheet, and an opening in said film within said enclosed area, said opening being located in its entirety within said area and having its boundaries spaced inwardly from said line of seal.

3,938,659

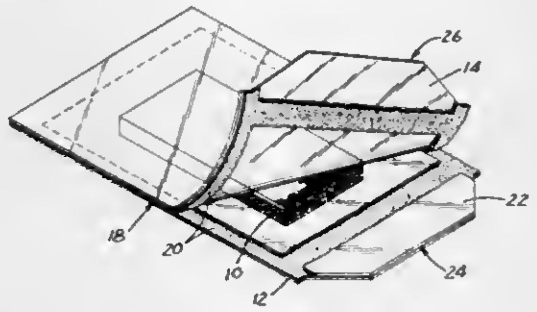
FRANGIBLE BONDING USING BLUSH LACQUER AND PACKAGING BONDED THEREWITH

Charles R. Wardwell, 559 Oak St., Winnetka, Ill. 60093

Filed June 24, 1974, Ser. No. 482,436

Int. Cl.^{2} B65D *75/60;* **B65B** *55/10*

U.S. Cl. 206—439 **18 Claims**



1. A package including a product enclosed by a substrate and a closure member, said substrate being bonded to said closure member by a frangible bonding system comprising a bonding agent in the form of a layer of dried blush lacquer formed of film-forming resin containing voids, the film-forming resin forming cohesive internal bonds of said layer of blush lacquer, said voids making said cohesive internal bonds of said layer of blush lacquer rupturable by peeling the closure member and the substrate from one another.

17. A method of packaging a sterilized product between a substrate and a cover layer, said method comprising coating the substrate with a blush lacquer formed of a film-forming resin disposed in a liquid vehicle composed of a solvent and non-solvent for said resin, the solvent being more volatile than the non-solvent, evaporating said vehicle to leave the resin as a dried blush lacquer, the solvent being evaporated in preference to the non-solvent, applying a layer of heat seal material to said dried blush lacquer, placing the cover layer on the heat seal material with the product therebetween, applying heat and pressure to heat seal the cover layer to said dried blush lacquer to seal the product therebetween, and effectively sterilizing the enclosed space.

3,938,660

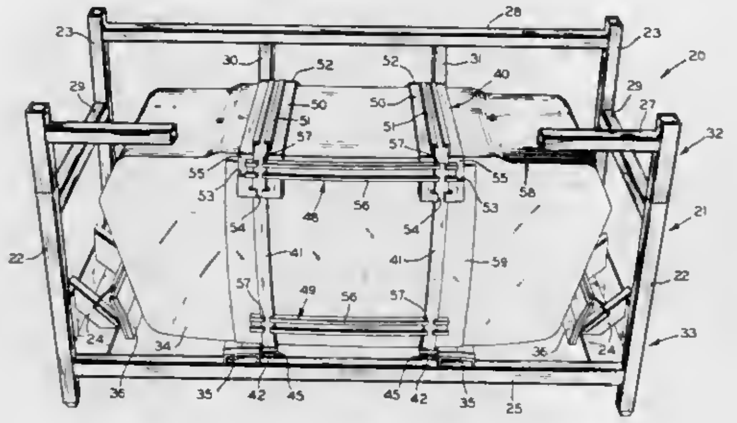
GLASS SHEET SHIPPING PACKAGES

Richard J. Moehring, Maumee, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed June 27, 1974, Ser. No. 483,701

Int. Cl.^{2} B65D *85/48*

U.S. Cl. 206—451 **11 Claims**



1. In a composite shipping package including a shipping rack containing a plurality of up-standing sheets of glass having an open, substantially L-shaped frame upon which said sheets are supported on edge and an adjustable tie down apparatus, the improvement comprising

- a. a pair of spaced apart L-shaped pads each having a first elongated leg lying transversely across the top edges of said sheets and a second leg lying along the front face of the outer one of said sheets;
- b. a pair of banding straps wherein each of said straps is connected to one of said pads for holding said pad on said top edges of said sheets;
- c. a first pressure member whose ends are connected to and extend between said straps and wherein the ends of the pressure member bear against said second leg of each said pad and,
- d. means securing said straps to said rack under tension for applying pressure on the ends of said pressure member whereby the pressure applied by each said strap to said pressure member is uniformly transmitted to said plurality of sheets to hold said sheets on said rack.

3,938,661

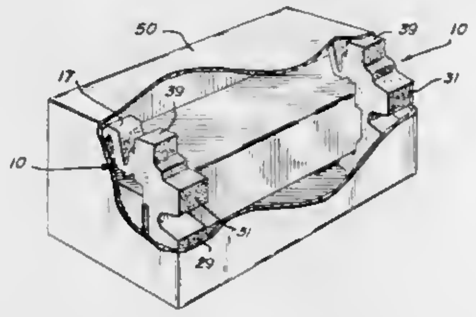
PACKING BRACE

John Maurice Carmody, Palos Heights, Ill., assignor to Republic Packaging Corporation, Chicago, Ill.

Filed Oct. 17, 1974, Ser. No. 515,566

Int. Cl.^{2} B65D *81/04, 85/30*

U.S. Cl. 206—523 **5 Claims**



1. A packing brace for packaging articles comprising, in combination,

an integral band of resilient material,

said integral band formed by a first section having a substantially U-shaped cross section and including both outer and inner bracing surfaces,

a second section having a substantially U-shaped cross section and including both outer and inner bracing surfaces,

a pair of integrally formed hinge members pivotally joined to and interconnecting said first and second sections between opposed legs of said U-shaped section,

each of said hinge members further including a centrally disposed hinge joint,

and said first and second sections and said hinge members being integrally formed as a unitary construction,

whereby each of said first and second sections may be moved laterally and arcuately throughout an arc of approximately 180° with respect to one another thereby to accommodate a variety of packaging positions.

3,938,662

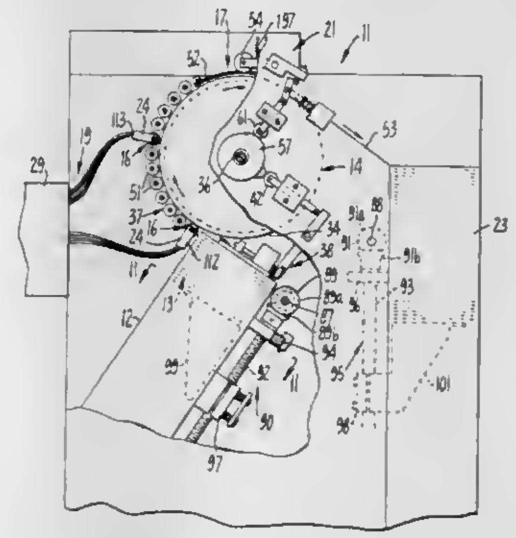
SELECTIVE IMPRINTING MACHINE

Franklin Henry Ernst, Jr., 2500 Emerson St., Napa, Calif. 94558, and Dalny Travaglio, 299 Lexington Road, Kensington, Calif. 94707

Division of Ser. No. 364,010, May 25, 1973, Pat. No. 3,817,171, which is a continuation of Ser. No. 99,346, Dec. 18, 1970, abandoned. This application Dec. 3, 1973, Ser. No. 421,417

Int. Cl.^{2} G06K *19/06*

U.S. Cl. 209—73 **8 Claims**



1. A device for selecting desired individual information-bearing media from a plurality of individual information-bearing media, comprising:

magazine means for holding a supply of individual information-bearing media,

a master indicia-bearing medium for selectively specifying the characteristics of the individual information-bearing media to be selected,

transport means for moving individual information-bearing media from said magazine means through scanning and selection stations, and for moving said individual information-bearing medium and said master indicia-bearing medium substantially continuously in joint synchronism with each other relative to said scanning means for simultaneous comparison of the two media thereby,

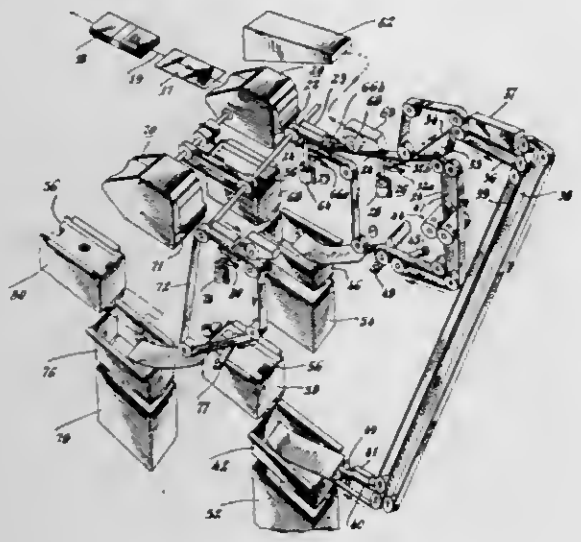
scanning means adjacent said scanning station and comprising a plurality of sensors, said scanning means being responsive to the characteristics of individual information-bearing media as compared with said master indicia-bearing medium to detect those individual information-bearing media having a first predetermined correspondence of said characteristics and issue a first signal upon such detection, and to issue a second signal upon detection of a second predetermined correspondence of said characteristics and upon default of detection of either of said first and second predetermined correspondence of said characteristics, and

selection means at said selection station responsive to said first and second signals to cause the desired information-bearing media to be selected out of the plurality of such media upon said first signal for further operations on such desired media, and to reject media upon said second signal.

3,938,663
CIRCUIT FOR SORTING CURRENCY

W. Robert Carnes, Darien; John J. Balogh, Jr., Trumbull, and Lester L. Selnick, Ridgefield, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Apr. 2, 1974, Ser. No. 457,368
Int. Cl.^{2} G07D *7/00*
U.S. Cl. 209—73 4 Claims



1. A circuit arrangement for providing a digital representation of the intensity of light transmissivity of an article being transported through an examination station over an interval of time, said representation being compared to a predetermined light intensity reference level, said circuit arrangement determining fitness and wear characteristics of said article, and comprising:

a first circuit means including a photosensitive element which is positioned at the examination station for receiving light transmitted through the article as said article is transported through the examination station, said first circuit means generating a first electrical signal having an amplitude which is proportional to the intensity of the light transmitted through said article;

a second circuit means coupled to said first circuit means for forming the integral of said first electrical signal, said second circuit means including gating means, said gating means receiving a gating signal from a bill present comparator for enabling and disabling, representively, the second circuit means, said gating signal being representative of the presence and absence, respectively, of an article at the examination station;

a bill present comparator operatively coupled to said gating means for generating and applying said gating signal to said gating means;

comparator circuit means having first and second input terminals, said comparator circuit means providing a first DC output level when an input signal applied to said first terminal is greater in amplitude than a reference signal applied to said second input terminal, and, for providing a second DC output level when the amplitude of a signal applied to said first imput terminal is less than the amplitude of a refernce signal applied to said second input terminal;

means for applying the integral of said first electrical signal to the first input terminal of said comparator circuit means;

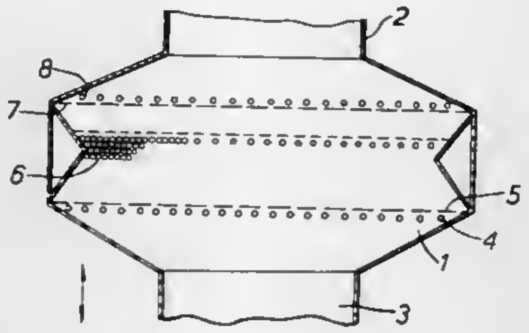
means for establishing and applying to the second input terminal of said comparator circuit means a reference signal having an amplitude representative of a predetermined light intensity; and

compensating circuit means disposed at said examination station and operatively connected to said comparator circuit means for detecting variations in the light intensity at the examination station in the absence of an article at said examination station, and for varying the reference potential applied to said second input terminal of said comparator circuit means in response to said variations in light intensity.

3,938,664
SIEVES

Kenneth Hartley, Seascale, and Arthur Edward McIntosh, Gosforth, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 23, 1973, Ser. No. 390,750
Claims priority, application United Kingdom, Aug. 23, 1972, 39316/72
Int. Cl.^{2} B07B *1/00*
U.S. Cl. 209—233 5 Claims

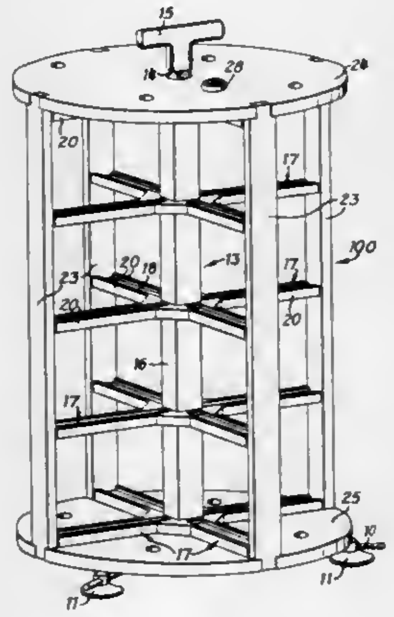


1. A sieve unit for separating spherical particles from undesirably shaped particles and debris, the unit comprising a bed of uniformly sized spheres disposed in efficiently packed layers in a substantially orthorhombic formation on a mesh screen, the spheres being of a size which packed efficiently provide an effective pore path of a diameter not greater than that of the mesh screen, and means for vibrating the spheres so as not to destroy the substantially orthorhombic formation.

3,938,665
DISPLAY UNITS

Clive St. John Rumble, 47 Orchard Court, Portman Square, London W. 1, England

Filed Dec. 13, 1973, Ser. No. 427,029
Claims priority, application United Kingdom, Dec. 18, 1972, 58321/72; Feb. 7, 1973, 6110/73; Sept. 7, 1973, 42215/73
Int. Cl.^{2} E05B *73/00*
U.S. Cl. 211—4 2 Claims

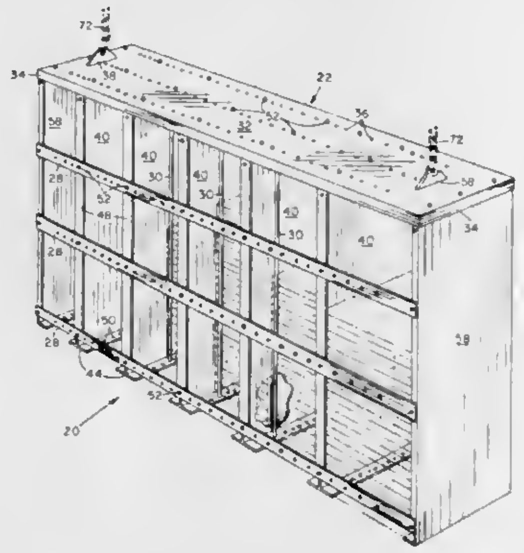


1. A pilfer resistant display unit for displaying cassettes while permitting inspection of the faces thereof, comprising a base including a vertically extending support rod, a pillar member having a vertically directed central aperture rotatably mounted on said support rod, a plurality of angularly spaced apart sets of support arms extending radially from said pillar, each of said sets of support arms comprising an upper arm and a lower arm, said arms being vertically spaced apart in accordance with the vertical extent of said cassettes, the upper arm of each set including radially extending depending parallel flanges, and the lower arm of each set including upwardly extending parallel flanges, the upper and lower flanges of each set being disposed in coplanar alignment to define a channel having an outwardly open mouth through which said cassettes may be slidably received and removed in a radial direction, said flanges prohibiting substantial non-radial movements of a cassette mounted within a said channel, a locking frame mounted on said pillar for rotation relative thereto about a vertical axis, a plurality of vertically directed blocking arms formed on said frame, said blocking arms being shiftable between blocking and unblocking positions of said mouth portions of said channels selectively in accordance with the rotated position of said locking frame relative to said pillar member, and locking means extending between said pillar member and said locking frame for locking said blocking arms of said frame in said blocking position and releasing said arms to permit relative rotation of said locking frame and pillar respectively in the locked and unlocked positions of said locking means.

3,938,666
RACK ASSEMBLY

William R. Castleberry, 409 Franklin, San Marcos, Tex. 78666

Filed Oct. 21, 1974, Ser. No. 516,651
Int. Cl.^{2} A47F *5/10*
U.S. Cl. 211—49 D 13 Claims



1. A rack assembly for storing and dispensing articles of varying width and depth comprising:

adjustable vertical walls forming vertical compartments therebetween;

bottom means for carrying the weight of said articles contained in said compartments, said bottom being connected to said adjustable vertical walls;

retaining means connected to said adjustable vertical wall for holding said articles in said compartments until dispensed;

top means for detachably connecting to the uppermost portion of said vertical walls;

depth adjustment means extending from said top means to said bottom means to maintain smaller articles at the front of said compartments until dispensed;

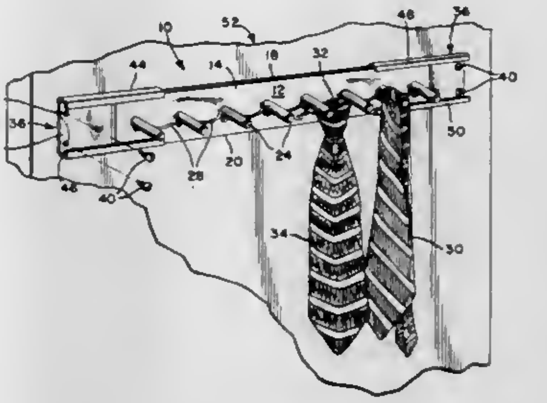
cooperating means on said top means, bottom means and said depth adjustment means to allow adjustments in depth of said vertical compartments without removing said depth adjustment means from within said rack assembly;

said articles feeding by gravity as an individual article in a compartment is removed through an opening in the bottom portion of said retaining means thereby allowing the remaining articles in that compartment to drop downward.

3,938,667
COMBINATION TIE RACK

Bonnie P. Buckland, 21 Lanyard Ave., Trotwood, Ohio 45426

Filed Sept. 19, 1974, Ser. No. 507,406
Int. Cl.^{2} A47F *7/00*
U.S. Cl. 211—87 2 Claims



1. A combination tie rack comprising:

a. an elongated, substantially rectangularly shaped base plate having front and rear faces thereon,

b. a plurality of sockets formed in said base plate at said front face thereof at uniformly spaced intervals along said front face,

c. a plurality of posts having the bases thereof received in said sockets,

d. said posts projecting from said front face of said base plate substantially perpendicularly with respect thereto and thereby being shaped to support untied neckties thereon,

e. a plurality of discrete, semi-circular wire loops projecting outwardly perpendicularly from said front face of said base plate,

f. ends of each of said wire loops being received in adjacent sockets with said posts, thereby disposing said loops intermediate said posts,

g. said wire loops being adapted to be engaged by the hooks of pretied neckties to suspend pretied neckties therefrom and the spacing between said posts and said loops being such that all of said posts and said loops can be occupied simultaneously by untied and pretied neckties, respectively,

h. a pair of substantially C-shaped attaching brackets telescopically receiving opposite ends of said base plate,

i. said attaching brackets, at each end of said base plate, overlying said rear face and upper and lower edges of said base plate and portions of said front face adjacent said upper and lower edges, and

j. openings formed through said base plate to receive fasteners therethrough, thereby adapting said base plate for direct attachment to internal structural members of a vertical supporting surface.

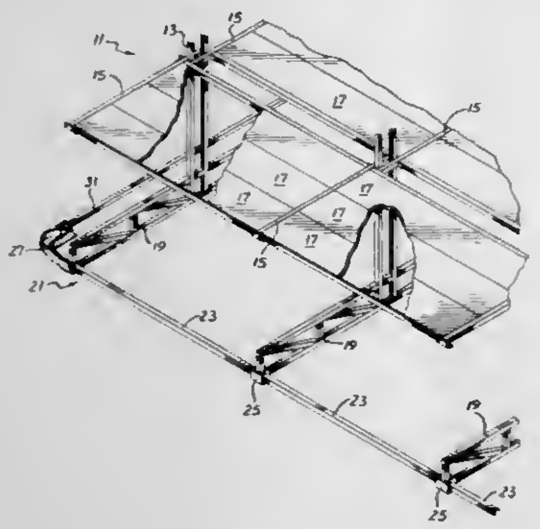
3,938,668
GUIDERAIL SYSTEM FOR STORAGE RACKS

Anthony N. Konstant, Mount Prospect, Ill., assignor to Speedrack Inc., Skokie, Ill.

Filed Feb. 21, 1974, Ser. No. 444,355
Int. Cl.^{2} A47F *5/00*
U.S. Cl. 211—134 3 Claims

1. A cantilever storage rack having support means in contact with the floor including an elongated base extending substantially the full depth of said rack to a location adjacent

an aisle which provides access to the storage rack, a guiderail located along the aisle-defining edge of the storage rack and bracket means for holding said guiderail in desired position, said guiderail being tubular, and said bracket means including horizontally extending projections proportioned to closely interfit within said tubular guiderail, said base containing a



recess in the lower portion of the outer end thereof adjacent the aisle, which recess accommodates a portion of said bracket means so that the outermost extension of said base is in general vertical alignment with the outermost extension of said guiderail and the load carried by the storage rack is transferred to said bracket means.

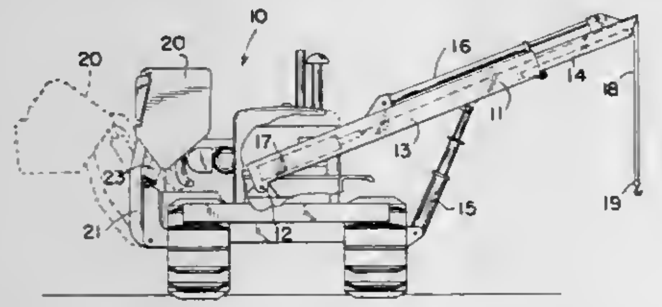
3,938,669
HYDRAULIC CIRCUIT FOR A PIPELAYER

David S. Vinton, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 25, 1974, Ser. No. 454,107

Int. Cl.² B66C *23/00*

U.S. Cl. 212—8 B **20 Claims**



1. A hydraulic circuit for a pipelayer machine having an extensible boom pivotally mounted to a vehicle, an extensible hoist cable extending from the outer end of said boom, and a counterweight extending from one side of said vehicle to counterbalance said boom, said circuit comprising:

a boom lift motor operatively connected for lifting said boom;

a hoist motor operatively connected for extending and retracting said hoist cable;

a first source of pressurized fluid for supplying fluid by way of first circuit means for low speed operation of said motors;

first valve means for selectively communicating fluid from said first source of fluid to one of said motors;

a second source of pressurized fluid for supplying fluid by way of second circuit means for high speed operation of said motors;

second valve means for selectively communicating fluid from said second source to said one of said motors;

control means interconnecting said first and second valve means and operative over a first range of movement for moving said first valve means into communicating position and operative over a second range of movement for moving said first valve means to a non-communicating position and simultaneously therewith move said second valve means to a communicating position.

3,938,670
TOWER CRANE

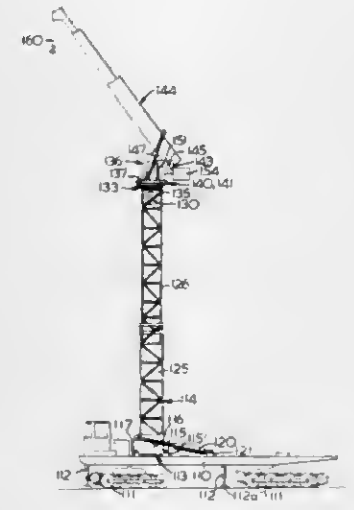
Donald E. Wellman, Komoka, Canada, assignor to General Crane Industries Limited, London, Canada

Continuation of Ser. No. 144,199, May 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 818,751, April 23, 1969, abandoned. This application Aug. 21, 1974, Ser. No. 499,411

Claims priority, application Canada, Apr. 9, 1969, 48201/69

Int. Cl.² B66C *23/62*

U.S. Cl. 212—46 A **18 Claims**



10. A tower crane comprising platform means carrying in combination a base mounting for a tower, a tower pivotally connected to said mounting for tilting movement between a vertical operating position and a substantially horizontal stored position, raising means interconnecting the platform means and the tower for moving the tower between said positions, a jib structure carried by said tower, said jib structure comprising a turntable mounted on the top of said tower, said turntable including a rotatable part and a non-rotatable part, a jib support platform hingedly connected to the rotatable part of said turntable, power means for rotating said rotatable part of said turntable to cause slewing of the jib support platform about the longitudinal axis of the tower, a jib, a pivot mounting said jib on said jib support platform to allow luffing movement of said jib, power means connected between the jib support platform and the jib for causing said luffing movement, and power means connected between the movable part of said turntable and said jib support platform for folding the jib support platform relative to said turntable about said hinge connection, whereby the jib support platform and associated jib can be folded to an inoperative position along the side of the tower for storage and unfolded to an operative position to the top of said tower.

3,938,671
METHOD AND APPARATUS FOR HANDLING LARGE FABRIC ROLLS FOR SLITTING

Ernest L. Lewey, Greensboro; Ned K. Sharpe, Burlington, and James F. Sloan, Greensboro, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

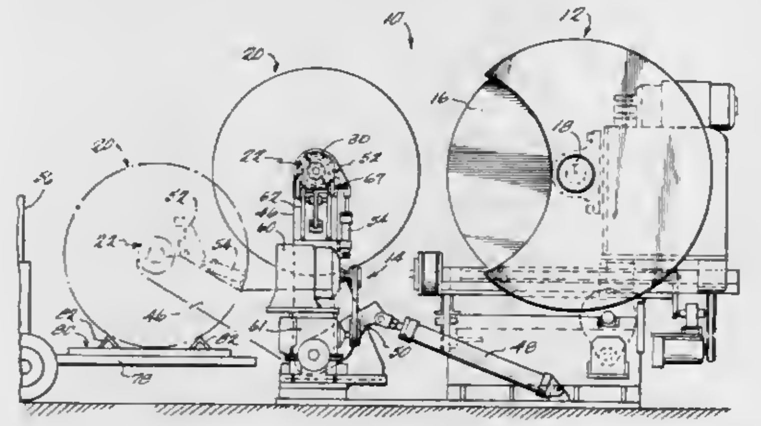
Filed Aug. 13, 1974, Ser. No. 497,032

Int. Cl.² B65G *61/00*

U.S. Cl. 214—1 R **11 Claims**

1. A method of handling a roll comprising a length of web material wound around a cylindrical spool, particularly a roll of a large size having a width of the order 144 inches and a diameter of the order of 45 inches, for slitting into a plurality

of rolls of equal diameter and lesser width by rotating said roll and a circular cutter about their axes in parallel relation at an initial slitting position wherein the exterior periphery of the cutter is exterior to the exterior periphery of the web material of the roll and effecting a relative lateral movement between said roll and said cutter from said initial slitting positions to final slitting positions wherein the exterior periphery of the cutter is interior of the interior periphery of the spool of said roll, said handling method comprising the steps of moving a roll into an initial handling position wherein its axis is disposed generally parallel with the axis of rotation at said initial slitting position, supporting the weight of the roll along its lower exterior periphery at said initial handling position, disposing a spindle of a size to fit said spool with end portions extending outwardly thereof in an initial position spaced longitudinally from said roll with the axis of said spindle generally aligned with the axis of said roll, supporting the weight of said spindle at said initial position along the lower periphery thereof at a first position adjacent the end portion thereof adjacent said roll and at a longitudinally spaced second position at the remote end portion thereof, applying longitudinally opposed forces to said roll and to the remote rear end portion of said spindle acting in a direction toward one another to effect a relative longitudinal movement of said roll and spindle together from said initial positions to interengaged positions wherein said spindle is engaged within the spool of said roll and the end portions thereof extend outwardly of said roll, maintaining the aforesaid support of said roll throughout the aforesaid relative longitudinal movement, maintaining the aforesaid support of said spindle at said second position through said relative longitudinal movement, progressively changing the support of said spindle at said first position longitudinally along the lower periphery of the spindle in a direction toward said second position during an initial portion of said relative longitudinal movement wherein the adjacent end portion of said spindle is engaged within said roll, removing the changing support of said spindle during a final portion of said relative longitudinal movement, removing the application of force to said remote spindle end after said relative longitudinal movement, transferring the aforesaid support of said roll to said spindle by supporting the outwardly extending end portions of said spindle and laterally translationally moving said roll into said initial slitting position through the support of the end portions of said spindle.



3,938,672
DEVICE FOR TRANSFERRING A PLATE-LIKE PRODUCT FROM ONE STATION TO ANOTHER

Matti Olavi Leiponen, Harjavalta, and Tuomo Veikko Juhani Kivisto, Helsinki, both of Finland, assignors to Outokumpu OY, Outokumpu, Finland

Filed Sept. 18, 1974, Ser. No. 506,990

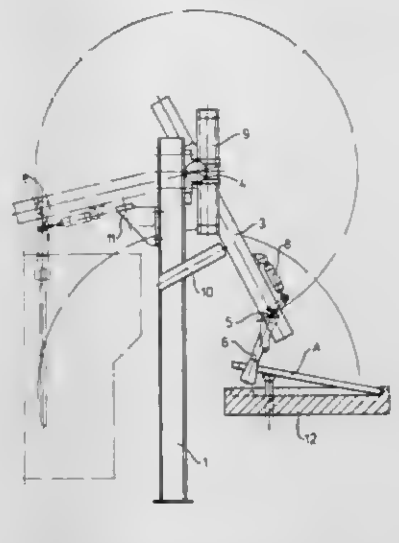
Claims priority, application Finland, Sept. 21, 1973, 2959/73

Int. Cl.² B66C *1/54*

U.S. Cl. 214—1 BD **2 Claims**

1. A device for transferring an anode plate from a casting table into a cooling tank, which comprises a base consisting of two spaced vertical pillars;

a metal lifting frame larger than said anode plate, said lifting frame being pivoted to swing about a pair of essentially horizontal pins supported by said pillars for swinging the anode plate through the frame; reciprocally movable grippers for gripping, holding and releasing lugs of the anode plate, said grippers being articulated on a shaft mounted parallel to two sides of said frame; said grippers being mounted to hold said anode plate, after gripping



engagement, in a substantially vertical position after lifting the plate from the casting table and to release the plate into a cooling tank; and

a power mechanism connected to said frame for turning the frame between two positions so that in one position of the frame the grippers can grip the plate lugs at said casting table and in another position of the frame the grippers can place the plate in the cooling tank.

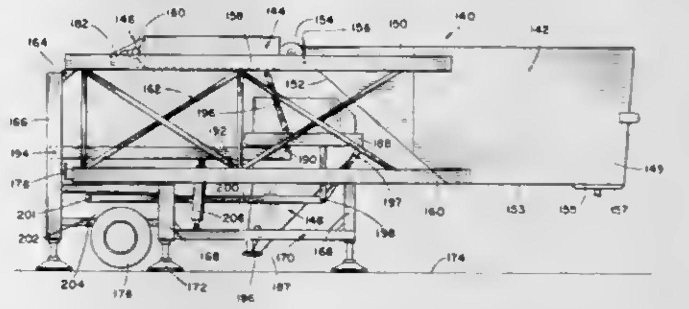
3,938,673
PORTABLE CONCRETE BATCH PLANT

L. F. Perry, Jr., 113 Highview, Georgetown, Tex. 78626

Filed Oct. 7, 1974, Ser. No. 512,517

Int. Cl.² B65G *69/00*

U.S. Cl. 214—2 **6 Claims**



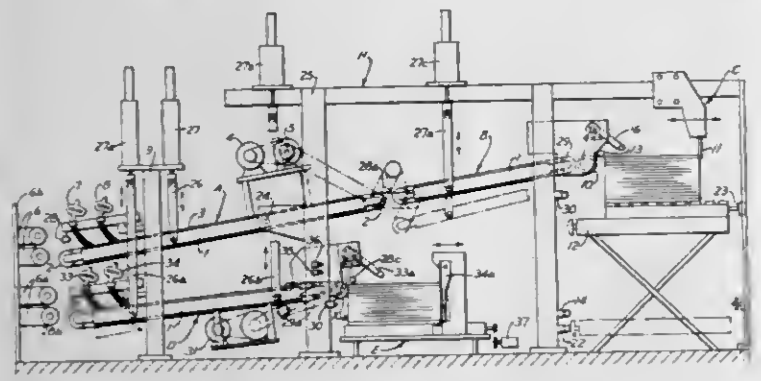
1. A portable concrete batch weigh plant comprising support frame means movable between horizontal and vertical positions, cement silo means secured to the support frame means and movable therewith, cement weight bin means secured to the support frame means and movable therewith, said cement weigh bin means being in communication with the cement silo in one position for receiving dry cement therefrom, water weigh bin means secured to the support frame means and movable therewith, aggregate weigh bin means carried by the support frame means and movable independently with respect thereto, means operably secured between the support frame means and aggregate bin means for movement of the aggregate bin means through an overhead arc between lowered positions for loading thereof and raised positions for unloading thereof and for raising and lowering the support frame means between said horizontal and vertical positions, discharge means provided for said cement weigh bin and water weigh bin means for discharging dry cement and water therefrom, and discharge means provided for said ag-

gregate bin means for discharging aggregate from the aggregate bin means in the raised position thereof.

3,938,674
METHOD AND APPARATUS FOR STACKING PAPERBOARD BLANKS

Hendrik J. Kroeze, Albergen, and Hans Scheij, Almelo, both of Netherlands, assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Sept. 9, 1974, Ser. No. 504,226
Int. Cl.² B65G *57/112*; B65H *29/22*
U.S. Cl. 214—6 G **6 Claims**



1. Apparatus for forming first and second stacks of blanks from vertically displaced, parallel streams of said blanks comprising:

a first stacking station for stacking the blanks from a first of said streams, said first stacking station including:

a first conveyor means in alignment with said first stream for advancing, in shingled fashion, the blanks from said first stream;

first platform means beneath an output end of said first conveyor means for receiving said blanks in stacked formation thereon; and

first gate means adjacent said output end of the first conveyor means for interrupting the advance of said blanks thereon when the height of said

first stack reaches a predetermined height on said first platform means; and

a second stacking station for stacking the blanks from a second of said streams, said second stacking station including:

a second conveyor means in alignment with said second stream for advancing, in shingled fashion, the blanks from said second stream;

second platform means, downstream from said first platform means, beneath an output end of said second conveyor means for receiving said blanks in stacked formation thereon; and

second gate means adjacent said output end of the second conveyor means for interrupting the advance of said blanks thereon when the height of said second stack reaches a predetermined height on said second platform means, said output end of the first conveyor means being upwardly movable in proportion to an increase in height of said first stack for maintaining a substantially constant fall space between said output end and the top of said first stack,

said second platform means being downwardly movable in proportion to an increase in height of said second stack for maintaining a substantially constant fall space between the output end of said second conveyor means and the top of said second stack; and

switch means for stopping said first and second conveyor means upon respective activation of said first and second gate means,

each of said conveyor means having an input end movable downwardly relative to said first and second streams for accumulating a storage stack of blanks thereon from said first and second streams respectively while said conveyor means are stopped,

each of said first and second gate means including:

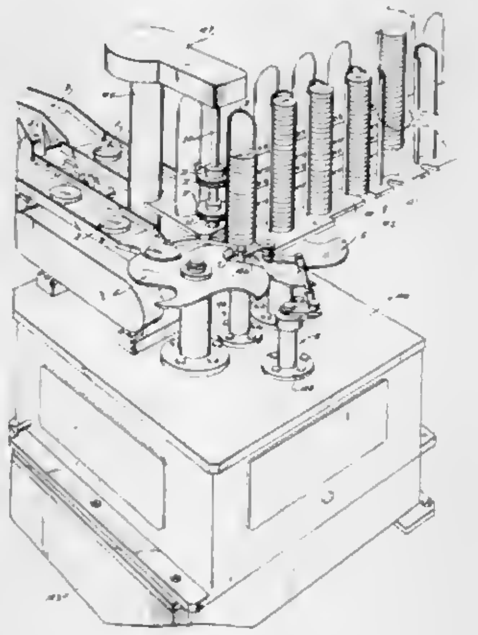
first and second roller means between which said blanks pass from the respective conveyor means to the respective platform means, said second roller means movable into engagement with said blanks upon activation of said gate means; and

control means for rotating said second roller means after engagement thereof with said blanks to advance blanks then between said first and second rollers onto said stacks on the respective platform means prior to removal thereof from said stacking stations.

3,938,675
PAIRING AND STACKING SYSTEM FOR MOLDED ARTICLES

Herbert Rees, Willowdale, Canada, assignor to Husky Injection Molding Systems Limited, Bolton, Canada

Filed Feb. 24, 1975, Ser. No. 552,180
Int. Cl.² B65G *57/30*
U.S. Cl. 214—6 M **10 Claims**



1. A system for pairing and stacking molded articles of a first and a second type simultaneously coming from a molding machine, comprising:

a pair of rotatable supporting members each having at least one cutout for receiving a molded article of said first and said second type, respectively, said cutouts describing overlapping closed paths and being mutually aligned in a predetermined position of said members;

feed means for respectively supplying said articles of first and second type to said members and depositing an article in each cutout ahead of the region of overlap;

drive means for said members intermittently actuating same with substantial standstill in said predetermined position;

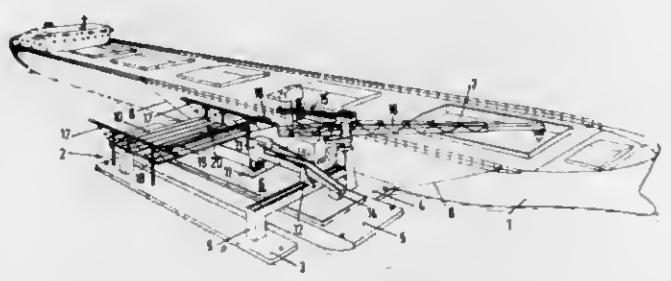
pusher means synchronized with said drive means for jointly dislodging a pair of articles from said cutouts in juxtaposed relationship during standstill of said members; and

receiving means for said pair of articles on the side of said members opposite said pusher means.

3,938,676
FLOATING UNLOADING INSTALLATION FOR LIGHTERS

Hendrik Magchiel Willem Croese, Schiedamseweg 103, Vlaardingen, Netherlands

Filed Sept. 30, 1974, Ser. No. 510,715
Claims priority, application Netherlands, Apr. 26, 1974, 7405664
Int. Cl.² B65G *67/58*
U.S. Cl. 214—13 **8 Claims**

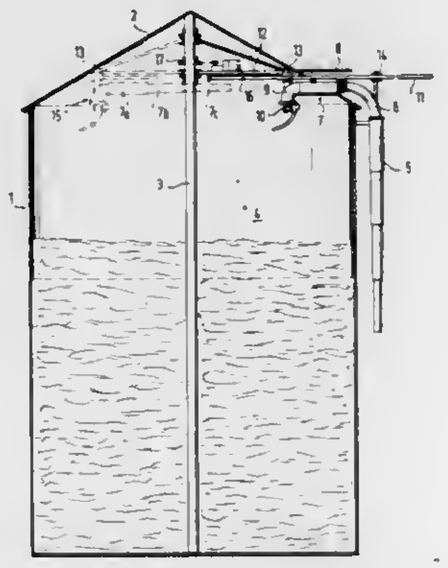


1. A floating unloading installation for unloading lighters, said installation comprising two pontoons, connecting means fixedly securing said pontoons together in transversely spaced relation with the spacing between said pontoons being sufficient to accommodate between said pontoons a conventional lighter for movement therebetween, said connecting means including a transverse bridge fixedly mounted on said pontoons, digging means, means mounting said digging means on said bridge in a balanced state and for movement both generally across the space between said pontoons and about a vertical axis to assure the complete unloading of a lighter disposed between said pontoons, said digging means including a digging unit and first conveying means for delivering material from said digging unit to said bridge, said bridge having vertically fixed second conveying means for delivering material to one of said pontoons, and third conveying means for delivering material from said one pontoon away from said installation.

3,938,677
APPARATUS FOR DISTRIBUTING MATERIAL INTO A STORAGE ROOM, SILO AND THE LIKE

Ernst Weichel, Bahnholstrasse 1, 7326 Heiningen, Germany

Filed May 22, 1973, Ser. No. 362,871
Claims priority, application Germany, May 25, 1972, 2225387
Int. Cl.² B65G *65/32*
U.S. Cl. 214—17 CB **8 Claims**

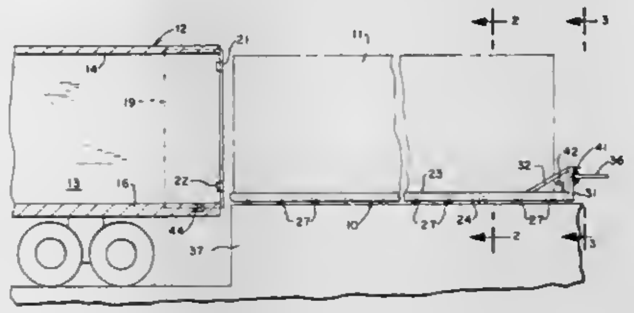


1. Apparatus for distributing stalks, leaves or bulk material into storage spaces, such as silos, hay barracks, hay towers and the like, comprising wall means laterally defining an upwardly extending storage space, a tubular conveyor device for discharging material into said storage space, said conveyor device comprising a first conveyor section for transporting the material to the upper end of said storage space, and at least a second conveyor section in communication with said first section, said second section having an outlet end located in the upper portion of said storage space for discharging material into said storage space, wherein the improvement comprises that said second conveyor section is pivotally displaceable about an axis intersecting its longitudinal axis at a point spaced axially from its outlet end, said second conveyor section comprises a plurality of telescopically displaceable subsections, means for suspending said second conveyor section and for displacing said outlet end of said second conveyor section along an arcuate path in a plane extending transversely of the upward direction of said storage space, said telescopically displaceable sub-sections being extended and retracted during travel of said outlet end along said arcuate path, said first conveyor section extends upwardly along and adjacent the exterior of said storage space, an arcuate bend member connecting said first and second conveyor sections so that said second conveyor section extends transversely of said first conveyor section, said arcuate bend member and said second conveyor section are pivotally displaceable about the vertical axis of said first conveyor section, and said means for suspending said second conveyor section includes an upright column centered within said storage space and the axis of said column defines the center about which said outlet end of said second conveyor section is displaceable along an arcuate path.

3,938,678
CARGO TRANSPORT SYSTEM

Ruy E. Kern, 1032 Kerri Ann Drive, Martinez, Calif. 94553

Filed Sept. 18, 1974, Ser. No. 507,234
Int. Cl.² B65G *67/02*
U.S. Cl. 214—38 D **2 Claims**



1. For use in a cargo transport system which includes a forklift truck which incorporates tines having tips, the combination of a container having an interior volume defined by top and bottom walls, a pair of side walls, a front end wall, and a closure at the rear end, a pallet adapted for insertion into and removal from the container, the pallet including a rectangular frame for supporting a load of cargo, the frame having its outer peripheral dimensions substantially commensurate with the peripheral dimensions of the bottom wall of the container, a plurality of rollers mounted on the frame about parallel axes extending transversely of the frame, said rollers being adapted to support the frame and cargo load for rolling movement onto the bottom wall of the container, an upstanding push plate secured at its lower end to one end of the frame, means forming a pair of spaced-apart pockets in the plate for receiving thrust forces from the tips of the tines of the forklift truck, means for locking the tips of the tines within said pockets for imparting pulling forces to the pallet, at least one lock pin mounted for movement on the pallet between a retracted position and downwardly extending locking position, and pin receiving means in the container positioned in register with the locking means when the pallet is carried within the container, said lock pin when in its locking position being engaged in said pin receiving means for precluding relative movement of the pallet with respect to the container.

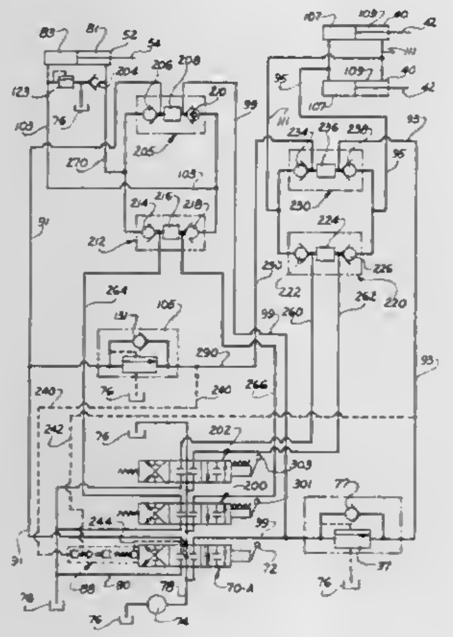
3,938,679
CONTROL SYSTEM FOR REFUSE HANDLING APPARATUS

Richard V. Clucker, Kenton, and Roland R. Kennedy, Galion, both of Ohio, assignors to Harsco Corporation, Camp Hill, Pa.

Continuation-in-part of Ser. No. 187,384, Oct. 7, 1971, Pat. No. 3,760,962. This application Apr. 27, 1973, Ser. No. 354,997

Int. Cl.² B65F *3/00*

U.S. Cl. 214—83.3 **3 Claims**



1. A rear loader type refuse truck comprising, in combination, a body including a forward refuse receiving body portion and a rear packer body portion, said rear packer body portion including a load receiving opening; a packer blade means forwardly of said load receiving opening and including mounting means for longitudinal and pivotal movement of said packer blade; a blade actuating fluid motor operatively connected top said packer blade; a load packing fluid motor operatively connected to said packing blade for reciprocating said packer blade to compact the load; pressure responsive control means for automatically sequentially operating said fluid motors to move said packing blade between raised and lowered positions, and for advancing and retracting said packing blade between load engaging and retracted positions, said pressure responsive control means including a main auto-cycle control valve means and a plurality of pressure responsive valves arranged in circuit with said first and second fluid motors for sequentially energizing said fluid motors to cyclically operate through a plurality of packing cycles, said main auto-cycle control valve means comprising a single spool four-way valve including an inlet communicating with a source of pressurized fluid, a first outlet for delivering pressurized fluid to certain chambers of said fluid motors when said spool of said four-way valve is in a first position and a second outlet for delivering pressurized fluid to certain other chambers of said fluid motors when said spool of said four-way valve is in a second position, said four-way valve including a third centered spool position wherein both of said outlets are isolated from said source of pressurized fluid; a pressure responsive feedback controller that automatically shifts said main auto-cycle control valve means between said positions responsive to the occurrence of predetermined pressure values encountered by said system; emergency stop means for shifting said main auto-cycle control valve to said third control position; and a manual actuator for operating said emergency stop means; and a manual packer blade control valve downstream of said auto-cycle control valve means and in circuit with said blade actuating fluid motor and a manual load packing control valve downstream of said auto-cycle control valve means and in circuit with said load packing fluid motor whereby said auto-cycle control valve means isolates said manual control valves from the pressurized fluid when said auto-cycle valve means is in said closed position.

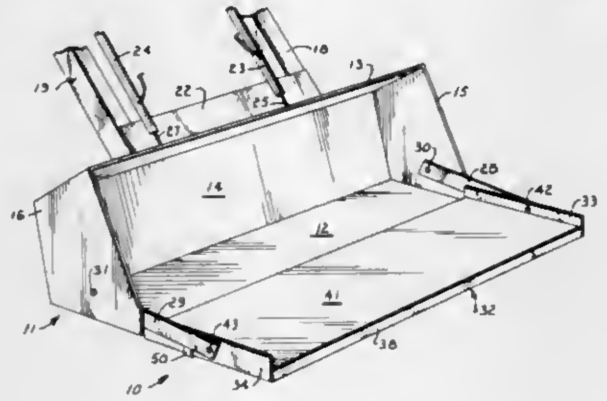
3,938,680
BUCKET ATTACHMENT

Homer L. Grimes, Rural Rte. No. 1, Hepler, Kans. 66746

Filed Aug. 19, 1974, Ser. No. 498,393

Int. Cl.² E02F *3/40*

U.S. Cl. 214—145 R **10 Claims**



1. An attachment for a vehicle carrying a bucket thereon, said bucket having a top, a bottom, and a pair of opposite sides, said attachment comprising:

arm means adapted for pivotal connection to said bucket;

a platform pivotally coupled to said arm means, said platform and arm means being pivotally movable between a first position wherein said platform forms an extension of said bucket bottom and a second position wherein said platform forms an extension of said bucket top; and

means for locking said platform to said bucket in rigid extension from said bucket top.

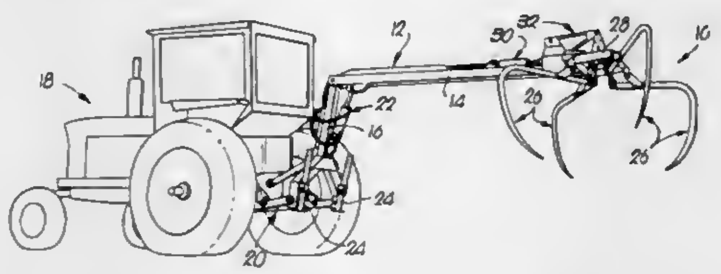
3,938,681
GRAPPLING HAYFORK

Max E. Bennett; James Edson McCanse, both of Oregon, Ill.; Gordon L. Lawson, Postville, and William H. Clark, Waukon, both of Iowa, assignors to Hesston Corporation, Hesston, Kans.

Filed Apr. 8, 1974, Ser. No. 458,523

Int. Cl.² B66C *3/04*

U.S. Cl. 214—147 G **7 Claims**



1. In apparatus for handling animal foodstuffs:

an elongated lifting boom mounted at one end for vertical swinging movement toward and away from the ground;

a transversely extending, downwardly opening pickup fork on the opposite end of said boom having at least one pair of opposed tines mounted on the boom for generally horizontal swinging toward and away from one another to close and open said fork respectively,

said fork including mechanism intercoupling said tines with one another for actuation thereof in unison when said mechanism is reciprocated transversely of said boom;

power means having a component reciprocable along said beam toward and away from said fork; and

structure operably coupling said component with said mechanism for effecting said transverse reciprocation of the mechanism during said longitudinal reciprocation of said component whereby to open and close said fork,

said mechanism including means permitting limited unequal swinging of said tines with respect to one another when uneven resistances are encountered during closing of the fork.

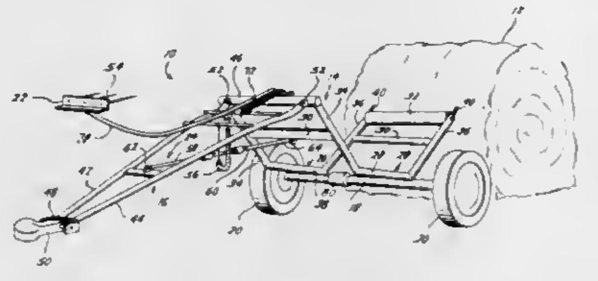
3,938,682
SELF-LOADING HAY HAULER

Carroll Grant Rowe, Rte. 3, Box 236A, Hope, Ark. 71801

Filed Nov. 13, 1974, Ser. No. 523,247

Int. Cl.² B60P *1/04*

U.S. Cl. 214—353 **17 Claims**



1. A device upon which a bale of hay or any other appropriate commodity may be loaded and transported by a towing vehicle, including

a carrier frame upon which the bale rests when it has been loaded, said carrier frame including two side members, each consisting of at least one segment, at least one horizontal bar for connecting and bracing the two side members,

a hitch frame, one end of which is pivotally connected to the carrier frame, while the other end may be connected to the towing vehicle,

an axle and wheels secured to the carrier frame,

braking means for the axle and wheels,

a fork pivotally connected to the carrier frame for pulling the bale onto the carrier frame, said fork falling over and grasping the bale as the device is positioned to pick up the bale, and

a roller bar connected to the rearward end of the two side members, said roller bar providing a point of rotation for the carrier frame when the roller bar contacts the ground for loading the bale onto the carrier frame.

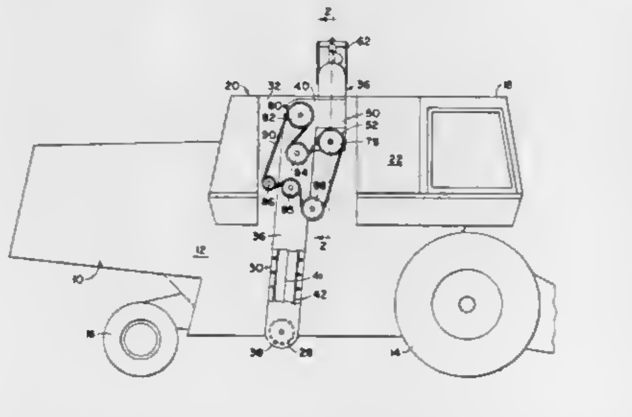
3,938,683
COMBINE GRAIN TANK LOADING CONVEYOR

Darwin Carl Bichel, East Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed Nov. 13, 1974, Ser. No. 523,508

Int. Cl.² B60P *1/40*

U.S. Cl. 214—519 **4 Claims**



1. In a combine having a main separator body with opposite upright side walls, an elevated grain tank, and a clean grain elevator extending upwardly along one of the body side walls for elevating clean grain and having an upper discharge end adjacent the top of the grain tank the combination therewith of an improved grain tank loading conveyor for moving grain from the discharge end of the elevator to the grain tank and comprising: A laterally extending upwardly and inwardly inclined, straight, generally tubular auger housing having a lower intake end communicating with the upper discharge end of the elevator adjacent one side of the grain tank, an upper discharge end above a central portion of the grain tank and a lower end wall normal to the axis of the housing; an auger rotatably mounted in the housing and including an axial shaft; and a gear case mounted on the lower end wall of the housing and including a horizontal input shaft, an inclined output shaft coaxially connected to the auger shaft, and bevel gear means drivingly connecting the input shaft to the output shaft; and drive means operatively connected to the input shaft, for rotating the input shaft.

3,938,684
COMBINE UNLOADING AUGER DRIVE

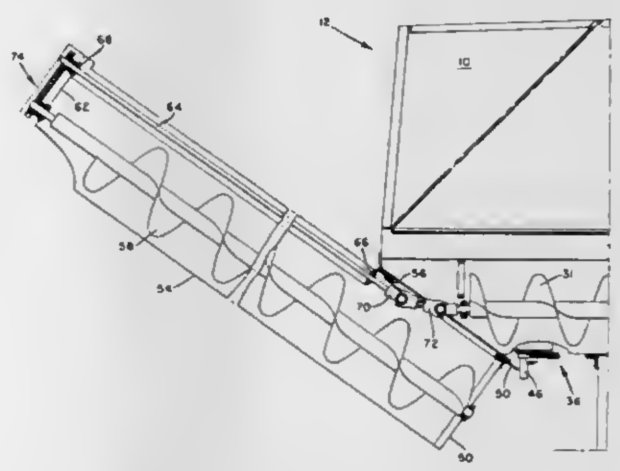
Harald Quoifly, Homburg, and Norbert Kuhn, Zweibrucken, both of Germany, assignors to Deere & Company, Moline, Ill.

Filed Dec. 23, 1974, Ser. No. 535,414

Claims priority, application Germany, Jan. 3, 1974, 2400200; Jan. 3, 1974, 7400121

Int. Cl.² B65G *65/46*

U.S. Cl. 214—521 **10 Claims**



1. In a combine having an operator's station, a power source, and a grain tank, including a feeder auger on the bottom of the grain tank for moving grain from the grain tank to a discharger auger-type conveyor mounted on one side of the grain tank in crop-receiving relationship with the feeder auger and swingably mounted thereon for swinging between a generally fore and aft transport position and a range of unloading positions wherein the conveyor extends generally laterally outwardly and upwardly from the grain tank, the improvement comprising; a drive means operatively connected to the feeder auger and the discharge conveyor and including a clutch means selectively engageable to drivingly connect the feeder auger and the discharge conveyor to the power source; a clutch actuating means operatively associated with the clutch means for controlling the engagement of the clutch means and including a control lever mounted at the operator's station and shiftable between clutch engaging and clutch disengaging positions; and interlock means operatively connected to the clutch actuating means and the discharge conveyor for preventing engagement of the clutch means when the discharge conveyor is not in one of its unloading positions.

3,938,685

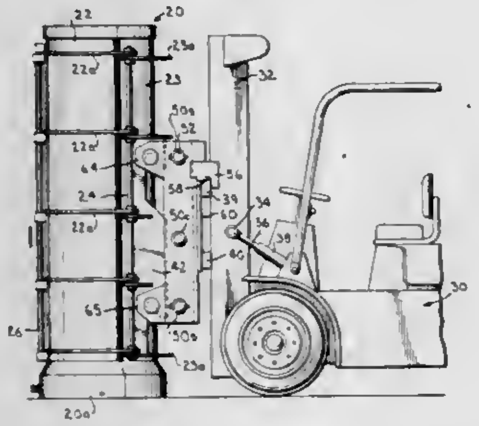
MEANS FOR ENGAGING, LIFTING AND TRANSPORTING CONCRETE PIPE MOLDS

Ronald J. Walchek, South Sioux City, Nebr., assignor to Concrete Pipe Machinery Company, Sioux City, Iowa

Filed Mar. 22, 1974, Ser. No. 453,574

Int. Cl.^{2} E04G *13/02*

U.S. Cl. 214—621 **8 Claims**



1. A mold handling apparatus for removable engagement with a concrete pipe mold having at least three longitudinally hinged sections and adapted for attachment to a vehicle having a lifting mechanism, said handling apparatus comprising, in combination:

a frame made up of a first pair of normally vertical rigid plates connected to one another and spaced apart by a pair of elongate, normally horizontal, rigid shafts;

a second pair of normally vertical rigid plates mounted on said shafts and spaced laterally from one another;

means on said first pair of plates for attaching said frame to the lifting mechanism of a vehicle, and

means on said second pair of plates for removable engagement with said concrete pipe mold,

said first and second pairs of plates each being removably and adjustably mounted on said rigid shafts, whereby the relative positions of each plate of each pair may be individually adjusted with respect to one another as well as the positions of the first and second pairs with respect to themselves,

each one of the second pair of plates is C-shaped in side view whereby the upper and lower portions thereof extend outwardly of the first pair of plates and

the means on the second pair of plates for removable engagement with the mold comprise stub shafts, said shafts mounted in opposition to one another on the outwardly extending C-legs, pointing inwardly.

3,938,686

PAINT CONTAINER

Robert T. Milligan, 532 Leverington Ave., Philadelphia, Pa. 19128, and Robert H. Vernon, Hagues Mill Road, Ambler, Pa. 19002

Filed Nov. 18, 1974, Ser. No. 525,043

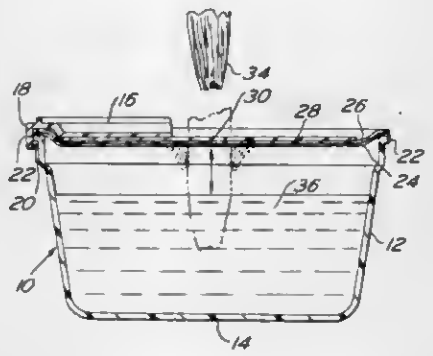
Int. Cl.^{2} B65D *23/06*

U.S. Cl. 215—232 **7 Claims**

1. A container means for paints comprising:

an optically clear plastic cup-like container;

a multi-laminate seal secured to the top of said cup-like container, said seal comprising a first film, a second film continuously joined to said first film, and a third film continuously joined to said second film, said third film forming the outer layer of said seal, said first film and said second film being placed in tension during application to said cup-like container, said third film being applied in a relaxed state to said second film whereby when said multi-laminate seal is slit, said seal will flex inwardly when a brush is inserted therethrough and will return to its original plane when said brush is withdrawn thereby enabling the maintenance of a moisture saturated condition of air above paint contained within said plastic cup-like container; and



a top closure member readily attachable and detachable to said cup-like container to provide a further means for protecting container contents.

3,938,687

BARREL OF SYNTHETIC MATERIAL

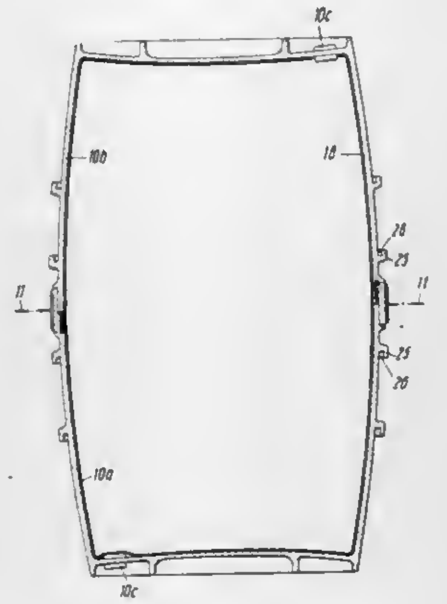
Eckhard Maier, Ettlingen; Heinrich Ostermeier, Herford; Kalman Körmendi, Karlsruhe, and Friedel Schinke, Bunde, all of Germany, assignors to Elbatainer Kunststoff- und Verpackungs- Gesellschaft m.b.H., Ettlingen and Sulo Eisenwerk Streuber & Lohmann, Herford, both of, Germany

Filed Nov. 1, 1973, Ser. No. 412,046

Claims priority, application Germany, Nov. 11, 1972, 2255299

Int. Cl.^{2} B65D *11/06, 45/32*

U.S. Cl. 220—5 R **8 Claims**



1. A barrel of plastic material comprising two symmetrical, axially separable halves with confronting end faces meeting at a midplane transverse to the barrel axis, each of said halves being provided in the vicinity of said midplane with a peripheral edge bead forming a set of axially extending teeth alternating with gaps of substantially like width, the teeth of each half overlying the edge bead of the other half and being received in the gaps thereof, said teeth having free ends provided beyond said midplane with radially upstanding bosses which form a pair of parallel annular crenelations bounding a substantially flat ring zone defined by the interleaved teeth of said halves, and a generally flat strap inserted under tension between said crenelations and bearing radially inwardly upon said ring zone, thereby forcing said free ends into firm contact with underlying areas of said edge beads forming the bottoms of said gaps, said edge beads being provided with axially extending bracing formations engaging each other across said midplane at locations radially inward from said ring zone.

3,938,688

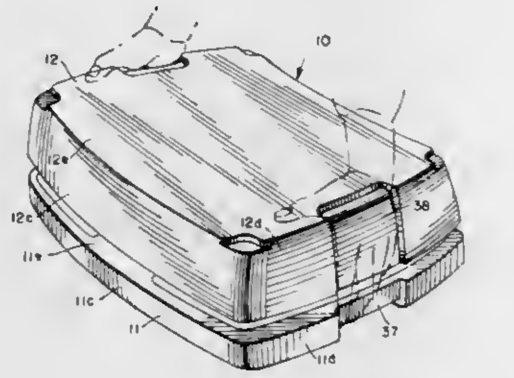
COVERED SERVING TRAY

Jay Edward Ryan, Wheeling, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jan. 7, 1974, Ser. No. 431,152

Int. Cl.^{2} B65D *1/36;* A45C *11/20*

U.S. Cl. 220—23.8 **9 Claims**



1. A food server combination comprising separable tray and cover sections; said tray and cover sections each having planar body portions and having front, rear, and side walls; said planar body portion of said tray section having a plurality of upwardly-opening recesses for receiving dishes, cups, and the like; one of said recesses being generally centrally disposed intermediate the side walls of said tray section; said planar body portion of said cover section having a plurality of downwardly-opening recesses complementing the recesses of said tray section and including a generally central recess overlying the central recess of said tray section; one of said sections providing a channel extending perimetrically about the central recess thereof and the other of said sections providing a plurality of arcuate circumferentially-spaced shoulders received within said channel; said one section also including a plurality of lug portions in said channel received in the spaces between said circumferentially-spaced shoulders and engagable with the ends of said shoulders for locking said cover and tray sections against relative rotation in planes parallel with said planar body portions.

3,938,689

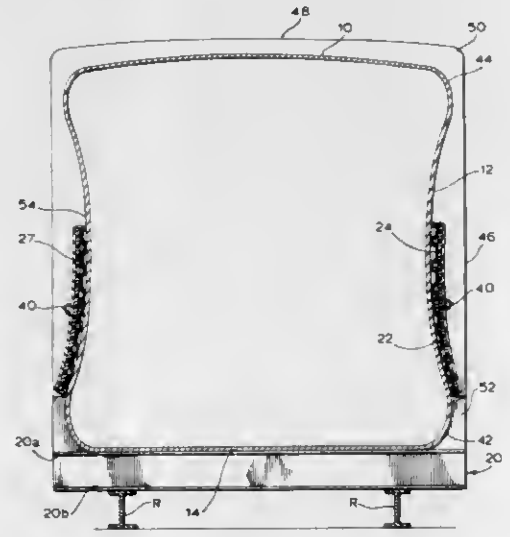
PROCESSING TANK

Nicholas Marie de Munnik, 450 Walmer Road, Apt. 409, Toronto, Ontario, Canada

Filed July 8, 1971, Ser. No. 486,616

Int. Cl.^{2} B65D *25/18, 7/22*

U.S. Cl. 220—71 **12 Claims**



1. A tank for flowable material such as fluids, liquid, semiliquid materials and the like creating substantial hydro-static pressures therein, said tank comprising;

a bottom wall, opposite side walls extending upwardly therefrom and a top wall and two end walls defining an elongated enclosed chamber;

means supporting said bottom wall at spaced intervals and extending from side to side thereof;

side support braces extending upwardly along the exterior of said side walls and having upper and lower ends;

top support braces extending across the exterior of said top wall from side to side thereof;

lower corners joining the lower ends of said side support braces with at least some of said bottom wall supporting means;

upper corners joining the upper ends of said side support braces with respective ends of said top support braces;

said side walls being characterized by a shape which is inwardly curved along the length of said tank, and said side support braces being shaped to follow the inwardly curved shape thereof, and wherein a straight line passing through a said side support brace and a straight line passing through its respective top support brace intersect one another at right angles at a point lying within the respective said upper corner joining said side brace and top brace, and wherein no such straight lines intersect said side walls or said top wall of said tank.

3,938,690

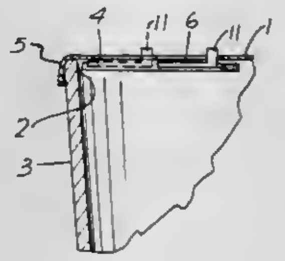
SPILL-PROOF DRINKING CONTAINER

Robert C. Butler, Rancho Palos Verde, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 8, 1975, Ser. No. 539,445

Int. Cl.^{2} A47G *19/22*

U.S. Cl. 220—90.4 **1 Claim**



1. A spill-proof drinking container, comprising

a cover mounted in a substantially leakproof manner over the open mouth of a drinking container and having an opening formed therethrough in the area of the circumference of the cover;

a closure member slidably mounted on the cover for movement over the opening whereby the container is rendered spill-proof and for movement to a position free from the opening whereby a user may pour and drink liquid in the container through the opening in the cover;

guide means on the underside of the cover for guiding the closure member, said closure member being movably mounted in the guide means;

a projecting member extending from the overside of the closure member to facilitate manual movement of the closure member in the guide means; and

compression spring means mounted in close proximity with the closure member in the guide means and abutting the closure member for urging the closure member over the opening.

3,938,691

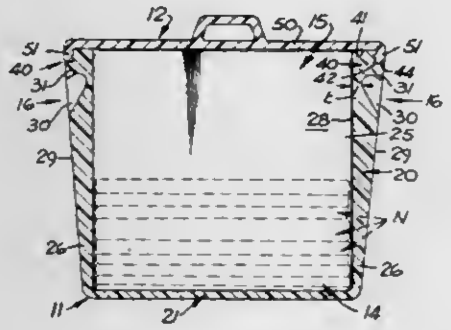
NEWSPAPER CONTAINER

Sarah J. Dumas, 300 Brentwood Drive NE., Atlanta, Ga. 30305

Filed Aug. 2, 1974, Ser. No. 494,095

Int. Cl.² B65D *25/28*

U.S. Cl. 220—94 A **5 Claims**



1. A container comprising a receptacle defining an article receiving chamber therein having an open mouth thereto including a side wall including a front wall portion, a rear wall portion and a pair of end wall portions joining said front and end wall portions, a pair of handles on said end walls on opposite sides of said receptacle, and reinforcing means for strengthening said side wall in alignment with said handles to prevent collapse of said receptacle as it is lifted by said handles, said reinforcing means defining an offset section in each of said end wall portions and including a central web angled outwardly from said end wall portion and a pair of side webs joining opposite sides of said central web to said end wall portions; and a closure constructed and arranged to engage said side wall to close said open mouth of said chamber and restrain said side wall about said open mouth against outward movement.

3,938,692

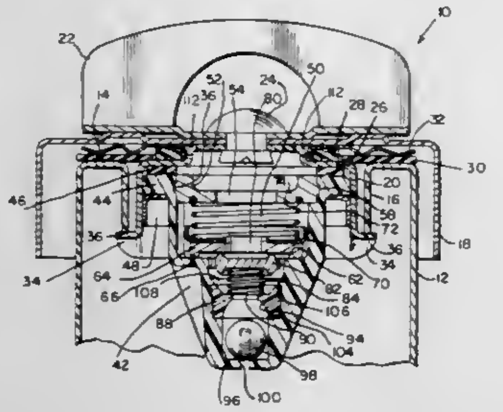
PRESSURE-VACUUM RELIEF FUEL TANK CAP WITH ROLL-OVER SAFETY VALVE FEATURE

Billy G. Crute, Connersville, Ind., assignor to Stant Manufacturing Company, Inc., Connersville, Ind.

Filed Sept. 30, 1974, Ser. No. 510,483

Int. Cl.² B65D *51/16*

U.S. Cl. 220—203 **5 Claims**



1. A pressure-vacuum cap for a chamber having a normally upwardly extending filler neck formed with a peripherally and radially extending, upwardly facing sealing surface concentric with the longitudinal axis of said neck, said cap comprising a cover, means providing a concentric housing extending downwardly into said filler neck and connected to said cover, means providing a seal between said housing means and said sealing surface, said housing means including a valve body providing a centrally disposed concentric passageway extending axially therethrough and in communication with said chamber, pressure-vacuum valve means disposed in said passageway for normalizing the pressure in such a chamber, venting the chamber to atmosphere when the pressure in the chamber exceeds a predetermined superatmospheric level and when the pressure in the chamber drops below a predetermined subatmospheric level, said valve body including, in said passageway, a resilient plug providing a concentric, axially downwardly facing valve seat with a concentric venting opening extending axially therethrough, and a ball disposed in said passageway to move into closing engagement with said valve seat to close said passageway against the movement of fluid from said chamber when the filler neck is tilted downwardly to a predetermined angle relative to a horizontal plane.

3,938,693

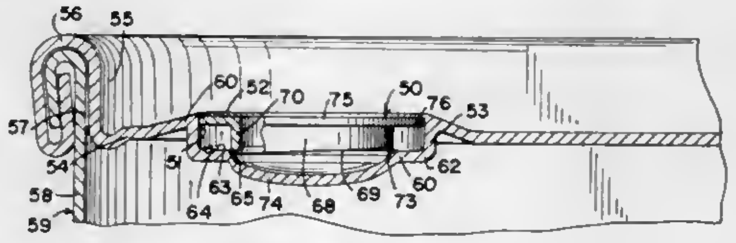
NON-DETACHABLE EASY OPEN FLAP AND TAB ASSEMBLY

Anil U. Patel, Chicago; James V. DePhillips, Bolingbrook, and Harry A. Peyser, Olympia Fields, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Continuation of Ser. No. 438,908, Feb. 1, 1974. This application Feb. 10, 1975, Ser. No. 548,494

Int. Cl.² B65D *43/02, 17/00, 17/24*

U.S. Cl. 220—267 **10 Claims**



1. In an end panel wall for a container,

a tear open flap offset below the plane of the wall within a recess therein;

a fitment telescoped into the recess and adapted to be pressed against said flap to tear open the same from the end wall to provide a raw-edge pour opening, said fitment dimensioned to tightly fit into the opening and serving as a guard shielding said raw edge of the opening and also as a spout for the contents from the container, and holding means comprising a portion of the panel wall formed to overlap said fitment and hold the same captive against said flap.

3,938,694

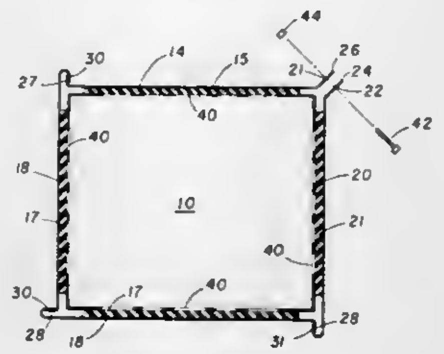
EVAPORATIVE COOLER COVER

William A. Archuleta, 4979 S. 4055 West, Kearns, Utah 84118

Filed May 6, 1974, Ser. No. 467,188

Int. Cl.² B65D *7/42;* **F16L** *9/14*

U.S. Cl. 220—77 **4 Claims**



1. A cover for an evaporative cooler comprising a plurality of panels adapted to cover the air entry sections of the cooler, each panel having interlocking means on juxtaposed edges for releasably interlocking the panel with each adjacent panel, each panel having an insulation interposed between the panel and the air entry sections of the cooler to seal the air entry sections of the cooler and opposed edges on the first and last panels having means accommodating means for acting directly upon said panels to simultaneously progressively tighten all panels against the cooler.

3,938,695

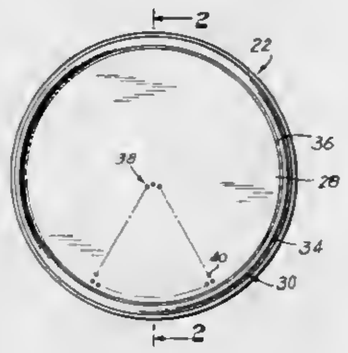
DRINK-THROUGH SLOSH-INHIBITING CLOSURE LIDS FOR POTABLE OPEN-TOP CONTAINERS

Stanley Ruff, 9 Arbor Drive, New Rochelle, N.Y. 10804

Filed Jan. 18, 1974, Ser. No. 434,649

Int. Cl.² F47G *19/22*

U.S. Cl. 220—90.4 **7 Claims**



1. A closure lid for capping the open top of a potable container, said lid having peripheral means for releasably sealingly engaging the lip of the container, a crown, and means providing a limited area in said crown having a group of small openings therein at least adjacent the periphery of the crown through which the potable in the container may be drunk through the lid, said crown being imperforate except at said area, the sizes and spacings of said openings inhibiting slosh waves in the potable, said lid having flutes which are expandable downwardly to open up upon application of manual pressure to the crown in the vicinity of the limited area whereby to form a depression to accommodate the nose of a person drinking the potable from the container through the lid, the side walls of the depression acting as baffles to further minimize slosh waves in the potable.

3,938,696

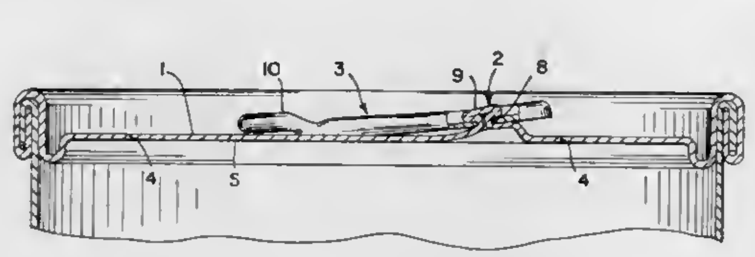
INCLINED INTEGRAL RIVET ON END PANEL FOR TAB CONTROL

Edward J. Herbst, Posen, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Sept. 18, 1974, Ser. No. 507,040

Int. Cl.² B65D *41/32*

U.S. Cl. 220—273 **4 Claims**



1. An improved easy-opening end closure comprising a substantially planar end panel, a substantially planar tab, a score line formed in said end panel and defining a flap therein for fracturing by the tab to open said closure, and biasing means comprising an offcenter rivet integral with said end panel securing said tab thereto and inclined at an acute angle toward said tab and urging said tab against said end panel.

3,938,697

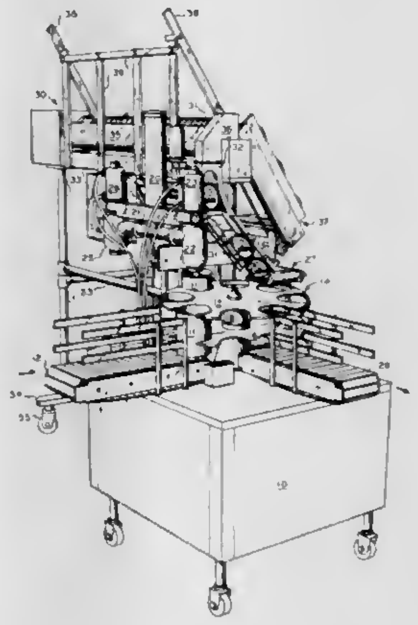
MAGAZINE FEEDER FOR CIRCULAR ELEMENTS

Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 27, 1974, Ser. No. 510,129

Int. Cl.² G07F *11/12*

U.S. Cl. 221—11 **17 Claims**



1. Apparatus comprising:

a conveying means for accepting a row of axially aligned articles each having a generally circular outer periphery and delivering said articles to a first end of said conveying means;

dispensing means located adjacent said first end of said conveying means for receiving each of said articles in said row and delivering each said article from said conveying means;

a magazine feeder means for delivering at least one axially aligned row of said articles into said conveying means, said magazine feeder means having at least one compartment for carrying a row of said articles to said conveying means and successively releasing each row so carried into said conveying means;

means for generating a first control signal in response to a substantial depletion of the row of articles within said conveyor means;

magazine drive means for initiating movement of said magazine feeder means in response to the presence of said first control signal;

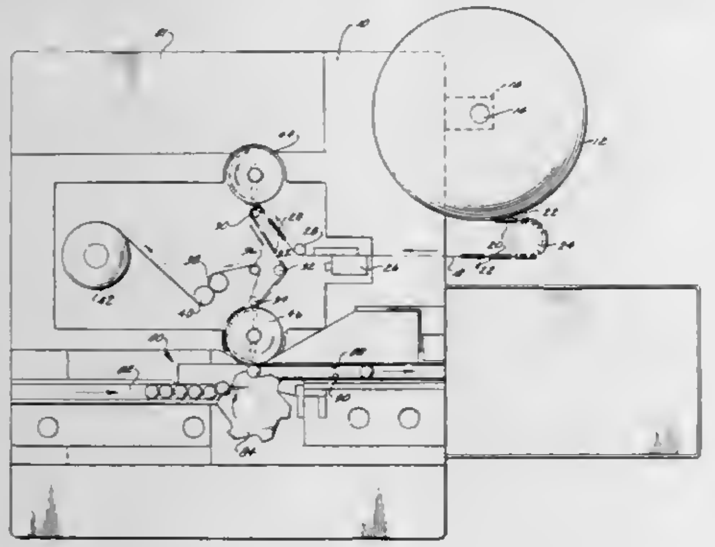
means for terminating operation of said magazine drive means and halting movement of said magazine feeder means in response to a compartment of the magazine feeder means being brought into position to deliver a row of said articles into said conveying means; and

means for automatically reversing said magazine drive means and returning said magazine feeder means to a preselected reloading position in response to the articles in all compartments thereof having been delivered into said conveying trough means.

3,938,698
APPARATUS FOR DISPENSING ADHESIVE LABELS

James E. McDavid, Jr., Chagrin Falls; Stanley E. Truesdell, Mentor, and Elmer Thomas Chipps, Mentor-on-the-Lake, all of Ohio, assignors to Avery Products Corporation, San Marino, Calif.

Filed Nov. 27, 1974, Ser. No. 527,857
Int. Cl.^{2} B65H *5/28*
U.S. Cl. 221—73 **9 Claims**



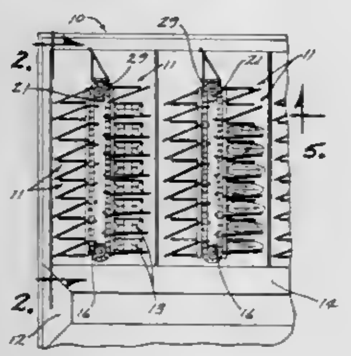
1. Apparatus for applying labels from a carrier strip having adhesive labels on both sides of the strip, comprising:

means feeding the carrier strip successively through first and second loops, the second loop being reversed from the first loop, first and second movable transfer means operatively associated respectively with the first and second loops, each transfer means having a surface moving tangential to the labels as they move through a respective one of the loops, means securing each label to the surface of the associated transfer means as it moves through the convex side of the loop, the transfer means pulling each label from the convex side of the carrier strip as it moves through the associated loop.

3,938,699
SPRING CLIP VENDING DEVICE

Francis A. Wittern, 1616 Casady Drive, Des Moines, Iowa 50315, and Arthur N. Wirstlin, 306 3rd St., SE., Altoona, Iowa 50009

Filed Jan. 29, 1974, Ser. No. 437,687
Int. Cl.^{2} G07F *11/42*
U.S. Cl. 221—85 **1 Claim**



1. In a machine for holding and dispensing a plurality of articles individually upon the step-wise advancement of said articles by a motor associated therewith, a vending device comprising:

shelf means for directly supporting a plurality of articles to be vended;

horizontally spaced front and rear members mounted on said shelf means, one of said members being a drive member rotatable in place about a vertical axis;

conveyor means comprised of a continuous loop member horizontally disposed about and drivingly engaged by said drive member;

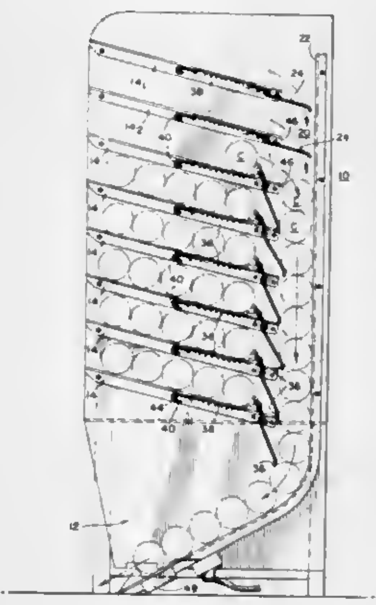
cam means fixedly mounted upon said shelf means;

a plurality of dispensing means for releasably and laterally holding the articles on said shelf to be dispensed, said dispensing means being attached at regular intervals along said conveyor means, operation of said conveyor means causing said dispensing means to periodically coact with said cam means to thereby cause said dispensing means to release said article to be dispensed, said dispensing means each including a cradle and a spring clip member adapted to hold an article therebetween, said spring clip member being biased against said article to be dispensed, said bias being overcome upon engagement of each of said dispensing means with said cam means to release said articles, said cradle being L-shaped and including a back portion and a base, said base being affixed to said conveyor means and said back portion extended at right angles to said base, said clip member being pivotally connected to said cradle and biased toward said back portion, said base having a horizontally disposed flame formed at its upper end and a biasing flange at its lower end securing said clip member in biasing relation, said biasing flange being formed at an angle between parallel and perpendicular to the plane of said base, and said clip member having a pair of projections inserted through openings formed therefor in said flanges.

3,938,700
MULTI-RACK ARTICLE DISPENSING APPARATUS

Vernon Doyle Camp, and Harry R. Payne, both of Chattanooga, Tenn., assignors to Cavalier Corporation, Chattanooga, Tenn.

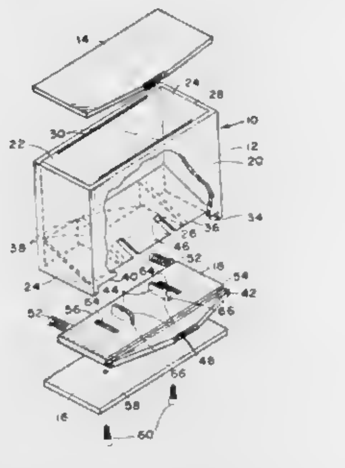
Filed Nov. 25, 1974, Ser. No. 527,156
Int. Cl.^{2} G07F *11/12*
U.S. Cl. 221—109 **5 Claims**



3. In a vending machine, a plurality of inclined article racks attached in a vertical column to dispense articles, a vertical access for receiving articles from said racks, each of said racks having a lower end, an article release mechanism pivoted to said lower end of each of said racks, means for controlling said articles in said rack to prevent the release of articles when said release mechanism contacts an article in said vertical access, comprising a releasing plate having a first and a second portion divided by a pivot support, said first portion being longer than said second portion and being of a size to support a plurality of articles, said second portion being in the same plane as said first portion and being of a size to prevent articles from being released from said inclined rack.

3,938,701
TOOTHPICK DISPENSER

Francis J. Jones, 11035 W. 26th Ave., Lakewood, Colo. 80215
Continuation of Ser. No. 299,845, Oct. 24, 1972, abandoned. This application Mar. 26, 1974, Ser. No. 454,813
Int. Cl.^{2} B65G *59/06*
U.S. Cl. 221—184 **6 Claims**



1. A dispensing apparatus for toothpicks or the like comprising, a receptacle in which a plurality of the toothpicks can be stored in stacked substantially parallel relationship, said receptacle having an inclined lower surface on which the toothpicks are supported with at least one slot through the inclined surface along a lowermost edge thereof, a discharge opening adjacent the lowermost edge of the inclined surface through which toothpicks can pass one at a time, a slide member slidably received in a lower portion of the receptacle beneath the inclined surface, elongated delivery channel means in the slide member adapted to retain a single toothpick and movable with the slide member between a receiving position beneath the discharge opening and a removal position exteriorly of the receptacle whereby a toothpick in the delivery channel can be carried from the receptacle to a position exteriorly of the receptacle, and alignment finger means affixed to and protruding upwardly from said slide member through each slot in the inclined surface and being slidable through the slot in a direction parallel to the direction of sliding movement of the slide member to align toothpicks in a single-file stack with the discharge opening whereby to cause the toothpicks to pass one at a time through the discharge opening when the delivery channel is moved beneath the discharge opening and said slide member being retained in the lower portion of the receptacle by a bottom plate, and further including guide slots in said slide member and means on the bottom plate communicating with the guide slots to guide movement of the slide plate so that it does not become misaligned within the receptacle.

3,938,702
DEVICE FOR DELIVERING OBJECTS OF NON-UNIFORM THICKNESS

Marten Geert Aalpoel, Nuenen, Netherlands, assignor to Arenco P.M.B. B.V., Best, Netherlands

Filed Apr. 8, 1974, Ser. No. 458,899
Claims priority, application Netherlands, Apr. 11, 1973, 7305092
Int. Cl.^{2} B65H *5/16*
U.S. Cl. 221—238 **11 Claims**

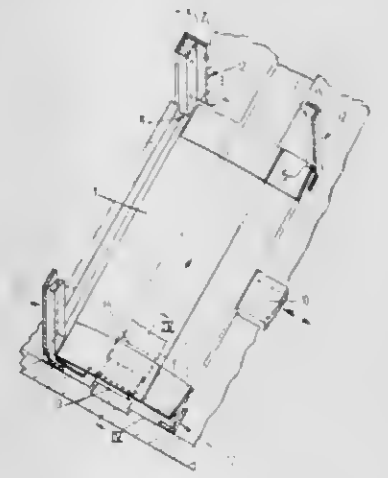
1. A device for delivering objects of non-uniform thickness one by one from a pile of such objects, comprising in combination:

a generally horizontal plate for supporting the pile of objects;

first stop surface means disposed in upstanding relation to said plate for engaging one side of the pile of objects;

second stop means disposed in upstanding relation to said plate and at right angles to the first stop surface means, said second stop surface means presenting first abutment means for engaging a side of the pile of objects and second abutment means, offset from the first abutment means, for allowing the lowermost object in the pile to be displaced partially beneath the first abutment means;

said first stop surface means having a delivery gap adjacent said plate and extending from said second abutment means outwardly from beneath said first abutment means to a position allowing displacement of the lowermost object only when such lowermost object is displaced partially beneath said first abutment means and into engagement with said second abutment means;



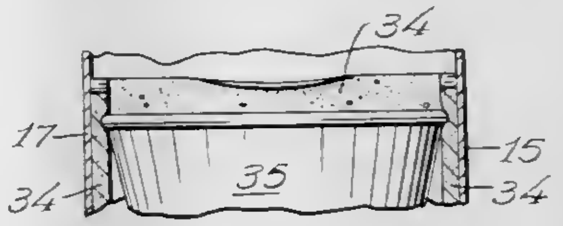
pusher means reciprocable toward and away from said second stop surface means to displace a lowermost object against said second abutment means; and

feed means spaced from said first stop surface means and aligned substantially centrally with respect to said delivery gap, said feed means engaging a lowermost, displaced object for delivering such lowermost object through said delivery gap.

3,938,703
DISPENSING CARTON FOR NESTABLE CUPS

Harry I. Roccaforte, Western Springs, Ill., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Feb. 19, 1975, Ser. No. 550,947
Int. Cl.^{2} A47F *1/08*
U.S. Cl. 221—305 **4 Claims**



1. A blank made from foldable paperboard or similar sheet-like material adapted to be folded into a tubular carton suitable for containing and dispensing a stacked array of nestable cups or the like, said blank comprising:

a substantially rectangular sheet of said paperboard, said sheet having parallel top and bottom edges and parallel lateral edges arranged at right angles to said top and bottom edges;

four side wall panels defined by three vertically oriented fold lines spaced intermediate said lateral edges and arranged parallel thereto, said side panels having substantially equal width;

closure flaps hingedly connected along said top edge of said blank to said wall panels and adapted to be folded to form a top closure for said carton in the finally erected configuration;

bottom closure flaps hingedly connected along said bottom edge to said side panels and adapted to be folded into a bottom closure for said carton in its finally erected configuration;

means formed integral with said blank and extending across the lower end of said blank for effecting removal of the lower portion of said blank including said bottom closure to provide access to said cups in the final erected configuration of the carton; and

a layer of expanded foam plastic on at least one of said side walls positioned near the lower end thereof, said layer attached near the adjacent vertically oriented fold lines leaving a section of said plastic unattached near the center of said side walls.

3,938,704

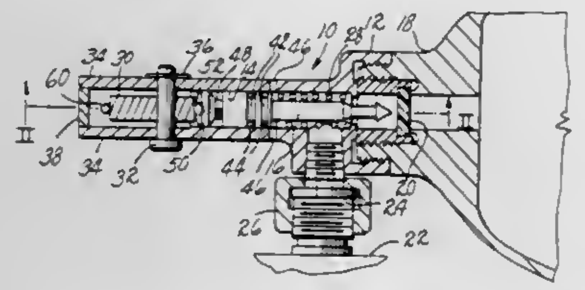
INFLATION CONTROL VALVES

Jerome H. Milgram, Cambridge, Mass., assignor to Offshore Devices, Inc., Lynn, Mass.

Filed May 23, 1974, Ser. No. 472,620

Int. Cl.² B67B *7/24*

U.S. Cl. 222—5 **4 Claims**



1. A valve for controlling the inflation of a device from a pressurized gas container having a frangible diaphragm closure, comprising a body formed with an interior guideway, a puncturing pin slidably retained in the guideway for movement toward and away from the diaphragm, means including a cam for advancing the pin to puncture the diaphragm, and a lanyard for imparting rotary motion to the cam, said lanyard having a fixed end with an enlarged member disposed in a recess in the cam, said lanyard extending around a portion of the periphery of the cam to a free end which extends away from the cam, said enlarged member and said recess being so shaped and dimensioned that when the free end of the lanyard is pulled, rotary motion is imparted to the cam by the enlarged member to force the pin to advance to puncture the diaphragm and the enlarged portion separates from the recess automatically thereafter when the recess becomes aligned with the direction of pull of the lanyard to thereby release the lanyard from the cam.

3,938,705

ASPIRATING SYSTEM

Thomas P. Cramer, 508 Culler Ave., Frederick, Md. 21701

Filed Oct. 23, 1969, Ser. No. 869,453

Int. Cl.² B67D *5/08*

U.S. Cl. 222—59 **1 Claim**

1. A system for delivering aspirated dry powder at a constant rate operated by high pressure fluid comprising:

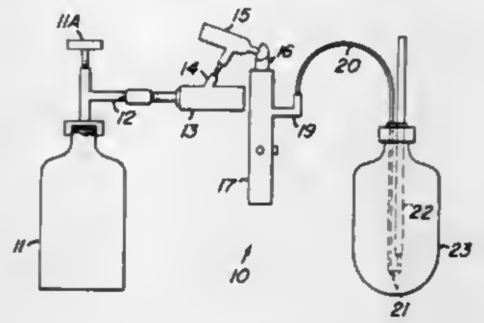
a venturi aspirator containing a predetermined quantity of dry powder, an exhaust tube with one end embedded in said dry powder and its other end extending outside of said aspirator, and a pressure fluid inlet tube provided with a return bend portion smaller than and extending into said exhaust tube one end,

a miniature flow regulator having a body with an exit port in fluid communication with said aspirator inlet tube, a high pressure fluid supply passage normally in fluid communication with said exit port, and an internally and longitudinally biased piston slidably mounted in said body so that said piston is normally in fluid communication with said passage, said piston being directly responsive to the pressure of said high pressure fluid,

a normally opened valve member sealingly secured in said passage and having a valve stem longitudinally slidably with clearance in said valve member, said stem having one end portion secured to a cap which is capable of seating against one end of said valve member, the other end portion of said stem extending through the other end of said valve member and being in abutment with said piston,

a spring interposed between said valve member and stem and tending to close said cap against said valve member one end in opposition to said biased piston, whereby said cap continuously alternates between an unseated, open position and a seated, closed position in direct dependence upon the pressure of said high pressure fluid and force of said spring overcoming the biasing force of said biased piston, to continuously regulate the flow of said high pressure fluid to said exit port depending on the predetermined biasing force of said biased piston, and

a piston pulsing unit interposed between said regulator and said aspirator, said unit having a body with a central passage and a lateral exit port in fluid communication with said central passage and said aspirator inlet tube, an accumulator secured to one end of said pulsing body adjacent said lateral port and in fluid communication with said regulator exit port, an elongated piston member slidably mounted in said central passage, one end of said piston member having longitudinally spaced peripheral seals with one of the seals being movable to and from a position intermediate said accumulator and lateral port, longitudinally spaced but adjacent peripheral grooves in said piston member, a spring biased ball detent located in a lateral recess provided in said unit body and alternately engageable in said grooves, and means biasing said piston member toward said accumulator in opposition to fluid delivered from said accumulator.



3,938,706

MECHANICAL FLUID AND PASTE DISPENSER

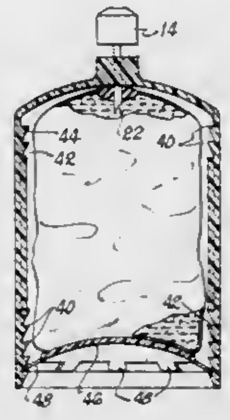
Milton J. Cohen, 9201 Persimmon Tree Road, Potamac, Md. 20854

Continuation-in-part of Ser. No. 308,548, Nov. 21, 1972, abandoned. This application Aug. 27, 1973, Ser. No. 392,089

Int. Cl.² B65D *35/20*

U.S. Cl. 222—83.5 **2 Claims**

1. In a bag type fluid and paste dispenser comprising a rigid housing which is open at the bottom end and which is adapted to be held by the hand, a collapsible sealed bag which contains a fluid or paste material to be dispensed dimensioned to be received in the housing, a closure on the upper end of the housing, a hollow tubular member extending into the interior of the housing for piercing the bag when in position of use to communicate the fluid or paste with a dispensing valve, and means for pressurizing the fluid and paste material within the bag comprising a disc member dimensioned to be received in a telescoping relation within the open end of the housing adjacent the bottom side for displacement of the disc member relative to the housing and the bag through the housing into and out of engagement with the bag to effect pressurization of the contact material within the bag, means for actuation of the disc member for movement relative to the housing, and an operative connection between the disc member and the walls of the housing for restraining the disc member in position to which it is displaced within the housing, in which the operative connection between the disc member and the walls of the housing comprises rack teeth extending inwardly from the inner walls of the housing through a substantial length of the housing, said disc member being dimensioned to have a width slightly greater than the distance between the crests of the rack teeth on opposite sides of the housing whereby the edges of the disc member are resiliently deflected responsive to engagement with the rack teeth during displacement inwardly through the housing and are restrained by the rack teeth from displacement in the opposite direction.



3,938,707

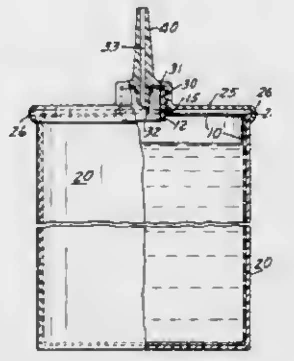
FLUID CONTAINING AND DISPERSING STRUCTURE

Justin M. Schmit, Pompano Beach, Fla., assignor to Arctic Pac, Inc., Fort Lauderdale, Fla.

Filed Mar. 6, 1974, Ser. No. 448,617

Int. Cl.² B67B *7/28*

U.S. Cl. 222—83.5 **6 Claims**



1. In a liquid containing and dispensing device:

a. a sealed liquid-containing pouch having at least one flexible upper wall portion;

b. relatively rigid tubular member positioned within the pouch and its flexible upper wall portion and being secured to said wall portion with the latter extending across one end of the tubular member in sealing relation;

c. means positioned around the rigid tubular member with the flexible upper wall portion of the liquid-containing pouch thereon and securing the tubular member in the upper wall portion of the liquid-containing pouch;

d. a container having relatively rigid side walls surrounding said pouch in supporting relation and having an interior with configurations and dimensions generally complementary to the exterior of said pouch;

e. a top wall structure for the container constructed and arranged to be removably connected to the side wall structure, and,

f. a pouring structure integral with the top wall structure and removably connectable to the pouch at the rigid tubular member and including a tubular member receiving and piercing means which receives and positively engages said tubular member in interengaging and telescoping relation, said piercing means piercing said flexible wall portion of said pouch when the latter is so received into the rigid tubular member thereby bringing the same into fluid communication with the interior of said pouch to facilitate pouring of the liquid from said pouch outwardly through said pouring structure.

3,938,708

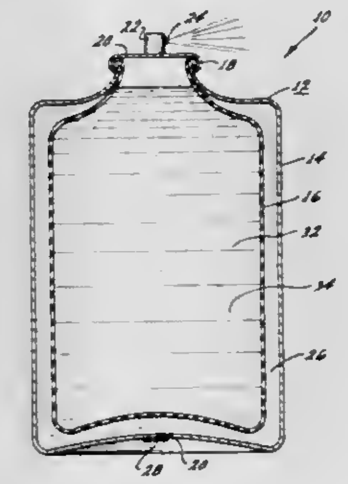
AEROSOL DISPENSING SYSTEM

Norman D. Burger, Culver City, Calif., assignor to Norman D. Burger, Culver City and Nicholas Mardesich, Palos Verdes Estates, both of, Calif., part interest to each

Continuation-in-part of Ser. No. 497,613, Aug. 15, 1974, abandoned, which is a continuation-in-part of Ser. No. 466,140, May 2, 1974, abandoned. This application Jan. 27, 1975, Ser. No. 544,390

Int. Cl.² B65D *35/28*

U.S. Cl. 222—95 **35 Claims**



1. An aerosol dispensing system comprising:

an outer container;

compressible inner container means positioned within said outer container;

means to compress said inner container means positioned between said inner container means and said outer container;

a mechanical breakup spray head and valve assembly connected to said inner container means;

a relatively non-foaming liquid product at a pressure above atmospheric pressure within said inner container means due to the force exerted on the inner container means by said means to compress said inner container means;

a neutral propellant within said inner container means;

said neutral propellant being in a liquid state at the pressure within said inner container means and being at least partially soluble or miscible in said liquid product, and

said neutral propellant being at least partially vaporized at atmospheric pressure or less on passage of said product and neutral propellant through said spray head to create a turbulence within said spray head which produces breaking up of said liquid product into a fine spray.

27. An aerosol dispensing system comprising:

an outer container;

compressible inner container means positioned within said outer container;

means to compress said inner container means positioned between said inner container means and said outer container;

a mechanical breakup spray head and valve assembly connected to said inner container means;

a finely divided powder product at a pressure above atmospheric pressure within said inner container means due to the force exerted on said inner container means by said means to compress said inner container means;

a liquified neutral propellant within said inner container means;

said neutral propellant being present in an amount sufficient to form a slurry with said product and to carry said product into said spray head during discharge of said product, and

said neutral propellant being at least partially vaporized at atmospheric pressure or less on passage of said product and neutral propellant through said spray head to create a turbulence within said spray head which produces a fine powder spray.

3,938,709

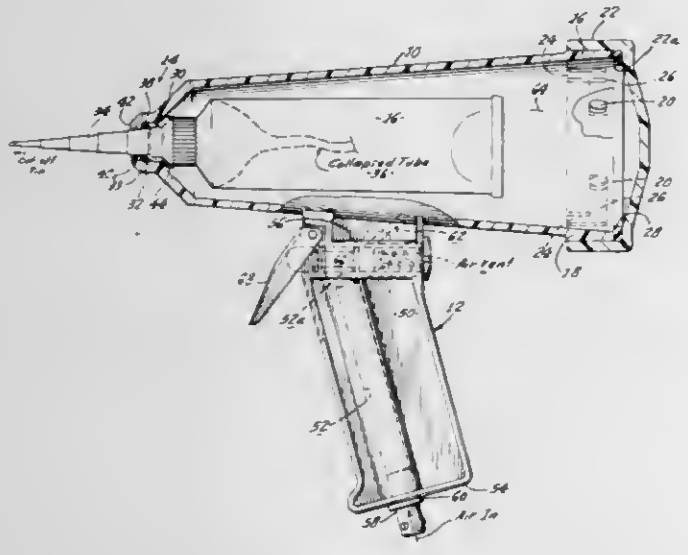
GAS PRESSURE ACTUATED PLASTIC SQUEEZE DISPENSER AND VALVING MEANS THEREFOR

Roland W. Collar, Sun Valley, Calif., assignor to Techon Systems, Inc., Gardena, Calif.

Continuation of Ser. No. 246,542, April 24, 1972, abandoned. This application Feb. 25, 1974, Ser. No. 445,797

Int. Cl.^{2} B65D *35/28*

U.S. Cl. 222—95 **2 Claims**



1. Air compression means to apply air under pressure to the outside of a squeezable tube containing an extrudable plastic material and having nozzle at one end thereof through which such material is extrudable, said means comprising:

an elongated housing, said housing defining a chamber to receive said tube and having a removable closure at one end and an opening at the other end, said housing receiving said tube with its nozzle disposed in said opening and having sealing means about said opening to seal the tube nozzle therewithin, said sealing means including:

a radially inwardly extending flange at the remote end of the housing defining said opening, an O-ring abutting said flange, and a cylindrical conical grommet, said grommet being dimensioned to fit tightly within the housing portion defining the opening and including an inwardly extending sharp annular rib, said rib serving to bite into the tube nozzle when inserted in said grommet, whereby said nozzle is inhibited from inadvertently being withdrawn from said opening when said chamber is not filled with gas under pressure;

a source of gas under pressure;

passage means connecting said source to said chamber; and

valve means interposed in said passage means, said valve means including manual triggering means, whereby the gas under pressure may be selectively admitted through said passage means into said chamber upon manual actuation of said trigger means, and upon release of the trigger means, the gas under pressure in said chamber is vented to the atmosphere.

3,938,710

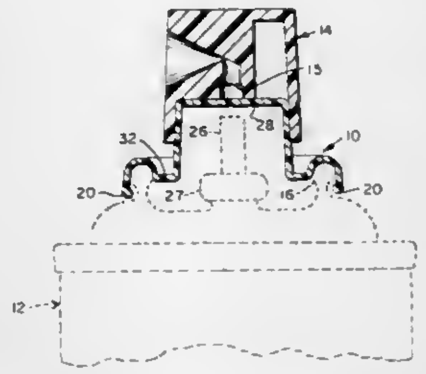
SAFETY DEVICE FOR AEROSOL CAN

Robert A. Bennett, Easton, Conn., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 13, 1975, Ser. No. 540,594

Int. Cl.^{2} B67B *5/02*

U.S. Cl. 222—153 **3 Claims**



1. A safety device for aerosol cans having an upper circular rim, a spray nozzle and a spray stem, comprising:

A. an outer annular overhang member removably mountable about the upper circular rim of the aerosol can;

B. an annular table terminating at its outer periphery with the inner termination of said overhang region for placement of the aerosol can spray nozzle thereon; and

C. a cylindrical sidewall downwardly depending from the inner termination of the annular table so as to provide structural rigidity to the device as well as preventing downward movement of the spray nozzle with respect to the aerosol can and thereby preventing depression of the spray stem by the spray nozzle.

3,938,711

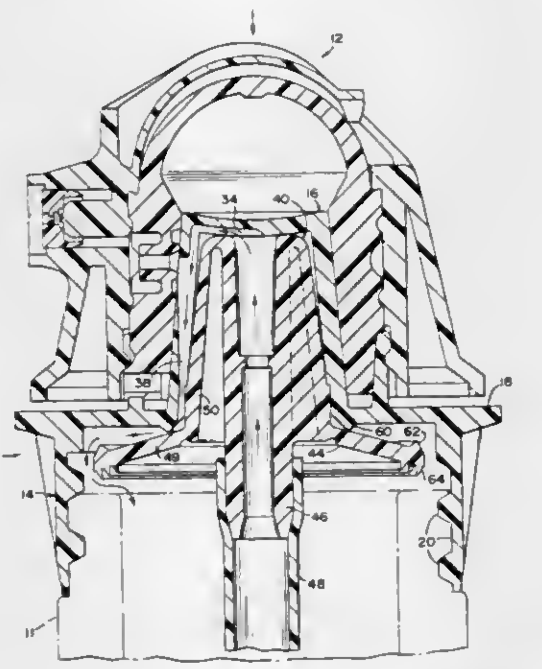
SELF PRIMING MECHANISM FOR DISPENSER

Ronald F. Ewald, Rolling Meadows, and Raymond M. Konarski, Carpentersville, both of Ill., assignors to Seaquist Valve Company, Cary, Ill.

Filed Sept. 16, 1974, Ser. No. 506,008

Int. Cl.^{2} B65D *37/00*

U.S. Cl. 222—209 **9 Claims**



1. A self prime mechanism for use with a dispenser which utilizes a dispensing means of the type having a dip tube, said self prime mechanism comprising: a container attachment means, a dip tube sealer comprising a collar and a dip tube tail, a feedback passage disposed in communicating relation from the interior of said dip tube to the head space of the dispenser, said collar being positioned in said feedback passage, said dip tube sealer being movable between an open and a sealed position as said container attachment means is sealed to the container, whereby air trapped in said dip tube is permitted to flow back into said head space before said container means is sealed.

3,938,712

APPARATUS FOR MEASURING OUT PULVERULENT MATERIALS

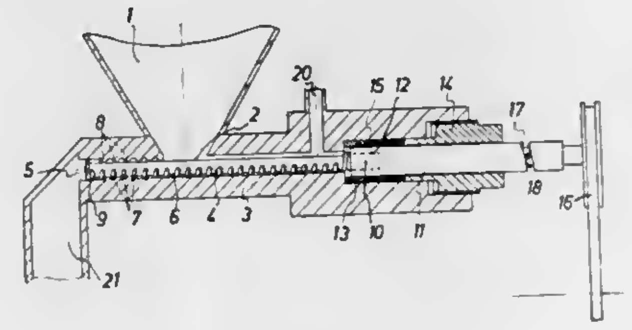
Teddy Durieux, Jemeppe-sur-Sambre, Belgium, assignor to Solvay & Cie, Brussels, Belgium

Filed Mar. 26, 1974, Ser. No. 454,799

Claims priority, application France, Mar. 26, 1973, 73.10851

Int. Cl.^{2} G01F *11/00*

U.S. Cl. 222—404 **5 Claims**



1. In apparatus for measuring out pulverulent materials, which apparatus includes a screw presenting a side root surface and positioned, and rotatably mounted, in a barrel open at at least one of its ends, the improvement wherein the thread of said screw extends from said surface and is interrupted between only two diametrically opposite generatrices of the latter for causing said side surface to consist of a single threaded zone and a single smooth zone, and said apparatus further comprises fixed scraping means cooperating with said threaded zone of said screw, said fixed scraping means comprising several teeth lined up along an axis parallel to the longitudinal axis of the barrel, the distance between said teeth being equal to, or a multiple of, the pitch of the thread, each of said teeth having a profile such that it meshes with, and occupies substantially the entire space between, two consecutive threads of said screw, and drive means to rotate and reciprocate said screw in order to allow said threads to synchronously mesh with said teeth of said scraping means.

3,938,713

FLOW REGULATOR FOR SEDIMENT COLLECTING CHAMBERS OF A SEPARATING DEVICE

Jacob Pielkenrood, Krommenie, Netherlands, assignor to Pielkenrood-Vinitex B.V., Assendelft, Netherlands

Filed May 28, 1974, Ser. No. 472,946

Int. Cl.^{2} B67D *3/00;* B01D *21/10*

U.S. Cl. 222—486 **10 Claims**

1. In a flow regulator for the sediment discharge from two adjoining hopper-shaped sediment collecting chambers, wherein a substantially vertical partition separates the collecting chambers, and wherein the collecting chambers include a common side wall at the lower end thereof, the improvement comprising:

means forming an opening in said side wall and communicating with each chamber separated by the vertical partition,

rotatable disc means mounted in said side wall adjacent to the partition,

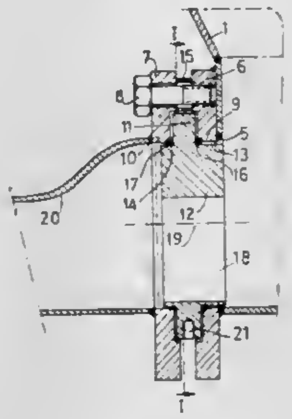
the partition extending at least the full diameter of said disc,

means forming an opening in said disc,

the axis of rotation of the disc being in general alignment with the partition,

the opening in said disc being asymmetrically disposed relative to the axis of rotation,

the opening in the side wall being larger than the opening in the disc such that upon rotation of the disc the opening in the disc remains within the opening of the side wall,



said disc including means to effect rotation thereof in the opening of said side wall, and

rotation of the disc being operative to vary the area of the opening communicating with each chamber whereby the ratio of discharge flow may be varied.

3,938,714

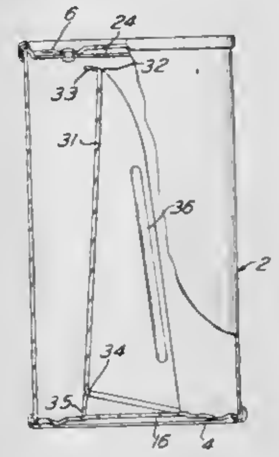
POURING SPOUT DISPENSING SYSTEM

Morris Coppersmith, Wyncote, Pa., assignor to Packaging Aids, Inc., Wyncote, Pa.

Continuation-in-part of Ser. No. 260,860, June 8, 1972, Pat. No. 3,831,824. This application Aug. 26, 1974, Ser. No. 500,755. The portion of the term of this patent subsequent to Aug. 27, 1991, has been disclaimed.

Int. Cl.^{2} B67D *3/00*

U.S. Cl. 222—525 **10 Claims**



1. A dispensing system comprising:

a. a longitudinally extended container having opposing wall members displaced each from the other, at least one of said wall members having a removeable section formed integral with said wall member in a plane substantially coincident with said wall member for forming an opening of predetermined contour when at least a portion of said removeable section is displaced from said wall member;

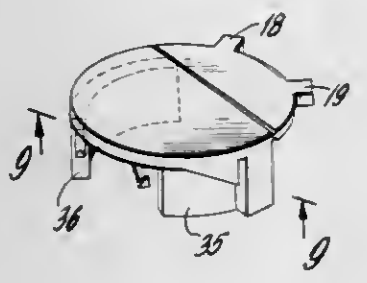
b. a spout member located wholly within said container when said removeable section is contiguous to said wall member throughout said predetermined contour, said spout member extending substantially between said opposing wall members when said spout member is located wholly within said container and free floating within said container, said spout member being only partially removeable from said container through said opening when said removeable section is displaced from said wall member; and,

c. means for releaseably securing said spout member to said container when said spout member is only partially removed from said container through said opening by gravity assist, said releaseable securing means forming a groove passing throughout a peripheral boundary of one end of said spout member for releaseably capturing a wall section of said wall member opening contour.

3,938,715

PROTECTIVE CLOSURES FOR CONTAINERS

Clayton Bogert, 118 Lowell Road, Glen Rock, N.J. 07452
Filed Nov. 20, 1972, Ser. No. 307,880
Int. Cl.² B65D *55/14*
U.S. Cl. 222—534 **6 Claims**



1. A safety closure for containers comprising:

a neck portion on a container,

a liftable cap for the container,

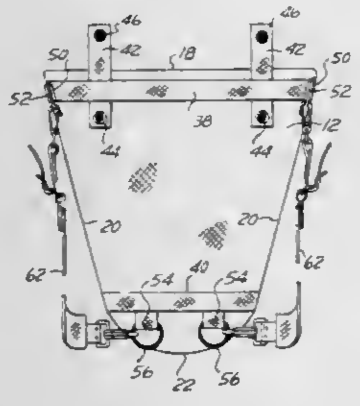
means comprising slots in said neck portion and cooperating lugs on the cap to interengage said neck portion and said cap,

a sleeve surrounding said neck portion and said cap, and means to interlock the sleeve and the cap to prevent inadvertent opening of said cap.

3,938,716

CONVERTIBLE BACK-PACK PANNIER

W. Shaun Jackson, 809 Sycamore, Ann Arbor, Mich. 48104, and Leslie Eric Bohm, 29560 Rutherland, North, Southfield, Mich. 48076
Filed Sept. 18, 1974, Ser. No. 507,061
Int. Cl.² A45F *3/04*
U.S. Cl. 224—9 **12 Claims**

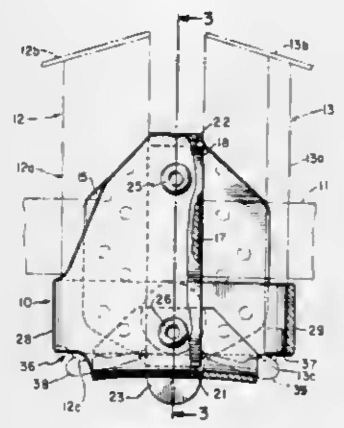


1. A bag adapted to be attached to the rear wheel carrier of a cycle for use as a pannier or convertibly used as a back-pack, comprising: first and second fabric sections, each having a straight base edge and a pair of substantially straight side edges forming substantially equal and opposed acute angles with the base so that the side edges are directed toward one another in a direction away from the base and are joined to one another at their ends opposite to the base; a side panel extending fully about the perimeters of said two sections and joining the sections together in spaced relationship to one another so as to enclose a volume; separable closure means providing access to the interior of the volume of the bag; first fastener means secured to the second section adjacent to the bass edge and adapted to fasten to the carrier of a cycle so that the base edge extends parallel to the carrier and the bag extends downwardly therefrom; and second fastener means affixed to the second section adjacent the base and the end opposite the base and adapted to secure back-pack straps to the bag so that the bag may be attached to and supported on the back of a wearer with the base projecting downwardly.

3,938,717

MAGAZINE HOLDER

Paris Theodore, 24 E. 73rd St., New York, N.Y. 14304
Filed Feb. 1, 1974, Ser. No. 438,656
Int. Cl.² F42B *39/00*
U.S. Cl. 224—13 **8 Claims**



1. A cartridge magazine holder comprising:

a magnetic member having a pair of elongated rigid polepieces for magnetically engaging a side of a cartridge magazine so as to hold the magazine in parallel alignment with the long axis of said magnetic member;

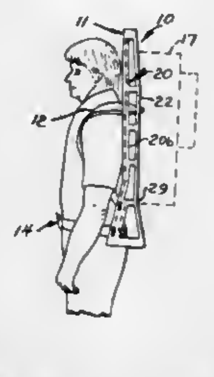
a piece of flexible sheet material mounted on said magnetic member so as to form a loop extending around the cartridge magazine to hold the cartridge magazine in alignment with said magnetic member and prevent lateral withdrawal or shifting of the magazine while allowing the magazine to be withdrawn base-first in a direction parallel to the long axis of said magnetic member, said loop leaving the nose of the first cartridge exposed so as not to disturb its alignment with the lips of the magazine, and leaving a sufficient portion of the base of the cartridge magazine exposed to allow a user to securely grasp the magazine for withdrawal; and

means for mounting said magazine holder on the belt of a user.

3,938,718

BACKPACK FRAME AND ASSEMBLY

George Benjamin Madison, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed Apr. 11, 1974, Ser. No. 459,876
Int. Cl.² A45F *3/00*
U.S. Cl. 224—25 A **14 Claims**



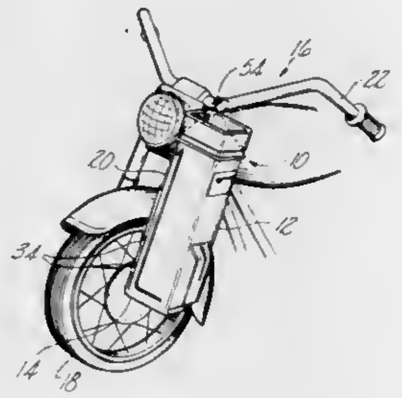
1. A backpack assembly comprising: a one-piece skeletal plastic frame including an integral peripheral frame portion having an upper frame member, first and second side frame members, and a lower frame member, said frame further including a backplate and a skeletal frame gridwork integrally connecting said backplate with said peripheral frame, said peripheral frame defining a first plurality of elongated slots extending along substantially the entire length of said first and

second side frame, said backplate defining a second plurality of elongated slots therein; a backband secured to said frame through said first plurality of slots; a pair of shoulder straps secured at their upper ends to said frame at said second plurality of slots and secured at their lower ends to said frame at said first plurality of slots; fastener means for securing the end portions of said shoulder straps to said frame; and a waistband assembly carried by said frame at said first plurality of slots; whereby said shoulder straps, backband and waistband may be independently adjusted on said frame in accordance with the location of said slots.

3,938,719

STORAGE MEANS FOR MOTORCYCLES AND LIKE VEHICLES

Ronald C. Carlton, 1002 Welch Blvd., Flint, Mich. 48504
Filed Aug. 24, 1973, Ser. No. 391,457
Int. Cl.² B62J *7/02*
U.S. Cl. 224—36 **8 Claims**



1. In combination with a two-wheeled vehicle having a frame structure extending from a wheel axle, a storage means comprising:

a. a support structure comprising a first leg extending parallel to and co-axial with the axle of a wheel and having a lip formed at its upper end, and a second leg substantially perpendicular to the first leg and formed at the lower end of the first leg and having an aperture formed therethrough, the first leg abutting the frame substantially along the extent of the first leg,

b. means for attaching the first leg to the frame structure, the lip preventing the slippage of the leg past the means for attaching,

c. a carrier for storing and transporting goods therein, the carrier having an aperture formed in the bottom thereof, the bottom seating on the second leg and the aperture being in registry with the aperture formed in the second leg, and

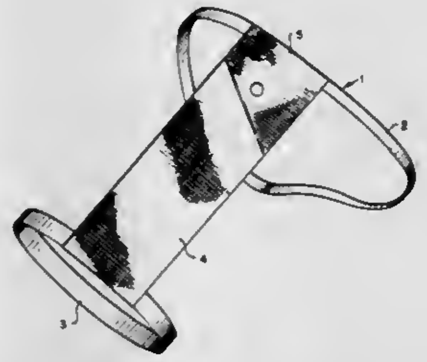
d. quick detachment means extending through the registering apertures for detachably supporting the carrier on the second leg of the support structure.

3,938,720

WALLET WITH CARRYING HARNESS

La Verne M. Vela, 675 Pearson, Ferndale, Mich. 48220
Filed Dec. 10, 1970, Ser. No. 96,849
Int. Cl.² A45C *1/00*
U.S. Cl. 224—5 R **1 Claim**

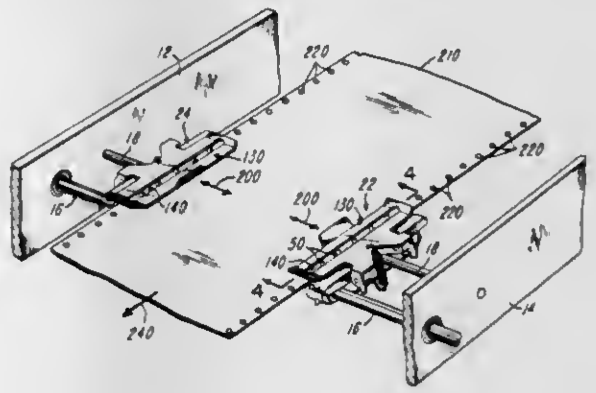
1. The method of concealing a pocket-like member on the person which resides in suspending beneath the person's clothing under tension lengthwise and sidewise between an elastic band which fits snugly around the waist and an elastic band which fits snugly around an upper thigh of the person so that the member is held snugly against the body between the waist and a thigh of the person.



3,938,721

PIN BELT MECHANISM FOR MOVEMENT OF A CONTINUOUS STRIP

Robert W. Staneck, and George R. Spaleny, both of Dayton, Ohio, assignors to The Standard Register Company, Dayton, Ohio
Filed Aug. 19, 1974, Ser. No. 498,636
Int. Cl.² G03B *1/30*
U.S. Cl. 226—75 **3 Claims**



1. Mechanism for movement of a continuous strip provided with a longitudinal row of apertures comprising:

a pair of parallel shafts, there being a first shaft and a second shaft, the strip being arranged to move at right angles to the shafts, the shafts being longer in length than the width of the strip.

a carriage having an opening therethrough, the first shaft extending through the opening, the carriage being movable along the first shaft,

a drive wheel, the second shaft extending through the drive wheel for rotation of the drive wheel with rotation of the second shaft, the drive wheel being movable along the second shaft,

a second wheel rotatably carried by the carriage and spaced from both of the shafts,

a continuous belt encompassing the drive wheel and the second wheel for rotation therewith,

a plurality of pin members carried by the belt, each of the pin members extending through the belt and being movable with rotation of the belt,

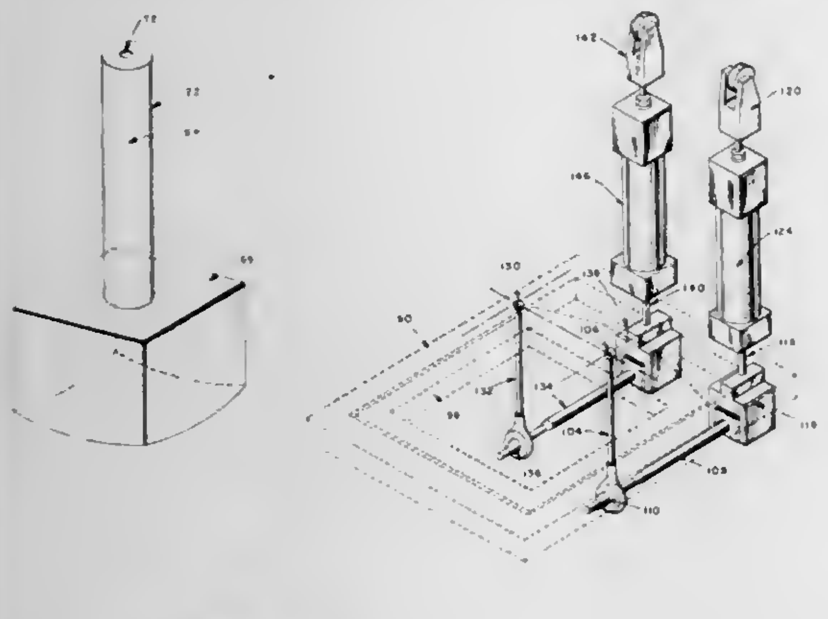
the carriage having a second opening adjacent the first said opening, the openings being connected by a slot therebetween, a threaded stud extending into the carriage through the slot and having a head portion engageable with a portion of the carriage which is adjacent the slot, the threaded stud being rotatable to slightly move said portion of the carriage to change the dimension of the slot and to change the dimension of the openings, to provide a clamping pressure upon the shaft which extends through the first said opening.

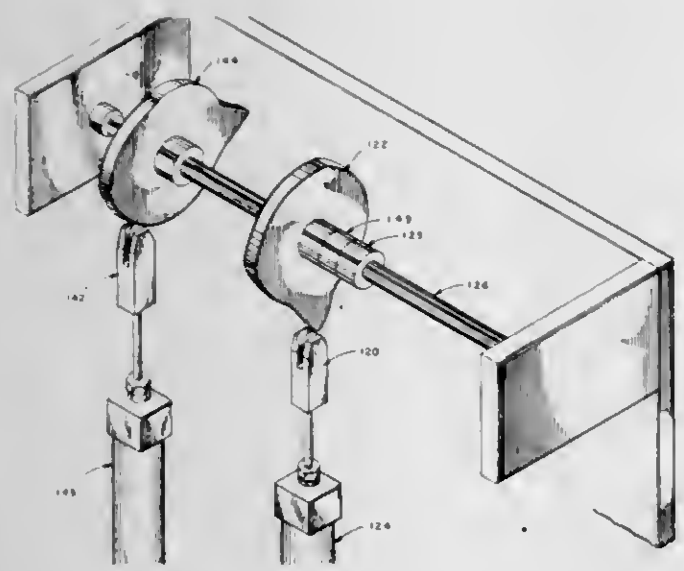
3,938,722
ULTRASONIC THERMAL COMPRESSION BEAM LEAD, FLIP CHIP BONDER

James E. Kelly, Melrose; Richard F. Foulke, Carlisly, and Raymond T. Fitzsimmons, Lexington, all of Mass., assignors to Mech-El Industries, Inc., Woburn, Mass.

Filed Apr. 30, 1973, Ser. No. 355,889
Int. Cl.^{2} B23K *21/02*

U.S. Cl. 228—1 **10 Claims**





1. A bonding apparatus for bonding electrical leads of beam lead devices and flip chip devices to mating conductive surfaces or a substrate and for bonding electrical leads to contact pads on a semiconductor device comprising:

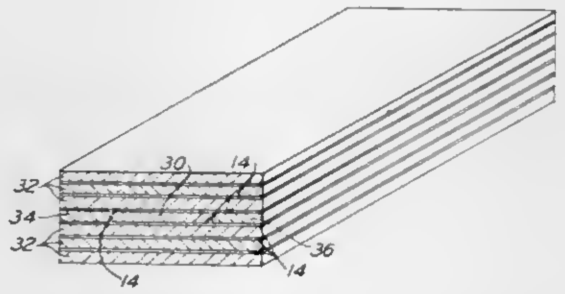
a bonding tool having bonding surfaces disposed substantially about the periphery of one end of said tool;
a tool holder adapted to receive said tool at one end thereof, such that the longitudinal axis of said tool holder is perpendicular to the longitudinal axis of said bonding tool;
a support member adapted to receive said tool holder;
slidable mounting means for mounting said tool holder and said support member;
a gimbal, having outer, middle and inner frames, on which inner frame said slidable mounting means is mounted;
a motor;
a cam shaft driven by said motor;
a plurality of cams mounted on said cam shaft;
a plurality of cam followers engaged with at least some of said cams;
a plurality of pivotal shafts connecting said cam followers to said gimbal to cause a pivotal movement of said middle and inner frames;
a housing in which said gimbal and said motor are mounted;
table means on said housing to position a semiconductor device under said bonding tool;
a source of bonding energy for said bonding tool;
said pivotal movement of said middle and said inner frames of said gimbal causing a wobble movement of said bonding tool along a predetermined adjustable rectangular path about the periphery of one of said semiconductor devices, whereby the bonding surface of said tool sequentially and individually make a bonding contact with each of said electrical leads on each perimeter of said semiconductor devices.

3,938,723
METHOD FOR ROLLING THIN METAL FILMS

Edward R. Slaughter, 7938 Brentwood Road, Mentor, Ohio 44060

Filed Jan. 3, 1972, Ser. No. 215,044
Int. Cl.^{2} B23K *21/00*

U.S. Cl. 228—117 **5 Claims**



1. A method of forming metal foil of a predetermined thickness t and comprising the steps of:

a. providing at least three elongated strips of said metal having a thickness T which is substantially greater than t with at least one strip being substantially less ductile than at least two other strips;
b. forming at least three sheets of said metal into a composite with at least one strip constituting an inner portion of said composite with the inner portion of said composite being substantially less ductile than the outer strips, said strips being bsnded together in face-to-face juxtaposed relationship with a layer of matrix material of a thickness substantially less than T, said matrix material being applied uniformly substantially completely across said faces to form a composite comprised of alternate layers of matrix and individual metal strips;
c. rolling said composite to reduce its thickness to a point wherein said metal strips have been reduced to a thickness *t*; and,
d. thereafter, destroying the bonds formed by said matrix material and separating said strips.

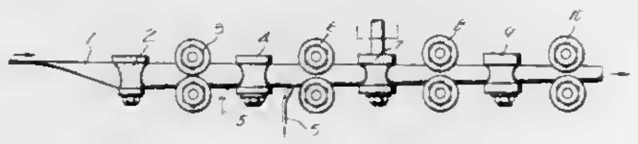
3,938,724
METHOD OF MAKING BUTT WELDED TUBES

Takao Nakamura, Yokohama; Itsuo Hirose, Kamakura; Rokuro Misawa, Yokohama; Hidenori Horii, Yokohama; Akira Hagio, Yokohama, and Tetsuo Sada, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 129,902, March 31, 1971, abandoned. This application June 29, 1973, Ser. No. 375,174
Int. Cl.^{2} B23K *9/00, 9/02*

U.S. Cl. 228—147 **5 Claims**

1. In a method of making butt welded tubes of oxidizable material comprising heating a skelp to a temperature suitable for butt welding of the material, passing the heated skelp between forming rolls to form it into a tube having longitudinal edge positions bounding an open seam, and passing said open-seam tube between butt-welding rolls to cause said longitudinal edge portions to become butt welded, the improvement of blowing oxygen under pressure onto said butt welded edge portions, whilst they are at a temperature at which oxidation will occur, thereby to cause increase of temperature of said edge portions and result in removal by oxidation and blowing away of protrusions formed during the butt welding, and whilst said butt welded edge portions are at increased temperature passing said tube through reducing rolls to produce a substantially seamless tube.

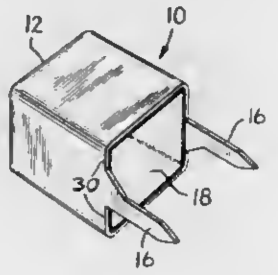


3,938,725
METHOD OF MAKING ARTICLES SUCH AS ELECTRICALLY INSULATED HOUSINGS USING STRIPED LAMINATES

John H. Hardwick; William H. Jagoe; Carl W. Tonnesen, all of Salem, and Harold W. Jesse, Amherst, all of N.H., assignors to TME Corporation, Salem, N.H.

Filed Jan. 4, 1974, Ser. No. 430,679
Int. Cl.^{2} B63B *19/00*

U.S. Cl. 228—155 **5 Claims**



1. A method of making housings for electronic components from sheet materials comprising the steps of forming a long band composed of at least a first strip of one sheet material and a second strip of a second sheet material laminated together, each strip being of uniform length, the first strip being wider than the second strip and the second strip being positioned on the first strip such that the band has at least one first longitudinally continual zone constituted by only the first strip of material and at least one second longitudinally continual zone constituted by a laminate of both strips, and forming a succession of articles from the band by shaping and blanking the band, the shaping and blanking being controlled to locate at least one mounting lug of each housing in the first zone of the band and a cup-like body of each housing in the second zone of the band.

3,938,726
NESTING INSULATED HOT-OR-COLD FOOD TRAY

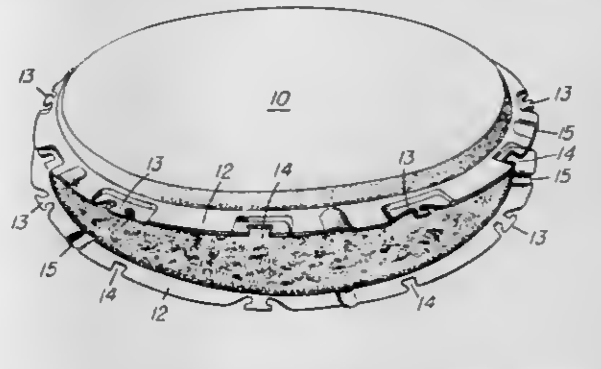
Morell J. Holden, Jr., and Frank LeBoutillier, both of Canandaigua, N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed June 20, 1974, Ser. No. 481,095
Int. Cl.^{2} B65D *1/26;* A44B *17/00*

U.S. Cl. 229—2.5 R **9 Claims**

1. Insulated hot or cold food tray for temporarily storing and transporting food items at temperatures different from ambient temperatures comprising

an integral dished tray structure of molded material having
a bottom plate surface (**10**);
a surrounding rim (**11**) formed to incline upwardly with respect to the bottom plate surface;
and a flange (**12**) laterally projecting from the rim generally in a plane parallel to said bottom surface (**10**);
the angle of inclination of the rim being selected such that cotangent α is at least 1.5 t/D
wherein α equals angle of inclination; t equals wall thickness of the foamed plastic material and D equals depth of the tray structure and corresponding to the distance from the top of the flange (**12**) to the top of the bottom plate surface (**10**);
said flange (**12**) being formed with projection and recess means (**13, 14; 23, 24**) located at regularly distributed spaced intervals around the circumference thereof,
the projection means have portions which have a dimension which is greater than the dimension of the recess means (**14, 24**) at equal spacing from the surrounding rim (**11**),
inversion of one tray over another and engagement of the projection means of one tray in the recess means of the inverted, opposite tray permitting fitting of said flanges together and locking the projection means of one tray through the recess means of the other to engage the flange of the other tray from the face opposite that facing the first tray to provide an insulated storage and transport carrier to transport food items in the chamber formed by the inverted, engaged trays with the flanges of the trays locked together by overlapping engagement of the respective projection means of one tray behind the flanges of the other tray;
wherein the projection of the projection and recess means comprises an outwardly tapering tab (**13**) and inwardly tapering notches (**16**) formed adjacent both sides of each tab and separating the tab from the surrounding flange area;
and the recess means of the projection and recess means comprises an inwardly tapering engagement notch (**14**), the maximum dimension of the engagement notch lying between the minimum and maximum dimension of the tab, the taper of said tab, and said engagement notches, respectively, being from about 15 mm to 18 mm, and the rim having a width (W) of about 13 mm.

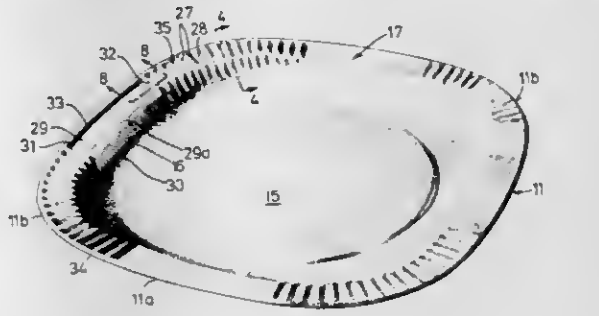


3,938,727
DISPOSABLE CARDBOARD PLATES

Karl Gösta Bertil Andersson, Halmstad, Sweden, assignor to Duni Bila AB, Halmstad, Sweden

Filed Aug. 5, 1974, Ser. No. 494,974
Claims priority, application Sweden, Aug. 6, 1973, 7310754
Int. Cl.^{2} B65D *1/42, 1/34*

U.S. Cl. 229—2.5 R **6 Claims**



1. A plate comprising a bottom defining a predetermined contour; a continuous side wall surrounding said bottom and integrally joined to said bottom along said contour, said side

wall extended upwardly from said bottom in an inclined fashion; and a brim integrally joined to and surrounding said side wall and extending generally parallel to said bottom;

said side wall and said brim being shaped along each of a plurality of spaced portions of the circumference of said plate with an origamically folded section having a plurality of alternating grooves and ridges formed in said side wall in registration with a similar plurality of alternating ridges and respectively formed in said brim;

an outer portion of said brim extending upwardly and away from said bottom and forming an end wall enclosing the outer end of each brim groove, to prevent passage of the contents of said plate therethrough when said plate is tilted to fill said brim grooves with said contents.

3,938,728
COLLAPSIBLE CONTAINER

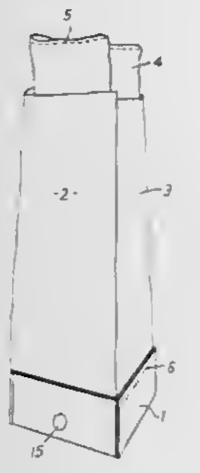
Henry Charles Deards, and Nigel Evans Pickford, both of Welwyn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 19, 1974, Ser. No. 498,851

Claims priority, application United Kingdom, Sept. 6, 1973, 41890/73; May 10, 1974, 20755/74

Int. Cl.² B65D *85/72, 5/40*

U.S. Cl. 229—14 B **1 Claim**



1. A collapsible container assembly comprising: a rectangular open-topped box; a free-standing but collapsible water-tight plastics-film sleeve fitting closely within the box at its base, the depth of the box being no more than one-half of the depth of the sleeve, the sleeve being supported within the base of the box so as to allow it to stand vertically therefrom and having the form of a block-bottom bag, the flat bottom of which is essentially of the same size and shape as the bottom of the box; and a water-tight plastics-film liner within the sleeve having a perimeter of length not significantly less than that of the inner perimeter of the sleeve, and being formed of plastics-film that is thinner and more flexible than that from which the sleeve is formed; in which the sleeve member has been formed from a length of non-gusseted tubular film by sealing one end thereof, opening the sealed sleeve into block-ended form, folding the resulting ears of the sealed end down upon a stiffening member placed against the block end, and fastening them in this position, whereby the base of the sleeve is provided with a stiffening attachment or enclosure such that the base so stiffened will fit accurately into the box member of the container assembly.

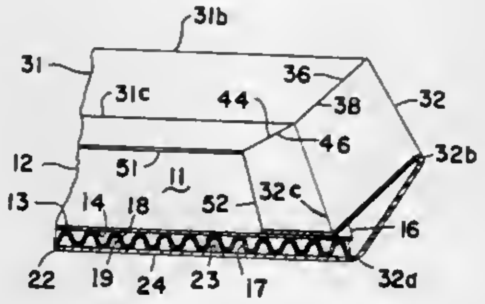
3,938,729
DISPOSABLE TRAY

Donald Ferrand Smith, Clifton, N.J., assignor to St. Regis Paper Company, New York, N.Y.

Filed Nov. 6, 1974, Ser. No. 521,260

Int. Cl.² B65D *5/22*

U.S. Cl. 229—30 **19 Claims**



1. A tray, comprising in combination:

a top member having a first and a second side with said first side comprising a top surface of the tray;

a bottom member having a first and a second side with said second side comprising a bottom surface of the tray;

means mounting said second side of said top member to said first side of said bottom member with one of said top and bottom members extending beyond the other of said top and bottom members forming a first and a second rim portion;

each of said rim portions having a first fold line;

means for mounting said rim portions to said other of said top and bottom members establishing obtuse folds at said first fold lines and establishing acute folds located beyond said other of said top and bottom members forming a rim for the tray;

and means connecting said first rim portion to said second rim portion to secure said rim portions relative to one another.

3,938,730
FOOD CONTAINER

Josef Detzel, Weitnau, and Klaus Peter Bartels, Langen, both of Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed July 22, 1974, Ser. No. 490,650

Claims priority, application Germany, July 21, 1973, 7326904

Int. Cl.² B65D *5/64, 5/54*

U.S. Cl. 229—43 **4 Claims**

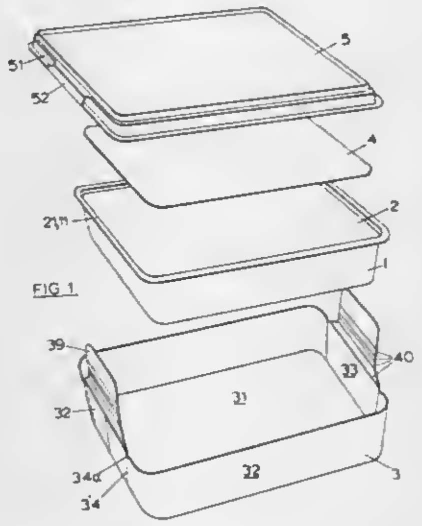


FIG 1

1. A container comprising a tray having side walls with a peripheral sealing flange extending around the upper edges thereof; a lid for the tray sealingly engaging the peripheral sealing flange; and, an outer protective member closely surrounding the tray, the protective member having a bottom panel, upstanding wall panels with upper edges, connecting flaps folded up from the bottom panel to severably connect the wall panels together, and opening tabs formed by the portion of the connecting flaps extending beyond the upper edges of the wall panels, the opening tabs being folded around the peripheral sealing flange of the tray to lie on the lid, the opening tabs having securing portions releasably secured in position with the lid and end portions which are not secured to the lid whereby pulling on the end portions of the opening tabs will break the connection of the securing portion of the opening tabs with the lid and the connection of the connecting flaps and side wall panels and allow the protective member to fold flat.

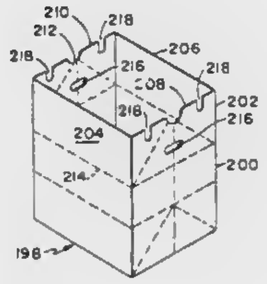
3,938,731
RECEPTACLE FOR WASTE MATERIAL

Thorvald S. Ross, Jr., Manchester, and Leonard P. Entin, Wayland, both of Mass., assignors to Thorvald S. Ross, Jr., Beverly, Mass.

Division of Ser. No. 138,482, April 29, 1971, Pat. No. 3,779,157. This application Aug. 16, 1973, Ser. No. 388,994

Int. Cl. B65d *33/08, 5/46, 25/30*

U.S. Cl. 229—54 R **5 Claims**



1. A rectangular container having sides, ends, a bottom, and an opening at the top, the material of the container being a foldable sheet material, the sides and ends being connected at the vertical corners of the container, each side and end comprising a foldable lower portion and a foldable upper panel portion comprising side and end panel portions, said side and end panel portions also being connected to each other along their entire vertical edges, the side panel portions being longer than the end panel portions and of such vertical width as to overlap a minimum amount and yet sufficiently to allow sealing the container when the longer side panel portions are folded toward each other into a horizontal plane; and the end panels forming upstanding triangular flaps when the side panels are in their horizontal plane, said upstanding flaps forming handles adapted to be gripped by the user of the container for carrying the latter, and are provided with hand-holes; each end panel integrally having a central section and two outer sections, the sections being integral with each other, the two outer sections being foldable to lie against the central section, the central section being provided with a hand-hole, and the upper edge of each outer section being provided with notches shaped to be complementary to at least a portion of said hand-hole when the outer sections are folded against the central section thereby to reinforce the latter.

3,938,732
ADJUSTMENT MEANS FOR ROLL CRUSHERS WITH GAS HYDRAULIC SPRINGS

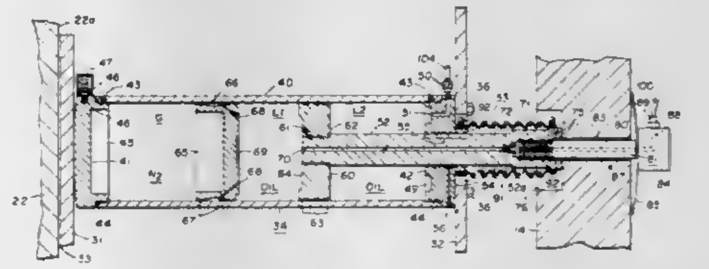
Vernon L. Schrimper; Floyd A. Lillig, and Darrell J. Ulch, all of Cedar Rapids, Iowa, assignors to Iowa Manufacturing Company, Cedar Rapids, Iowa

Filed Sept. 16, 1974, Ser. No. 506,349

Int. Cl.² B02C *4/32*

U.S. Cl. 241—231 **10 Claims**

1. In a crusher of the roll type having a crushing roll mounted on and movable with respect to a crusher frame and a pair of gas hydraulic spring assemblies for maintaining the location of the roll with respect to the frame during crushing operation up to a predetermined crushing load, each spring assembly including at least one cylinder assembly comprising a cylinder closed at its opposite ends by first and second end walls, a floating piston slidably disposed in the cylinder and normally spaced from the first cylinder end wall, a compressible fluid pressurizing the space between the floating piston and the first cylinder end wall, a main piston slidably disposed between the floating piston and the second cylinder end wall and defining first and second chambers on the respective opposite ends of the main piston between the floating piston and the second cylinder end wall, a piston rod connected to the main piston having its outer end extending through and beyond the second cylinder end wall, the improvement comprising: means for adjusting the location of the movable roll relative to the frame by varying the overall length of each of the spring assemblies independently of the compressible fluid,



said means in the case of each spring assembly including a non-compressible fluid normally filling each of the cylinder first and second chambers, and a hydraulic system for optionally and conjointly varying the volume of the non-compressible fluid in each of the two chambers effective to cause relative movement between the main piston and the cylinder and for optionally varying the volume of the non-compressible fluid in the first chamber only effective to vary the pressure of the compressible fluid between the floating piston and the first cylinder end wall, the first cylinder end wall being operatively secured to either the adjacent end of the movable roll or the frame and the outer end of the piston rod to the other thereof so that thrust upon the roll during crusher operation is transmitted to the compressible and non-compressible fluids, the non-compressible fluid and the pressure of the compressible fluid in the spring assemblies together being effective to maintain the location of the movable roll with respect to the frame up to said predetermined crushing load.

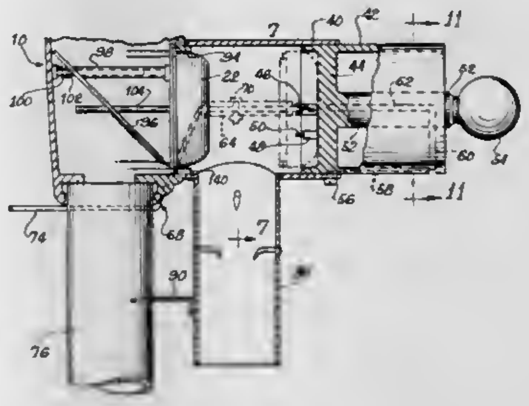
3,938,733
SEALED COLLECTION SYSTEM

Leonard J. Weber, Broadview; George G. Dominick, Hoffman Estates, and Emad T. Moustafa, Countryside, all of Ill., assignors to Qonaar Corporation, Elk Grove Village, Ill.

Filed Jan. 14, 1975, Ser. No. 540,803

Int. Cl.² G07B *15/00*

U.S. Cl. 232—16 **13 Claims**



1. In a system for handling coins and the like including a storage housing for the coins, a door for said storage housing, a lock for said door, and a transfer mechanism for use in

removing the coins from the housing, the improvement comprising means for holding the transfer mechanism in position on the housing, said holding means comprising a pair of arms pivotally connected to said transfer mechanism, means permitting spreading of the arms for location of the arms around a housing portion, means for moving the arms together for holding engagement of the arms with the housing portion, and means for retaining the arms in said holding engagement during transfer of coins from said storage housing to said transfer mechanism, said transfer mechanism including means for operating the lock to open and to then relock the door, and wherein said arms are retained in said holding engagement until said door has been relocked.

3,938,734

CONTROLLING SYSTEM FOR THE DISPLACEMENT OF THE SPECIFICALLY LIGHTER LIQUID COMPONENTS FROM A SELF-EMPTYING SEPARATOR

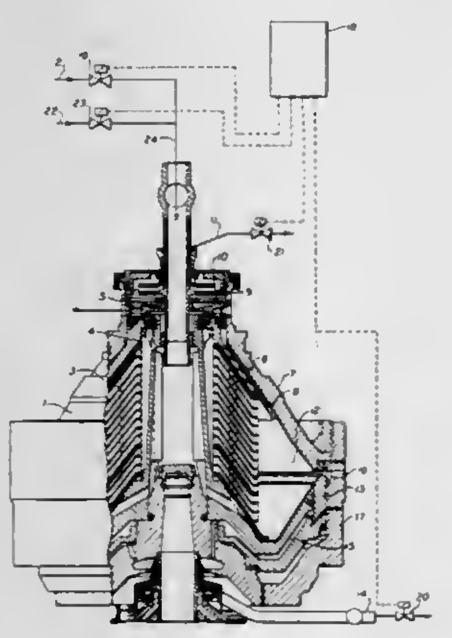
Friedrich Wilke, Oelde, Germany, assignor to Westfalia Separator AG, Oelde Westfalen, Germany

Filed Dec. 12, 1974, Ser. No. 532,134

Claims priority, application Germany, Dec. 21, 1973, 2363741

Int. Cl.^{2} B04B *1/14, 11/00*

U.S. Cl. 233—20 R **4 Claims**



1. A self-emptying centrifuge suitable for separating a feed material into a specifically heavier liquid, a specifically lighter liquid, and a solids component, comprising:

- a separating drum outfitted with an inlet for introduction of the feed, an outlet for specifically heavier liquid, an outlet for specifically lighter liquid, and an outlet for the solids component, each of the feed inlet, the outlet for specically heavier liquid, and the outlet for the solids component being provided with a valve, means for actuating the solids outlet valve to open and close it for being in the closed position during normal centrifuging and in the open position when solids are to be discharged, and
- a control unit effective following actuation thereof to operate the valve for the outlet for specifically heavier liquid to reduce the flow of specifically heavier liquid and after a fixed time interval to operate said means for actuating the solids outlet valve for opening of the solids outlet valve for discharge of the solids, and also following actuation of the control unit, to operate the valve in the feed line to shut off flow of feed to the centrifuge,

whereby as long as the valve in the feed line is open specifically lighter can be displaced from the centrifuge via the outlet for specifically lighter liquid before the solids component is discharged.

3,938,735

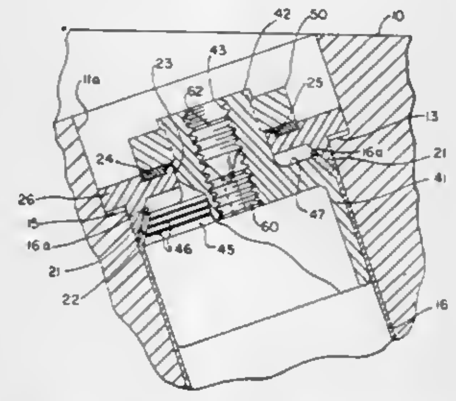
CAPPING ASSEMBLY FOR THIN ALL CENTRIFUGE TUBES

Herschel E. Wright, Santa Clara, and Kenzo Ishimaru, San Jose, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 13, 1975, Ser. No. 557,949

Int. Cl.^{2} B04B *15/00*

U.S. Cl. 233—26 **4 Claims**



1. A centrifuge test tube cap for a thin flexible test tube comprising:

- a stem member including a stud adapted to extend out of the mouth of the tube, said stem member including a cylindrically shaped skirt dimensioned to fit snugly within the inner surface of said test tube, said stem member also including an annular surface between said skirt and said stud slanting outwardly in the downward direction;
- a crown member having an opening therein said stud of said stem member and having a depending lip, the outer diameter of which is adapted to be substantially the same as the outer diameter of said flexible test tube, said lip having a wedge-shaped cross-section with an annular inner surface slanting outwardly in the downward direction and substantially conforming with the shape and slant of said annular surface on said stem member, said wedge-shaped lip of said crown member being positioned over said stem member and being thereby adapted to cause the upper edge of said flexible tube to be deformed inward against said annular slanting surface of said stem member; and

means for clamping together said stem member and said crown member whereby said upper edge portion of said flexible tube is squeezed between said respective slanting surfaces of said stem and said crown member.

3,938,736

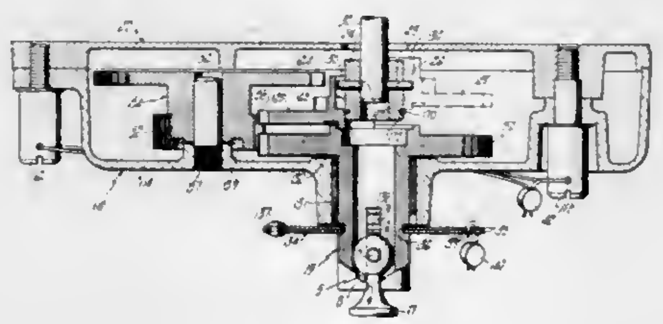
FUEL PUMP COMPUTER CONVERSION MEANS

Arthur Coleman, Dundee, Scotland, and Ronald M. Garland, Ashhurst Wood, England, assignors to Veeder Industries, Inc., Hartford, Conn.

Filed Sept. 6, 1974, Ser. No. 503,613

Int. Cl.^{2} G06C *15/42;* **B67D** *5/22*

U.S. Cl. 235—94 R **10 Claims**



1. Fuel pump computer conversion means for selectively converting the unit volume price and volume registration of a mechanical fuel pump computer from a first to a second unit volume measure having a volumetric ratio of *a*:1; the mechanical fuel pump computer having a variator with a base and a center shaft with a portion depending below the base adapted to be rotated by a fuel meter in accordance with the volume of fuel delivered, the variator being settable for establishing each place of a unit volume fuel price within a multiple place price range and for registering the unit volume price established by the variator setting, and a resettable register having at least one volume counter connected to be driven by the variator center shaft to register the volume of fuel delivered and at least one cost counter connected to be driven by the variator to register the cost of fuel delivered in accordance with the registered volume and the unit volume price established by the variator setting; the fuel pump computer conversion means comprising an auxiliary housing mounted on the underside of the base of the variator about said depending center shaft portion, a rotary output with center shaft drive means mounted on said depending center shaft portion within the housing, a rotary input rotatably mounted on the housing to extend therethrough and having input drive means inside the housing and an outside extension adapted to be rotated by a fuel meter in accordance with the volume of fuel delivered, intermediate rotary drive means mounted within the housing for operatively connecting the rotary input drive means and the rotary output drive means; the input, output and intermediate drive means collectively providing settable drive means manually selectively shiftable from externally of the housing from a first setting establishing a first drive ratio between the rotary input and rotary output, to a second setting establishing a second drive ratio between the rotary input and rotary output, the second and first drive ratios having a relative drive ratio of *a*:1 for registering with the fuel pump computer in said first setting of the settable drive means, the unit volume price and the volume of fuel delivered in said first unit volume measure and the cost of fuel delivered in accordance with the volume and unit volume price in said first unit volume measure, and for registering with the fuel pump computer in said second setting of the settable drive means, the unit volume price and the volume of fuel delivered in said second unit volume measure and the cost of fuel delivered in accordance with the volume and unit volume price in said second unit volume measure, and means inside the auxiliary housing for preventing manually shifting the settable drive means from its said second setting to its said first setting from externally of the housing whereby a fuel pump computer converted by the conversion means is operative to be manually selectively converted once from externally of the housing, from setting a unit volume price in said first to said second unit volume measure, register the volume of fuel delivered in the respective unit volume measure, and register the cost of the fuel delivered in accordance with the registered volume and the unit volume price established by the variator setting.

3,938,737

COUNTER FOR MEASURING APPARATUS SUCH AS A WATER METER OR THE LIKE

Hans Richter, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

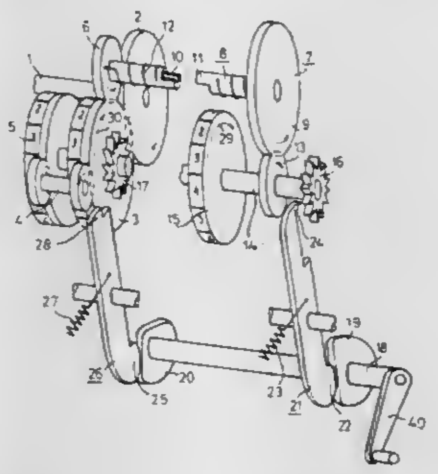
Filed Jan. 30, 1975, Ser. No. 545,555

Claims priority, application Germany, Jan. 31, 1974, 2405145

Int. Cl.^{2} G07B *15/00;* **G06C** *25/02*

U.S. Cl. 235—131 R **5 Claims**

1. A counter for measuring apparatus such as a water meter or the like comprising: a first number wheel for a low decade; a drive shaft for driving said first number wheel; an additional number wheel for values of a lowest decade; clutch-coupling means for clutch coupling said additional number wheel to said drive shaft; a first alignment star corresponding to said first number wheel and an additional alignment star corresponding to said additional number wheel; and, a cam mechanism for aligning said number wheels including: a rotatable cam shaft having a first cam disc and an additional cam disc mounted thereon; a first pawl mounted so as to be actuable by said first cam for engaging said first alignment star to align said first number wheel when said cam shaft is rotated; and, an additional pawl mounted so as to be actuable by said additional cam for engaging said additional alignment star to align said additional number wheel when said cam shaft is rotated; said cams being mounted on said cam shaft so as to first cause said additional pawl to engage said additional alignment star, and then, to cause said first pawl to engage said first alignment star when said cam shaft is rotated.



3,938,738

PROCESS FOR DRAWING IN AND COMPRESSING GASES AND MIXING THE SAME WITH LIQUID MATERIAL

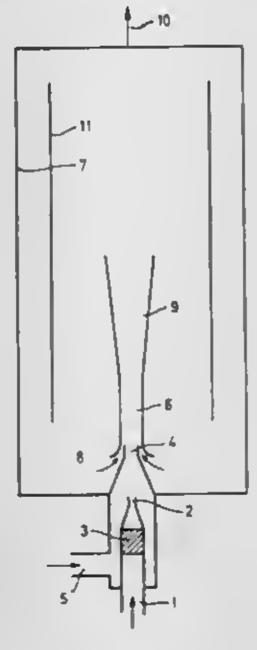
Otto Nagel; Heribert Kuerten, both of Neustadt, and Peter Zehner, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Mar. 5, 1975, Ser. No. 555,633

Claims priority, application Germany, Mar. 6, 1974, 2410570

Int. Cl.^{2} A62C *1/12;* **B05B** *7/10;* **E03C** *1/08*

U.S. Cl. 239—9 **3 Claims**



1. A process for drawing in and compressing gases and mixing the same with liquid, comprising the steps in which

- a. the gases are premixed in a mixing nozzle with one or more liquid jets traveling at a velocity of from 10 to 70 m/sec,
- b. the smallest cross-sectional area of the mixing nozzle is situated from the propulsive nozzle at a distance which is equal to from 1 to 10 times the smallest hydraulic diameter of the mixing nozzle and

c. the said smallest cross-sectional area of the mixing nozzle is equal to from 1.5 to 15 times the smallest cross-sectional area of the propulsive nozzle,

d. the two-phase liquid/gas mixture emerging from this mixing nozzle is passed to the most constricted portion of an impulse exchange tube which is present in the liquid medium, is open at its inlet and outlet ends and is preferably provided with a diffuser, and

e. the smallest cross-sectional area of the impulse exchange tube is equal to from 1.2 to 20 times the smallest cross-sectional area of the mixing nozle and the length of the impulse exchange tube is equal to from 0 to 20 times the smallest hydraulic diameter.

3,938,739

NOZZLE FOR ELECTROSTATIC SPRAY GUN

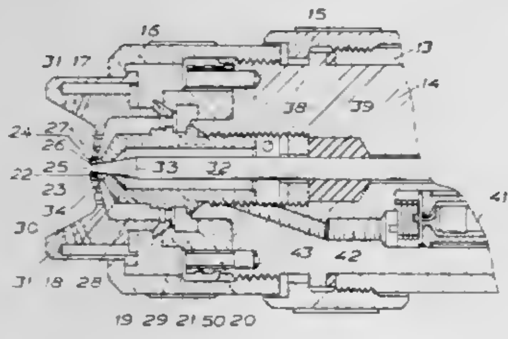
Alf Georg Bertilsson, Falkoping, and Sten Gunnar Hugo Svensson, Skara, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Apr. 17, 1974, Ser. No. 461,588

Claims priority, application Sweden, Apr. 19, 1973, 7305599

Int. Cl.² B05B *5/02*

U.S. Cl. 239—15 20 Claims



1. Electrostatic spray gun comprising a paint nozzle with a paint discharge orifice, means to convey paint to the paint nozzle, and means coupling high voltage to the paint nozzle, said nozzle comprising a body consisting essentially of a non-conductive matrix and a large number of electrically conductive particles dispersed therein, said body having an annular surface around the paint discharge orifice which includes a plurality of exposed particle surfaces forming a plurality of electrodes for producing air ions, a plurality of said exposed particle surfaces comprising a substantial portion of the maximum cross-section of the respective particle, the exposed particle surfaces being substantially coplanar with the immediately adjacent surface of said non-conductive matrix.

3,938,740

NOZZLE FOR ELECTROSTATIC SPRAY GUN

Alf Georg Bertilsson, Falkoping; Sten Gunnar Hugo Svensson, and Claes Erik Söderman, both of Skara, all of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Apr. 17, 1974, Ser. No. 461,589

Claims priority, application Sweden, Oct. 4, 1973, 7313505

Int. Cl.² B05B *5/02, 7/04*

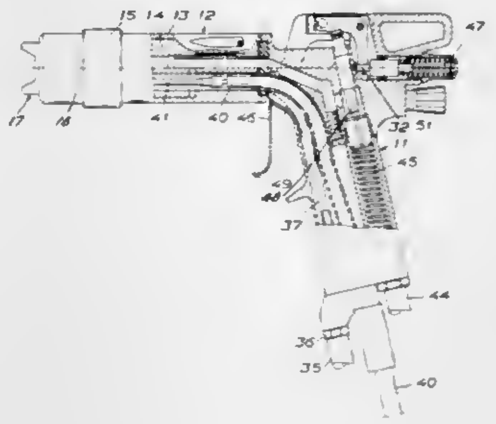
U.S. Cl. 239—15 31 Claims

1. Electrostatic spray gun comprising a paint nozzle with a paint discharge orifice, means to convey paint to said orifice, and means coupling high voltage to said nozzle, said nozzle comprising:

a non-conductive first body and a second body at least partly covered by said first body, said second body consisting essentially of a non-conductive matrix and a large number of electrically conductive particles dispersed therein, said discharge orifice being an orifice in said second body;

said high voltage being coupled to said second body of said nozzle; and

said second body having an annular surface around the paint discharge orifice which includes a plurality of exposed particle surfaces forming a plurality of electrodes for producing air ions, a plurality of said exposed particle surfaces comprising a substantial portion of the maximum cross-section of the respective particle, the exposed particle surfaces being substantially coplanar with the immediately adjacent surface of said non-conductive matrix.



3,938,741

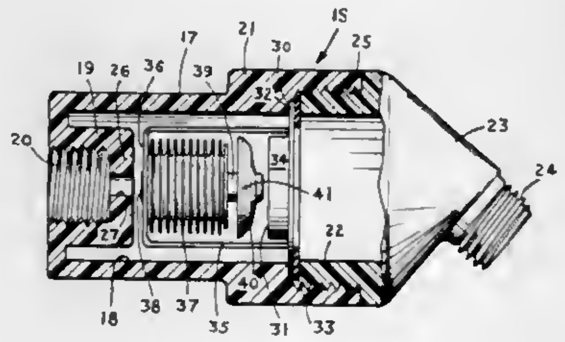
SHOWER HEADS

Lawrence McFarland Allison, Louisville, Ky., assignor to Apor Industries, Inc., Chattanooga, Tenn.

Filed Nov. 18, 1974, Ser. No. 524,738

Int. Cl.² B05B *12/10*

U.S. Cl. 239—75 4 Claims



1. A bathing fixture comprising a housing having a water supply inlet communicating with a chamber therein, a valve seat providing an outlet opening for said chamber, a discharge nozzle connected to said housing and in communication with the outlet opening formed by said valve seat, temperature responsive power means located in said chamber, a valve member connected to said power means for movement thereby upon an increase in temperature of the water flowing through said chamber above a given operating temperature, and means in said chamber supporting said power means to enable the latter to move said valve member toward said valve seat to close the opening therethrough when the temperature of the water in said chamber reaches said given operating temperature, one end of said housing being provided with a nipple for connecting a water supply pipe to said housing and forming said water supply inlet, said nipple and said valve seat having a common central axis, and said supporting means supporting said power means between said nipple and said valve seat with one end of said power means fixed in said chamber at a place adjacent to the discharge end of said nipple, said valve member being connected to the other end of said power means and movable along said common central axis toward said valve seat.

3,938,742

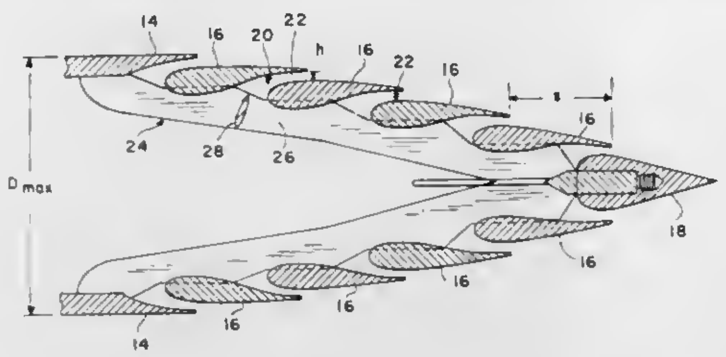
CASCADE PLUG NOZZLE

Blake W. Corson, Jr., Newport News, Va., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Continuation of Ser. No. 331,759, Feb. 13, 1973, abandoned. This application July 12, 1974, Ser. No. 488,616

Int. Cl.² B63H *11/00*

U.S. Cl. 239—265.11 10 Claims



1. A low drag exhaust nozzle for a jet aircraft which provides jet noise suppression comprising a plurality of coaxial annular segment means for sequencing the exit of exhaust gas sound wave pressure perturbations, enveloping the majority of exhaust gases in a thin exhaust gas jet layer, and converting the kinetic energy of the exhaust jet into a forward, drag-reducing thrust component, wherein said coaxial annular segments are spaced serially along the longitudinal axis of the nozzle, the diameters of said annular segments progressively decreasing downstream along said axis so that each segment is smaller in diameter than the preceding upstream segment and is larger in diameter than the subsequent downstream segment, each of said annular segments overlapping both the preceding upstream annular segment and the subsequent downstream annular segment for overlapping lengths which are small compared to the axial length of said annular segments, and said overlapping lengths defining a plurality of coaxial channels therebetween having noncoplanar exits, the length of each of said channels being small compared with the axial length of said annular segments defining said channels and the radial depth of at least the first, most upstream channel being small compared with the axial distance between the exits of said first channel and the next downstream channel and the boattail angle between the external surface of the most upstream annular segment and the longitudinal axis of the nozzle is less than 10°.

3,938,743

ADJUSTABLY POSITIONABLE SUPERSONIC NOZZLE MEANS

A. Leslie Miller, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed June 26, 1974, Ser. No. 483,236

Int. Cl.² B05B *1/32, 1/30*

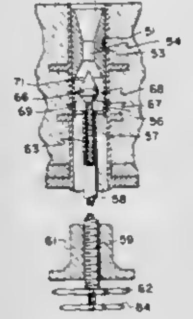
U.S. Cl. 239—457 1 Claim

1. Apparatus for use in a tuyere or like tubular member to impart supersonic velocity to a fluid passing therethrough, said apparatus comprising:

nozzle means including a central member axially positionable within a tubular member, said central member having a convergent portion, a divergent portion, and a neck portion between said divergent and convergent portions to define an annular passageway between said neck portion and tubular member having a restricted flow area to said fluid;

a venturi member having an axially convergent portion, an axially divergent portion, and a neck portion positioned between said convergent and divergent portions of said venturi member; said central member having its convergent portion of a shape substantially conforming to the convergent portion of said venturi member and being axially positionable with respect to said convergent portion of said venturi member;

a first adjusting means operably connected to said venturi member and central member for axially positioning said members along said tubular member; and



a second adjusting means operably connected to said central member for positioning said central member relative to said venturi member.

3,938,744

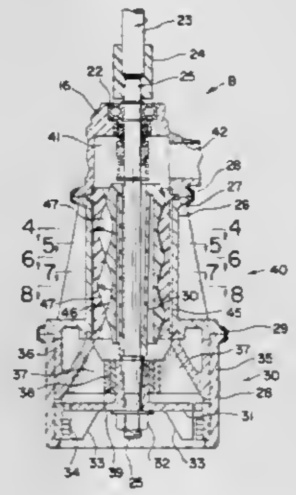
POSITIVE DISPLACEMENT ROTARY PUMP AND DRIVE COUPLING THEREFOR

Clifford Harry Allen, 13109 Westchester Trail, Chesterland, Ohio 44026

Filed Sept. 5, 1974, Ser. No. 503,380

Int. Cl.² B02C *18/40;* F01C *5/04;* F04C *15/00*

U.S. Cl. 241—46.11 10 Claims

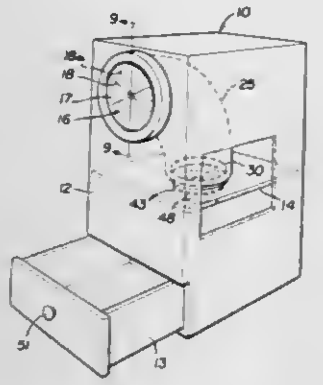


3. In a progressing-cavity, positive displacement rotary pump assembly including a rotary shaft and drive means therefor, a generally tubular stator coaxial with said rotary shaft and having a helically formed interior surface, a rotor located within said stator and having a helically formed exterior surface engaging said interior surface of said stator to define therewith sealed pumping cavities, the improvement which comprises:

a flexible member for coupling said rotor to said shaft, one end of said member being rigidly connected to said shaft and the other end thereof being rigidly connected to said rotor to transmit driving torque to said rotor and to flex to accommodate orbital movement of said rotor during rotation thereof.

3,938,745
BOTTLE CRUSHER

Floyd R. Gladwin, P.O. Box 1113, Southgate, Mich. 48192
Filed Oct. 10, 1974, Ser. No. 513,698
Int. Cl.² B02C *13/18, 19/12*
U.S. Cl. 241—99 12 Claims



6. A glass article breaker comprising:

a rotatable flat disk-like plate having a short and a long narrow radially directed vane formed upon its upper surface;

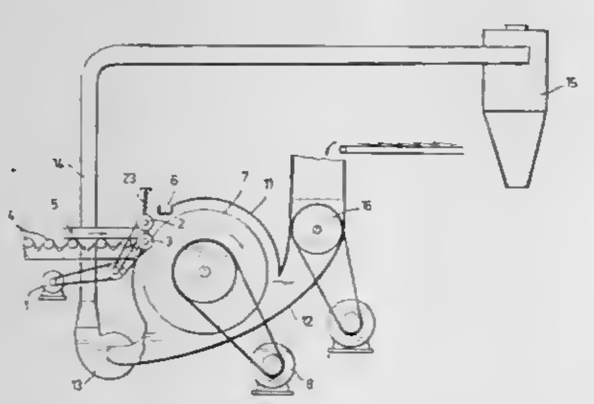
with the upper edge of each vane being sloped upwardly from the center of the plate towards the plate outer edge, and terminating in a small area high point, but with the slope of the short vane being greater than and its high point being higher than that of the long vane;

a chute arranged above the plate for directing glass articles, such as bottles and the like for gravity dropping upon the plate and vane high points for initially breaking the glass;

and means for rotating the plate, wherein said vanes repeatedly impact the glass and the sloped upper edges of the vanes throw the glass upwardly for gravity dropping back down upon the plate and vanes.

3,938,746
PRE-TEARING DEVICE FOR DRY PLATES OF WOOD PULP

Gunnar Nordgren, Helsinki, Finland, assignor to Oy Suomen Vanutehdas - Finwad Ltd., Helsinki, Finland
Filed Oct. 22, 1974, Ser. No. 516,927
Claims priority, application Finland, Dec. 21, 1973, 3956/73
Int. Cl.² B02C *18/14, 18/22*
U.S. Cl. 241—186 R 6 Claims



1. A pre-tearing device for producing a coarse flour from bale plates of flake-dried wood pulp, comprising:

a. a tearing cylinder arranged for rotation about an axis of rotation;

b. a plurality of spikes arranged on the cylindrical surface of the tearing cylinder as two helices extending in opposite directions in relation to each other, the distance between adjacent spikes of each helix being in the axial direction of the tearing cylinder, several times bigger than the width of each spike;

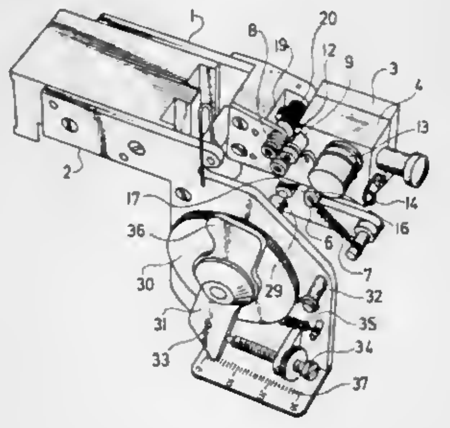
c. a plurality of bands extending circumferentially around the cylinder in a parallel relationship with each other, the distance between adjacent bands, in the axial direction of the tearing cylinder, being several times bigger than the width of each band;

d. means for feeding the bale plates to the rotating cylinder such that the angle between the feeding direction of the plates and the radius of the cylinder, at the point where the front end of the plates engages the cylindrical surface of the tearing cylinder, is in the range of 15 to 35°; and

e. a wedge means arranged in parallel with the axis of the tearing cylinder at a distance, from the feeding point in the direction of said rotation of the cylinder, and spaced a distance radially from the cylindrical surface of the tearing cylinder for grinding larger loose pieces of bale plates.

3,938,747
CHUCK HEAD WITH ROTATABLE FEEDING MOVEMENT

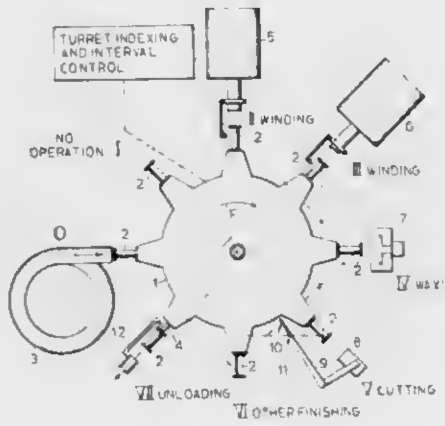
Bohuslav Vavrinec, Prague, Czechoslovakia, assignor to Tesla, narodni podnik, Prague, Czechoslovakia
Filed Feb. 22, 1974, Ser. No. 444,844
Claims priority, application Czechoslovakia, Mar. 9, 1973, PB1728-73
Int. Cl.² H01F *41/08*
U.S. Cl. 242—4 C 6 Claims



1. A chuck for winding a conductor wire into a toroid comprising a frame having a base wall and a spaced front plate parallel therewith, a front shaft and a rear shaft rotatably journalled within said base wall and front plate, a rotatable core on which said wire is wound into a toroid, said core being located between said front and rear shafts, a first and second toroid clamping rollers mounted respectively on each of said front and rear shafts, said first and second toroid clamping rollers being adapted to engage therebetween the wire toroidally wound on said core, a supporting shaft rotatably journalled between the base wall and the front plate spaced from and parallel with the front and rear shaft, a bracket pivotally supported by said supporting shaft, a lateral shaft journalled on said bracket, a third clamping roller mounted on said lateral shaft, said lateral shaft being positioned on said bracket to move toward and away from said frame on pivoting said bracket, so that said third supporting roller is adapted to selectively engage the surface of said wire wound on said core, and spring means for normally biasing said bracket toward said frame, transmission means for simultaneously rotating the front, rear and lateral shafts at a uniform speed and in the direction of rotation of said core, so that said clamping rollers cooperate to rotate the wire wound on said core, and motor means for driving said gear means.

3,938,748
MACHINE TOOL WITH INTERMITTENTLY ROTATABLE TURRET, MORE PARTICULARLY A COIL WINDER, AND METHOD OF OPERATING SAME

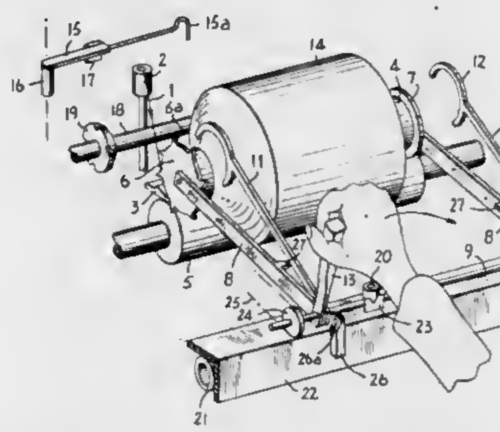
Giuseppe Camardella, No. 1, Via E. Biondi, 20154 Milan, Italy
Continuation of Ser. No. 15,808, March 2, 1970, abandoned. This application Mar. 13, 1974, Ser. No. 450,916
Int. Cl.² H01F *11/04*
U.S. Cl. 242—7.09 4 Claims



1. A method of performing a plurality of working operations on successive workpieces, the method including loading on a feed support the workpieces to be processed, and advancing the feed support by steps to convey the workpieces through a series of working stations, said working operations including a basic working operation requiring a relatively long time, and a plurality of complementary working operations each requiring a relatively short time, characterized in carrying out said basic working operation on *n* parts simultaneously at *n* working stations, *n* being at least 2, carrying out said complementary working operations in succession on single workpieces at single working stations, and advancing said feed support at the end of each basic working operation by *n* steps of which the last step is followed by a long stop for carrying out the next basic working operation and a complementary working operation, and the other steps are followed by short stops for carrying out only complementary working operations.

3,938,749
DEVICE FOR DOFFING A FULL BOBBIN ON A TEXTILE MACHINE

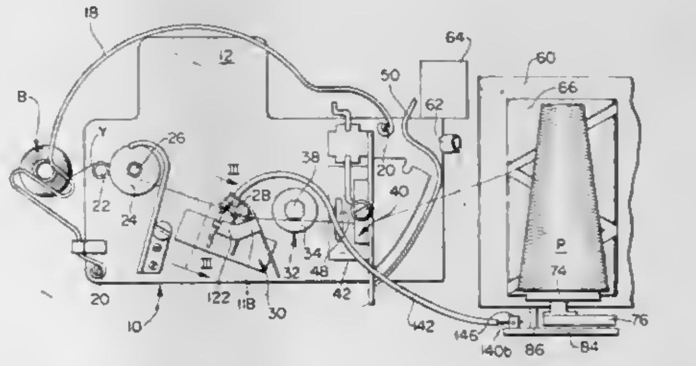
Jean Gleyze, St. Pierre de Colombier, France, assignor to Societe Civile Textile dite Societex, Lyon, France
Filed May 20, 1974, Ser. No. 471,974
Claims priority, application France, May 21, 1973, 73.18446
Int. Cl.² B65H *67/04*
U.S. Cl. 242—18 PW 10 Claims



1. In an device on a textile machine for changing bobbins and loading empty bobbin tubes for winding yarn thereon, a combination comprising means for releasably supporting an empty bobbin tube on opposite ends turnable about its axis, said means comprising a pair of spaced substantially parallel arms having each at one end tube engaging means adapted to engage a tube at a respective one of opposite ends, said arms being in the region of the other ends thereof connected to each other for simultaneous pivoting movement about a pivot axis substantially parallel to the axis of a tube so mounted, between a first yarn winding position and a second releasing position; means connected to said bobbin tube supporting means for pivoting the same between said positions thereof; means for moving at least said one end of at least one of said arms away from the other arm as the bobbin tube supporting means approaches said releasing position to release the bobbin tube from said engaging means; a cradle pivotable about said pivot axis; and means on said arms of said bobbin tube supporting means for engaging said cradle during pivoting of said bobbin tube supporting means from said first to said second position for moving said cradle to a corresponding second position for receiving a full bobbin upon release of the bobbin tube from said bobbin tube engaging means, said cradle engaging means being arranged so that the cradle may stay in said corresponding second position when said bobbin supporting means is returned to said first position.

3,938,750
STRAND DELAY DEVICE

Porter I. Barnes, Johnston, and Carlton A. Steele, Warwick, both of R.I., assignors to Leesona Corporation, Warwick, R.I.
Filed Sept. 5, 1974, Ser. No. 503,496
Int. Cl.² B65H *63/00, 54/22*
U.S. Cl. 242—36 8 Claims



1. In a strand detection system having a fault sensing zone operable to receive a strand and detect faults therein as the strand moves through said zone, the combination therewith of strand retaining means movable in a path between a first location for retaining said strand against entry into said zone and a second location remote from said first location where said strand is released for entry into said zone, securing means adapted to be positioned in said path for preventing said retaining means from moving away from said first location, and means for displacing said securing means from said path to permit said retaining means to move to said second position and afford passage of said strand into said zone.

3,938,751
DEVICE FOR CONTINUOUSLY TREATING WIRES

Heijiro Kawakami, Kobe, and Yasunobu Kawaguchi, Takarazuka, Hazine Fukinbara, Kobe, all of Japan
Filed Dec. 21, 1973, Ser. No. 427,238
Int. Cl.² B65H *51/20*
U.S. Cl. 242—47.01 10 Claims

1. A device for continuously treating wire comprising:

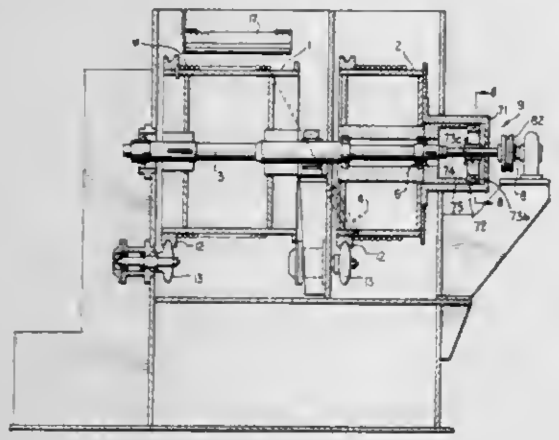
a first freely rotatable drum for winding said wire thereon;

a second drum for winding said wire thereon being freely rotatable independently of said first drum;

means for rotating the first and second drums relative to each other;

means for guiding a portion of said wire stretched between said first and second drums;

means for detecting the slackening of said wire portion stretched between said first and second drums;



means responsive to said detecting means for adjusting the slackening of said wire portion stretched between said first and second drums; and

means for controlling the relative rotations of said first and second drums.

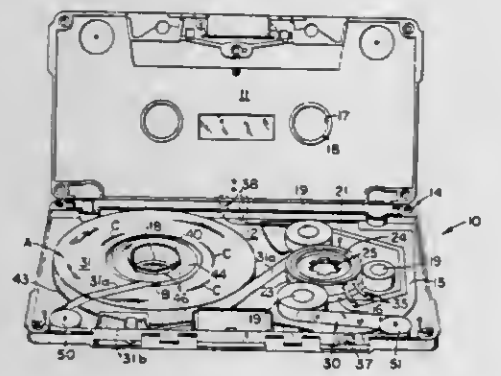
3,938,752
AUXILIARY DRIVE ENDLESS LOOP TAPE CARTRIDGE

Donald V. Mann, 4620 Geary Blvd., and Herman C. Mann, 426 Oxford St., both of San Francisco, Calif. 94118

Continuation of Ser. No. 880,201, Nov. 26, 1969, abandoned. This application Oct. 19, 1973, Ser. No. 408,143

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.19 A **18 Claims**



1. An endless loop magnetic tape cartridge for commercially available standard cassette recorders having two spaced reel drive shafts comprising:

a hollow rectangular cartridge case, said case having two spaced reel drive shaft apertures and a capstan drive aperture for cooperating with the mechanical drives of a standard cassette recorder;

a flat circular tape platen having a conical tape hub concentrically attached thereto and a flat tape supporting surface, said tape hub mounted inside said hollow rectangular case over a first reel drive shaft aperture;

an endless spool of magnetic tape spirally coiled on a surface of said flat circular tape platen with its innermost convolution contiguous to said conical tape hub, said endless spool having a threading loop egressing from its innermost convolution and returning to its outermost convolution;

guide means mounted within said case operably supporting said threading loop therein for engagement with a capstan drive and magnetic responsive means of a standard cassette recorder when said hollow cassette case is inserted therein;

an auxiliary drive means journalled inside said hollow rectangular case over a second reel drive shaft aperture, said auxiliary drive means having a flat floating plate with a central circular aperture mounted generally concentrically with said second reel drive shaft aperture, a drive wheel mounted over said second reel drive shaft aperture and a plurality of tape guides mounted on said floating plate and circumferentially disposed in spaced relationship about said drive wheel operable to support a portion of said threading loop about a substantial portion of said drive wheel to achieve positive driving engagement therebetween while allowing said drive wheel and said floating plate to move in unison within said rectangular case; and

coupling means drivingly connecting said drive wheel of said auxiliary drive with one of the reel drive shafts of a standard cassette recorder when said cartridge case is inserted therein whereby the capstan drive will be assisted by said auxiliary drive during operations of said recorder.

3,938,753
FILM TENSION MAINTENANCE MEANS FOR USE IN ROLL-FILM CAMERA

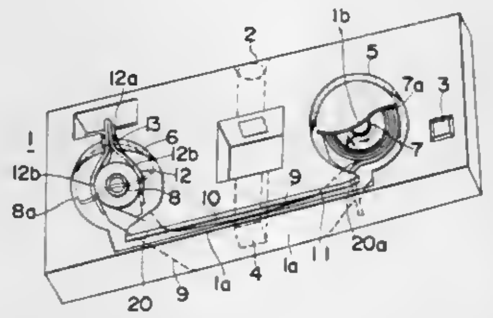
Shigeru Oshima, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 14, 1974, Ser. No. 497,448

Claims priority, application Japan, Aug. 17, 1973, 48-96543[U]

Int. Cl.² B65H *77/00*

U.S. Cl. 242—71.2 **1 Claim**



1. In a camera including a camera body, a feed spool and a take-up spool rotatably mounted within said camera body, a film loaded on said feed spool and being steadily wound from said feed spool onto said take-up spool for exposure of successive film frames through a camera lens, the improvement comprising:

an expandable clasp element for tensioning said film, said element including a base portion and a pair of arms, said element being formed by a strip of tensile material bent into caliper shape to form said base portion and said two arms which extend from said base portion and tend to close towards one another,

said camera body being provided with a slot to the side of said take-up spool, said slot receiving said base portion with said arms extending from said slot and being fitted around the central portion of said take-up spool and film wound thereon to grip the film and to maintain pressure thereon countering any tendency of the wound film to uncoil.

3,938,754
VEHICLE SENSITIVE RETRACTOR WITH PENDULUM ON FLYWHEEL

Robert L. Stephenson, Sterling Heights, and Yogendra Singh Loomba, Washington, both of Mich., assignors to Allied Chemical Corporation, New York, N.Y.

Filed July 10, 1974, Ser. No. 487,331

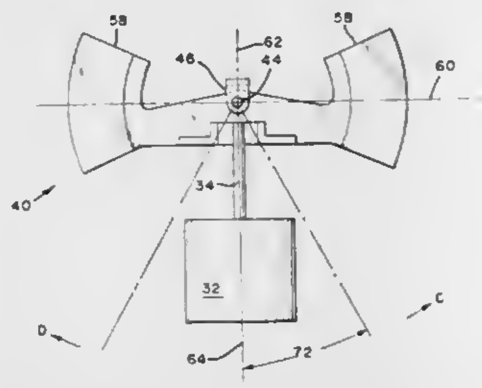
Int. Cl.² B65H *75/48*

U.S. Cl. 242—107.4 A **6 Claims**

1. In a vehicle-sensitive, inertia operated safety belt retractor having a reel for winding a safety belt, means to lock the reel and thereby restrain an occupant of the vehicle during dangerous situations, a support structure which includes two side walls and a back wall, an inertia mechanism, a support assembly mounted on said retractor for supporting the inertia mechanism and an actuating means responsive to said inertia mechanism for operating the means for locking the reel; the improvement wherein:

said inertia mechanism is a pendulum assembly which includes a pendulum head in contact with said actuating means, said pendulum assembly being actuated by forces exceeding a predetermined magnitude resulting from a sudden change in the motion or orientation of the vehicle, said actuation means operating directly on the means for locking the reel; and

said support assembly for said pendulum assembly includes: a flywheel; a pendulum support having a substantially circular support edge upon which said pendulum head is disposed, said pendulum assembly requiring a force exceeding a predetermined magnitude to lift a part of the pendulum head up and off a part of said support edge before said pendulum assembly will cause said locking means to lock the reel; said pendulum support being mounted on said flywheel, said flywheel and said pendulum assembly being adapted to pivot in one plane to a variety of operable static positions to which said pendulum assembly is adjustable accoroing to the position in which the retractor is oriented by virtue of installation in the vehicle; an axle for said flywheel adapted to allow said flywheel to pivot in one plane; and a flywheel support for said flywheel and said flywheel axle, said flywheel support being mounted on said retractor.



3,938,755
VEHICLE SENSITIVE RETRACTOR WITH ENCLOSED DOUBLE PENDULUM

Robert L. Stephenson, Sterling Heights; Robert C. Pfeiffer, Rochester, and Yogendra Singh Loomba, Washington, all of Mich., assignors to Allied Chemical Corporation, New York, N.Y.

Filed July 10, 1974, Ser. No. 487,330

Int. Cl.² B65H *75/48*

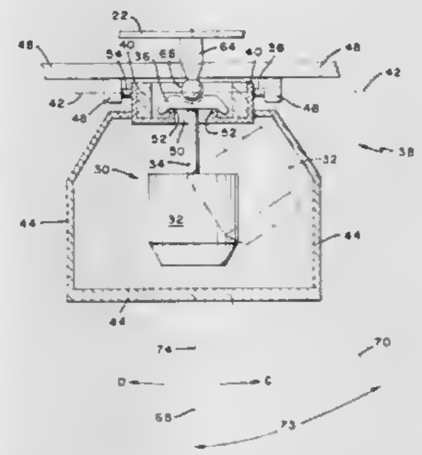
U.S. Cl. 242—107.4 A **6 Claims**

1. In a vehicle-sensitive, inertia operated safety belt retractor having a reel for winding a safety belt, means to lock the reel and thereby restrain an occupant of the vehicle during dangerous situations, an inertia mechanism, a support mounted on said retractor for supporting the inertia mechanism and an actuating means responsive to said inertia mechanism for operating the means for locking the reel; the improvement wherein:

said inertia mechanism is a lower pendulum assembly which includes a pendulum head in contact with said actuating means, said pendulum assembly being actuated by forces exceeding a predetermined magnitude resulting from a sudden change in the motion or orientation of the vehicle, said actuation means operating directly on the means for locking the reel without any intermediate mechanism disposed structurally or operatively between said actuating means and said means for locking the reel; and

said support for said lower pendulum assembly is an upper pendulum assembly which includes: a trunnion which is a concave vessel having a substantially circular support edge upon which said pendulum head is disposed, said lower pendulum assembly being adapted to pivot upon said support edge in any lateral directions, said pendulum assembly requiring a force exceeding a predetermined magnitude to lift a part of the pendulum head up and off a part of said support edge before said lower pendulum assembly will cause said locking means to lock the reel;

said upper pendulum assembly being adjustable to a variety of operable static positions in one plane with reference to said retractor according to the position in which the retractor is oriented by virtue of installation in the vehicle; a swivel axis for said trunnion adapted to allow said trunnion to pivot in two lateral directions in one plane; a support member for said trunnion; and a pendulum housing which is attached to the trunnion; said inertia mechanism and said support having a compact configuration, sufficiently compact for said pendulum assembly and said gimbal assembly to be mounted either within said retractor or outside said retractor.



3,938,756
RECORDING AND/OR REPRODUCING APPARATUS USING A TAPE CASSETTE

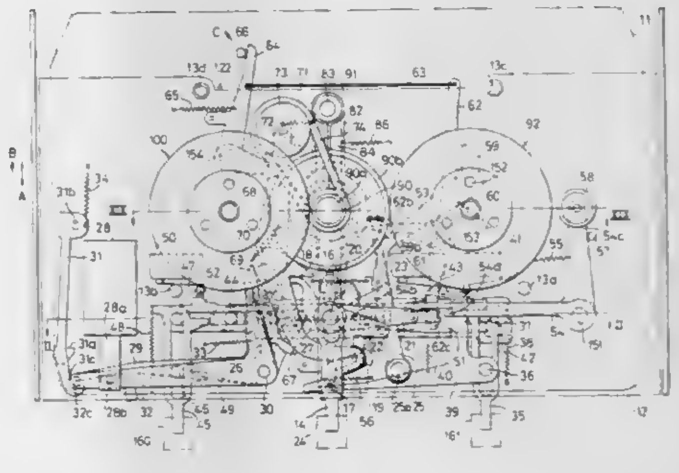
Hiroshi Katoh, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed May 24, 1974, Ser. No. 473,177

Claims priority, application Japan, May 25, 1973, 48-57667; June 12, 1973, 48-66201; June 14, 1973, 48-66338; June 14, 1973, 48-66339; June 12, 1973, 48-66200

Int. Cl.² B65H *59/38;* **G03B** *1/04;* **G11B** *1/52, 15/06*

U.S. Cl. 242—188 **9 Claims**



1. A recording and/or reproducing apparatus of the type using a tape cassette containing a recording tape therewithin, said apparatus comprising:

means for drawing the tape out of the cassette and placing the tape in a predetermined tape level path at the time of loading the apparatus and for replacing the tape in the tape travel path back into the cassette at the time of unloading the apparatus;

a fast-forward operation mechanism for placing the apparatus in a fast-forward mode responsive to controllable manipulation;

fast-forward drive means operated responsive to the fast-forward control mechanism being thus manipulated to place the apparatus in the fast-forward mode operational state;

a rewind operation mechanism for placing the apparatus in a tape rewind mode responsive to controllable manipulation;

rewind drive means operated responsive to manipulation of the rewind control mechanism to place the apparatus in the tape rewind mode operational state;

locking means for locking the fast-forward control mechanism and the rewind control mechanism in their respective manipulated states; and

control means for maintaining unoperated the fast-forward drive means or the rewind drive means at the time when the apparatus is in the unloading mode despite the locked manipulated state of the fast-forward control mechanism or the rewind control mechanism and for maintaining unoperated said mechanism upon completion of the unloading operation of the apparatus.

3,938,757

TAPE TRANSPORT SYSTEM INCLUDING A LOGICAL NETWORK FOR PRODUCING QUADRATURE PULSE TRAINS AND MOTOR CONTROL UTILIZING SAME

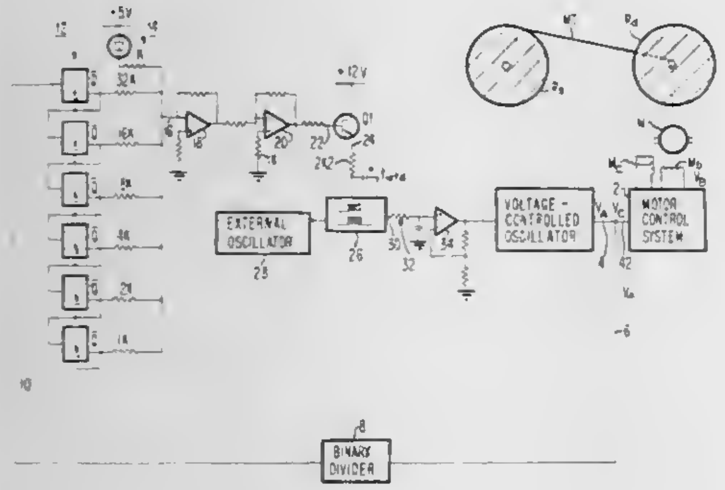
John E. Sargunar, Glenrothes, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 29, 1974, Ser. No. 456,239

Claims priority, application United Kingdom, May 2, 1973, 20840/73

Int. Cl.^{2} B65H *59/38;* G03B *1/04;* G11B *15/32*

U.S. Cl. 242—186 7 Claims



1. A constant speed reel-to-reel tape transport system, comprising: a tape drive reel; a tape supply reel; a drive motor driving the drive reel; said drive motor including a pair of quadrature windings; motor supply means producing a pair of square-wave motor-drive pulse trains of the same repetition rate, but 90° out of phase, and supplying one train to each of the quadrature windings of the drive motor to control its speed in accordance with the repetition rate of the pulse trains; and control means responsive to the change in the effective radius of one of said reels for varying the repetition rate of said pulse trains, and thereby the speed of the motor, to maintain a constant linear tape speed.

3,938,758

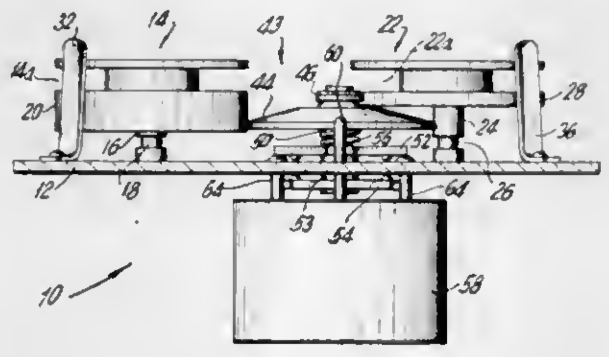
SIMPLIFIED TAPE DRIVE

Peter J. Totino, West New York, N.J., assignor to Quasar Microsystems, Inc., Brentwood, N.Y.

Filed Nov. 15, 1973, Ser. No. 415,953

Int. Cl.^{2} G03B *1/04;* G11B *15/32*

U.S. Cl. 242—201 13 Claims



1. A tape drive comprising a supply reel and a take-up reel, said supply reel being provided with a wide rim and said take-up reel being provided with a narrow rim, a portion of said supply reel rim extending below said take-up reel rim, said reels being rotatably mounted on a deck, a magnetic head being positioned in a path of tape moving from one to the other of said reels, drive means for advancing and rewinding said tape, said drive means including a platform disposed between said reels, means pivotally mounting said platform on said deck for free pivotal movement in a plane between first and second positions, said platform including a planar plate provided with spaced protuberances distributed about a periphery of one surface of said planar plate, said protuberances abutting against said deck to permit said planar plate to slidably move relative to said deck, a shaft projecting from said plate and being oriented in a direction substantially normal to said plane, a drive disc rotatably mounted on said shaft with said drive disc being movable with said plate about a pivot point of said plate between said first and second positions, friction means disposed between said drive disc and said plate for transmitting rotational forces to said plate in response to rotary movement of said drive disc on said shaft, said friction means including a helical spring mounted concentrically on said shaft with opposing free ends of said spring frictionally abutting against said drive disc and said plate, a motor shaft frictionally engaging a periphery of said drive disc for rotating said drive disc, biasing means connected to said plate for urging said plate in direction of said motor shaft to insure frictional engagement between said drive disc and said motor shaft, said drive disc including coaxial smaller and larger diameter discs vertically spaced from one another along axes thereof and fixed to one another for simultaneous rotation, said larger diameter disc being disposed at a low level to be engageable only with said supply reel rim, said smaller diameter disc being disposed at a higher level to be engageable only with said take-up reel rim, positions of said drive disc with respect to said pivot point of said platform being determined by direction of rotation of said motor shaft, said drive disc moving to said first position to engage said large diameter disc with said supply reel rim for turning said supply reel when said motor shaft turns in one direction, and said drive disc moving to said second position to engage said smaller diameter disc with said take-up reel rim for turning said take-up reel when said motor shaft turns in an opposite direction, whereby rewinding said tape by turning said supply reel is at a higher speed than advancing said tape by turning said take-up reel.

3,938,759

SPECIAL AIRCRAFT USING A NOVEL INTEGRATED LIFT, PROPULSION AND STEERING SYSTEM

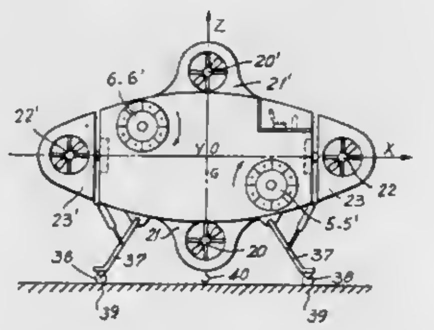
Paul Bastide, 108, rue de Rennes, 75006-Paris, France

Division of Ser. No. 354,797, April 26, 1973, abandoned. This application Aug. 19, 1974, Ser. No. 498,873

Claims priority, application France, Apr. 26, 1972, 72.14768

Int. Cl.^{2} B64C *39/00*

U.S. Cl. 244—9 10 Claims



10. An aircraft comprising a fuselage body constructed and arranged for propulsion in air, said body being substantially symmetrical and having vertical and horizontal longitudinal planes, and an integrated lift, propulsion and steering system including four cycloidal propellers grouped in pair on said fuselage body, one pair at the front and one pair at the rear of the body, each cycloidal propeller having a horizontal axis of rotation and comprising a flat ring having a horizontal axis, a circular array of identical horizontal blades, each free to turn about an axis perpendicular to said ring, said blades being supported from said ring at the periphery thereof, connecting-rods extending parallel to the plane of said ring and coupled to the blades for turning the same to vary the angle of net thrust produced by the blades, a common control head coupled to said connecting rods to operate the same and which may be eccentrically adjusted with respect to the axis of rotation of said propeller to vary the angle of thrust produced by said propeller within a vertical plane, and a hollow drive shaft for driving each propeller, said control head including means for swivelling the connecting-rods of the propeller, comprising a control lever passing inside said hollow shaft, a central swivel joint for said control lever which is stationary, two movable swivel joints at the end of the lever and two stationary hydraulic cylinders disposed at 90° with respect to each other coupled to the inner of the movable swivel joints.

3,938,760

AIRCRAFT FOR SHORT LANDING AND TAKEOFF DISTANCE

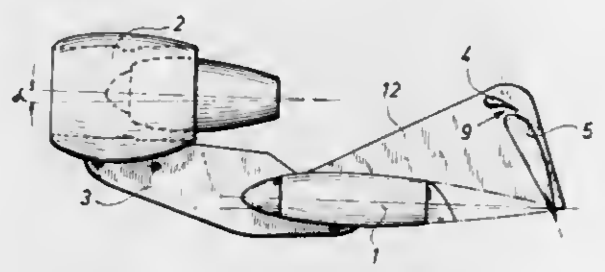
Heinzjochen Höppner, Neukeferloh, and Hans-Jurgen Schwärzler, Munich, both of Germany, assignors to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany

Filed Sept. 27, 1972, Ser. No. 292,636

Claims priority, application Germany, Oct. 5, 1971, 2149590

Int. Cl.^{2} B64C *15/06*

U.S. Cl. 244—12 D 4 Claims



1. In an airplane, the improvement for obtaining short takeoff and landing distance, comprising the combination of a jet flow emitting engine mounted on the upper side of a wing of the aircraft and in forward position so that the jet as rearwardly directed by the engine passes over and above the wing; and

the wing being constructed to have flap means in the rear of the engine, the flap means being pivotable on an axis adjacent the trailing edge of the wing so that the front portion of the flap means swings up for being positionable in the range of the jet flow of the engine to obtain jet deflection in down direction along the lower side of the swung up flap means.

3,938,761

AIRCRAFT WITH IMPROVED FIELD OF VIEW FOR PASSENGERS

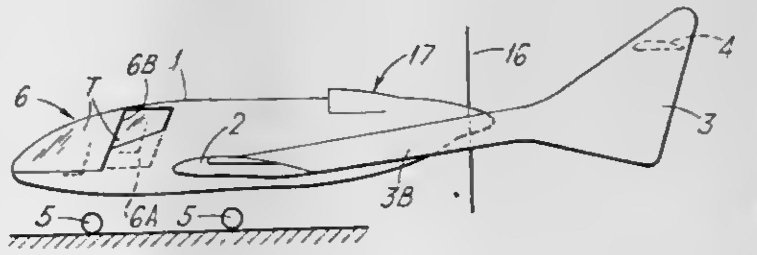
John Hempenstall, London, England, assignor to Scenic Flying Limited, Surrey, England

Filed Oct. 17, 1973, Ser. No. 407,133

Claims priority, application United Kingdom, Oct. 23, 1972, 48749/72

Int. Cl.^{2} B64C *1/00*

U.S. Cl. 244—13 8 Claims



1. An aircraft with an improved field of view comprising:

a fuselage,

thrust producing means,

lift surfaces including a mainplane attached to said fuselage, and

a cabin within and extending to and constituting the nose of said fuselage, the cabin enclosing seated accommodation for a plurality of passengers and for a pilot,

said passenger accommodation comprising a plurality of passenger seats,

said pilot accommodation comprising a pilot seat disposed behind and at a higher seating level than said passenger seats and having associated controls for said aircraft,

said cabin having a cabin transparency comprising a substantially continuous area of transparent material extending rearwardly from the foremost part of the nose of said fuselage to said pilot seat to afford substantially unobstructed vision from the aircraft for respective passengers seated in a normal position upon said passenger seats and facing forwardly and to afford sufficient vision from the aircraft to pilot the same for a pilot seated in a normal position upon said pilot seat and facing forwardly,

all of said thrust producing means being disposed substantially entirely behind all of said passenger and pilot seats,

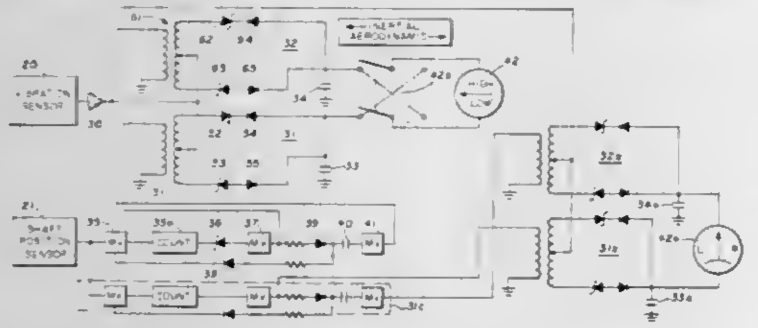
said mainplane being disposed substantially entirely behind all of said passenger and pilot seats and so as not to substantially reduce in any other normal flight attitudes of the aircraft that view of the ground which is afforded from the aircraft in straight and level flight for passengers and a pilot respectively seated in a normal position upon said passenger and pilot seats and facing forwardly, and

said mainplane being selected to be efficient at airspeeds compatible with safe low flying for sightseeing or observation purposes.

3,938,762
ROTOR BLADE FORCE TRACK SENSING SYSTEM AND AUTOMATIC SPAN TRACKING SYSTEM

Milford R. Murphy, Arlington, Tex., assignor to Textron, Inc., Providence, R.I.

Filed May 20, 1974, Ser. No. 471,177
Int. Cl.^{2} B64C *11/44*
U.S. Cl. 244—17.13 23 Claims



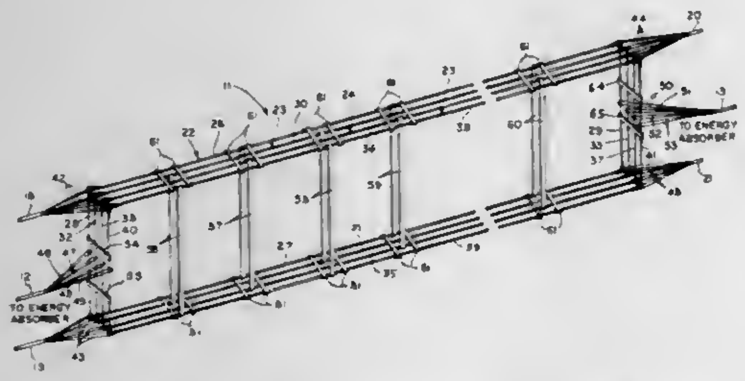
1. The method of minimizing one-per-rev vibration in a helicopter due to rotor unbalance which comprises:
generating a one-per-rev vibration signal for at least two blades of the rotor as a manifestation of rotor unbalance,
sampling said signals when each of the rotor blades are successively in alignment with a reference direction during each cycle of rotation of said rotor, and
generating a difference signal by comparing samples of said signals from each of the rotor blades to represent by magnitude and phase the character of said unbalance.

9. A system to aid in minimizing one-per-rev vibration in a helicopter airframe when supported by a mast driven rotor which comprises:
a. means to generate a signal representative of unbalance force on said mast due to displacement of the center of gravity of the rotor from the mast axis when rotating at normal rotor speed and zero lift, whereby the rotor may be modified in magnitude proportional to the magnitude of said signal and in direction dependent upon the span and chord components of said signal, and
b. means to generate a signal representative in phase and magnitude of unbalance moments on said mast due to aerodynamic forces on said mast when hovering said helicopter at normal rotor speed whereby the aerodynamics of said rotor may be modified in magnitude proportional to the magnitude of said signal and direction dependent upon said components of said signal.

3,938,763
SPACE SHUTTLE ORBITER BARRICADE

Perry R. DiGiovanniantonio, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 23, 1974, Ser. No. 472,559
Int. Cl.^{2} B64F *1/02*
U.S. Cl. 244—110 C 2 Claims

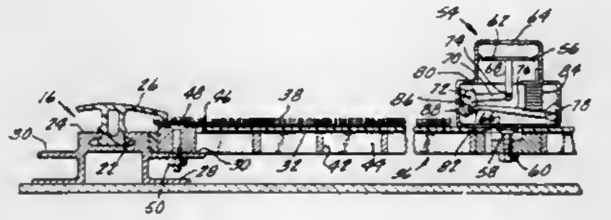


1. An arresting barrier for arresting aircraft having a fuselage and wings of predetermined size, comprising:
a plurality of barrier elements;
each of said barrier elements including vertically spaced horizontally disposed upper and lower rope members and horizontally spaced vertically disposed left and right rope members, wherein each end of each rope member terminates in an integral loop and the loops of said upper and lower rope members are interlinked with corresponding loops of said left and right rope members;
each of said barrier elements further including a plurality of horizontally spaced vertically disposed engaging straps each strap having two end portions respectively encircling said upper and lower vertically spaced horizontally disposed rope members to thereby slidably attach said strap to said upper and lower rope members;
each of said engaging straps having an edge protector attached to and covering each edge thereof, said edge protector having a U-shaped transverse cross section;
said barrier elements juxtaposed in substantially parallel planes, corresponding straps of adjacent barrier elements juxtaposed with respect to each other, the adjacent straps of each barrier element being horizontally offset relative to each other to thereby define a plurality of openings, each opening having a horizontal dimension sufficient to permit passage of a portion of the fuselage of an aircraft to be arrested while preventing passage of the wings of said aircraft;
means slidably attached to corresponding vertically disposed rope members of each said barrier element for connecting each said vertically disposed rope member to a corresponding energy absorber, wherein said rope members each comprise a polyurethane coated nylon rope having a predetermined diameter and said vertically disposed engaging straps each comprise multi-ply nylon webbing and each said edge protector comprises nylon webbing having a polyurethane coating thereon; and
means attached to the vertically disposed rope members of each barrier element for connecting each said vertically disposed rope member to a corresponding stanchion.

3,938,764
FRANGIBLE AIRCRAFT FLOOR

Robert G. McIntyre, Manhattan Beach, and Otto J. Minnich, Orange, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed May 19, 1975, Ser. No. 578,479
Int. Cl.^{2} B64C *1/18*
U.S. Cl. 244—117 R 9 Claims



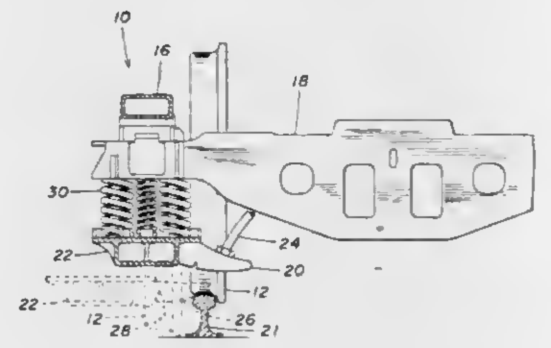
1. A frangible aircraft floor comprising a porous floor support;
a frangible panel on said support; and
means responsive to a predetermined environmental condition for striking said panel to disintegrate it.

3,938,765
DERAILMENT DETECTOR

Geoffrey Wilton Cope, Williamsville, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 162,609, July 14, 1971, abandoned. This application Aug. 3, 1973, Ser. No. 385,384
Int. Cl.^{2} B60T *7/12*; B61H *11/02*
U.S. Cl. 246—172 5 Claims

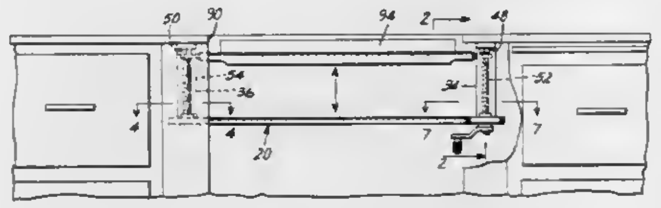
1. A safety device for initiating an air brake application on a railway car having conventional side frames with tension members which support suspension springs and rotatably mounted wheels and an air brake system, comprising a hollow metal shoe having a fracture groove on the lower side thereof, one end of the same shoe being attached to and extending laterally from an inside surface of the tension members of the side frames in close proximity and overlying the adjacent running rail, and means connecting the cavity in said shoe to the air brake train line, said shoe being arranged to strike the adjacent rail and fracture upon derailment of any wheel thereby opening said cavity and venting air from the brake train line to the atmosphere.



3,938,766
ADJUSTABLE TYPEWRITER PLATFORM MECHANISM

Bruce E. Herbolsheimer, and Douglas D. Marsh, both of Auburn, Ind., assignors to Garrett Tubular Products, Inc., Garrett, Ind.

Filed Dec. 6, 1974, Ser. No. 530,210
Int. Cl.^{2} F16F *15/01*; F16M *7/00*
U.S. Cl. 248—23 18 Claims

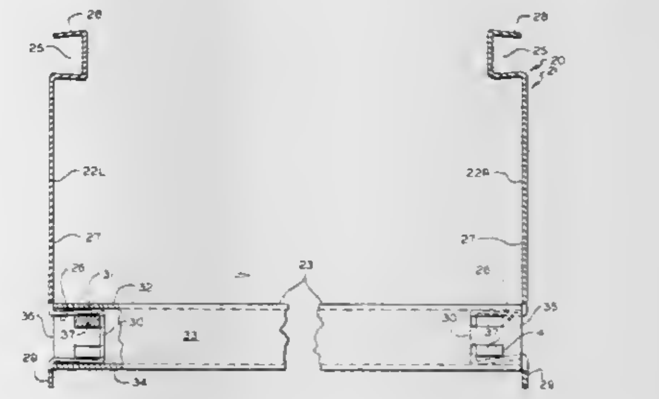


1. An adjustable typewriter platform mechanism for use with a desk having a desk top with a typewriter platform recess, the mechanism comprising a horizontally disposed U-shaped base plate having two substantially parallel and elongated sides and having a cross-member interconnecting said sides;
means for fastening said base plate to said desk with said base plate being horizontally disposed below said desk top;
a plurality of vertically disposed jack-screws each having one end thereof rotatably journalled in said base plate for nontranslational rotation therein, being spaced both longitudinally along and transversely from a horizontal axis on said base plate, and each having the other end thereof rotatably journalled in said fastening means for notranslational rotation therein;
means, including a pair of parallel spaced and horizontally disposed support-bars, for supportably attaching a typewriter platform to said jack-screws to receive lifting motion therefrom, to permit limited vertical motion between said support-bars and said jack-screws, and to permit limited relative horizontal movement between said support-bars and said jack-screws in two horizontal and orthogonally intersecting axes; and
means for simultaneously rotating all of said jack-screws.

3,938,767
CABLE TRAY

George W. Norris, Syracuse, N.Y., assignor to Crouse-Hinds Company, Syracuse, N.Y.

Filed Oct. 30, 1974, Ser. No. 519,086
Int. Cl.^{2} E21F *17/02*; F16L *3/00*
U.S. Cl. 248—58 4 Claims



1. A cable tray section, comprising: a sheet metal side rail at each side, a plurality of hollow, bent sheet metal rungs substantially rectangular in cross section, each rung bottom comprising horizontal flanges spaced on either side of an opening to the rung interior, each side rail having an upstanding web, the web having an inwardly-offset hollow flange formed adjacent to and along its bottom edge, the hollow flange having three sides bent about a keystone-shaped, outwardly opening groove, the groove being narrower across its open side than across its inward and closed side, the hollow flange having spaced pairs of vertically-extending slots thereacross at selected spaced intervals along each rail, each rung-end having its sides engaged in the hollow flange paired slots and the rung-ends abutting the upstanding webs above and below the hollow flange, at least one rung joiner for each rung-end, each joiner being longer than the width of the rung and substantially rectangular in cross section, each rung-end having at least one pair of horizontally aligned rectangular joiner slots through its sides receiving a joiner, each joiner having a tapered end adapted to be inserted in a rung-end slot, the rung-end slots being spaced from the rung-ends a selected distance and drivingly receiving a joiner therethrough and clampingly securing the rung-end against the abutting adjacent flange web, a plurality of hangers, each hanger having a railengaging portion at one end and a flat, normally horizontallydisposed, projecting portion at the other end, the projecting portion having a hole therethrough the rail-engaging portion having a length and normally horizontal width adapting this portion to be inserted in the outwardly-opening groove when the projecting portion is vertically disposed, the normally upper and lower surfaces of the railengaging portion being arcuately curved from side to side and being outwardly tapered lengthwise of the hanger to conform to the keystone shape of the rail groove, the rail engaging portion being inserted in the rail groove and rotated 90° until the projecting portion is turned to its normal horizontal disposition, the rungs being first secured to the side rails and the hangers thereafter secured in place between selected rungs, and table tray support rods each having one end secured to supporting structure and having its other end passing through a respective hanger projecting portion hole and secured thereto.

3,938,768
BARREL HANDLER

Don L. Babcock, Box 62, Utica, Kans. 67584

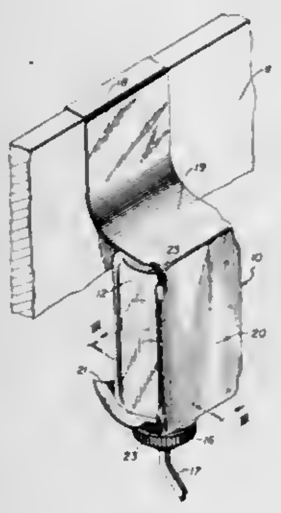
Filed June 24, 1974, Ser. No. 482,794
Int. Cl.^{2} B62B *3/08*
U.S. Cl. 248—129 8 Claims

1. A barrel handler forming a two-piece rack for loading, unloading and transporting barrels and the like comprising a pair of box tubing forming a base frame having a central frame

forming with said box tubing a U-shaped recesses at each of the ends thereof, a pair of upstanding pair of box tubing having its lower end disposed centrally of and secured to said base frame, a pair of support box tubing forming a support frame and connected between extremities of said base frame and said support frame, a movable barrel receiving frame means pivotally disposed and mounted on the free end of said upstanding pair of box tubing, and space-rest means to support the barrel receiving frame means in relative relation to the base frame, said space-rest means being constructed of box tubing and mounted in up-standing relation adjacent one of said U-shaped recesses, said base frame having a pair of wheel rollers at an end of said base frame, and a pair of handle grip means mounted on the end of said barrel receiving frame means distal to said wheel rollers.

3,938,769
BOTTLE HOLDER

Hyatt G. Wetherbee, 8 Elmwood Ave., Millbury, Mass. 01527
Continuation of Ser. No. 366,530, June 4, 1973, abandoned, which is a continuation of Ser. No. 244,411, April 17, 1972, abandoned. This application Nov. 18, 1974, Ser. No. 524,444
Int. Cl.^{2} A61M *27/00;* A47G *29/00*
U.S. Cl. 248—312 **5 Claims**

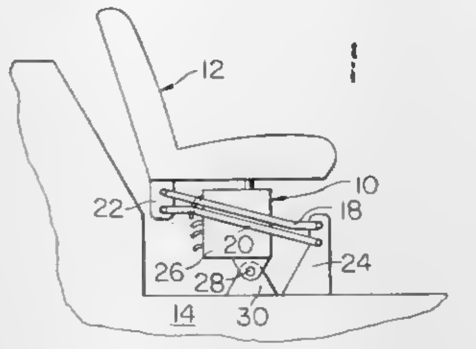


1. A bottle holder for holding an animal-feeding bottle adjacent the plane of a horizontal support, comprising

a. a first, substantially hook-shaped portion adapted to fix the holder to the support,
b. a second portion extending generally horizontally from the first portion,
c. a third portion extending downwardly from the second portion, so that said third portion is spaced from the plane of the support, and
d. a fourth portion attached to said third portion, directed horizontally back toward the plane of the support, and adapted to carry an inverted bottle so that a substantial part of the bottle is held in a volume of space defined by the second, third, and fourth portions of the holder, and by the plane of the wall, the frame being stamped from a single sheet of metal, the bottle being provided with a neck of reduced diameter and a cap, an aperture being provided in the fourth portion through which the neck extends, the diameter of the aperture being such that the reduced neck without the cap can pass through said aperture, but cannot pass through with the cap in place, the frame being constructed of opaque sheet material and thus obscuring from view a large portion of the bottle.

3,938,770
METHOD AND APPARATUS FOR HYDRAULICALLY SUSPENDING A VEHICLE SEAT

Leland D. Turner, East Peoria, and Donald L. Smith, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Oct. 7, 1974, Ser. No. 512,195
Int. Cl.^{2} F15B *1/02;* F16M *13/00;* F15C *4/00*
U.S. Cl. 248—400 **16 Claims**

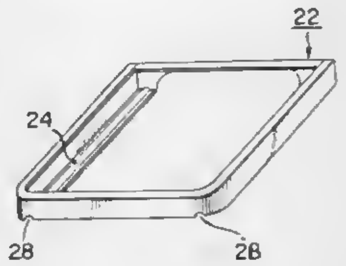


1. A hydraulic suspension assembly for regulating movement of a vehicular seat in response to vertical travel of the vehicle, comprising

a power piston reciprocably arranged within a power cylinder, the piston and cylinder comprising a flexible coupling between the vehicular seat and a suitable support structure, the power piston tending to be movable within the power cylinder and to develop pressure variations within the power cylinder in response to relative movement between the vehicular seat and the support structure,
a source of fluid under pressure,
a control valve for selectively communicating the source and a fluid drain with the power cylinder on opposite sides of the power piston,
means for operating the control valve in response to the pressure variations developed within the power cylinder by the power piston in order to establish said selected communication for the source and fluid drain with the power cylinder, and
load compensating means for limiting response of the control valve to the operating means in response to relatively minor pressure variations developed within the power cylinder,
the load compensating means comprising a restrictive orifice for communicating one end of the control valve spool with an end of the power cylinder subject to increased pressurization in response to downward movement of the vehicular seat relative to the vehicle.

3,938,771
SEAT ADJUSTER

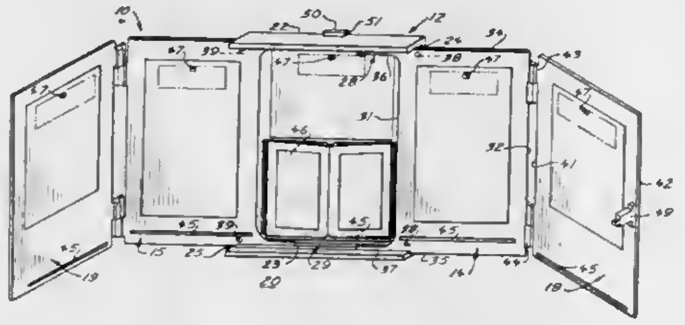
Muneharu Urai, Higashiyamato, Japan, assignor to Takeji Saito, Musashino, Japan
Filed July 19, 1974, Ser. No. 489,501
Int. Cl.^{2} A47B *7/00*
U.S. Cl. 248—429 **8 Claims**



1. A seat adjuster for use in a vehicle or the like comprising a pair of bars supported in parallel with each other on the floor surface of the vehicle, a seat frame supporting a seat body thereon and including a pair of opposite vertical side walls each having a substantially horizontal flange formed integrally therewith extending inwardly therefrom, said flanges extending the depth of the seat, and bar engaging means formed on each of said flanges, said bar engaging means having a sectional shape complementary to the sectional shape of at least a portion of each said bar, said bar engaging means engaging with said bars for allowing free sliding movement of said seat frame on said bars so that said seat frame can make sliding movement along said bars.

3,938,772
FOLDING DISPLAY EASEL

Peter W. M. Andrusiak, 124 Regina St., New Westminster, British Columbia, Canada (V3L 1S5)
Filed Nov. 25, 1974, Ser. No. 526,905
Int. Cl.^{2} A47B *97/08*
U.S. Cl. 248—461 **10 Claims**

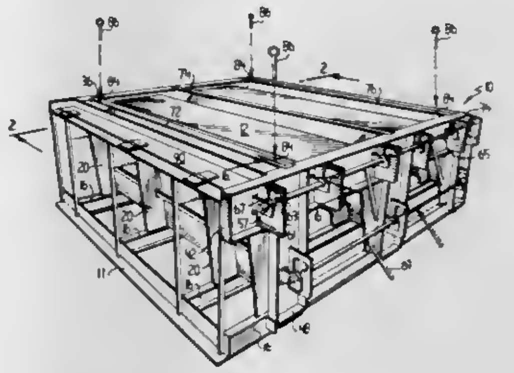


1. A folding display easel for supporting documents for easy viewing, the easel having:

a. a center panel having a front face and spaced, parallel upper and lower edges and spaced side edges, the upper and lower edges having parallel track means spaced forwardly of said front face,
b. a leg hinged to the center panel and adapted to extend therefrom, the leg being restricted against swinging relative to the center panel to support the center panel generally upright when the easel is erected and stood on a generally horizontal working surface,
c. right-hand and left-hand inner panels engaging the respective parallel track means of the center panel for sliding of the inner panels relative to the center panel, the inner panels being spaced laterally from each other and forwardly from the center panel to permit sliding together of the panels for stacking, each inner panel having respective inner and outer edges and respective parallel upper and lower edges,
d. right-hand and left-hand outer panels having respective inner and outer edges, the inner edges of the left-hand and right-hand outer panels being hinged to the outer edges of the left-hand and right-hand inner panels respectively, each outer panel being adapted to be folded essentially flat against the respective inner panel and when so folded to be spaced laterally from the adjacent inner panel and the center panel, so that when each outer panel is folded against its respective inner panel, the inner panels can be slid together along the track means without interference between adjacent panels so that the five panels are stacked together.

3,938,773
APPARATUS INCLUDING CAMMED FASTENING MEANS FOR MAKING MODULAR CRYPTS

Edward C. Duwe, and William E. Duwe, both of Oshkosh, Wis., assignors to Duwe Precast Concrete Products, Inc., Oshkosh, Wis.
Filed Oct. 15, 1974, Ser. No. 514,932
Int. Cl.^{2} B28B *7/22*
U.S. Cl. 249—27 **9 Claims**

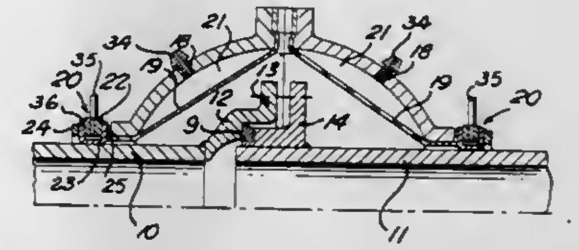


1. Apparatus for casting reinforced concrete crypt modules comprising;

a base;
a shaped casting form supported on said base for receiving fluent casting material therein, one end of said casting form being open;
an end door pivotally mounted to said base in confronting relation with the open end of said casting form, said end door having spaced slots extending therethrough; and
means mounted to said end door and said casting form for urging said end door sealingly against the open end of said casting form;
said means including spaced arm members positioned at the open end of said casting form and arranged to penetrate a respective slot in said end door, each arm member having a cam slot disposed in the penetrating end thereof, spaced cam plates affixed to said end door, each of said cam plates positioned adjacent a respective slot in said end door and having an opening therethrough, cam bar means having axially spaced cams thereon and extending through the openings of at least two cam plates, said cams being disposed in said cam slots of each of said arm members.

3,938,774
METHOD AND APPARATUS FOR SEALING LEAKING PIPELINE JOINTS

Edward Peter Smith, Burton-Upon-Trent, England, assignor to BTR Industries Limited, England
Filed May 23, 1974, Ser. No. 472,820
Claims priority, application United Kingdom, July 2, 1973, 31492/73
Int. Cl.^{2} B22D *19/04;* B25P *13/02*
U.S. Cl. 249—90 **8 Claims**

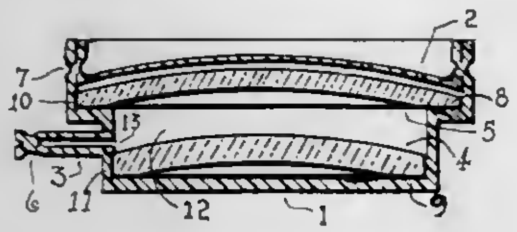


1. Apparatus for sealing a leaking joint in a pipeline, which apparatus comprises a separable mould which can be located around, and sealed to, a pipeline, which mould comprises a flexible inner lining which in use defines in conjunction with the pipeline a mould chamber enclosing the joint, an outer rigid casing which in use surrounds and is sealingly connected

to the lining to provide a space therebetween, means to allow sealant under pressure to be injected into the mould chamber and means for connecting the space between the lining and the casing to a source of fluid pressure.

3,938,775
MOLD ASSEMBLY FOR CASTING SYNTHETIC LENSES

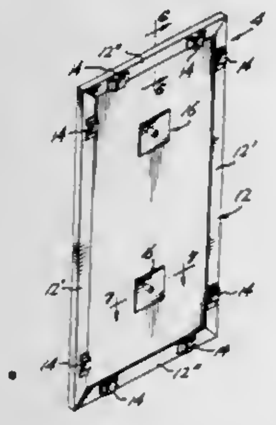
George M. J. Sarofeen, 107 Hanover Ave., Colonial Heights, Va. 23834
Filed Aug. 20, 1973, Ser. No. 390,060
Int. Cl.² B29D *11/00*
U.S. Cl. 249—102 **12 Claims**



1. A mold assembly for casting synthetic resin lenses comprising a resilient mold assembly support member in the form of an irregular cylinder having at least a pair of mold element positioning shelves of different diameters for supporting said mold elements and adjacent resilient walls connected to said positioning shelves, at least one of said walls interconnecting a pair of shelves, a plurality of mold elements of different diameters, each mold element being positioned on one of said shelves, said mold elements being disposed in an axially spaced relationship and with the periphery of said mold elements being in sealing contact with the inner surface of the walls, of said cylinder, each of said walls having an inner diameter slightly less than the diameter of the associated mold element before insertion of the mold elements and a sealed cavity having a boundary formed by opposing surfaces of the mold elements and the wall of the mold assembly supporting member between said mold elements within which a synthetic resin may be cast by polymerization, the boundary of said cavity including the entire surface of one face of one of the mold elements said face extending to the outermost periphery of the mold element.

3,938,776
FORMING PANEL WITH CONNECTION MEANS FOR ABUTTING PANELS

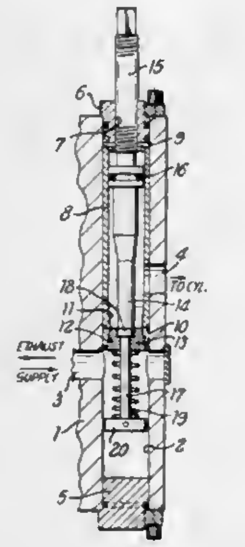
Stanley J. Frazier, 3206 S. Hudson St., Seattle, Wash. 98118
Division of Ser. No. 77,935, Oct. 5, 1970, Pat. No. 3,687,411. This application Feb. 7, 1972, Ser. No. 224,218
Int. Cl.² E04G *9/05*
U.S. Cl. 249—114 **5 Claims**



1. A forming member comprising a quadrilateral panel, the edges of which are straight from corner to corner thereof, said panel having a flat operatively interiorly oriented face and a raised marginal frame around the perimeter of the operatively exteriorly oriented face thereof, which frame has a flat face adapted to serve as a bearing surface for a waler, and pairs of connector means laterally outstanding therefrom, at spaced points thereon, which define pairs of spaced, coplanar, open-ended, edge oriented slots on all four sides of the panel, the open ends of which slots are spaced inwardly from the adjacent edges of the panel to enable one leg of an L-shaped key to be inserted in each slot while the other leg of the key is interposed in laterally outstanding condition from the frame, between the slot and the adjacent edge of the panel, said pairs of connector means being aligned with one another on spaced lines extending parallel to the axes of the panel, between the opposing sides thereof, and there being an apertured intermediate bearing surface for the waler raised on the operatively exteriorly oriented face of the panel, which is coplanar with the face of the frame, but disposed within the frame at a point positioned intermediate opposing sides of the panel in the space between the pairs of connector means thereadjacent, so that the waler can make three pointed contact with the intermediate surface and the frame within the space between the latter pairs of connector means.

3,938,777
CONTROL VALVES

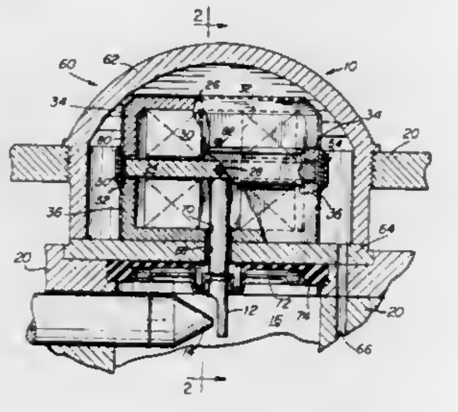
Thomas Vincent Foster, and Frank Alan Fenton, both of Doncaster, England, assignors to Emhart Corporation, Farmington, Conn.
Filed Aug. 5, 1974, Ser. No. 494,656
Claims priority, application United Kingdom, Aug. 10, 1973, 37910/73
Int. Cl.² F16K *31/50*
U.S. Cl. 251—82 **12 Claims**



1. A flow control valve for controlling the rate of flow of gas in one direction through the valve comprising a housing having therein a bore with first and second ends, first and second ports communicating with the bore in the housing, the first port being a lesser distance from the first end of the bore than is the second port, a sleeve mounted within the bore and having a double conical seat located between the first and second ports and providing similar first and second valve seats of which the first valve seat is at a lesser distance from the first end of the bore than is the second valve seat, a support stem extending longitudinally within the bore, a valve member slidable along the support stem within the bore, a stop in a fixed position on the support stem within the bore, spring means carried by the support stem and biasing the valve member towards the said stop and towards one of the valve seats, and adjustable mounting means mounting the support stem in the first end of the bore and enabling longitudinal movement of the support stem relative to the bore to be effected whereby the stop may be positioned relative to one of the valve seats such that the valve member is biased into engagement with the stop by the spring means and a predetermined aperture is formed between the valve member and the said one of the valve seats for controlling the rate of flow of gas past the said one valve seat in a first direction but the valve member is able to move against the action of the spring means to permit a substantially unrestricted flow of gas past the valve seat in a direction opposite to the said first direction.

3,938,778
METHOD AND APPARATUS FOR PROTECTING AN IMMERSED TORQUE MOTOR AGAINST CONTAMINATION

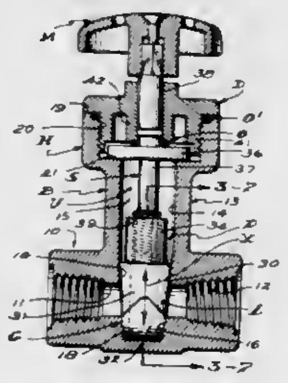
Kenneth P. Hansen, Enfield, and Robert K. Olson, Bloomfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 19, 1974, Ser. No. 534,644
Int. Cl.² H01F *7/08;* F16K *31/04*
U.S. Cl. 251—129 **16 Claims**



9. Apparatus for protecting a torque motor having a movable flapper against the accumulation of contamination in magnetic gaps of the motor comprising:
a fluid impermeable coating on the exterior of the torque motor other than the exterior area from which the movable flapper projects, the coating also having an aperture located at a low flux area on the exterior of the torque motor through which fluid may reach the interior of the motor; and
fluid sealing means extending between the coating on the motor exterior and the movable flapper to permit the flapper to move in response to motor torquing.

3,938,779
PLASTIC VALVE

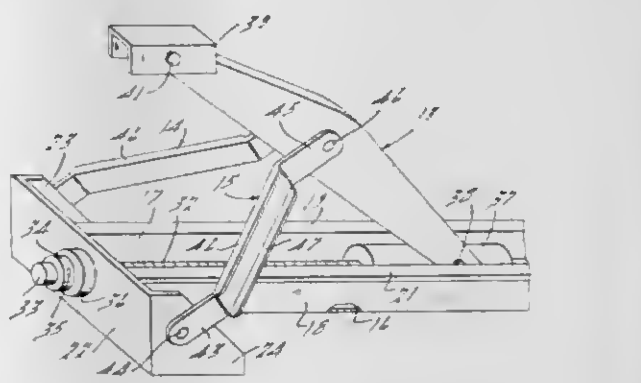
Braham G. Benjamin, Tustin, Calif., assignor to Flo-Tite Plastics Corporation, Temple, Tex.
Filed Aug. 1, 1974, Ser. No. 493,530
Int. Cl.² F16K *3/12*
U.S. Cl. 251—268 **4 Claims**



1. A gate valve comprising a body with an elongate horizontal axially extending lower portion and an elongate central portion between the ends of and extending upwardly from the lower portion and defining a normally closed chamber with an upper portion and a lower portion with flat axially spaced, substantially axially inwardly disposed, axially inwardly and downwardly inclined end seat surfaces, laterally spaced substantially laterally inwardly disposed, laterally inwardly and downwardly inclined side support surfaces and a substantially upwardly disposed bottom surface, an axially extending flow passage in the lower portion of the body intersecting the lower portion of the chamber and communicating therewith substantially centrally of said seat surfaces, a vertically extending vertically shiftable gate of flexible resilient material in the chamber and having a top, axially spaced substantially axially outwardly disposed and axially inwardly and downwardly inclined end sealing surfaces, laterally spaced substantially laterally outwardly disposed and downwardly and laterally inwardly inclined side supported surfaces and a substantially downwardly disposed bottom surface, said gate normally arranged in the lower portion of the chamber with its supported and sealing surfaces in tight wedging engagement with opposing related seat and support surfaces of the chamber and with the bottom surface of the gate in spaced opposing relationship with the bottom surface of the chamber and operating means to selectively shift the gate vertically to and from said normal position and in the upper portion of the chamber, the angle of inclination of said supported and support surfaces is less from the central vertical axis of the gate and chamber than is the angle of the sealing and seat surfaces from said vertical axis.

3,938,780
AUTOMOBILE CHASSIS JACK

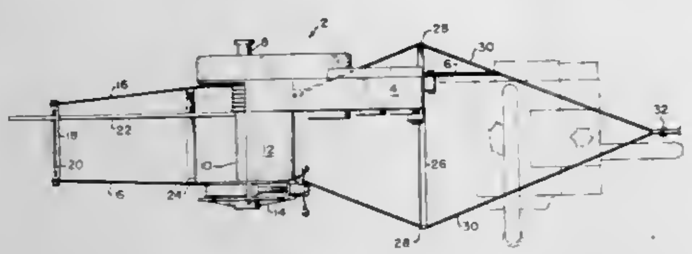
Murray L. Hauptman, 23200 Orleans Place, Southfield, Mich. 48075
Filed Feb. 21, 1974, Ser. No. 444,325
Int. Cl.² B66F *3/00*
U.S. Cl. 254—126 **11 Claims**



1. In an automobile chassis jack, an elongated base, a shaft extending along said base, a nut mounted on said shaft, means interconnecting said nut and shaft whereby rotation of said shaft will cause axial movement of the nut, a lifting arm pivotally connected at one end to said nut, a lifting pad pivotally mounted at the outer end of said lifting arm, a thrust plate mounted at one end of said base and extending transversely thereacross, a pair of side levers each having one end pivoted adjacent said thrust plate, the opposite ends of said side levers being pivotally connected to an intermediate portion of said lifting arm, means at the end of said base remote from said thrust plate for rotating said shaft in either direction, whereby said lifting pad may be moved between a raised position and a lowered position, the lifting pad in its lowered position being remote from said rotating means whereby the lifting pad may be placed beneath a chassis without the necessity of inserting intermediate portions of the jack beneath the chassis, and means for preventing a load on said lifting pad transmitted to said nut from rotating said shaft.

3,938,781
LEVEL WIND FOR WINCH

Truxtun Craven; Carlyle A. Crecelius, and Clayton W. Philbrick, all of Vashon, Wash., assignors to Olympic Instruments Inc., Vashon, Wash.
Filed Oct. 12, 1972, Ser. No. 296,787
Int. Cl. B66d *1/76*
U.S. Cl. 254—175.7 **8 Claims**



1. A level wind winch for use in combination with a power source, comprising:

a winch unit including a frame and a winch drum mounted for rotation about its central axis to the frame,

flexible rope means secured about the drum,

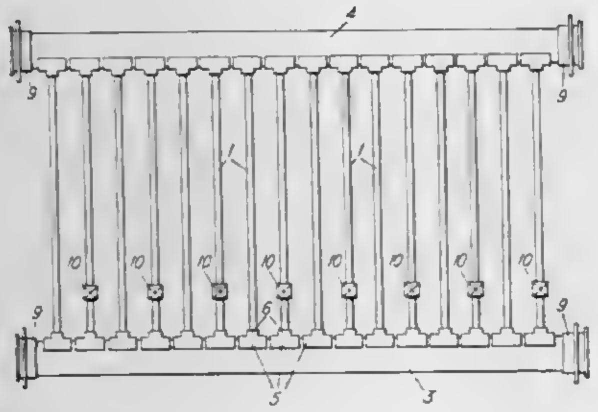
a flexible bridle comprising a pair of equal length cables securing opposite sides of the winch frame to a common fixed point of attachment rearwardly of the winch frame,

a spreader bar of greater length than the winch drum extending intermediate the point of attachment and the winch frame substantially parallel to the central axis of rotation of the winch drum,

cable retainers on the outer ends of the spreader bar through which the cables of the flexible bridle pass, the bridle allowing the winch unit to pivot about an imaginary vertical line perpendicular to the central axis of the winch drum and intermediate the winch drum and spreader bar when the rope means is being wrapped about the winch drum under tension and approaches either of the ends of the drum, the force generated by uneven loading on the flexible bridle elevating the rope means one wrap and causing the rope means to reverse directions and begin wrapping a succeeding layer over the initial layer.

3,938,782
APPARATUS FOR PRODUCING A FOAMED FIBRE DISPERSION

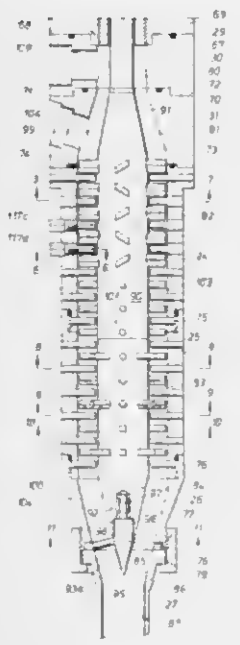
Neil George Douglas Robertson, Marlow, England, assignor to Wiggins Teape Research & Development Limited, London, England
Continuation-in-part of Ser. No. 347,561, April 3, 1973. This application Oct. 25, 1974, Ser. No. 518,187
Claims priority, application United Kingdom, Apr. 7, 1972, 16210/72
Int. Cl.² B01F *15/02*
U.S. Cl. 259—4 R **23 Claims**



12. Apparatus according to claim 11, including a vacuum system operable to remove liquid from foamed fibre dispersion on the foraminous support and a pump and return pipe arranged to return to the mixer liquid removed from the foamed fibre dispersion on the foraminous support.

3,938,783
METHOD FOR CONTINUOUS MIXING OF FOAM MATERIALS

Lawrence C. Porter, Palos Verdes Peninsula, Calif., assignor to The Upjohn Company, Kalamazoo, Mich.
Continuation of Ser. No. 85,639, Oct. 30, 1970, abandoned. This application Mar. 27, 1973, Ser. No. 345,297
Int. Cl.² B01F *7/18*
U.S. Cl. 259—7 **3 Claims**



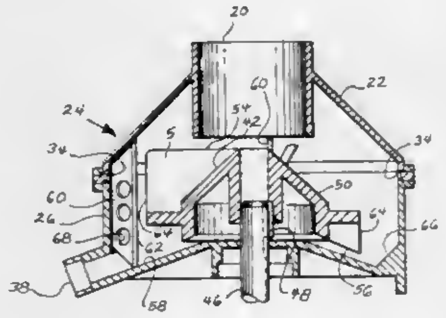
1. A method of commingling liquid materials having different viscosities to provide a substantially homogeneous mixture, comprising

introducing said materials into a stream flowing along an annular passageway, different ones of siad materials being introduced into said passageway at different locations therealong,

transversely shearing said stream at a plurality of locations along its path with pin-like members having cross-sectional configurations which are different at different locations such that the mixing and shearing action exerted on said stream progressively increases during its flow along said annular passageway.

3,938,784
BLENDER

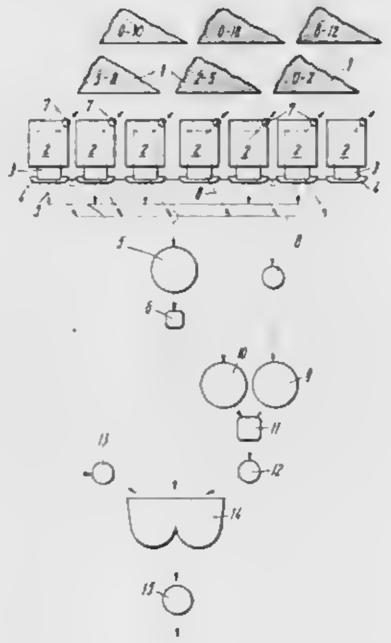
George C. Moreton, Winston-Salem, N.C., assignor to Electronic Data Controls Corporation, Winston-Salem, N.C.
Filed Aug. 24, 1973, Ser. No. 391,466
Int. Cl.² B01F *7/04*, *7/18*
U.S. Cl. 259—8 **22 Claims**



19. A blender for mixing liquids, liquids and powders, or similar products, said blender comprising a substantially closed blending bowl generally vertically disposed and having a bottom wall, an intake port adjacent one end of said bowl and a discharge port adjacent the other end thereof, said discharge port being disposed adjacent the outer edge of said bottom wall and said bottom wall sloping downwardly toward said outer edge thereof, an impeller mounted in said bowl for rotation about a generally vertical longitudinal axis and having radially extending blades disposed intermediate said intake and discharge ports and extending over said bottom wall, and means for rotating said impeller.

3,938,785
METHOD AND APPARATUS FOR MANUFACTURING A COATING MASS FOR ROAD CONSTRUCTIONS

Carl-Hermann Heise, Hannoversche Str. 61, 3220 Alfeld, Germany
Division of Ser. No. 368,352, June 8, 1973, Pat. No. 3,880,410. This application Feb. 18, 1975, Ser. No. 550,865
Claims priority, application Germany, June 10, 1972, 2228407
Int. Cl.² B28C *1/22*
U.S. Cl. 259—149 **5 Claims**

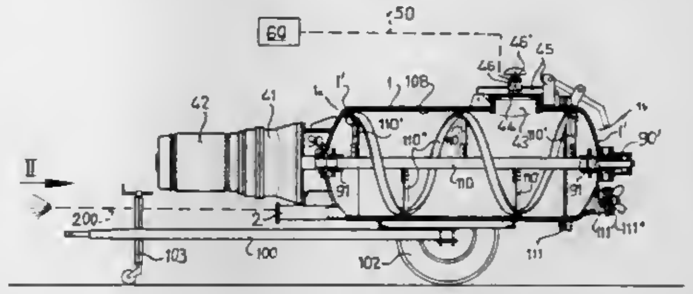


1. A method for manufacturing a coating mass for road constructions, wherein stone minerals of different grain size ranges are dosed, dried, heated, dusted off, and mixed with a binding agent and other flux materials, the stone minerals of the various grain size ranges being separately pre-dosed, dried, and heated, wherein individually absorbed fine material is divided into a sand fraction and into a self filler fraction by means of filtering, wherein the sand fraction is again added to the stone fraction of the respective grain size range, wherein the self filler fractions of all grain size ranges are combined, and wherein the heated stone fractions are weighted and mixed together with the combined self filler fractions and the binding agent in order to form the coating mass.

3,938,786
APPARATUS FOR WET SPRAYING OF CONCRETE

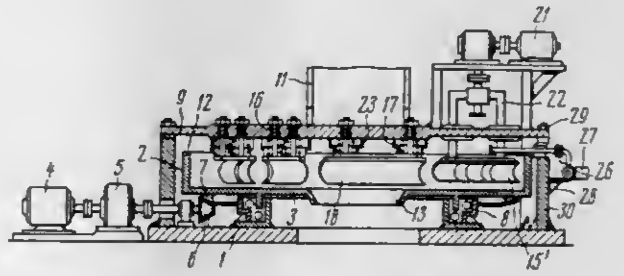
Jean Bernold, Im Hasenberg, 8880 Walenstadt, Switzerland
Division of Ser. No. 311,500, Dec. 4, 1972, abandoned. This application May 2, 1974, Ser. No. 466,474
Int. Cl.² B28C *5/06*
U.S. Cl. 259—151 **14 Claims**

1. An apparatus for the wet spraying of concrete, comprising a mixer embodying a mixing container incorporating means for closing such in a gastight fashion, a compressed air source connected with the mixing container, said mixing container incorporating a closable concrete outlet opening defined by a connection pipe, a substantially cylindrical concrete containing conduit of substantially constant diameter detachably introduced at one inner end through the connection pipe and in a position substantially flush with the inner wall of the mixing container, and a number of supplementary air infeed conduits located near the mixer and opening into the concrete containing conduit at locations spaced circumferentially about the periphery thereof for the infeed therein of compressed air to suppress the formation of concrete slugs, the infed compressed air flowing towards the central lengthwise extending axis of the concrete containing conduit to break-up any possibly formed concrete slugs.



3,938,787
APPARATUS FOR MIXING AND GRANULATING BULK MATERIALS

Vitaly Petrovich Bobylev, ulitsa Naberezhnaya imeni Lenina, 120, kv. 7; Alexandr Feodosievich Kravtsov, ulitsa Pisarzhevskogo, 6a, kv. 6, both of Dnepropetrovsk; Vitaly Nikolaevich Bytkin, prospekt Lenina, 234, kv. 32, and Ruvim Semenovich Bershtein, prospekt Metallurgov, 22, kv. 58, both of Zaporozhie, all of U.S.S.R.
Filed Dec. 31, 1974, Ser. No. 537,772
Claims priority, application U.S.S.R., Jan. 3, 1974, 1981783
Int. Cl.² B28C *5/18*
U.S. Cl. 259—177 R **4 Claims**



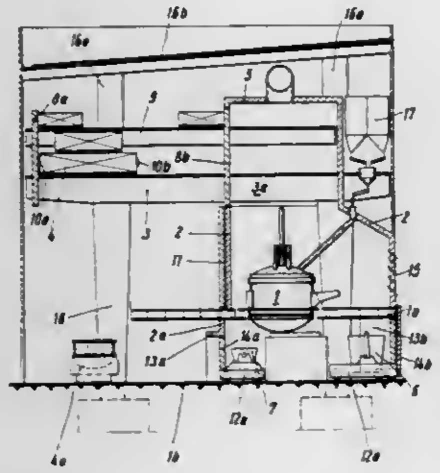
1. An apparatus for mixing and granulating bulk materials, comprising: a framework; a bowl mounted on said framework for rotation about a vertical axis; a peripheral wall for said bowl, adjacent to which a material to be treated can be charged into said bowl; a bottom for said bowl having a discharge opening at the center thereof; a portion of said framework, said portion overlying said bowl; a first group of vanes, in which each vane has one end thereof adjoining the discharge opening of said bowl, the vane curving arcuately in longitudinal and transverse directions and having a side thereof, which is convex in the longitudinal direction and concave in the transverse direction, facing in a direction which is opposite to that of rotation of said bowl, the vane being mounted on said portion of said framework, overlying said bowl; a second group of vanes, in which each vane has one end thereof adjoining the peripheral wall of said bowl, the vane being defined by at least two steps curving arcuately in the transverse direction and arranged in a horizontal direction, the vane having a side thereof, which is concave in the transverse direction, facing in a direction which is opposite to that of rotation of said bowl, the vane being inclined in the direction of rotation of said bowl so that it provides an acute angle with a radius extending from the center of said bowl to

the end of this stepping vane, adjoining the peripheral wall of said bowl, the vane being mounted on said portion of said framework, overlying said bowl; a discharge blade spanning jointly with such one of said stepping vanes, which is the most remote in succession in the direction of rotation of said bowl; the space between the peripheral wall of said bowl and the discharge opening in said bowl, said discharge blade being mounted on said portion of said framework, overlying said bowl; each said vane of said first group being arranged so that said vanes set as guides directing the material being treated toward the corresponding vanes of said second group, with the vanes of said second group, in turn, being arranged so that they act as guides directing the material being treated onto the successive ones of said vanes of said first group; a device for feeding a liquid binding agent into said bowl, said feeding device being mounted on said portion of said framework, overlying said bowl; and a drive to effect rotation of said bowl about the vertical axis thereof.

3,938,788

APPARATUS FOR THE PRODUCTION OF METALS BY A SMELTING METALLURGICAL PROCESS

Franz Josten, Duisberg, Germany, assignor to Fried. Krupp Huttenwerke AG, Bochum, Germany
Filed Dec. 9, 1974, Ser. No. 531,023
Claims priority, application Germany, Feb. 2, 1974, 2405038
Int. Cl.² C21C *5/40*
U.S. Cl. 266—13 **12 Claims**



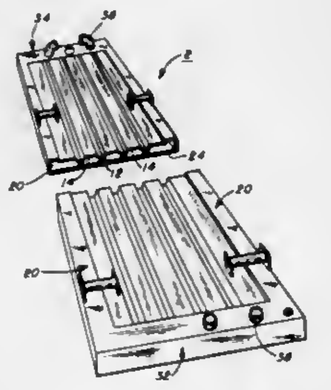
1. In an apparatus for the production or refinement of metals comprising a furnace and a hood disposed thereover, the improvement which comprises an upper chamber surrounding the sides and the top of said furnace, said upper chamber having at least one chamber side wall, said wall having a first movable door therein, a runway disposed partially within said chamber and partially out of said chamber, a charging crane disposed on said runway having disposed at one end thereof a second movable door movable therewith, means connected to said charging crane for moving said first movable door to permit entry of said charging crane, the size of said first and second movable doors being such as to substantially occupy the entire entrance way to said upper chamber.

3,938,789

METALLURGICAL COOLING PANEL

Raymond E. Richards, 36227 Ridge Road, Willoughby, Ohio 44094
Filed Dec. 5, 1973, Ser. No. 422,026
Int. Cl. C21c *5/40*
U.S. Cl. 266—16 **13 Claims**

1. A panel for use in internal cooling comprising,
a pair of oppositely disposed metal plate members,
said plate members being spaced apart and joined at their edges to provide a fluid transmitting passageway therebetween,
at least one of said plate members including integral laterally spaced continuous corrugations defining generally parallel channels in said passageway for directing fluid flow longitudinally in said panel,
manifold means disposed adjacent each of the opposed ends of said plate members and communicating with said channels,
said manifold means is of a box-like construction extending transversely across the width of said plate members,
said box-like construction defined by an end wall, an inner wall and a top wall,
said inner wall secured in fluid sealed relation to the confronting surface of said one plate member and axially inwardly of the terminal end edge thereof,



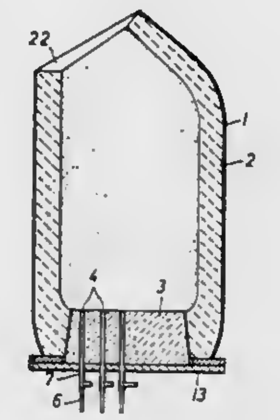
one of said plate members terminating interiorly of one of said manifold means and in laterally off-set relation to said other plate member for controlling fluid flow interiorly of said manifold means,
said one plate member includes integral upstanding side walls extending longitudinally thereof and secured in fluid sealed relation to the corresponding opposed sides of said other plate member,
said side walls extending parallel to each other and interiorly of said manifold means,
said inner wall being secured in fluid sealed relation at its opposed ends to said side walls axially inwardly of the respective ends thereof,
a series of plug welds securing said one plate member to said other plate member, and
said plug welds being disposed in the area of said corrugations between said channels.

3,938,790

METHOD AND CONVERTER FOR REFINING PIG-IRON INTO STEEL

Helmut Knuppel; Karl Brotzmann; Hans-Georg Fassbinder, all of Sulzbach-Rosenberg, Germany; Guy Savard, Vaudreuil, and Robert Lee, Montreal, both of Canada, assignors to Eisenwerk-Gesellschaft Maximilianshutte mbH, Sulzbach-Rosenberg, Germany
Division of Ser. No. 800,892, Feb. 20, 1969, Pat. No. 3,706,549. This application June 15, 1971, Ser. No. 153,277
Int. Cl.² C21C *5/42*
U.S. Cl. 266—35 **6 Claims**

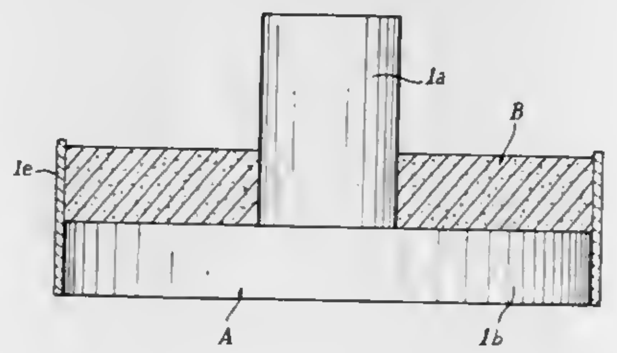
1. A converter consisting essentially of a sheet-steel casing with a refractory lining and an inserted nozzle bottom in which a substantial portion of the converter bottom is free of nozzles, and in which the nozzles are each made up of an oxygen pipe and a concentric encasing gas pipe, and in which a non-return valve is arranged in the feed line to each encasing-gas pipe.



3,938,791

DEVICE FOR PLUGGING TAP-HOLES OF REACTORS FOR METALLURGICAL PROCESSES

Bruno Imbertl, Genova, Italy, assignor to Centro Sperimentale Metallurgico S.p.A., Rome, Italy
Continuation of Ser. No. 378,994, July 13, 1973, abandoned. This application Jan. 14, 1975, Ser. No. 540,868
Claims priority, application Italy, July 31, 1972, 51891/72
Int. Cl.² C21C *5/46*
U.S. Cl. 266—42 **1 Claim**

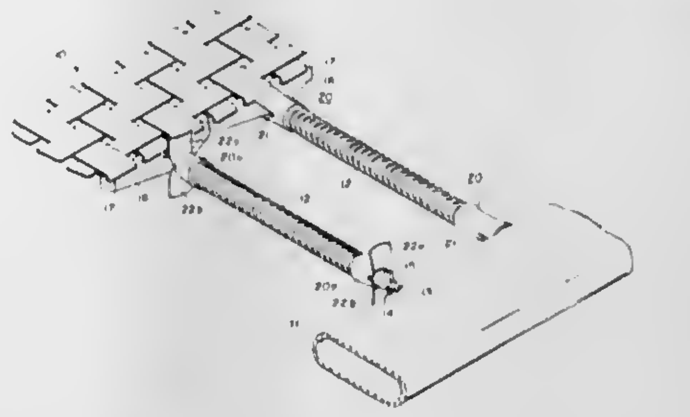


1. A device for plugging the taphole from within reactors for metallurgical processes, comprising a solid element made of refractory material and having an enlarged substantially cylindrical head, an annular packing consisting essentially of a mixture of refractory material in powder form and of a binder, said packing being disposed on the same side of said head as said element and surrounding one end of said element, said material being cold coherent and plastically deformable for increasing values of the temperature within the limits of the thermal interval within which the mixture sets, and becoming indeformable for values of the temperature higher than the said thermal setting interval, but lower than the operating temperature of the reactor, after a period of exposure to the operative conditions longer than the time necessary for installing the plug, and an annular collar member made of sheet material and surrounding said annular packing and spaced outwardly from said solid element by said annular packing.

3,938,792

PROTECTIVE END COVERS FOR THE RESILIENT SUSPENSION MEMBERS OF TRAMPOLINE BEDS AND THE LIKE

George P. Nissen, Cedar Rapids, Iowa, assignor to Nissen Corporation, Cedar Rapids, Iowa
Division of Ser. No. 462,662, April 22, 1974, Pat. No. 3,869,120. This application Oct. 18, 1974, Ser. No. 515,823
Int. Cl.² F16F *1/46*
U.S. Cl. 267—69 **1 Claim**



1. For use with apparatus for rebound of a performer in connection with trampoline, gymnastic and like activities, the apparatus having a frame and a flexible bed resiliently suspended from the frame by a plurality of resiliently extensible members between opposed marginal edges of the frame and the bed, each extensible member having an end portion and an outer hook removably connected to one of said marginal edges, the hook extending transversely across the adjacent end portion of the extensible member and terminating in an exposed hook end subject to contact by a performer, a protective device comprising: a flexible sleeve having two longitudinally adjacent portions, the first portion being adapted to encompass said member end portion to locate the sleeve relative to the extensible member, the wall of the second sleeve portion having a pair of slits therein extending in a longitudinal direction inwardly from the outer end thereof to form a pair of flap portions foldable back toward the first sleeve portion, one of the flap portions being adapted to protectively overlie said hook end.

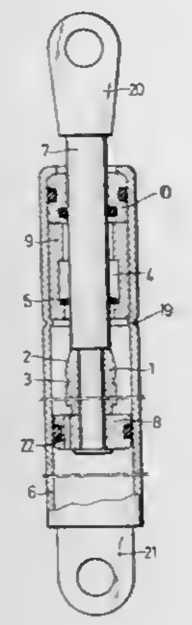
3,938,793

PNEUMATIC SPRING WITH STOP MECHANISM

Panayotis Kaptanis, Neuwied, and Castor Fuhrmann, Brachtendorf, both of Germany, assignors to Stabilus GmbH, Kohlenz-Neuendorf, Germany
Filed Aug. 26, 1974, Ser. No. 500,360
Claims priority, application Germany, Sept. 8, 1973, 2345503
Int. Cl.² F16F *9/32*
U.S. Cl. 267—120 **11 Claims**

1. A pneumatic spring comprising:
a. a cylinder having an axis and bounding a sealed cavity therein;
b. a piston axially movable in said cavity;
c. a piston rod axially fastened to said piston and extending outward of said cavity in movable, sealing engagement with said cylinder, said piston rod and said cylinder constituting the two principal elements of said spring;
d. a gas under a pressure higher than atmospheric pressure retained in said cavity and biasing said piston rod outward of said cavity;
e. stop means responsive to a first relative axial movement of said elements for impeding relative axial movement of said elements,
  1. said stop means responding to a second axial movement of said elements different from said first movement for releasing said elements,

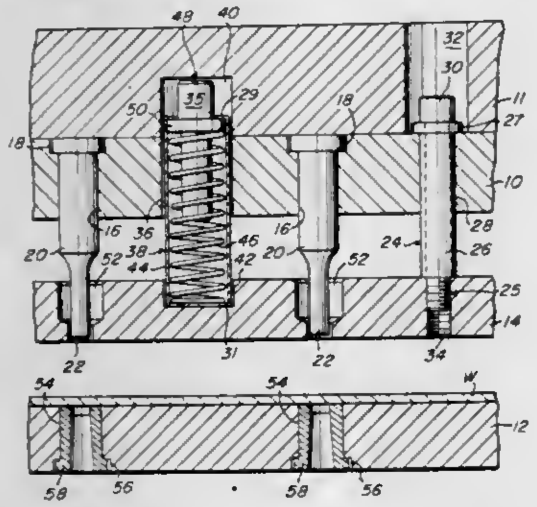
2. said stop means including cooperating stop members axially secured to said elements respectively,
3. said stop members engaging each other while said stop means impede said axial movement; and



f. means for securing said elements against relative angular movement during said relative axial movements thereof.

3,938,794
CAGED SPRING UNIT

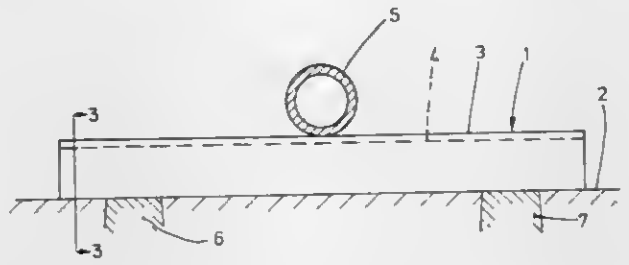
Harry G. Stevens, Union, and Allan E. Randolph, Sr., Dayton, both of Ohio, assignors to Dayton Progress Corporation, Dayton, Ohio
Division of Ser. No. 323,955, Jan. 15, 1973. This application Aug. 21, 1974, Ser. No. 499,269
Int. Cl.^{2} F16F *5/00*
U.S. Cl. 267—130 **5 Claims**



1. A device for use as an independent pre-loaded stripper spring unit comprising a cage containing a longitudinally extending compressible spring, means at one end of said cage providing a seat for one end of said spring, means at the other end of said cage defining an aperture therein, a plunger-like means within and oriented axially of said cage having a portion enlarged in diameter to form opposite facing, axially spaced, shoulders, an inwardly facing shoulder being engaged by an opposite end of said spring and an outwardly facing shoulder limiting against the said other end of said cage around said aperture, under the urging of said spring, an extension of said plunger-like means being projected through said aperture to extend the length of the assembly comprising said cage, said spring and said plunger, said plunger-like means being accessible through its said extension to be moved inwardly of said cage to reduce the normal length of said assembly and apply a spring load to urge an axial projection of said cage, and said plunger extension being fabricated to facilitate a reduction of its projected length and the normal length of said assembly without a requirement for applying an additional load on said spring or said cage.

3,938,795
RESILIENT SHOCK ABSORBING BUMPER

Richard Haar, Braunschweig, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed Sept. 19, 1973, Ser. No. 398,818
Claims priority, application Germany, Sept. 21, 1972, 2246220
Int. Cl.^{2} B60R *19/08;* **B61F** *19/04;* **F16F** *3/10, 7/00*
U.S. Cl. 267—140 **9 Claims**



1. A crush resistant bumper for protecting an object against impact collisions, said object having a continuous elongate support surface for said bumper; said bumper comprising:

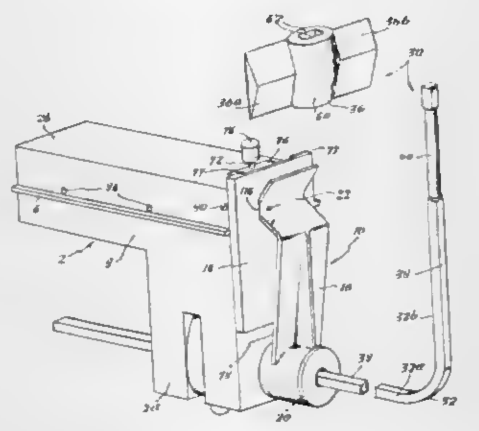
an elongate resilient cushion member having one side disposed on said support surface of said object, said one side being attached to said support surface in a substantially continuous line along substantially the entire length of said cushion member, said cushion member having an impact accepting surface on the side thereof which is opposite said one side and faces away from said support surface; and

a flexible, pliant band of high tensile strength which is substantially stable in its longitudinal dimension, said band being secured on said cushion member in a region thereof which is closer to said impact accepting surface than to said support surface, said band further being attached to said cushion member at points which define a substantially continuous line substantially coextensive with the long dimension of said impact accepting surface,

whereby forces impacting against a restricted area of said bumper are distributed longitudinally by said band to and along said cushion member to resist permanent crushing of said cushion member in the vicinity of the impact area.

3,938,796
WORKPIECE LOCATION APPARATUS

Gordon Williams Wynn, The Glebe, Holton-cum-Beckering, Lincoln, Lincolnshire, England
Filed July 1, 1974, Ser. No. 484,756
Int. Cl.^{2} B25B *11/00*
U.S. Cl. 269—2 **21 Claims**

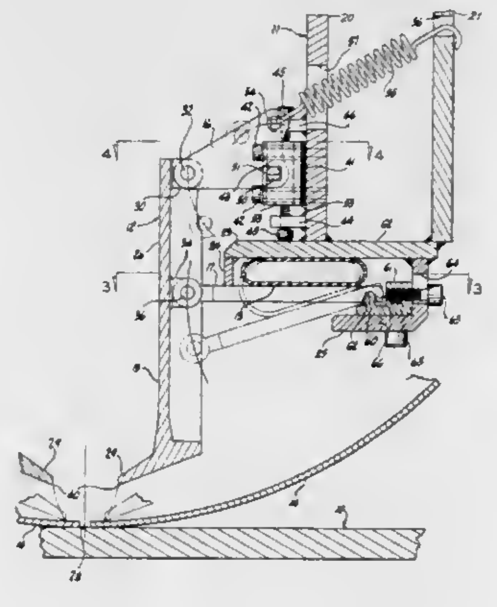


1. Workpiece location apparatus for making a saw cut at a predetermined location in an elongate workpiece comprising:

a bearer member adapted to be placed on the workpiece in fixed relation to and engageable with a side face thereof; saw guide means including a planar element carried by said bearer member in fixed relation therewith to thereby define a saw cutting guide plane perpendicular to said side face, said saw guide means including biasing means adapted to urge a saw blade against said planar element and presenting a guide opening for introduction of the saw blade from above, said biasing means and planar element thus being adapted to maintain the saw blade in said saw cutting guide plane during the cutting cycle; and workpiece location means mounted on said bearer member adapted to define a location for the workpiece in a direction transverse to said saw cutting guide plane, said location means being adjustably mounted on said bearer member relative to said guide plane in said transverse direction.

3,938,797
CLAMPING DEVICE FOR WELDING SEAMER

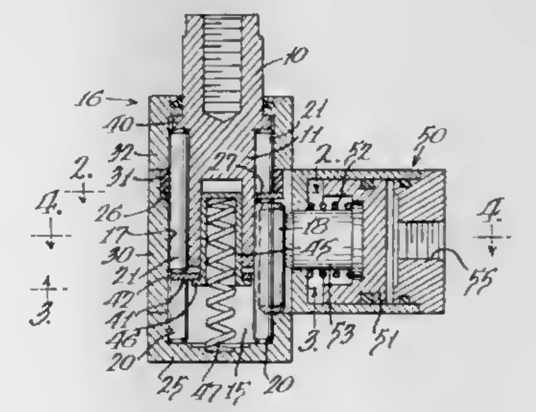
Arthur I. Frederick, Webster Groves, Mo., assignor to The Pandjiris Weldment Co., St. Louis, Mo.
Filed Jan. 9, 1974, Ser. No. 431,905
Int. Cl.^{2} B23K *37/04;* **B25B** *1/18*
U.S. Cl. 269—20 **10 Claims**



1. In a clamping device for a seamer:
a. a base including a workpiece table,
b. a support member spaced above the table and including first and second connection points,
c. a clamping unit including:
  1. a clamping member transversely disposed of said table and having a bearing end adapted to engage a workpiece on the table, a first connection point disposed in lengthwise spaced relation from said bearing end, and a second connection point disposed between said bearing end and said first connection point,
  2. a link member pivotally connected between the first connection point of the support member and the first connection point of the clamping member,
  3. a pressure lever link member pivotally connected between said second connection point of the support member and the second connection point of the clamping member, and
  4. adjustable means for varying the path of the bearing end,
d. an inflatable flexible hose disposed between the support member and the pressure lever link member to apply a force to said pressure lever link member between the connection points to the support member and the clamping member,
e. means for inflating the hose to rotate the pressure lever link member about the second connection point of the support member to urge the bearing end of the clamping member into engagement with the workpiece,
f. means for returning the clamping member out of engagement with the workpiece when the hose is deflated,
g. said clamping member being substantially vertical, and including an inclined outstanding finger at the lower end providing a bearing edge at the bearing end, and
h. the horizontal distance between the link member pivotal connections to the clamping member and support member being less than the horizontal distance between the pressure lever link member pivotal connections to provide relative movement of said bearing edge laterally away from said support member as said bearing edge is urged toward said workpiece table.

3,938,798
ADJUSTABLE WORK SUPPORT

James C. Solie, and Samuel B. McClocklin, both of Owatonna, Minn., assignors to Owatonna Tool Company, Owatonna, Minn.
Filed Apr. 23, 1975, Ser. No. 570,614
Int. Cl.^{2} G25B *11/00;* **B23Q** *3/10*
U.S. Cl. 269—20 **10 Claims**



1. An adjustable work support comprising a casing with a cylindrical open-ended chamber, a plunger having a cylindrical stem movable lengthwise in said chamber and an end outside said casing for work-supporting engagement, said chamber having a diameter greater than said stem to provide a space therebetween, a series of round locking pins in said space in side-to-side contact, every other pin movable with the stem and the remaining pins held against movement with the stem, a driving pin positioned between two of said locking pins, and means for exerting a force on said driving pin to force said two locking pins apart and exert a compressive force on said locking pins one against the other to hold the stem in adjusted position.

3,938,799
SIGNATURE ARRANGING DEVICE AND METHOD

Thomas F. Macke, Fort Lauderdale, Fla., assignor to Hydrabind, Inc., Miami, Fla.
Filed Oct. 24, 1972, Ser. No. 299,819
Int. Cl.^{2} B65H *5/30*
U.S. Cl. 270—55 **11 Claims**

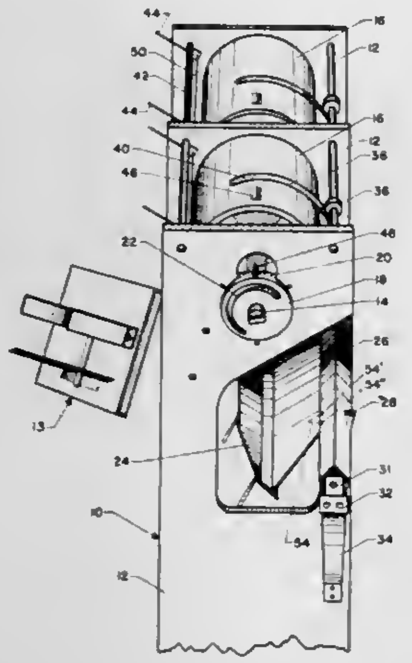
1. A signature inserting and collating device utilized in a bookbinding operation for providing signatures stacked one inside the other in an inserted array or stacked side by side in a collated array comprising:

a magazine for holding a plurality of signatures in said magazine with backbone in a first position or in a second position, oppositely disposed;

a rotatable cylindrical drum having a surface signature connecting means connected tangentially at one point along its surface, said drum connected adjacent to said signature magazine and positioned to receive one edge portion of a signature in said magazine;

said signature connected means separates and holds a signature in said magazine to said cylindrical surface for a predetermined amount of rotational distance of said drum;

movable means coupled adjacent said cylinder for receiving said signatures from said drum surface in a first or second position in a receiving area relative to said magazine signature position;



signature drive means for driving said movable means for moving signatures; and

finger means connected to said movable means, adjustable to a first position for moving signatures in a first direction and to a second position for moving signatures in an opposite direction.

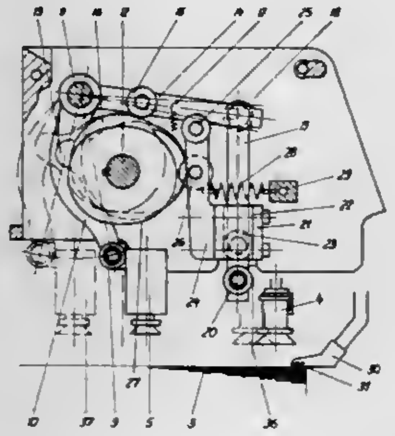
3,938,800
SUCTION HEAD FOR SHEET FEEDING APPARATUS
Arno Wirz, Bammental, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Continuation of Ser. No. 352,191, April 18, 1973, abandoned. This application Oct. 3, 1974, Ser. No. 511,688

Claims priority, application Germany, Apr. 26, 1972, 2220353

Int. Cl.^{2} B65H *3/08*

U.S. Cl. 271—93 **10 Claims**



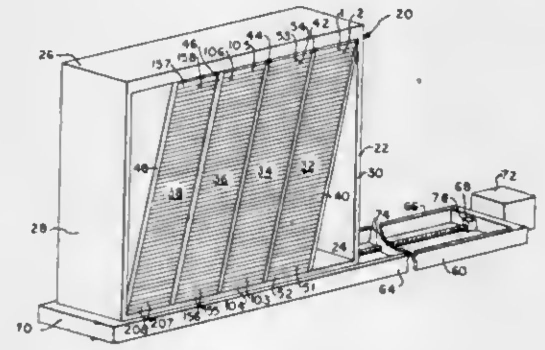
1. A suction head for feeding sheets to further sheet transporting means comprising suction separation means for lifting sheets off a pile of sheets, transport suction means for taking over the sheet lifted by the suction separation means, said transport suction means being movable over a given transport distance for advancing the sheet in a transport direction towards said further sheet transporting means, and control means for moving said suction separation means in said transport direction over a distance shorter than said transport distance simultaneously with and at the same velocity as said transport suction means, whereby said separation suction means assist said transport means in transporting the lifted sheet over said shorter distance.

3,938,801
CONTINUOUS OPERATING COLLATOR
David H. Holliday, 21315-80th West, Apt. 11, Edmonds, Wash. 98020

Filed Aug. 19, 1974, Ser. No. 498,454

Int. Cl.^{2} B65H *31/24*

U.S. Cl. 271—173 **29 Claims**



1. A collator comprising:

a. at least two columns identified as a first column and a second column,

b. each column having a plurality of bins;

c. said columns being juxtapositioned to each other;

d. said columns being on a bias at a slant;

e. said bins being, substantially, horizontal;

f. an upper bin, partially, overlying the next lower bin and, partially extending over the next lower bin; and,

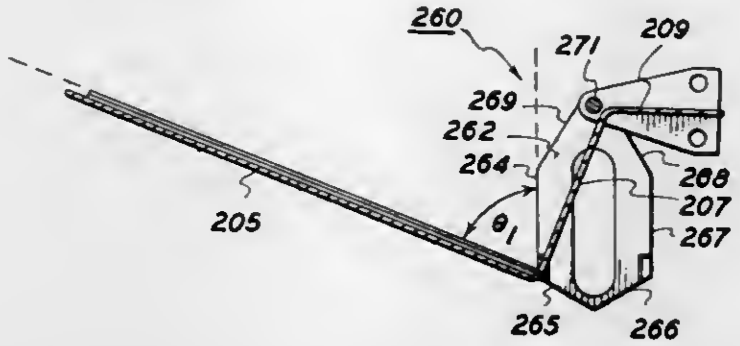
g. the top bins in the second column overlying, substantially, the lowest bin in the first column.

3,938,802
SHEET STACKING APPARATUS
Robert E. Hartman, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 319,956, Dec. 29, 1972, abandoned. This application Aug. 19, 1974, Ser. No. 498,691

Int. Cl.^{2} B65H *31/36*

U.S. Cl. 271—220 **2 Claims**



2. In a sorting apparatus in which copy sheets are sorted into tray members moved past a sheet path, wherein each tray member is arranged with a first tray portion inclined to the horizontal plane on which sides of copy sheets are received and a second tray portion against which edges of the copy sheets are received, the improvement comprising:

a frame,

at least one light weight plate member located on said frame at the termination of the sheet path at an acute angle to said first tray portion,

said plate member being pivotable on an axis parallel to and adjacent to said second tray portion to move relative to the tray member whereby a copy sheet entering the tray member strikes said plate member transferring kinetic energy to rotational kinetic energy which is absorbed by the topmost sheets in said tray member upon return of said plate member to its rest position,

wherein said plate member is in the shape of a polygon which is relatively thin, said polygon having a leading edge in the sheet path forming said acute angle with said first tray portion,

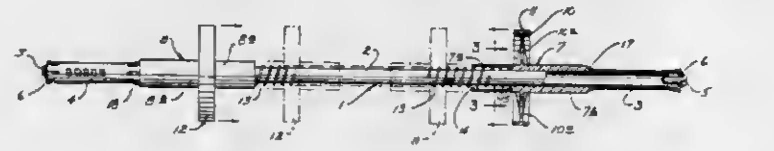
wherein said acute angle decreases as the tray member fills with copy sheets whereby curling of sheets along said second tray portion is minimized.

3,938,803
DUAL PURPOSE EXERCISING DEVICE
Robert B. Wilmoth, and Warren J. Wilmoth, both of 3802 Bobbie Lane, Garland, Tex. 75042

Filed Aug. 1, 1974, Ser. No. 493,581

Int. Cl.^{2} A63B *21/22, 23/02*

U.S. Cl. 272—57 J **1 Claim**



1. An exercise device comprising: an elongated cylindrical bar having a smooth outer surface; a pair of hand grips; an abutment on each of said hand grips, one of said hand grips being secured to each end of said bar such that each of said abutments is positioned intermediate opposite ends of said bar; a pair of tubular sleeves having inner and outer ends, each of said sleeves having a bore extending therethrough, said bar being telescopically disposed in said bores, each of said sleeves having an enlarged counterbore formed in inner ends thereof, said bore and counterbore in each of said sleeves being concentric forming a shoulder inside each of said tubular sleeves intermediate opposite ends of said sleeves; a coiled spring having a central passage, said bar extending through said central passage, said spring having ends extending into said counter bores and into abutting relation with said shoulders such that an outer end of each of said sleeves is urged into engagement with one of said abutments on said hand grips secured to opposite ends of said bar; a pair of wheels; and means rigidly securing one of said wheels to each of said sleeves, each of said wheels being spaced from the outer end of each of said sleeves to provide an extension between the outer end of each of said sleeves and each of said wheels, said extensions being adapted to be gripped by human hands to urge said sleeves inwardly along said bar to move outer ends of said sleeves out of engagement with said abutments on said hand grips on opposite ends of the bar.

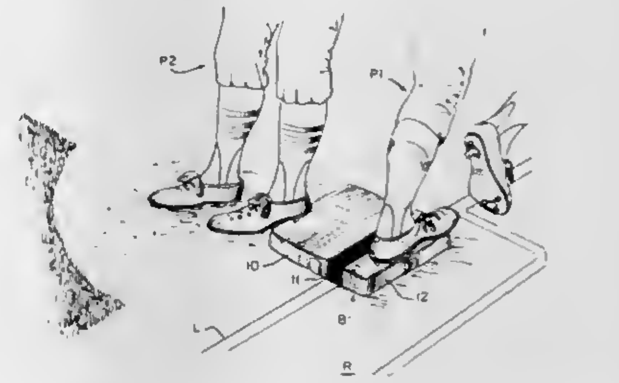
3,938,804
SAFETY BASE FOR ATHLETIC EVENTS
Arthur Eugene Willett, 5902 Arapahoe Terrace, Forest Heights, Md. 20021

Continuation-in-part of Ser. No. 415,835, Dec. 10, 1973, abandoned. This application Apr. 17, 1975, Ser. No. 569,304

Int. Cl.^{2} A63B *69/40*

U.S. Cl. 273—25 **4 Claims**

1. A safety base for the first base position of softball and baseball playing fields, comprises an elongate, rectangularly shaped base having a first end portion of the size and shape of a conventional softball and baseball base for disposition in a conventional position in the infield at the first base position, an integral, extended end portion for placement across and outside the base line to thus present an extended end portion of the base to a player running toward the base, which extended end portion may be tagged by the runner, thereby significantly reducing the danger of collision between the runner and another player attempting to get the runner out at the base, said extended end portion comprising a second portion which has a length substantially the same as the width of the base line and is adapted to overlie the base line, and a third portion which is adapted to extend outwardly of the base line, said first and third portions being readily visually distinguishable one from the other and said second portion being readily visually distinguishable from the first and third portions.



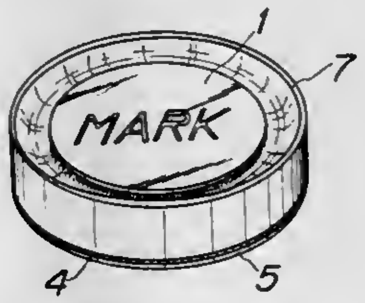
3,938,805
GOLF ACCESSORY
Kei Sakuma, 10-Go, 14-Ban, 5-Chome, Sendagi, Bunkyo, Tokyo, Japan

Filed July 23, 1974, Ser. No. 491,665

Claims priority, application Japan, July 24, 1973, 48-87624[U]; Dec. 9, 1973, 48-144466[U]

Int. Cl.^{2} A63B *57/00*

U.S. Cl. 273—32 A **7 Claims**



1. A golf accessory comprising:

a green marker of a Velcro fastener material;

a retaining element of a Velcro fastener material for retaining said green marker;

a base member fixedly secured to said retaining element and having a protecting means for protecting said green marker from being accidentally brushed off when retained; and

an adhering means attached to said base member for adhering said base member to a suitable position comprising a layer of pressure-sensitive adhesive and a release paper attached thereto.

3,938,806
NET AND PORTABLE NET ROLLER
Kelly Husbands, 600 Urbano, San Francisco, Calif. 94127

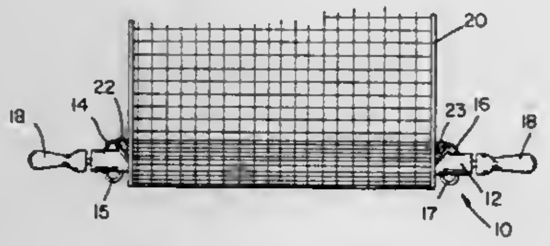
Filed Dec. 11, 1974, Ser. No. 531,584

Int. Cl.^{2} A63B *71/00*

U.S. Cl. 273—95 R **4 Claims**

1. Apparatus for putting up and taking down game nets such as volley ball net comprising a net having connector elements of a first type fixed to the upper and lower margins of the net at each end for attachment of the net to spaced support members, a portable cylinder having a length at least as great as the width of said game net, at least one connector element of a second type complementary to the connector elements of the first type fixed to each end of the cylinder, and a pair of

handles rotatably mounted to the ends of the cylinder, so that the net can be taken down by detaching the connector elements of the first type at one end of the net from one support member and reattaching the detached connector elements to the respective connector elements on the cylinder, rolling the net onto the cylinder while holding the cylinder by one of the handles, and then detaching the connector elements at the other end of the net from the other support member, and the net thereafter can be put up by connecting the connector elements at the other end of the net to one or the other of the support members, grasping the handles while moving toward the remaining support member to allow the net to unroll from the cylinder, and connecting the connector elements at said one end of the net to the other support member.



3,938,807
BALL GAME WITH SHIFTABLE LABYRINTHINE PLATFORM

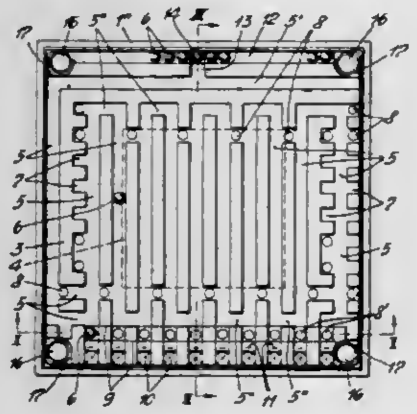
Hanspeter Lüthi, Maurstrasse 58, CH-8117 Fallanden, and Werner Dubach, Illnauerstrasse 32, CH-8307 Effretikon, both of Switzerland

Filed Dec. 27, 1974, Ser. No. 536,763

Claims priority, application Switzerland, Jan. 4, 1974, 54/74

Int. Cl.^{2} A63F *7/16*

U.S. Cl. 273—110 **10 Claims**



1. A ball game comprising a housing having a transparent cover, a labyrinthine platform in said housing, a plurality of balls disposed between the cover and the labyrinthine platform, loading means for urging the labyrinthine platform resiliently towards the cover whereby the cover and the platform may engage the opposite diametrical portions of at least one of said balls, and actuating means connected to the labyrinthine platform and accessible externally of said housing for manual shifting of said labyinthine platform against the action of its loading means and thereby releasing said at least one engaged ball.

3,938,808
GAME APPARATUS INCLUDING BOARD AND PIECES

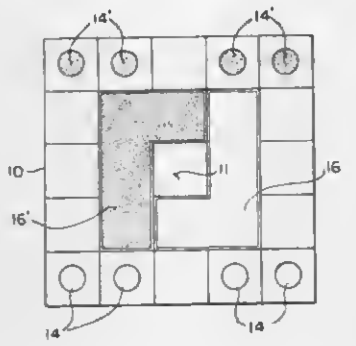
William E. Bockmon, Jr., Louisville, Ky., assignor to Gamut Games, Inc., Shepherdsville, Ky.

Filed Jan. 30, 1975, Ser. No. 545,665

Int. Cl.^{2} A63F *3/00*

U.S. Cl. 273—131 BA **5 Claims**

1. A game for plural participating players including a gameboard having multiple discrete areas disposed in rows and columns, each row and each column having an odd number of areas so that there is on the board one central discrete area, the areas being symmetrically disposed as viewed by each of the players; and differently colored sets of pieces for the different players, each set including a fixed number of pawns each occupying one discrete area and including a knight shaped to occupy at least several contiguous areas, all of the areas except the central area being capable of occupation by a piece and the discrete areas of the gameboard which are occupied when all of the pieces are positioned thereon being greater than half the total number of discrete areas on the gameboard but never including the central area.



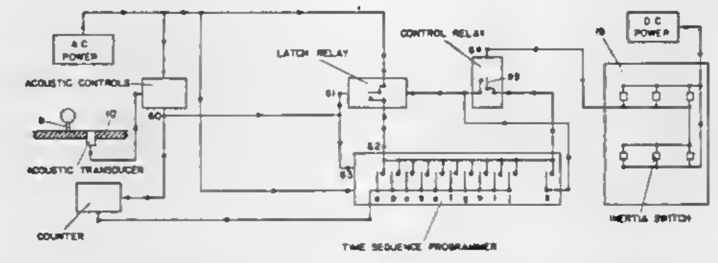
3,938,809
GOLF GAME

Joseph A. Gentiluomo, 1456 Belmont Ave., Schenectady, N.Y. 12308

Division of Ser. No. 204,890, Dec. 6, 1971, Pat. No. 3,784,207. This application Sept. 28, 1973, Ser. No. 401,615

Int. Cl.^{2} A63B *69/36, 67/02*

U.S. Cl. 273—176 FA **6 Claims**



1. A golf game apparatus, comprising a golf ball tee from which golf balls are hit, an upright target for halting balls propelled from said tee, and ball momentum determining and indicating means functionally associated with said tee and said target to provide a numerical momentum magnitude representation for each ball propelled toward said target with either tee or fairway type golf clubs; said ball momentum determining and indicating means include time sequence signal producing means for providing one or more pulses of which each pulse represents a predetermined increment of ball velocities, and a remotely interconnected numeric indicating device operative in receiving and translating said pulses to provide a numeric display of said momentum magnitude representation.

3,938,810
CENTER HOLE FORMATION IN AN INFORMATION STORING DISC

Michel Pradervand, Geneva, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,605

Claims priority, application United Kingdom, Apr. 19, 1972, 18043/72

Int. Cl.^{2} G11B *17/06*

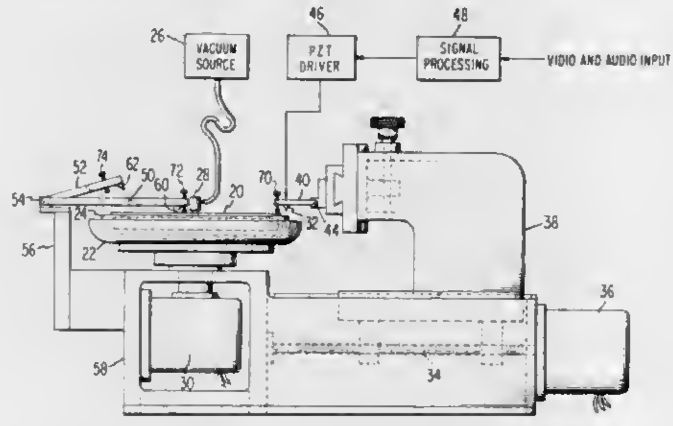
U.S. Cl. 274—13 R **5 Claims**

1. Apparatus for providing a centrally apertured disc with a replica disc center hole edge locator concentric with a spiral information groove, said apparatus comprising:

a turntable for receiving a centrally apertured disc and causing rotation thereof;

inscribing means, mounted with respect to said turntable so as to be subject to engagement with a surface of a disc during rotation thereof by said turntable, with said engagement being maitnained at a fixed distance from the center of rotation of said disc so that said inscribing means serves to cut, in a region of said disc surrounding and spaced from the central aperture thereof, a closed circular groove of a predetermined depth and a first diameter, centered about said center of rotation of said disc; and

means, subject to radial motion with respect to said turntable during said rotation of said disc, for forming an information storing groove in said surface of said disc in a spiral configuration centered about said center of rotation of said disc, with all of the convolutions of said spiral groove having a greater diameter than said first diameter and with the maximum depth of said information storing groove being small relative to said predetermined depth.



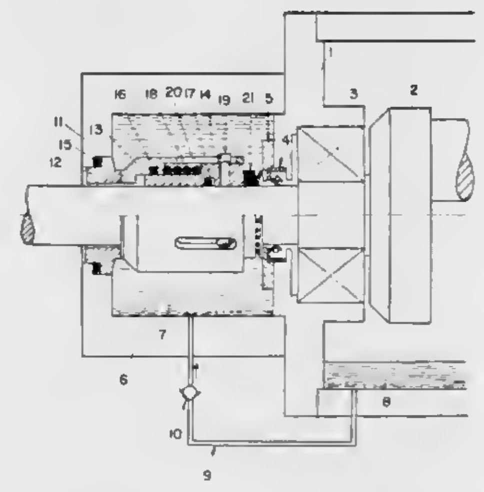
3,938,811
SEALING MEANS FOR STIRLING ENGINE CRANKCASES

Ingemar Joel Greis, Dalby, Sweden, assignor to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Filed Oct. 11, 1974, Ser. No. 514,210

Int. Cl.^{2} F16J *15/00*

U.S. Cl. 277—15 **4 Claims**



1. A sealing device for preventing leakage of gas through a crank casing wall along a rotatable crank shaft extending therethrough, said crank casing containing gas at a cyclically varying elevated pressure, characterised in that an oil-containing chamber is arranged on the outside of said crank casing wall and surrounding the said crank shaft, said crank casing has an oil sump within said wall, a conduit connects said oil sump of said crank casing with said chamber, a non-return valve being arranged in said conduit allowing flow of oil only in the direction from said sump to said chamber, a one way sealing member about said shaft and located between the shaft and said wall to permit flow of oil in the direction from said chamber into said crank casing, and rotation means being provided for causing rotation of the oil in said chamber in the direction of rotation of said crank shaft.

3,938,812
DEVICES FOR MAKING FLUID-TIGHT JOINTS BETWEEN TWO RELATIVELY ROTATING PARTS

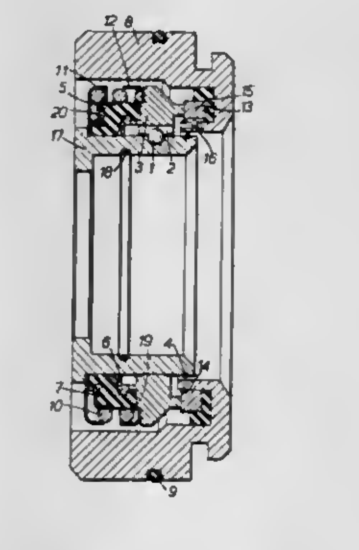
Edgar Padbury Coleman, 197 Tentelow Lane, Southal, Middlesex, England

Filed June 19, 1973, Ser. No. 371,436

Claims priority, application United Kingdom, June 20, 1972, 28719/72

Int. Cl.^{2} F16J *9/00*

U.S. Cl. 277—41 **5 Claims**



1. A gland for making a fluid-tight seal between a casing and a sleeve which are rotatable with respect to each other, said gland comprising a rubbing ring mounted in said casing, a floating ring keyed to said sleeve, a spring acting between said sleeve and said floating ring to urge said floating ring into engagement with said rubbing ring, a sealing ring of fluid-resistant elastomeric material having a first part mounted in a recess in one of said sleeve and said floating ring to form a seal with at least one wall surface of said recess and a second part forming a sliding seal with the surface of the other of said sleeve and floating ring, an L-shaped rubbing ring having first, second and third surfaces, said first surface abutting said floating ring, said second surface substantially parallel to said first surface and adapted to abut a step in said casing when said second surface is urged towards said step, said third surface substantially perpendicular to said second surface and intersecting said second surface, a cuff positioned between said casing and rubbing ring and forming a seal with said third surface of said rubbing ring, said cuff spaced from said second surface of said rubbing ring, the outer diameter of said floating ring where it abuts said first surface of said rubbing ring being greater than the inner diameter of said cuff where it forms said seal with said rubbing ring, whereby fluid pressure in said casing exerts pressure on only said rubbing ring in a sense which tends to increase the contact pressure between said rubbing and sealing rings when said second surface of said rubbing ring is spaced from said step.

3,938,813
POSITIVE-CONTACT SEAL

Hans Forch, Birkenau, Germany, assignor to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Germany

Filed Aug. 1, 1974, Ser. No. 493,937

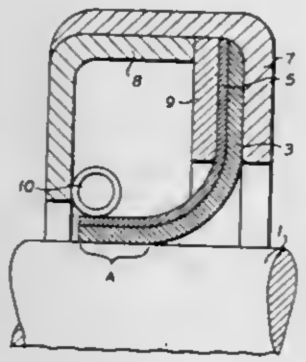
Claims priority, application Germany, Aug. 3, 1973, 2339353

Int. Cl.^{2} F16J *15/32*

U.S. Cl. 277—152 **24 Claims**

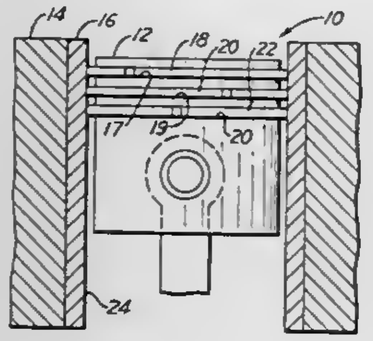
1. In a sealing assembly for a shaft comprising a housing for a fluid medium, a flexible sealing ring disposed within said

housing and adaptable to be disposed about a shaft in contact therewith, and means for urging said flexible sealing ring into contact with said shaft, the improvement wherein said flexible sealing ring comprises a layer which is impermeable to the fluid medium to be used, said layer in facing relationship to the interior of said housing, said flexible sealing ring having on its exterior surface which is in contact with the shaft free fiber ends, a majority of which are oriented in an axial direction towards the interior of said housing and are disposable in the direction of rotation of the shaft.



3,938,814
BEARING MEMBER HAVING A WEAR RESISTANT COATING ON ITS BEARING FACE

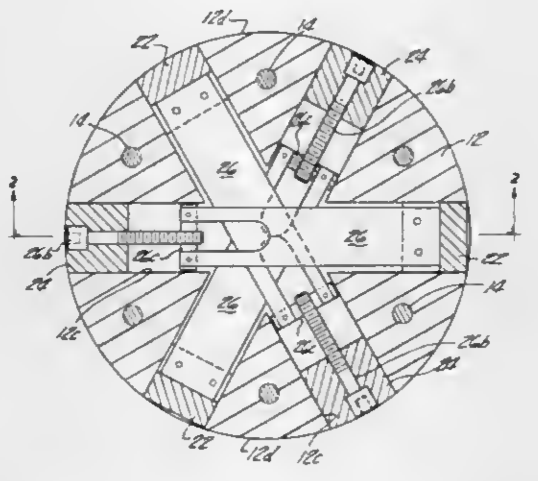
John E. Cromwell, Baltimore, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.
Filed Sept. 23, 1974, Ser. No. 508,245
Int. Cl.^{2} B32B *15/18*; **F16J** *9/00*
U.S. Cl. 277—235 A **11 Claims**



1. A bearing member having a wear resistant coating applied to a wear surface thereon by plasma spraying a mixture of particles on said wear surface, said mixture comprising by weight:
15–40% intermetallic brazing and binding alloy particles,
  said particles consisting of:
    0.18 – 0.48 parts carbon,
    0.60 – 1.60 parts silicon,
    2.58 – 6.88 parts chromium,
    10.50 – 28.00 parts nickel,
    0.60 – 1.60 parts iron, and
    0.54 – 1.44 parts boron;
5–30% cobalt molybdenum alloy particles,
  said cobalt molybdenum alloy particles consisting substantially of 75% cobalt alloyed with 25% molybdenum; and
30 – 60% molybdenum particles.

3,938,815
CHUCK HAVING JAW COUNTERBALANCE MECHANISM

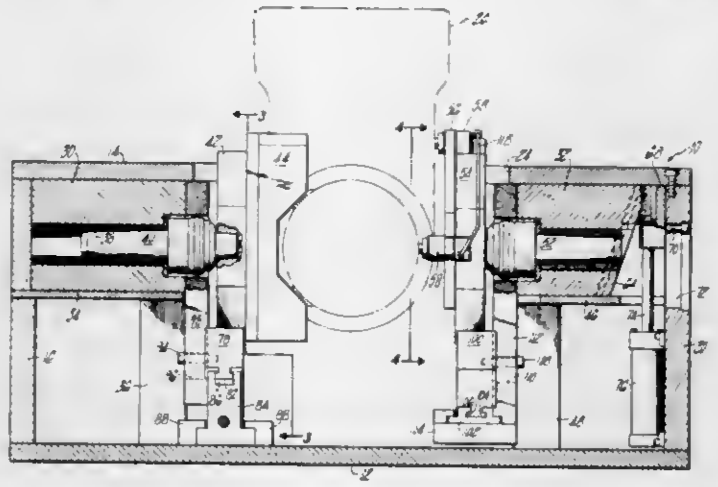
Erwin F'Geppert, Novi, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Mar. 31, 1975, Ser. No. 563,545
Int. Cl.^{2} B23B *31/14, 31/24*
U.S. Cl. 279—1 C **9 Claims**



1. A chuck structure comprising a base adapted to be rotated around a central axis; work gripper jaws slidably mounted on said base for radial adjustments toward and away from said central axis; a counterbalance for each jaw; each counterbalance being slidably mounted on the base for movement along a diammetrical line passing through the associated jaw and the central axis; and tensioned connector means joining each jaw with its counterbalance.

3,938,816
CHUCK OF THE INDEXING TYPE

William James Manchester, Durham, Conn., assignor to PowerHold Products, Inc., Rockfall, Conn.
Filed Jan. 22, 1974, Ser. No. 435,435
Int. Cl.^{2} B23B *31/34*
U.S. Cl. 279—5 **9 Claims**

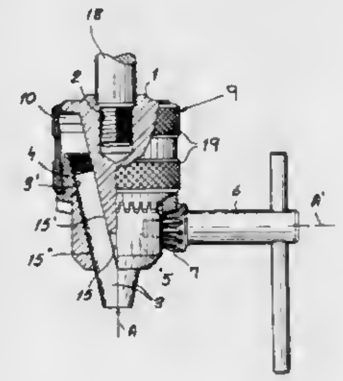


1. A chuck of the indexing type for holding a large workpiece weighing up to about 2,000 pounds comprising a pair of substantially planar support plates rigidly interconnected in spaced parallel relationship and consisting of a base plate and a top plate having an enlarged central aperture of sufficient size to readily permit passage of a workpiece therethrough, a pair of opposed jaw supports mounted between said plates adjacent the periphery of said aperture, a housing for each of said jaw supports fixedly positioned and rigidly supported between said plates, one of said jaw supports being slidably movable within said housing relative to said plates toward and away from the other support, said jaw supports including live centers positioned coaxially along the axis of movement of

said movable support, a jaw mounted on each live center for indexed rotation relative to said supports into any one of a number of indexed rotary positions, a jaw support operator mounted on the housing between said plates and having wedge-like drive means in alignment with said live centers for driving said movable support and associated jaw toward and away from said other jaw and support for clampably engaging and releasing a workpiece positioned between the jaws, and jaw locking means supportably mounted on the base plate and directly engaging the jaws to provide support for the jaws in a direction normal to the base plate and directly opposite machine tool pressure on the workpiece, said locking means rigidly immobilizing the indexed jaws against rotation and readily releasing the jaws for indexed rotation.

3,938,817
CHUCK FOR IMPACT-TYPE DRILL

Günter Horst Röhm, Heinrich-Rohm-Str. 50, 7927 Sontheim (Brenz), Germany
Continuation-in-part of Ser. No. 377,730, July 9, 1973, abandoned. This application Nov. 12, 1973, Ser. No. 414,824
Claims priority, application Germany, Nov. 10, 1972, 7241181
Int. Cl.^{2} B23B *5/22*
U.S. Cl. 279—61 **1 Claim**



1. A chuck comprising:
a chuck body adapted to be rotated about an axis and having an axial passage formed with an axially tapered seat;
a plurality of jaws axially slidable on said seat;
a tightening ring surrounding said body and having a conically threaded inner periphery threadedly engaging said jaws for axial displacement of same and a cylindrical outer periphery formed with a sharp-edged shoulder; and
a cylindrical sleeve surrounding said body and having one end plastically deformed over said shoulder, said ring being formed on its outside periphery with an outwardly open circumferential groove, having a pair of flanks, one of said flanks constituting said choulder, said sleeve being formed at said one end with an inwardly projecting ridge received in said groove and a beveled outer edge, said ring being formed at one side of said groove with an outwardly projecting ledge forming a continuation of the other flank of said groove, said one end of said sleeve bearing on said ledge.

3,938,818
DRAW PALLETT AND METHOD OF MAKING SAME

Hermann Studeny, Niederkassel, and Holger Bultmann, St. Augustin, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany
Filed Feb. 13, 1974, Ser. No. 442,251
Claims priority, application Germany, Feb. 13, 1973, 73053108[u]
Int. Cl.^{2} B62B *15/00*
U.S. Cl. 280—19 **29 Claims**

1. Draw pallet for conveying stackable cargo comprising:
a thin flexible sheet of high strength resinous material, said thin flexible sheet defining perforations therein for accommodating drainage of water therethrough,
and roughening means on one side of said thin sheet for limiting sliding of cargo stacked on said one side.

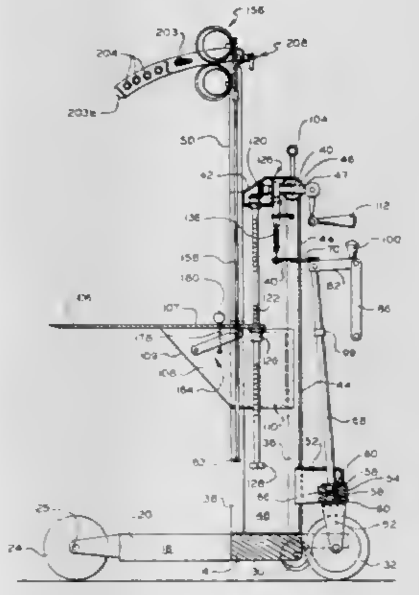
3,938,819
SLIDABLE MULTIPURPOSE CONTAINER DEVICE

William F. Martin, Ridgewood, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Nov. 7, 1974, Ser. No. 521,678
Int. Cl.^{2} B62B *15/00*
U.S. Cl. 280—19 **3 Claims**

1. A slidable multipurpose container device, comprising
a sheet-like bottom having a rounded leading edge;
a sheet-like front affixed to and extending from the bottom at substantially right angles thereto;
a pair of sheet-like sides affixed to the sides of the bottom in substantially parallel spaced relation and extending from the bottom at substantially right angles thereto;
a sheet-like back removably positioned at substantially right angles to the bottom and the sides to form a substantially rectilinear container;
a substantially rod-like member swivelly mounted on the front and extending forward thereof and a loop handle at the free end of the rod-like member; and
track members on the rear ends of the sides in facing relationship removably positioning the back.

3,938,820
INVALID CART AND LIFT

Herman G. Nabinger, 311 Kirk Ave., Syracuse, N.Y. 13205
Filed Aug. 21, 1974, Ser. No. 499,313
Int. Cl.^{2} B62B *3/12*; **A61G** *7/10*
U.S. Cl. 280—47.11 **8 Claims**



1. An improved invalid cart and lift comprising:
a horizontally disposed frame having a closed end and an end with an opening therein, the opening having a portion of the frame as its opposing side walls;

a support wheel rotatably connected to each of the opposing side walls of the opening;

a horizontally disposed platform integral with the closed end of the frame;

a steering wheel supporting the closed end of the frame;

a steering shaft operably connected to the steering wheel and extending upwardly therefrom;

a handle for pulling and steering the cart connected to the upwardly extending portion of the steering shaft, with the handle, the steering shaft and the steering wheel being operably connected so that horizontal movement of the handle results in a corresponding movement of the plane of rotation of the steering wheel;

a housing projecting vertically from the frame;

a seat supported by the housing, the seat being vertically movable for raising and lowering a patient by means including a manually operated crank extending from the housing, a horizontal drive shaft actuated by the crank, a vertical threaded driven shaft, a mitre gear for transmitting the rotation of the drive shaft to the driven shaft, with the mitre gear, the drive and the driven shafts being for the most part contained in the housing, and a ball nut forming a part of the seat, the ball nut being operably connected to the vertical threaded driven shaft whereby rotation of said shaft effects vertical movement of the ball nut and therefore the seat; and

braking means to slow or totally stop the downward vertical movement of the seat, the braking means including a disc operably connected to rotate with one of said drive and driven shafts, a band having two ends with one end anchored securely, the band being wrapped over a portion of the disc, spring means, operably connected to the other end of the band, biasing the band into frictional engagement with the disc, and brake release means which when actuated relieve the biasing effect of the spring means.

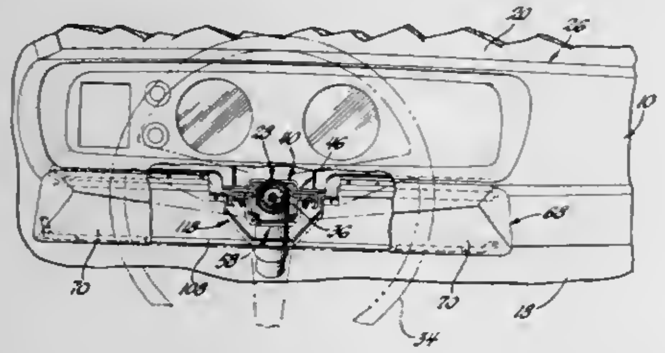
3,938,821
OCCUPANT KNEE RESTRAINT

Ronald H. Haas, Okemos, and Roy J. Wohlscheid, Lansing, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 10, 1973, Ser. No. 404,986

Int. Cl. B62d *1/18;* B60r *21/02*

U.S. Cl. 280—87 C **1 Claim**



1. The combination comprising, an automotive vehicle including an occupant compartment for supporting a driver in seated attitude, an energy absorbing steering column assembly for absorbing the kinetic energy of the upper torso of said driver when engaged thereby, column support means mounted on the vehicle, means mounting said steering column assembly to said column support means, a knee restraint including a center portion partially surrounding the lower part of said steering column assembly and a pair of knee deformable side portions, each located to one side of said steering column assembly and engageable by the knees of said driver to absorb kinetic energy of the lower torso of said driver and control the kinematics of the upper torso of said driver with respect to said steering column assembly, and rigid generally U-shaped bracket means including a base portion connected to said center portion of said knee restraint below said lower part of said steering column assembly and spaced leg portions, each located to one side of said steering column assembly and secured to said column support means, said bracket means being spaced from said column assembly and blocking deformation of said center portion into said steering column assembly upon engagement of said driver's knees with said knee restraint.

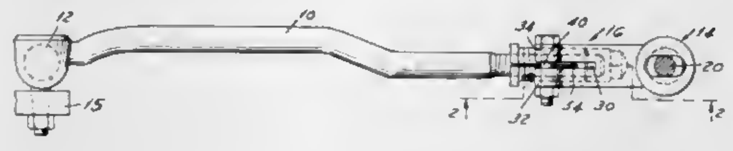
3,938,822
ADJUSTABLE TIE ROD ASSEMBLY

Charles P. Guerriero, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 4, 1974, Ser. No. 512,390

Int. Cl. B62d *7/16*

U.S. Cl. 280—95 R **2 Claims**



1. An adjustable tie rod assembly comprising a rod, a joint and an intermediate member,

said rod having an externally threaded end portion,

said joint having a tubular extension with an internally threaded portion,

said intermediate member having a generally tubular construction with an internally threaded portion engaging the end portion of said rod,

said intermediate member having an externally threaded portion engaging the internally threaded portion of said tubular extension,

said internally threaded portion of said intermediate member having a different pitch from the externally threaded portion of said intermediate member,

said intermediate member having a tool receiving portion at one of its ends,

said intermediate member being rotatable relative to said rod and said joint whereby the length of said tie rod assembly may be changed,

said tubular extension having an axially extending slot whereby said tubular extension may be reduced in circumferential dimension when subjected to a clamping force,

said intermediate member having an axially extending slot whereby said intermediate member may be reduced in circumferential dimension when subjected to a clamping force,

clamping means engaging said tubular extension constructed to impose a clamping force on said tubular extension and said intermediate member whereby said intermediate member may be held against rotation relative to said rod and said joint,

said clamping means comprising a first flange extending radially from said tubular extension on one side of said slot in said tubular extension and a second flange extending radially from said tubular extension on the other side of said slot in said tubular extension,

said clamping means also including a threaded fastener extending between said first and second flanges and constructed to draw said flanges together when tightened.

3,938,823
FLUID OPERATED VEHICLE BODY LEVEL CONTROL SYSTEM

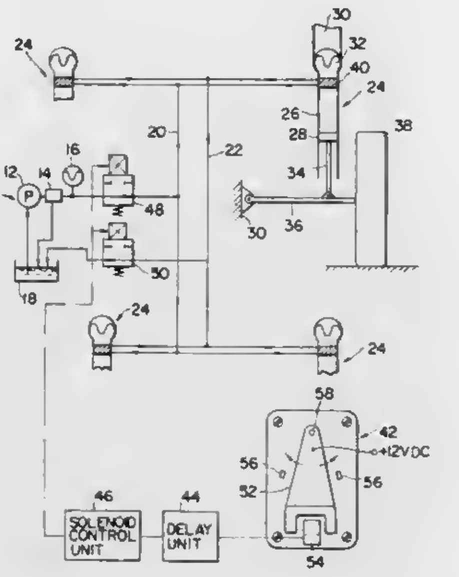
Mituo Hiruma, Kodaira, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed May 28, 1974, Ser. No. 474,066

Claims priority, application Japan, May 29, 1973, 48-59275

Int. Cl.^{2} B60G *11/28*

U.S. Cl. 280—124 F **6 Claims**



1. In a fluid operated levelling system of a vehicle body having a source of fluid under pressure connected to a fluid reservoir, the combination comprising:

adjustors operative to raise and lower the vehicle body relative to ground;

levelling valves communicating with the source and the reservoir and being responsive to the tilt of the vehicle body with respect to road surface and operative to communicate the adjustors with the source and the reservoir to move the vehicle body to a level substantially parallel to the road surface;

first electrically controlled normally open valve means connected between the source and inlets of the levelling valves;

second electrically controlled normally open valve means connected between the reservoir and outlets of the levelling valves;

sensing means for sensing the tilt of the vehicle body relative to road surface and generating an electrical tilt representing signal in response to said sensed tilt;

a delay unit connected to the sensing means and including integrating means for integrating said electrical tilt representing signal with respect to time; and

a solenoid control unit connected between the delay unit and the first and second valve means, said solenoid control unit including a level detector responsive to the output of the delay unit and operative to feed said electrical tilt representing signal to the electrically controlled valve means when the integrated level of said electrical tilt representing signal is above a predetermined value for thereby closing said electrically controlled valve means to block fluid communication between the source and the reservoir and the levelling valves.

3,938,824
PROTECTIVE INSTALLATION, ESPECIALLY FOR THE PASSENGERS OF MOTOR VEHICLES

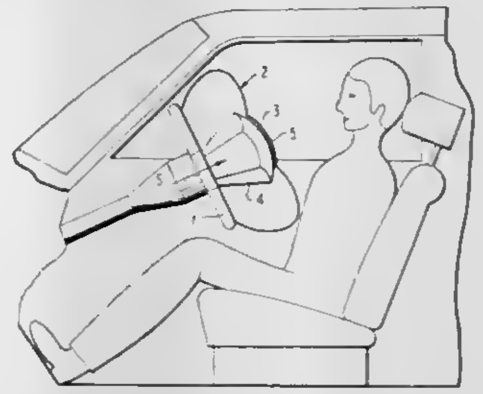
Helmut Patzelt, Fellbach, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Nov. 15, 1973, Ser. No. 416,055

Claims priority, application Germany, Nov. 18, 1972, 2256720

Int. Cl.^{2} B60R *21/08*

U.S. Cl. 280—150 AB **7 Claims**



1. In a protective installation, especially for the passengers of motor vehicles, which includes an air bag means automatically inflatable by means of a gas upon exceeding a predetermined vehicle deceleration, and an insert means coordinated to the air bag means which during the inflation is disposed at a distance to the bag bottom, in relation to the main flow direction of the gas and extends essentially transversely to the main flow direction of the gas, said insert means forming in the area thereof disposed in the main flow of the gas a baffle surface for the inflowing gas, and the air bag means being securely connected with the insert means within the area of its bottom facing the passenger, the improvement comprising elastic retaining means for anchoring said insert means at a relatively fixed vehicle part, said elastic retaining means including strips of the fabric material of said air bag means.

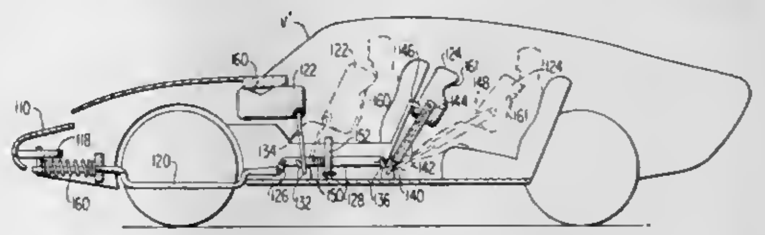
3,938,825
VEHICLE SAFETY APPARATUS

George T. Boswell, 6710 Kenmont Place, Springfield, Va. 22151

Continuation of Ser. No. 201,803, Nov. 24, 1971, abandoned. This application Dec. 14, 1973, Ser. No. 424,686

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 B **13 Claims**



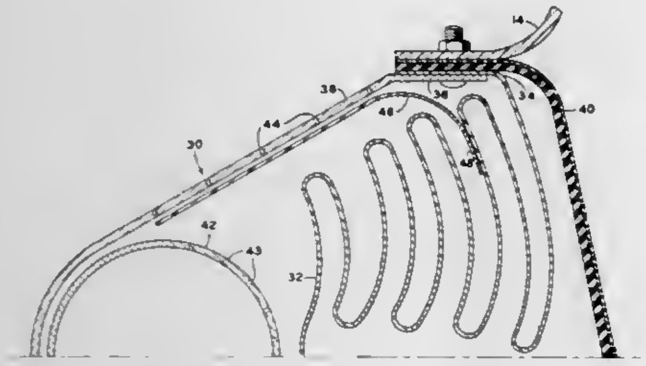
1. Safety apparatus for a vehicle having a passenger seat, comprising an energy absorbing panel positioned in front of the seat and movably mounted on the vehicle for movement between a first position wherein said energy absorbing panel is spaced from the occupant of the seat and a second position wherein said energy absorbing panel is positioned closely adjacent to and in front of the occupant of the seat, bumper means movably mounted on the vehicle, a linkage connecting said bumper means to said energy absorbing panel, said linkage being operable to effect movement of said energy absorbing panel from said first position to said second position in response to inward movement of said bumper means caused by an impact thereon to restrain forward movement of the occupant of the seat before significant forward body movement of the occupant in response to the force of the impact,

and means for retaining said energy absorbing panel in said second position during the impact.

3,938,826
ASPIRATED VEHICLE OCCUPANT RESTRAINT SYSTEM

Gerardo Giorgini, Moncalieri, Turin, and Giorgio Bocca, Chivasso, both of Italy, assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 7, 1974, Ser. No. 440,604
Int. Cl.^{2} B60R *21/08*
U.S. Cl. 280—150 AB **14 Claims**



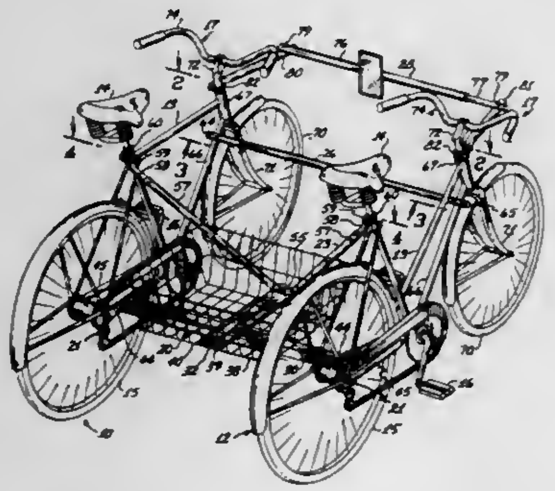
1. In an aspirated vehicle occupant restraint system including a housing, a confinement having a collapsed condition in which it is located in the housing and an expanded condition for restricting movement of an occupant in the passenger compartment of the vehicle, means for expanding the confinement from the collapsed condition to the expanded condition and aspirator means fixed in said housing having an inlet in fluid communication with the confinement, the improvement comprising:

flap means attached to the inner surface of the confinement wall intermediate the margins thereof, said flap means
- i. normally closing the inlet of the aspirator means when the confinement is in the collapsed condition, and
- ii. being progressively moved to expose the inlet of the aspirator means by movement of the confinement wall as the confinement moves from the collapsed condition to the expanded condition.

3,938,827
BICYCLE INTERCONNECTING APPARATUS

Charles L. Johnson, 4235 E. McDowell Road, Space No. 100, Phoenix, Ariz. 85008

Filed Dec. 6, 1974, Ser. No. 530,352
Int. Cl.^{2} B62K *13/06*
U.S. Cl. 280—209 **6 Claims**



1. An apparatus for interconnecting a pair of bicycles comprising:

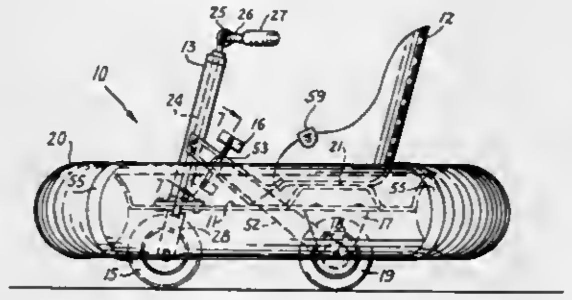
a) a pair of bicycles positioned in a side-by-side relationship, each of said pair of bicycles having a frame, a rear wheel axle, a seat and a steering mechanism;
b) a first interconnecting bar extending between said pair of bicycles and coupled on the opposite ends thereof to the frames of said bicycles adjacent the rear wheel axles thereof;
c) a second interconnecting bar extending between said pair of bicycles and coupled on the opposite ends thereof to said pair of bicycles adjacent the seats thereof, said second interconnecting bar comprising,
  - a V-shaped hollow tubular member a portion intermediate the opposite ends of which is connected to said first interconnecting bar,
  - a rod axially slidably mounted in each of the opposite ends of said V-shaped hollow tubular member for adjusting the length of said second interconnecting bar, each of said rods coupled to a different one of said pair of bicycles, and
  - means on said V-shaped tubular member for optionally allowing axial sliding movement of said rods relative to said V-shaped tubular member; and

means extending between the steering mechanisms of said pair of bicycles and connected thereto for causing the steering mechanisms to turn in unison, said means for interconnecting the steering mechanisms of said pair of bicycles being adjustable for setting the toe-in relationship of the steering mechanisms of said pair of bicycles.

3,938,828
VEHICLE WITH INFLATABLE BUMPER

John W. Hammond, 9805 47th Ave., College Park, Md. 20740

Filed Sept. 5, 1974, Ser. No. 503,434
Int. Cl.^{2} B62M *1/02*
U.S. Cl. 280—261 **7 Claims**

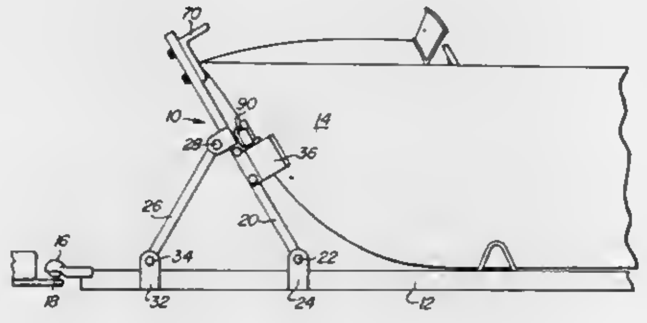


1. An occupant propelled, tricycle type, recreational bumper vehicle comprising:
- a. a floorboard;
- b. a seat attached to said floorboard;
- c. a steering column assembly attached to and extending through said floorboard to engage;
- d. a front axle, supported by;
- e. a front wheel;
- f. a foot powered propulsion assembly attached to said steering column assembly;
- g. at least two rear axle support bracket assemblies attached to said floorboard and supporting;
- h. a rear axle assembly supported by;
- i. two rear wheels;
- j. a sprocket chain engaged between said foot powered propulsion assembly and said rear axle assembly whereby mobility for said vehicle may be obtained;
- k. a safety guard for covering said sprocket chain in the area above said floorboard;
- l. an inflatable bumper removably attached to the outside periphery of said floorboard;
- m. said steering assembly comprising;
- n. a shaft housing assembly;
- o. a steering shaft, having at one end;
- p. a gooseneck clamp, engaging;
- q. a pair of handlebars, having;
- r. handgrips;
- s. said steering shaft having at its other end a "U" shaped fork;
- t. said shaft housing assembly comprising;
- u. a tube, having;
- v. a stepped bore therethrough for bearing engagement with the steering shaft; and
- w. said tube being attached at its lower end to a plate having an aperture therethrough for connection to the floorboard.

3,938,829
BOAT TRAILER LATCHING DEVICE

James D. Anderson, 4339 S. 850 East, South Ogden, Utah 84403

Filed Oct. 21, 1974, Ser. No. 516,277
Int. Cl.^{2} B60P *3/10*
U.S. Cl. 280—414 R **13 Claims**

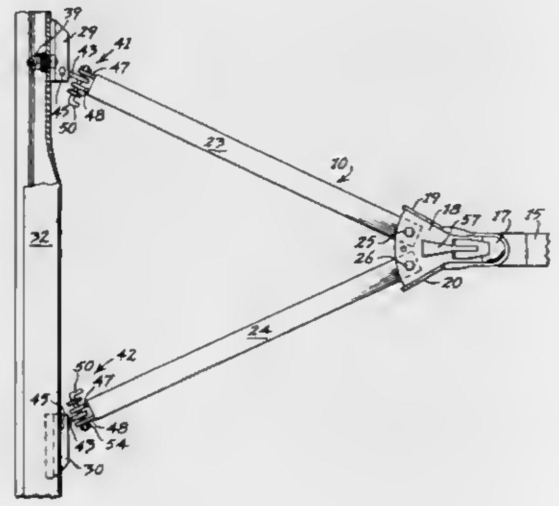


1. A boat latching device comprising an upstanding support member, a bow stop member slidably biased to the upper end of said upstanding support member, a bow conforming guide member fixed to said upstanding support member below said stop member and a means for automatically latching the bow of a boat to said upstanding support member.

3,938,830
TOW BAR ASSEMBLY

Oscar B. Lane, 1030-3rd Ave. S., Nashville, Tenn. 37210

Filed Oct. 16, 1974, Ser. No. 515,163
Int. Cl.^{2} B60D *1/16*
U.S. Cl. 280—493 **2 Claims**

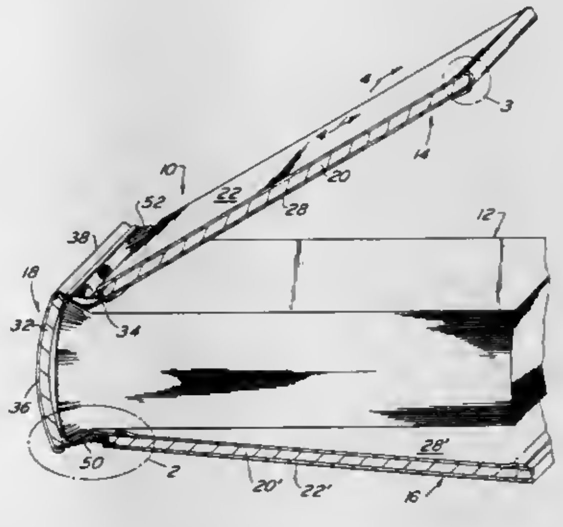


1. A tow bar assembly adapted to be attached to the front portion of a trailing vehicle, for towing by a towing vehicle having a draft hitch member, comprising:
- a. a cooperative hitch member adapted to detachably couple with said draft hitch member in operative position,
- b. a pair of elongated draft bars having leading and trailing end portions,
- c. means pivotally connecting each of said leading end portions to said cooperative hitch member to permit pivotal movement of said draft bars in a substantially horizontal plane when said hitch members are coupled in operative position,
- d. an attachment member for each draft bar, each of said attachment members having means for detachable connection to a trailing vehicle,
- e. coupling means connecting the trailing end portion of each draft bar to a corresponding attachment member,
- f. each of said coupling means comprising a pair of laterally spaced ears projecting rearward from each of said trailing end portions,
- g. said coupling means further comprising a tongue projecting forward from said corresponding attachment member between said ears, and a transverse pin connecting said ears and said tongue for relative pivotal movement about the longitudinal axis of said pin,
- h. the spacing between said ears being greater than the dimension of said tongue in the same direction as said ear spacing, to permit translatory shifting movement of said tongue between said ears.

3,938,831
METAL COVERED BOOKS

Walter H. Herman, Rose Valley, Pa., assignor to Franklin Mint Corporation, Franklin Center, Pa.

Filed July 11, 1974, Ser. No. 487,483
Int. Cl.^{2} B42D *3/00*
U.S. Cl. 281—29 **4 Claims**



1. A book comprised of rigid front and back covers connected to a spine, each cover being a laminate of an outer layer of metal and a hard non-metallic substrate, said metal layers of said front and rear covers extending around three edges of said hard non-metallic substrates, said spine being a laminate of an outer layer of metal and a hard non-metallic substrate, two fabric hinges, each fabric hinge being connected to one of said covers and to said spine, four elongated metal clips, each of said clips extending substantially throughout the entire height of said book, two of said clips being embedded in said spine between said layer of metal and said substrate and being exposed along both side edges of said spine, each of the other two of said clips being embedded in a different one of said covers between said layers of metal and said substrates and being exposed along the edge of each of said covers adjacent said spine, two hinges of flexible metal mesh overlying said fabric hinges, each said metal mesh hinge having an exposed outer surface of metal, each metal mesh hinge being connected along one side edge portion to the metal clip of one of said covers and along an opposite side edge portion to the metal clips of said spine to form metal mesh hinges between the spine and the covers whereby the

entire outer surfaces of said covers, spine and hinges are metal.

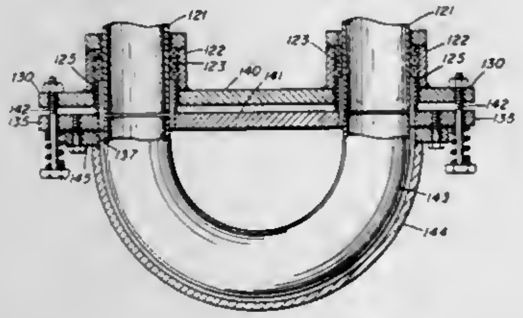
3,938,832
PACKING GLAND FOR TICL$_4$ INLET TO OXIDIZER REACTOR

Peter Joseph Preston, Savannah, Ga., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 1, 1974, Ser. No. 520,089

Int. Cl.² F16L *55/00*

U.S. Cl. 285—157 **7 Claims**



1. A coupling for a U-bend in a brittle pipe comprising a flanged housing means for a brittle U-bend of pipe, a flanged follower plate removably secured to said housing flange, said flanged follower plate having follower sleeves opposite the ends of said pipe U-bend, a flanged plate carrying two packed sleeves and adapted to fit over said follower and be secured to said follower plate, said packed sleeves containing packing rings, each packed sleeve containing a brittle pipe, and means to urge said follower flange toward said packed sleeve flange such that said packing is compressed and holds said brittle pipes.

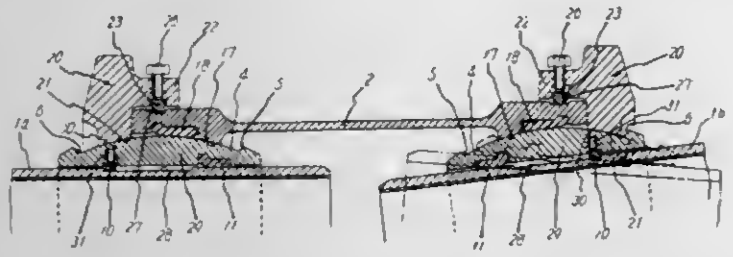
3,938,833
UNIVERSAL PIPE JOINT CONSTRUCTION

Tadashi Miyaoka, 7-31 Horikiri-cho, Nishinomiya, Hyogo, Japan

Filed Oct. 10, 1974, Ser. No. 513,568

Int. Cl.² F16L *27/04*

U.S. Cl. 285—166 **7 Claims**



1. A universal pipe joint for connecting a pair of pipes comprising:

a pair of articulation rings each having a spherical convex outer surface portion and a cylindrical inner surface portion adapted to fit over one of the pipes, and a sealing member interposed between each articulation ring and the pipe associated therewith;

means for attaching one of the articulation rings to each one of the pipes comprising an annular groove formed in the inner surface of the articulation ring, a first split lock ring adapted to fit in said groove, an annular recess formed in the outer surface of the pipe associated with such one articulation ring, and means for engaging the first lock ring in said recess by decreasing the diameter of the first lock ring;

a joint pipe having at each end thereof an annular concave inner surface adapted to engage a portion of the convex outer surface of one of the articulation rings, and a second sealing member interposed between the convex outer surface of each articulation ring and the joint pipe; and,

a pair of separation preventive rings, and means for attaching the separation preventive rings to the joint pipe at the ends thereof, each separation preventive ring having an annular concave inner surface which is adapted to engage a portion of the convex outer surface of one of the articulation rings in an axial direction opposite to the concave inner surface of the joint pipe engaging such one articulation ring.

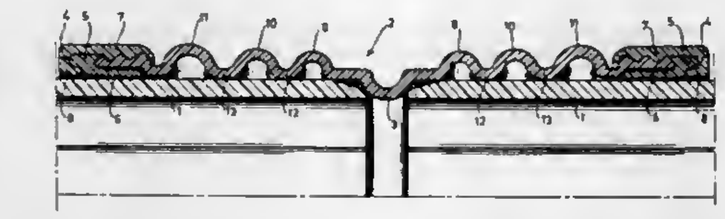
3,938,834
PIPE CONNECTION FOR PLASTIC PIPES COMPRISING A TRANSVERSELY OR HELICALLY CORRUGATED PIPE-CONNECTING PART

Albertus Antony Oostenbrink, Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Filed Apr. 20, 1973, Ser. No. 353,080

Int. Cl.² F16L *21/02*

U.S. Cl. 285—235 **7 Claims**



1. Pipe-connection for the ends of plastic pipes comprising a tubular plastic pipe receiving part of preferably thermoplastic material receiving the end of a plastic pipe, said pipe receiving part having a recess in the vicinity of its end, sealing means accommodated in said recess, the receiving part having a substantially uniform wall thickness and at least two continuous annular corrugations being contiguous with the inserted pipe spaced inwardly of said recess, the cross section area of the corrugations between the corrugations and the pipe decreasing from the end of the receiving part, and the corrugations have a different radius of curvature for obtaining the different cross section areas and the inner diameters of the hollows between the corrugations being equal.

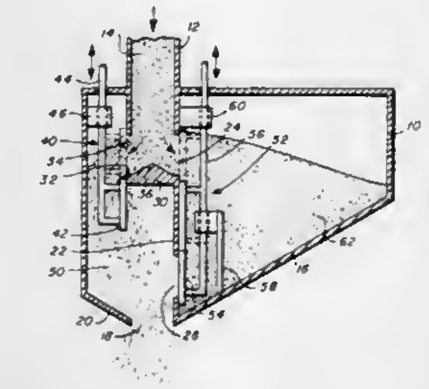
3,938,835
DOUBLE ACTION WINTER ROAD CONDITIONER APPARATUS

Poy Lee, 52 Tennyson St., Somerville, Mass. 02145

Filed Sept. 12, 1974, Ser. No. 505,486

Int. Cl.² B60B *39/00*

U.S. Cl. 291—34 **6 Claims**



1. An apparatus for use with a motor vehicle for improving the traction of the vehicle especially when traveling on ice covered highways or the like comprising;

a housing associated with at least one wheel of the vehicle and having means defining an inlet port at the top of the housing for receiving sand and an outlet port at the bottom of the housing,

a wall for separating the housing into first and second compartments and defining at least in part an inlet passage and an outlet passage to the second compartment,

said receiving means of the housing defining a chamber having an inlet to the first compartment,

first valve means operable to permit sand to flow from the sand receiving means, via the inlet to the first compartment and through the first compartment to the outlet in the housing,

and second valve means including two closure members and means commonly supporting the closure members,

whereby in a first position one closure member is open and the other closure member is closed to permit sand to flow from the sand receiving means via the inlet passage to the second compartment, and in a second position the one closure member is closed and the other closure member is open to permit sand to flow from the second compartment via the outlet passage to the outlet of the housing.

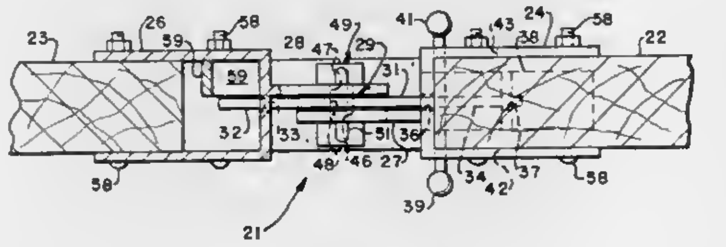
3,938,836
HIGH STRENGTH BOLT ASSEMBLY FOR DOORS AND THE LIKE

Donald V. Smith, Northern Nevada Childrens Home, Carson City, Nev. 89701

Filed July 12, 1974, Ser. No. 487,997

Int. Cl.² E05C *1/04*

U.S. Cl. 292—148 **5 Claims**



1. In a high strength bolt assembly for positive securement of a door, window or the like, said assembly including a pair of assembly mounting elements with a first of said elements being formed for mounting to said door proximate a door frame and a second of said elements being formed for mounting to said door frame proximate said first of said elements, and a bolt mounted to one of said elements for movement to and from a bolted position and an unbolted position, the improvement comprising:

said elements being formed to provide, as mounted on said door and door frame, adjacent flange portions defining a bolt receiving slot therebetween, said flange portions each spanning across the slot defined by the confronting edges of said door and said door frame when said door is in a closed position;

said bolt being mounted for movement into said bolt receiving slot upon movement to said bolted position and being mounted to span across the slot defined by the confronting edges of said door and said door frame in said bolted position; and

said flange portions and said bolt each being formed with a channel therein dimensioned for receipt of lock means, and each said channel being positioned for aligned registration of all of the channels in a direction extending substantially parallel to the slot defined by the confronting edges of said door and door frame upon closing of said door and movement of said bolt to said bolted position, said elements being further formed and said channels oriented for positioning of said lock means therethrough for access to said lock and unlock the same from both sides of said door.

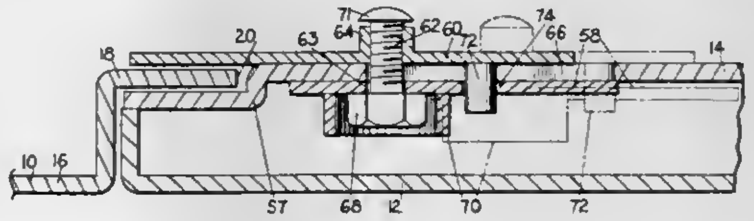
3,938,837
SAFETY LOCK FOR ENCLOSURES

William L. Bright, 0605 SW. Curry St., Portland, Oreg. 97201

Division of Ser. No. 230,223, Feb. 29, 1972, Pat. No. 3,791,683. This application Dec. 3, 1973, Ser. No. 421,446. The portion of the term of this patent subsequent to Feb. 12, 1991, has been disclaimed.

Int. Cl.² E05C *1/04*

U.S. Cl. 292—149 **1 Claim**



1. An enclosure comprising

a. defining walls with at least one of said walls having a door opening therein and an inwardly disposed offset flange adjacent said opening parallel with said wall in which said opening is provided,

b. a door in said opening having opposite face surfaces and having a portion thereof overlapping said flange in its closed position,

c. a pair of clamp plates on opposite face surfaces of said door,

d. said plates having a slidable mounted engagement on said door in an arrangement whereby one of said plates is movable into and out of overlapping relation with said flange on the opposite surface of said flange from the door,

e. means defining a slot in said door,

f. a bolt extending through said slot and threadedly engaged in one of said clamp plates,

g. said bolt being arranged in a tightened condition to clamp said clamp plates together on said door in an overlapping position of said one clamp plate with said flange to lock the door and in a loosened condition to allow slidable movement of said clamp plates to a position wherein said one clamp plate is out of overlapping position with said flange to permit the door to open,

h. the bolt associated with said clamp plates having a head of non-conventional shape whereby to be capable of rotation only by a special tool and thus non-removable by unauthorized persons,

i. the clamp plate on the bolt head side including a protective wall portion peripherally surrounding said bolt head and open at the open end,

j. said wall portion defining a socket which is at least as deep as the thickness of the bolt head to prevent side engagement of the bolt head by unauthorized persons and which is of greater diameter than said bolt head to permit removal of the bolt by a special tool inserted through the open end of the protective wall portion.

3,938,838
SLIDING DOOR LOCK

Lee Wesley Brakensiek, 10508 Rancho Road, La Mesa, Calif. 92041

Filed July 15, 1974, Ser. No. 488,706

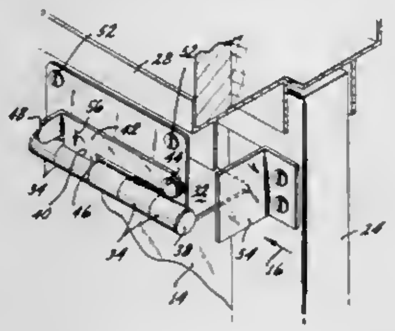
Int. Cl.² E05C *3/04*

U.S. Cl. 292—210 **2 Claims**

1. An improved locking apparatus for a slidable door panel, said panel slidable within upper and lower channels of a door casing comprising:

a base member fixedly attached to the outer surface of said upper channel parallel to and remote from said slidable door panel;

a leaf member having a hinged attachment to said base member of movement from a first position where said leaf member hangs downward by the force of gravity and is substantially an extension of said base member to a second position inwardly toward said slidable door panel where said leaf member is substantially perpendicular to said base member, a section of the hinge of said leaf member having a cutaway portion, one edge of said cutaway portion being positioned adjacent said base member when said base member is in said second position; and

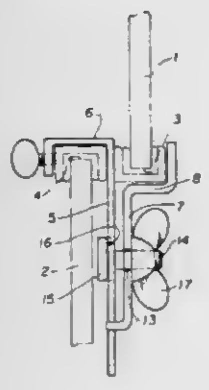


a locking lever positioned parallel to the surface of said base member and pivotable about its end attachment thereto, said locking lever having a downward extending tab portion on its end remote from its attachment end for abutting said one edge of said cutaway portion and holding said leaf member in said second position and an outward extending actuating member adjacent said tab for actuation of said locking lever.

3,938,839
SLIDING WINDOW LOCK

William S. Collier, Northglenn, Colo., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 19, 1974, Ser. No. 525,158
Int. Cl.^{2} E05C ***19/18***
U.S. Cl. 292—258 **1 Claim**

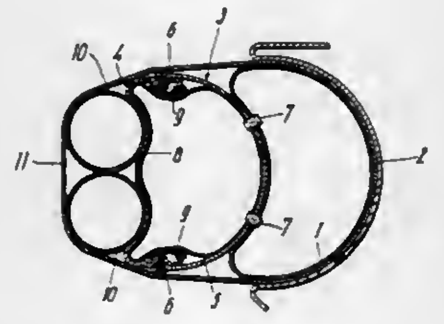


1. A sliding window lock for a sliding window having a pair of substantially parallel units each of which is slidable, relative to the other and which are positionable with a first of the units having a bottom edge portion and the second of the units having a top edge portion overlapping the bottom edge portion of the first unit, said lock comprising
  a substantially plate-like clip member bent at one end at substantially right angles to the remainder thereof to form a head part, the clip member being positioned inside the window between the first and second units with the head part thereof fitting over the edge of one of the units, said clip member having a slot formed therethrough in the remainder thereof and extending longitudinally therealong and serrations formed in the surface of said clip member along the slot and extending from both longitudinal edges of the slot substantially perpendicularly thereto;
  a substantially elongated clamp member bent at one end at substantially right angles to the remainder thereof to form a first head part, bent at the first head part at substantially right angles to the remainder of the head part to form a lip, and bent at an opposite end at substantially right angles to the remainder thereof to form a second head part extending in a plane substantially parallel to the first head part, the first and second head parts extending in opposite directions from the remainder of the clamp member, said second head part having a free edge and a cutout formed therein for accommodating the clip member, the clamp member being positioned inside the window in operative proximity with the clip member with the first head part thereof fitting over the edge of the other of the units bordered by the lip thereof, said clamp member having a bore formed through the remainder thereof: and
fastening means for releasably affixing the clamp member to the clip member inside the window thereby preventing relative movement of said members and said window units, said fastening means comprising a bolt passing through the slot and the bore and having a head with a serrated undersurface in abutment with the serrations in the surface of the clip, and a wing nut threadedly coupled to the bolt and releasably securing said bolt.

3,938,840
SHOCK ABSORBER FOR A VEHICLE

Ernst-Günter Haase, Egmating, and Rudolf König, Ottobrunn, both of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Germany

Filed Mar. 28, 1974, Ser. No. 455,895
Claims priority, application Germany, Apr. 3, 1973, 2316503
Int. Cl.^{2} B60R ***19/08***
U.S. Cl. 293—71 P **1 Claim**

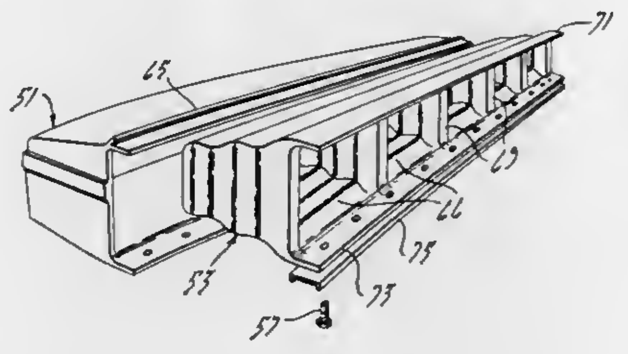


1. In a shock absorber assembly for a vehicle, such as a bumper member for a vehicle, including a flexible closed hollow body arranged to be filled with a flowable, highly compressible fluid medium, such as air, said hollow body arranged to absorb impact forces, and a first rigid support member extending along and disposed in juxtaposition with said hollow body, a second support member arranged on the opposite side of said hollow body from said first support member, wherein the improvement comprises that said second support member is a rigid closed hollow vessel and is disposed in juxtaposition with said hollow body substantially complementary to said first support member, means establishing communication between said second support member and said hollow body so that said second support member acts as an equalizing vessel for receiving the fluid medium from said flexible hollow body when such hollow body is compressed under the application of shock forces directed against the shock absorber assembly and being transmitted to said hollow body through said second support member, said first support member arranged to be mounted on the understructure of a vehicle body, at least one second flexible hollow body mounted in contact with said second support member on the opposite side thereof from said hollow body located between said first and second support members, a flexible jacket laterally enclosing and disposed in contact with said hollow body between said first and second support members and said second hollow body and also with said second support member and located between the juxtaposed surfaces of said hollow body and said first support and disposed in surface contact with said hollow body and said first support member.

3,938,841
RESILIENT BUMPER ASSEMBLY

Patrick M. Glance, Plymouth, and Marvin A. Maten, Jr., Orchard Lake, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 422,946, Dec. 7, 1973, Pat. No. 3,897,095. This application Jan. 27, 1975, Ser. No. 544,599
Int. Cl.^{2} B60R ***19/08***
U.S. Cl. 293—71 R **4 Claims**

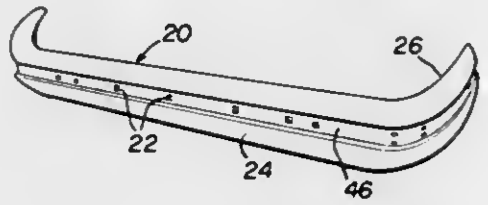


4. A resilient bumper assembly for an automotive vehicle including:
  a rigid elongate backing member extending transversely of the vehicle,
  an elastomeric outer shell,
  means securing said outer shell to said backing member,
  energy absorbing means received within the outer shell and abutting the backing member,
  said energy absorbing means including a plurality of elastomeric bellows elements having axes positioned essentially parallel to the direction of travel of the vehicle,
  said energy absorbing means having horizontally disposed rectangular bellows-like elements, adjoining elements having common walls.

3,938,842
BUMPER GUARD ASSEMBLY

Edward A. Ruhl, Southfield, Mich., assignor to Robin Products Company, Warren, Mich.

Filed May 20, 1974, Ser. No. 471,784
Int. Cl.^{2} B60R ***19/08***
U.S. Cl. 293—71 R **19 Claims**

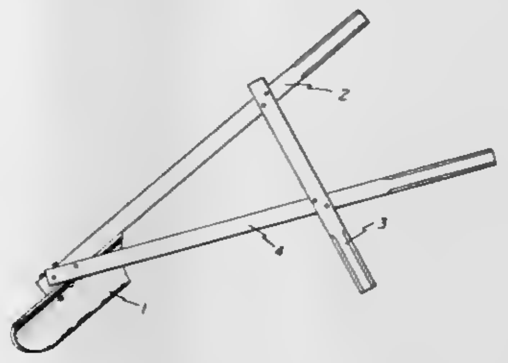


1. A bumper assembly, comprising in combination, an elongated metal bumper, at least one self-supporting impact resistant plastic upright member having a longitudinal axis generally perpendicular to the longitudinal axis of said bumper, said upright member being channel-shaped in transverse cross-section, opening toward said bumper and having integral opposed tab portions extending longitudinally of said bumper and secured to said bumper by connectors generally perpendicular to the longitudinal axis of said bumper, and at least two elongated impact resistant plastic bumper guards, channel-shaped in transverse cross-section and opening toward said bumper, said bumper guards being secured to said bumper on either side of said upright member, said guards lying generally in the longitudinal axis of said bumper and enclosing said upright member tabs adjacent said upright member.

3,938,843
SNOW CRADLE

Otto Andrew Pahl, 36 Worden Road, Scotia, N.Y. 12302

Filed June 26, 1974, Ser. No. 477,489
Int. Cl.^{2} E01H ***5/02***
U.S. Cl. 294—54 **1 Claim**

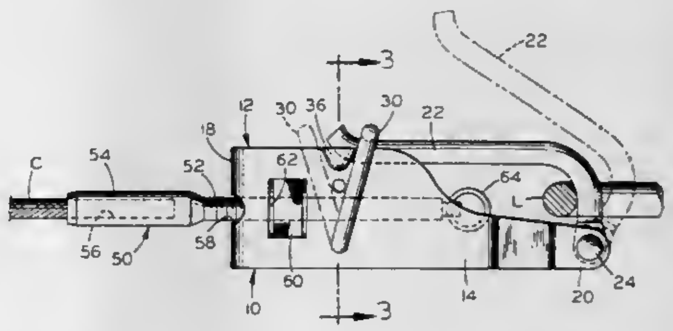


1. A manually operated snow mover comprising a curved wooden scoop, a pair of spaced handle arms fastened to the convex back of the scoop, a lower cutting edge and a leading circular cutting toe on the scoop, the free ends of the arms being spaced apart so the longer flat arm may be placed under a user's arm pit to act as a lever, the other arm having a long handle portion to form one half of a fulcrum and a cross arm with a handle portion connected across the two arms and extending over a considerable distance to be grasped by a user's hand to form the other half of the fulcrum whereby the fulcrum has a circular motion acting as a movable imaginary pivot, the center of this pivot floating up and down and side to side as the snow mover is used in a sweeping motion.

3,938,844
ADJUSTABLE PELICAN HOOK

Curtiss S. Johnson, Jr., Middle Haddam, Conn., assignor to C. Sherman Johnson Co., Inc., East Haddam, Conn.

Filed June 10, 1974, Ser. No. 478,077
Int. Cl.^{2} B66C ***1/36***
U.S. Cl. 294—83 R **4 Claims**



1. A pelican hook having an adjustment feature comprising:
  an elongated U-shaped body member having generally parallel sides connected together at one end and a opening between the sides at the other end;
  a jaw member pivotally connected to the body member between the sides at the other end for movement between opened and closed positions;
  a catch formed from a ring pivotally mounted in the body member to move into locking engagement with the jaw member in the closed position;
  means for holding the catch in locking engagement with the jaw member including a detent mounted on the body member;
  an adjustable link including a threaded shaft extending through the body member at the one end and between the sides adjacent the one end, the link also having a fastening for connecting the pelican hook to another article;
  means for adjusting the position of the link relative to the body member to increase and decrease the distance be-

tween the fastening on the adjustable link and the jaw member in the closed position, the adjusting means including a rotatable nut on the threaded shaft and captured by the parallel sides of the body member at a longitudinal station on the body member; and

means for limiting the rotation of the threaded shaft relative to the body member, the limiting means including a member extending transversely through the threaded shaft and between the parallel sides of the body member.

3,938,845

GRIPPING DEVICE OF A LIFTING DEVICE, ESPECIALLY IN A CORE REACTOR FOR DEPOSITING AND PICKING UP OF FUEL ELEMENTS AND CONTROL RODS

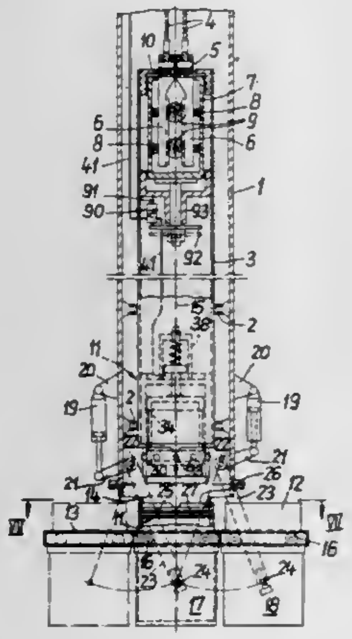
Anton Fehl, and Bernhard Hoffmeister, both of Wilhelmshaven, Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Apr. 1, 1974, Ser. No. 456,959

Claims priority, application Germany, Apr. 5, 1973, 2317014

Int. Cl.^{2} G21C *19/10*

U.S. Cl. 294—86 A **39 Claims**



1. A gripping device especially for use in connection with the placement of fuel elements and control bars of a reactor core; a tubular member, a gripper body moveable axially in said member, gripper tools adapted for being coupled to the lower end of said gripper body, a single power operable device in said gripper body for actuating said gripper tools, said gripper tools having like upper and lower guiding means, said upper guiding means being engageable by the lower ends of said gripper body, said lower guiding means being engageable with elements to be placed, said upper guiding means telescopically engaging the lower end of said gripper body, abutment means limiting said telescopic engagement, and connecting means substantially positively connecting the gripper body to a gripper tool in telescopic engagement therewith.

3,938,846

AUTOMATIC LOADER FOR BROACHING MACHINES

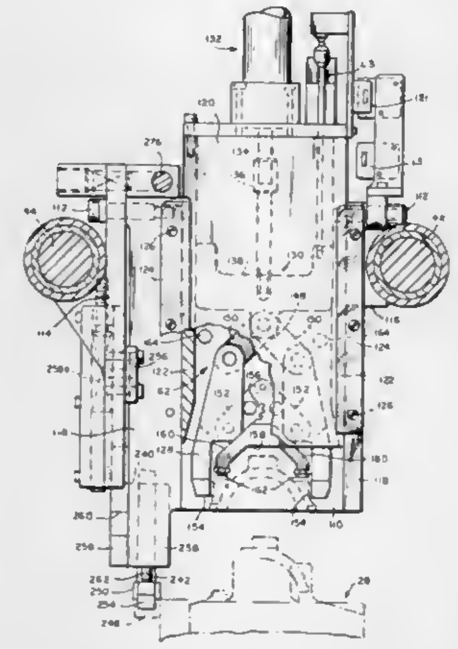
Joseph B. Yuryan, Hudson, Mass., assignor to The LaPointe Machine Tool Company, Hudson, Mass.

Division of Ser. No. 225,090, Feb. 10, 1972, Pat. No. 3,805,944. This application Feb. 1, 1974, Ser. No. 438,733

Int. Cl.^{2} B66C *1/42*

U.S. Cl. 294—106 **13 Claims**

1. A loader for transferring work pieces from a work support to a moving conveyor, wherein a carrier is supported for reciprocation perpendicular to the work support and parallel to the conveyor, positioning means fixed to the carrier, first means for effecting movement of the carrier downwardly relative to the work support to engage the positioning means with the work piece resting on the work support, spaced gripper fingers mounted on the carrier for movement thereon relative to the positioning means from a position in which the fingers are spread apart to a position of engagement with the work piece when the latter is engaged with the positioning means, second means comprising a vertically reciprocable member, a first pair of links pivotally connected at one end to said member and at their other ends to the respective gripper fingers, a second pair of links pivoted at one end at a predetermined fixed position on the carrier and at their other ends to the respective gripper fingers intermediate the ends of the latter, and means for limiting downward movement of the gripper fingers to a predetermined level wherein the lower ends of the fingers extend below the positioning means opposite the work piece so that further movement of said first means operates to rock the gripper fingers about the second links into engagement with the work piece, said first means being operable thereafter to effect upward movement of the carrier, positioning means, and gripper fingers to lift the work piece from the work support.



3,938,847

GRIPPER MEANS

John J. Peyton, Santa Barbara, Calif., assignor to Industrial Automation Corporation, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 305,709, Nov. 13, 1972, abandoned. This application Oct. 23, 1973, Ser. No. 408,922

Int. Cl.^{2} B66C *1/6.2*

U.S. Cl. 294—110 R **12 Claims**

1. In a bottle handling apparatus, a bottle gripper comprising:

a support means;

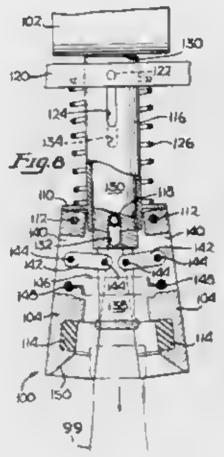
first and second gripping members each pivotally supported by said support means, said gripping members being rotatable between a first position whereby the lower portion of said gripping members may engage a bottle neck and a second position not engaging a bottle neck;

spring means for encouraging said gripping members to said first position;

an actuator member moveable between third and fourth positions, said actuator extending upward so as to be engageable from above for encouragement from said third position to said fourth position;

over-center toggle means, said toggle means being coupled between said first and second gripping member and said actuator member, said toggle means being a means for allowing said first and second gripping members to be moved by said spring means toward said first position as said actuator member moves toward said third position, and for locking said actuator member at said fourth position and said first and second gripping members at said second position by the over-center action of said toggle means, whereby said first and second gripping members will snap to said first position and said actuator member to said third position as said actuator is encouraged to move from said fourth position;

means for yieldably supporting said support means so that the lower portion of said gripping members may be deflected from their normal positions upon contact with a bottle, the lower portion of said gripping members being chamfered to engage a bottle neck and encourage said gripper and said bottle neck into approximate axial alignment.



3,938,848

METHODS AND APPARATUS FOR THE PNEUMATIC CONVEYING OF MATERIAL

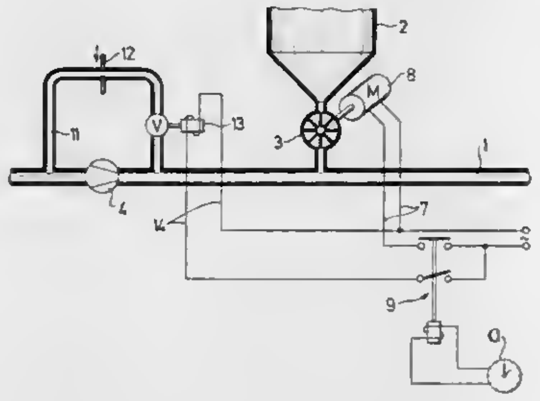
Wolfgang Krambrock, Ravensburg; Paul Lübbehusen, Ravensburg-Durnast, and Hans-Jürgen Huck, Obereschach, all of Germany, assignors to Waeschle Maschinenfabrik GmbH, Ravensburg, Germany

Filed Feb. 19, 1974, Ser. No. 443,243

Claims priority, application Germany, July 6, 1973, 2334360

Int. Cl.^{2} B65G *53/66*

U.S. Cl. 302—42 **12 Claims**



1. A method of pnuematic conveying by air flow of material which tends to form deposits on a conveyor conduit wall and, when given amounts of such deposits have been so formed, to peel off the thus formed deposits from the conduit wall with the probability that such peeled off deposits will form a blockage in the conduit, and wherein the deposit and peeling off process possesses a rhythm cycle specific to the material being conveyed, comprising the steps of automatically alternating conveying phases in which the material is introduced into the conveying air flow and conveyed in continuous flow through said conduit, and cleaning phases in which the introduction of material into the air flow is stopped and only air passed through said conduit for completely removing all material in said conduit, including deposited material, for cleaning said conduit before additional material is introduced into said conduit, and further including the step of alternating said conveying and cleaning phases with a rhythm that is substantially more rapid than said rhythm cycle of material deposit and peeling off so as to remove the deposits from the conduit wall before thay build up in size sufficient to peel off and cause blockage.

3,938,849

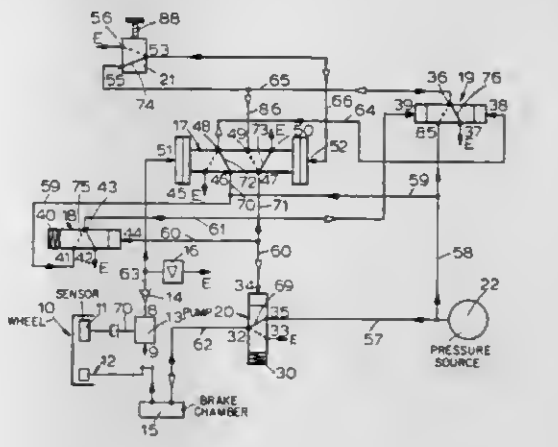
METHOD AND APPARATUS FOR INHIBITING VEHICLE WHEEL LOCKING

Frederick John Charles Hope, Stanyards Farm, Chertsey Road, Chobham, Surrey, and James Malcolm Pigney, Woolhampton Way, Berkshire, both of England

Filed May 29, 1974, Ser. No. 474,421

Int. Cl.^{2} B60T *8/06, 13/16*

U.S. Cl. 303—21 A **30 Claims**



13. In a control system for automatic control of a vehicle braking system to inhibit wheel locking including a fluid pressure actuated brake for braking a vehicle wheel and a conduit through which braking fluid pressure is applied from a source to the brake, the improvement wherein: said control system comprises means for generating a first fluid pressure from the rotation of a vehicle wheel, a valve incorporated in said conduit and capable, when subjected to a second fluid pressure, to interrupt fluid flow therein and means for automatically actuating said valve by subjecting it to said second fluid pressure to periodically interrupt said flow when the first fluid pressure indicates wheel locking, said means including a multi-port fluid valve control device which is fed with said first fluid pressure and with a further fluid pressure dependent on the applied brake pressure, the control device producing said second fluid pressure to actuate said valve and interrupt said flow when said further fluid pressure is greater than the first fluid pressure thereby signifying wheel locking.

3,938,850

BRAKE VALVE FOR A MOTOR VEHICLE BRAKE SYSTEM

James D. Pembleton, Lathrup Village, and Keith C. Pratt, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 30, 1974, Ser. No. 474,509

Int. Cl.^{2} B60T *8/14*

U.S. Cl. 303—24 F **1 Claim**

1. A brake valve for a motor vehicle brake system,

said brake valve having a pressure inlet constructed to be connected to a brake master cylinder and a pressure outlet constructed to be connected to a wheel brake,

said brake valve having a proportioning valve constructed to limit a pressure increase at said outlet relative to a pressure increase at said inlet when the pressure at said inlet exceeds a pressure determined, in part, by the force exerted by a proportioning valve spring,

a fluid chamber and communicating means connecting said chamber to said inlet,

a piston disposed, in part, in said chamber,

a second spring biasing said piston to an at-rest position,

said piston being coupled to a cam means,

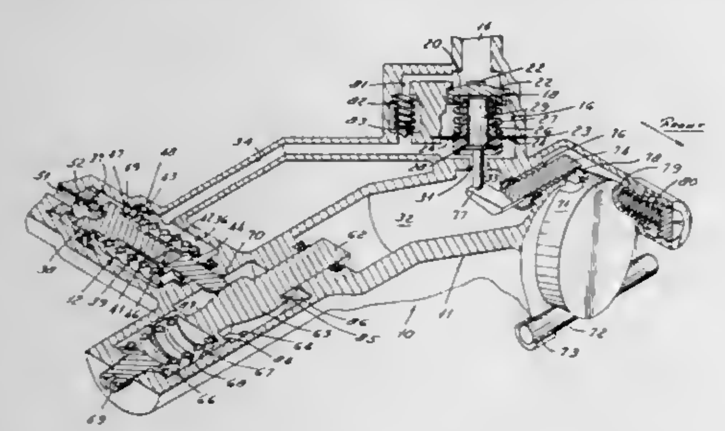
said cam means being coupled to said proportioning valve spring and constructed to increase said force exerted by said proportioning valve spring in response to displacement of said piston,

said piston being displaceable in response to fluid pressure in said chamber that exceeds a predetermined minimum pressure that is determined, in part, by the biasing force of said second spring on said piston whereby said cam means increases said force exerted by said proportioning valve spring in response to the fluid pressure in said chamber,

said cam means having a cam surface with a straight line portion whereby initial displacement of said cam means will not produce an increase in said force exerted by said proportioning valve spring,

inertia sensitive valve means disposed, in part, in said communication means and constructed to close the communication between said chamber and said inlet in response to a rate of vehicle deceleration that exceeds a predetermined minimum rate,

pressure limiting means disposed in said communication means and constructed to limit the communication between said inlet and said chamber in response to a rate of increase in pressure in said inlet that exceeds a predetermined minimum rate thereby providing means to compensate for vehicle lag.



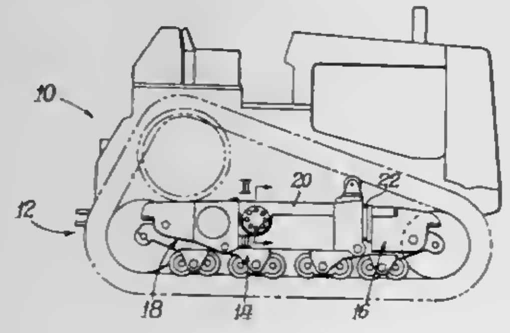
3,938,851
RECOIL MECHANISM

Robert L. Shelby, Chillicothe, and Eldon D. Oestmann, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 19, 1974, Ser. No. 507,264

Int. Cl.² B62D *55/30*

U.S. Cl. 305—10 **9 Claims**



1. In combination with first and second members generally reciprocable so as to be movable in one and the other directions relative to each other, recoil means comprising:

cylinder means associated with the first member and movable therewith upon relative movement between said members in one and the other directions, said cylinder means having an open end;

a sleeve piston disposed within said cylinder means and movable therein;

a rod member disposed within the sleeve piston, and extending inwardly of said cylinder means through said open end of said cylinder means, said cylinder means, rod member and sleeve piston forming a substantially closed chamber in which substantially incompressible fluid may be disposed;

reaction means associated with the second member for movement therewith;

said rod member being movable with said second member inwardly of the cylinder means upon relative movement between said members in the one direction;

compressible and extensible resilient means associated with the sleeve piston and reaction means to urge them apart,

whereby, with said chamber substantially filled with substantially incompressible fluid, movement of the rod member with the second member inwardly of the cylinder means, upon relative movement between said members in said one direction, moves the sleeve piston relative to the cylinder means directionally opposite the movement of the rod member relative to the cylinder means, whereby, upon said relative movement of said first and second members in said one direction, the amount of compressing movement of the resilient means is greater than the corresponding amount of relative movement of the first and second members in said one direction.

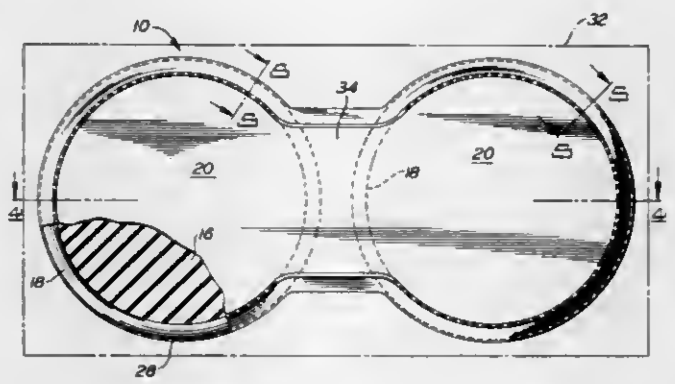
3,938,852
ELASTOMERIC STRUCTURAL BEARING

Richard D. Hein, Wabash, Ind.; John A. Welch, Cuyahoga Falls, and James E. Britton, Akron, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 394,692, Sept. 6, 1973. This application Dec. 19, 1974, Ser. No. 534,269

Int. Cl.² F16C *25/02*

U.S. Cl. 308—3 R **7 Claims**



1. An internally reinforced elastomeric bearing structure adapted to support a tilting and laterally movable load without external support or confinement within an enclosure, comprising:

a. a substantially flat monolithic elastomeric support body defining an upper surface disposed in parallel spaced apart relation with a lower surface and a peripheral edge bounding the perimeters of said surfaces;

b. a plurality of inextensible tension support rings embedded in said peripheral edge and around the periphery of said support body with each support ring being selectively disposed both in laterally spaced apart relation and in vertically spaced apart relation to the next adjacent support ring, and said support rings extending serially from close to the top surface to the close to bottom surface of said support body.

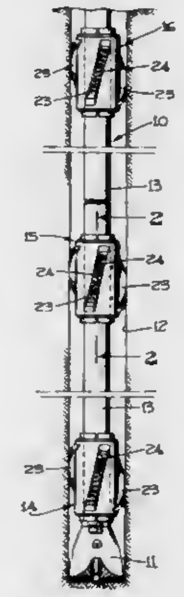
3,938,853
SHRINK-FIT SLEEVE APPARATUS FOR DRILL STRINGS

Rainer Jürgens, Westercelle, and Alfred Ostertag, Celle, both of Germany, assignors to Christensen Diamond Products Company, Salt Lake City, Utah

Continuation-in-part of Ser. No. 465,818, May 1, 1974, abandoned. This application Dec. 16, 1974, Ser. No. 532,745

Int. Cl.² F16C *1/26*

U.S. Cl. 308—4 A **39 Claims**



1. Apparatus adapted to be disposed in a bore hole, comprising a drill string member having a cylindrical exterior surface, an inner sleeve on said member and having an internal cylindrical surface conforming to the cylindrical surface of said member, said sleeve also having an external conical surface, an outer sleeve surrounding said inner sleeve and having an internal conical surface conforming to said external conical surface and in contact therewith, spaced seal means between the exterior of said inner sleeve and interior of said outer sleeve providing a confined region for tapping fluid under pressure between said sleeves, and means for conducting fluid under pressure to said confined region to expand said outer sleeve and enable said outer sleeve to be moved relatively longitudinally along said inner sleeve outer surface to shrink-fit said outer sleeve on said inner sleeve and said inner sleeve on said drill string member upon relieving of the fluid pressure.

3,938,854
TRACK SHAFT — BED OF BALL BEARING

Hiroshi Teramachi, 8-34-2, Higashi-tamagawa, Setagaya, Tokyo, Japan

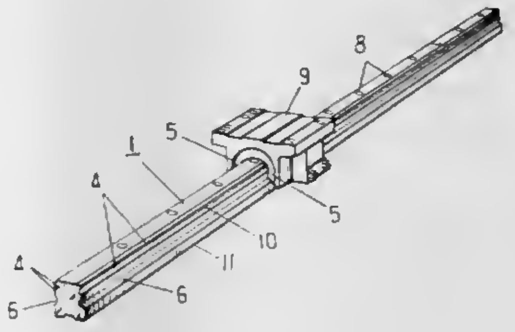
Filed Oct. 7, 1974, Ser. No. 512,456

Claims priority, application Japan, Oct. 19, 1973, 48-120712

Int. Cl.² F16C *29/04*

U.S. Cl. 308—6 R **1 Claim**

1. A machine slide comprising an elongated bar having two opposite sides with respective upper portions having respective arcuate surfaces with a plurality of circumferentially spaced apart cylindrical recesses each of said recesses having ball bearings therein, and a saddle member having a circularly cylindrical recess and with a bottom having a lower opening into which the bar extends, said saddle member being engaged on said ball bearings for movement thereon, said sides of said bar having a respective stop recess below the respective arcuate surface into which the respective bottom edges bounding the saddle member cylindrical recess extends.



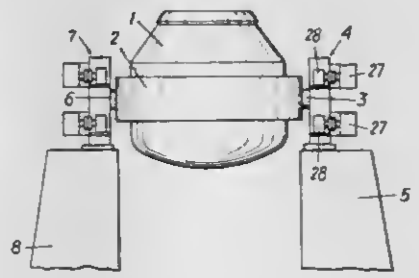
3,938,855
LARGE CONVERTER ARRANGEMENT

Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Jan. 7, 1975, Ser. No. 539,175

Int. Cl.² F16C *29/00*

U.S. Cl. 308—6 R **11 Claims**



1. A drive and bearing arrangement for a large converter construction with an expansion bearing assembly on one side, a fixed bearing assembly opposite the expansion bearing assembly and driving means for both the expansion bearing assembly and the fixed bearing assembly, characterized in that the expansion bearing assembly comprises

a first bushing with recesses of semi-circular cross-section therein,

an axially movable first trunnion supported in said first bushing and having recesses of semi-circular cross-section therein, the recesses in said first bushing and the recesses in said first trunnion complementing one another so as to form spaces of circular profile,

a first driving toothed wheel in connection with said axially movable first trunnion, and

torque-transmitting crowned rollers located within said spaces of circular profile; and further characterized in that the fixed bearing assembly comprises

a second bushing,

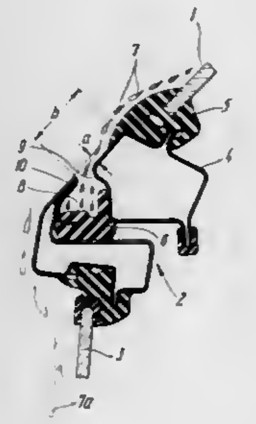
a second trunnion, part of which protrudes into and is force-locked to said second bushing,

a second driving toothed wheel in connection with said second trunnion, and

a bearing, containing inner rings and outer rings, provided between the bushing and the trunnion, said rings having spherical faces acting as mutual running faces, which running faces have a common center.

3,938,856
WATER COLLECTING DEVICE ASSOCIATED WITH THE SIDE WINDOW OF A VEHICLE

Lutz Jansseo, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed July 12, 1974, Ser. No. 488,009
Claims priority, application Germany, July 14, 1973, 2335957
Int. Cl.² B60J *9/00*
U.S. Cl. 296—154 **2 Claims**

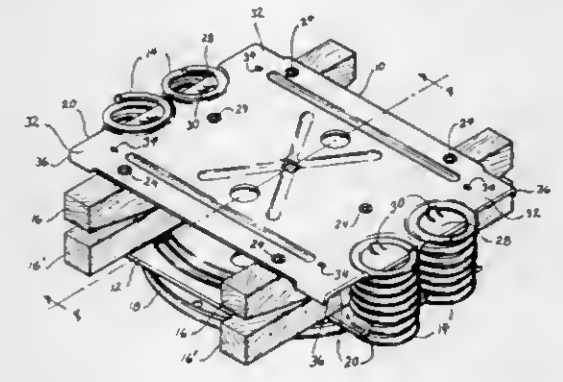


1. In a vehicle comprising a front windshield capable of being contacted by water, a column adjacent said windshield for the mounting thereof, a side door located laterally rearward of said column and having an outer edge adjacent said column, said side door and said column forming a joint therebetween, a side window arranged in said side door and occupying a first elevational position, and a sealing member positioned in said joint for preventing passage of water therethrough; the improvement wherein said outer edge of said side door projects substantially outward, away from said column, by a predetermined distance from the outermost periphery of said column, wherein said outer edge of said side door, and said column and said sealing member are dimensioned so as to form an impervious channel, having an opening extending across the direction of flow of water which would normally flow rearwardly and laterally from the windshield onto the side window of the door, for intercepting water when water is flowing from said windshield rearwardly and laterally towards said side window, for transferring intercepted water downward away from said side window, and wherein said channel has a lower end occupying a second elevational position lower than said first elevational position of said side window, said lower end terminating at an outlet for discharging water remotely from said side window.

3,938,857
ROCKER SPRING UNIT

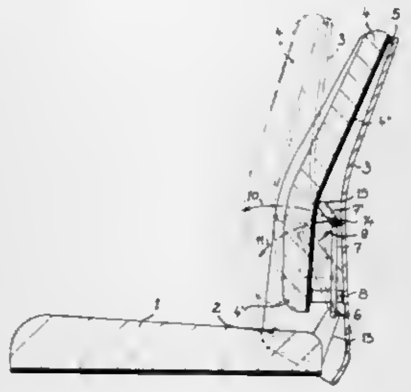
Charles H. Craig, Fort Smith, Ark., assignor to Hickory Springs Manufacturing Company, Hickory, N.C.
Filed Apr. 23, 1973, Ser. No. 353,502
Int. Cl. A47c *3/02*
U.S. Cl. 297—263 **8 Claims**

1. A rocker spring unit comprising top and bottom generally flat plate members, rocker springs attached to and extending between opposite edge portions of said plate members, and separate rocker elements attached to said plate members in paired relation inboard of said rocker springs at the respective inner faces of said top and bottom plate members and in symmetrical relation to the attachment of said rocker springs at said opposite edge portions of said plate members, said top plate member extending to provide a land at each corner thereof beyond said rocker springs and said rocker elements for securing the rocker spring unit to a chair bottom thereat.



3,938,858
CHAIR WITH ADJUSTABLE BACKREST

Fritz Drabert, Marienstr. 37, and Klaus Geffers, Goethestr. 26, both of 495 Minden, Germany
Filed Dec. 2, 1974, Ser. No. 528,614
Claims priority, application Germany, Dec. 3, 1973, 2360165
Int. Cl.² A47C *3/00*
U.S. Cl. 297—284 **12 Claims**



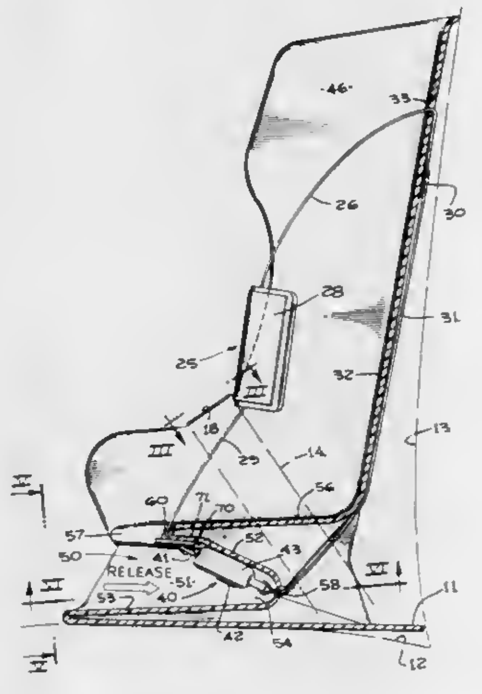
1. A chair of the type having a seat and a pivotable backrest wherein said backrest includes:
- a backplate pivotally supported to a frame,
- a backrest member forwardly of said backplate and secured adjacent its upper portion to said backplate,
- and means responsive to the pivotal movement of said backplate about its pivotal support for moving at least that portion of said backrest member which is disposed adjacent the sacro-lumbar region of a seat occupant by an amount in excess of that resulting from said pivotal movement alone, said responsive means moving said portion of said backrest member forwardly as the backrest is forwardly pivoted and moving said portion of said backrest member rearwardly as the backrest is rearwardly pivoted.

3,938,859
CHILD SAFETY SEAT FOR VEHICLES WITH HARNESS RELEASE INACCESSIBLE TO CHILD PASSENGER

Cyril Henderson, Woodland Hills, and John N. Broughton, Northridge, both of Calif., assignors to American Safety Equipment Corporation, Encino, Calif.
Filed May 20, 1974, Ser. No. 471,465
Int. Cl.² A62B *35/00*
U.S. Cl. 297—385 **8 Claims**

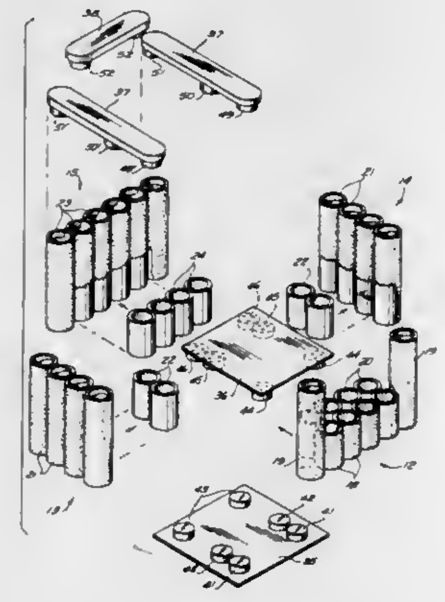
1. In a child safety seat having a child seating surface and a supporting base structure securable to a vehicle seat by a pre-existing vehicle seat belt and wherein the child seat is provided with its own child seat safety harness having releasable buckling parts to facilitate the child's entry and egress of the child seat when the latter is secured by said pre-existing vehicle seat belt to the vehicle seat, the improvement comprising the provision of:

- buckle receptacle means in said child seat base structure positioned generally under said child seating surface for receiving the child seat safety harness buckling parts and maintaining them in a substantially inaccessible location relative to a child seated in said child safety seat.



3,938,860
FURNITURE FORMED OF TUBULAR ELEMENTS

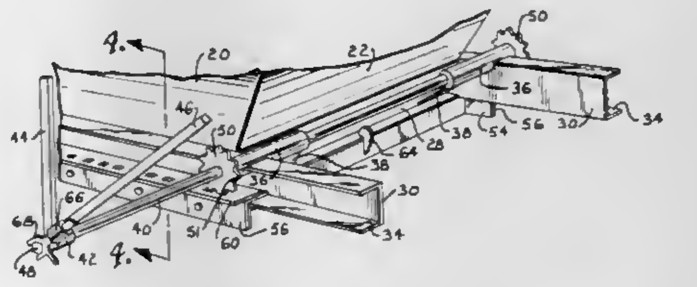
Bruce Cobb, 36 E. 7th St., New York, N.Y. 10003
Filed Nov. 15, 1974, Ser. No. 524,103
Int. Cl.² A47C *7/00*
U.S. Cl. 297—440 **9 Claims**



1. An article of furniture, comprising:
- a. a plurality of rigid tubes arranged vertically in side-by-side relation, some of said tubes being relatively short and some being relatively long,
- b. fastening means connecting said tubes together into a unitary assembly in which all of said tubes are arranged vertically,
- c. a seat defined by horizontal load-supporting means resting upon the upper ends of at least some of said short tubes, and
- d. a back defined by a row of said relatively long tubes, said long tubes being arranged side-by-side with, and fastened to, some of said short tubes.

3,938,861
DOOR CONSTRUCTION FOR HOPPER TRAILER

James H. Bagwell, Great Bend, Kans., assignor to Doonan Trailer Corporation, Great Bend, Kans.
Filed Sept. 25, 1974, Ser. No. 509,069
Int. Cl.² B61D *7/20*
U.S. Cl. 298—27 **4 Claims**



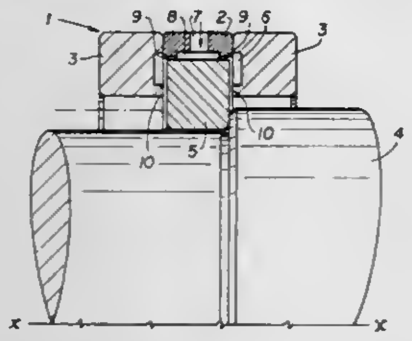
1. In combination with a land vehicle, hopper construction comprising:
- a hopper bed having an opening in its bottom for the discharge of material;
- first and second track components of L-shaped cross-sectional configuration extending longitudinally on opposite sides of said opening with one leg of each component extending away from the opening;
- closure structure for said opening having a transverse dimension greater than the width of the opening so as to extend beneath said track components;
- first and second mounting members of inverted L-shaped cross-sectional configuration disposed in opposed relationship to said track components and extending longitudinally along opposite sides of said closure structure with one leg of each member substantially overlying said one leg of a corresponding track component,
- said mounting members being rigidly coupled with said closure structure and adapted to move relative to said track components;
- generally planar flange structure having a portion substantially overlying said one leg of at least one of said mounting members and another portion projecting from the said one leg of said one mounting portion;
- said flange structure extending substantially along the length of said one member, being rigidly coupled therewith and having a plurality of longitudinally aligned through openings in said other portion; and
- a spur gear mounted for rotation with its teeth complementally received by the openings in said flange portion whereby rotation of said gear moves said closure structure.

3,938,862
FLUID BEARING SYSTEM

Rainer Schurger, Arnstein; Lothar Walter, Schweinfurt, and Erich Burkl, Stammheim, all of Germany, assignors to SKF Industrial Trading & Development Company, B.V., Amsterdam, Netherlands
Filed Dec. 26, 1973, Ser. No. 427,554
Claims priority, application Germany, Dec. 27, 1972, 2263555
Int. Cl.² F16C *39/04*
U.S. Cl. 308—9 **12 Claims**

1. A fluid bearing for a rotary shaft comprising a housing surrounding said shaft and forming at least one annular compression chamber on the interior surface thereof, at least one portion of said housing being annular and fixed stationary with respect to said shaft and having conduit means for the inlet of

fluid under pressure to said chamber, a ring secured to said shaft for rotation therewith and extending within said compression chamber in spaced opposition to said stationary portion, having a peripheral surface coacting with said annular portion to divide said compression chamber into laterally spaced sections, said ring forming with the surface of said stationary portion a circumferential compression space and lateral throttling gaps between the inlet conduit and said lateral sections of the compression chamber for restriction of fluid flow under both radial and axial loads.



3,938,863

AEROSTATIC BEARING

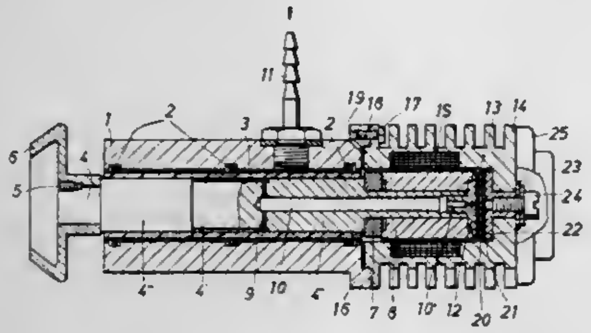
Hans R. Victor, and Jurgen Schmidt, both of Karlsruhe, Germany, assignors to SKF Kugellagerfabriken, Schweinfurt, Germany

Filed Sept. 27, 1974, Ser. No. 509,749

Claims priority, application Germany, Sept. 29, 1973, 2349072

Int. Cl.^{2} F16C *17/16, 13/02*

U.S. Cl. 308—9 **19 Claims**



1. An aerostatic bearing for the spinning turbine of an open end spinning machine comprising a rotatable shaft secured at one end to said turbine, a cylindrically hollow housing surrounding said shaft, means for introducing a gaseous medium under pressure through said housing to form a radial aerostatic bearing about said shaft, said shaft having at least one radial duct and an axial bore communicating with said duct for exhaust of said gaseous medium, said bore being closed to said one end of said shaft and extending through said shaft to open at the other end, an abutment surface fixed with respect to said housing spaced from the other end of said shaft opposite to the opening of said bore to receive the gaseoue media exhausting therefrom and to produce an axial aerostatic bearing with the end of said shaft.

3,938,864

JOURNAL ROLLING BEARING

Berthold Haussels, Wermelskirchen, Germany, assignor to Acousa Saxon S.A., Saxon, Switzerland

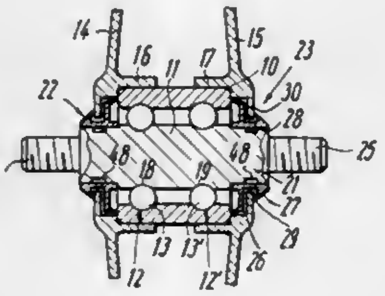
Filed Nov. 26, 1973, Ser. No. 418,999

Claims priority, application Germany, Nov. 30, 1972, 2258577; Oct. 5, 1973, 2344661

Int. Cl.^{2} F16C *1/24*

U.S. Cl. 308—187.2 **18 Claims**

1. A journal bearing comprising an inner bearing member defining a pair of axially spaced inner bearing races, a tubular outer bearing ring encircling said inner bearing member and arranged to provide central support for a wheel or the like, said outer bearing ring being formed with outer bearing races juxtaposed with said inner bearing races, at least two rows of rolling elements between said bearing member and bearing ring with the rows spaced from one another axially of the bearing ring, each of said rows being received in an inner bearing race and an outer bearing race juxtaposed therewith, the inner bearing member axially extending beyond the respective inner bearing races in opposite directions respective annular seals mounted upon each end of said inner bearing member and engaging said ring for protecting the rolling elements against contamination, and respective threaded elements carried on axial end portions of the inner bearing member for retaining said seals thereon.



3,938,865

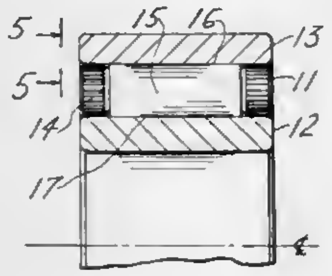
CAGELESS ROLLER BEARING

William S. Rouverol, 22 Lovell Ave., Mill Valley, Calif. 94941

Filed Apr. 1, 1974, Ser. No. 457,052

Int. Cl.^{2} F16C *35/06*

U.S. Cl. 308—205 **30 Claims**



1. In a roller bearing having a pair of circumferentially continuous races,

a plurality of rollers in rolling engagement with said races,

each of said rollers having a load bearing portion formed to a surface of revolution and a pair of spaced apart toothed portions,

each of said races having a load bearing portion formed to a surface of revolution and a toothed portion, one of said races having two spaced apart toothed portions in meshing engagement with the toothed portions on said rollers,

each of said surfaces of revolution having substantially straight generating elements,

the pitch surface of each of said toothed portions containing straight-line extensions of said straight generating elements, the teeth of one of said toothed portions being formed to profiles contacting their mating tooth profiles substantially at the pitch line.

3,938,866

ROLLER CAGES FORMED FROM APERTURED SEPARATORS FOR ROLLER BEARINGS

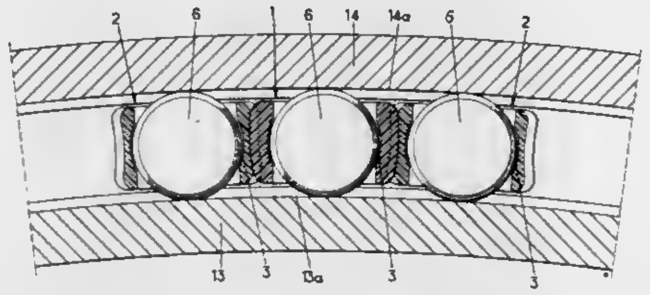
Jacques Lucien Joseph Martin, Paris, France, assignor to Societe Anonyme dite: R.K.S., France

Filed Mar. 13, 1974, Ser. No. 450,690

Claims priority, application France, Mar. 27, 1973, 73.11002

Int. Cl.^{2} F16C *33/46*

U.S. Cl. 308—235 **12 Claims**



1. A roller cage for a roller bearing assembly comprising first and second apertured separators alternately interlocked in one another and each having a housing provided with two apertures, a roller adapted to be received in the housing through one of the apertures and resiliently encased therein, each housing being symmetrical about the axis of revolution of the roller and having its symmetrical center at the mid height of the axis of symmetry, the said first and second separators each having two part spherical surfaces symmetrical about a plane of symmetry containing the axis of the housing and the axis of the cage, the part spherical surfaces on the first separators being convex and those of the second separators being concave and the radius of curvature of the convex surfaces being equal to the curvature of the concave surfaces.

3,938,867

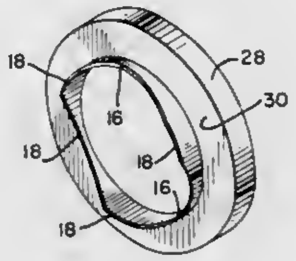
THRUST WASHER

Dean E. Johnston, Thomaston, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed May 20, 1974, Ser. No. 471,282

Int. Cl.^{2} F16C *33/58*

U.S. Cl. 308—235 **4 Claims**



1. A thrust washer comprising: a radially extending annular portion and a flange extending axially from the inner periphery of the radially extending annular portion, said annular portion and flange being made of flat strip steel, said flange having circumferentially spaced cutouts extending around the circumference of the flange; the circumferential lengths of the cutouts at the free end of the flange forming the major part of the total circumference of the flange at such free end with at least a portion of each cutout having a curved surface, the axial lengths of the cutouts being less than the full length of the flange to provide rigidity and strength.

3,938,868

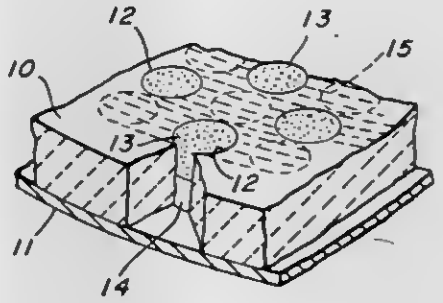
BEARING LUBRICATION SYSTEM

Jan W. VanWyk, Kirkland, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sept. 23, 1974, Ser. No. 508,072

Int. Cl.^{2} F16C *33/10*

U.S. Cl. 308—239 **10 Claims**



1. A bearing structure including relatively movable members having engaging bearing surfaces, one of said members having a plurality of lubricant reservoirs therein opening to the bearing surface, a solid lubricant material contained in each of said reservoirs, said solid lubricant having a coefficient of thermal expansion greater than the material of said one bearing member, and expansion members in said reservoirs under the lubricant, said expansion members having a higher coefficient of thermal expansion than the bearing material.

3,938,869

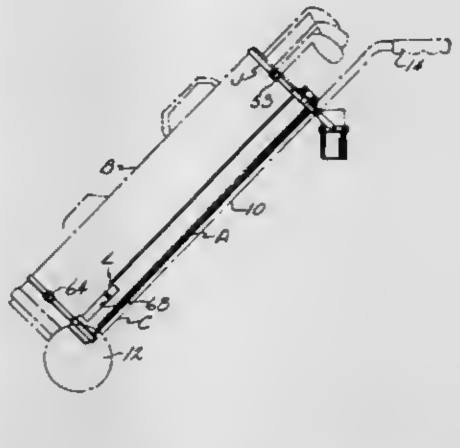
GOLF BAG SUPPORTED BEVERAGE CAN HOLDING ASSEMBLY

Robert M. Josey, 814 E. Grand, Apartment 3, El Segundo, Calif. 90245

Filed Nov. 14, 1974, Ser. No. 523,808

Int. Cl.^{2} A47B *81/00*

U.S. Cl. 312—100 **5 Claims**



1. In combination with a cart supported golf bag, which bag is of the type that has a lug supported from the lower portion thereof in which a longitudinal opening is defined to receive the tip of an umbrella and an open end through which golf clubs project, a multiple beverage can holding container assembly that may be removably secured to said bag, said can holding assembly including:

a. an elongate container defined by a cylindrical side wall that has a first open end and a second end closed by a bottom, said container being of sufficient length that a plurality of beverage cans may be arranged end to end as a stack therein, with a longitudinal opening in said side wall adjacent said bottom through which the lowermost one of said beverage cans may be withdrawn when desired; said stack moving downwardly by gravity to dispose another of said beverage cans in alignment with said opening when one of said beverage cans is withdrawn through the latter, and said beverage cans when emptied being insertable in said container through said first open end to rest on said stack;

b. an elongate cup having an open end, a cylindrical sidewall, and a bottom, said sidewall adjacent said open end of said cup being capable of snugly and slidably engaging said sidewall of said container adjacent said first end thereof to be removably supported from said container and close the latter;

c. a gimbal assembly secured to said cup adjacent said open end thereof and above the center of gravity of said cup;

d. first means secured to said container adjacent said first open end thereof for removably engaging said bag adjacent said open end thereof to transversely position said container relative to said bag, said first means removably supporting said gimbal assembly when said cup is removed from said container, with said cup when supported by said gimbal assembly from said first means capable of having one of said beverage containers disposed therein, and said cup and beverage container remaining in an upright position at all times when said bag is in either vertical or tilted in a direction in which said gimbal assembly is free to pivot, said first means including:

1. a first circumferentially extending band secured to said container adjacent said first open end thereof;
2. a plurality of circumferentially spaced first lugs secured to said first band, with one of said lugs having said cavity and transverse slot therein; and
3. a plate secured to one of said first lugs, said plate being insertable in the open end of said golf bag to laterally position said container to the latter;

e. second means secured to said container for removably engaging said opening in said bag to transversely position the lower portion of said container adjacent said bottom relative to said bag; said second means including:

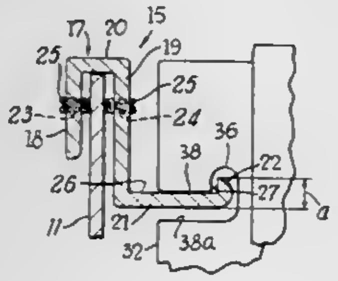
1. a second circumferentially extending band secured to said container adjacent said bottom thereof;
2. at least one second lug that extends outwardly from said second band; and
3. a third pin secured to said second lug that removably engages said opening in said lug secured to said golf bag;

f. strap means operatively associated with said first and second means, which strap means encircle said bag and secure said can holding assembly thereto, and

g. cover means removably supported from said container for closing said opening in said container through which said cans are sequentially removed.

3,938,870
DOCUMENT FILING APPARATUS

Jack Bernard Guest, and Kathleen Ethel Joyce Guest, both of 119 Albury Drive, Pinner, Middlesex, England
Continuation-in-part of Ser. No. 365,635, May 31, 1973, abandoned. This application July 26, 1974, Ser. No. 492,060
Int. Cl.² A47B *63/00;* **A44B** *21/00*
U.S. Cl. 312—184 **3 Claims**



1. Document filing device for a filing cabinet having a drawer provided with laterally spaced vertical side wall panels comprising in combination,

a. a rail for the horizontal edge of each vertical side wall panels,

b. each rail comprising a channel shaped portion having a depending inner and an outer side wall joined by a web connecting the upper edges thereof and adapted to embrace said panel edge, whereby the rail is readily mountable on the panel edge,

c. a flange projecting inwardly from said inner side wall at right angles thereto,

d. an upwardly projecting rib extending lengthwise of said flange and spaced from said inner side wall,

e. said rib terminating substantially short of the plane of said web,

f. an upwardly facing substantially flat surface on said flange located between said rib and said inner side wall and forming a guideway,

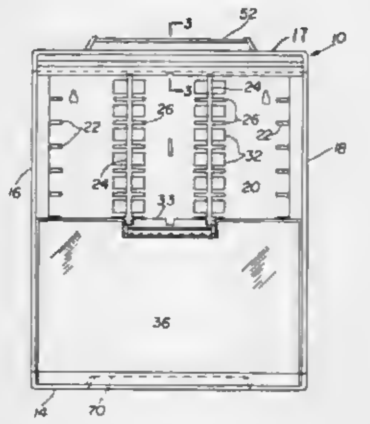
g. a tab of a document folder similarly formed at opposite ends with a recess extending upwardly from a horizontal edge surface thereof and spaced laterally from a vertical edge surface thereof,

h. said horizontal edge surface engaging said horizontal edge surface of the tab respectively when the recess in the tab is located over said rib, and

i. adjustment means on the channel shpaed portion of the rail to engage opposite sides of said panel enabling the spacing of the rib from the panel to be infinitely adjusted and thereafter secured in position.

3,938,871
CASSETTE STORAGE DEVICE WITH ADJUSTABLE PARTITIONS

Allan E. Bartholomew, North Canton, Ohio, assignor to Myers Industries, Inc., Akron, Ohio
Filed Jan. 22, 1974, Ser. No. 435,478
Int. Cl.² A47B *57/00;* **A47F** *3/06;* **B65D** *21/08, 85/672*
U.S. Cl. 312—240 **4 Claims**



1. A molded plastic storage cabinet for receiving articles of varied sizes comprising

a frame including a top, a bottom, and opposed sides, which frame has an open front, said sides having vertically spaced support flanges on the inner walls thereof, a removable vertical partition member extending the height of the frame and depthwise thereof, said partition member having support flanges on the sides thereof aligned with said side wall support flanges for support of articles on both sides of the partition member, said partition member being laterally deflectible intermediate its upper and lower edges for removable engagement with said frame,

said top including an integral elevated elongated handle section defined by hand receiving openings formed in said top on opposed sides of such handle section,

two cover members individually slidably engaging the frame adjacent either the top or the bottom thereof for operatively enclosing the front of said frame, each cover member having an arcuately shaped rear edge, a pair of transversely extending cylindrically shaped ribs on the front portion of the cabinet, one for each cover member, to engage said arcuately shaped rear edge of a said cover member for controlled pivotal movement, and means on a front portion of said partition member to engage edges of said cover members to aid in retaining them in closed position.

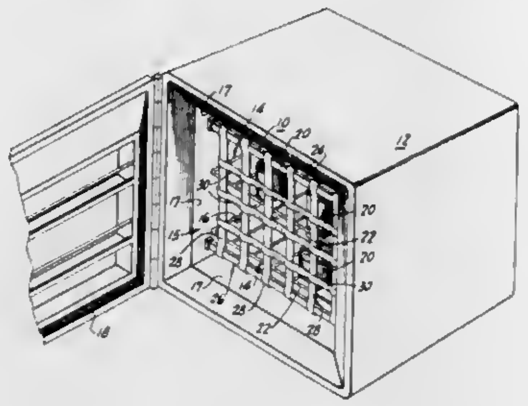
3. A molded plastic storage cabinet for receiving articles of either of two selected sizes comprising

a frame including a top, a bottom, and opposed sides, which frame has an open front, said sides having vertically spaced support flanges on the inner walls thereof, a removable flexible vertical partition member extending the height of the frame and depthwise thereof, said partition member having support flanges on the sides thereof aligned with said side wall support flanges for support of articles on both sides of the partition member, said partition member being laterally deflectible intermediate its upper and lower edges for removable engagement with said frame,

said partition member having a center wall and laterally directed, vertically extending flat surfaced stop flanges on said center wall intermediate the front and rear thereof but adjacent to and spaced from a rear edge thereof, said stop flanges being positioned intermediate and spaced vertically from each vertically adjacent pair of support flanges to permit lateral deflection of said partition member, said stop flanges extending into a storage area formed between each vertically adjacent pair of said support flanges to contact and stop articles being moved into such storage area, the said storage areas being adapted to receive one size of article when abutted against said stop flanges and to receive the other and larger size articles when said stop flanges are removed.

3,938,872
SHELF RETAINER FOR MOBILE VEHICLE REFRIGERATORS

Lynn W. Hagerman, 7236 Burton St., Dublin, Calif. 94566
Filed Oct. 15, 1974, Ser. No. 514,765
Int. Cl.² A47B *96/04*
U.S. Cl. 312—291 **2 Claims**



1. In a mobile refrigerator having, in combination, a refrigeration compartment defined by inside walls, an open front, and a door affording access to the refrigeration compartment through the open front, the compartment having at least one shelf for supporting removable articles thereon, the improvement comprising: an article retaining device including:

a. first elongated adjustable cross-member mounted between the sidewalls;

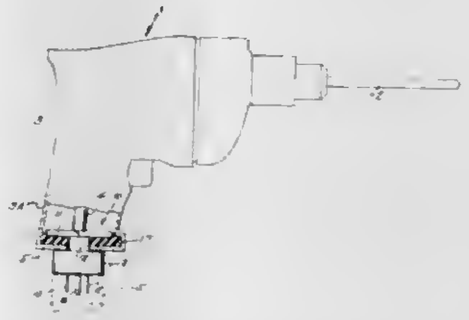
b. second elongated adjustable cross-member mounted between the sidewalls, and below and parallel to said first cross-member; each of said cross-members comprising a sleeve member and a slide member with an end telescopically inserted in said sleeve member;

c. means for horizontally mounting said crossmembers between the sidewalls comprising an anchor bracket slidably connected to said sleeve member; locking means for selectively fixing said anchor bracket to said sleeve member; a compression spring having a first end contacting said anchor bracket and a second end contacting the end of said slide member said compression spring being compressible between said anchor bracket and the end of said slide member, said cross-members having opposite ends which are forced against said opposing sidewalls when said compression spring is compressed, and;

d. a web comprising a plurality of elastic vertical bands and a plurality of horizontal bands, said plurality of vertical bands each having first ends connected to said first cross-member and second ends connected to said second cross-member.

3,938,873
ELECTRICAL PLUG MOUNTING DEVICE FOR POWER TOOLS

James F. Kimball, Star Rte. 2, Box 466, Dexter, Oreg. 97431
Filed Oct. 3, 1974, Ser. No. 511,634
Int. Cl.² H01R *11/02*
U.S. Cl. 339—58 **3 Claims**



1. A device for incorporation into the separable housing of a hand held power tool for mounting an electrical plug member component in exterior abutment with the housing, said device including,

a base of non-metallic material disposed within the tool housing, said base of a shape substantially corresponding to an interior cross section of the housing,

a plug body exterior of the tool housing and having contact blades projecting outwardly therefrom, a wall surface of said plug body for abutment with an exterior wall surface of the tool housing,

a cylindrical neck portion extending intermediate said base and the plug body and of slightly greater length than the thickness of the tool housing wall, said neck portion of a diameter enabling reception within a cord receiving opening formed within said wall surface of the tool housing, and

filler means disposed and fully occupying that area intermediate said base and the interior of said wall surface of the tool housing, said filler means contributing towards securement of the base in place within the tool housing thereby rigidly mounting the exteriorly located plug body against both axial and rotational loads.

3,938,874
ELECTRICAL CONNECTOR CONTACT RETENTION SYSTEM

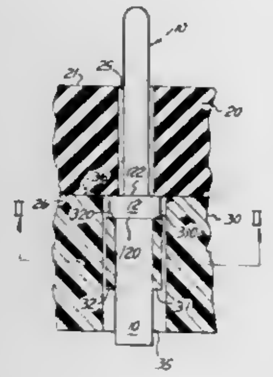
Normand C. Bourdon, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.
Continuation of Ser. No. 433,965, Jan. 16, 1974, abandoned. This application Apr. 17, 1975, Ser. No. 569,028
Int. Cl.² H01R *13/42*
U.S. Cl. 339—59 M **6 Claims**

1. An electrical connector unit comprising:

a first insulator having a plurality of bores therethrough extending from a forward face to a rearward face, each of said bores having a central axis; and

a second insulator having a front face mounted against the rearward face of the first insulator, said second insulator having a plurality of passages therethrough, each axially aligned with the central axis of a respective bore in said first insulator, each of said bores and passages adapted to receive an electrical contact, which is insertable from the rear of said second insulator, each of said contacts having an enlarged section defining a rearwardly facing shoulder and a forwardly facing shoulder, said second insulator further including:

a plurality of rectangularly shaped contact retention members disposed in each of said passages, said members having a front end, a rear end, and an adjacent side between front and rear ends which is integral with said second insulator so that said retention members extend from the walls of said second insulator passages, each of said rear ends tapering inwardly from the wall of said passage towards said central axis in the direction of said first insulator, each of said forward ends including a forwardly facing surface which faces in the direction of said first insulator, said forwardly facing surface being generally parallel to the front face of said second insulator and integral with said passage wall at the end furthest from the axis of said passage, each of said forwardly facing surfaces being equally distant from said second insulator front face, each of said retention members being resiliently expandable away from said central axis to permit said enlarged contact section to pass into said passage and past said retention members upon forward insertion of the contact into said passage and respective bore from the rear of said second insulator, said retention members contracting behind the rearwardly facing shoulder on the contact upon insertion so that the forwardly facing surfaces of said retention members engage the rearwardly facing shoulder of the contact to limit rearward movement of the contact in said passage, said contact retention members being substantially rigid in the axial direction when in their contracted position behind the enlarged portion of the contact so as to provide a positive stop against rearward movement of the respective contact.



3,938,875

SIGHT FOR USE ON HAND FIREARMS AND A METHOD OF USING IT

Nils Inge Algot Ruder, Erik Dahlbergsgatan 11, 211 48, Malmo, Sweden

Continuation-in-part of Ser. No. 830,566, May 9, 1969, abandoned, and a continuation-in-part of Ser. No. 789,627, Oct. 18, 1968, abandoned, and a continuation of Ser. No. 495,094, Oct. 12, 1965, abandoned. This application Oct. 13, 1969, Ser. No. 868,282

Int. Cl.^{2} G02B *27/32*

U.S. Cl. 350—10 21 Claims

1. A sighting device for a firearm including in combination:

a housing;

means for mounting said housing on a firearm comprising an outer tube adapted to receive said housing, said tube being closed at its forward end and open at its rearward end, bearing means within said tube for engaging and pivotally supporting one end of said housing, and adjustable supporting means within said tube for supporting said housing and for adjusting the angular position of said housing within said tube, said housing extending axially into said outer tube and forming at said rearward end of said tube an opening to be looked into by a shooter when aiming the firearm;

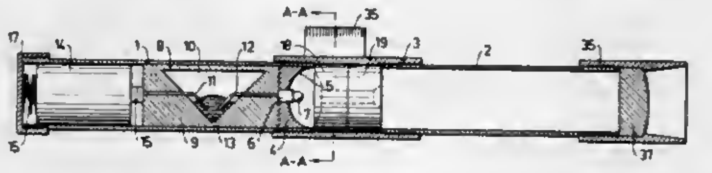
a light unit mounted on the forward end of said housing and comprising a light-collecting member of a luminous, light-diffusing and light-transmitting material, said light-collecting member having a substantial surface area exposed to ambient light, and being constructed to emit light of a first color from a rearwardly-facing surface when exposed to said ambient light;

said light unit further comprising light source means adapted to emit light of a second color from said rearwardly-facing surface, whereby said emitted light varies from said first color to said second color as the intensity of said ambient light varies;

aperture means in said housing providing an opening of circular configuration to form of light emitted by said light-collecting member a small luminous spot visible through said opening at the rearward end of said tube;

said adjustable supporting means for adjusting the angular position of said housing within said tube further controlling the position of said aperture means in mutually perpendicular directions in relation to the axis of said outer tube; and

convergent lens means at the rearward end of said housing in the path of the light forming said luminous spot, said convergent lens being adjusted to make a virtual image of said luminous spot at an infinite distance, as viewed through said opening.



3,938,876

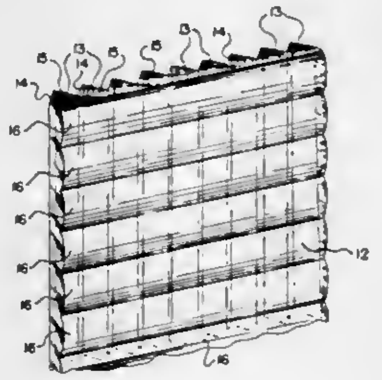
FRONT PROJECTION SCREEN MADE FROM A TRANSPARENT MATERIAL

John Brown, Flemington, N.J., assignor to Qantix Corporation, Flemington, N.J.

Filed Dec. 19, 1974, Ser. No. 534,298

Int. Cl.^{2} G03B *21/60*

U.S. Cl. 350—128 2 Claims



1. A front projection screen made from a sheet of light transmitting material having a predetermined critical angle of internal reflection less than 45%; said sheet having a front surface and a back surface; said screen being characterized by:

said back surface having formed thereon a plurality of parallel ridges; each of said ridges having curved sides terminating at a peak; said curved sides extending away from said sheet at an angle equal to or greater than 45° immediately adjacent to said sheet; the angle between a line tangent to said sides and said sheet continuously decreasing as said curved sides extend towards said peak; the angle between a line tangent to said sides and said sheet being greater than or equal to said predetermined critical angle of internal reflection at said peaks but less than 45°;

said front surface having formed thereon a plurality of parallel ridges each forming a section of a cylinder; said ridges on said front surface being disposed perpendicularly to said ridges on said back surface; and

said parallel ridges which form sections of cylinders each have therefore a focal length and the distance from said front surface to said back surface is between 30 percent and 70 percent of said focal length.

3,938,877

HYPERFINE FILTER FOR THE RESONANCE LINES OF CAESIUM AND RUBIDIUM

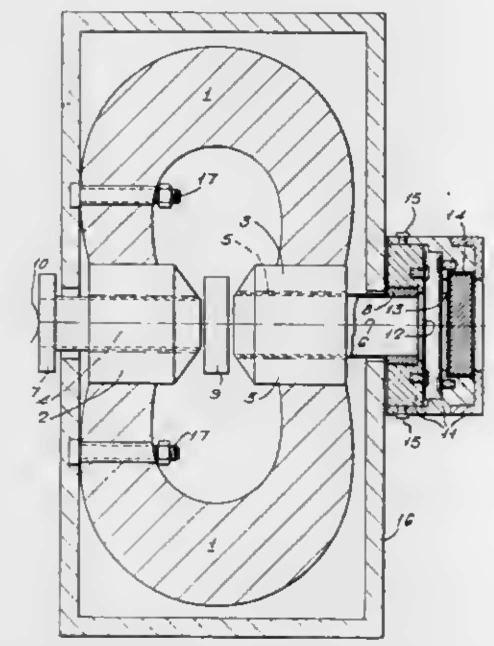
Franco Strumia, and Nicola Beverini, both of Pisa, Italy, assignors to Consiglio Nazionale Della Ricerche, Milan, Italy

Filed Apr. 10, 1974, Ser. No. 459,728

Claims priority, application Italy, Apr. 12, 1973, 49407/73

Int. Cl.^{2} G02B *27/28*

U.S. Cl. 350—148 8 Claims



1. A hyperfine filter for the resonance lines of the alkali metals, caesium and rubidium which comprises in series,

a cell transparent to light rays and which contains vapors of the alkali metal to be filtered;

a device for generating a magnetic field into which said cell is placed;

a lamp of the metal of which filtering is desired, the light beam emitted therefrom being directed to strike said cell so that the two hyperfine components of the resonance line passing through the cell are absorbed by the atoms present in the cell as radiation 6^+ or 6^- respectively so that in each hyperfine line only one of the two orthogonal components of circular polarization is absorbed;

a circular analyzer for separating one of the hyperfine components of the light beam emerging from the said cell from the other and which includes a $\lambda/4$-wave plate and a linear polarizer arranged in series; and

an interference filter for selecting the particular resonance line desired.

3,938,878

LIGHT MODULATOR

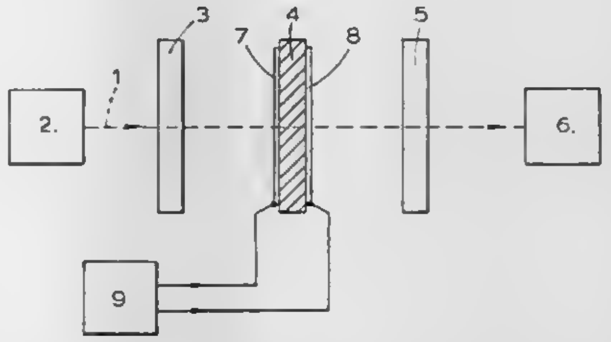
Alan John Fox, Horley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 261,288, June 9, 1972, abandoned, which is a continuation of Ser. No. 104,077, Jan. 5, 1971, abandoned. This application Sept. 12, 1974, Ser. No. 505,591

Claims priority, application United Kingdom, Jan. 9, 1970, 1173/70

Int. Cl.^{2} G02F *1/03*, *1/29*

U.S. Cl. 350—150 22 Claims



1. A light modulator comprising a light-permeable crystal of the m3m point group provided with a pair of electrically conductive light-permeable electrodes for setting up an electric field within the crystal in a direction making an angle greater than zero with all of the crystallographic axes, means for directing light polarized in a plane at an angle to the fast and slow directions of the crystal through the crystal in a direction making an angle greater than zero with all of the crystallographic axes and which makes an angle smaller than 90° with the field direction, and a polarization analyzer provided in an output path for the light from the crystal.

3,938,879

LIQUID CRYSTAL DEVICES

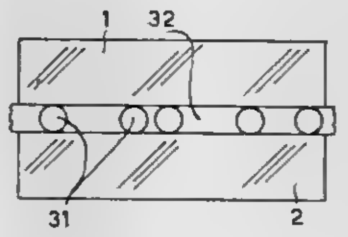
Claudio Dalmasso, Ivrea (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Continuation of Ser. No. 272,524, July 17, 1972, abandoned. This application Nov. 25, 1974, Ser. No. 527,005

Claims priority, application Italy, Nov. 24, 1971, 70842/71

Int. Cl.^{2} G02F *1/13*

U.S. Cl. 350—160 LC 2 Claims



1. In a device having two parallel members adapted to contain liquid crystal material therebetween and spacer means for spacing said members from each other a given distance and attaching same to each other, wherein the improvement comprises:

said spacer means comprising alumina particles in a glass matrix and disposed proximate to the edges of said members with the diameter of the particles equal to said given distance and wherein the glass matrix is in a molten state during the assembly of said device and solidifies attaching said members to each other with said members spaced apart said given distance by said particles.

3,938,880

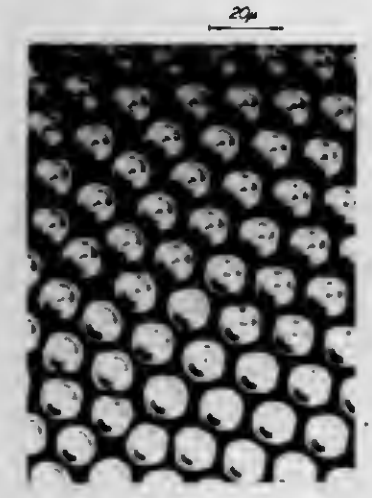
SPHERULITIC LIQUID CRYSTALLINE TEXTURE

Werner E. L. Haas, Webster, and James E. Adams, Bear Creek Harbor East, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 28, 1974, Ser. No. 473,598

Int. Cl.² G02F *1/13*

U.S. Cl. 350—160 LC **56 Claims**



56. A method of producing a stable spherulitic liquid crystalline texture, comprising:

- a. providing on a substrate a layer of aligned liquid crystalline composition comprising a dielectrically negative nematic liquid crystalline material and from about 0.4 to about 3 percent by weight of an optically active material, said liquid crystalline composition prior to alignment being optically negative and having a light reflection band centered about $\lambda_o = 2np$ where n = index of refraction and p = helical pitch, the ratio of the helical pitch of the non-aligned liquid crystalline composition to the layer thickness of liquid crystalline composition being from about 1 to about 10;
- b. applying a voltage potential across the layer of liquid crystalline composition; and
- c. removing said voltage potential whereupon spherulitic regions of the liquid crystalline composition are formed within the aligned liquid crystalline composition.

3,938,881

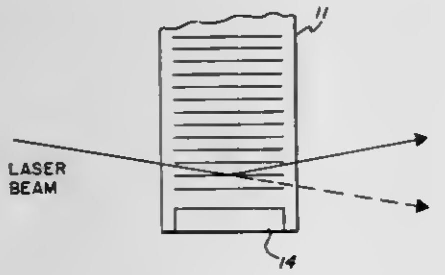
ACOUSTO-OPTIC MODULATION DEVICE

David K. Biegelsen, Woodside; Gary K. Starkweather, Saratoga, and James C. Zesch, Mountainview, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1974, Ser. No. 526,493

Int. Cl.² G02F *1/33, 1/11*

U.S. Cl. 350—161 **17 Claims**



1. An acousto-optical light deflection device comprising:

a plastic sound medium, and

a piezo-electric sound transducer integrally bonded to said medium, said transducer being adapted to receive a modulated signal so as to generate acoustic waves, whereby acoustic waves transmitted to said medium form a diffraction grating for a light beam passing through said medium.

3,938,882

HIGH NUMERICAL APERTURE INTERMEDIATE WIDE ANGLE OBJECTIVE

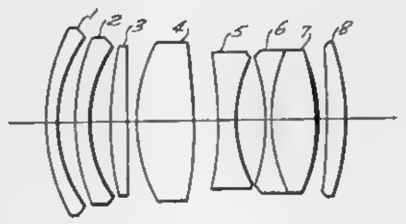
Michiro Oishi, Tokyo, Japan, assignor to Asahi Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 20, 1974, Ser. No. 507,743

Claims priority, application Japan, Sept. 27, 1973, 48-108715

Int. Cl.² G02B *9/64*

U.S. Cl. 350—214 **3 Claims**



1. An intermediate wide angle retro focus objective lens system comprising a 7 group, 8 element lens wherein the lens elements have the following characteristics:

	Radius of Curvature in m m		Lens spacing in m m	n_i / ν_i
r_1	92.500	d_1	3.95	1.51633 / 64.1
r_2	57.275	d_2	9.52	
r_3	132.250	d_3	5.32	1.69350 / 53.3
r_4	55.875	d_4	9.42	
r_5	167.500	d_5	7.50	1.83400 / 37.2
r_6	1537.500	d_6	2.50	
r_7	68.313	d_7	26.50	1.78590 / 44.2
r_8	−178.523	d_8	9.27	
r_9	−149.500	d_9	9.00	1.76182 / 26.6
r_{10}	68.250	d_{10}	9.67	
r_{11}	−159.375	d_{11}	5.00	1.74077 / 27.8
r_{12}	80.750	d_{12}	19.20	1.806610 / 40.8
r_{13}	−79.500	d_{13}	3.75	
r_{14}	−951.448	d_{14}	8.75	1.78590 / 44.2
r_{15}	−111.275			

$F = 100.0$
$|F_{1.2}| = 95.13$
$F_{1.2.3.4} = 83.54.$

Seidel's Coefficients

Lens Surface	S_1	S_2	S_3	S_4	S_5
1	0.284	0.131	0.061	0.368	0.198
2	−2.375	−0.138	−0.008	−0.595	−0.035
3	0.493	0.272	0.151	0.310	0.255
4	−9.272	−0.324	−0.011	−0.733	−0.026
5	2.942	0.879	0.263	0.271	0.160
6	−0.187	−0.225	−0.270	−0.030	−0.360
7	4.454	0.977	0.214	0.637	0.187
8	3.146	−1.869	1.111	0.247	−0.806
9	−2.925	1.608	−0.884	−0.289	0.645
10	−1.069	−0.892	−0.743	−0.634	−1.148
11	0.003	−0.010	0.034	−0.267	0.771
12	0.264	0.175	0.116	0.026	0.094
13	1.593	−0.366	0.084	0.561	−0.148
14	−0.074	0.120	−0.193	−0.046	0.386
15	3.029	−0.261	0.023	0.395	−0.036
SUM	0.306	0.078	−0.054	0.223	0.134

Wherein the lenses are numbered from **1** to **8** from the object side, and lenses **5** and **6** form doublets; and wherein

F:	is the resultant focal length of the whole optical system;
$F_{1.2...i}$:	is the resultant focal length of the first to the i-th lenses;
n_i:	is the d-line index of refraction of the i-th lens;
ν_i:	is the Abbe's number of the i-th lens;
r_k:	is the radius of curvature of the k-th surface; and
d_j:	is the j-th lens spacing or lens thickness.

3,938,883

WIDE ANGLE LENS SYSTEM

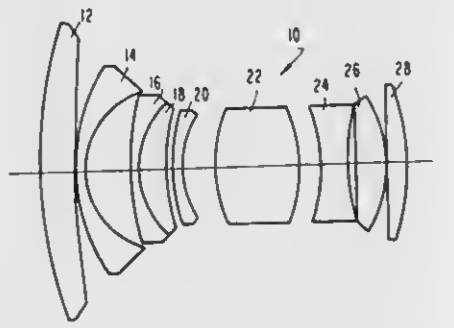
Yasuo Takahashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1975, Ser. No. 572,866

Claims priority, application Japan, May 8, 1974, 49-50954

Int. Cl.² G02B *9/64, 13/04*

U.S. Cl. 350—214 **1 Claim**



1. A retrofocus type wide angle lens system which comprises:

a first positive lens;

a second negative meniscus lens having a face of larger curvature towards the image side and being in light communication with said first lens;

a third negative meniscus lens having a face of larger curvature towards the image side and being in light communication with said second lens;

a fourth positive lens bonded to said face of larger curvature of said third lens and being in light communication with said third lens;

a fifth negative meniscus lens having a face of larger curvature towards the image side and being in light communication with said fourth lens;

a sixth positive lens in light communication with said fifth lens;

a seventh negative lens in light communication with said sixth lens;

an eighth positive meniscus lens having a face of larger curvature towards the image side and being in light communication with said seventh lens;

a ninth positive lens being in light communication with said eighth lens. said lens system satisfying the following conditions:

$$(1)\quad \frac{F}{0.22} < F_1 < \frac{F}{0.12}$$

$$(2)\quad \frac{F}{1.75} < F_{1.2.3.4.5} < \frac{F}{1.35},\ F_{1.2.3.4.5} < 0$$

$$(3)\quad 0.05 < n_3 - n_4 < 0.15,\ 8 < \nu_3 - \nu_4 < 15$$

$$(4)\quad \frac{F}{0.85} < F_{1.2.3.4.5.6} < \frac{F}{0.6}$$

$$(5)\quad 1.5 < \frac{n_8 + n_9}{2} < 1.75,\ 50 < \frac{\nu_8 + \nu_9}{2} < 62$$

wherein F equals **100** and is the composite focal length of the total lens system;

$F_{1.2.\,.\,.\,.,\,i}$ is the composite focal length of the lens group consisting of 1st to ith lenses;

r_j is the radius of curvature of *j*th lens face;

d_k is the *k* th spacing or lens thickness;

n_i is the d-line refractive index of *i*th lens;

ν_i is the Abbe number of *i*th lens;

$r_1 =$	246.8	$d_1 =$	19.2	n_1=1.71300	ν_1=54.0
$r_2 =$	604.7	$d_2 =$	0.4		
$r_3 =$	103.5	$d_3 =$	6.1	n_2=1.62041	ν_2=60.3
$r_4 =$	43.6	$d_4 =$	23.1		
$r_5 =$	183.0	$d_5 =$	4.1	n_3=1.78590	ν_3=44.2
$r_6 =$	47.5	$d_6 =$	15.8	n_4=1.67270	ν_4=32.1
$r_7 =$	172.8	$d_7 =$	2.0		
$r_8 =$	111.4	$d_8 =$	5.3	n_5=1.64250	ν_5=58.4
$r_9 =$	53.0	$d_9 =$	18.5		
r_{10}=	113.5	d_{10}=	43.2	n_6=1.74320	ν_6=49.4
r_{11}=	− 91.2	d_{11}=	10.7		
r_{12}=	− 126.2	d_{12}=	16.0	n_7=1.80518	ν_7=25.4
r_{13}=	171.9	d_{13}=	5.5		
r_{14}=	− 563.0	d_{14}=	14.3	n_8=1.52307	ν_8=58.4
r_{15}=	− 65.3	d_{15}=	0.4		
r_{16}=	34680.0	d_{16}=	10.8	n_9=1.69680	ν_9=55.7
r_{17}=	− 146.9				

$$F_1 = 571.4 = \frac{F}{0.175}$$

$$F_{1.2.3.4.5} = -65.4 = -\frac{F}{1.53}$$

$$F_{1.2.3.4.5.6} = 149.3 = \frac{F}{0.67}$$

3,938,884

LARGE APERTURE PHOTOGRAPHIC LENS SYSTEM

Jihei Nakagawa, Higashi-murayama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1975, Ser. No. 549,479

Claims priority, application Japan, Feb. 14, 1974, 49-17987

Int. Cl.² G02B *9/62*

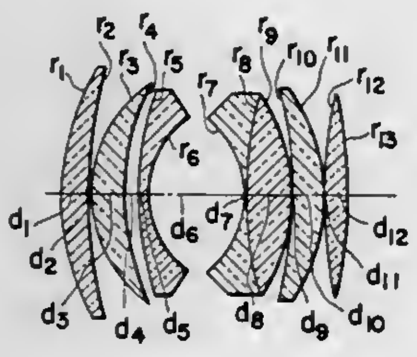
U.S. Cl. 350—215 **4 Claims**

1. A large aperture photographic lens system comprising a first positive meniscus lens, a second positive meniscus lens, a third negative meniscus lens, a fourth cemented doublet lens component consisting of a negative lens and a positive lens, a fifth positive meniscus lens and sixth positive lens, and said large aperture photographic lens system satisfying the following conditions:

(1) $0.9 < r_{11}/r_9 < 1.05$.
(2) $0.95 < d_8/d_{10} < 1.25$
(3) $1 < r_5/r_4 < 1.3$
(4) $0.03f < d_4 < 0.05f$
(5) $n_1, n_2, n_5, n_6, n_7 > 1.75$

$|r_9| > 0.55f$

wherein reference symbol f represents the focal length of the entire lens system, reference symbols r_4, r_5, r_9 and r_{11} represent respective radii of curvature of the image side surface of said second lens, the object side surface of said third lens, the image side surface of said fourth component and the image side surface of said fifth lens, reference symbol d_4 represents the air space between the second lens and the third lens, reference symbols d_8 and d_{10} represent respective thicknesses of the image side lens of said fourth component and the fifth lens and reference symbols n_1, n_2, n_5, n_6 and n_7 represent respective refractive indices of said first lens, said second lens, the image side lens of said fourth component, said fifth lens and said sixth lens.



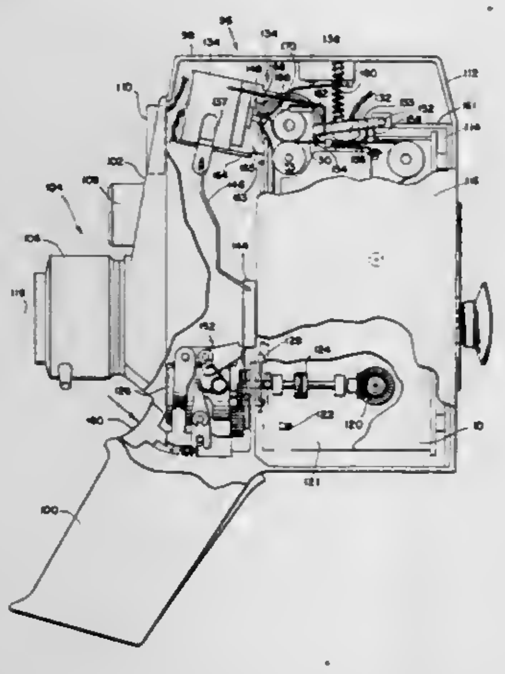
3,938,885
MULTIPURPOSE AUDIO-VISUAL CASSETTE SYSTEM

Donald T. Scholz, Watertown, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 374,578, June 28, 1973, Pat. No. 3,848,977. This application Aug. 5, 1974, Ser. No. 494,838

Int. Cl.² G03B *23/02*

U.S. Cl. 352—78 R **3 Claims**



1. A film handling cassette for use with audiophotographic apparatus, the apparatus including first and second drive means for advancing a strip of film having a perforated edge, said first drive means including a capstan arrangement configured for advancing said film strip in accordance with capstan pressure engagement therewith, said second drive means including a shuttle drive configured for advancing said film strip in accordance with shuttle engagement of said perforated edge of said film strip, said cassette comprising a housing, a strip of photographic film material retained within said housing, means for guiding said film strip in a given direction along a given path within said housing, means for defining an opening in said housing for facilitating performance of a photographic program and an audio program with said film strip, said opening defining means including means for receiving the first drive means for engagement with said film strip at a first location along said given path and for receiving the second drive means in engagement with said film strip at a second location along said given path so that said film strip is advanced in said given direction from said first location to said second location, said guiding means including means for defining a minimum length of film path between said first and second locations and for storing an excess of film between said first and second locations in a free film loop extending out of said opening defining means and exteriorly of said housing, and said film strip including a first and second discontinuity located near the trailing end of said film strip with said first discontinuity interposed between said second discontinuity and said trailing end of said film strip, said second discontinuity including an interruption in said perforated edge of said film strip, said interruption being configured for disabling film cooperation with the second drive means so as to preclude advancement of said second discontinuity past said second location, said first discontinuity including means for engaging the first drive means to preclude advancement of said first discontinuity past said first location, and said first and second discontinuity being spaced from each other along said film strip a distance substantially equal to said minimum path length for halting the advancement of said first discontinuity at said first location while said second discontinuity is further advanced to said second location to automatically withdraw said film loop back into said housing responsive to advancement of said first and second film discontinuities respectively to said first and second locations.

3,938,886
SLIDE PROJECTOR CONTROLLABLE OF ITS PROJECTION TIME

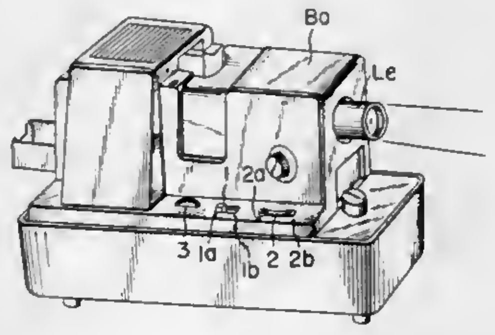
Masanori Uchidoi, Kawasaki, and Tateo Yamada, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1973, Ser. No. 412,837

Claims priority, application Japan, Nov. 11, 1972, 47-129976[U]

Int. Cl.² G03B *23/04*

U.S. Cl. 353—115 **20 Claims**



1. A slide film projector, comprising in combination:

a. slide film supporting means for supporting a plurality of slides while supporting one of said slides in a ready position;
b. slide film moving means for causing a slide film to move between said ready position and a projection position;
c. means for driving said slide film moving means including a motor arranged for running without interruption in between a plurality of successive operations of said slide film moving means;

d. means for programming movement of said slide film moving means, including:
    1. slide film movement control means including a selectively connectable and disconnectable driving connection with said driving means, for causing said slide film moving means to operate sequentially in a predetermined cycle by receiving driving force from said driving means through said driving connection;
    2. switching means, operatively connected with said control means, for disconnecting the driving connection of said control means with said driving means when a slide film is positioned at said projection position by said slide film moving means, and for maintaining the driving connection therebetween when no slide film is in said projection position; and
    3. timer switch means, operatively connected to both said switching means and said control means, for governing the projection time of said slide film, said timer switch means being provided with selective setting means for setting a particular projection time for said slide film and having time measuring means responsive to said switching means for restoring the driving connection between said control means and said driving means upon lapse of the time set by said setting means, said timer switch means further having means for resetting said time measuring means to a beginning state in response to said switching means when said slide film is caused to shift from said projection position to said ready position by said slide film moving means, and

e. means for shifting said slide film support means, between cycles of said slide film moving means, so as to bring different slides successively into said ready position.

3,938,887
REPRODUCTION CAMERA

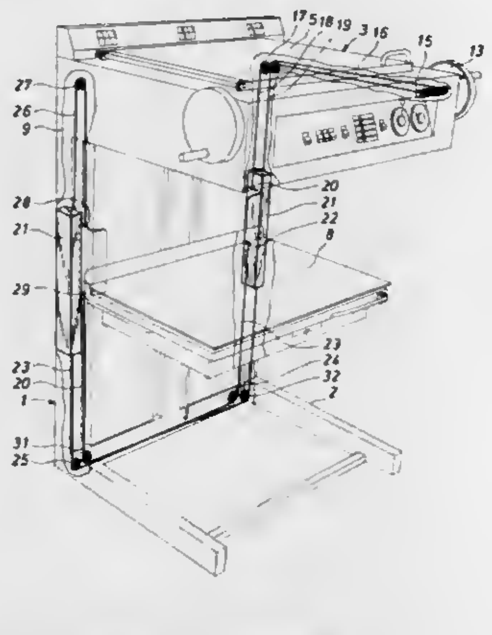
Sven Nygaard, Nykobing Falster, and Rex Stemann Larsen, Rodovre, both of Denmark, assignors to Eskofot A/S, Ballerup, Denmark

Filed Sept. 21, 1973, Ser. No. 399,519

Claims priority, application Denmark, Oct. 16, 1972, 5103/72

Int. Cl.² G03B *27/62*

U.S, Cl. 355—63 **2 Claims**



1. A reproduction camera comprising:

a frame,
a fixed table carried by said frame and having a supporting plate for a light-sensitive sheet,
two vertical guide members on said frame at adjacent corners of said frame,
first and second counterweights,
two pairs of cord pulleys associated with one of said guide members, one of said pair being mounted above and the other of said pair being mounted below said one of said guide members, a third pair of cord pulleys and a single pulley associated with the other of said guide members, said third pair being mounted below the other of said guide members and said single pulley being mounted above said other guide member, and
a winding drum mounted on said frame for rotation,
means attached to said drum member for manual rotation thereof,
an endless cord wound several times on said drum,
a movable table,
said cord extending from said drum to and engaging one of said pulleys mounted above said one guide member, and then vertically downwardly past said one guide member and fixedly attached to said movable table, and then to and engaging one of said pulleys mounted below said one guide member and then horizontally to and engaging one of said pulleys below said other guide member, and then vertically past said other guide member and attached to one of said counterweights, and then vertically to and engaging said single pulley, and then vertically past said other guide member and fixedly attached to said movable table and then to and engaging the other pulley below said other guide member and then horizontally to and engaging the other pulley below said one guide member and then vertically past said one guide member and attached to the other of said counterweights and then to and engaging the other pulley above said one guide member and then to said drum, so that rotation of said drum in one direction raises said counterweights and lowers said movable table and rotation of said drum in the opposite direction lowers said counterweights and raises said movable table.

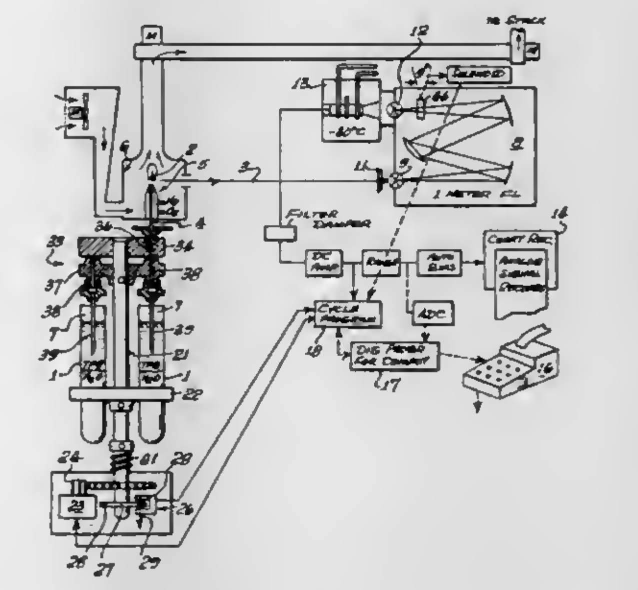
3,938,888
AUTOMATED PRECISION FLAME-EMISSION PHOTOMETRIC APPARATUS

Theodore R. Folsom, La Jolla; Gerald J. Parks, Jr., and William E. Weitz, Jr., both of San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 3, 1975, Ser. No. 546,355

Int. Cl.² G01J *3/30*

U.S. Cl. 356—87 **15 Claims**



1. Apparatus for use with a flame-emission spectrometer having an aspirator tube feeding a liquid test sample to a burner flame for producing photoelectrically-detectable spectral line emission beams, said apparatus comprising:

a fixed valve plate having a port sealably receiving said aspirator tube,
a movably-indexable valve plate provided with a plurality of capillary-sized ports disposed for communication with said fixed plate port when said movable plate is indexed,

an elongate hollow-bore aspirating tube mounted in and dependently carried by each of said movable plate ports,

a plurality of liquid sample holders each disposed for immersibly receiving one of said elongate tubes,

drivable support means carrying said indexable valve plate and said sample holders, and

means for driving said support means for successively indexing said movable plate and holders into aligned communication with said fixed plate port whereby each fluid sample can be aspirated into said burner flame,

said fixed and movable valve plates having mating flat valve-face surfaces constantly maintained in flush contact one with the other for excluding atmospheric leakage into said ports.

3,938,889

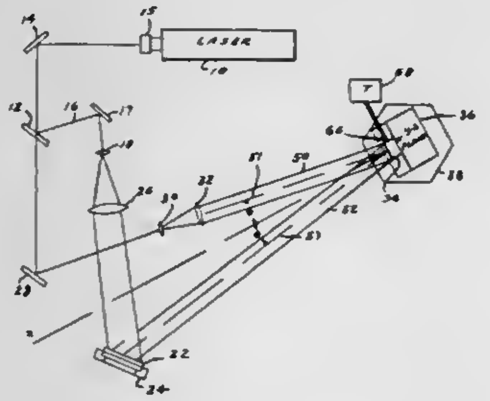
METHOD AND APPARATUS FOR MEASURING LINEAR THERMAL EXPANSION OF POLYMERIC MATERIAL

James A. McKinnis, Rice County, Kans., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 4, 1974, Ser. No. 476,178

Int. Cl.² G01B *9/02*

U.S. Cl. 356—109 **3 Claims**



1. The method of measuring the linear thermal expansion of a sample of a polymeric material for determining the coefficient of linear expansion of the material, comprising: preparing a wedge shaped sample of polymeric material having a sharp tip; positioning the wedge shaped sample on a graphite block within a temperature controlled chamber; securing the base of the wedge shaped sample to the graphite block with the tip of the wedge lying in the plane of the junction of the sample base and a surface of the graphite block; recording the temperature of the sample; directing a collimated coherent laser object beam toward said sample; positioning a holographic plate in the path of reflected light from said sample, with the central beam path of the incident beam on the sample and the central beam of the reflected beam from said sample to the holographic plate lying in a plane perpendicular to the plane of the junction of the sample base and the surface of the graphite block and being at equal angles with respect to a line perpendicular to the plane of the junction of the sample base and the surface of the graphite block; directing a collimated reference beam toward said holographic plate; blocking said object beam and said reference beam after a predetermined exposive time interval; heating the sample at small temperature increments to a predetermined temperature above the original measured temperature; allowing the sample to remain at such predetermined temperature for between 30 to 45 minutes; recording the sample temperature after expansion of the sample; exposing said holographic plate a second time to said reference beam and the reflected beam from said sample; blocking the reference beam and the object beam after a predetermined exposure time interval; removing the holographic plate; developing the holographic plate; restoring the holographic plate to its former position; illuminating the holographic plate with only the reference beam to reconstruct the sample images with the fringe pattern thereon which provide an indication of the thermal expansion of the polymeric sample.

3,938,890

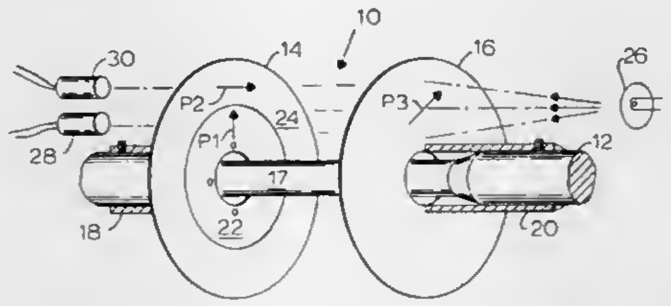
TORQUE-TRANSDUCER UTILIZING DIFFERENTIAL OPTICAL SENSING

Evan R. Flavell, P.O. Box 6397, Albany, Calif. 94706

Filed Oct. 15, 1974, Ser. No. 514,997

Int. Cl.² G01J *4/04*; G01L *3/04, 3/12*

U.S. Cl. 356—119 **16 Claims**



1. A torque transducer for measuring a torque in a shaft, said torque transducer comprising:

a shaft;

light transmission control means attached thereto and responding to torque stress induced therein, having,

a first area of light transmission control and a second area of light transmission control responding in an equal but opposite manner to said torque stress;

light source means mounted on one side of said light transmission control means;

first and second photosensing and signal generating means mounted on the other side of said light transmission control means and oriented in such a manner as to separately and respectively receive light transmitted through each of said first and second areas thereof and to generate first and second signals respectively;

differential circuit means connected to said photosensing and signal generating means and receiving said first and second signals and subtracting one from the other to provide a difference signal and a polarity corresponding to the greater of said first and second signals, and

torque indicator means connected to said differential circuit means for receiving said difference signal and for indicating the amount and the direction of torques exerted on the shaft in response to the amount of light received by said photosensing means.

3,938,891

APPARATUS FOR DETECTING CHANGES IN A NATURAL OCEAN WAVE PATTERN

Fordyce E. Tuttle, deceased, late of Palm Beach, Fla., and by Eleanor Porter Tuttle, executrix, P.O. Box 908, Palm Beach, Fla. 33480

Continuation of Ser. No. 54,293, July 13, 1970, abandoned. This application Nov. 24, 1972, Ser. No. 310,187

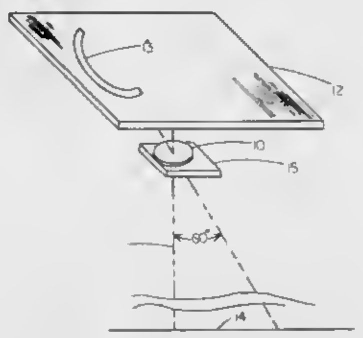
Int. Cl.² G01B *11/30*; G01N *21/40*

U.S. Cl. 356—120 **1 Claim**

1. A device for detecting the presence of a moving underwater vehicle which discerns differences in the natural occurring ocean surface wave pattern comprising:

an image forming means mounted for receiving reflected electro-magnetic radiation from the surface of said ocean;

arcuate aperture means in the focal plane of said image forming means, said arcuate aperture being spaced from the optical axis of said image forming means such that a ray having the angle of incidence to the mean ocean surface of greater than 57° will pass through the aperture; and



means for detecting the intensity level of said received reflected radiation.

3,938,892

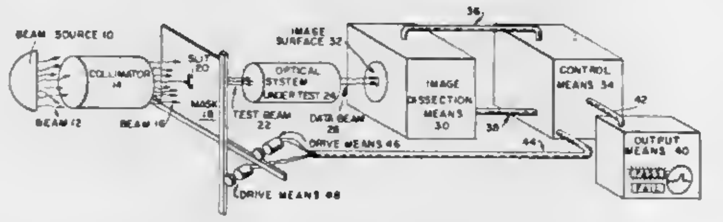
ELECTRONIC OPTICAL TRANSFER FUNCTION ANALYZER

Edwin E. Klingman, III, Huntsville, Ala., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 24, 1973, Ser. No. 354,060

Int. Cl.² G01B *9/00*; G01J *1/00*

U.S. Cl. 356—124 **12 Claims**



1. An analyzer for obtaining the optical transfer function of an optical system under test comprising:

a. test beam source means for producing a collimated test beam incident on the optical system under test whereby the latter produces a data beam;

b. an image dissector tube having an image surface for receiving the data beam, and positioning coils responsive to an address signal for selecting which elemental area of the image surface determines the output signal whose amplitude is a measure of the intensity of light received by the selected elemental area;

c. address signal generating means for sequentially generating address signals that are applied to the positioning coils and are respectively associated with the various elemental areas of the image surface; and

d. storage means responsive to the output signals of the tube and to the address signal generating means for storing numbers representative of the light intensity on the various elemental areas at locations correlated with the addresses thereof.

3,938,893

IMAGE FOCUSSING MECHANISM

Yasuhiro Nanba; Seiji Yamada, both of Sakai, and Motonobu Matsuda, Isumi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

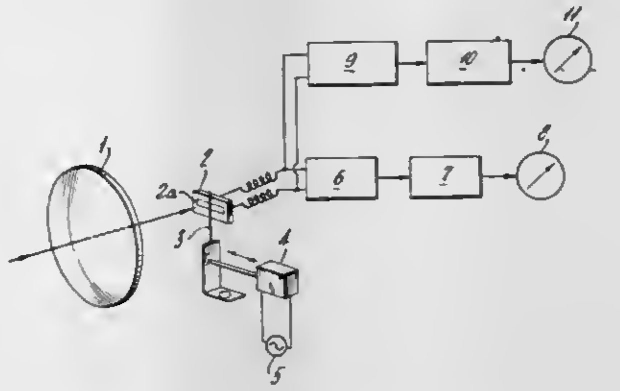
Filed Nov. 4, 1974, Ser. No. 520,510

Claims priority, application Japan, Nov. 9, 1973, 48-126648

Int. Cl.² G01B *9/00*

U.S. Cl. 356—125 **8 Claims**

8. An image scanning device for detecting a focussing condition by means of a scanning signal obtained by scanning an image formed through a lens, characterized in that the image is scanned by means of a photoelectric element and a light shielding needle element which shields a minor part of the light receiving surface of said photoelectric element.



3,938,894

FOCUS DETECTING DEVICE

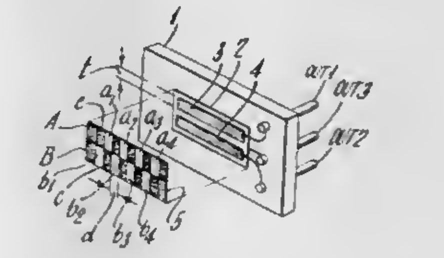
Yasuhiro Nanba, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 12, 1974, Ser. No. 532,120

Claims priority, application Japan, Dec. 29, 1973, 49-1114

Int. Cl.² G03B *13/18*

U.S. Cl. 356—125 **12 Claims**



1. A focus detecting element positioned at a plane intended to be focussed by a lens for receiving light through the lens to produce an electrical signal, characterized in that said element comprises at least one pair of photodiodes elongated in longitudinal directions parallel to each other, each of said photodiodes having a light receiving surface divided into a plurality of longitudinally spaced areas along the elongated direction of said photodiode, the areas of one of said pair of diodes being longitudinally offset with respect to the areas of the other of said pair of diodes.

3,938,895

METHOD FOR POSITIONING AN OPTICAL FIBER

Andrew Bridger, Brighton, and Mark L. Dakss, Waltham, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Aug. 19, 1974, Ser. No. 498,804

Int. Cl.² G01B *11/26*

U.S. Cl. 356—152 **5 Claims**

1. A method for positioning an optical fiber in a holder for subsequent use in coupling a pair of similarly mounted optical fibers together, the method comprising the steps of

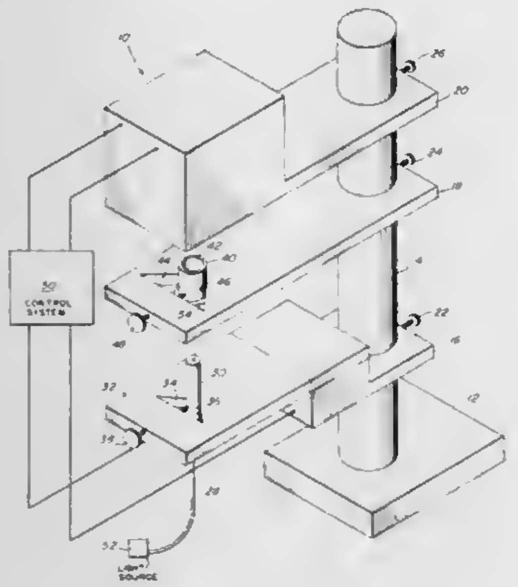
defining an axis,

positioning an optical fiber holder main body such that a first external surface thereof is in a predetermined relationship to the axis and a second external surface is in another predetermined relationship to a point on the axis,

aligning an optical fiber essentially parallel with the axis,

positioning the optical fiber along the axis so that the optical fiber is in juxtaposition to the main body over a portion of its length and an end of the optical fiber is at a position approximately at the point on the axis,

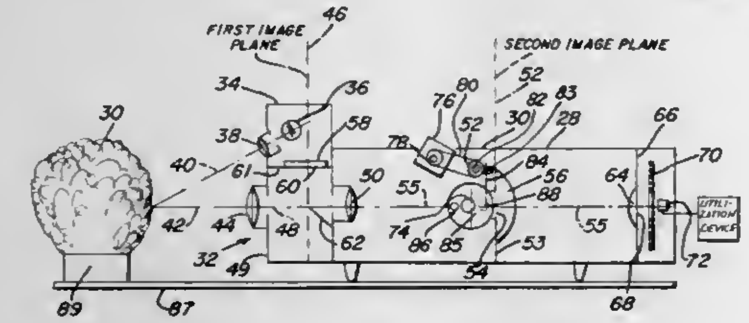
passing light through the optical fiber so that light exits from the end of the optical fiber,
positioning a position-sensitive photodetecting means on the axis so that the light exiting from the end of the optical fiber is incident thereon,
detecting the light,
generating a signal indicative of the position of the end of the optical fiber relative to the axis,



moving the optical fiber normal to the axis in response to the signal until the optical fiber is coaxial with the axis, and
securing the optical fiber to the main body to form an optical fiber holder in which the position of the optical fiber is in a known relationship to at least two external surfaces thereby allowing for precise positioning of the optical fiber.

3,938,896
IMAGE COLORIMETER

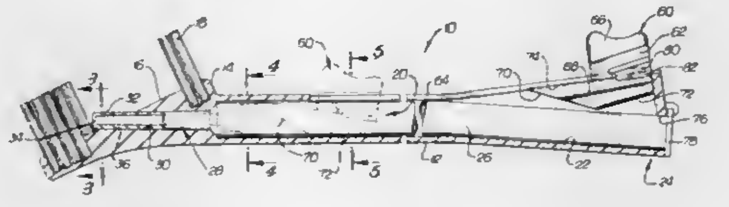
Paul J. Selgin, Bethel, Conn., assignor to Neotec Corporation, Rockville, Md.
Filed Apr. 4, 1974, Ser. No. 457,846
Int. Cl.^{2} G01J *3/34*
U.S. Cl. 356—179 **7 Claims**



1. An image colorimeter comprising:
an enclosure having a light source therein;
a first opening formed in the enclosure for permitting illumination of an exterior object by the source;
a second opening formed in the enclosure for admitting reflected light from the object to be focused on a first image plane defined internally of the enclosure;
a permanent standard device mounted in the enclosure and intersecting the first image plane;
the standard device oriented to reflect light from the source within the enclosure;
a second image plane defined in the enclosure for producing images from reflected light of the object and the standard device;
the second image plane being transverse to the reflected light from the object and the standard device, permitting formation of separate image areas of the object and the standard reference at the second image plane;
means located adjacent the second image plane for alternately varying the size of the image areas;
optical means located at the second image plane for projecting a beam, having components combined from the object and standard device images, along the enclosure; and
detecting means located in the enclosure for intercepting the beams and producing an electrical signal, in response thereto which varies in accordance with the respective brightness of the object and standard device images.

3,938,897
TOOTHBRUSH WITH DENTIFRICE CARTRIDGE

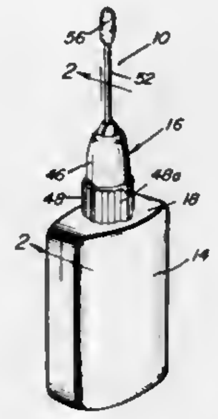
Burnie M. Craig, Pasadena, Calif., assignor to Loren S. Fond, Beverly Hills, Calif.
Continuation-in-part of Ser. No. 232,714, March 8, 1972, abandoned. This application Mar. 11, 1974, Ser. No. 449,822
Int. Cl. A46b *11/04*
U.S. Cl. 401—155 **6 Claims**



1. In combination:
a. a brush having a handle and having at one end of said handle a head provided with a bristled surface;
b. said handle having a cartridge chamber therein and said head having an opening therethrough communicating at one end with said chamber and at its other end with said bristled surface;
c. said opening and said bristled surface including therebetween an acute angle of no more than about 45°;
d. a cartridge disposed in said chamber and having an elongated tip of elastomeric material disposed in said opening and projecting beyond said bristled surface, said tip having adjacent its terminus a self-closing slit; and
e. said opening and the axis of the terminal portion of said tip making an acute angle with the axis of said chamber and said cartridge.

3,938,898
SWAB APPLICATOR WITH ADAPTER CHUCK AND CLOSURE

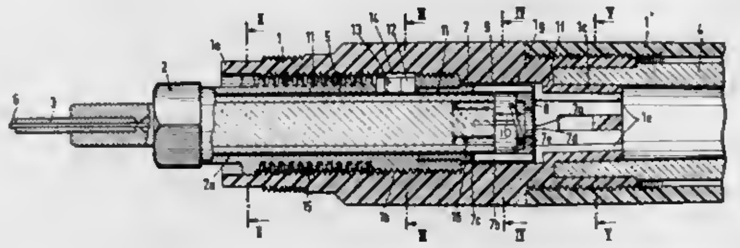
Jack Reitknecht, 210 E. Broadway, New York, N.Y. 10002
Filed Apr. 5, 1974, Ser. No. 458,449
Int. Cl.^{2} B05B *11/00*
U.S. Cl. 401—183 **6 Claims**



1. An applicator comprising a tubular member having a swab on one end thereof with the swab enclosing only a minor portion of the length of the tubular member and projecting slightly beyond said one end of the tubular member whereby the swab is supported solely by the tubular member, the other end of the tubular member being open, said tubular member and swab having a passageway extending completely therethrough and terminating at the outer end of the swab to provide an uninterrupted, continuous passageway through the tubular member and swab for applying material to a surface, said tubular member being constructed of shape-sustaining material having sufficient flexibility to enable bending during application of material to a surface.

3,938,899
STYLOGRAPH

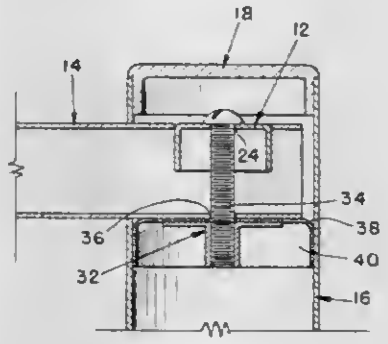
Otto Mutschler, Ludolf-Krehl Str. 21, D-69 Heidelberg, Germany
Filed May 5, 1975, Ser. No. 574,320
Claims priority, application Germany, May 8, 1974, 2422137
Int. Cl. B43k *8/00*
U.S. Cl. 401—260 **7 Claims**



1. A stylograph comprising:
a. a tubular barrel member having an axis and being open in one axial direction;
b. a feed bar member formed with an axial bore and fixedly mounted in said barrel member;
c. a tubular stylus mounted on said feed bar member and projecting outward of said barrel member in said one axial direction;
d. a plunger mounted in said bore for axial movement toward and away from a predetermined position;
e. a pin secured on said plunger for joint axial movement and movably received in said stylus;
f. a retainer member mounted on said feed bar member and closing said bore in an axial direction opposite to said one direction,
  1. said plunger and said retainer member axially bounding therebetween an air chamber in said bore in said predetermined position of the plunger, said plunger moving inward of said air chamber when moving away from said position thereof,
  2. said plunger and said feed bar member radially bounding therebetween an annular gap of capillary dimensions in said bore, said gap axially connecting said air chamber with said stylus in all operative positions of said plunger;
g. means in said barrel member offset from said feed bar member in said opposite direction, and defining an ink reservoir,
  1. at least one of said members being formed with a continuous capillary conduit communicating with said air chamber and having axially terminal portions directly communicating with said reservoir and said annular gap, a portion of said conduit extending over the entire axial dimension of said air chamber and by-passing said air chamber; and
h. means for admitting ambient air to said air chamber when ink flows from said reservoir to said stylus through said conduit and said gap.

3,938,900
TUBE JOINING SYSTEM

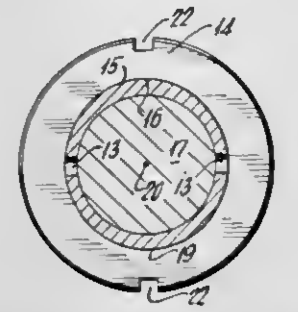
Charles N. Apple, Sr., Greensboro, N.C., assignor to Metafab Industries, Inc., Greensboro, N.C.
Filed Feb. 11, 1974, Ser. No. 441,035
Int. Cl. E04g *7/00*
U.S. Cl. 403—263 **5 Claims**



1. A joint formed from a plurality of members wherein the longitudinal axis of the members are out of alignment comprising; a first tubular member having an exterior surface defining at least one opening therein and an inner periphery, a second tubular member having an end portion extending through said opening into said first member toward the inner peripheral surface thereof, and means within said first member for releasably securing said first member to said second member including a first fastener member having a peripheral surface in abutting relation with said inner periphery of said member, and a second fastener member extending axially along said first tubular member and extending through said second member cooperatively coupled to said first fastener member for securing said first and second members together, said first fastener member is cup shaped and having a surface abutting said second member, and a peripheral surface extending axially of said first tubular member, and an aperture threadably receiving the end of said second fastener member within the cup.

3,938,901
LOCKING DEVICE FOR A BEARING RING OR THE LIKE

Ralph S. Howe, Jr., New Britain, Conn., assignor to Textron, Inc., Providence, R.I.
Filed Oct. 1, 1974, Ser. No. 511,085
Int. Cl.^{2} F16C *35/06*
U.S. Cl. 403—350 **20 Claims**



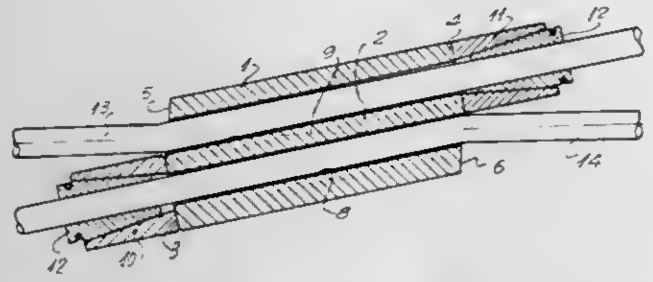
1. Locking means for securing a bearing ring or the like to a cylindrical shaft, said ring having a cylindrical bore to fit the shaft and said ring having at one axial end a slot of limited axial length, whereby said ring is circumferentially discontinuous in an axial region of the slot and is therefore locally radially deformable in said axial region, said ring having at said axial region a circumferential contour characterized by a minimum radial extent at the angular region of the slot and by a maximum radial extent at a second angular region offset from said first-mentioned angular region to an extent less than 180°, and a circumferentially continuous locking collar having a bore conforming substantially to the said ring contour, said collar having an externally accessible formation engageable for relative angular displacement of said collar and ring to

bring the second angular region of said ring into adjacency with the first angular region of said collar.

3,938,902

CONNECTING DEVICE FOR WIRES

Juan Coll Morell, Calle Amilcar 209, Barcelona, Spain
Filed Aug. 19, 1974, Ser. No. 498,618
Claims priority, application Spain, Feb. 26, 1974, 201309
Int. Cl.^{2} F16B *2/14*
U.S. Cl. 403—391 **1 Claim**

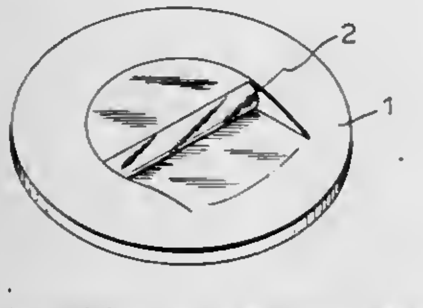


1. Connecting device for two wires which are to be placed under tension in series connection, having a rigid block which has two opposite ends and two substantially parallel bores extending from one end to the other to receive the wires, and two anchoring means respectively associated with the bores adapted to anchor the tensioned lengths of the wires respectively at the opposite ends of the block against the applied tension when the said tensioned lengths extend through the bores, the anchoring means comprising wedges received in tapering orifices and adapted to grip the wires, the said tapering orifices of the anchoring means being in members separate from the said rigid block and adapted to abut the ends of the block, each end face of the block having two facets through which respectively the said bores open, one of the facets being substantially perpendicular to the bore which opens through it and being for abutment by the associated anchoring means, and the other being at such an angle to the bore which opens through it that it is substantially perpendicular to a common axis of the connected wires.

3,938,903

HIGHWAY ROADMARKER WITH STUDDED BOTTOM

Paul B. Montgomery, Tyler, Tex., assignor to Ferro Corporation, Clevelaod, Ohio
Filed Jan. 3, 1975, Ser. No. 531,792
Int. Cl.^{2} E01F *9/04*
U.S. Cl. 404—16 **4 Claims**

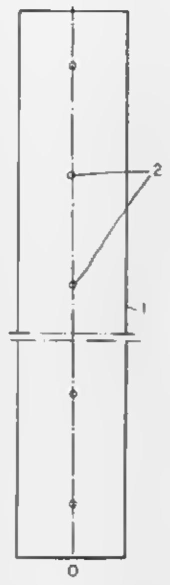


1. In a highway lane divider and roadmarker, adapted to be affixed to a pavement surface, said marker having a substantially planar base, the improvement of said base having a multiplicity of studs protruding therefrom in spaced relationship, said studs having substantially vertical sides, and bottom surfaces substantially parallel to said base, said studs protruding from said base from about 0.025 inch to about 0.1 inch, said studs spaced apart from each other a distance of from about 1/32 inch to about ¼ inch, said studs dispersed substantially symmetrically over the area of said base, with the total exposed surface area of said studs, exclusive of their bottom surfaces, representing at least 30% of the total surface area represented by said base and the bottom surfaces of said studs.

3,938,904

PASSAGE STRUCTURES FOR USE IN ACQUIRING THE TECHNIQUES FOR DRIVING MOTOR CYCLES

Toshiki Nishiyama, No. 78, 4-chome, Uwa-machi, Yokosuka, Kanagawa, Japan
Filed Feb. 1, 1974, Ser. No. 438,702
Int. Cl.^{2} E01C *5/16*
U.S. Cl. 404—35 **15 Claims**



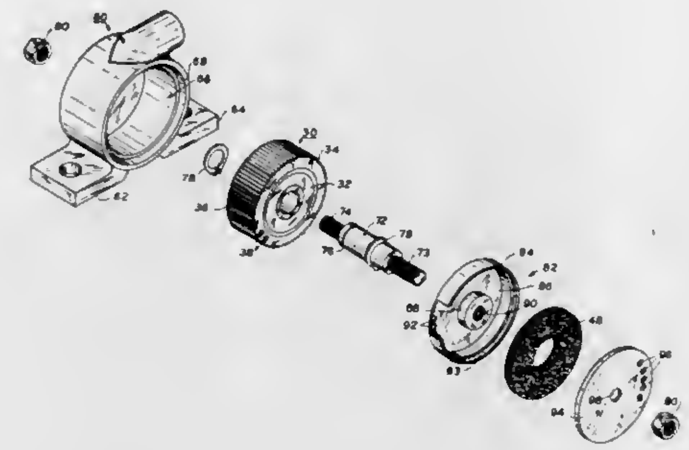
1. A portable road-type structure for driver education which can be moved readily from one location to another which comprises a roadway, at least part of the surface of said roadway possessing a V-shape and at least part of the surface of said roadway containing an inverse V-shape, both of said shapes being inclined from the center of the roadway to both of the shoulders thereof, and a plurality of pylons installed in the roadway along the center lines thereof at substantially equally predetermined intervals along the longitudinal direction of the roadway, said portable road-type structure functioning as an educational tool for teaching an individual the fundamental knowledge and techniques for driving a motorcycle before being exposed to actual driving conditions.

3,938,905

NOISELESS AIR-ACTUATED TURBINE-TYPE VIBRATOR WITH MUFFLER

Theodore S. Wadensten, P.O. Box 8 Stilson Road, Wyoming, R.I. 02898
Filed Jan. 2, 1974, Ser. No. 430,082. The portion of the term of this patent subsequent to Mar. 11, 1992, has been disclaimed.
Int. Cl.^{2} F01D *5/12*
U.S. Cl. 415—119 **12 Claims**

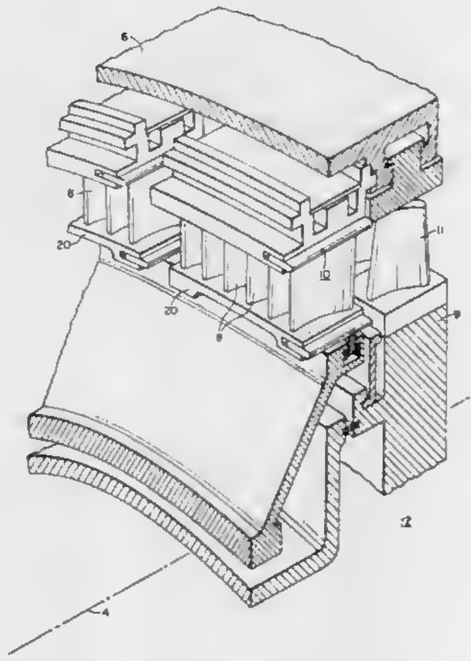
1. A relatively silent, compressed gas-actuated, turbine-type vibrator having a rotor of not less than 1-1/4 inches and not more than 5½ inches diameter and when operated within a speed range of 6,000 to 10,000 rpms having a noise level not greater than 75 decibels hz., the vibrator including: (a) a substantially closed housing having a cylindrical chamber therein; (b) a dynamically unbalanced rotor freely rotatable in the cylindrical bore of the chamber, the diameter and length of the rotor being established so that not less than 1/32 of an inch clearance is provided between the rotor and ends and bore of the chamber, the rotor having a plurality of tooth-like configurations formed on its outer periphery, the tooth-like configuration further having a depth which corresponds to a distance not exceeding 7 percent and not less than 1½ percent of the diameter of the rotor; (c) an air outlet formed in the housing and extending from the rotor chamber to the outside of the housing; (d) an air inlet formed in the housing and extending from the outside of the housing to the rotor chamber, the air inlet arranged to direct the incoming pressurized air tangentially against the teeth of the mounted rotor and with the tooth-like configuration so formed that in a plane normal to the axis of the rotor the face of the tooth-like configuration against which the incoming air impinges defining an angle of intersection with a theoretical radial line of said rotor, said defined angle being as little as zero and as great as 30° as measured from said point of intersection and inclined in such a direction that the circumferential thickness of the tooth-like configurations tend to decrease as the radial distance from the axis increases, the cross-sectional area of the inlet being 30 to 55 percent of the area of the outlet diameter; (e) a muffler housing carried by the turbine housing and providing an attached muffler chamber, said muffler housing having an inlet side connected to the chamber outlet and on a side opposite the inlet side into the muffler housing there is provided a closure plate having an outlet leading substantially directly to atmosphere, and (f) a porous muffler member carried in the muffler housing, this muffler member constructed so as to provide myriad paths for the effluent air while flowing through the muffler housing to its discharge from this muffler housing.



3,938,906

SLIDABLE STATOR SEAL

Frank Michel, Swarthmore, Pa., and Thomas M. Szewczuk, Claymont, Del., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 7, 1974, Ser. No. 513,002
Int. Cl.^{2} F01D *11/00*
U.S. Cl. 415—139 **1 Claim**

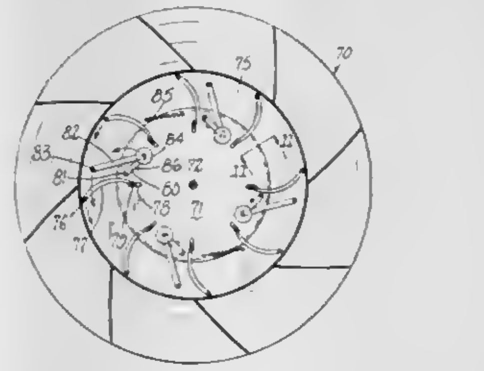


1. A seal structure for reducing leakage of a fluid between adjacent stationary shroud segments in a turbine comprising, a turbine casing, a blade ring disposed within said casing, an annular array of stationary blades disposed within said blade ring, said blades supported on their radially outer end by a plurality of arcuately formed outer shroud segments and on their inner ends by a plurality of arcuately formed inner shroud segments, said adjacent shroud segments defining gaps therebetween allowing dimensioned changes in said segments due to thermal causes, one end of each of said shroud segment having a slot defined by opposing radially spaced legs, said slot having an opening facing said adjacent segment, a movable seal member mounted in said slot for guided movement towards said adjacent segment, a spring means disposed within said slot for biasing said seal member into abutting sealing engagement with said adjacent segment for sealing said fluid against radial flow across said shroud and radially directed slots in said opposing legs of said segment, said sealing member having a radially enlarged portion received within said radial slots whereby, in conjunction with said spring means, said slot defined by said opposed spaced legs is sealed against axial flow therethrough.

3,938,907

HORIZONTAL MULTIDIRECTIONAL TURBINE WINDMILL

George S. Magoveny, and Eric J. Forgo, both of North Haven, Conn., assignors to Windsunwatt, Inc., New Haven, Conn.
Filed June 24, 1974, Ser. No. 482,355
Int. Cl.^{2} F01D *7/00, 7/02*
U.S. Cl. 415—141 **2 Claims**



1. A horizontal multidirectional windmill comprising a fixed housing and a rotor, the housing being constituted by upper and lower horizontally disposed members and a plurality of vertically disposed vanes extending between said members adjacent the periphery thereof and lying at an angle from radial, each adjacent pair of vanes and the horizontal member surfaces therebetween forming a funnel to direct air inwardly with a tangential component, and the rotor being constituted by upper and lower horizontally disposed members lying in the planes of said housing members, a vertical axle to which said rotor members are secured, a plurality of buckets mounted between said rotor members and extending inwardly from the periphery thereof, each said bucket comprising a flexible vertically disposed surface portion and supports for the inner and outer edges of said portions, and means for varying automatically the distance between said supports as a function of rotational speed of the rotor, each of the upper and lower rotor members comprising a central element and an outer annular element, said elements being relatively rotatable, the supports for the inner edges of the buckets being carried by said central element and the supports for the outer edges being carried by said annular element, the distance varying means comprising at least one lever pivotally connected to at least one of said elements, and a weighted body mounted on said lever, said means being adapted to cause relative rotational movement of said elements.

3,938,908

PUMP

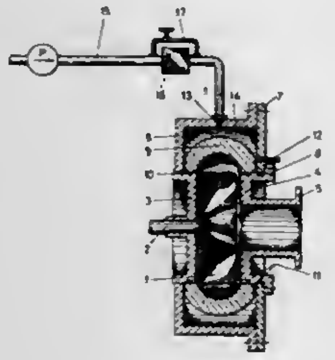
Siegfried Emilius Maria de Bree, Rotterdam, Netherlands, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

Continuation of Ser. No. 340,741, March 13, 1973, abandoned. This application Oct. 10, 1974, Ser. No. 513,925

Claims priority, application Netherlands, Mar. 16, 1972, 7203503

Int. Cl.² F04D *7/00, 7/02*

U.S. Cl. 415—196 **2 Claims**



1. A pump having an outer casing and an inner casing of a brittle material and of unitary construction, a rotor mounted on a shaft and having an axial fluid passageway, said rotor being disposed in said inner casing, said outer casing comprising a cover surrounding said shaft and a cover surrounding said passageway, said inner casing radially outwardly overlying and axially overlapping both of said covers, and means to introduce a fluid under pressure between said inner and outer casings thereby to place the inner casing in compression to prestress the inner casing in opposition to fluid pressure peaks within the inner casing, said inner casing being of substantially U-shaped cross-sectional configuration with the legs of the U extending into sealed axially sliding contact one with one said cover and the other with the other said cover.

3,938,909

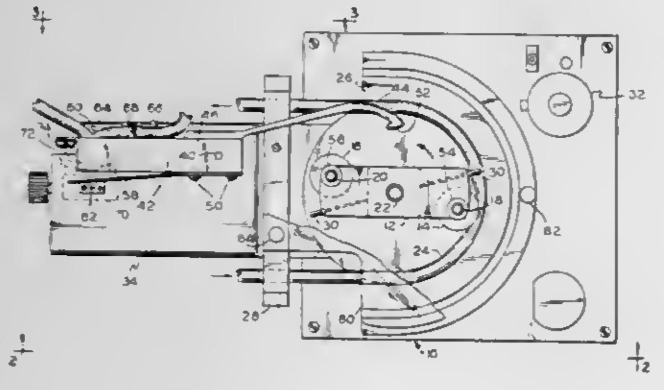
SINGLE NEEDLE ALTERNATING FLOW BLOOD PUMP SYSTEM

Charles B. Willock, 16222 SE. Oatfield Road, Milwaukie, Oreg. 97222

Division of Ser. No. 348,509, April 6, 1973, Pat. No. 3,848,592. This application June 24, 1974, Ser. No. 482,424

Int. Cl.² F04B *49/00, 43/08, 43/12, 45/06*

U.S. Cl. 417—12 **3 Claims**



1. In blood pump including a guide for receiving a liquid-carrying tube, a rotor carrying rollers for bearing against said tube, and rotor drive means for rotating said rotor, the improvement comprising an attachment for said pump adapting said pump for use in a system for alternately withdrawing and returning blood via a single path, said attachment including:

mounting means for attachment relative to said blood pump,

an actuating arm pivotable with respect to said mounting means and having a first portion disposed in a path generated by a portion of said rotor whereby rotation of said rotor to a predetermined position pivots said arm from a first position to a second position,

a spring normally biasing said arm into said first position to be actuated by said rotor,

a clamping member disposed adjacent said arm and receiving a length of tubing between said arm and said clamping member such that said arm in its first position compresses said tubing against said clamping member and in said second position unclamping said tubing,

said tubing communicating with said liquid-carrying tube,

switching means operated by movement of said arm to said second position, said switching means being connected for interrupting power to said drive means for said pump, whereby said arm is effective for unclamping said tubing while said power is interrupted,

and means for subsequently restoring power to said drive means for reinitiating pumping by said pump.

3,938,910

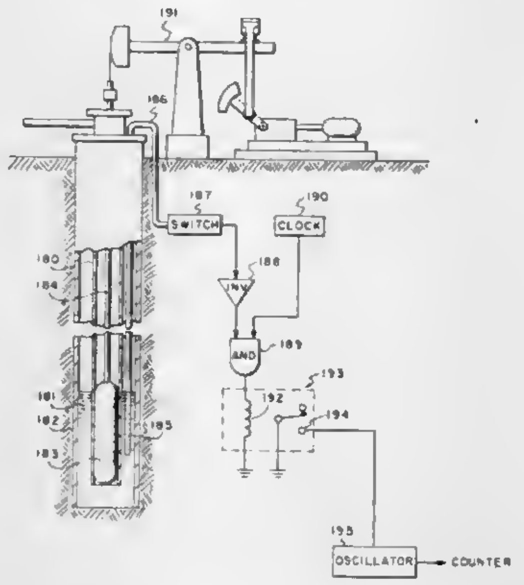
OIL WELL PUMPOFF CONTROL SYSTEM

Bobby L. Douglas, Garland, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 469,264, May 13, 1974, which is a continuation-in-part of Ser. No. 365,881, June 1, 1973, Pat. No. 3,854,846. This application Nov. 1, 1974, Ser. No. 519,904

Int. Cl.² F04B *49/00*

U.S. Cl. 417—12 **21 Claims**



1. A system for controlling the operation of a well pumping installation including a pump, a motor for operating said pump, a sucker rod string, a walking beam and a pumped fluid flowpipe, comprising:

means responsive to a predetermined characteristic of a component of said well pumping installation;

means to generate signals indicative of said response;

means to determine whether said signals are occurring less than a predetermined percentage of time during a given time interval; and

means to terminate the pumping operation in the event of said lesser determination.

3,938,911

FUEL INJECTION PUMP WITH METERING VALVE CONTROLLED COOLING

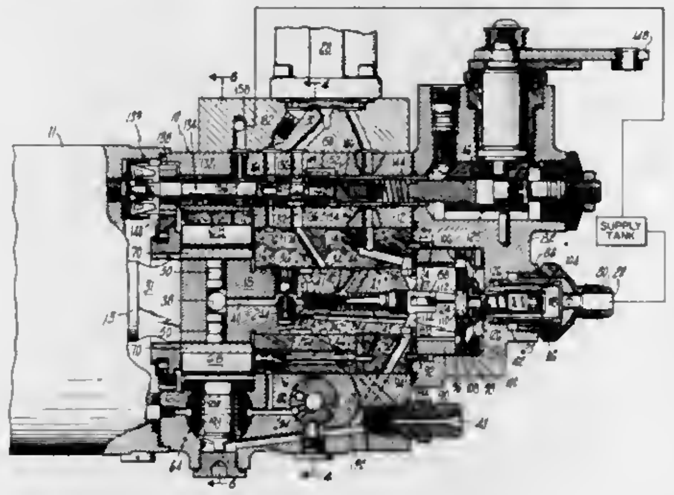
Daniel Salzgeber, Windsor; Robert Rauleisen, and Charles W. Davis, both of Simsbury, all of Conn., assignors to Stanadyne, Inc., Windsor, Conn.

Division of Ser. No. 336,538, Feb. 28, 1973, Pat. No. 3,861,833. This application July 31, 1974, Ser. No. 493,242

Int. Cl.² F04B *3/00, 49/00, 19/02*

U.S. Cl. 417—252 **5 Claims**

1. A liquid fuel injection pump comprising a supply tank, a low pressure supply pump having an inlet connected to said supply tank, a rotor mounting a high pressure pump which pressurizes measured charges of fuel for sequential delivery to the cylinders of an associated engine in timed relation therewith, a first passage connecting the outlet of said supply pump and said high pressure pump, a movable metering valve in said passage for controlling the restriction offered by a metering port to control the fuel delivered to said high pressure pump, and a bypass passage connecting said first passage to said supply tank and having a normally closed bypass port opened by said metering valve as said metering valve approaches its closed position to continue the circulation of new fuel from said tank through the fuel injection pump whenever said metering valve is closed.



3,938,912

HORIZONTAL TYPE HYDROHOIST

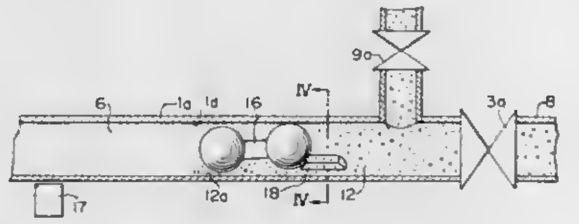
Masakatsu Sakamoto, Matsudo; Kenji Uchida, Kashiwa; Makoto Saito, Tokyo; Yasunori Yamada, Yokohama, and Yoshiyuki Takenaka, Kamakura, all of Japan, assignors to Hitachi, Ltd.; Showa Denko K.K. and Hitachi Sanki Engineering Co., Ltd., France

Filed Mar. 1, 1974, Ser. No. 447,357

Claims priority, application Japan, Mar. 2, 1973, 48-25887

Int. Cl.² F04B *17/00, 35/00*

U.S. Cl. 417—339 **13 Claims**



1. A horizontal type hydrohoist comprising:

a plurality of substantially cylindrical feed pipes arranged horizontally and in parallel relationship with respect to each other;

a drive liquid pump communicating with a drive liquid tank and connected at one end of said feed pipes by first valve means;

transport piping connected at the other end of said feed pipes by second valve means for transporting slurry under pressure;

a slurry pump communicating with a slurry tank and connected with said feed pipes by third valve means in the vicinity of said other end of said feed pipes;

return piping connected with said drive liquid tank and said feed pipes by fourth valve means in the vicinity of said one end of said feed pipes for returning the drive liquid in the feed pipes to said drive liquid tank by the slurry fed by said slurry pump;

separator means arranged in each of said feed pipes at the boundary portion between the slurry and the drive liquid so as to provide a small space between said separator means and the inner peripheral surface of said feed pipe;

and stopper means located at the portion of said feed pipes on the drive liquid feed side of the junction of said feed pipes and piping communicating said feed pipes with said slurry pump for stopping movement of said separator means such that one end of said separator means is lifted from the bottom of said feed pipes to permit drive liquid to pass under said separator means.

3,938,913

FLOW MACHINE FOR AN AGGRESSIVE, RADIOACTIVE OR SPECIAL-PURITY FLOW MEDIUM

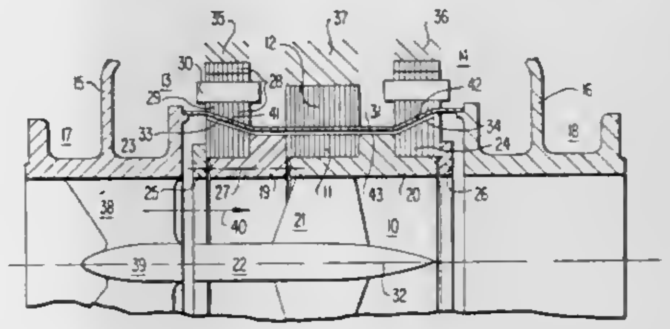
Gerhard Isenberg; Peter Bloch, both of Dachau, and Wolfgang Tuzinsky, Munich, all of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Germany

Filed Dec. 20, 1972, Ser. No. 316,899

Claims priority, application Germany, Dec. 20, 1971, 2163256

Int. Cl.² F04B *17/00*

U.S. Cl. 417—356 **28 Claims**



1. A flow machine for aggressive, radioactive, or special-purity flow mediums comprising:

machine casing means having inside walls which include a center section joined at both ends by respective conically outwardly flared sections,

rotatable impeller means with an outer configuration extending approximately parallel to said center section and said conical outwardly flared sections and arranged within said inside walls,

bearing support means for supporting said impeller means such that said impeller means is spaced at all points from the inside walls of said casing means, said bearing support means including magnetic material housed in the respective conical sections of said impeller means, a plurality of electro-magnets spaced from one another around the circumference of said inside walls, and electrical means for supplying electrical current to said electro-magnets, whereby both radial and axial support is provided to said impeller means by way of the respective components of magnetic force acting along the conical sections.

3,938,914

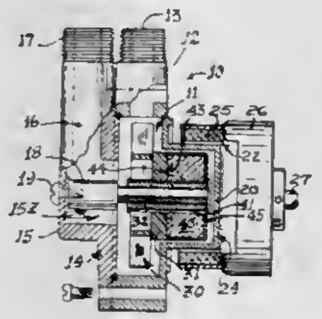
PUMP IMPELLER AND COUPLING MAGNET STRUCTURES

Frederick N. Zimmermann, Deerfield, Ill., assignor to March Manufacturing Company, Glenview, Ill.

Continuation of Ser. No. 679,777, Nov. 1, 1967, abandoned. This application Aug. 18, 1969, Ser. No. 854,019

Int. Cl. F04b *17/00, 35/04*

U.S. Cl. 417—420 **18 Claims**



1. In a magnetically coupled pump of the type having a rotary impeller and conjoined, driven, one-piece cylindrical

coupling magnet with a longitudinal bore and formed of a magnetic composition of the frangible type susceptible to fracture and like faulting, and rotating coaxially with the impeller with its cylindrical surface closely confronting an enclosure wall portion located in a narrow clearance space subjoining said surface in the magnetic air gap between the magnet and a cooperative driving magnet rotated externally of said wall portion, the combination with said driven magnet of guard means comprising substantially non-magnetic circumambiently extending restrictive band means substantially encircling the magnet body in a direction about the cylindrical aspect thereof to confine at least portions thereof in case of fracture or faulting, as aforesaid, against dislocation in a direction particularly toward said clearance space, the outermost periphery of said band means lying close to the outer periphery of the magnet body well within said clearance space.

3,938,915

SCREW ROTOR MACHINE WITH HOLLOW THREAD ROTOR ENCLOSING A SCREW CAM ROTOR

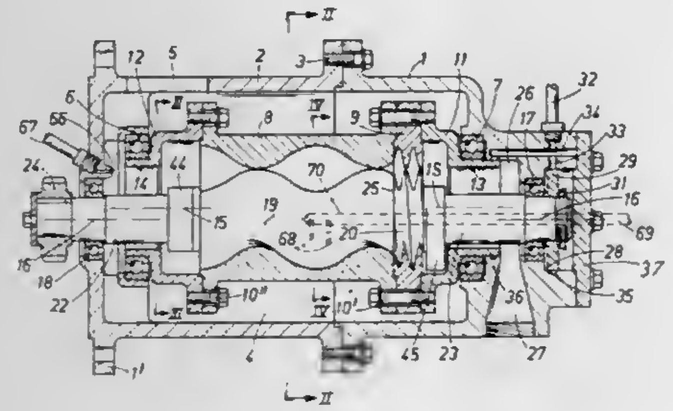
Hans Kristoffer Olofsson, Huddinge, Sweden, assignor to Atlas Copco Aktiebolag, Huddinge, Sweden

Filed July 18, 1974, Ser. No. 489,940

Claims priority, application Sweden, July 20, 1973, 7310167

Int. Cl.² F01C *1/16;* **F04C** *17/12*

U.S. Cl. 418—9 **9 Claims**



1. In a screw rotor machine for compressible working medium including a screw cam rotor provided with gudgeons, a hollow screw thread rotor provided with bearing surfaces and enclosing the screw cam rotor, the rotors being journalled in a housing for respective rotation around parallel mutually displaced rotation axes, the rotors forming chambers for the working medium between their screw cam and screw threads which chambers move from end to end of the rotors during their rotation while changing their volumes, the improvement enabling high working loads with short sealing lengths and small leakage losses while maintaining simple rotor screw profiles comprising:

a circularly profiled single-thread-screw cam rotor having two parts with different lead angles,

the single-thread-screw being generated in relation to an inner base cylinder formed by the centers of the circular rotor cross sections taken along the screw cam rotor axis and having a diameter amounting to two times the distance between the rotation axes,

the single-thread-screw cam rotor circular profile enclosing, in each cross section, both the inner base cylinder and cylindrical extensions of the gudgeons the relation between the distance between the rotation axes and the radices of the cam rotor profile amounting to a value between 0.2 and 0.4.

3,938,916

GAS SEAL FOR VANE TYPE INTERNAL COMBUSTION ENGINE

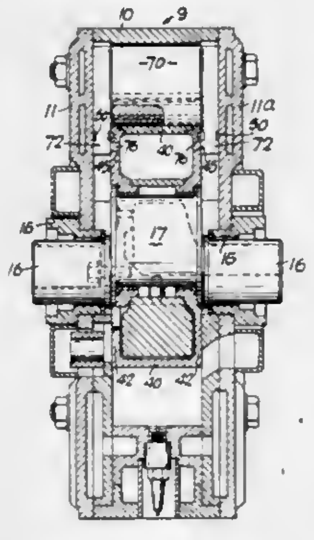
Tony Ralph Sarich, 2 Hadley Place, Karrinyup, Western Australia, Australia

Filed Jan. 16, 1974, Ser. No. 433,747

Claims priority, application Australia, Jan. 16, 1973, 1916/73

Int. Cl.² F01C *19/00;* **F03C** *3/00;* **F04C** *15/00, 27/00*

U.S. Cl. 418—137 **8 Claims**



1. An internal combustion engine having a housing, a shaft mounted for rotation relative to the housing, a piston member carried by said shaft, a housing face on said housing, a piston face on said piston member in spaced opposed relationship to said housing face, a plurality of vanes arranged to form with said housing and said piston member a plurality of chambers which vary in capacity in response to relative rotation between said shaft and said housing, each said vane having a vane extension interposed between said housing face and said piston face, seal means on one of said faces adjacent to said vane extension, walls defining an opening in said vane extension at said seal means, said opening extending through said vane extension between said faces, an insert mounted in said opening and extending therethrough in a direction normal to said one of said faces, said insert being in engagement at one end with said seal means and at the other end with the other of said faces, said insert being relatively movable with respect to said vane extension in a direction normal to said one face, at least a portion of said insert having such a close fit with said walls of said opening as to be in sealing relationship therewith, whereby the passage of gas through said opening between said insert and said vane extension is prevented.

3,938,917

LINEAR OIL SEAL MEANS PRINCIPALLY INTENDED TO OBTAIN AN OIL SCRAPING EFFECT

Nobutaka Morimitsu, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

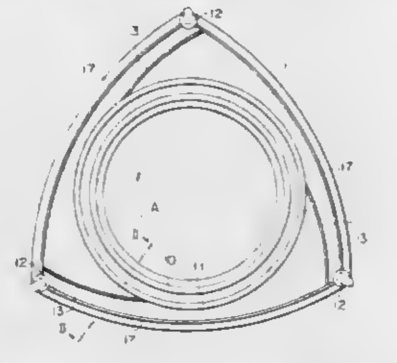
Filed Dec. 10, 1973, Ser. No. 423,146

Claims priority, application Japan, July 17, 1973, 48-79810

Int. Cl.² F01C *19/08;* **F04C** *27/00*

U.S. Cl. 418—142 **5 Claims**

1. In a rotary piston engine including a polygonal rotor containing side walls and having a plurality of apex portions with a corner seal being provided at each apex portion, at least one annular oil seal means and side seal means, said annular oil seal means comprising an annular oil seal groove disposed in the side wall portion of the rotor, said oil seal groove containing an annular oil seal ring resiliently supported by a spring means, said annular oil seal ring housing an annular elastic means which intercepts an annular space left between said annular oil seal ring and said annular oil seal groove, said side seal means comprising a linear groove disposed in the side wall portion of said rotor and extending between two adjacent corner seals provided at respective apex portions of said linear groove containing a linear sealing element resiliently supported by a spring means, the improvement which comprises providing a linear oil seal means which extends between said annular oil seal means and said side seal means, said linear oil seal means comprising a linear groove disposed in the side wall portion of said rotor, said linear groove containing a linear sealing element resiliently supported by a spring means, said linear oil means joining said side seal means in a region located on one side of a line which connects a particular corner seal with the central axis of the rotor, said linear oil seal means joining the annular oil seal means in a region located on the other side of said line said one side preceding the corner seal, as seen in the direction of rotation of the rotor.



3,938,918

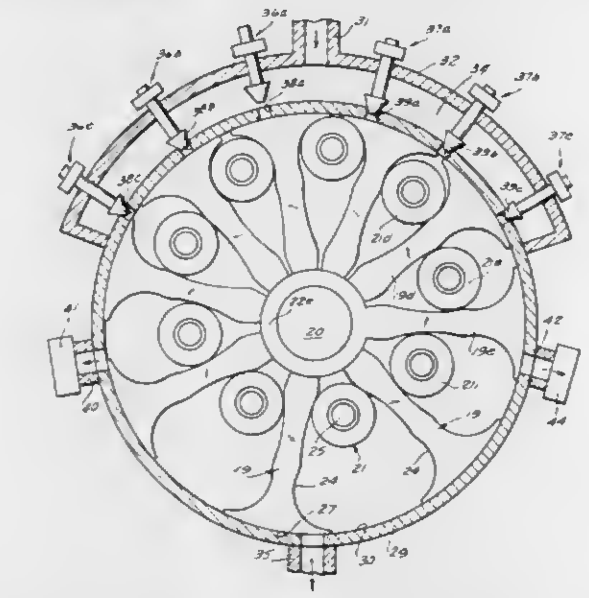
ROTARY VANE DEVICE

John Snygg, 433 Prospect St., and Vello H. Ebrok, 410 Prospect St., both of East Orange, N.J. 07017

Filed Apr. 16, 1974, Ser. No. 461,413

Int. Cl.² F04C *3/00*

U.S. Cl. 418—150 **15 Claims**



2. In an eccentric rotor vane device having a main chamber having a substantial cylindrical interior surface, first and second ports spaced around and communicating with said main chamber, a plurality of angularly related radial vanes independently pivotal and rotatable within said main chamber about a vane axis therewithin, said vanes occupying substantially the total radial distance from said axis to said interior surface of said main chamber, a rotor that is eccentrically mounted with respect to said main chamber and rotatable about a rotor axis spaced from said vane axis. said rotor having vane guides for interdigitating and accurately engaging and guiding said vanes as said rotor and said vanes are rotated within said main chamber, and a power delivery shaft connected with said rotor for delivering power in association therewith, the improvement wherein each of said confronting vane surfaces has a contour with respect to the longitudinal (x) axis of the vane and the transverse axis (y) of the vane which is substantially defined by the following:

$$x(\phi) = x_{DE}(\phi) + \rho[y_{DE}(\phi) + x_{DE}(\phi)\cdot s_O(\phi)]/[r(\phi) \quad 1+(s_O(\phi))^2]$$

$$y(\phi) = y_{DE}(\phi) - \rho[x_{DE}(\phi) - y_{DE}(\phi)\cdot s_O(\phi)]/[r(\phi) \quad 1+(s_O(\phi))^2]$$

where

$O \quad \phi \quad \pi$

$x_{DE}(\phi) = r(\phi)\ \mathrm{Re}\ \exp\ (i\alpha(\phi))$

$y_{DE}(\phi) = r(\phi)\ \mathrm{Im}\ \exp\ (i\alpha(\phi))$

$r(\phi) = \quad R^2+c^2-2cR\cos\phi$

$$\exp\ (i\alpha(\phi)) = (-1)^m \prod_{k=1}^{n} \frac{[(c(k)\,f(k,\phi)-a)-i\,s(k)\,f(k,\phi)]}{[f^2(k,\phi)-2a\,c(k)\,f(k,\phi)+a^2]^{1/2}}$$

$c(k) = \cos\ (2k\ \Delta\phi)$

$s(k) = \sin\ (2k\ \Delta\phi)$

$\Delta\phi = 2\pi m/(2n+1)$ where m and n are positive integers such that m and $2n+1$ have no common divisors

$f(k,\phi) = \cos\ (2k\ \Delta\phi) - (c/R)\cos\phi$

$a = (\tfrac{1}{2})[1-(c/R)^2]$

$$s_o(\phi) = [a\,r^2(\phi)/R^2] \sum_{k=1}^{n} s(k)/[f^2(k,\phi)-2a\,c(k)\,f(k,\phi)+a^2]$$

R = radius of vane guide circle (distance from center of rotor axis to center of right circular cylindrical vane guide surface which engages vane).

c = distance between vane axis at center of main chamber and rotor axis at center of vane guide circle.

ρ = radius of right circular cylindrical vane guide surface which engages vane.

3,938,919

ROTARY PISTON MACHINE OF TROCHOIDAL CONSTRUCTION

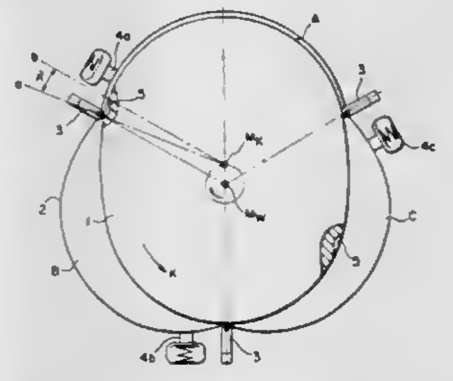
Franz Huf, Constance, and Jurgen Lambrecht, Ebenhausen, both of Germany, assignors to Dornier System GmbH, Germany

Filed Jan. 29, 1975, Ser. No. 545,184

Claims priority, application Germany, Feb. 5, 1974, 2405307

Int. Cl.² F04C *29/08*

U.S. Cl. 418—183 **6 Claims**



1. In a rotary piston machine of trochoidal construction for compressing a gaseous medium having working chambers between a trochoidal piston and a housing corresponding to the coordinated outer envelope curve, said working chambers being separated from each other by radial seals in the housing, and outlet openings closed-off by means preventing backflow for discharging medium from the working chambers,

the improvement comprising trough-shaped recess means in the peripheral piston surface which, in the dead center position of the piston, are positioned immediately ahead of a radial seal.

3,938,920

DEVICE FOR LIMITING THE PRESSING FORCE TO A PRE-ESTABLISHED VALUE IN MECHANICAL PRESSES

Roland Fleissner, Bichl, Germany, assignor to Dorst-Keramikmaschinen-Bau, Kochel, Germany

Filed Feb. 11, 1974, Ser. No. 440,994

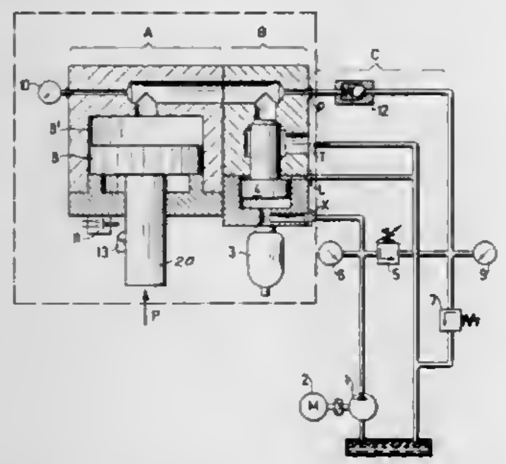
Claims priority, application Germany, Feb. 12, 1973, 2306747

Int. Cl.² B29C *3/00*

U.S. Cl. 425—78 **14 Claims**

1. A device for limiting the pressing force to a pre-estab-

lished value in a mechanical press, said press having an upper punch mount, hydraulic cushion means mounting said upper punch mount, a reservoir for hydraulic fluid and a prime mover driven pump and conduit means connecting said pump to said hydraulic cushion, a first pressure relief valve in said conduit, said device characterized in that a relief duct is provided interconnecting said hydraulic cushion and said reservoir; a second pressure relief valve in said duct, said second pressure relief valve being adjustable for varying the maximum hydraulic pressure exerted by said hydraulic cushion means.



3,938,921
MOULDS

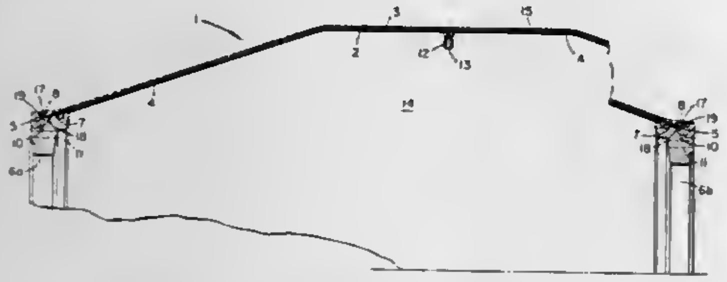
George Atkins, Sutton Coldfield, and Philip J. Evans, Birmingham, both of England, assignors to Dunlop Limited, London, England

Filed Aug. 11, 1972, Ser. No. 279,752

Claims priority, application United Kingdom, Aug. 12, 1971, 37837/71

Int. Cl.^{2} B29D *3/02*

U.S. Cl. 425—111 **15 Claims**



1. Apparatus for moulding wire reinforced rubber articles comprising a moulding surface said surface being a peripheral surface of a multi-piece mould, said mould being constructed of a material having a greater coefficient of expansion than said wire, at least one spacer element being provided between at least two adjacent mould pieces, said element comprising a material which is thermoplastic and softens at the temperature of said moulding, whereby during the moulding said element is caused to flow by the expanding mould pieces and thereby compensate for the expansion of the mould material.

3,938,922
MEANS FOR FORMING A PRESTRESSED SLAB INCLUDING COLLAPSIBLE BULKHEADS

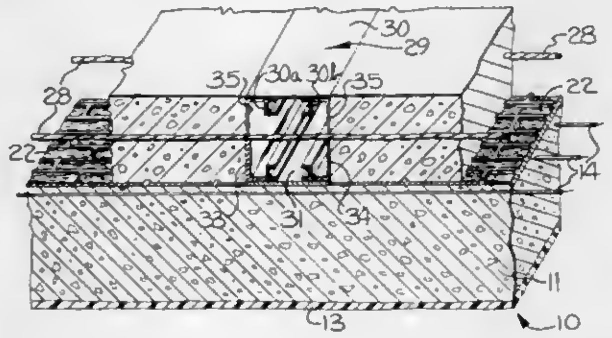
Fred Darroll Godley, Charlotte, N.C., assignor to Modular Wall Systems, Inc., Charlotte, N.C.

Division of Ser. No. 186,837, Oct. 6, 1971. This application Mar. 28, 1974, Ser. No. 455,749

Int. Cl.^{2} B28B *23/04*

U.S. Cl. 425—111 **5 Claims**

1. An apparatus for forming and curing cast panels comprising:
  an elongate bed defining a horizontal planar surface for supporting material being cast,
  side form means for facilitating stripping of a cast panel and including a pair of stationary support means extending parallel and in spaced relation to said bed and a pair of slip form means engaging corresponding ones of said support means for movement vertically relative to said bed and said support means between a forming position wherein material cast between said slip form means is retained therebetween and an elevated release position wherein a cast panel may be stripped from said apparatus, and
a plurality of bulkhead means disposed transversely between said side frame means for dividing material cast into said apparatus into a plurality of discrete panel lengths, each said bulkhead means being defined by a plurality of discrete plate members including a lower plate member, a pair of side plate members supported on said lower plate member and an upper plate member normally overlying said pair of side platc members, said plate members having stop means for normally arranging said plate members to define a hollow box structure, said stop means including inwardly directed lip portions of said side plate members and members extending vertically from said upper and lower plate members for engaging said lip portions and each of said side plate members being pivotally movable relative to the corresponding lower plate member upon removal of the corresponding upper plate member between an upright forming position whrein material being cast is retained and a tilted release position wherein a cast panel may be stripped from said apparatus.



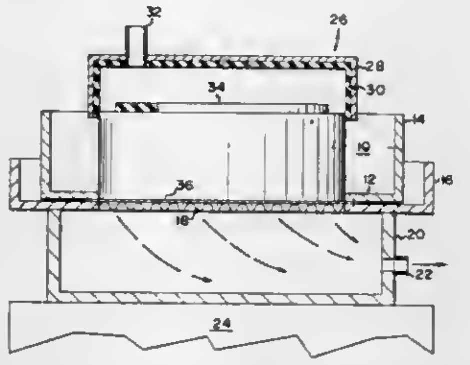
3,938,923
APPARATUS AND METHOD FOR FORMING A SEALED OUTER RING FOR CERAMIC REGENERATOR

Chester J. Dziedzic, Dushore; Richard N. Kleiner, Towanda, and Joseph J. Cleveland, Wysox, all of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 2, 1974, Ser. No. 466,394

Int. Cl.^{2} B29C *27/14, 30/00*

U.S. Cl. 425—127 **6 Claims**



1. Apparatus for forming a gas-impervious ceramic seal within a predetermined number of the peripheral cells of a ceramic honeycomb structure having first and second opposing surfaces defining the cell openings and having an outer wall surrounding the cells, while simultaneously forming a ceramic layer on the outer wall, the apparatus comprising:
  a. a first reservoir adapted to receive the structure and a castable ceramic composition, the reservoir having a bottom portion defining an opening corresponding in shape to the cross section of the structure and having an area at least equal to the area of the first surface, and having side walls of a height at least equal to the height of the outer wall of the structure;
  b. first removable gas-impervious slurry-impervious contact means adapted for gas-impervious contact with a central portion of the second surface, for forming a temporary vacuum seal of the central portion cells, and leaving the peripheral cells exposed;
  c. a second reservoir adapted for positioning atop the structure and having outer walls adapted for contact with the outer walls of the structure, for maintaining a ceramic slurry composition in contact with the exposed cells of the second surface;
  d. second removable gas-pervious slurry-impervious contact means adapted for contact with at least the cell openings of the first surface corresponding to the exposed cell openings of the second surface;
  e. vacuum means positioned below the second contact means in contact therewith, adapted for evacuating the exposed peripheral cells through the second contact means, to promote flow of slurry into the evacuated cells, thereby to at least partly impregnate and seal these cells against gas flow; and
  f. vibrator means positioned below the vacuum means and in contact therewith for vibrating the apparatus to promote flow of the casting and slurry compositions.

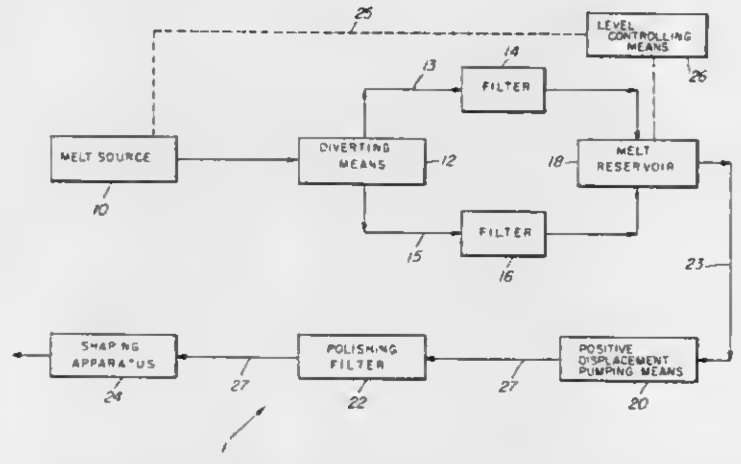
3,938,924
THERMOPLASTIC MELT APPARATUS

Richard M. Abella, Cranford, N.J.; Keith D. Dodson, and Jerry G. Richardson, both of Greenville, S.C., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 28, 1974, Ser. No. 455,763

Int. Cl.^{2} B29B *5/02*

U.S. Cl. 425—147 **16 Claims**



1. An assembly for the continuous filtration and transport of a thermoplastic melt from a melt source to a shaping apparatus comprising:
  a melt source providing a continuous flow of a thermoplastic melt;
  a diverting means disposed downstream of said melt source providing communication for said melt between said melt source and at least two parallel disposed conduits;
  at least two parallel disposed conduits, each provided with a removeable filter means, wherein said thermoplastic melt stream is filtered;
  a melt reservoir in communication with the downstream end of each of said parallel conduits, said reservoir providing a pool for storage of a fixed volume of said filtered thermoplastic melt;
  a level controlling means, in control communication with said melt reservoir and said melt source said level controlling means regulating the melt output of said melt source as a function of the level in said melt reservoir to insure a uniform melt flow to said melt reservoir;
  a positive displacement pumping means in communication with the outlet of said reservoir, said pumping means providing the motive force to provide a uniform rate of flow of said melt to a shaping apparatus; and
  said shaping apparatus in communication with the discharge out of said positive displacement pumping means, for shaping said thermoplastic melt, which flows into said shaping apparatus at a uniform rate, into a shaped article.

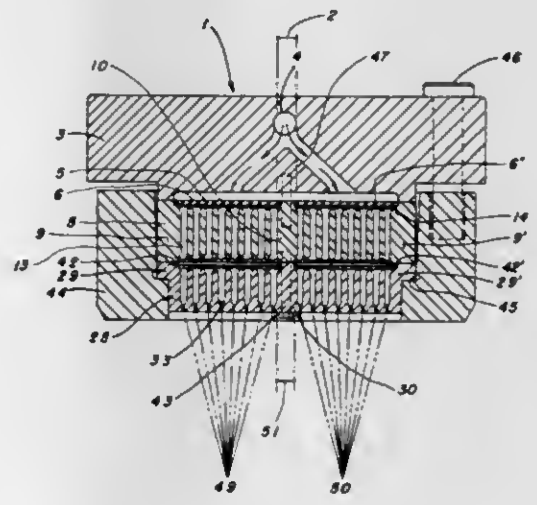
3,938,925
SPIN PACK ASSEMBLY

Robert Lees, Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 11, 1974, Ser. No. 505,182

Int. Cl.^{2} B29F *3/04*

U.S. Cl. 425—198 **16 Claims**



9. A spinneret plate for the extrusion of synthetic filaments, comprising:
  a. a top and a bottom surface; and
  b. a plurality of polymer flow channels, each of said polymer flow channels having a capillary aperture formed in said plate, said capillary aperture having a top end, said top end being located beneath said top surface, and each of said polymer flow channels having an enlarged inlet comprising a wall extending upwardly and outwardly from said top end of said capillary aperture, said wall of said enlarged inlet intersecting with adjacent walls in a closed, interlocking network of ridges on said top surface;
  said spinneret plate being further characterized in that the longitudinal axes of said capillary apertures of said polymer flow channels are perpendicular to said surfaces; said walls of said enlarged inlets are continuous, smooth surfaces of curvature which exhibit a converging pattern while proceeding from said top surface to said top ends of said capillary apertures; and said ridges of said enlarged inlets define a plurality of equilateral polygonal sectional areas selected from the group consisting of triangles, squares and hexagons.

3,938,926
PIZZA PIE FORMING MACHINE

Joseph Fraioli, Sr., 300 Martine Ave., White Plains, N.Y. 10601

Filed Oct. 16, 1974, Ser. No. 515,082

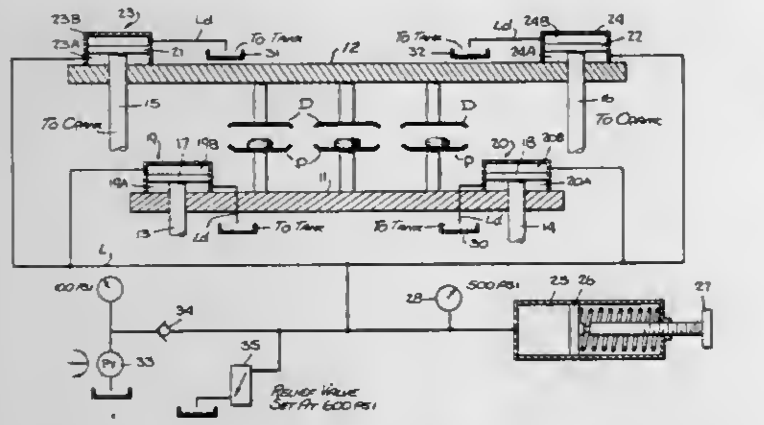
Int. Cl.^{2} A21C *11/00*

U.S. Cl. 425—233 **5 Claims**

1. A machine for shaping dough pieces into pies suitable for pizzas, said machine comprising:
  A. upper and lower platens in spaced, parallel relation for supporting a pie-shaping die and a dough-piece pan, respectively,
  B. a crank mechanism for reciprocating both platens concurrently to effect engagement between the die and pan and to effect disengagement therebetween, said crank

mechanism including crank rods which stroke up and down and are coupled to the platens to effect the reciprocating motion thereof; and

C. a hydraulic system for subjecting said dough piece to uniform fluidic pressure in the course of engagement, said system including cylinders mounted on at least one of said platens and movable therewith, each cylinder having a piston slidable therein, which piston is connected to a respective crank rod and acts to divide the associated cylinder into a front-side and a rear-side compartment whereby the cylinders are provided with a set of front-side compartments and a set of rear-side compartments, a compressible pressure chamber, means coupling the set of front-side compartments of the cylinders which compartments are subjected to pressure when the platens approach each other to said compressible pressure chamber, said set of front-side compartments being filled with oil whereby in the course of engagement, oil from the set of front-side compartments is forced into the chamber and is returned to the set of front-side compartments in the course of disengagement, and means connecting the set of rear-side compartments to the atmosphere whereby the set of rear-side compartments is filled with air.



3,938,927
APPARATUS FOR THE CONTINUOUS MANUFACTURE OF CHIPBOARD PANELS, FIBRE PANELS OR THE LIKE

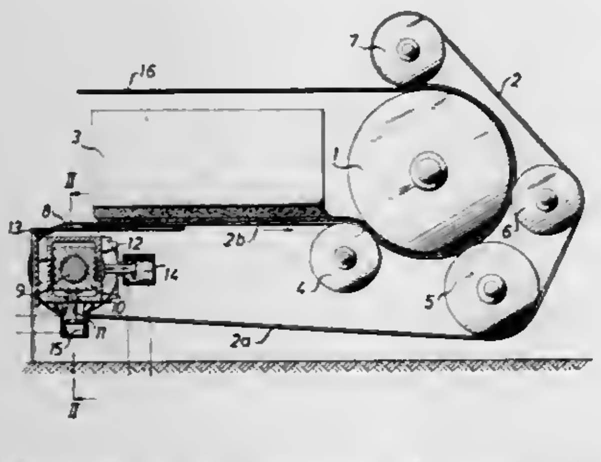
Heinz Brinkmann, Bennigsen; Rolf Gersbeck, Ronnenberg, and Eckart Schlomach, Hannover, all of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hannover-Kleefeld, Germany

Filed Apr. 22, 1975, Ser. No. 570,454

Claims priority, application Germany, Apr. 25, 1974, 2420029

Int. Cl.^{2} B29J *5/08*

U.S. Cl. 425—373 **7 Claims**



1. In apparatus for the continuous manufacture of pressed panels of particulate material, a heated and rotatable press drum, a tensioned endless belt onto which a ribbon of particulate material treated with a binder can be fed, an inlet roller positioned adjacent said drum such that said belt with said ribbon of particulate material thereon passes between the inlet roller and the drum, at least one return roller for said belt to press said belt against said drum and thereby to press said ribbon of particulate material between said belt and said drum, a tensioning and control roller for said belt, said tensioning and control roller being so spaced and disposed with respect to said inlet roller that, between said tensioning and control roller and said inlet roller, said belt extends in a substantially horizontal pass, and means positioned above said substantially horizontal pass of said belt to feed said particulate material onto said substantially horizontal pass of said belt.

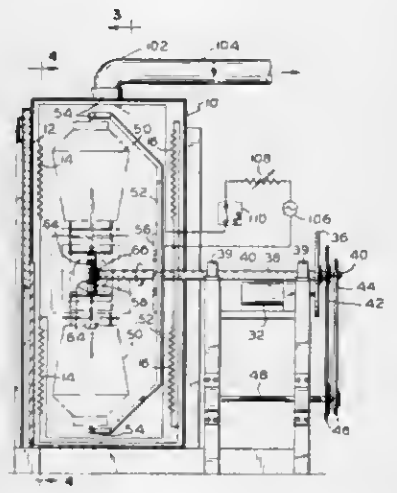
3,938,928
MULTIPLE MOLD ROTARY CASTING APPARATUS

Alvadore M. Andrews, deceased, late of Portland, Oreg. by The United States National Bank of Oregon, executor

Filed Jan. 24, 1974, Ser. No. 436,191

Int. Cl.^{2} B29C *5/04*

U.S. Cl. 425—430 **14 Claims**



1. A rotational casting apparatus comprising:

mold means including a plurality of hollow molds for molding synthetic plastic material into hollow articles by rotation of said molds when they contain said plastic;

an oven enclosing said molds and having heating means for heating said molds, said oven being fixed in position;

cooling means separate from said heating means, for cooling said molds and the molded articles therein while they are in said oven by transmitting moist air cooling fluid from an external source into the oven in the space surrounding outside of the molds; and

rotation means for rotating said molds within said oven, including a common drive shaft for rotating all of the molds about a common axis, a plurality of rotor means for rotating each of said molds about its mold axis at an angle to said common axis, and support means for supporting each of said molds on said common drive shaft so their mold axes extend radially and are circumferentially spaced about said common axis.

3,938,929
FLEXIBLE PLASTICS HOSE MAKING APPARATUS

Vernon Dennis Stent, and Derek Cecil Wright, both of Woking, England, assignors to Creators Limited, England

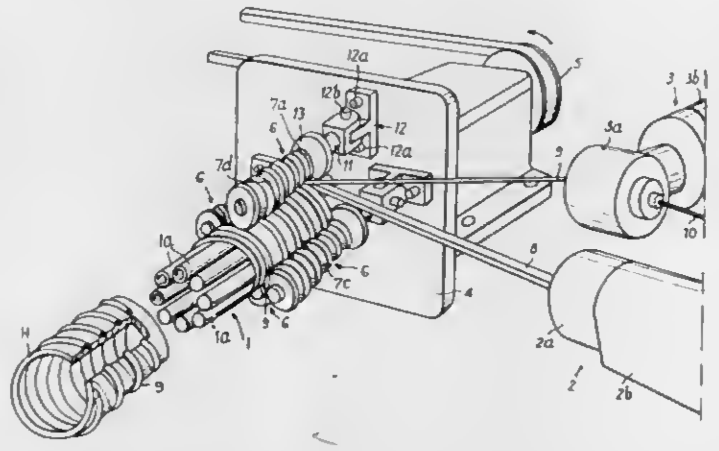
Division of Ser. No. 355,593, April 30, 1973, Pat. No. 3,890,181. This application Dec. 12, 1974, Ser. No. 532,227

Claims priority, application United Kingdom, Nov. 27, 1972, 54636/72

Int. Cl.^{2} B29C *27/28*

U.S. Cl. 425—501 **4 Claims**

1. An apparatus for manufacturing a flexible plastics hose wherein a strip of a first plastics material is extruded, a reinforcing element of a second plastics material is simultaneously extruded, said strip is wound into a helix around a driven mandrel while the plastics material is still in a plastic condition and adjacent turns are bonded together by pressure applied between said mandrel and roller means external thereof to form a tubular wall of said plastics material, said reinforcing element being simultaneously wound around said helix of said first plastics material in spaced helical turns having the same pitch angle as said helix of first plastics material while the reinforcing element is guided into said spaced helical turns and is pressed into the first plastics material by said roller means so as to partially embed said reinforcing element into said tubular wall and to feed the tubular wall with the reinforcing element partially embedded therein axially of the mandrel, said apparatus comprising a mandrel around which the extruded strip of plastic material and the reinforcing element are to be wound, said mandrel comprising a plurality of mandrel rollers which are circumferentially equi-spaced on a circle around and extend substantially parallel to the center axis of the mandrel, means for driving said mandrel rollers in the same direction and at the same speed, and a plurality of roller assemblies disposed at circumferentially spaced positions around said mandrel for pressing the plastics materials against the mandrel to bond the turns of the strip of plastics material together and to partially embed the reinforcing element in said plastics material, each said roller assembly comprising a plurality of roller sections rotatable about a common axis, each independently of other roller sections of a roller assembly, each roller assembly being disposed opposite a mandrel roller with its axis intersecting a radial line from the center axis of the mandrel through the axis of said opposing mandrel roller and inclined to said center axis of the mandrel, tangentially of the mandrel, at an angle equal to the pitch angle of the helical turns of the reinforcing element of the hose to be made, each roller section having a portion formed with a guide groove for receiving the reinforcing element with adjacent guide grooves of an assembly being spaced apart by a distance corresponding to the pitch of the helical turns of the reinforcing element and the diameters of at least the grooved portions of the roller sections increasing in the direction of hose formation, and successive roller assemblies in the direction of winding of the plastics materials being so positioned axially of the mandrel that the guide grooves thereof locate with the turns of the reinforcing element around the hose being made.



3,938,930
EXPANSION SHIM FOR HOT BRIQUETTE ROLL SEGMENTS

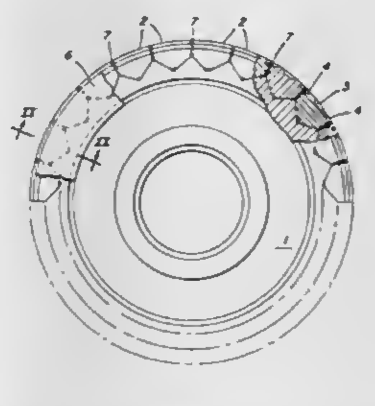
William L. Lauterbach, Upper St. Clair Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1973, Ser. No. 409,833

Int. Cl.^{2} B29C *15/00*

U.S. Cl. 425—472 **2 Claims**

1. A shim for use in hot briquette machines having peripheral mold segments on mold rolls comprising a sheet of alloy having a melting point no higher than the temperature at which the mold segments achieve their greatest expansion under operating conditions, said sheet having a profile similar to the profile of a mold segment of said hot roll briquette machine.



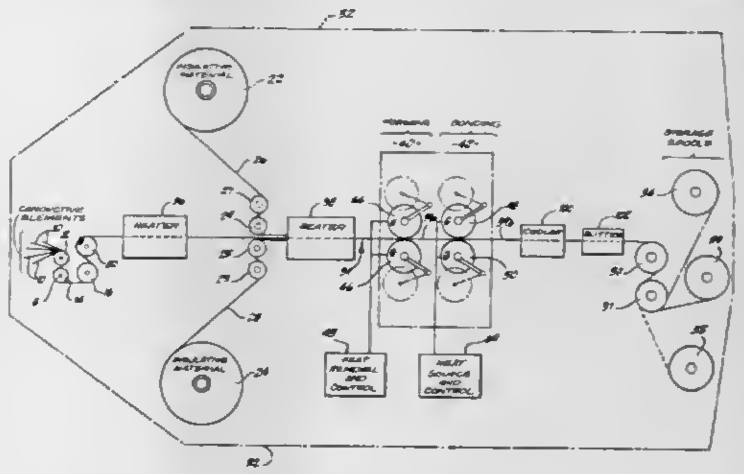
3,938,931
APPARATUS FOR INSULATING ELECTRICALLY CONDUCTIVE ELEMENTS

Leroy L. Emmel, Costa Mesa, Calif., assignor to Fortin Laminating Corporation, San Fernando, Calif.

Division of Ser. No. 93,949, Dec. 1, 1970, Pat. No. 3,802,974. This application Dec. 19, 1973, Ser. No. 426,246

Int. Cl.^{2} B29C *27/22, 27/30;* **B30B** *3/04, 7/00*

U.S. Cl. 425—505 **5 Claims**



1. An apparatus for simultaneously insulating a plurality of electrically conductive elements with thermal bonding insulative material comprising:

a heater adapted to receive the combination of two layers of thermal bonding insulative material and a plurality of electrically conductive elements positioned therebetween, said heater being adapted to heat the thermal bonding insulative material to a pliable temperature below bonding temperature, to give the insulative material plasticity and to relieve internal stresses therein;

a first pair of rollers adapted to receive the heated combination of the two layers of thermal bonding insulative material and the plurality of electrically conductive elements positioned therebetween, at least one roller of said first pair of rollers having an outer surface formed with alternating recesses and ridges which engage and form the layers of insulative material about the plurality of electrically conductive elements;

heat removal and control means for cooling at least one of said first pair of rollers to conduct and remove heat from and to solidify and stabilize the layers of thermal bonding insulative material with the plurality of conductive elements positioned therebetween;

a second pair of rollers in tandem with said first pair of rollers, said second pair of rollers being adapted to receive the layers of thermal bonding insulative material formed about the plurality of electrically conductive elements, at least one roller of said second pair of rollers having an outer surface formed with alternating recesses and ridges which engage the layers of insulative material formed around the plurality of electrically conductive elements;

heat source and control means for heating at least one of said second pair of rollers to a temperature which bonds the formed layers of insulative materials together and around the plurality of electrically conductive elements; and

frame means for mounting said adjustable heater; said heat removal and control means, said heat source and control means, and the first and second pairs of rollers and for supporting the thermal bonding insulative material and the plurality of conductive elements therebetween.

3,938,932

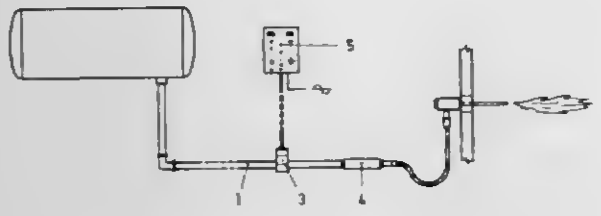
PROCESS FOR IMPROVING THE COMBUSTION OF SOLID

Luciano Benzan, c/o Busenco Establishment, Via Ortona 5, 47036 Riccione (Forli), Italy

Filed Feb. 4, 1974, Ser. No. 439,019

Int. Cl.^{2} F23D *21/00*

U.S. Cl. 431—2 **11 Claims**



1. A process for improving the combustion of a liquid fuel combustible medium in the presence of a combustion-supporting medium, comprising the steps of transporting said media to the place of combustion by conduit means; and transmitting energy pulses by resonating an aluminum sleeve having efficient resonant characteristics provided on said conduit means to at least one of said media in said conduit means at a location upstream of and remote from said place of combustion, so that the molecular attraction of said one medium is substantially reduced to facilitate mixing of said one medium with the other medium and thereby aid in combustion of the resulting mixture.

3,938,933

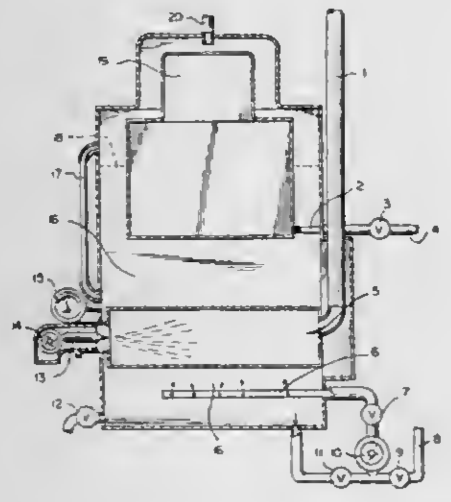
FUEL OIL BURNING METHOD

Gregorio Cardenes Armas, Las Palmas (Canary Islands) Paraguay, 7, Spain

Filed June 11, 1973, Ser. No. 368,582

Int. Cl.^{2} F23J *7/00*

U.S. Cl. 431—4 **4 Claims**



1. A method of burning fuel-oil comprising the steps of:

injecting fuel-oil into a tank partly filled with hot water maintained at approximately 90°C;

allowing the fuel-oil to rise through the hot water to form a separate layer of fuel-oil in the top of said tank while preheating said fuel-oil to a temperature of approximately 90°C;

withdrawing fuel-oil from said layer;

heating the thus withdrawn fuel-oil to a temperature of approximately 300°C;

injecting the heated fuel-oil into an open-ended mixing chamber of a combustion chamber while simultaneously injecting into said mixing chamber a separate jet of water so that an intimate mixture of fuel-oil and water is formed; and

supplying to the open end of said mixing chamber sufficient air to support combustion of the said mixture.

3,938,934

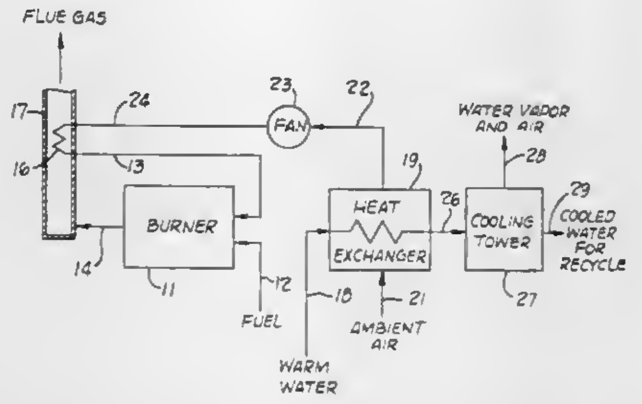
FUEL ECONOMIZER PROCESS AND APPARATUS

William A. Frondorf, Rocky River, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Nov. 8, 1974, Ser. No. 521,974

Int. Cl.^{2} F23D *11/44*

U.S. Cl. 431—11 **4 Claims**



1. A process for heating cool combustion air feed to a fuel burner at an installation having a source providing a stream of warm water to be cooled for recycle use and means for evaporative cooling of said warm water, the improvement for reducing the load on said evaporative cooling means and for utilizing heat in said warm water stream comprising:

indirectly exchanging heat from said stream of warm water to said air, and dispatching resulting warmed air to said burner, said heat exchange from said stream of warm water to said air taking place prior to evaporative cooling of the warm water.

3,938,935

CONTROL SYSTEMS FOR GASEOUS FUEL FIRED APPLIANCES

Harald Engelbert, London, England, assignor to Radiation Limited, London, England

Filed Nov. 19, 1973, Ser. No. 417,284

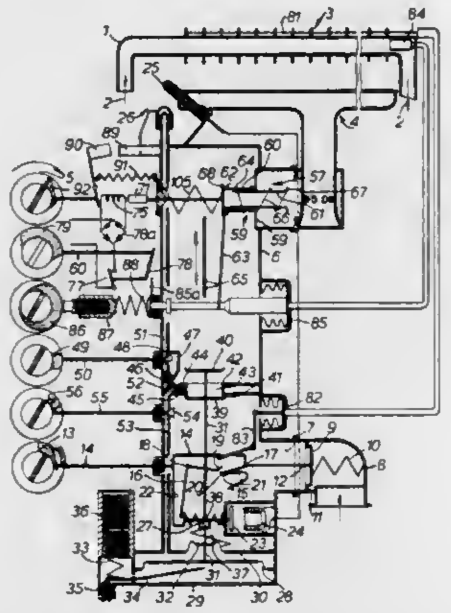
Claims priority, application United Kingdom, Nov. 17, 1972, 53239/72

Int. Cl.^{2} F23Q *9/08*

U.S. Cl. 431—47 **17 Claims**

1. A control system for a gaseous fuel fired appliance, said system comprising a gaseous fuel flow control means including a first flow control member for controlling fuel flow from a fuel inlet to a fuel outlet, a passage between said fuel inlet and outlet by-passing said first flow control member, a second flow control member for controlling fuel flow along said passage, a movable member, means for actuating said movable member, a linkage interconnecting the movable member and the first flow control member for transmitting to the latter movement of the movable member, means for varying the ratio of movement of the movable member to movement of the first

flow control member, means for moving both the first flow control member and the second flow control member as a unit between an "off" position in which fuel flow from said inlet to said outlet and along said passage is preveoted and an "on" position in which said fuel flow is permitted and from which on position further movement of the first flow control member to regulate the flow of fuel from the inlet to the outlet is effected by the movable member, and further means for adjusting the effective cross-sectional area of the passage to control the maximum rate of fuel along the passage and thus from said inlet to said outlet when said first flow control member is closed.



3,938,936

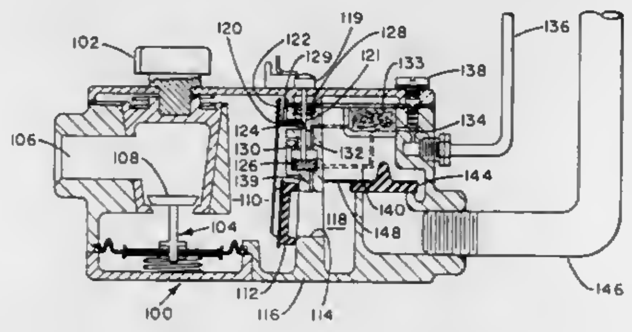
FLUID CONTROL SYSTEM

George Vizmeg, West Covina, Calif., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 5, 1974, Ser. No. 503,554

Int. Cl.^{2} F23Q *9/08*

U.S. Cl. 431—51 **2 Claims**



1. A fluid control system for use with combustion apparatus comprising:

a valve assembly having primary and secondary valves in series between an inlet and an outlet of said assembly;

a main burner in said combustion apparatus connected to said valve assembly outlet;

a pilot burner for said combustion apparatus positioned adjacent said main burner, said valve assembly having fluid flow conduits including first and second passages connected to said pilot burner;

means to sense a flame at the pilot burner and to generate a first control signal in the presence of a flame and a second control signal in the absence of a flame;

a third valve movable between first and second positions, when in said first position directing fluid through said first passage to said pilot burner; and when in said second position directing fluid through said second passage to said burner and preventing fluid from flowing through said first passage;

a first actuator for selectively operating said primary valve including means to open said valve to permit the passage of fluid from a first chamber to a second chamber of said assembly; said first fluid flow passage being in communication with said first chamber and said second fluid flow passage being in communication with said second chamber, with said pilot burner flame sensing means providing a selected one of said first and second control signals to said actuator to respectively open and close said primary valve, the closure of said primary valve in the absence of a flame at said pilot burner discontinuing flow of fluid to said second chamber and to said second flow passage;

said primary valve means including means to lock said third valve in said first position when said primary valve is in said closed position to direct fluid in said first chamber, to said pilot burner, through said first passage, the opening of said primary valve means in response to a sensed pilot burner flame releasing said locking means to place said third valve in its second position to close said first fluid flow passage and to open said second fluid flow passage to thereby communicate said pilot burner with said second chamber, the subsequent closure of said primary valve discontinuing flow of fluid into said second chamber and into said second fluid flow passage to said pilot burner; and

a second actuator for selectively operating said secondary valve including means to open said valve in response to a demand for heating in a space served by said combustion apparatus to permit passage of fluid from said second chamber of said valve assembly to said main burner, said pilot burner sensing means providing said second control signal to said second actuator to maintain said secondary valve closed in the absence of a flame at said pilot burner.

3,938,937

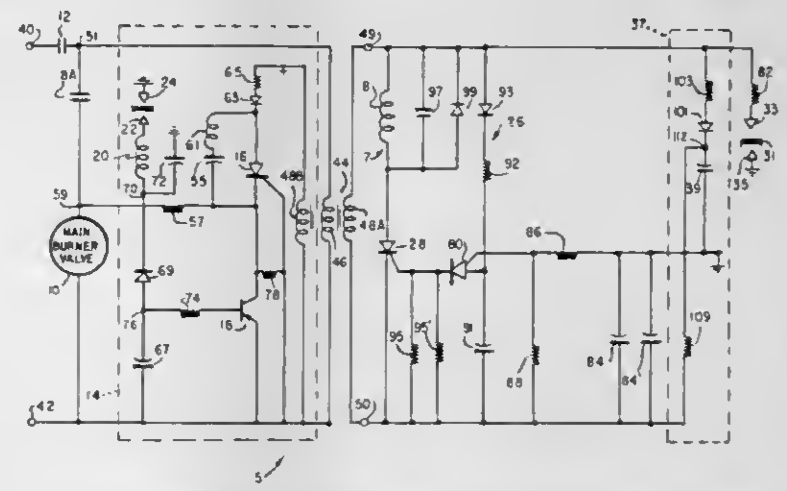
FUEL IGNITION CONTROL ARRANGEMENT

Russell B. Matthews, Goshen, Ind., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Dec. 7, 1973, Ser. No. 422,692

Int. Cl.^{2} F23H *5/08*

U.S. Cl. 431—78 **18 Claims**

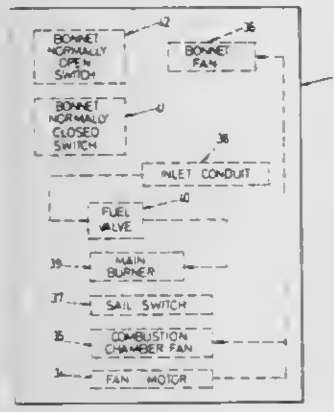


1. In an automatic fuel ignition system including valve means operable when energized to permit a gaseous fuel to be supplied to burner apparatus in response to a thermostatically-controlled means, an arrangement comprising control means including first timing means responsive to said thermostatically-controlled means for effecting energization of said valve means to permit fuel to be supplied to the burner apparatus, igniting means including spark producing means responsive to energization of said valve means to produce ignition sparks for igniting fuel supplied to the burner apparatus when said valve means is in fuel supplying condition to establish a flame, and second timing means responsive to said thermostatically-controlled means for controlling said first timing means for de-energizing said control means after a predetermined timing interval whenever a flame fails to be established within said timing interval, said control means including flame sensing means responsive to the ignition of the fuel supplied to the

burner apparatus to override said second timing means for enabling said control means to maintain said valve means energized, and further flame sensing means responsive to the ignition of the fuel supplied to the burner apparatus for de-energizing said spark producing means.

3,938,938
IGNITION SYSTEM AND COMPONENTS THEREOF

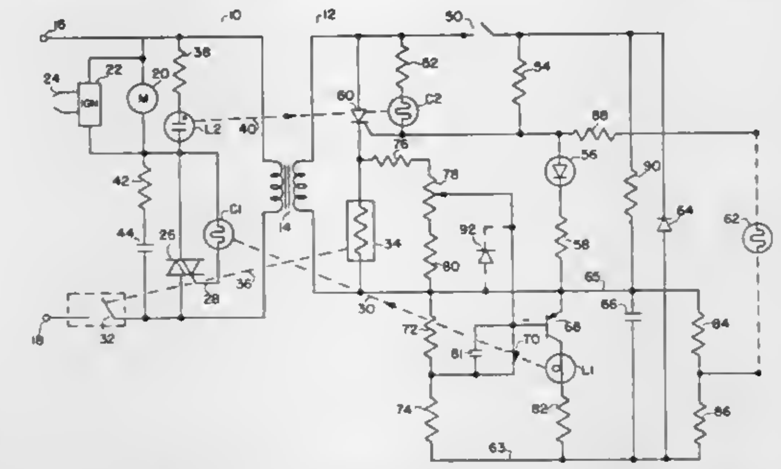
Elmer A. Carlson, Agoura, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Division of Ser. No. 447,889, March 4, 1974, Pat. No. 3,870,929. This application Nov. 25, 1974, Ser. No. 526,742
Int. Cl.^{2} F23N *5/12*
U.S. Cl. 431—78 **12 Claims**



1. A spark ignitor for a combustible fuel, said ignitor comprising: a first junction; a first switch for connection to a conductor having a positive potential to said first junction; first and second inductive means each having first and second leads; a charging resistor connected from said first junction to said first inductive means first lead; a second switch for closure after said first switch is connected in parallel with said charging resistor; a silicon-controlled rectifier (SCR) having an anode, a cathode and a gate, said anode being connected from said first inductive means second lead; a diode having an anode connected from said SCR cathode, and a cathode connected to said second inductive means first lead, said second inductive means second lead being adapted for connection to a conductor of a negative potential; a main capacitor connected from said first inductive means first lead to said diode anode; said diode cathode being connected to said SCR gate; a second junction connected from said first inductive means first lead; starting means and hold off connected from said second junction to said SCR gate to fire said SCR when said second switch is closed; and conductor means connected with said first inductive means to establish an arc when the energy stored in said main capacitor is transferred to said first inductive means, said starting and hold off means including first and second resistors, a unijunction transistor having an emitter and first and second bases, an auxiliary capacitor, and third, fourth and fifth junctions, said first resistor being connected between said second and third junctions, said second resistor being connected between said third and fourth junctions, said SCR anode being connected from said fourth junction, said transistor second base being connected from said third junction, said transistor emitter being connected from said fifth junction, said auxiliary capacitor being connected from said fifth junction to said SCR gate, said transistor first base being connected to said SCR gate, said first and second inductive means including first and second transformers, respectively, each said transformer having primary and secondary windings, said first transformer primary winding having first and second ends connected to said first and second leads of said first inductive means, respectively, said second transformer primary winding having first and second ends connected to said first and second leads of said second inductive means, respectively, each of said secondaries having first and second leads, said conductor means including first and second spaced conductive structures, said first transformer primary having said first and second leads thereof connected to said first and second spaced conductive structures, respectively, to establish an arc therebetween, a main fuel burner, a gas valve having a winding actuable to supply fuel to said burner, said structures being in proximity to said burner to ignite fuel emanating therefrom by said arc, and means connected from said second transformer primary for actuating said valve.

3,938,939
BURNER CONTROL SYSTEM WITH SECONDARY SAFETY SWITCH

Robert Bruce MacAskill, Jr., and Charles Norvin Porter, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.
Filed Feb. 12, 1975, Ser. No. 549,409
Int. Cl.^{2} F23N *5/08*
U.S. Cl. 431—79 **14 Claims**

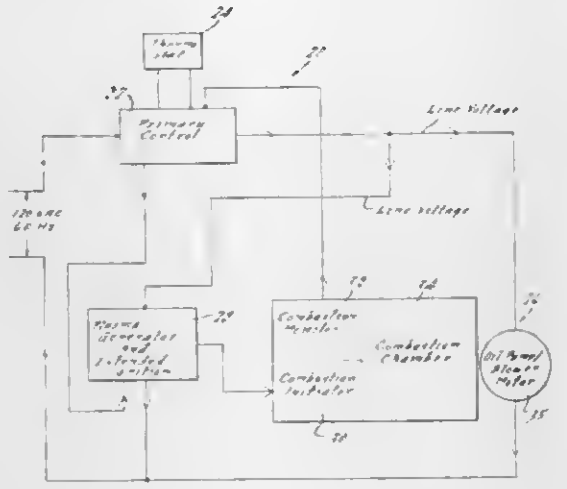


1. A burner control system having: a primary circuit including a switch for connecting the burner motor to a line voltage and a secondary circuit responsive to a thermostat and a flame detecting means, comprising:

- circuit breaker means for disconnecting the burner motor from the line voltage wherein said circuit breaker means includes: a current sensitive element in the secondary; and
- a fail safe means for activating said circuit breaker means in the event the switch for connecting the line voltage to the burner should fail.

3,938,940
PRIMARY CONTROL AND IGNITION SYSTEM FOR OIL BURNERS

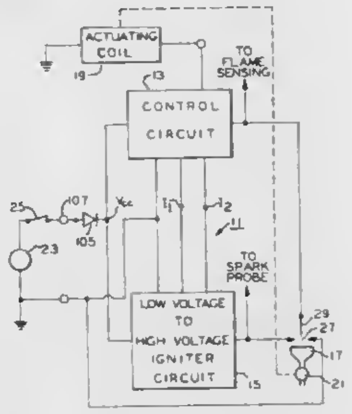
Frederick T. Bauer, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Jan. 9, 1975, Ser. No. 539,914
Int. Cl.^{2} F23N *5/08*
U.S. Cl. 431—79 **40 Claims**



1. In an electrical primary control and ignition system for oil burners, the combination including burner control means adapted to be connected to a main line source of AC current, a low voltage control circuit including burner ignition detection means, means providing a substantially lower voltage than line voltage in said control circuit, means in said low voltage control circuit including solid state means effective to actuate said burner control means, means interfacing between said low voltage control circuit and said burner control means, plasma generating means adapted to be connected to said main line source of AC current, and combustion initiation means operatively connected to said plasma generating means.

3,938,941
CONTROL SYSTEM

Jaykishan C. Patel, Clinton, Iowa, assignor to General Electric Company, Fort Wayne, Ind.
Filed Sept. 9, 1974, Ser. No. 504,252
Int. Cl.^{2} F23N *5/12*
U.S. Cl. 431—80 **28 Claims**



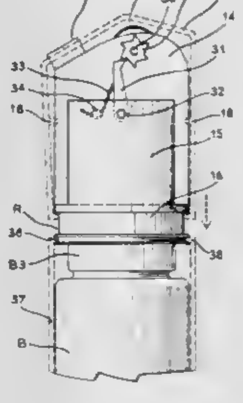
1. A low voltage control system for a fuel burner having a fuel valve and adapted to be operable from a direct current and comprising:

- means for actuating the fuel valve to enable flow of a combustible fuel from the burner;
- means for spark igniting the fuel emitted from the burner;
- means for detecting a flame disposed near the burner, the impedance between the detecting means and a point of reference potential being greater when no flame is present at the burner and lower when a flame is present at the burner;
- a semiconductor device coupled to the detecting means for conducting current only when the impedance between the detecting means and the point of reference potential is lower thereby to indicate the presence of a flame; and
- means responsive to the current conducted by the semiconductor device for disabling the spark igniting means.

3,938,942
PYROPHORIC GAS LIGHTER

Jean Francois Torassa, Nice, France, assignor to S.A.R.L. Publigam, Morteau, France
Filed Mar. 8, 1974, Ser. No. 449,376
Claims priority, application France, Mar. 9, 1973, 73.10410; Nov. 9, 1973, 73.41898
Int. Cl.^{2} F23Q *2/16*
U.S. Cl. 431—142 **5 Claims**

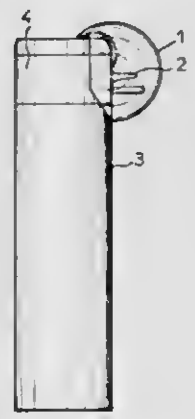
1. A pyrophoric lighter comprising a head, means for mounting said head freely on the spring-urged stem of the valve of a can of pressurized inflammable fluid, said head having a passage therethrough for said inflammable fluid from said valve stem to a point outside said head, a striking wheel for rotation against a flint carried by the lighter head to direct sparks toward said point to ignite fluid passing through said passageway to said point, whereby pressure on said head in the direction of a said container depresses the said valve stem to initiate flow of gas through said passageway, the release of said pressure permitting said head to move away from the container under the urging of the spring of said valve stem thereby to discontinue the flow of said fluid, and guide means for guiding said head on said container, said guide means com-



prising an intermediate piece comprised by a pair of legs that rest on a said container and that support between them means for rotating said wheel upon movement of said head toward said container.

3,938,943
SECURITY DEVICE FOR A PORTABLE LIGHTER

Jean Gaston Malamoud, Annecy, France, assignor to S.T. Dupont, Paris, France
Filed Feb. 28, 1974, Ser. No. 447,050
Claims priority, application France, Mar. 1, 1973, 73.07291
Int. Cl.^{2} F23Q *25/00*
U.S. Cl. 431—150 **6 Claims**



1. A security device for a lighter having an externally operated actuator lever for opening and closing a valve, and a flint wheel in spaced relation adjacent said actuator lever, said security device comprising a security member secured to the lighter and including means arranged in proximity to the actuator lever and flint wheel for preventing operation of the actuator lever and substantially closing the space between the flint wheel and the actuator lever to prevent access therebetween, said security member being separable from the lighter to free the actuator lever, said means for preventing operation of the actuator lever including a first portion abutting against said lever from below to prevent downward operation thereof and a second portion attached to said first portion and extending upwardly therefrom to be interposed in the space between said lever and flint wheel to prevent access to said space while enclosing the actuator lever from above.

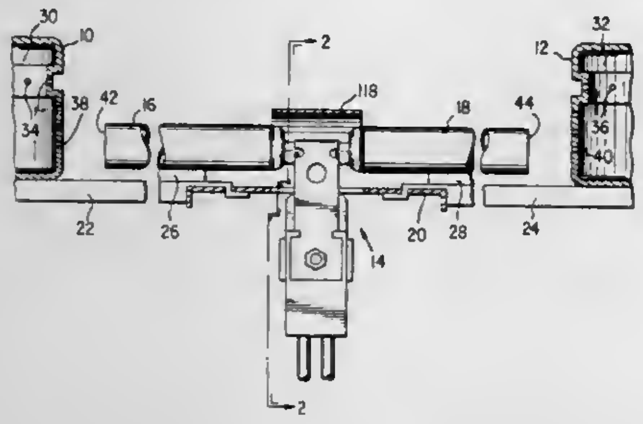
3,938,944
ELECTRIC IGNITION ASSEMBLY

Fred Riehl, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed May 14, 1974, Ser. No. 469,720

Int. Cl.² F24C *3/10*

U.S. Cl. 431—191 **14 Claims**



1. An electric ignition assembly for a plurality of burners comprising
an electric resistance igniter element;
a hood surrounding the igniter element;
said hood having a plurality of openings;
a plurality of flash conduits, each flash conduit extending between a respective burner and the hood in alignment with a respective opening in the hood for directing unignited fuel from the respective burner into the hood;
said resistance igniter element being spaced within the hood a predetermined distance away from alignment with each respective conduit and opening; and
means for diverting a portion of a respective stream passing through each opening from each respective conduit toward the igniter element.

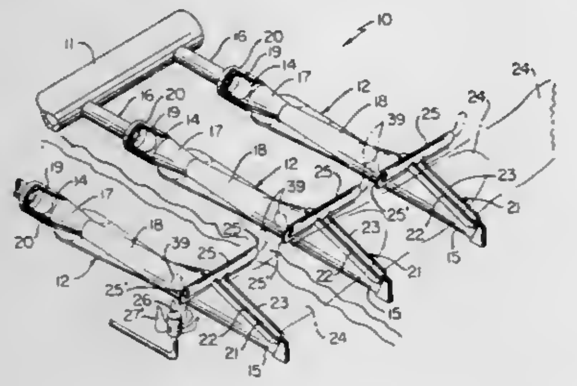
3,938,945
BURNER CONSTRUCTION AND METHOD OF MAKING THE SAME

Fred Riehl, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 16, 1974, Ser. No. 515,231

Int. Cl.² F23D *13/02*

U.S. Cl. 431—191 **12 Claims**



1. A burner construction comprising a tubular member having an inlet for receiving fuel from a supply thereof and having an outlet for issuing and burning a main flow of said received fuel to produce a main flame means at said outlet, said outlet being elongated and having opposed ends, and a deflector means carried by said tubular member adjacent one end of said outlet for directing some of said received fuel substantially transverse of said tubular member to create ignitor flame means substantially transverse to said tubular member for igniting said main flow of fuel at said outlet to create said main flame means, said deflector means being adapted to deflect said received fuel to each side of said tubular member to create said ignitor flame means at both sides of said tubular member, said deflector means comprising a substantially U-shaped member disposed in substantially an inverted position on top of and substantially transverse of said tubular member whereby said inverted U-shaped member has a pair of depending spaced apart legs joined together at the tops thereof by an arcuate section and said deflected fuel flow is adapted to issue from opposed ends of said U-shaped member, said U-shaped member having a tab that extends from the bottom of one of said legs and projects into said outlet of said tubular member to defect said main fuel flow into said U-shaped member.

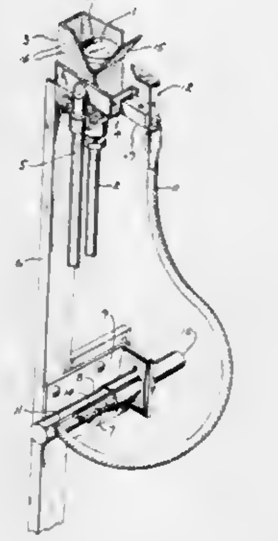
3,938,946
IGNITION ENHANCER FOR STARTING PILOT BURNERS

Edward G. Phlaum, Kankakee, Ill., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Feb. 7, 1975, Ser. No. 547,869

Int. Cl.² F23Q *3/00*

U.S. Cl. 431—264 **4 Claims**



1. An ignition enhancer for pilot burners and the like, which comprises a pilot burner, means supplying gas to the pilot burner, a gas diffuser housing having a plurality of apertures in at least one wall thereof and disposed around the pilot burner, means securing the housing to a support, one of the walls of the housing having the apertures therein being slanted outwardly at an angle of approximately forty-five degrees from the vertical to confine a pocket of gas beneath the slanted wall when gas is supplied to the burner and passes through the slanted wall, an igniter electrode capable of providing a spark secured beneath the slanted wall of the housing substantially in line with the pilot burner but located within tolerance limits in any direction of plus or minus one-eighth inch with respect to the pilot burner without adversely affecting the spark ignition of gas supplied to the pilot burner.

3,938,947
DEVICE FOR FEEDING AN EXPANDED GASEOUS FUEL TO A BURNER NOZZLE FOR INSTANCE OF A LIGHTER AND LIGHTER SUCH AS A CIGARETTE LIGHTER PROVIDED WITH SUCH A DEVICE

Claude Roland Julius Rosenthal, Paris, France, assignor to Uniflam, Societe Anonyme, Societe Universelle des Flammes, Luxemburg

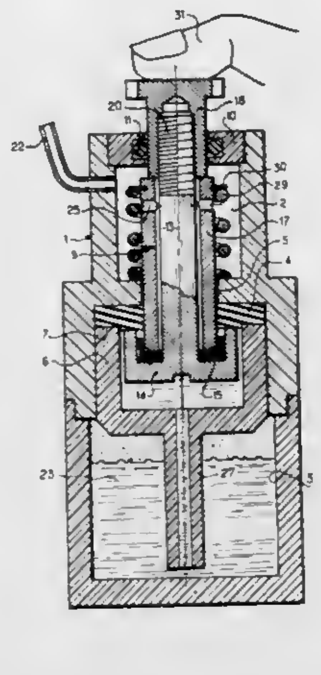
Filed Dec. 4, 1974, Ser. No. 529,578

Claims priority, application France, Dec. 10, 1973, 73.44028

Int. Cl.² F23D *13/04*

U.S. Cl. 431—344 **16 Claims**

1. A feeding device for supplying expanded fuel gas to a burner nozzle for instance of a lighter, comprising a sealed or fluid-tight casing divided by a resilient sealing element into a pair of chambers the first one of which communicates with said burner nozzle whereas the second one contains liquified gas under pressure, a valve member formed with a cylindrical bearing area portion inserted in sealing relationship through a cylindrical aperture formed in said sealing element and axially displaceable within said casing, a compressible porous member forming a pressure reducing means which is mounted in said second chamber onto said valve member and is connected through a passageway duct to said first chamber, wherein the improvement consists in that that end portion of said valve member which is located within said second chamber comprises a cup-shaped head in which is disposed said porous member which in a first axial position of said valve member within said casing is separated from said liquified gas under pressure by said head pressed in sealing engaging relationship against said resilient element and which in a second axial position of said valve member in which said head is spaced away from said sealing element, is fed with liquified gas under pressure and supplies said burner nozzle with expanded gas through the medium of said passageway duct and said first chamber.



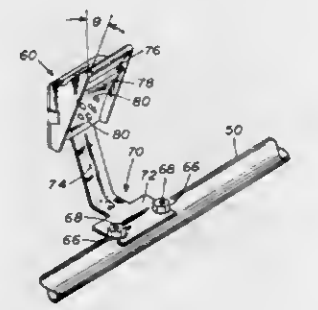
3,938,948
COOKING SYSTEM

Lewis Frank Moore, and George McNair Price, both of Shreveport, La., assignors to The Frymaster Corporation, Shreveport, La.

Division of Ser. No. 223,443, Feb. 4, 1972, Pat. No. 3,809,062. This application Mar. 1, 1974, Ser. No. 447,091

Int. Cl.² F23D *13/12*

U.S. Cl. 431—347 **2 Claims**



1. A burner comprising:
a gas supply manifold;
at least two orifices secured to the manifold for discharging gas jets in such directions that the gas jets and secondary air entrained therein interact to cause turbulent intermixing of the gas and the air;
a bracket mounted on the manifold and secured against relative movement with respect thereto by the orifices; and
target means mounted on the bracket and positioned at least partially in the path of the interacting jets to deflect the jets and thereby cause further turbulent intermixing of the gas and the air;
said target means comprising a ceramic member having a planar surface facing generally toward the jets and extending angularly with respect thereto;
said bracket being formed from metal and comprising bifurcated portions for receiving the orifices, means for receiving and retaining the ceramic target member and means for preventing wilting due to extended exposure to heat.

3,938,949
METHOD AND APPARATUS FOR BURNING PULVERULENT MATERIALS

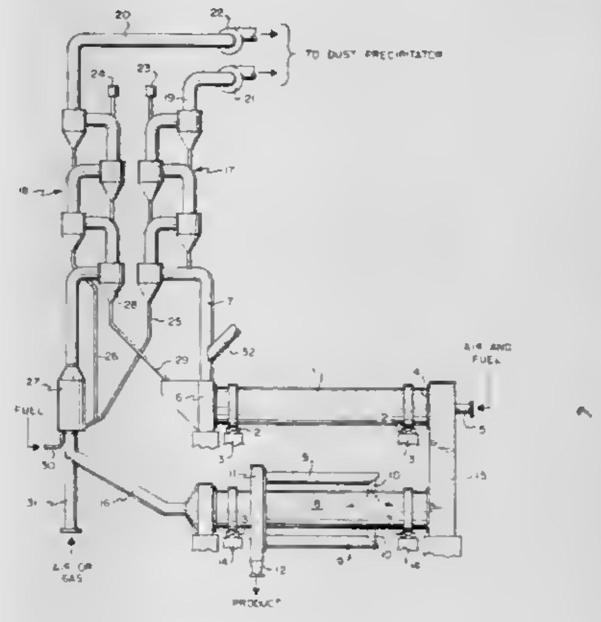
Soren Bent Christiansen, Copenhagen Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed July 24, 1974, Ser. No. 491,620

Claims priority, application United Kingdom, July 31, 1973, 36378/73

Int. Cl.² F27B *15/16*

U.S. Cl. 432—14 **25 Claims**



1. A method of burning pulverous or granular material in a plant including a suspension preheater, a rotary kiln and a separate rotary cooler unit, said cooler unit having a central cooler tube provided with a plurality of cooler tubes arranged in planetary fashion about the central cooler tube, the kiln having an inlet end portion and an outlet end portion for cooling the burnt material by means of air subsequently used for combustion and preheating purposes in the plant, which comprises directing cooling air into the planetary cooler tubes and from the planetary cooler tubes into the central cooler tube, dividing the heated cooling air into at least two streams within the central cooler tube, directing the divided heated cooling air out of both ends of the rotary cooler unit in its divided streams, directing at least one stream to the rotary kiln to be used as combustion air, directing exhaust gases from the rotary kiln to the preheater to preheat the material, and directing the other stream of heated cooling air to the preheater to preheat the material prior to being burnt in the rotary kiln.

4. A rotary kiln plant for burning pulverous or granular material comprising a suspension preheater, an inclined rotary kiln and a separate rotary cooler, the rotary cooler having a central cooler tube provided with a plurality of cooler tubes arranged in planetary fashion about the central cooler tube and being connected at one end by at least one duct to the lower end of the rotary kiln and communicating at the other end portion with the suspension preheater, means for directing cooling air to the planetary cooler tubes and from the planetary cooler tubes to the central cooler tube in such a

manner that the heated cooling air from said rotary cooler is divided into two streams, means for directing a first stream of said preheated cooling air to the rotary kiln for use as preheated combustion air, means for directing the second stream to the suspension preheater for preheating the material to be burnt in the kiln, and means associated with the rotary kiln for directing the hot product from the kiln to the rotary cooler.

3,938,950
STRIPPING APPARATUS

Ernest A. Weiler, Rochester, and Rabin Moser, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 14, 1974, Ser. No. 451,311

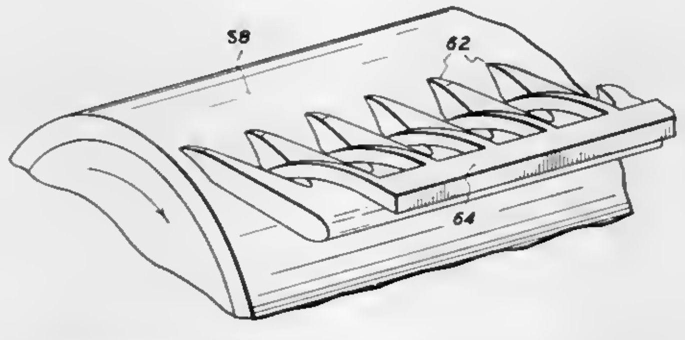
Int. Cl.² B65H ***29/56***

U.S. Cl. 432—59 **5 Claims**

1. In an apparatus for contact fusing toner particles to paper support material wherein said apparatus comprises fusing roll for applying heat and pressure to the particles and paper support material at a nip through which they are passed therethrough, an improved stripping apparatus for stripping sheets from the fuser roll surfaces comprising:

blade retaining means positioned in close proximity to a fuser roll surface from which copy sheets are to be stripped,

a flexible blade member supported by said blade retaining means at an angle of about **20°** to **30°** to the fuser roll surface longitudinally coextensive therewith,



said blade member having a hollow ground edge at the tip thereof of a radius slightly greater than the fuser roll surface,

wherein said blade retaining means and blade member are arranged with inter-locking tines.

CHEMICAL

3,938,951
METHOD OF OBTAINING TITANIUM TANNING AGENT AND ITS APPLICATION FOR TANNING HIDES, PELTS AND FUR SKINS

David Lazarevich Motov, ulitsa Fersmana, 18, kv. 19; Vladimir Ivanovich Konstantinov, ulitsa Fersmana, 18, kv. 44; Vladimir Georgievich Rumyantsev, Zapadnaya ulitsa, 3, kv. 56; Valentin Ivanovich Belokoskov, ulitsa Fersmana, 16, kv. 19; Eduard Osvaldovich Ude, ulitsa Fersmana, 22, kv. 12; Artur Grigorievich Babkin, ulitsa Fersmana, 18, kv. 34, all of Apatity, Murmanskoi oblasti; Alexandr Ivanovich Metelkin, Nagornaya ulitsa, 46/48, korpus 20, kv. 31, Moscow; Vasily Georgievich Suchkov, Leninsky prospekt, 87a, korpus 4, kv. 48, Moscow; Nina Ivanovna Koleshikova, Izmailove, Nikitinskaya ulitsa, 31, kv. 31, Moscow; Alexandr Vasilievich Motovilin, ulitsa Dzerzhinskogo, 185, kv. 55, Taganrog, Rostovskoi oblasti; Nina Trofimovna Rusakova, ulitsa Redneva, Ia, kv. 71, Vladivostok; Tatyana Vladimirovna Nikonova, bulvar Generala Karoysneva, 7, korpus 6, kv. 32, Moscow; Nina Ivanovna Polyaninova, ulitsa Dezerzhinskogo, 174"A", Tanganrog; Mikhail Grigorievich Sinenko, ulitsa Dezerzhinskogo, 183, kv. 21, Taganrog Rostovskoi oblasti; Irina Fedorovna Krylova, Komsomolsky prospekt, 19, kv. 36, Moscow, and Vladimir Mikhailovich Yakutin, ulitsa Dzerzhinskogo, 185, Taganrog, Rostovskoi oblasti, all of U.S.S.R.

Division of Ser. No. 343,120, Dec. 11, 1972, Pat. No. 3,852,431, which is a continuation of Ser. No. 20,133, March 16, 1970, abandoned. This application Mar. 20, 1973, Ser. No. 343,120

Int. Cl.² C14C ***3/04***

U.S. Cl. 8—94.25 **7 Claims**

1. A method of tanning delimed pelts using ammonium titanyl double sulfate monohydrate as tanning agent wherein said tanning agent in dry form is introduced into the tanning bath so that at the initial stage of the tanning process the agent is introduced in an amount of from 2 to 5 per cent of the pelt weight as referred to the percentage of TiO_2, while at the final stage of the tanning process, upon draining the tanning liquor and penetrating of the pelt by the tanning agent, it is introduced in an amount of from 5 to 8 per cent of the pelt weight as referred to the percentage of TiO_2 and wherein said tanning agent is prepared by dissolving titanium-containing material in sulfuric acid to form a solution containing titanium ions; adding ammonium sulfate to said solution in an amount of 180 to 300 g/l and adjusting the content of H_2SO_4 to 300 g/l while keeping the aggregate concentration of ammonium sulfate and H_2SO_4 to from 520 to 620 g/l in order to precipitate substantially all the titanium from said solution as ammonium titanyl double sulfate monohydrate at a temperature of 12° to 30°C.; removing said precipitate, washing said precipitate with a solution containing 300 to 450 g/l H_2SO_4 and 180 to 300 g/l of $(NH_4)_2SO_4$; and then washing the precipitate with a solution containing 300 to 400 g/l of ammonium sulfate.

3,938,952
METHOD AND MEANS FOR MULTI-COLORED DYEING TEXTILE YARNS

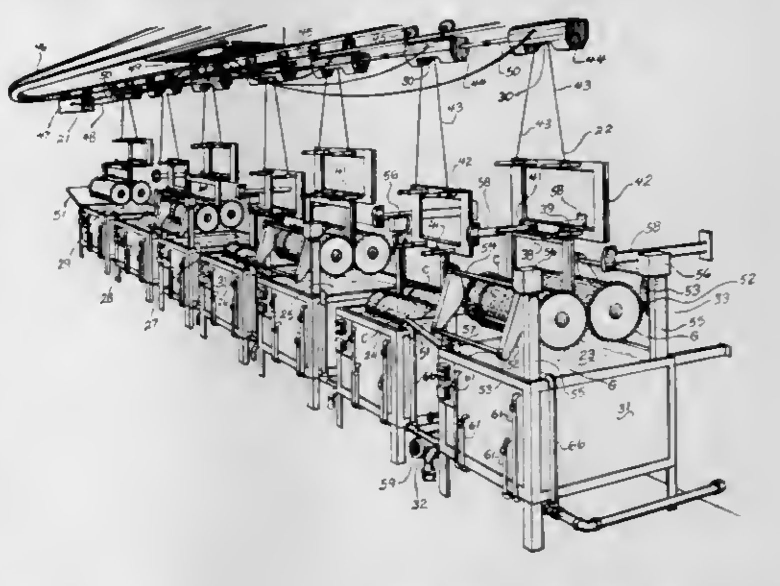
William Allen McNeill, Gastonia, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Aug. 20, 1974, Ser. No. 498,961

Int. Cl.² D06F ***17/02***

U.S. Cl. 8—149 **27 Claims**

1. A method of multi-color dyeing textile yarn comprising progressively advancing a batch of textile yarn contained in a perforate container through the steps of positioning said container to have a horizontally disposed axis along which the yarn is disposed in an axially progressing tortuously coiled maze, immersing said positioned container sequentially in each of a plurality of dye baths with the immersion in at least one of two sequential dye baths of said plurality being to a depth less than the full extent of the batch of yarn in said container so as to have dye applied to only a portion of the batch in said at least one dye bath, while disposing the container in a different dyeing disposition in each of said two dye baths with said axis maintained horizontally disposed.



3,938,953
PROCESS AND DEVICE FOR BLOOD EXAMINATION USING SUBSTANCES LABELLED WITH RADIOACTIVE NUCLIDES

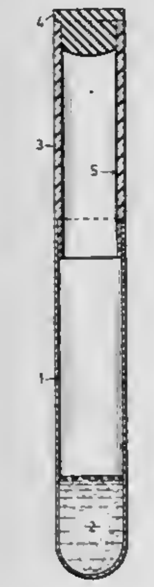
Stratos Paschalis, Frankfurt am Main; Rudolf Kern, Mainz, and Karl-Friedrich Mück, Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 28, 1974, Ser. No. 474,056

Claims priority, application Germany, May 30, 1973, 2327576

Int. Cl.² G01N ***33/16***

U.S. Cl. 23—230 B **11 Claims**



1. In a process for determining the concentration of a hormone in a measured amount of liquid which comprises adding thereto measured amounts of radioactively-labelled hormone and of a hormone-binding protein or antibody, contacting the liquid mixture with an ion exchange resin for adsorbing unbound hormone, and then determining the residual radioactivity of the liquid mixture, the improvement wherein said liquid mixture is introduced into a measuring vial, the measuring vial is connected to an adsorption vial formed from a mixture of a thermoplastic resin and an ion exchange resin adsorbing said hormone, the connected measuring and adsorption vials are sealed, the liquid mixture is brought into contact with the walls of the adsorption vial for adsorption of unbound hor-

mone, and the liquid mixture is then drained into said measuring vial for determination of residual radioactivity.

3,938,954
DETERMINATION OF CALCIUM

William S. Stavropoulos, Carmel; Bernard J. Thiegs, and Robert F. Mack, both of Indianapolis, all of Ind., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation of Ser. No. 350,278, April 11, 1973, abandoned. This application Jan. 20, 1975, Ser. No. 542,528

Int. Cl.^{2} G01N *33/16*

U.S. Cl. 23—230 B **8 Claims**

5. In a method for determination of calcium comprising the steps of mixing together predetermined quantities of a biological fluid, orthocresolphthalein complexone, as the essential color forming reagent, and an alkaline buffer comprising an amine base, incubating the mixture for a predetermined period under predetermined conditions of temperature, and measuring the intensity of the resulting color, the improvement wherein: the amine base is an aminoloweralkanol of three or four carbon atoms, having a pK of from about 9.3 to about 10, and wherein the ingredients are mixed together in proportions sufficient to provide a pH of from about 10.1 to about 10.7 in the ultimate mixture.

3,938,955
NONDESTRUCTIVE METHOD FOR QUICKLY DETERMINING AMOUNT OF LUBRICANT ON TEXTILE

Allison Maggiolo, Greensboro, N.C., assignor to Glen Raven Mills and Lee H. Peery, both of Glen Raven, N.C., part interest to each

Filed Jan. 20, 1975, Ser. No. 542,688

Int. Cl.^{2} G01N *33/36, 23/10, 33/28*

U.S. Cl. 23—230.3 **16 Claims**

1. A nondestructive testing method for quickly measuring the amount of a coating applied to a strand, said method employing a radiation analysis instrument having a predetermined field and being adapted for quantitatively measuring a tracer, said method comprising applying to a running length strand a coating composition containing a tracer, winding the coated strand into a package of infinite mass relative to the field of the analysis instrument, and subjecting the package to analysis by the instrument to obtain a reading of the amount of tracer within the field of the instrument, which reading provides a relative indication of the amount of coating applied to the individual strand.

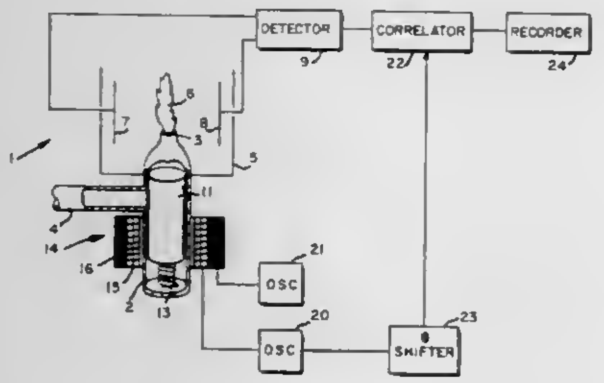
3,938,956
MODULATED HYDROGEN ION FLAME DETECTOR

John Dimeff, San Jose, Calif., assignor to The United States of America as represented by the National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed June 28, 1974, Ser. No. 484,209

Int. Cl.^{2} G01N *27/62*

U.S. Cl. 23—254 EF **4 Claims**



1. In a hydrogen flame detector having a means forming a chamber for receiving a mixture of a known gas and an unknown gas; a means forming a nozzle at one end of said chamber for providing a flame of said mixture of gases; and an electrode means for collecting ions of said unknown gas generated in said flame, the improvement comprising:

a means for modulating the density of said mixture of gases in said chamber at a predetermined frequency prior to their introduction into said flame, said modulation of said mixture serving to modulate said ions of said unknown gas at said predetermind frequency;

a means coupled to said electrode means for providing an output signal in response to said modulated ions having a component fluctuating at said predetermined frequency;

a means responsive to said modulating means for generating a reference signal having a component fluctuating at said predetermined frequency;

a means responsive to said output and said reference signals for providing a resultant signal corresponding to the cross-correlation between said first and said second output signal; and

a means coupled to said resultant signal generating means for utilizing said resultant signal.

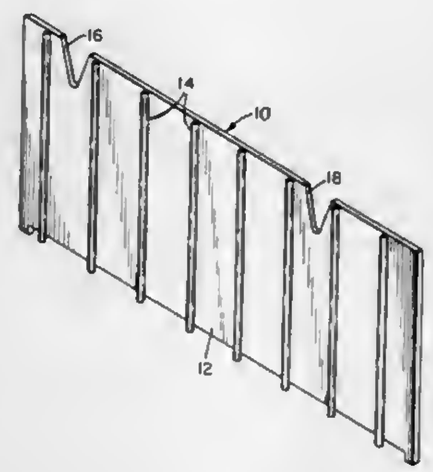
3,938,957
APPLICATOR CARD

Terry O. Lanier, Northboro, and Eugene F. Martha, North Attleboro, both of Mass., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 24, 1975, Ser. No. 561,266

Int. Cl.^{2} G01N *1/14, 31/20*

U.S. Cl. 23—259 **5 Claims**



1. A disposable applicator card comprising

an absorbent backing,

alignment means cooperatively associated with said backing, and

at least one compressible tube disposed on and affixed to one surface of said absorbent backing, each said tube extending beyond one edge of said backing.

3,938,958
FLUID DISPENSING DEVICE

Terry O. Lanier, Northboro, and Eugene F. Martha, North Attleboro, both of Mass., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 24, 1975, Ser. No. 561,267

Int. Cl.^{2} G01N *1/14, 31/20*

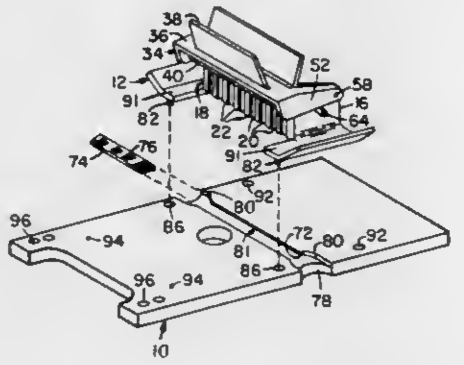
U.S. Cl. 23—259 **16 Claims**

1. A fluid dispensing device comprising

a base plate,

support means operatively associated with said base plate suitable for operatively accommodating an applicator card having at least one compressible tube adhered to a backing, and

means operatively associated with said support means suitable for filling each said compressible tube with a quantity of test fluid and dispensing a predetermined quantity of said test fluid from each said compressible tube to a test vehicle.



3,938,959
CATALYST-TYPE EXHAUST GAS PURIFYING DEVICE

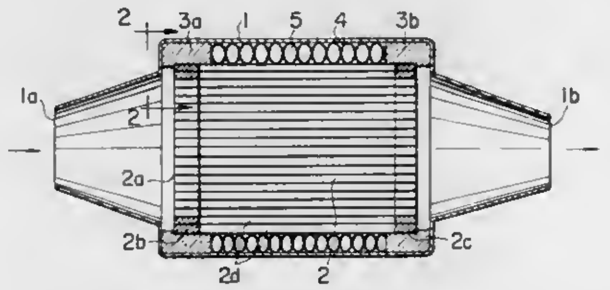
Kazuma Matsui, Toyota; Shigeo Hoshino, Kariya, and Sigeru Kamiya, Toyohaski, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Oct. 12, 1973, Ser. No. 406,107

Claims priority, application Japan, Oct. 20, 1972, 47-105651

Int. Cl.^{2} B01J *8/00;* **F01N** *3/15*

U.S. Cl. 23—288 FC **3 Claims**



1. A catalyst-type exhaust gas purifying device comprising:

a housing having an exhaust gas inlet and an exhaust gas outlet at its opposite ends,

a monolithic catalyzing element disposed within said housing so as to define between the ends of the element an annular space between an outer peripheral surface of said catalyzing element and an inner peripheral surface of said housing, said catalyzing element including therein a plurality of elongated spaces extending parallel to a flow axis of said housing, and

a metal fabric in said annular space extending between said ends and short thereof, and supporting said catalyzing element,

both ends of those of said elongated spaces which are located at the outer circumferential part, including at least the outermost circumferential part, of said catalyzing element being filled with exhaust gas blocking material consisting of ceramic material, said blocking material extending into said elongated spaces at the outer circumferential part and sealing the ends thereof, said blocking material at each end of each said blocked elongated space being longitudinally spaced from the blocking material at the other end thereof, whereby said sealed elongated spaces at said outer circumferential part provide at least one annular layer of heat insulating spaces and the remainder part of said elongated spaces provide exhaust gas passages.

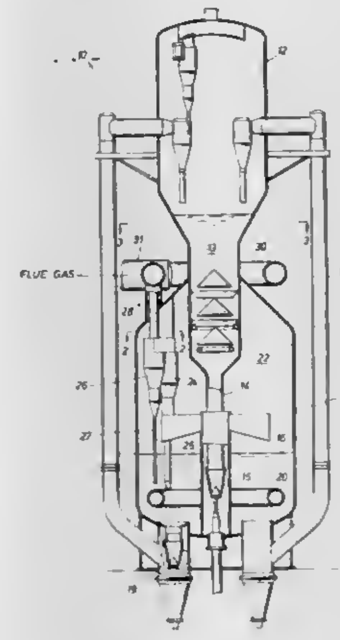
3,938,960
EXTERNAL FLUID CATALYTIC CRACKING UNIT REGENERATOR PLENUM MANIFOLD

Philip E. Glasgow, and Nathan Gilbert, both of Houston, Tex., assignors to Pullman Incorporated, Chicago, Ill.

Filed Jan. 16, 1975, Ser. No. 541,680

Int. Cl.^{2} B01J *8/18;* **B01D** *45/12*

U.S. Cl. 23—288 B **8 Claims**



1. For use in a regeneration chamber of upright circular construction in which a finely divided particulate catalyst is at least partly coated with a carbon material residue from its prior use as a catalyst is accumulated and the catalyst is found in a portion of the chamber in a dilute phase mixed with flue gases, the improvement comprising

at least two cyclone separator means in the regeneration chamber, each having an inlet means communicated with the regeneration chamber for receiving a mixture of flue gas and particulate catalyst thereinto and wherein said cyclone separator means separates the flue gas and catalyst which are discharged through separate outlet means;

an externally located flue gas plenum on the exterior of the regeneration chamber for said cyclone separator means for collecting flue gases therefrom and communicating the flue gas to a point of disposal; and

a generally vertically directed standpipe connected to each of said cyclone separator means and also connected to said plenum, said stand pipe passing through a wall of the regenerator chamber and which includes:

an internal metal pipe;

an insulation coating thereon; and,

hanger means connected to said pipe and extending therefrom and adopted to be connected at an exterior point to a fixed structural support.

3,938,961
SAMPLE TRAY

Terry O. Lanier, Northboro, Mass., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 24, 1975, Ser. No. 561,265

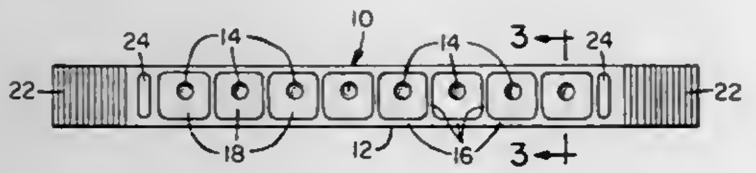
Int. Cl.^{2} G01N *1/14, 31/20*

U.S. Cl. 23—292 **5 Claims**

1. A sample tray comprising

a base plate,

at least one elevated test specimen reservoir affixed to one surface of said base plate intermediate the ends thereof, a catch basin surrounding each elevated test specimen reservoir, and

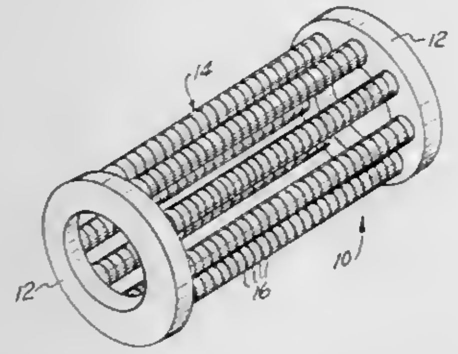


a wall surrounding each said catch basin so that each said catch basin is separated from each other catch basin.

3,938,962
LAMINATED COMPOSITE WEAR MATERIALS

Weston H. Feilbach, Jr., Bethlehem, Pa., and Charles S. Baum, St. Clair Shores, Mich., assignors to Weston H. Feilbach, Bethlehem, Pa.

Filed Apr. 4, 1974, Ser. No. 457,800
Int. Cl.^{2} B32B *15/00*
U.S. Cl. 29—191 **9 Claims**

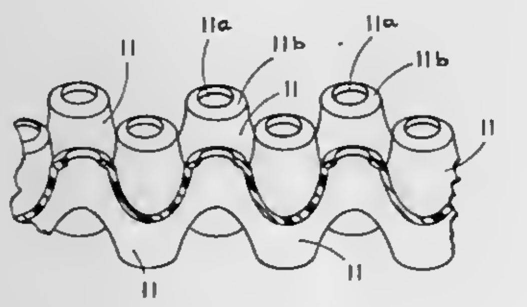


1. A composite body consisting of a plurality of metallic sections stacked and retained relative to one another so that a portion of the surface of each section abuts a portion of the surface of an adjourning section and another portion of the surface of each section forms a portion of the surface of said composite body, characterized by the process of treating, prior to assembly of said sections into said body, at least certain of the sections at said portions of their surfaces which abut an adjourning section so as to harden the surface of said sections.

3,938,963
SANDWICH CORE PANEL HAVING CURED FACE SHEETS AND A CORE FORMED WITH PROJECTING MODES

Jesse R. Hale, 25913 Stanford St., Hemet, Calif. 92343

Filed Oct. 1, 1973, Ser. No. 402,188
Int. Cl.^{2} B32B *3/12, 3/28*
U.S. Cl. 29—191.4 **7 Claims**

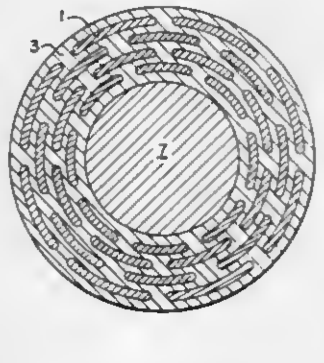


1. A sandwich panel comprising:
first and second curved face sheets and
a core formed from projecting nodes sandwiched between said face sheets, said core nodes having end face portions, the end face portions of the nodes being excised at the central part thereof, the remaining portions of said node end face portions forming flanges which are bent away from the center plane of the core and the longitudinal axes of their respective nodes, said flanges being joined to the panel face sheets and conforming to the contour thereof.

3,938,964
BERYLLIUM REINFORCED COMPOSITE SOLID AND HOLLOW SHAFTING

Richard Schmidt, Mclean, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 256,491, May 24, 1972. This application Mar. 18, 1974, Ser. No. 452,156
Int. Cl.^{2} B32B *15/02*
U.S. Cl. 29—191.4 **6 Claims**



1. A beryllium reinforced metal shaft comprising:
a plurality of arcuate, beryllium reinforcing ribbons imbedded in a metal matrix;
said metal matrix being selected from the group consisting of aluminum and titanium;
said arcuate, beryllium reinforcing ribbons arranged in said matrix to coincide with concentric circles whose centers coincide with the cent of the shaft,
substantially each arcuate ribbon in any one circle overlapping in arcuate width an arcuate ribbon in another circle with matrix material therebetween.

3,938,965
PROCESS FOR PRODUCING SOLID INDUSTRIAL FUEL

Owen Pyle, Anchorage, Ky., assignor to The Kingsford Company, Louisville, Ky.

Continuation-in-part of Ser. No. 275,366, July 26, 1972, and a continuation-in-part of Ser. No. 279,767, Aug. 11, 1972, which is a continuation-in-part of Ser. No. 271,795, July 14, 1972. This application Apr. 5, 1973, Ser. No. 347,993
Int. Cl.^{2} C10L *9/08*
U.S. Cl. 44—1 C **7 Claims**

1. A process for producing a substantially pollution-free fuel from moist woody vegetable materials comprising the steps of:
continuously supplying said materials to dryer; drying said materials until the moisture content thereof is less than approximately 15 percent; admitting said dried materials to a carbonizer; pyrolyzing said materials in said carbonizer to form crude charcoal and a fuel gas therefrom; collecting at least a major portion of the fuel gas and charcoal formed; cooling and conditioning said charcoal against spontaneous combustion; crushing said charcoal until it will pass through an approximately 16 mesh U.S. Standard sieve but no finer than will just pass through about an 80 mesh sieve; beneficating said crude charcoal in a classifier and removing a dense fraction having a bulk density of at least about 50 lbs. per cubic foot therefrom to form a beneficated fuel which will produce, when burned, low relatively nonabrasive ash.

5. The process of claim 1 further comprising the step of pulverizing said beneficated charcoal in a mill to produce a powdered fuel.

3,938,966
PROCESS FOR IMPROVING COAL

James K. Kindig, Arvada, and Ronald L Turner, Lakewood, both of Colo., assignors to Hazen Research, Inc., Golden, Colo.

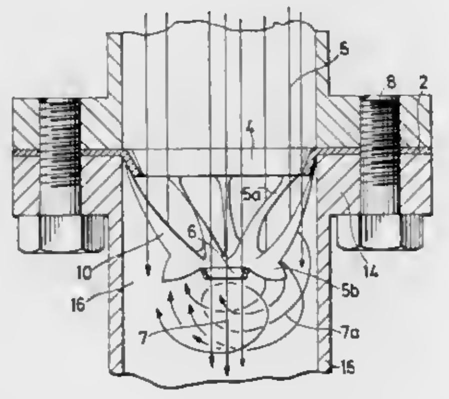
Filed Mar. 25, 1974, Ser. No. 454,253
Int. Cl.^{2} C10L *9/02*
U.S. Cl. 44—1 R **9 Claims**

1. A process for beneficiating coal, including reducing sulfur and ash, increasing calorific value, and improving other properties, which comprises contacting a coal which contains impurities, such as pyrite or marcasite or other ash-forming minerals, which are substantially liberated from the coal particles, with an iron carbonyl under reaction conditions which substantially preclude the general thermal dissociation of the carbonyl into iron and carbon monoxide, in order to increase the apparent magnetic susceptibility of the impurities so that a magnetic separation between the coal and impurities may be effected.

3,938,967
DEVICE FOR POST-ATOMIZATION FOR COMBUSTION ENGINES USING A COMPRESSED MIXTURE AND AN EXTERNAL IGNITION

Anton Reissmüller, Fallenschmidstrasse 28, D-7320 Goppingen-Jebenhausen, Germany

Filed Mar. 31, 1975, Ser. No. 563,635
Claims priority, application France, Mar. 29, 1974, 74.11406
Int. Cl.^{2} B01F *3/02*
U.S. Cl. 48—180 R **3 Claims**

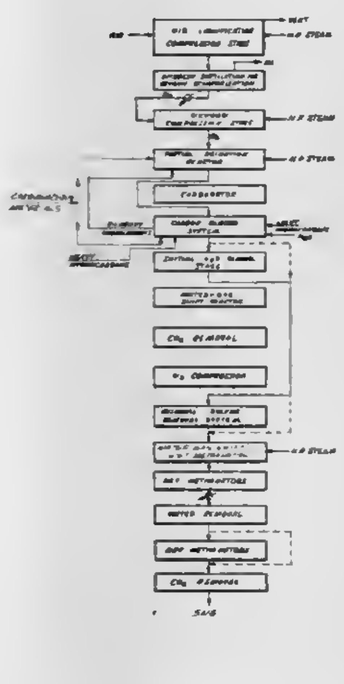


1. A device for post-atomization of fuel/air mixture delivered by a carburetor through an intake manifold to the cylinder of an internal combustion engine, said device including a flange mounted between the carburetor and the intake manifold, said flange forming a conical ring contiguous with the inner surface of the manifold throat, a plurality of fins attached at their outer ends to said conical ring and extending radially inward toward the center of the manifold throat, and in the downstream direction with respect to the flow of the fuel/air mixture, a circular nozzle at the center of the manifold throat and below said conical ring, said nozzle having a central opening, said fins at their inner ends being enlarged and curved to form blades that join said nozzle tangentially with respect to said opening, and said blades for the most part extending radially outward toward the wall of the intake manifold.

3,938,968
PROCESS FOR THE PRODUCTION OF SUBSTITUTE NATURAL GAS

Gerald A. White, Los Angeles, and Theodore R. Roszkowski, Malibu, both of Calif., assignors to The Ralph M. Parsons Company, Pasadena, Calif.

Continuation-in-part of Ser. No. 287,226, Sept. 8, 1972, abandoned. This application Sept. 6, 1974, Ser. No. 503,684
Int. Cl.^{2} C01B *2/14*
U.S. Cl. 48—215 **13 Claims**



1. A process for the production of substitute natural gas which comprises:
a. providing from the process a supply of high pressure steam;
b. using a portion of the high pressure steam to liquefy air and generate, from the liquefied air, gaseous oxygen;
c. introducing the gaseous oxygen, steam and a carbonaceous material to a partial oxidation reaction zone to form an initial gas stream containing predominately hydrogen and the oxides of carbon and minor amounts of methane;
d. passing at least a portion of the initial gas stream and steam through at least one wet methanation reaction zone where the gas stream and steam contact a low metal content wet methanation catalyst which comprises from about 5 to about 35% by weight of at least one metal from the third period of Group VIII of the Periodic Table on a temperature stabilized, ceramic alumina support, said support being heat treated at a temperature above the highest temperature encountered in said methanation zone prior to the addition of said metal thereto, at a temperature from about 900° to about 1600°F where the feed temperature to said wet methanation zone is at least about 900°F and the exit temperature from said methanation zone is up to about 1600°F to form methane followed by cooling of the gas stream exiting the wet methanation zone to produce high pressure process steam.

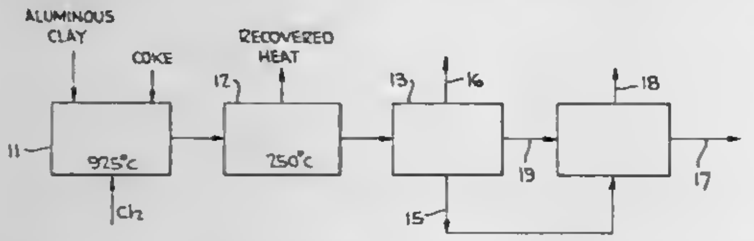
3,938,969
PURIFICATION OF ALUMINUM CHLORIDE

Roger Frank Sebenik, 4725 Chastant St., Metairie, La. 70002, and Alfred Lippman, 4613 Purdue Drive, Metairie, La. 70003, assignors to Toth Aluminum Corporation, New Orleans, La.

Filed Dec. 7, 1973, Ser. No. 422,846
Int. Cl.^{2} B01D *47/00;* C01F *7/48*
U.S. Cl. 55—71 **13 Claims**

1. A method for recovering aluminum chloride from a mixed chloride gas containing aluminum chloride and at least

one chloride selected from the group consisting essentially of $FeCl_3$, $TiCl_4$ and $SiCl_4$ which comprises contacting said mixed chloride gas at atmospheric pressure with a liquid solvent in which aluminum chloride is soluble to dissolve the aluminum chloride, and recovering the aluminum chloride from the solvent by distilling the aluminum chloride from the solvent at a pressure sufficient to condense the aluminum chloride as a liquid.



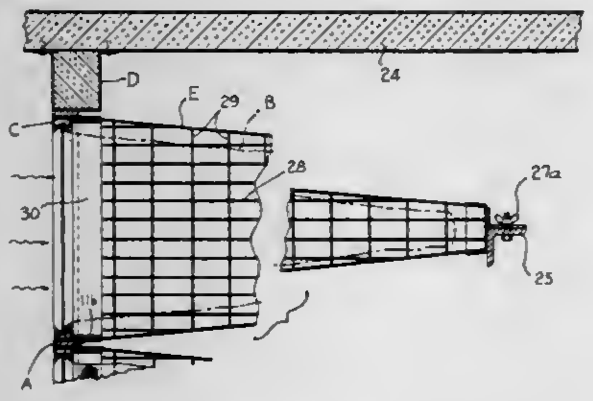
3,938,970
HIGH VELOCITY FILTER

William E. Carter, Sr., Piedmont, S.C., assignor to Thermo-Kinetics, Inc., Greenville, S.C.

Division of Ser. No. 258,484, June 1, 1972, Pat. No. 3,844,749. This application Aug. 23, 1974, Ser. No. 500,119

Int. Cl.^{2} B01D *46/02*

U.S. Cl. 55—276 **3 Claims**



1. In a high velocity air handling assembly as for conditioning air in industrial plants, a filter and sound attenuator section comprising: a plurality of elongated longitudinally disposed sock filters having an open base on one end tapering inwardly therefrom toward and being closed on the other end; a plurality of elongated open ended boxes of substantially uniform cross-section constructed of sound absorbing material, each of said boxes containing one of said sock filters therein, said boxes extending substantially along the entire length of said sock filters; and support means carrying said boxes in longitudinal alignment with said filters in said air handling assembly, means holding the open end of said filters adjacent an open end of said boxes whereby said boxes straighten the air flow path through said air handling assembly and attenuate the sound passing therethrough.

3,938,971
BAG FILTER CLEANING DEVICE

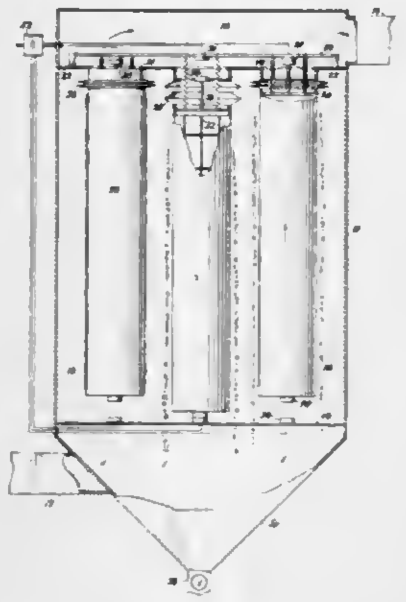
Kenneth R. McClure, Andover, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Oct. 7, 1974, Ser. No. 512,639

Int. Cl.^{2} B01D *46/04*

U.S. Cl. 55—300 **1 Claim**

1. Apparatus for filtering solids from gas comprising a housing having an inlet compartment for dust bearing gas and an outlet compartment for clean gas, an apertured tube sheet intermediate said inlet and outlet compartments, an annular expansion joint attached to the tube sheet around each aperture thereof, a cylindrical support cage depending from each expansion joint, a fabric filter bag surrounding each support cage and attached to each annular expansion joint to intercept the dust particles in the dust bearing gas passing therethrough, cleaning means for said filter bags adapted to shake the filter bags to remove collected dust particles therefrom, said cleaning means comprising an electromagnet affixed to said housing at opposite ends of each filter bag, magnetic stop means aligned with each electromagnet and integral with the cage support, spring means attached at opposite ends to the movable support cage and to the fixed housing structure, means for alternately energizing each electromagnet sufficient to axially flex the adjacent expansion joint to reciprocate the filter bag whereby said magnetic stop means abruptly terminates axial movement of each filter bag so as to agitate the dust particles whereby the dust particles may be dislodged from the filter and permitted to fall to the bottom of the filter house when the stop means strikes the electromagnet.



3,938,972
IMPINGEMENT SEPARATOR FOR GAS-LIQUID MIXTURES

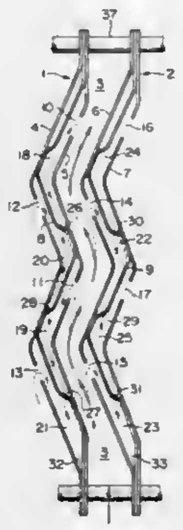
Shojiro Sugimura, Tamano, Japan, assignor to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

Filed Sept. 5, 1973, Ser. No. 394,471

Claims priority, application Japan, Sept. 8, 1972, 47-90125

Int. Cl.^{2} B01D *45/08*

U.S. Cl. 55—440 **2 Claims**



1. A vertical flow impingement separator for gas-liquid mixtures comprising at least two separating elements spaced and held upright substantially in parallel to each other so as to provide therebetween a passage or passages for gas-liquid mixture, each of said separating elements having a first and a second outer plate bent in zigzag fashion to extend in a vertical direction and spaced apart in a substantially parallel fashion except at upper and lower ends thereof, the second outer plate of one of said separating elements and the first outer plate of the other of said separating elements being so arranged to define therebetween a zigzag passage for the gas-liquid mixture, said first and second outer plates being provided with horizontal slits, each of which is disposed at a suitable position between an impingement position of the mixture upon the outer plates and a position at which the gas-liquid mixture is deflected at the next bent portion of the outer plate, so as to collect liquid which rushes out from the gas-liquid mixture due to inertial force directed out of the deflected stream of said mixture when said mixture flows along the separating elements in zigzag fashion, and a bent inner plate intervening between said first and second outer plates to form an independent series of liquid passages substantially separated from the passages for the gas-liquid mixture by the bent inner plate and either one of said first and second outer plates fixed to said bent inner plate, each of said liquid passages being communicated with one of said slits and said bent inner plate being provided a plurality of exits, each of which is located at a position corresponding to the bottom portion of each of the liquid passages to allow separated liquid to flow downward successively through said series of liquid passages whereby liquid separated from the gas-liquid mixture flows through said zigzag series of liquid passages without substantially being taken up or carried again by the gas-liquid mixture flowing through said zigzag passage, and is drained out at the lower end of the lowermost liquid passage.

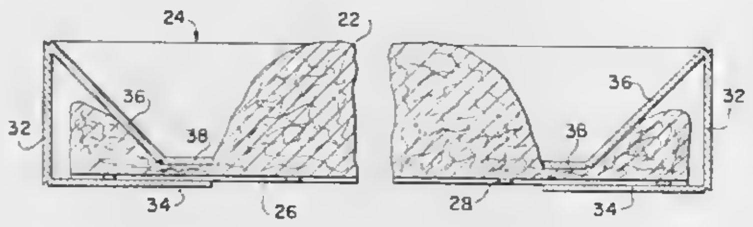
3,938,973
AIR FILTER

Eli J. Kershaw, 6284 25th St., South, St. Petersburg, Fla. 33707

Filed Apr. 19, 1974, Ser. No. 462,575

Int. Cl.^{2} B01D *46/10*

U.S. Cl. 55—501 **13 Claims**



1. An air filter, comprising:

a filter element of fibrous material; and

a frame for supporting said filter element at its marginal edges;

said frame comprising a strip of stiff paper scored along two spaced longitudinal lines and folded away from said longitudinal lines to form a trough for receiving said filter element, said strip also being folded transversely to form a closed configuration surrounding said filter element to receive said marginal edges of said filter element in said trough;

said frame including an outer wall, a flat rear wall extending inward from said outer wall, and a front wall extending inward from said outer wall toward said filter element and sloping toward said rear wall;

said front wall terminating in a flange disposed in a parallel relationship with said rear wall, said flange being secured to said rear wall with said filter element compressed therebetween to hold said frame and filter element together.

3,938,974
METHOD OF PRODUCING OPTICAL WAVE GUIDE FIBERS

Pedro B. Macedo, 6100 Highboro Drive, Bethesda, Md. 20034, and Theodore A. Litovitz, 904 Devere Drive, Silver Spring, Md. 20903

Continuation-in-part of Ser. No. 355,164, April 27, 1973, abandoned. This application Apr. 22, 1974, Ser. No. 462,481

Int. Cl.^{2} C03C *17/02, 15/00;* **G02B** *5/14*

U.S. Cl. 65—3 R **29 Claims**

1. In a method for the production of an optical wave guide comprising a cladding layer and a glass core with an index of refraction larger than the index of refraction of said cladding layer, the improvement comprising forming said core by heat treating a base glass which is separable into at least a soluble phase and an insoluble phase to cause phase separation, leaching out the soluble phase and impurities to obtain an porous glass, thermally consolidating the glass to seal said pores, drawing the resultant glass into a fiber, and applying a cladding layer to produce said wave guide.

3,938,975
TREATMENT OF BLAST FURNACE SLAG

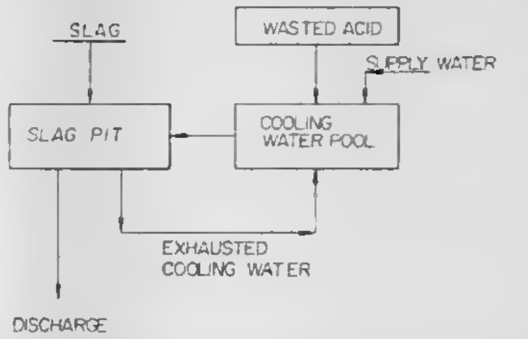
Takeshi Nagata, Kitakyushu, Japan, assignor to Nippon Steel Corporation and Hamada Heavy Industries Co., Ltd., both of, Japan

Filed Aug. 16, 1974, Ser. No. 498,023

Claims priority, application Japan, Aug. 27, 1973, 48-96864

Int. Cl.^{2} C03B *1/00*

U.S. Cl. 65—19 **8 Claims**



1. A method for treating blast furnace slag containing sulfides comprising cooling and solidifying the slag discharged from the blast furnace by spraying an acidic aqueous solution containing not less than 0.003% ferrous sulfate or ferrous chloride onto the slag, said aqueous solution having a pH not less than 3.

3,938,976
PROCESSES AND APPARATUS FOR FEEDING MATERIAL TO A GLASS MELTING TANK

Norman Isaac Webb Walker, Liverpool, England, assignor to Pilkington Brothers Limited, St. Helens, England

Filed Dec. 27, 1973, Ser. No. 429,019

Claims priority, application United Kingdom, Dec. 28, 1972, 59836/72

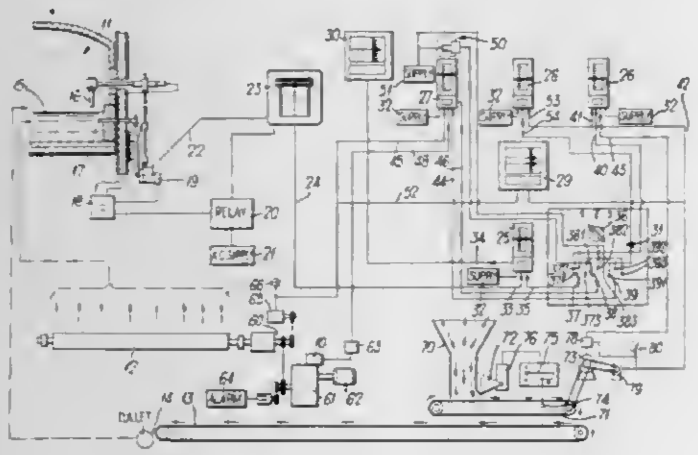
Int. Cl.^{2} C03B *3/00*

U.S. Cl. 65—29 **12 Claims**

1. Apparatus for feeding material to a glass melting tank comprising, a first feed means for feeding solid batch material to the tank at an adjustable and controlled rate, a second feed means for feeding cullet to the tank at an adjustable and controlled rate, a first control means for controlling the rate of feed of the solid batch material in said first feed means, a second control means for controlling the rate of feed of cullet in said second feed means, a glass level detector for detecting the level of glass within the tank and generating a first control signal indicative of said level, one of said control means being arranged to receive said first control signal and thereby control the feed rate of the associated feed means in dependence on the level detected, and an adjustable ratio control unit

arranged to receive a signal dependent on the rate of feed of said associated feed means and provide a second control signal to the other of said control means such that the first and second control signals correspond and maintain a predetermined ratio of feed rates for the two feed systems.

10. A method of controlling feeding rates of batch material and cullet which are fed by two separate feed systems to a glass melting tank, comprising the steps of establishing a fixed reference level of glass within the tank, detecting the level of glass within the tank, generating a first control signal representing the difference between the actual level of glass within the tank and the fixed level, controlling the feed rate in an adjustable manner of one feed system in dependence on the first control signal, establishing a ratio of feeds between the two separate feed systems, generating a second control signal corresponding to a feed rate for the other feed system which is a function of the established ratio of the feed rate of the said one system, and supplying said second control signal to a control device for controlling the rate of feed in an adjustable manner said other feed system.



3,938,977

PROCESS FOR PRODUCING PHOTOCHROMICITY IN UNTREATED GLASSES OF SUITABLE COMPOSITION BY A TEMPERATURE TREATMENT IN A LIQUID

Georg Gliemeroth, Mainz-Mombach, Germany, assignor to Jenaer Glaswerk Schott & Gen., Mainz, Germany

Filed June 19, 1973, Ser. No. 371,546

Claims priority, application Germany, June 22, 1972, 2230506

Int. Cl.² C03B ***25/00;*** **C03C** ***21/00***

U.S. Cl. 65—30 R **8 Claims**

1. In a process for thermally activating a photochromically inactive untreated glass composition containing sufficient silver halide for obtaining photochromically active glass, said silver halide being substantially uniformly distributed therein, the improvement which comprises immersing said glass for a sufficient time in a substantially silver-free molten salt bath having a sufficiently high annealing temperature to photochromically activate said glass, wherein the density of the molten salt is substantially the same as or somewhat lower than the density of the glass so that deformation of said glass during the annealing is essentially prevented, said process of photochromic activation in said molten salt bath being conducted in the substantial absence of ion exchange for the purpose of chemically strengthening or tinting the glass.

3,938,978

METHOD OF MAKING CRYSTALLIZED GLASS

Merritt J. Hummel, Lower Burrell, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 343,981, March 22, 1973, Pat. No. 3,856,497, which is a continuation-in-part of Ser. No. 239,335, March 29, 1972, abandoned. This application Aug. 26, 1974, Ser. No. 500,415. The portion of the term of this patent subsequent to Dec. 24, 1991, has been disclaimed.

Int. Cl.² C03B ***29/00***

U.S. Cl. 65—33 **6 Claims**

1. A method of making a crystallized glass article substantially free of microcracking, comprising:

a. preparing a glass batch consisting essentially of
  i. a silica,
  ii. an alumina,
  iii. a lithium family glass batch ingredient consisting of a lithium salt, and
  iv. a zinc salt in an amount sufficient to provide a crystallized glass article from said glass batch having a ZnO content, percent by weight on an oxide basis of 1 to 4.0, which crystallized glass article obtained is characterized by the presence of microcracks in the surface thereof
b. adding to said glass batch an alkali metal salt wherein the alkali metal is a member of the group consisting of potassium, rubidium and cesium, said alkali metal salt being present in an amount sufficient to provide a glass article upon cooling a melt of said glass batch having a content of an oxide of the alkali metal of said salt, percent by weight on an oxide basis of 0.15 to 2.50,
c. melting the glass batch containing the ingredients set forth in (a) and (b) to form a glass melt,
d. cooling said glass melt and subsequently therewith,
e. forming a glass article,
f. heat treating said glass article at a temperature and for a time sufficient to form crystals throughout the glass article and to form a crystallized glass article having surfaces thereof substantially free of microcracks.

3,938,979

METHOD AND APPARATUS FOR VERTICALLY DRAWING A GLASS RIBBON

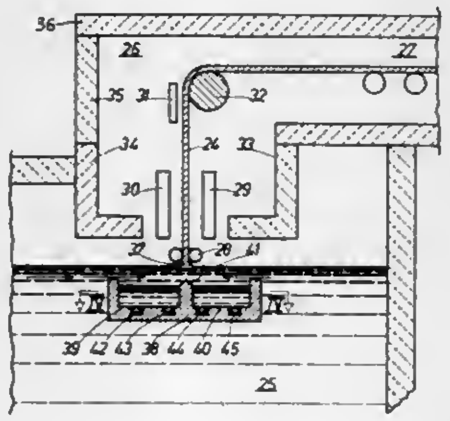
Emile Plumat, Gilly, Belgium, assignor to Glaverbel-Mecaniver, Watermael-Boitsfort, Belgium

Continuation of Ser. No. 326,043, Jan. 23, 1973, abandoned. This application Aug. 1, 1974, Ser. No. 493,888

Claims priority, application Luxemburg, Jan. 24, 1972, 64654

Int. Cl.² C03B ***15/04***

U.S. Cl. 65—90 **17 Claims**



1. In a process of manufacturing flat glass by drawing glass upwardly as a continuous ribbon from a bath of molten glass held in a drawing kiln via a drawing meniscus located at the surface of such bath in the drawing zone of the kiln, into which zone forward and reverse currents of glass, originating from a main current of molten glass which flows into such zone from a region to which glass is continuously supplied, flow in respectively opposite directions along such surface toward the meniscus, the improvement comprising the steps of: maintaining completely immersed in the bath, beneath at least part of the drawing zone and spaced above the bottom of the bath, at least one pool of molten material; providing heat exchange means outside the pool; and withdrawing heat from such pool by effecting a heat exchange between the pool and the means, for maintaining a predetermined temperature profile in such part of the drawing zone, said step of withdrawing heat being carried out to withdraw heat to a greater extent at a region of the bath located at a central portion of the length of the drawing zone than at a region located at an end portion of the length of the drawing zone in a manner to reduce the temperature gradient in the bath along the line between such central and end portions.

8. In apparatus for manufacturing flat glass by drawing, including a feed channel along which molten glass is continuously fed from one end thereof and means for drawing glass upwardly as a continuous ribbon from the surface of the molten glass in such channel at a drawing zone disposed between the one end and a remote end of the channel, whereby molten glass fed from the channel flows along such surface in respectively opposite directions into the ribbon via a drawing meniscus, the improvement comprising at least one refractory member located in said channel and holding at least one pool of molten material completely immersed in the molten glass in such channel, beneath said drawing zone, said refractory member being shaped to withdraw heat from the glass to a greater extent at a central portion of the length of the drawing zone than at the end portions of the length of the drawing zone in a manner to reduce the temperature gradient in the bath along the line between such central portion and such end portions.

3,938,980

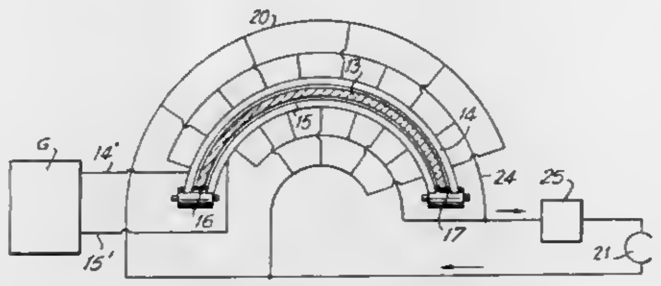
METHOD AND APPARATUS FOR FORMING TEMPERED GLASS ARTICLES

Walter K. French, Montrose, N.Y., assignor to The Seagrave Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 426,526, Dec. 20, 1973, Pat. No. 3,875,766. This application Oct. 15, 1974, Ser. No. 514,422

Int. Cl.² C03B ***27/00***

U.S. Cl. 65—114 **2 Claims**



1. The method of tempering an elongated glass article having a regular, non-planar cross section defining interior and exterior main surfaces and having adjacent edge portions, without significant deformation thereof, comprising the steps of supporting the weight of said article on said edge portions, subjecting at least transverse increments of said article to a source of homogeneous heat while simultaneously quenching said surfaces while the article is supported on said edge portions to define within said article a temperature differential condition in which interior portions of said article are at temperatures at least as high as the annealing temperature of said glass, while said surfaces of said glass are at a temperature sufficiently below said annealing temperature to remain rigid and, hence, susceptible of supporting the weight of said article without deformation under gravitational influences.

2. Apparatus for the tempering of a glass article comprising support means for said article, a pair of homogeneous heater means in proximate spaced relation to said surfaces of said article for adding heat to said article at an essentially constant rate throughout the thickness of said article, quench means extending through said heater means, said quench means including apertures adjacent said surfaces, and means for conducting quench fluids through said apertures and against said surfaces, and suction means for drawing off said quenching fluids after the same have been directed against said surfaces, said quench means acting on said article while the same is subject to the influences of said homogeneous heater means for preferentially extracting heat from the surfaces of said article, thereby to establish in said article a condition in which interior portions of said article are at temperatures approximating or exceeding the annealing temperature of said article while said surfaces are at temperatures substantially below the annealing temperature.

3,938,981

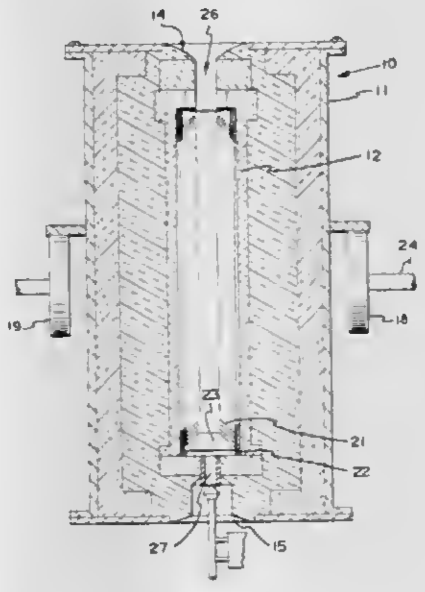
METHOD FOR REMOVING GASEOUS INCLUSIONS FROM MOLTEN GLASS

Douglas F. St. John, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 29, 1974, Ser. No. 518,362

Int. Cl.² C03B ***5/14***

U.S. Cl. 65—134 **3 Claims**



1. The method of refining molten glass which comprises:
a. defining a chamber having an axis of rotation and having a restricted top and bottom forming a top opening and a bottom discharge respectively;
b. introducing a stream of molten glass into said chamber, said stream of molten glass having substantially all glass-making constituents in a molten state and containing undesirable entrapped gaseous inclusion;
c. continuing to introduce molten glass so as to provide a mass of molten glass in the chamber;
d. rotating said chamber about its axis and thereby rotating the enclosed mass of molten glass so as to subject at least portions of the mass of glass in the chamber to centrifugal forces;
e. controlling the speed of the rotation of the chamber and the amount of glass in the chamber such that a paraboloidal void is formed in the mass of glass;
f. diverting substantially all of the downwardly flowing molten glass into a plurality of confined downwardly and outwardly directed flow paths;
g. each path defining a velocity profile in which the velocity of portions of the downwardly diverted flowing molten glass is decreased thereby;
h. causing the gaseous inclusions to travel against the direction of the downwardly and outwardly flowing molten glass, inwardly and upwardly in the confined flow paths and into the void;

- i. maintaining the volume of the mass of glass in the chamber substantially constant; and
- j. removing refined molten glass from the discharge of the chamber.

3,938,982
PROCESS FOR PREPARING LIQUID FERTILIZERS

Alessandro Frangioni, Mogliano Veneto (Treviso); Giovanni Venturino; Giorgio Morandi, both of Mestre (Venice), and Adriano Del Vesco, Mantova, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed July 27, 1973, Ser. No. 383,113

Claims priority, application Italy, July 28, 1972, 27589/72

Int. Cl.² C05B *7/00;* **C01B** *25/26*

U.S. Cl. 71—34 **8 Claims**

1. A continuous process for the preparation of suspension liquid fertilizers starting from ammonia and phosphoric acid having a P_2O_5 concentration not higher than 36% by weight obtained by the wet method, and which fertilizers contain ammonium phosphate in suspension, said process comprising the following steps:

- 1. ammoniating the phosphoric acid with gaseous ammonia until a pH comprised between 4 and 5 is attained, said ammoniating step being carried out at temperatures comprised between 105°C and the boiling temperature of the resulting suspension and for a time of from 30 to 90 minutes;
- 2. continuing the ammoniation with gaseous ammonia until the pH of the suspension is comprised between 6 and 8, this second ammoniation step carried out at temperatures comprised between 105°C and the boiling temperature of the suspension; and
- 3. rapidly cooling the ammonium phosphate suspension thus obtained to a temperature comprised between 0°C and 35°C and during the cooling adding a suspending agent while maintaining the suspension under stirring.

3,938,983
COMPOSITION CONTAINING AN ALIPHATIC N-CYCLOALKYL-P-(2-CHLOROETHYL)-PHOSPHONAMIDATE

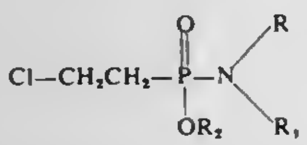
David I. Randall, and Robert W. Wynn, both of Easton, Pa., assignors to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 230,455, Feb. 29, 1972, abandoned, which is a division of Ser. No. 875,498, Nov. 10, 1969, abandoned. This application Feb. 12, 1974, Ser. No. 441,860

Int. Cl.² A01N *9/36*

U.S. Cl. 71—86 **5 Claims**

1. The method for stimulating plant growth which comprises contacting the plants to be treated with an effective amount of a substituted 2-chloroethyl phosphonamidic ester of the following formula:



$$\mathrm{Cl{-}CH_2CH_2{-}\underset{\substack{|\\ OR_2}}{\overset{\substack{O\\ \|}}{P}}{-}N}\begin{smallmatrix}\diagup R\\ \diagdown R_1\end{smallmatrix}$$

wherein R is cycloalkyl of three to eight carbon atoms, R_1 is hydrogen or cycloalkyl of three to eight carbon atoms and R_2 is alkyl of one to seven carbon atoms or haloalkyl wherein alkyl contains one to seven carbon atoms, as active ingredient, in admixture with a suitable plant growth regulating carrier.

3,938,984
HERBICIDE

Adolf Fischer, Mutterstadt, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Division of Ser. No. 348,085, April 4, 1973. This application May 23, 1974, Ser. No. 472,654

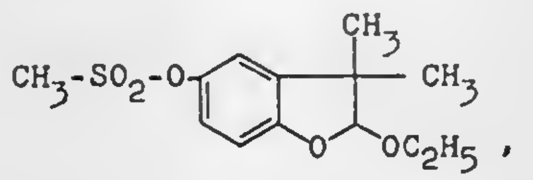
Claims priority, application Germany, Apr. 13, 1972, 2217698

Int. Cl.² A01N *9/28*

U.S. Cl. 71—88 **8 Claims**

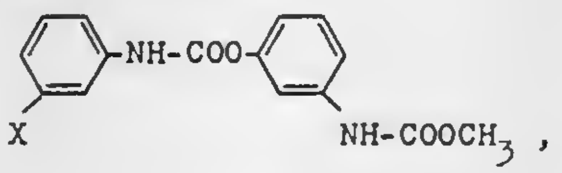
1. A herbicide composition containing a herbicidally effective amount of a mixture consisting essentially of

a. a compound of the formula



and

b. a compound of the formula



where X denotes hydrogen or lower alkyl of a maximum of 3 carbon atoms in a weight ratio of *a* to *b* in the range of 9:1 to 1:9.

3,938,985
SUBSTITUTED TRIAZINES

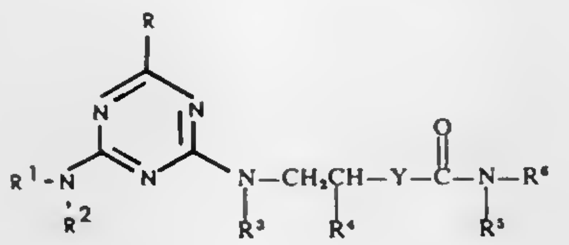
John W. Kobzina, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 288,245, Sept. 11, 1972, Pat. No. 3,819,626. This application Apr. 22, 1974, Ser. No. 462,905

Int. Cl.² A01N *9/22*

U.S. Cl. 71—93 **20 Claims**

1. A method for controlling the growth of undesirable vegetation which comprises applying to said vegetation an herbicidally effective amount of a compound of the formula



wherein R is chlorine, methoxy or methylthio; R^1 is alkyl of from 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, or alkoxyalkyl of 2 to 6 carbon atoms; R^2, R^3, R^4 and R^5 are hydrogen or alkyl of 1 to 6 carbon atoms; R^6 is alkyl of 1 to 6 carbon atoms, monocarbocyclic aryl of 6 to 10 carbon atoms substituted with up to 3 (0 to 3) fluorine, chlorine or bromine atoms; and Y is oxygen or sulfur.

3,938,986
HERBICIDE

Blaine O. Pray, Ponce, P.R., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 807,934, March 17, 1969, abandoned, which is a continuation-in-part of Ser. No. 580,891, Sept. 21, 1966, abandoned, and a continuation-in-part of Ser. No. 599,699, Dec. 7, 1966, abandoned, and a continuation-in-part of Ser. No. 631,593, April 18, 1967, abandoned. This application July 28, 1970, Ser. No. 59,004

Int. Cl.² A01N *9/20*

U.S. Cl. 111—111 **7 Claims**

1. A herbicidal composition containing as a herbicidal component isopropyl N-(3-chlorophenyl)carbamate in an amount sufficient to be herbicidally effective when applied to the soil, and further containing an amount of 4-chlorophenyl N-methylcarbamate sufficient to extend the soil life of said isopropyl N-(3-chlorophenyl)carbamate.

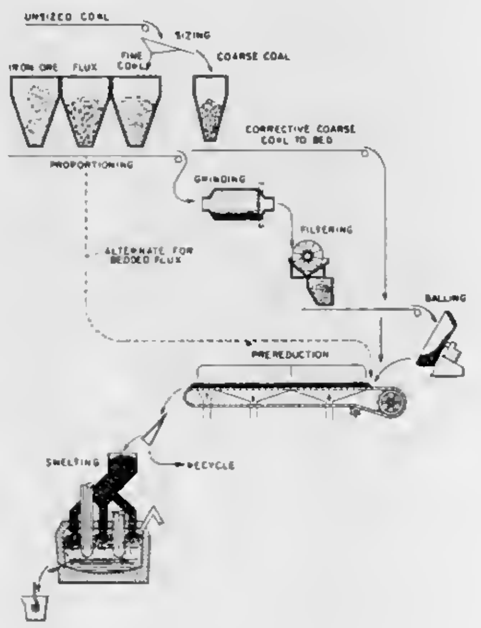
3,938,987
PROCESS FOR PREPARING A SMELTER FURNACE CHARGE COMPOSITION

Thomas E. Ban, South Euclid, Ohio, assignor to McDowell-Wellman Engineering Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 353,594, April 23, 1973, abandoned. This application Apr. 11, 1974, Ser. No. 460,125

Int. Cl.² C22B *1/16;* **C21C** *5/52*

U.S. Cl. 75—3 **5 Claims**



1. A process for the preparation of a complete self-reducing charge composition including prereduced metal pellets having a crushing strength of from about 40 to about 150 pounds comprising the step of prereducing on a traveling grate:

- a. green pellets comprising iron oxide, water, and a nonagglomerating carbonaceous material without any additional binder for binding the pellet during and after prereduction said nonagglomerating carbonaceous material supplying an amount of fixed carbon which is insufficient to reduce 100% of the iron oxide to metallic iron and is in the range of from 40% to 80% of that required to:
  - 1. carburize the iron so produced; and
  - 2. reduce all the iron oxide constituents to the metallic state;
- b. external corrective coarse carbonaceous material in an amount sufficient to supply the balance of the required amount of fixed carbon to:
  - 1. carburize the iron so produced; and
  - 2. reduce all the iron oxide constituents to the metallic state,

said prereducing being at a temperature of at least 1800° F to reduce at least a portion of the iron oxide to metallic iron, and said external carbonaceous material being physically blended with said green pellets.

3,938,988
METHOD FOR PRODUCING ALUMINUM METAL FROM ITS SALTS

Donald F. Othmer, 333 Jay St., Brooklyn, N.Y. 11201

Continuation of Ser. Nos. 103,765, Jan. 4, 1971, Pat. No. 3,793,003, and Ser. No. 308,059, Nov. 20, 1972, Pat. No. 3,853,541, and Ser. No. 370,310, June 15, 1973, Pat. No. 3,861,904. This application Aug. 7, 1973, Ser. No. 386,411

Int. Cl.² C22B *4/00*

U.S. Cl. 75—10 R **20 Claims**

1. The process of producing aluminum from a salt containing aluminum and a single other element by steps comprising:

- a. heating said salt to a high temperature of at least 2500°–5500°C to break it into aluminum and said other element in a mixture comprising the two elemental gases;
- b. flash cooling said mixture comprising said two elemental gases from said high temperature, to a lower temperature of not over 1500°C within a time interval of not more than one to five seconds, by contacting said gas mixture directly with a coolant which is liquid at said lower temperature and is chemically nonreactive with said salt and its constituent elements in elemental form at said lower temperature; and
- c. condensing said aluminum in said liquid coolant while allowing said other element to pass on in a gas phase.

3,938,989
ARSENIC REMOVAL FROM NICKEL MATTE

Malcolm Charles Evert Bell, Sudbury, and Ramamritham Sridhar, Mississauga, both of Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed June 24, 1974, Ser. No. 482,250

Claims priority, application Canada, July 5, 1973, 175759

Int. Cl.² C22B *23/00*

U.S. Cl. 75—82 **20 Claims**

1. A process for refining nickel matte which comprises establishing a molten bath of nickel matte containing at least one impurity selected from the group consisting of antimony, arsenic, bismuth, selenium, and tellurium and at least about 28% sulfur and contacting the nickel matte with gaseous chlorine which reacts with the impurity to form a chloride that is volatilized from the nickel matte, thereby separating said impurity from the matte.

3,938,990
METHOD OF MAKING CORROSION RESISTANT AUSTENITIC STEEL

Albert G. Hartline, III, Tarentum, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

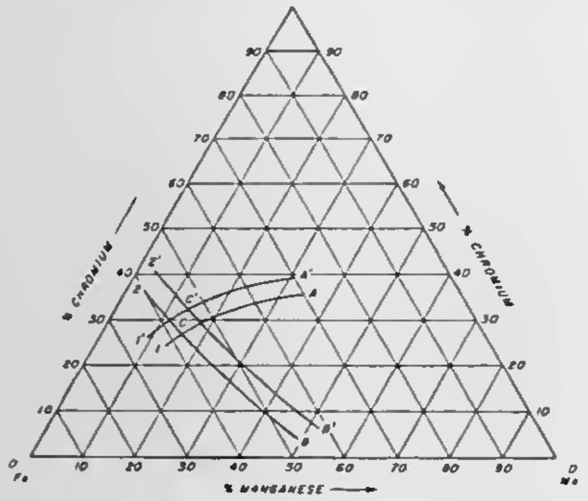
Division of Ser. No. 419,576, Nov. 28, 1973, Pat. No. 3,880,654. This application Sept. 5, 1974, Ser. No. 503,224

Int. Cl.² C22C *38/58*

U.S. Cl. 75—122 **1 Claim**

1. A method for producing a substantially nonporous austenitic stainless steel which comprises compositing an alloy

consisting essentially of about 21–45% manganese, about 10–30% chromium, about 1–4% nickel, about 0.85–3% nitrogen, up to 1% carbon, up to 2% silicon, and the balance iron and residuals, wherein the composition is such that:



$$1.\ \%Cr + 0.8(\%Mn) - 11.8(\%N - 0.1) - 1.23(\%Ni) = 28.5$$

$$(2)\quad \frac{30\,(\%C + \%N) + 0.5\,(\%Mn) + \%Ni}{\%Cr + 1.5\,(\%Si)} = 1.5$$

melting said materials to form a homogeneous liquid phase and solidifying the resultant liquid phase by air cooling or quenching in the temperature range from about 1000°–1600°F.

3,938,991

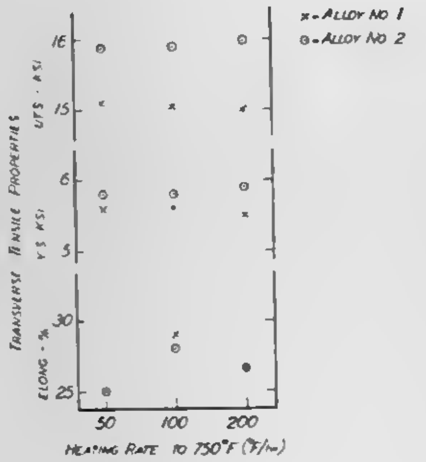
REFINING RECRYSTALLIZED GRAIN SIZE IN ALUMINUM ALLOYS

Philip R. Sperry, North Haven, Conn., and William C. Setzer, Creve Coeur, Mo., assignors to Swiss Aluminium Limited, Chippis, Switzerland

Filed July 15, 1974, Ser. No. 488,677

Int. Cl.^{2} C22C *21/14*; C22F *1/04*

U.S. Cl. 75—143 **18 Claims**



1. An aluminum base alloy possessing a fine recrystallized grain size in the annealed condition which consists of 0.03 – 0.6% silicon, 0.03 – 0.7% iron, 0.03 – 1.5% manganese, 0.03 – 0.20% vanadium, up to 0.3% copper, up to 0.2% titanium, balance aluminum.

3,938,992

ELECTROGRAPHIC DEVELOPING COMPOSITION AND PROCESS USING A FUSIBLE, CROSSLINKED BINDER POLYMER

Thomas A. Jadwin; Ravi Khanna; Stewart H. Merrill, and Edmond S. Perry, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 380,317, July 18, 1973, abandoned. This application Aug. 19, 1974, Ser. No. 498,818

Int. Cl.^{2} G03G *9/00, 5/00*

U.S. Cl. 96—1 SD **17 Claims**

1. An electrographic developing composition comprising a mixture of finely-divided carrier particles and finely-divided crosslinked toner particles electrostatically attractable thereto, said toner particles having an average particle size within the range of about 0.01 to about 100 microns and comprising a fusible binder polymer, the molecular chains of said polymer being covalently crosslinked to an extent sufficient to extend the useful fusing range of said toner particles by at least about 10°C. relative to comparable uncrosslinked toner particles comprising the same binder polymer except in uncrosslinked form.

3,938,993

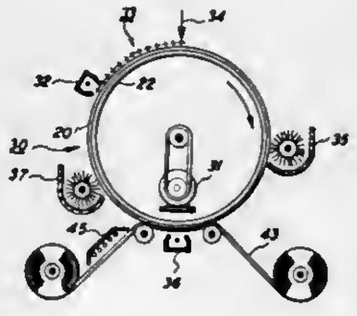
XEROGRAPHIC METHOD FOR MAKING A RESPONSIVE ANSWER SYSTEM

Stephen F. Royka, Fairport, and Robert G. Martin, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 648,701, June 26, 1967, Pat. No. 3,877,155. This application Nov. 27, 1973, Ser. No. 428,979

Int. Cl.^{2} G03G *13/20, 13/22, 15/20*

U.S. Cl. 96—1.4 **6 Claims**



1. A xerographic method for making a device for selectively indicating information characterized by having simultaneously legible meaningful permanent information and legible confusing removable information displayed on a surface within a response area, said method comprising the steps of:

a. printing said legible meaningful permanent information on said surface within said response area; and

b. xerographically printing said legible confusing removable information on said surface within said response area by forming a latent electrostatic image, corresponding to said legible confusing removable information, on a xerographic plate, developing said latent image with toner, transferring at least part of said toner image to said surface, and fixing said toner image to said surface, said fixing being to a greater than class 1 but less than class 3 fix.

3,938,994

PYRYLIUM DYES FOR ELECTROPHOTOGRAPHIC COMPOSITION AND ELEMENT

George A. Reynolds; James A. Van Allan, and Lawrence E. Contois, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 235,845, March 17, 1972. This application June 18, 1974, Ser. No. 480,331

Int. Cl.^{2} G03G *5/06*

U.S. Cl. 96—1.6 **8 Claims**

1. A photoconductive composition comprising an organic photoconductive electrically insulating material containing a sensitizing amount of a compound selected from the group consisting of:

1. 2,4-Diphenyl-6-(2,6-diphenyl-4H-pyran-4-ylidenemethyl)-pyrylium salts
2. 2,6-Diphenyl-4-(2,6-diphenyl-4H-pyran-4-ylidenemethyl)-pyrylium salts
3. 4-(Benzoyl-2,6-diphenyl-4H-pyran-4-ylidenemethyl)2,6-diphenyl-pyrylium salts and
4. 2,6-Bis(4-amyloxyphenyl)-4-[2-(4-amyloxyphenyl)-6-phenyl-4H-pyran-4-ylidenemethyl]pyrylium salts,

said composition exhibiting photoconductive sensitivity to visible light in that portion of the spectrum extending from about 570 to about 620 millimicrons.

3,938,995

SILVER HALIDE COLOR PHOTOGRAPHIC ELEMENT AND PROCESS CONTAINING LEUCO DYES

Thomas Edward Gompf, Penfield, and William Henry Faul, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 10, 1974, Ser. No. 487,083

Int. Cl.^{2} G03C *7/00, 1/40*

U.S. Cl. 96—55 **16 Claims**

5. A method of forming a negative color image which comprises:

1. concurrently developing a silver and a dye image in the imagewise exposed areas of a photosensitive photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer containing a stabilized ballasted leuco dye which comprises the reaction product of a cyan color-forming coupler and a N,N-dialkyl-p-phenylenediamine having an electronegative group attached to the benzene ring, said electronegative group having the capability of deactivating the p-phenylenediamine group sufficiently to stabilize the leuco dye molecule against aerial oxidation; and
2. removing developed silver and residual silver halide to leave a cyan dye image in the imagewise exposed areas of said layer without oxidizing the leuco dye molecules in the non-exposed areas of said layer.

3,938,996

PROCESS FOR DEVELOPING LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIALS

Mitsuto Fujiwhara; Ryosuke Satoh; Toyoaki Masukawa, and Takahiro Uozumi, all of Hino, Japan, assignors to Konishiroku Photo Industry Co. Ltd., Tokyo, Japan

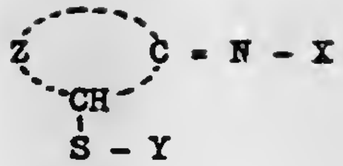
Filed June 17, 1974, Ser. No. 479,895

Claims priority, application Japan, June 22, 1973, 48-69867

Int. Cl.^{2} G03C *5/30, 7/00*

U.S. Cl. 96—66.3 **12 Claims**

1. A process for developing an imagewise exposed, light-sensitive silver halide photographic material which comprises developing the photographic material in the presence of a compound having the general formula:



wherein Z is an atomic grouping necessary to form a 5, 6 or 7 membered carbocyclic ring; Y is a group which, when the sulfur atom of the thioether linkage is released, forms together with said sulfur atom a compound having a development-inhibiting action; and X is a hydroxyl group or a substituted or nonsubstituted amino group.

3,938,997

RAPID ACCESS, AIR STABLE, REGENERABLE IRON CHELATE DEVELOPER SOLUTIONS

Richard S. Fisch, and Norman Newman, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 28, 1975, Ser. No. 563,064

Int. Cl.^{2} G03C *5/30, 5/26*

U.S. Cl. 96—66.3 **5 Claims**

1. A superadditive non-fixing developer solution comprising at least three developer materials, the solution comprising an iron chelating developer, a second developer selected from the group consisting of ascorbic acid, sugartype derivatives of ascorbic acid, and stereoisomers and diastereoisomers of ascorbic acid and its sugar-type derivatives, and a third developer selected from the group consisting of 1-phenyl-3-pyrazolidone, glycin, cysteine hydrochloride, hydroxylamine sulfate, 4-amino-N-ethyl-N-(β-methanesulfoneamidoethyl)-m-toluidine, and hydroquinone monosulfonate.

3,938,998

LOW CONTRAST, RAPID ACCESS, AIR STABLE, REGENERABLE IRON CHELATE DEVELOPER SOLUTIONS

Richard S. Fisch, and Norman Newman, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 28, 1975, Ser. No. 563,087

Int. Cl.^{2} G03C *5/30, 5/26*

U.S. Cl. 96—66.3 **3 Claims**

1. A rapid access, low contrast air stable non-fixing developer solution which comprises an iron chelate photographic developer and at least one second developer selected from the group consisting of amidol, gallic acid, tannic acid and 2,5, di-tert-butyl hydroquinone.

3,938,999

ANTISTATIC PHOTOGRAPHIC SENSITIVE MATERIALS

Masakazu Yoneyama; Nobuo Yamamoto; Naohiko Sugimoto; Ikutaro Horie, all of Minami-ashigara, and Yasuhiro Nakayama, Fujimiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

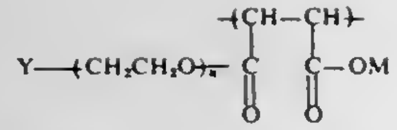
Filed Mar. 31, 1975, Ser. No. 563,904

Claims priority, application Japan, Mar. 30, 1974, 49-36410

Int. Cl.^{2} G03C *1/84, 1/82*

U.S. Cl. 96—84 R **12 Claims**

1. An antistatic photographic sensitive material comprising a support having thereon at least one silver halide emulsion layer, wherein a surface active copolymer containing in the main chain an alkyl repeating unit represented by the formula (I)

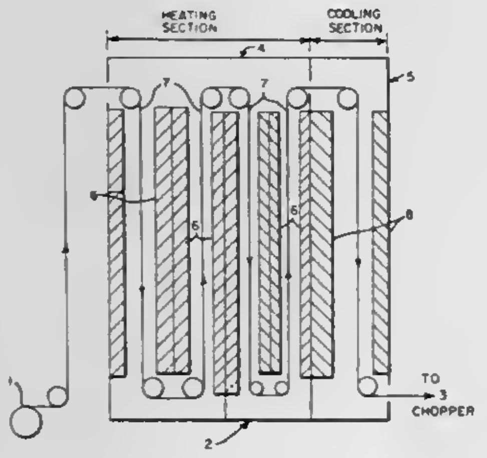


$$Y-\!\!-(CH_2CH_2O)_n-\overset{\displaystyle -\!(CH-CH)\!-}{\underset{\displaystyle O}{\overset{|}{\underset{\|}{C}}}\quad\underset{\displaystyle O}{\underset{\|}{C}}-OM} \qquad (1)$$

wherein Y represents an organic residue having 4 to 22 carbon atoms; n represents the average number of ethyleneoxy units and is 1 to 100; and M represents a hydrogen atom, an alkali metal atom, an alkaline earth metal atom, an ammonium group or an alkylammonium group is present in at least one of a surface of the support and a photographic layer.

3,939,000
FLAT PHOTOGRAPHIC FILM PRODUCED BY HEATING ABOVE THE SECOND ORDER TRANSITION TEMPERATURE OF THE BASE

Harold C. Arvidson, Jr., Princeton Junction, N.J., and Quayton Ray Stottlemyer, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 21, 1973, Ser. No. 417,803
Int. Cl.² G03C *1/80;* **B29C** *25/00*
U.S. Cl. 96—87 R **8 Claims**



1. A process for removing curl from a biaxially oriented polyester film coated with at least one photosensitive layer comprising briefly raising the temperature of the film to a temperature which is above its second order transition temperature but not in excess of 120°C.

3,939,001
SPOONABLE FROZEN GELATIN DESSERT CONCENTRATE

Adolph Scott Clausi, Cos Cob, Conn.; Martin Glicksman, Valley Cottages, and Elizabeth Farkas, Yonkers, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.
Division of Ser. No. 368,150, June 8, 1973, Pat. No. 3,889,002. This application Aug. 1, 1974, Ser. No. 493,574
Int. Cl.² C09H *11/00*
U.S. Cl. 106—136 **5 Claims**

1. A method of making a hydrophilic colloid readily dispersible and soluble in hot tap water which comprises soaking the hydrophilic colloid in a polyhydric alcohol not exceeding ambient temperatures for at least about one hour such that the hydrophillic colloid appears as discrete swollen particles impregnated with the polyhydric alcohol but prior to actual dissolution in the alcohol.

3,939,002
METHOD OF MAKING A CERAMIC FIBER REPLICA OF A BODY OF RETICULATED ORGANIC FOAM

Colin Washbourne, Birmingham, England, assignor to Foseco International Limited, Birmingham, England
Filed Oct. 23, 1974, Ser. No. 517,253
Claims priority, application United Kingdom, Nov. 12, 1973, 52449/73
Int. Cl.² C04B *35/80, 35/84*
U.S. Cl. 106—41 **6 Claims**

1. A ceramic replica of a body of reticulated organic foam wherein the ceramic consists wholly or substantially of fibrous material, the average fiber length of the fibrous material being at most 50% of the diameter of the cells of the foam, and any non-fibrous particulate matter present making no significant contribution to the strength of the replica body.

4. A method of making a ceramic replica, consisting wholly or substantially of fibrous material, of a body of reticulated organic foam comprising the steps of

impregnating a body of reticulated organic foam with a slurry of finely-divided inorganic fibers, the average fiber length of the fibrous material being at most 50% of the diameter of the cells of the foam, and any non-fibrous particulate matter present making no significant contribution to the strength of the body,

drying the so-impregnated body, and

firing the so-impregnated and dried body at a temperature of at least 500°C.

3,939,003
FABRICATION OF METAL-CERAMIC COMPOSITES

James W. McCauley, Wakefield; Dennis J. Viechnicki, Wellesley, and Frederick Schmid, Marblehead, all of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Division of Ser. No. 287,165, Sept. 7, 1972. This application Feb. 15, 1974, Ser. No. 443,061
Int. Cl.² C04B *35/02*
U.S. Cl. 106—65 **7 Claims**

1. A constrained single crystal metal ceramic grown from seed in a crucible and having the orientation of the seed, said crystal having incorporated therein a metallic net, the metallic net having been positioned so that on the unidirectional solidification of the ceramic material, the crystal grew through the metallic net.

3,939,004
ASPHALT PAVING COMPOSITIONS FROM POSITIVE SPOT ASPHALT FRACTIONS

Luke W. Corbett, Mountainside, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.
Continuation of Ser. No. 222,693, Feb. 1, 1972, abandoned. This application Nov. 29, 1974, Ser. No. 528,440
Int. Cl.² C08L *95/00;* **C10C** *3/08*
U.S. Cl. 106—273 R **4 Claims**

1. An asphalt composition suitable for use in a paving formulation, which comprises a mixture of

a. an asphaltene fraction having substantially no petrolene content,

b. propane-precipitated asphalt having a softening point of 150° to 225°F., a penetration at 77°F. of 0 to 15 dmm, and polar aromatic content of at least 20 percent by weight, and

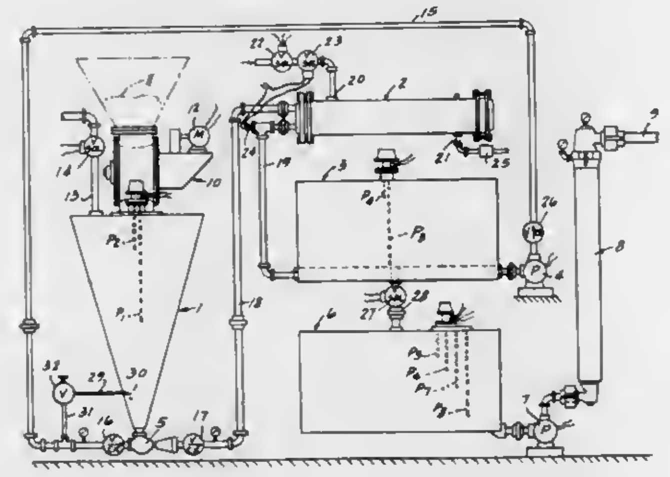
c. vacuum gas oil having an atmospheric equivalent boiling range within the limits of about 650°F. and 1150°F.

said composition having a polar aromatic content of at least 30 percent by weight, a ductility (ASTM D-113) of at least 50 cm, and a 39.2°F. penetration ratio of at least about 0.25, said composition having a negative Oliensis Spot Test,

said asphaltene fraction constituting about 5 to 45 wt. % of the composition, and said vacuum gas oil constituting no more than 10 wt. % of the composition.

3,939,005
METHOD FOR AUTOMATIC PREPARATION OF SOLUTIONS OF LIQUID AND DRY MATERIALS

Donald R. White, 5218 Howard, Western Springs, Ill. 60558
Division of Ser. No. 339,420, March 8, 1973. This application July 5, 1974, Ser. No. 486,017
Int. Cl.² B01F *1/00*
U.S. Cl. 127—63 **5 Claims**

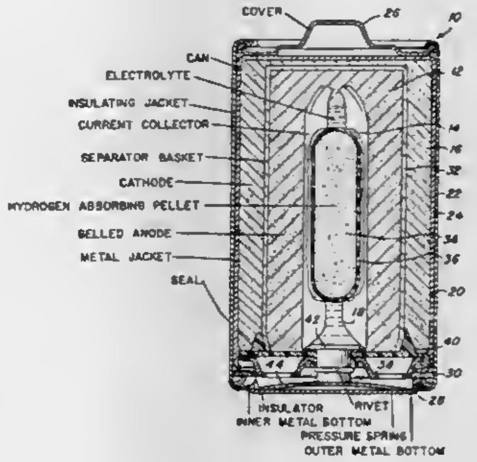


1. A method for the automatic preparation, on demand, of a liquid material from dry and/or liquid component materials, comprising the steps of providing a predetermined quantity, of fixed total amount, of a first component material, adding a predetermined quantity, of fixed total amount, of a second component material to said first quantity, at least one of said component materials being in liquid form, to form a mixture of fixed total amount having a predetermined concentration, providing a previously prepared supply of such liquid material, circulating such previously prepared material through a closed path, not including said fixed total amount of said mixture of predetermined concentration, withdrawing quantities of said mixture from said fixed total amount, in amounts that are small as compared with said total amount, and introducing said small amounts of mixture so withdrawn into said closed circulating path, and applying sufficient heat to the prepared material and the component mixture, circulating in said closed path, to cause any undissolved materials therein to go completely into solution, and, following such application of heat to said fixed total amount of the added component mixture, supplying the material, so prepared therefrom, for use.

3,939,006
HYDROGEN ABSORBING MATERIAL FOR ELECTROCHEMICAL CELLS

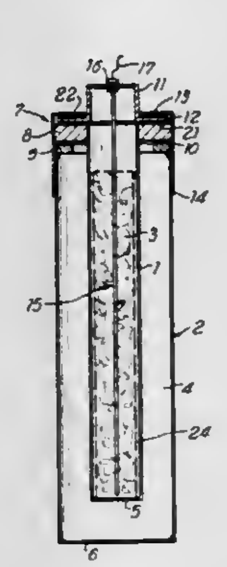
Akiya Kozawa, Middleburg Heights, Ohio, assignor to Union Carbide Corporation, New York, N.Y.
Continuation of Ser. No. 853,311, Aug. 27, 1969, abandoned. This application July 3, 1972, Ser. No. 268,785
Int. Cl. H01m *1/08*
U.S. Cl. 136—6 GC **5 Claims**

1. A hydrogen gas absorbing pellet consisting essentially of a solid compound which will react chemically with hydrogen gas, a catalyst for the hydrogen gas consuming reaction, a binder for retaining the solid compound and the catalyst in a desired geometric shaped body which will be porous to hydrogen gas so as to allow the gas to circulate through the body and contact the surface of the solid compound and catalyst, and an outer sheath encasing said body which is permeable to hydrogen gas but impermeable to liquid.



3,939,007
SODIUM SULPHUR CELLS

James L. Sudworth, Burton-on-Trent, and Alec R. Tilley, Blackbrook, near Belper, both of England, assignors to British Railways Board, London, England
Filed Jan. 16, 1974, Ser. No. 433,976
Claims priority, application United Kingdom, Jan. 16, 1973, 2267/73
Int. Cl.² H01M *10/00*
U.S. Cl. 136—6 FS **5 Claims**



1. A sodium-sulphur cell having

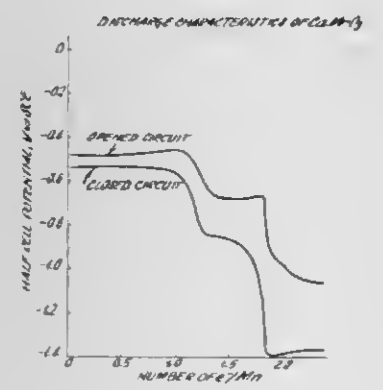
a. a metal outer tubular member open at one end and closed at its other end,

b. an inner tubular member extending substantially coaxially of the outer tubular member and open at its end adjacent the open end of the outer tubular member and closed at its other end, the inner tubular member constituting a solid electrolyte for the cell and dividing the cell into anode and cathode compartments, one said compartment being formed by the interior of the inner tubular member and the other said compartment being formed by the annular space between the inner and outer tubular members,

c. an inturned radial flange on the outer tubular member,
d. an out-turned radial flange on the inner tubular member,
e. first compressible sealing means through which said out-turned radial flange abuts said inturned radial flange to close the annular space between said inner and outer tubular members,
f. a closure member for closing said open end of the inner tubular member,
g. second compressible sealing means through which said closure means abuts said out-turned radial flange, and
h. a clamping member having an inturned radial flange which abuts said closure member and is held in position by said outer tubular member so that it applies a compression force axially of said tubular members to both said first and second sealing means.

3,939,008
USE OF PEROVSKITES AND PEROVSKITE-RELATED COMPOUNDS AS BATTERY CATHODES

John M. Longo, New Providence, N.J., and LeRoy R. Clavenna, Baytown, Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.
Filed Feb. 10, 1975, Ser. No. 548,291
Int. Cl.² H01M *17/00*
U.S. Cl. 136—6 LN **13 Claims**



1. An electrical energy storage device comprising:
a. a container;
b. an electrolyte in said container;
c. a metal anode; and
d. a cathode-active material, said cathode active material being an oxide of the general formula ABO_3 and having perovskite structure, wherein A is selected from the group consisting of non-transition metals of Group IIA of the Periodic Table of the Elements and B is a non-noble transition metal selected from Groups VIIB and VIII of the Periodic Table of the Elements.

3,939,009
METHOD OF MAKING BATTERY PLATE GRIDS FOR LEAD-ACID BATTERIES AND ALLOYS THEREFOR

Stanley Charles Barnes, Coventry, and Robert James Lawrie, Solihull, both of England, assignors to Joseph Lucas (Batteries) Limited, Birmingham, England
Filed Mar. 22, 1974, Ser. No. 453,976
Claims priority, application United Kingdom, Apr. 7, 1973, 16809/73
Int. Cl.² H01M *4/84;* C22C *11/02*
U.S. Cl. 136—66 **7 Claims**

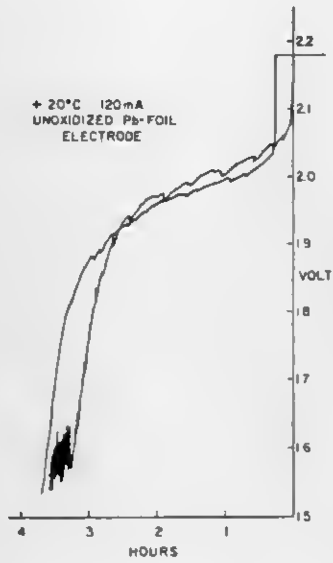
5. A method of manufacturing a battery plate grid for a lead-acid battery comprising the steps of producing a molten alloy consisting of:

Calcium + Lithium	0.22 –1.04 Atomic %
Aluminium	0.035–0.25 Atomic % and
Lead	Remainder

and wherein the atomic percentage of Lithium is not less than 0.15 and does not exceed 0.90 and the atomic percentage of Calcium is not less than 0.07 and does not exceed 0.49, and then casting the molten alloy into the shape of the grid.

3,939,010
MANGANESE DIOXIDE CATHODE

John Ralph Coleman, Ottawa, Canada, and Torstein Valand, Skedsmokorset, Norway, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada
Filed Sept. 25, 1973, Ser. No. 400,664
Claims priority, application United Kingdom, Oct. 2, 1975, 45358/75
Int. Cl.² H01M *6/30*
U.S. Cl. 136—114 **5 Claims**

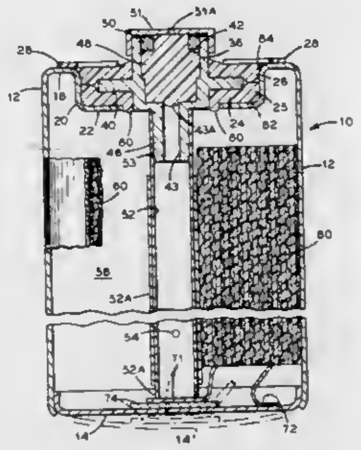


1. In a reserve primary cell of the acid Leclanche type having a cathode and an amalgamated zinc anode mounted in a container and arranged to be activatable by the addition of sulfuric acid as electrolyte, the improvement which consists of said cathode being a lead current collector having thereon a layer of anodized lead and having a conductive compressed cathodic layer of manganese dioxide and carbon adhered to said anoidic layer.

3,939,011
LITHIUM CELL WITH INTERNAL AUTOMATIC SAFETY CONTROLS

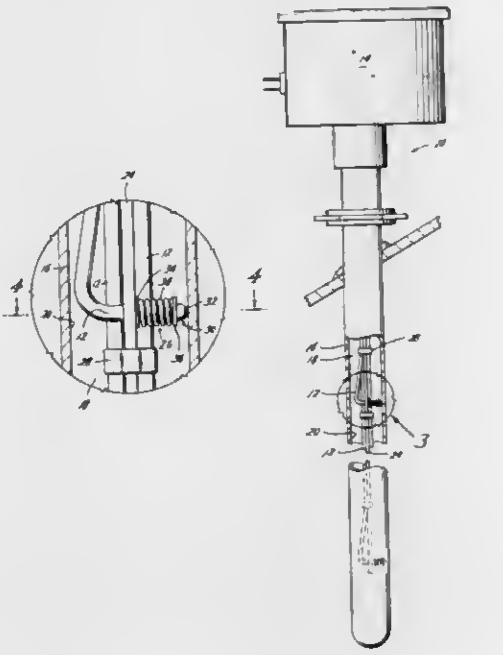
John F. Zaleski, Pleasantville, N.Y., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed Jan. 5, 1973, Ser. No. 321,186
Int. Cl.² H01M *2/12*
U.S. Cl. 136—177 **17 Claims**

1. A self-controlling electric primary cell constructed to limit or prevent internal pressure likely to lead to explosive rupture, said cell comprising
a. a container enclosure;
b. anode means;
c. cathode means comprising a depolarizer cathodic body disposed within the cell container;
d. an electrolyte for electrochemically relating said anode means and said cathode means to generate an electric current between them for conduction to an external circuit;
e. an outer electrode element disposed on the outside of said container;
f. an electrical circuit conductor extending from said depolarizer body to said outer electrode element, said circuit conductor consisting of a filling tube for introducing a fluid electrolyte component into the container can during manufacture, and wherein said filling tube serves as a stationary switch element;
g. electrical switching means disposed within said cell enclosure and responsive to an undesirable operating condition within the cell, which prevent the aggravation of said condition by opening the circuit between the electrical circuit conductor, the depolarizer and the outer electrode element, wherein the undesirable condition is excessive pressure caused by excessive temperature and excessive current;
h. said electrical switching means including a movable switch element, which cooperates with the stationary switch element and is controlled by said condition within the container.



3,939,012
MULTIPOINT THERMOCOUPLE ASSEMBLY USING COIL SPRINGS

Richard David Williams, Houston, Tex., assignor to Instrumatics, Inc., Houston, Tex.
Filed Apr. 21, 1975, Ser. No. 569,818
Int. Cl.² G01K *1/08, 7/04;* H01L *35/02*
U.S. Cl. 136—221 **6 Claims**



1. In a thermocouple assembly for obtaining a temperature profile of a process throughout a vessel, which assembly includes a thermocouple having a cold junction and a temperature sensitive end, an enclosure containing said cold junction, a housing extending from the enclosure containing a longitudinal passage therein, the thermocouple being located in the longitudinal passage and extending generally parallel thereto throughout most of its length, the improvement comprising:
a. the temperature sensitive end of the thermocouple extending generally perpendicular to the longitudinal passage and being in contact with the interior of the housing;
b. a support strap located in said longitudinal passage and through which the temperature sensitive end of the thermocouple extends; and
c. coil spring means operatively connected to the temperature sensitive end for maintaining said temperature sensitive end in contact with the interior of said housing.

3,939,013
PROCESS FOR PRODUCING RIMMED ENAMELING STEEL

Larry E. Gardner, Tipp City; John J. Grenawalt, Boardman Township, County of Mahoning, both of Ohio, and Adolph John Birkle, Jackson, Mich., assignors to Youngstown Sheet and Tube Company, Youngstown, Ohio
Continuation of Ser. No. 796,148, Feb. 3, 1969, abandoned. This application June 6, 1973, Ser. No. 367,554
Int. Cl.² C21D *7/14*
U.S. Cl. 148—2 **2 Claims**

1. A process for producing a rimmed unkilled enameling steel characterized by a minimum yield strength after firing of 40 ksi, which process comprises:
a. providing a rimmed unkilled steel consisting essentially, in percent by weight, of: 0.02 to 0.08 vanadium; 0.008 to 0.016 nitrogen; 0.2 to 0.7 manganese; 0.04 to 0.16 carbon; and the balance being essentially iron;
b. hot rolling said steel at a temperature in the range of 1590° to 1630°F;
c. cold reducing the hot rolled steel; and
d. subjecting the cold reduced steel to a decarburizing annealing cycle which will produce a substantially homogeneous grain structure throughout its thickness and reduce the carbon content to less than .01 percent, which annealing cycle comprises:
  1. heating said steel to a temperature in the range of 1340° to 1350°F and holding at that temperature for about three hours;
  2. heating said steel in a wet atmosphere of decarburizing gas in the range of 1340° to 1350°F;
  3. heating said steel in a dry atmosphere of decarburizing gas at a temperature in the range of 1340° to 1350°F; and
  4. furnace cooling said steel to a temperature of about 200°F.

3,939,014
AQUEOUS ZINC PHOSPHATING SOLUTION AND METHOD OF RAPID COATING OF STEEL FOR DEFORMING

Stuart Reed, Warminster, Pa., assignor to Amchem Products, Inc., Ambler, Pa.
Filed Nov. 20, 1974, Ser. No. 525,411
Int. Cl.² C23F *7/10*
U.S. Cl. 148—6.15 Z **9 Claims**

1. A process for forming a zinc phosphate coating on a steel surface comprising contacting the steel surface with an acidic aqueous coating solution consisting essentially of phosphate, zinc and nitrate, wherein the zinc is present in the coating solution in an amount of from about 0.4 to about 1.2 parts by weight for each part of the phosphate and the nitrate is present in the solution in an amount of from about 0.4 to about 1.6 parts by weight for each part of the phosphate, the phosphate being present in the coating solution in an amount of from about 10 g/l to about 150 g/l, the zinc being present in an amount of from about 5 g/l to about 100 g/l, and the nitrate being present in an amount of from about 10 g/l to about 80 g/l and the ratio of total acid to free acid in the coating solution is from about 4.5 to about 8.5 with the total acidity of the coating solution being from about 110 to about 140 points.

3,939,015

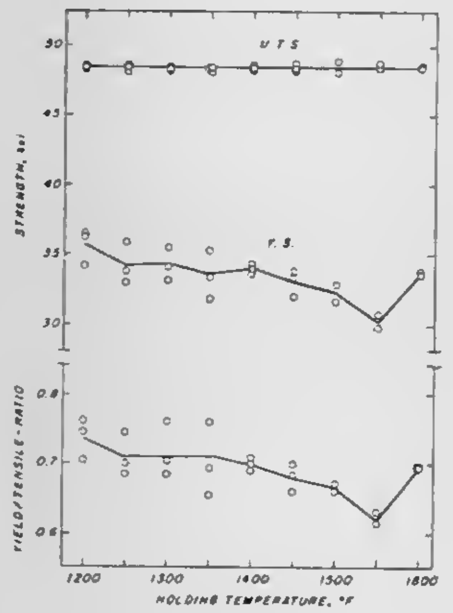
IN-LINE HEAT TREATMENT OF HOT-ROLLED ROD

Raymond A. Grange, Washington Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 18, 1974, Ser. No. 534,001

Int. Cl.^{2} C21D *7/14, 9/52*

U.S. Cl. 148—12 B **24 Claims**



1. In the commercial production of extended lengths of low alloy steel rod having a carbon content below about 0.4%, wherein said rod is cooled from the A_3 temperature thereof to a temperature below 1,200°F in a constrained time period, said period being within the range of 2.5 to 15 minutes; an interrupted cooling procedure for enhancing the ability of said rod to receive subsequent cold-work, said procedure comprising,

a. cooling said rod from said A_3 temperature to a temprature within the range of $T_p \pm 35$°F and holding the rod within said temperature range for a duration of at least 2 minutes, wherein T_p is a function of carbon content as given by:
$(C < 0.28\%)\ T_p = 1{,}585 - 500 \cdot \%C$
$(C > 0.20\%)\ T_p = A_1 - 70$

b. thereafter cooling said rod to about room temperature.

3,939,016

AQUEOUS QUENCHING MEDIUM CONTAINING SALTS OF POLYMERIC MATERIALS

Takashi Tokuue, Yokohama, and Takashi Kato, Yokosuka, both of Japan, assignors to Toho Chemical Industry Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1973, Ser. No. 402,781

Claims priority, application Japan, Oct. 2, 1972, 47-97969

Int. Cl.^{2} B23K *35/24*

U.S. Cl. 148—28 **3 Claims**

1. A quenching medium comprising an aqueous solution containing 0.4 to 10% by weight of a polymer mixture consisting essentially of 40 to 60% by weight of sodium or potassium polyacrylate and 60 to 40% by weight of a sodium or potassium salt of a copolymer of acrylic acid and methacrylic acid, said polyacrylate and copolymer of acrylic acid and methacrylic acid each having an intrinsic viscosity $[\eta]$ of 0.010 to 0.050 l/g.

3,939,017

PROCESS FOR DEPOSITING THE DEPOSITION AGENT ON THE SURFACE OF A NUMBER OF SEMICONDUCTOR SUBSTRATES

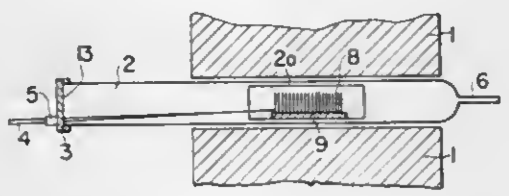
Noboru Ryugo; Keizo Inaniwa, and Akira Sugiyama, all of Takasaki, Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 29, 1974, Ser. No. 456,291

Claims priority, application Japan, Apr. 2, 1973, 48-36757

Int. Cl.^{2} H01L *7/44*

U.S. Cl. 148—189 **14 Claims**



1. A process for diffusing an impurity into a semiconductor wafer comprising:
placing a plurality of semiconductor wafers upright on a boat,
placing a plurality of impurity sources so as to surround and be closely spaced from said wafers,
placing said boat into one end of an elongated tube,
discharging air within said tube from the other end of said tube to thereby establish a vacuum or reduced air atmosphere in said tube, and
heating said semiconductor wafers and impurity sources in said tube to thereby produce a gaseous oxide from said impurity within said tube and diffuse said impurity into said semiconductor wafers.

3,939,018

SOLID PROPELLANT CONTAINING ORGANIC PERCHLORATE SALT AS BURNING RATE ACCELERATOR

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 20, 1968, Ser. No. 761,902

Int. Cl.^{2} C06D *5/06*

U.S. Cl. 149—19.1 **4 Claims**

1. A composite solid propellant composition comprising up to 15 weight percent of tris(difluoroamino)-methoxyethyl ammonium perchlorate, an inorganic oxidizing agent, and an organic resin binder.

3,939,019

COVERING APPARATUS AND METHOD FOR FILM MOUNTED SERIAL TISSUE SECTIONS

John E. P. Pickett, 3323 Pinafore Drive, Durham, N.C. 27705

Filed Aug. 2, 1974, Ser. No. 494,064

Int. Cl.^{2} G01N *1/28;* **G02B** *21/34;* **A01N** *1/00*

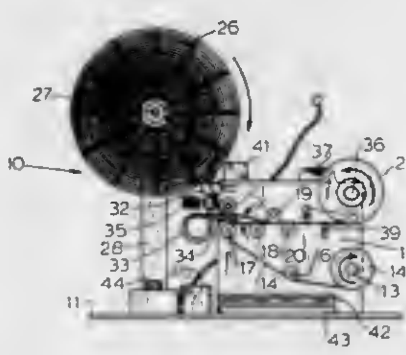
U.S. Cl. 156—57 **4 Claims**

1. A method for impregnating with a substance which when dry is optically clear and covering with an optically clear cover serially mounted histologic tissue sections mounted on an optically clear film strip to prepare the sections for viewing and where the sections are in the state, following embedding, of having been sliced to a thickness within the 3–12 micron range, of having been serially adhered to one side of said strip, of having been stained and of having had the embedding medium removed from the tissue interstices, comprising the steps:

a. mounting on a film reel adapted for rotation a length of at least three feet of said film strip having serially mounted and adhered thereon a plurality of said 3–12 micron thick sections in said stained state;

b. rotatably mounting proximate said film reel a convolutely wound roll of adhesive tape in continuous tape form, said tape consisting of an optically transparent backing strip and on one side of said strip a coating of pressure sensitive adhesive substance characterized by being dissolvable in a selected solvent, in a dissolved state being adapted to impregnate the interstices of said stained tissue sections when submerged therein and in a dry state when confined in said interstices being optically clear;

c. pulling said tape and film from the respective roll and reel such that the side of said film mounting said sections and the side of said tape having said adhesive substance is guided to a station wherein said tape is maintained flat and horizontal during its travel and with said tape adhesive coated side disposed upwardly and at such said station said film is maintained flat and angled downwardly during its travel at an acute included angle with respect to the tape and with the mounted side of said film having the adhered serial sections disposed downwardly whereby to merge the entire surface of said tape adhesive coated side with the entire surface of said film mounted side and to thereafter bring the entire respective merged surfaces of the tape and film in a closely merged relation preparatory to being rolled into a coil;



d. providing at said station immediately prior to the place of said merger a flow of said selected solvent in which said tape adhesive substance is soluble, said solvent including a predetermined quantity of an additional adhesive substance dissolved therein, said amount of additional adhesive substance being selected to provide at the place of merger a flow of sufficient solvent over the entire surface of said tape coated side to combine with the tape adhesive thereon to insure such tape adhesive being sufficiently dissolved in a selected period of minutes to fully impregnate the interstices of said stained sections and with sufficient additional and compatible adhesive substance being supplied to insure said interstices being filled during the completion of said merger and following such merger to leave said stained sections optically clear;

e. taking up such merged film-tape in a convolutely wound roll at a predetermined speed and tension selected to allow said mixture of solvent and adhesive substance to cover said entire surface of said tape coated side prior to said merger and to allow said roll to be formed without damaging said sections;

f. after said merger allowing the merged tape film to rest in a firmly wound convolute form for a predetermined period of minutes to complete the impregnation of said sections by said dissolved adhesive substances and the setting of such substances;

g. after said period of minutes rewinding said merged tape-film into a convolutely spaced reeled form for drying; and

h. drying said merged tape-film while in said convolutely spaced relation to evaporate said solvent and complete the setting of said adhesive substances.

3,939,020

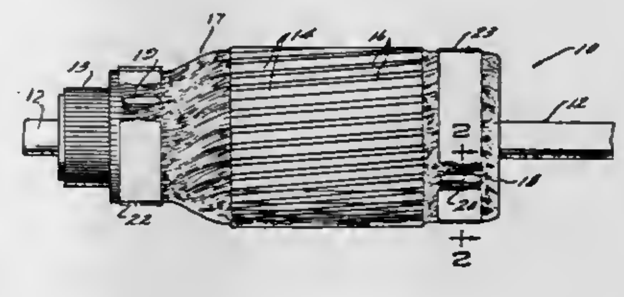
METHOD OF BALANCING A ROTOR

Ara Caramanian, deceased, late of Cincinnati, Ohio, by Adele Jeannette Caramanian, executrix, Cincinnati, Ohio; and John A. Caramanian, Colerain Township, Hamilton County, Ohio, assignors to John A. Caramanian, Colerain Township, Hamilton County, Ohio

Division of Ser. No. 859,049, Sept. 18, 1969, abandoned. This application Feb. 11, 1974, Ser. No. 441,208

Int. Cl.^{2} G01M *1/00*

U.S. Cl. 156—64 **6 Claims**



1. A method of balancing a rotor which comprises applying to the rotor a balancing composition which consists essentially of approximately 23 percent by weight of an epichlorhydrin-bisphenol A epoxy resin, 22 percent of a fibrous inorganic material, 37 percent of powdered weighting material selected from the group consisting of a powdered zinc and powdered barium sulphate, 15 percent of a reactive polyamide having an amino equivalent of 200 to 300, a catalyst and a diluent, the composition having a specific gravity of at least 2.0 and having substantially no slump at room temperature, the composition being sufficiently tacky, adherent, and cohesive to adhere to the rotor during dynamic testing before curing, dynamically testing the rotor with the balancing composition in position thereon, adjusting the amount of the balancing composition on the rotor to achieve balance, and then curing the resin.

3,939,021

PROCESS FOR PRODUCING ARTIFICIAL LEATHER

Yoshifumi Nishibayashi, Sen-nan; Atsushi Shimizu, Takaishi; Yasuhiro Shiga, Osaka; Kenji Okabe, and Ken-ichi Baba, both of Sen-nan, all of Japan, assignors to Toyo Cloth Co., Ltd., Osaka, Japan

Filed Dec. 18, 1973, Ser. No. 425,864

Claims priority, application Japan, June 16, 1973, 48-68113

Int. Cl.^{2} B32B *31/14, 05/20, 05/28*

U.S. Cl. 156—78 **20 Claims**

1. A method for producing artificial leather which comprises:

a. applying a dope comprising 100 parts by weight of a urethane prepolymer having an average molecular weight of 500–10,000 and containing about 2 to 10% by weight of terminal isocyanate groups, about 0.5 to 10 parts by weight of an amine catalyst and about 0.05 to 3 parts by weight of foam stabilizer dissolved in a hydrophobic solvent to a releasing carrier sheet;

b. exposing the resulting coating layer to a moisture containing gas at an absolute humidity of from about 2 to 50 g/m^3 and a temperature of 60°–200° C. for a sufficient period of time greater than 0.1 minute to produce microfoam in the coating layer;

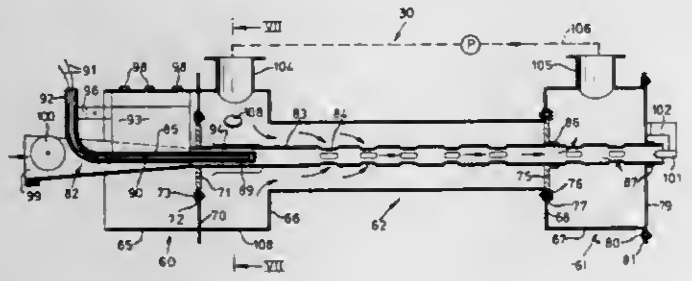
c. laminating said coating layer onto a backing material while it is adhesive;

d. allowing the laminated layer to produce a polyurethane layer having a permanent adhesion with the backing material so that an adhesion strength of about 100 to 10,000 g/cm of the width of the transferred lay is obtained; and

e. stripping off the carrier sheet thereform.

3,939,022
METHOD OF FORMING ARTICLES OF FIBROUS MATERIALS

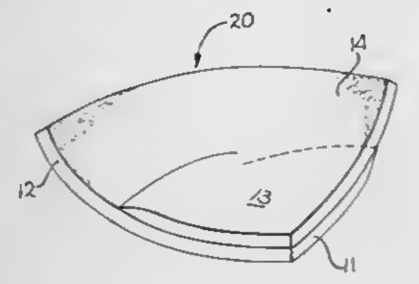
John W. Lacon, Sarnia, Canada, assignor to Fiberglas Canada Limited, Toronto, Canada
Division of Ser. No. 346,381, March 30, 1973, Pat. No. 3,912,572. This application May 22, 1974, Ser. No. 472,260
Claims priority, application Canada, Feb. 1, 1973, 162625
Int. Cl.^{2} B31F *1/00*
U.S. Cl. 156—200 **23 Claims**



1. A method of forming articles from a strip-shaped felt of fibrous material containing heat-hardenable bonding material, comprising the steps of:
supplying the felt longitudinally towards forming surfaces which are spaced apart for receiving the felt therebetween;
pulling the felt longitudinally between said spaced forming surfaces so that said spaced forming surfaces mold the cross-sectional shape of the felt by sliding contact with opposite sides of the felt;
flowing hot gas into one side of the felt, through the entire thickness of the felt and out from the opposite side of the felt to cure the bonding material;
the pulling of the felt being effected by gripping the molded and cured felt; and
cutting the molded and cured felt into predetermined lengths.

3,939,023
METHOD OF CONSTRUCTION OF BRA PAD

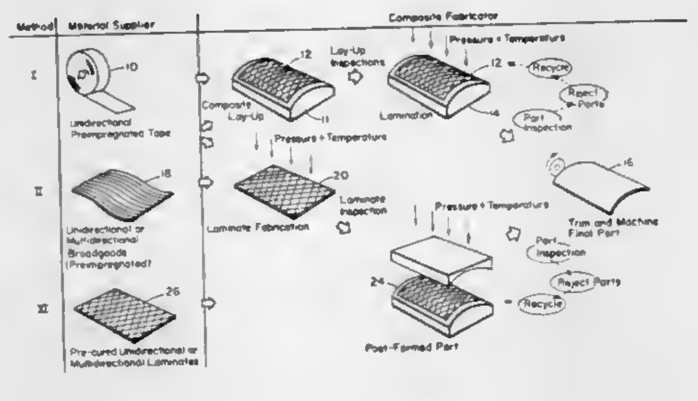
Herbert Magidson; Otto L. Huber, both of Beverly Hills, and Helmut Hennrich, Manhattan Beach, all of Calif., assignors to Moldex, Inc., Culver City, Calif.
Filed Nov. 5, 1973, Ser. No. 412,666
Int. Cl.^{2} A41C *3/00*
U.S. Cl. 156—211 **4 Claims**



1. The method of making a bra pad comprising the steps of:
a. making a beveled cut part way across a sheet of fiberfill or the like material, said cut establishing first and second portions of said sheet adjacent to said cut;
b. folding the first of said portions over another part of said sheet and positioning the two edges formed by said beveled cut at right angles to each other, the first portion having a surface thereof in engagement with a surface of said other part of said sheet, the opposite surface of said first portion being exposed and adjacent to the second portion of said sheet;
c. applying a bonding agent to the exposed faces of said first and second portions of said sheet adjacent said beveled cut;
d. forming said sheet into a substantially conical shape by placing said opposite surface of said first portion of said sheet over said second portion and engaging the surfaces of said first and second portions to which bonding agent has been applied;
e. placing said form in a heated mold whereby said material will be molded to the contours of said mold; and
f. trimming excess material from said molded form producing a bra pad.

3,939,024
STRUCTURAL REINFORCED THERMOPLASTIC LAMINATES AND METHOD FOR USING SUCH LAMINATES

John T. Hoggatt, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Apr. 10, 1974, Ser. No. 459,463
Int. Cl.^{2} B29B *1/00*
U.S. Cl. 156—242 **3 Claims**

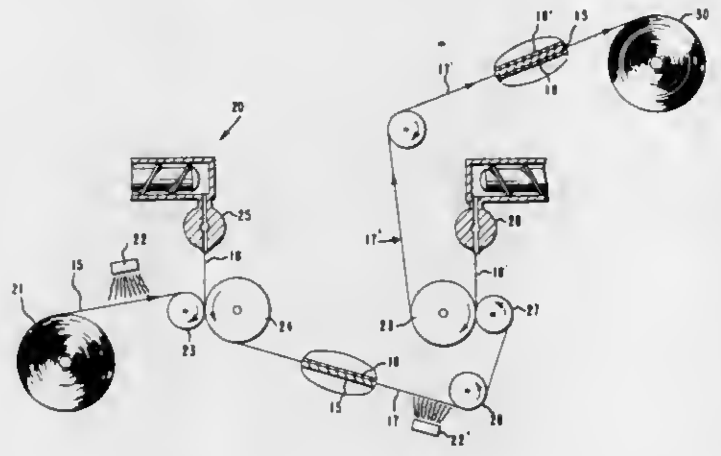


1. The method for fabricating a skeletal structure having an outer skin attached thereto consisting essentially of impregnating webs of fiber reinforcing material with a thermoplastic material such that the fiber reinforcing material constitutes about 45% to 65% of the total volume of the impregnated webs, overlapping said webs to form a composite lay-up, forming under heat and pressure a composite essentially planar laminate from the overlapped webs, permitting said thermoplastic material to harden, thereafter forming said planar laminate under heat and pressure into a desired shape, and securing said desired shape between metal cladding to said skeletal structure.

3,939,025
METHOD OF MAKING A POLYETHYLENE TEREPHTHALATE LAMINATE

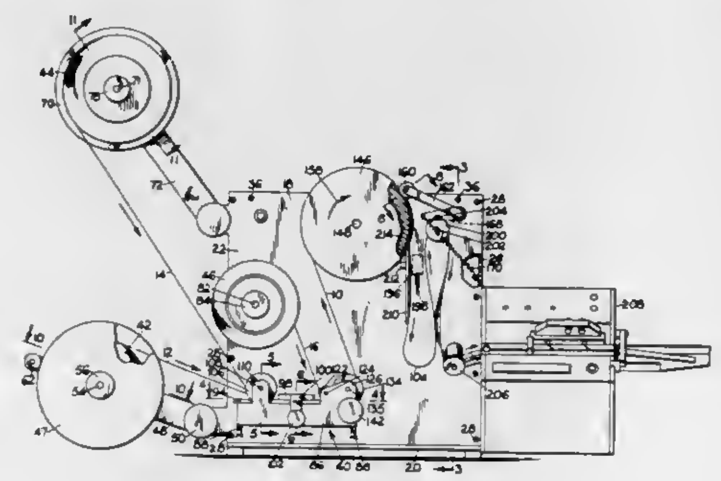
William Paul Kane, Bon Air, Va., assignor to E. I. DuPont de Nemours & Co., Wilmington, Del.
Division of Ser. No. 281,943, Aug. 18, 1972, Pat. No. 3,924,013. This application Apr. 2, 1974, Ser. No. 457,382
Int. Cl.^{2} B29F *3/00*
U.S. Cl. 156—244 **3 Claims**

1. A method of making a laminate comprising:
passing a non-browning paperboard having a pH of between 7.0 and 7.5 adjacent a heating source;
heating an uncoated first surface of such paperboard to a temperature of at least about 285°F. by means of the heating source;
extruding a layer of polyethylene terephthalate onto such uncoated first surface of the heated paperboard, such polyethylene terephthalate having an intrinsic viscosity within the range of 0.51 to 0.85; and
cooling the extruded layer of polyethylene terephthalate to solidify it and to effect a bond between the paperboard and the polyethylene terephthalate to form a 2-ply laminate.



3,939,026
PROCESS OF PREPARING A FILM STRIP FOR HANDLING

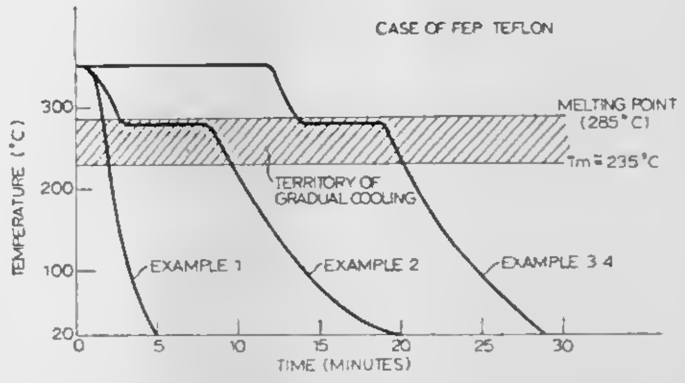
Chester H. Petry, Jr., Newberg, and J. Carl Hensley, Portland, both of Oreg., assignors to Byers Photo Equipment, Portland, Oreg.
Division of Ser. No. 291,945, Sept. 25, 1972. This application June 4, 1974, Ser. No. 476,302
Int. Cl.^{2} B32B *31/08, 31/20;* B65H *21/00*
U.S. Cl. 156—304 **2 Claims**



1. The process of preparing a film strip for handling comprising simultaneously supplying a strip of film and a tab strip of approximately the same thickness from roll sources in longitudinal parallel edge relation on a longitudinal surface between longitudinal side rails and with adjacent edges of said strips disposed on opposite sides of a dividing projection which is of less length than the longitudinal surface and which is spaced from one of the side rails on the side that is to receive the tab strip a lesser distance than the width of the tab strip to cause the latter to buckle laterally when received therein, whereby as said strip portions pass beyond said dividing projection the buckled tab strip straightens out and expands laterally so as to be in adjacent edge relation and in the same plane as the film strip as aforesaid, then supplying from a rolled source a connecting strip having a pressure sensitive surface on one side thereof in overlapping relation on said strips along said adjacent edges, and then pulling the three strips partly around a roller to compress the connecting strip onto said tab and film strips and to secure the pressure sensitive adhesive to the two strips.

3,939,027
METHOD OF BONDING FLUORO PLASTICS TO A BASE

Shogo Ohya, Kyoto; Momoyoshi Takagi, Yahatacho, and Masao Kurokawa, Tokyo, all of Japan, assignors to Masao Kurokawa, Japan
Filed Aug. 6, 1974, Ser. No. 495,541
Int. Cl.^{2} C09J *5/06*
U.S. Cl. 156—306 **3 Claims**



1. A method of bonding a fluoro plastic to a substance to be coated therewith comprising heating a fluoro plastic selected from the group consisting of tetrafluoroethylene-hexafluoropropylene copolymer, polychlorotrifluoroethylene and polyvinylidene fluoride and the substance to a temperature above the melting point of the fluoro plastic and below the point at which the fluoro plastic will be denatured, bringing the substance and the fluoro plastic in the melted state into contact and keeping them at said temperature for a time sufficient to wet the boundary surface between the fluoro plastic and the substance, cooling said boundary surface from the contact temperature to a temperature range between a temperature T_m and $T_m + 50°C$, the temperature T_m being the temperature at which the rate of crystallization of the fluoro plastic is maximized and is given by the formula [(melting point (°C)+273)×9/10]−273, gradually cooling the boundary surface in said range for at least five minutes, and thereafter cooling the substance and the fluoro plastic to room temperature, whereby the internal stress caused in the fluoro plastic is prevented from being concentrated at the boundary surface.

3,939,028
PROTECTION OF CARBON ARTICLES

Josef Schiffarth; Clive Graham Lorkin, and Kenneth John Fletcher, all of Borken, Germany, assignors to Foseco International Limited, Birmingham, England
Division of Ser. No. 343,217, March 21, 1973, abandoned.
This application Oct. 29, 1974, Ser. No. 518,897
Claims priority, application United Kingdom, Mar. 22, 1972, 13390/72; July 26, 1972, 34986/72
Int. Cl.^{2} C09J *5/00, 7/00*
U.S. Cl. 156—306 **9 Claims**

4. A method of protecting the sides of an arc furnace carbon electrode against corrosive attack when subjected to elevated temperatures during use comprising applying to the sides of the electrode at least one preformed self-supporting sheet of a material which comprises an inorganic fusible matrix of graphite-wetting material and particles of a refractory filler and thereafter heating the sides of the electrode to a temperature sufficient to fuse the matrix into a continuous refractory-containing coating which firmly adheres to the sides of the electrode.

3,939,029

METHOD OF BONDING UTILIZING A HEAT ACTIVATED POLYAMIDE ADHESIVE

Kenneth D. Gilliam, Sugar Grove, and Carl Serres, Naperville, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Nov. 16, 1973, Ser. No. 416,442

Int. Cl.^{2} C09J *5/06;* **C08G** *73/10;* **B32B** *27/34, 15/08*

U.S. Cl. 156—331 10 Claims

1. A method of adhering surfaces comprising the steps of:

a. placing between the surfaces to be bonded a resinous polyamide having an inherent viscosity greater than 0.2 and containing an aliphatic or cycloaliphatic diamine residue of up to about 20 carbon atoms copolymerized with a carboxylic aromatic acid residue having 3 carboxyl groups wherein two of said carboxyl groups are linked to said diamine residue through amide bonds and wherein the remaining unreacted carboxyl groups is in either the acid or ester form attached to a carbon atom which is adjacent to a second carbon atom of the same aromatic ring containing one of the carboxyl groups involved in said amide bond such that said unreacted carboxyl group can imidize with said amide bond,

b. heating the surfaces and polyamide such as to induce imidization, and

c. cooling the bonded surfaces.

3,939,030

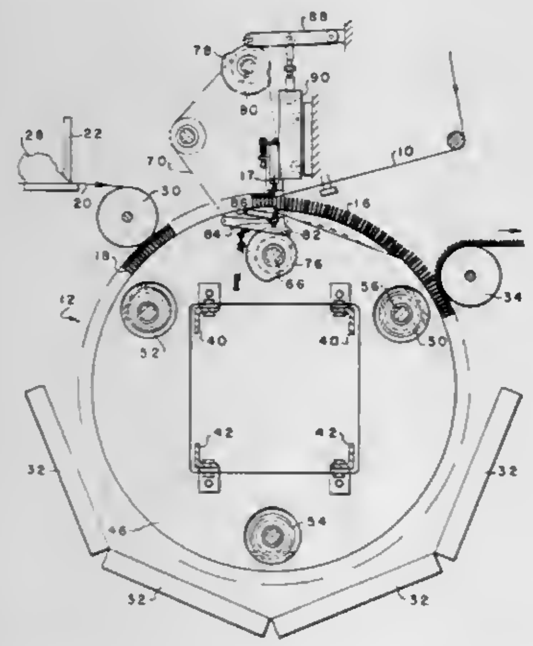
CARPET MACHINE

Charles A. Wethington, and David G. Littlejohn, both of Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 309,489, Nov. 24, 1972, abandoned. This application July 8, 1974, Ser. No. 486,518

Int. Cl.^{2} D04H *13/00;* **D05C** *15/00*

U.S. Cl. 156—435 5 Claims



1. Apparatus to produce a bonded pile fabric comprising: a rotor, means to rotate said rotor, means slidably mounting a plurality of blades in said rotor, a second single blade member reciprocably mounted above said plurality of blades and operably associated therewith, means to supply yarn between said plurality of blades and said second blade member, said second blade member having notches in the bottom edge thereof to form high loops and low loops between two blades of said plurality of blades, means to move said second blade member downwardly at a predetermined time to bend the yarn over one blade of said plurality of blades, means to slide upwardly the blade of said plurality of blades next adjacent to the blade over which the yarn is bent to form a loop in said yarn, means to move said second blade member upwardly away from the formed loops, means to periodically move said second blade member in a direction parallel to the axis of said rotor as said second blade member moves upwardly, means to index said rotor to rotate said rotor a predetermined distance to place the blade members in loop forming position, means to supply an adhesive backed backing material into contact with said formed loop, means to set the bond between said adhesive and said loop and means to guide said backing material with loops bonded thereto away from said apparatus, said rotor including a means to maintain said blades of said plurality of blades in said loops until said rotor is indexed to a point where a formed loop is guided away from said apparatus and a means to align said plurality of blades to slide downwardly after the formed loop is guided away from said apparatus.

3,939,031

DEVICE FOR BUTT SPLICING WEBS

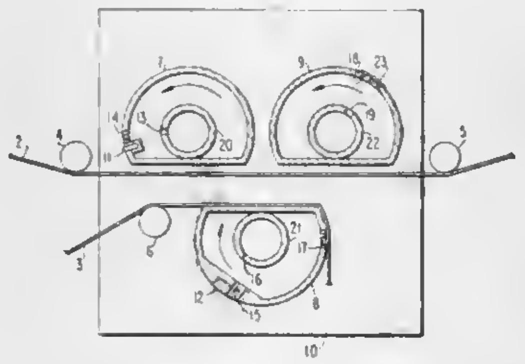
Hisashi Takimoto, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Nakanuma Ashigara, Japan

Filed Nov. 29, 1974, Ser. No. 528,310

Claims priority, application Japan, Nov. 29, 1973, 48-134581

Int. Cl.^{2} B31F *5/06*

U.S. Cl. 156—505 2 Claims



1. In an apparatus for butt splicing of webs including a framework, a first cutting drum provided with a cutting member on the periphery thereof, a second cutting and splicing drum having a cutting member on its periphery cooperating with said cutting member of said first drum, and a third splicing drum including means for holding a piece of splicing tape thereon for movement therewith, the improvement comprising:

means for rotatably supporting said drums on said framework for rotation in synchronism with the second drum positioned intermediate of and closely adjacent to said first drum and said third drum,

means for feeding the leading end of a new web and the trailing end of an old web along a path extending in the direction of feed between said second drum and said first drum and said second drum and said third drum, such that the leading end of the succeeding web and the trailing end of the preceding web are sandwiched between said first and second drums to simultaneously sever the same by said cooperating cutting members, and the abutting ends of the succeeding and preceding webs are subsequently sandwiched along with said piece of splicing tape between said second and third drums such that said splicing tape overlies said abutting web ends to splice the same,

said first cutting drum including means on the periphery thereof trailing the cutting member carried by said first cutting drum for holding the trailing end of the preceding web to said first cutting drum after severance thereof,

means on the periphery of the second drum leading said second drum cutting means for holding the leading end of said succeeding web on the periphery of said second and splicing drum, and for holding the leading end of the succeeding web after cutting, on the periphery of said second cutting and splicing drum to the position where the abutting ends of the preceding and succeeding webs are spliced by the piece of splicing tape at the splicing zone;

whereby, the cut portion of the trailing end of the preceding web is maintained in contact with the periphery of the first cutting drum and the cut portion of the leading end of the succeeding web is maintained on the periphery of the second cutting and splicing drum.

3,939,032

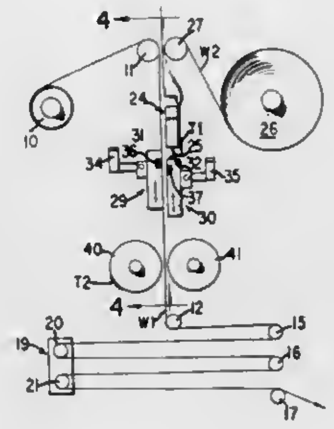
WEB BUTT SPLICER

Charles M. Taitel, Parsippany, and Ralph L. Ryan, Lake Parsippany, both of N.J., assignors to Compensating Tension Controls, Inc., Orange, N.J.

Filed Dec. 27, 1974, Ser. No. 536,726

Int. Cl.^{2} B31F *5/06*

U.S. Cl. 156—505 10 Claims



1. Apparatus for butt splicing the end of web material from a spare roll to web material being drawn from a depleting supply roll comprising in combination a knife member mounted to be movable laterally between two operative positions on either side of a line having sides facing toward and away from said line in each of the operative positions and having an end perpendicular to said line providing a knife edge on each side of said knife member, means for directing the web in use along said line, means on each side of said knife member for securing the end portion of the spare roll web to that side thereof facing away from said line with the end of the spare web positioned along the knife edge on that side, a pair of plate members on either side of said line movable parallel to said line and each having an end parallel to and facing said end of said knife member, means for moving the plate member on the opposite side of said line from the knife member to align said end thereof with said end of said knife member to cooperate therewith in severing the web in use, tape pressing means mounted on each of said plate members, means for moving the plate member on the same side of the line as the knife member to operatively position said tape pressing means thereon, means for stopping the movement of the web along said line, means for moving the knife member across said line while the web is stopped to cut the web in use and butt the end of the spare web thereto, and means for operating said operatively positioned tape pressing means while the web is stopped to press the overlapping portion of a tape applied to and overlapping the web end carried by the knife member against the cut end of the web in use to splice the spare web thereto.

3,939,033

ULTRASONIC WELDING AND CUTTING APPARATUS

Frank J. Grgach, Danbury, and Everett A. Harris, Ridgefield, both of Conn., assignors to Branson Ultrasonics Corporation, New Canaan, Conn.

Filed Dec. 16, 1974, Ser. No. 532,847

Int. Cl.^{2} B06B *3/00;* **B29C** *27/08*

U.S. Cl. 156—515 18 Claims

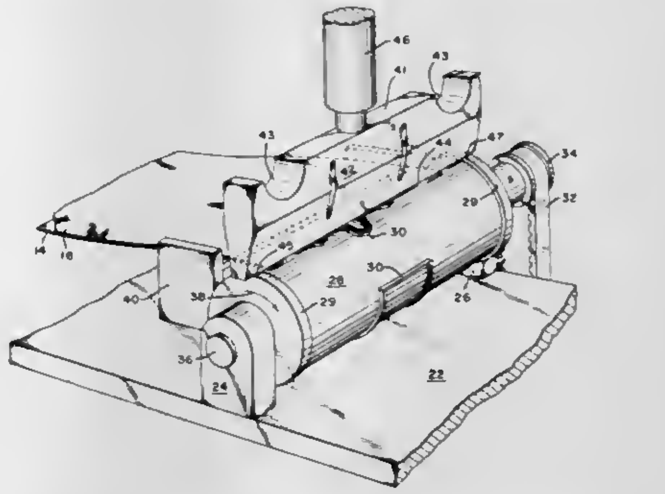
1. In an ultrasonic welding and cutting apparatus for welding and cutting soft film and fabric material, the combination of:

horn means adapted to be resonant at a predetermined frequency having an input surface for receiving vibratory energy of said frequency and an opposite frontal surface for transferring the received energy to material in contact with said frontal surface;

electroacoustic means coupled to said horn means at its input surface for rendering said horn means resonant;

anvil means disposed opposite said frontal surface for supporting the material for contact with said frontal surface to provide for energy transfer from said horn means to the material, said anvil means including a pattern of raised welding and cutting surfaces in the shape of an article to be produced, and raised bearing surface means for impact by said frontal surface, and

said horn being constructed to exhibit substantially uniform motional excursion of said frontal surface in the direction toward said anvil at the region opposite said pattern of welding and cutting surfaces and including means for producing reduced motional excursion of said frontal surface at the region of impact with said bearing surface means.



3,939,034

TAB TAPE SPLICING APPARATUS

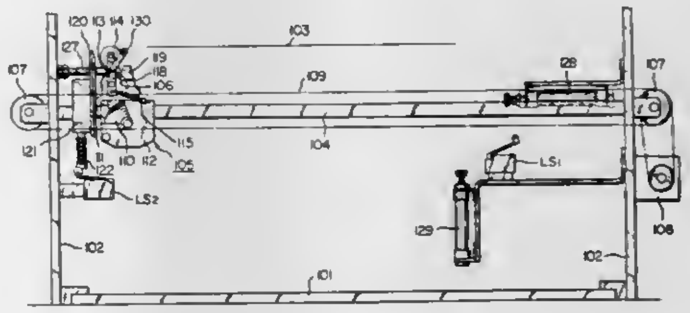
Iwao Tanaka, Tokyo; Yukio Shiratori, Higashikurume, and Hidetaro Iijima, Urawa, all of Japan, assignors to Nichiban Co., Ltd., Tokyo, Japan

Filed June 7, 1974, Ser. No. 477,272

Claims priority, application Japan, Feb. 20, 1974, 49-19421

Int. Cl.^{2} B32B *31/04*

U.S. Cl. 156—522 10 Claims



1. An apparatus for splicing a tab tape to a pressure-sensitive adhesive sheet comprising: a guide rail arranged opposite to an adhesive surface of a pressure-sensitive adhesive sheet and extending in the breadthwise direction of said sheet; a movable frame slidably carried on said guide rail and having a tab tape holder; an arm pivotably attached to said movable frame and normally biased into an upright position by a spring to guide, press and fasten a tab tape to said adhesive surface

of said pressure-sensitive adhesive sheet; a splicing roll rotatably attached to one end of said arm; a stopper attached to said movable frame to restrain the movement of said arm in said upright position; a ratchet mechanism mounted on said movable frame whereby said arm is allowed to rotate in a direction in which said arm is tiltable; a projecting rod provided at a starting position of said movable frame on said guide rail to release said ratchet mechanism; a hydraulic piston cylinder unit provided at a terminal position of said movable frame on said guide rail to rotate said arm in said tiltable direction; cutting means for cutting said tab tape between said splicing roll and an end edge of said pressure-sensitive adhesive sheet; and drive controlling means for reciprocating said movable frame between said starting position and said terminal position.

3,939,035

METHOD OF PRODUCING MONOCRYSTALLINE SEMICONDUCTOR MATERIAL, PARTICULARLY SILICON, WITH ADJUSTABLE DISLOCATION DENSITY

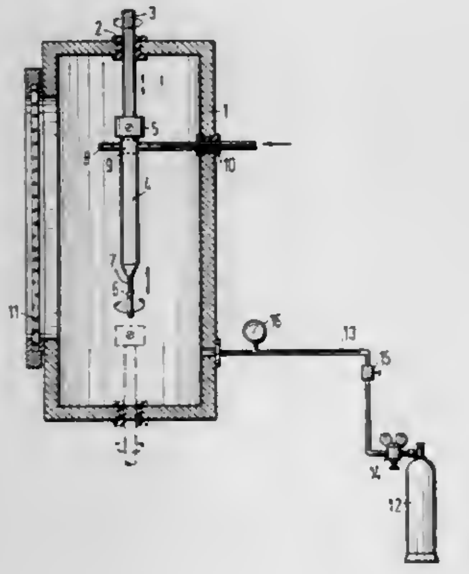
Wolfgang Keller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich & Berlin, Germany

Continuation of Ser. No. 230,878, March 1, 1972, abandoned. This application Apr. 22, 1974, Ser. No. 462,936

Claims priority, application Germany, Mar. 31, 1971, 2115650

Int. Cl.² B01J *17/18*

U.S. Cl. 156—618 **1 Claim**



1. Method of producing monocrystalline silicon having a uniform dislocation density in the range of 100,000 dislocations/cm² which comprises, in a crucible-free zone melting process, passing a molten zone through a rod situated in a recipient and with the aid of a seed crystal fused to an end of the rod converting the rod into a monocrystalline silicon rod free of dislocations, permitting the rod to cool, and then using the dislocations which exist on the end of the rod due to the zone - melting process as seeds, passing a heated zone through the dislocation-free monocrystalline silicon rod at a maximum temperature of 1370°C in the direction opposite to the direction of the zone melting process at a speed of 1–2 mm/min. to impart to said dislocation-free monocrystalline silicon rod a uniform dislocation density in the range of 100,000 dislocations/cm².

3,939,036

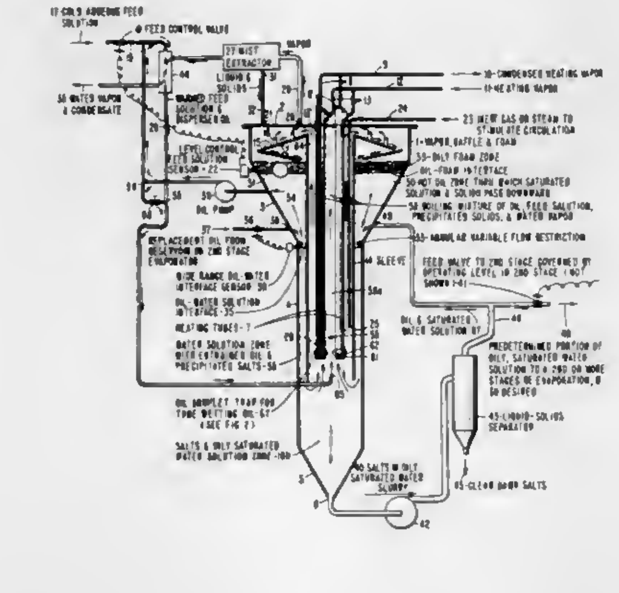
HEAT EXCHANGERS AND EVAPORATORS

Ransome W. Erwin, Ogden, Utah, assignor to Austral-Erwin Engineering Co., Houston, Tex.

Continuation-in-part of Ser. No. 306,183, Nov. 14, 1972. This application Oct. 25, 1973, Ser. No. 409,659

Int. Cl.² B01D *1/100;* **C10G** *33/00;* **B01D** *1/26, 3/34*

U.S. Cl. 159—47 R **18 Claims**



1. The method of evaporating an aqueous feed solution containing dissolved solids or mineral salts and separating the resulting product into individual components without adherence of the solids or mineral salts to any surfaces contacting the aqueous solution, said method being carried out in an evaporating and separating apparatus which comprises (1) an evaporating chamber including a confined heating and vaporizing zone having heating elements therein and (2) succeeding separating chambers or zones separate from the evaporating chamber said succeeding chambers or zones including separating zones for (a) misty vapors, (b) oily foam, (c) hot oil, (d) oily aqueous solution, and (e) oily aqueous solution solids-slurry; all contacting surfaces of said evaporating and separating apparatus, including the evaporating chamber and the succeeding chambers or zones, being formed of preferentially oil wettable material, and all contacting surfaces of said evaporating chamber being formed of substantially zero water adsorbent polymeric fluorocarbon material; which method comprises the following steps:

a. Flowing the aqueous solution as an continuous medium mixed with sufficient dispersed oil to form a continuous film of oil on all preferentially oil wettable contacting surfaces, flowing said aqueous solution upwardly through said confined heating and vaporizing zone and therein contacting said heating elements, the surfaces of which are substantially zero water adsorbent and totally wetted with a film of oil, thereby converting a portion of the aqueous solution to water vapor and precipitated solids, thus forming a mixture comprising hot oil, misty vapors, solids, and the remaining aqueous solution; and

b. Separating the mixture of hot oil, misty vapors, solids, and remaining aqueous solution (still the continuous water medium) into components thereof in said succeeding separating zones or chambers in which substantially all surfaces contacting these materials are preferentially oil wettable.

3,939,037

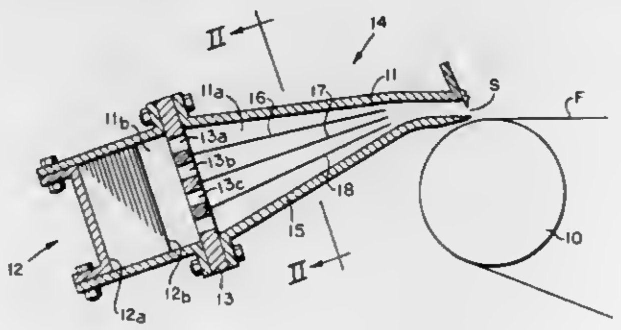
HEADBOX WITH FLEXIBLE TRAILING ELEMENTS

Lester M. Hill, Cassville, Wis., assignor to Beloit Corporation, Beloit, Wis.

Continuation of Ser. No. 345,436, March 27, 1973, abandoned, which is a continuation-in-part of Ser. No. 121,775, March 8, 1971, abandoned, which is a division of Ser. No. 698,633, Jan. 17, 1968, Pat. No. 3,607,625. This application Mar. 14, 1974, Ser. No. 451,225. The portion of the term of this patent subsequent to Sept. 21, 1988, has been disclaimed.

Int. Cl.² D21F *1/02*

U.S. Cl. 162—341 **13 Claims**



1. In a headbox for delivering stock to a forming surface, the headbox having a slice chamber and a slice opening, the improvement comprising:

a flexible element positioned in the slice chamber for stock flow induced movement and extending in the direction of stock flow, and

means supporting said element in the slice chamber with its downstream portion unattached, whereby a fine scale turbulence is produced in the stock without large scale eddies.

3,939,038

NUCLEAR REACTOR, CORE VESSEL INTERCEPT CONSTRUCTION

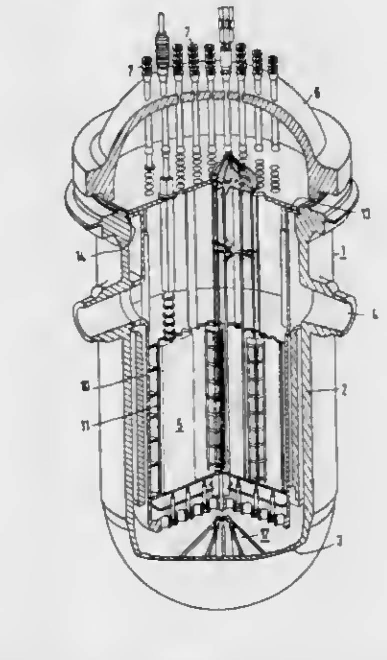
Konrad Pernstich, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed July 18, 1973, Ser. No. 380,471

Claims priority, application Germany, July 28, 1972, 2237208

Int. Cl. G21c *9/00*

U.S. Cl. 176—38 **8 Claims**



1. A pressurized-water nuclear reactor including a pressure vessel having a substantially cylindrical side wall and a substantially hemispherical bottom wall above which a core vessel is positioned by its top, with its lower end spaced above this bottom wall, and means extending upwardly from the latter towards said lower end for intercepting said core vessel if it accidentally falls, said pressure vessel having a cover and pressurized-water coolant connections; wherein the improvement comprises said means being formed by a structural metal framework inside of said vessel and supported by said bottom wall at a plurality of interspaced positions, said framework extending upwardly until at least adjacent to the core vessel's said lower end, at least some of said interspaced locations being adjacent to the peripheral portion of said bottom wall, said framework being made of ductile metal and having upper portions proportioned to deform beyond the elastic limit of the metal and absorb the shock of intercepting said core vessel when it falls.

3,939,039

REACTOR CORE CLAMPING DEVICE

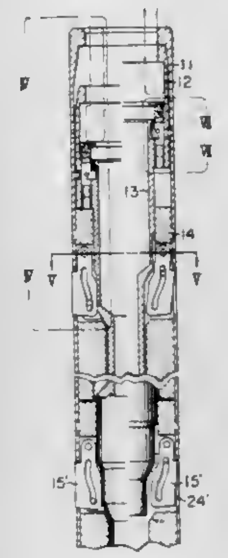
Katumi Seki; Masaru Kawara, and Yasuo Tachi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 12, 1973, Ser. No. 378,690

Claims priority, application Japan, July 12, 1972, 47-69064

Int. Cl. G21c *3/12*

U.S. Cl. 176—87 **14 Claims**



1. For use in a nuclear reactor having a core, a clamping device for clamping a plurality of core elements together in forming the core, comprising: projection means being movably mounted on a core element for movement between a withdrawn position and a position projecting outwardly from a core element toward another core element when the core elements are arranged within the core of a nuclear reactor; operating means for moving said projection means from its withdrawn position to its projected position a predetermined length to clamp the core element in cooperation with other core elements of the nuclear reactor core; a wrapper tube forming the exterior of the core element mounting with its longitudinal axis extending generally vertical in the reactor core and being of hexagonal shape in horizontal cross section; said projection means being provided adjacent the upper portion of said wrapper tube; said operating means being mounted within said wrapper tube for vertical movement; said wrapper tube having a hole within one of its side walls for said projection means; said projection means moving generally horizontally from within said wrapper tube in its withdrawn position horizontally through its hole to project horizontally beyond said hole and outside of said wrapper tube in its projected position; and separate lock means for locking said vertically moving operating means and said wrapper tube against relative movement in one of said projection means positions.

3,939,040
ENZYMATIC BATING METHOD

Rolf Monsheimer, Darmstadt-Eberstadt, and Ernst Pfleiderer, Darmstadt-Arheilgen, both of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed Apr. 23, 1974, Ser. No. 463,392

Claims priority, application Germany, Apr. 28, 1973, 2321629

Int. Cl.² C14C *1/06*

U.S. Cl. 195—6 2 Claims

1. A method for bating soaked, limed, dehaired skins and hides which comprises contacting said skins and hides for 15 minutes to 300 minutes with an aqueous bath having a temperature from 25° to 35°C. and a pH between 7.5 and 10, said aqueous bath comprising an enzyme mixture consisting essentially of

a. a bacterial protease having an optimum efficacy towards hemoglobin at a pH from 10 to 12, and

b. a fungus protease having an optimum efficacy toward casein at a pH above 7, a neutral to weakly alkaline bacterial protease, papain, trypsin, or a mixture of these proteases, said enzyme mixture being present in an amount equivalent to 0.3 to 6.5 percent, by weight of said skins and hides, of enzymes having an enzymatic activity of 1000 Loehlein-Vollhardt units.

3,939,041
METHOD OF MAKING FRUCTOSE

Donald J. Lartigue, Corning, and Howard H. Weetall, Elmira, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 31, 1974, Ser. No. 475,157

Int. Cl.² C12D *13/00*

U.S. Cl. 195—31 F 1 Claim

1. A method of preparing fructose from an aqueous dextrose solution which comprises the step of reacting the solution under incubation conditions with crosslinked bacterial cells of an organism of the genus Streptomyces, the crosslinked cells having glucose isomerase activity and being the reaction product of a suspension of individual cells having glucose isomerase activity and an aqueous solution of tetrazotized benzidine, the tetrazotized benzidine solution having dissolved therein between about 4.0 and 20.0 mg of tetrazotized benzidine per gram of cells.

3,939,042
PROCESS FOR THE PRODUCTION OF L-GLUTAMIC ACID

Kiyoshi Nakayama, Sagamihara; Mamoru Kobata, Kawasaki; Yoshitake Tanaka, Machida; Tadaaki Nomura, Tokyo, and Ryoichi Katsumata, Maebashi, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1974, Ser. No. 495,272

Claims priority, application Japan, Aug. 11, 1973, 48-89679

Int. Cl.² C12D *13/06;* C12K *1/02*

U.S. Cl. 195—49 6 Claims

1. A process for producing L-glutamic acid which comprises culturing a mutant strain derived from a microorganism having an ability to utilize methanol and an ability to produce L-glutamic acid and belonging to a genus selected from Pseudomonas and Protaminobacter, said mutant having at least one property selected from a) a requirement for L-methionine, b) a requirement for L-isoleucine, c) a requirement for L-phenylalanine and d) a resistance to DL-lysine hydroxomate, in a medium containing methanol as the principal carbon source, accumulating L-glutamic acid in the culture liquor and recovering L-glutamic acid therefrom.

3,939,043
ANTIBIOTICS DESIGNATED XK-88 SERIES AND PROCESS FOR PRODUCTION THEREOF

Takashi Nara, Tokyo; Seigo Takasawa, Hadano; Ryo Okachi, Machida; Isao Kawamoto, Machida; Mitsuyoshi Yamamoto, Machida; Seiji Sato, Machida; Tomoyasu Sato, Machida, and Atsuko Morikawa, Tama, all of Japan, assignors to Abbott Laboratories, North Chicago, Ill.

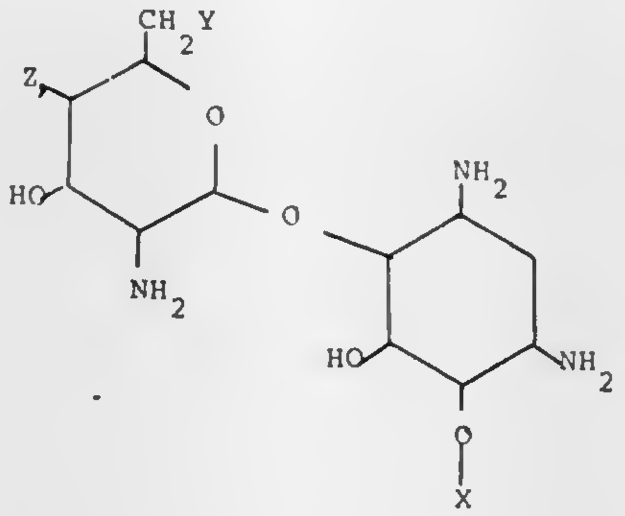
Filed Oct. 21, 1974, Ser. No. 516,816

Claims priority, application Japan, Oct. 24, 1973, 48-118932

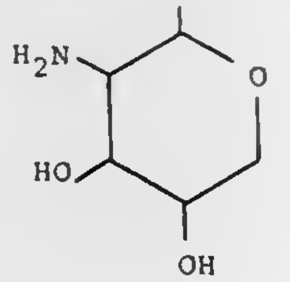
Int. Cl.² C12D *9/00*

U.S. Cl. 195—80 R 7 Claims

1. A method for producing antibiotic compounds of the formula



wherein X represents



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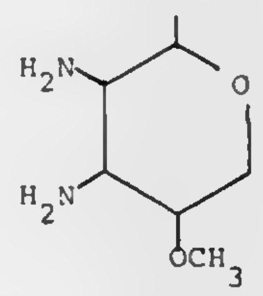


or —H; Y represents $—NH_2$ or —OH, and is $—NH_2$ when X is —H; and Z represents —H or —OH and is —H when X is —H, which comprises culturing *Streptomyces hofuensis* ATCC 21970, or a mutant thereof capable of producing at least one of said compounds, in a nutrient medium containing assimilable sources of nitrogen and carbon until substantial antibacterial activity is imparted to said medium and isolating at least one of said compounds therefrom.

3,939,044
ANAEROBIC MICROBE TRANSPORT ASSEMBLY AND METHOD OF USING

Tracy Dale Wilkins, and Franklin Jimenez-Ulate, both of Blacksburg, Va., assignors to Virginia Polytechnic Institute Educational Foundation, Inc., Blacksburg, Va.

Filed Apr. 23, 1975, Ser. No. 570,641

Int. Cl.² C12B *1/00*

U.S. Cl. 195—126 26 Claims

1. An assembly for maintaining anaerobic microorganisms, which comprises;

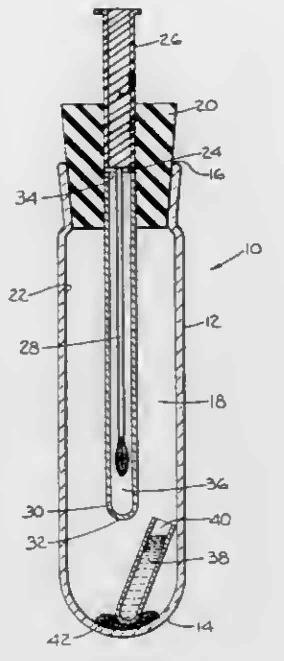
a. a first tubular container having hermetically sealed ends and which defines a hermetically sealed chamber;

b. means disposed in said chamber for removing gaseous oxygen;

c. a second tubular container having a closed end and an open end and which defines a compartment, said second container being mounted on said first container so that there is no communication between said chamber and said compartment, said compartment being in open communication with the atmosphere outside of said chamber;

d. means of hermetically sealing said open end at will; and

e. means of establishing communication between said chamber and said compartment when said open end is hermetically sealed.



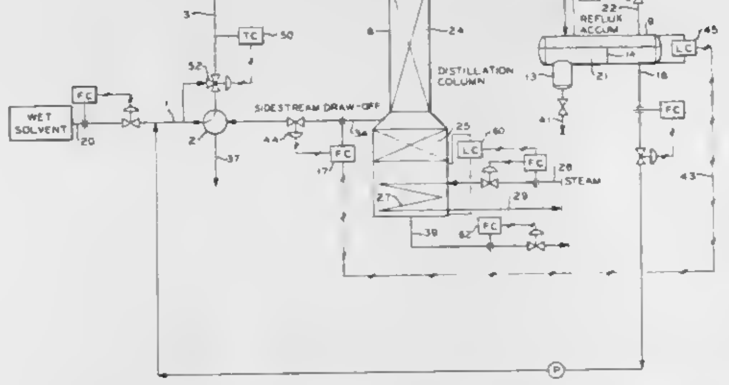
3,939,045
DISTILLATION METHOD AND APPARATUS

Harry L. Walker, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 284,619, Aug. 29, 1972, abandoned. This application Jan. 9, 1974, Ser. No. 431,944

Int. Cl.² B01D *3/42*

U.S. Cl. 203—1 6 Claims



1. A method for distilling the normally liquid media remaining after a catalytic polymerization to separate the polymerization solvent from components in the normally liquid media which have greater and lesser volatility comprising,

a. introducing the normally liquid media into a distillation zone;

b. withdrawing an overhead stream comprising components having volatility higher than that of the polymerization solvent along with some of the polymerization solvent, a side stream comprising said polymerization solvent and a bottom stream comprising components having lower volatility than the polymerization solvent;

c. accumulating the polymerization solvent that is in the overhead stream in a reservoir; and,

d. sensing the level of the polymerization solvent in said reservoir and controllably withdrawing said side stream from said distillation zone responsive to said level of said polymerization solvent in said reservoir.

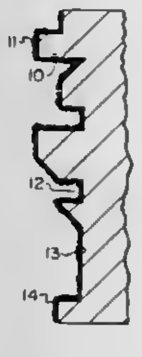
3,939,046
METHOD OF ELECTROFORMING ON A METAL SUBSTRATE

Gordon A. Conn, Verona, and William R. Gass, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 29, 1975, Ser. No. 572,813

Int. Cl.² C25D *1/00, 1/02, 5/44*

U.S. Cl. 204—4 10 Claims



1. A method of making a metal article comprising the steps of:

1. providing an aluminum master substrate having at least one surface which is desired to be reproduced, said surface being covered with an oxidized layer;
2. making the aluminum master substrate cathodic at a current density of between about 10A/sq. ft. to about 500A/sq. ft., in an aqueous electrically conducting solution selected from the group consisting of an acid solution or acid salt solution or mixtures thereof which will not etch aluminum, said solution having a temperature of up to about 50°C, said current causing evolution of gas at the solution-oxidized surface interface and chemical activation effective to thin and smooth the oxidized layer without removing it;
3. coating the smoothed, oxidized surface of the aluminum master substrate with a thin metal layer; and
4. dissolving the aluminum master substrate and the attached oxidized layer, to provide a metal article having a surface that is the negative duplicate of the surface of the master substrate.

3,939,047
METHOD FOR FABRICATING ELECTRODE STRUCTURE FOR A SEMICONDUCTOR DEVICE HAVING A SHALLOW JUNCTION

Hideo Tsunemitsu, and Hiroshi Shiba, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 305,673, Nov. 13, 1972, Pat. No. 3,848,260. This application Aug. 29, 1974, Ser. No. 501,633

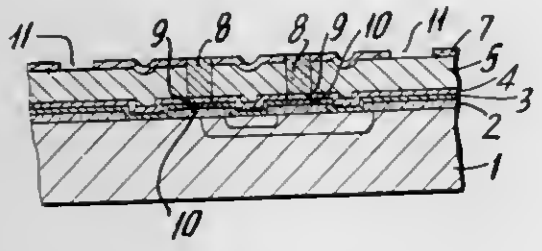
Claims priority, application Japan, Nov. 15, 1971, 46-91405

Int. Cl.² C25D *5/02;* H01L *23/48*

U.S. Cl. 204—15 13 Claims

1. A method of fabricating a semiconductor device comprising the steps of providing a semiconductor substrate, forming an insulating film over the upper surface of said substrate except for predetermined portions thereof, successively forming first, second, and third metal layers on said substrate and said insulating film, said first metal layer being capable of being alloyed with said semiconductor substrate at a first temperature, said first metal layer having a thickness less than

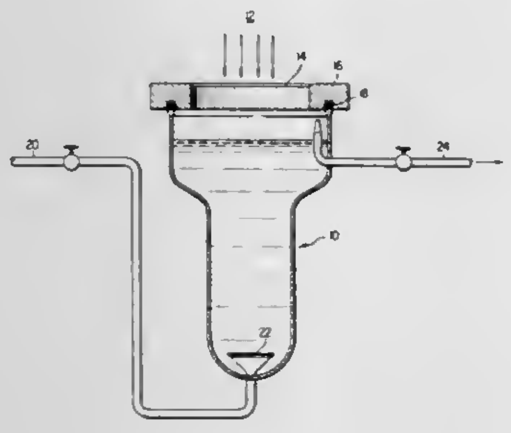
the depth of the shallowest junction in the substrate, said second metal layer being capable of being alloyed with said substrate at a second temperature higher than said first temperature, said third metal layer having a good electric conductivity and being thicker than any of said first and second metal layers, anodically oxidizing said third metal layer to convert the selected portion thereof into an insulator to the surface of said second metal layer, anodically oxidizing those portions of said second and first metal layers which are aligned with said selected portion of said third metal layer, and thereafter performing heat treatment for alloying a portion of said first metal layer with said substrate at a temperature below said second temperature.



3,939,048
PROCESS FOR MAKING ANHYDROUS METAL HALIDES

Warren H. Philipp, North Olmsted; Stanley J. Marsik, Fairview Park, and Charles E. May, Rocky River, all of Ohio, assignors to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Nov. 27, 1974, Ser. No. 527,728
Int. Cl.^{2} B01J *1/10*
U.S. Cl. 204—157.1 H **10 Claims**



1. A process for the preparation and isolation of high purity anhydrous lower valence state metal halides comprising
  dissolving the corresponding higher valence state metal halide of the desired lower valence metal halide in an organic liquid, said organic liquid being selected such that the higher valence state metal halide is soluble therein and the lower valence state metal halide is insoluble therein, and
  subjecting the solution to high energy radiation which reduces the higher valence state metal halide to its corresponding lower valence state metal halide at a temperature in the range of from about 0°C. to about room temperature.

3,939,049
PROCESS FOR RADIATION GRAFTING HYDROGELS ONTO ORGANIC POLYMERIC SUBSTRATES

Buddy D. Ratner, and Allan S. Hoffman, both of Seattle, Wash., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 10, 1974, Ser. No. 459,734
Int. Cl.^{2} C08F *2/46;* C08L *43/04, 83/10*
U.S. Cl. 204—159.13 **7 Claims**

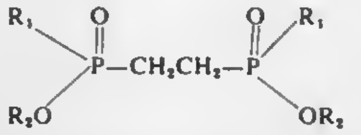
1. In a method for radiation grafting hydrogels onto an organic substrate selected from the group consisting of silicone rubber, polyurethane, polyvinyl chloride, and polyurethane-polyether copolymers wherein the substrate is immersed in an aqueous polymer graft solution and thereafter subjected to ionizing radiation, the improvement comprising adding an amount of cupric or ferric ions within the concentration range of 0.0008 M to 0.0016 M to an aqueous graft solution consisting of N-vinyl-2-pyrrolidone monomer or mixtures of N-vinyl-2-pyrrolidone and a second monomer selected from the group consisting of 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, propylene glycol acrylate, acrylamide, methacrylic acid, and methacrylamide, wherein the N-vinyl-2-pyrrolidone constitutes from 1/20 to 18/20 by volume of said mixture, said aqueous graft solution comprising a total monomer content in the range of 4 to 40% by volume.

3,939,050
PROCESS FOR THE PREPARATION OF ETHANE-1,2-DIPHOSPHINIC ACID DIESTERS

Hans-Jerg Kleiner, Bad Soden, Taunus, and Sigurd Rösinger, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

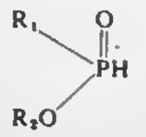
Filed Jan. 17, 1974, Ser. No. 434,029
Claims priority, application Germany, Mar. 19, 1973, 2313581
Int. Cl.^{2} B01J *1/10*
U.S. Cl. 204—162 HE **7 Claims**

1. In a process for the preparation of an ethane-1,2-diphosphinic acid diester of the formula



$$R_1(R_2O)P(=O)-CH_2CH_2-P(=O)R_1(OR_2)$$

wherein R_1 represents an alkyl, phenyl or phenalkyl group having from 1 to 18 carbon atoms and R_2 is an alkyl group or a halogen substituted alkyl group having from 1 to 18 carbon atoms by reacting with acetylene a phosphorous acid ester of the formula



$$R_1(R_2O)P(=O)H$$

wherein R_1 and R_2 are as defined above, the improvement which comprises activating the reaction with high-energy irradiation.

3,939,051
PROCESS FOR ELECTRODEPOSITION OF CATIONIC THERMOSETTING COMPOSITIONS

Carl C. Anderson, Gibsonia, and Joseph R. Marchetti, Greensburg, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

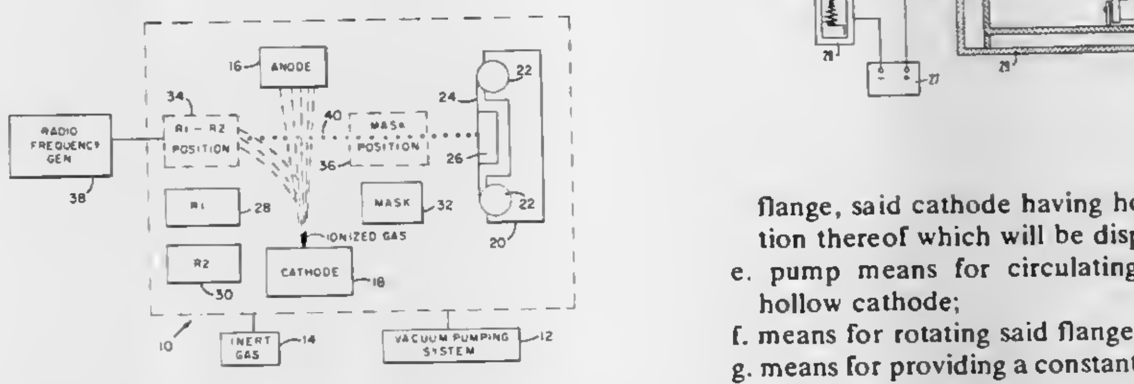
Filed Aug. 2, 1971, Ser. No. 168,433
Int. Cl.^{2} C25D *13/06*
U.S. Cl. 204—181 **5 Claims**

1. A method of coating an electrically-conductive substrate which comprises passing electric current between an anode and a cathode in contact with an aqueous coating composition comprising an interpolymer of:
  a. from about 5 to about 50 percent by weight of a secondary or tertiary nitrogen-containing aminoalkyl monomer;
  b. from about 5 to about 80 percent by weight of reaction product comprising a half-blocked diisocyanate and an unsaturated hydroxyl-containing monomer; and
  c. from about 0 to about 90 percent by weight of at least one ethylenically unsaturated monomer.

3,939,052
DEPOSITING OPTICAL FIBERS

Leon H. Riley, 7707 Logan Drive SW., Huntsville, Ala. 35802

Filed Jan. 15, 1975, Ser. No. 541,363
Int. Cl.^{2} C23C *15/00;* G02B *5/16*
U.S. Cl. 204—192 **3 Claims**



1. A process for depositing and positioning optical fiber cores onto a base tape in a predetermined manner, comprising:
  evacuating a vacuum enclosure;
  filling said enclosure with an inert gas;
  forming an ionized plasma within said enclosure;
  positioning a supply of cladding material in a target position;
  energizing a tape feed to pass plastic tape over a deposition position;
  actuating a control means to cause sputtering of said cladding material onto said plastic tape;
  removing said cladding material supply from said target position;
  positioning a supply of fiber core material in said target position;
  placing an interruption mask over said deposition position, and
  re-energizing said tape feed and said control means to cause sputtering of said fiber core material through said interruption mask onto a cladded plastic tape.

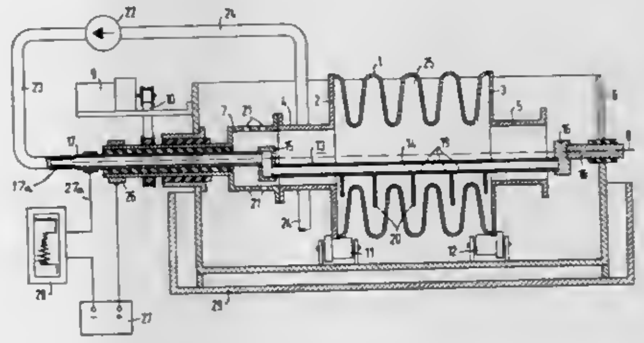
3. A process as defined in claim 1 wherein said interruption mask is provided with a plurality of slits to definitely position fiber cores on said cladded tape.

3,939,053
APPARATUS FOR THE ELECTROLYTIC POLISHING OF NIOBIUM STRUCTURES

Heinrich Diepers, Erlangen-Bruck, and Otto Schmidt, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Division of Ser. No. 289,543, Sept. 15, 1972, Pat. No. 3,850,769. This application June 28, 1974, Ser. No. 484,247
Int. Cl.^{2} C25F *7/00*
U.S. Cl. 204—212 **5 Claims**

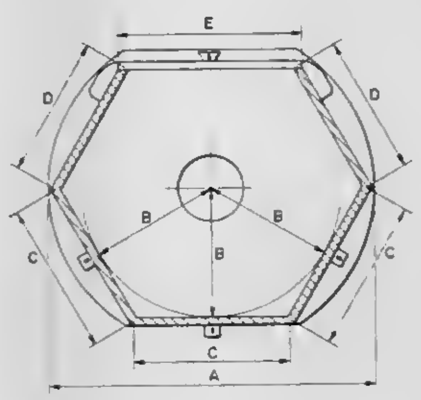
1. Apparatus for electrolytically polishing a hollow niobium body comprising:
  a. an open tank having side walls and a bottom adapted to accept an electrolyte made up of an aqueous solution of sulfuric and hydrofluoric acid;
  b. at least one tubular flange rotatably supported in the wall of said tank capable of accepting a hollow niobium body having an opening therein in such a manner that the hollow niobium body can be aligned with the flange;
  c. said flange positioned in said tank whereby said niobium body attached to said flange will be disposed in said tank partially immersed in electrolyte which can be filled therein;
  d. a stationary hollow cathode extending from the exterior of said tank through said flange and adapted to extend into said hollow body which will be attached to said flange, said cathode having holes in the wall of the portion thereof which will be disposed within said body;
  e. pump means for circulating electrolyte through said hollow cathode;
  f. means for rotating said flange;
  g. means for providing a constant voltage source and including two terminals, one of which is coupled to said cathode and the other of which includes means for coupling to the hollow body which will be attached to said flange; and
  h. switching means for turning said voltage on and off.



3,939,054
NONSYMMETRICAL HEXAGONAL ELECTROPLATING BARREL

Albert Singleton, 7360 Brookside Park, Middleburg Heights, Ohio 44130

Filed Dec. 13, 1974, Ser. No. 532,725
Int. Cl.^{2} C25D *17/20*
U.S. Cl. 204—213 **13 Claims**



1. An electroplating barrel assembly of polypropylene adapted for use in electroplating in combination with electrodes bounded by two end pieces and five foraminous side panels joined along their edges to form a closed polygonal enclosure having one side opening,
  the side opening having a width greater than the width of any of the side panels and being adapted to receive a door to completely enclose anything within the barrel,
  the width of the two side panels adjacent the side opening being less than the width of at least half the remaining side panels.

3,939,055

LAMINATED ASBESTOS DIAPHRAGM

Robbie T. Foster, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 3, 1973, Ser. No. 403,137

Int. Cl.^{2} C25B *13/06;* **B32B** *19/08*

U.S. Cl. 204—295 **3 Claims**

1. A laminated asbestos diaphragm comprising;

1. an asbestos mat, which mat has been treated by the process comprising:
   - a. drawing an aqueous alkali metal hydroxide solution through said mat to provide alkali metal hydroxide within said mat;
   - b. rendering the mat substantially free of water; and
   - c. thereafter heating the mat in the substantial absence of water to between 110° and 280°C. for more than 2 hours;
2. a layer of asbestos on said mat, said layer having been deposited by drawing a slurry of asbestos fibers through said previously heated asbestos mat thereby depositing asbestos fibers on said asbestos mat.

3,939,056

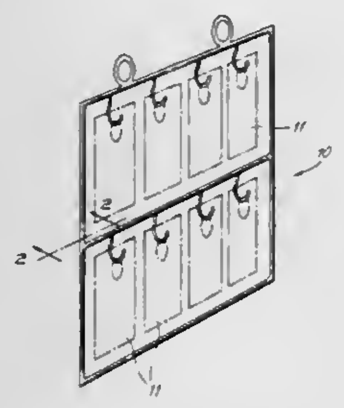
COATED PLATING RACK

Shimetomo Fueki, Tokyo; Shigeo Ohuchi, and Kazuhiro Ogawa, both of Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 19, 1973, Ser. No. 408,179

Int. Cl.^{2} C25D *17/08*

U.S. Cl. 204—297 W **2 Claims**



1. A rack for supporting electrically non-conductive articles during the successive electroless plating and electroplating of such articles, said rack comprising a metal frame, and a plastic resin coating on said frame, said resin selected from the group consisting of polyvinyl chloride, polyethylene, polyester and polyurethane, said plastic resin coating having substantially uniformly dispersed therein at least one organosulphur com pound which is present in said coating in an amount between approximately 1.5 and 200 grams of said organosulphur compound per kilogram of said resin.

3,939,057

PROCESS FOR TREATING OIL SHALE

Thomas G. Reed, Jr., 818 Heather Court, Houston, Tex. 77024

Filed Jan. 18, 1974, Ser. No. 434,598

Int. Cl.^{2} C10G *1/02;* **C10B** *47/06*

U.S. Cl. 208—11 **10 Claims**

1. A process for producing a crude shale oil and a high BTU gas comprising

feeding a mixture of a major amount of crushed oil shale and a minor amount of coal, sufficient to provide process heat which is needed in excess of that supplied by burned char, to a rotary preheater,

heating said mixture to a temperature less than that at which decomposition of kerogen begins, said heating by direct contact of said mixture with a flow of hot gases,

passing said preheated mixture to a rotary retort,

indirectly heating said mixture to a temperature in the range of 850° to 1050°F. with said hot gases, said hot gases indirectly heating said rotary prior to contacting said mixture in said preheater,

taking off a vaporous overhead comprising shale oil and tar oil and leaving a char on said shale,

passing said retorted mixture to a hopper,

removing residual shale oil by sweeping said hopper with superheated steam,

passing said vaporous overhead and stripped shale oil residual to a high temperature condenser,

condensing an oil fraction at a temperature above 212°F from said vaporous overhead and said hopper residual shale oil,

passing the uncondensed gases from said high temperature condenser to a low temperature condenser,

condensing water from said uncondensed gas,

recovering a high BTU gas,

passing said mixture from said hopper to a furnace, and burning said char and unvolatized coal to produce said hot gases, which pass from said furnace, first contacting said rotary retort and then directly contacting said mixture in said preheater.

3,939,058

METHOD FOR FLUID CRACKING WITH A COMPOSITE CATALYST

Charles J. Plank, Woodbury, and Edward J. Rosinski, Deptford, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 765,723, July 31, 1968, which is a division of Ser. No. 280,421, May 14, 1963, abandoned. This application Jan. 26, 1970, Ser. No. 5,929

Int. Cl.^{2} C10G *11/02, 11/04;* **B01J** *29/06*

U.S. Cl. 208—120 **15 Claims**

1. A method of converting a charge of hydrocarbon material to hydrocarbon products which comprises contacting said charge under hydrocarbon conversion conditions with a crystalline zeolite catalyst composition prepared by:
   - a. exchanging the zeolite with a solution containing at least one exchangeable cation to at least partially replace the original cation;
   - b. heating the exchanged zeolite at a temperature of 500° to 1600°F;
   - c. compositing the resulting zeolite with a porous matrix material; and
   - d. contacting the resultant composite with a solution containing at least one exchangeable cation other than the original cation.

14. The catalyst composition prepared by the steps recited in claim 1 wherein the final exchange is with an ammonium salt.

3,939,059

HYDROCARBON CONVERSION WITH AN ACIDIC SULFUR-FREE MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 14, 1975, Ser. No. 550,083

Int. Cl.^{2} C10G *35/08, 13/08;* **B01J** *27/06;* **C07C** *5/24*

U.S. Cl. 208—139 **20 Claims**

1. A process for converting a hydrocarbon which comprises contacting the hydrocarbon at hydrocarbon conversion conditions with an acidic sulfur-free catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.1 to about 5 wt. % cobalt, about 0.01 to about 2 wt. % rhenium, and about 0.1 to about 3.5 wt. % halogen, wherein the platinum group metal, cobalt, and rhenium are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum group metal is present in the elemental metallic state, and wherein substantially all of the cobalt and rhenium are present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon conversion conditions or in a mixture of these states.

3,939,060

HYDROCARBON CONVERSION WITH A SULFIDED ACIDIC CATALYTIC COMPOSITE

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 288,864, Sept. 13, 1972, Pat. No. 3,846,282. This application Oct. 29, 1974, Ser. No. 518,700

Int. Cl.^{2} C10G *35/06, 13/02*

U.S. Cl. 208—139 **14 Claims**

1. A process for catalytically reforming a gasoline fraction to produce a high octane reformate which comprises contacting the hydrocarbon at reforming conditions with a sulfided acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % iridium, about 0.01 to about 5 wt. % nickel, about 0.1 to about 3.5 wt. % halogen, and about 0.01 to about 1 wt. % sulfur, wherein the platinum or palladium, iridium, and nickel are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum or palladium, nickel, and iridium are present therein in a sulfided state or in the corresponding elemental metallic states, and wherein the composite is sulfided, prior to contact with the hydrocarbon and after substantially all of the platinum or palladium, iridium, and nickel contained therein have been reduced to the corresponding elemental metallic state, by treatment with a sulfiding gas at conditions selected to incorporate about 0.01 to about 1 wt. % sulfur.

3,939,061

PROCESS FOR REACTIVATION OF IRIDIUM-CONTAINING CATALYSTS

John D. Paynter, Louisville, Ky., and Richard R. Cecil, Mendham, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 16, 1973, Ser. No. 388,741

Int. Cl.^{2} C10G *35/08;* **B01J** *23/96*

U.S. Cl. 208—140 **22 Claims**

13. In a process for the catalytic reforming of hydrocarbons wherein a hydrocarbon feedstock is contacted with a reforming catalyst comprising an iridium hydrogenation dehydrogenation component composited with an alumina support at reforming conditions, the catalyst having been at least partially deactivated during contact with said feedstock by the deposition of coke deposits thereon, a method for reactivating said catalyst after discontinuing contact of said catalyst with said feedstock comprising:
   - a. contacting a bed of said catalyst in a reaction zone with a gaseous mixture containing oxygen at partial pressures of at least about 0.1 psi at temperatures ranging from 575°F. to about 850°F. for a period ranging from about 0.1 to about 48 hours to burn at least a substantial portion of said coke deposits therefrom, the duration of said contacting at said elevated temperature being insufficient to convert more than about 70 weight percent of the iridium component of said catalyst to agglomerates having crystallite sizes greater than about 50A;
   - b. contacting a bed of said coke depleted catalyst, without subsequent contacting with a substantially halogen-free, oxygen-containing gas at temperature sufficient to reagglomerate the iridium on said catalyst in a plurality of cycles, an initial cycle of which includes the steps of
     - i. contacting said coke depleted catalyst in a reaction zone with hydrogen or a hydrogen-containing gas at temperature ranging from about 400°F. to about 1100°F. to reduce a substantial portion of said iridium component of said catalyst to its metallic form;
     - ii. contacting said reduced catalyst having a substantial portion of the iridium contained thereon in the metallic form in a reaction zone with a substantially oxygen-free gas which contains halogen in concentration ranging from about 0.01 mole percent to about 10 mole percent at a temperature of at least about 850°F., continuing said contacting not substantially beyond the point of halogen breakthrough from the exit side of the bed of said catalyst;

     and one or more subsequent cycles which includes
     - iii. contacting said halogen-treated catalyst in a reaction zone with a hydrogen or a hydrogen-containing gas at temperature ranging from about 400°F. to about 1100°F. for time sufficient to convert a substantial portion of said iridium component of said catalyst to its metallic form; and then
     - iv. contacting said catalyst having a substantial portion of the iridium contained thereon in the metallic form in a reaction zone with a gas which contains halogen in concentration ranging from about 0.01 mole percent to about 10 mole percent at a temperature of at least about 850°F., continuing said contacting not substantially beyond the point of halogen breakthrough from the exit side of the bed of said catalyst.

3,939,062

CATALYST REGENERATION PROCEDURE

John H. Sinfelt, Berkeley Heights, and James L. Carter, Chatham, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 16, 1973, Ser. No. 388,746

Int. Cl. C10g *35/08;* **B01j** *11/18*

U.S. Cl. 208—140 **20 Claims**

7. In a process for the catalytic conversion of a naphtha feed stock wherein a naphtha feed sotck and hydrogen are contacted with a catalyst comprising from about 0.01 to about 3.0 wt. % of an iridium component and a chlorine component contained on a refractory inorganic oxide support at reforming conditions, the catalyst having been at least partially deactivated during contact with said naphtha feed stock by the deposition of carbonaceous residues, a method of regenerating said catalyst comprising (1) contacting said catalyst, after contact with said naphtha feed stock with an oxygen-free chlorine-containing reagent in a gaseous medium from the group consisting of hydrocarbon feed, hydrogen containing gas, inert gas and mixtures thereof in amounts sufficient to increase catalyst chlorine content to about 1.0 to about 4.0 wt. %, based on anhydrous catalyst, and (2) contacting said treated catalyst with a substantially sulfur-free gaseous mixture containing oxygen, a chlorine-containing reagent, and water at a temperature of less than about 1050°F. for a time sufficient to burn at least a substantial portion of said carbonaceous residues from said catalyst, said gaseous mixture containing 0.1 to 1.0 mole percent oxygen and a concentration of chlorine-containing reagent equivalent in chlorine content to 20 to 2000 ppm by volume of HCl, the molar ratio of water to said equivalent HCl in said gaseous mixture being less than about 10:1.

11. The process of claim 7 wherein said catalyst additionally contains a platinum component.

3,939,063

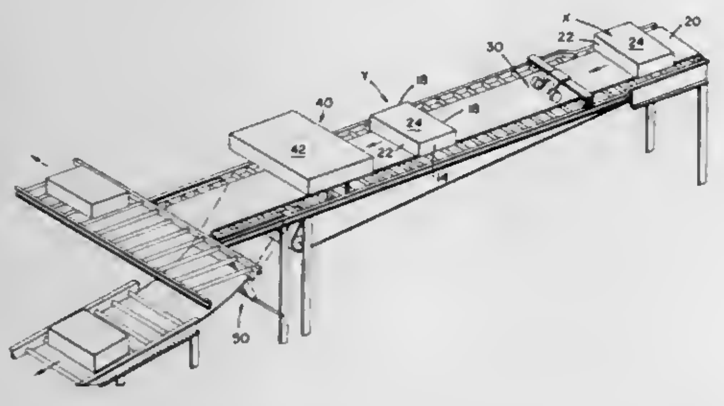
LOOSE FLAP DETECTOR AND CASE EJECTOR SYSTEM FOR WRAP-AROUND PAPERBOARD CARTONS

Otis A. Epperson, Greenwood, and Raymond H. Smith, Ft. Smith, both of Ark., assignors to Gerber Products Company, Fremont, Mich.

Filed Oct. 10, 1974, Ser. No. 513,673

Int. Cl.² B03B *1/00*

U.S. Cl. 209—7 3 Claims



1. In a packaging line of the type including transport means for moving a sequence of filled wrap-around paperboard cartons past a plurality of work stations to detect the presence of insecurely sealed closure flaps thereon, the improvement comprising:

impact means at a first of said work stations having at least one weighted roller pivotally suspended in the path of said cartons so as to allow said roller to arcuately strike the leading side wall of each of said cartons during movement by said transport means and thereafter to allow said roller to roll over the top surface of said moving cartons to open any insecurely sealed flap thereof;

optical open-flap detector means at a second of said work stations, said detector means including a plurality of spaced light source-photocell pairs in light beam alignment, positioned so that the light beam received by each of said photocells will be interrupted when a corresponding one of said closure flaps is in an open position; and

diverter means for removing cartons having so-detected open flaps from said packaging line.

3,939,064

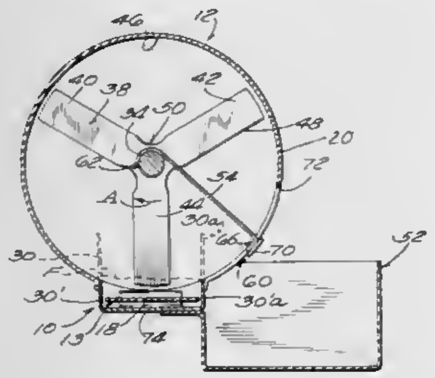
FEED CLEANER

Dee Dexter Allen, Zeeland, Mich., assignor to U. S. Industries, Inc., New York, N.Y.

Filed Dec. 4, 1974, Ser. No. 529,467

Int. Cl.² B07B *13/00*

U.S. Cl. 209—44 17 Claims



1. A poultry feed cleaner for cleaning feed being conveyed along a feed trough comprising in combination: a drive shaft rotatably mounted in a direction generally parallel to the direction of the feed trough, a plurality of axially spaced generally aligned blades secured to said shaft and extending radially therefrom, said blades being rotated with said shaft for transverse movement through the feed being conveyed through said trough, said blades being spaced from each other sufficiently to remove foreign matter in the feed without removing any sufficient amounts of feed.

3,939,065

SCREENING DEVICE

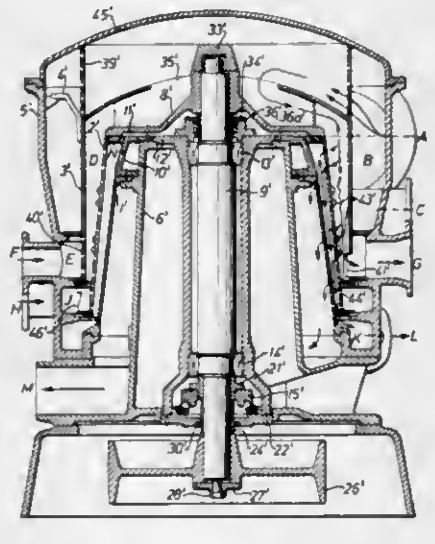
Sten Eskil Einarsson Ahlfors, Box 3691, S-776 00 Hedemora, Sweden

Filed Aug. 23, 1973, Ser. No. 391,038

Claims priority, application Sweden, Aug. 31, 1972, 11251/72

Int. Cl.² B07B *1/22*

U.S. Cl. 209—240 16 Claims



1. A device for purifying and fractionating a material suspension, notably a fiber suspension, under pressure, said device including

a treatment chamber having a circular cross-section, with an inlet for the suspension and outlets for reject and accept, respectively;

a screening drum having a circular cross-section and rotatable in the treatment chamber, said drum being provided with pulsation organs;

said inlet being exterior of said drum,

each pulsation organ having a limited extension along the axial dimension of said drum, and a rounded front surface, said organ being adapted to create pulsations in the suspension layer close to the screening drum,

said drum being perforate to provide an array of screen holes spaced on the surface of said drum,

the number of screen holes being considerably larger than the number of pulsation organs and

at least one screen hole being located on the surface of each said pulsation organ at its leeward side, viewed in the direction of rotation of said drum, thereby causing a local return flow outwardly through said screening drum.

3,939,066

SEWAGE TREATMENT PROCESS

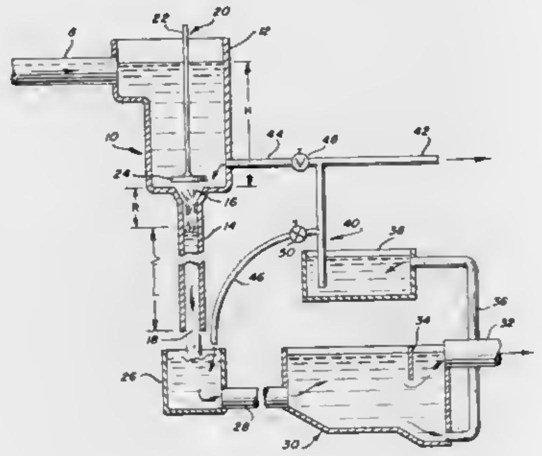
William J. Bauer, 422 South Park Road, La Grange, Ill. 60525

Continuation of Ser. No. 290,853, Sept. 21, 1972, abandoned. This application Aug. 6, 1974, Ser. No. 495,212

Int. Cl.² C02C *1/08*

U.S. Cl. 210—6 11 Claims

1. A process of treating aqueous sewage material containing organic solids particles during flow of such material, including subjecting said material to a positive pressure in a first zone in a receptacle, flowing such material abruptly from such zone of positive pressure downward through a generally vertical conduit in a manner to provide a reactor zone of near absolute zero pressure subjacent said receptacle and full conduit flow beneath said reactor zone, precluding entry of air into said reactor zone, flowing such material from said zone of positive pressure into and through said reactor zone at high velocity, causing water vapor and gases suddenly to be separated and released in said material in said reactor zone, and permitting such water vapor and gases to expand suddenly in said reactor zone, thereby rupturing organic solids particles in said sewage material by the sudden expansion of such water vapor and gases and thereby disintegrating said particles into substantially smaller particles.



3,939,067

METHOD AND APPARATUS FOR TREATING SEWAGE

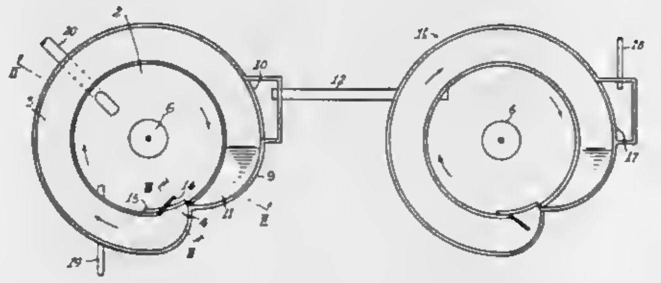
Peter H. Huisman, Pretoria, South Africa, assignor to Gypsum Industries Limited, Transvaal, South Africa

Filed Oct. 30, 1973, Ser. No. 411,158

Claims priority, application South Africa, Mar. 21, 1973, 73/1972

Int. Cl.² C02C *1/08*

U.S. Cl. 210—7 12 Claims



1. In activated sludge treatment of sewage in a chamber having a center, the improvement comprising a) imparting to the sewage in the chamber a spiral motion about the chamber center, b) using the motion imparted to the sewage to cause liquid-born sludge in the chamber to flow from the chamber into and along a canal around the chamber, c) returning at least part of the liquid-born sludge under the influence of gravity directly from the canal back into the chamber after flowing said sludge in the canal substantially around the chamber.

4. Apparatus suitable for use in activated sludge treatment of sewage and comprising a tank having a central chamber with a floor and a centre, canal means for slow and non-turbulent flow of sludge around the chamber, an overflow weir from the chamber into the canal means, underflow weir means to permit sludge in the canal means to flow directly from the canal means into the chamber, a deflecting wall in the canal means co-operating with the underflow weir means and an outlet from the canal means adjacent the deflecting wall and upstream thereof.

3,939,068

PROCESS FOR TREATING WASTE WATER CONTAINING CELLULOSE NITRATE PARTICLES

Theodore M. Wendt, Franklin, and Arthur M. Kaplan, Newton, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 422,458, Dec. 6, 1973, abandoned. This application Feb. 4, 1975, Ser. No. 546,953

Int. Cl.² C02C *1/06*

U.S. Cl. 210—7 12 Claims

1. A process for treatment of a waste stream from nitrocellulose manufacture containing at least 50 ppm of insoluble, non-biodegradable nitrocellulose material which comprises the following steps taken in sequence:

a. chemically digesting by reacting with alkali at a pH of at least 11.5 said insoluble nitrocellulose material in said waste stream to convert said insoluble material to soluble and biodegradable organic and nitrate products,

b. neutralizing said waste stream upon completion of said chemical digestion to a pH within the range of about 6.0 to 9.0,

c. combining said neutralized waste stream with domestic raw sewage and with a microbially utilizable carbon material to form a mixed liquor, said raw sewage added in sufficient quantity to reduce the nitrate content of the mixed liquor to less than 200 ppm and said carbon material added in sufficient quantity to sustain microbial denitrification of substantially all nitrates in the mixed liquor,

d. microbially denitrifying said liquor to convert the nitrate content of said mixed liquor to nitrogen gas, and thereafter separating solids from said liquor,

e. subjecting the solids-free liquor from step (d) to an aerobic microbial treatment to break down the organic products and to convert reduced nitrogen compounds present in said liquor to nitrates, and

f. microbially denitrifying the effluent from step (e) to reduce the nitrate compounds to nitrogen gas and to provide a substantially nitrate-free effluent having an ecologically acceptable BOD level.

3,939,069

ARTIFICIAL KIDNEY AND A METHOD OF ULTRAFILTERING A LIQUID

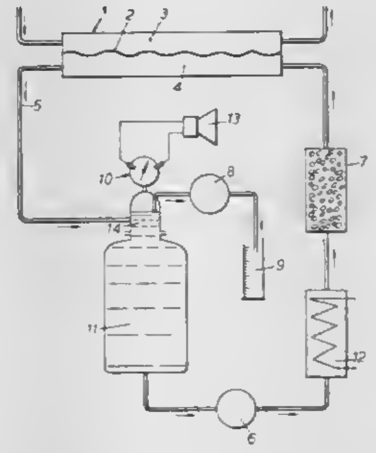
Alain Granger, Lesigny, and Andre Sausse, Sceaux, both of France, assignors to Rhone-Poulene-Textile, Paris, France

Filed Dec. 6, 1972, Ser. No. 312,515

Claims priority, application France, Dec. 6, 1971, 71.43720

Int. Cl.² B01D *31/00, 13/00*

U.S. Cl. 210—22 A 12 Claims

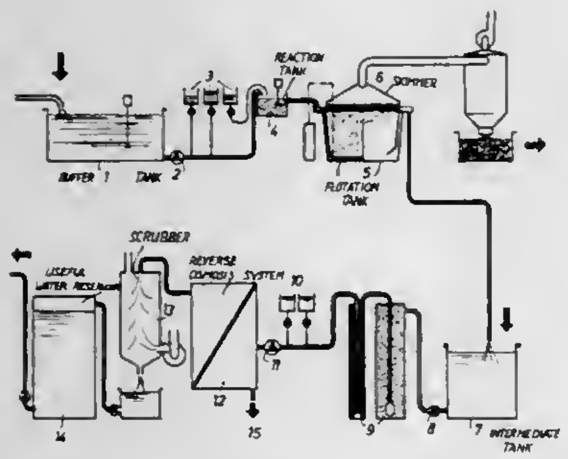


1. A method of ultrafiltration of a liquid comprising the steps of providing a constant volume closed system having a wall portion forming a membrane of an ultrafiltration apparatus, connecting the face of the membrane remote from said constant volume closed system to the liquid to be ultrafiltered, filling said system with a dialysis liquid, circulating the dialysis

liquid along said membrane at a flow rate corresponding to the normal conditions of a haemodialysis operation and withdrawing by pumping a fraction of said dialysis liquid from the system at a predetermined rate, so that the volume of liquid in said system is maintained constant.

3,939,070
METHOD AND INSTALLATION FOR THE TREATMENT OF WASTE WATER TO FORM USEFUL WATER

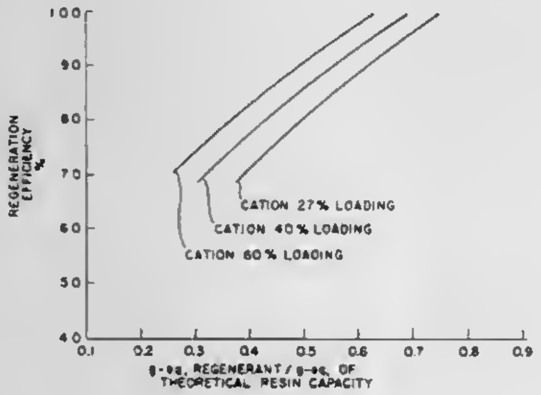
Hanspeter Roth, Effretikon, Switzerland, assignor to "Swissair" Schweizerische Luftverkehr-AG, Zurich, Switzerland
Filed July 10, 1974, Ser. No. 486,949
Claims priority, application Switzerland, July 13, 1973, 10289/73
Int. Cl.² B01D *31/00, 13/00*
U.S. Cl. 210—23 H **5 Claims**



1. A method for the treatment of industrial waste water for forming useful water, comprising the steps of:
   a. subjecting the waste water to a chemical flocculation treatment;
   b. floating the flocculate and turbid portions of the waste water which are formed during the flocculation treatment by electro-flotation; and
   c. subjecting the clarified water to filtration by reverse osmosis.

3,939,071
RECOVERABLE REGENERANTS FOR CATIONIC EXCHANGE RESINS

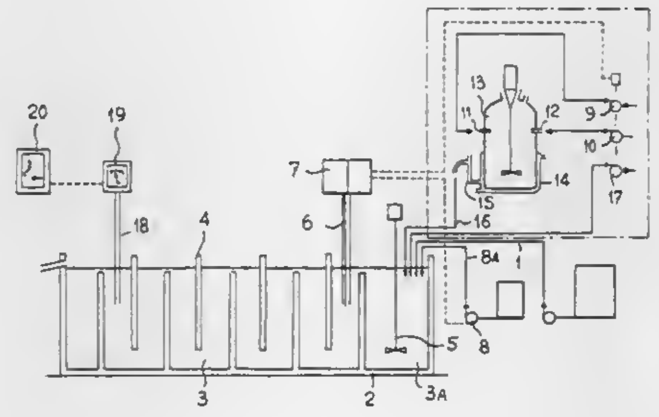
Arthur Katzakian, Jr., Sacramento, and David O. DePree, Loomis, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
Filed Aug. 12, 1974, Ser. No. 496,482
Int. Cl.² B01D *15/06*
U.S. Cl. 210—34 **15 Claims**



1. A method of recovering and recycling spent ion-exchange regenerants comprising the steps of:
1. passing through a first, separate bed of spent, weakly basic, anion exchange resin containing bound inorganic anion, X, a weak organic base anion regenerant, R_a, to regenerate said resin and to form a first effluent stream containing spent anion regenerant of the formula, R_aX;
2. passing through a second, separate bed of spent, weakly acidic cation exchange resin containing bound inorganic cation, M, a cation regenerant, R_c, selected from an hydroxy or alkoxy substituted alkanoic acid to regenate said resin and to form a second effluent stream containing spent cation regenerant of the formula, MR_c;
3. combining said first stream containing spent anion regenerant, R_aX, with said second stream containing spent cation regenerant, MR_c, to form a mixture containing a strongly dissociated, ionizable complex, R_cR_a, and reconstituted inorganic salt, MX;
4. dissociating the complex to free R_c or R_a regenerant;
5. separating one of the regenerants from the mixture and recycling it to one of said beds; and
6. separating the remaining regenerant from the mixture and recycling it to the other of said beds.

3,939,072
APPARATUS FOR GENERATING AN OXIDIZING REAGENT FOR THE TREATMENT OF POLLUTED WATER

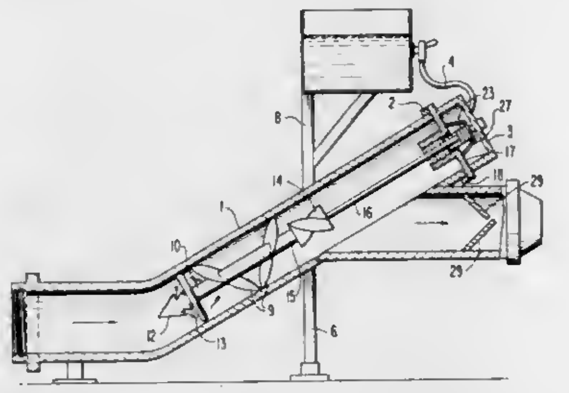
Eric Jourdan LaForte, Ecully, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France
Division of Ser. No. 380,815, July 19, 1973, Pat. No. 3,900,555. This application June 17, 1974, Ser. No. 480,302
Claims priority, application France, July 28, 1972, 72.27359
Int. Cl.² B01D *21/01, 21/24*
U.S. Cl. 210—96 R **7 Claims**



1. A generator assembly for generating and supplying reagents to a treatment tank, comprising:
a reactor;
overflow means connected to said reactor for maintaining a constant level therewithin and delivering any overflow above the constant level out of the generator assembly for delivery to the treatment tank;
two inlet pipes disposed symmetrically in the upper part of said reactor;
two reagent proportioning pump means, each for supplying proportioned amounts of reagent to a respective one of said inlet pipes;
a single motor means connected to said two reagent proportioning pump means for driving both of said pump means; and
regulator means connected to said motor means for controlling said motor means in a predetermined manner in response to the conditions sensed external to the generator assembly in the treatment tank.

3,939,073
APPARATUS FOR DEODORIZING LIQUIDS

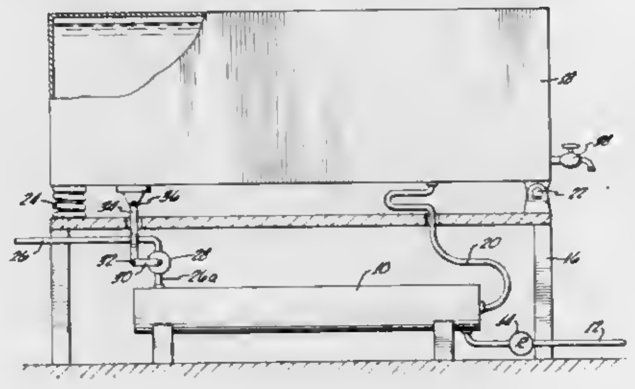
Jules Bats, Place de la Gare, 40 - Mugron (Landes), France
Filed Nov. 26, 1974, Ser. No. 527,275
Int. Cl.² B01F *7/02;* **B05B** *7/06;* **B01F** *7/08*
U.S. Cl. 210—152 **8 Claims**



1. Apparatus for admixing a deodorizing liquid with a bad smelling liquid, comprising a generally Y-shaped hollow body comprised by a base having an upper and a lower end, a first leg and a second leg, and said legs meeting the base at an angle to each other, means supporting the Y-shaped body in an inclined position with the base and the first leg at an acute angle to a horizontal and the second leg below said first leg, the base and the legs intersecting in a vertical plane, means for introducing a deodorizing liquid into the lower end of the base, fixed mixing means within the base above said introducing means for admixing the deodorizing liquid and the bad smelling liquid, rotatable mixing means above the fixed mixing means in said body, an inclined shaft having a lower and an upper end extending coaxially through said first leg for rotating said rotatable mixing means, said fixed mixing means supporting the lower end of said shaft, and means at the upper end of said shaft for rotating said shaft.

3,939,074
APPARATUS FOR CONTROL OF A REVERSE OSMOSIS SYSTEM

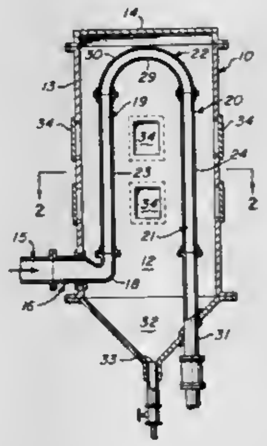
Donald T. Bray, Escondido, Calif., assignor to Desalination Systems, Inc., Escondido, Calif.
Filed June 28, 1974, Ser. No. 484,120
Int. Cl.² B01D *33/00, 13/00*
U.S. Cl. 210—257 M **2 Claims**



1. A reverse osmosis system comprising a module containing a semipermeable membrane, a pipe for introducing feed water under elevated pressure into said module, means for releasing brine from said module while retaining operating pressure therein, a rigid storage tank for temporarily storing purified water passed through the semipermeable membrane in said module, and a pipe for transferring purified water from said module into said storage tank; in which the improvement comprises:
   a. a valve in one of said pipe introducing feed water under elevated pressure into said module, and said pipe for transferring purified water from said module into said rigid storage tank;
   b. a resilient support for an end of said rigid storage tank; and,
   c. a mechanical linkage between the resiliently supported end of said rigid storage tank which actuates said valve at a predetermined vertical displacement of said resiliently supported end of said rigid storage tank caused by the weight of purified water therein.

3,939,075
THICKENING APPARATUS

Marvin E. Ginaven, Springfield, Ohio, assignor to The Bauer Bros. Co., Springfield, Ohio
Continuation of Ser. No. 81,980, Oct. 19, 1970, abandoned. This application Nov. 10, 1972, Ser. No. 305,547
Int. Cl.² B01D *35/00*
U.S. Cl. 210—258 **13 Claims**



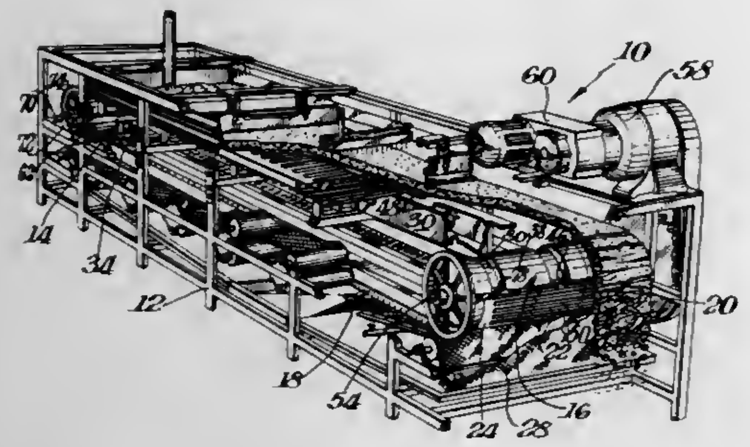
1. A thickener in a system flowing solids in a slurry form under pressure and in a relatively large volume, said thickener being enclosed to express fluids under conditions of non-exposure to the atmosphere by a housing having lower and upper ends and providing at the lower end an inlet and an outlet and a drain for expressed fluids, a relatively thin slurry being admitted to said housing by way of said inlet and discharging in a thickened form from said outlet, said thickener including a continuous unobstructed duct structure within said housing including vertically oriented up and down duct sections communicating at respective lower ends with said inlet and said outlet and comprising screen walls in relatively closely spaced approximately parallel relation bridged at their lateral extremities by short interconnecting walls to provide for the slurry to move therein in a thin sheet-like flow, said vertical duct sections extending upwardly within the housing toward the upper end thereof and having adjacent of their ends to one end thereof interconnected by an imperforate generally arcuate duct section which provides for a direction reversing continuous slurry flow from one to the other of the vertical sections of said duct, slurry flow through a part of said duct being opposed by gravity forces, and portions of said vertical duct sections being perforate for an expression of fluids into said housing, expressed fluids flowing to said drain and exiting from said housing thereby.

3,939,076
HORIZONTAL VACUUM BELT FILTER MACHINE

Kenneth T. Seibert, Wilmington, Del., assignor to Straight Line Filters, Inc., Wilmington, Del.
Filed Dec. 20, 1974, Ser. No. 534,833
Int. Cl.² B01D *33/04*
U.S. Cl. 210—400 **3 Claims**

1. In a horizontal vacuum belt filter machine of the type comprising a frame, spaced apart drum means journaled to the frame at opposite ends thereof, endless belt means mounted on the drum means having an upper horizontal path of travel and comprising a plurality of separate longitudinally aligned

endless belt segments, an endless filter medium supported upon the endless belt means in the area of the upper horizontal path of travel, and suction means beneath the upper horizontal path of travel cooperating with the endless belt means and the filter medium for withdrawing liquid from slurry-like material deposited upon the filter medium, the improvement being characterized by the separate endless belt segments each including edge portions recessed for overlapping sealing engagement with the recessed edge portion of an adjacent belt segment to form a leak resistant joint therebetween along the horizontal path of travel, the overlapping joint additionally acting by frictional cooperation to minimize relative longitudinal slippage between adjacent belt segments as they travel along the horizontal path.



3,939,077

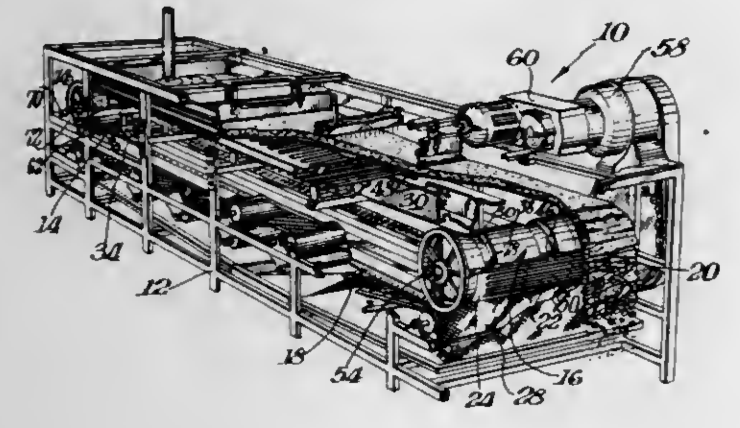
HORIZONTAL VACUUM BELT FILTER MACHINE

Kenneth T. Seibert, Wilmington, Del., assignor to Straight Line Filters, Inc., Wilmington, Del.

Filed Dec. 20, 1974, Ser. No. 534,834

Int. Cl.² B01D *33/14*

U.S. Cl. 210—401 **6 Claims**



1. In a horizontal vacuum belt filter machine of the type comprising a frame, spaced apart drum means journaled to the frame at opposite ends thereof, endless belt means mounted on the drum means having an upper horizontal path of travel and comprising a plurality of separate longitudinally aligned endless belt segments, an endless filter medium supported upon the endless belt means in the area of the upper horizontal path of travel, and suction means beneath the upper horizontal path of travel cooperating with the endless belt means and the filter medium for withdrawing liquid from slurry-like material deposited upon the filter medium, the improvement being characterized by the spaced apart drum means at one end of the frame including a plurality of independent drums having the plurality of endless belt segments mounted thereon, each independent drum being jounaled upon an axle for rotation independently of the others, and means for adjusting the longitudinal spacing of the axles relative to each other.

3,939,078

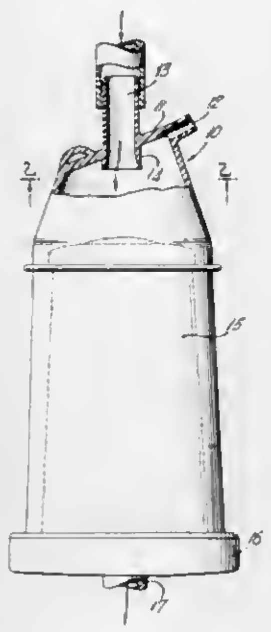
EXTRACORPOREAL FILTER

Francis Martin Servas, Belle Mead, N.J., and Jorge Torres, Newbury Park, Calif., assignors to Johnson & Johnson, New Brunswick, N.J. and Purolator, Inc., Del.

Filed Apr. 19, 1974, Ser. No. 462,452

Int. Cl.² B01D *35/00*

U.S. Cl. 210—436 **2 Claims**



1. An extracorporeal blood filter having improved characteristics for removing excess gas from the blood being filtered comprising a filter media mounted in a housing; said housing having a straight, smooth, uniformly sloped top surface from a low point positioned at the circumference of said housing to a high point positioned at the circumference of said housing directly opposite said low point, an inlet for the blood positioned in the top surface, a gas vent positioned at said high point, said blood inlet having a portion extending below the sloped top surface into the housing, said portion being free and open and not in contact with any other part of said filter whereby gas escaping to the vent is directed away from the entering bloodstream.

3,939,079

FILTER MEDIUM WHICH PERMITS INCREASED AMOUNT OF FILTRATION

Hiroshi Uchiyama, Hachiouji; Kazunobu Kakimoto, Funabashi; Yoshio Fujiwara, Narashino; Shigeru Yamagishi, Tokyo, and Junshiro Hayakawa, Chofu, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd. and Tokyo Kokyu Rozai Co., Ltd., both of Tokyo, Japan

Filed May 15, 1973, Ser. No. 360,512

Claims priority, application Japan, May 15, 1972, 47-047984

Int. Cl.² B01D *39/20*

U.S. Cl. 210—504 **6 Claims**

1. A filter medium which permits an increased amount of filtration and having a grade number of about 100 to about 300, a bulk density of about 1.70 to about 2.27 and an apparent porosity of about 39.0 to about 51.0%, said filter medium being prepared from starting materials comprising

a. 100 parts by weight of aggregate particles of at least one of fused alumina, sintered alumina, silicon carbide and silicon nitride,

b. 5 to 18 parts by weight of an inorganic bonding material having a chemical composition of about 10 to about 50% by weight of SiO_2 and about 5 to 20% by weight of B_2O_3, the chemical composition of said bonding material being such that a decrease in the viscosity of said bonding material does not occur at a temperature of 1100°C., or greater, at least 70% by weight of said bonding material being a non-vitreous substance selected from the group consisting of talc, Gairome-Clay, calcined alumina, sintered alumina, aluminum hydroxide, boric acid, calcium carbonate, magnesium carbonate, wollastonite, siliceous sand and siliceous stone, and

c. 3–15 parts by weight of a combustible substance.

3,939,080

COMPOSITION FOR NEUTRALIZING STATIC ELECTRICITY

Edwin B. Martin, Greenville, S.C., assignor to Mar-Chem, Incorporated, Greenville, S.C.

Filed Oct. 10, 1973, Ser. No. 404,867

Int. Cl.² H05F *1/00*

U.S. Cl. 252—1 **5 Claims**

1. A composition for treating water recirculated in an air washer and characterized by having sufficient ionic activity to be effective for neutralizing static electricity in a room to which the air washer delivers a flow of air, the composition consisting essentially of about fifty percent by weight dodecyl-benzyl-triethyl-ammonium chloride; water in such quantity as to constitute substantially the remainder of the composition; and from about four fluid ounces per gallon of the composition to about thirty fluid ounces per gallon of the composition of an additive selected from the group consisting of rust inhibiting agents and anti-foaming agents.

3,939,081

LOAD SUPPORTING LUBRICANT

Arnold O. DeHart, Rochester; Richard C. Rosenberg, Romeo, and Edward G. Trachman, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 29, 1975, Ser. No. 544,911

Int. Cl.² C10M *5/00, 7/00, 1/10, 3/02*

U.S. Cl. 252—12 **3 Claims**

1. A load supporting lubricant disposed between two slidably engageable surfaces consisting essentially of:

1. a binder fluid; and
2. a single layer of hard, uniformly sized spheres between the surfaces having a diameter in the range of from about ¼ mm to about 4,0 mm, dispersed through said fluid; each of said spheres being able to roll at random between said surfaces in engaging load supporting relationship therewith and through said binder fluid as one of said surfaces moves relative to the other.

2. A load bearing arrangement comprising slidably engageable surfaces having a load supporting medium disposed between the surfaces, said medium consisting essentially of:

1. from 20 to 80 percent by volume of a petroleum grease; and
2. the balance being a single layer of hard, uniformly sized spheres between the surfaces having a diameter in the range of from about ¼ mm to about 4.0 mm, dispersed through said fluid; each of said spheres being able to roll at random between said surfaces in engaging load supporting relationship therewith and through said binder fluid as one of said surfaces moves relative to the other.

3,939,082

SOAP THICKENED LUBRICANT COMPOSITION

Edward S. Williams, Claymont, Del.; William H. Reiland, West Chester, Pa., and John Q. Griffith, III, Claymont, Del., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 178,479, Sept. 7, 1971, Pat. No. 3,816,316, which is a continuation-in-part of Ser. No. 34,899, May 5, 1970, Pat. No. 3,694,363. This application June 10, 1974, Ser. No. 477,872. The portion of the term of this patent subsequent to Sept. 26, 1989, has been disclaimed.

Int. Cl.² C10M *1/48, 3/42, 5/24, 7/46*

U.S. Cl. 252—32.7 E **12 Claims**

1. A soap thickened lubricant comprising an effective amount, for thickening, of a lithium soap of a fatty acid or an aluminum soap of a fatty acid and a hydrocarbon base oil having a viscosity in the range of 80 to about 3,000 SUS at 100°F said base oil comprising at least one hydrorefined naphthenic oil or hydrocracked paraffin oil having a viscosity in the range of 40 to 12,000 SUS at 100°F.

5. A lubricant according to claim 4 and containing in the range of 0.0 to 1 percent lithium stearate, in the range of 0.02 to 2 percent neutral barium petroleum sulfonate and in the range of 0.1 to 5 percent zinc dialkyldithiophosphate.

3,939,083

TEXTILE-MACHINERY LUBRICANT COMPOSITION

Walter J. Coppock, Wallingford; James R. Amaroso, Newtown Square, both of Pa., and John Q. Griffith, III, Claymont, Del., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 240,806, April 4, 1972, Pat. No. 3,813,339. This application Feb. 7, 1974, Ser. No. 440,615. The portion of the term of this patent subsequent to May 28, 1991, has been disclaimed.

Int. Cl.² C10M *1/24*

U.S. Cl. 252—42 **10 Claims**

1. A high retention lubricant for textile-machinery, said lubricant comprising a base oil, an effective amount of a tackiness agent for retention in a bearing, and sufficient lithium soap to provide a MacMichael viscosity at 70°F in the range of 5 to 15, said base oil having a viscosity in the range of 60 to 600 SUS at 100°F, a 335 UVA in the range of 0.01 to 0.4, and an aniline point in the range of 150° to 170°F, and containing in the range of 85 to 100% of at least one hydrorefined naphthenic oil component having a viscosity in the range of 40 to 12,000 SUS at 100°F, said tackiness agent being selected from the group consisting of polyacrylates, aluminum oleate, olefin polymer, hydrogenated olefin polymer, mixtures of hydrogenated and unhydrogenated olefin polymer, and natural rubber obtained from dehydrated latex.

3,939,084

FUNCTIONAL FLUID COMPOSITIONS CONTAINING SUBSTITUTED PYRIMIDINES

James D. Sullivan, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 316,159, Dec. 18, 1972, abandoned, which is a continuation of Ser. No. 156,133, June 23, 1971, Pat. No. 3,759,829, which is a continuation-in-part of Ser. No. 796,885, Feb. 5, 1969, Pat. No. 3,591,500, which is a continuation-in-part of Ser. No. 540,488, April 6, 1966, abandoned. This application Dec. 28, 1973, Ser. No. 429,451

Int. Cl. C10m *3/32*

U.S. Cl. 252—47.5 **2 Claims**

1. Composition comprising

1. a major amount of a fluid of lubricating or hydraulic viscosity selected from the group consisting of
   - i. polyphenyl thioethers,
   - ii. mixed polyphenyl oxy-thioethers, and
   - iii. admixtures thereof, and

II. a corrosion inhibiting amount of 4-aminopyrazolo (3,4-d)pyrimidine.

2. Composition comprising

I. a major amount of a fluid of lubricating or hydraulic viscosity selected from the group consisting of
   i. polyphenyl thioethers,
   ii. mixed polyphenyl oxy-thioethers, and
   iii. admixtures thereof, and

II. a corrosion inhibiting amount of 7-amino-1-v-triazolo-(d)pyrimidine.

3,939,085

PROCESS FOR FORMING A LIQUID DEVELOPER ORGANISOL

Ian Edward Smith, Lockleys; Peter John Hastwell, Elizabeth Grove, and Marinus Cornelus Vermeulen, Valley View, all of Australia, assignors to Savin Business Machines Corporation, Valhalla, N.Y.

Division of Ser. No. 155,108, June 21, 1971, Pat. No. 3,839,032. This application May 14, 1973, Ser. No. 359,650

Int. Cl.^{2} G03G *9/00*

U.S. Cl. 252—62.12 1 Claim

1. A method of compounding a developing liquid for developing latent electrostatic images including the steps of forming an organosol comprising a solution of high molecular weight resin in a solvent having a kauri-butanol number in excess of 50, suspending said solution in a diluent having a kauri-butanol number of less than 30, forming a solution of a high molecular weight resin in a solvent having a kauri-butanol number greater than 50, milling said solution with a finely divided pigment having electrophoretic properties, suspending said pigment mix in a diluent having a kauri-butanol number of less than 30 and then mixing the high molecular weight resin suspension and the pigment suspension to form a developing liquid in which the pigment to resin ratios are between 1:11 and 1:1.

3,939,086

HIGHLY CLASSIFIED OXIDIZED DEVELOPER MATERIAL

Robert J. Hagenbach, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 369,036, June 11, 1973, Pat. No. 3,849,182, which is a continuation-in-part of Ser. No. 834,862, June 19, 1969, abandoned. This application July 18, 1974, Ser. No. 489,630

Int. Cl.^{2} G03G *9/10*

U.S. Cl. 252—62.1 P 9 Claims

1. An electrostatographic developer mixture consisting essentially of about one part by weight of finely-divided toner particles electrostatically adhering to the surface of about 10 parts to about 200 parts by weight of highly shape-classified low carbon hypereutectoid steel carrier particles having an average particle size between about 50 microns and about 1,000 microns and a specific gravity of at least about 7 grams per cubic centimeter, said steel carrier particles having been heat treated to a tempered martensitic microstructure with an average hardness of 40–55 Rockwell C in an air or oxygen atmosphere at temperatures ranging between about 500° and about 1,000°F to provide an oxide surface layer comprising Fe_3O_4 on said steel carrier material, said oxide surface layer having a thickness between about 0.2 and about 5.0 microns, said steel carrier particles comprising carrier cores having a composition comprising about 95.0 to about 99.0 parts iron, about 0.1 to about 2.0 parts carbon, about 0.5 to about 2.0 parts manganese, about 0.5 to about 2.0 parts silicon, about 0.03 to about 0.1 parts aluminum, about 0.01 to about 0.05 parts phosphorus, and about 0.02 to about 0.05 parts sulphur, said treated carrier particles being overcoated with a resinous coating material capable of electrostatically releasing said electrostatically adhering toner particles to an electrostatic latent image.

3,939,087

TONER COMPOSITIONS CONTAINING SILANE TREATED FUMED SILICA

Bheema R. Vijayendran, Bethel, and R. Clark DuBois, Fairfield, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Nov. 19, 1973, Ser. No. 416,936

Int. Cl.^{2} G03G *9/04*

U.S. Cl. 252—61.1 L 8 Claims

1. A hydrophobic, oleophilic liquid toner for use in a copier duplicator wherein an electrostatic image is created on a photoconductive layer, comprising: a concentrate having 0.1 to 12.0% pigment with a particle size not greater than 25 millimicrons, 10 40% polymer having a high affinity for the adsorption of said pigment, 40 to 65% hydrocarbon carrier having a K.B. number less than 30, a dielectric constant of less than 3.5, a resistivity of at least 10^9 ohm centimeters, and a TCC flash point of at least 100°F, said hydrocarbon carrier having a composition containing less than 2% aromatic liquid constituents and said polymer being soluble in said hydrocarbon carrier, and 1.0 to 12% silane treated fumed silica having a particle size of 5 to 15 millimicrons and a BET surface area of 100 to 400 m^2/gm, one part of said concentrate being dissolved in 4 to 50 parts by weight of said hydrocarbon carrier, said silane having some of the bonds of the silane linkage substituted by saturated or unsaturated hydrophobic organic groups.

3,939,088

FIRE-RESISTANT HYDRAULIC FLUID

Alfred Goldschmidt, El Cerrito, and Robert A. Stayner, Lafayette, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 25, 1974, Ser. No. 454,638

Int. Cl.^{2} C09K *3/00;* **C10M** *1/06, 1/28*

U.S. Cl. 252—79 HF 7 Claims

1. A water-in-oil emulsion finding use as a functional fluid comprises from about 19 to about 50 weight percent of water, from about 80 to about 49 weight percent of mineral oil and in an amount sufficient to stabilize said water-in-oil emulsion a hydrocarbyl-substituted succinic acid monoester of a polyoxyethylene mono-ol of average molecular weight from about 200 to about 1,000 terminated with an alkyl group of 1 to 5 carbon atoms, wherein said hydrocarbyl substituent is of from about 750 to about 2,000 average molecular weight.

3,939,089

ETCHING SOLUTIONS FOR COPPER AND COPPER ALLOYS AND ETCHING PROCESS USING THE SAME

Akira Matsumoto, and Katsutoshi Itani, both of Fuji, Japan, assignors to Tokai Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 30, 1974, Ser. No. 510,536

Claims priority, application Japan, Oct. 17, 1973, 48-115711

Int. Cl.^{2} C09K *13/06;* **C23F** *1/00*

U.S. Cl. 252—79.4 9 Claims

1. An etching solution for copper and copper alloys comprising an aqueous peroxysulfate solution containing from 5 percent by weight to its solubility limit therein of a peroxysulfate, from 10 parts per million to its solubility limit therein of a purine compound, and from 5 parts per million to 1,000 parts per million of a halogen compound which liberates halogen in an aqueous peroxysulfate solution.

3,939,090

ANTIFOGGING CLEANER

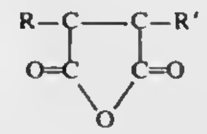
Barney J. Zmoda, Bridgewater Township, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,739

Int. Cl.^{2} C11D *7/50*

U.S. Cl. 252—90 11 Claims

1. A composition consisting essentially of approximately by weight, (a) 0.01 to 1.% of a copolymer derived from (1) an α, β - ethylenically unsaturated dicarboxylic acid anhydride having the general formula



wherein R and R′ are independently selected from the group consisting of hydrogen, alkyl, aryl, aralkyl, substituted alkyl, aryl and aralkyl and (2) an ethylenically unsaturated monomer selected from the group consisting of vinyl ethers, styrene, alpha-methyl styrene, lower alkyl substituted styrenes and lower olefins, up to 10% of at least one lower alkylene glycol; lower alkyl monoether, (c) up to 25% of a C_1-6 aliphatic alcohol, (d) 0.1 to 2.0% of an ethoxylated C_{10}-18 alkali metal or ammonium sulfate having about 2–200 units of ethylene oxide and the balance water, with the proviso that at least one of component (b) or (c) is present.

3,939,091

COMPOSITION FOR USE IN DEACIDIFICATION OF PAPER

George B. Kelly, Jr., Gaithersburg, Md., assignor to The United States of America as represented by the Librarian of Congress, Washington, D.C.

Filed Feb. 14, 1975, Ser. No. 550,087

Int. Cl.^{2} C09K *3/30;* **A61L** *13/00*

U.S. Cl. 252—189 6 Claims

1. A composition for the deacidification of paper materials comprising 0.1 to 20% by weight of methyl magnesium carbonate in an organic solvent.

3,939,092

WATER WASHABLE DYE PENETRANT AND METHOD FOR UTILIZING SAME

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

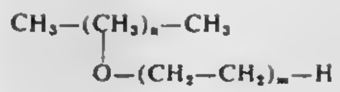
Continuation-in-part of Ser. No. 444,433, Feb. 21, 1974. This application Nov. 7, 1974, Ser. No. 521,730

Int. Cl.^{2} C09K *11/06;* **G01N** *19/08, 21/16*

U.S. Cl. 252—301.2 P 13 Claims

1. A water washable biodegradable liquid dye penetrant composition for use in non-destructive testing for detecting cracks and flaws in the surface of an object, which comprises (1) a major amount of a combination of biodegradable nonionic surfactants consisting of ethoxylates of linear secondary aliphatic alcohols, with the hydroxyl groups randomly distributed, the linear aliphatic portion of said alcohols being alkyl chains containing in the range from 11 to 15 carbon atoms, one of said biodegradable surfactants containing an average of 5 moles of ethylene oxide and another of said biodegradable surfactants containing an average of 9 moles of ethylene oxide; and (2) a small amount of a dye soluble in said combination of biodegradable surfactants.

2. A dye penetrant composition as defined in claim 1, wherein said ethoxylates of said alcohols forming said surfactants have the formula:



$$\begin{array}{l}\mathrm{CH_3{-}(CH_2)_n{-}CH_3}\\ \qquad\;|\\ \qquad\mathrm{O{-}(CH_2{-}CH_2)_m{-}H}\end{array}$$

where *n* is in the range from 9 to 13, *m* for said one of said surfactants being 5, and *m* for said another of said surfactants being 9, and said dye is present in said composition in an amount ranging from about 0.1 to 15 parts, per 100 parts, by weight of the total combination of said surfacants, said composition being substantially non-flammable.

3,939,093

DAYLIGHT FLUORESCENT PIGMENTS

Theodor Papenfuhs, Frankfurt am Main; Ernst Spietschka, Oberauroff/Taunus, and Helmut Troster, Konigstein/-Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

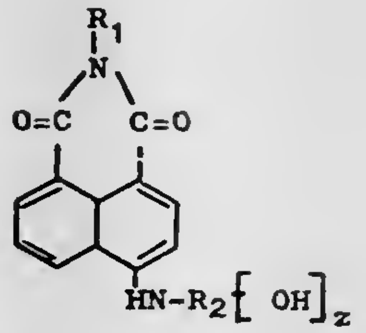
Filed Dec. 6, 1974, Ser. No. 530,299

Claims priority, application Germany, Dec. 6, 1973, 2360787

Int. Cl.^{2} C09K *11/06;* **C09D** *11/00*

U.S. Cl. 252—301.2 R 12 Claims

1. Daylight flurorescent pigments consisting essentially of a condensation resin and one or several compounds of the general formula (1)



in which R_1 stands for a substituted alkyl, cycloalkyl or aryl radical or a heterocyclic radical, R_2 stands for an alkylene radical which may be interrupted by heteroatoms, isocyclic or heterocyclic radicals, or which stands for a cycloalkylene radical whereby R_2 may be substituted by further non-ionic substituents, and *z* is 1, 2 or 3, the condensation resin being a melamine-formaldehyde resin which was obtained by condensation of melamine with formaldehyde or with agents yielding formaldehyde and with aryl sulfonic acid amides, aralkyl sulfonic acid amides or with both aryl sulfonic acid amides and aralkyl sulfonic acid amides.

3,939,094

COMPOSITIONS AND PROCESS FOR LIQUID SCINTILLATION COUNTING

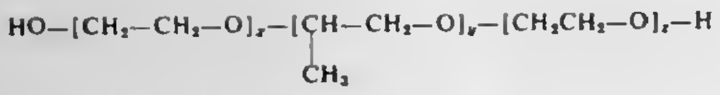
Joel M. Kauffman, Sharon, Mass., assignor to New England Nuclear Corporation, Boston, Mass.

Filed Nov. 30, 1973, Ser. No. 420,633

Int. Cl.^{2} G01T *1/167*

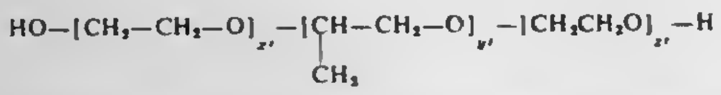
U.S. Cl. 252—301.2 C 14 Claims

1. A liquid scintillation counting composition, comprising at least one solvent, a scintillating solute and a surface active agent, said surface active agent comprising a mixture of a first material having the following structural formula:



$$HO-[CH_2-CH_2-O]_x-[\underset{CH_3}{\underset{|}{C}}H-CH_2-O]_y-[CH_2CH_2-O]_z-H$$

wherein *y* is from about 15 to 56, and *x* and *z* are from about 1 to 35, and a second, different material having the following structural formula:



$$HO-[CH_2-CH_2-O]_{x'}-[\underset{CH_3}{\underset{|}{C}}H-CH_2-O]_{y'}-[CH_2CH_2O]_{z'}-H$$

wherein *y′* is from about 15 to 56, and *x′* and *z′* are from about 1 to 35.

3,939,095

DYE-CONTAINING MICROCAPSULES

Wolfgang Sliwka, Weinheim; Wolf-Ruediger Gaefke, and Tilmann Korth, both of Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Aug. 8, 1973, Ser. No. 386,526

Claims priority, application Germany, Aug. 10, 1972, 2239358

Int. Cl.^{2} B01J *13/02*

U.S. Cl. 252—316 **6 Claims**

1. Dye containing microcapsules which comprise:

a. a capsule wall, said wall being a mixture of gelatine and gum arabic or a copolymer of from 20 to 65 percent by weight of methyl methacrylate, from 10 to 65 percent by weight of an acetyl acetate of mono(meth)-acrylates of aliphatic diols of from 2 to 8 carbon atoms, from 0 to 30 percent by weight of acrylamide, from 0 to 30 percent by weight of acrylic acid, methacrylic acid or a mixture thereof, from 0 to 30 percent by weight of vinyl pyrrolidone, from 0 to 3 percent by weight of vinylsulfonic acid or salts thereof, of 2-sulfoethyl methacrylate or salts thereof or of 2-acrylamido-2-methylpropane-sulfonic acid or salts thereof; and,

b. core material consisting essentially of at least one dye and a water immiscible organic liquid consisting essentially of at least one phenylindane mono- or disubstituted by linear or branched alkyl of from 1 to 6 carbon atoms.

3,939,096

SUPPORTED CATALYST FOR ACROLEIN OXIDATION

Peter C. Richardson, Morristown, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Sept. 24, 1974, Ser. No. 508,947

Int. Cl.^{2} B01J *29/16;* **C07C** *51/24*

U.S. Cl. 252—456 **11 Claims**

1. An unagglomerated catalyst adapted for use in the catalytic conversion of a monoethylenically unsaturated acrylic aldehyde to the corresponding monoethylenically unsaturated acyclic carboxylic acid having the empirical formula $Mo_aV_bW_cMn_dO_e$, the atomic ratio of Mo:V:W:Mn:O being such that when a is 12, b is 0.5 to 12, c is 0.1 to 6, d is 0.5 to 20 and e is 37 to 94, contained on a porous silica support particle having a surface area of from about 25 to about 350 gm/m^2 and a porosity of from about 0.2 to about 1.0 cc/gm, the catalytic metals being contained essentially only on the surfaces of the particles.

3,939,097

EXHAUST GAS CLEANING CATALYSTS AND METHOD OF PRODUCING SAME

So Takeoka, Wako; Hideya Inaba, and Masayoshi Ichiki, both of Osaka, all of Japan, assignors to Hitachi Shipbuilding and Engineering Co., Ltd., Osaka, Japan

Filed Dec. 6, 1973, Ser. No. 422,356

Claims priority, application Japan, Dec. 7, 1972, 47-122955; Dec. 7, 1972, 47-122956

Int. Cl.^{2} B01J *21/04, 23/74, 23/84*

U.S. Cl. 252—464 **16 Claims**

1. A method of producing an exhaust gas cleaning catalyst comprising the steps of

forming an alloy composed of 20 to 50% by weight of Cu; at least one of the metals Ni in an amount of 1 to 20% by weight, and Cr in an amount of 0.5 to 8% by weight; and Al as the remaining percent by weight;

adding at least one additional metal selected from the group consisting of V, Mn, Fe, Co, Nb, Mo, Ru, Rh and Pd; and

eluting Al from the surface of said alloy to activate the surface of said catalyst.

3,939,098

SUSPENSION FOR DEPOSITING A PYROELECTRIC MATERIAL

Robert Dean Larrabee, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 24, 1973, Ser. No. 363,669

Int. Cl.^{2} H01B *1/06*

U.S. Cl. 252—518 **4 Claims**

1. A suspension having improved stability comprising a mixture of an alcohol having one to five carbon atoms and glycine and a pyroelectric particulate material selected from the group consisting of triglycine sulfate, triglycine selenate and triglycine fluoroberyllate suspended in said mixture.

3,939,099

FRAGRANCE COMPOSITION

Philip Tusa, Madison, and Frank Tranner, Trumbull, both of Conn., assignors to Chesebrough-Pond's, Inc., Greenwich, Conn.

Filed Dec. 26, 1974, Ser. No. 536,396

Int. Cl.^{2} A61K *2/46;* **C11B** *9/00*

U.S. Cl. 252—522 **10 Claims**

1. A fragrance composition having an adequate odor strength when initially applied to the human skin and which odor strength is continued for a long period of time after application comprising a fragrance oil and a film former mutually soluble in a water-ethanol solvent system, the film-former being in an amount of 0.01 to 20.0% by weight of the total weight of the film-former, fragrance oil and water-ethanol solvent components, the fragrance oil being in an amount of 0.01 to 50.0% by weight of the total weight of the film-former, fragrance oil and waterethanol solvent components, the water-ethanol solvent being in an amount of 30.0 to 99.98% by weight of the total weight of the fragrance oil, film-former and water-ethanol solvent components, the water being in an amount of 1.0 to 59.8% by weight of the water-ethanol solvent.

3,939,100

COMBINATION ALKALI METAL PYROPHOSPHATE-ALKALINE EARTH METAL PYROPHOSPHATE DETERGENT BUILDER

Thomas J. Hau, Cincinnati, and Steven D. Cherney, Springdale, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 14, 1975, Ser. No. 550,055

Int. Cl.^{2} C02B *1/22;* **C11D** *3/04, 3/12, 9/18*

U.S. Cl. 252—532 **19 Claims**

1. A detergent additive comprising:

a. an alkali metal pyrophosphate; and

b. an alkaline earth metal pyrophosphate having

a mean particle diameter of less than 25 microns; in a weight ratio of the alkali metal pyrophosphate to the alkaline earth metal pyrophosphate of from about 60:1 to about 1:8.

9. A detergent composition comprising:

a. from about 5% to about 60% by weight of an alkali metal pyrophosphate;

b. from about 1% to about 50% by weight of an alkaline earth metal pyrophosphate having a mean particle diameter of less than 25 microns and

c. from about 2% to about 40% by weight of an organic detergent surfactant component.

3,939,101

COMPOSITION FOR ULTRASONIC INSPECTION OF OBJECTS AND METHOD FOR EMPLOYING SAME

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 295,059, Oct. 4, 1972, Pat. No. 3,826,127. This application Feb. 21, 1974, Ser. No. 444,213

Int. Cl.^{2} G01N *29/04;* **C09K** *3/00*

U.S. Cl. 252—408 R **16 Claims**

1. A composition for ultrasonic inspection of surface and subsurface flaws and discontinuities, comprising an aqueous gel containing an N-alkyl-2-pyrrolidone wherein the alkyl group contains from 1 to 4 carbon atoms, a water soluble surfactant and silica suspended in said gel.

3,939,102

HYDROCARBON ISOMERIZATION CATALYST AND PROCESS

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 365,782, May 31, 1973, Pat. No. 3,839,193, which is a continuation-in-part of Ser. No. 27,457, April 10, 1970, abandoned. This application Mar. 29, 1974, Ser. No. 456,705. The portion of the term of this patent subsequent to Oct. 1, 1991, has been disclaimed.

Int. Cl.^{2} B01J *27/04, 27/08, 27/10*

U.S. Cl. 252—439 **9 Claims**

1. A catalytic composite consisting essentially of a refractory inorganic oxide having combined therewith, on a Friedel-Crafts metal halide-free basis, about 0.01 to about 2 weight percent platinum or palladium, about 0.01 to about 2 weight percent iridium, about 0.01 to about 5 weight percent germanium, and about 0.1 to about 3.5 weight percent halogen in halide form, calculated on an elemental basis, and about 1.0 to about 100 weight percent Friedel-Crafts metal halide, wherein the platinum or palladium, iridium and germanium are uniformly dispersed throughout the refractory inorganic oxide, wherein substantially all of the platinum or palladium and iridium are present in the corresponding metallic states and wherein substantially all of the germanium is present in the form of the oxide, sulfide, halide, oxychloride or aluminate.

3,939,103

CATALYTIC PRODUCT FOR THE OXIDATIVE DESTRUCTION OF GASEOUS ORGANIC COMPOUNDS AND METHOD FOR THEIR PREPARATION

Christian Belliot; Etienne Cheylan; Serge Madelaine, and Johannes Ebbing, all of Paris, France, assignors to Compagnie Francaise Thomson Houston-Hotchkiss Brandt, Paris, France

Division of Ser. No. 203,833, Dec. 1, 1971, abandoned. This application July 19, 1973, Ser. No. 380,721

Claims priority, application France, Dec. 1, 1970, 70.43189

Int. Cl.^{2} B01J *29/06, 29/34*

U.S. Cl. 252—455 R **15 Claims**

1. A catalyst for the oxidative destruction of gaseous organic compounds, which comprises between about 80 and about 50% of total catalyst weight of active ingredients and from about 20 to about 50% of total catalyst weight of a cold-shapable refractory excipient, wherein the active ingredients comprises from about 50% to about 85% by weight of rhombohedral manganese oxides, from 0 to about 30% by weight of manganous carbonate, from about 3 to about 10% by weight of cupric oxide, and from 0 to about 15% by weight of nickel oxides.

3,939,104

CATALYTIC PROCESS

John Stewart Campbell; Keith Farmery; David John Heath, and Norman Henry Harbord, all of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 2, 1973, Ser. No. 402,779

Claims priority, application United Kingdom, Oct. 4, 1972, 45696/72; Nov. 20, 1972, 53493/72; Apr. 5, 1973, 16288/73

Int. Cl.^{2} B01J *29/06, 29/00*

U.S. Cl. 252—455 R **18 Claims**

1. A catalyst for treating internal combustion engine exhaust gases which comprises at least one non-noble metal or compound thereof on a support that comprises a primary catalyst support carrying a refractory secondary catalyst support, the secondary support consisting essentially of one or more involatile acidic and/or amphoteric oxides selected from the group consisting of alumina, silica, chromia, manganese oxide, iron oxide and mixtures or compounds thereof substantially in combination with one or more basic oxides from the group consisting of calcium, strontium and barium wherein at least 70% by weight of said acidic and/or amphoteric oxide is in combination with said basic oxides and said one or more basic oxides is present in a quantity that will give a stoichiometric compound with said acidic and/or amphoteric compound.

3,939,105

MICROPOROUS POLYURETHANE HYDROGELS, METHOD AND COMPOSITES WITH NATURAL AND OTHER SYNTHETIC FIBERS OR FILMS

Allen Paul Jones, Jr., Charleston; Robert John Knopf, St. Albans, and Claude Milton Conner, Nitro, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 18, 1974, Ser. No. 480,567

Int. Cl.^{2} C08G *18/14*

U.S. Cl. 260—2.5 AY **33 Claims**

1. An article of manufacture comprising a composite of (1) a shaped microporous, water swellable, lightly crosslinked, hydrogel polymer article of the isocyanato terminated prepolymer comprising the reaction product of:

i. a poly(alkyleneoxy) polyol having an average molecular weight up to about 25,000 wherein the alkyleneoxy group contains from 2 to 4 carbon atoms, and

ii. an organic diisocyanate, said prepolymer impregnated with a minor significant amount of a liquid non-solvent prior to lightly crosslinking thereof with an equivalent amount of a crosslinking agent of the group:

iii. water or organic polyamine; wherein said poly(alkyleneoxy) polyol is a mixture of a major amount of a poly(ethyleneoxy) diol having an average molecular weight of from about 4,000 to about 25,000 and a minor amount of a higher polyol of the group poly(alkyleneoxy) triol or poly(alkyleneoxy) tetrol having from 2 to 4 carbon atoms in the alkyleneoxy group or aliphatic polyhydroxyl compound of the formula $C_nH_{2n+2-m}(OH)_m$ wherein n has a value of 3 to 6 and m has a value of 3 to 4, or mixtures thereof, said triol or tetrol having an average molecular weight of from about 92 to 5,000, wherein the mole ratio of diol to higher polyol in said mixture is from about 6:1 to 40:1; wherein the equivalents ratio of isocyanato groups to hydroxyl groups is from about 1.2:1 to about 1.6:1; wherein the organic polyamine is a primary or secondary diamine or triamine and wherein the equivalents of reactive crosslinking groups in said crosslinking agent used is equivalent to the number of equivalents of isocyanato groups present in said prepolymer; in combination with (II) a natural or a different synthetic fiber or film.

3,939,106

ENERGY ABSORBING POLYURETHANE-POLYUREA CELLULAR ELASTOMERS

Raymond A. Dunleavy, and Leslie E. Hawker, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 20, 1973, Ser. No. 343,180
Int. Cl.^{2} C08G *18/14, 18/32, 18/48*
U.S. Cl. 260—2.5 AM **4 Claims**

1. A process for producing a cellular polyurethane-polyurea elastomer useful as the energy absorbing component in automobile bumpers which process comprises forming and curing a reaction mixture consisting essentially of:

a. a polymer polyol comprising a liquid polyoxyalkylene polyol that has a molecular weight of at least 1500 and a hydroxyl number from 20 to 120 and that contains therein film-forming organic polymer having a molecular weight of at least 5000, said polymer polyol consisting essentially of from 85 to 60 parts by weight of the polyol and from 15 to 40 parts by weight of the polymer per 100 parts by weight of the polymer polyol and said polymer having been produced polymerizing in said polyol at least one monomer selected from the group consisting of hydrocarbon olefins, olefinic nitriles, alkenyl esters of alkanoic acids, alkyl acrylates, alkyl methacrylates and unsaturated aliphatic acids;

b. an aromatic polyamine having at least two primary amine groups attached to carbon atoms of the same or different aromatic rings, at least one of such carbon atoms being adjacent to a carbon atom having a chlorine substituent and each such aromatic ring consisting of carbon and hydrogen;

c. an aromatic glycol, said glycol being the reaction product of an alkylene oxide with an aromatic amine consisting of carbon, hydrogen and nitrogen, said nitrogen being in an amino group, and said aromatic amine having two active hydrogens provided by the amino group or an aromatic alcohol consisting of carbon, hydrogen and oxygen, said oxygen being in hydroxyl groups, and said alcohol having two active hydrogens; provided by the hydroxyl groups;

d. an organic polyisocyanate in an amount that provides from 0.8 to 1.3 isocyanato groups per active-hydrogen group in the reaction mixture;

e. a catalytic amount of catalyst for the curing of the reaction mixture to produce the elastomer; and

f. a blowing agent in an amount sufficient to produce a cellular structure in the elastomer,

said reaction mixture containing from 97 to 65 parts by weight of (a) and 3 to 35 parts by weight of (b) per 100 parts by weight of (a) and (b) and said reaction mixture containing from 1 to 35 parts by weight of (c) per 100 parts by weight of (a) and (c), with the proviso that the reaction mixture contains no more than 35 parts by weight of (b) and (c) per 100 parts by weight of (a), (b) and (c).

2. An elastomer produced by the process of claim 1.

3,939,107

FIRE-RETARDANT PARTICLE BOARD AND BINDER THEREFOR FROM AMINOPLAST WITH AMMONIUM POLYPHOSPHATE-FORMALDEHYDE PRODUCT

Gordon E. Brown, Eugene, Oreg., assignor to Monsanto Company, St. Louis, Mo.

Filed Sept. 6, 1974, Ser. No. 503,890
Int. Cl.^{2} C08L *1/00, 61/24, 61/34*
U.S. Cl. 260—17.3 **15 Claims**

1. A fire retardant aminoplast binder resin solution containing not more than 30 percent by weight water consisting of

A. a substantially neutral aqueous solution of a low molecular weight urea-formaldehyde resin of a mol ratio of from about 3.0 to 3.5 formaldehyde to urea, a viscosity of from about 60 to 100 cps and a percent solids of at least 70 percent,

B. sufficient urea to reduce the formaldehyde to urea ratio to from about 1.2 to 2.0, and

C. a stable concentrated aqueous solution having a percent solids of at least 55 percent of ammonium polyphosphate reacted with from 5 to 12.5 percent by weight formaldehyde adjusted to a pH of from 4.7 to 6.2 to produce a concentration of dissolved ammonium polyphosphate of from about 40 to 56 percent by weight in said binder resin solution.

3,939,108

COLD WATER RESISTANT STARCH-BASED ADHESIVE CONTAINING STYRENE-MALEIC ANHYDRIDE RESIN AND FIXED ALKALI

Julius Sirota, South Plainfield, and Matthew P. McKenna, Jr., Flemington, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Dec. 16, 1974, Ser. No. 532,930
Int. Cl.^{2} C08L *3/00*
U.S. Cl. 260—17.4 ST **8 Claims**

1. A cold water resistant adhesive composition comprising a mixture of starch, at least one styrene maleic anhydride copolymer having a styrene to maleic anhydride ratio of 1:1 to 3:1, a peptizer, water and sufficient alkali to give a pH within the range of 8.0 to 11.0 with at least 20% of the total alkali, on a stoichiometric equivalent basis, of a 100% fixed alkali product, employed in the form of a fixed alkali, said composition containing 4.8 to 20.0 parts sytrene maleic anhydride per 100 parts starch.

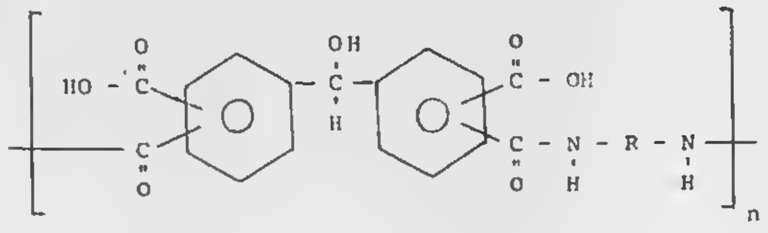
3,939,109

POLYAMIC-ACIDS PREPARED FROM 3,3,4,4-BENZHYDROL TETRACARBOXYLIC DIANHYDRIDE

Walter P. Barie, Jr., Shaler Township; Anatoli Onopchenko, Monroeville, and Johann G. D. Schulz, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 19, 1974, Ser. No. 534,230
Int. Cl.^{2} C08G *73/10*
U.S. Cl. 260—29.1 R **7 Claims**

1. A polyamic acid having the general formula



where the carbonyl groups are independently in the 3-, 4- and 3'-, 4'- positions respectively, wherein *n* is greater than about 10 up to about 1000 and R is a divalent organic radical having at least two carbon atoms with each nitrogen atom chemically bonded to different carbon atoms of said R radical.

3,939,110

AQUEOUS POLYELECTROLYTIC ELECTROCOATING MATERIALS OF ORGANIC RESINS

Kenneth Herman Colberg, Arlington Heights, and Ronald Joseph Zukowski, Buffalo Grove, both of Ill., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 297,419, Oct. 13, 1972, Pat. No. 3,784,093. This application Jan. 2, 1974, Ser. No. 430,053
Int. Cl.^{2} C08L *33/02;* C09D *5/40*
U.S. Cl. 260—29.6 ME **3 Claims**

1. An aqueous polyelectrolytic electrocoating concentrate dispersable in water to form a bath used in contact with an anode and a cathode in an electric circuit of an electrocoating process for electrocoating a metal substrate, which comprises from about 20 to 60 weight percent synthetic polycarboxylic acid resin solids based on the concentrate, said solids being soluble in alcohols haivng from 1 to 5 carbon atoms, and having from 50 to 85 percent of their reactive sites neutralized with a sufficient quantity of water soluble amino compound to maintain the polycarboxylic acid resin solids as a dispersion of anionic polyelectrolyte in the concentrate, and

a monohydric alcohol having from 1 to 5 carbon atoms selected from the group consisting of methanol, ethanol, propanol, isopropanol, n-butanol, isobutanol, sec-butanol, tert-butanol, amyl alcohol and isoamyl alcohol, said alcohol being at least partly associated with and dispersed in the resin concentrate in an amount of from 2.0 to 20 weight percent based on the weight of the resin solids, the presence of said alcohol being to at least maintain the resistivity and increase the throwing and wetting power of the medium bath, and to provide a higher quality, more pliable coating which releases more vapors from and leaves less voids in the coating upon curing than if said monohydric alcohol were not present in the concentrate.

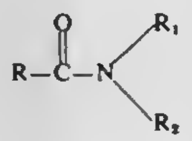
3,939,111

STABLE POLYURETHANE SOLUTIONS

Charles S. Schollenberger, Hudson, and Kornelius Dinbergs, Broadview Heights, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed July 1, 1974, Ser. No. 484,396
Int. Cl.^{2} C08K *3/28, 5/20*
U.S. Cl. 260—32.6 NR **7 Claims**

1. A solution of polyurethane in a solvent having the general formula



wherein the R's are hydrogen or alkyl containing a viscosity stabilizing amount of about 0.01 to about 2% of an ammonium salt of an inorganic acid selected from the group consisting of ammonium chloride, ammonium nitrate, and ammonium sulfate.

3,939,112

THERMOPLASTIC RESIN COMPOSITION HAVING HIGH IMPACT STRENGTH

Donald G. Needham, Ramona, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 18, 1974, Ser. No. 524,887
Int. Cl.^{2} C08K *5/01;* C08L *9/06*
U.S. Cl. 260—33.6 AQ **9 Claims**

1. A composition consisting essentially of

a. a polymodal radial brached block copolymer of the general formula

$(A-B)_xY$

wherein *A* is essentially a block of polymerized monovinyl-substituted aromatic monomers of 8 to about 16 carbon atoms; *B* is essentially a polymerized conjugated alkadiene block, the alkadiene having 4 to about 12 carbon atoms; *Y* is an atom or group of atoms derived from a polyfunctional coupling agent; and *x* represents the number of functional groups of said polyfunctional coupling agent, and

b. an amount of a naphthenic extender oil which increases the impact strength.

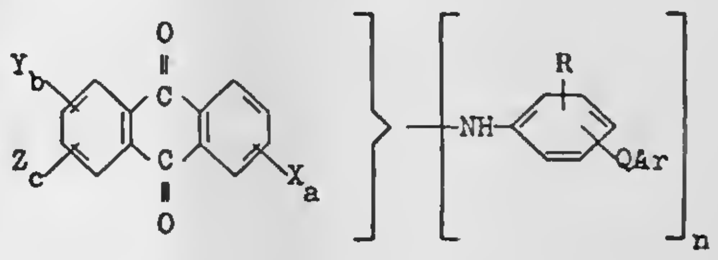
3,939,113

PROCESS FOR THE BULK DYEING OF POLYESTERS

Arnold Wick, Therwil, and Max Jost, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 29, 1974, Ser. No. 492,629
Claims priority, application Switzerland, Aug. 2, 1973, 11224/73
Int. Cl.^{2} C08L *67/00*
U.S. Cl. 260—40 P **8 Claims**

1. Process for the bulk dyeing of polyesters, characterised in that the dyestuffs used are anthraquinone derivatives of the formula



(1)

wherein Q denotes one of the bridge members —O— or —CO—, R denotes hydrogen or an alkyl group containing 1–4 carbon atoms, Ar denotes an aryl group, *n* denotes a number from 1 to 4, X, Y and Z denote an amino, hydroxyl, alkoxy, aryloxy, alkylmercapto, arylmercapto, arylamino or aroylamino group or halogen and *a*, *b* and *c* each denote zero or a number from 1 to 4, with the sum of $n+a+b+c$ being a number from 1 to 6.

3,939,114
POWDER PAINTS CONTAINING ALUMINUM AND NICKEL I

Melville J. Camelon, Utica, and Rodney C. Gibeau, Mt. Clemens, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 422,473, Dec. 6, 1973, abandoned. This application Sept. 16, 1974, Ser. No. 506,487
Int. Cl.² C08K *3/08, 9/04, 9/10*
U.S. Cl. 260—42.14 16 Claims

1. In a powder paint which exclusive of catalysts, antistatic agents, plasticizers, and flow control agents, the same being known and optional additives to powder paints, consists essentially of aluminum flakes, non-metal pigment, and a particulate, organic, film-former, the improvement wherein

A. said non-metal pigment comprises 0 to about 22 weight percent of said powder paint,

B. said aluminum flakes comprise about 0.005 to about 25 weight percent of said powder paint and are encapsulated prior to admixture with said particulate, organic, film-former with about 2 to about 200 parts by weight of a continuous coating of a thermosettable, organic, film-former per 100 parts by weight aluminum flakes, said thermosettable, organic, film-former consisting essentially of a copolymer having average molecular weight (M_n) in the range of about 1500 to about 15,000 and glass transition temperature in the range of about 40°C. to about 90°C. bearing functional groups provided by constituent monomers selected from the group consisting of glycidyl esters of a monoethylenically unsaturated carboxylic acid, C_5–C_7 monohydroxy acrylates, C_5–C_7 monohydroxy methacrylates and alpha-beta olefinically unsaturated amides and wherein at least above 50 weight percent of the constituent monomers are selected from acrylic monomers and the remainder weight percent, if any, of the constituent monomers consist essentially of C_8–C_{12} monovinyl hydrocarbons, said copolymer being self-crosslinkable or employed in combination with a monomeric or polymeric crosslinking agent that is capable of reacting with said functional groups on said copolymer.

C. nickel powder is dispersed in said powder paint, the weight ratio of said nickel powder to the encapsulated aluminum flakes being between about 1:4 and about 5:1, and

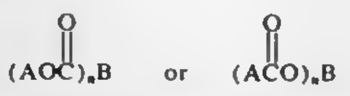
D. said particulate, organic film-former is selected from
   1. a thermoplastic, particulate, film-former that is a polymer of alpha-beta olefinically unsaturated monomers of which about 51 to about 100 weight percent are acrylic monomers and 0 to about 49 weight percent are monovinyl hydrocarbons, and
   2. thermosettable, particulate, film-formers consisting essentially of a copolymer having average molecular weight (M_n) in the range of about 1500 to about 15,000 and glass transition temperature in the range of about 40°C. to about 90°C., bearing functional groups provided by constituent monomers selected from the group consisting of glycidyl esters of a monoethylenically unsaturated carboxylic acid, C_5–C_7 monohydroxy acrylates, C_5–C_7 monohydroxy methacrylates and alpha-beta olefinically unsaturated amides and wherein at least about 50 weight percent of the constituent monomers are selected from acrylic monomers and the remainder weight percent, if any, of the constituent monomers consist essentially of C_8–C_{12} monovinyl hydrocarbons, said copolymer being self-crosslinkable or employed in combination with a monomeric or polymeric cross-linking agent that is capable of reactions with said functional groups on said copolymer.

3,939,115
POLYCHROMOPHORIC ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

Richard H. S. Wang, and Gether Irick, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

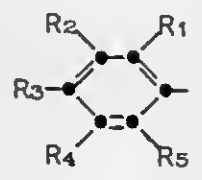
Filed Oct. 2, 1974, Ser. No. 511,331
Int. Cl.² C08K *5/00;* C08L *5/00*
U.S. Cl. 260—45.8 N 30 Claims

1. An organic composition susceptible to ultraviolet degradation stabilized against such degradation with a stabilizing amount of a composition of matter comprising compounds having the formula:



$$(A\overset{O}{\overset{\|}{O}C})_nB \quad \text{or} \quad (A\overset{O}{\overset{\|}{C}}O)_nB$$

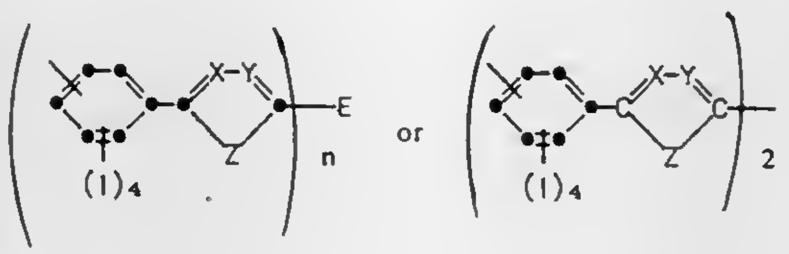
wherein A is a group having the structure:



wherein

R_1, R_2, R_3, R_4 and R_5 are hydrogen, hydroxy, chloro, bromo, fluoro, lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, lower alkylaryl, alkoxy, aryloxy, amino, substituted amino, cyano, carboalkoxy and the substituents R_1 and R_2, R_2 and R_3, R_3 and R_4, and R_4 and R_5 combined with the carbon atoms to which they are attached, are joined alkylene groups completing a carbocyclic ring, which ring can also be substituted with one or more of the substituents listed above for R_1, R_2, R_3, R_4 and R_5;

B is a heterocyclic group having the structures



wherein

X and Y are a carbon atom, a carbon atom containing an alkyl group having 1 to 12 carbon atoms, a carbon atom containing an aryl group having 6 to 18 carbon atoms or a nitrogen atom; Z is an oxygen atom, a sulfur atom, or a nitrogen atom containing a hydrogen atom or a substituted or unsubstituted lower alkyl group having 1 to 12 carbon atoms; I is hydrogen, chloro, bromo, fluoro, lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, lower alkylaryl, aryl-substituted-aryl, alkoxy, aryloxy, substituted amino and cyano, said I is present on all positions of the benzenoid ring, except the carbon atom attached to the heterocyclic ring and the carbon atom attached to the carbonyloxy or oxycarbonyl group, E is a substituted or unsubstituted alkylene and arylene and n is an integer from 1 to 6 wherein at least one of R_1, R_5 or I ortho to the oxy of said carbonyloxy or oxycarbonyl group is hydrogen.

3,939,116
SELF-SUPPORTED, ORIENTED HIGH-PERFORMANCE FILMS HAVING MINIMAL THERMAL DISTORTION PROPERTIES

Burnett H. Johnson, and Don J. Henderson, both of Baytown, Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed May 14, 1973, Ser. No. 359,836
Int. Cl.² C08G *18/00*
U.S. Cl. 260—47 CB 9 Claims

1. An oriented shaped article formed from a high softening temperature aromatic-containing polymer or copolymer having a thermal co-efficient of expansion (α) of from +1.6 to -3.0×10^{-5} deg $^{-1}$ and for PPA a birefringence value of from 0.05 to 0.2 and wherein said article has been elongated at least 25% more than its non-oriented value in one dimension.

3,939,117
PROCESS FOR PRODUCING A POLYARYLENE ESTER

Katsuji Ueno, Hirakata, Japan, assignor to Sumitomo Chemical Company, Limited, Japan

Filed May 31, 1974, Ser. No. 475,181
Claims priority, application Japan, May 31, 1973, 48-61533
Int. Cl.² C08G *63/40*
U.S. Cl. 260—47 C 13 Claims

1. A process for producing a polyarylene ester, which comprises subjecting to a polymerization reaction at a temperature of 0° to 100° C, in the presence of a polymerization catalyst selected from the group consisting of a tertiary amine, a quaternary ammonium compound and a quaternary phosphonium compound, a slurry of at least one divalent phenol, at least one aromatic carboxyl dichloride, and calcium hydroxide in the form of solid particles, said polymerization catalyst being used in an amount of 0.001 to about 5 molar % based on the amount of the divalent phenol and said calcium hydroxide being present in an amount of at least 1.5 mol per one mol of said divalent phenol, in an inert organic liquid which is a solvent for the polyarylene ester but not a solvent for the calcium hydroxide to give a reaction mixture consisting of a solid phase and a single liquid phase containing the polyarylene ester dissolved in the inert organic liquid, and then separating the liquid phase from the solid phase.

3,939,118
PROCESS FOR REMOVING CONTAMINANTS FROM POLYCARBONATE SOLUTIONS

Alfred Horbach, Krefeld, and Hugo Vernaleken, Krefeld-Bockum, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 24, 1974, Ser. No. 508,948
Claims priority, application Germany, Oct. 6, 1973, 2350327
Int. Cl.² C08G *63/74, 63/62*
U.S. Cl. 260—47 XA 13 Claims

1. A process for removing inorganic compounds from polycarbonate solutions which comprises contacting a polycarbonate solution with a molecular sieve which is moist with water.

3,939,119
AROMATIC POLYETHER-POLYTHIOETHER-POLYSULFONE THERMOPLASTICS

Francis X. O'Shea, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed May 27, 1971, Ser. No. 147,599
Int. Cl.² C08G *65/40*
U.S. Cl. 260—49 8 Claims

1. Thermoplastic high polymers consisting essentially of the structure

$\left[R\left(C_6H_4-SO_2-C_6H_4\right)_y\right]_n$,

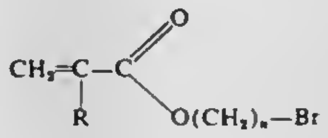
wherein *y* is 1 or 2, *n* is an integer from about 30 to 60, R is a mixture of —O—R′—S— and —S—R′—O—, and R′ is selected from the group consisting of phenylene, methylphenylene and dimethylphenylene groups.

3,939,120
ACRYLONITRILE COPOLYMERS SUITABLE FOR MAKING FLAME-RESISTING FIBERS

Luciano Console, Mirano-Venezia; Ferdinando Bencini, San Donato Milanese, Milan, and Enzo Chiellini, Rosignano Solvay, Livorno, all of Italy, assignors to Societa' Italiana Resine S.p.A., Milan, Italy

Filed Nov. 25, 1974, Ser. No. 527,097
Claims priority, application Italy, Nov. 28, 1973, 31752/73
Int. Cl.² C08F *214/16, 216/14;* C08L *27/10;* C08K *5/20*.
U.S. Cl. 260—63 HA 10 Claims

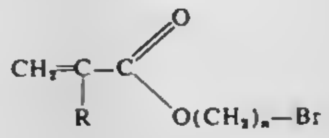
1. A copolymer suitable for making self-extinguishing fibers, consisting essentially of the following comonomers: at least 50 wt.% acrylonitrile, from 2 to 30 wt.% of vinyl or vinylidene chloride, from 0 to 10 wt.% of a neutral, ethylenically unsaturated, non-halogenated monomer and from 2 to 40 wt.% of a monomer selected from the group corresponding to the general formula:



$$CH_2=C(R)-C(=O)-O(CH_2)_n-Br \quad ;$$

wherein R is selected from the group of hydrogen and methyl and *n* is an integer from 1 to 4.

3. A copolymer suitable for making self-extinguishing fibers, consisting essentially of the following comonomers: at least 50 wt.% acrylonitrile, from 2 to 30 wt.% of vinyl or vinylidene chloride, from 0 to 10 wt.% of a neutral, ethylenically unsaturated, non-halogenated monomer; from 0.1 to 3 wt.% of a copolymerized monomer carrying sulphonic groups, and from 2 to 40 wt.% of a monomer selected from the group corresponding to the general formula:



$$CH_2=C(R)-C(=O)-O(CH_2)_n-Br \quad ;$$

wherein R is selected from the group of hydrogen and methyl and *n* is an integer from 1 to 4.

3,939,121
THERMOSETTING TOLUENE-SOLUBLE WATER-INSOLUBLE ALKYLATED UREA-FORMALDEHYDE RESIN AND PROCESS FOR THE MANUFACTURE THEREOF

Leonard Joseph Calbo, Jr., Ardsley, N.Y., assigoor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 4, 1974, Ser. No. 430,802
Int. Cl.² C08G *14/02*
U.S. Cl. 260—70 A 17 Claims

6. A process for the manufacture of a thermosetting toluene-soluble water-insoluble alkylated urea-formaldehyde

resin according to claim 1, which consists essentially in the following steps:

1. reacting 1 mol of urea with about 2.3 to 2.7 mols of formaldehyde at a non-acid pH in aqueous solution;
2. concentrating the reaction product to at least 50% solids;
3. adding to the residue an excess of a non-tertiary C_{4-6} alkanol or mixture of non-tertiary C_{4-6} alkanols in stoichiometric excess;
4. maintaining the resulting solution at a predetermined pH below 7 and at a predetermined temperature between 20°C. and reflux at which combination of pH and temperature alkylation of said reaction product proceeds rapidly and polymerization of said reaction product proceeds slowly, whereby a urea-formaldehyde resin is obtained at least 30% of the methylol groups of which are alkylated and which has a number average molecular weight between 350 and 700;
5. concentrating the reaction product to at least 80% solids;
6. adding to the residue said alkanol or a mixture of said alkanols in stoichiometric excess;
7. acidifying the resulting solution to a pH below about 2;
8. maintaining the solution at about 25°C. to 55°C. until the reaction product contains between about 1.3 and 1.8 mol of said C_{4-6} alkanol or mixture of said alkanols and until it contains 0.3 to 0.7 mol of methylol substituents per mol of combined urea present; and
9. raising the pH of the solution about 7.

3,939,122
PROCESS FOR THE PREPARATION OF COMPOUNDS WHICH CONTAIN HYDANTOIN RINGS

Rudolf Merten, Leverkusen; Jurgen Lewalter, Cologne, and Wilfried Zecher, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 457,853, April 4, 1974, abandoned. This application Aug. 1, 1974, Ser. No. 493,521

Claims priority, application Germany, Apr. 11, 1973, 2318205

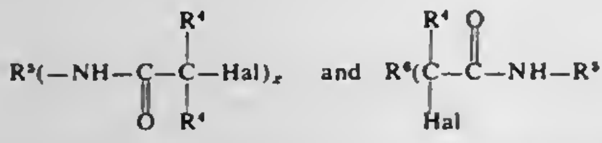
Int. Cl.² C08G *18/08*

U.S. Cl. 260—77.5 R **10 Claims**

1. A process for the preparation of a compound containing hydantoin groups which comprises reacting at a temperature of 50° to 350°C. at least one compound of the formula

$$R^2(\text{-NCX})_z$$

wherein X is O or S; z is an integer of from 2 to 3 and R^2 is an optionally substituted aliphatic radical having 1–20 carbon atoms, an optionally substituted aromatic radical having 5–12 carbon atoms, a cycloaliphatic radical having 5–12 carbon atoms, an aliphatic-aromatic radical having 6–20 carbon atoms, an aromatic or cycloaliphatic heterocyclic radical containing 5–12 carbon atoms which contains or is substituted by hetero atoms such as N, O or S with (b) at least one α-halocarboxylic acid amide selected from the group consisting of



$$R^3(-NH-\underset{\underset{O}{\|}}{C}-\overset{\overset{R^4}{|}}{\underset{\underset{R^4}{|}}{C}}-Hal)_x \quad \text{and} \quad R^6(\overset{\overset{R^4}{|}}{\underset{\underset{Hal}{|}}{C}}-\overset{\overset{O}{\|}}{C}-NH-R^5)_y$$

wherein Hal denotes halogen; R^4 is an optionally substituted aromatic radical having 5–10 carbon atoms, an aliphatic radical having 1–20 carbon atoms, a cycloaliphatic radical having 5–10 carbon atoms, hydrogen or the two radicals R^4 taken together with the carbon atom to which they are attached form a cycloaliphatic ring of 5–7 ring members, R^5 is one of the radicals defining R^3; R^6 is an aliphatic radical having 1–10 carbon atoms, a cycloaliphatic radical having 5–10 carbon atoms, an aliphatic-aromatic radical having 6–10 carbon atoms or an aromatic radical having 5–10 carbon atoms and *x* and *y* are integers from 2 to 3.

3,939,123
LIGHTLY CROSS-LINKED POLYURETHANE HYDROGELS BASED ON POLY(ALKYLENE ETHER) POLYOLS

Virgil Edison Matthews, Charleston, and Robert John Knopf, Saint Albans, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 18, 1974, Ser. No. 480,568

Int. Cl.² C08G *18/66, 18/14*

U.S. Cl. 260—77.5 AM **45 Claims**

1. A water swellable, lightly crosslinked, hydrogel polymer of the isocyanato terminated prepolymer comprising the reaction product of:

i. a poly(alkyleneoxy) polyol having an average molecular weight up to about 25,000 wherein the alkyleneoxy group contains from two to four carbon atoms, and

ii. an organic diisocyanate,

said prepolymer lightly crosslinked with an equivalent amount of a crosslinking agent of the group:

iii. water or organic polyamine;

wherein said poly(alkyleneoxy) polyol is a mixture of a major amount of a poly(ethyleneoxy) diol having an average molecular weight of from about 4,000 to about 25,000, and a minor amount of a higher polyol of the group poly(alkyleneoxy) triol or poly(alkyleneoxy) tetrol or aliphatic polyhydroxyl compound of the formula $C_nH_{2n+2-m}(OH)_m$ wherein *n* has a value of 3 to 6 and *m* has a value of 3 to 4, or mixtures thereof, said triol or tetrol having an average molecular weight of from about 92 to 5,000, wherein the mole ratio of diol to higher polyol in said mixture is from about 6:1 to 40:1; wherein the equivalents ratio of isocyanato groups to hydroxyl groups is from about 1.2:1 to about 1.6:1; wherein the organic polyamine is a primary or secondary diamine or triamine; and wherein the equivalents of reactive crosslinking groups in said crosslinking agent used is equivalent to the number of equivalents of isocyanato groups present in said prepolymer.

3,939,124
FIRE-RETARDANT POLYURETHANE RESINS PREPARED FROM SIDE-CHAIN HALOGENATED AROMATIC POLYISOCYANATES

Eugene P. DiBella, Piscataway, and Bernard Rudner, Ridgewood, both of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Sept. 9, 1974, Ser. No. 504,401

Int. Cl.² C08G *18/76*

U.S. Cl. 260—77.5 AT **5 Claims**

1. A fire-retardant polyurethane resin that comprises the reaction product of a polyisocyanate component containing from about 30% to 80% by weight of a side-chain halogenated aromatic polyisocyanate selected from the group consisting of 2,4-diisocyanatobenzotrichloride, 2,6-diisocyanatobenzotrichloride, and mixtures thereof and a polyol having at least two active hydrogen atoms selected from the group consisting of polyether polyols, polyester polyols, and mixtures thereof.

3,939,125
DIGLYCIDYLIMIDAZOLIDONES

Daniel Porret, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

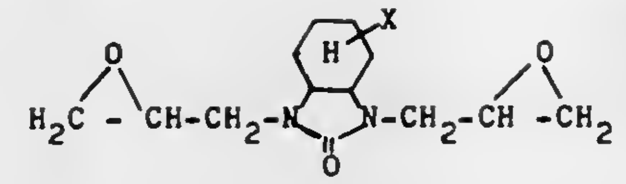
Division of Ser. No. 319,961, Dec. 29, 1971, Pat. No. 3,828,066. This application Apr. 12, 1974, Ser. No. 460,408

Int. Cl.² C08G *59/26*

U.S. Cl. 260—77.5 C **2 Claims**

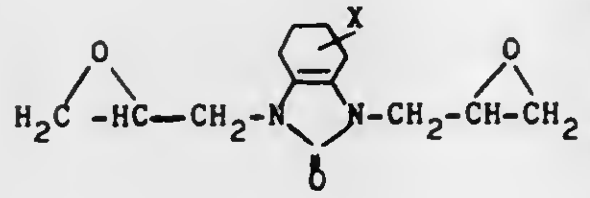
1. A curable mixture which serves for the manufacture of moldings, comprising a diglycidyl compound of the formula

(I)



or

(II)



wherein X is hydrogen or alkyl of 1 to 4 carbon atoms, and a curing agent for epoxy resins.

3,939,126
ACRYLYL-TERMINATED UREA-URETHANE COMPOSITIONS

Charles H. Carder, Charleston, W. Va., and George W. Borden, East Lyme, Conn., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sept. 5, 1974, Ser. No. 503,473

Int. Cl.² C08G *18/32*

U.S. Cl. 260—77.5 CR **8 Claims**

1. An acrylyl-terminated urea-urethane comprising the reaction product obtained by reacting a mixture consisting essentially of:

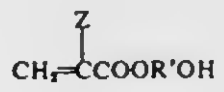
a. an organic polyisocyanate having at least 2 isocyanato groups;

b. a hydroxylamine of the structure:

HOR′NHR

wherein R is hydrogen, alkyl of from 1 to 10 carbon atoms cycloalkyl of 5 to 12 carbon atoms or aryl of 6 to 12 carbon atoms and R′ is divalent alkylene of 1 to 12 carbon atoms, arylene of 6 to 12 carbon atoms or cycloalkylene of 5 to 12 carbon atoms; and

c. a hydroxyhydrocarbyl acrylate of the structure:



$$CH_2{=}\overset{\overset{Z}{|}}{C}COOR'OH$$

wherein Z is hydrogen or methyl and R′ is as hereinbefore defined; and wherein the number of equivalents of isocyanato groups in the organic polyisocyanate charged is from about 80 percent to about 105 percent of the sum total of the number of equivalents of hydrogen atoms reactive therewith that are present in the hydroxyl and amine groups in said hydroxylamine and in said hydroxyhydrocarbyl acrylate.

3,939,127
POWDER PAINT WITH EPOXY AND AMIDE COPOLYMER AND MIXTURE OF DICARBOXYLIC ACIDS AND POLYANHYDRIDES

Santokh S. Labana, Dearborn Heights, and Ares N. Theodore, Farmington, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 394,881, Sept. 6, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,456

Int. Cl.² C08G *59/42, 81/02;* **C08F** *220/32*

U.S. Cl. 260—78.4 D **5 Claims**

1. In a thermosettable powder paint which exclusive of pigments, catalysts, antistatic agents, plasticizers, and flow control agents, the same being conventional non-reactive additives to the thermosettable powder paint, consists essentially of a coreactive particulate mixture of

1. a qualitatively difunctional copolymer of about 5 to about 20 weight percent of a glycidyl ester of a monoethylenically unsaturated acid and about 95 to about 80 weight percent of monoethylenically unsaturated monomers and having a glass transition temperature in the range of about 40°C. to about 90°C. and a molecular weight (M_n) in the range of about 1500 to about 15,000, and
2. a $C_4 - C_{26}$ saturated, straight chain, aliphatic dicarboxylic acid,

the improvement wherein

A. said copolymer is qualitatively difunctional and said other monoethylenically unsaturated monomers consist essentially of an alpha-beta olefinically unsaturated amide in an amount comprising about 2 to about 10 weight percent of said copolymer and monofunctional monomers selected from the group consisting of esters of a $C_1 - C_8$ monohydric alcohol and acrylic acid esters of a $C_1 - C_8$ monohydric alcohol and methacrylic acid and $C_8 - C_{12}$ monovinyl hydrocarbons, and

B. there is substituted for a portion of said dicarboxylic acid a polyanhydride having molecular weight in the range of about 1000 to about 5000 and the resultant mixture of said dicarboxylic acid and said polyanhydride is proportional and quantified such that said dicarboxylic acid is present in an amount that provides about 0.1 to about 0.6 carboxyl groups per epoxy group on said copolymer and said polyanhydride is present in an amount that provides about 0.2 to about 1.1 anhydride groups per epoxy group on said polymer.

3,939,128
VULCANIZATION OF HALOGEN OR EPOXY-CONTAINING POLYACRYLATE ELASTOMERS

Rudolf Adolf Behrens, Gladstone, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 158,601, June 30, 1971, abandoned. This application July 11, 1973, Ser. No. 378,084. The portion of the term of this patent subsequent to July 17, 1990, has been disclaimed.

Int. Cl.² C08F *28/02*

U.S. Cl. 260—79.5 P **14 Claims**

1. A vulcanizable halogen or epoxy-containing polyacrylate elastomer composition comprising, for each 100 parts by weight of said elastomer, from about 0.05 to 2.5 parts of sulfur

and from about 0.5 to 7 parts by weight of either the sodium or potassium salt of 2-ethylhexanoic acid.

3,939,129

PROCESS FOR THE PREPARATION OF RANDOM COPOLYMERS OF MONO-OLEFINS OR OF MONO-OLEFINS AND UNCONJUGATED DIENES WITH LACTAMS WITH SUBSTITUTION ON THE NITROGEN ATOM BY AN UNSATURATED RADICAL

Gilbert Marie, Pau, France, assignor to Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

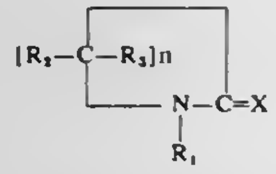
Filed Apr. 11, 1974, Ser. No. 460,078

Claims priority, application France, Apr. 12, 1973, 73.13309

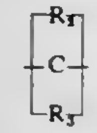
Int. Cl.^{2} C08F *210/00, 4/06, 4/42*

U.S. Cl. 260—79.7 **26 Claims**

1. A process for the preparation of substantially linear amorphous, random copolymers of mono-olefins, or mono-olefins and unconjugated dienes, with unsaturated lactams of the general formula



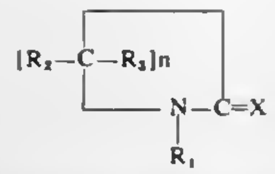
where R_1 is a monovalent alkenyl radical containing 2 to 8 carbon atoms, R_2 and R_3, which are identical or different, represent hydrogen or a monovalent hydrocarbon radical, free of ethylenic unsaturation and containing 1 to 8 carbon atoms, X represents oxygen or sulphur, and n is an integer of from 3 to 14 representing the number of repeating units



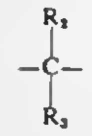
$$\left[-\overset{R_2}{\underset{R_3}{C}}-\right]$$

in the lactam ring so that the number of carbon atoms in the ring is equal to ($n = 1$) comprising contacting at least 2 mono-olefins containing from 2 to 20 carbon atoms in their molecules or at least 2 such mono-olefins and an unconjugated diene, in an inert liquid medium at a temperature of between −80°C and +150°C, with at least one of said unsaturated lactams, in the form of a complex formed with a Lewis acid, in at least stoichiometric amounts, in the presence of a catalytically effective amount of a catalyst system formed by the combination of an organometallic compound of at least one metal in columns I, II, or III of the periodic table of elements with a compound of a transition metal in columns IV to VIII of the periodic table, at a ratio of the number of atoms of the first metal to the number of atoms of the second metal of between 1 and 50, to obtain said copolymer.

15. A substantially linear, amorphous, random copolymer consisting of 99.9 to 80% weight of non-polar groups having at least 2 mono-olefins containing 2 to 20 carbon atoms in their molecules or at least 2 such mono-olefins and an unconjugated diene, and 0.1 to 20% polar groups having at least 1 unsaturated lactam of the general formula



where R_1 is a monovalent alkenyl radical containing 2 to 8 carbon atoms, R_2 and R_3, which are identical or different, represent hydrogen or a monovalent hydrocarbon radical free of ethylenic unsaturation and containing 1 to 8 carbon atoms, X represents oxygen or sulphur, and n is an integer of from 3 to 14 representing the number of repeating units



$$-\overset{R_2}{\underset{R_3}{C}}-$$

in the lactam ring so that the number of carbon atoms in the ring is equal to ($n + 1$).

26. Elastomers as defined in claim 25, in which the substrate is a metal surface.

3,939,130

POLYMERS OF MONOMERS CONTAINING ACTIVE METHYLENE GROUPS AND OTHER ETHYLENICALLY UNSATURATED MONOMERS

Ignazio S. Ponticello, Rochester, N.Y., assignor to Indicon Inc., Danbury, Conn.

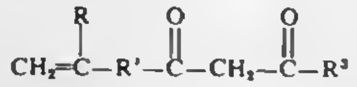
Filed Aug. 15, 1974, Ser. No. 497,803

Int. Cl.^{2} C08F *28/00;* C08G *75/00*

U.S. Cl. 260—65 **11 Claims**

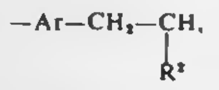
1. A polymer prepared from components comprising:

A. from about 1 to about 100 percent by weight of a polymerizable monomer containing at least one active methylene group and having the formula



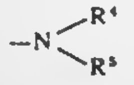
$$CH_2{=}\overset{R}{C}-R'-\overset{O}{\overset{\|}{C}}-CH_2-\overset{O}{\overset{\|}{C}}-R^3$$

wherein R is hydrogen or methyl, R′ is substituted or unsubstituted arylenethylene having the structure



$$-Ar-CH_2-\underset{R^2}{CH},$$

wherein Ar is arylene containing from 6 to 12 carbon atoms, R^2 is hydrogen, alkyl containing from 1 to 10 carbon atoms, aryl containing from 6 to 12 carbon atoms, or cycloalkyl containing from 5 to 7 carbon atoms, and R^3 is alkoxy containing from 1 to 10 carbon atoms, amino having the structure



$$-N{<}\begin{matrix}R^4\\R^5\end{matrix}$$

wherein R^4 and R^5 are independently selected from the group consisting of hydrogen, alkyl containing from 1 to 10 carbon atoms, cycloalkyl containing from 5 to 7 carbon atoms, and aryl containing from 6 to 12 carbon atoms; cycloalkyl containing from 5 to 7 carbon atoms, or aryl containing from 6 to 12 carbon atoms; and

B. from 0 to about 99% by weight of at least one additional polymerizable ethylenically unsaturated monomer.

3,939,131

2,4-DIMETHYL-4-VINYL-1-CYCLOHEXENE-2,6- OR 3,6-IMETHYL-1,3,6-OCTATRIENE COPOLYMER RESIN

Hiroyuki Morikawa; Tosio Sugimoto, and Kazuo Sato, all of Ami, Japan, assignors to Mitsui Petrochemical Industries, Inc., Tokyo, Japan

Filed Aug. 19, 1974, Ser. No. 498,403

Claims priority, application Japan, Aug. 22, 1973, 48-93361

Int. Cl.^{2} C08F *236/22*

U.S. Cl. 260—80.7 **21 Claims**

1. A copolymer of 2,4-dimethyl-4-vinyl-1-cyclohexene and at least one member of the group consisting of 2,6- and 3,6-dimethyl-1,3,6-octatrienes, which copolymer is suitable for use as a tackifier, said copolymer consisting essentially of the reaction product of: (A) structural units of 2,4-dimethyl-4-vinyl-1-cyclohexene; (B) structural units of at least one member selected from the group consisting of 2,6- and 3,6-dimethyl-1,3,6-octatrienes in proportions of 100 moles of (A) to 1 to 400 moles of (B); and optionally (C) from 1 to 50 moles per 100 moles of component (A), at least one unsaturated compound selected from the group consisting of isoprene, butadiene piperylene, cyclopentadiene, styrene, vinyltoluene, alpha-methylstyrene, isobutylene, vinylcyclohexene and alpha-pinene, and characterized by containing not more than seven unsaturated double bonds per 100 carbon atoms per copolymer molecule, and having a softening point of 85°–160°C. and a number average molecular weight of 450–1850.

3,939,132

PROCESS FOR THE PREPARATION OF RANDOM COPOLYMERS OF MONO-OLEFINS OR OF MONO-OLEFINS AND UNCONJUGATED DIENES WITH UNSATURATED DERIVATIVES SELECTED FROM N-VINYLIMIDAZOLES AND N-VINYLIMIDAZOLINES

Gilbert Marie, Pau, France, assignor to Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

Filed Apr. 11, 1974, Ser. No. 460,079

Claims priority, application France, Apr. 12, 1973, 73.13307

Int. Cl.^{2} C08F *210/00, 4/06, 4/42*

U.S. Cl. 260—80.72 **28 Claims**

1. A process for the preparation of substantially linear, amorphous, random copolymers of mono-olefins, or mono-olefins and unconjugated dienes, with a member selected from the group consisting of N-vinylimidazole, N-vinylimidazoline, ring substituted N-vinyl-imidazoles and ring substituted N-vinylimidazolines wherein the substituents are hydrocarbon radicals and amino-hydrocarbon radicals, comprising contacting at least two mono-olefins containing from 2 to 20 carbon atoms in their molecule or at least two such mono-olefins and said unconjugated diene in a liquid medium at a temperature of between −80° to 150°C with at least one of the said members in the form of a complex with a Lewis acid, in the presence of the catalyst system formed by the combination of an organometallic compound of at least one metal in column I, II or III of the periodic table of elements with a compound of a transition metal in columns IV to VIII of said periodic table at a ratio of the number of atoms of the first metal to the number of atoms of the second metal of between 1 and 50, to obtain the desired copolymer.

16. A substantially linear, amorphous random copolymer, characterized by the fact that it contains 99.9 to 80% weight of non-polar groups from at least 2 mono-olefins containing 2 to 20 carbon atoms in their molecule or at least 2 such mono-olefins and an unconjugated diene, and 0.1 to 20 percent polar groups from at least 1 member selected from the group consisting of N-vinylimidazole, N-vinylimidazoline, ring substituted N-vinylimidazoles and ring substituted N-vinylimidazolines wherein the substituents are hydrocarbon radicals and amino-hydrocarbon radicals.

28. Elastomers as defined in claim 27, vulcanized on a metal surface.

3,939,133

SYNERGISTIC PEROXIDE CURES FOR HIGH VINYL RUBBERS

Mark R. Roodvoets, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 10, 1974, Ser. No. 468,701

Int. Cl. C08d *5/02, 3/08*

U.S. Cl. 260—85.1 **24 Claims**

1. A peroxide cured high vinyl resin composition comprising by weight, 100 parts of a peroxide cured resin selected from the class consisting of a homopolymer of butadiene or a copolymer of butadiene and styrene containing at least 40 percent of butadiene, at least 80 percent of the butadiene repeating units in the polymer or copolymer being in the 1,2-configuration, said resin cured utilizing from 0.4 to about 4.0 parts based upon an equivalent amount of dicumyl peroxide of a peroxide curing agent selected from a first class consisting of dicumyl peroxide, bis (t-butylperoxy) diisopropyl benzene, t-butyl perbenzoate, and n-butyl 4,4-bis (t-butylperoxy) valerate and from 0.25 to about 2.5 parts based upon an equivalent amount of dicumyl peroxide of a peroxide curing agent selected from a second class consisting of benzoyl peroxide, bis (4-t-butylcyclohexyl) peroxydicarbonate, t-butyl peroctoate, 2,5-dimethyl-2,5-bis(t-butylperoxy)-hexane, 2,5-dimethyl-2,5-bis (t-butylperoxy)-hexyne-3, and t-butyl hydroperoxide.

3,939,134

CATALYTIC PROCESS FOR PREPARING POLYMERS AND COPOLYMERS OF ACRYLONITRILE

Luciano Console, Mirano (Venice); Alessandro Zecchin, Sassari, and Antonio Quarta, Porto Torres (Sassari), all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed July 8, 1974, Ser. No. 486,736

Claims priority, application Italy, July 6, 1973, 26266/73

Int. Cl.^{2} C08F *3/76, 15/22*

U.S. Cl. 260—85.5 R **12 Claims**

1. The method of polymerizing a monomer composition containing at least 85% by weight of acrylonitrile and up to 15% by weight of a further ethylenically unsaturated monomer copolymerizable therewith, which method comprises contacting the monomer composition in a aqueous medium at a temperature from 40° to 70°C with a catalytic composition comprising hydrogen peroxide, a water-soluble salt of a hydroxylamine mono- or di-sulfonic acid and a water-soluble ferrous salt, wherein the proportion of said catalytic system is from 0.05 to 5 parts by weight to 100 parts by weight of said monomer composition, wherein the molar ratio of said hydrogen peroxide to said sulfonic acid salt is from 0.05:1 to 20:1, and wherein the molar ratio of said hydrogen peroxide to said ferrous salt is from $1{:}10^{-3}$ to $1{:}10^{-6}$.

3,939,135

COFUSED RESINS AND THEIR PREPARATION

Jesse C. H. Hwa, Stamford, Conn.; Paul Kraft, Yonkers, and Leonard Feiler, Riverdale, both of N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Continuation of Ser. No. 682,384, Nov. 13, 1968, abandoned, which is a continuation-in-part of Ser. No. 585,052, Oct. 7, 1966, abandoned. This application Feb. 8, 1971, Ser. No. 113,689

Int. Cl.^{2} C08F *6/14, 6/24*

U.S. Cl. 260—87.1 **10 Claims**

1. A reticulated resin structure in the form of a dry, free flowing powder, said resin structure comprising a plurality of vinyl polymer resin particles which are fused to one another at a plurality of contact points in a manner such that said resin structure has interstices between the thus fused particles thereof; said reticulated resin structure being prepared by means of a process which comprises intimately mixing an aqueous emulsion or suspension of discrete particles of a vinyl polymer and an at least partially water-miscible organic sol-

vent system selected from the group consisting of ketones having from 3 to 6 carbon atoms, mixtures of such ketones with water-miscible lower alkanols of 1 to 5 carbons which are miscible with both the ketone and the water, dioxane, tetrahydrofuran, diemthylacetamide and mixtures of these, and heating the admixture to a temperature of at least 40°C. and for a time sufficient to soften said vinyl polymer particles without fully solubilizing said particles and fuse said particles together with one another into a resin having a reticulated structure with interstices between said fused particles and sufficient to provide fused particles having a surface area of at least $2M^2/g$ as measured by the BET method, a dry aggregate strength as measured by the Instron method of at least α - 20, a wet aggregate strength as measured by the modified Brookfield test of from about $\beta = 8$ to about $\beta = 130$ and a maximum bulk density by the ASTM-D1182 method of about 30 grams per 100 milliliters, and then separating the resulting reticulated resin structure.

3,939,136
POLYMERISATION OF CYCLOOCTENE

Manfred Zimmermann, Cologne; Guenther Lehnert, Leverkusen; Dieter Maertens, Leverkusen, and Gottfried Pampus, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed July 2, 1974, Ser. No. 485,294

Claims priority, application Germany, July 7, 1973, 2334604

Int. Cl.² C08F *4/14*

U.S. Cl. 260—93.1 **6 Claims**

1. A process for the production of a polyoctenamer in which at least 80% of the C=C -double bonds are in the cis-configuration, wherein cyclooctene is polymerised in an inert organic solvent at a temperature of from −50° to +10°C. in the presence of a catalyst comprising:

A. a tungsten halide or oxyhalide;
B. an alcohol or a halogen substituted alcohol;
C. an organometallic compound of aluminum and
D. boron trifluoride or boron trifluoride therate,

components A and B being in a molar ratio of from 1:1 to 1:5, components C and A being in a molar ratio of from 1:1 to 1:6 and components D and A being in a molar ratio of from 0.1:1 to 10:1.

3,939,137
SILANE ADJUVANT FOR CHROMIUM OXIDE CATALYST

John P. Hogan; Benoy E. Nasser, and Joseph A. Delap, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 22, 1974, Ser. No. 526,158

Int. Cl.² C08F *4/24, 110/02*

U.S. Cl. 260—94.9 C **10 Claims**

1. A polymerization process which comprises contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in the presence of a liquid solvent with a catalyst system comprising (1) a calcined support containing chromium in the form of chromium oxide at least a part of said chromium being in the hexavalent state and (2) a silane of the formula $R_{4-n}SiH_n$ wherein *n* is an integer from 0 to 3 and R is a saturated or unsaturated hydrocarbon group containing from 1 to 10 carbon atoms per molecule selected from alkyl, alkenyl, aryl, aralkyl, alkaryl, and cycloalkyl groups.

3,939,138
RADICAL POLYMERIZATION INITIATOR ANDD PROCESS FOR ITS PREPARATION

Souichi Suzuki; Hiroshi Horino, both of Yokohama, and Tetsu Ohishi, Tokyo, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Sept. 4, 1974, Ser. No. 503,189

Claims priority, application Japan, Sept. 6, 1973, 48-99675

Int. Cl.² C09F *1/40*

U.S. Cl. 260—100 **9 Claims**

1. A radical emulsion-, suspension-, or aqueous-polymerization initiator consisting essentially of as an active ingredient a hydroperoxide of disproportionated rosin acid, alkali metal salt thereof, ammonium salt thereof, hydrogenated rosin acid, alkali metal salt thereof, or ammonium salt thereof, said active ingredient being prepared by contacting disproportionated rosin acid, alkali metal salt thereof, ammonium salt thereof, hydrogenated rosin acid, alkali metal salt thereof, or ammonium salt thereof with molecular oxygen in water or an organic solvent in the presence of a radical reaction initiator at a temperature of 0° to 150°C. and a pressure of 0 to 100 kg/cm².G to form the hydroperoxide thereof.

3,939,139
NEW ANTIBIOTIC X-1092

David Pruess, and James Parnell Scannell, both of North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sept. 9, 1974, Ser. No. 504,598

Int. Cl.² C07C *103/52;* C12B *1/00*

U.S. Cl. 260—112.5 R **1 Claim**

1. A compound of the formula:
1-(s)-hydroxy-2-(S,S)-valylamido-cyclobutane-1-acetic acid and its pharmaceutically acceptable salts.

3,939,140
PROCESS FOR THE PREPARATION OF A DYESTUFF CONSISTING SUBSTANTIALLY OF ONLY UNSYMMETRICAL 1:2-CHROMIUM COMPLEX AZO DYESTUFFS

Fritz Meininger, Frankfurt am Main, and Hermann Fuchs, Kelkheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

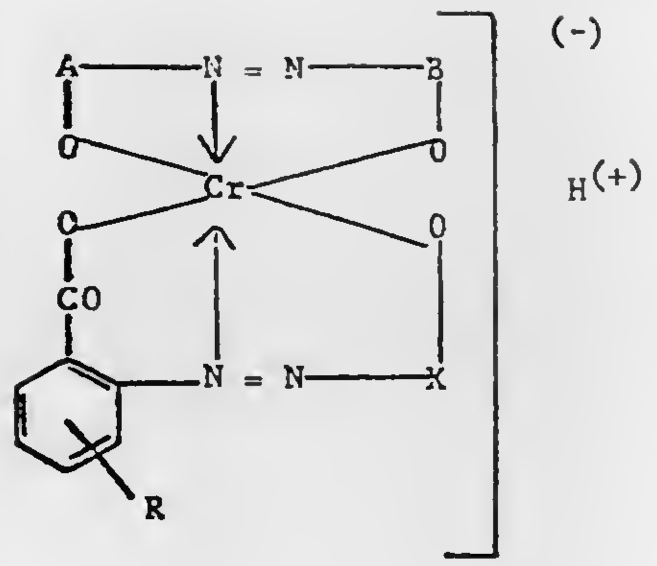
Continuation of Ser. No. 245,767, April 20, 1972, abandoned. This application June 17, 1974, Ser. No. 480,206

Claims priority, application Germany, Apr. 23, 1971, 2119830

Int. Cl.² C09B *45/06, 45/16*

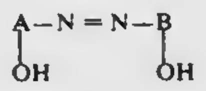
U.S. Cl. 260—145 A **15 Claims**

1. A process for the preparation of a dyestuff consisting essentially of an unsymmetrical 1:2-chromium complex azo dyestuff of the formula



(1)

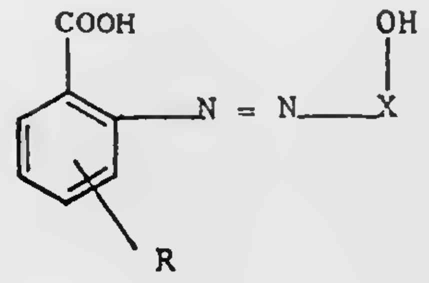
wherein A is phenylene unsubstituted by sulfonic acid or phenylene unsubstituted by sulfonic acid and substituted by chlorine, bromine, nitro, methyl, ethyl, methoxy, ethoxy, sulfamoyl or carbamoyl, B and X each is naphthalene, pyrazolone or acetoacetyl-phenylamide each of which is unsubstituted by sulfonic acid, and R is hydrogen, chlorine, bromine, methyl, β-hydroxyethylsulfonyl, carboxyl, sulfamoyl, sulfo-N-monoalkylamino or sulfo-N-dialkylamino in which said alkyl is of one to four carbon atoms, which process comprises heating a mixture of an o,o'-dihydroxy azo compound of the formula



$$\underset{\mathrm{OH}}{\mathrm{A}}-\mathrm{N}=\mathrm{N}-\underset{\mathrm{OH}}{\mathrm{B}}$$

(2)

and an o-carboxy-o'-hydroxy azo compound of the formula



(3)

said compounds of the formulas (2) and (3) being unsubstituted by sulfonic acid, in a molar ratio of said compound of the formula (2) to said compound of the formula (3) in the range of about 1:0.75 to about 1:1 with about 1.0 to 1.1 molar amount of chromium-III compound, calculated on the compound of formula (2), in an organic solvent to a temperature of about 105°C. to about 120°C. to completely metallize said compound of the formula (2), and then heating said mixture at a pH of about 5.0 to about 6.5 at a temperature of about 70°C. to about 90°C. to form said unsymmetrical dyestuff of the formula (1).

3,939,141
WATER-SOLUBLE COPPER COMPLEX PHENYL AZO NAPHTHALENE REACTIVE DYESTUFFS

Fritz Meininger, Frankfurt am Main, and Reinhard Hahnle, Hofheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

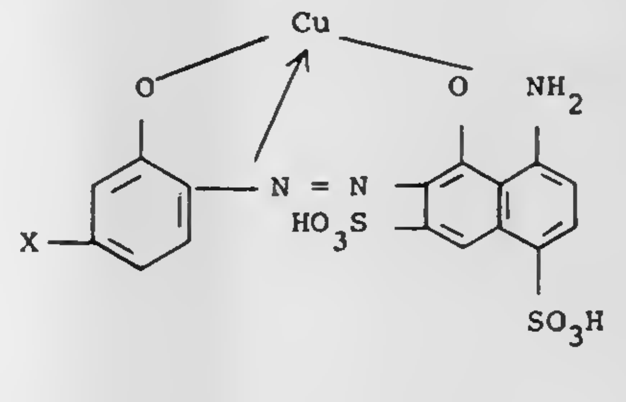
Continuation-in-part of Ser. No. 205,397, Dec. 6, 1971, abandoned. This application Jan. 3, 1974, Ser. No. 430,485

Claims priority, application Germany, Dec. 7, 1970, 2060081

Int. Cl.² C09B *45/18, 62/44, 62/74, 62/82*

U.S. Cl. 260—151 **4 Claims**

1. A water soluble copper-complex monoazo dyestuff of the formula



wherein X is
$-CH{=}CH_2$ or
$-SO_2-CH_2-CH_2-Z$
in which Z is hydroxy, sulfato, thiosulfato, phosphato, dimethylamino or diethylamino.

3,939,142
PHENYLAZOPHENYL DYESTUFF

Erwin Fleckenstein, Hofheim, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany

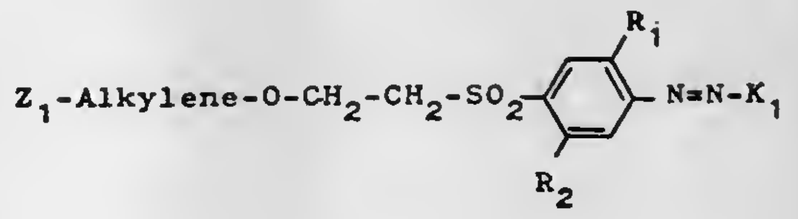
Filed Aug. 6, 1974, Ser. No. 495,191

Claims priority, application Germany, Aug. 6, 1973, 2339713

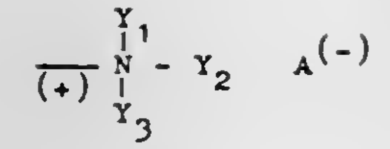
Int. Cl.² C07C *115/00*

U.S. Cl. 260—205 **3 Claims**

1. A basic azo dyestuff, free from sulfo groups and having the formula

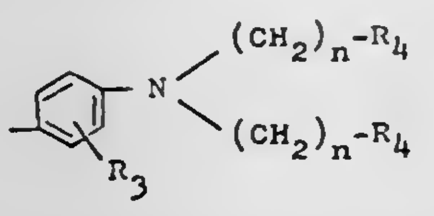


wherein Z_1 is the quaternary salt of the formula



$$\underset{(+)}{\overline{\quad\quad}}\;\overset{Y_1}{\underset{Y_3}{N}} - Y_2 \quad A^{(-)}$$

wherein Y_1 and Y_2 are identical or different and each is alkyl of one to six carbon atoms, or benzyl or cyclohexyl, Y_3 is hydrogen, alkyl of one to four carbon atoms, benzyl or alkoxy and/or Y_1, Y_2 and/or Y_3 together with the N-atom form the morpholine, piperidine or pyridine ring and $A^{(-)}$ is an anion, alkylene is alkylene of two or three carbon atoms, R_1 is hydrogen, chlorine, bromine, methoxy, ethoxy, methyl or ethyl, R_2 is hydrogen, methoxy, ethoxy, methyl or ethyl and K_1 is a radical of the formula



in which R_3 is hydrogen, alkyl of one to four carbon atoms, alkoxy of one to four carbon atoms, acetylamino or chlorine or bromine, the radicals R_4 are identical or different and each is hydrogen, hydroxy, cyano, acetoxy or alkoxy of one to four carbon atoms or phenyl or chlorine or bromine and the indices *n* are identical or different and each is 1, 2, 3, or 4.

3,939,143

1-N-ISOSERYLKANAMYCINS AND THE PRODUCTION THEREOF

Hamao Umezawa; Kenji Maeda, both of Tokyo; Shinichi Kondo, Yokohama, and Sumio Umezawa, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed May 1, 1974, Ser. No. 466,053

Claims priority, application Japan, May 15, 1973, 48-53151; Aug. 29, 1973, 48-96176

Int. Cl.^{2} C07A *15/04*

U.S. Cl. 260—210 K **11 Claims**

1. A compound selected from the group consisting of 1-N-isoserylkanamycin; 1-N-isoserylkanamycin B; 1-N-isoseryl-3′,4′-dideoxykanamycin B; and the pharmaceutically acceptable acid-addition salts thereof.

3,939,144

MANUFACTURE OF N-(BENZENESULFONYL)-5-O-DESOSAMINYL-ERYTHROMYCILAMINE DERIVATIVES

Gorjana Radobolja; Zrinka Tamburasev, and Slobodan Djokic, all of Zagreb, Yugoslavia, assignors to Pliva, Pharmaceutical and Chemical Works, Zagreb, Yugoslavia

Filed Jan. 10, 1975, Ser. No. 540,151

Claims priority, application Yugoslavia, Jan. 14, 1974, 97/74

Int. Cl.^{2} C07H *15/22*

U.S. Cl. 260—210 E **5 Claims**

1. An N-(4-R^2-benzenesulfonyl)-5-0-desosaminyl-erythromycilamine, wherein R^2 is a C_1-C_5 alkyl radical, halogen or NH_2.

3,939,145

NOVEL ETHEREALLY MONOSUBSTITUTED MONOSACCHARIDES

Paul Gordon, Chicago, Ill., assignor to Strategic Medical Research Corporation, Chicago, Ill.

Filed Mar. 1, 1973, Ser. No. 337,134

Int. Cl.^{2} C07H *5/06*

U.S. Cl. 260—210 R **24 Claims**

1. A compound selected from the group consisting of
3-O-3′-(N′,N′-dimethylamino-n-propyl)-glucose,
3-O-4′-(N-methyl piperidyl)-glucose,
3-O-2′-(N′,N′-dimethylaminoethyl)-glucose,
3-O-3′-(2′,N′,N′-trimethylamino-n-propyl)-glucose,
α-N,N-dimethylaminoisopropyl-glucoside,
6-O-3′-(N′,N′-dimethylamino-n-propyl)-galactose,
3-O-2′-(N′,N′-dimethylaminopropyl)-glucose,
6-O-2′-(N′,N′-dimethylaminopropyl)-galactose, and therapeutically effective and acceptable organic acid and inorganic acid salts thereof.

3,939,146

NOVEL ETHEREAL MONOSUBSTITUTIONS OF MONOSACCHARIDE DERIVATIVES

Paul Gordon, Chicago, Ill., assignor to Strategic Medical Research Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 337,134, March 1, 1973. This application Dec. 14, 1973, Ser. No. 424,786

Int. Cl.^{2} C07G *3/00*

U.S. Cl. 260—210 R **23 Claims**

1. A compound selected from the group consisting of
3-O-3′-(N′,N′-dimethylamino-n-propyl)-1,2-O-isopropylideneglucofuranose,
3-O-4′-(N′-methylpiperidyl)-1,2-O-isopropylidenglucosefuranose,
3-O-2′-(N′,N′-dimethylaminoethyl)-1,2-O-isopropylideneglucofuranose,
3-O-3′-(2′,N′,N′-trimethylamino-n-propyl)-1,2-O-isopropylideneglucofuranose,
3-O-2′-(N′,N′-dimethylaminopropy)-1,2-O-isopropylideneglucosefuranose,
6-O-3′-(N′,N′-dimethylamino-n-propyl)-1,2-O-isopropylidenegalactopyranose,
6-O-2′-(N′,N′-dimethylaminopropyl)-1,2-O-isopropylidenegalactopyranose,
3-O-3′-(N′,N′-dimethylamino-n-propyl)-1,2:5,6-di-O-isopropylideneglucofuranose,
3-O-4′-(N′-methylpiperidyl)-1,2:5,6-di-O-isopropyleneglucofuranose,
3-O-2′-(N′,N′-dimethylaminoethyl)-1,2:5,6-di-O-isopropyleneglucofuranose,
3-O-3′-(2′,N′,N′-trimethylamino-n-propyl)-1,2:5,6-di-O-isopropyleneglucofuranose,
3-O-2′-(N′,N′-dimethylaminopropyl)-1,2:5,6-di-O-isopropyleneglucofuranose,
6-O-3′-(N′,N′-dimethylamino-n-propyl)-1,2:3,4-di-O-isopropylidenegalactopyranose,
6-O-2′-(N′,N′-dimethylaminopropyl)-1,2:3,4-di-O-isopropylidenegalactopyranose,
α-N′,N′-dimethylamino-iso-propyl-2,3:5,6-di-O-isopropylideneglucofuranoside,
and therapeutically effective and acceptable organic and inorganic acid salts thereof.

3,939,147

NOVEL 1,2-DIAZA-1,5,9-CYCLO DODECATRIENES AND 1,2-DIAZA-1-CYCLODODECENES

Bernard Hugelin, Gaillard, France, and Eduard Troxler, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

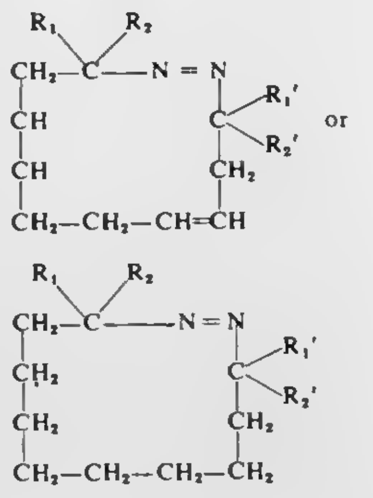
Filed June 14, 1973, Ser. No. 370,081

Claims priority, application Switzerland, June 16, 1972, 9112/72

Int. Cl.^{2} C07D *245/02*, *405/04*, *405/10*, *405/14*

U.S. Cl. 260—239 BC **15 Claims**

1. A 1,2-diaza-1,5,9-cyclododecatriene or 1,2-diaza-1-cyclododecene of the formula



wherein

- R_1 and R_1' independently of one another denote alkyl of one to six carbon atoms; alkenyl of up to four carbon atoms; alkyl of one to four carbon atoms substituted by phenyl; alkenyl of up to four carbon atoms substituted by phenyl; cyclohexyl; phenyl; phenyl substituted in the 4-position by a halogen atom, an alkyl of one to four carbon atoms or an alkoxy of one to four carbon atoms; 1-naphthyl; or 3,4-methylenedioxyphenyl;
- R_2 and R_2' independently of one another denote hydrogen; alkyl of one to four carbon atoms; or
- R_1 and R_2, or R_1' and R_2', together with the carbon atoms to which they are bonded form a cycloalkyl ring of five to 12 carbon atoms.

3,939,148

PROCESS FOR PREPARING 1,3,5,7-TETRANITRO-1,3,5,7-TETRAAZACYCLOOCTANE

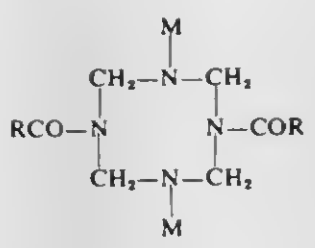
Victor I. Siele, Succasunna, and Everett E. Gilbert, Morristown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 25, 1974, Ser. No. 445,738

Int. Cl.^{2} C07D *257/02*

U.S. Cl. 260—239 HM **18 Claims**

1. A process for preparing 1,3,5,7-tetranitro-1,3,5,7-tetraazacyclooctane, which comprises the step of reacting an N-acylated-1,3,5,7-tetraazacyclooctane of the following formula



wherein R is an alkyl radical of 1 to 6 carbon atoms, and M in both cases is the same and is either a nitro group or an acyl radical of the formula RCO—, wherein R has the aforesaid definition, with nitrogen pentoxide in the presence of a liquid diluent from the group consisting of a nitroparaffin, methylene chloride, chloroform, 100% nitric acid, polyphosphoric acid containing more than 75% by weight of phosphorus pentoxide and a liquid system for producing nitrogen pentoxide consisting essentially of a mixture of 100% nitriacid and a material of the group consisting of trifluoroacetic anhydride, sulfur trioxide, phosphorus pentoxide and polyphosphoric acid containing more than 75% by weight of phosphorus pentoxide.

3,939,149

UREIDOACETAMIDO-PENICILLINS

Hans-Bodo König; Wilfried Schrock, both of Wuppertal-Elberfeld; Hans Disselnkotter, Cologne, and Karl Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

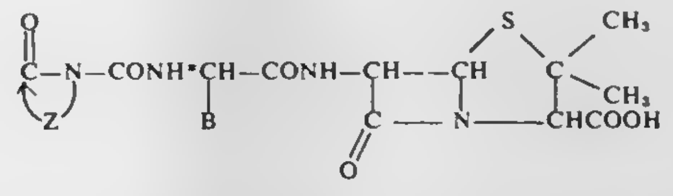
Division of Ser. Nos. 145,809, May 21, 1971, abandoned, and Ser. No. 145,877, May 21, 1971, abandoned. This application Dec. 19, 1973, Ser. No. 426,188

Claims priority, application Germany, May 25, 1970, 2025414; May 25, 1970, 2025415

Int. Cl.^{2} C07D *499/46*

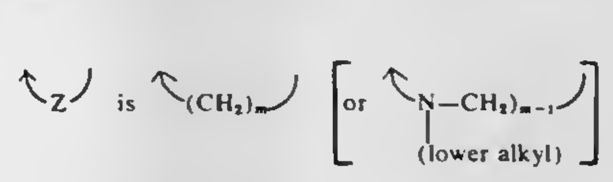
U.S. Cl. 260—239.1 **5 Claims**

1. A compound selected from the group consisting of a penicillin of the formula:

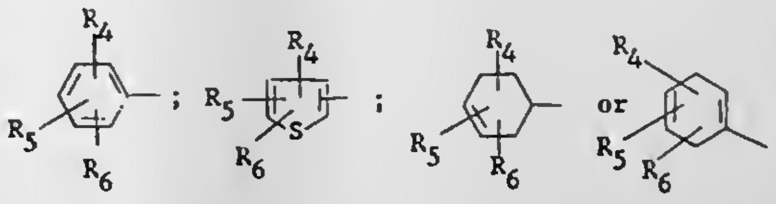


and the pharmaceutically acceptable nontoxic salts thereof wherein

the carbon atom designated by * constitutes a center of chirality,



in which m is 3, and
B is



wherein

R_4, R_5 and R_6 are the same or different, and are each hydrogen, halo, lower alkyl, lower alkoxy, lower alkylthio, lower alkylthionyl, lower alkylsulphonyl, nitro, di(lower alkyl)amino, lower alkanoylamino, hydroxy, or lower alkanoyloxy.

3,939,150

PENICILLIN DERIVATIVES

Masuo Murakami, Tokyo; Ichiro Isaka, Hoya; Khozi Nakano, Shiraoka; Isao Souzu, Urawa; Akio Koda, Hoya; Teruaki Ozasa, Urawa; Teruya Kashiwagi, Ageo, and Yukiyasu Murakami, Urawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1974, Ser. No. 514,363

Claims priority, application Japan, Oct. 19, 1973, 48-118390; Nov. 16, 1973, 48-129067; Apr. 4, 1974, 49-38146; July 27, 1974, 49-86355; Sept. 6, 1974, 49-102685

Int. Cl.^{2} C07D *499/68*

U.S. Cl. 260—239.1 **1 Claim**

1. α-(4-Oxo-4H-thiopyran-3-carboxamido)-p-hydroxybenzylpenicillin and its pharmaceutically acceptable acid addition salts.

3,939,151

DISPLACEMENT OF THE THIAZOLIDINE RING IN PENICILLIN WITH THE FORMATION OF A BIOLOGICALLY ACTIVE CEPHEM SYSTEM

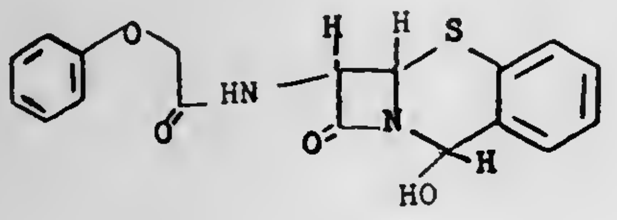
John C. Sheehan, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed July 25, 1974, Ser. No. 491,873

Int. Cl.^{2} C07D *501/24*

U.S. Cl. 260—243 C **1 Claim**

1. A biologically active material of the formula



3,939,152

5-PHENYL-2,4-BENZODIAZEPINES

William Taub, Harishom, and Uri Golik, Givataym, both of Israel, assignors to Yeda Research and Development Company Ltd., Israel

Filed Mar. 29, 1974, Ser. No. 456,015

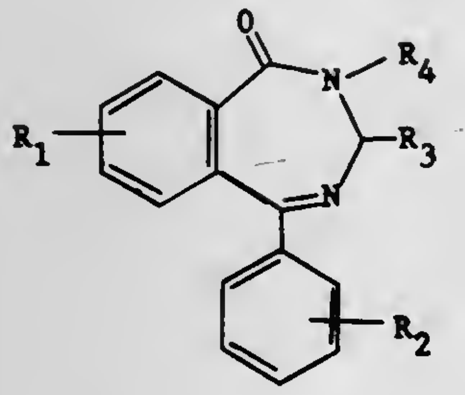
Claims priority, application United Kingdom, Apr. 4, 1973, 16109/73

Int. Cl.^{2} C07D *243/00*

U.S. Cl. 260—239.3 B **10 Claims**

1. A compound of the formula (I):

(I)



or a pharmaceutically acceptable salt or N-oxide thereof wherein R_1 is a hydrogen or halogen atom or a nitro, methyl, cyano or trifluoromethyl group; R_2 is a hydrogen or halogen atom or a nitro, methyl, cyano or trifluoromethyl group; R_3 is a hydrogen atom or a methyl group; R_4 is a hydrogen atom or a methyl or ethyl group.

3,939,153

PROCESS FOR PRODUCING CAPROLACTAM

Frank C. Fowler, Kansas City, Mo., assignor to Hillyard Chemical Company, St. Joseph, Mo.

Filed Aug. 9, 1974, Ser. No. 496,258

Int. Cl.^{2} C07D *201/12*

U.S. Cl. 260—239.3 A **8 Claims**

1. A process for producing e-caprolactam from a polymer thereof which comprises continuously introducing into a reaction zone a melt of said polymer, continuously introducing high temperature steam into said reaction zone as the sole depolymerizing agent therein, continuously withdrawing from said reaction zone, steam, polymer degradation products and undecomposed polymer melt, maintaining said reaction zone at a temperature of at least about 600°F. and recovering e-caprolactam from said polymer degradation products as a product of said process.

3,939,154

PYRAZOLINE DERIVATIVES

Ivan Joseph Bolton, Bingley, England; Fritz Fleck, Bottmingen, Switzerland, and Alec Victor Mercer, Leeds, England, assignors to Sandoz Ltd., (Sandoz AG), Basle, Switzerland

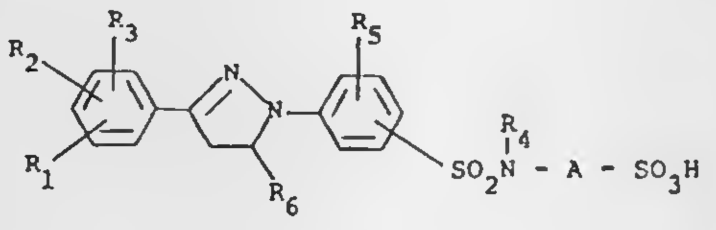
Filed Jan. 24, 1974, Ser. No. 436,129

Claims priority, application United Kingdom, Jan. 29, 1973, 4366/73

Int. Cl.^{2} C07D *231/06*

U.S. Cl. 260—239.9 **62 Claims**

1. A compound of formula I,



I

in which R_1 is halogen or alkyl of 1 to 4 carbon atoms,

R_2 and R_3, which may be the same or different, are hydrogen, halogen or alkyl of 1 to 4 carbon atoms,

R_4 is hydrogen or alkyl of 1 to 4 carbon atoms,

R_5 signifies a hydrogen atom, a halogen atom, an alkyl radical of 1 to 4 carbon atoms or an alkoxy radical of 1 to 4 carbon atoms,

R_6 is hydrogen or alkyl of 1 to 4 carbon atoms, and

A is an alkylene chain of 1 to 3 carbon atoms,

which compound is in free acid or salt form.

3,939,155

4′,5′-DIHYDROSPIRO[ANDROST/ESTR-4-ENE-17,2′(3′H)-FURAN]3,4′-DIONE AND CONGENERS, AND INTERMEDIATES THERETO

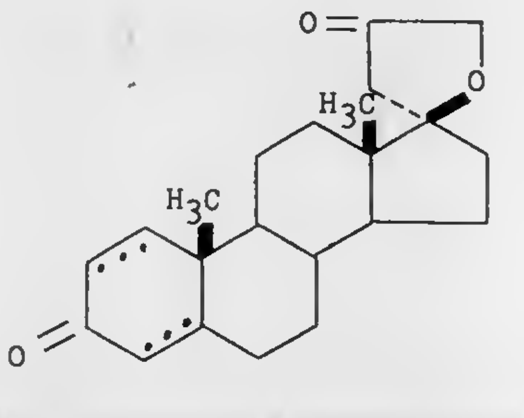
Edward A. Brown, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed June 28, 1974, Ser. No. 483,986

Int. Cl.^{2} C07J *21/00*

U.S. Cl. 260—239.55 R **10 Claims**

1. A compound of the formula



wherein the dotted lines in ring A indicate that the compound is Δ^1, Δ^4, or $\Delta^{1,4}$.

5. 4′,5′-Dihydrospiro[5α-androstane-17,2′(3′H)-furan]-3β,4′-diol.

8. 4′,5′-Dihydro-3-methoxyspiro[estra-2,5(10)-diene-17,2′(3′H)-furan]-4′-ol.

10. 3-Methoxyspiro[estra-1,3,5(10)-triene-17,2′(5′H)-furan].

3,939,156

CARDENOLIDES

Hans Peter Albrecht, Lutzelsachsen, and Günter Neugebauer, Mannheim, both of Germany, assignors to Knoll A.G. Chemische Fabriken, Ludwigshafen (Rhine), Germany

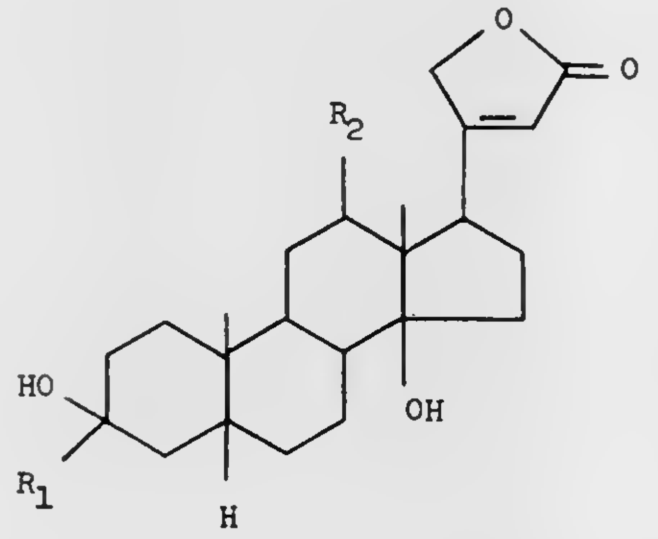
Filed July 15, 1974, Ser. No. 488,421

Claims priority, application Germany, July 18, 1973, 2336445

Int. Cl.^{2} C07J *19/00*

U.S. Cl. 260—239.57 **36 Claims**

1. Compound of the formula



in which R_1 is alkyl of 1 to 4 carbon atoms, vicinal epoxy- or dihydroxyalkyl of 2 to 4 carbon atoms, alkenyl or alkinyl of 2 to 4 carbon atoms, or phenyl and R_2 is H or OH.

3,939,157

3-BENZYL-7-SUBSTITUTED ACETAMIDO-3-CEPHEM-4-ARBOXYLIC ACIDS AND HALOGENATED BENZYL DERIVATIVES

John Herbert Charles Nayler, Dorking; Michael John Pearson, Roffey, and Robert Southgate, Barns Green, all of England, assignors to Beecham Group Limited, United Kingdom

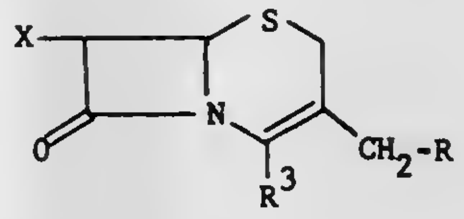
Continuation of Ser. No. 303,959, Nov. 6, 1972, abandoned. This application July 31, 1974, Ser. No. 493,453

Claims priority, application United Kingdom, Jan. 3, 1972, 142/72; Apr. 21, 1972, 18694/72; Sept. 9, 1972, 41972/72

Int. Cl.^{2} C07D *501/22*

U.S. Cl. 260—243 C **6 Claims**

1. A compound of the formula:



wherein R is phenyl or mono-halophenyl; X is phenylacetamido, phenoxyacetamido, 2-thienylacetamido, α-aminophenylacetamido or α-azidophenylacetamido; and R^3 is a carboxylic acid group, a pharmaceutically acceptable salt of the carboxylic acid group or t-butyl ester of the carboxylic acid group.

3,939,158

N-(2,4-DIHALO-S-TRIAZIN-6-YL)-UREAS AND PROCESS FOR THEIR MANUFACTURE

Rainer Begrich, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

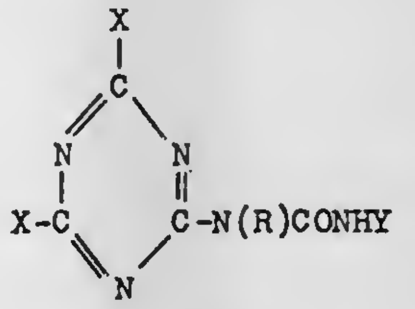
Filed Aug. 8, 1974, Ser. No. 495,594

Claims priority, application Switzerland, Aug. 17, 1973, 11870/73

Int. Cl.^{2} C07D *251/50*

U.S. Cl. 260—249.5 **9 Claims**

7. A N-(2,4-dihalo-s-triazin-6-yl)-urea of the formula



(1),

wherein X is halogen, R is lower alkyl, lower alkoxy-lower alkyl, phenyl, halophenyl, nitrophenyl, lower alkyl-phenyl, lower alkoxy-phenyl or hydrogen and Y is the sulphonic acid group.

3,939,159
SPIRO(PYRROLO (1,2-A)QUINOXALINES)

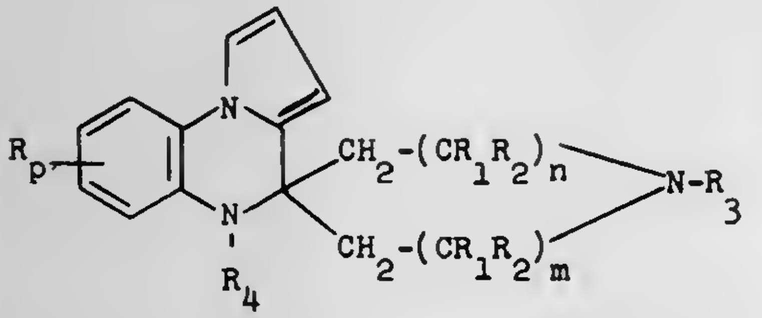
Horst Dornauer, Kelkheim, Germany, and Vernon Brian Anderson, High Bridge, N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed May 29, 1974, Ser. No. 474,447

Int. Cl.^{2} C07D *207/32, 487/20*

U.S. Cl. 260—250 Q **8 Claims**

1. A compound of the formula:



in which R is alkyl or from 1 to 3 carbon atoms, alkoxy of from 1 to 2 carbon atoms or halogen; *m*, *n* and *p* are integers from 0 to 2, the sum of *m* and *n* being from 2 to 4; R_1 and R_2 are hydrogen or methyl; R_3 is hydrogen, alkyl of from 1 to 4 carbon atoms, alkanoyl of from 2 to 6 carbon atoms, cycloalkylcarbonyl of from 4 to 6 carbon atoms or aralkyl of from 7 to 9 carbon atoms; and R_4 is hydrogen or alkanoyl of from 2 to 3 carbon atoms; and the physiologically tolerable acid addition salts thereof.

3,939,160
PTERIDINES

Alexander Stuart, Bromley, England, assignor to Burroughs Wellcome Co., N.C.

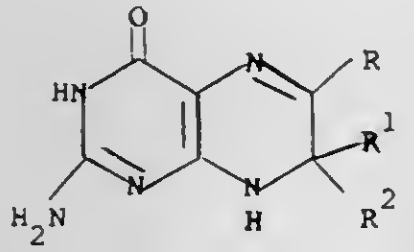
Filed July 26, 1973, Ser. No. 382,715

Claims priority, application United Kingdom, Aug. 1, 1972, 35815/72; Feb. 1, 1973, 5189/73

Int. Cl.^{2} C07D *241/00*

U.S. Cl. 260—251.5 **14 Claims**

1. A compound of formula (I), or a tautomeric form thereof,



(I)

wherein R is a lower alkyl group substituted with one or more halogen atoms, and R^1 and R^2 are the same or different and each is a lower alkyl group or R^1 and R^2, together with the carbon atom in the pteridine ring structure, form a spirocycloalkyl ring system having 4 to 6 carbon atoms outside the pteridine ring structure.

3,939,161
1,3-DIMETHYL- 1H-PYRAZOLO(4,3-D) PYRIMIDINE-7 (6H)-ONES

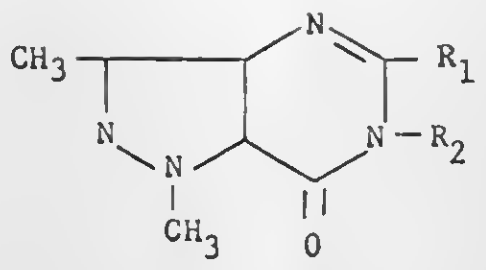
James Daniel Ratajczyk, Waukegan; Robert George Stein, Kenosha, and Leo Ralph Swett, Waukegan, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 29, 1973, Ser. No. 410,588

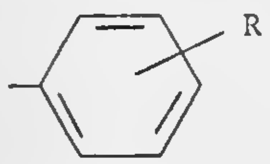
Int. Cl.^{2} C07D *239/00*

U.S. Cl. 260—256.4 F **8 Claims**

1. A compound represented by the structural formula



wherein R_1 is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, piperidinomethyl, methoxymethyl, N-methylpiperazinomethyl, carbethoxy, or p-chlorophenoxymethyl; and R_2 is hydrogen, C_1–C_4 alkyl, phenyl or



wherein R is a substituent of the class consisting of halo, methyl, tri fluoromethyl and di(C_1–C_4)alkylamino (C_1–C_4)alkyloxy.

3,939,162
ANTHRAPYRIMIDINE DYES

Wolfgang Elser, Frankenthal, and Manfred Ruske, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

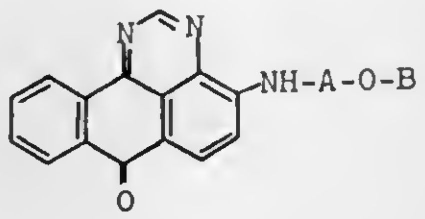
Filed Dec. 19, 1973, Ser. No. 426,368

Claims priority, application Germany, Dec. 29, 1972, 2263919

Int. Cl.^{2} C07D *239/84*

U.S. Cl. 260—256.4 Q **7 Claims**

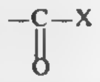
1. An anthrapyrimidine dye of the formula



in which

A is linear or branched saturated unsubstituted alkylene of two to eight carbon atoms, or $-CH_2-CH_2-O-CH_2-CH_2-$;

B is hydrogen or



$$-\underset{\underset{O}{\|}}{C}-X$$

where X is linear or branched saturated alkyl of one to nine carbon atoms, a linear or branched saturated alkyl of one to nine carbon atoms in which one or two hydrogen atoms are substituted by chloro, bromo or phenoxy, cycloalkyl of five to eight carbon atoms, phenyl; phenyl in which one to three hydrogen atoms are substituted by chloro, bromo, fluoro, alkyl of one to three carbon atoms, trifluoromethyl, ethoxy and cyano, said phenyl substituents being identical or different, naphthyl, phenylalkyl of seven to ten carbon atoms, styryl, a pyridine ring, or —NH—R or —O—R where R is alkyl of one to six carbon atoms, cycloalkyl of six to eight carbon atoms, phenyl, or phenyl in which one to three hydrogen atoms are substituted by chloro, bromo, methyl, methoxy and phenoxy, said phenyl substituents being identical or different.

3,939,163
METAL SALTS OF HINDERED PIPERIDINE CARBOXYLIC ACIDS AND STABILIZED COMPOSITIONS

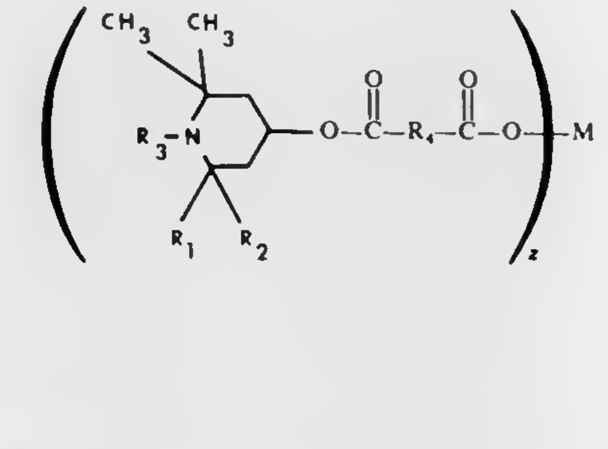
Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,237

Int. Cl.^{2} C07D *211/46*

U.S. Cl. 260—270 C **10 Claims**

1. A compound of the formula



CH_3
CH_3
R_3-N
$O-\overset{O}{\overset{\|}{C}}-R_4-\overset{O}{\overset{\|}{C}}-O$
M
R_1
R_2
z

wherein

R_1 and R_2 independently of each other are straight or singly branched-chain alkyl of formula
$-CH_2$-(C_nH_{2n+1})

where *n* is 0 to 5, or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group,

R_3 is hydrogen, a straight-or singly branched-chain alkyl of formula
$-CH_2$-(C_nH_{2n+1})

where *n* is 0 to 11, β-methoxyethyl, alkenyl having 3 or 4 carbon atoms, propargyl, benzyl or methyl substituted benzyl,

R_4 is straight- or branched-chain alkylene having 1 to 4 carbon atoms,

M is a metal selected from the group consisting of nickel, manganese, zinc, iron, cobalt, tin and di-n-alkyl tin of up to 8 carbon atoms, and

z has a value of from 1 to 4, the value of *z* being the same as the available valence of M.

3,939,164
7 AND 8-HALO SUBSTITUTED 1,2,3,4-TETRAHYDROISOQUINOLINE COMPOUNDS

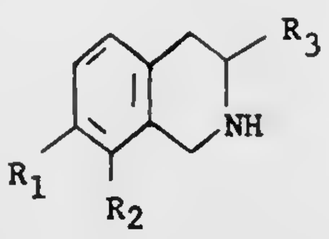
Carl Kaiser, Haddon Heights, N.J., and Robert G. Pendleton, Elkins Park, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Feb. 8, 1974, Ser. No. 440,925

Int. Cl.^{2} C07D *217/08, 217/00*

U.S. Cl. 260—286 R **4 Claims**

1. A compound of the formula:



in which:

R_1 and R_2 are chloro, bromo or iodo, R_1 and R_2 being the same or different, or R_1 and R_2 are both fluoro and

R_3 is hydrogen, methyl or ethyl or a pharmaceutically acceptable, acid addition salt thereof.

3,939,165
5,6,6a,6b,7,8-HEXAHYDROBENZ[a]PHENANTHRIDINE HYDROCHLORIDE

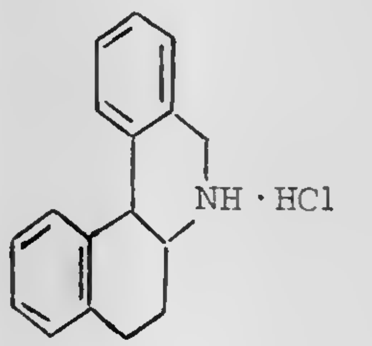
Thomas J. Schwan, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Nov. 14, 1974, Ser. No. 523,589

Int. Cl.^{2} C07D *215/58*

U.S. Cl. 260—286 R **1 Claim**

1. A compound of the formula:



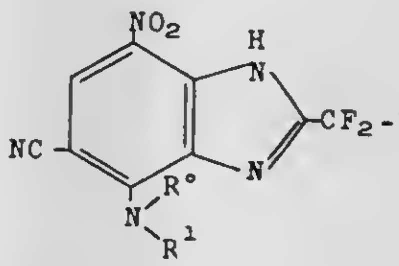
3,939,166
4-SUBSTITUTED-5-CYANO-7-NITRO-2-(α,α-DIFLUOROALKYL)BENZIMIDAZOLES

John L. Miesel, and David I. Wickiser, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind. Division of Ser. No. 232,289, March 6, 1972, abandoned. This application Nov. 15, 1973, Ser. No. 416,298

Int. Cl.^{2} C07D *235/16*

U.S. Cl. 260—293.6 **9 Claims**

1. Compound of the formula



wherein Y represents
- a. hydrogen,
- b. chlorine,
- c. fluorine,
- d. trifluoromethyl, or
- e. pentafluoroethyl;

and wherein R^o and R_1 are either taken separately, in which case each independently represents one of the following, subject to the limitation that at least one of R^o and R^1 contains more than 1 carbon atom and that R^o and R^1 together contain less than 9 carbon atoms:
1. hydrogen
2. alkyl
3. alkenyl containing more than 2 carbon atoms,
4. alkynyl containing more than 2 carbon atoms,
5. (fluoroalkyl)methyl wherein alkyl is C_1-C_7, both inclusive, and bears at least one fluorine atom,
6. cycloalkyl of C_3-C_8, both inclusive

7. cycloalkylloweralkyl, wherein cycloalkyl is of C_5–C_6, both inclusive, and loweralkyl is of C_1–C_4, both inclusive, or

8. loweralkylcycloalkyl, wherein cycloalkyl and loweralkyl are as defined in the preceding candidate moiety;

or R^0 and R^1 are taken together, in which case they jointly constitute, with the nitrogen atom to which they are attached, piperidino; and the alkali metal and alkaline earth metal salts thereof.

3,939,167
3-(2-METHYLTHIO-2-TERTIARY AMINDACETYL)-5-PHENYLISOXAZOLES

Shoichi Hiral, Ibarakl, and Kyozo Kawata, Kawanishi, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

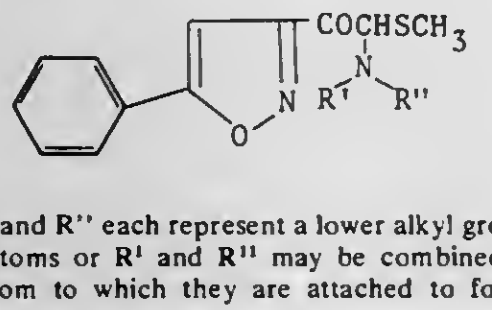
Filed Aug. 21, 1973, Ser. No. 389,636

Claims priority, application Japan, Aug. 22, 1972, 47-83916

Int. Cl.² C07D *295/12*

U.S. Cl. 260—293.67 **8 Claims**

1. A phenylisoxazole of the formula:



wherein R' and R'' each represent a lower alkyl group of 1 to 3 carbon atoms or R^1 and R^{11} may be combined with the nitrogen atom to which they are attached to form a pyrrolidino or piperidino group.

3,939,168
4-PIPERIDINE ACETAMIDES

Barry Cook, Manchester, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

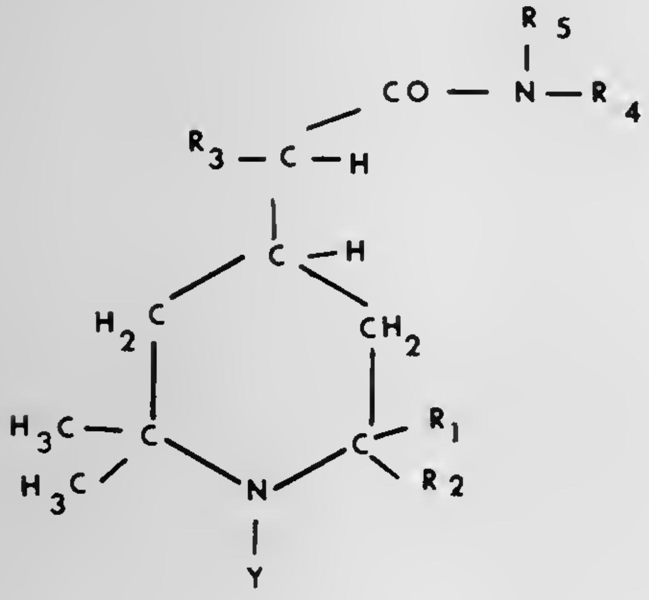
Filed July 17, 1973, Ser. No. 380,040

Claims priority, application United Kingdom, July 28, 1972, 35487/72

Int. Cl.² C07D *211/32*

U.S. Cl. 260—293.77 **18 Claims**

1. A compound of the formula I



wherein

Y is straight- or branched alkyl having from 1 to 12 carbon atoms, alkenyl having from 3 to 12 carbon atoms, benzyl, α-methyl-benzyl, p-methyl benzyl, α, p-dimethylbenzyl, α-napthylmethyl, 2-phenyl- 2-hydroxyethyl or a group R_7-CH OH-CH_2- wherein R_7 is hydrogen, alkyl having from 12 to 4 carbon atoms or phenyl.

R_1 and R_2 are the same or different and each is straight- or branched alkyl having from 1 to 12 carbon atoms or R_1 and R_2, together with the carbon atom to which they are attached, form a cycloalkyl group having from 5 to 12 carbon atoms.

R_3 and R_5 are independently hydrogen, straight-or branched alkyl having from 1 to 4 carbon atoms, benzyl, α-methyl benzyl, α, p- dimethylbenzyl or a cycloalkyl group having 5 or 6 carbon atoms.

R_4 is hydrogen, a hydrocarbyl group having from 1 to 20 carbon atoms and being either unsubstituted or substituted by halogen or interrupted by one or more oxygen or sulphur atoms or a salt of the amine function of a compound of formula I said salt being selected from the phosphate, carbonate, sulphate, chloride, acetate, stearate, malonate, citrate, tartrate or oxalate salt.

3,939,169
ALKYLENE BIS(PYRIDINIUMAREYLENE QUATERNARY SALTS)

Philip Neil Edwards, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

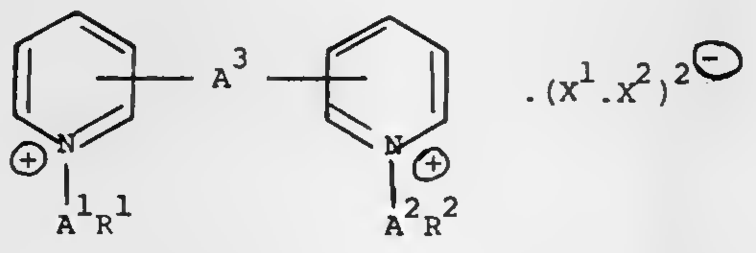
Division of Ser. No. 234,648, March 14, 1972, Pat. No. 3,786,058. This application Dec. 27, 1973, Ser. No. 428,692

Claims priority, application United Kingdom, Mar. 29, 1971, 8071/71

Int. Cl.² C07D *213/40*

U.S. Cl. 260—294.8 R **6 Claims**

1. A pyridine derivative of the formula:



wherein R^1 and R^2 which may be the same or different are each alkyl having 8 to 14 carbon atoms, n-undec-10-yl, 2-n-hexyloxyethyl, 2-(2-butoxyethoxy)ethyl, 3,4-dichlorophenyl, 4-chlorobenzyl, 2,4-dichlorobenzyl or 2-naphthylmethyl; A^1 and A^2 are each a direct linkage or a linking group of the formula —CH_2CO.NH— wherein the methylene is joined to the pyridine nitrogen; $(X^1.X^2)^{2-}$ represents two monoanions or a dianion selected from the group consisting of two halide, methanesulphonate, toluene-p-sulphonate or acetate ions or the sulphate dianion; and A^3 is a linking group of the formula:

$$—(CH_2)_nNH.CO.NH(CH_2)_yNH.CO.NH(CH_2)_n—$$

wherein *n* is 0, 1 or 2; and *y* is 0 or 2 to 6.

3,939,170
DEHYDRO PYRIDINYL SULFIDES, SULFOXIDES AND SULFONES

Donald Richard Randell, Stockport, and Malcolm John Smith, Marple Stockport, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

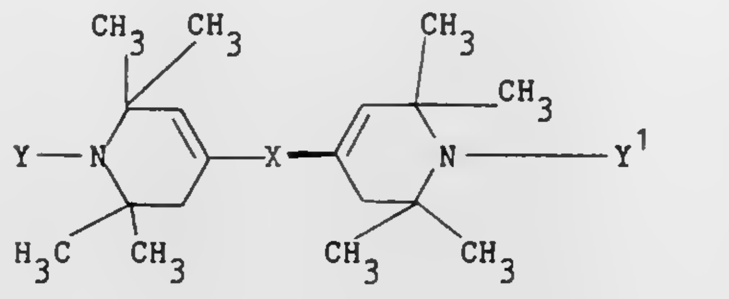
Filed June 3, 1974, Ser. No. 475,717

Claims priority, application United Kingdom, June 8, 1973, 27354/73

Int. Cl.² C07D *211/70*

U.S. Cl. 260—294.8 F **10 Claims**

1. A compound having the formula:



I

wherein X is S, SO or SO_2 and Y and Y^1 are the same or different and each is H, OH, O or a straight- or branched alkyl having from 1 to 4 carbon atoms, and salts thereof when Y and Y^1 are other than O, said salts being formed with the acids selected from hydrogen chloride, sulfuric acid, phosphoric acid, carbonic acid, acetic acid, maleic acid, oxalic acid and tartaric acid.

3,939,171
2-AMINO-1,4-DIHYDROPYRIDINE DERIVATIVES

Horst Meyer; Freidrich Bossert, both of Wuppertal-Elberfeld; Wülf Yater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

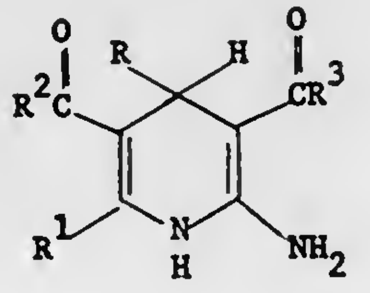
Division of Ser. No. 455,304, March 27, 1974, Pat. No. 3,857,849, which is a division of Ser. No. 336,639, Feb. 28, 1973, Pat. No. 3,867,393. This application Oct. 24, 1974, Ser. No. 517,732

Claims priority, application Germany, Mar. 6, 1972, 2210674

Int. Cl.² C07D *213/55*

U.S. Cl. 260—294.8 D **3 Claims**

1. A compound of the formula:



wherein

R is a heterocyclic ring selected from the group consisting of pyridyl, thienyl, furyl and pyrryl, said heterocyclic ring being unsubstituted or substituted by one or two members selected from the group consisting of lower alkyl, lower alkoxy and halogeno;

R^1 is phenyl or pyridyl;

R^2 is lower alkoxy, lower alkoxy(lower alkoxy), alkenyloxy of 2 to 4 carbon atoms, alkynyloxy of 2 to 4 carbon atoms, amino, lower alkylamino or di(lower alkyl)amino; and

R^3 is lower alkoxy, lower alkoxy(lower alkoxy), alkenyloxy of 2 to 4 carbon atoms, alkynyloxy of 2 to 4 carbon atoms, amino, lower alkylamino or di(lower alkyl)amino.

3,939,172
4-AMINOTHIAZOLE

Gregory Gallagher, Jr., Collegeville, and William D. Kingsbury, West Chester, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Nov. 7, 1974, Ser. No. 521,707

Int. Cl.² C07D *277/40, 277/46*

U.S. Cl. 260—306.8 R **10 Claims**

1. 4-Aminothiazole and its acid addition salts.

4. 4-Trifluoroacetamidothiazole and its acid addition salts.

7. The method of preparing 4-aminothiazole comprising reacting 4-trifluoroacetamidothiazole with an ammonium or alkali metal hydroxide in an aqueous medium at from about room temperature up to about 40°C. until the hydrolysis reaction is substantially complete.

10. The method of preparing 4-aminothiazole comprising reacting 2-bromo-4-trifluoroacetamidothiazole under low pressure catalytic hydrogenation conditions in the presence of a noble metal catalyst to give 4-trifluoroacetamidothiazole then reacting said 4-trifluoroacetamidothiazole with sodium or potassium hydroxide in an aqueous medium at from about 30°–35°C. for about 4–8 hours.

3,939,173
SUBSTITUTED CARBONYL COMPOUNDS

Harold Francis Hodson, Hayes, and John Frederick Batchelor, Beckenham, both of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Sept. 5, 1973, Ser. No. 394,423

Claims priority, application United Kingdom, Sept. 6, 1972, 41431/72; Feb. 20, 1973, 8200/73

Int. Cl.² C07D *257/04*

U.S. Cl. 260—308 D **9 Claims**

1. 2,7-Di-(5-tetrazolyl) fluorenone or a pharmaceutically acceptable salt thereof.

3,939,174
CERTAIN 3-OXO-2-ARYL-5,6-DIHYDRO-4(H)-PYRROLO-(1,2-C) (1,2,3)TRIAZOLIUM COMPOUNDS

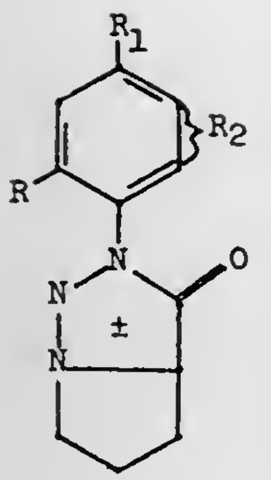
Marwan J. Abu-El-Haj, Groton, and James W. McFarland, Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 395,713, Sept. 10, 1973, which is a continuation-in-part of Ser. No. 170,996, Aug. 11, 1971, abandoned. This application Dec. 13, 1974, Ser. No. 532,495

Int. Cl.² C07D *249/06, 471/04, 513/04*

U.S. Cl. 260—308 A **2 Claims**

1. A compound of the formula



wherein
R is hydrogen, halogen, methyl, or nitro;
R_1 is halogen; and
R_2 is hydrogen, halogen, or nitro.

3,939,175

HYDROXYPHENYLATED HYDANTOINS

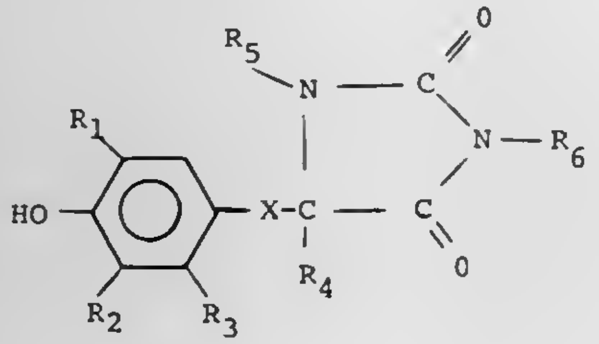
Andreas Schmidt, Reinach, Switzerland; Janet B. Peterson, Yonkers, and Martin Dexter, Briarcliff Manor, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 357,744, May 3, 1973, abandoned. This application May 14, 1974, Ser. No. 469,717

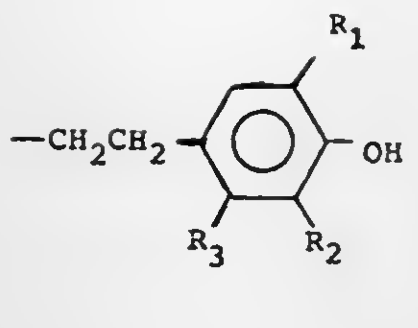
Int. Cl.² C07D ***49/32***

U.S. Cl. 260—309.5 **8 Claims**

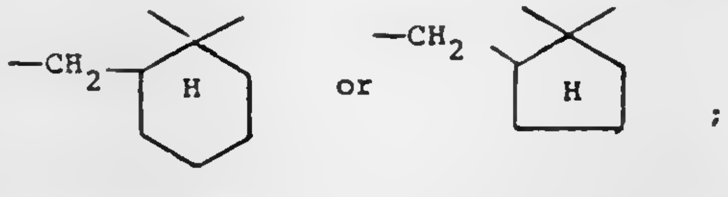
1. A compound of the formula



wherein R_1 denotes alkyl with 1 to 8 carbon atoms, cycloalkyl with 6 to 8 carbon atoms or aralkyl with 7 to 9 carbon atoms; R_2 denotes hydrogen, alkyl with 1 to 8 carbon atoms, cycloalkyl with 6 to 8 carbon atoms or aralkyl with 7 to 9 carbon atoms; R_3 denotes hydrogen or methyl; X denotes a direct bond, alkylene with 1 to 18 carbon atoms, which can be interrupted by oxygen or sulphur atoms, or the radical $—OCH_2—$ wherein the oxygen atom is bonded to the phenol radical; R_4 denotes hydrogen, alkyl with 1 to 17 carbon atoms, alkenyl with 2 to 17 carbon atoms, thiaalkyl with 3 to 21 carbon atoms, oxaalkyl with 3 to 21 carbon atoms, cyclohexyl, benzyl, phenyl, alkylphenyl with 7 to 14 carbon atoms, alkoxyphenyl with 7 to 24 carbon atoms, chlorophenyl, dichlorophenyl, naphthyl or a group



or X and R_4 conjointly with the carbon atom in the 5-position of the hydantoin ring denote one of the radicals



R_5 denotes hydrogen, alkyl with 1 to 18 carbon atoms, alkenyl with 3 to 18 carbon atoms, cyclohexyl, benzyl or hydroxybenzyl which is unsubstituted or substituted by 1 to 3 alkyl groups each with 1 to 4 carbon atoms; R_6 denotes alkenyl with 3 to 18 carbon atoms, cyclohexyl, benzyl or hydroxybenzyl which is unsubstituted or substituted by 1 to 3 alkyl groups each with 1 to 4 carbon atoms.

3,939,176

MAGENTA COUPLERS

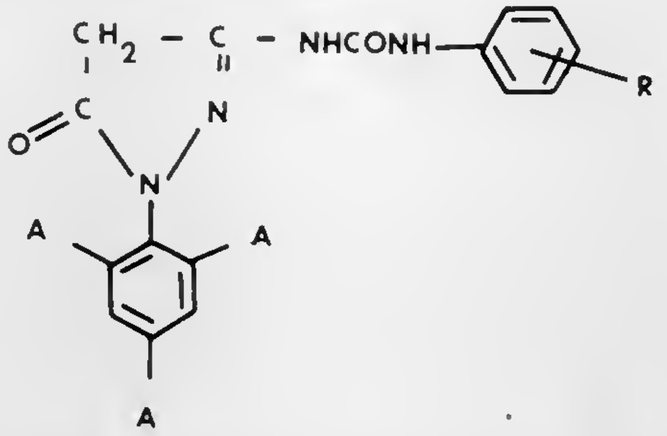
Mario Gandino, Ferrania, and Paolo Beretta, Liberta Ferrania, both of Italy, assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 268,449, July 3, 1972, Pat. No. 3,844,794, which is a continuation of Ser. No. 43,031, June 3, 1970, abandoned. This application July 22, 1974, Ser. No. 490,733

Int. Cl.² C07D ***231/08***

U.S. Cl. 260—310 A **4 Claims**

1. A color coupler of the formula:



wherein two of the A groups are halogen, the remaining A group is alkoxy of 1-18 carbon atoms, and R and R^1 are alkoxy or alkyl groups of 5-20 carbon atoms.

3,939,177

4-AMINOMETHYL-9-BENZYL-1,2,3,4-TETRAHYDROCARBAZOLES

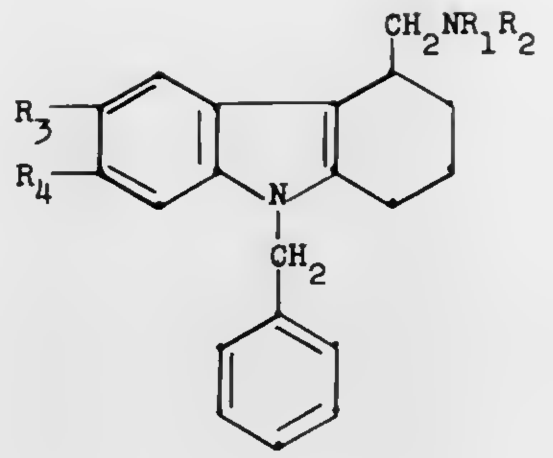
Ernest John Alexander, East Greenbush, and Aram Mooradian, Schodack, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Nov. 22, 1972, Ser. No. 308,674

Int. Cl.² C07D ***209/86***

U.S. Cl. 260—315 **8 Claims**

1. $4\text{-}R_1R_2NCH_2\text{-}9\text{-benzyl-}6\text{-}R_3\text{-}7\text{-}R_4\text{-}1,2,3,4\text{-tetrahydrocarbazole}$ having the formula:



wherein
R_1 and R_2 are each hydrogen, lower-alkyl or benzyl, and
R_3 and R_4 are each hydrogen, lower-alkyl, or lower-alkoxy.

3,939,178

CERTAIN PYRANO [3,4-B]INDOLES AND THIOPYRANO[3,4-B]INDOLES

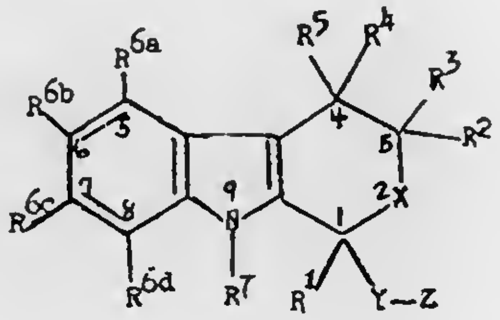
Christopher A. Demerson, St. Laurent; Leslie G. Humber; Thomas A. Dobson, both of Dollard des Ormeaux, and Ivo L. Jirkovsky, Montreal, all of Canada, assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 148,895, June 1, 1971, abandoned. This application Sept. 15, 1972, Ser. No. 289,714

Int. Cl.² C07D ***495/04, 493/04***

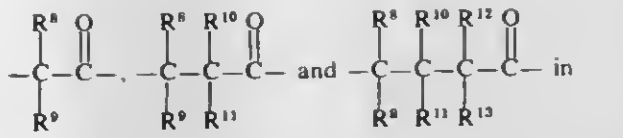
U.S. Cl. 260—326.28 **58 Claims**

1. A compound of the formula Ia



Ia.

in which R^1 is selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, lower cycloalkyl, phenyl, benzyl and 2-thienyl, R^2, R^3, R^4 and R^5 are the same or different and are each selected from the group consisting of hydrogen and lower alkyl, R^{6a}, R^{6b}, R^{6c}, and R^{6d} are the same or different and selected from the group consisting of hydrogen, lower alkyl, hydroxy, lower alkoxy, benzyloxy, lower alkanoyloxy, nitro, halo, mercapto, lower alkylthio, trifluoromethyl, amino and sulfamoyl, R^7 is selected from the group consisting of hydrogen, lower alkyl and lower alkenyl, X is selected from the group consisting of oxy and thio, Y is selected from the group consisting of carbonyl,



$$-\underset{R^9}{\overset{R^8}{C}}-\overset{O}{\overset{\|}{C}}-,\ -\underset{R^9}{\overset{R^8}{C}}-\underset{R^{11}}{\overset{R^{10}}{C}}-\overset{O}{\overset{\|}{C}}-\ \text{and}\ -\underset{R^8}{\overset{R^8}{C}}-\underset{R^{11}}{\overset{R^{10}}{C}}-\underset{R^{13}}{\overset{R^{12}}{C}}-\overset{O}{\overset{\|}{C}}-\ \text{in}$$

which each of R^8, R^9, R^{10}, R^{11}, R^{12} and R^{13} is hydrogen or lower alkyl, and Z is selected from the group consisting of hydroxy and lower alkoxy, or a pharmaceutically acceptable salt thereof.

3,939,179

CONTINUOUS PRODUCTION OF THIOPHENE FROM BUTANE

Thomas Robert Bell, Devon, and Perrin Gary Smith, Chester Springs, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 29, 1973, Ser. No. 392,594

Int. Cl.² C07D ***333/10***

U.S. Cl. 260—332.8 **4 Claims**

1. In a continuous catalytic gas-phase process of reacting hydrogen sulfide with one or more C_4 hydrocarbons selected from the group consisting of normal butane, normal butenes and mixtures thereof to produce thiophene, by-product carbon disulfide and by-product hydrogen comprising
   continuously preheating the said C_4 hydrocarbon reactant within the range 500° to 900°F. and separately preheating the hydrogen sulfide reactant within the range of 900° to 1100°F. and
   thereafter introducing the said reactant gases to a dehydrogenation catalytic reactor maintained at a temperature within the range of 900° to 1100°F.
   continuously withdrawing a product stream from the said reactor containing thiophene, carbon disulfide, hydrogen, excess hydrogen sulfide and unreacted C_4 hydrocarbons, separating thiophene and carbon disulfide from the reactor product stream while recycling excess hydrogen sulfide and unreacted C_4 hydrocarbons to the said reactor and regenerating the dehydrogenation catalyst when the conversion to thiophene falls off,
   the improvement consisting of introducing the said reactant gases at a mole ratio of hydrogen sulfide to C_4 hydrocarbon ranging from about 15 to 1 to about 20 to 1 to an adiabatic reactor containinng a dehydrogenation catalyst while
   simultaneously introducing sulfur vapor to the catalyst to react with by-product hydrogen and thereby to generate heat in an amount sufficient to maintain the catalyst temperature within the range of 900° to 1100°F.

3,939,180

PENICILLIN ESTERS

Harry Ferres, and John Peter Clayton, Horsham, both of England, assignors to Beecham Group limited, United Kingdom

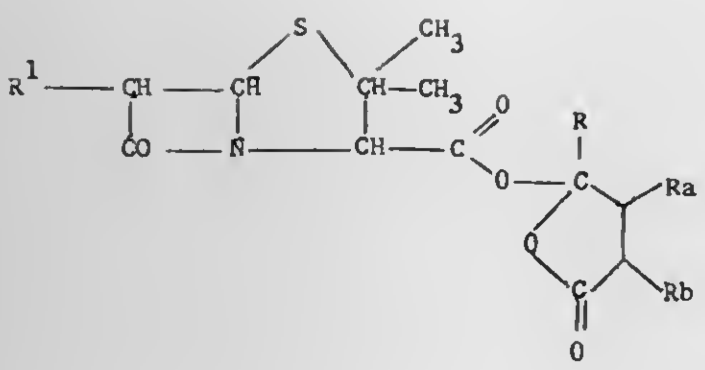
Division of Ser. No. 524,776, Nov. 18, 1974, which is a continuation of Ser. No. 285,941, June 5, 1972, abandoned. This application Dec. 9, 1974, Ser. No. 530,833

Claims priority, application United Kingdom, June 9, 1971, 19604/70

Int. Cl.² C07D ***499/28***

U.S. Cl. 260—239.1 **4 Claims**

1. A compound of formula (I) or a pharmaceutically acceptable acid addition salt thereof:



(I)

wherein R is hydrogen, methyl or phenyl; Ra and Rb are hydrogen or lower alkyl; and R¹ is an acylamino group selected from phenylacetamido; p-hydroxyphenylacetamido; p-heptylphenylacetamido; phenoxyacetamido; α-phenoxypropionamido; α-phenoxybutyamido; 2,6-dimethoxyphenylacetamido; 3-phenyl-5-methyl-isoxazole-4-carbamido; 3-(2-chlorophenyl)-5-methyl-isoxazole-4-carbamido; 3-(2,6-dichlorophenyl)-5-methyl-isoxazole-4-carbamido; 3-(2-chloro-6-fluorophenyl)-5-methyl-isoxazole-4-carbamido; 2-ethoxynapthyl-1-carbamido; o, m or p-aminophenylacetamido; 3-carboxyquinoxalin-2-carbamido; 2-furylacetamido; 2-thienylacetamido; 3-thienylacetamido; 3-pyridylacetamido; isothiazolylacetamido; 3-hexenamido; 2-biphenylamido; n-hexanamido; n-octanamido; propionamido; α-aminophenylacetamido; α-amino-2-thienylacetamido; α-amino-3-thienylacetamido; α-methylaminoacetamido; α-amino-2- or -3- or -4-chlorophenylacetamido; α-amino-2-methoxyphenylacetamido; α-amino-2,4-dichlorophenylacetamido; α-amino-3,4-dichlorophenylacetamido; α-amino-α-methylphenylacetamido; α-amino-4-hydroxyphenylacetamido; α-amino-3-chloro-4-hydroxyphenylacetamido; α-methylphenylacetamido; α-hydroxyphenylacetamido; α-carboxyphenylacetamido; α-(5-tetrazolyl)phenylacetamido; α-guanidino-2-thienylacetamido; α-guanidino-4-hydroxyphenylacetamido; α-guanidino-4-hydroxy-2- or -3-methylphenylacetamido; α-carboxy-3-thienylacetamido; α-sulphaminophenylacetamido; α-sulphamino-3-thienylacetamido; α-(N-methylsulphamino)-phenylacetamido; α -azidophenylacetamido; 1-aminocyclohexylcarbamido; 1-aminocyclopentylcarbamido; 5-amino-5-carboxypentanamido; α-phenoxyphenylacetamido; α-phenyl-β-sulphaminopropionamido; α-sulphophenylacetamido; α-guanidinophenylacetamido; β-amino-β-cyclohexylpropionamido and α-(benzyloxycarbonyl)phenylacetamido.

3,939,181

INTERMEDIATES FOR THE PREPARATION OF PYRIMIDINE COMPOUNDS

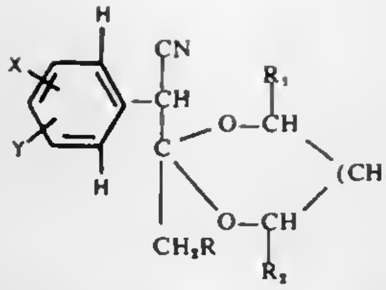
John W. Mentha, Washington; Janice V. Shaffner, Greenville, and Ronald M. Cresswell, Raleigh, all of N.C., assignors to Burroughs Wellcome Co., N.C.

Division of Ser. No. 256,339, May 24, 1972, Pat. No. 3,849,416, which is a continuation-in-part of Ser. No. 177,502, Sept. 2, 1971, abandoned. This application Aug. 5, 1974, Ser. No. 494,721

Int. Cl.² C07D *317/30, 319/06, 321/04*

U.S. Cl. 260—340.7 18 Claims

1. A compound of the formula



where $n = 0$, 1 or 2, R is alkyl of 1 to 10 carbon atoms or a hydrogen atom, R_1 and R_2 are the same or different and each is a hydrogen atom or lower alkyl of 1 to 4 carbon atoms optionally substituted with hydroxy, lower alkoxy or a halogen atom,

X is a halogen atom or nitro, Y is a halogen atom or a hydrogen atom, or R_1 and R_2 taken together can complete a 5 to 7 member saturated ring when $n = 0$.

3,939,182

PROSTAGLANDIN E_1 INTERMEDIATE 6α-CARBOXY-5α(1-HYDROXYETHYL)-2-CYCLOHEXENE-1-HEPTANOIC ACID,γ-LACTONE, AND LOWER ALKYL OR ARALKYL ESTERS THEREOF

Chan-Hwa Kuo, South Plainfield; David Taub, Metuchen, and Norman L. Wendler, Summit, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 406,752, Oct. 15, 1973, which is a division of Ser. No. 290,590, Sept. 20, 1972, Pat. No. 3,850,952. This application Feb. 11, 1975, Ser. No. 549,123

Int. Cl.² C07D *493/00*

U.S. Cl. 260—343.3 R 2 Claims

1. 6α-Carboxy-5α(1-hydroxyethyl)-2-cyclohexene-1-heptanoic acid, γ-lactone, 1–6 carbon loweralkyl, or 6–10 carbon aromatic hydrocarbon substituted lower alkyl ester.

3,939,183

PURIFICATION OF MALEIC ANHYDRIDE

John D. Gardner, Richmond, and John F. Manning, Albany, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 5, 1973, Ser. No. 404,076

Int. Cl.² C07D *307/60*

U.S. Cl. 260—346.8 M 9 Claims

1. In a process for obtaining purified maleic anhydride from crude maleic anhydride wherein the maleic anhydride is produced by steps comprising oxidizing a hydrocarbon feedstock over a catalyst comprising vanadium and phosphorus oxides to obtain an effluent gas containing maleic anhydride, and recovering the crude maleic anhydride from the effluent gas by contacting the effluent gas with an organic absorbent followed by stripping the crude maleic anhydride out of the absorbent, and wherein the crude maleic anhydride is treated by steps comprising heating the crude maleic anhydride, distilling the crude maleic anhydride, and withdrawing a purified maleic anhydride overhead product, the improvement which comprises combining, contacting and heating an alkaline earth or transition metal chloride and P_2O_5 or alkali or alkaline earth metal perborate with the crude anhydride before distilling the crude anhydride to obtain overhead produce maleic anhydride.

3,939,184

PRODUCTION OF CARBONYL COMPOUNDS SUBSTITUTED IN α-POSITION

Horst Koenig; Horst Metzger, and Werner Reif, all of Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

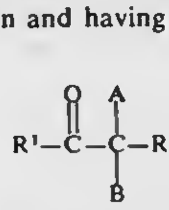
Division of Ser. No. 863,770, Oct. 2, 1969, Pat. No. 3,821,277, which is a continuation of Ser. No. 505,229, Oct. 26, 1965, abandoned. This application Mar. 26, 1973, Ser. No. 344,632

Claims priority, application Germany, Oct. 30, 1964, 1226562; Oct. 30, 1964, 1226563; Oct. 30, 1964, 1238454

Int. Cl.² C07C *69/66, 117/00, 121/76, 122/00*

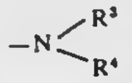
U.S. Cl. 260—349 1 Claim

1. A process for the manufacture of carbonyl compounds substituted in α-position and having the formula:



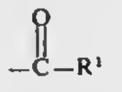
$$R^1-\overset{\overset{O}{\|}}{C}-\underset{\underset{B}{|}}{\overset{\overset{A}{\uparrow}}{C}}-R^2$$

where R¹ is an alkyl radical having 1 to 12 carbon atoms, an aralkyl radical having 7 to 8 carbon atoms, a phenyl, o-toluyl, m-toluyl, p-toluyl, α-naphthyl or β-naphthyl radical which may bear 1 chlorine atom or 1 methoxy group as substituents, the group



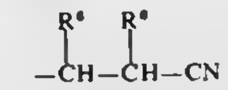
$$-N{<}^{R^3}_{R^4}$$

where R² and R⁴ are selected from the group consisting of hydrogen, alkyl of 1 to 10 carbon atoms, cyclohexyl, benzyl, phenyl, toluyl, p-chlorophenyl, and naphthyl or the radical —OR⁵ where R⁵ is alkyl of 1 to 4 carbon atoms, R² is hydrogen, the radical



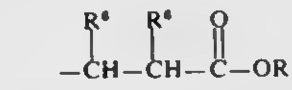
$$-\overset{\overset{O}{\|}}{C}-R^1$$

where R¹ has the meaning given above, the radical



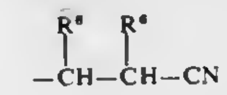
$$-\overset{\overset{R^6}{|}}{C}H-\overset{\overset{R^6}{|}}{C}H-CN$$

or the radical



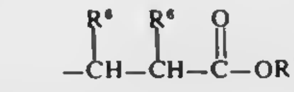
$$-\overset{\overset{R^6}{|}}{C}H-\overset{\overset{R^6}{|}}{C}H-\overset{\overset{O}{\|}}{C}-OR^{11}$$

where R⁶ is hydrogen or methyl and R¹¹ is alkyl of 1 to 4 carbon atoms, A is hydrogen, linear alkyl of 1 to 10 carbon atoms, chlorine, bromine, iodine, the radical



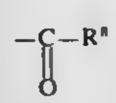
$$-\overset{\overset{R^6}{|}}{C}H-\overset{\overset{R^6}{|}}{C}H-CN$$

or the radical



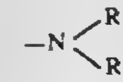
$$-\overset{\overset{R^6}{|}}{C}H-\overset{\overset{R^6}{|}}{C}H-\overset{\overset{O}{\|}}{C}-OR^{11}$$

where R⁶ and R¹¹ have the meanings given above, B is chlorine, bromine, iodine, hydroxy, sulfhydryl, thiocyano, cyanato, nitro, azido, the radical —XR⁷ where X is oxygen, sulfur or the radical $—SO_2—$ and R⁷ is alkyl having 1 to 4 carbon atoms, phenyl, naphthyl, benzyl, or if X is oxygen or sulfur, the acyl radical



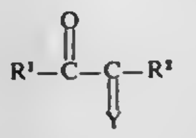
$$-\underset{\underset{O}{\|}}{C}-R^8$$

where R⁸ is hydrogen, phenyl or toluyl, or the group



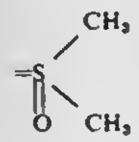
$$-N{<}^{R^3}_{R^4}$$

where R³ and R⁴ have the meanings given above, which comprises reacting a sulfur ylide having the formula:



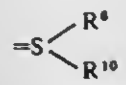
$$R^1-\overset{\overset{O}{\|}}{C}-\underset{\underset{Y}{\Downarrow}}{C}-R^2$$

where R¹ and R² have the meanings given above and Y is the radical



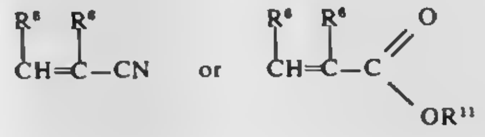
$$=\underset{\underset{O}{\|}}{S}{<}^{CH_3}_{CH_3}$$

or the radical



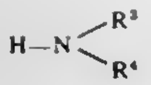
$$=S{<}^{R^9}_{R^{10}}$$

where R⁹ and R¹⁰ are linear alkyl groups having 1 to 4 carbon atoms or phenyl radicals, with a solution which contains both an electrophilic agent A′ that is converted into said radical A and a nucleophilic agent B′ that is converted into said radical B or contains a compound of the type AB capable of reacting both as A′ and as B′, or first with a solution which contains said electrophilic agent A′ and then with a solution which contains said nucleophilic agent B′, at temperatures between 0° and 150°C, A′ being chlorine, bromine, iodine, cyanogen, cyanogen chloride, cyanogen bromide, an alkyl bromide, iodide, sulfate or sulfonate of 1 to 10 carbon atoms, an aralkyl bromide, iodide, sulfate or sulfonate of from 6 to 15 carbon atoms, or an α,β-olefinically unsaturated carboxylic nitrile or ester having the formula



$$\overset{\overset{R^6}{|}}{C}H=\overset{\overset{R^6}{|}}{C}-CN \quad \text{or} \quad \overset{\overset{R^6}{|}}{C}H=\overset{\overset{R^6}{|}}{C}-C{<}^{O}_{OR^{11}}$$

where R⁶ and R¹¹ have the meanings given above, the solution of said electrophilic agent A′ containing an amount of protons at least equivalent to the amount of nitrile or ester to be reacted if A′ is one of the said carboxylic acid derivatives, and B′ in said solution being a chloride, bromide, iodide, hydroxide, alkanolate having 1 to 4 carbon atoms, phenolate, sulfide, phenyl sulfide, ethyl sulfinate, naphthylsulfinate, phenyl sulfinate, benzyl sulfinate, cyanide, thiocyanide, azide or nitrite of an alkali metal, an alkaline earth metal or ammonium or being an amine having the formula



where R^3 and R^4 have the meanings given above, water, hydrogen sulfide or a compound having the formula $H - X - R^7$ where R^7 and X have the meanings given above.

3,939,185

PROCESS FOR THE PREPARATION OF 1-NITRO-ANTHRAQUINONE WHICH IS PRACTICALLY FREE OF 1,5-DINITRO-ANTHRAQUINONE

Axel Vogel, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 30, 1973, Ser. No. 420,370

Claims priority, application Germany, Dec. 2, 1972, 2259074

Int. Cl.^{2} C07C *79/37*

U.S. Cl. 260—369 **11 Claims**

1. In a known process for the purification of 1-nitro-anthraquinone by isolating 1-nitro-anthraquinone from an impure composition containing anthraquinone nitration products and reactants primarily containing 1-nitro-anthraquinone and containing as an impurity 1,5-dinitro-anthraquinone, the improvement comprising removing 1,5-dinitro-anthraquinone by adding to said composition a mixture of concentrated nitric acid, containing at least 75% by weight HNO_3 and not more than 25% by weight H_2O and an inert organic solvent which is miscible with the concentrated nitric acid and is selected from the group consisting of aliphatic and alicyclic hydrocarbons with up to 12 carbon atoms, and halogen derivatives thereof, wherein the relative quantities of nitric acid and inert organic solvent in said mixture as well as the total quantities in said composition, are such that the solubility of 1-nitroanthraquinone and anthraquinone in the mixture of nitric acid and organic solvent is greater that the sum of the partial solubilities in the individual components of the solvent mixture and subsequently, the undissolved 1,5-dinitro-anthraquinone containing constitutent is separated from the solution thus formed.

3,939,186

PROCESS FOR PRODUCING ETHERS OF STEROIDS

Ken-ichi Wakabayashi, and Susumu Kanno, both of Machida, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Dec. 6, 1974, Ser. No. 530,151

Claims priority, application Japan, Dec. 29, 1973, 49-1184

Int. Cl.^{2} C07J *9/00, 1/00*

U.S. Cl. 260—397.4 **12 Claims**

1. A process for producing estrogenic steroid ethers which comprises admixing an alkali, a reactant estrogenic steroid having a hydroxyl group attached directly to an aromatic ring of the estrogenic steroid nucleus and a dialkyl sulfate in the presence of a hydrophilic solvent selected from the group consisting essentially of dioxane, tetrahydrofuran, methyltetrahydrofuran, tetrahydropyrane, acetone, and methyl ethyl ketone, in which said reactant and product estrogenic steroid are readily soluble.

3,939,187

15α,-SULFONYLOXY-12β-HYDROXYPREGNANES AND PROCESS FOR THE PREPARATION THEREOF

Hans-Günter Lehmann, Berlin, Germany, assignor to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

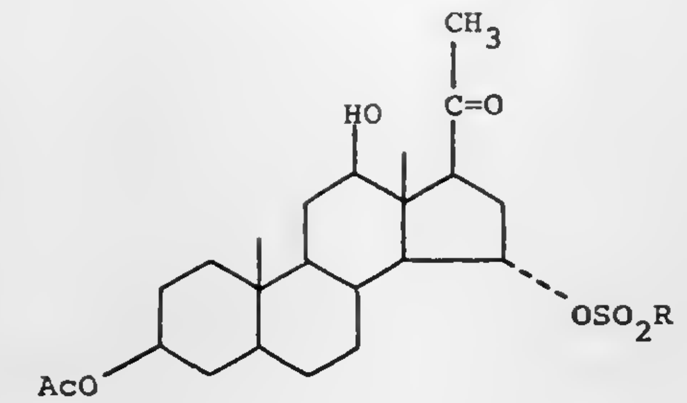
Filed July 2, 1974, Ser. No. 485,062

Claims priority, application Germany, July 4, 1973, 2334559

Int. Cl.^{2} C07J *5/00*

U.S. Cl. 260—397.45 **10 Claims**

1. A 15α-sulfonyloxy-12β-hydroxypregnane of the formula



wherein Ac is the acyl radical of an alkyl, cycloalkyl, cycloalkylalkyl, carbocyclic aryl or carbocyclic aralkyl hydrocarbon carboxylic acid of up to 8 carbon atoms and R is alkyl of 1–8 carbon atoms, cycloalkyl of 3–8 carbon atoms or carbocyclic aryl of 6–18 carbon atoms.

3,939,188

PREPARATION OF ZEROVALENT PHOSPHINE SUBSTITUTED RHODIUM COMPOUNDS AND THEIR USE IN THE SELECTIVE CARBONYLATION OF OLEFINS

Gary B. McVicker, Westfield, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Mar. 24, 1972, Ser. No. 237,891

Int. Cl.^{2} C07F *15/00*

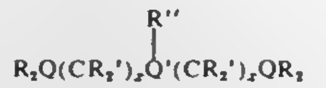
U.S. Cl. 260—429 R **7 Claims**

1. A composition of matter, said composition being characterized by one of the following formulae:

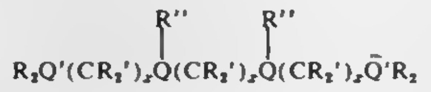
$[(L)(L')Rh°]_2, [L_3Rh°]_2, [L'_2Rh°]_2, [L''Rh°]_2$

where L is a monodentate ligand, L' is a bidentate ligand and L'' is a tri or quadra-dentate ligand, wherein L, L' and L'' can be the same or different and each is one selected from the group consisting of:

1. $R_3Q, R_2R'Q, (RR'R'')Q$
2. $R_2Q(CR_2')_xQ'R_2$

3)


$$R_2Q(CR_2')_x\overset{\overset{R''}{|}}{Q'}(CR_2')_xQR_2$$

4)


$$R_2Q'(CR_2')_x\overset{\overset{R''}{|}}{Q}(CR_2')_x\overset{\overset{R''}{|}}{Q}(CR_2')_x\bar{Q}'R_2$$

5. $RQ'[(CR_2')_xQR_2]_2$
6. $Q'[(CR_2')_xQR_2]_3$

wherein R, R' and R'' can be the same or different and each is selected from the group consisting of C_1 to C_{20} alkoxy, C_3 to C_8 cycloalkyl, C_3 to C_8 cycloalkoxy, phenyl, phenyl substituted with F, Cl, Br and I, phenyl substituted with C_1 to C_{20} alkyl, phenyl substituted with C_3 to C_8 cycloalkyl, phenyl substituted with C_1 to C_{20} alkoxy, oxyphenyl, oxyphenyl substituted with C_1 to C_{20} alkyl, oxyphenyl substituted with C_3 to C_8 cycloalkyl, oxyphenyl substituted with F, Cl, Br and I, oxyphenyl substituted with C_1 to C_8 cycloalkoxy; Q and Q' can be the same or different and each is selected from the group consisting of P, As and Sb; and *x* is an integer ranging from 1 to 5.

3,939,189

N-FLUORODICHLOROMETHYLTHIO)-N-(TRIFLUOROMETHYL)-AMINOBENZHYDROXAMIC ACIDS SALTS

Engelbert Kühle, Berg. Gladbach; Erich Klauke, Odenthal; Helmut Kaspers, and Scheinppflug, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

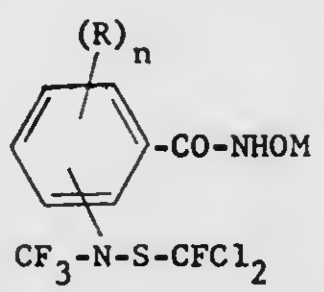
Filed Feb. 19, 1974, Ser. No. 443,882

Claims priority, application Germany, Mar. 10, 1973, 2311983

Int. Cl.^{2} C07F *3/06*

U.S. Cl. 260—429.9 **4 Claims**

1. An N-(fluorodichloromethylthio)-N-(trifluoromethyl)-amino-benzhydroxamic acid or salt of the formula



(I)

in which

- R is halogen, nitro, alkyl or alkoxy with in either case up to 3 carbon atoms, or trifluoromethyl,
- *n* is 0, 1 or 2, and
- M is (hydrogen or one) an equivalent of (an alkali metal, alkaline earth metal or heavy metal) zinc, copper, iron, manganese or nickel.

3,939,190

GROUP V PENTAVALENT ATOM-CONTAINING COMPOSITIONS

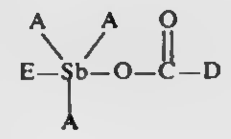
Jeremy Musher, New York, N.Y., and Kai Su, Rutherford, N.J., assignors to Evelyn Musher, New York, N.Y.

Filed Feb. 25, 1972, Ser. No. 229,499

Int. Cl.^{2} C07F *9/90, 9/92*

U.S. Cl. 260—446 **11 Claims**

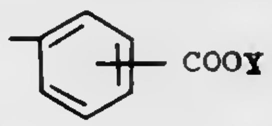
1. A polymerisable compound having the molecular formula



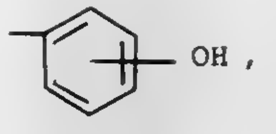
wherein:

a. A is a phenyl moiety or a lower alkyl moiety up to C_5,

b. D is selected from the group consisting of



wherein Y is selected from the group consisting of H, $-CH_2$ and $-CH_2CH_2OH$,



, $-CH{=}CH_2$

and $-CHCl-CH_2Cl$; and

c. and E is any of D herein or $-CH_3$.

3,939,191

PROCESS FOR METHANOL SYNTHESIS

Setunobu Asano, and Tadasi Nakamura, both of Niigata, Japan, assignors to Mitsubishi Gas Chemical Co. Inc., Tokyo, Japan

Filed Dec. 18, 1973, Ser. No. 425,830

Claims priority, application Japan, July 24, 1972, 47-73468

Int. Cl.^{2} C07C *29/16*

U.S. Cl. 260—449.5 **2 Claims**

1. In a process for synthesizing methanol by the reaction of hydrogen and an oxide of carbon, the improvement which comprises carrying out the reaction in the presence of a catalyst comprising oxides of copper, zinc and boron in an atomic ratio of copper: zinc: boron of 20 to 70: 15 to 50: 0.3 to 5.3 at a reaction pressure of 20 to 500 kg/cm², a reaction temperature of 150° to 350°C and a space velocity of 2,000 to 5×10^4 hr^{-1}.

3,939,192

N-SULFENYLATE-N-METHYL-CARBAMIC ACID ESTERS OF 2-OXIMINO-ALKANECARBOXYLIC ACID NITRILES

Engelbert Kuhle, Berg.Gladbach; Peter Siegle, Cologne; Ingeborg Hammann, Cologne, and Wolfgang Behrenz, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

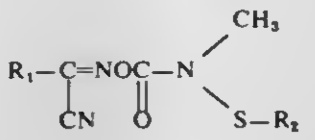
Filed Feb. 11, 1974, Ser. No. 441,599

Claims priority, application Germany, Feb. 22, 1973, 2308660

Int. Cl.^{2} C07C *119/00*

U.S. Cl. 260—453 R **7 Claims**

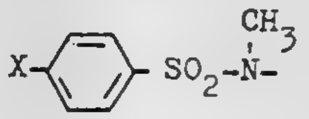
1. An N-sulfenylated-N-methylcarbamic acid ester of a 2-oximino-alkanecarboxylic acid nitrile of the formula



(1)

in which

- R_1 is alkyl of one to six carbon atoms, or cyclohexyl or cycloheptyl optionally substituted by alkyl of one to four carbon atoms, and
- R_2 is methyl substituted by at least one of fluoro of chloro, phenyl, methylphenyl, fluorophenyl, trifluoromethylphenyl, or the radical of the formula



in which

X is chlorine or methyl.

3,939,193

D-HOMOSTEROIDS

Leo Alig, Liestal; Andor Furst, Basel, and Marcel Muller, Frenkendorf, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

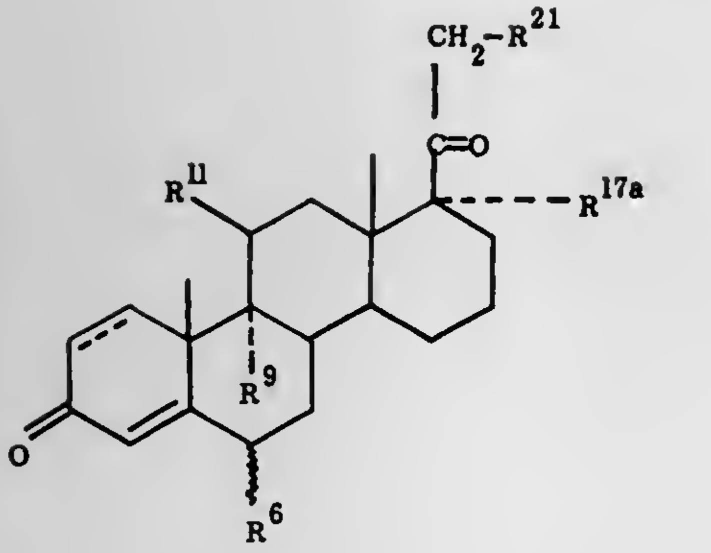
Filed Aug. 29, 1974, Ser. No. 501,558

Claims priority, application Switzerland, Sept. 26, 1973, 13764/73

Int. Cl.^{2} C07C *141/12, 49/45*

U.S. Cl. 260—457 **12 Claims**

1. A D-homosteroid of the formula



(I)

wherein R^6 is hydrogen, fluorine, chlorine, bromine or methyl; R^{11} is hydroxy; R^9 is hydrogen, fluorine, chlorine or bromine when R^{11} is hydroxy and R^9 is chlorine or bromine when R^{11} is fluorine or chlorine; R^{21} is halogen or R when R^{11} is hydroxy and R^{21} is halogen, hydroxy or hydrocarbon C$_{1-15}$ acyloxy or R when R^{11} is fluorine or chlorine; R is a sulfate or phosphate radical or the radical of a dicarboxylic acid or tricarboxylic acid in the form of a water-soluble salt; R^{17a} is hydroxy or hydrocarbón C$_{1-15}$ acyloxy; and the broken line in the 1,2-position denotes an optional bond.

3,939,194

BIS-2-AZOMETHINE PIGMENTS, PROCESS FOR THEIR MANUFACTURE AND THEIR USE

Francois L'Eplattenier, Therwil; André Pugin, Riehen, and Laurent Vuitel, Therwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

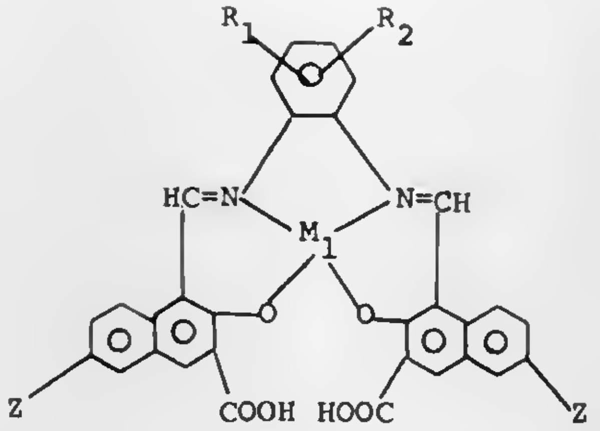
Division of Ser. No. 369,671, June 13, 1973, Pat. No. 3,875,200. This application Jan. 2, 1975, Ser. No. 538,429

Claims priority, application Switzerland, June 19, 1972, 9190/72

Int. Cl.^{2} C07C *119/10, 101/76*

U.S. Cl. 260—439 R **4 Claims**

1. A bis-azomethine pigment of the formula



wherein N$_1$ is nickel, copper, zinc or cadmium, R$_1$ and R$_2$ are hydrogen, chloro, lower alkyl, lower alkoxy, phenyl, phenoxy, or wherein R$_1$ and R$_2$ together form a benzene ring, and Z is hydrogen, chloro, or lower alkoxy.

3,939,195

PREPARATION OF SILANOL CONTAINING ORGANOPOLYSILOXANES

Hans Joachim Lucking, Bergisch-Neukirchen; Klaus Seyfried, Schildgen; Werner Buchner, Opladen-Luetzenkirchen, and Karl-Heinz Rudolph, Cologne-Stammheim, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 7, 1975, Ser. No. 539,150

Claims priority, application Germany, Jan. 24, 1974, 2403303

Int. Cl.^{2} C07F *7/08*

U.S. Cl. 260—448.2 E **5 Claims**

1. The process for the preparation of an organopolysiloxanol comprising contacting at least one organochlorosilane of the formula

$$(CH_3)_a(C_2H_5)_b(CH_2=CH-)_cSiCl_{4-a-b-c}$$

wherein

a, b and c is 0, 1, 2, or 3

and wherein

$$2 \leq a+b+c \leq 3$$

at a temperature of about −10° to 90° C with water containing NH$_4$Cl in an amount from 1 to 100% of its saturation concentration, the pH value of the aqueous solution being adjusted to between about 7.5 and 11.6 by introduction of NH$_3$, separating the hydrolyzate from the aqueous solution immediately after hydrolysis, and flushing the hydrolyzate with an inert gas, to remove NH$_3$ therefrom.

3,939,196

DIARYLCYCLOBUTANES

John E. Lawson; Ronnie D. Denois, and Robert F. Majewski, all of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Feb. 20, 1974, Ser. No. 444,071

Int. Cl.^{2} C07C *39/17, 43/20*

U.S. Cl. 260—613 R **3 Claims**

1. A compound selected from the group consisting of 1,3-bis(p-hydroxyphenyl)cyclobutane and the monomethyl ether thereof.

3,939,197

PROCESS FOR THE PREPARATION OF ALKALINE SULFATE ESTERS OF N-ALKYL-SUBSTITUTED HYDROXYPOLYALKOXYMETHYLCYCLOHEXENES

Herman S. Bloch, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 277,835, Aug. 3, 1972, Pat. No. 3,859,324. This application Nov. 4, 1974, Ser. No. 520,693

Int. Cl.^{2} C07C *141/12*

U.S. Cl. 260—458 **7 Claims**

1. A process for the preparation of a biodegradable detergent which comprises the steps of:

a. condensing butadiene with allyl alcohol in a Diels-Alder reaction at a temperature in the range of from about 50° to 190° C. and a pressure in the range of from atmospheric to about 100 atmospheres to form hydroxymethylcyclohexene;

b. ring alkylating said hydroxymethylcyclohexene with a 3 to 20 carbon atom 1-alkene in the presence of an organic peroxy free-radical generating compound and hydrogen chloride at a temperature at least as high as the decomposition temperature of said free-radical generating compound;

c. alkoxylating the resultant n-alkyl-substituted hydroxymethylcyclohexene with an alkoxylating agent selected from the group consisting of ethylene oxide and propylene oxide at a temperature in the range of from about 20° to 125° C. and at a pressure of from about 50 to about 1000 pounds per square inch to form an n-alkyl-substituted hydroxypolyalkoxymethylcyclohexene;

d. sulfating said n-alkyl-substituted hydroxypolyalkoxymethylcyclohexene with a sulfating agent at a temperature of from about 0° to about 60° C. to form the sulfate ester thereof;

e. neutralizing said sulfate ester with a neutralizing agent to form the alkaline sulfate ester of said n-alkyl-substituted hydroxypolyalkoxymethylcyclohexene; and

f. recovering said alkaline sulfate ester.

3,939,198

CHLORINATED NAPHTHALENE ESTERS

Grover L. Farrar, Westfield, N.J., and Phillip W. Storms, Dickinson, Tex., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 529,221, Feb. 23, 1966, abandoned. This application May 6, 1970, Ser. No. 35,244

Int. Cl.^{2} C07C 69/76

U.S. Cl. 260—469 **8 Claims**

1. 1,4-dichloro-2,6-dicarbomethoxynaphthalene.

8. 1,3,4,7,8-pentachloro-beta-methyl naphthoate.

3,939,199

OXACYLATION OF OLEFINS IN THE GASEOUS PHASE

Hans Fernholz, Fischbach, Taunus; Friedrich Wunder, Florsheim am Main, and Hans-Joachim Schmidt, Falkenstein, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 215,901, Jan. 6, 1971, abandoned. This application June 22, 1973, Ser. No. 372,686

Claims priority, application Germany, Jan. 8, 1971, 2100778

Int. Cl.^{2} C07C *67/04*

U.S. Cl. 260—469 **1 Claim**

1. In a process for oxacylating olefins in the gaseous phase wherein an olefin selected from the group consisting of ethylene, propylene and isobutylene is reacted with oxygen and a saturated aliphatic, cycloaliphatic, araliphatic or aromatic carboxylic acid having not more than 10 carbon atoms in the presence of a catalyst consisting essentially of palladium or palladium salts and an additive selected from the group consisting of gold, gold salts, cadmium, cadmium salts, bismuth, bismuth salts, alkaline earth metal salts and alkali metal salts, supported on a porous silicic acid carrier, the improvement which comprises: using a silicic acid support for said catalyst having a total pore volume of from 0.4 to 1.2 ml/g wherein the total pore volume attributable to pores having a diameter less than 30 A is less than 10% of the total pore volume.

3,939,200

ALIPHATIC ACYL-CONTAINING AMINE HYDROCHLORIDES

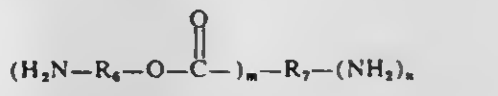
William D. Emmons, Huntingdon Valley, and Jerome F. Levy, Dresher, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 518,977, Jan. 6, 1966, Pat. No. 3,567,763. This application Sept. 4, 1970, Ser. No. 69,965

Int. Cl.^{2} C07C *101/26*

U.S. Cl. 260—482 R **8 Claims**

1. An amine having the formula



$$(H_2N-R_6-O-\overset{\overset{\displaystyle O}{\|}}{C}-)_m-R_7-(NH_2)_n$$

wherein m and n are either 1 or 2,

R$_6$ is an alkylene or cycloalkylene radical having 2 to 8 carbon atoms and up to one hetero oxygen or sulfur atom in the alkylene chain, and

R$_7$ is a divalent organic alkylene or cycloalkylene radical having 3 to 18 carbon atoms.

3,939,201

ESTERS

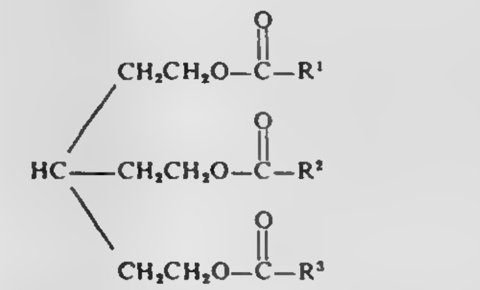
Robert Bacskai, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 9, 1973, Ser. No. 414,584

Int. Cl.^{2} C07C *69/30, 69/78*

U.S. Cl. 260—488 J **5 Claims**

1. A triester of the following formula:



wherein R^1, R^2 and R^3 are alkyl or hydrocarbyl aryl groups having from 2 to 14 carbon atoms.

3,939,202

PROCESS FOR PREPARING POLYENE COMPOUNDS

Masanao Matsui, Tokyo; Seiichi Kitamura, Ibaraki, and Masahiro Morioka, Suita, all of Japan, assignors to Teikoku Chemical Industry Co., Ltd., Osaka, Japan

Filed Jan. 29, 1974, Ser. No. 437,557

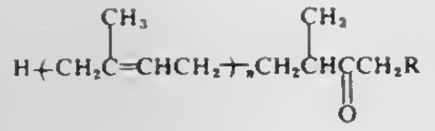
Claims priority, application Japan, Jan. 31, 1973, 48-12566; June 15, 1973, 48-67566; June 15, 1973, 48-67567

Int. Cl.^{2} C07C *67/00*

U.S. Cl. 260—489 **9 Claims**

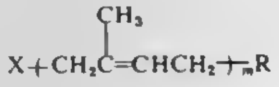
1. A process for preparing a polyene compound which comprises:

A. reacting a compound of the formula



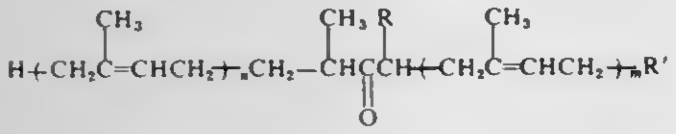
$$\mathrm{H\left(CH_2\overset{CH_3}{\overset{|}{C}}{=}CHCH_2\right)_{n}CH_2\overset{CH_3}{\overset{|}{C}}H\underset{\underset{O}{\|}}{C}CH_2R}$$

with a compound of the formula



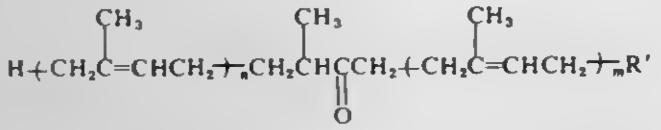
$$\mathrm{X\left(CH_2\overset{CH_3}{\overset{|}{C}}{=}CHCH_2\right)_{m}R}$$

to form a compound of the formula



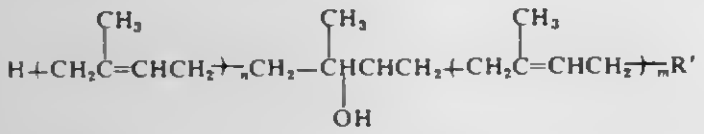
$$\mathrm{H\left(CH_2\overset{CH_3}{\overset{|}{C}}{=}CHCH_2\right)_{n}CH_2{-}\overset{CH_3}{\overset{|}{C}}H\underset{\underset{O}{\|}}{C}\overset{R}{\overset{|}{C}}H\left(CH_2\overset{CH_3}{\overset{|}{C}}{=}CHCH_2\right)_{m}R'}$$

B. subjecting the product of (A) to hydrolysis and decarboxylation to form a compound of the formula



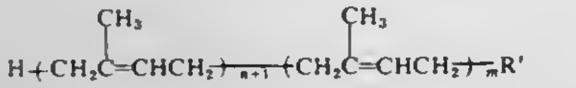
$$\mathrm{H\left(CH_2\overset{CH_3}{\overset{|}{C}}{=}CHCH_2\right)_{n}CH_2\overset{CH_3}{\overset{|}{C}}H\underset{\underset{O}{\|}}{C}CH_2\left(CH_2\overset{CH_3}{\overset{|}{C}}{=}CHCH_2\right)_{m}R'}\quad .$$

C. reducing the product of (B) to form a compound of the formula



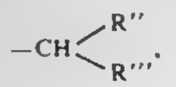
$$\mathrm{H\left(CH_2\overset{CH_3}{\overset{|}{C}}{=}CHCH_2\right)_{n}CH_2{-}\overset{CH_3}{\overset{|}{C}}H\underset{\underset{OH}{|}}{C}HCH_2\left(CH_2\overset{CH_3}{\overset{|}{C}}{=}CHCH_2\right)_{m}R'}$$

D. reacting the product of (C) with a dehydrating agent to form a compound of the formula



$$\mathrm{H\left(CH_2\overset{CH_3}{\overset{|}{C}}{=}CHCH_2\right)_{n+1}\left(CH_2\overset{CH_3}{\overset{|}{C}}{=}CHCH_2\right)_{m}R'}$$

where in each occurence above R is a group convertible into carboxyl on hydrolysis, R′ is protected or unprotected hydroxyl or a group of the formula



$$\mathrm{-CH{<}^{R''}_{R'''}}.$$

where R″ and R‴ are each carboxyl or a group convertible into carboxyl on hydrolysis, X is the residue of an acid, *m* is a positive integer and *n* is O or a positive integer.

3,939,203

CERTAIN SUBSTITUTED 2-HYDROXYBENZOPHENOXIMES AND THE PROCESS OF EXTRACTING COPPER THEREWITH

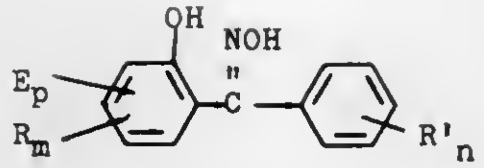
Phillip L. Mattison, Minneapolis, and Ronald R. Swanson, New Hope, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Mar. 18, 1968, Ser. No. 714,040

Int. Cl.² C07C *131/00*

U.S. Cl. 260—566 A **8 Claims**

1. A compound of the formula



in which R and R′ may be individually alike or different and are saturated aliphatic hydrocarbon groups of 1–25 carbon atoms, E is an electron withdrawing substituent, *p* is 1, 2, 3 or 4, *m* is 0 or a whole integer up to 4-*p* and *n* is 0, 1, 2, 3 or 4, said compound having a total of 3–25 carbon atoms in R_m and R'_n and said electron withdrawing substituent E_p (1) having an electron withdrawing capacity such that a phenol containing only said substituent has an acid ionization constant Ka of at least about 50 × 10^{-10} and (2) being so selected and positioned on the aromatic ring to substantially increase the efficiency of the compound as a copper extractant from aqueous solutions having a pH of less than about 1.0.

3,939,204

RADIOACTIVE FUNCTIONAL DIAGNOSTIC AGENTS

Götz Buttermann, Ottobrunn, Germany, assignor to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

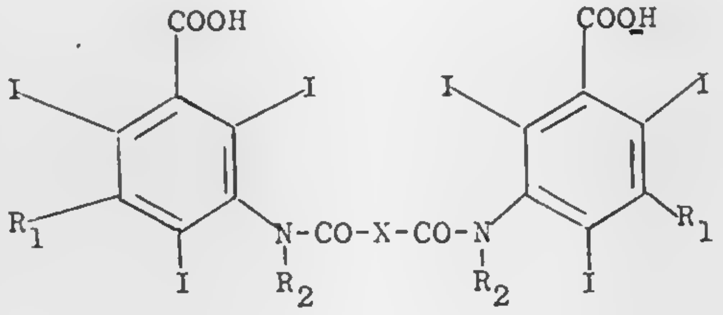
Filed June 4, 1973, Ser. No. 366,461

Claims priority, application Germany, Dec. 22, 1972, 2264002; Jan. 10, 1973, 2300966

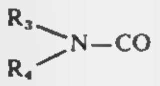
Int. Cl.² C07C *103/30*

U.S. Cl. 260—518 A **21 Claims**

1. A radioactive compound selected from the group consisting of dicarboxylic acid anilides of the formula



wherein
- 1–6 of said iodine atoms are in the form of a radioactive iodine isotope;
- R_1 is hydrogen, carboxyl, N-alkanoyl, N-alkanoylaminomethyl, N-alkyl-N-alkanoylamino or



$$\mathrm{{}^{R_3}_{R_4}{>}N{-}CO}$$

- wherein R_3 and R_4 are each hydrogen, lower alkyl or hydroxyalkyl;
- R_2 is hydrogen, lower alkyl or hydroxyalkyl;
- X is alkylene of 1–14 carbon atoms which can be interrupted by one or more oxygen or sulfur atoms; and

the physiologically acceptable salts thereof.

3,939,205

PROCESS FOR HYDRATING AN UNSATURATED NITRILE

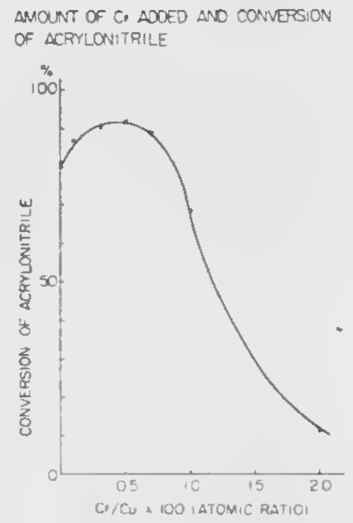
Tokuzo Kurata; Takeshi Okano; Kunihiko Ohfuchi, all of Kitakyushu; Akio Tamaru, Yokohama; Yoshifumi Murata, Kitakyushu, and Saburo Nagashima, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Nov. 17, 1972, Ser. No. 307,622

Claims priority, application Japan, Nov. 19, 1971, 46-092840; Apr. 24, 1972, 47-041172; Sept. 1, 1972, 47-087641

Int. Cl. C07c *103/08*

U.S. Cl. 260—561 N **15 Claims**



1. A process for preparing an amide, which comprises hydrolyzing acrylonitrile or methacrylonitrile to the corresponding amide in the presence of a copper catalyst obtained by reducing copper oxide, copper hydroxide, a copper salt of an inorganic acid, a copper salt of an aliphatic acid or a copper salt of an aromatic acid with formaldehyde in the presence of an alkali in an aqueous medium.

3,939,206

PROCESS FOR PREPARATION OF TERPENE FLAVORANTS AND NOVEL INTERMEDIATES THEREFOR

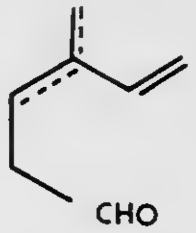
Erhard Bertele, Dubendorf, and Peter Schudel, Grut near Wetzikon, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 742,178, July 3, 1968, Pat. No. 3,872,172. This application Jan. 25, 1974, Ser. No. 436,756

Int. Cl.² C70C *47/20*

U.S. Cl. 260—601 R **2 Claims**

1. A compound of the formula:



3,939,207

METHOD FOR PREPARING ALDEHYDES

Albert Eschenmoser, Bergstrasse 9, Kuesnacht, Zurich, Switzerland

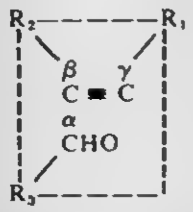
Continuation-in-part of Ser. No. 856,478, Sept. 9, 1969, abandoned. This application Mar. 16, 1973, Ser. No. 341,829

Claims priority, application Switzerland, Sept. 19, 1968, 14014/68

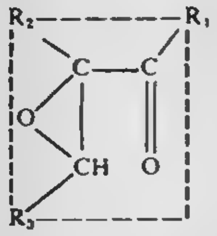
Int. Cl.² C07C *47/20*

U.S. Cl. 260—601 R **13 Claims**

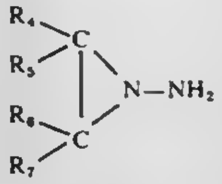
1. Process for the manufacture of an aldehyde of the formula



in which either R_1 and R_3 together represent alkylene with 2 or 3 chain carbon atoms, or R_2 and R_3 together represent alkylene with 3 or 4 chain carbon atoms and the remaining R_2 or R_1 is hydrogen or lower alkyl, which comprises condensing a compound of the formula



wherein R_1, R_2 and R_3 have the above meanings, with the aminoaziridine of the formula



in which R_4, R_5, R_6 and R_7 each represents a member selected from hydrogen, lower alkyl, lower alkenyl, lower cycloalkyl, phenyl, tetrahydronaphthyl or phenyl substituted by at least one halogen, lower alkyl or phenyl, or R_5 and R_6 together are alkylene with 3 to 5 carbon atoms and R_4 and R_7 are hydrogen, at about room temperature and heating the condensation product to about 170° until the evolution of molecular nitrogen ceases.

3,939,208

PROCESS FOR PREPARING METHACROLEIN FROM ISOBUTENE AND OXYGEN

Enrico Cavaterra, Saronno; Donato Petrera, Arenzano; Francesco Pignataro, and Gabriele Colucci, both of Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed July 23, 1974, Ser. No. 491,062

Claims priority, application Italy, July 24, 1973, 26969/73

Int. Cl.² C07C *45/04*

U.S. Cl. 260—604 R **2 Claims**

1. A process for obtaining methacrolein from isobutene by reaction thereof in a gaseous phase with oxygen or oxygen containing gaseous mixtures, at a temperature comprised between 350° and 500°C, characterized in that in said process there is used a catalytic system consisting of a chemical combination of the elements: tellurium, cerium, molybdenum, at least one element selected from the group consisting of Na, K, Li, Rb and Cs, and, in addition, of oxygen, the different elements being present in the catalytic system in atomic ratios

represented by the following formula: $Me_vTe_xCe_yMo_{12}O_z$, wherein Me is Na, K, Li, Rb, Cs or mixtures thereof, $v = 0.3 - 18$, $x = 0.3 - 24$, $y = 0.3 - 21$ and z corresponds to the quantity of oxygen bound to the other elements and corresponding to their state of oxidation in the catalyst.

3,939,209
ACETALDEHYDE PRODUCTION

Morgan C. Sze, Upper Montclair, and Ruey H. Wang, Parsippany, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Division of Ser. No. 183,788, Sept. 27, 1971, Pat. No. 3,869,518. This application Feb. 24, 1975, Ser. No. 552,534

Int. Cl.² C07C *45/04*

U.S. Cl. 260—604 AC **16 Claims**

1\. A process for producing acetaldehyde and vinyl chloride, comprising:

contacting a molten mixture comprising a multivalent metal chloride in both its higher and lower valence state and the corresponding oxychloride in an amount sufficient to provide oxygen requirements for acetaldehyde production, said multivalent metal being selected from the group consisting of copper, chromium, cobalt, maganese and iron with a gaseous feed comprising a hydrocarbon selected from the group consisting of ethane, ethylene and mixtures thereof and further comprising ethyl chloride in an amount sufficient to prevent net production thereof, said contacting being effected at a temperature from about 700°F to about 1000°F, in the essential absence of added chlorine and hydrogen chloride to produce a gaseous effluent comprising acetaldehyde and vinyl chloride.

3,939,210
SELECTIVE OXYALKYLATION OF MERCAPTOPHENOLS

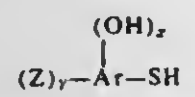
Francis J. Bajer, Depew, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,316

Int. Cl.² C07C *149/36*

U.S. Cl. 260—609 F **8 Claims**

1\. A process for the selective oxyalkylation of a mercaptophenol of the formula:



$$(Z)_y\text{—}\overset{\overset{\textstyle (OH)_x}{|}}{Ar}\text{—}SH$$

wherein Ar is mono, di, tri or poly atomic phenol; each Z is independently selected from the group consisting of hydrocarbon, halogen or hydrogen and the sum of X and Y is the total remaining substitutable positions of Ar, comprising reacting said mercaptophenol with a silylating agent containing the silyl grouping

R_nSi^-

wherein R is a monovalent hydrocarbon radical and *n* is from 0 to 3, oxyalkylating the mercapto function of the resulting silylated mercaptophenol to the degree of oxyalkylation desired and therefrom hydrolyzing the product.

3,939,211
CATALYTIC OXIDATION OF HYDROCARBONS

Richard Harvey Spector, S. Brunswick Township, and Richard Keith Madison, Murray Hill, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed July 11, 1974, Ser. No. 487,848

Int. Cl.² C07C *179/02*

U.S. Cl. 260—610 B **10 Claims**

1\. A process for preparing beta-isopropylnaphthalene hydroperoxide which comprises intimately contracting, with agitation beta-isopropylnaphthalene dispersed in an alkaline, aqueous medium with molecular oxygen at a temperature of from about 75° to 100°C. in the presence of 25 to 1000 parts per million parts of beta-isoproplynaphthalene of a heavy metal catalyst selected from the group consisting of the nickel'' complex of α,α'-(ethylenedinitrilo)di-o-cresol, tris(triphenylphosphine)rhodium (1) chloride and bis(triphenylphosphine) iridium carbonylchloride.

3,939,212
CHLORINATED AND BROMINATED CARBOCYCLIC DIETHERS

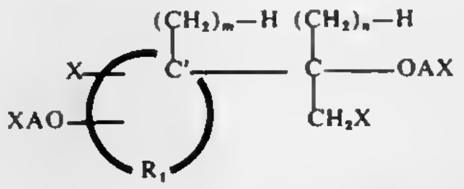
Corwin J. Bredeweg, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 4, 1972, Ser. No. 311,456

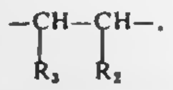
Int. Cl.² C07C *43/18, 43/28*

U.S. Cl. 260—611 R **11 Claims**

1\. A compound represented by the formula



wherein each X is independently chlorine or bromine, A is a vicinal alkylene of from 2 to about 8 carbon atoms, R_1 is an alkylene of from 4 to 7 carbon atoms, two terminal carbon atoms of which are joined to C' to form a carbocyclic ring upon which X- and XAO- are vicinally substituted and m and n are independently zero or 1, provided that when A has the formula



$$\text{—}\underset{\textstyle R_3}{\underset{|}{C}H}\text{—}\underset{\textstyle R_2}{\underset{|}{C}H}\text{—}.$$

one of R_2 and R_3 is hydrogen and the other is hydrogen or an alkyl, monohydroxyalkyl, monochloroalkyl or monobromoalkyl group of from 1 to 6 carbon atoms.

3,939,213
PREPARATION OF POLYALKOXYALKYL COMPOUNDS

Edwin H. Homeier, Maywood, and Robert A. Dombro, Arlington Heights, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed May 20, 1974, Ser. No. 471,515

Int. Cl.² C07C *41/02, 41/06*

U.S. Cl. 260—615 B **9 Claims**

1\. A process for the preparation of a polyalkoxylated alkane which comprises treating, at a temperature of about 100°C. to about 500°C. and a pressure of from 1 to about 100 atmospheres, an alkene having from 4 to 18 carbon atoms with ethylene oxide or propylene oxide in a hydrogen atmosphere in the presence of a catalyst selected from the group consisting of transition metal chlorides, hydroxides, acetates, and decacarbonyls and π-cyclopentadienyl derivatives of transition metal chlorides or oxides.

3,939,214
OXIDATION OF AROMATIC COMPOUNDS WITH A TETRAVALENT LEAD OXIDATION SYSTEM

Robert Allan Campbell Rennie, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 27, 1971, Ser. No. 147,607

Claims priority, application United Kingdom, June 8, 1970, 27540/70

Int. Cl.² C07C *37/00, 27/16, 49/82;* C07D *215/14*

U.S. Cl. 260—621 G **11 Claims**

1\. A process for the liquid phase oxidation of an aromatic compound containing a benzene ring with at least one unsubstituted carbon atom to give an aromatic compound containing a hydroxy substituted benzene ring or the corresponding ester, which process comprises treating an aromatic compound selected from the group consisting of alkyl benzenes, diphenyl ether, diphenyl, naphthalene, anthracene, phenanthrene, quinoline and isoquinoline, with a homogeneous solution of a soluble salt of an alkali metal and a tetravalent lead compound dissolved in a strong liquid acid having a pKa less than about 1.5 at a concentration of 0.1 to 0.01 N at ambient temperature whereby said aromatic compound is oxidized to the corresponding hydroxy substituted compound or ester thereof, said strong acid comprising between 50 and 100% by volume of the solution and being selected from the group consisting of perchloric acid, fluoboric acid, trifluoroacetic acid, dichlorofluoroacetic acid and chlorodifluoroacetic acid.

3,939,215
CHEMICAL PROCESS

Lloyd E. Goddard, Orangeburg, S.C., assignor to Ethyl Corporation, Richmond, Va.

Filed May 22, 1974, Ser. No. 472,352

Int. Cl.² C07C *39/06, 37/22*

U.S. Cl. 260—624 A **5 Claims**

1\. A method of removing aluminum from a sec-alkylphenol composition, said composition resulting from the alkylation of phenol with a sec-alkyl precursor olefin in the presence of an aluminum phenoxide catalyst, said composition containing aluminum, said method comprising (a) adding to said sec-alkylphenol composition an aqueous solution of an alkali metal hydroxide in an amount such that said alkali metal hydroxide is in stoichiometric excess of said aluminum to form a caustic mixture, (b) heating said caustic mixture at about 30°–150°C, (c) adding to said caustic mixture a mineral acid in an amount in stoichiometric excess of said alkali metal hydroxide to form an acidic mixture, (d) heating said acidic mixture at 30°–150°C and (e) removing the acidic aqueous phase leaving a substantially aluminum-free sec-alkylphenol composition.

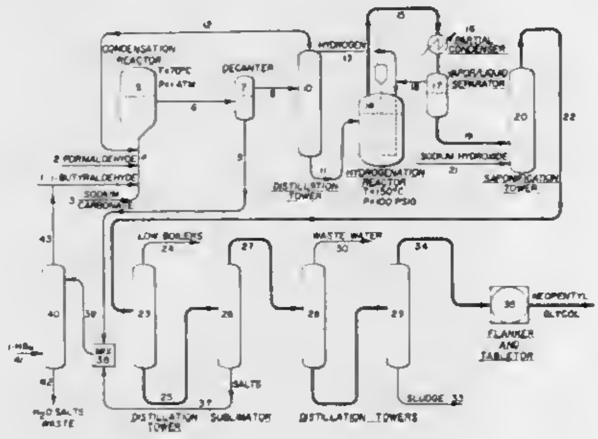
3,939,216
PROCESS FOR THE PREPARATION OF NEOPENTYL GLYCOL

Roger L. Wright, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 26, 1974, Ser. No. 483,321

Int. Cl.² C07C *29/00*

U.S. Cl. 260—635 P **4 Claims**



1\. In a process for producing neopentyl glycol of high purity wherein isobutyraldehyde and formaldehyde are reacted in a condensation reactor in the presence of a condensation catalyst to form a reaction mixture containing hydroxypivaldehyde; said reaction mixture is separated into an organic component containing hydroxypivaldehyde and an aqueous component containing the spent catalyst; which hydroxypivaldehyde-containing component is then reduced to produce neopentyl glycol; saponified with caustic to cleave hydroxypivaldehyde esters present in the crude neopentyl glycol-containing reaction mixture; and the resulting mixture sublimated by passing steam through the saponified reaction mixture in a sublimator, the sublimator being at a temperature of about 70°C. to about 140°C.; the improvement which comprises mixing residue from the sublimator base with the aqueous spent catalyst-containing component from the condensation reactor to provide a liquid mixture, extracting the organic materials from the mixture with sufficient isobutyraldehyde to provide a minimum isobutyraldehyde to water ratio in the extractor of about 0.18 to 1.0, and utilizing the resultant isobutyraldehyde extract as a feed to the condensation reactor.

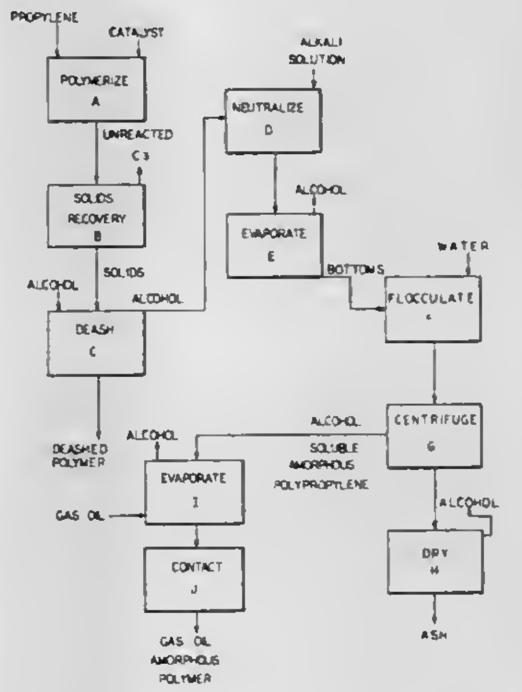
3,939,217
ALCOHOL PURIFICATION PROCESS

Herbert W. H. Meyer, Jr., Baytown, Tex., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Feb. 24, 1975, Ser. No. 552,654

Int. Cl.² C07C *29/24*

U.S. Cl. 260—643 D **13 Claims**



1\. A process for the recovery of lower alkanol used to deash alpha-olefin polymer wherein the alkanol after deashing comprises a mixture of said alkanol, contaminates and amorphous alpha-olefin polymer which comprises adding a minor amount of water to said mixture to form a floc containing a substantial portion of said contaminates, centrifuging said mixture to remove the floc therefrom, and thereafter evaporating to recover alkanol.

3,939,218
P-TERT-BUTYL-DIPHENYLALKANE INSECTICIDES

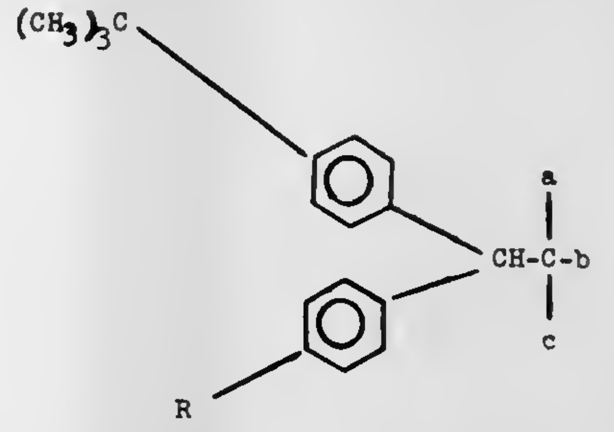
Jerry G. Strong, Warren, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 23, 1974, Ser. No. 499,866

Int. Cl.² C07C *25/18*

U.S. Cl. 260—649 DD **4 Claims**

1\. A compound having the following general structure:



wherein R is selected from the group consisting of CH_3 and C_2H_5, *a* is chloro, *b* is selected from the group consisting of CH_3 and C_2H_5 and *c* is hydrogen.

3,939,219

HYROGENATION OF UNSATURATED COMPOUNDS

Geoffrey Wilkinson, London, England, assignor to Johnson, Matthey & Co., Limited, London, England

Continuation-in-part of Ser. No. 53,031, July 7, 1970, Pat. No. 3,725,305. This application Feb. 6, 1973, Ser. No. 330,106

Claims priority, application United Kingdom, July 14, 1969 35249/69

Int. Cl.² C07C *5/02, 5/04, 5/06, 5/08*

U.S. Cl. 260—666 P **22 Claims**

1. A process for the homogeneous liquid phase hydrogenation of an olefinically or acetylenically unsaturated hydrocarbon to produce a hydrocarbon having a lower degree of unsaturation by contact of the said starting hydrocarbon with molecular hydrogen in the presence of a catalyst solution containing a catalytically effective amount of a cation selected from the group consisting of:

M_2^{n+}
$M_2(OCOR)_{4-n}^{n+}$
$M_2(OCSR)_{4-n}^{n+}$
and
$M2(SCSR)_{4-n}^{n+}$

the said solution being prepared by the addition of strong acid to a solution of a compound selected from the group consisting of

$M_2(OCOR)_4$
$M_2(OCOR)_4L$
$M_2(OCOR)_4L_2$
$M_2(OCSR)_4$
$M_2(OCSR)_4L$
$M_2(OCSR)_4L_2$
$M_2(SCSR)_4$
$M_2(SCSR)_4L$
and
$M_2(SCSR)_4L_2$

where M is a metal selected from the group consisting of Mo, Cr, Cu, Re and metals of the platinum group;
R is selected from the group consisting of methyl and phenyl;
L is a ligand selected from the group consisting of H_2O, CH_3OH, C_2H_5OH, pyridine, Cl^- and Br^-;
n is a positive integer from 1 to 4;
(OCOR) represents a carboxylate radical;
(OCSR) represents a thiocarboxylate radical, and
(SCSR) represents a diethiocarboxylate radical,
and the said solution including a stabilising amount of a donor ligand selected from the group consisting of pyridine, quinoline, dimethylaniline, dibutyl sulphide, dimethyl sulphoxide, triphenyl phosphine oxide, phenyl isocyanide, acetonitrile, phosphorus tri-isocyanate, phosphorus triisothiocyanate, stannous halide, germanium (II) halide and a ligand having the formula MR'_3 where M is selected from the group consisting of phosphorus, arsenic and antimony and the R′ substituents, which may be the same or different, are selected from the group consisting of alkyl and aryl radicals.

3,939,220

DEHYDROGENATION METHOD AND MULTIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 304,177, Nov. 6, 1972, Pat. No. 3,790,473, which is a continuation-in-part of Ser. No. 142,079, May 10, 1971, Pat. No. 3,702,294, which is a continuation-in-part of Ser. No. 819,114, April 24, 1969, abandoned, and Ser. No. 807,910, March 17, 1969, Pat. No. 3,740,328. This application Jan. 18, 1974, Ser. No. 434,746

Int. Cl.² C10G *35/06;* **C07C** *3/28, 5/32;* **B01J** *23/62*

U.S. Cl. 260—668 D **17 Claims**

1. A catalytic composite comprising a combination of a platinum or palladium component, an iridium component, a rhenium component, a tin component and an alkali or alkaline earth component with a porous carrier material in an amount sufficient to result in a composite containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % iridium, about 0.01 to about 2 wt. % rhenium, about 0.01 to about 5 wt. % tin and about 0.01 to about 5 wt. % alkali metal or alkaline earth metal, wherein substantially all of the platinum or palladium component, iridium component, and the rhenium component are present in the corresponding elemental metallic states and wherein substantially all of the tin component is present in an oxidation state above that of the elemental metal.

9. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon with the catalytic composite defined by claim 1 at dehydrogenation conditions.

3,939,221

XYLENES SEPARATION PROCESS

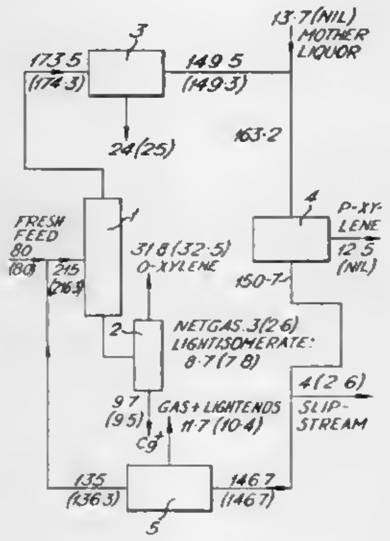
David Pearce, Virginia Water, England, assignor to The British Petroleum Chemical International Ltd., London, England

Filed July 23, 1974, Ser. No. 490,936

Claims priority, application United Kingdom, July 27, 1973, 35842/73

Int. Cl.² C07C *7/13*

U.S. Cl. 260—674 SA **11 Claims**



1. In a continuous process for the separation of a feedstock containing a major proportion of mixed xylene isomers into substantially pure o- and p-isomer fractions by feeding the feedstock to a fractional distillation column in which a fraction containing a major portion of the o-xylene in the feedstock is removed from the bottom of the column and further fractionated to recover substantially pure o-xylene and a major portion of the p-xylene in the feedstock is removed in an overhead fraction, the p-xylene being removed from the overhead fraction by crystallization and the mother liquor therefrom being recycled to the feed after contact with an isomerization catalyst, the improvement which comprises, prior to contacting said mother liquor remaining after crystallization with an isomerization catalyst, the steps of combining said mother liquor with additional mother liquor and contacting said combined mother liquor with a crystalline alumino-silicate active for the selective adsorption of p-xylene the hydrated form of which has the formula:

$$M_{2/n}O : Al_2O_3 : wSiO_2 : yH_2O \qquad (1)$$

wherein M is a cation which balances the electrovalance of the tetrahedra, *n* represents the valence of the cation, *w* represents the number of moles of SiO_2 and y represents the number of moles of water;

and, thereafter recovering the adsorbed p-xylene from said substrate, the amount of said mother liquor added being substantially equal to the quantity of p-xylene recovered from said crystalline alumino-silicate in any given time.

3,939,222

PRODUCTION OF POLYURETHANE PLASTICS

Dieter Dieterich, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 299,513, Oct. 20, 1972, abandoned. This application Apr. 26, 1974, Ser. No. 464,600

Claims priority, application Germany, Oct. 26, 1971, 2153269

Int. Cl.² C08L *75/04*

U.S. Cl. 260—858 **2 Claims**

1. A storage stable dispersion of solid polyurethane or polyurea particles (a) in a liquid prepolymer (b) (liquid or pasty) suitable for the production of polyurethane plastics substantially without the use of added solvents where the dispersion comprises two components

a. 30–80 wt. % solid thermoplastic polyurethane or polyurea particles having particle sizes between 0.5–300μ and a ring and ball softening point below about 200°C. which are insoluble in component b) at temperatures below at least 30°C. and which are soluble in component b) at temperatures above about 80°C. as noncoherent disperse phase and
b. 20–70 wt. % of a liquid polyurethane prepolymer as coherent phase.

3,939,223

BARRIER RESINS AND IMPACT MODIFIERS THEREFOR

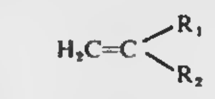
John A. Powell, Willingboro, N.J., and Alan Williams, Richboro, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 27, 1972, Ser. No. 248,147

Int. Cl.² C08L *51/00, 53/00*

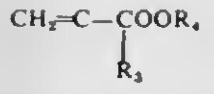
U.S. Cl. 260—876 R **3 Claims**

1. An impact-modified barrier resin composition having a superior balance of properties comprising a blend of (A) from about 60 to 80 weight percent of a polymer of from about 50 to 90 weight percent acrylonitrile, from about 5 to 28 weight percent of a vinylidene aromatic monomer of the formula



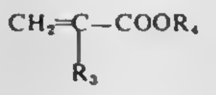
$$H_2C{=}C\begin{matrix} R_1 \\ R_2 \end{matrix}$$

wherein R_1 is hydrogen, chlorine or methyl and R_2 is a substituted or unsubstituted aromatic radical having from 6 to 10 carbon atoms and from about 2 to about 25 weight percent of an olefinic ester monomer of the formula



$$CH_2{=}\underset{\displaystyle R_3}{\underset{|}{C}}{-}COOR_4$$

wherein R_3 is hydrogen, an alkyl group having from 1 to 4 carbon atoms or a halogen, and R_4 is an alkyl group of from 1 to 8 carbon atoms, and (B) from about 20 to 40 weight percent of a graft copolymer of (1) from 20 to 60 weight percent of a superstrate polymer polymerized from a monomer mixture comprising from 50 to 90 weight percent acrylonitrile, from 5 to 28 weight percent of vinylidene aromatic monomer and from 2 to 25 weight percent of olefinic ester of the formula



$$CH_2{=}\underset{\displaystyle R_3}{\underset{|}{C}}{-}COOR_4$$

wherein R_3 is hydrogen, halogen, or an alkyl group having from 1 to 4 carbon atoms and R_4 is an alkyl group of from 1 to 6 carbon atoms and (2) from 80 to 40 weight percent of a substrate polymer having a glass transition termperature of temperature than −40°C. comprising 50 to 100 weight percent of a conjugated diene selected from the group consisting of 1,3-butadiene and isoprene, from 50 to 0 weight percent of an ethylenically unsaturated monomer selected from the group consisting of vinylidene aromatic compounds, acrylonitrile, and mixtures thereof, and from 0 to 10 weight percent olefinic ester, provided that said superstrate polymer is at least about 50 percent grafted onto said substrate polymer.

3,939,224

BLOCK COPOLYMERS FOR A SHEET OR FILM

Shigeki Horiie, Yokohama; Shin-Ichiro Asai, and Yoshihisa Moriya, both of Tokyo, all of Japan, assignors to Kenki Kagaku Kogyo Kasushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1973, Ser. No. 423,617

Int. Cl.² C08F *236/00, 4/46*

U.S. Cl. 260—880 B **5 Claims**

1. A block copolymer comprising 70 ~ 85% by weight of a styrene-type unit and 15 ~ 30% by weight of a conjugated diene unit prepared from a mixture of styrene-type monomers and conjugated diene monomers in a non-polar organic solvent with use of a poly-functional organolithium compound as an initiator, said mixture containing 30 ~ 70% by weight of said styrene-type monomers, wherein a first polymerization is effected, after which additional styrene-type monomers are added in such amount that the content of styrene units accounts for the proportion of 70 to 80% by weight of the finally obtained block copolymer when 40% or more of the diene monomers added have been converted to a copolymer, and effecting a polymerization to completion.

3,939,225

LENSES FOR EXTERIOR VEHICLE LAMPS

William J. Hall, Brimfield, and Robert A. Myers, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 19, 1973, Ser. No. 426,380

Int. Cl.² C08L *9/06*

U.S. Cl. 260—880 R **12 Claims**

1. A method for covering the light source in exterior lamps in vehicles which method comprises covering the lamp with a lens which is the polymerization product of (1) from 55 to 85 percent by weight of an ethylenically unsaturated nitrile monomer selected from the group consisting of acrylonitrile and mixtures of acrylonitrile and methacrylonitrile which contain up to 20 percent by weight of methacrylonitrile based on the total weight of acrylonitrile and methacrylonitrile; and (2) from 15 to 45 percent by weight of a monovinylidene aromatic hydrocarbon monomer which is copolymerizable with the nitrile monomer; and which further contains a rubber compo-

nent having a refractive index which is substantially the same as the refractive index of the acrylonitrile polymer, wherein the rubber component comprises:

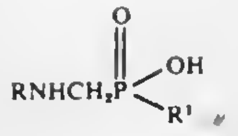
A. A butadiene-styrene rubbery substrate having a butadiene content of 68 to 72 percent by weight and a styrene content of 28 to 32 percent by weight based on the total weight of the butadiene-styrene rubbery substrate which rubbery substrate is further characterized as having a refractive index in the range of from 1.5375 to 1.5475, a particle size in the range of from 0.06 to 0.2 micron, a gel content in the range of from 40 to 95 percent, a swelling index in the range of from 10 to 40, and a second order transition temperature (Tg) less than −40°C.; and

B. a superstrate grafted onto the rubbery substrate which superstrate comprises:
  1. the polymerization product of a first polymerizable monomer composition comprising:
     a. from 0.1 to 2 percent by weight of a nonconjugated diolefin monomer;
     b. from 0 to 30 percent by weight of an ethylenically unsaturated nitrile monomer selected from the group consisting of acrylonitrile, and mixtures of acrylonitrile and methacrylonitrile which contain up to 20 percent by weight of methacrylonitrile;
     c. from 40 to 60 percent by weight of a vinylidene aromatic hydrocarbon monomer; and
     d. from 20 to 50 percent by weight of an alkyl ester of acrylic or methacrylic acid wherein the alkyl group contains from 1 to 8 carbon atoms, wherein the percent by weight is based on the total weight of the monomer in the first polymerizable monomer mixture; and
  2. a second polymerizable monomer composition comprising from 55 to 85 percent by weight of an ethylenically unsaturated nitrile monomer selected from the group consisting of acrylonitrile and mixtures of acrylonitrile and methacrylonitrile which contains up to 20 percent by weight of methacrylonitrile based on the total weight of acrylonitrile and methacrylonitrile and from 15 to 45 percent by weight of a monovinylidene aromatic hydrocarbon monomer wherein the percent by weight is based on the total weight of the monomers in the second polymerizable monomer mixture;

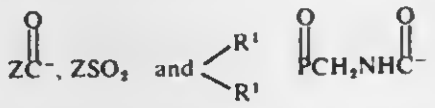
wherein the grafted superstrate contains a total of at least 40 percent by weight ethylenically unsaturated nitrile monomer and wherein the ratio of grafted superstrate to substrate is in the range of from 15-200:100, wherein the amount of rubber in the polymerization product calculated on the weight of the rubber prior to grafting, is in the range of from 10 to 30 percent by weight.

3,939,226
PHOSPHONOMETHYL COMPOUNDS
Daniel J. Scharf, Cheektowaga, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.
Filed Jan. 7, 1974, Ser. No. 431,195
Int. Cl.² C07F *9/141*
U.S. Cl. 260—932 **31 Claims**

1. A compound of the formula



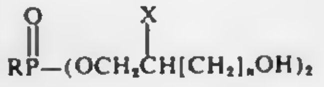
wherein R^1 is selected from the group consisting of ^+OH, alkoxy of 1–6 carbon atoms and aryloxy and R is selected from the group consisting of



wherein Z is ^+OH, alkyl from 1–6 carbon atoms aryl, alkoxy from 1–6 carbon atoms and aryloxy, provided that at least one R^1 is selected from the group consisting of alkoxy of 1–6 carbon atoms or aryloxy.

3,939,227
BIS(HYDROXY AND HALO ALKYL) ALKYL OR ARYL PHOSPHONATES
Siegfried Altscher, Monsey, and Jagadish C. Goswami, New City, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.
Filed July 29, 1974, Ser. No. 492,562
Int. Cl.² C07F *9/40*; C08J *9/00*
U.S. Cl. 260—953 **6 Claims**

1. Compounds of the formula



$$\overset{O}{\overset{\|}{RP}}-(OCH_2\overset{X}{\overset{|}{C}}H[CH_2]_nOH)_2$$

where *n* is an integer from 1 to 8, R is selected from the group consisting of C_1-C_{20} alkyl, phenyl and halo- substituted C_1-C_{20} alkyl and phenyl and X is halogen.

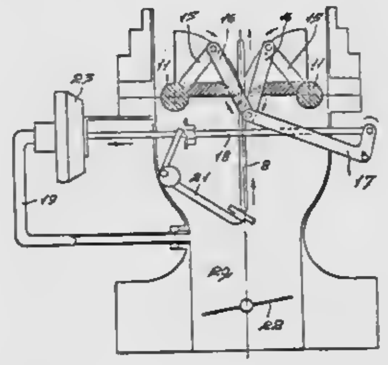
3,939,228
PROCESS FOR PRODUCING PHOSPHAZENE COMPOUND
James T. F. Kao, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 4, 1973, Ser. No. 347,833
Int. Cl.² C07F *9/15*
U.S. Cl. 260—973 **8 Claims**

1. A process for the manufacture of phosphazene compounds consisting essentially of reacting alkali metal alkoxide having from 1 to about 6 carbon atoms or alkali metal phenoxide with a phosphonitrilic halide at from about 70° to about 150°C in a reaction medium consisting essentially of a liquid paraffinic hydrocarbon and an inert chloroaromatic hydrocarbon solvent.

3,939,229
PREPARATION OF ALIPHATIC PHOSPHATES
Ingenuin Hechenbleikner, West Cornwall, and William Plamer Enlow, Falls Village, both of Conn., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Dec. 4, 1974, Ser. No. 529,672
Int. Cl.² C07F *9/11, 9/113*
U.S. Cl. 260—985 **7 Claims**

1. A process for preparing aliphatic phosphates comprising contacting a trialkyl or trialkenyl phosphite with oxygen in the presence of a metal catalyst selected from the class consisting of chromium, copper, tin or cobalt catalysts, at a temperature of from about 20°C to about 60°C.

3,939,230
CARBURETORS
Arpad Simon, Nova Iquacu City, Brazil, assignor to Atom Auto Pecas Ltd., Nova Iquacu City, Brazil
Filed Dec. 7, 1971, Ser. No. 205,611
Claims priority, application Brazil, Jan. 18, 1971, 320
Int. Cl.² F02M *9/08*
U.S. Cl. 261—50 A **1 Claim**



1. In carburators for internal combustion engines comprising two articulate venturi blocks which in combination produce between them a variable aperture, said blocks being mounted in the intake path of the carburator and being combined with a diaphragm control device which actuates a feeding needle valve located inside a feed nozzle connected with a constant level float chamber providing fuel, the improvement

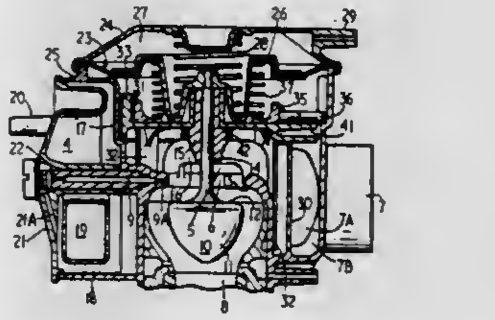
wherein said two variable aperture venturi blocks are similarly shaped and are pivotally mounted on two spaced parallel pivoting axes so as to swing inwardly and downwardly and vice-versa, describing an arc of approximately 90 degrees, said venturi blocks being so shaped that a small aperture is formed between them when in their elevated position, said aperture widening as the blocks swing inwards and downwards on account of the particular configuration given to said blocks, said aperture being located directly above said feed nozzle;

wherein said feed nozzle stands vertically and the wall of the lower end of said feeding nozzle tapers downwards and displays around its tapered periphery a plurality of spraying outlets, the bore of said feed nozzle above said tapering lower end being substantially cylindrical, but tapering internally into a narrow passage and tapering out again, thus forming two small chambers, one above and one below said narrow passage, said lower chamber being located immediately above the final lowermost tapering, wherein said plurality of spraying outlets is located; and

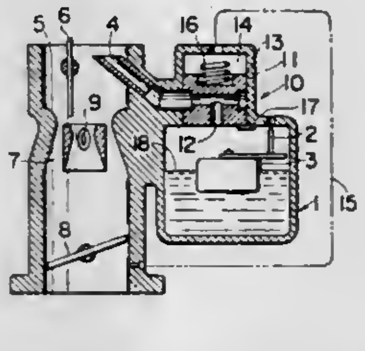
wherein said feeding needle valve includes a downwardly tapered feeding needle freely mounted in said feed nozzle and a generally cylindrical seat internally mounted in threaded relationship — allowing vertical shifting — on the lower tapered end of said feed nozzle, said feeding needle being capable of abutting the upper end of said cylindrical seat.

3,939,231
CARBURETTORS AND ASSOCIATED COMPONENTS
William Henry Steele, Bonnet Bay, and George Nejtek, Condell Park, both of Australia, assignors to Victa Limited, Milperra, Australia
Filed Sept. 19, 1973, Ser. No. 398,800
Claims priority, application Australia, Sept. 20, 1972, 507/72
Int. Cl.² F02M *1/02, 9/12*
U.S. Cl. 261—62 **13 Claims**

1. A carburettor for deriving a fuel/air mixture for application to a gas engine subject to changing loads, comprising a housing, individual inlet means to said housing for fuel and air, a fuel/air mixing chamber in said housing connected to an outlet, a valve seat in said housing and in the path of fuel and air passing from said inlet means to said chamber, an axially displaceable valve co-operating with said valve seat to control the flow of fuel and air to said chamber, a second chamber in said housing, an element movable within said second chamber and dividing said second chamber into two compartments and connected to said valve to open and close said valve, a manually operable throttle control for said engine including a rotatable throttle control member within said housing and coaxial with said valve and connected with said movable element to change the position thereof within said second chamber to determine the open condition of said valve with respect to said valve seat, said open condition corresponding to a selected speed of said engine, resilient means for biasing said movable element to said changed position, and an automatic speed governor control for said engine including means for fluid connection with a first one of said compartments for communicating thereto fluid pressure changes indicative of changes in speed of said engine, said fluid pressure changes effecting movement of said movable element with respect to its said changed position to increase said open condition of said valve with decreasing speed of said engine and to decrease said open condition of said valve with increasing speed of said engine, thereby maintaining substantially uniform speed of said engine corresponding to said selected speed.



3,939,232
CARBURETOR
Keizo Higashigawa, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan
Filed June 20, 1974, Ser. No. 481,324
Claims priority, application Japan, Dec. 10, 1973, 48-136832
Int. Cl.² F02M *5/02*
U.S. Cl. 261—72 R **10 Claims**



1. In a carburetor having an air horn, a choke valve, a venturi, a throttling valve, a discharge nozzle, a float chamber, and an air vent in communication with said float chamber, the improvement comprising valve means located between said float chamber and said air vent for closing said air vent under the pressure of fuel within said chamber when a vehicle is excessively inclined or upset, said valve means comprises a valve box and a piston-shaped valve movable within said valve box, said valve means including an upper chamber formed between said piston-shaped valve and said valve box, and a negative pressure transmission line having one end connected to said upper chamber and the other end connected to the intake manifold of the carburetor.

3,939,233
METHOD FOR THE PRODUCTION OF SPHERICAL PARTICLES

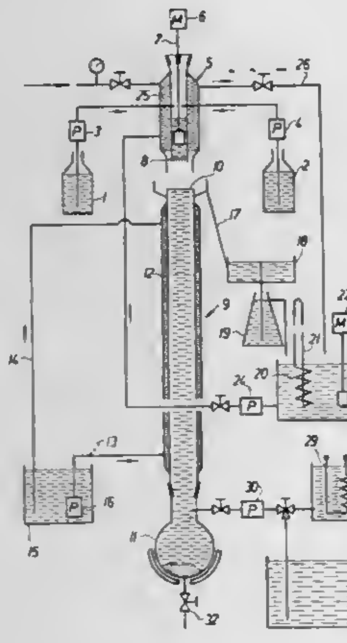
Hubert Bildstein, Vienna; Karl Knotik, Siegendorf, and Peter Leichter, Vienna, all of Austria, assignors to HOBEG Hochtemperaturreaktor-Brennelement GmbH, Grossauheim, Germany

Filed Nov. 17, 1972, Ser. No. 307,561

Claims priority, application Austria, Nov. 18, 1971, 9980/71

Int. Cl. B01j *2/06*

U.S. Cl. 264—13 4 Claims



1. A method of producing spherical solid particles comprising the steps of:
   a. suspending solid grains of at least one powdered substance selected from the group which consists of graphite, soot, boron oxide, amorphous boron, boron carbide, amorphous silicon, silicon oxide and silicon carbide in an aqueous solution of at least two mutually condensable organic compounds capable of forming upon curing at an elevated temperature a synthetic resin, one of said compounds being selected from the group which consists of resorcinol and urea, the other of said compounds being an aldehyde condensable with said one of said compounds;
   b. forming droplets of the suspension of said grains of said powdered substance in said solution;
   c. passing said droplets downwardly through a column of a liquid immiscible with said solution and at a temperature of substantially 80° to 100°C and sufficient to induce condensation of said compounds to form said synthetic resin and to cure the resulting synthetic resin, thereby forming particles in which said grains are distributed in a synthetic resin matrix;
   d. separating the latter particles from said liquid; and
   e. heating the particles separated in step (d) to a temperature of substantially 1800° to 2600°C to carbonize said synthetic resin and form graphite and carbides in the heated particles from the carbon formed on carbonization of said synthetic resin.

3,939,234
METHOD FOR SEALING AND STRIPPING A CONCRETE FORM

Stephen S. Dashew, Los Angeles, Calif., assignor to Interform Inc., Compton, Calif.

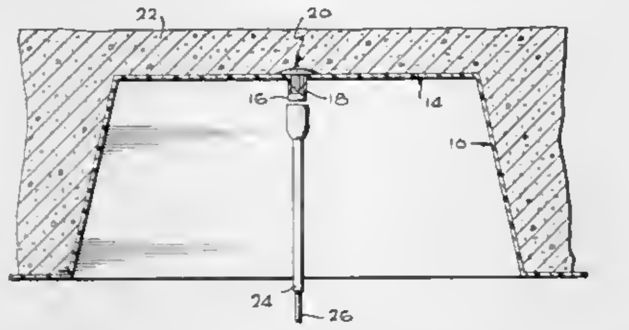
Filed Aug. 14, 1972, Ser. No. 280,348

Int. Cl.^{2} B28B *21/90*

U.S. Cl. 264—31 1 Claim

1. A method for sealing and stripping a form of a type which has an air hole extending through a wall of the form comprising:

inserting through the air hole in an interference fit with the walls thereof, the shaft of a cap which has a thin dome with a concave inner surface at one end of the shaft, and depressing the center of the dome towards the form wall to deform the dome so it has a central dimple;



pouring concrete over the form and allowing it to at least partially set; and

applying a gas conduit to said air hole at the inside of the form and blowing gas under pressure therethrough to provide a layer of pressured gas between the concrete and form wall to loosen the form.

3,939,235
PROCESS FOR CONTINUOUS PRODUCTION OF THIN POLYURETHANE FOAM LAYERS

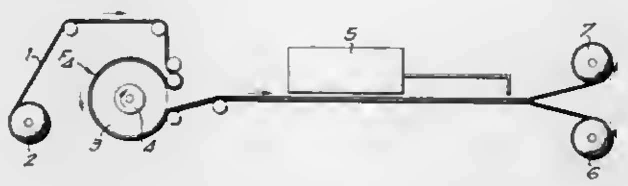
Willy F. Poppe, Sint-Niklaas, Belgium, assignor to Serpo, Sint-Niklaas, Belgium

Filed Mar. 19, 1974, Ser. No. 452,537

Claims priority, application Belgium, Mar. 30, 1973, 797553

Int. Cl.^{2} B29D *27/04*

U.S. Cl. 264—46.6 4 Claims



1. Process for the continuous production of polyurethane foam layers comprising the steps of:
   a. moving a band-like supporting layer longitudinally;
   b. guiding said moving supporting layer at a particular location so as to form a section having a substantially cylindrical shape, the axis of said cylindrically shaped section being horizontal and being perpendicular to the direction of travel of said supporting layer;
   c. rotating a disk within said cylindrically shaped section of said moving supporting layer; and simultaneously
   d. projecting a foamable polyurethane reaction mixture on said moving supporting layer of said cylindrically shaped section; and simultaneously
   e. reciprocally moving said rotating disk first in one direction and then in the opposite direction along said axis.

3,939,236
METHOD FOR BLOW MOLDING FOAMED WALLED PLASTIC OPEN MOUTHED CONTAINERS

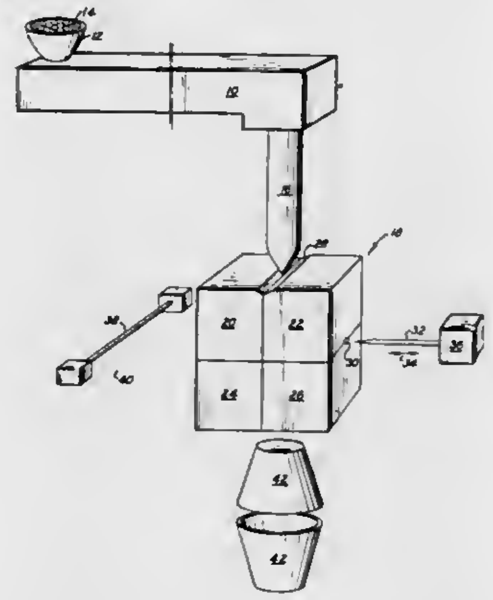
Granville J. Hahn, Dallas, Tex., assignor to Cosden Oil & Chemical Company, Big Spring, Tex.

Continuation-in-part of Ser. No. 81,488, Oct. 16, 1970, abandoned. This application Jan. 24, 1973, Ser. No. 326,568

Int. Cl.^{2} B29C *17/07, 17/14;* B29D *27/00*

U.S. Cl. 264—53 4 Claims

1. A method for blow molding foamed walled plastic open-mouthed containers which comprises extruding foamed plastic through an annular orifice to form a foamed parison of tubular configuration, having foamed walls pinching a lower section of the tubular configuration within a lower portion of a sectional mold, pinching an upper portion of the tubular configuration within an upper portion of a sectional mold, introducing a gas through a hollow needle inserted at a point through a center portion of said mold and parison therein and blowing the tubular configuration with a gas introduced through said needle at said point to form a hollow foam-walled body assuming the contour of the closed mold and severing the molded hollow article in a single thin cut with a hot severing means passed through the center thereof, including the aperture formed in blowing, into two foamed wall container portions, said severing means melting said plastic as it passes thereby severing said container into clean smooth cut halves and substantially removing the aperture formed by said needle without substantial removal or production of plastic inter-connecting substances as scrap material.



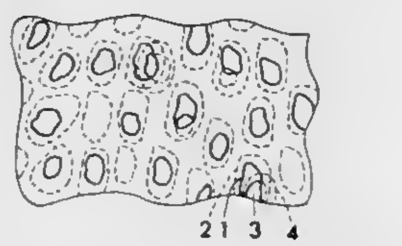
3,939,237
METHOD OF MAKING A FLUID TRANSMITTING POROUS TUBE OR SHEET

Hirokuni Naito, Hino; Isao Yoshimura, Fujisawa, and Hisao Tashiro, Kawasaki, all of Japan, assignors to Asahi Dow, Ltd., Tokyo, Japan

Division of Ser. No. 190,548, Nov. 19, 1971. This application Apr. 22, 1974, Ser. No. 462,592

Int. Cl.^{2} B29D *27/00, 23/04*

U.S. Cl. 264—54 8 Claims



1. A method of making a tube or sheet-shaped fluid transmitting porous material having an extension of 1.2 to 10 times and a thickness of 0.15 to 3 mm. which comprises mixing a polyolefin (A) and a secondary polymer (B) and a decomposition type chemical blowing agent, said secondary polymer (B) being a member selected from the group consisting of:
   1. an ethylene-vinyl ester copolymer of which the vinyl ester content is at least 10% or more by weight based on the copolymer,
   2. a copolymer of ethylene with an unsaturated carboxylic acid ester of which the unsaturated carboxylic acid ester content is at least 10% or more by weight based on the copolymer,
   3. a rubber selected from the group consisting of a natural rubber, a butadiene rubber, a solution-polymerized random copolymer type styrene-butadiene rubber, an emulsion-polymerized random copolymer type styrene-butadiene rubber, a butadiene-acrylonitrile rubber, an iosprene-butadiene rubber, a polyisoprene rubber and an isobutylene-isoprene rubber,
   4. A thermoplastic elastomer selected from the group consisting of a styrene-butadiene block copolymer and a styrene-isoprene block copolymer, and mixtures thereof, said secondary polymer being employed in an amount of

$$5 \leqq \frac{B \times 100}{A + B} \leqq 95\% \text{ by weight;}$$

and continuously subjecting the resulting polymer mixture to extrusion while foaming, to form a film by passage through a die of an extruder; said extrusion moulding being effected under conditions defined by the formula:

$0.15 < S/t_2\ 10$

wherein

$t_2 = t_1/a^{1/3}$

$1.2 < a < 10,$

S represents an average die slit clearance (mm.),

t_2 represents an average thickness of the foaming polymer composition in the state before foaming (mm.),

t_1 represents an average thickness of the porous material (mm.), and

(a)represents an expansion based on the volume of the foaming polymer composition in the state before foaming (times.)

Said extrusion further satisfies the following conditions:

$7 \leqq V \leqq Q/W$

wherein

Q represents an extrusion volume of the extruded porous material from which the contained space volume is subtracted (cm^3/min.),

W represents a cross section area of the die slit (cm^2), and

V represents an extrusion speed calculated from Q and W (cm./min.).

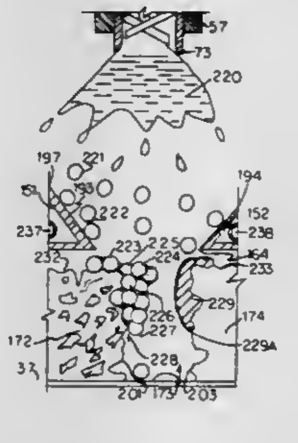
3,939,238
METHOD FOR MANUFACTURE OF FACING BRICKS WITH SHARPLY DELINEATED PORTIONS OF DIFFERENT COLOR AND TEXTURE

Thomas R. Salts, Amarillo, Tex., assignor to Crowe-Gulde, Inc., Amarillo, Tex.

Division of Ser. No. 265,548, June 23, 1970, Pat. No. 3,799,716. This application Dec. 28, 1973, Ser. No. 429,085

Int. Cl.^{2} B28B *1/08*

U.S. Cl. 264—71 7 Claims



1. A process for repeatedly and concurrently making a plurality of colored and coated concrete bricks of differing surface texture and color which process comprises the cycle of steps of
   a. filling each of plurality of verically extending chambers in a mold with concrete mix, vibrating the mold and compacting the concrete mix in each of said chambers to form a plurality of plastic concrete brick masses, and spraying the mold surfaces of each chamber with a first fluid liquid slurry comprising cement and a first pigment prior to each filling of each said chamber of said mold with said concrete mix and thereby distributing said liquid slurry

over surfaces of each of said plastic concrete brick masses adjacent said mold and thereby coloring each of said plastic brick masses prior to removal of each of such plastic masses from said mold; then

b. removing thus-coated brick masses from the mold to thereby provide and thereafter maintaining a longitudinally and transversely extending array of a plurality of vertically extending spaced apart brick masses of predetermined width, depth, and height having between the separate brick masses in said array vertically and longitudinally extending spaces and vertically and transversely extending spaces, said spaced being narrow relative to said width, depth, and height of said brick masses said array of brick masses having between longitudinally neighboring masses of said array longitudinally and horizontally spaced apart parallel transversely and vertically extending surfaces and between transversely neighboring brick masses horizontally and transversely spaced apart parallel longitudinally and vertically extending surfaces, said vertically extending and relatively narrow spaces located between said vertically extending surfaces;

c.
  i. preparing a viscous pigmented cementitious slurry thickened to be selectively adherent to a hydrophyllic wet surface,
  ii. then periodically pressurising and atomizing said viscous pigmented cementitious thickened slurry and forming, at a spray source, a stream of small globules of atomized slurry and, while said brick masses are in a fixed spatial relation to said spray source, directing the said stream of small globules of atomized slurry towards and between and against
    aa. a pair of inwardly sloped guide surfaces, said pair of guide surfaces having a wide opening at its top and a narrow opening at its bottom, said lower opening located above and parallel to the upper edges of a pair of said vertically extending spaced apart surfaces of neighboring brick masses in said array of plurality of spaced apart plastic concrete brick masses, each of said sloped guide surfaces having a slurry repellent surface and located above said vertically extending mass, and said guide surfaces of each said pair of guide surfaces having a common line of intersection below the top surface of said array of spaced apart vertically extending brick masses and within the vertically extending space located between said pair of vertically extending surfaces, and wherein a flat planar extrapolation of each of said surfaces of said pair of guide surfaces extends above the said upper edge of said vertically extending spaced apart surfaces of neighboring brick masses and
    bb. into said vertically extending and relatively narrow spaces between said spaced apart vertically extending surfaces of neighboring brick masses in said array of a plurality of plastic concrete brick masses below said guide surfaces, and developing a turbulent flow of said stream of small globules at the top of the said vertically extending spaces and thereby then
  iii. applying said small globules of atomized slurry selectively to a portion of a vertically extending surface of each of said plastic concrete brick masses in said array in an amount sufficiently thin to be static on said surface of said plastic concrete brick mass and sufficiently thick to provide an optically opaque layer, said portion of said vertically extending surface of each of said plastic concrete brick masses for each of such masses extending from an upper edge of said mass, said upper edge joining two corners of said mass and the contiguous area of a vertically extending surface thereof adjacent to said upper edge to a lower lobular edge, said lower lobular edge spaced away from the bottom edge of said brick, and providing a sharp delineation between each said optically opaque layer and the area of said plastic concrete brick mass surface therebelow

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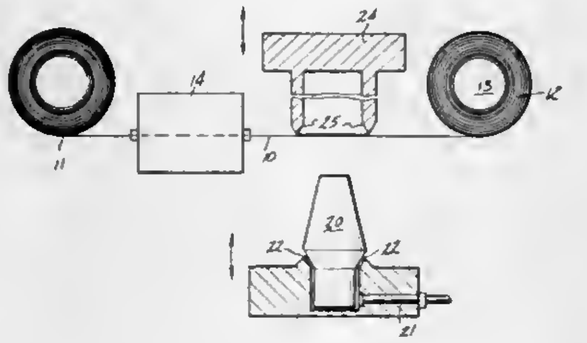
3,939,239

METHOD OF MAKING LINED ARTICLES

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471
Continuation-in-part of Ser. No. 343,498, March 21, 1973, abandoned, which is a division of Ser. No. 186,984, Oct. 6, 1971, Pat. No. 3,787,157, which is a continuation-in-part of Ser. Nos. 71,734, Sept. 14, 1970, Pat. No. 3,717,544, and Ser. No. 100,050, Dec. 21, 1970, Pat. No. 3,719,735. This application June 10, 1974, Ser. No. 477,751
Int. Cl.² B29C *17/07*; B29F *1/10*
U.S. Cl. 264—89 **7 Claims**

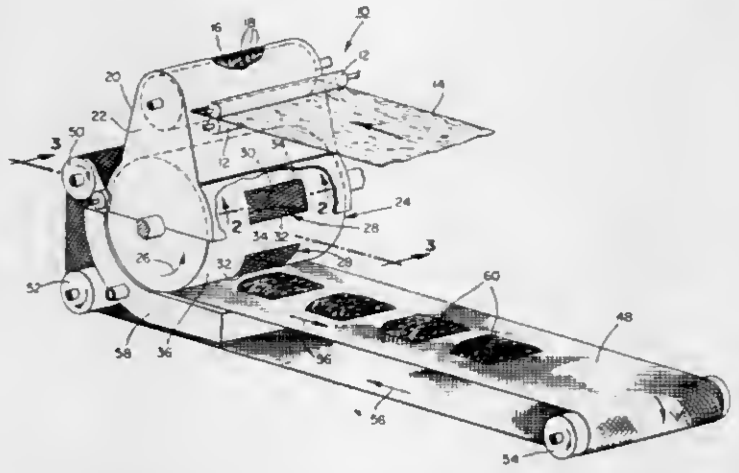


1. A method of making lined, hollow plastic articles wherein a parison is formed on a core in a parison mold by molding plastic around a pre-formed plastic liner on the core in a parison mold cavity and wherein the parison is subsequently expanded in a blow mold, the improvement which comprises providing a supply of a web of plastic liner material, providing a holding means including a cutting means adjacent said web, bringing said web into juxtaposition with said core and holding means, forming said liner directly on said core by moving said core relative to the web and holding means to engage the web by the core and holding means and form the liner on the core by the core and holding means, said moving also severing the formed liner from the web by the cutting means, transferring the core with the formed, severed liner thereon for subsequent operations, and feeding the balance of the web for scrap reclamation.

3,939,240

METHOD FOR FORMING FIBROUS PADS

Peter P. Savich, Longmeadow, Mass., assignor to Scott Paper Company, Philadelphia, Pa.
Filed May 16, 1974, Ser. No. 470,548
Int. Cl.² D04H *1/00*
U.S. Cl. 264—91 **2 Claims**



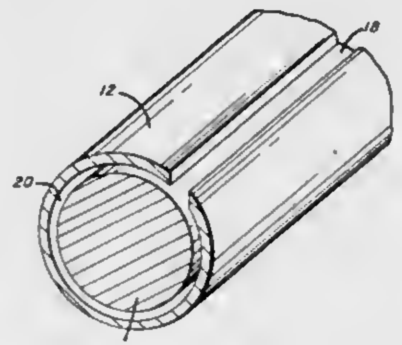
1. A method for forming a fibrous pad by employing a forming member including a cavity having a foraminous forming surface and upper margins defining an opening into said cavity, the area of the foraminous forming surface being greater than the area of the opening bound by the upper margins of said cavity, said method comprising the steps of:

A. forming a gaseous suspension of fibers;
B. establishing a pressure drop across the foraminous forming surface of the cavity to direct the gas of the suspension through the forming surface, and to condense the fibers of the suspension onto the forming surface in the form of a fibrous layer incompletely filling said cavity;
C. directing a transfer conveyor into overlying relationship with, and closely adjacent to the orifice of the cavity after the fibrous layer is formed in said cavity; and
D. transferring the fibrous layer to said transfer conveyor and confining said fibrous layer to a lesser area on the transfer conveyor than it occupied on the foraminous forming surface to form a fibrous pad having a greater basis weight than that of the fibrous layer on the foraminous forming surface.

3,939,241

METHOD FOR POWDER METALLURGY COMPACTING

Joseph W. Powell, Verona Borough, and James N. Fleck, Upper St. Clair Township, Allegheny County, both of Pa., assignors to Crucible Inc., Pittsburgh, Pa.
Filed Oct. 4, 1974, Ser. No. 511,963
Int. Cl.² B22F *3/02*
U.S. Cl. 264—111 **2 Claims**



1. In a method for isostatically compacting powder metallurgy charges by the application of fluid pressure by:
a. filling a generally cylindrical metal container with a powder metallurgy charge,
b. sealing said container,
c. outgassing said container,
d. heating said container and charge to an elevated temperature,
e. applying fluid pressure to the exterior of said heated container to isostatically compact said charge therein to produce a powder metallurgy compact,
f. releasing said pressure and cooling said container and compact, and
g. removing said compact from said container;

the improvement comprising:
h. applying to the interior surface of said container, prior to filling said container with said powder metallurgy charge, a separating medium layer for preventing bonding between said container and compact during application of said fluid pressure,

said container being steel and having a wall thickness of at least one-sixteenth inch, said container collapsing under said applied fluid pressure and establishing residual stresses within said container following the release of said fluid pressure, and
i. slitting said container to release said residual stresses, wherein said residual stresses within said container are sufficient to cause said container to spring open and move away from said formed compact therein.

3,939,242

FABRICATION PROCESS FOR MULTIPHASED PLASTICS

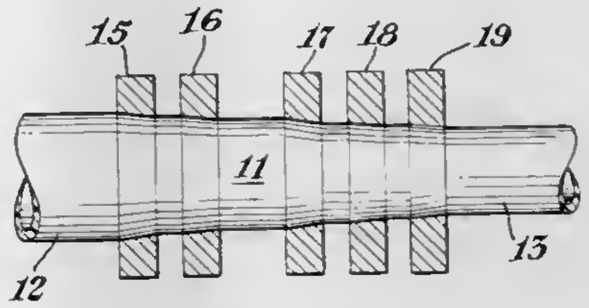
Robert D. Lundberg, Somerville, and Henry S. Makowski, Scotch Plains, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.
Division of Ser. No. 331,628, Feb. 12, 1973, Pat. No. 3,842,154. This application June 28, 1974, Ser. No. 483,977
Int. Cl.² B29B *3/00*
U.S. Cl. 264—294 **6 Claims**

1. A process for fabricating an article from a thermoplastic composition, said composition being a thermoplastic ionomer, i.e., a polymer having a thermoplastic backbone having polar groups selected from the group consisting of carboxylate, sulfonate, and phosphonate groups pendent thereto, said polar groups being present in from at least about 0.2 to about 15 mole % of the total polymer and capable of forming ionic domains, which comprises:
a. adding from about 0.1 to 50 moles per mole of polar group of a volatile preferential plasticizer to said ionomer, said plasticizer being dispersible in said ionomer, liquid during the processing of said ionomer, having a boiling point substantially above the softening point of the thermoplastic backbone and possessing at least one functional constituent exhibiting a bond moment whose absolute value is at least 0.6 debyes;
b. heating said ionomer to a temperature between the softening point of the thermoplastic backbone and the boiling point of the plasticizer;
c. forming said ionomer in a first desired shape at the temperature specified in step (b);
d. evolving said volatile plasticizer;
e. re-forming the product of step (d) in a second desired shape; at a temperature above the softening point of the thermoplastic backbone but below the ultimate softening point; and
f. cooling below the softening point of the thermoplastic backbone.

3,939,243

TUBE TREATING AND METHOD

David H. Dawson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Aug. 19, 1974, Ser. No. 498,680
Int. Cl.² B29D *23/01*
U.S. Cl. 264—296 **5 Claims**



1. A method for the preparation of a synthetic resinous tube capable of radial expansion and generally without change of length of the tube upon expansion, the steps of the method comprising
providing a synthetic resinous thermoplastic tube having a diameter greater than a desired diameter,
introducing a portion of the tube into a plurality of die plates having successively smaller circular openings therein, the tube having a region of decreased diameter generally adjacent the die plate having the smaller opening and a region of major diameter generally adjacent the die plate having the largest port opening,
moving at least one of the die plates towards the region of major diameter thereby reducing the diameter of a por-

tion of the tube while maintaining the conduit in fixed relation to at least a major portion of the remaining die plates, subsequently, in sequence,

moving each said plurality of die plates in hereinbefore described manner to provide a synthetic resinous thermoplastic tube having reduced diameter, the foregoing steps being performed at a temperature between the glass temperature of the resinous tube and the softening temperature.

3,939,244
PROCESS FOR THE PURIFICATION OF TITANIUM TETRACHLORIDE

Luigi Piccolo; Antonio Paolinelli, both of Milan, and Marcello Ghirga, Bresso (Milan), Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Nov. 27, 1972, Ser. No. 309,828

Claims priority, application Italy, Dec. 27, 1971, 32955/71; May 3, 1972, 23849/72

Int. Cl.² C01G *23/02*

U.S. Cl. 423—76 **14 Claims**

1. Process for the purification of titanium tetrachloride in gaseous or liquid form, obtained by chlorination of rutile or ilmenitic ores or ilmenitic slag or other materials containing titanium dioxide in the presence of carbon at elevated temperatures to remove organic impurities so that the titanium tetrachloride product is colorless and to remove vanadium compounds so that the residual content of vanadium metal is less than 5 p.p.m., characterized in that said titanium tetrachloride is brought into contact with a purifying agent consisting of a support selected from alumina or sodium chloride when said titanium tetrachloride is purified in liquid form and a support of alumina when said titanium tetrachloride is purified in gaseous form, said support being in granular form which is inert to metallic sodium and titanium tetrachloride with which metallic sodium has been contacted by bringing the sodium to its melting point in a closed vessel containing the granular inert support material under agitation for at least 15 minutes, and allowing the resulting mixture to cool slowly, under agitation, over at least a 15 minute period to solidify the sodium on the granules, when said purification is carried out in liquid form, the alumina has a granulometry of between 0.05 and 0.5mm particle size and a specific surface area in excess of 1 sq.m./g and the sodium amount contacted with the alumina is in such a quantity that the final concentration thereof in the purifying agent is in the range of from 10 to 25 parts by weight per 100 parts of inert support and the sodium chloride is of a particle size of between 0.1 and 1 mm and the specific surface area thereof is less than 1 sq.m./g with the amount of sodium contacted therewith being in a quantity so that the final concentration thereof in the purifying agent is between 3 and 10 parts by weight per 100 parts of inert support, and when the purification is carried out in gaseous form, the alumina has a particle size of between 0.05 and 0.5 mm, the specific surface area thereof is in excess of 1 sq.m./g and the amount of sodium contacted therewith is in a quantity so that the final concentration thereof in the purifying agent is between 1 and 6.5 parts by weight per 100 parts by weight of inert support.

3,939,245
PROCESS FOR THE SEPARATION OF TUNGSTEN AND MOLYBDENUM

Andrew Irwin Bellingham, Artarmon, Australia, assignor to Warman Equipment (International) Limited, Artarmon, Australia

Filed Nov. 14, 1974, Ser. No. 523,797

Claims priority, application Australia, Nov. 19, 1973, 5700/73

Int. Cl.² C01G *39/00, 41/00*

U.S. Cl. 423—55 **3 Claims**

1. A process for the separation of tungsten and molybdenum from a molybdenum- and tungsten-containing alkaline solution wherein the solution is treated in a reactor system in a continuous process, including the steps of adding sulphuric acid to maintain the solution at a pH value of about 8.5, progressively passing the solution through a series of reactor stages at elevated temperature and adding an alkali metal sulphide solution equal to no more than about the stoichiometric equivalent necessary to form the thiomolybdate ion with the molybdenum in solution, adding a further amount of sulphuric acid to maintain the solution at a pH value of 2.0 to 2.5, precipitating molybdenum trisulphide during the reaction under evolution of hydrogen sulphide, recycling said hydrogen sulphide for absorption by said molybdenum- and tungsten-containing alkaline solution, and separating the precipitated molybdenum trisulphide from the remaining solution.

3,939,246
MANUFACTURE OF CRYSTALLINE ALUMINOSILICATE ZEOLITES

Louis D. Rollmann, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,565

Int. Cl.² C01B *33/28*

U.S. Cl. 423—118 **9 Claims**

1. A process for effecting conversion of kaolin-type clays to crystalline aluminosilicate molecular sieve zeolites of the faujasite type which comprises:

a. mixing the kaolin-type clay with a flux constituting a halide or carbonate of an alkali metal corresponding to between about 5 and about 20 weight percent, calculated as alkali metal oxide, of the kaolin-type clay;

b. calcining the resulting mixture at a temperature within the approximate range of 880° to 1100°C. for a sufficient time for the clay to undergo the characteristic kaolin exotherm after dehydration is completed; and

c. aging the fluxed calcined kaolin-type clay in an aqueous solution of sodium hydroxide of approximately 5 to 20 weight percent concentration at a temperature within the approximate range of 30° to 110°C. until crystallization of the aluminosilicate zeolite is achieved.

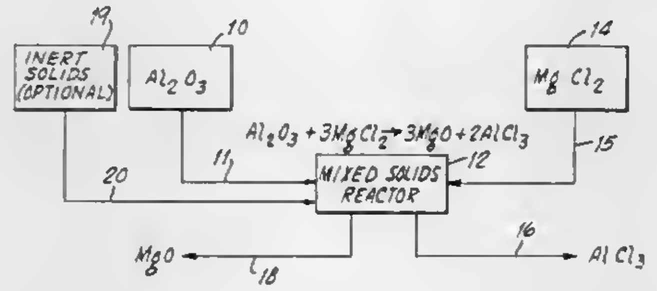
3,939,247
PRODUCTION OF ALUMINUM TRICHLORIDE AND MAGNESIUM OXIDE

Sven Fougner, 110 10th St., Garden City, N.Y. 11530

Filed Aug. 27, 1973, Ser. No. 391,747

Int. Cl.² C01F *7/60, 7/56, 5/02*

U.S. Cl. 423—135 **14 Claims**



1. A method of producing aluminum trichloride and magnesium oxide which comprises reacting alumina or alumina-containing material material which reacts with magnesium chloride in accordance with the chemical equation

$$Al_2O_3 + 3MgCl_2 \qquad 3MgO + 2AlCl_3$$

wherein the reaction is carried out at a temperature in the range from above about the melting point of magnesium chloride to about 2000°C. in the presence of a continually mixed mass of inert solid particulate material and wherein the resulting produced $AlCl_3$ is recovered as a vapor from the resulting produced solid MgO.

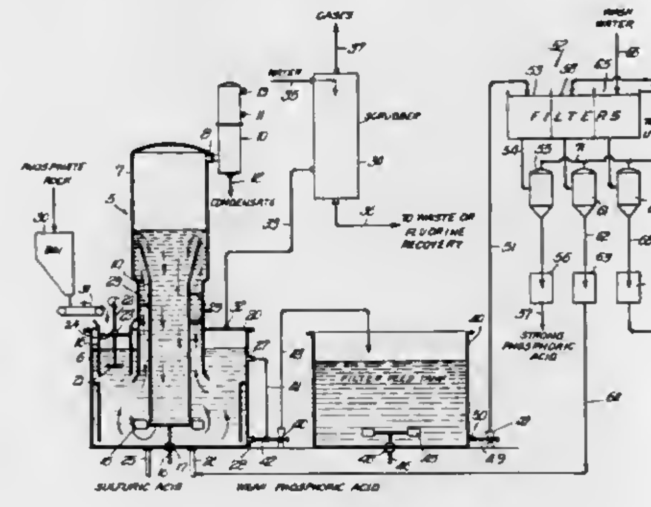
3,939,248
PROCESS AND APPARATUS FOR MANUFACTURING PHOSPHORIC ACID

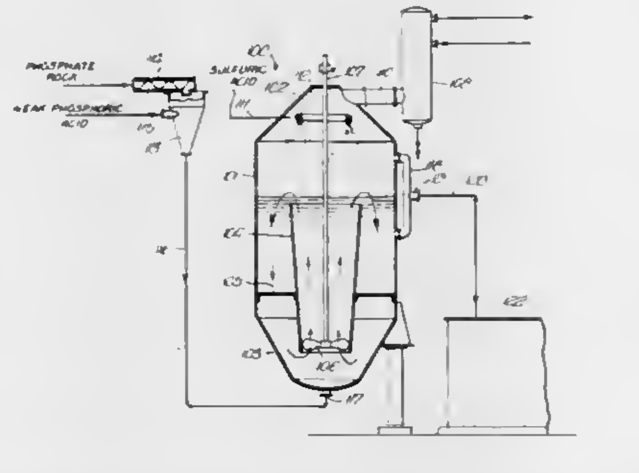
Harold B. Caldwell, Sarasota, Fla., assignor to Whiting Corporation, Harvey, Ill.

Continuation of Ser. No. 779,823, Nov. 29, 1968, abandoned, which is a continuation of Ser. No. 632,101, April 19, 1967, Pat. No. 3,416,889, which is a continuation-in-part of Ser. No. 377,012, June 22, 1964, abandoned. This application May 5, 1972, Ser. No. 250,601. The portion of the term of this patent subsequent to Dec. 17, 1985, has been disclaimed.

Int. Cl.² C01F *11/46;* **C01B** *25/22;* **B01J** *8/00*

U.S. Cl. 423—166 **18 Claims**





1. In the manufacture of wet process phosphoric acid from reactants which include phosphate rock and sulfuric acid wherein said phosphate rock and sulfuric acid are combined to produce a body of reaction slurry containing phosphoric acid and calcium sulfate, a portion of said slurry being withdrawn from said body for recovery of phosphoric acid and calcium sulfate, the improvement comprising, circulating said body of reaction slurry in a combination reactor and cooler unit, at least a portion of which is enclosed and maintained at a subatmospheric pressure, to induce evaporative cooling of said body, said evaporative cooling being conducted at a rate sufficient to maintain the temperature of said body of reaction slurry essentially constant, said body of reaction slurry being circulated in said combination reactor and cooler unit in a flow pattern adapted to expose said body to said subatmospheric pressure and at a rate sufficient to maintain substantially uniform conditions of supersaturation throughout said body, and said sulfuric acid is sprayed onto the circulating body of reaction slurry.

14. In an apparatus wherein reactants which include phosphate rock and sulfuric acid are combined to produce a body of reaction slurry containing phosphoric acid and calcium sulfate, a portion of said slurry being withdrawn from said body for recovery of phosphoric acid and calcium sulfate, the improvement comprising means for circulating said body in a combination reactor and cooler unit, at least a portion of which is enclosed and maintained at a subatmospheric pressure, in a predetermined flow pattern adapted to expose said body to said subatmospheric pressure and at a rate sufficient to maintain the temperature of said body of reaction slurry essentially constant and also sufficient to enable the maintenance of substantially uniform conditions of supersaturation throughout said body, and means for spraying the sulfuric acid onto the body of reaction slurry.

3,939,249
PURIFICATION OF TALC

Fred R. Huege, Somerville, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed Nov. 7, 1974, Ser. No. 521,763

Int. Cl.² C01F *1/00*

U.S. Cl. 423—178 **7 Claims**

1. A method for removing an arsenic sulfide impurity from talc which comprises acidifying an aqueous pulp of said impure talc to a pH below 2 with an acid selected from the group consisting of sulfuric and hydrochloric, adding to said pulp an oxidizing agent having an oxidation potential with a greater negative value than −1.0 volts, maintaining the pH of said pulp below 2 until said impurity is dissolved therein, separating the talc from said pulp and washing the resulting purified talc product.

3,939,250
METHOD OF TREATING RESIDUAL GASES CONTAINING VARIOUS COMPOUNDS OF SULPHUR

Max Michel, Yerres, and Georges Dupuy, Fontenay-aux-Roses, both of France, assignors to Rhone-Poulenc Industries, Courbevoie, France

Filed June 25, 1973, Ser. No. 372,985

Claims priority, application France, June 29, 1972, 72.23497

Int. Cl.² B01D *53/34*

U.S. Cl. 423—224 **4 Claims**

1. A method of catalytic treatment of residual gases containing carbon disulphide, carbonyl sulphide and having high hydrogen sulphide content comprising the steps of passing the gases in admixture with sulphur dioxide for the Claus reaction at a temperature above 200°C into contact with catalysts consisting essentially of a carrier of active alumina having a specific surface area of at least 150 m²/g, a pore volume of at least 0.2 cm³/g, and a compound selected from the group consisting of the oxides, sulphides and compounds capable of being sulphurized of a metal selected from the group consisting of molybdenum, cobalt, nickel and iron present in an amount within the range of 1–15% by weight of the activated alumina.

3,939,251
REGENERATION METHOD FOR GAS TREATING APPARATUS

Sabro Tsuji, Tokyo, Japan, assignor to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 872,286, Oct. 29, 1969, abandoned. This application Aug. 7, 1972, Ser. No. 278,371

Claims priority, application Japan, Nov. 1, 1968, 43-79308

Int. Cl.² C01B *17/00;* **B01J** *8/00*

U.S. Cl. 423—244 **18 Claims**

1. A method of desulphurizing an exhaust gas containing sulphur oxide comprising:

1. introducing an exhaust gas containing sulphur oxide into a plurality of adsorption beds via open passageways, each bed being arranged in parallel with respect to the flow of exhaust gas and being packed with activated carbon thereby separating said sulphur oxide from said exhaust gas;
2. supplying a regenerating liquid from the top of the activated carbon layer to at least one of the adsorption beds when the a concentration of sulphur oxide adsorbed in said activated carbon has reached a predetermined value in order to regenerate said activated carbon;

3. drying said activated carbon wetted by said regenerating liquid with said exhaust gas whereby the activity of said activated carbon is increased to adsorb said sulphur oxide; said introducing of said flue gas, supplying of said regenerating liquid and drying of said activated carbon being carried out and repeated in accordance with a predetermined time schedule, the passageways for introducing said flue gas into each of said adsorption beds being kept open during said time schedule, and
4. regulating the flow rate of said flue gas in an adsorption bed to be regenerated solely with an increase in the flow rate of said regenerating liquid supplied to said adsorption bed, whereby said activated carbon in said adsorption bed to be regenerated is washed down.

3,939,252
DILITHIUM HEPTAMOLYBDOTETRAGADOLINATE

Raghvendra K. Pandey, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Mar. 6, 1974, Ser. No. 448,769
Int. Cl.² C01F *17/00;* C01G *39/00*
U.S. Cl. 423—263 **3 Claims**

1. A method for the preparation of dilithium heptamolybdotetragadolinate represented by the formula $Li_2Gd_4(MoO_4)_7$ comprising the steps of:
   a. providing a charge of gadolinium oxide (Gd_2O_3), molybdenum trioxide (MoO_3) and lithium molyhdate ($Li_2.MoO_4$) in a respective mole ratio of 2:6:1;
   b. firing the charge at a temperature above about 800° centigrade and below about 1150° centigrade;
   c. maintaining the firing temperature for a time adequate to assure molecular homogeneity in the charge;
   d. increasing the temperature to about 1130° to 1250° centigrade;
   e. cooling from about 1130° to 1250° centigrate to about 400° to 600° centigrade over a period of about 100 to 200 hours; and
   f. cooling rapidly and without control to room temperature, and at least a portion of the dilithium heptamolybdotetragadolinate is in single crystal form.

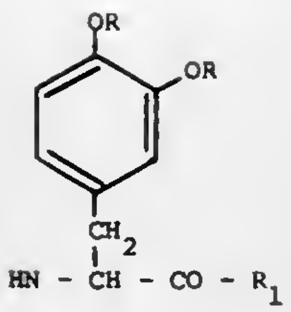
3. A method for the preparation of dilithium heptamolybdotetragadolinate represented by the formula $Li_2Gd_4(MoO_4)_7$ comprising the steps of:
   a. providing a charge of gadolinium oxide (Gd_2O_3), molybdenum trioxide (MoO_3) and lithium molybdate ($Li_2.MoO_4$) in a respective mole ratio of 2:6:1;
   b. firing the charge at a temperature above about 800° centigrade and below about 1150° centigrade;
   c. maintaining the firing temperature for a time adequate to assure molecular homogeneity in the charge and;
   d. cooling the charge by means of the Czochralski vertical crystal pulling technique to yield a single crystal of dilithium heptamolybdotetragadolinate.

3,939,253
NOVEL, TRANSIENT PRO-DRUG FORMS OF L-DOPA USEFUL IN THE TREATMENT OF PARKINSON'S DISEASE

Nicolae S. Bodor; Kenneth B. Sloan, and Anwar A. Hussain, all of Lawrence, Kans., assignors to Interx Research Corporation, Lawrence, Kans.

Division of Ser. No. 412,419, Nov. 2, 1973, Pat. No. 3,891,696.
This application Apr. 10, 1975, Ser. No. 566,748
Int. Cl.² A61K *31/24, 31/195*
U.S. Cl. 424—309 **15 Claims**

1. A method for treating Parkinson's Disease in warmblooded animals which comprises administering thereto, an antiParkinsonism effective amount of a compound having the formula:



wherein R represents a member selected from the group consisting of hydrogen, $—COCH_3$, $—COC_2H_5$, $—COOC_2H_5$, and $—CO—C(CH_3)_3$; wherein R_1 represents a member selected from the group consisting of hydroxyl and —OM, wherein M represents a member selected from the group consisting of an alkali metal and an ammonium ion; and wherein R_2 represents $—(R_5)CO—CH{=}C(R_4)—$, wherein R_4 represents methyl or ethoxy, and wherein R_5 represents a member selected from the group consisting of methyl, $—C_6H_5$, and $—OC_2H_5$.

3,939,254
PROCESS FOR PREPARING ALKALI METAL ORTHOPHOSPHATES AND AMMONIA

Bernard H. Nicolaisen, Houston, Tex., assignor to Olin Corporation, New Haven, Conn.

Filed Dec. 30, 1974, Ser. No. 537,236
Int. Cl.² C01B *15/16, 25/26;* C01C *1/02;* C01B *31/20*
U.S. Cl. 423—312 **19 Claims**

1. A process for preparing ammonia and a substantially ammonia-free solution of sodium orthophosphate comprising:
   a. introducing aqueous monoammonium phosphate into a substantially vertical first column provided with vapor-liquid contact means,
   b. introducing aqueous sodium carbonate into said first column at a level below that at which said monoammonium phosphate is introduced at a rate sufficient to maintain therein an Na/P molar ratio in the range of 0.5–1.5,
   c. permitting said monoammonium phosphate to flow downwardly into continuous co-current contact and react with said sodium carbonate at a temperature of 125–250°F.,
   d. removing overhead substantially ammonia-free carbon dioxide and separately recovering a bottoms product comprising a solution of sodium ammonium phosphate having a reduced carbon dioxide content,
   e. contacting said bottoms product with sufficient sodium hydroxide to provide a reaction mixture having a selected Na/P molar ratio in the range of 1–2,
   f. stripping ammonia from said reaction mixture at elevated temperature and at a pressure in the range of 130 to 500 p.s.i.g. in a second column having vapor-liquid contact means, and
   g. recovering from said second column an overhead product comprising said ammonia and a bottoms product comprising a solution of sodium orthophosphate having the selected Na/P molar ratio.

3,939,255
PROCESS FOR PRODUCTION OF AMMONIUM POLYPHOSPHATES

William Percy Moore, Hopewell, Va., and John Harvey Agee, Baton Rouge, La., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 167,810, July 30, 1971, abandoned. This application June 11, 1973, Ser. No. 368,554
Int. Cl.² C01B *15/16, 25/26*
U.S. Cl. 423—313 **1 Claim**

1. In a process for production of ammonium polyphosphate solution which comprises the following steps:

   a. providing a concentrated wet-process phosphoric acid containing 60–70% P_2O_5;
   b. continuously reacting said concentrated acid with substantially anhydrous ammonia in an elongated tubular reactor at a temperature of 550°–650°F. for 5–60 seconds, sufficient ammonia being reacted with the acid to produce a reaction melt having a nitrogen to P_2O_5 weight ratio between about 0.12 and 0.18, whereby the polyphosphate content of the melt is increased to 60–90% of the total P_2O_5 without formation of insoluble reaction products; and
   c. continuously quenching the resulting reaction melt in aqueous ammonia of sufficient concentration to form a clear solution containing 10–13% nitrogen and 33–37% P_2O_5 having 60–90% of the total P_2O_5 in polyphosphate form, the improvement comprising:
      1. maintaining 2–10% sulfate ion in the concentrated wet-process phosphoric acid of step (a) as a corrosion inhibitor;
      2. preheating the concentrated wet-process phosphoric acid utilized in step (b) in a conventional steam-heated heat exchanger to a temperature of 200°–290°F.;
      3. further preheating said concentrated wet-process phosphoric acid to a temperature of 320°–500°F. by passing said melt from said reactor to an indirect heat exchanger;
      4. preheating the substantially anhydrous ammonia utilized in step (b) in a conventional steam-heated heat exchanger to a temperature of 200°–440°F.;
      5. further preheating said ammonia to a temperature of 320°–540°F. by indirectly heat-exchanging the ammonia with the hot reaction melt in step (b).

3,939,256
SULFUR RECOVERY PROCESS

William G. Kazel, Arvada, Colo., assignor to Cyprus Metallurgical Processes Corporation, Los Angeles, Calif.

Filed Mar. 9, 1972, Ser. No. 233,352
Int. Cl.² C01B *17/14*
U.S. Cl. 423—578 A **1 Claim**

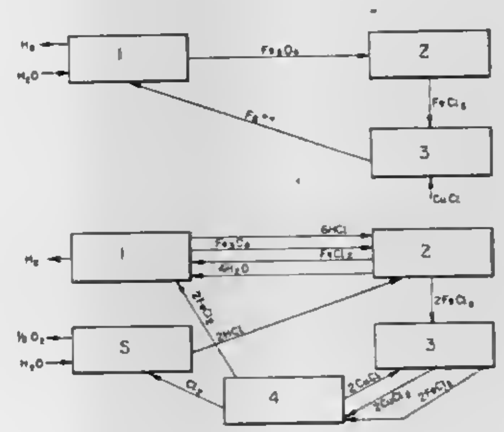
1. A process for the recovery of elemental sulfur from mixtures in which it is present with soluble calcium compound impurities which comprises:
   a. contacting the mixture with water to solubilize calcium ions;
   b. separating the solids content of the treated mixture from the liquid content and washing the solids content to remove said solubilized calcium ions from the solids content;
   c. forming a water slurry of said solids content;
   d. adding to the slurry a surface modifying additive selected from the group consisting of alkali metal hydroxides, alkali metal carbonates, and mixtures thereof to produce an alkaline slurry pH of at least about 9;
   e. heating the slurry to at least the melting point of sulfur for a period sufficient to coalesce substantially all of the sulfur particles, and
   f. recovering the coalesced sulfur from the slurry.

3,939,257
PROCESS FOR PRODUCING HYDROGEN FROM WATER

Jon B. Pangborn, Lisle, and John C. Sharer, Evanston, both of Ill., assignors to American Gas Association, Arlington, Va.

Filed Aug. 20, 1973, Ser. No. 390,178
Int. Cl. C01b *1/02, 1/05, 7/08*
U.S. Cl. 423—658 **15 Claims**

1. In a reactant regenerative closed cycle process for the production of hydrogen from water the steps comprising:
   providing solid ferriferrous oxide and a gaseous chloride ion yielding substance to a reaction zone to produce ferric chloride;
   reducing the ferric chloride in gaseous dimer phase with a solid reducing agent selected from the group consisting of cuprous chloride, chromous chloride and platinum to produce ferrous chloride; and



then oxidizing the solid or molten ferrous compound with steam so as to produce hydrogen and ferriferrous oxide for recycle.

3,939,258
PROCESS FOR THE MANUFACTURE OF HUMAN TRANSFERRIN LABELLED WITH INDIUM 113M

Elfriede Niemann, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 9, 1973, Ser. No. 386,862
Claims priority, application Germany, Aug. 12, 1972, 2239791
Int. Cl.² A61K *43/00*
U.S. Cl. 424—1 **2 Claims**

1. A method for making human transferrin labelled with indium 113*m*, which comprises adding an eluate of an indium 113*m* generator dropwise to an aqueous human transferrin solution in a volume ratio of 1:1, said eluate having an activity concentration of 0.9 to 50 milli Curie per ml and containing 0.2 to 0.01 N hydrochloric acid and said aqueous transferrin solution containing 3 to 10 mg of sodium bicarbonate per 5 to 100 mg of human transferrin per ml.

3,939,259
COATING COMPOSITION AND THERAPEUTIC PREPARATION INCORPORATING SAME

Anthony Pescetti, 999 E. Mission Road, Fallbrook, Calif. 92028

Filed May 24, 1974, Ser. No. 473,289
Int. Cl.² A61K 9/22
U.S. Cl. 424—20 **2 Claims**

1. A therapeutic preparation comprising a pharmaceutical gelatin capsule containing a blend of three groups of particles containing a pharmaceutically active material, said first group containing a unit dose amount of said material for release thereof within a period of one hour after ingestion, a second group of said particles containing a unit dose amount of said material being provided with a coating comprising a major proportion of zein and shellac in a weight/weight ratio of between 1:7 and about 1:14 and minor proportions of ethyl cullulose, bees wax and a plasticizer, said coating having an effective thickness for disintegration and relase of said material in a period of about 4 hours after ingestion, and a third group of said particles containing a unit dose amount of said material being provided with a coating comprising a major proportion of zein and shellac in a weight/weight ratio of between about 1:7 and about 1:14 and minor proportions of ethyl cellulose, bees wax, polyvinylpyrrolidone and a plasticizer, said coating having an effective thickness for disintegration and relase of said material in about a period of about 8 hours after ingestion.

3,939,260

THERAPEUTIC AND COSMETIC COMPOSITIONS

Victor Lafon, Paris, France, assignor to Societe Anonyme dite: Orsymonde, Paris, France

Continuation of Ser. No. 92,862, Nov. 25, 1970. This application Oct. 7, 1974, Ser. No. 512,926

Claims priority, application France, Nov. 26, 1969, 69.40803; Mar. 24, 1970, 70.10548

Int. Cl.^{2} A61K *9/10;* A45D *40/00;* A61K *7/48*

U.S. Cl. 424—28 **2 Claims**

1. A process of preparing an emolient cream in a porous support, which comprises admixing a molten oil phase comprising a fatty alcohol and an emulsifier with a heated aqueous phase comprising an emolient, a thickener, an emulsifier and water to form an oil-in-water emulsion; cooling the emulsion to form a cream; immersing a polyurethane foam, while compressed into said cream and allowing the cream to be absorbed into the foam; and freeze-drying the foam thus impregnated with the cream.

3,939,261

FLAVORED DENTIFRICE

Jordan B. Barth, East Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 30, 1974, Ser. No. 502,043

Int. Cl.^{2} A61K *7/16*

U.S. Cl. 424—49 **15 Claims**

1. An anhydrous dentifrice which contains about 10 to 90% by weight of a liquid vehicle including a hydroscopic humectant, about 0.1 to 10% by weight of a dipeptide sweetener selected from the group consisting of L-aspartyl-L-phenylalanine methyl and ethyl esters and L-aspartyl-L-hexahydrophenylalanine methyl and ethyl esters in admíxture with about 0.1 to 15% by weight of a non-toxic acid anhydride selected from the group consisting of acetic-, succinic-, adipic-, fumaric-, lactic-, malic-, folic-, ascorbic-, aspartic-, benzoic-, isovaleric-, phenoxyacetic-, citric-, tartaric-, orthophosphoric-, lauric- and stearic acids and compatible mixtures thereof whereby the acid pH integrity of said sweetener is maintained about 3 to 5 and excess-free water present is absorbed thereby providing the stability in said sweetener.

3,939,262

DENTIFRICES

Keun Y. Kim, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 21, 1974, Ser. No. 435,052

Int. Cl.^{2} A61K *7/18*

U.S. Cl. 424—52 **6 Claims**

1. A translucent dental cream comprising

1. a solid phase comprising about 95 to 100% by weight, based on the total weight of the solid phase, as a polishing agent a synthetic amorphous silica prepared by exchanging hydrogen for the alkali metal ion of a particulate alkali metal silicate having an SiO_2/M_2O ratio of from about 1.6 to about 3.75 and containing 10 to 25% by weight of water, said polishing agent having an average refractive index of from about 1.410 to 1.440 and an average particle diameter of from about 1 to about 30 microns, and
2. a liquid phase comprising water and a polyhydric alcohol humectant, the refractive index of said liquid phase being essentially the same as the refractive index of said solid phase.

3,939,263

METHODS OF COMBATTING INSECTS AND ACARINA USING OXYGENATED DERIVATIVES OF S-(TERT-BULYTHIO)METHYL O,O-DIETHYL PHOSPHORODITHIOATE AND PHOSPHOROTHIOATE

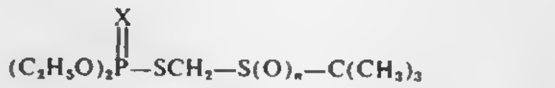
Frank Albert Wagner, Jr., Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 358,756, May 9, 1973, Pat. No. 3,878,267. This application Dec. 19, 1974, Ser. No. 534,381

Int. Cl.^{2} A01N *9/36*

U.S. Cl. 424—216 **6 Claims**

1. A method for the control of insects and acarina, comprising contacting said insects and acarina with an insecticidally or acaricidally effective amount of a compound of the structure:



$$(C_2H_5O)_2\overset{\overset{X}{\|}}{P}-SCH_2-S(O)_n-C(CH_3)_3$$

where X is sulfur or oxygen and *n* is 1 or 2; with the proviso that when *n* is 1, X is oxygen.

3,939,264

METHOD FOR CONTRACEPTION BY THE ADMINISTRATION OF SEQUENTIAL CONTRACEPTIVE PREPARATIONS

Ursula Lachnit-Fixson, Berlin, Germany, assignor to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

Filed Apr. 12, 1973, Ser. No. 350,590

Claims priority, application Germany, Apr. 14, 1972, 2218831; Mar. 3, 1973, 2310963

Int. Cl.^{2} A61K *31/56;* C07J *9/00*

U.S. Cl. 424—239 **6 Claims**

1. A method of oral contraception which comprises administering orally to a female of child-bearing age an estrogen at a daily dosage of 0.050 mg. of 17α-ethinylestradiol for 21 days of her menstrual cycle, either (a) in combination the first 11 days with 0.050 mg. per day of d-norgestrel followed for the next 10 days by 0.125 mg. per day of d-norgestrel, or (b) in combination the first 11 days with 1 mg. of 17α-ethinyl-19-nortestosterone acetate followed for the next 10 days by 2 mg. per day of 17α-ethinyl-19-nortestosterone acetate.

3,939,265

NOVEL ZOOTECHNICAL COMPOSITIONS

Jean André Grandadam, 4, Rue Lhomme, 94100 Saint-Maur Des Fosses, France

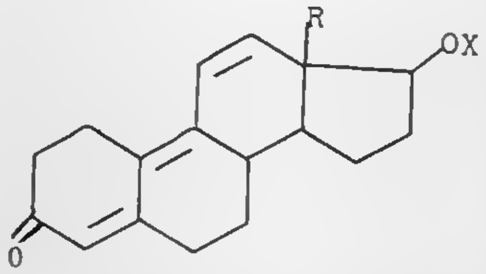
Continuation-in-part of Ser. No. 356,495, May 2, 1973, abandoned. This application Jan. 16, 1975, Ser. No. 541,387

Claims priority, application France, May 10, 1972, 72.16665; Sept. 14, 1973, 73.33060

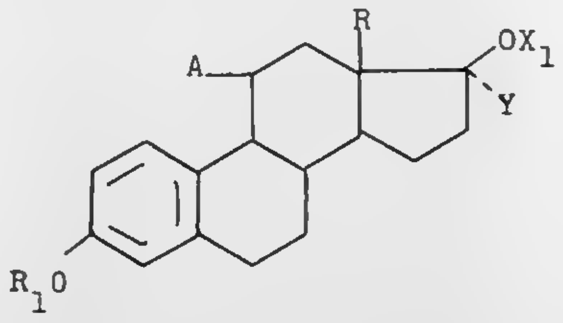
Int. Cl.^{2} A61K *31/56*

U.S. Cl. 424—239 **16 Claims**

1. Novel zootechnical compositions for increasing the weight of farm animals comprising a mixture of 1 to 300 mg of an anabolisant steroid of the formula



wherein R is alkyl of 1 to 4 carbon atoms and X is selected from the group consisting of hydrogen, lower alkyl optionally substituted with phenyl, lower alkenyl, lower alkoxy-lower alkyl, lower alkyl-thialower alkyl, cycloalkyl of 3 to 7 carbon atoms, cycloalkyl lower alkyl, heterocycloalkyl, cyclic alkyl wherein the ring is derived from an unsaturated nitrogen, oxygen or sulfur heterocycle of 5 to 7 carbon atoms and acyl of an organic carboxylic or carbonic acid of 1 to 18 carbon atoms and 0.05 to 50 mg of an estrogenic steroid of the formula



wherein R is alkyl of 1 to 4 carbon atoms, R_1 is selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms and cycloalkyl of 3 to 7 carbon atoms, A is selected from the group consisting of hydrogen and β-alkoxy of 1 to 4 carbon atoms, Y is selected from the group consisting of hydrogen, methyl, ethynyl and haloethynyl and X_1 is selected from the group consisting of hydrogen and acyl of an organic carboxylic or carbonic aliphatic or cyclanic acid of 1 to 10 carbon atoms.

3,939,266

SUBSTITUTED SULFONYLACETAMIDO CEPHALOSPORINS

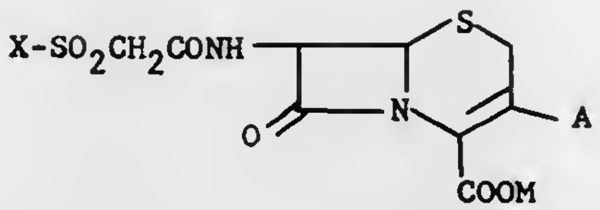
Robert M. De Marinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 249,858, May 3, 1972, Pat. No. 3,865,819. This application Dec. 3, 1974, Ser. No. 529,207

Int. Cl.^{2} A61K *31/54*

U.S. Cl. 424—246 **5 Claims**

1. A pharmaceutical composition comprising an antibacterially effective amount of a compound of the formula



where:

- X is lower alkyl of C_1–C_6;
- A is CH_2S-Het;
- Het is a 5- or 6-membered heterocyclic ring containing one to four atoms selected from the group consisting of N, O and S, unsubstituted or substituted with from one to two groups selected from the group consisting of lower alkyl, cycloalkyl or alkenyl, each having one to four carbon atoms; lower alkoxy or alkoxyalkyl, each alkyl or alkoxy having one to four carbon atoms; hydroxy; CF_3; NHR; NR_2; SR; or halogen;
- R is hydrogen or alkyl (C_1–C_4); and
- M is hydrogen, alkali metal cation or nontoxic ammonium cation

and a pharmaceutically acceptable carrier therefor.

3,939,267

4-ETHERS OF 3-AMINO-5-SULFAMOYLBENZOIC ACIDS

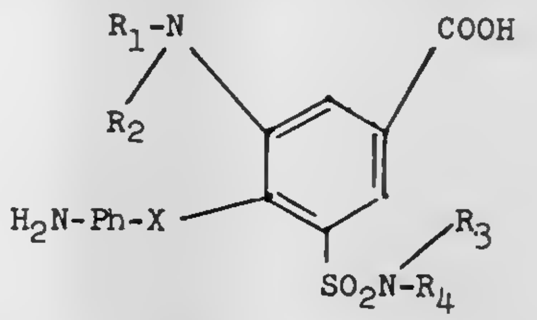
Lincoln Harvey Werner, Summit, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,530

Int. Cl.^{2} A01N *9/20, 9/24*

U.S. Cl. 424—319 **4 Claims**

1. A pharmaceutical composition comprising a diuretically effective amount of a compound corresponding to the formula



in which R_1 is lower alkyl, lower alkenyl, cycloalkyl or cycloalkyl-lower alkyl, each of which with 3 to 7 ring carbon atoms, Ph is unsubstituted phenylene or phenylene substituted by one member of lower alkyl, each of R_2, R_3 and R_4 is hydrogen or lower alkyl, and X is oxygen or sulfur, or the lower alkyl esters or therapeutical useful ammonium, alkali or alkaline earth metal or acid addition salts thereof, together with a pharmaceutical excipient.

3,939,268

2,4-DIAMINO SUBSTITUTED PYRIDOL(3,2-D)PYRIMIDINE AS ANTITHROMBOTIC AGENTS

Josef Nickl; Erich Muller; Berthold Narr, and Josef Roch, all of Biberach, Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

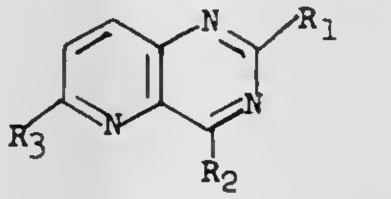
Division of Ser. No. 241,791, April 6, 1972, Pat. No. 3,843,638. This application Sept. 4, 1974, Ser. No. 503,073

Claims priority, application Germany, Apr. 10, 1971, 2117657; Feb. 23, 1972, 2208534; Feb. 23, 1972, 2208535

Int. Cl.^{2} A61K *31/54, 31/495, 31/535*

U.S. Cl. 424—246 **9 Claims**

1. An antithrombotic pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective antithrombotic amount of a compound of the formula



wherein

- R_1 and R_2 are each morpholino, thiomorpholino, 1-oxido-thiomorpholino, 1,1-dioxido-thiomorpholino or piperidino, where each of these may optionally have a methyl substituent attached thereto; piperazino; N′-formyl-piperazino; N′-acetyl-piperazino; N′-carbethoxy-piperazino; N′-benzoyl-piperazino; N′-methanesulfonyl-piperazino; N′-p-toluenesulfonyl-piperazino; N′-carbamoyl-piperazino; N′-methyl-piperazino; di(alkanol of 2 to 6 carbon atoms)-amino; or ethylenediamino; and
- R_3 is hydrogen or methyl;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,939,269

BENZENESULFON YL-SEMICARBAZIDES FOR LOWERING BLOOD SUGAR LEVELS

Walter Aumuller, Kelkheim, Taunus; Rudi Weyer, Frankfurt am Main, and Ruth Heerdt, Mannheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

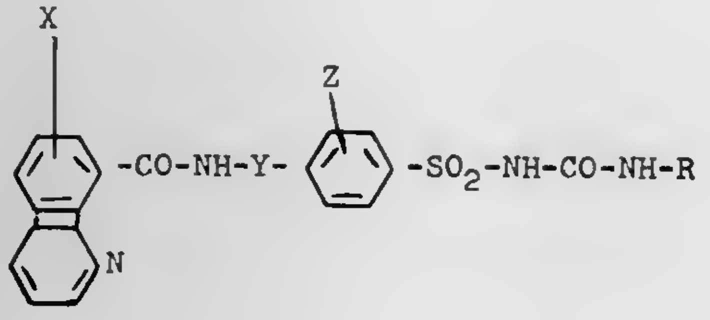
Division of Ser. No. 149,746, June 3, 1971. This application Jan. 18, 1973, Ser. No. 324,836

Claims priority, application Germany, Apr. 26, 1971, 2120266

Int. Cl. A61k *27/00*

U.S. Cl. 424—258 **3 Claims**

1. A pharmaceutical preparation for oral administration and lowering the blood sugar level in the treatment of diabetes mellitus, which comprise a pharmaceutical carrier and about 0.5 to 100 mg. per unit dose of a benzenesulfonyl-semicarbazide of the formula



in which

- X represents hydrogen, chlorine, bromine, methoxy or methyl,
- Z is hydrogen or alkylene of 1 or 2 carbon atoms, which forms together with Y a 5-membered ring.
- Y represents $-CH(CH_3)-CH_2-$, or $-CH_2-CH_2-$,
- R represents
  - a. alkylene-imino of 3 to 7 carbon atoms in the ring, which may be unsaturated or substituted by 1 or 2 methyl groups or lower alkyl group or methoxy group,

a salt thereof of a pharmaceutically acceptable base or acid.

3,939,270

PHARMACEUTICAL PREPARATIONS CONTAINING α-AMINOPENICILLINS

Bertil Ake Ekstrom, and Berndt Olof Harald Sjoberg, both of Sodertalje, Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

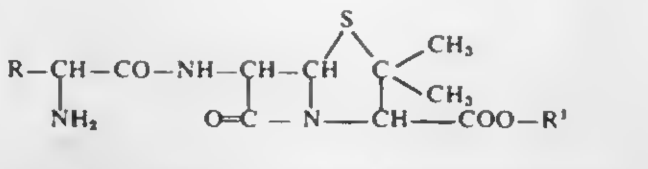
Division of Ser. No. 178,426, Sept. 7, 1971, Pat. No. 3,873,521. This application Mar. 8, 1973, Ser. No. 339,364

Claims priority, application Swedeo, Sept. 17, 1970, 12688/70; Nov. 20, 1970, 15720/70

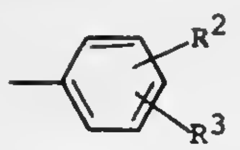
Int. Cl.² A61K *31/43*

U.S. Cl. 424—271 **19 Claims**

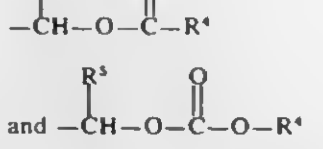
1. A pharmaceutical preparation which comprises, as an active ingredient, an anti-bacterially effective amount of at least one compound of the structural formula



or a pharmaceutically acceptable acid addition salt thereof, in which formula R is the radical



wherein R² is selected from the group consisting of hydrogen and hydroxy and R³ is selected from the group consisting of hydrogen and halogen such as chlorine and fluorine, and wherein R¹ is selected from the group consisting of



$$-\overset{CH_3}{\overset{|}{C}}H-O-\overset{O}{\overset{\|}{C}}-R^4$$

$$\text{and } -\overset{R^5}{\overset{|}{C}}H-O-\overset{O}{\overset{\|}{C}}-O-R^4$$

in which formulas R⁴ is selected from the group consisting of alkyl groups containing from 1 to 4 carbon atoms; and R⁵ is selected from the group consisting of H, and $-CH_3$, and a pharmaceutically acceptable carrier.

3,939,271

ANTIDEPRESSIVE AND ANTIANXIETY COMPOSITION COMPRISING 2-PYRAZOLYL-BENZOPHENONES

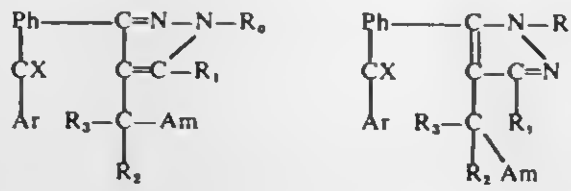
Heinz Werner Gschwend, New Providence, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 3, 1974, Ser. No. 475,475

Int. Cl.² A61K *31/415*

U.S. Cl. 424—273 **4 Claims**

1. An antidepressive and antianxiety pharmaceutical composition comprising a antidepressively or anxiolytic effective amount of a compound corresponding to the formulae



wherein Ar is unsubstituted phenylene, or phenyl substituted by one or two, of the same or different substituents selected from the group consisting of lower alkyl, lower alkoxy, halo or trifluoromethyl, Ph is 1,2-phenylene substituted by one or two halogen atoms, R_o is hydrogen, lower alkyl, (hydroxy, lower alkoxy or Am)C_mH_{2m} or Ar-C_nH_{2n}, wherein Am is amino, mono- or di-lower alkylamino, lower alkyleneimino or mono-aza-, oxa- or thia-alkyleneimino, wherein the additional nitrogen, oxygen or sulfur atom is separated from the iminonitrogen by at least 2 carbon atoms, *m* is an integer from 1 to 7, *n* such from 0 to 7, each of R_1, R_2 and R_3 is hydrogen or lower alkyl, and X is oxo, thio or hydrogen and hydroxy or lower alkoxy, simple or mixed, open or cyclic lower alkyl or alkylene ketals thereof; or a lower alkanoyl, alkoxycarbonyl, AmCO or AmCS derivative of the compounds containing at least one hydrogen attached to oxygen or nitrogen; or a therapeutically useful acid addition salt thereof, together with an enterally or parenterally applicable pharmaceutical excipient.

3,939,272

SOLUBILIZING PROCESS FOR OIL INSOLUBLE PESTICIDES

Frederic C. McCoy, Beacon, N.Y., and Carl Loyal W. Swanson, deceased, late of Hopewell Junction, N.Y. (by Viola C. Swanson, executrix), assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 275,680, July 27, 1972. This application May 16, 1974, Ser. No. 470,686

Int. Cl.² A01N *9/12*

U.S. Cl. 424—276 **5 Claims**

1. A process for converting normally paraffinic oil-insoluble 5,6-dihydro-2-lower alkyl-1,4-oxathiin-3-carboxanilide-4,4-dioxide pesticides, wherein said lower alkyl radical contains 1 to 4 carbon atoms, to their oil-soluble form by:

- a. admixing each mole of said compounds to be converted to their oil-soluble form with:
- b. a molar excess of at least one alkylated phenol wherein the alkyl groups contain from 3 to 30 carbon atoms, at temperatures ranging from 20°C to 100°C until said normally paraffinic oil-insoluble compounds are converted to their paraffinic oil-soluble form.

3,939,273

3,4-METHYLENEDIOXY-CINNAMYLOXYBENZENE AS A MOSQUITO LARVICIDE

Leonard Jurd, Berkeley, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 5, 1975, Ser. No. 555,499

Int. Cl.² A01N *9/28*

U.S. Cl. 424—282 **2 Claims**

1. A method for killing mosquito larvae which consists of applying to a body of water where the larvae are located a larvicidal amount of 3,4-methylenedioxy-cinnamyloxybenzene.

3,939,274

PHENOXYPHENYLALKANOIC ACID ESTER INSECTICIDES

Albrecht Franke, Ludwigshafen, Germany, and Walter Traber, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

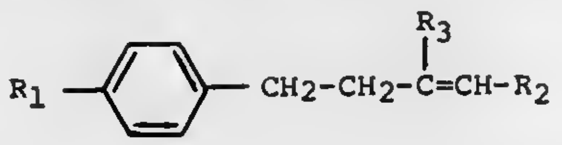
Division of Ser. No. 252,783, May 12, 1972, Pat. No. 3,824,274. This application Apr. 3, 1974, Ser. No. 457,524

Claims priority, application Switzerland, May 15, 1971, 7205/71; Apr. 6, 1972, 5087/72

Int. Cl.² A01N *9/24*

U.S. Cl. 424—308 **13 Claims**

1. An insecticidal composition comprising an insecticidally effective amount of a compound of the formula



wherein R_1 represents a phenyl, phenoxy, phenylthio or cyclohexyl radical which is optionally substituted by halogen, nitro, C_1–C_5 alkyl or C_1–C_5 alkoxy, or a phenyl or cyclohexyl radical which is bonded via a C_1–C_4 alkylene, C_1–C_4 alkyleneoxy or C_1–C_4 alkylenethio bridge member, R_2 represents a (C_1–C_5 alkoxy) carbonyl, (C_3–C_6 alkenyloxy)carbonyl or, (C_3–C_6 alkinyloxy)carbonyl, radical and R_3 represents hydrogen or C_1–C_5 alkyl; together with a suitable carrier therefor.

3,939,275

METHODS AND COMPOSITIONS FOR INCREASING GROWTH RATE AND FEED EFFICIENCY OF ANIMALS

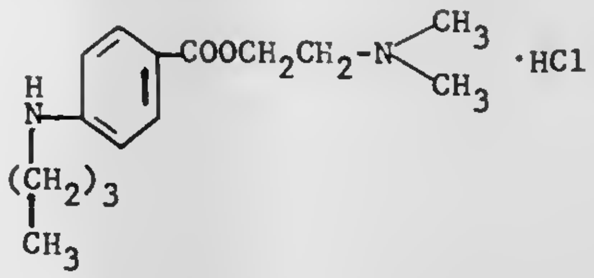
Clifton A. Baile, Glen Mills; Carol Lynn McLaughlin, Malvern, and Robert Lee Webb, West Chester, all of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 232,241, March 6, 1972, Pat. No. 3,839,570. This application May 2, 1974, Ser. No. 466,425

Int. Cl.² A61K *31/245*

U.S. Cl. 424—310 **4 Claims**

1. The method of increasing growth rate and feed efficiency of ruminant animals comprising administering orally to said animals an effective but nontoxic quantity of a local anesthetic having the following formula:



3,939,276

CYCLIC CARBONYL COMPOUNDS

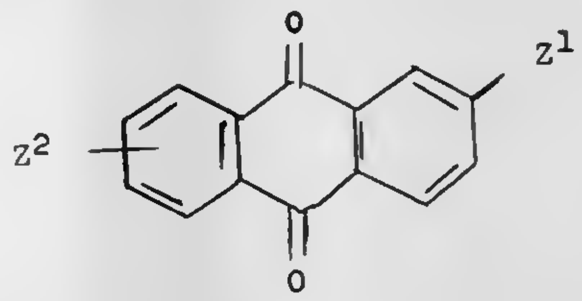
Harold Francis Hodson, Hayes, and John Frederick Batchelor, Beckenham, both of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 287,042, Sept. 7, 1972. This application Mar. 6, 1973, Ser. No. 338,415

Int. Cl.² A61K *31/19*

U.S. Cl. 424—317 **11 Claims**

1. A method of preventing the symptoms of asthma or allergic rhinitis in a mammal having asthma or allergic rhinitis which comprises administering to said mammal a prophylactically effective amount of a compound of formula



where Z¹ is selected from the group consisting of carboxyl, a pharmaceutically acceptable carboxylate salt and alkyl carboxylate wherein the alkyl moiety has 1 to 6 carbon atoms; and Z² is selected from the group consisting of hydrogen and a substituent Z¹ as defined herein.

3,939,277

INSECTICIDAL BIODEGRADABLE ANALOGUES OF DDT

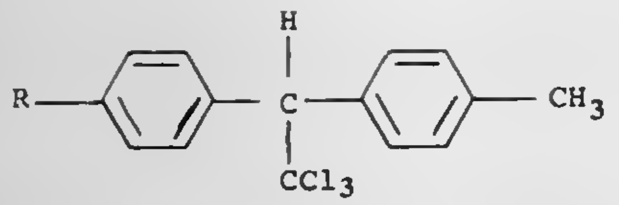
Robert L. Metcalf; Inder Kapoor, and Asha Hirwe, all of Urbana, Ill., assignors to The University of Illinois Foundation, Urbana, Ill.

Division of Ser. No. 147,247, May 26, 1971, Pat. No. 3,787,505. This application Sept. 6, 1973, Ser. No. 394,568

Int. Cl.² A01N *9/24*

U.S. Cl. 424—340 **4 Claims**

1. A biodegradable insecticidal formulation comprising a major amount of a compatible inert carrier and a minor amount sufficient to provide insecticidal activity of a compound having the formula:



where R is selected from the group consisting of —OCH$_3$, —OC$_2$H$_5$ and —OC$_3$H$_7$.

3,939,278

PHENOXYPHENYL-ACETYLENES AND THIO ANALOGUES THEREOF AS ANTITHROMBOTIC AGENTS

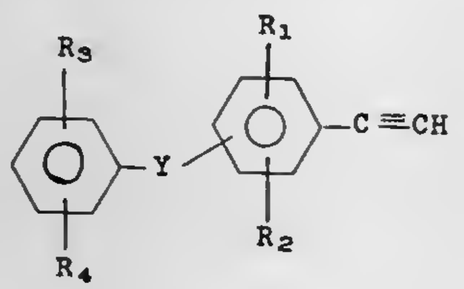
William B. Lacefield, and Winston S. Marshall, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed July 5, 1974, Ser. No. 485,878

Int. Cl.^{2} A61K *31/085, 31/09, 31/10*

U.S. Cl. 424—340 **4 Claims**

1. A method of treating vascular thrombosis in warm-blooded animals which comprises administering to a warm-blooded animal in need of such treatment an amount effective for treating vascular thrombosis of a phenoxyphenylacetylene of the formula,



wherein R$_1$, R$_2$, R$_3$, and R$_4$ are monovalent groups independently selected from the group consisting of hydrogen, halo, C$_1$–C$_3$ alkyl, and C$_1$–C$_3$ alkoxy; and Y is oxygen.

3,939,279

FEED AND METHOD OF AQUIANIMALS CULTIVATION

Takatsugu Kawano; Hiroshige Kojima; Hiroshi Ohosawa, and Kazuto Morinaga, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 66,575, Aug. 24, 1970, abandoned. This application June 27, 1973, Ser. No. 373,910

Claims priority, application Japan, Aug. 22, 1969, 44-65961

Int. Cl.^{2} A23L *1/28*

U.S. Cl. 426—2 **13 Claims**

1. A method of aquianimal cultivation which comprises feeding the aquianimal with cells obtained by aerobically culturing in a sea water medium containing waste molasses and an inorganic nitrogen compound as the sources of carbon and nitrogen, a yeast strain selected from the group consisting of

NRRL Y-7345
NRRL Y-7346
NRRL Y-7347
NRRL Y-7348 and
NNRL Y-7349

3,939,280

PROCESS FOR TREATING ANIMAL WASTE

John N. Karnemaat, Comstock Township, Kalamazoo County, Mich., assignor to General Environmental Systems Co., Inc., Warsaw, Ind.

Filed Aug. 30, 1974, Ser. No. 501,888

Int. Cl.^{2} A23K *1/00*

U.S. Cl. 426—2 **13 Claims**

1. A process for treating poultry manure to transform same to a material suitable for use as a feedstuff for animals, which comprises the steps of:

carrying out the following steps A and B in optional sequence,

- A. mixing poultry manure with an acid to neutralize the ammonia in the poultry manure, to change the pH of the poultry manure to less than 7.0 and to leave present in the poultry manure a catalytically effective amount of the acid, the acid being stable, non-toxic to animals and free of elements that cause bad taste and are unsatisfactory for animal nutrition, the mixing being carried out for a period of time effective to form a substantially uniform homogeneous mixture of said poultry waste and said acid,
- B. mixing into the poultry manure an amount of formaldehyde-supplying substance effective to kill essentially all the pathogenic bacteria present in said poultry waste, the mixing being carried out for a period of time effective to form a substantially uniform homogeneous mixture of the poultry manure, the acid and the formaldehyde-supplying substance,
- C. then mixing into the product from both of steps A and B, granular urea in an amount at least sufficient to react with the residual formaldehyde in the product of step B, to form urea-formaldehyde condensation products therein, and
- D. drying the product of step C to a moisture content of less than about 15 percent.

3,939,281

EXTRACTION OF FAT FROM STARCH-CONTAINING VEGETABLE MATTER

Dieter Schwengers, Dormagen, Germany, assignor to Pfeifer & Langen, Cologne, Germany

Filed Nov. 9, 1973, Ser. No. 414,495

Claims priority, application Germany, Nov. 14, 1972, 2255666; Nov. 14, 1972, 2255667

Int. Cl.^{2} C11B *1/04, 1/10;* **C12C** *11/00*

U.S. Cl. 426—11 **9 Claims**

1. The process for degreasing vegetable matter containing starch and fats which comprises crushing said vegetable matter, extracting the crushed matter with a normally gaseous inert solvent in liquid state at a temperature of about 20° to 100°C and below the critical temperature and a pressure of about 30 to 1000 atmospheres and above the critical pressure of the inert solvent which solvent has a critical temperature below about 200°C, separating the fat-containing solvent from the substantially fat-free vegetable residue, separating the dissolved fat from the solvent by raising the temperature to vaporize the solvent, and reducing the pressure of the fat-free vegetable residue.

3,939,282

FOOD PRODUCT

Norman John Carlile, Wirral, England, and Theodorus Johannes van Selm, Krimpen aan den Ijssel, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed May 7, 1973, Ser. No. 357,750

Int. Cl.^{2} A23D *3/00*

U.S. Cl. 426—603 **5 Claims**

1. A plastic emulsion food spread comprising an aqueous phase and a fat phase in the form of an emulsion in which the fat phase is partly crystallized and comprises by weight of the fat phase, from about 5% to about 40% of a triglyceride composition, the fatty acid residues of which are in random distribution and consist essentially of the acid residues of palm oil, and a major proportion of an additional fat where said fat is selected from the group consisting of corn, cottonseed, groundnut, safflower, sunflower, sesame and soybean oils.

3,939,283

COLORED FOODSTUFFS AND BEVERAGES

Arthur Ernest Billington, Watford, assignor to Beecham Group Limited, England

Filed Aug. 13, 1973, Ser. No. 387,750

Claims priority, application United Kingdom, Aug. 19, 1972, 38787/72; Oct. 5, 1972, 45943/72

Int. Cl.^{2} A23L *1/275*

U.S. Cl. 426—250 **12 Claims**

1. A foodstuff or beverage composition comprising an amount of 1-(azo-benzene-4-sulphonic acid)-2-naphthol-6, 8-disulphonic acid or an edible salt thereof sufficient to impart to the composition the desired degree of orange color in combination with a foodstuff or beverage.

3,939,284

PROCESS FOR THE PRODUCTION OF MEAT, POULTRY AND FISH ANALOGS AND THE PRODUCTS THEREOF

Cavit Akin, Naperville; Robert J. Flannery, Olympia Fields, both of Ill., and Franklin D. Darrington, Highland, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Jan. 29, 1975, Ser. No. 545,031

Int. Cl.^{2} A23J *3/00;* **A23L** *1/30, 1/275, 1/28*

U.S. Cl. 426—250 **25 Claims**

1. A process for imparting meatlike texture to mixtures of protein materials comprising the steps of:

- a. preparing a mixture of a single-cell protein material and at least one material selected from the group consisting of (1) animal protein and (2) plant protein, said mixture containing about 5 to about 50 percent of the single-cell protein component;
- b. adjusting the moisture level to about 20 to about 45 percent;
- c. extruding the moisturized protein mixture at temperatures within the range of 210° to 385°F. to provide a shaped extrudate;
- d. drying the extrudate at temperatures ranging from about 130 to about 350°F.; and
- e. cooling the dried extrudate to produce a product which has meatlike chewability and resists dispersion in water.

3,939,285

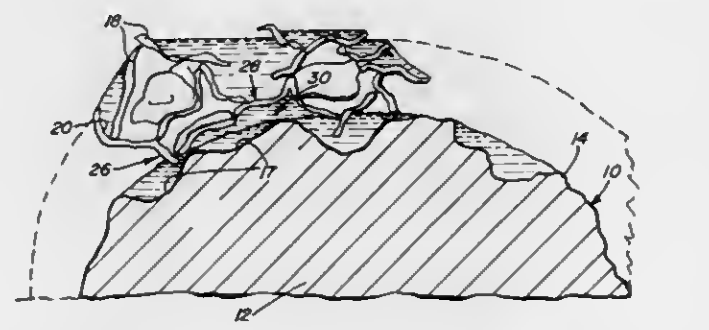
METHOD OF MAKING AGGLOMERATES COMPRISED OF PARTICLES FOR CARRYING LIQUID

Charles B. Garrett, Sr.; Roger L. Garrett, both of Alexandria, and Alan B. Rubin, Fairfax, all of Va., assignors to Adams Laboratories, Inc., Alexandria, Va.

Filed Nov. 6, 1973, Ser. No. 413,214

Int. Cl.^{2} A23C *9/00*

U.S. Cl. 426—285 **10 Claims**



10. A method for converting a liquid to a semi-dry granular form that is convenient to handle, the method comprising the following steps:

combining adsorptive primary carrier particles that are resistant to shearing, with a liquid, the particles insoluble in the liquid, until saturation of the particles results to form a damp material;

mixing thereto secondary adsorptive carrier particles, insoluble in the liquid and smaller than the primary carrier particles, for causing the formation of agglomerates, each agglomerate comprising secondary carrier particles adhering to a primary carrier particle, adjacently positioned particles of the agglomerates creating cavities filled with the liquid, the agglomerates forming a free flowing granular material with substantial surface moisture adsorbed by each agglomerate.

3,939,286

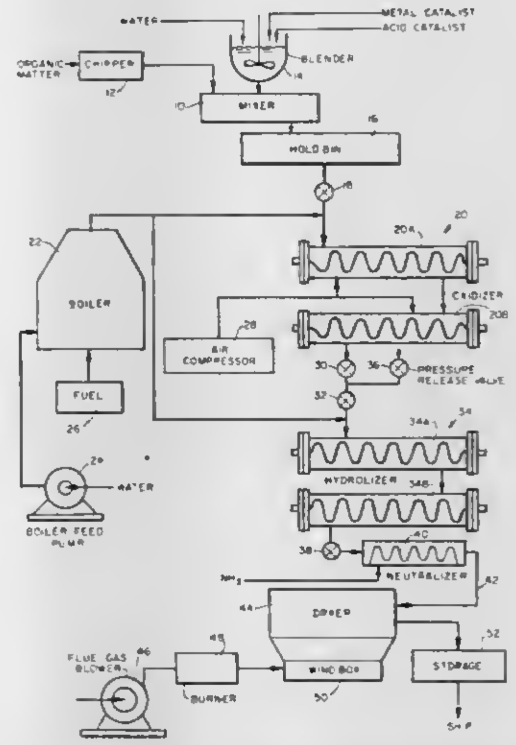
PROCESS FOR OXIDIZING AND HYDROLYZING PLANT ORGANIC MATTER PARTICLES TO INCREASE THE DIGESTABILITY THEREOF BY RUMINANTS

James W. Jelks, Rte. 1, Box 461, Sand Springs, Okla. 74063

Continuation of Ser. No. 327,414, Jan. 29, 1973, abandoned. This application Oct. 21, 1974, Ser. No. 516,596

Int. Cl.^{2} A23K *1/12, 1/18*

U.S. Cl. 426—312 **8 Claims**



1. A process for treating cellulosic plant matter particles to increase the digestability thereof by ruminants comprising:

- a. mixing said particles with (1) water, (2) an acid catalyst selected from the group consisting of carbonic, sulfuric, phosphoric, hydrochloric and acetic acids to produce a pH of less than 3, and (3) a metal catalyst selected from the group consisting of elemental iron, ferric chloride, ferric sulfate, ferric nitrate, elemental manganese and the non-toxic salts of manganese;
- b. subjecting the resulting mixture to an oxygen partial pressure of from about 20 to 30 psig at an elevated temperature of approximately 105°C to approximately 110°C for 12 to 20 minutes; to effect an exothermic reaction of oxygen with the cellulose in said particles whereby at least a portion of the lignin-cellulose bonds of said particles are broken and at least a portion of the cellulose molelcules are fragmented; and
- c. blowing off resulting gases of oxidation; and
- d. hydrolyzing the resulting oxidized mixture in the presence of the acid and metal catalysts added in step (a); at elevated temperature and pressure of between about 135°C and about 150°C under saturated steam conditions to convert at least a portion of the cellulose into saccharides and saccharide acids.

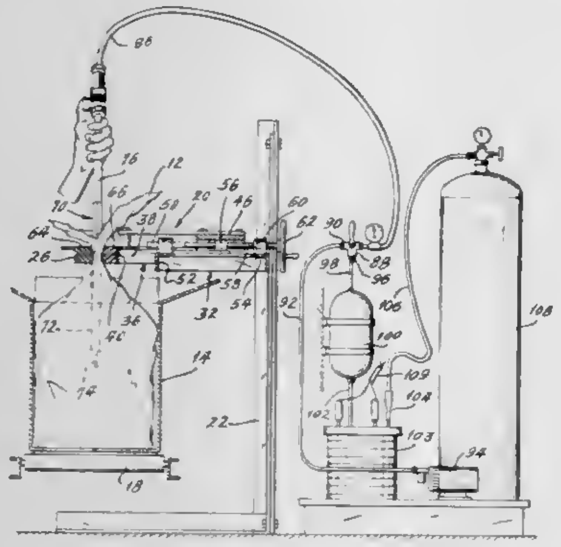
3,939,287
STERILIZING APPARATUS AND PROCESS

David F. Orwig, and Robert G. Roecklein, both of Kirkwood, Mo., assignors to Spicecraft, Inc., St. Louis, Mo.

Filed June 17, 1974, Ser. No. 479,987

Int. Cl.^{2} A23L *3/34*; **B65B** *31/04*, *55/00*

U.S. Cl. 426—316 **16 Claims**



16. A process fpr sterilizing food products packaged in bags comprising the steps of:
- supporting a bag containing a product to be sterilized with the open end of the bag extending between cushioned clamping members,
- inserting into the bag and into the product to be sterilized and between the cushioned clamping members a probe which has an outlet opening adjacent to the inserted end thereof,
- moving the cushioned clamping members against the bag and against the probe to seal the bag closed while the probe is inserted therein,
- operating multi-positioned valve means to a first position communicating the probe and the interior of the bag with a vacuum pressure pumping means to reduce the pressure in the bag to a predetermined subatmospheric pressure,
- moving the multi-position valve means to a second position discontinuing communication between the vacuum pumping means and the probe,
- thereafter moving the multi-position valve means to a third position communicating the probe and the interior of the bag with a source of gaseous sterilant for introduction therein,
- relieving some of the pressure produced by the cushioned clamping members against the probe, and
- withdrawing the probe from the bag and from the product therein.

3,939,288
INHIBITION OF WARMED-OVER FLAVOR IN MEATS

Kunito Sato, Chicago, and Gerald R. Hegarty, Elmhurst, both of Ill., assignors to Armour and Company, Phoenix, Ariz.

Continuation of Ser. No. 278,061, Aug. 4, 1972, Pat. No. 3,821,444. This application June 19, 1974, Ser. No. 480,690. The portion of the term of this patent subsequent to July 2, 1991, has been disclaimed.

Int. Cl.^{2} A22C *18/00*; **A23L** *1/31*

U.S. Cl. 426—332 **4 Claims**

1. Uncured meat which is resistant to the development of warmed-over flavor and which has incorporated therein 0.01 to 0.50 percent by weight of 3-hydroxy-2-ethyl-gamma-pyrone.

3,939,289
DRY CARBONATION SOURCE FOR A BEVERAGE CONCENTRATE AND METHOD OF PREPARING THE SAME

John Hornyak, Yonkers, and Howard D. Stahl, Hartsdale, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,309

Int. Cl.^{2} A23L *1/22*

U.S. Cl. 426—548 **15 Claims**

1. A process for preparing a dry carbonation source for use in preparing a carbonated beverage comprising:
- co-grinding calcium carbonate and an anhydrous, solid, water-soluble nontoxic acid
- wherein the cogrinding of the calcium carbonate and the acid
  - a. grinds the aggregates of calcium carbonate into finely-divided particles having an average primary particle size of less than about 100 millimicrons and being substantially free of aggregates in excess of about 10 microns,
  - b. causes intimate association of the acid with the calcium carbonate, and
  - c. grinds the acid to an average particle size of less than about 100 microns.

15. A process according to claim 13 wherein the sweetener comprises L-aspartyl-L-phenylalanine methyl ester.

3,939,290
WATER IN OIL EMULSION

Kimio Terada; Satoshi Fujita; Shigeru Oinuma, and Hiroshige Kohno, all of Tokyo, Japan, assignors to Asahi Denka Kogyo Kabushiki Kaisha, Japan

Filed July 19, 1973, Ser. No. 380,734

Claims priority, application Japan, July 21, 1972, 47-72495

Int. Cl.^{2} A23D *3/00*

U.S. Cl. 426—564 **5 Claims**

1. An edible water-in-oil emulsion, which is stable during storage and carriage and the phase of which can be reversed by mechanical working to form an oil-in-water emulsion, said water-in-oil emulsion comprising about 50 – 95% by weight of a continuous oil phase, about 5 – 50% by weight of a dispersed aqueous phase, a polyhydric alcohol fatty acid ester having a substantial proportion of a polyhydric alcohol unsaturated fatty acid ester in an amount of about 0.25 – 2.5% by weight of said water-in-oil emulsion, and a sucrose fatty acid ester having an HLB value of at least 10 in an amount of about 0.5 – 5% by weight of said water-in-oil emulsion.

3,939,291
GRINDER GAS FIXATION

Saul Norman Katz, Monsey, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed May 20, 1974, Ser. No. 471,633

Int. Cl.^{2} A23F *1/04*

U.S. Cl. 426—594 **8 Claims**

1. A method for aromatizing soluble coffee with an aromatized glyceride comprising the steps of:
- a. condensing as a frost an aroma-containing gas which has a high carbon dioxide content,
- b. placing the aroma-containing frost in a pressure vessel, the amount of frost being sufficient to provide a saturated carbon dioxide phase within the vessel,
- c. isolating the vessel from the atmosphere,
- d. supplying heat to the the vessel to raise the internal temperature above 87.8°F.,
- e. contacting within said heated vessel the frost aromas and a liquid glyceride phase said glyceride being present in the vessel at a level of about one gram of glyceride to 0.5 to 6 grams of the frost; thereafter,
- f. slowly releasing pressure from the vessel in a manner which avoids the formation of liquid carbon dioxide, and then
- g. combining the aroma-bearing glyceride with coffee solids.

3,939,292
PROCESS FOR STABLE PHASE III POTASSIUM NITRATE AND ARTICLES PREPARED THEREFROM

George A. Rohrer, Sault St. Marie, Mich., assignor to Technovation, Inc., Sault Ste. Marie, Mich.

Continuation-in-part of Ser. No. 76,059, Sept. 28, 1970, Pat. No. 3,728,694. This application Dec. 18, 1972, Ser. No. 316,417

Int. Cl.^{2} B05D *3/06*

U.S. Cl. 427—55 **6 Claims**

1. A process for the preparation of a Phase III potassium nitrate which is stable at ambient conditions, comprising:
- a. melting reagent grade potassium nitrate in the presence of a vacuum having a maximum pressure of about 1×10^{-5} torr,
- b. evaporating the melted potassium nitrate at a temperature of from about 390° C to 440° C while maintaining the vacuum,
- c. collecting the vapors in the form of a thin film of Phase III potassium nitrate, and
- d. relieving the vacuum to atmospheric pressure and allowing the temperature to reach room temperature while maintaining a moisture-free atmosphere.

3,939,293
METHOD FOR PASSIVATING CHROMIUM

Vlasta Brusic, Mount Kisco, and Robert O. Lussow, Hopewell Junction, both of N.Y., assignors to International Business Machines, Corporation, Armonk, N.Y.

Filed Apr. 30, 1974, Ser. No. 465,657

Int. Cl.^{2} C23F *7/02*

U.S. Cl. 427—403 **11 Claims**

1. A process for passivating chromium which comprises contacting chromium at a temperature of from about 425°C to about 475°C with O_2 for a period of time greater than twenty minutes to grow a passivating chromium oxide film thereon.

3,939,294
ADHESIVES AND THEIR USE

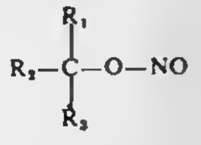
John William Fieldhouse, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 1, 1974, Ser. No. 493,796

Int. Cl.^{2} B32B *27/40;* **C08G** *18/00;* **B29H** *5/02*

U.S. Cl. 428—424 **12 Claims**

1. A lamination of two rubber substrates adhered by a cured adhesive composition which comprises an organic isocyanate and an adhesive promoter having the formula



$$R_2-\overset{\displaystyle R_1}{\underset{\displaystyle R_3}{\overset{|}{\underset{|}{C}}}}-O-NO$$

or

$$X.R(NH.COO.NO)_x$$

in which R_1, R_2 and R_3 represent a saturated or unsaturated hydrocarbyl group of 2 to 16 carbon atoms or C, R_1, R_2 and R_3 represent a hydrocarbyl group which includes a cyclic-containing aliphatic hydrocarbyl group of 5 to 7 carbon atoms, R is an aliphatic, cycloaliphatic or aromatic hydrocarbyl group of 1 t0 16 carbon atoms, X is hydrogen or —NCO or —NH-COO.NO or —NH.COO.C_6H_5 and x is 1 or 2.

3,939,295
PROTECTIVE COATINGS AND FRITS THEREFOR

Robert Robertson, Warrington, and Reginald Arthur Read, Lymm, both of England, assignors to Radiation Limited, London, England

Continuation-in-part of Ser. No. 140,566, May 5, 1971, abandoned. This application Dec. 22, 1972, Ser. No. 317,271

Claims priority, application United Kingdom, May 12, 1970, 23039/70

Int. Cl.^{2} C32B *15/00;* **C23D** *5/00*

U.S. Cl. 428—539 **11 Claims**

1. A process for providing a surface with a catalytically-active glass ceramic coating comprising the steps of
- i. producing a glass ceramic frit having a formulation lying within the ranges SiO_2 30–70% by weight: Al_2O_3 0–25% by weight: LiO_2 and/or Na_2O and/or K_2O (in total) 0-30% by weight: CaO and/or SrO and/or BaO and/or MgO (in total) 10–40% by weight: ZnO 0–10% by weight: and B_2O_3 0–20% by weight,
- ii. milling the frit to a fineness of from 2–20 grams on a 200 mesh sieve (50 ml. sample),
- iii. preparing a slurry from the frit,
- iv. incorporating a catalyst in the slurry,
- v. coating the surface with the slurry and drying the same, and,
- vi. firing the surface with the dried slurry at a temperature within the range of from 650°–950°C to produce a fully-fired glass ceramic coating with a porosity in excess of about 20%.

3,939,296

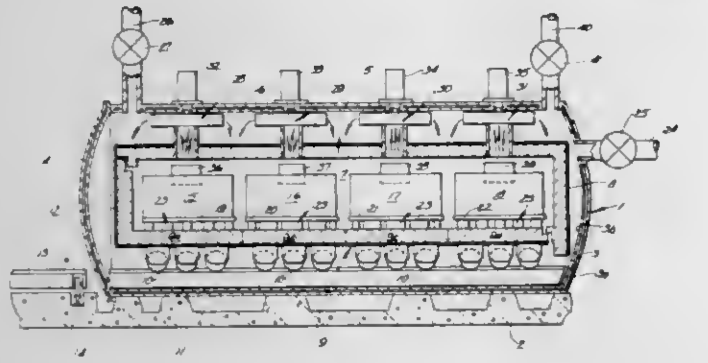
ANNEALING FURNACE BASE PLATE SUPPORTS

John H. Burger; John R. McClelland, both of Butler, and Robert P. Dunkle, Kittanning, all of Pa., assignors to Armco Steel Corporation, Middletown, Ohio

Filed Sept. 24, 1974, Ser. No. 508,698

Int. Cl.² F27D *3/02, 3/12*

U.S. Cl. 13—25 **19 Claims**



1. In an annealing furance of the type comprising an outer enclosure surrounding an insulated heating chamber and wherein the bottom of said heating chamber comprises a metallic coil-carrying car mounting on its upper surface at least one base plate upon which a coil of metal to be anealed is located, said car having an electrical heating element above its upper surface and beneath said base plate, improved supports for said base plate on said upper surface of said car, each of said supports comprising at least one block of refractory material mounted on said upper surface of said car and upon which said base plate rests, said supports being so arranged on said upper surface of said car as to afford maximum support for said base plate whereby to prevent warping of said base plate and distortion of said coil thereon during an annealing cycle, said supports being of such height as to accommodate said heating element between said upper surface of said car and said base plate in spaced relationship to both and to permit circulation of an atmosphere about said heating element.

3,939,297

STOKER FEED SYSTEM

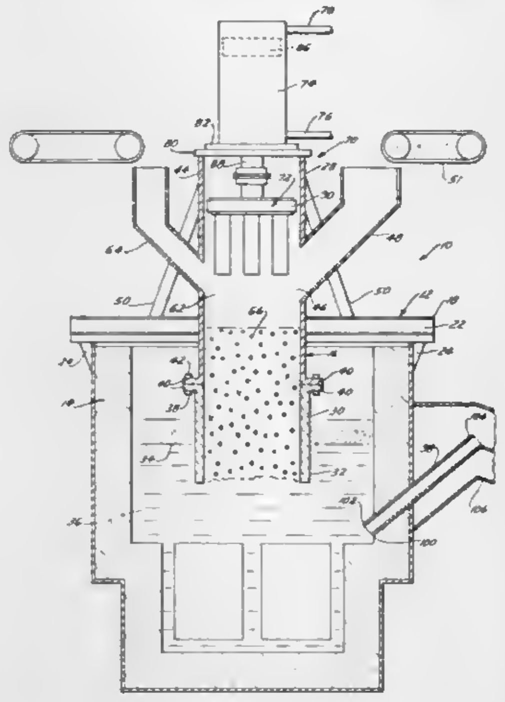
William F. Aylard, Northfield, and Albert I. Blank, Lyndhurst, both of Ohio, assignors to Chase Brass & Copper Co., Incorporated, Cleveland, Ohio

Filed Dec. 7, 1973, Ser. No. 422,858

Int. Cl.² H05B *5/14;* **C21B** *11/00*

U.S. Cl. 13—29 **11 Claims**

1. A stoker feed system for supplying metal to a electrical induction melting furnace, said stoker feed system comprising a generally vertically extending feed tube having opposed upper and lower end portions, with the lower end portion thereof being submerged below the upper surface of molten metal in said induction furnace; at least one feed chute communicating with said feed tube adjacent the upper end portion thereof for supplying a charge to said feed tube for maintaining a column of metal in said feed tube above the upper surface of said molten metal in said furnace during operation thereof; means in said feed tube for compressing said metal in said feed tube and for moving the metal column in the feed tube downwardly in the tube to push the lower portion of the metal column in the feed tube into the molten mass in said induction furnace while maintaining the height of the compressed column of metal in the feed tube within a predetermined height range to allow condensation on the metal column in the feed tube of undesirable gases flowing up the feed tube from the furnace, and a molten metal discharge conduit operatively connected to said furnace, said conduit having a first end portion located in direct communication with said furnace adjacent the bottom of the melting furnace and a second end portion located outside of the furnace at a higher elevation than said first end portion of the discharge conduit and the lower end portion of the feed tube, thereby to provide direct discharge of molten metal from the furnace while automatically and independently maintaining a relatively constant molten metal level in said induction furnace above the lower end portion of the feed tube during operation thereof.



3,939,298

JOINTS FOR ELECTRIC CABLES

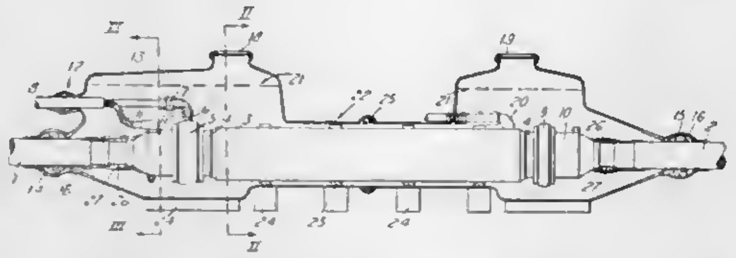
Cyril Henry Gosling, London; David Glick, Rainhill, near Liverpool; Alan Leslie Powell, Bexleyheath, and William Young Murray, Prescot, all of England, assignors to British Insulated Callender's Cables Limited, London, England

Filed Feb. 12, 1968, Ser. No. 704,763

Claims priority, application United Kingdom, Feb. 15, 1967, 7323/67The portion of the term of this patent subsequent to Jan. 9, 1985, has been disclaimed.

Int. Cl.² H02G *15/08*

U.S. Cl. 174—21 R **15 Claims**



1. A joint enclosure enclosing a joint between fluid impregnated metal sheathed power cables comprising a fluid-tight enclosure surrounding the conductor joint and being divided transversely into at least three parts including a central part of low thermal resistance, surrounding the joint between cable conductors, and two end parts, which electrically insulate the central part from the sheaths of the cables connected at the joint and are each sealed both to the central part and to one of the cable sheaths, in which

a. at one end of the joint a terminal passes through a ring shaped insulating part,

b. a bonding lead passes through but is insulated from the central part of the fluid-tight enclosure, and

c. the bonding lead is connected between the terminal and, at the other end of the joint, the cable sheath of one of the cable lenghts connected at the joint.

3,939,299

ALUMINIUM ALLOY CONDUCTOR WIRE

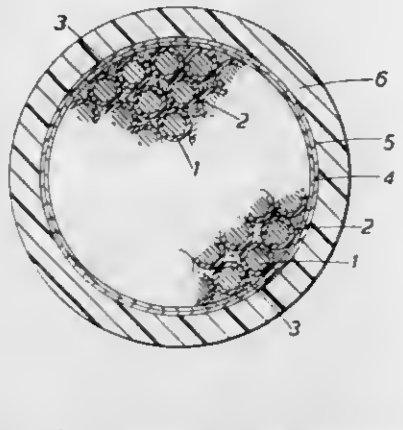
Peter Michael Raw, Harrow, England, and Rees Jenkin Llewellyn, Burnaby, Canada, assignors to British Insulated Callender's Cables Limited, London, England

Filed July 31, 1974, Ser. No. 493,532

Claims priority, application United Kingdom, Aug. 9, 1973, 37869/73

Int. Cl.² H01B *1/02;* **H02G** *15/20*

U.S. Cl. 174—23 R **14 Claims**



1. A conductor wire composed of an aluminium alloy consisting of between 98.0 and 99.5 weight percent aluminium; between 0.3 and 1.0 weight percent iron; between 0.16 and 1.2 weight percent silicon; and trace quantities of conventional impurities.

3,939,300

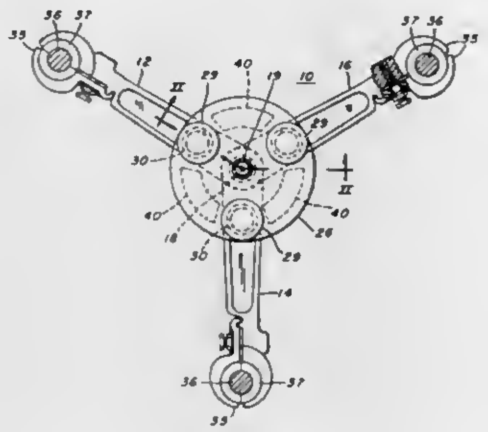
FRAMELESS DAMPING SPACER WITH CLOSE COIL SPRING

Ronald G. Hawkins, Massena, N.Y., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 24, 1975, Ser. No. 552,183

Int. Cl.² H02G *7/14, 7/12*

U.S. Cl. 174—42 **15 Claims**



1. A frameless damping spacer for overhead conductors comprising at least two elongated, rigid, spacer arms pivotally connected to each other at one of their ends adjacent a central location of the spacer, rigid pin means pivotally connecting the one end of said arms to each other, conductor clamps respectively located at the other ends of said arms remote from said central location for connecting the arms to respective overhead conductors, with each conductor clamp having a groove for receiving one of the conductors, and resilient damping means resiliently connecting the arms together, said resilient damping means having a longitudinal axis extending in a direction substantially perpendicular to the longitudinal axes of the spacer arms, and generally parallel to the axes of the grooves of the conductor clamps.

3,939,301

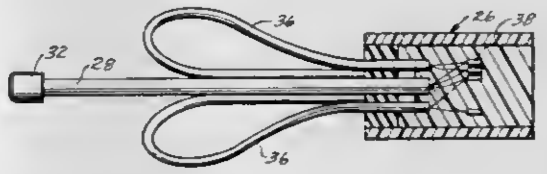
FIXED COUNT UNDERGROUND CABLE TERMINAL

William H. Channell, 122 Oak Tree Drive, Glendora, Calif. 91740

Filed Apr. 29, 1974, Ser. No. 464,853

Int. Cl.² H02G *3/00*

U.S. Cl. 174—72 R **4 Claims**



1. A cable junction for providing connection between a multi-line telephone cable and a plurality of service cables, comprising a housing, a single short stub length of input cable having a plurality of conductor wires in the cable, one end of the cable stub extending into the housing, a plurality of short lengths of output cables, each output cable having at least one conductor wire, one end of the output cables extending into the housing with the respective conductor wires being connected in the housing to the conductor wires of the input cable, sealing means filling the housing and permanently sealing the conductor wire connections, and means permanently sealing the other ends of the short lengths of output cable.

3,939,302

METHOD AND APPARATUS FOR RECORDING AND/OR REPRODUCING A VIDEO SIGNAL ON A PHOTOGRAPHIC RECORD DISC

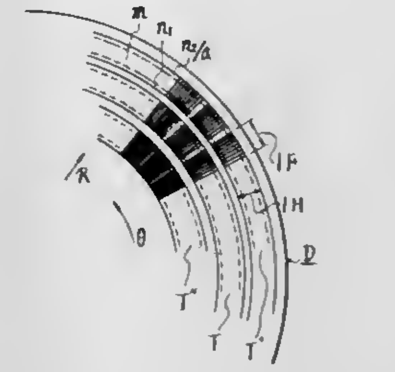
Nobutoshi Kihara, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 14, 1974, Ser. No. 451,298

Claims priority, application Japan, Mar. 16, 1973, 48-30741

Int. Cl.² G11B *7/02*

U.S. Cl. 178—6.6 R **24 Claims**



1. A method of recording television signals having line and field intervals in substantially circular record tracks on a rotatable record disc, comprising the steps of:

pulse modulating the video information in each line interval of said television signals;

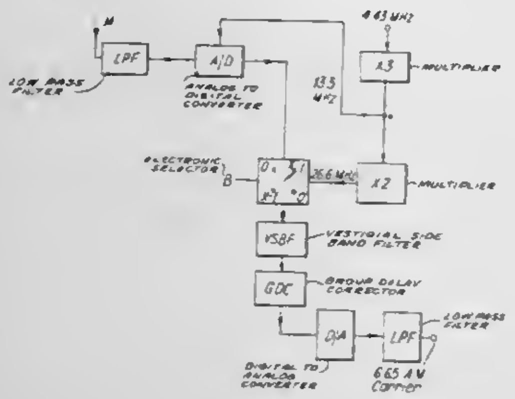
generating pilot carrier signals during at least a portion of each line interval of said television signal for use during subsequent playback of the recorded television signals to demodulate the video information;

repeatedly scanning successive scan lines across the width of one of said substantially circular record tracks, said scan lines being substantially transverse to the circumferential direction of said record track; and

recording in each of said scan lines said pulse modulated video information to be recorded and said generated pilot carrier signals, said pilot carrier signals being recorded during at least a beginning or end portion of each of said scan lines.

3,939,303
DIGITAL VIDEO MODULATION APPARATUS

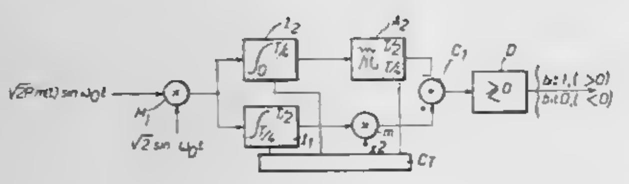
Frederick Henry Wise, London, England, assignor to Independent Broadcasting Authority, London, England
Filed Aug. 13, 1973, Ser. No. 387,769
Claims priority, application United Kingdom, Aug. 15, 1972, 38075/72
Int. Cl.^{2} H04N *5/40*
U.S. Cl. 178—7.1 6 Claims



1. Apparatus for producing, at an output, digital output signals defining the timing and the levels of the peak values, and the timing of the zero values, for a sub-carrier signal amplitude modulated by a modulating signal which comprises means for providing digitized samples of the modulating signal at a rate of twice the frequency of the sub-carrier, selector means for feeding the samples to the output with alternate samples changed in value while preserving their timing relative to the remaining samples, and means for introducing nominally zero signals midway between the samples to define the occurrence of zero levels.

3,939,304
DECOMMUTATOR FOR EXTRACTING ZERO AND ONE BITS FROM A CODED MESSAGE OF DURATION-MODULATED PULSES

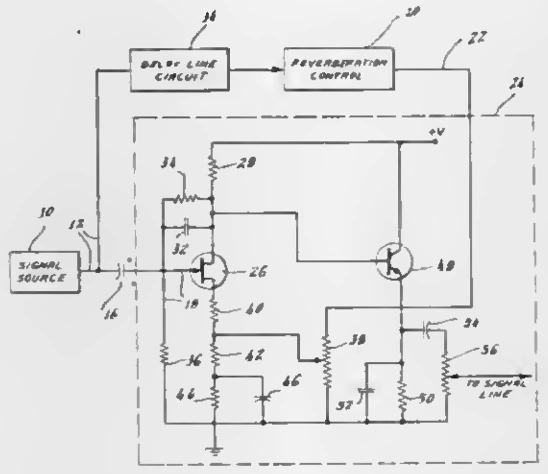
Andre Auguste Ribes, Toulouse, France, assignor to Centre National d'Etudes Spatiales, Paris, France
Continuation-in-part of Ser. No. 321,968, Jan. 8, 1973, abandoned. This application Jan. 30, 1975, Ser. No. 545,743
Claims priority, application France, Jan. 7, 1972, 72.00456
Int. Cl.^{2} H04L *15/00*
U.S. Cl. 178—68 6 Claims



1. A decommutator for extracting 0 and 1 bits from duration-modulated pulses of a conventionally coded message in which the initial instants of the pulses are evenly spaced over a time period T and the length of which varies according to the information contained in the pulse, said pulses being first detected before being applied to the decommutator, said decommutator comprising a first integrator and a second integrator, means for applying the detected duration-modulated pulses conjointly to both said integrators, a gated storage element, a multiplying member having a constant multiplication factor, means for connecting the first integrator to the storage element so as to store therein the signals integrated by this first integrator, means for connecting the second integrator to the multiplying member so as to multiply the magnitude of the signals integrated in said second integrator by said constant factor, a comparison means having two inlets and one outlet, means for connecting the storage element and the multiplying member each to one different inlet of the comparison means, and means for controlling the integration intervals of the integrators and the gating of the storage element so that a said pulse is integrated in the first integrator over a period carrying no said information and stored in a succeeding portion of the same period and that said pulse is integrated in the second integrator over a period carrying said information and multiplied by said factor, whereby the stored integrated signals and the multiplied integrated signals are compared in said comparison means for providing 0 and 1 bits, and means for connecting the outlet of said comparison means to a bit detector for detecting said 0 and 1 bits.

3,939,305
REVERBERATION MIXER CIRCUIT

Robert Clement Allen Crooks, Arcadia, Calif., assignor to Norlin Music, Inc., Lincolnwood, Ill.
Filed Sept. 30, 1974, Ser. No. 510,366
Int. Cl.^{2} H04R *3/00*
U.S. Cl. 179—1 J 6 Claims



1. A circuit for mixing a direct signal with a reverberation signal comprising:

an active gain-producing element;

means for applying the direct signal to said element in a manner such that said signal is amplified by the element;

amplitude control means for said reverberation signal;

and means for connecting said control means to said element in a manner such that, as the amplitude for the reverberation signal is increased by said control means, the gain of the element for the direct signal is reduced, the reverberation signal being applied to the element through the amplitude control means and the means for connecting said control means to the element;

whereby the output from the element has a direct signal component and a reverberation signal component, the direct signal component decreasing as the reverberation signal component increases.

3,939,306
VIDEOTELEPHONE SYSTEM WITH CENTRALIZED SYNCHRONIZATION CONTROL

Virgilio Mosca, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy
Filed June 11, 1974, Ser. No. 478,282
Claims priority, application Italy, June 12, 1973, 25174/73
Int. Cl.^{2} H04N *5/04*
U.S. Cl. 179—2 TV 8 Claims

1. A videotelephone system comprising:

a central office;

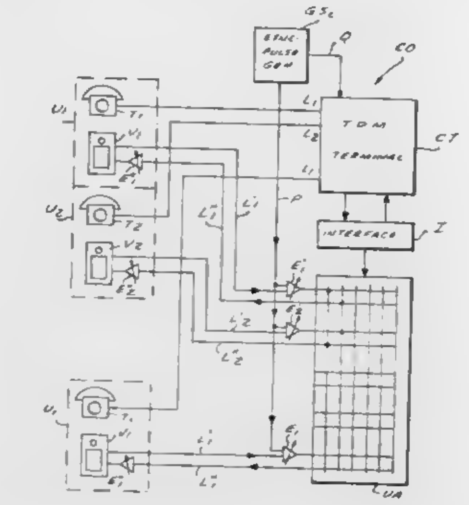
a multiplicity of outlying stations served by said central office, each of said stations including a telephone apparatus with signaling means, a video transmitter provided with first sweep-control means and a video receiver provided with second sweep-control means;

circuitry connecting said stations with said central office, said circuitry including a first link extending from each video transmitter to said central office and a second link extending from said central office to each video receiver;

signal-responsive equipment at said central office for establishing a connection between two stations, said equipment including switch means with inputs tied to said first links and with outputs tied to said second links;

a source of synchronizing pulses at said central office connected in parallel to said first links;

pulse-extraction means at each of said stations connected to said second link thereof for activating said first and second sweep-control means by said synchronizing pulses;



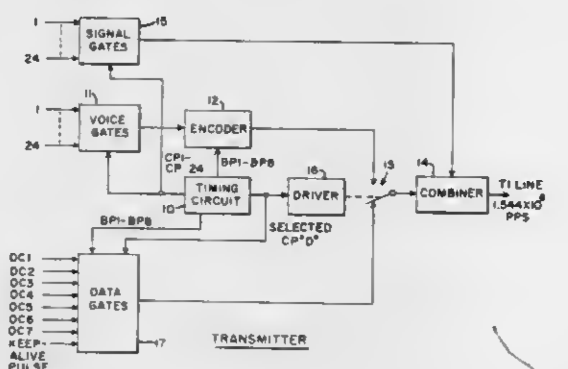
first amplifier means inserted in said first links at said central office; and

second amplifier means inserted in said second links at said stations, said source being connected to said first links through said first amplifier means;

said first amplifier means comprising an input stage, an output stage and a network including a capacitance and a normally open electronic shunt switch connected to said first link between said stages, said electronic switch being connected to said source for periodic closure by a train of quenching pulses at the cadence of said synchronizing pulses to discharge said capacitance, said synchronizing pulses being fed by said source to said output stage.

3,939,307
ARRANGEMENT FOR UTILIZING ALL PULSES IN A NARROW BAND CHANNEL OF A TIME-DIVISION MULTIPLEX, PULSE CODE MODULATION SYSTEM

Larry D. Bishop, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.
Filed Aug. 12, 1974, Ser. No. 496,478
Int. Cl.^{2} H04J *3/00*
U.S. Cl. 179—15 A 5 Claims



1. In a carrier system having a plurality of relatively wide band, time-division multiplexed channels each represented by N sequential coded pulses, an arrangement for transmitting N data pulses in at least a selected one of said relatively wide band channels comprising:

a. respective storage means for each of said N data pulses;

b. parallel to series converting means having N inputs and one output for producing a sequential series of pulses in response to the pulses at said N inputs;

c. means connecting (N − 1) of said storage means to a respective one of said inputs of said parallel to series converting means;

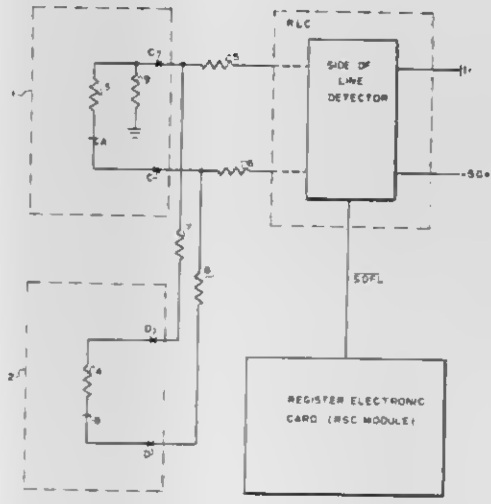
d. means connected to said (N − 1) storage means for detecting the presence of an undesired state of all (N − 1) stored data pulses;

e. means connected to the Nth storage means and to said detecting means for producing a pulse of desired state in response to said detecting means detecting said presence of an undesired state of all (N − 1) stored data pulses and for producing a pulse having the same state as the data pulse stored in said Nth storage means in response to the presence of at least one pulse of desired state stored in said (N − 1) storage means;

f. and means connecting said last-named detecting means to the Nth input of said parallel to series converting means.

3,939,308
ELECTRONIC SIDE OF LINE DETECTOR

David M. Shaver, and John A. Gauthier, both of Brockville, Canada, assignors to GTE Automatic Electric (Canada) Limited, Brockville, Calif.
Filed Sept. 27, 1974, Ser. No. 510,082
Int. Cl.^{2} H04M *15/36*
U.S. Cl. 179—17 A 10 Claims



1. An improved side of line detector for a communication switching system, said system coupled to at least one line including a first and second subscriber loop connected one at a time, said first subscriber loop having a mark impedance coupled to ground, said improved side of line detector comprising:

differential amplifier means having at least two inputs for producing an output signal when said two inputs are not equal;

input voltage divider means coupled to said line including,

first divider means for holding a first input of said amplifier means at a reference voltage, and

second divider means for holding a second input of said amplifier means at said reference voltage only when said mark impedance is not connected to said line;

comparison output means coupled to said differential amplifier means for producing a side of line signal when said differential amplifier means produces an output signal;

whereby only when said first subscriber loop and mark impedance is connected to said line, said comparison output means will produce said side of line signal.

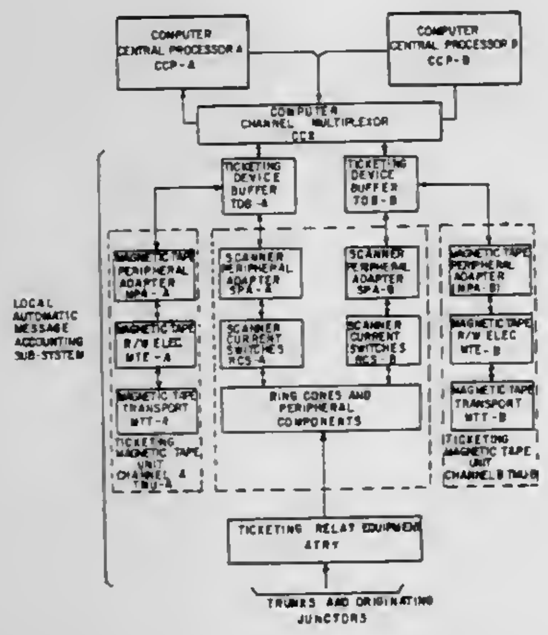
3,939,309
COMMUNICATION SWITCHING SYSTEM DATA RETRIEVAL AND LOADING ARRANGEMENT

William A. Malmgren, Glendale Heights, Ill., and Bryan F. Gearing, Bedford, Mass., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 18, 1974, Ser. No. 434,742

Int. Cl.^{2} H04M *15/06;* H04Q *3/54*

U.S. Cl. 179—18 ES **13 Claims**


COMPUTER CENTRAL PROCESSOR A CCP-A
COMPUTER CENTRAL PROCESSOR B CCP-B
COMPUTER CHANNEL MULTIPLEXOR CCX
TICKETING DEVICE BUFFER TDB-A
TICKETING DEVICE BUFFER TDB-B
LOCAL AUTOMATIC MESSAGE ACCOUNTING SUB-SYSTEM
MAGNETIC TAPE PERIPHERAL ADAPTER MPA-A
MAGNETIC TAPE R/W ELEC MTE-A
MAGNETIC TAPE TRANSPORT MTT-A
TICKETING MAGNETIC TAPE UNIT CHANNEL A TMU-A
SCANNER PERIPHERAL ADAPTER SPA-A
SCANNER CURRENT SWITCHES RCS-A
SCANNER PERIPHERAL ADAPTER SPA-B
SCANNER CURRENT SWITCHES RCS-B
RING CORES AND PERIPHERAL COMPONENTS
MAGNETIC TAPE PERIPHERAL ADAPTER MPA-B
MAGNETIC TAPE R/W ELEC MTE-B
MAGNETIC TAPE TRANSPORT MTT-B
TICKETING MAGNETIC TAPE UNIT CHANNEL B TMU-B
TICKETING RELAY EQUIPMENT ATRY
TRUNKS AND ORIGINATING JUNCTORS

1. In a communication switching system having a switching network for establishing communication paths selectively between calling and called lines, common equipment having memory means adapted for containing program information for facilitating the controlling of the establishment of the paths, scanning means for monitoring busy paths for ticketing purposes, the common equipment for generating ticketing information in response to said scanning means and for storing it in said memory means, a data retrieval and loading arrangement comprising:

- information storage means adapted to be operatively coupled to the system for transferring the ticketing information from said memory means and for storing said ticketing information therein, and said information storage means further adapted for selectively transferring the program information from said memory means and for storing said program information therein;
- adapter means responsive to the common equipment for conveying said ticketing information and said program information to said storage means for storage therein; and
- status means responsive to directive information from the common equipment for controlling said adapter means to transfer to said information storage means either said ticketing information or said program information.

3,939,310
STEREOPHONIC HEADSET WITH EAR TO EAR ACOUSTICAL PASSAGEWAY

Robert B. Hodges, 1522 Jewell Ave., Topeka, Kans. 66607

Filed Aug. 9, 1974, Ser. No. 496,327

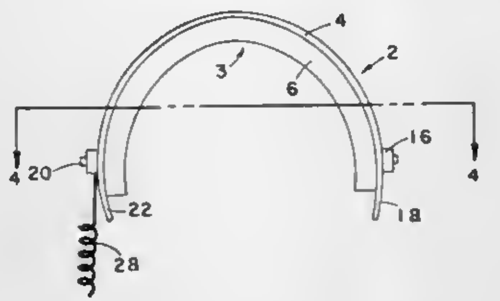
Int. Cl.^{2} H04M *1/05;* H04R *5/00*

U.S. Cl. 179—156 R **3 Claims**

1. A sound reproducing headset comprising:

a. a first and second earphone respectively adapted to produce sound from electrical signals, means supporting said earphones in generally opposed positions on the head of a listener and respectively in the vicinity of each of the listener's ears, and

b. means forming an enclosed, acoustical passageway having openings only adjacent said respective ears, said earphones being directed into said passageway in the respective vicinity of said passageway openings,



c. whereby the sound from said respective earphones intermixes in said passageway.

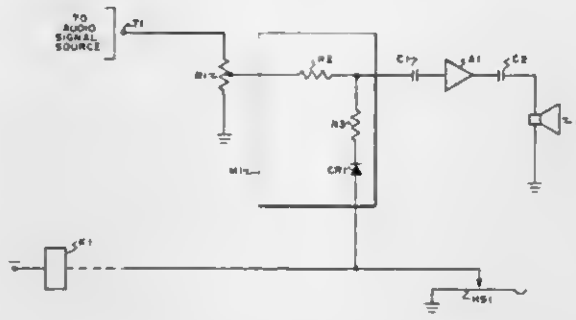
3,939,311
MUTING CIRCUIT FOR SUBSCRIBERS TELEPHONE

James W. Smith, Elmhurst, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 23, 1974, Ser. No. 517,137

Int. Cl.^{2} H04M *1/00*

U.S. Cl. 179—81 R **7 Claims**



1. A telephone subscriber subset including: a transducer; a hook switch connected to a source of biasing potential; an input terminal connected to a source of audio signals; and a muting circuit connected between said terminal and said transducer initially operated to couple audio signals from said terminal to said transducer at substantially the same level as received at said terminal; said muting circuit further including a circuit connection to said hook switch wherein biasing potential is conducted to said muting circuit in response to an off-hook condition of said hook switch so that the level of said audio signals conducted from said terminal to said transducer is reduced.

3,939,312
PATTERN VOICE COIL TRANSDUCER HAVING PERMANENT MAGNET PLATES OF A SINGLE POLARITY

Norman J. McKay, 1670 Kilborn Ave., Apt. 17, Ottawa, K1H 6M9, Canada

Filed Mar. 12, 1974, Ser. No. 450,379

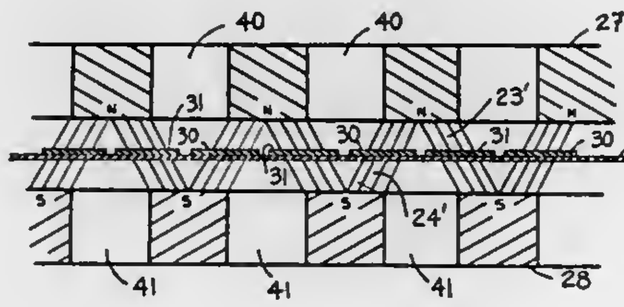
Claims priority, application Canada, Mar. 13, 1973, 166015

Int. Cl.^{2} H04R *9/02*

U.S. Cl. 179—115.5 PV **14 Claims**

1. Electromechanical transducer apparatus which comprises,

- permanent magnet field generating means comprising a first assembly of permanently magnetic material displaying a sole pattern of magnetic poles solely of one polarity, a second assembly of permanently magnetic material spaced from the first assembly and displaying a second sole pattern corresponding to the first pattern of poles solely of opposite polarity to that of the first pattern, and means orienting said assemblies relatively to one another whereby a flux pattern is set up between the first and second patterns of poles across the space separating the two assemblies consisting of a pattern of similarly directed but alternately inclined field zones, said assemblies each comprising a sheet of ferrite material each displaying the respective magnetic pole pattern on one face thereof,
- an electrically insulating diaphragm in said space,
- conductors on said diaphragm, each conductor extending substantially across a respective field zone,



- and means connecting the ends of said conductors into a circuit in the sense that forces on said conductors reinforce in a chosen direction transverse to the diaphragm to move the diaphragm when current flow is in one direction in said circuit, and forces on the conductors reinforce to move the diaphragm in the opposite direction when current flow in the circuit is in the opposite direction.

3,939,313
ROTARY SWITCH ASSEMBLY HAVING FIXED CONTACTS WHICH MAY BE SELECTIVELY SEGMENTED

Yoshikazu Hayashi, Gifu, and Mitsuo Sato, Aichi, both of Japan, assignors to Kabushiki Kaisha Tokai Riki Denki Seisakusho, Japan

Filed May 20, 1974, Ser. No. 471,562

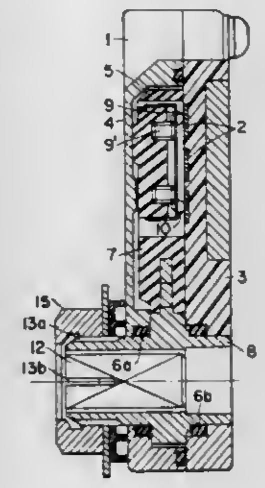
Claims priority, application Japan, July 23, 1973, 48-87036[U]

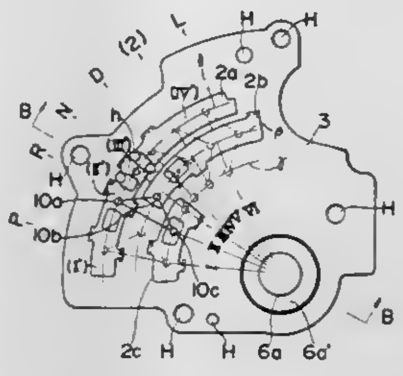
Int. Cl.^{2} H01H *21/62, 1/06*

U.S. Cl. 200—11 J **9 Claims**

1. A rotary switch of the sliding contact type comprising

- a base plate of insulating material,
- a plurality of concentric, arcuate rows of stationary contact plates secured at a surface of said base plate,
- a rotary contact arm having a plurality of contacts, said rotary contact arm including a hub,
- said hub including an axially projecting portion being threaded at the outer periphery thereof, and said hub having a rectangular bore extending therethrough, said hub projecting portion being formed with two intersecting grooves perpendicular to the sides of said rectangular bore, said two intersecting grooves extending through said projecting portion,
- a rotatable shaft received in said hub, said rotatable shaft including a distal end portion having a rectangular cross-section, said distal end portion being inserted into said rectangular bore of said hub,
- a tapered nut having a central rectangular bore, said tapered nut threadedly engaging the threaded outer periphery of said projecting portion of said hub, such that the inner faces of said rectangular bore of said projecting portion of said hub forcibly presses against said distal end portion, thereby firmly securing said rotatable shaft to said hub, and
- a cover plate connected to said base plate for providing a cavity enclosing said rotary contact arm so that said contacts of said rotary contact arm slidably contact said stationary contact plates at positions corresponding to predetermined angles of rotation of said rotatable shaft.





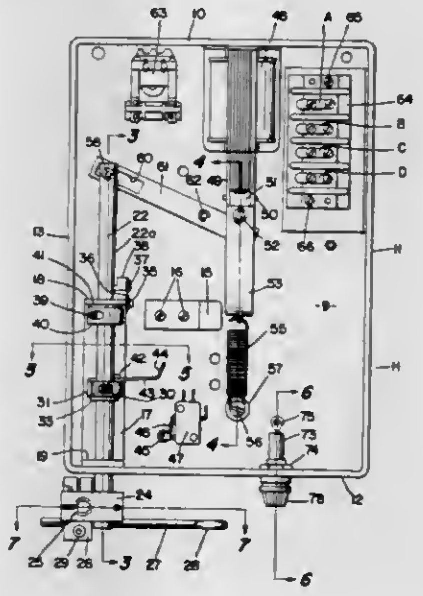
3,939,314
SAFETY DEVICE FOR POWER-OPERATED PRESSES AND THE LIKE

John K. Loeser, Mayfield Village, Ohio, assignor to The Positive Safety Manufacturing Company, Eastlake, Ohio

Filed June 24, 1974, Ser. No. 482,445

Int. Cl.^{2} H01H *3/16;* F16D *9/00*

U.S. Cl. 200—61.42 **6 Claims**



1. In a safety device of the character described, a housing, a probe shaft mounted in said housing for vertical reciprocal sliding movement, a sensor or probe supported by said probe shaft, a solenoid mounted on said housing and having an armature movable along an axis parallel with said probe shaft, a beam mounted for pivotal movement in said housing, and operatively connected at one end with said probe shaft, said beam movable in response to energization of said armature to

permit said probe shaft and sensor or probe to fall by gravity, spring-actuated means operative in opposition to said armature for moving said beam to cause said probe shaft to be moved to a raised inoperative position, and means including an electrical circuit for controlling operation of a press or machine in response to said gravity fall, said circuit including a limit switch having a switch closing arm provided with a roller, and a switch actuator arm supported by said probe shaft and having a terminal inclined portion adapted to engage said roller, and to have a combined rolling and wedging engagement with the roller during said gravity fall, whereby bounce or vibration of the probe shaft and sensor is eliminated and positive operation of the limit switch and probe or sensor is assured.

3,939,315

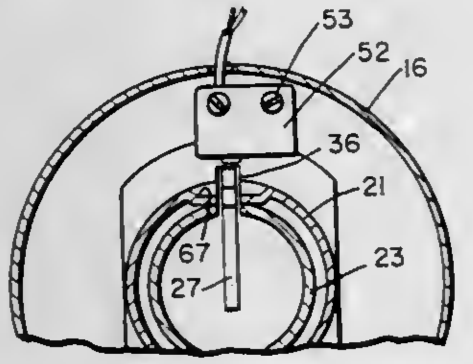
ELECTRIC SWITCH CONTAINED WITHIN LOCK FRAME AND ACTUATED BY MOVEMENT OF LOCKING BAR

Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed June 10, 1974, Ser. No. 477,899

Int. Cl.^{2} H01H *27/00*

U.S. Cl. 200—61.64 **4 Claims**



1. A door lock condition indicator comprising a lock frame, an outer hub on said frame concentric with a rotational axis, an inner hub on said frame concentric with said axis, an outer spindle rotatable in said outer hub about said axis, an inner spindle rotatable in said inner hub about said axis, a locking bar, means for mounting said locking bar in said inner spindle for movement relative to said lock frame parallel to and along said axis between a first position in non-rotational engagement with said lock frame and free from said outer spindle and a second position in non-rotatable engagement with said lock frame and in non-rotatable engagement with said outer spindle, an electric switch having a radially movable actuator, and means for mounting said switch on said lock frame with said actuator in position radially and axially free of said locking bar in one of said locking bar positions and axially engaged and radially moved by said locking bar in the other of said locking bar positions.

3,939,316

PANIC STOPLIGHT SYSTEM FOR AUTOMOBILES USING A FLUID PRESSURE SWITCHING DEVICE

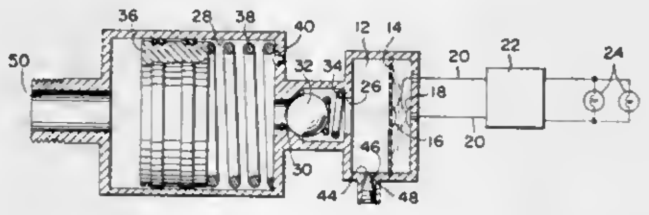
Edward J. Stropkay, 11348 Spruce Drive, Chesterland, Ohio 44026

Filed Oct. 19, 1973, Ser. No. 407,822

Int. Cl.^{2} H01H *35/38*

U.S. Cl. 200—82 D **3 Claims**

1. A fluid pressure switching device in combination with a vehicle braking system for indicating panic braking, comprising: a fluid accumulator chamber, fluid supply means for supplying fluid to said accumulator chamber at variable rates for pressurizing said accumulator chamber, said fluid supply means including a fluid supply chamber communicating through a supply conduct with said accumulator chamber and volume reducing means for reducing the volume of said fluid supply chamber to force fluid therefrom into said accumulator chamber, a flow control check valve means in said supply conduit for preventing flow of fluid from said accumulator chamber to said fluid supply chamber, said vehicle braking system including a manually operated brake actuator and fluid conduit means through which pressure is applied by said brake actuator for applying the vehicle brakes, said brake actuator also being coupled via said fluid conduit means to supply pressure to said volume reducing means for operation of the latter in response to pressure in said fluid conduit means to reduce the volume of said fluid supply chamber for pressurizing said accumulator chamber at a rate proportional to the force applied to said brake actuator, a switch connected with signal lights of the vehicle, movable switch operating means responsive to a predetermined pressure in said accumulator chamber for operating said switch, a normally open bleed orifice in fluid communication with said accumulator chamber for passing fluid from the latter to relieve pressure therein at a predetermined rate, said orifice being of a size to preclude pressurization of said accumulator chamber in excess of such predetermined pressure when said fluid supply means supplies fluid to said accumulator chamber at or below such predetermined rate and to permit temporarily pressurization of said accumulator chamber in excess of such predetermined pressure when said fluid supply means supplies fluid to said accumulator chamber above such predetermined rate to effect movement of said switch operating means to operate said switch, the relationship of the size of said bleed orifice, the predetermined pressure at which said switch operating means operates said switch, and the fluid pressures in said fluid conduit means in response to operation of said brake actuator being such that said switch operating means is operative to operate said switch when said brake actuator has been operated for panic braking.



3,939,317

ELECTRIC COMPRESSED-GAS CIRCUIT BREAKER

Dieter Noack, and Heiner Marin, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

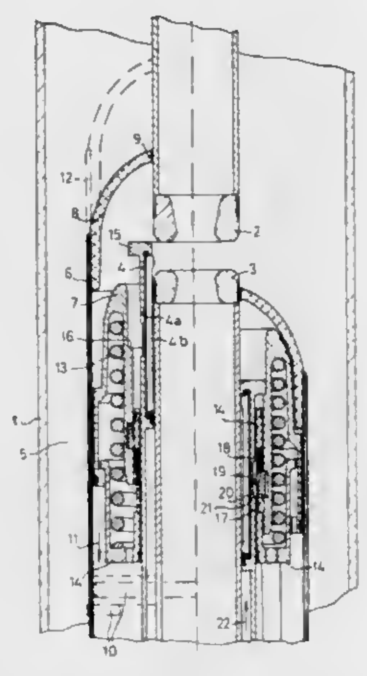
Filed Sept. 12, 1974, Ser. No. 505,386

Claims priority, application Germany, Sept. 18, 1973, 2347605

Int. Cl.^{2} H01H *33/88*

U.S. Cl. 200—148 A **6 Claims**

1. In an electric compressed-gas circuit breaker having a contact arrangement including a movable switching piece and a stationary contact piece and being equipped with a drive actuated extinguishing device for extinguishing the arc drawn as the breaker switches from the closed position to the open position, the extinguishing device comprising: a movable blast cylinder member; a blast piston member axially movable relative to said blast piston; a drive connected to one of said members and to said switching piece for moving the same when the breaker is moved between the opened and closed positions thereby imparting kinetic energy thereto during the movement between said positions; energy storage means for receiving and storing at least a portion of said energy in a manner so as to load the other one of said members therewith; engaging means for engaging said other one of said members to move the same in a direction to load said energy storage means with said kinetic energy toward the end of the movement from said closed position to said open position; and, latching means for releasing said stored energy at the beginning of the next movement from said closed position to said open position to cause said other member to be propelled by said stored energy in a direction opposite to said one member whereby additional compression of the gas is achieved.



3,939,318

ELECTRICAL PUSH-BUTTON SWITCH

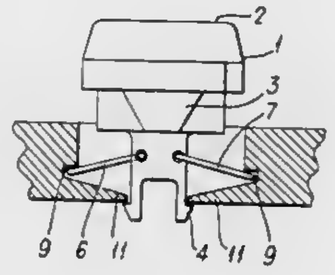
John Graham Brown, Dartford, and John Peter Stocker, London, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 25, 1974, Ser. No. 464,015

Claims priority, application United Kingdom, May 4, 1973, 21246/73

Int. Cl. H01h *13/26*

U.S. Cl. 200—159 R **7 Claims**



1. An improved electrical push-button switch of the type having a shank extending through a passage in a switch housing, and a pair of springs extending between said housing and said shank, whereby depressing said push button causes said shank to move against the tension of the springs until a cross-over point occurs, whereafter the springs assist the movement of the shank, wherein the improvement comprises:

at least one extended portion on each of said springs in cooperation with stationary extended portions on said housing so that when the push button is in its initial rest position, said extended portions of the springs are not in contact with said extended portions of said housing, and when said push button is depressed, the movement of said shank becomes opposed by the springs when said extended portion of each spring engages said complimentary extended portion of the housing, and when said button is released said shaft is restoratively returned to its rest position by means of the tension in said springs caused by the extension of said spring in cooperation with the extension on said housing.

3,939,319

HIGH-FREQUENCY HEATING DEVICE FOR VARIABLY CONTROLLING A HIGH FREQUENCY OUTPUT IN A CONTINUOUS OR STEPWISE MANNER

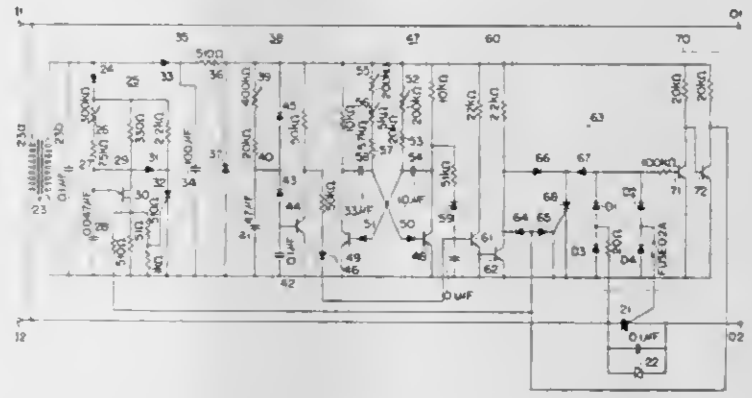
Motokazu Tamano, Yokohama; Tomimitsu Noda, and Masanobu Yoshioka, both of Fuji, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Jan. 31, 1974, Ser. No. 438,403

Claims priority, application Japan, Feb. 7, 1973, 48-15296

Int. Cl.^{2} H05B *9/06*

U.S. Cl. 219—10.55 B **8 Claims**



1. A high-frequency microwave type heating device comprising a semiconductor controlled rectifying element, a transformer including a primary winding coupled through the semiconductor controlled rectifying element to an AC power source, a magnetron high-frequency oscillator coupled to a secondary winding of the transformer, a signal generating circuit operated in accordance with the cycle of a voltage of the AC power source to generate a signal at a predetermined phase angle of each cycle of the power source voltage, a pulse oscillator whose output pulse width is variable, and a control circuit supplied at least with an output of the pulse oscillator and an output of the signal generating circuit to generate a control signal, said control signal of the control circuit being used to control the semiconductor controlled rectifying element; and in which said semiconductor controlled rectifying element is a triac thyristor and said high-frequency heating device further includes an amplifying circuit for amplifying an output signal of the pulse oscillator for application to the control circuit, a delay circuit for supplying upon energization a signal to said amplifying circuit for a predetermined time period to cause the operation of the amplifying circuit to be stopped, thus preventing a pulse from the pulse oscillator from being applied to the control circuit, and a voltage detection circuit for detecting a voltage across the triac thyristor to prevent an output signal from the signal generating circuit from being applied to the control circuit when no voltage is applied across the triac thyristor.

3,939,320

BEAM STIRRER

Theodore S. Saad, Westwood, Mass., assignor to Micro-Tronics, Inc., Wisconsin Rapids, Wis.

Filed Apr. 12, 1974, Ser. No. 460,367

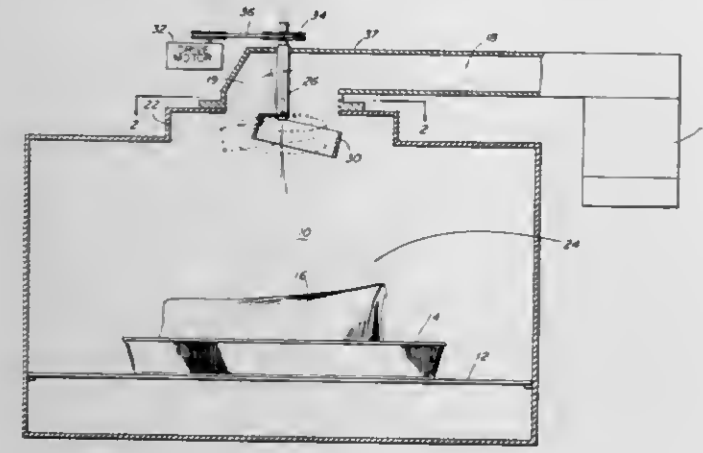
Int. Cl.^{2} H05B *9/06*

U.S. Cl. 219—10.55 F **14 Claims**

6. In a microwave oven having means defining an oven cavity, a source of microwave energy, and means coupling the energy from the source to the cavity, the improvement comprising;

a beam stirrer disposed in the oven cavity in a position to receive the coupled energy and including a cylindrical body of approximately quarter wave length height, means eccentrically supporting the structure including a shaft and tab means for securing the shaft close to one section of the body and motor means coupled to the shaft for rotating the cylindrical body to thereby deflect the beam in many directions with the energy being coupled relatively uniformly as the structure rotates, wherein a small angle is provided between the center line of the shaft and the center line of the body.

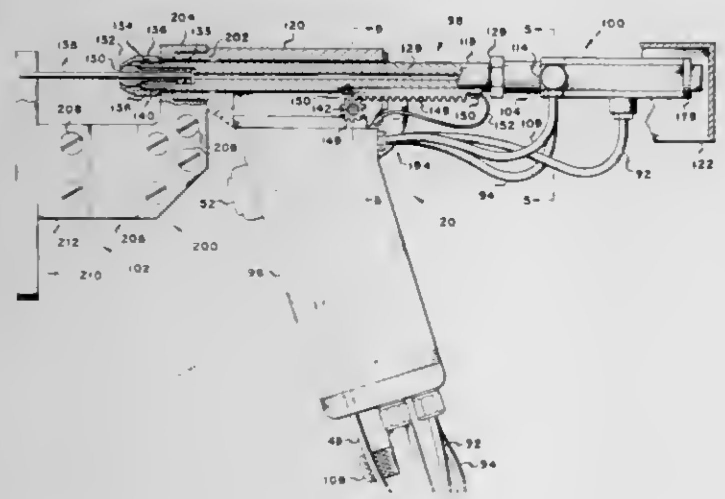
9. In a microwave oven having a source of microwave energy, a cooking cavity and waveguide means coupling from the source to an opening into the cooking cavity, a beam stirrer disposed adjacent the opening and comprising a resonant structure that represents a relatively low impedance to the energy, is disposed adjacent the opening into the cooking cavity and covers a first area intermediate the opening and cooking cavity and means for eccentrically rotating the structure to spread the energy beam without substantially disrupting the impedance to energy and so that the structure when rotating covers a second area larger than said first area and also intermediate the opening and cooking cavity.



3,939,321
PORTABLE ELECTRICAL DISCHARGE METALWORKING MACHINE

Isidore L. Q. Bertrand, and Wilford R. Hays, both of Los Angeles, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Nov. 19, 1973, Ser. No. 417,391
Int. Cl.² B23P *1/08*
U.S. Cl. 219—69 D **22 Claims**

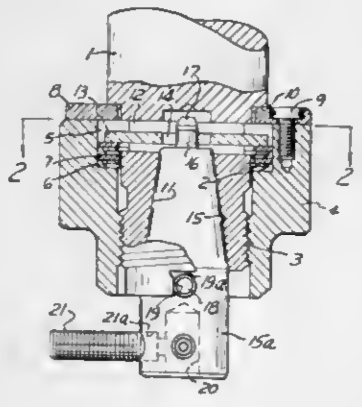


1. In a portable electrical discharge metalworking tool, the combination comprising a hollow electrode, a quill portion retaining said electrode for cooperative movement, means to supply electrical energy to said electrode through said quill, means to flow a coolant through said quill and said electrode to the work, means mounted in tandem with said quill and said electrode to vibrate said electrode with respect to the work, and means to automatically move said electrode toward the work.

3,939,322
ELECTRODE TOOL HOLDER ASSEMBLY FOR ELECTRICAL MACHINING APPARATUS

Benno Ibo Bonga, Onex, Geneva, Switzerland, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

Filed June 10, 1974, Ser. No. 477,806
Claims priority, application Switzerland, June 15, 1973, 8680/73
Int. Cl.² B23P *1/08;* B23Q *1/08*
U.S. Cl. 219—69 R **6 Claims**

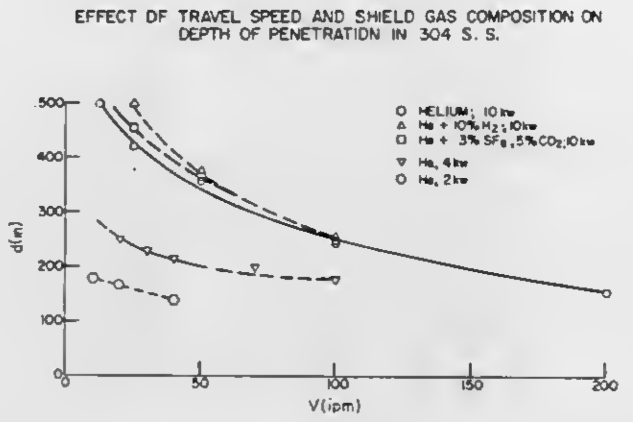


1. An electrode tool holder assembly for removably mounting an electrode tool on the ram of an electro-erosion machine, said holder assembly comprising an electrode supporting mandrel having a taper-shank portion, a tapered bore disposed in the end of said ram and adapted for coaxial engagement with said mandrel taper-shank portion, a projecting integral prong at the end of said mandrel taper-shank portion, a longitudinally displaceable sleeve disposed about the end of said ram, a peg element disposed transversely relative to the longitudinal axis of said mandrel taper-shank portion and displaceable along said londitudinal axis, means on said peg element for locking engagement with said projecting prong by rotation of said mandrel taper-shank portion relative to said peg element, biasing means for normally urging said peg element in a direction pulling said mandrel taper-shank portion in engagement with said tapered bore, abutment means on said sleeve engageable with said peg element for displacing said peg element and said mandrel taper-shank portion in a direction separating said mandrel taper-shank portion from said tapered bore when said sleeve is displaced in a predetermined direction relative to said ram, and means for angularly locating said mandrel taper-shank portion relative to said tapered bore about said longitudinal axis.

3,939,323
SHIELDING GAS FOR LASER WELDING

Richard J. Meehan, deceased, late of Mamaroneck, N.Y. (by Linda B. Meehan, administratrix); Richard H. Rein, Millwood, and Ralph H. Willgohs, Yorktown Heights, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 288,938, Sept. 14, 1972, abandoned. This application Aug. 13, 1974, Ser. No. 497,124
Int. Cl.² B23K *26/00*
U.S. Cl. 219—121 LM **3 Claims**

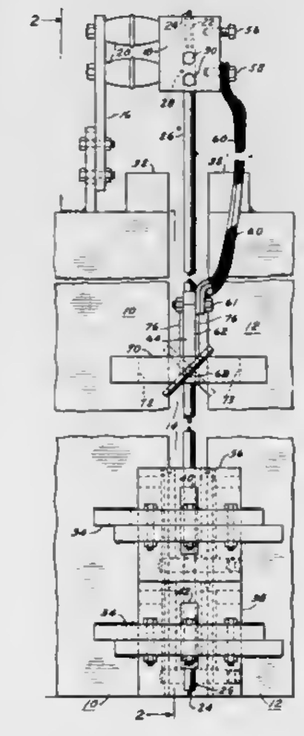

EFFECT OF TRAVEL SPEED AND SHIELD GAS COMPOSITION ON DEPTH OF PENETRATION IN 304 S. S.

1. A method for deep penetration welding of metallic workpieces with a laser beam which comprises directing said beam to the workpiece and shielding the weld zone with a shielding gas consisting essentially of a mixture of helium and less than 20% by volume of an electronegative gas.

3,939,324
APPARATUS FOR WELDING A JOINT BETWEEN TWO CLOSELY SPACED VERTICAL MEMBERS

Wendell V. McDowell, Pottstown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Oct. 7, 1974, Ser. No. 512,381
Int. Cl.² B23K *9/12*
U.S. Cl. 219—126 **1 Claim**



1. Apparatus for butt welding a joint between two closely spaced vertical members comprising:

a. a pair of removable liquid weld retaining shoes disposed on each side of said joint, each of said pairs of shoes having a facing spanning said joint and being disposed substantially in registry with the shoes on the opposite side of said joint,

b. a conductive electrode guide tube holder disposed at a point above said joint,

c. a conductive consumable electrode guide tube secured to said holder and extending to about the bottom of said joint,

d. a conductive shoe, adapted to be placed in contact with said guide tube at a point intermediate the length of said joint, comprising:
  i. a contact element having its front end contoured to fit against said guide tube;
  ii. a rotatable shaft slidably inserted into the rear end of said contact element; and
  iii. a plate, threadedly engaging said shaft, having magnet means affixed thereto for magnetically engaging said vertical members,

e. means, adapted to be placed in contact with said guide tube at a point opposite said conductive shoe for maintaining said shoe and guide tube in contact, comprising:
  i. an insulating element having its front end contoured to fit against said guide tube;
  ii. a rotatable shaft slidably inserted into the rear end of said insulating element; and
  iii. a plate, threadedly engaging said shaft, having magnet means affixed thereto for magnetically engaging the opposite side of said vertical members,

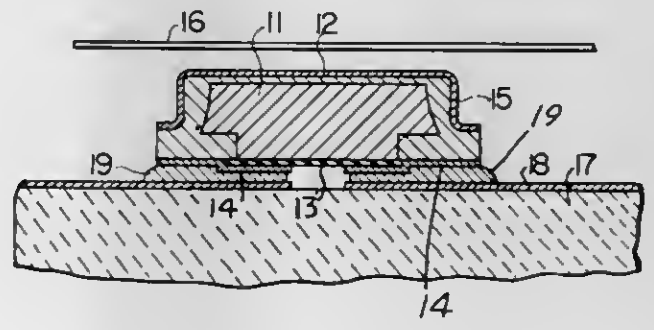
f. power supply means connected to said guide tube holder, and

g. conductive means connected from said guide tube holder to said conductive shoe.

3,939,325
THERMAL RECORD PRINTER HEAD AND METHOD OF MAKING THE SAME

Hiroshi Otani, Shijonawate, and Fujio Oda, Ashiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 29, 1973, Ser. No. 420,319
Claims priority, application Japan, Dec. 1, 1972, 47-121024
Int. Cl.² H05B *1/00*
U.S. Cl. 219—216 **7 Claims**



1. A thermal record printer head comprising:

a semiconductor substrate having a front surface and a back surface;

an impurity diffused layer formed in the front surface of the semiconductor substrate to be adjacent to a thermosensitive recording medium;

further impurity diffused regions formed in the back surface of said semiconductor substrate and extending through side portions between said front and said back surfaces of said semiconductor substrate to said impurity diffused layer and to be electrically connected therebetween and to make at least said impurity diffused layer work as an exothermic resistive layer; and

electrodes provided on said further impurity diffused regions in the back surface.

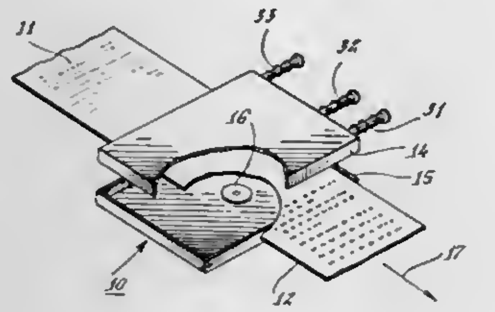
3,939,326
DUAL RIBBON FUSER

Mark A. Hutner, Glenview, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1975, Ser. No. 538,705

Int. Cl.² H05B *1/00*

U.S. Cl. 219—216 **5 Claims**



1. Apparatus for fixing toner on a substrate, as the substrate is moved through a zone, comprising:
  a. first and second members disposed on opposite sides of said zone;
  b. an electrical power source;
  c. a pair of electric heating elements, connected in series, coupled to the power source;
  d. means coupling the heating elements to said first member for heating the zone; and
  e. means, responsive to the temperature in the zone, for shorting out one of the heating elements when the temperature in the zone is lower than a predetermined temperature.

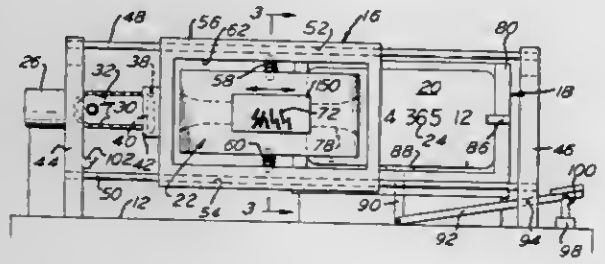
3,939,327
OPTICAL READING APPARATUS AND METHOD

John H. Humphrey, Los Angeles, Calif., assignor to Data Source Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 848,769, Aug. 5, 1969, abandoned. This application Apr. 5, 1972, Ser. No. 241,180

Int. Cl.² G06K *7/10*; G08C *9/06*; G06K *9/00*

U.S. Cl. 235—61.11 E **36 Claims**



1. Apparatus for reading a font of indicia carried by a substantially planar substrate and displaced from the plane thereof, comprising a plurality of sets of detector means in spaced relation from said substrate, each of said sets comprising a light source and a light sensor, said light source and said light sensor in each set being on an angle with respect to said substrate so that light from said source will be reflected from the plane of said substrate to said sensor, said light sensor being positioned with respect to said light source to detect light reflected from the plane of said substrate and at least a reduction in the amount of reflected light due to the presence of at least a part of the indicia of said font which impedes the reflection of light to said detector, means associated with said light sensors for generating a signal having informational value indicative of the indicia detected, and each of said sets of light conducting means being positioned to sense the presence of a different portion of said font.

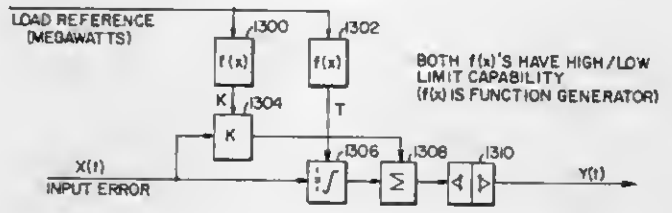
3,939,328
CONTROL SYSTEM WITH ADAPTIVE PROCESS CONTROLLERS ESPECIALLY ADAPTED FOR ELECTRIC POWER PLANT OPERATION

Guy E. Davis, Martinez, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 6, 1973, Ser. No. 413,272

Int. Cl.² F01K *7/16*; F01D *17/00*; G05B *11/42*

U.S. Cl. 235—150.1 **28 Claims**


LOAD REFERENCE (MEGAWATTS)
1300
1302
f(x)
f(x)
BOTH f(x)'S HAVE HIGH/LOW LIMIT CAPABILITY (f(x) IS FUNCTION GENERATOR)
K
1304
K
T
1306
1308
1310
X(t)
INPUT ERROR
Y(t)

1. A power control system including an integrating controller responsive to a first electrical input signal indicative of the difference between a reference value and a measured variable to provide a corrective output for effecting control of the variable, said integrating controller comprising:
  a. an integrating circuit for integrating the first electrical input signal with a time constant T;
  b. a proportional circuit for providing an output proportional to the first electrical input signal in accordance with a gain constant K;
  c. a summing circuit responsive to the outputs of said integrating circuit and said proportional circuit to provide the corrective output; and
  d. function generator means responsive to a second electrical input signal indicative of a system's control index for independently varying the gain K and the time constant T as a selected function of the system's control index.

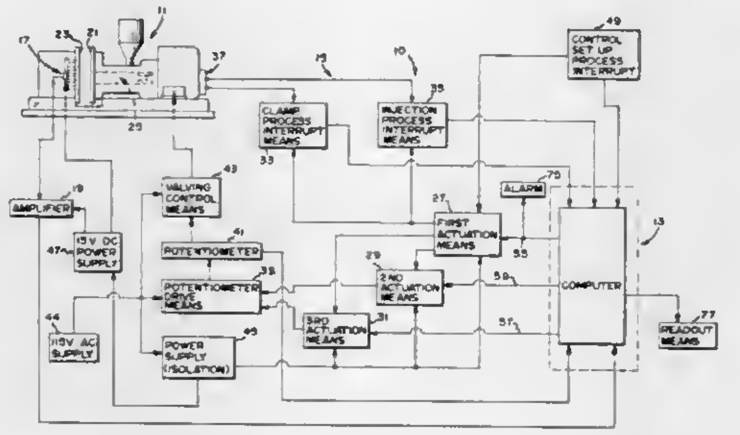
3,939,329
INTERFACE MEANS

J. Robert Doran, Warren, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Aug. 26, 1974, Ser. No. 500,442

Int. Cl.² G06F *15/46*, *3/00*; B29F *1100*

U.S. Cl. 235—151.1 **16 Claims**



1. Interface means for interconnecting a sequentially actuated apparatus and a computer to automatically maintain at a desired level a process variable of said apparatus wherein said computer is adapted for receiving a response signal from said apparatus during each sequence of operation, said response signal indicative of the level of said process variable during each of said sequences of operation, said computer further adapted for comparing said response signal to a reference signal representative of said desired level for said process variable and providing a first output signal of continuous nature and at least one of two secondary output signals, a first of said secondary output signals indicative that said level of said process variable is less than said desired level, a second of said secondary output signals indicative that said level of said process variable is greater than said desired level, said interface means comprising:
  first actuation means operatively connected to said computer and said apparatus for receiving said first continuous output signal and actuating said computer to receive said response signal from said apparatus;
  second actuation means operatively connected to said computer, said first actuation means, and said apparatus for receiving said first secondary output signal and actuating said apparatus prior to the next sequence of operation of said apparatus to increase said level of said process variable to achieve said desired level; and
  third actuation means operatively connected to said computer, said first actuation means, and said apparatus for receiving said second secondary output signal and actuating said apparatus prior to the next sequence of operation of said apparatus to decrease said level of said process variable to achieve said desired level.

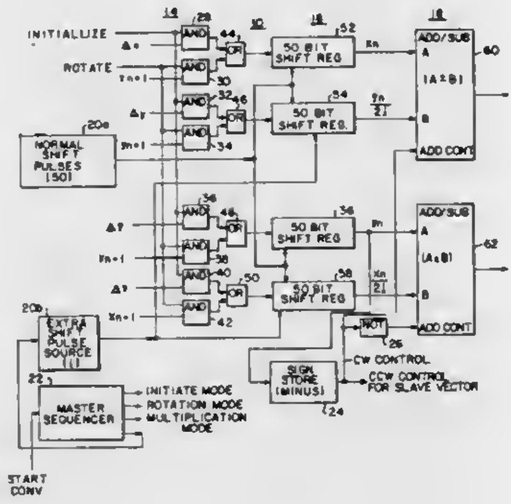
3,939,330
VECTOR CONVERSION SYSTEM

Francis A. Fluet, Clarence, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, PA

Filed Oct. 10, 1974, Ser. No. 513,915

Int. Cl.² G05B *19/18*; G06F *15/46*

U.S. Cl. 235—151.11 **12 Claims**



1. A vector conversion digital system for a numerical contouring control having a programmed machine path with at least two axial displacements ΔX, ΔY, with a given cutter radius RCRAD, the vectoral conversions being consummated prior to the incremental commanded displacement of said cutter, comprising:
  a. means for master vector rotation and multiplication for receiving signals which are a function of said displacements ΔX, ΔY, and for delivering a counter rotational control signal, and an RSS signal where: $\mathrm{RSS} = \sqrt{\Delta X^2 + \Delta Y^2}$ and
  b. means for slave vector rotation and multiplication connected to receive said counter rotational control signal, and input signals which are 0 and a function of RCRAD respectively, and for delivering output signals IRC and JRC which are the orthogonal components of RCRAD, which components, when interchanged, position RCRAD normal to said programmed machine path.

3,939,331
RAILROAD TRACK SURVEY APPARATUS

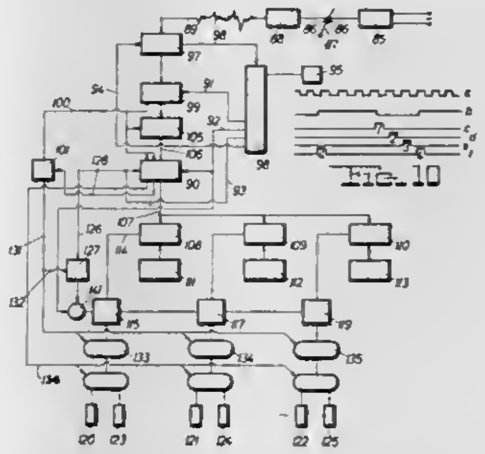
Josef Theurer, Vienna; Keith L. Hall, Linz, and Franz Eglseer, Ohlsdorf, all of Austria, assignors to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H., Vienna, Austria

Continuation-in-part of Ser. No. 316,028, Dec. 18, 1972, abandoned. This application Mar. 18, 1974, Ser. No. 452,202

Claims priority, application Austria, Dec. 24, 1971, 11119/71

Int. Cl.² G01B *7/14*

U.S. Cl. 235—151.32 **18 Claims**



1. A system for monitering the deviation in a first or second direction of the actual position of a track from a desired position along a predetermined length of said track, comprising, in combination, error signal means for furnishing an error signal having an amplitude corresponding to the amplitude of said deviation and a positive and negative sign for deviations in said first or second direction respectively; transfer signal furnishing means connected to said error signal furnishing means for furnishing a transfer signal in response to a change in said sign of said error signal; storage means connected to said error signal furnishing means to be reset in response to a reset signal, for furnishing a storage signal only if the maximum amplitude of said error signal following receipt of one of said reset signals exceeds a predetermined amplitude; first and second counting means; activating means connected to said transfer signal furnishing means, said storage means and said counting means and responsive to said transfer signal for activating said first counting means to advance by one count in response to said storage signal only when said sign of said error signal is changing from a positive to a negative sign and for activating said second counting means to advance by one count in response to said storage signal only when said sign of said error signal changes from a negative to a positive sign; and reset means connected to said transfer signal furnishing means and said storage means for furnishing said reset signal to said storage means in response to said transfer signal but after a delay time sufficient for operation of said counting means, whereby the count on said first and second counting means signifies the number of track length intervals between successive substantially zero deviations of said track position wherein said amplitude of said deviation exceeded an amplitude corresponding to said predetermined amplitude of said error signal in said first and second direction respectively.

3,939,332
ZERO INDICATOR FOR PLURAL SCALE SYSTEMS

Roger B. Williams, Jr., Sylvania, Ohio, and Richard C. Loshbough, Temperance, Mich., assignors to Reliance Electric Company, Pepper Pike, Ohio

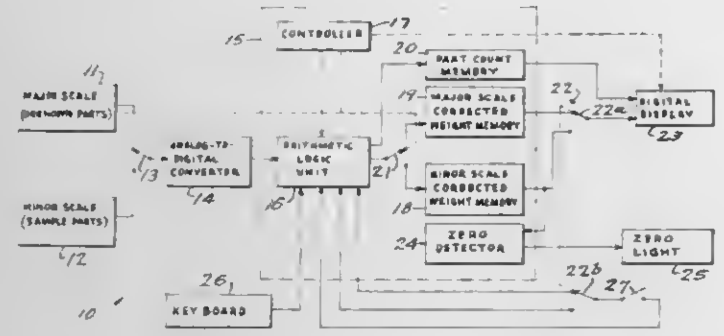
Filed June 27, 1974, Ser. No. 483,646

Int. Cl.² G01G *9/413*, *13/14*

U.S. Cl. 235—151.33 **11 Claims**

11. A weight measuring apparatus comprising, in combination, at least two scales, each of said scales being adapted to generate a weight output signal, a digital display, switching means for applying the weight output signal of one of said

scales to said display when said switching means is in a first state and for applying the weight output signal from another one of said scales to said display when said switching means is in a second state, and means for visually indicating the existence of a zero weight condition in one of said scales when the weight output signal from another of said scales is being applied to said digital display.


CONTROLLER
15
17
20
PART COUNT MEMORY
11
MAJOR SCALE (UNKNOWN PARTS)
19
MAJOR SCALE CORRECTED WEIGHT MEMORY
22
22a
DIGITAL DISPLAY
23
ANALOG-TO-DIGITAL CONVERTER
13
14
ARITHMETIC LOGIC UNIT
16
21
MINOR SCALE CORRECTED WEIGHT MEMORY
18
MINOR SCALE (SAMPLE PARTS)
12
ZERO DETECTOR
24
ZERO LIGHT
25
22b
27
26
KEY BOARD
10

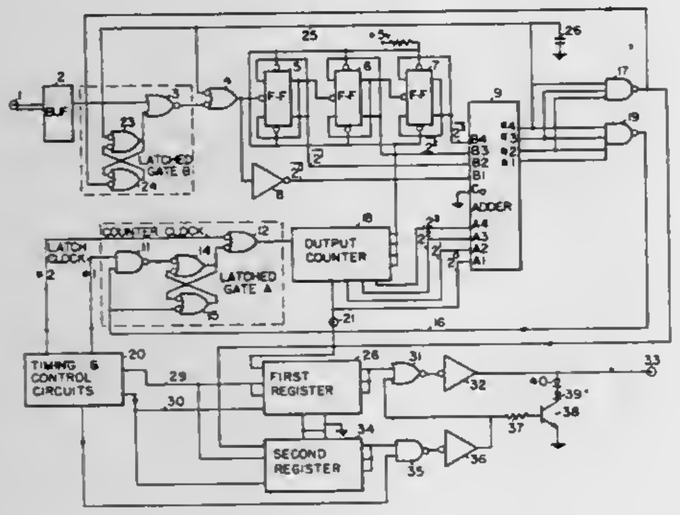
3,939,333
PREVIOUS EVENTS MEMORY

Eugene Elwin Keech, Santa Ana, Calif., assignor to Electronic Engineering Co. of California, Santa Ana, Calif.

Filed Aug. 9, 1974, Ser. No. 495,949

Int. Cl.^{2} H03K *21/30, 5/18*

U.S. Cl. 235—153 AP **8 Claims**



1. The method of uninterruptedly storing and then retrieving an unlimited series of input digital electrical signal transitions subsequent to the occurrence of the same in real time, which includes the steps of;

- a. electrically digitally counting the number of transitions of said input digital electrical signal,
- b. separately electrically digitally counting internally generated pulses,
- c. comparing the count of said transitions of said input signal with a separate digital count of said internally generated pulses to detect nonequivalence between these two counts,
- d. periodically advancing the count of said internally generated pulses as long as nonequivalence exists between said two counts,
- e. terminating the advance of count of said internally generated pulses as soon as said two counts become equivalent, and
- f. utilizing the least significant bit of said count of said internally generated pulses as the digital output signal.

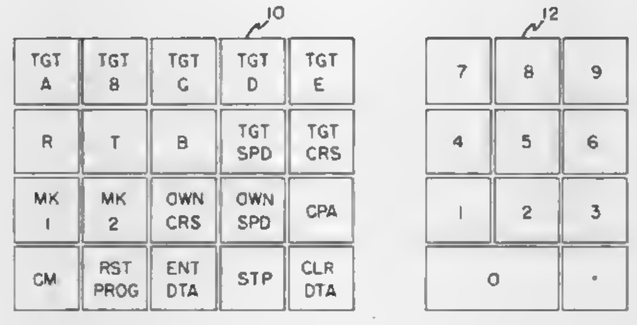
3,939,334
CLOSEST POINT OF APPROACH CALCULATOR

Albert Roth, and Gary M. Holma, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 2, 1975, Ser. No. 537,971

Int. Cl.^{2} G06F *15/02, 15/50*

U.S. Cl. 235—156 **5 Claims**



1. Apparatus for computing closest point of approach parameters from target and own ship data taken at different times, said apparatus comprising:

- a keyboard for generating signals represent a parameter to be calculated and for generating input data signals and including a re-set terminal;
- data encoder circuit means having an input coupled to said keyboard for encoding the data signals generated by said keyboard and having an output;
- data storage means having a first input coupled to the output of said data encoder for storing data and having second and third inputs and an output;
- data address encoder means having an input coupled to said keyboard for encoding data address information and having an output;
- data address counter means having a first input coupled to the output of said data address encoder, a second input coupled to the output of said keyboard, a third input and an output coupled to the third input of said data storage means;
- program encoder circuit means having a first input coupled to the output of said keyboard for encoding program information and having an output;
- program counter circuit means having a first input coupled to the output of said program encoder for providing an output signal in response to the particular parameter signal generated by said keyboard and having an output, second, and third, and fourth inputs;
- program read-only memory circuit means having an input coupled to the output of said program counter and providing a control and address output, an increment counter output coupled to the second input of said data address counter, a control output, an instruction output and a jump output connected to the second input of said program counter;
- a central processing unit coupled to said control and instruction outputs of said program read-only memory and to the output of said data storage means for computing a selected parameter in response to the control and instruction signals from said program read-only circuit means and providing termination signal at a first output of the computation and having a second output coupled to a display for displaying the computed results;
- clock means having a first input connected to said keyboard and being responsive to a start output signal for providing output clock signals to a third input to said program counter for starting a computation and for discontinuing said clock pulses in response to the termination pulse from said control processing unit.

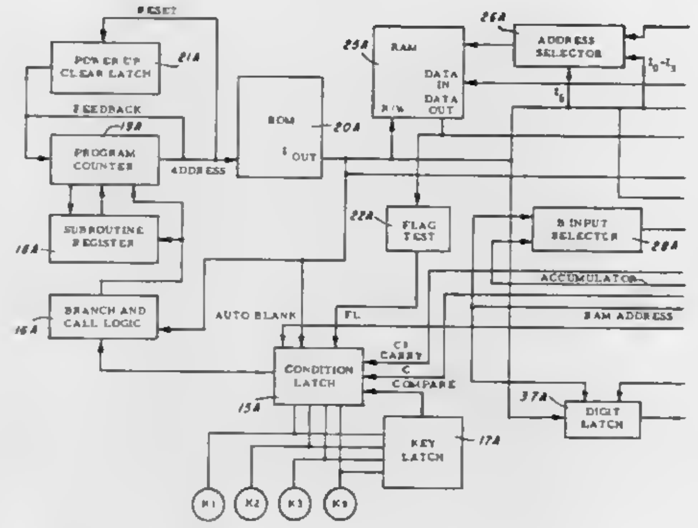
3,939,335
UNIVERSAL CONDITION LATCH IN AN ELECTRONIC DIGITAL CALCULATOR

George L. Brantingham, Richardson; Louis H. Phillips, Dallas, and Larry T. Novak, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 26, 1974, Ser. No. 527,510

Int. Cl.^{2} G06F *15/02*

U.S. Cl. 235—156 **16 Claims**



1. In a calculator system having data storage means, an arithmetic unit for performing operations on data and control circuitry for providing commands which define the operation of the system, a condition latch circuit arrangement comprising:

- a. a bistable condition latch;
- b. a comparator circuit in said arithmetic unit having inputs for receiving sets of data, said comparator circuit for comparing pluralities of said sets of data and generating condition signals to set said condition latch in accordance with the results of said comparisons;
- c. a plurality of keyboard input terminals arranged to accept input signals from a keyboard, said keyboard input terminals being coupled to said condition latch for setting said condition latch in accordance with the logical OR of input signals from selected ones of said keyboard terminals; and
- d. selector means coupling said comparator circuit and said keyboard input terminals to said condition latch for the selective setting of said condition latch, said selector means being responsive to said control circuitry for selecting said condition signal to set said condition latch in response to compare commands from said control circuitry and for selecting the logical OR of input signals from selected of said keyboard input terminals to set said condition latch in response to test key commands from said control circuitry.

3,939,336
APPARATUS FOR ANALYSIS OF NETWORK DIAGRAMS

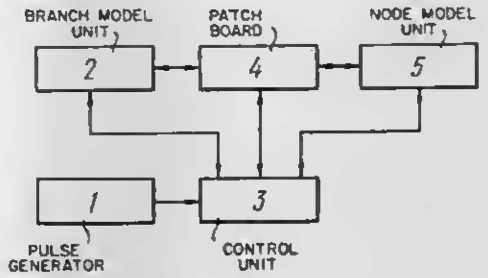
Vsevolod Viktorovich Vasiliev, Prospekt 40 let., Oktyabrya 82, kv. 60; Alexandr Georgievich Dodanov, Dneprovskaya naber. 119, kv. 140; Alla Nikolaevna Klepikova, ul. Grekova, 13, Kv. 16 and Anatoly Grigorievich Timoshenko, Brest-Litovsky prospekt, 4, kv. 44, all of Kiev, U.S.S.R.

Continuation-in-part of Ser. No. 432,648, Jan. 11, 1974, abandoned, Continuation of Ser. No. 316,710, Dec. 20, 1972, abandoned, which is a continuation of Ser. No. 98,275, Dec. 15, 1970, abandoned. This application Dec. 2, 1974, Ser. No. 528,698

Int. Cl.^{2} G06G *7/48*; **G06F** *15/56*

U.S. Cl. 235—184 **11 Claims**

1. An apparatus for analysis of network diagrams, comprising: a pulse generator; a branch model unit, the number of branch models wherein is equal to that of branches in the network diagram and each branch model includes a time interval forming unit having an input (**15**) which serves as the input of said branch model; a branch model state indication unit having at least three terminals, one of the terminals being connected to the output of said time interval forming unit, the second terminal (**9**) being connected to said input (**15**) of said branch model, and the third terminal serving as the output (**16**) of said branch model; a patch board whose terminal jacks (**17**) are connected to the inputs (**15**) and outputs (**16**) of said branch models and, through patch cords (**18**), to one another in accordance with the topology of the network diagram; and a control unit including a calendar device (**26**) and a control subunit (**25**) connected to said calendar device, patch board, pulse generator and branch model unit.



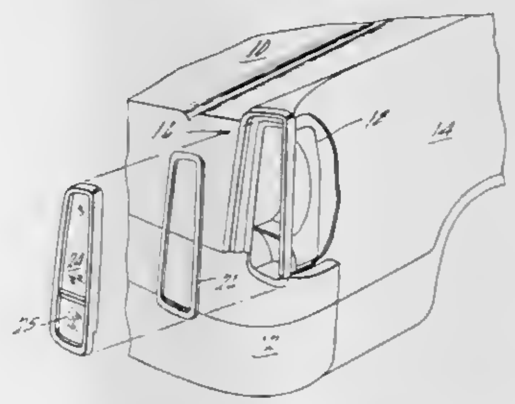
3,939,337
VEHICLE LAMP CONSTRUCTION

Roy Oda, Westland; Garry O. De Frayne, Pontiac, and Paul L. Walker, Royal Oak, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 7, 1973, Ser. No. 422,808

Int. Cl.^{2} B60Q *1/02*

U.S. Cl. 240—8.3 **4 Claims**



1. A repairable lamp unit comprising a housing having a cavity for location therein of a lamp bulb, a lens for covering the open end of said cavity and in cooperation with said housing enclosing said lamp bulb, and a pliable tacky substantially noncuring elastomeric material having a surface in adhering contact with said housing and a second surface portion in adhering contact with said lens, said lens and housing being releasably held in a sealed and assembled relationship by said elastomeric material with said elastomeric material permitting removal of said lens from said lamp unit without damage of said lens and housing, said elastomeric material forming the sole means by which the lens is joined to said housing.

3,939,338
COMBINED TERRARIUM AND LAMP

Nicholas A. Giammalvo, New York, N.Y., assignor to The Raymond Lee Organization, Inc., a part interest

Filed Jan. 8, 1975, Ser. No. 539,260

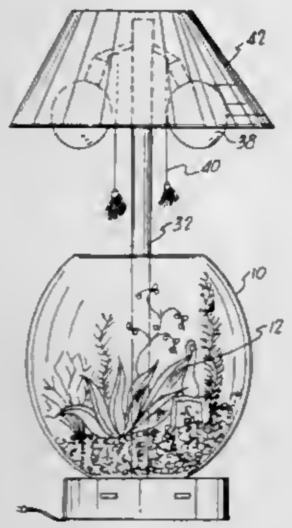
Int. Cl.^{2} F21S *13/12*; **F21V** *33/00*

U.S. Cl. 240—10 P **3 Claims**

1. A lamp comprising:

a transparent bowl containing a terrarium; said bowl having a horizontal bottom portion;

first means supporting the bowl and containing at least one first light source positioned to illuminate the terrarium from below, said first means including a shallow hollow vertical cylinder open at its top end, said portion resting on said top end, and a retaining ring securing said portion to said cylinder;



a hollow vertical rod sealed in the bowl and extending outward therefrom;

a least one second light source secured to the top of the rod and provided with an on-off switch; and

second means including a two cable conductor extending into the first means, connected directly to the first source, extending through said rod and connected through said switch to said second source to supply electrical energy to all of said sources.

3,939,339
LIGHTING SYSTEM FOR A MOTORCYCLE

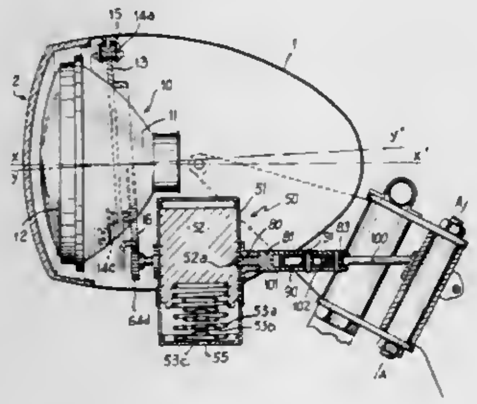
Jacques M. Alphen, 67, Allée Jules Verne, 92 La Celle Saint-Cloud, France

Filed Mar. 28, 1974, Ser. No. 455,757

Claims priority, application France, Apr. 2, 1973, 73.11767

Int. Cl.^{2} B60Q *1/10*

U.S. Cl. 240—62.2 **18 Claims**



1. A headlight for use with a two-wheeled vehicle, such as a motorcycle, having a body and handlebars pivotable with respect to the body, the headlight comprising:

a frame fixed with respect to the handlebars of the vehicle

light-projecting means carried by said frame, said light projecting means having an optical axis along which light is projected therefrom,

support means for rotatably supporting said light-projecting means with respect to said frame, said light-projecting means being rotatable about an axis extending in a front-to-rear direction of said light-projecting means and at a small acute angle to said optical axis, and

means operative when the vehicle makes a turn for rotating said light-projecting means about its axis of rotation from the position it occupies when the vehicle is upright and traveling in a straight line, the amount of rotation at any moment being a function of the angle of inclination which the vehicle makes at that moment with the vertical.

3,939,340
DIFFUSED LIGHT REFLECTING SCREEN FOR TAKING PHOTOS AND THE LIKE

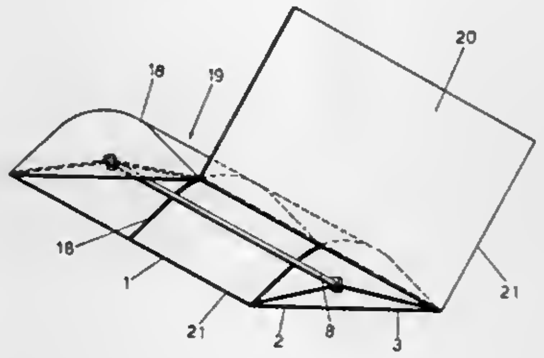
Renato Gozzano, Via Quarnero 14, Milan, and Santino Martinelli, Via S. Pietro 37, Bollate, both of Italy

Filed Aug. 14, 1974, Ser. No. 497,238

Claims priority, application Italy, Aug. 27, 1973, 52183/73

Int. Cl.^{2} F21V *7/00*

U.S. Cl. 240—103 R **5 Claims**



1. A foldable reflecting screen for taking photos and the like characterized by the fact that it is constituted of a carrying skeleton defining an inner space of parabolic cross section having a base rectangular frame and which is formed of members which are articulated to each other and of members which can be connected to each other by disengageable means so that the skeleton components can be partly disassembled and partly folded so as to occupy a minimum space or according to an opposite sequence of operations can be brought in their use position, and of an outer covering which comprises a first portion made of flexible, opaque sheet material having a white inner surface and a dark outer surface and designed to cover the parabolic surface defined by said skeleton, and a second portion made of translucent flexible material to screen the rectangular base of said skeleton and which is at least disconnectably connected with the first portion along their edges, said base frame comprising two side rods and cross members, near the ends of said longitudinal rods of the rectangular frame and at least on one intermediate point first fittings being provided to disassemblably receive the ends of said cross members, and other fittings to disassemblably receive the ends of curved centering parabolic rods.

3,939,341
PHASE-LOCKED OPTICAL HOMODYNE RECEIVER

Ross E. Graves, Pacific Palisades, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 2, 1975, Ser. No. 564,579

Int. Cl.^{2} H03D *1/24;* **H04B** *1/30, 9/00*

U.S. Cl. 250—199 **11 Claims**

1. A phase-locked optical homodyne receiver comprising, in combination:

means for receiving an optical input signal, said input signal being characterized by a carrier frequency and information-containing modulation components;

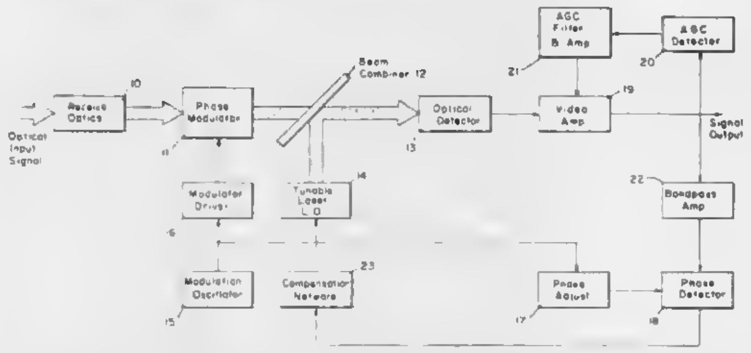
controllable means for generating an optical local oscillator signal having substantially the same frequency as said carrier frequency;

modulating means for phase modulating one of said signals with a reference modulation signal having a frequency which is substantially low compared to said carrier frequency;

means for combining said phase-modulated signal with the other of said signals;

means for optically detecting said combined signals;

means for deriving an output signal from said optically detected signals; and



means for synchronously detecting said output signal by providing an error signal responsive to said reference modulation signal at said reference frequency and a portion of said output signal, said error signal coupled to said local oscillator signal generating means to maintain said local oscillator signal and said carrier in phase synchronism.

3,939,342
DEVICE FOR MEASURING AN ANGULAR DEVIATION BY HETERODYNE DETECTION

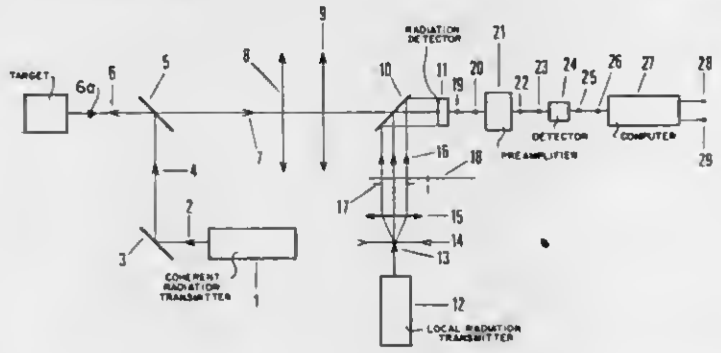
Jean Pierre Bezerie, Ville D'Avray, and Michel Benoit Sirielx, Jouy-En-Josas, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed Mar. 28, 1974, Ser. No. 455,529

Claims priority, application France, Apr. 4, 1973, 73.12068

Int. Cl.^{2} G01J *1/20*

U.S. Cl. 250—203 R **6 Claims**



1. A device for measuring an angular deviation by a space-time modulated heterodyne detection comprising a coherent optical radiation transmitter pointed at a target, a local transmitter of a coherent optical radiation having the same wavelength as the preceding radiation, a photovoltaic detector, means for focussing at a point on said detector the radiation reflected by the target, and means for converting the radiation of the local transmitter into a beam of parallel rays and causing said beam of parallel rays to impinge perpendicularly on the surface of said detector, wherein the means for space-time modulating the heterodyne detection are interposed in the path of the radiation from the local transmitter.

3,939,343
PULSED NEUTRON LOGGING SYSTEM FOR INELASTIC SCATTERING GAMMA RAYS WITH GAIN COMPENSATION

Ward E. Schultz, and Harry D. Smith, Jr., both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 4, 1974, Ser. No. 447,593

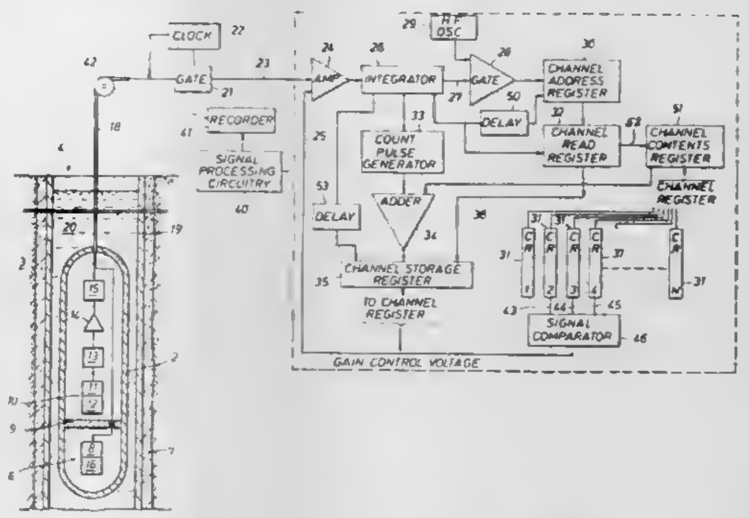
Int. Cl.^{2} G01V *5/00*

U.S. Cl. 250—262 **3 Claims**

1. A method for controlling and linearizing the gain of an inelastic neutron scattering measurement well logging system for the direct detection of hydrocarbon in the pore spaces of earth formations in the vicinity of a well borehole comprising the steps of:

passing a well logging sonde containing a pulsed source of fast neutrons and a gamma ray detector through a well borehole;

repetitively irradiating at a repetition rate greater than at least 4000 bursts/sec. earth formations in the vicinity of the borehole with relatively short duration bursts of fast neutrons and detecting, essentially during said neutron bursts, gamma rays produced by the inelastic scattering of fast neutrons and thermal neutron capture gamma rays produced by the capture of thermal neutrons from previous bursts at said repetition rate by materials in the vicinity of the borehole;



developing an energy spectrum of gamma radiation emitted essentially only during said neutron irradiating bursts;

developing a gain control signal proportional to the difference in the apparent location in said energy spectrum of gamma radiation attributable to the 2.22 MEV hydrogen capture gamma ray photopeak and its predetermined known location at 2.22 MEV in said spectrum; and

controlling the gain of amplification means used in developing said gamma ray energy spectrum in response to said gain control signal so as to minimize said gain control signal.

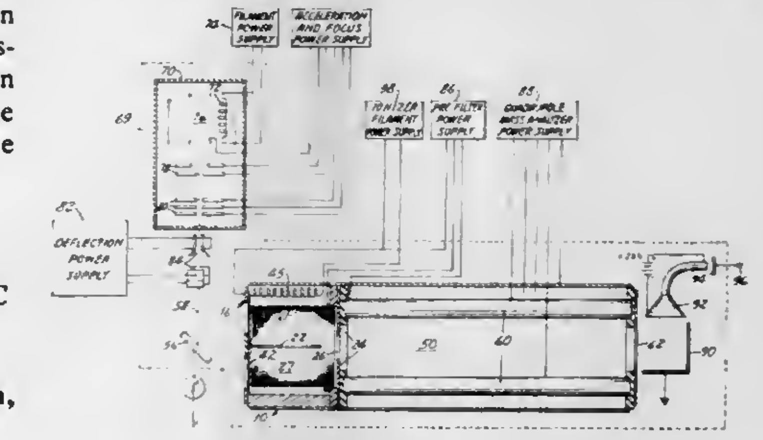
3,939,344
PREFILTER-IONIZER APPARATUS FOR USE WITH QUADRUPOLE TYPE SECONDARY-ION MASS SPECTROMETERS

James T. McKinney, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 23, 1974, Ser. No. 535,805

Int. Cl.^{2} H01J *39/34*

U.S. Cl. 250—281 **8 Claims**


FILAMENT POWER SUPPLY
ACCELERATION AND FOCUS POWER SUPPLY
IONIZER FILAMENT POWER SUPPLY
PRE FILTER POWER SUPPLY
QUADRUPOLE MASS ANALYZER POWER SUPPLY
DEFLECTION POWER SUPPLY
70
69
82
45
50
60
62
90
92
10

1. An apparatus for use with a quadrupole type mass analyzer comprising:

an electrically conductive cylindrical grid having entrance and exit ends allowing the axial passage of ions therethrough, positioned in front of the input to the quadrupole mass analyzer such that the longitudinal axis of the grid is in line with the longitudinal axis of the quadrupole analyzer;

an electrically conductive entrance aperture plate electrically insulated from said grid and positioned adjacent said antrance end thereof such that the plane of the entrance plate is normal to said axis of said grid, said entrance aperture plate having an annular opening concentric to said axis of said grid through which ions may be admitted into said grid, having a solid center portion forming a baffle to prevent ions, neutral atoms, photons and other particles such as may be directed toward said entrance end from passing directly along said axis through said grid, and having a substantially unidimensional electrode attached to said center portion and extending within said grid and along said axis thereof substantially the full length of said grid; and

an electrically conductive exit aperture plate electrically insulated from said grid and positioned adjacent said exit end such that the plane of the exit aperture plate is normal to said axis, said exit aperture plate having a circular opening concentric to said axis of said grid to restrict the passage of ions out of said grid, whereby the application of predetermined potentials to said grid and to said entrance and exit aperture plates respectively causes ions entering said grid through said annular opening and which have a relatively low kinetic energy to be selectively transmitted through said opening in said exit aperture plate, and causes high kinetic energy ions, neutral atoms, photons and other particles not to be transmitted.

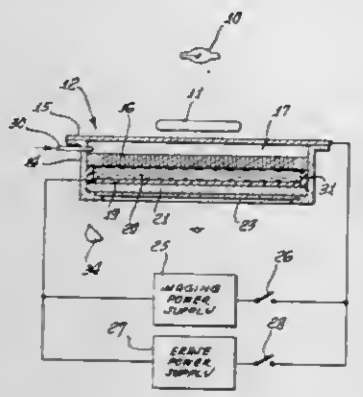
3,939,345
LIQUID CRYSTAL IMAGING OF RADIOGRAMS

Frank V. Allan, Los Angeles; John B. Fenn, Jr., Canoga Park, and Murray S. Welkowsky, Sherman Oaks, all of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Filed Dec. 23, 1974, Ser. No. 536,922

Int. Cl.^{2} G03B *41/16*

U.S. Cl. 250—315 A **13 Claims**



1. In an electronradiography imaging chamber providing a visual image suitable for direct viewing and/or copying, the combination of:

a first electrode;
an anisotropic conductive plate;
a second transparent electrode;
means for supporting said electrodes and plate in spaced relation with a first x-ray absorber gap between said first electrode and said plate and a second liquid crystal material gap between said plate and said second electrode;
means for connecting a power source across said electrodes;
an x-ray absorber and electron and positive ion emitter in said first gap for producing a charge image on said plate; and
a liquid crystal material in said second gap, with said charge image transmitted through said plate towards said second electrode for modulating said material producing a visual image of said charge image.

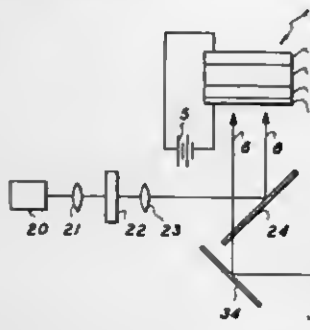
3,939,346
GAIN PHOTO-CURRENT ENHANCEMENT METHOD

Simpei Tutihashi, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 18, 1974, Ser. No. 507,044

Int. Cl.^{2} H01J *31/49*

U.S. Cl. 250—330 **30 Claims**



1. The method of providing gain photocurrent, comprising:

a. providing between two electrodes, an insulating layer in contact with a photoconductive layer comprising selenium or selenium alloy, the thickness ratio of photoconductive layer to insulating layer being at least about 10 to 1;
b. applying a D.C. voltage across said photoconductive and insulating layers;
c. impinging said photoconductive layer with light having a wavelength within the fundamental absorption band of the selenium or selenium alloy within said photoconductive layer and which excites a primary current within said photoconductive layer; and
d. impinging said photoconductive layer with infrared radiation.

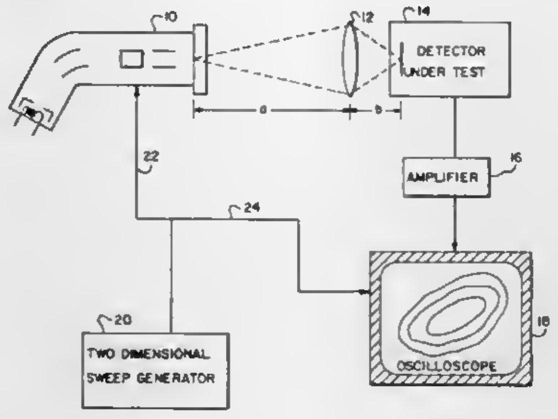
3,939,347
TWO DIMENSIONAL DISPLAY OF DETECTOR RESPONSE

Gordon A. Shifrin, Malibu, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 5, 1974, Ser. No. 520,991

Int. Cl.^{2} H01J *31/49;* **G01R** *15/12*

U.S. Cl. 250—334 **15 Claims**



1. A detector contour plotter for testing the response of a detector to a stimulus comprising:

thin-film target means including an infra-red phosphor screen for emitting infrared radiation when excited;
means for generating a raster on said thin-film target means so that a point source of infrared radiation is emitted from the opposed side of said target means and is swept over a prescribed area;
focusing means for focusing an image of said raster on the detector under test;
cathode-ray imaging means having a two-dimensional scan which is driven in synchronism with said raster; and
means for applying the output response of the detector under test to said cathode-ray imaging means to control the intensity of its scanning beam in accordance with said detector output response.

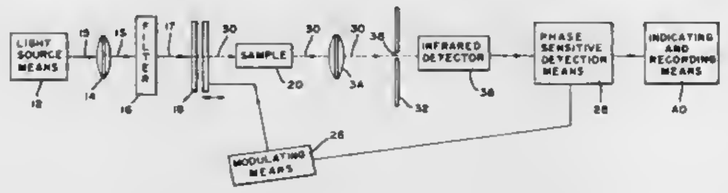
3,939,348
INFRARED GAS ANALYSIS

Joseph J. Barrett, Morris Plains, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed June 11, 1974, Ser. No. 478,543

Int. Cl.^{2} G01J *3/28*

U.S. Cl. 250—339 **14 Claims**



11. A method for detecting and quantitatively measuring a molecular species of gaseous material in a sample to be analyzed, comprising the steps of

generating light in the form of incoherent infrared radiation;
collecting, collimating and transmitting the light;
filtering said light so as to selectively transmit light having a frequency range in the region of an absorption band for the molecular species to be detected;
interferometrically filtering said filtered light and transmitting light at a plurality of discrete frequencies to form a plurality of fringes which provide a detectable signal by directing the light through a plurality of transmission windows regularly spaced in frequency, the frequency spacing between adjacent windows being equal substantially to the frequency difference between adjacent spectral lines of the absoprtion spectrum for the molecular species to be detected, and scanning said light to cause the transmission peaks for adjacent orders to coincide substantially with the spectral lines of said absorption spectrum, said signal having an intensity substantially equal to the sum of said fringes;
transmitting said detectable signal through said gaseous material, whereby the intensity of said detectable signal changes in proportion to the concentration of said molecular species; and
detecting and indicating the intensity change of said signal.

3,939,349
METHOD AND DEVICE FOR CLASSIFYING TIRES

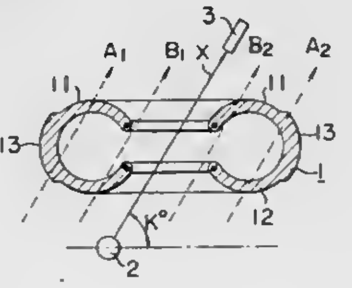
Masami Shimizu, Kawasaki, and Masao Koyama, Hatano, both of Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha and The Yokohama Rubber Company Ltd., both of, Japan

Filed Dec. 26, 1973, Ser. No. 428,014

Claims priority, application Japan, Dec. 27, 1972, 47-585

Int. Cl. G01t *1/16*

U.S. Cl. 250—360 **5 Claims**



1. A method of classifying a tire which comprises, (a) emitting x-rays and γ-rays from a radiation source on the side of a first sidewall of said tire and irradiated on said tire sidewall at a predetermined angle of inclination relative to the plane of the tire; (b) detecting the intensity of said x-rays or γ-rays which have penetrated through said tire on the side of a second sidewall of said tire, and (c) comparing with each other the values of intensity of said x-rays or γ-rays which have penetrated separately through said first sidewall and said second sidewall thereby to determine whether said tire is a tire with a white ribbon or said tire is a tire without a white ribbon in a sidewall thereof.

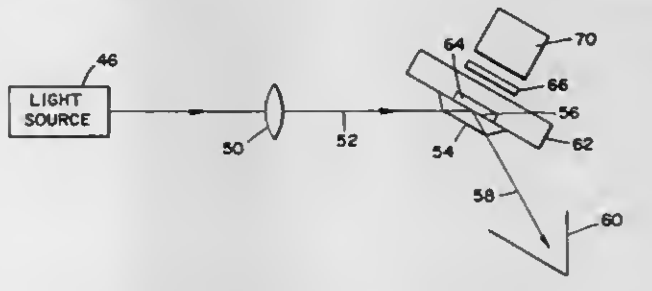
3,939,350
FLUORESCENT IMMUNOASSAY EMPLOYING TOTAL REFLECTION FOR ACTIVATION

Melvyn N. Kronick, and William A. Little, both of Palo Alto, Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Apr. 29, 1974, Ser. No. 465,009

Int. Cl.^{2} G01T *1/20*

U.S. Cl. 250—365 **15 Claims**



1. A method for determining the presence of a ligand in an unknown suspected of containing said ligand, which comprises:

combining in an aqueous assay medium, said unknown and receptor for said ligand, said receptor having at least on the average one fluorescing molecule bound to each receptor molecule;
contacting said assay medium with one side of an optically transparent surface having a plurality of ligand analogs bound to said surface in contact with said assay medium, wherein the optically transparent surface has a refractive index greater than the refractive index of said assay medium;
irradiating said surface with light having a wave length absorbed by said fluorescing molecule, on the side of said surface opposite said assay medium, and at an angle to said surface to provide total internal reflection; and
measuring the amount of fluorescent light emitted from said surface, wherein the amount of fluorescent light is a function of the amount of ligand present in said assay medium.

3,939,351
THREE-PHASE X-RAY GENERATOR

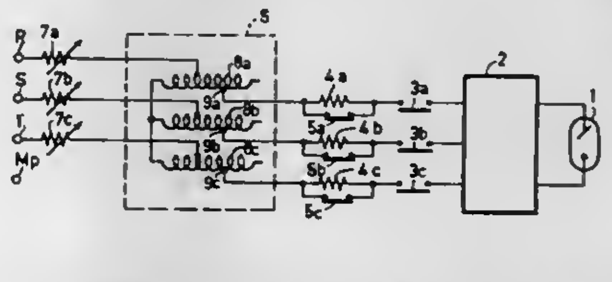
Heinz Mester, Hamburg, Germany, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed July 15, 1974, Ser. No. 488,394

Claims priority, application Germany, July 19, 1973, 2336780

Int. Cl.^{2} H05G *1/30*

U.S. Cl. 250—402 **2 Claims**

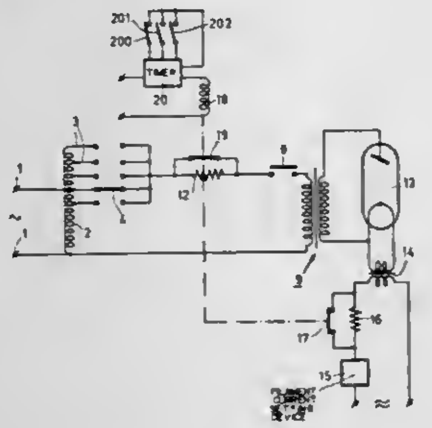


1. Circuit means for reducing ripple at double mains frequency in the high voltage of an X-ray tube, said ripple resulting from variations in emission current due to temperature variations of the filament of said tube when the filament current is alternating current of mains frequency, said circuit

means comprising a three-phase transformer and rectifier circuit means connected to an X-ray tube for converting three-phase mains voltages into an unsmoothed high voltage for the X-ray tube and unbalancing means for inducing a ripple on said high voltage at double mains frequency so as to cancel the ripple induced by the temperature variations of the filament.

3,939,352
X-RAY GENERATOR PROVIDED WITH STARTING LOAD CONTROL

Heinz Mester, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 8, 1974, Ser. No. 440,718
Claims priority, application Germany, Feb. 22, 1973, 2308681
Int. Cl.² H05G *1/30*
U.S. Cl. 250—409 3 Claims

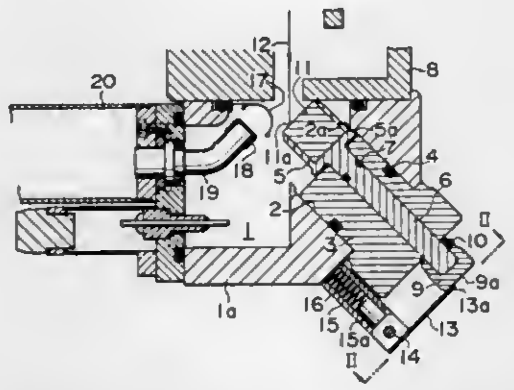


1. An X-ray generator circuit for an X-ray tube, comprising means for starting the X-ray tube at any selected one of a plurality of different starting powers, all of which are higher than the maximum continuous power at which the X-ray tube may to operated, the load capacity of the X-ray tube limiting to different respective time intervals the maximum period during which the tube should be operated at said different starting powers; timing means for measuring said different respective time intervals; and switching means responsive to said timing means for automatically reducing the power of the X-ray tube to a suitably lower power when the X-ray tube has been operated at the selected starting power for the time interval associated with the selected starting power.

3,939,353
ELECTRON MICROSCOPE SPECIMEN MOUNTING APPARATUS

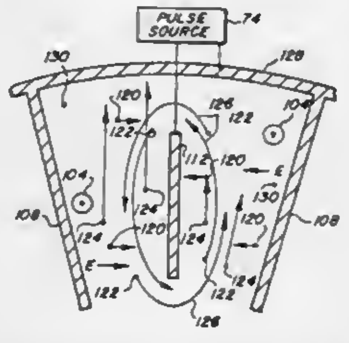
Shogo Shirai, Yokohama, and Haruo Uchida, Machida, both of Japan, assignors to Kabushiki Kaisha Akashi Seisakusho, Japan
Continuation of Ser. No. 501,802, Aug. 29, 1974, abandoned, which is a continuation of Ser. No. 361,181, May 17, 1973, abandoned. This application Apr. 9, 1975, Ser. No. 566,347
Claims priority, application Japan, May 22, 1972, 47-50588
Int. Cl.² G21K *5/06*
U.S. Cl. 250—441 7 Claims

1. In an electron microscope having a specimen chamber evacuated during use of the microscope, an electron beam operative during use of the microscope to irradiate a portion of a specimen and an electron lens for focusing the beam, an apparatus for adjustability and releasably mounting a specimen to undergo irradiation during use of the microscope and for substantially reducing the effect of vibration on the focusing of the beam, said apparatus comprising: specimen-holding means positionable into an irradiating position wherein a portion of the specimen is exposed to the electron beam and including means for adjustably positioning the specimen when said specimen-holding means is in said irradiating position to variably select the portion of the specimen exposed to the electron beam, means for releasably mounting said specimen-holding means in said irradiating position, and means for rigidly releasably coupling said specimen-holding means to the electron lens when said specimen-holding means is in said irradiating position, said means for releasably mounting said specimen-holding means comprising, a cylindrical support member having a pair of opposed end surfaces and a lateral surface, means mounting said specimen-holding means at one of said end surfaces, means defining a circumferential shoulder on a portion of said lateral surface, and means defining an annular recess in said lateral surface circumferentially of said lateral surface, means defining a throughbore between the interior and the exterior of said specimen chamber for receiving said cylindrical support member, said means defining a throughbore including means defining a second shoulder in a wall of said specimen chamber for engaging with said circumferential shoulder on said lateral surface of said cylindrical support member when said cylindrical support member is disposed within said throughbore, and means disposed within said annular recess hermetically sealing said cylindrical support member in said throughbore, said cylindrical support member having one of said opposed end surfaces exposed to the interior and exterior of said specimen chamber respectively whereby said cylindrical support member is forced toward the interior of said specimen chamber whenever a pressure differential is developed between the interior and the exterior of said specimen chamber to engage said shoulders for rigidly releasably coupling said specimen-holding means by said cylindrical support member to the electron lens to transmit vibratory motion from said specimen-holding means to the lens to substantially prevent the relative movement of one with respect to the other whenever said specimen-holding means is induced to vibrate thereby maintaining the focus of the electron beam on the selected portion of the specimen.



3,939,354
METHOD AND APPARATUS FOR SEPARATION OF IONS FROM A PLASMA

George Sargent Janes, Lincoln, Mass., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.
Filed Feb. 2, 1973, Ser. No. 328,954
Int. Cl.² B01D *59/44*; H01J *39/34*
U.S. Cl. 250—484 26 Claims



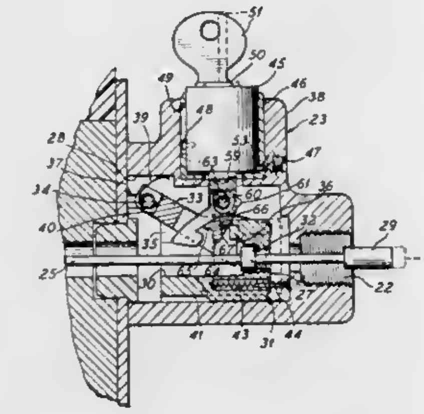
1. A method for separating particles of a first charge type from a neutral, bounded environment containing at least particles having a second charge type and wherein said particles of said first and second charge type have different mass-to-charge ratios, said method including the steps of:

circulating the second charge type particles in said environment on paths which generally close within the bounded environment; and

accelerating said particles of said first charge type toward a collection surface in a direction distinct from the circulation of said second charge type particles.

3,939,355
AUTOMATIC LOCKING RADIOISOTOPE CAMERA LOCK

Peter J. Rosauer, Mount Prospect, Ill., assignor to Magnaflux Corporation, Chicago, Ill.
Filed Oct. 4, 1974, Ser. No. 512,063
Int. Cl.² G21F *5/02*
U.S. Cl. 250—497 14 Claims



1. In a lock assembly for securing an isotope source in a radioisotope camera shield,

a pigtail extending from said source and adapted to extend and withdraw the isotope source relative to the camera shield,

a hollow lock casing adapted to be secured to the radioisotope camera shield and having a longitudinal lock chamber opening to the camera shield, and a lock barrel chamber extending at right angles with respect to said lock casing,

a stop on the source pigtail,

a lock barrel in said barrel chamber, and biased in an extended position relative to said lock barrel chamber,

a key cylinder in said lock barrel,

means operable by turning movement of said key cylinder to hold said lock barrel in a retracted position relative to said chamber or release said lock barrel to be extended from said chamber, and

three cooperating movable elements for locking and releasing said stop, two being operated by turning of the key cylinder and retracted or extended movement of the lock barrel and the third being operated by withdrawal tension on the pigtail and requiring an overt act on the pigtail in addition to turning of the key cylinder and release of the lock barrel to release the pigtail for extension outside of the camera shield for use.

3,939,356
HYDRO-AIR STORAGE ELECTRICAL GENERATION SYSTEM

Edward S. Loane, Reading, Pa., assignor to General Public Utilities Corporation, Reading, Pa.
Filed July 24, 1974, Ser. No. 491,222
Int. Cl.² F03B *13/105*
U.S. Cl. 290—52 10 Claims

1. A hydro-air storage system for generating electricity comprising:

a surface reservoir containing water;

a subterranean hydroelectric power plant;

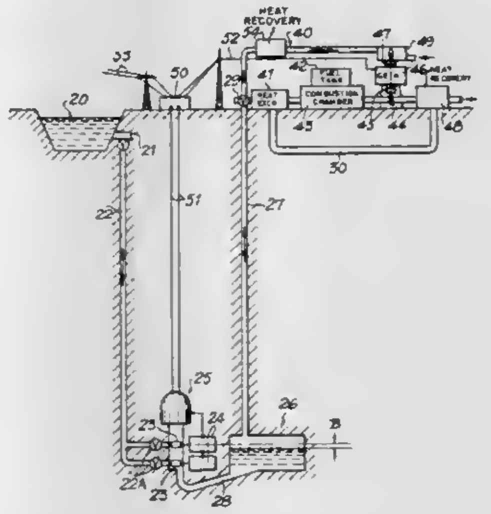
a penstock connecting said surface reservoir with said hydroelectric power plant;

a subterranean reservoir having an upper region containing compressed air and a lower region containing water;

a conduit connecting the lower water containing region of said subterranean reservoir with said hydroelectric power plant;

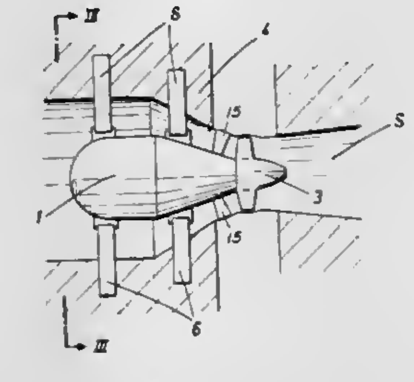
a surface power plant for generating electrical power from compressed air; and

an air shaft connecting the upper compressed air region of said subterranean reservoir with said surface power plant, whereby water from the surface reservoir flows through the subterranean power plant to generate electricity and compressed air is forced through the surface power plant by the water to generate electricity.



3,939,357
POWER PLANT

Gerhard Ziegler, Graz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria
Filed Oct. 29, 1973, Ser. No. 410,497
Claims priority, application Austria, Nov. 3, 1972, 9370/72
Int. Cl.² H02K *7/18*
U.S. Cl. 290—52 6 Claims



1. In a power plant which comprises

(1) a carrying structure having a wall defining a duct having an axis,

(2) a central structure comprising an axial-flow turbine and a generator,

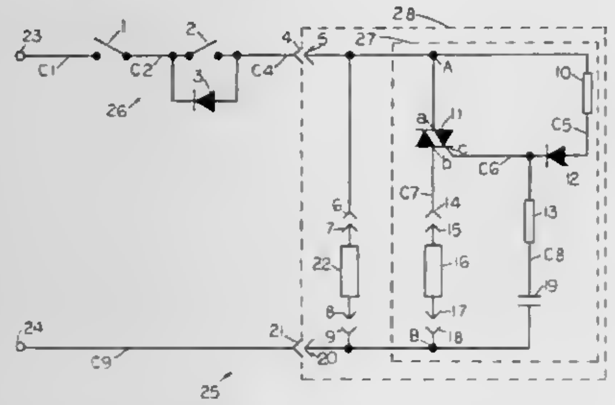
  (a) the central structure being disposed substantially coaxially in the duct, and

(3) a pair of radial arms rigidly fixed to the wall and extending diametrically and substantially perpendicularly to the axis, on a horizontal plane, the improvement of

(4) hinge means connecting each of the arms to the central structure for pivoting the central structure about an axis substantially parallel to the axis of the duct.

3,939,358
PLURAL LOAD LIGHTING ASSEMBLY ENERGIZABLE THROUGH TWO INPUT TERMINALS

James A. Saveker, 1801 W. 40th St., Lorain, Ohio 44053
Filed Nov. 7, 1974, Ser. No. 521,797
Int. Cl.² H02J *3/02*
U.S. Cl. 307—22 **7 Claims**



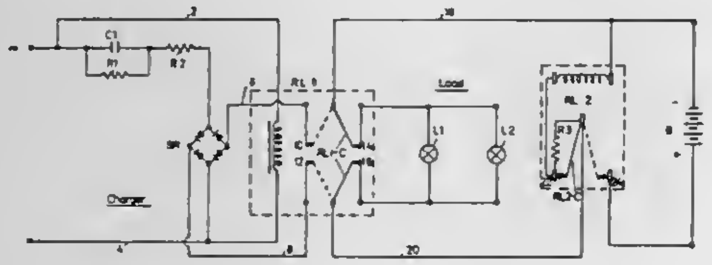
1. A plural load control system comprising:

first circuit means further connecting two input terminals to a pair of loads and further having internal means for selectively energizing first load only of said pair of loads with D-C electrical energy when D-C electrical energy of a required polarity characteristic is present across said two input terminals and for energizing said pair of loads with A-C electrical energy when A-C electrical energy is present across said two input terminals; and

source means for connecting electrical energy through said two input terminals, including second circuit means actuable to supply D-C electrical energy of said required polarity characteristic and actuable to supply A-C electrical energy.

3,939,359
BATTERY CHARGING AND DISCHARGING SYSTEM

Jacob Nehushtan, and Meyer Schusberger, both of Rishon-le-Zion, Israel, assignors to Tadiran Israel Electronics Industries Ltd., Israel
Filed Aug. 16, 1974, Ser. No. 497,888
Int. Cl.² H02J *7/00*
U.S. Cl. 307—66 **3 Claims**



1. A battery charging and discharging system for normally supplying power from an alternate current source as charging power to a battery, for disconnecting the battery from the source and connecting the battery to a load when said source power fails and the battery current exceeds a preselected value, and to disconnect the battery both from source and from said load when said source power fails and the battery current fails to said value, said system comprising:

a first pair of terminals adapted for connection to said source;

a second pair of terminals adapted for connection to said load;

a third pair of terminals adapted for connection to the battery;

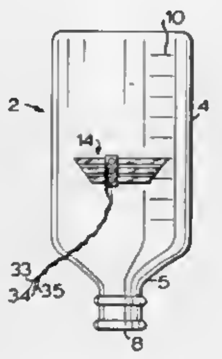
fourth and fifth pairs of terminals, one of the fifth pair of terminals being connected to one of the third pair of terminals;

a device connected between the interconnected terminals of the third and fifth pairs and the others of said third and fifth pair terminals to interconnect the said other terminals and supply charging current to said battery when charging current is supplied to the fifth pair of terminals, to interconnect the said other terminals and cause the battery to supply current to said fifth pair of terminals when said charging current is absent and said battery current exceeds said value, and to disconnect said other terminals from each other and prevent battery current from being supplied to said fifth pair of terminals when charging current is absent from the fifth pair of terminals and said battery current is absent; and

a battery charging circuit connected between said first and fourth pairs of terminals, said circuit including a first relay having a winding which is energized when said source supplies power and deenergized when source power fails, said first relay having first contact means connecting said fifth pair of terminals to said second pair of terminals when said winding is deenergized and connecting said fifth pair of terminals to said fourth pair of terminals when said winding is energized, said circuit delivering charging current to said fourth pair of terminals when said relay is energized.

3,939,360
LIQUID LEVEL SENSOR AND ELECTRODE ASSEMBLY THEREFOR

John A. Jackson, Oshawa, Canada, assignor to John A. Jackson and Albert Bangay, both of Scarborough, Canada, part interest to each
Continuation of Ser. No. 409,631, Oct. 25, 1973, abandoned. This application Jan. 22, 1975, Ser. No. 543,193
Int. Cl.² H01H *35/18*
U.S. Cl. 307—118 **15 Claims**



1. Apparatus for detecting the level of fluid in a non-conducting container and comprising:

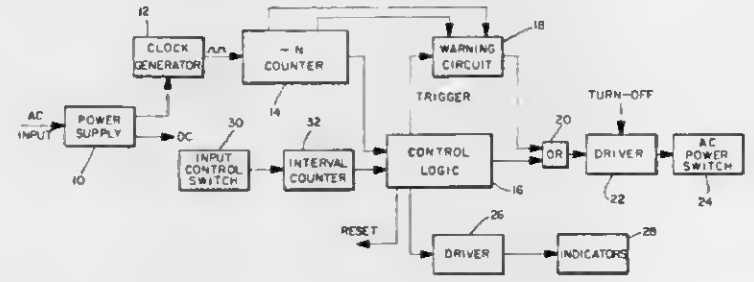
a. detector means mountable against the exterior surface of said container and having three spaced capacitance plate members, namely an upper member, a lower member and a middle member between said upper and lower members, the capacity between said upper and middle members being C_1, the capacity between said lower and middle members being C_2, and the value of C_1 being greater than that of C_2 when said detector means is located in air and also when said detector means is mounted on said container with the fluid level in said container above or below said detector means,

b. circuit means including a bias capacitance of capacity C_3 detachably connected between said lower and middle members, the value of C_3 being such that when said detector means is located in air or on said container with the fluid level in said container below said upper member, the value of C_1 is less than the combined values of C_2 and C_3, and when said detector means is on said container with the fluid level in said container above said upper member, C_1 is greater than the combined values of C_2 and C_3,

c. said circuit means including means for comparing the value of C_1 with the combined values of C_2 and C_3 and operative to produce an alarm signal when the value of C_1 is less than the combined values of C_2 and C_3.

3,939,361
ELECTRONIC TIMER SWITCH

Dwain Aidala, Marlboro, and Albert W. Welz, Jr., Westford, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.
Filed May 9, 1974, Ser. No. 468,474
Int. Cl.² H01H *7/00, 43/00*
U.S. Cl. 307—141 **6 Claims**



1. A timer switch adapted for electrical connection to an alternating current source and comprising:

a manually actuable input control switch;

first electronic circuit means operative in response to alternating current from said source to provide a count representative of the number of alternating current cycles received from a reference time, and including

clock means operative to provide clock pulses in response to and at the frequency of said alternating current; and

counter means operative in response to said clock pulses to provide a first signal upon receipt of a predetermined number thereof;

control circuit means for providing a timing interval for duration selectable in successive discrete increments in response to the number of manual actuations of said control switch and including

interval counter means operative in response to each actuation of said control switch to provide a second signal of duration corresponding to a discrete increment;

second electronic circuit means operative in response to said first signal from said counter means and said second signal from said interval counter means to provide an output signal for the duration of said selected timing interval; and

switch means operative in response to and for the duration of said output signal.

3,939,362
POWER PACK WITH SWITCH FOR PLURAL PRIMARY-ECONDARY CONNECTIONS

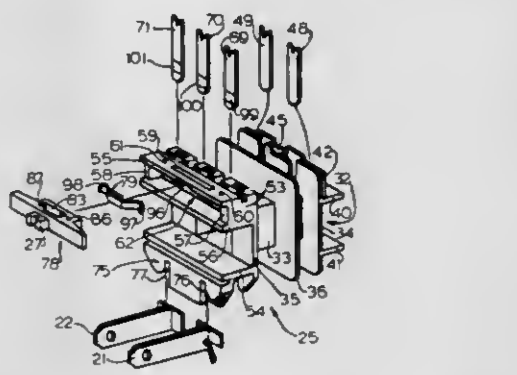
James E. Grimes, and Joseph W. Rovan, both of Anaheim, Calif., assignors to Disston, Inc., Pittsburgh, Pa.
Filed Dec. 5, 1974, Ser. No. 529,630
Int. Cl.² H02J *4/00*
U.S. Cl. 307—150 **6 Claims**

1. In a power pack for use with small electrical appliances to provide an operating voltage from a line voltage, comprising:

a. a case and cover assembly for housing a transformer core and winding subassembly;

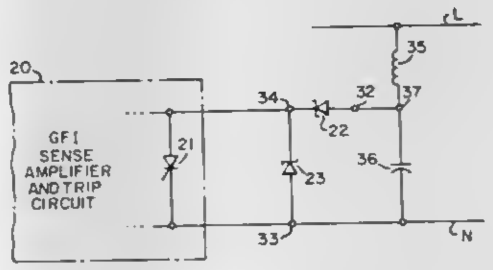
b. a transformer subassembly in the housing including:

1. a bobbin molded of electrical insulating material and formed with a plurality of isolated cavities adapted for receiving and mounting soldering lugs, primary terminals and a switch assembly and formed with the other integral insulating formations for receiving and insulating the core from the windings;
2. primary and secondary windings wound on the bobbin;
3. primary and secondary soldering lugs secured in respective ones of said cavities and connected to selected taps on the windings;
4. primary terminals secured to the bobbin in other respective said cavities and connected to the primary winding, said primary terminals projecting from the cover for engaging a wall outlet to connect to the line voltage;
5. a laminated core secured to the bobbin and surrounding the windings and being insulated therefrom by said insulating formations;
6. a switch assembly mounted and retained in said switch assembly cavity formed in the bobbin, said switch assembly including a movable switch member with an operator member extending through and operable externally of said case and cover assembly with an electrically conducting contactor member operative in one position to electrically connect a tap on one side of said windings with a first circuit configuration on that side and with said operator member in an opposite position being operative to electrically connect a tap on the same side into a second circuit configuration on that side, said circuit configurations being operative in conjunction with said core, windings and the circuit configuration of the opposite side to provide a particular character of supply voltage for each said position.



3,939,363
CIRCUITRY WITH ZENER DIODE VOLTAGE SURGE SUPPRESSOR CONNECTED TO SERVE AS HALF WAVE RECTIFIER

Joseph C. Engel, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 25, 1974, Ser. No. 445,524
Int. Cl.² H07H *7/20*
U.S. Cl. 307—202 R **5 Claims**



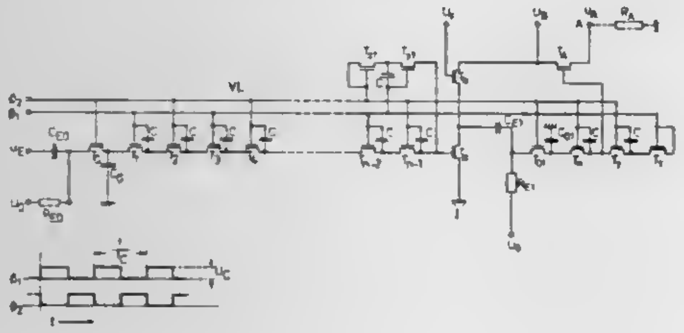
1. Electrical apparatus comprising:

a first circuit portion requiring a half wave rectified voltage source and including an element to be protected from surge voltages beyond a predetermined value;

a three terminal diode arrangement interconnected with the first circuit portion, the diode arrangement including a pair of diodes connected in series opposition and having first and second terminals to common electrodes of said diodes that are not connected to each other and a third terminal at the other pair of common diode electrodes that are connected to each other with the first and second terminals available for connection to a full wave alternating voltage source and the second and third terminals connected across the element to be protected, at least said diode between said second and third terminals having rectification and voltage dependent conduction characteristics;

said first circuit portion being a sense amplifier and trip circuit of a ground fault interrupter and said first and third terminals of said diode arrangement being connected to conductors of a full wave alternating voltage supply including a neutral conductor connected to the second diode terminal and a hot line conductor connected through a solenoid trip coil to the first diode terminal.

3,939,364
DELAY LINE FOR ANALOGOUS SIGNALS
Fritz Guenter Adam, and Hermannus Schat, both of Freiburg, Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed Nov. 12, 1974, Ser. No. 523,187
Claims priority, application Germany, Nov. 21, 1973, 2357982
Int. Cl.^{2} H03K *21/00*
U.S. Cl. 307—221 C **9 Claims**

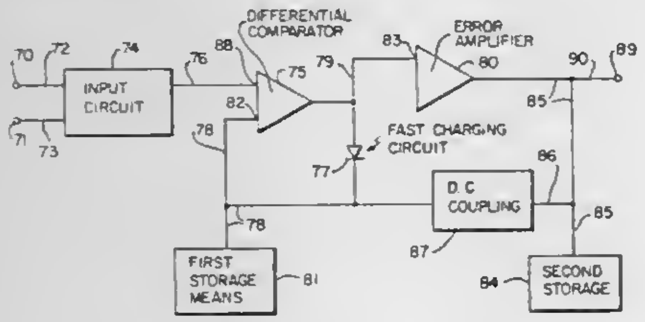


1. A delay line of the type wherein a plurality of stages are coupled together, said delay line having an input to which there is applied a d.c. potential and a signal to be delayed and wherein clock signals are applied to said stages, comprising:

at least one inverter stage coupled between two adjacent stages of said plurality of stages for inverting the signal potential; and

means for adding the output of said at least one inverter stage to said delay line thereby reducing unwanted modulations with respect to said d.c. input potential.

3,939,365
PULSE PEAK DETECTOR
William A. Lindgren, 9300 Gunpowder Place, Gaithersburg, Md. 20760
Filed July 10, 1974, Ser. No. 487,307
Int. Cl.^{2} H03K *5/20*
U.S. Cl. 307—235 A **4 Claims**



1. A pulse peak detector for generating a DC voltage proportional to the peak amplitude of an applied input pulse having a short duration and a fast rise time comprising:

an input circuit for receiving the applied pulse signal;

first storage means connected to said input circuit for storing a signal related to the peak amplitude of the applied pulse signal,
  said first storage means and said input circuit having a time constant less than the duration of the applied pulse;

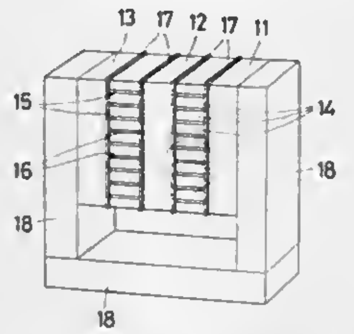
means connected to said input circuit and to said first storage means for generating an error signal of predetermined amplitude,
  the time duration of said error signal being proportional to the time interval during which the amplitude of the applied signal is greater than the amplitude of the signal stored by said first storage means;

coupling circuit means connected to said means for generating an error signal;

second storage means connected to said coupling means for storing a signal whose amplitude is accurately representative of the peak amplitude of the applied signal,
  the time constant of said coupling means and said second storage means being long relative to the repetition rate of the applied signals; and

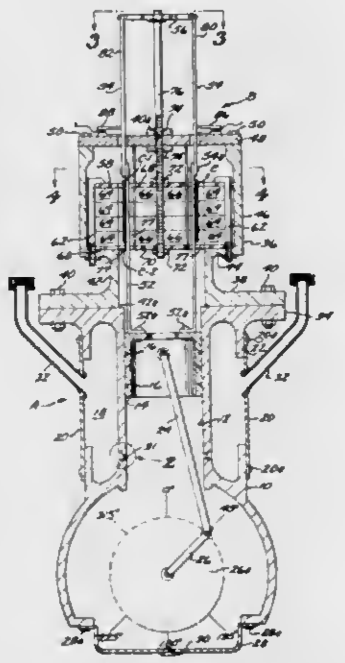
DC coupling means for coupling said first storage means to said second storage means whereby charge is exchanged between said second storage means and said first storage means.

3,939,366
METHOD OF CONVERTING RADIOACTIVE ENERGY TO ELECTRIC ENERGY AND DEVICE FOR PERFORMING THE SAME
Yasuro Ato, and Soji Miyagawa, both of Nagoya, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan
Continuation of Ser. No. 227,545, Feb. 18, 1972, abandoned. This application Oct. 9, 1973, Ser. No. 404,425
Claims priority, application Japan, Feb. 19, 1971, 46-8144
Int. Cl.^{2} G21D *7/00*
U.S. Cl. 310—3 R **1 Claim**



1. A device for converting radioactive energy to electric energy, said device comprising in combination, a first, second and third magnetic body, a plurality of InSb monocrystalline semi-conductor bodies stacked vertically between said first and second and between said second and third magnetic body, each stacked plurality of semi-conductor bodies being separated from the magnetic body by an insulating plate, a layer of ^{210}Po radioactive substance sandwiched between adjacent semi-conductor bodies and disposed to produce electron hole pairs in said semi-conductor bodies, wherein said electron hole pairs diffuse toward an unirradiated region of said semiconductor bodies to eleminate the differences in density between electrons and holes in each of said semiconductor bodies, said magnetic bodies separating said electrons and said holes from each other by means of the resultant magnetic field wherein said electrons and holes are caused to move in a direction perpendicular to the direction of diffusion of the electron-hole pairs, and a U-shaped plate member of high magnetic permeability disposed by the leg members thereof on the outer surfaces of said first and third magnetic bodies, said U-shaped plate member supporting the magnetic bodies and said stacked semi-conductor bodies in association, each of said semi-conductor bodies having electrodes on opposite sides thereof to receive separated electron-hole pairs of electric energy generated within each of the semi-conductor bodies.

3,939,367
MAGNETICALLY ACTUATED RECIPROCATING ENGINE
Juan A. Ramirez, 513 E. 224th St., Carson, Calif.
Filed Aug. 4, 1975, Ser. No. 603,027
Int. Cl.^{2} H02K *7/06*
U.S. Cl. 310—20 **6 Claims**



1. In combination with a crankshaft, a flywheel connected to said crankshaft, a connecting rod pivotally connected to said crankshaft, a piston pivotally connected to said connecting rod, an engine block that rotatably supports said crankshaft and flywheel, said engine block having a cylinder therein in which said piston reciprocates when said crankshaft and flywheel rotate, a source of electric energy, a magnetically actuated device for driving said crankshaft, said device including:

a. a housing mounted on said block, with the interior of said housing in communication with said cylinder;

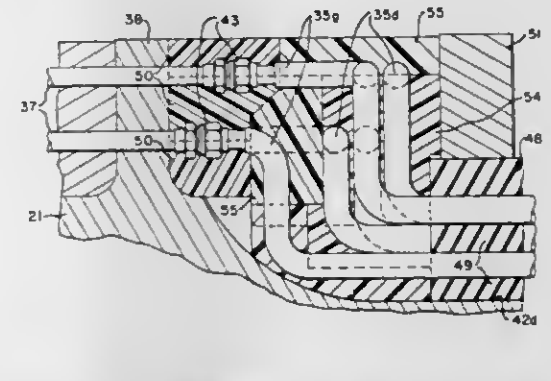
b. first and second permanent magnetic means situated in said housing that define an annulus shaped space therebetween that has a magnetic field therein, with the adjacent portions of said first and second magnetic means of the same polarity, and said annulus shaped space axially aligned with said cylinder;

c. a solenoid coil that may reciprocate in said annulus shaped space to positions thereabove and below, said solenoid coil having a first end that first enters said annulus shaped space when said solenoid coil moves downwardly relative thereto and a second end that first enters said annulus shaped space when said solenoid coil moves upwardly relative to said annulus shaped space;

d. first means that supports said solenoid coil at a fixed position relative to said piston; and

e. commutation means for intermittently completing an electric circuit to said solenoid from said source of energy and reversing the direction of flow of current through said solenoid, said commutation means as said crankshaft and flywheel rotate to dispose said second end of said solenoid in a position to move into said annulus shaped space completing an electric circuit from said source of electric energy to said solenoid coil that imparts a magnetic polarity to said second end such that said solenoid tends to be pulled downwardly towards a locked position in said annulus shaped space, said commutation means just prior to said solenoid coil moving to said locked position breaking said electric circuit, said solenoid coil after said electric circuit has been broken continuing to move downwardly in said annulus shaped space due to momentum imparted to said flywheel, said solenoid coil after said first end thereof has moved downwardly in said annulus shaped space below the center of said magnetic field having said electric circuit thereto again completed to energize said solenoid coil for said first end thereof to have a polarity that tends to force said solenoid coil downwardly out of said annulus shaped space, said electric circuit to said solenoid coil being broken by said commutation means when said first end of said solenoid coil has moved downwardly out of said annulus shaped space, with the momentum imparted to said flywheel causing said crankshaft to rotate until said solenoid coil starts to move upwardly towards said annulus shaped space, and said commutation means intermittently completing said electric circuit in reverse order and with reverse current flow as said solenoid moves upwardly through said annulus shaped space.

3,939,368
LIQUID-COOLED ROTOR FOR DYNAMOELECTRIC MACHINES
Jacques E. Albaric, Pittsburgh; Charles W. Burkhart, North Huntingdon, and Warren W. Jones, Acme, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 25, 1974, Ser. No. 482,912
Int. Cl.^{2} H02K *9/00*
U.S. Cl. 310—59 **5 Claims**



1. A rotor for a dynamoelectric machine comprising:

a shaft portion having an axis extending therethrough and a body portion carrying windings, said windings including conductors having passages for circulation of a liquid coolant therethrough,

an annular coolant chamber encircling said shaft portion,

means for supplying liquid coolant to said chamber,

a plurality of connectors disposed in radially-spaced circular rows extending circumferentially in one wall of the chamber,

a plurality of insulating hoses being joined to each of said connectors and extending axially in alignment therewith,

means for supporting said connectors and hoses in position on the shaft,

a plurality of slots extending longitudinally in the surface of the shaft portion under the end portions of said windings,

a plurality of coolant tubes connected to said insulating hoses, said coolant tubes having axial portions extending axially from said hoses through a transition region, said tubes being disposed in a predetermined arrangement in said transition region to bring them into groups at a smaller radial distance from the shaft axis than said hoses, each group of tubes extending axially in one of said slots for connection of the tubes to the winding conductors, and

means in said transition region for isolating said coolant tubes into sets of tubes and for rigidly supporting in position said tubes in each set, said isolating and supporting means comprising;
  wall members extending radially in said transition region between said coolant tubes to isolate said tubes into

said sets, said walls defining spaces containing said tubes within each set therebetween, and,

a mass of resin surrounding and enclosing each set of tubes in said spaces between said wall members,

blocks of rigid insulating material enclosing and supporting said axially extending portions of said tubes between said mass of resin and said insulating hoses, and,

rigid insulating blocks supporting said axially extending groups of tubes in said slots, said masses of resin being confined between said walls and said insulating blocks on both sides thereof.

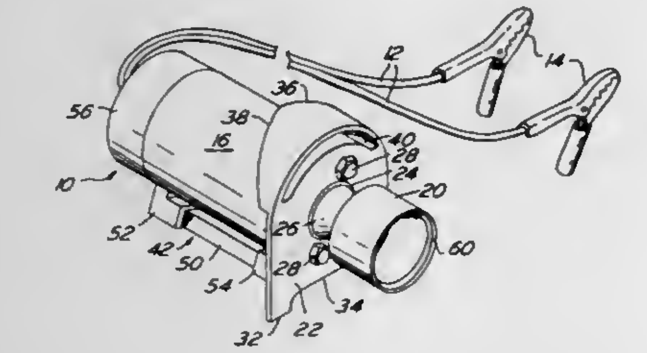
3,939,369
HOUSING FOR STARTER MOTOR

Matthew A. Sullivan, Elkins Park, Pa., assignor to Sullivan Products, Inc., Willow Grove, Pa.

Filed July 17, 1974, Ser. No. 489,318

Int. Cl.² H02K *5/00*

U.S. Cl. 310—89 **15 Claims**



1. In an apparatus for housing a hand-held starter motor comprising an electric motor, a substantially cylindrical casing for said motor, the cylindrical axis of said casing being substantially parallel to a shaft connected to said motor and extending from the casing, and the diameter of said casing being such that the hand may extend around more than 180° of the circumference of said casing to hold said motor, the improvement comprising flange means adjacent the end of said casing where said shaft extends from said casing, said flange means extending radially outwardly beyond the circumference of said casing along substantially 360° of said circumference, the radial extent of said flange means being sufficient to prevent the user's hand and fingers from sliding past said flange means, said flange means having a curved surface, said curved surface circumscribing a portion of the outer surface of said casing and facing away from the end of said casing from which said shaft extends, said curved surface approximately fitting the curve of the hand between the thumb and the forefinger when the hand is holding said motor.

3,939,370
VARIABLE SPEED THREE-PHASE MOTOR

Arnold Müller, Lichtensteinstrasse 31, 7312 Kirchheim, Teck, Germany

Filed June 18, 1974, Ser. No. 480,426

Claims priority, application Germany, June 28, 1973, 2332868

Int. Cl.² H02K *17/16*

U.S. Cl. 310—125 **3 Claims**

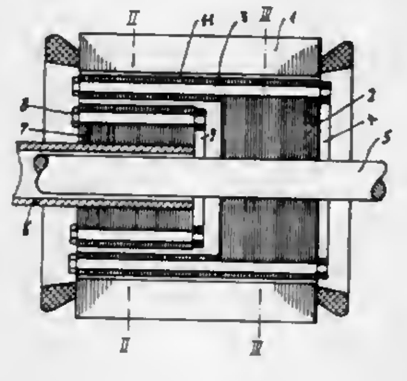
1. A variable speed three-phase short-circuit motor comprising:

a central drive output shaft defining the longitudinal axis of the motor;

a main rotor of the short-circuit cage type, fixedly mounted on the output shaft for rotation therewith;

a hollow intermediate rotor axially adjoining the main rotor as an extension of its short-circuit cage, thereby forming a continuous outer rotor surface therewith, the intermediate rotor being thus solidary with the main rotor and disposed coaxially with respect to the output shaft to form a cavity that is concentric with respect to the motor axis;

an inner short-circuit rotor arranged inside said cavity so as to cooperate with the surrounding intermediate rotor;



a secondary shaft arranged coaxially with the drive output shaft on the side of the intermediate rotor and inner rotor, said secondary shaft carrying the inner rotor for rotation independent of the drive output shaft; and

a stator surrounding both the main rotor and the intermediate rotor for dynamoelectric cooperation therewith.

3,939,371
ROTARY ELECTRIC MACHINE

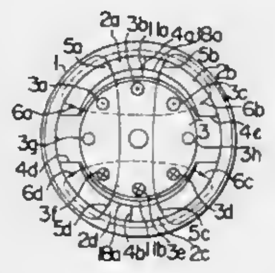
Tadao Murakami, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed July 2, 1974, Ser. No. 485,253

Claims priority, application Japan, July 4, 1973, 48-74794

Int. Cl.² H02K *21/28*

U.S. Cl. 310—154 **8 Claims**



1. In a rotary electric machine comprising a rotor, a stator, and at least a pair of magnetic poles associated with one of said rotor and stator, each of said pair of magnetic poles including at least one magnet having different B-H characteristics along the direction of rotation of said rotor, said magnet including a portion having the highest coercive force where the magnetic field is weakened and a portion having the highest magnetic flux density where the magnetic field is strengthened, the improvement comprising said magnet including intermediate portions where the magnetic flux density and the coercive force are progressively substantially increased and decreased respectively.

3,939,372
CONTACT-FREE PULSE GENERATORS

John W. Wurst, Dover, and James E. O'Brien, Kenilworth, both of N.J., assignors to The Singer Company, New York, N.Y.

Continuation of Ser. No. 364,836, May 29, 1973, abandoned. This application Nov. 7, 1974, Ser. No. 521,712

Int. Cl.² H02K *19/24*

U.S. Cl. 310—168 **1 Claim**

1. A contact-free electrical pulse generator, comprising:

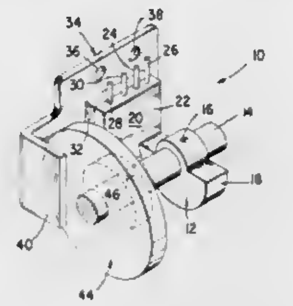
a. a flux conducting base member

b. permanent magnet means adapted to be affixed to said base member for providing a source of flux lines;

c. a Hall effect sensor device adapted to be mounted juxtaposition said magnet means and within the path of said flux lines, said sensor device having at least two stable states depending on the level of flux density imposed thereon;

d. a flux conducting rotary shaft means adapted to be journaled in spaced relation to said base member and adapted to cooperate with said base member to enhance the flow of said flux lines;

e. flux conducting cam means adapted to be carried by said rotatable shaft in a position to cooperate with said Hall sensor device in said flux path, said cam means having a stepped peripheral circumference for changing the magnetic flux density imposed by said magnet means on said Hall sensor device in accordance with preselected angular positions of said rotary shaft means;



f. said base member including a portion at one end extending outwardly therefrom toward said rotary shaft means and said rotary shaft means in addition to said flux conducting cam means including a circular shaped flux conducting disc carried thereon and adapted to rotate in overlapped relation proximate said outwardly extending base member portion to provide a magnetic flux conducting circuit with the base member through the circular disc, the shaft, and the cam means.

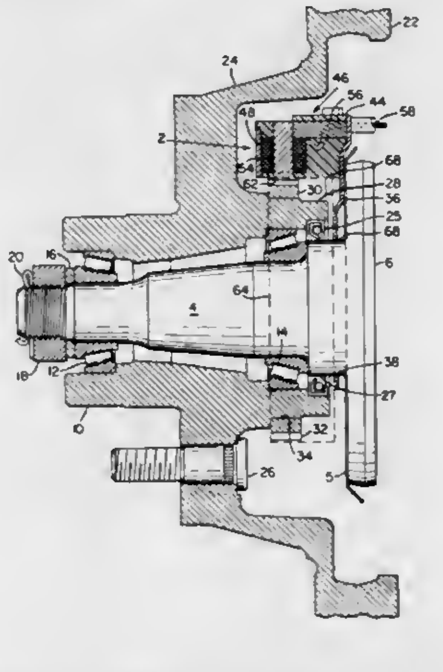
3,939,373
FIXED GAP SPEED SENSOR

James K. Roberts, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Oct. 29, 1974, Ser. No. 518,668

Int. Cl.² H02K *19/20*

U.S. Cl. 310—168 **1 Claim**



1. A device for sensing the speed of a wheel having a hub rotating on a spindle, comprising a tone wheel including a ring shaped member mounted on the wheel hub, the member being made of magnetic material with teeth formed in the outer periphery and the inner surface of the ring shaped member engaging a portion of the wheel hub which is concentric with the hub axis, a pick-up for sensing the speed of rotation of the tone wheel and providing signals corresponding thereto, a bracket having a nest for receiving the pick-up and having a locating aperture for mounting the bracket on a hub seal surface on the spindle, the pick-up being potted in the nest with a potting compound in a position to provide a suitable gap between the tone wheel and pick-up to avoid adjustment of the pick-up relative to the tone wheel after assembly of the bracket to the spindle, the pick-up being accurately positioned in the nest during potting by clamping the pick-up to a surface of a stepped plug having a radius corresponding to the radius of the tone wheel plus a suitable gap between the tone wheel and pick-up while the locating aperture in the bracket is closely mated on a diameter on the stepped plug.

3,939,374
ELECTRON MULTIPLIERS HAVING TAPERED CHANNELS

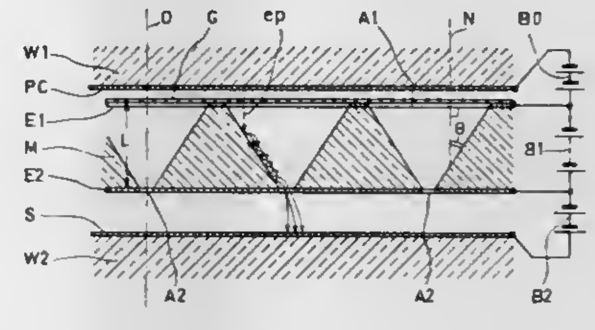
Pieter Schagen; Hewson Nicholas Graham King; Daphne Louise Lamport; Roger Pook; Pamela May Stubberfield, and Derek Washington, all of Salfords, near Redhill, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,016

Claims priority, application United Kingdom, Nov. 6, 1973, 2842/73

Int. Cl.² H01J *43/24, 43/22*

U.S. Cl. 313—95 **9 Claims**



1. A channel plate electron multiplier, comprising a thin plate having two major faces and a plurality of closely spaced substantially identical channels interconnecting said two major faces, the axes of said channels being parallel to each other and a major part of each of said channels having a cross-section which is gradually tapered from an input aperture of one cross-section to an exit aperture of smaller cross-section, the ratio of the cross-sectional area of said input aperture to the cross-sectional area of said exit aperture being no less than five, the ratio between the axial distance spacing said input aperture from said exit aperture to the smallest linear dimension of said input aperture being no greater than three, the surfaces of said channels being resistive and secondary emissive at leas over said gradually tapered major part, and an electrostatic field controlling conductive structure adjacent to and extending across said input aperture for flattening any fringing electrostatic field generated within said channels to the extent that substantially all equipotential surfaces within said channels intersect with the surfaces of said tapered major part at an angle not less than fifty degrees nor greater than seventy-five degrees, in order that a major portion of secondary emitted electrons are thereby attracted back toward and collide with the secondary emissive surface of said tapered major part at a point closer to said exit aperture without crossing to and colliding with the opposite side of said tapered major part.

3,939,375
CATHODE RAY TUBE HAVING CHANNEL MULTIPLIER AND ELECTRON REFLECTING SYSTEM FOR ENERGIZING COLOR PHOSPHOR STRIPS

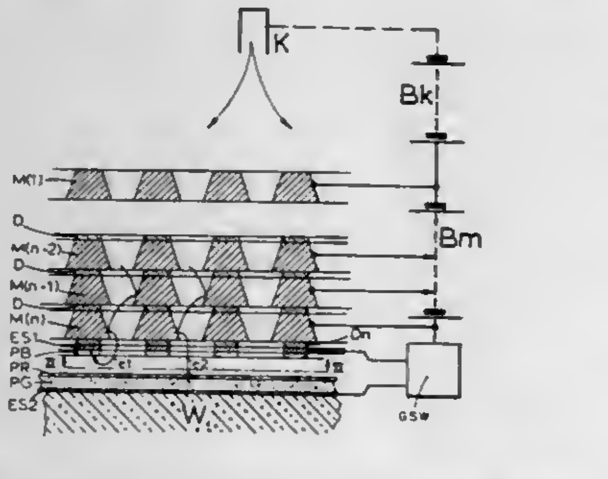
Pieter Schagen; Hewson Nicholas Graham King, and Derek Washington, all of Salfords, near Redhill, England, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 288,597, Sept. 13, 1972, Pat. No. 3,860,849. This application Dec. 3, 1974, Ser. No. 529,263

Claims priority, application United Kingdom, Aug. 8, 1972, 42723/72

Int. Cl.² H01J *29/07, 29/28*

U.S. Cl. 313—408 **7 Claims**



1. An image display screen for use in a color television tube, comprising:

a channel plate defining a display area and having an input side for receiving electrons into channels of said channel plate from a scanning electron beam and an output side for delivering electrons from channels of said channel plate;

at least two interdigitated color selection electrodes insulated from and substantially covering the output side of said channel plate but shaped so as to not block the channels of said channel plate;

separate phosphor layers covering each of said at least two interdigitated electrodes on the side thereof remote from said channel plate; said separate phosphor layers corresponding to different colors; and

a further electrode coextensive with said channel plate and spaced from and facing said separate phosphor layers, whereby electrons delivered from a channel of said channel plate may be directed toward and be caused to collide with the phosphor layer covering a selected one of said electrodes in the vicinity of said channel by application of appropriate electrical potentials to said electrodes.

3,939,376
ALIGNMENT SPRING COUNTERACTING ANTENNA TYPE GETTER EFFECT ON ELECTRON GUN ALIGNMENT

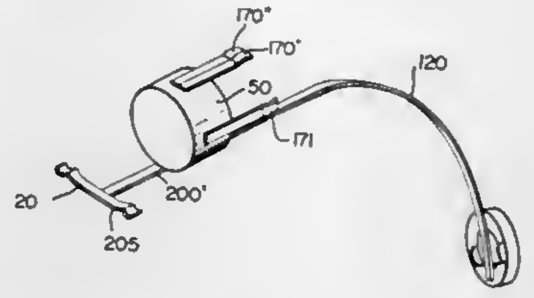
Clair W. Reash, Fairview Park, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 26, 1974, Ser. No. 536,619

Int. Cl.² H01J *29/02, 29/70, 29/82*

U.S. Cl. 313—451 **1 Claim**

1. In a picture tube having a cylindrical neck portion and a conical funnel portion and containing an electron gun assembly including a glass header member adapted to seal the neck portion, a cylindrical metal cup member said cup member being held centrally spaced in said neck portion by peripherally attached spring members, a getter assembly attached to said cup member by an elongated spring member which forcibly holds said getter assembly against the funnel portion of said tube and imparts a rotational force on said electron gun assembly, the improvement which comprises at least one spring member attached to said cup member and extending toward said header member and forcibly contacting said neck portion of said picture tube and imparting a force on said electron gun assembly which substantially balances said rotational force due to said elongated spring member attached to said getter assembly, said peripherally attached spring members compensating for the increased force applied to the electron gun assembly by said spring member attached to said cup member to maintain said electron gun in axial alignment in said neck portion of said picture tube.



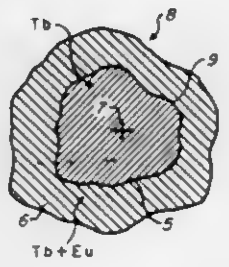
3,939,377
PENETRATION PHOSPHORS AND DISPLAY DEVICES

Stanley F. Ignasiak, Marlboro, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 13, 1974, Ser. No. 505,710

Int. Cl.² H01J *31/20*

U.S. Cl. 313—468 **20 Claims**



1. An electron tube including an evacuated envelope, a cathodo-luminescent screen therein, and means for exciting said screen within said envelope by electrons, said screen including cathodo-luminescent particles each comprising:

a generally central region, and

a generally peripheral region surrounding said central region in contiguous relation therewith,

said particle being composed of a La phosphor material with a substantially uniform distribution of Tb ions, and

said generally peripheral region having a distribution of Eu ions increasing toward the exterior surface of said particle,

said La phosphor material being La_2O_2S,

said Tb ions being provided by Tb_2O_2S,

said Eu ions being provided by Eu_2O_2S, and the respective concentrations of Tb_2O_2S and Eu_2O_2S each being substantially smaller than the concentration of La_2O_2S.

16. An electron tube including an evacuated envelope, a cathodo-luminescent screen therein, and means for exciting said screen within said envelope by electrons, said screen having cathodo-luminescent particles each comprising:

a generally central region composed of a $La_2O_2S : Tb_2O_2S$ phosphor,

a generally peripheral region surrounding said central region in contiguous relation therewith composed of $La_2O_2S : Tb_2O_2S : Eu_2O_2S$ phosphor,

the La_2O_2S and Tb_2O_2S materials being substantially uniformly distributed in said particle and the relative concentrations of said Tb_2O_2S and said Eu_2O_2S being such that relatively low velocity electrons striking any one of said particles excite said phosphor in said peripheral region preferentially to produce red line emission, and relatively high velocity electrons striking one of said particles excite said phosphor in said central region preferentially to produce green line emission.

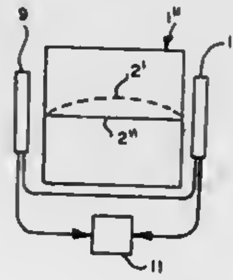
3,939,378
STORAGE CATHODE RAY TUBE HAVING AUXILIARY COILS TO CORRECT NON-SYMMETRICAL GEOMETRY

Johnnie Everett Schmauder, Portland, and James Kipling Richardson, Beaverton, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 388,857, Aug. 8, 1973, abandoned. This application Jan. 8, 1975, Ser. No. 539,563

Int. Cl.² H01J *31/60, 31/58*

U.S. Cl. 315—12 R **1 Claim**



1. A storage cathode-ray-tube having auxiliary coils to correct non-symmetrical geometry of an image caused by electron-electron interaction of writing and storing electron beams, comprising:

faceplate means including a storage target for providing an image producing means;

means for bombarding said faceplate means with high velocity electrons emitted from a single on axis writing electron gun to produce an image on said storage target;

means for simultaneously bombarding said faceplate means with uniformly distributed flood beam electrons emitted from a single off axis flood electron gun to retain said image; and

an auxiliary set of "Hemholtz" coils disposed between said faceplate means and said flood electron gun and on opposite sides of the cathode-ray-tube, said coils connected to receive said flood beam electrons for producing a correcting field proportional to said flood beam electrons for compensating the electron-electron interaction thereby substantially eliminating non-symmetrical geometry of the image.

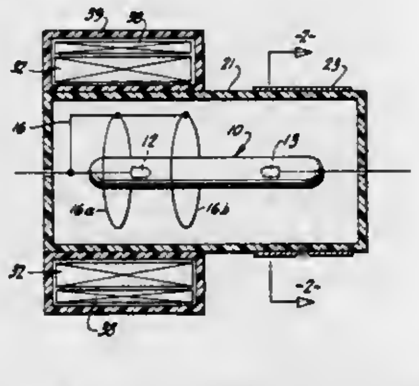
3,939,379
HIGH ENERGY GAS DISCHARGE SWITCHING DEVICE

John W. Sullivan, Los Altos, and Richard P. Fleenor, Los Gatos, both of Calif., assignors to Gould Inc., Chicago, Ill.

Continuation of Ser. No. 483,114, June 26, 1974, abandoned. This application Feb. 18, 1975, Ser. No. 550,300

Int. Cl.² H01J *1/52, 5/02, 11/04*

U.S. Cl. 315—85 **19 Claims**



1. In a high energy switching device for delivering energy from a source to a load: a gas discharge tube having first and second electroder connected electrically in series with the source and the load, a control element connected to the first electrode, means for applying a trigger signal to the control element to initiate firing of the tube to pass energy from the source to the load, and means comprising an electrostatic shield disposed about the second electrode for preventing the tube from firing in the absence of a trigger signal when the potential between the electrodes is below a predetermined level.

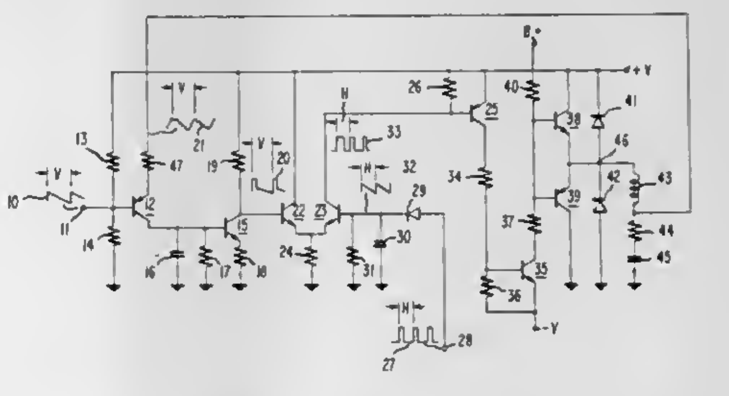
3,939,380
CLASS D AMPLIFIER

John Charles Peer, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 21, 1974, Ser. No. 444,405

Int. Cl.² H01J *29/70, 29/76*

U.S. Cl. 315—397 **7 Claims**



1. A class D amplifier comprising:

first and second serially coupled active current conducting devices;

first and second unidirectional current conducting devices respectively parallelly coupled to said first and second active devices and poled for conducting forward current in a direction opposite to forward current conduction in said first and second active devices;

means coupling the junction of said first and second active devices to the junction of said first and second unidirectional devices for forming an output terminal adapted for supplying current to a load; and

means coupled to control electrodes of said first and second active devices for providing signals for alternately enabling said first and second active devices for conduction such that during a first portion of an amplifying cycle said first active device conducts in the forward direction and said second active device conducts in its reverse direction, and during a second portion of said amplifying cycle said second active device conducts in its forward direction and said first active device conducts in its reverse direction for minimizing crossover distortion in said amplifier.

3,939,381
UNIVERSAL BURN-IN FIXTURE

David P. Meany, Anaheim, Calif., assignor to MCM Industries, Inc., Anaheim, Calif.

Filed Mar. 22, 1974, Ser. No. 453,858

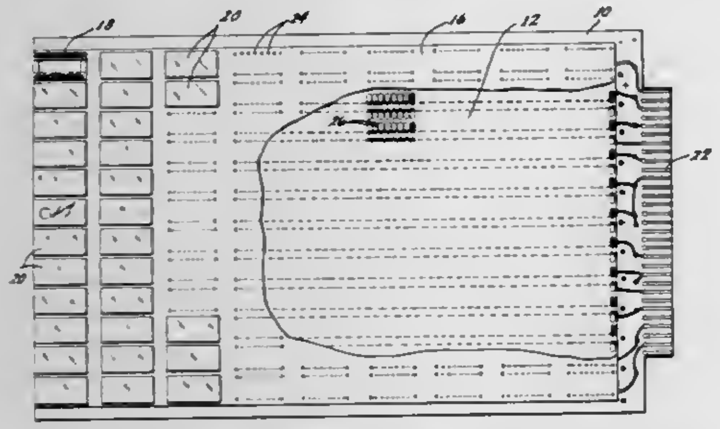
Int. Cl.² H02B *1/04;* **H01C** *1/00;* **H05K** *1/16*

U.S. Cl. 317—101 R **15 Claims**

1. A universal burn-in fixture for aging a plurality of semiconductor devices at the same time, and wherein the semiconductor devices may be any one of a plurality of types which are enclosed in a standard package having a plurality of leads in predetermined locations, including,

a printed circuit board having a layer of conductive material on at least one side of the board,

the printed circuit board subdivided into a plurality of areas each conforming in size to receive a semiconductor device of standard configuration and with each area containing a plurality of openings conforming in location to the predetermined locations of the plurality of leads for each standard semiconductor package, the layer of conductive material formed in a conductive pattern of pads of conductive material spaced from and surrounded by the remaining layer of conductive material and with the pads of conductive material surrounding predetermined ones of the openings, and



a unitary layer of resistive material covering substantially all of the layer of conductive material and bridging the spacing between the pads of conductive material and the surrounding conductive material to form a separate resistor between each pad and the surrounding conductive material.

3,939,382

CHASSIS INTENDED TO HOLD ELECTRONIC CIRCUITS

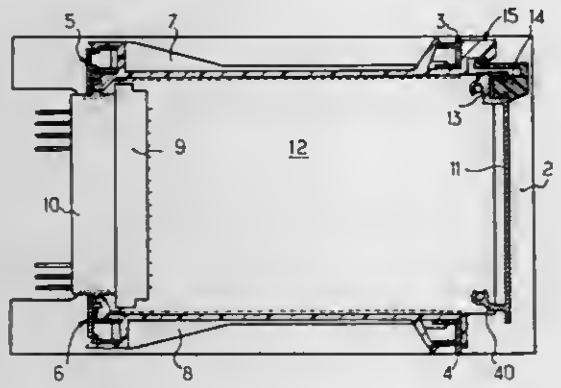
Guy Lacan, Carrieres Sous Bois, and Yves Oehlert, Rueil Malmaison, both of France, assignors to Le Telemecanique Electrique, Nanterre, France

Filed Apr. 5, 1974, Ser. No. 458,147

Claims priority, application France, Apr. 12, 1973, 73.13357

Int. Cl.² H02B *1/02*

U.S. Cl. 317—101 DH **4 Claims**



1. A rack for mounting circuit boards comprising: a pair of vertically spaced side walls, a first pair of vertically spaced cross-pieces attached to the respective side walls, a second pair of vertically spaced cross-pieces attached to the respective side walls and extending parallel to said first pair of cross-pieces, said first and second pairs of cross-pieces each having regularly spaced and inwardly facing grooves, said second pair of cross-pieces having inwardly facing extensions, a connector provided with first and second end projecting tongues, each of said projecting tongues being provided with an aperture, a plurality of pairs of support members each extending between the first and second pairs of cross-pieces, said support members being provided with opposed elongated grooves for the reception of circuit card edges and having projecting studs which removably engage the said apertures and shoulders which press the said projecting tongues against the said inwardly facing extensions, said support members further having vertically extending ribs which slidably and horizontally engage the grooves of the cross-pieces of the second pair and resilient jaws which grasp and hold the cross-pieces of the second pair, said support members further having further ribs which slidably and vertically engage the grooves of the cross-pieces of the first pair and further resilient jaws which grasp and hold the cross-pieces of the first pair.

3,939,383

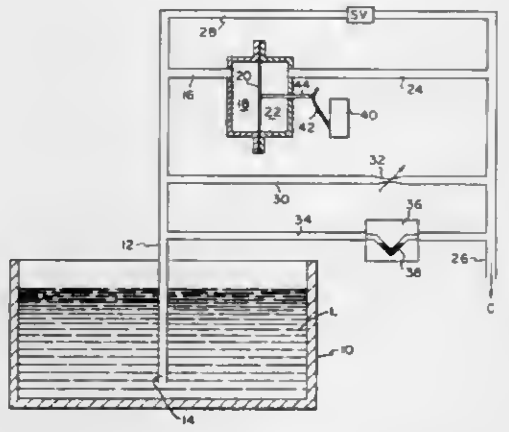
LIQUID LEVEL MONITORING DEVICE

Gerald F. Alm, Grangeville, Idaho, assignor to The Wickes Corporation, San Diego, Calif.

Filed Jan. 31, 1975, Ser. No. 546,010

Int. Cl.² H01H *47/00*

U.S. Cl. 317—123 **9 Claims**



1. A liquid level monitoring device comprising flexible pressure responsive diaphragm means, first pressure applying means for applying to one side of said diaphragm means a pressure variable in response to variations of level of a body of liquid being monitored, second pressure applying means for applying a constant pressure to the opposite side of said diaphragm means, first normally closed by-pass valve means operable in an open position to equalize the pressure on the opposite sides of said diaphragm means, second by-pass means connected in parallel with said first by-pass means establishing communication between opposite sides of said diaphragm means, sensitivity adjustment means in said second by-pass means for selectively blocking or adjustably restricting flow through said second by-pass means, and control means responsive to an unequalized pressure on opposite sides of said diaphragm means for opening said first by-pass valve means.

3,939,384

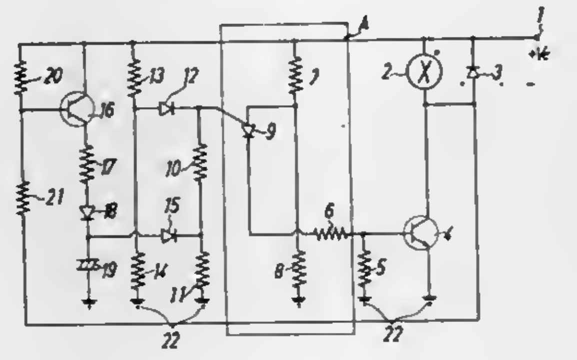
ELECTRIC TIMER SWITCH

Hiroshi Nakayama, Shizuoka, Japan, assignor to Iwatani & Co., Ltd., Osaka, Japan

Filed Oct. 2, 1974, Ser. No. 511,251

Int. Cl.² H03H *9/30*

U.S. Cl. 317—141 S **10 Claims**



1. A timing apparatus comprsing:

a a programmable unijunction transistor having an anode, a gate and a cathode;

b timing means connected to the gate of said programmable unijunction transistor for energizing said programmable unijunction transistor;

c a power supply; and

d a second transistor connected to said timing means and to said power supply providing energy from said power supply to said timing means.

3,939,385

SIGNALLING APPARATUS FOR SHIPS

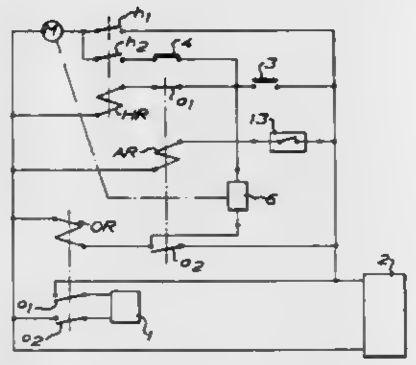
Bengt Lennart Holm, Malmo, and Gustav Rudolf Edelberg, Staffanstorp, both of Sweden, assignors to Kockums Mekaniska Verkstads AB, Malmo, Sweden

Filed Jan. 3, 1975, Ser. No. 538,275

Claims priority, application Sweden, Jan. 4, 1974, 7400075

Int. Cl.² H01H *47/22*

U.S. Cl. 317—157 **4 Claims**



1. In a signalling apparatus for ships, said apparatus being primarily intended for signalling in poor visibility and comprising

a current source,
an electric signalling device,
a first relay for connecting said signalling device to said current source,
a motor,
a plurality of alternatively selectable make contacts which are periodically closable by means of said motor and are connected in parallel with each other and in series with said first relay to said current source, and
a second self-holding relay for coupling said motor to said current source,
the improvement comprising a plurality of parallel-connected switches for manual signalling and at least one third relay which is connected to said current source in series with said parallel-connected switches and has a break contact coupled into the holding current path of said second relay, and at least one make contact for connecting said signalling device to said current source.

3,939,386

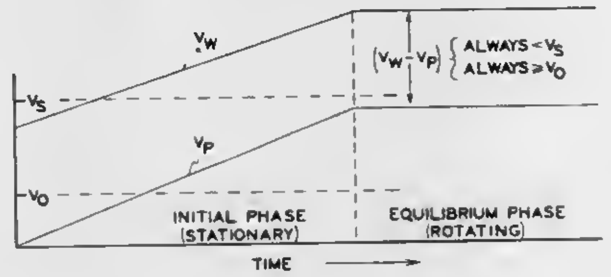
TECHNIQUE FOR CHARGING DIELECTRIC SURFACES TO HIGH VOLTAGE

Charles F. Gallo, and Thomas J. Hammond, both of Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 30, 1975, Ser. No. 545,638

Int. Cl.² H01T *19/00*

U.S. Cl. 317—262 A **4 Claims**



1. A method of applying electrostatic charge to a dielectric surface by means of a corona electrode operatively disposed relative to said dielectric surface, including the steps of:

a. applying a voltage to said corona electrode at a level relative to that of said dielectric surface above the threshold level required to ionize the surrounding atmosphere and generate corona current, and below the sparking level at which sparking occurs, so that corona current flows to said dielectric surface,
b. increasing the voltage of said corona electrode in relation to the increase of voltage of said dielectric surface according to the condition that the potential difference between said corona electrode and said dielectric surface remains between said sparking level and said threshold level, while the voltage of said corona electrode is increased above the sparking level, and
c. initiating relative movement between said dielectric surface and said corona electrode so as to continually bring parts of said dielectric surface from remote to proximate position relative to said corona electrode, so that any part of said dielectric surface is introduced to the distribution field of said corona current progressively,

whereby the voltage of said dielectric surface may be increased above the sparking level.

3,939,387

VARIABLE FREQUENCY POWER CONVERTER FOR AC MOTOR DRIVE

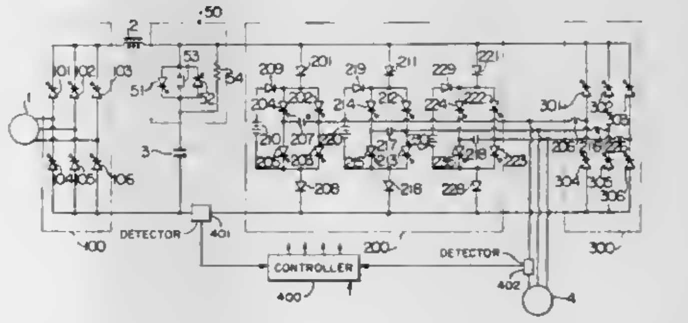
Takeo Maeda, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Apr. 19, 1974, Ser. No. 462,534

Claims priority, application Japan, Apr. 20, 1973, 48-44172

Int. Cl.² H02P *5/40*

U.S. Cl. 318—227 **7 Claims**



1. A power converter for driving an AC electric motor comprising a converter connected to an AC power source for converting an AC power into a desired DC power, a smoothing reactor for smoothing the DC output of the converter, an inverter for receiving the DC output smoothed by the smoothing reactor and for producing a rectangular output current of a desired frequency, an AC motor driven by the inverter, a series circuit connected to the inverter on its DC input side and consisting of a switching circuit and a smoothing capacitor which operates, when the output frequency of the inverter has reached a predetermined value, to compose a smoothing circuit with the smoothing reactor, and a feedback circuit consisting of controlled rectifier elements and commutation reactors which operates, when the output frequency of the inverter has reached the predetermined value, to feedback the reactive power of the AC motor.

3,939,388

SELF-BALANCING INSTRUMENT

Eisuke Abe, and Kiyonobu Tanaka, both of Musashino, Japan, assignors to Kabushikikaisha Yokogawa Denki Seisakusho, Tokyo, Japan

Filed Sept. 26, 1974, Ser. No. 509,420

Claims priority, application Japan, Mar. 12, 1974, 49-28732

Int. Cl.² G01R *17/06*; G05F *1/00*; G05B *6/02*

U.S. Cl. 318—321 **5 Claims**

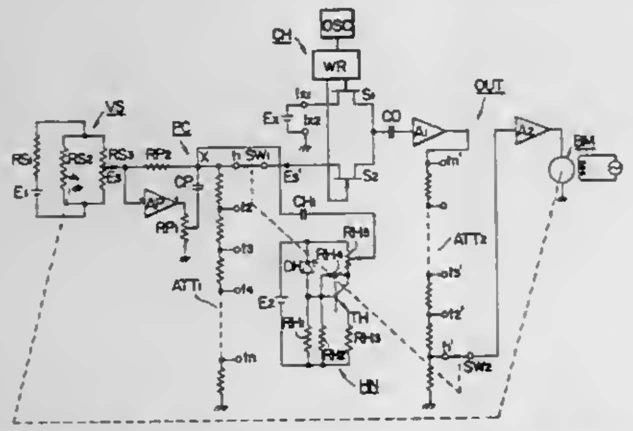
1. A multi-range, self-balancing apparatus, comprising

a. voltage generating means comprising a slide resistor having a movable brush and for generating an output standard voltage corresponding to the position of said brush;

b. phase compensating means comprising is a voltage dividing circuit, a first capacitor and a non-inverting input amplifier having a variable amplification factor, said voltage dividing circuit comprising a resistor and a first range-changing attenuator to divide the output standard voltage of said voltage generating means, said output standard voltage being applied to said input amplifier and said amplifier providing an output signal through said first capacitor to the voltage dividing point of said voltage dividing circuit thereby to provide a phase compensated output signal;

c. a difference signal generator and DC-AC converter means for converting the difference between said output signal from said phase compensating means and a measuring voltage, into an AC signal;

d. output means having a second range-changing attenuator for receiving said AC signal from said difference generator and DC-AC converter means and means for interlocking said second attenuator with said first attenuator whereby the product of the multiplication of of the attenuation ratio of said first attenuator and the attenuation ratio of said second attenuator is constant, said output means supplying an output signal in accordance with the attenuation ratio of the said second attenuator;



e. balancing motor means having a control phase and a shaft, said shaft being connected to said brush of said slide resistor of said voltage generating means, said output signal from said output means being applied to said control phase of said motor; and

f. white noise generator means comprising a Zener diode and means for connecting the output terminals of said white generator to said phase compensating means, whereby said white noise output is superposed on said phase compensated output signal from said amplifier and thereafter operated upon by said difference generator and DC-AC converter means and said output means and subsequently applied to said motor means thereby to keep the dead zone small and constant for all ranges.

3,939,389

POSITIONING CONTROL APPARATUS

Peter Nopper, Lyss, Switzerland, assignor to Zumbach Electronic - Automatic, Orpund, Switzerland

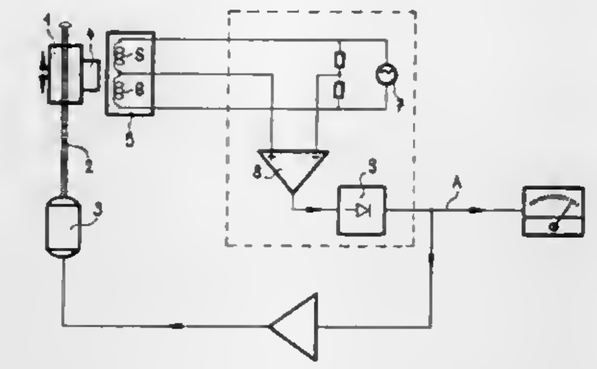
Filed Dec. 21, 1973, Ser. No. 427,050

Claims priority, application Switzerland, Jan. 17, 1973, 613/73

Int. Cl.² G05B *19/36*

U.S. Cl. 318—578 **4 Claims**

1. A servo type device of the null-seeking type for positioning a part and wherein a mechanical sensor is provided for engagement with and movement by said positionable part, comprising a reversible motor coupled to said part for effecting reversible movement thereof, a two-component servo signal generator, one component of said generator being a set of reactance coils and the other component being a reactance varying member, one of said signal generator components being stationary and the other component being mounted on said mechanical sensor for movement in one direction or the other from a null signal position in which the coil reactances are balanced so as to increase the reactance of one coil and simultaneously decrease the reactance of the other, means for resiliently biassing said mechanical sensor away from said null signal position in one direction or the other comprising end stops between which said mechanical sensor is mounted for movement, corresponding springs for biassing said mechanical sensor towards each end stop, and means for optionally rendering one or the other spring effective, a bridge circuit in which said coils are connected in different arms thereof, and means connecting the output terminals of said bridge circuit to said motor whereby the bridge output signal resulting from an unbalanced condition of said reactance coils causes said motor to be actuated to move said part and also said mechanical sensor in the direction which will re-establish the null signal position.



3,939,390

NUMERICAL CONTROL SYSTEM

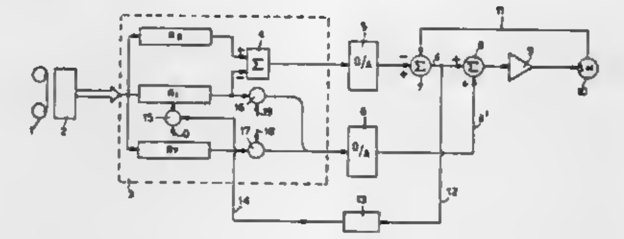
Piero Pomella, and Luciano Lauro, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Continuation of Ser. No. 46,761, June 16, 1970. This application Nov. 14, 1972, Ser. No. 306,188

Claims priority, application Italy, June 21, 1969, 52335/69

Int. Cl.² G05B *19/30*

U.S. Cl. 318—604 **7 Claims**



1. Apparatus for controlling the speed and position of a machine tool or the like movable along one or more axes by means of a servometer wherein the position and speed information for operating said servometer are obtained in the form of digital signals from a record means, said apparatus comprising:

first converter means for converting said position information obtained in digital signal form from said record means to a first analogue signal corresponding to the desired position of said machine tool,

second converter means for converting said speed information obtained in digital form from said record means to a second analogue signal corresponding to the desired speed of said machine tool,

adder means for adding said error signal to said second analogue signal and for producing a resultant analogue signal proportional to the sum thereof,

means for monitoring the level of said error signal and for producing an output signal responsive to the exceeding by said error signal level of a predetermined threshold level corresponding to said linear range of operation,

means for subtracting said monitoring means output signal from said digital position signal obtained from said record means, the resulting signal being converted in said first converter means to an analogue signal to replace said first analogue signal in said detector means for maintaining the detector means in said linear range,

means for coupling said output signal from said monitoring means to said second converter means to produce an analogue signal to be coupled to said adder means instead of said second analogue signal when said speed digital signal is nil,

and means for coupling said speed digital signal to said converter means when said output signal from said monitoring means is nil.

3,939,391

APPARATUS FOR CHARGING A HERMETICALLY SEALED ELECTRICAL ENERGY SOURCE

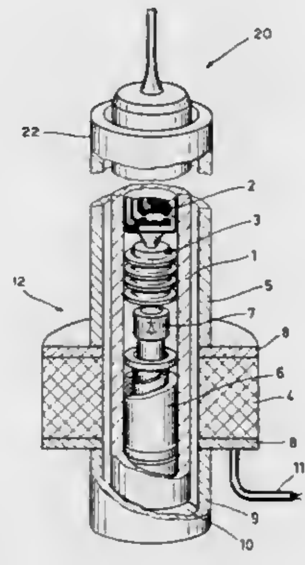
Helmut Winnacker, Burgdorf, Germany, assignor to Preussag Aktiengesellschaft, Germany

Filed Oct. 31, 1974, Ser. No. 519,421

Claims priority, application Germany, Nov. 7, 1973, 2355527

Int. Cl.² H02J *7/00*

U.S. Cl. 320—2 **5 Claims**



1. In an underwater device for deep sea use of the type including a water-tight housing, rechargeable energy storage means and energy dissipating means connected thereto, an improved means for charging said rechargeable energy storage means comprising, in combination:

a secondary winding secured within said water-tight housing and interconnected with said rechargeable energy storage means, said water-tight housing and said secondary winding being substantially coaxial;

a primary winding defining a central opening adapted to receive said water-tight housing in a charging state;

means for positioning said primary winding in substantially radial alignment with said secondary winding in said charging state, said primary winding substantially enclosing said secondary winding in said charging state to define an electromagnetic coupling therebetween; and

means for exciting said primary winding, whereby a charging current is induced in said secondary winding.

3,939,392

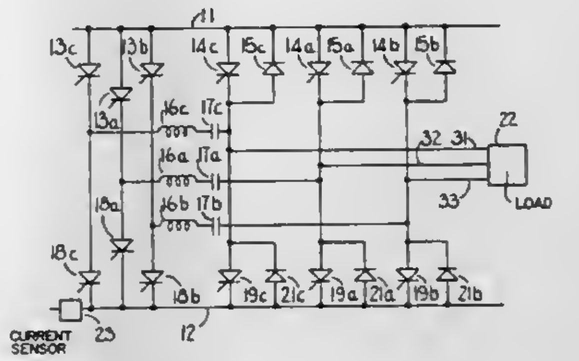
INVERTERS

Brian John Chalmers, Bramhall, and John Philip Gibson, Longsight, both of England, assignors to C.A.V. Limited, Birmingham, England

Filed Dec. 17, 1974, Ser. No. 533,620

Int. Cl.² H02M *1/18*

U.S. Cl. 321—11 **5 Claims**



1. An electric inverter comprising in combination, first and second supply lines, an inverting network connected between the supply lines, a plurality of output terminals associated with said inverting network and across which in use a load is connected, a current sensing device in one supply line, and means for modifying the operation of the inverting network and operable in use when the current in said device reaches a predetermined value for stopping current flowing from one supply line to the other, by way of the load, for a predetermined period of time, said means including a delay network whereby no regard is taken of very short current peaks above the predetermined value.

3,939,393

HIGH VOLTAGE RECTIFYING ARRANGEMENT HAVING A FIXING PIECE FOR AN INPUT TERMINAL

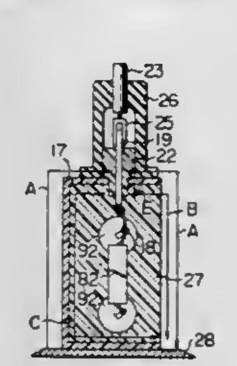
Tadashi Nagasaki; Isamu Kimura, and Shingo Tamura, all of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Sept. 4, 1973, Ser. No. 394,255

Claims priority, application Japan, Sept. 4, 1972, 47-102398

Int. Cl.² H02M *7/00*

U.S. Cl. 321—15 **5 Claims**



1. A high voltage rectifying arrangement for supplying a high D.C. voltage to a cathode-ray tube, said arrangement comprising:

a plurality of rectifiers and high voltage condensers constituting a voltage multiplier rectifying circuit;

a mold case made of an insulating material within which said rectifiers and condensers are provided;

a molding material filled within said mold case so that said rectifiers and condensers are embedded in said molding material;

an input terminal connected at one of its ends to said voltage multiplier rectifying circuit within said mold case;

means for connecting said input terminal at the other of its ends to the output of a flyback transformer for supplying a high voltage flyback pulse to said rectifying circuit;

a fixing piece formed of the same kind of material as said molding material for fixing said input terminal, said fixing piece having a first part buried in the molding material within said mold case, a second part projecting out from said molding material, and a bore passing through the first and second parts thereof so that said input terminal is embedded in and led out from said fixing piece at both of its ends through the bore of said fixing piece; and
an insulating rubber cap pressed around said second part of said fixing piece for covering the junction of said input terminal and said output of said flyback transformer to thereby eliminate a leakage path at the junction between the fixing piece and the molding material.

3,939,394
CONSTANT VOLTAGE CIRCUIT

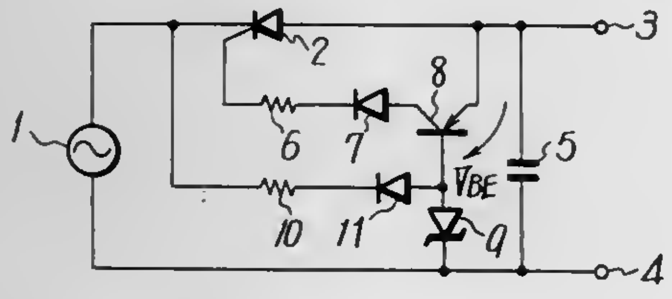
Tadao Suzuki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 17, 1974, Ser. No. 506,690

Claims priority, application Japan, Sept. 20, 1973, 48-106358

Int. Cl.² G05F *1/64*

U.S. Cl. 321—18 **8 Claims**



1. A power supply circuit comprising:
A. first and second input terminals to be connected to an alternating voltage source;
B. first and second output terminals, said second input terminal being connected to said second output terminal;
C. thyristor switching means comprising a first electrode connected to said first input terminal, a second electrode connected to said first output terminal, and a third electrode;
D. semiconductor switching means comprising a first electrode connected to said first output terminal, and second and third electrodes;
E. a first impedance connecting said second electrode of said semiconductor switching means to said third electrode of said thyristor switching means;
F. a second impedance connecting said third electrode of said semiconductor switching means to said first input terminal;
G. a series circuit comprising constant voltage means connecting said third electrode of said semiconductor switching means to said second output terminal; and
H. a capacitor connected in series between said output terminals.

3,939,395
SYSTEM FOR CONNECTING AND DISCONNECTING POWER SOURCE TERMINALS TO A LOAD FOR TIME PROPORTIONAL TO THE CURRENT DRAWN BY THE LOAD

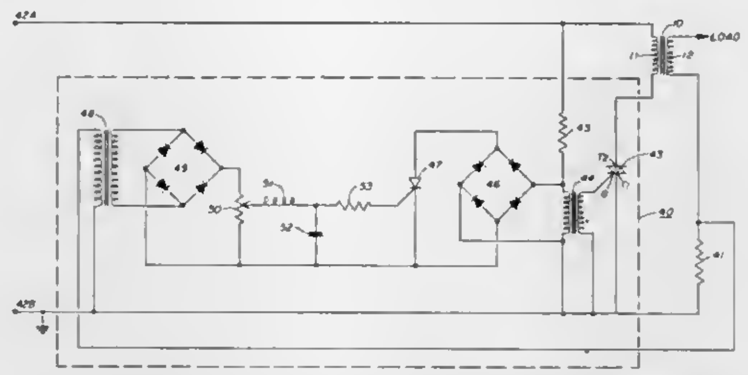
Floyd L. Prestridge, and Harry G. Wallace, both of Tulsa, Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 17, 1972, Ser. No. 244,394

Int. Cl.² G05F *1/56*

U.S. Cl. 323—4 **7 Claims**

1. A system for supplying electrical power to a varying load, including,
a pair of a.c. power source terminals;
means adapted to connect the terminals to the load;
an electronic switch means in circuit between the terminals and the connecting means and having a gate electrode, the electronic switch responding to a gate drive signal generated from the a.c. power source to disconnect the terminals and connecting means for one half and multiples of one half cycle of alternate polarity of the a.c. source voltage and connect the terminals and connecting means at zero crossing of the a.c. source voltage for one half and multiples of one half cycle of alternate polarity of the source voltage;
a drive circuit generating and programming the gate drive signal and connected to the gate electrode of the electronic switch, including:
a. A generator of the gate drive signal connected to the gate electrode and adapted to be connected to the a.c. power source,



b. A disconnect circuit for effectively disconnecting the generator from the gate electrode in response to an electrical signal, the disconnect circuit connected to the generator and a source of power,
c. And a delay section circuit to generate the programmed electrical signal to the disconnect circuit and connected to receive an input signal;
and means for sensing the current applied to the load as an input signal and connected to provide the input signal to the delay section of the drive circuit, whereby the source terminals are connected to the load at zero crossing of the a.c. source voltage for those intervals in which the power demanded by the load is within the continuous operative range of the components of the system and disconnected for one half and multiples of one half cycle of alternate polarity of the source voltage.

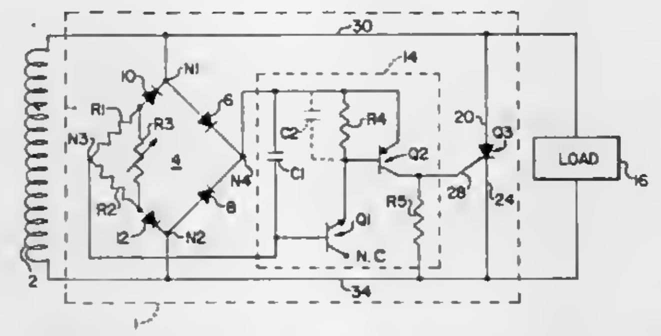
3,939,396
SHUNT A.C. VOLTAGE REGULATOR WITH MODIFIED FULL-WAVE BRIDGE

Raymond E. Larson, Fort Worth, Tex., assignor to ECC Corporation, Euless, Tex.

Filed Feb. 6, 1974, Ser. No. 439,867

Int. Cl.² G05F *1/44*

U.S. Cl. 323—8 **11 Claims**



1. A voltage regulator for a current limited A.C. voltage source comprising:
a semiconductor switching device having a pair of power electrodes and a control electrode;

means for connecting the switching device by its power electrodes in shunt with the voltage source;
means for connecting a load in shunt with said switching device;
a full-wave bridge rectifier, a first node of which is connected to one of said power electrodes and a second node of which is connected to the other of said power electrodes, said first and second nodes being located diagonally opposite each other in said rectifier, said rectifier including
- a first diode, one electrode of which is connected to said first node,
- a first impedance means connected in series between the other electrode of said first diode and a third node of the rectifier,
- a second diode, one electrode of which is connected to said second node,
- a second impedance means connected in series between the other electrode of said second diode and said third node,
- a third impedance means interconnecting the junction of said first diode and said first impedance means with the junction of said second diode and said second impedance means,
- a third diode connected between said first node and a fourth node,
- a fourth diode connected between said second node and said fourth node, and

central circuit means connected across said third node and said fourth node of said bridge rectifier and responsive to the voltage impressed across said third and fourth nodes for applying a control signal to the control electrode of the switching device to thereby cause the switching device to become conductive when the potential across its power electrodes is of the proper polarity, said control circuit means including
- a transistor whose emitter-collector circuit is coupled in series between the control electrode of the switching device and the fourth node of said rectifier,
- a semiconductor avalanche device coupled between the third node of said rectifier and the base of said transistor,
- fourth impedance means coupled between the base and the emitter of said transistor, and
- a capacitor coupled between the fourth node of said rectifier and either the third node of said rectifier or the base of said transistor.

3,939,397
METHOD AND APPARATUS FOR DETERMINING THE TIMING ANGLE IN INTERNAL COMBUSTION ENGINES

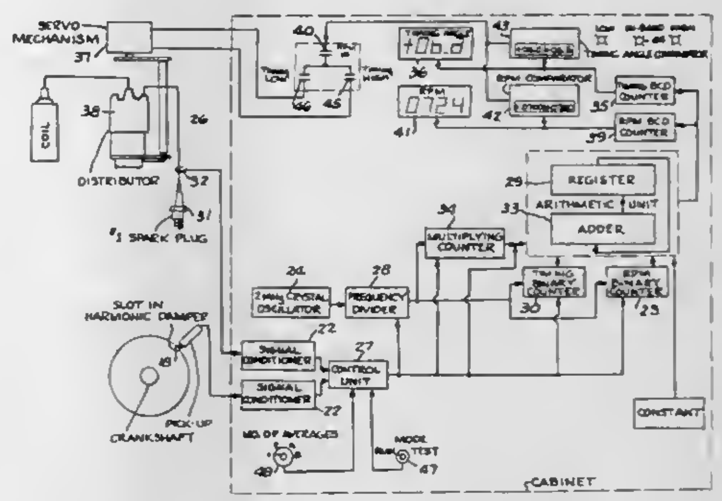
Richard C. Maisonville, Detroit, Mich., assignor to Scans Associates, Inc., Livonia, Mich.

Continuation-in-part of Ser. No. 200,974, Nov. 22, 1971, Pat. No. 3,763,420. This application June 1, 1973, Ser. No. 365,839

Int. Cl.² G01R *29/00*

U.S. Cl. 324—16 T **30 Claims**

1. A method of revealing the average timing angle over all the cylinders of an internal combustion engine with reference to a single predetermined top dead center position, said engine including a distributor, a plurality of cylinders each having a piston, a spark plug, and a crankshaft connected to said piston; said method including measuring the time the engine takes to rotate two full and exact revolutions from top dead center to top dead center from said predetermined top dead center position, determining simultaneously with the measurement of the time taken by the engine to rotate said two revolutions the time of advance with reference to said top dead center position for each individual cylinder in the engine summing these time intervals for each individual cylinder, dividing the values so obtained by the number of cylinders in said engine, thereby obtaining an average time of advance, determining the time said engine takes to rotate one degree during said two revolutions, and dividing the average time value just obtained by the time the engine takes to rotate one degree, thereby obtaining the true average timing angle.



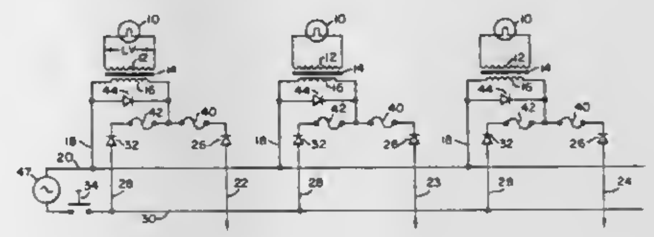
3,939,398
INDICATOR LAMP CIRCUIT HAVING FEEDBACK PROTECTION

Walter J. Kellogg, Beaver, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 16, 1974, Ser. No. 533,407

Int. Cl.² G01R *31/22*

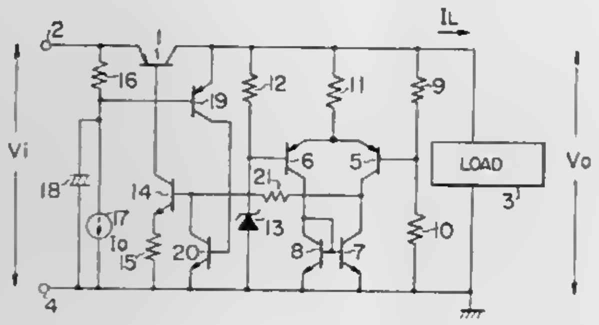
U.S. Cl. 324—21 **14 Claims**



1. An indicator light circuit comprising:
a plurality of indicator lights;
a transformer associated with each of said indicator lights having a primary side and a secondary side with only said associated indicator light being connected across the secondary of said transformer;
test circuit means connected to the primary of each of said transformers for supplying a test current to the primary of all of said transformers when a check of said plurality of indicator lights is required;
signal circuit means associated with each of said plurality of transformers for supplying current to the primary of said associated transformer in response to operation of an external component;
isolating means disposed in the primary connection to each of said transformers for preventing current flow from said signal circuit means through said test circuit means to the primary of any other transformer;
a transformer diode connected across the primary of said transformer; and,
fuse means disposed in series with said isolating means to disconnect said signal circuit means from said test circuit means upon failure of said isolating means.

3,939,399
POWER CIRCUIT WITH SHUNT TRANSISTOR

Michiro Funatsu, Yokohama, and Eiichi Matsumura, Tokyo, both of Japan, assignors to Hitachi, Ltd. and Nippon Electric Co., Ltd., both of, Japan
Filed June 7, 1974, Ser. No. 477,465
Claims priority, application Japan, June 11, 1973, 48-64840
Int. Cl.² G05F *1/56, 5/00*
U.S. Cl. 323—22 T **7 Claims**

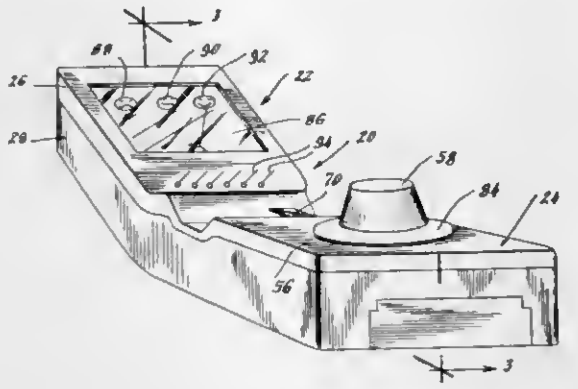


1. A power circuit comprising:
- a control transistor having a control terminal, an input terminal and an output terminal, said input terminal being connected with one terminal of the power source while said output terminal being connected with one terminal of a load;
- an error detecting amplifier circuit connected across the load, for detecting and amplifying changes of the load voltage;
- a drive transistor having a control terminal being connected with the output terminal of said error detecting amplifier circuit, a common terminal being connected with the other terminals of the power source and of the load, and an output terminal, which is for amplifying the output current of said error detecting amplifier circuit and supplying it to said control transistor;
- a transistor for detecting the difference between the input voltage to and the output voltage from said control transistor, which conducts to produce at an output terminal an output current in accordance with said voltage difference when said voltage difference decreases to below a predetermined value of voltage; and
- a shunt transistor having an input terminal connecting with the control terminal of said drive transistor, an output terminal connected with the other terminals of the power source and the load, and a control terminal connected with the output terminal of said difference detecting transistor to shunt the current supplied from said error detecting amplifier circuit to said drive transistor in accordance with the output current from said difference detecting transistor.

3,939,400
BATTERY TEST UNIT FOR TESTING BATTERIES WHILE STORED IN A CASSETTE-TYPE PACKAGE

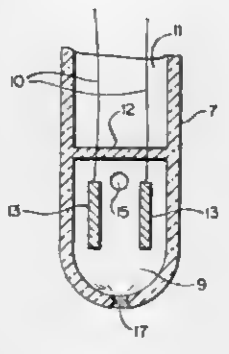
Peter F. Steele, 141 Hope St., Stamford, Conn. 06906
Filed May 23, 1974, Ser. No. 472,540
Int. Cl.² G01N *27/42*
U.S. Cl. 324—29.5 **7 Claims**

1. A battery test unit for testing batteries while stored in a cassette-type package having an electrically conductive sheet base and a housing mounted on the base, with said electrically conductive sheet base being accessible at the outside of said housing, said housing forming a plurality of individual compartments each for storing an individual battery and having a contact access opening in each compartment, the housing and base being arranged to store each battery with one terminal in electrical contact with the conductive sheet base and the other terminal accessible through the contact access opening, said battery test unit comprising:
- a body having a receptacle region for receiving the cassette-type package;
- main contact means in said unit and being positioned near said receptacle region for making electrical connection with the electrically conductive sheet base of a cassette-type package received in said body receptacle region for simultaneously making electrical connection to the one terminal of each battery in said package which is in electrical contact with said conducting base sheet;
- movable selector means in said unit for selectively individually making electrical connection through the cassette compartment access openings with one terminal of each battery stored in the corresponding cassette housing compartments of the cassette-type package received in said body receptacle region;
- meter means in said unit for testing each battery for metering the charge condition of the battery, said meter means being electrically connected to said selector means and to said main contact means; and
- indicator means in said unit associated with said meter means for indicating the charge condition of the individual battery with which said selector means is making electrical connection.



3,939,401
CONDUCTIVITY CELL ELECTRODE ENCLOSURE

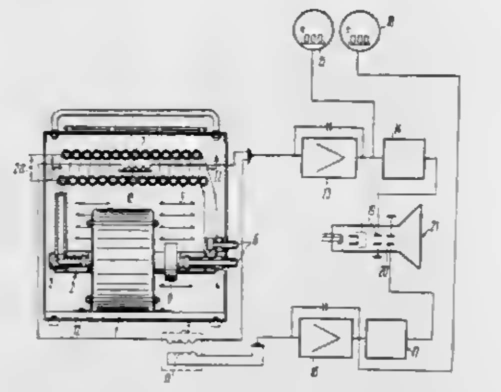
Constance Van Lenten, Hawthorne; Robert Rosenthal, Tenafly, and Elmer A. Sperry, III, Pompton Plains, all of N.J., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Continuation of Ser. No. 50,278, June 26, 1970, abandoned. This application June 2, 1972, Ser. No. 259,347
Int. Cl.² G01N *27/28*
U.S. Cl. 324—30 B **10 Claims**



1. A cell for measuring the conductivity of fluids having two parallel planar electrodes mounted interior to the cell comprising; a section of glass tubing separated into first and second volumes by an interior glass divider, said first volume having two vent holes oppositely disposed and symmetrically located in the walls of said first volume, the end of said section of glass tubing associated with said first volume being tapered to form a third vent hole, the electrodes being mounted within said first volume such that all three vent holes are bisected by a plane of equipotential formed in response to a voltage potential applied to the planar electrodes thereby substantially confining conduction of current to the interior of said first volume.

3,939,402
OSCILLOGRAPHIC FERROMETER

Vitaly Moritsovich Mogilevsky, ulitsa O. Zhilinoi, 92-b, kv. 23; Vadim Petrovich Ekimov, ulitsa Schetinkina, 48, kv. 33; Alexandr Petrovich Erastov, ulitsa B. Bogatkova, 205, kv. 15, and Viktor Vladimirovich Posokhin, ulitsa A. Lezhena, 30, kv. 35, all of Novosibirsk, U.S.S.R.
Filed Jan. 6, 1975, Ser. No. 538,854
Int. Cl.² G01R *33/14*
U.S. Cl. 324—34 R **1 Claim**



1. An oscillographic ferrometer comprising: a magnetizing means producing a magnetic field for placing a test sample thereinto; a magnetization measuring channel cooperating with said magnetizing means; a magnetizing field measuring channel cooperating with said magnetizing means and effecting together with said magnetization measuring channel the measurements of dynamic magnetization loop parameters of said test sample; said magnetizing means including a step-down transformer having a single-turn secondary winding, a single-layer ellipsoidal solenoid connected to said secondary winding and having a constant density of rectangle-shaped turns along the generatrix thereof, said solenoid being adapted for receiving a test sample and having the geometrical dimensions thereof selected in agreement with the following relationship:

$$K = 0.9965\left(\frac{b_L}{L}\right)0.4361$$

$$\frac{b_L}{L} \in 0.1 \text{ to } 0.6$$

$$a = 0.05L$$

where K is the contraction coefficient of said solenoid generatrix,

$2b_L$ is the width of the linear rectangular profile representing the geometrical locus of the cross section centers of said solenoid end turns;

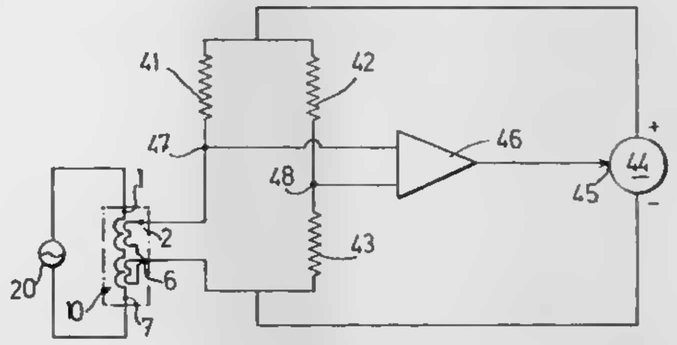
$2a$ is the height of the linear rectangular profile representing the geometrical locus of the cross section centers of said solenoid end turns,

2L is the length of said solenoid between the cross section centers of said end turns.

3,939,403
DEVICE FOR MAINTAINING CONSTANT THE TEMPERATURE OF A COIL FED BY AN A.C. CURRENT SOURCE

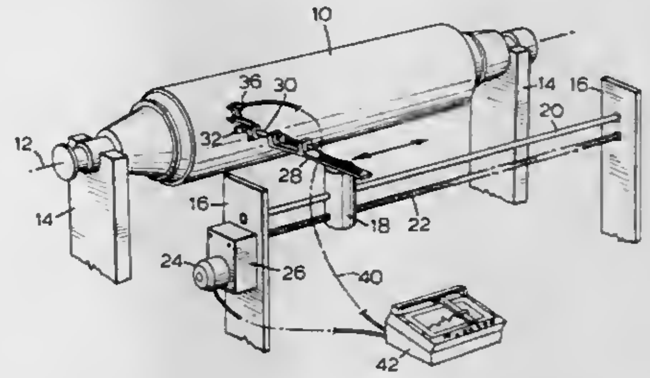
Marie-Claire Stassart, rue de Londres 7, 4000 Liége, Belgium
Filed June 3, 1974, Ser. No. 476,144
Claims priority, application Belgium, Apr. 11, 1974, 143115
Int. Cl.² G01R *33/12;* **H01H** *47/26*
U.S. Cl. 324—40 **1 Claim**

1. In a device for maintaining constant the temperature of a coil fed by an electrical alternating current source, said coil comprising two windings (A and B), each of said windings being formed by winding simultaneously two insulated wires (a_1, b_1 and a_2, b_2 respectively) having the same size, said two wires of each winding extending side by side and having each a first and a second end, said two windings having the same number of single turns wound in the same direction, means connecting the second end of the first wire (a_1) of the first winding (A) to the first end of the first wire (a_2) of the second winding (B), means connecting the second end of the second wire (b_1) of the first winding to the second end of the second wire (b_2) of the second winding, and means connecting the first end of the first wire (a_1) of the first winding and the second end of the first wire (a_2) of the second winding across said electrical alternating current source, the improvement comprising:
- a. a Wheatstone bridge comprising four arms, the first end of the second wire (b_1) of the first winding (A), and the first end of the second wire (b_2) of the second winding (B) being connected into the bridge to form one leg thereof, the other three legs consisting of resistors, such that said second wires are traversed by an electric current in opposite directions and that the resistances of said second wires (b_1, b_2) are balanced by said resistors,
- b. a differential amplifier having two inputs, said inputs being connected to the end terminals of a first crossarm of said bridge, and
- c. a voltage-controlled direct source having two terminals and a control input, said two terminals being connected to the end terminals of the second crossarm of said bridge and said control input being connected to the output of said differential amplifier.



3,939,404
METHOD OF TESTING FOR AND PREVENTING THE POSSIBILITY OF CRACKING, SPALLING OR LIKE DEFECTS IN ROLLING MILL ROLLS BY DETERMINING THE RATE OF CHANGE IN HARDNESS

William H. Tait, Hamilton, Canada, assignor to Dominion Foundries and Steel, Limited, Hamilton, Canada
Filed July 10, 1974, Ser. No. 487,092
Int. Cl.² G01R *33/12*
U.S. Cl. 324—40 **13 Claims**



1. A method of testing for and at least reducing the possibility of the occurrence of cracking, spalling or like defects in the exterior cylindrical surface of a cylindrical steel rolling mill roll, the method including the steps of:
- a. determining the rate of change of hardness along a reference direction for at least a part of the roll surface to find locations therealong having rates of change greater than

a predetermined maximum value known to foreshadow the possibility of the occurrence of defects for the roll and the conditions to which it is subjected in operation, and

b. when the rate of change of hardness along the reference direction exceeds the said maximum value removing material from the roll including the tested surface until the rate of change of hardness is below another predetermined maximum value.

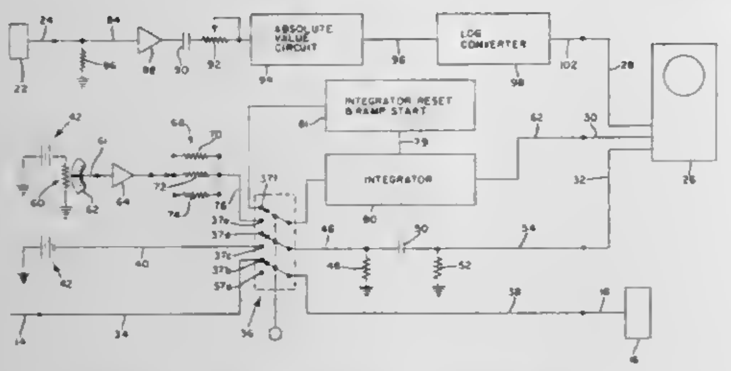
3,939,405
APPARATUS AND METHOD FOR MAKING DECAY RATE MEASUREMENTS

John Stefan Mutziger, East Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed Aug. 19, 1974, Ser. No. 498,297

Int. Cl.² G01R *27/00*

U.S. Cl. 324—57 R **10 Claims**



1. Apparatus for indicating the exponential rate of decay of oscillation in test objects such as mechanical structures, acoustical enclosures, or electrical circuits which have been excited and providing simultaneous indication of an adjustable reference decay rate signal for comparison comprising: means for exciting the test object and terminating the excitation; means for detecting the excitation response and providing a signal proportional thereto; means for receiving and processing the excitation response signal to produce an absolute-valued, log-converted decaying data signal; means for producing a variable, integrated reference decay rate signal simultaneously with the decaying data signal; indicator means for simultaneously presenting the reference decay rate signal and decaying data signal for comparison.

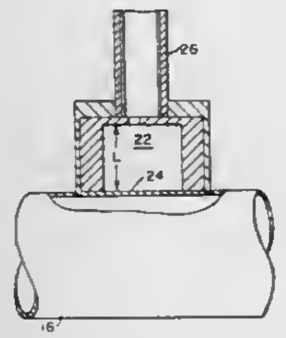
3,939,406
MICROWAVE FLUID FLOW METER

Thomas R. Billeter; Lee D. Philipp, both of Richland, Wash., and Richard R. Schemmel, Lynchburg, Va., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 13, 1973, Ser. No. 369,664

Int. Cl. G01r *27/04*

U.S. Cl. 324—58.5 C **5 Claims**



1. Apparatus for measuring the rate of liquid flow within a fluid conduit comprising:

a first microwave sensor having a resonant microwave cavity directly responsive to the fluid pressure internal of the conduit to provide a representative electrical output indicative thereof, said microwave cavity being exposed to the interior of the fluid conduit at a first given fixed location therealong outside the path of fluid flow;

a second microwave sensor having a second resonant microwave cavity directly responsive to the fluid pressure internal of the conduit to provide a representative electrical output indicative thereof, said second microwave cavity being exposed to the interior of the fluid conduit at a second given fixed location therealong outside the path of fluid flow and spaced from said first location; and

means for comparing the respective outputs from said first and second sensors and responsive thereto to provide a measurement of fluid flow within the conduit.

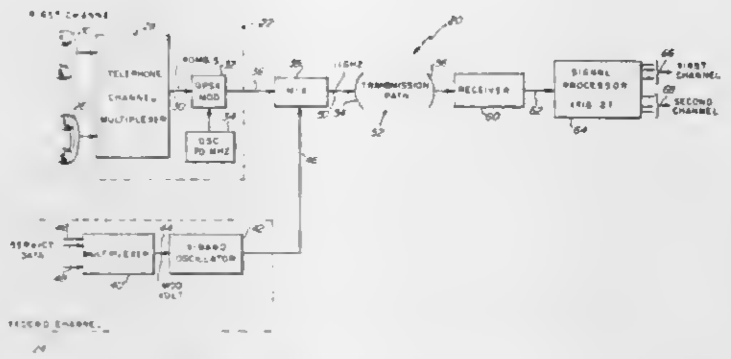
3,939,407
PLURAL CHANNEL COMMUNICATIONS SYSTEM

William J. Bickford, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 3, 1973, Ser. No. 421,013

Int. Cl.² H04L *7/02*

U.S. Cl. 325—47 **10 Claims**



9. A system utilizing a first signal and a second signal, said second signal having a spectrum wherein a carrier is present, said first signal being mixed with said second signal, said system comprising:

means coupled to said mixed signals for modulating said mixed signals with a first and a second demodulated replica of said first signal to produce first and second modulator output signals, said modulating means including means for combining said first and second output signals to produce said second signal;

means coupled to said modulating means for filtering a carrier of said second signal resulting from said modulating; and

first and second means coupled to said transmitting means and responsive to said carrier of said filtering means for demodulating said transmitted signal to provide said first and said second demodulated replica of said first signal, one of said demodulating means including means for shifting the phase of a carrier coupled to said one demodulating means relative to the phase of a carrier coupled to the other of said demodulating means, said demodulating means coupling said demodulated replica of said first signal to said modulating means.

3,939,408
CONDUCTIVITY CELL AND MEASURING SYSTEM

Neil L. Brown, Falmouth, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 5, 1974, Ser. No. 494,808

Int. Cl.² G01N *27/42*

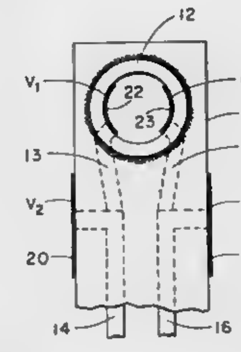
U.S. Cl. 324—30 B **11 Claims**

1. A conductivity cell comprising in combination

a T-shaped structure having as its crosshead an open-ended tube made of electrically non-conducting material;

a pair of external electrodes affixed to opposite sides of the stem of said T-shaped structure;

a pair of internal electrodes affixed to diametrically opposite arcuated portions of the inner wall surface of said tube,



said external and internal electrodes being in the same vertical plane which is perpendicular to the central axis of said tube.

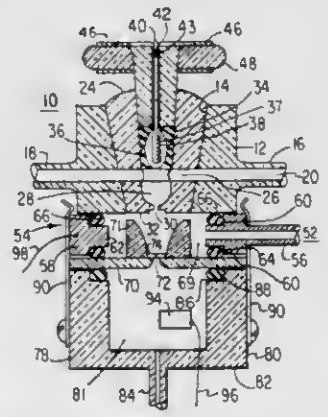
3,939,409
PARTICLE STUDY DEVICE AND SAMPLE METERING MEANS USED THEREIN

Walter R. Hogg, Miami Lake, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Aug. 1, 1974, Ser. No. 493,828

Int. Cl.² G01N *27/07*; G01F *13/00*

U.S. Cl. 324—71 CP **34 Claims**



1. In a particle study device wherein particulate matter in liquid suspension is passed through a sensing zone the improvement comprising a sample metering means having an input for receiving a sample of particulate matter, a drain for expelling a sample of particulate matter, an ejection port, and means for trapping a volume of sample therein, said sample metering means further including an ejecting means operative to eject a predetermined amount of said trapped volume of sample through said ejecting port, and coupling means coupled to said sample metering means to, a source of diluent and to said sensing zone for combining said ejected predetermined amount of said trapped sample and diluent to form said liquid suspension and for coupling said liquid suspension to said sensing zone.

3,939,410
ARRANGEMENT FOR TESTING METAL-CLAD, HIGH-VOLTAGE INSTALLATIONS

Rainer Bitsch, and Armin Diessner, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

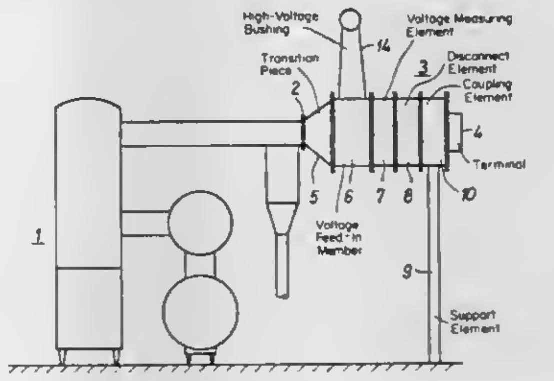
Filed May 30, 1974, Ser. No. 474,652

Claims priority, application Germany, May 30, 1973, 2328120

Int. Cl.² G01R *31/02*

U.S. Cl. 324—72 **6 Claims**

1. An arrangement for making tests on a metal-clad, high-voltage installation filled with insulating gas, particularly tests for detecting partial discharges, comprising a flange formed on the metal enclosure of the installation and defining an access opening in the same; an equipment unit having a metal encapsulation for accommodating the apparatus for making the tests, said metal encapsulation having a flange for removably engaging said flange of the metal enclosure of the installation; and, cover means for covering said access opening when said equipment unit is not attached to the metal enclosure of the installation.



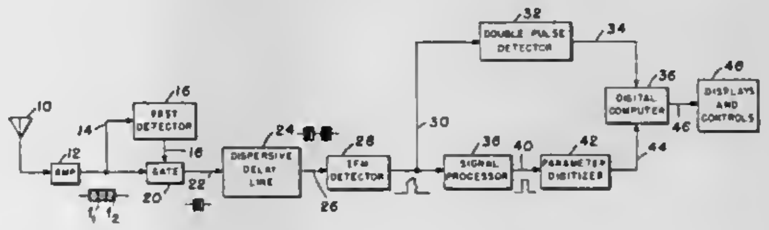
3,939,411
INSTANTANEOUS FREQUENCY MEASUREMENT SYSTEM

Wilbur G. James, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 3, 1974, Ser. No. 511,816

Int. Cl.² G01R *23/02*

U.S. Cl. 324—77 H **9 Claims**



1. Apparatus for measuring the frequencies of a plurality of simultaneously received pulse signals, comprising:

sampling means having an input connected to receive said plurality of simultaneously received pulse signals for sampling a portion substantially less than one pulse of each of said input signals,

phase shifting means connected to receive said sampled signals from said sampling means for producing output signals each shifted in phase by an amount related to the magnitude of its corresponding frequency, and

instantaneous frequency measurement means connected to receive said output signals from said phase shifting means for producing an output signal having a measurement of the frequency of each of said plurality of simultaneously received pulse signals encoded therein.

3,939,412
VOLTAGE MEASURING DEVICE FOR AN ENCAPSULATED HIGH-VOLTAGE SWITCHING INSTALLATION

Wolfgang Hermstein, Nurnberg; Gerhard Rosenberger, and Willi Muller, both of Berlin, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 8, 1974, Ser. No. 495,820

Claims priority, application Germany, Aug. 10, 1973, 2341073

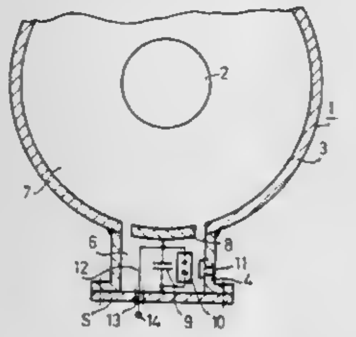
Int. Cl.² G01R *31/00*

U.S. Cl. 324—96 **14 Claims**

1. A voltage measuring device for use with an encapsulated, high-voltage switching installation including an inner conductor within a grounded metallic outer tube, which comprises:

a. means for widening said outer tube to thereby form a space for locating certain portions of said measuring device;

b. auxiliary electrode means positioned in said space so as to separate said space from an inner space defined by the outer tube and the inner conductor electrically insulated from the outer tube, said auxiliary electrode means and said inner conductor forming a first capacitor; and,



c. means operatively connected to said first capacitor for responding to electrical characteristics of said first capacitor to thereby give an indication of the voltage of said installation.

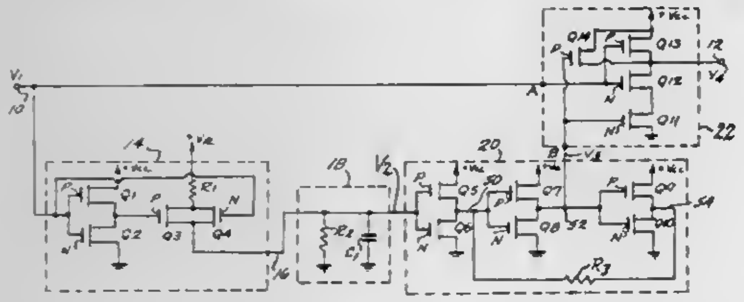
3,939,413
LOW CUTOFF DIGITAL PULSE FILTER ESPECIALLY USEFUL IN ELECTRONIC ENERGY CONSUMPTION METERS

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 13, 1974, Ser. No. 505,799

Int. Cl.² G01R *21/00, 11/32*

U.S. Cl. 324—142 **9 Claims**



1. In an electronic energy consumption meter comprising sources of signal variables representing voltage and current flowing in a monitored electrical circuit, a time-division multiplier for multiplying said variables and producing an analog power consumption signal, an A/D converter for producing digital pulses each representing the consumption of a predetermined unit of energy, and means for accumulating the number of digital pulses as an indication of total energy consumption, the improvement comprising a low cut-off pulse filter interposed between said A/D converter and said means for accumulating for passing only those digital pulses occurring above a predetermined cut-off repetition rate, said filter comprising:

- logic gate means having a first input connected to respond to said digital electrical pulses, a second input and an output for providing output electrical pulses directly corresponding to said digital pulses only when enabled by an enabling signal being applied to said second input,
- energy storage and dissipation means connected for short term storage and eventual dissipation at a predetermined rate of electrical energy applied thereto and for providing an averaged signal representing the amount of energy stored at any given time,
- a source of electrical energy,
- switch means connected between said source and said energy storage and dissipation means and connected for control by said digital electrical pulses for providing input pulses of energy to said energy storage and dissipation means corresponding to the occurrences of said digital electrical pulses whereby the value of said averaged signal corresponds to the repetition rate of said digital electrical signal, and
- trigger circuit means connected to receive said averaged signal and to provide said enabling input to the second input of said logic gate means only during the time when said averaged signal exceeds a predetermined threshold value corresponding to said predetermined repetition rate.

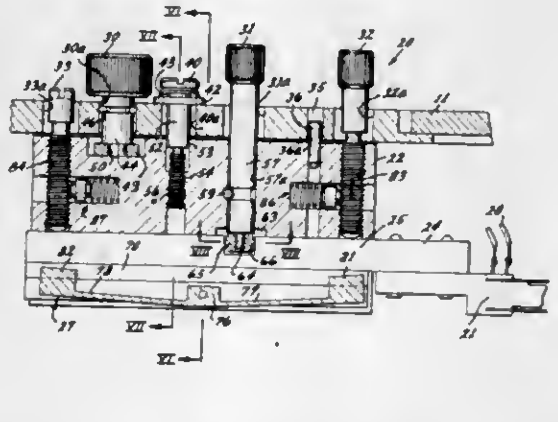
3,939,414
MICRO-CIRCUIT TEST APPARATUS

Jacques Leon Roch, San Jose, Calif., assignor to Electroglas, Inc., Santa Clara, Calif.

Filed Jan. 28, 1974, Ser. No. 436,844

Int. Cl.² G01R *31/02, 31/22*

U.S. Cl. 324—158 F **16 Claims**



1. An assembly for testing integrated circuit components comprising:

- platform means supporting integrated circuit components to be tested,
- support means cooperating with said platform for mounting at least one test probe assembly in a predetermined position relative to said platform means,
- said probe assembly including a housing mounted on said support means for controlled arcuate movement with respect to said support means and said platform means,
- said housing including slide means mounting a probe test unit for controlled axial movement with respect to said housing,
- means assoociated with said housing for effecting controlled rotational movement of said slide means and said probe test unit and for effecting controlled rotational movement of said slide means about at least one of two points producing effecting vertical movement with respect to said housing with respect to said housing, and
- means to maintain said predetermined position of said housing and probe test unit with respect to said platform means.

3,939,415
METHOD OF AND DEVICE FOR MEASURING LIFE TIME OF CARRIERS OF SEMICONDUCTOR

Yoshio Terasawa, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

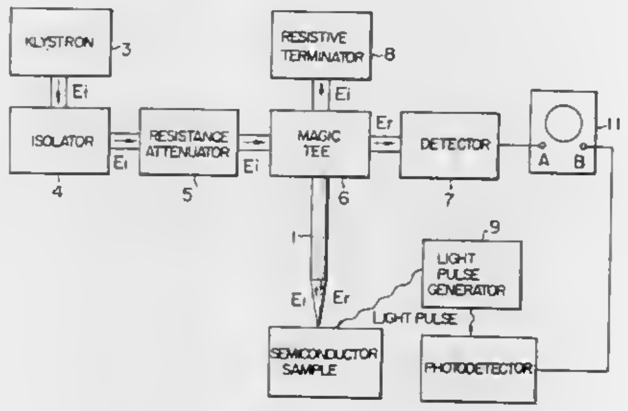
Filed July 24, 1974, Ser. No. 491,230

Claims priority, application Japan, July 27, 1973, 48-84013

Int. Cl.² G01R *31/26, 27/06*

U.S. Cl. 324—158 D **5 Claims**

1. A method of measuring the life time of carriers of a semiconductor, comprising the steps of supplying energy to a sample of a semiconductor to produce carriers therein, directing a microwave signal to a portion of said semiconductor through an antenna to obtain a microwave signal reflected therefrom, said antenna being a waveguide whose one end portion is tapered and has a drawing pen shaped opening, and detecting the reflected microwave signal from said semiconductor portion representative of the variation in the concentration of said carriers with respect to time which variation has a predetermined relationship to the life time of said carriers.



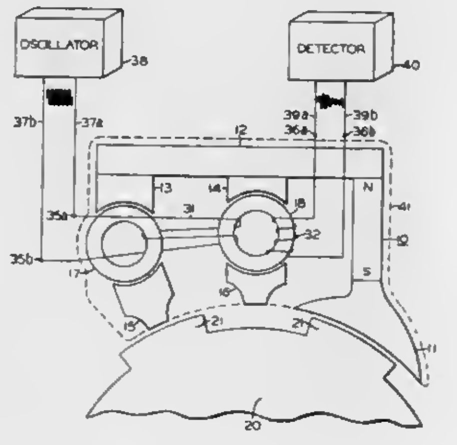
3,939,416
VEHICLE SPEED SIGNAL PULSE SOURCE

Arthur Maskery, Chippenham, England, assignor to Westinghouse Brake & Signal Co., Ltd., Chippenham, England

Filed July 15, 1974, Ser. No. 488,267

Int. Cl.² G01P *3/48*

U.S. Cl. 324—174 **10 Claims**



1. A vehicle speed signal pulse source comprising, input and output terminals, a substantially E-shaped magnetic structure wherein two legs of the E form a pair of magnetic circuit branches, a common primary winding wound about both of said pair of magnetic circuit branches and connected to said input terminals, a second winding wound about one of said pair of magnetic circuit branches and connected to said output terminals, a signal connected to said input terminals to produce magnetic fluxes in both of said pair of magnetic circuit branches, the last leg of the E including a permanent magnet forming another magnetic circuit branching of said substantially E shaped magnetic structure and causing magnetic flux to pass through both of said pair of magnetic circuit branches, and a rotatable magnetizable member positioned adjacent the legs of the E for increasing the reluctance in one of said pair of magnetic circuit branches at a time at a rate dependent upon the speed of rotation of said magnetizable member.

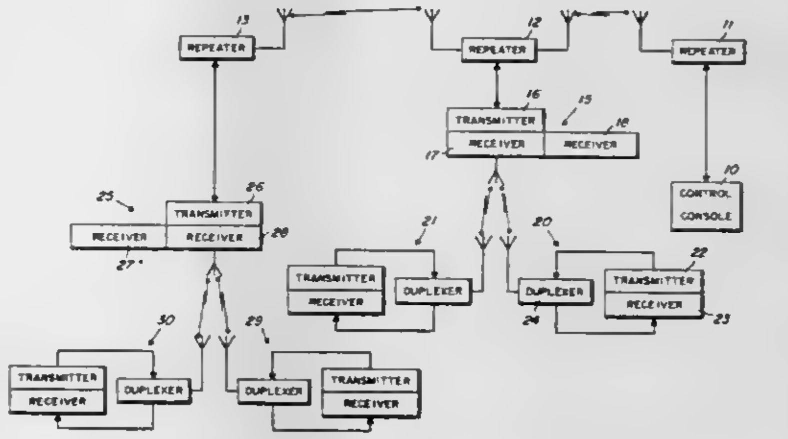
3,939,417
EMERGENCY COMMUNICATIONS SYSTEM

Gary A. Cannalte, Hoffman Estates; Richard J. Crouse, Palatine; Richard D. Koenig, Elgin; Thomas J. Rollins, Arlington Heights, and Donald L. Walker, Addison, all of Ill., assignors to Motorola, Inc., Chicago, Ill.

Filed Dec. 18, 1973, Ser. No. 425,908

Int. Cl.² H04B *7/14, 1/40*

U.S. Cl. 325—5 **11 Claims**



1. An emergency communications system comprising:

a. a control console including a transceiver with a transmitter and receiver portion;

b. a plurality of terminal stations positioned at spaced apart locations remote from said console, each including a transceiver with a transmitter and receiver portion in communication with said console;

c. a plurality of call boxes fixedly positioned at spaced apart locations adjacent to each terminal station, each of said call boxes including a transceiver tuned for full duplex communications with the transceiver in said adjacent terminal station;

d. switch means positioned in each of said call boxes for operation by a person in an emergency;

e. first circuit means positioned in each of said call boxes and connected to said switch means and said call box transceiver for causing said call box transceiver to transmit a first signal of predetermined duration to the transceiver of said console through the transceiver in said adjacent terminal station upon actuation of said switch means;

f. first circuit means positioned in said console and connected to the console transceiver for causing to be transmitted a signal to said terminal stations, upon reception of the first signal from one of said call boxes, for keying the transmitter portion of the transceiver in each of said terminal stations to provide a busy signal to all remaining call boxes;

g. ringing circuit means positioned in each of said call boxes and connected to said call box transceiver for providing a ringing signal to the person operating said one of said call boxes upon reception of a signal from the keyed transmitter portion of the transceiver in its respective adjacent terminal station responsive to said signal;

h. transmitted from said console second circuit means positioned in each of said call boxes and connected to said first circuit means for automatically causing to be transmitted by said call box transceiver subsequent to the first signal, a second signal indicative of the address of said call box and condition of predetermined portions of the call box;

i. second circuit means positioned in said console and connected to the console transceiver for indicating the address and condition of said calling call box upon reception of the second signal from said call box transceiver by way of the transceiver in its respective adjacent terminal;

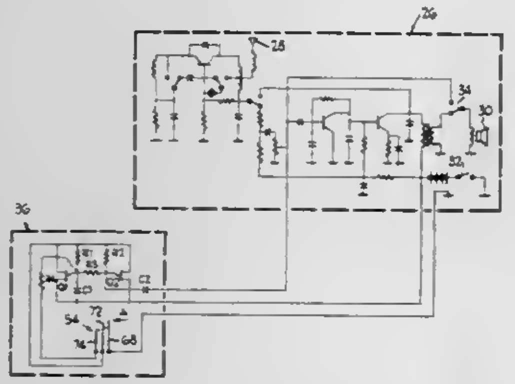
j. station busy signal indicating means positioned in each of said call boxes and connected to receive busy signals from said adjacent terminal stations for indicating one of said call boxes in the system is in use upon reception of a busy signal; and

k. transducer means mounted in each of said call boxes and in said control console and operatively connected to the transceivers therein for voice communication between any of said call boxes and said control console.

3,939,418
WALKIE-TALKIE DEVICE

Howard J. Morrison, Deerfield, and Albert G. Keller, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 7, 1974, Ser. No. 512,553
Int. Cl.² H04B *1/38*
U.S. Cl. 325—16 **14 Claims**

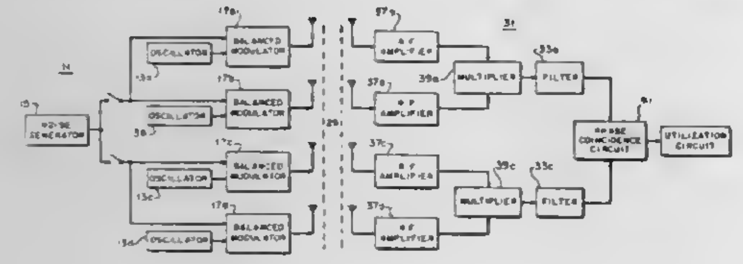


1. In a walkie-talkie unit including a microphone/speaker connected to a radio transceiver including an RF source, a power supply, a modulator, an audio amplifier, an antenna, a detector for transmitting and receiving audio signals and switch means for selectively operating in either a transmit or receive mode, the improvement comprising:
- a selectively actuatable audio signal generator connected to said transceiver for generating an audio signal of at least one frequency for transmission to another walkie-talkie when in a transmitting mode as well as generating sound from its speaker when in a receiving mode; and
- a hand manipulatable actuator to selectively actuate said signal generator in either of said modes.

3,939,419
SECURITY REMOTE CONTROL METHOD AND SYSTEM

Herbert G. Lindner, Red Bank, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 6, 1956, Ser. No. 620,776
Int. Cl.² H04K *1/00*; H04B *1/00*
U.S. Cl. 325—33 **4 Claims**

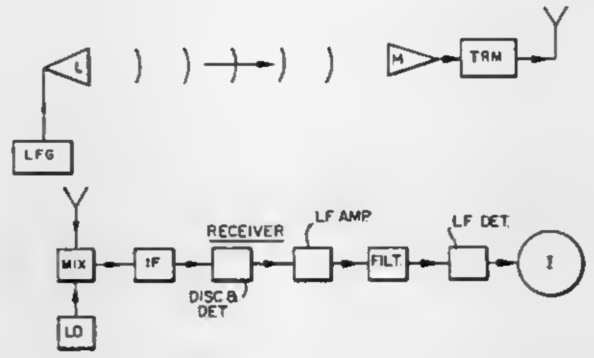


1. A security remote control system comprising a pair of carrier generators, means for balance modulating both the carriers from said generators by a single source of noise at a first station and means for transmitting only the side bands, a receiver at a second station for said side bands, means for combining the side bands of said pair of carriers to provide a beat frequency signal corresponding to the frequency difference of said pair of carriers, narrow band filter means to isolate said signal, and means responsive to said signal for controlling an operation at said second station.

3,939,420
DEBUGGING ARRANGEMENT

Sture Risberg, Enskede; Alf Lindgren, Taby; Kjell Rixon; Rickard Wallden, both of Tyreso, and Bengt Brundin, Sollentuna, all of Sweden, assignors to Sture Risberg, Enskede, Sweden

Filed Jan. 15, 1974, Ser. No. 433,610
Int. Cl.² H04B *1/46*
U.S. Cl. 325—67 **9 Claims**

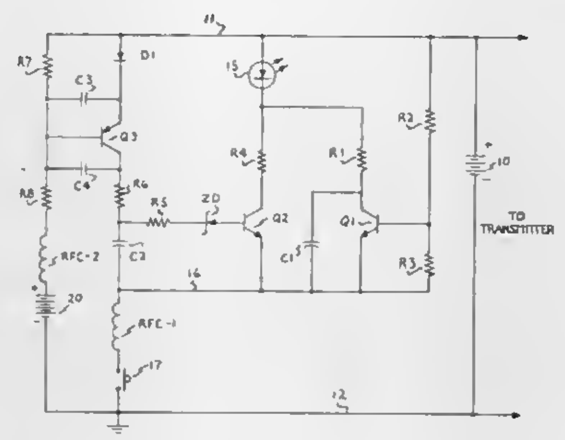


2. Apparatus responsive to the presence of a covert radio transmitter or "bug" within a confined space having a microphone including:
- tone generating means for generating a tone with a predetermined frequency,
- a loudspeaker for transmitting said tone within said confined space with a predetermined amplitude,
- a receiver responsive to radio frequency including a low-frequency amplifier for amplifying said tone and a narrow band-pass filter tuned to pass said tone signal,
- and means responsive to the amplitude of the output of said filter.

3,939,421
CIRCUIT FOR INDICATING THE BATTERY VOLTAGE AND OPERATION OF A RADIO TRANSMITTER

Jerry M. Barringer, Lynchburg; Raymond W. Harris, Rustburg, and John B. Woodward, Lynchburg, all of Va., assignors to General Electric Company, Lynchburg, Va.

Filed Nov. 25, 1974, Ser. No. 526,698
Int. Cl.² H04B *17/00*
U.S. Cl. 325—133 **1 Claim**



1. A circuit for indicating the operation of a radio transmitter and the voltage of a battery that powers said transmitter comprising:

a. a first main terminal for connection to a first terminal of a battery;
b. a second main terminal;
c. a switch connected to said second main terminal for connecting said second main terminal to a second terminal of said battery in response to said transmitter being operated;

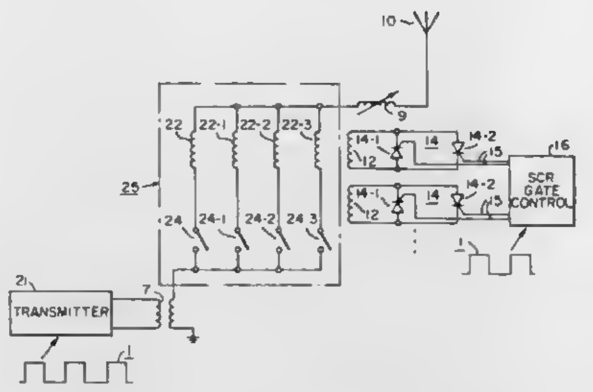
d. a light emitting device;
e. a first current control device having a first current path and a control electrode;
f. means connecting said light emitting device and said first current path of said current control device in series between said first and second main terminals;
g. a first voltage sensing circuit connected between said first and second main terminals and connected to said control electrode of said first current control device for closing said first current path in response to a voltage of selected magnitude between said first and second main terminals;
h. a second current control device having a second current path and a control electrode;
i. means connecting said second current path in parallel with said first current path;
j. a timing circuit having a capacitor and charging circuit connected between said first and second main terminals, said capacitor being charged at a rate which varies as a function of the magnitude of voltage between said first and second main terminals;
k. a second voltage sensing circuit for supplying charging current to said charge circuit comprising means for comparing the voltage of said battery and a predetermined voltage for providing said charging current and
l. means connecting said capacitor to said control electrode of said second current control device for closing said second current path in response to a selected charge voltage on said capacitor, said capacitor being discharged by said closed second current path and said second current path being opened in response to said capacitor being discharged;

whereby said light emitting device is energized steadily by said closed first current path in response to a voltage that exceeds said selected magnitude, and whereby, when said first current path is open, said light emitting device is energized and deenergized by said second current path at a rate determined by the charge and discharge rate of said capacitor.

3,939,422
DYNAMIC ANTENNA TUNER

Louis F. Deise, Timonium, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 12, 1974, Ser. No. 441,921
Int. Cl.² H04B *1/04*
U.S. Cl. 325—163 **4 Claims**

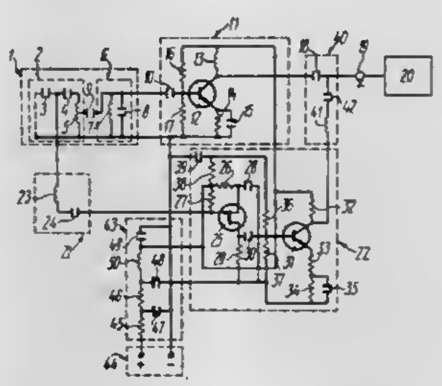


1. For use with a transmitter of the type employing frequency shift keying modulation, a system for dynamically tuning the resonant frequency of the transmitter antenna to alternate between resonant frequencies in synchronism with the repetitive shifts in frequency caused by frequency shift keying modulation, said transmitter having a range of RF output signal operating frequencies which is large relative to the frequency shift caused by frequency shift key modulation, said system comprising:
- a dynamic tuning circuit operatively connected to the transmitter antenna in series circuit therewith,
- means for coupling the transmitter RF output signal into the series circuit of said antenna and dynamic tuning circuit,
- said dynamic tuning circuit comprising a first plurality of inductance and switch pairs, each pair comprising a discrete helical coil and a connect-disconnect switch, each connect-disconnect switch being individually controllable to selectively establish either one or the other of: (A) a connect condition of the helical coil in which the coil is connected into said dynamic tuning circuit so that at least a portion of the transmitter RF output signal is flowing therethrough, and (B) a disconnect condition of the helical coil in which the coil is disconnected from said dynamic tuning circuit with none of the transmitter RF output signal flowing therethrough,
- all of the helical coils of the first plurality of inductance and switch pairs being disposed in concentric relationship with respect to one another;
- a second plurality of inductor and switch pairs, each pair comprising an inductive loop element and a short circuit-open circuit switch, each short circuit-open circuit switch being operative to establish either one or the other of: (i) a short circuit condition of the paired inductive loop element, and (ii) an open circuit condition of the paired inductive loop element,
- the inductive loop elements of said second plurality of inductor and switch pairs being in inductively coupled relationship with the concentric arrangement of helical coils of the first plurality of inductance and switch pairs; and
- means for commonly operating all of the short circuit-open circuit switches of said second plurality of inductance and switch pairs in synchronous relationship with the frequency shift keying modulation to alternately short circuit and open circuit all of the inductive loop elements, said inductive loop elements of the second plurality of inductor and switch pairs when in their short circuited condition being operative to reflect a decrease of inductance into any helical coil which is connected into said dynamic tuning circuit.

3,939,423
AUTOMOBILE ACTIVE RECEIVING ANTENNA

Viktor Ivanovich Zakharov, Trifononskaya, ulitsa 51, korpus 7, kv. 32; Alexandr Alexeevich Zinichev, 15 Parkovaya ulitsa, 24, korpus 1, kv. 59, and Oleg Ulyanovich Meloichuk, Chechersky pereulok, 4, korpus 1, kv. 20, all of Moscow, U.S.S.R.

Filed July 1, 1974, Ser. No. 485,351
Int. Cl.² H04B *1/18*; H01Q *1/32*
U.S. Cl. 325—312 **3 Claims**



1. An active receiving broadcast band antenna for an automobile radio receiver of amplitude and frequency modulated signals having a common feeder, comprising: an antenna body mounted within the automobile interior; a bandpass filter having an input circuit including a capacitor, said capacitor comprising a metal member insulated from the automobile body and arranged in close vicinity to the automobile windshield and a structural member of said automobile body, said bandpass filter being included within said antenna body; a frequency-modulated signal amplifier positioned within said antenna body having an input connected to said bandpass

filter and having an output; a power supply circuit for said frequency-modulated signal amplifier; a frequency correcting network positioned within said antenna body; an amplitude-modulated signal amplifier positioned within said antenna body and having an input connected to said bandpass filter via said frequency correcting network and an output; a power supply circuit for said amplitude-modulated signal amplifier; an interference filter connected to said power supply circuits of said frequency-modulated and amplitude-modulated signal amplifiers; and a frequency separation filter, said outputs of said frequency-modulated and amplitude-modulated signal amplifiers being connected to said common feeder of said radio receiver via said frequency separation filter.

3,939,424

RADIO RECEIVER WITH A PHASE LOCKED LOOP FOR A DEMODULATOR

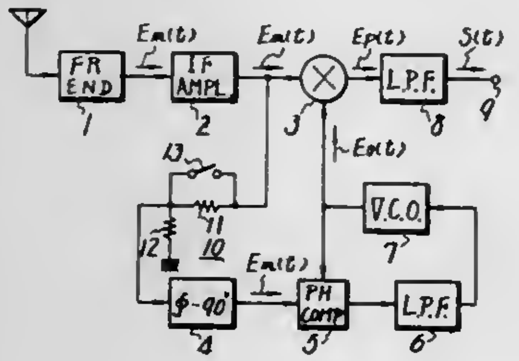
Ikuo Shimizu, and Masakatsu Toyoshima, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 4, 1974, Ser. No. 503,100

Claims priority, application Japan, Sept. 8, 1973, 48-101480; Sept. 10, 1973, 48-101893

Int. Cl.^{2} H04B *1/26*

U.S. Cl. 325—346 7 Claims



1. A radio receiver with a phase-locked loop for a demodulator, said receiver comprising:

A. means for receiving a plurality of modulated carrier signals;

B. means for tuning to a predetermined one of the modulated carrier signals;

C. means for demodulating the predetermined carrier signal from said tuning means, said demodulating means comprising a phase-locked loop which includes a phase comparator, a low pass filter receiving the output from said comparator to provide a control voltage and a variable oscillator controllable by said control voltage, said phase comparator receiving said predetermined modulated carrier signal and the output signal of said variable oscillator, and means for synchronously detecting the output signal of said variable oscillator with said predetermined modulated carrier signal to produce a demodulated signal; and

D. means for controlling the amplitude of the predetermined modulated carrier signal received by said phase comparator in such a way that the capture range and lock range of said phase-locked loop are controlled in response to the tuning operation of said tuning means.

3,939,425

NOISE-SQUELCHING CIRCUIT USING A PHASE-LOCKED LOOP

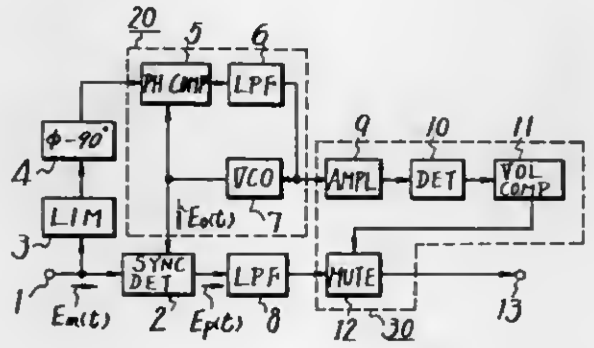
Masakatsu Toyoshima, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 17, 1974, Ser. No. 506,691

Claims priority, application Japan, Sept. 28, 1973, 48-109119

Int. Cl.^{2} H04B *1/16*

U.S. Cl. 325—348 6 Claims



1. A noise-squelching circuit comprising:

A. receiving means for receiving a modulated carrier signal within a predetermined frequency band;

B. a phase-locked loop comprising a phase comparator, a low pass filter, and a voltage-controlled oscillator, said oscillator being controlled by an output signal from said filter to provide a carrier signal having a predetermined frequency related to the frequency of said modulated carrier signal when a modulated carrier signal is applied to said phase comparator;

C. a demodulated signal path; and

D. a muting circuit connected to said filter to be controlled by the output signal thereof and connected to said signal path to permit the passage of signals along said path only in response to a predetermined output signal level from said filter corresponding to a phase-locked condition of said loop.

3,939,426

METHOD AND ARRANGEMENT FOR FURNISHING AN INDICATION OF MULTIPATH RECEPTION IN AN FM RECEIVER

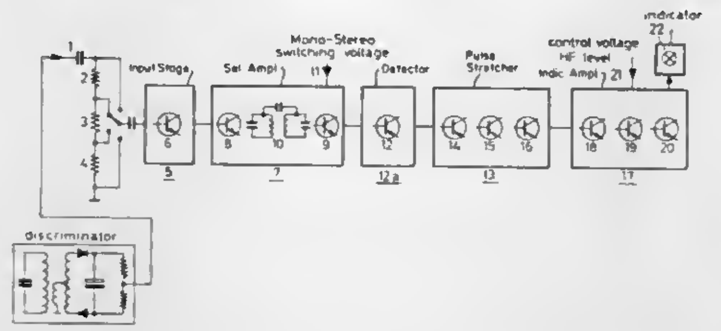
Karl Traub, Furth, and Günther Benecke, Nurnberg, both of Germany, assignors to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Inh. Max Grundig, Furth, Bavaria, Germany

Filed Oct. 30, 1970, Ser. No. 85,506

Claims priority, application Germany, Oct. 20, 1969, 1952739

Int. Cl.^{2} H04B *1/06*

U.S. Cl. 325—363 7 Claims



1. In a frequency modulation receiver having discriminator means furnishing a discriminator output signal having a plurality of desired frequency signals in the absence of multipath reception and at least one harmonic of one of said desired frequency signals in the presence of multipath reception, the frequency of said harmonic differing from the frequencies of said desired frequency signals, an arrangement for furnishing

an indicator signal indicative of said multipath reception, comprising, in combination, narrow bandwidth filtering means connected to said discriminator means for passing said harmonic when present, while rejecting signals of frequencies both higher and lower than said harmonic, thereby furnishing filtered harmonic signals occuring only during multipath reception, said narrow bandwidth filtering means comprising selective amplifier means tuned to a frequency between 15 kHv and 19 kHv; indicator means connected to said narrow bandwidth filtering means for furnishing said indicator signal in response to said filtered harmonic signals; further comprising rectifier means connected to said narrow bandwidth filtering means, for furnishing a pulse sequence in response to said filtered harmonic signals; and converter means connected between said rectifier means and said indicator means for converting said pulse sequence into a substantially constant voltage for activating said indicator means.

3,939,427

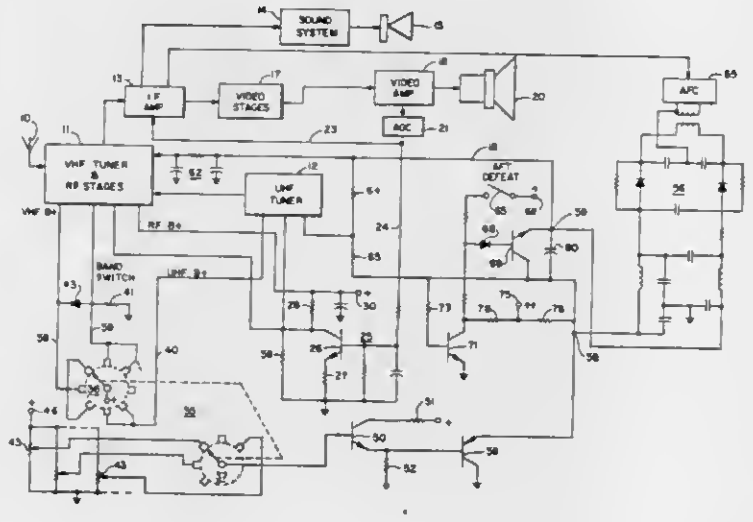
AUTOMATIC FINE TUNING DEFEAT CIRCUIT

David J. Mueller, Northlake, Ill., assignor to Quasar Electronics Corporation, Franklin Park, Ill.

Filed Aug. 5, 1974, Ser. No. 494,637

Int. Cl.^{2} H04B *1/16*

U.S. Cl. 325—418 12 Claims



1. A system for a wave signal receiver including in combination:

- a voltage responsive tuner stage tunable to different frequencies within at least one band of frequencies in response to a tuning voltage applied thereto;
- automatic frequency control means coupled with the output of said tuner stage for producing an automatic frequency control voltage indicative of the tuning of said tuner stage;
- tuning voltage supply means for supplying a voltage;
- means for coupling said tuning voltage supply means and the output of said automatic frequency control means to said voltage responsive tuner stage to supply said tuning voltage thereto, said tuning voltage being a composite of the voltage supplied by said tuning voltage supply means and the automatic frequency control voltage from said automatic frequency control means; and
- switch means coupled to said automatic frequency control means and to said tuning voltage supply means for sensing a predetermined voltage supplied by said tuning voltage supply means, said switch means being operative in response to said predetermined voltage to remove the effect of said automatic frequency control voltage from said composite tuning voltage.

3,939,428

RECEIVER WITH AUTOMATIC PASS BAND CONTROL

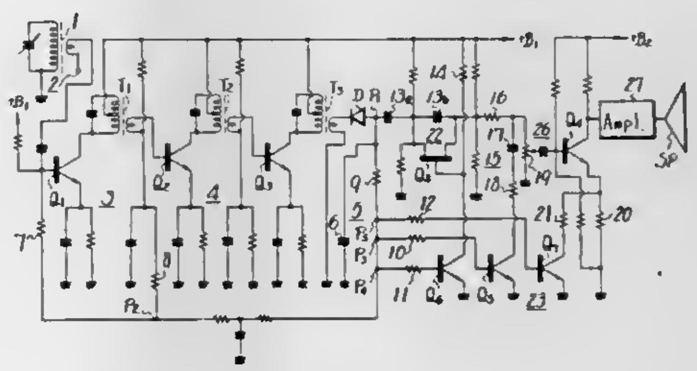
Ikuo Shimizu, Tokyo, and Keiko Ichihara, Ichikawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 26, 1974, Ser. No. 527,483

Claims priority, application Japan, Nov. 30, 1973, 48-135131

Int. Cl.^{2} H04B *1/16*

U.S. Cl. 325—427 6 Claims



1. In a receiver for modulated information signals the combination for attenuating higher frequency noise as a function of reduced signal strength comprising:

- a detector circuit for demodulating received signals, the output of said detector circuit representing said information and being indicative of the strength of said received signals;
- amplifying means for amplifying said detector circuit output to thereby recover said information;
- circuit means coupled to said detector circuit and responsive to said detector circuit output indicative of said received signal strength for producing a control signal which is a function of said received signal strength; and
- coupling means for interconnecting said detector circuit and said amplifying means, said coupling means including: first actuable filter means for attenuating frequency components above a predetermined range in said detector circuit output, said first actuable filter means being actuated by said control signal; and second actuable filter means for attenuating frequency components below said predetermined range in said detector circuit output, said second actuable filter means being actuated by said control signal and being connected in cascade with said first actuable filter means.

3,939,429

TUNABLE HIGH FREQUENCY INPUT CIRCUIT FOR A TELEVISION RECEIVER THAT TUNES BOTH VHF AND UHF CHANNELS AND CAN BE READILY INTEGRATED

Klaus Löho, Johberg, Belgium; Georg Lütteke; Gerd Schiefer, both of Aachen, Germany; Lammert Bruntink, Eindhoven, Netherlands; Paulus Petrus Maria Groenewegen, Eindhoven, Netherlands; Hans Viktor Weinerth, Eindhoven, Netherlands; Wilhelmus Antonius Joseph Marie Zwijsen, Eindhoven, Netherlands, and Karel Petrus Van Rooij, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 2, 1974, Ser. No. 485,203

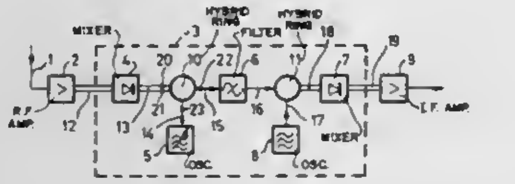
Claims priority, application Germany, July 7, 1973, 2334570

Int. Cl.^{2} H04B *1/26*

U.S. Cl. 325—432 20 Claims

1. A circuit arrangement for tuning both VHF and UHF television signals between upper and lower frequency limits, said circuit comprising a first mixer stage having a first input means for receiving said television signals, a second input, and an output means for providing a signal at a first intermediate frequency which is higher than twice said upper frequency limit; a first oscillator coupled to said second input and tunable in a range below said first intermediate frequency; a

gyromagnetic filter tuned to said first intermediate frequency and having an input coupled to said first mixer output and an output; a second mixer stage having a first input coupled to said filter output, a second input, and an output means for providing a signal at a second intermediate frequency lower than said lower frequency limit; and a second oscillator coupled to said second mixer second input and fixed tuned to a frequency above said first intermediate frequency.



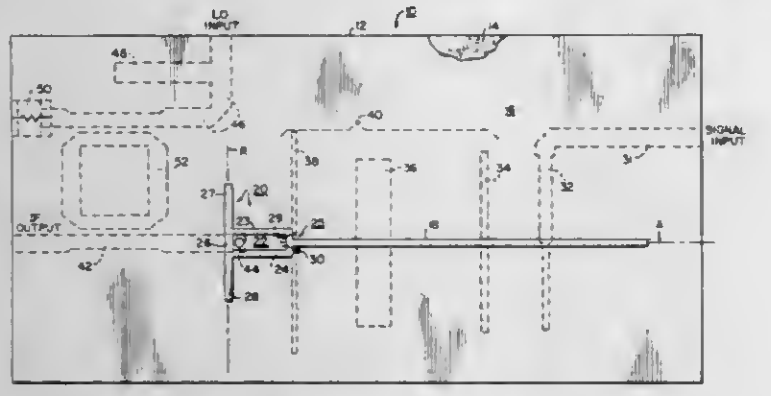
3,939,430
INTEGRATED CIRCUIT, IMAGE AND SUM ENHANCED BALANCED MIXER

Lawrence E. Dickens, Baltimore, and Douglas W. Makl, Arnold, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 24, 1974, Ser. No. 482,671

Int. Cl.² H04B *1/26*

U.S. Cl. 325—446 **13 Claims**



1. Microwave mixer apparatus, comprising;
a. a dielectric substrate,
b. a layer of conductor material affixed to one surface of said substrate,
c. a slot line formed in said layer of conductor material, the axis of said slot line establishing a longitudinal reference axis,
d. means for coupling a first signal at a first frequency into said slot line,
e. a coplanar strip line comprising said layer of conductor material forming a center strip aligned along said reference axis, and said layer of conductor material forming a first side conductor laterally spaced from one side of the center strip by a first longitudinal gap and forming a second side conductor laterally spaced from the other side of the center strip by a second longitudinal gap,
f. means for coupling a second signal at a second frequency into said coplanar strip line,
g. said slot line and said coplanar strip line being disposed in end-to-end relationship and at their adjacent ends cooperating to form a hybrid junction,
h. heterodyne circuit means operatively associated with said hybrid junction to derive a third signal at a frequency different from either that of the first and second frequencies,
i. means cooperative with said coplanar strip line to suppress derivation of a fourth signal at a fourth frequency different from any of the first, second and third frequencies,
j. means cooperative with said slot line to suppress derivation of a fifth signal at a fifth frequency different from any of the first, second, third and fourth frequencies,
k. said means cooperative with said coplanar strip line comprising a pair of first and second transversely aligned outwardly extending slot stubs of equal predetermined length formed in said side conductors of the coplanar strip line, said first and second slot stubs being formed at right angled appendages to the first longitudinal gap and to the second longitudinal gap, respectively, said slot stubs being formed at a longitudinal location along the coplanar strip line which is spaced from the hybrid junction end thereof by a predetermined distance,
l. said means cooperative with said slot line comprising a plurality of strips of conductor material affixed to the opposite side of said dielectric substrate, each strip of said plurality of strips passing transversely across said slot line, said plurality of strips being collectively constructed and arranged to present a relatively low impedance to said fifth frequency at said hybrid junction, and
m. said first, second, third, fourth and fifth signals are a set of signals composed of first and second input signals and related modulation product signals derived from combining the input signals in accordance with the heterodyne principle, the first, second, third, fourth and fifth signals respectively comprising a received signal, a local oscillator signal, an intermediate frequency signal, a sum frequency signal, and an image frequency signal.

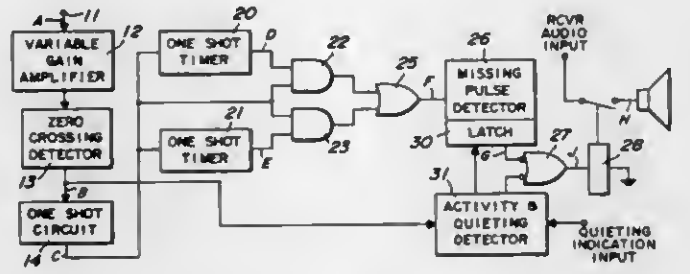
3,939,431
MUTING CIRCUIT FOR A RADIO RECEIVER

Donald C. Cohlman, Rolling Meadows, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Nov. 25, 1974, Ser. No. 526,485

Int. Cl.² H04B *1/10*

U.S. Cl. 325—478 **9 Claims**



1. A method of muting a radio receiver during the reception of audio frequency data or signals of a predetermined frequency, including the steps of:
a. monitoring the audio frequency signals in the receiver and providing a pulse for each zero crossing thereof;
b. using the pulses provided to produce a delayed window subsequent to each pulse, which window is delayed a period equal to the time between zero crossings of data of the predetermined frequency; and
c. comparing the occurrence of the pulses and the windows and muting the receiver for a period longer than the delay between windows each time a pulse and a window coincide.

3,939,432
FM LIMITER WITH INPUT LEVEL SENSING AND TTL LEVEL OUTPUT

Larry Allan Nelson, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

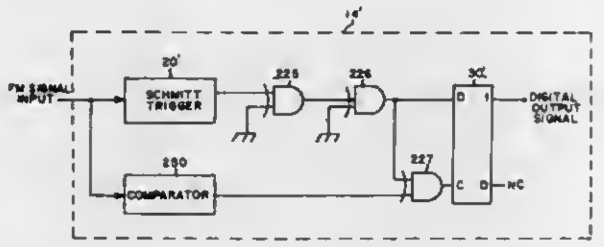
Continuation-in-part of Ser. No. 360,519, May 15, 1973, Pat. No. 3,863,264. This application Mar. 18, 1974, Ser. No. 452,298

Int. Cl.² H03B *19/00;* **H03K** *5/00*

U.S. Cl. 328—13 **2 Claims**

1. An analog limiter with input level sensing and TTL level output, comprising:

Schmitt trigger means responsive to the amplitude of an analog signal applied thereto for providing a first square wave;
comparator means responsive to the zero crossings of an analog signal applied thereto for providing a second square wave;



means responsive to said first and second square waves for providing a data signal and a timing signal; and
means responsive to both said data and timing signals for providing an output square wave having the zero crossings of said analog signal.

3,939,433
FEEDBACK CIRCUIT

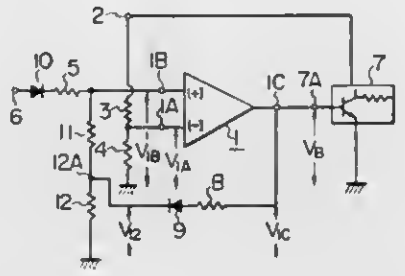
Tomoyuki Okada, Katsuta, and Seiji Suda, Mito, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 12, 1974, Ser. No. 441,856

Claims priority, application Japan, Feb. 16, 1973, 48-18266

Int. Cl.² H03G *3/30*

U.S. Cl. 330—25 **7 Claims**



1. A feedback circuit for use in a level detector having a comparing amplifier, means for applying a reference voltage to a first input terminal circuit of said comparing amplifier, means for applying a detected signal voltage to a second input terminal circuit of said comparing amplifier, and switching circuit connected to an output terminal circuit of said comparing amplifier and having a triggering input voltage level lower than said reference voltage, said feedback circuit comprising voltage dividing means for dividing the voltage of said second input terminal circuit to obtain a voltage lower than the triggering input voltage for said switching circuit in the region in which the voltage appearing at said output terminal circuit is lower than said triggering input voltage, and feedback means connected at one end thereof to said ouput terminal of said comparing amplifier and at the other end thereof to the voltage dividing point of said voltage dividing means.

3,939,434
WIDEBAND DC CURRENT AMPLIFIER

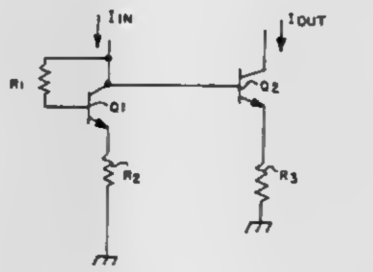
Philip Stephen Crosby, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 23, 1974, Ser. No. 499,824

Int. Cl.² H03F *3/04*

U.S. Cl. 330—40 **1 Claim**

1. A current amplifier, comprising:
a first and second transistor means, each of said transistor means having a base, a collector, and an emitter;
means directly connecting the collector of said first transistor means to the base of said second transistor means, said means having a resistive value of substantially zero ohms;
first and second resistor means serially connected between the emitters of said first and second transistor means, respectively, and a reference potential;
third resistor means serially connected between the base and collector of said first transistor means, wherein the



ratio of said first resistor means to said second resistor means plus unity equals the ratio of said third resistor means to said second resistor means;
means for applying input current to the collector of said first transistor means; and
means for applying a repeated input current to the collector of said second transistor means.

3,939,435
POWER AMPLIFIER

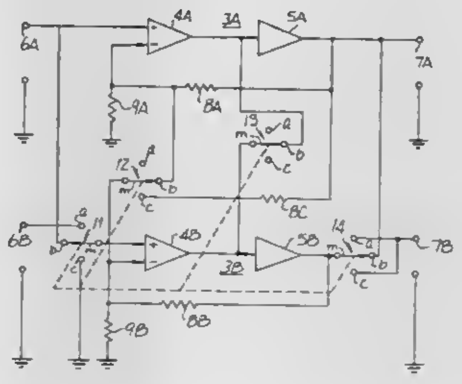
Tadao Suzuki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 17, 1973, Ser. No. 397,792

Claims priority, application Japan, Sept. 21, 1972, 47-109959[U]

Int. Cl.² H03F *1/14*

U.S. Cl. 330—51 **11 Claims**



1. A power amplifier comprising; a plurality of voltage amplifying means each having at least one input terminal and an output terminal; a like plurality of signal impedance converting means, each coupled to an output terminal of a corresponding one of said voltage amplifying means; and a plurality of switching means having plural operable conditions for selectively interconnecting the input terminals of said voltage amplifying means to each other, for selectively interconnecting the output terminals of said voltage amplifying means to each other and for selectively interconnecting the outputs of said signal impedance converting means to each other, respectively, said switching means selectively establishing in a first condition, independent series circuits each comprised of a voltage amplifying means and a corresponding signal impedance converting means; in a second condition, parallel connected voltage amplifying means and signal impedance converting means; and in a third condition, balanced transformerless connections between a first voltage amplifying means and a first signal impedance converting means and a second voltage amplifying means and a second signal impedance converting means.

3,939,436

REVERBERATION DEVICE

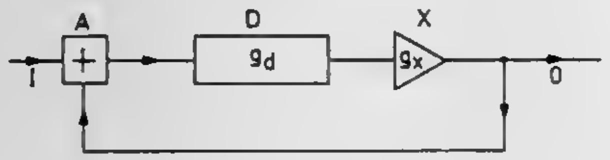
Hans Keller, Gundelfingen, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 22, 1974, Ser. No. 526,342

Claims priority, application Germany, Dec. 7, 1973, 2360983

Int. Cl.² H03F *3/68*

U.S. Cl. 330—84 **11 Claims**



1. A reverberation device, comprising:
- an input terminal;
- a first adding circuit having first and second inputs and an output, the first being connected to the input terminal;
- a delay line having an input and an output, said delay line having predetermined frequency dependent gain characteristics;
- a compensating amplifier having an input and an output, said amplifier having frequency dependent gain characteristics corresponding to the characteristics of the delay line, said delay line and compensating amplifier being connected in series;
- an output terminal, said series connected delay line and compensating amplifier being disposed between the output of the first adding circuit and the output terminal; and
- a feedback line connecting the output of the series connected delay line and compensating amplifier to the second input of the first adding circuit.

3,939,437

ALL-PASS REVERBERATOR WITH AN MOS DELAY LINE

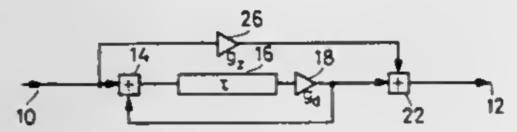
Fritz Guenter Adam, Freiburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 22, 1974, Ser. No. 526,343

Claims priority, application Germany, Dec. 7, 1973, 2360984

Int. Cl.² H03F *3/68*

U.S. Cl. 330—84 **4 Claims**



1. An all-pass reverberator, comprising:
- an input terminal;
- a first adding circuit having first and second inputs and an output, said first input connected to the input terminal;
- an MOS delay line having an input and an output and an attenuation of g_d, said input being connected to the output of the first adding circuit;
- a second adding circuit having first and second inputs and an output;
- an output terminal connected to the output of the second adding circuit;
- first circuit means for connecting the output of the delay line to the first input of the second adding circuit, said first circuit means having a gain of g_y;
- second circuit means for connecting the output of the delay line to the second input of the first adding means, said second circuit means having a gain of g_x; and
- third circuit means for connecting the input terminal to the second input of the second adding circuit, said third circuit means having a gain of g_z, wherein the gain

$$g_z = \frac{-g_d^2 g_x g_y}{1 - g_x^2 g_d^2}.$$

3,939,438

PHASE LOCKED OSCILLATOR

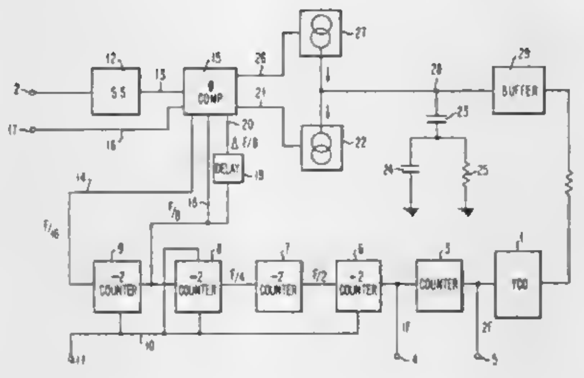
John Richard Taylor, Bishopstoke, England, assignor to International Business Machines Corporation, N.Y.

Filed Jan. 23, 1975, Ser. No. 543,586

Claims priority, application United Kingdom, Jan. 31, 1974, 4506/74

Int. Cl.² H03B *3/04*

U.S. Cl. 331—14 **12 Claims**



1. A phase locked oscillator comprising:
- a voltage controlled oscillator arranged to be controlled by an incoming controlling signal consisting of a stream of pulses of substantially constant repetition rate;
- means for comparing the phase of the output from the voltage controlled oscillator with the phase of the controlling signal and for producing on receipt of each pulse of the controlling signal, an error signal indicative of any phase error existing between the incoming pulse and the oscillator output;
- means for converting each phase error signal to a corresponding voltage and for accumulating the voltages in a store which has a predetermined decay rate, the resulting error voltage being applied to the input of the oscillator so as to reduce the phase error;
- means for interrupting the oscillator output to the comparing means on detection of a phase error exceeding a predetermined amount and for resupplying the oscillator output to the comparing means in phase with a subsequent incoming control pulse, such that voltage is accumulated in the store until it is of sufficient magnitude to bring the frequency of the oscillator to the desired value to hold the phase lock.

3,939,439

DIFFUSED WAVEGUIDING CAPILLARY TUBE WITH DISTRIBUTED FEEDBACK FOR A GAS LASER

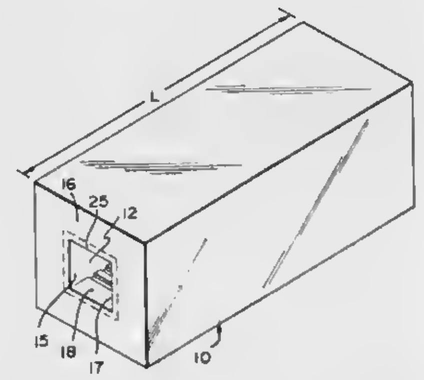
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of and Charles Elachi, Pasadena, Calif.

Filed Dec. 17, 1974, Ser. No. 533,555

Int. Cl.² H01S *3/08*

U.S. Cl. 331—94.5 C **17 Claims**

1. For use in a waveguide gas laser, a tube structure comprising:
- an elongated capillary tube having an outer surface extending from a first end to a second opposite end of said tube, said tube further having an inner surface, defining an elongated opening extending between said ends, at least a portion of said inner surface defining corrugations along the length of said opening with a periodicity Λ, where Λ is equal to one half of a selected wavelength λ, said tube being of a material with an index of refraction definable as n_2, said tube further including a diffused region surrounding said opening with an index of refraction, definable as n_3, where $n_2 > n_2$, the depth of said diffused region around said opening, definable as d, being less than the thickness of said tube between its outer and inner surfaces.



3,939,440

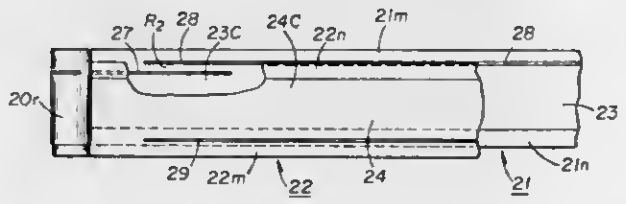
WOUND RESISTOR-CAPACITOR NETWORK AND METHOD OF FORMING

Richard D. Berg, Elmhurst; Donald R. Brown, Downers Grove; Otto T. Masopust, Jr., Bolingbrook, all of Ill., and James F. Stoltz, Cape Coral, Fla., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 17, 1974, Ser. No. 533,589

Int. Cl.² H03H *7/06, 13/00;* **H01G** *4/32;* **H01C** *17/04*

U.S. Cl. 333—70 CR **19 Claims**



1. A resistor-capacitor network in the form of a roll having first and second layers of convoluted electrically conducting material separated by first and second layers of convoluted dielectric material to define a capacitance, which comprises:
- first and second elongated resistance paths in said first layer of electrically conducting material extending from a lead termination area defined by said first layer of electrically conducting material at one end of the network roll, circumferentially in opposite directions to connect said lead termination area to an inwardly spaced capacitance-reforming portion of said first layer of electrically conducting material.

3,939,441

STRUCTURAL ARRANGEMENT FOR ELECTRONIC MODULES

Willi Menzel, Gauting, and Gundolf Milde, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

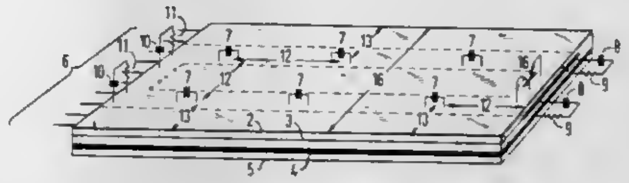
Filed Sept. 20, 1973, Ser. No. 399,259

Claims priority, application Germany, Sept. 22, 1972, 2246611

Int. Cl.² H03H *7/04, 13/00*

U.S. Cl. 333—70 R **13 Claims**

1. An electronic module of flat construction having a plurality of parallel strip conductors with spacing between said strip conductors being less than the width of those conductorrs, at least a pair of said strip conductors having terminals at ends thereof for connection to a source of current and being constructed to form two dimensional outgoing and incoming lines for a current supply to operating components mounted on said module comprising:
- a plurality of adjacent first capacitors connected between said outgoing and incoming lines and
- low pass filter means formed by pairs of said adjacent first capacitors and the segments of said incoming and outgoing lines lying between said pairs of first capacitors and formed by those of said first capacitors lying closest to any edge points of said strip conductors and segments of said incoming and outgoing lines lying between said edge points and said first capacitors lying closest to said edge points,
- said adjacent first capacitors being spaced one from the other and the distance from edge points of said incoming and outgoing lines to said first capacitors, respectively, lying closest to said edge points being sufficiently small as to form a said low pass filter means having a greater cut off frequency than the highest frequency component of interfering voltages occurring on said incoming and outgoing lines upon operating electronic components connected to said current supply.



3,939,442

CERAMIC FILTER CIRCUIT

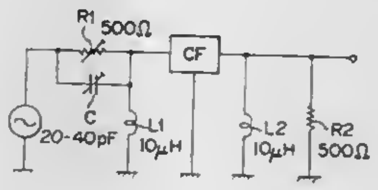
Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 23, 1973, Ser. No. 390,703

Claims priority, application Japan, Aug. 31, 1972, 47-87482

Int. Cl.² H03H *7/10, 9/20*

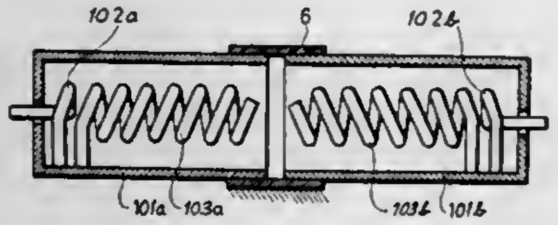
U.S. Cl. 333—72 **5 Claims**



1. A filter circuit for a wide band system comprising in combination a ceramic filter element having a wide pass band, said filter element having an input and an output, first circuit means connected to said input of said ceramic filter element for decreasing the distortion factor of a wide band signal passing through said ceramic filter, said first circuit means including a resistor connected in series with said ceramic filter element and connected to the input thereof, an inductor connected to the input of said ceramic filter element and in shunt with said ceramic filter element, and second circuit means connected to said output of said ceramic filter element for decreasing the distortion factor of a signal passing through said ceramic filter element, said second circuit means including a resistor connected in series with the output of said ceramic filter element and an inductor connected to the output of said ceramic filter element and in shunt therewith.

3,939,443
FREQUENCY-SELECTIVE COUPLING FOR HIGH-FREQUENCY ELECTROMAGNETIC WAVES

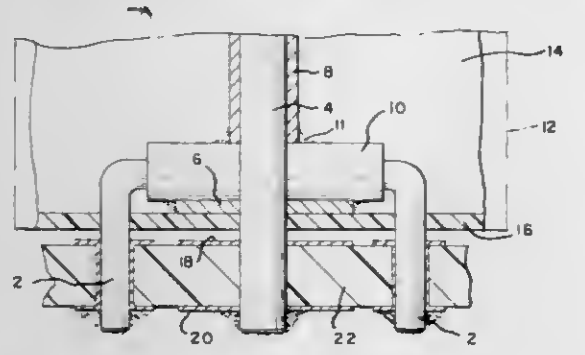
Oszkár Biró; Edit Dányl; Magdolna Fenyvesi, and János Pamuk, all of Budapest, Hungary, assignors to Finommechanikai Vallalat, Budapest, Hungary
Continuation-in-part of Ser. No. 317,259, Dec. 21, 1972, abandoned. This application May 29, 1974, Ser. No. 474,157
Claims priority, application Hungary, Jan. 7, 1972, FI 506
Int. Cl.² H01P *1/20, 7/04*
U.S. Cl. 333—73 R **5 Claims**



5. A frequency-selective coupling for high-frequency electromagnetic waves, comprising a pair of juxtaposed units antiresonant at a predetermined operating frequency and provided with mounting means enabling their relative rotation about a common axis, each unit including a substantially cylindrical grounded conductive shell centered on said axis with at least one open end and a central helical conductor extending generally axially within said shell, said central conductor having at least one point grounded to said shell and an ungrounded extremity spaced from said grounded point by a quarter wavelength at said operating frequency, said extremity terminating close to said open end within said shell, the shells of said units being of like diameters and confronting one another by their open ends with the corresponding extremities of their central conductors closely spaced from one another, said extremities lying in parallel planes transverse to said axes and forming a capacitive coupling variable upon relative rotation of said units.

3,939,444
PRINTED CIRCUIT MOUNTABLE, SELF GROUNDING, MULTIPLE FILTER MODULE

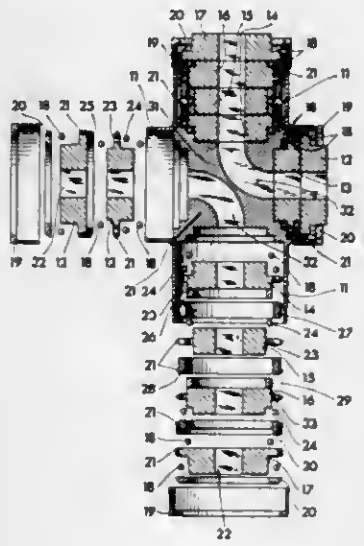
Robert David Hollyday, Hershey; Jack Leo Bradbery, Harrisburg, and William Jeffrey Hudson, Jr., Hershey, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 11, 1974, Ser. No. 432,739
Int. Cl.² H03H *13/00;* **H05K** *1/12, 9/00*
U.S. Cl. 333—79 **4 Claims**



1. A filter assembly, comprising:
a header having a first ground plane thereon,
a plurality of ceramic filter elements positioned in side-by-side relation overlying said first ground plane,
electrical leads on said filters projecting outwardly through said header,
a second ground plane normal to said first ground plane and electrically engaged upon and overlying said filters,
a printed circuit board having a ground plane thereon, and
electrically conducting pins connected to said frist and said second ground planes and projecting through said header for pluggable connection to the ground plane of said printed circuit board.

3,939,445
BALL UNIVERSAL JOINT FOR WAVE GUIDES

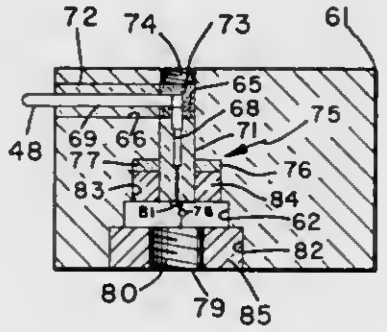
Mario Liguori, Milan, Italy, assignor to Messrs Elettronica Aster S.r.l., Milan, Italy
Filed Sept. 13, 1974, Ser. No. 505,791
Claims priority, application Italy, Mar. 1, 1974, 48874/74
Int. Cl.² H01P *1/02, 1/28*
U.S. Cl. 333—98 TN **3 Claims**



1. A ball universal joint for waveguides comprising:
a stack of circular plates including end plates on each end of said stack and intermediate plates between said end plates, each of said circular plates having a hole of rectangular cross-section extending therethrough and forming a waveguide step, each of said intermediate plates having a thin peripheral portion with a plurality of cylindrical holes extending therethrough arranged in a circular ring around the axis of its respective intermediate plate, the diameters of said circular rings on adjacent intermediate plates being different from each other;
a rigid body positioned between two of said intermediate plates and having at least one pair of end surfaces lying in planes at 90° to each other and facing respective ones of said two intermediate plates, said rigid body having at least one curved hole of rectangular cross-section extending between said two end surfaces and forming a curved waveguide step;
a rigid framework fast with said body and coupled to said end plates to hold said circular plates and said body in stacked compressed relation one on another;
rings of end balls between said framework and said end plates for axially coupling said framework to said end plates while permitting axial rotation of said circular plates;
rings of peripheral balls between the outer circular periphery of said circular plates for radially coupling said framework to said circular plates while permitting axial rotation of said circular plates;
an intermediate plate ball located in each of said cylindrical holes, said intermediate plate balls having substantially the same diameter as said cylindrical holes but having a larger diameter than the thickness of its respective thin peripheral portion; and
at least one rigid ring between adjacent ones of said circular plates, said ring abutting one of said adjacent plates and said intermediate plate balls in the cylindrical holes of the other of said adjacent ones of said circular plates.

3,939,446
MILLIMETER WAVE TRANSLATING DEVICE WITH CHANGEABLE INSERT ELEMENT

Theodore L. Kozul, 19 Wright Ave., Medford, Mass. 01757, and Paul A. Crandell, 6 Parker Road, Bedford, Mass. 01730
Continuation of Ser. No. 245,930, April 20, 1972, which is a division of Ser. No. 875,755, Nov. 12, 1969, Pat. No. 3,681,718. This application Nov. 1, 1973, Ser. No. 411,798
Int. Cl. H01p *1/00, 11/00*
U.S. Cl. 333—98 R **5 Claims**

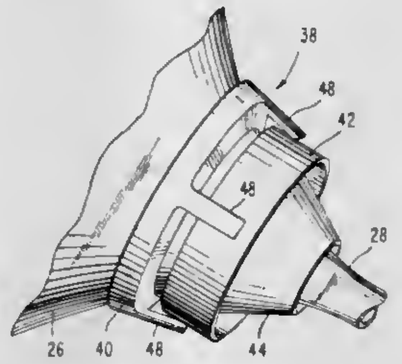


1. In a high frequency wave translating device including an input waveguide transmission line structure designed for conducting millimeter waves and an output coaxial transmission line structure, means coupling said input and output structure comprising,
a housing which contains the input waveguide structure,
a slot in the housing extending perpendicular to the input waveguide,
an electrically conductive flat plate insert which fits into the slot and contains the output coaxial line structures,
an opening through the plate transverse to the plane thereof, in registration with and forming a continuation of the input waveguide,
a wave translating element mounted in said opening for coupling electrically with both the input and output structures by electrically connecting to the waveguide and to the center conductor of the coaxial line, and
a high frequency wave choke defined by a coaxial cavity in the plate adjacent the opening between the opening and the output coaxial line structure, concentric with and along said output line for preventing millimeter waves conducted by the input structure from being conducted to the output structure,
an electrically conductive ring plug in the coaxial cavity completing the choke coaxial cavity and partially defining the plate opening and
an electrically conductive window plug in an edge of the plate completing the plate opening.

3,939,447
SPRING MOUNT FOR A CATHODE RAY TUBE YOKE

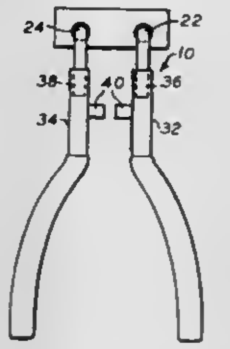
Ralph James D'Amato, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.
Filed Jan. 7, 1975, Ser. No. 539,107
Int. Cl.² H01F *7/00*
U.S. Cl. 335—210 **5 Claims**

1. A yoke mount for a cathode-ray tube comprising,
a first portion adapted for receiving a yoke,
a second portion adapted for connection to a cathode-ray tube, and
a plurality of springs interconnecting said first and second portions, said springs providing the sole support of said first portion relative to said second portion, said springs being bendable to accomodate alignment of a yoke with a cathode-ray tube.



3,939,448
MECHANICAL MAGNETS OF MAGNETOSTRICTIVE, REMANENT, CIRCULARLY MAGNETIZED MATERIAL

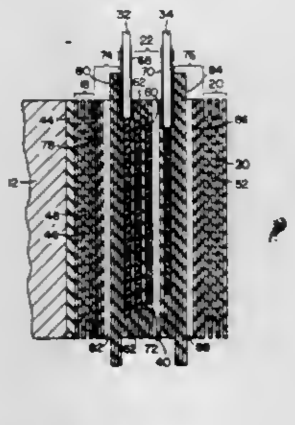
Ivan J. Garshelis, 61 Oleander Way, Clark, N.J. 07066
Filed July 12, 1974, Ser. No. 488,841
Int. Cl.² H01F *7/20;* **H01H** *55/00*
U.S. Cl. 335—215 **13 Claims**



1. A mechanical magnet, comprising a rod of magnetostrictive, remanent, circularly magnetically anisotropic, circularly magnetized material, and means for twisting said rod, whereby to alter said circular anisotropy to helical anisotropy and thus reorient the circular magnetic field to a helical field with an axial component.

3,939,449
INSULATED TRANSFORMER WINDINGS

Edward L. Boyd, Jefferson City, and John P. McInerney, Hartsburg, both of Mo., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 15, 1975, Ser. No. 541,368
Int. Cl.² H01F *27/08, 27/32*
U.S. Cl. 336—60 **4 Claims**



1. A transformer comprising;
a magnetic core structure;
an inner low-voltage winding structure having conductor layers disposed in inductive relationship with the magnetic core, said winding structure including at least one

layer of a solid insulating material between each of said conductor layers;

a high-voltage winding structure having conductor layers disposed around the outside of the inner low-voltage winding structure, said winding structure including at least one layer of a solid insulating material between each of said conductor layers;

a first winding-to-winding insulation structure disposed between the inner low-voltage winding and the high-voltage winding structures;

an outer low-voltage winding structure having conductor layers disposed around the high-voltage winding structure, said winding structure including at least one layer of a solid insulating material between each of said conductor layers; and

a second winding-to-winding insulation structure disposed between the high-voltage winding and the outer low-voltage winding structures;

said first and second winding-to-winding insulation structures each having ducts which permit the flow of liquid dielectric through the insulation structure, having layers of a solid insulating material which extend axially beyond the axial ends of all of the layered insulating material in all of said winding structures, and not having a conventional metallic foil electrostatic shield which extends substantially the entire axial length of the high-voltage winding structure.

3,939,450

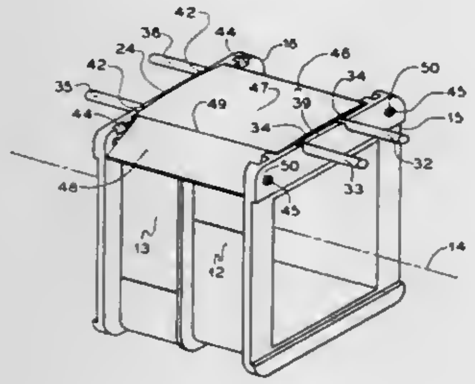
ELECTRICAL COIL ASSEMBLY WITH MEANS FOR SECURING EXTERNAL LEADS

Donald E. Donnelly, Edwardsville, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 4, 1974, Ser. No. 512,066

Int. Cl.² H01F *27/30*

U.S. Cl. 336—90 **4 Claims**



1. An electrical coil assembly comprising a bobbin having a pair of end flanges, a coil wound on said bobbin between said flanges and having a start end and a finish end, insulated external leads, means for connecting said insulated leads at their ends to said coil ends intermediate said flanges, said connecting means being secured to the inside wall of one of said flanges, the other of said flanges having slot means open to a peripheral edge thereof receiving therein an insulated portion of said insulated leads spaced from their connected ends, relatively rigid insulative cover means attached to said flanges and overlying said insulated leads adjacent said slot means for confining said insulated leads within said slot means, said cover means also extending between said flanges and overlying said connecting means thereby insulatingly covering said connecting means, and interengaging means on said cover means and on said flanges for providing snap-on attachment therebetween.

3,939,451

BALANCE CONTROL FOR USE IN 4-CHANNEL STEREOPHONIC SYSTEM

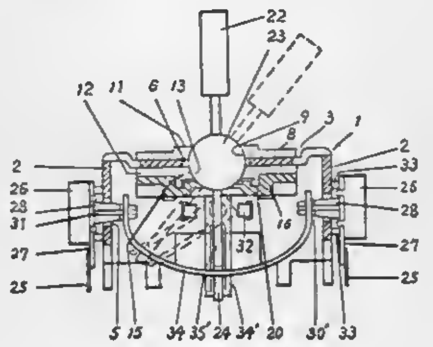
Masao Kasahima, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1973, Ser. No. 341,918

Claims priority, application Japan, Sept. 6, 1972, 47-89316

Int. Cl.² H01C *9/00*

U.S. Cl. 338—128 **4 Claims**



1. In combination with a balance control of the type wherein a substantially cubic frame having an upper wall and side walls extending downwardly from the upper wall is provided with a plurality of variable resistors provided with rotary shafts fixed to the side walls, the rotary shafts extending inwardly into the frame, ganging strips secured to the rotary shafts, each of the ganging strips in the shape of an arc and having a longitudinal slot, an operation rod provided with a ball, the ball mounted on the upper wall, the operating rod being inserted through the slots of the ganging strips to move the strips and thereby rotate one or more of the rotary shafts of the variable resistors, the improvement which comprises:

a. the opposite ends of each of the ganging strips provided with holes, the holes of each ganging strip being of a size different from the holes of the other remaining ganging strips;

b. the end portion of each of the rotary shafts being inclined so as to be smaller toward its outer end;

c. the ganging strips being secured to the rotary shafts by inserting the end portion of the rotary shafts into the holes of the ganging strips to the extent allowed by the size of the hole, whereby the radius of the arc of each ganging strip will be determined by the size of the hole of the ganging strip thereby permitting each ganging strip to have an arc of a different radius so that the ganging strips do not come into physical contact with each other although the end portions are the same.

3,939,452

DESK-TOP ELECTRONIC COMPUTER WITH MOS CIRCUIT LOGIC

Gian Franco Faggian, Ivrea (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed July 11, 1973, Ser. No. 378,354

Int. Cl.² G06F *15/20, 13/00, 9/06, 9/16*

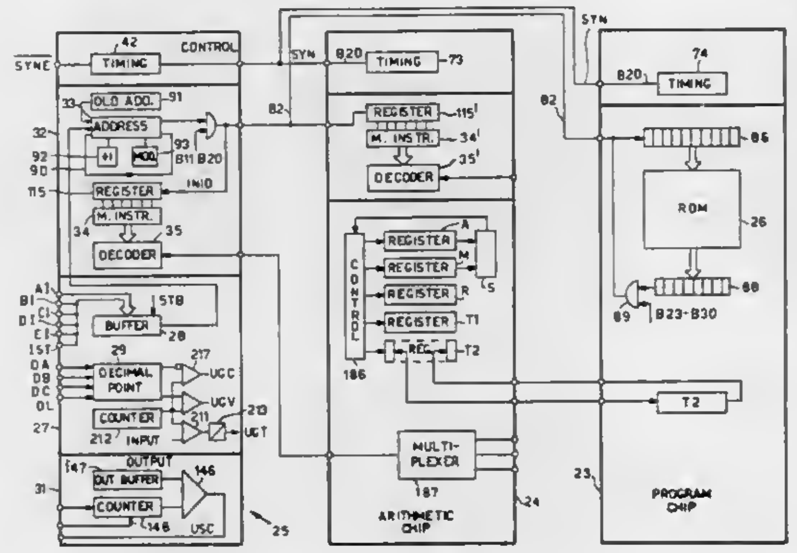
U.S. Cl. 340—172.5 **10 Claims**

1. In a desk-top electronic computer disposed on at least three semiconductor chips:

input-output means disposed on at least the first of the three semiconductor chips for receiving data signals applied thereto and for feeding data signals therefrom to the remaining semiconductor chips;

processing means receptive of data signals fed from said input-output means for processing the data signals, said processing means including arithmetic means disposed on the second semiconductor chip and receptive of data signals from said input-output means for performing arithmetic operations thereon, a memory instruction register and a memory address register both disposed on the first semiconductor chip, control means disposed on the third semiconductor chip and receptive of data signals from said input-output means for controlling the arithmetic means to perform selected arithmetic operations and comprising a read-only memory having addressable microinstructions stored therein and circuit means disposed on the three semiconductor chips for transferring over a first single signal conductor between the three semiconductor chips both the data signals from the memory address register to address the read-only memory and the data signals of the addressed microinstruction from the read-only memory to the memory instruction register; and

timing means disposed on the three semiconductor chips and interconnected by a second single signal conductor for synchronizing the data signal flow on the three semiconductor chips.



3,939,453

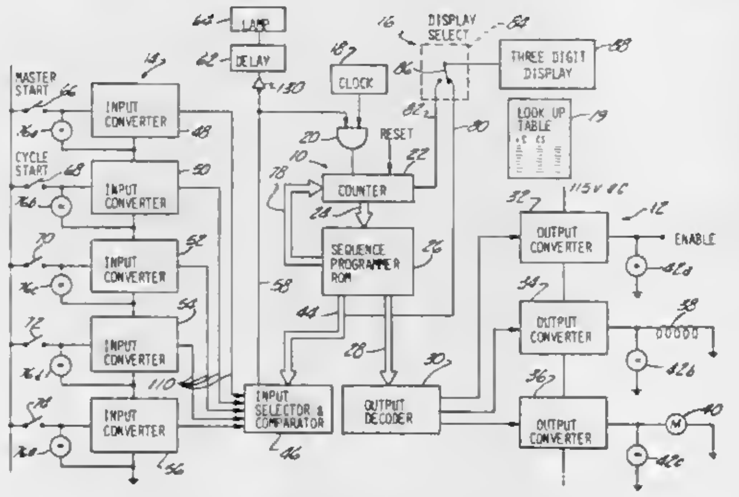
DIAGNOSTIC DISPLAY FOR MACHINE SEQUENCE CONTROLLER

Roger L. Schroeder, Springfield, Vt., assignor to Bryant Grinder Corporation, Springfield, Vt.

Filed Apr. 29, 1974, Ser. No. 465,334

Int. Cl.² G06F *15/46*

U.S. Cl. 340—172.5 **22 Claims**



1. In a sequence controller and diagnostic display system for a machine having means for performing a plurality of controlled functions in a cycle of programmed steps: means for producing a sequence of signals representing increments of advancement from one of said steps to another; sequence programmer means including data storage means connected to receive said signals for intermittently producing in response to each said signal a plurality of input codes defining known machine conditions to be met before performing subsequent steps and digital cycle step commands defining machine steps to be performed sequentially; means for advancing the means for producing said sequence of signals only as said machine conditions are met; and display means connected to selectively display coded digital representations of said cycle step commands and input codes as they are produced.

3,939,454

GAS DISCHARGE PANEL INFORMATION READ-OUT SYSTEM

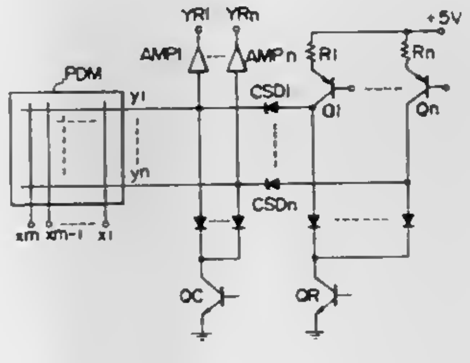
Shizuo Andoh, Kobe, and Kenji Murase, Kakogawa, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed July 30, 1974, Ser. No. 493,124

Claims priority, application Japan, Aug. 3, 1973, 48-87404

Int. Cl.² G11C *7/00, 11/28*

U.S. Cl. 340—173 PL **5 Claims**



1. A method for reading out information from a gas discharge panel having first and second sets of plural electrodes each, each said set being covered with an insulating layer and disposed in spaced relation from the other to define a gas discharge space therebetween and containing a gaseous medium within the said space, the electrodes of said first and second sets being disposed to intersect one another and thereby define discharge cells at the respective intersections of individual electrodes of said first and second sets and including a plurality of unidirectional conducting devices connected in circuit with respectively associated ones of said electrodes of said first set, information being stored in said panel as selectively established discharges in said cells and producing a wall charge in association with each information storing cell, said method comprising

producing a forward current flow in each of said unidirectional conducting devices to store an electric charge in each thereof,

applying a read voltage to each of said electrodes of said first set to produce a gas discharge in said cells and to cause a charging current to flow in the electrodes of said first set in a backward direction through said unidirectional conducting charge storage devices and of a level in accordance with the backward recovery time of the unidirectional conducting charge storage devices to terminate further backward conduction thereof,

an information storing discharge cell, following the termination of the backward direction charging current, producing a gas discharge current in accordance with the wall charge therein and causing a potential change in the electrode of said first set associated with the said information storing discharge cell, and

detecting selectively, a potential change of an electrode of said first set occurring due to the gas discharge current thereby to read out the information stored in an information storing discharge cell associated with the said electrode of said first set.

3,939,455

MICROPROCESSOR HAVING AN INTERFACE FOR CONNECTION OF EXTERNAL DEVICES

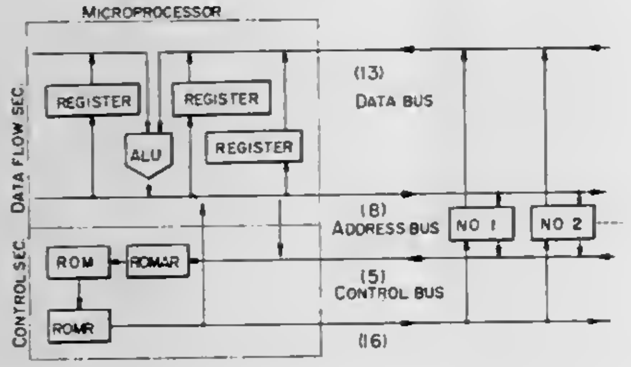
Koki Toyosawa, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Continuation of Ser. No. 293,051, Sept. 28, 1972, abandoned. This application Sept. 10, 1974, Ser. No. 504,703

Claims priority, application Japan, Oct. 1, 1971, 46-76311

Int. Cl.² G06F *9/00*

U.S. Cl. 340—172.5 **1 Claim**



1. A program-controlled microprocessor of the microprogramming type for incorporation in a system having at least one external device for operating as a part of said microprocessor, said microprocessor having an arithmetic section including a plurality of data buses, a control section including a read-only-memory register, and interface means connecting said microprocessor to said at least one external device, said interface means comprising data bus means including at least predetermined ones of said plurality of data buses of said arithmetic section of said microprocessor, control bus means connecting said read-only-memory register with said at least one external device and for providing outputs from said read-only-memory register indicative of microprogramming instructions to said at least one external device, and address bus means connecting said control section of said microprocessor with said at least one external device, said address bus means being responsive to an output of said at least one external device for supplying the output to said control section of said microprocessor whereby the output of said at least one external device designates an address of the next microprogramming instruction to be executed, the output of said at least one external device being provided in response to a microprogramming instruction supplied through said control bus means to said at least one external device.

3,939,456

HEATING PLANT MONITOR SYSTEM

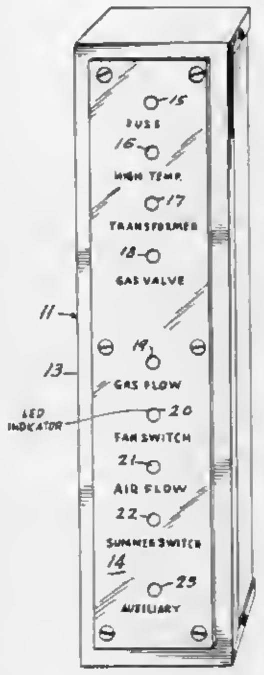
Thomas W. Curtis, and Roger M. Bresnahan, both of Toledo, Ohio, assignors to Curtis International, Inc., Toledo, Ohio

Filed Dec. 9, 1974, Ser. No. 530,822

Int. Cl.² G08B *25/00*

U.S. Cl. 340—213 R **10 Claims**

1. A visual monitor device for monitoring predetermined components in an operating system, at least some of such monitored components being dependent upon the other monitored components functioning normally, said device comprising, in combination, a visual display panel including a plurality of selectively energizable indicators positioned on said panel, a printed indicia associated with each of said indicators which identifies the system component monitored by each indicator, electrical power supply means connected to said indicators for maintaining all of said indicators in a first state of energization when all system components are in normal operation, a plurality of component sensing means for sensing the operating condition of each system component to be monitored, means connecting each of said sensing means to the correspondingly labeled indicator and to said power supply for causing in the event of a sensed malfunction of one component (a) its correspondingly labeled indicator to shift to a second state of energization and (b) other indicators to shift to said second state if their corresponding monitored components are dependent upon normal operation of said one component, and wherein said plurality of indicators are positioned on said panel in a prearranged linear sequence wherein the malfunction of a given component effective to shift the state of energization of its corresponding indicator will likewise shift the state of energization of said other indicator lights which are all subsequent in such prearranged sequence to the given corresponding indicator.



3,939,457

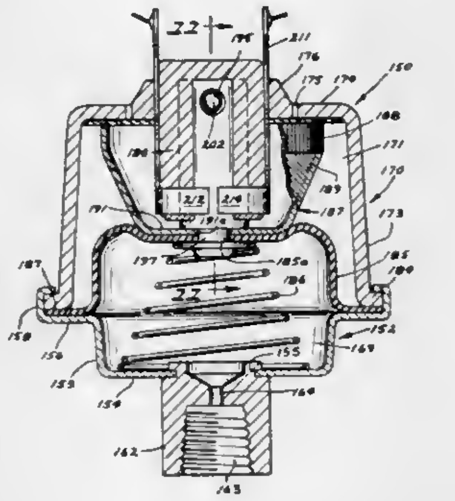
AIR FILTER RESTRICTION INDICATING DEVICE

Richard Donald Nelson, 711 River St., Decorah, Iowa 52101

Filed Nov. 7, 1974, Ser. No. 521,697

Int. Cl.² G08B *21/00*

U.S. Cl. 340—239 F **2 Claims**



1. An air filter restriction indicating device, having in combination

a housing having a top and bottom wall, and having an air filter in connection therewith,

an inverted upstanding cup-shaped diaphragm having an upwardly disposed end wall,

a flange secured about the open end portion of said diaphragm,

means securing said flange to said housing thereabout,

a flared cup shaped indicating member upstanding from said end wall of said diaphragm and secured thereto, said member bearing indicia upon its outer wall indicating the condition of restriction of said filter,

apertures through said housing at one side of said diaphragm for communication of said indicating member with the atmosphere,

a passage at the other side of said diaphragm through said housing communicating with the air stream passing from said air filter to an internal engine,

a tapered helical coil spring upstanding from the bottom wall of said housing holding said diaphragm in upward extended position,

said coil spring being arranged to have a compressive force representing the differential between atmospheric pressure and the partial vacuum drawn by said air stream on the other side of said diaphragm with the air filter being in a normally clean operating condition,

a cylindrical boss extending downwardly into said indicating member from the top wall of said housing,

a guide member upstanding within and secured to said indicating member freely moveable axially within said boss, and

said housing being transparent to disclose said indicating member to show the progressive degree of restriction in said air filter and to indicate when said air filter requires replacement.

3,939,458

METHOD FOR THE TABULATOR-LIKE ILLUSTRATION OF SYMBOLS

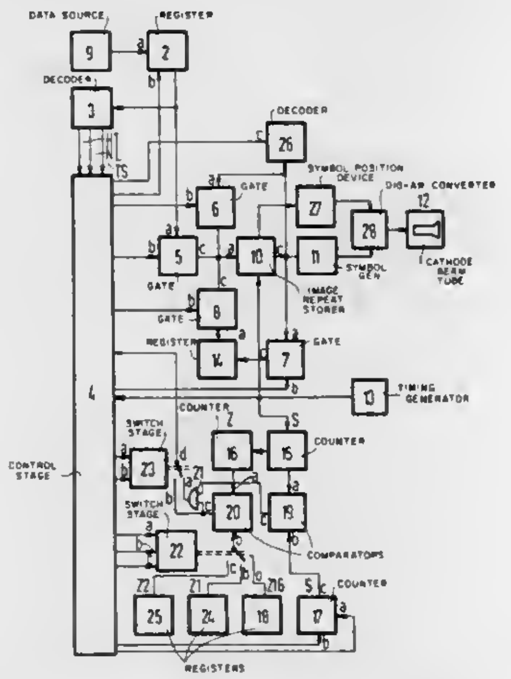
Rudolf Kuntze, Otterfing, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 7, 1974, Ser. No. 431,420

Claims priority, application Germany, Jan. 10, 1973, 2301104

Int. Cl.² G06F *3/14*

U.S. Cl. 340—324 A **13 Claims**



1. A method for the display of symbols, in tabulated form, on the screen of a data-video device whereby symbol words, corresponding to the symbols, are released by a data source, and display of the symbols effected by utilization of an image repetition store and a symbol generator, comprising the successive steps of:

I. inserting a writing mark word from the data source in the image repetition store and displaying a writing mark corresponding to the writing mark word upon the picture screen,

II. inserting an order word tabulator set from the data source in the form of a tabulator word, into that cell of the image repetition store in which the previously inserted writing mark word was stored,

III. continuously supplying data from the picture repetition store to the symbol generator whereby the latter provides symbols and a tabulator mark corresponding to the tabulator word, to the picture screen for display thereon,

IV. feeding an order word tabulator advance from the data source, and with utilization of a decoded ascertaining the location in the image repetition store of the next tabulator mark, and thereafter displaying a writing mark in the corresponding column so ascertained.

3,939,459

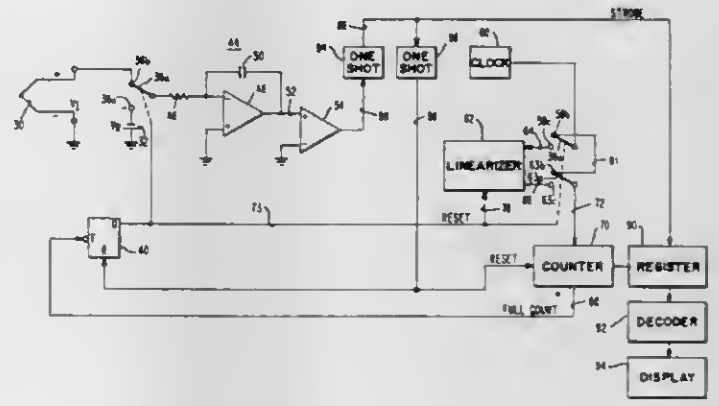
DIGITAL SIGNAL LINEARIZER

Howard S. Hoopes, Hatfield, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Jan. 9, 1974, Ser. No. 432,130

Int. Cl.² H03K *13/02, 13/20*

U.S. Cl. 340—347 NT **2 Claims**



1. A digital signal linearizer comprising:

a programmable pulse rate multiplier for receiving an input pulse train whose total pulse count represents the value of a particular variable and has a non-linear relationship to the value of said variable, said multiplier being operable in accordance with a control signal to produce from said input pulse train an output pulse train at an instantaneous pulse rate which is a predetermined multiple of the instantaneous pulse rate of said input pulse train, and

a counter-decoder operable to count the pulses of said input train and supply in response to the progression of said count through successive predetermined ranges to the total count a control signal for each of said ranges for programming said multiplier to provide over each of the ranges a predetermined linear relationship between the number of pulses supplied to the output train and the corresponding change in value of said variable, said counter-decoder including:

a first resettable binary counter for counting the pulses of said input pulse train and for producing on the output lines from its separate stages binary states representing the selectable spans of said successive ranges following the reset of said first counter,

gating means for selectively gating signals from said output lines in response to gating signals to select said successive ranges,

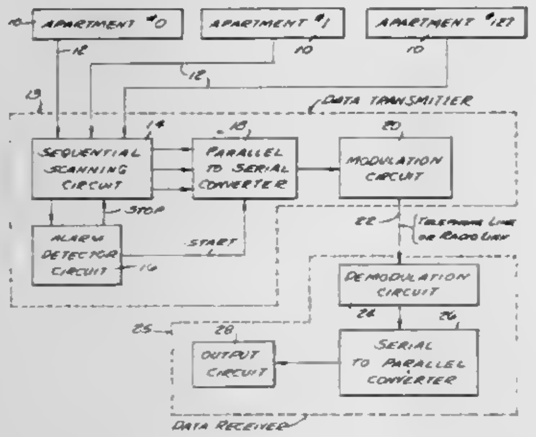
a second binary counter reset simultaneously with said first counter and operable to count said gated signals for producing on the output lines from its separate stages a binary address indicative of the count of the number of said successive ranges following reset passed by the input pulse train, and

decoding means connected to the output lines of said second counter and responsive to said binary address to produce said gating signal on output lines to said gating means for selecting said successive ranges and to produce said control signal for each of said successive ranges as required to establish the necessary multiple for said pulse rate multiplier to provide said desired predetermined linear relationships over each of said ranges.

3,939,460
SECURITY ALARM SYSTEM

Barry N. Horn, Milwaukee, Wis.; Richard S. Swain, Des Plaines, Ill., and Richard C. Rice, Milwaukee, Wis., assignors to Barry N. Horn, Milwaukee, Wis.

Filed Apr. 24, 1974, Ser. No. 463,713
Int. Cl.^{2} G08B *25/00, 26/00*
U.S. Cl. 340—408 7 Claims

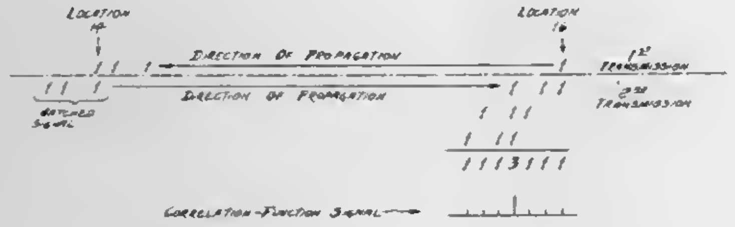


1. A security alarm system comprising a plurality of alarm conductors each wired to corresponding premises, a sequential scanning circuit coupled to said alarm conductors for sequentially scanning the same, an alarm detector circuit coupled to the output of said sequential scanning circuit and operable to detect an alarm condition on said alarm conductors as they are scanned, a parallel to serial converter coupled to said sequential scanning circuit, means for initiating the operation of said parallel to serial converter when an alarm condition is detected on one of said alarm conductors, means for transmitting the output of said parallel to serial converter to a remote location, means in said remote location for receiving the transmitted data, a serial to parallel converter in said remote location for translating the received data from serial to parallel form, and an output circuit coupled to the output of said serial to parallel converter for utilizing the received data, said transmitting means including a voltage controlled oscillator coupled to the output of said parallel to serial converter, and further comprising a frequency divider counter coupled to the output of said voltage controlled oscillator, the output of said frequency divider counter being coupled to said parallel to serial converter and serving as clock pulses therefor.

3,939,461
CORRELATION SYSTEM USING MATCHED SIGNALS

Antares Parvulescu, Hastings-on-Hudson, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 19, 1962, Ser. No. 238,810
Int. Cl.^{2} H04B *11/00*; G01S *9/66*
U.S. Cl. 340—3 R 10 Claims



1. A method for reconstituting a signal which must be propagated between two points in a bounded physical medium so that an approximation of said signal is recoverable comprising the steps of:

propagating said signal from one point to another point within said bounded medium;

receiving the propagated signal at said other point;

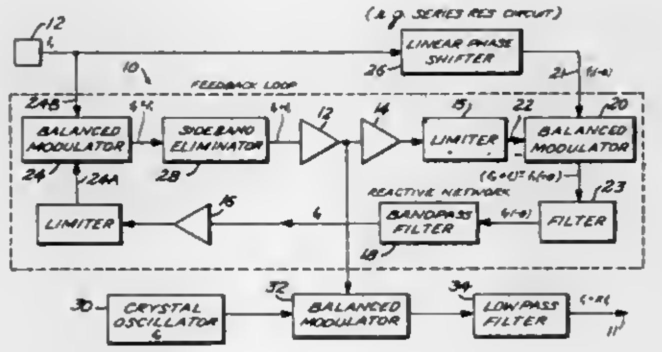
reversing said received signal with respect to time so that it constitutes a signal matched to the characteristic response of the bounded medium between said two points; and

propagating said matched signal through said bounded physical medium from one of said points when a signal approximating said originally propagated signal is desired at the other of said points.

3,939,462
DOPPLERIZING A SIGNAL OF VARYING FREQUENCY

Claude C. Routh, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 28, 1966, Ser. No. 605,498
Int. Cl.^{2} G01S *9/66*; G09B *9/00*
U.S. Cl. 340—3 E 1 Claim



1. A transponder for shifting all frequency components of signal frequency, f_i, by a factor K, to simulate a true doppler frequency shift in a complex signal, said transponder comprising;

means for receiving said signal, f_i,

a closed loop comprising an amplifier with a feedback circuit, the gain of said amplifier being sufficient to generate self-sustained oscillations in the loop,

said loop including a first balanced modulator, a second balanced modulator, a band pass filter, and two side band selector means connected, respectively, in the outputs of said modulators for selecting one side band at the output of each of said modulators,

said band pass filter having a center resonant frequency, f_r, and having an extended substantially linear phase-frequency characteristic extending above and below the zero phase at said resonant frequency,

a linear phase shifter,

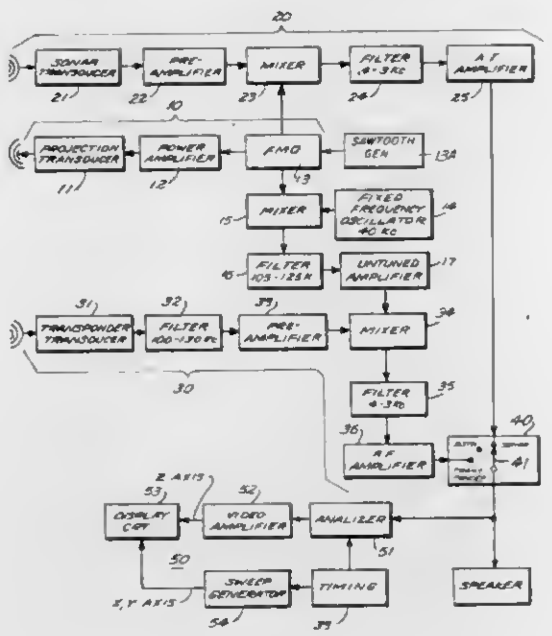
means for applying said signal, respectively, to said first balanced modulator, and to said second balanced modulator, the signal circuit to said second modulator including said linear phase shifter so that the phase of the selected side band at the output of said second modulator shifts as the frequency f_i shifts, so that the reactive network of said band pass filter will shift the frequency of oscillation, f_r, of said loop as the frequency of said input signal f_i is shifted to kf_i, and

means for extracting the frequency $f_i + kf_i$ in said loop comprising a fixed frequency oscillator of frequency f_o equal to said center frequency, f_r, of the band pass filter and means for adding said f_o to $f_r + f_i$ in said loop to yield true doppler frequency shift, $f_i + kf_i$.

3,939,463
ACOUSTIC TRANSPONDER NAVIGATION SYSTEM

Neil C. Kelly; Robert L. McFarland, both of San Diego, and Jack W. Sampsell, National City, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 5, 1964, Ser. No. 342,833
Int. Cl.^{2} G01S 9/68
U.S. Cl. 340—3 E 1 Claim



1. In combination in an acoustic obstacle detection and navigating system;

a transmitting station comprising a variable frequency oscillator, a sawtooth generator coupled to said oscillator for sweeping the frequency of oscillations through the range of frequencies from f_1 to f_2, a submersible projection transducer coupled to said oscillator for continuously ensonifying a sector of water about said transducer with sonic energy varying between f_1 and f_2,

a fixed frequency oscillator of frequency f_3 at said station,

a sonar receiver at said station including a mixer for combining the frequencies f_1 to f_2 of said oscillator with the echo frequencies reflected from a passive target, so that the difference at any instant between the reflected frequency and the transmitted frequency is a frequency proportional to the rate of change of said variable frequency and target range,

a remote transponder station including a receiving hydrophone coupled to a transmitting transducer, a mixer coupled between said hydrophone and transmitting transducer, a local oscillator of fixed frequency, f_3, coupled to said mixer for shifting received frequencies from the range of f_1 to f_2, to the range of $f_1 + f_3$ to $f_2 + f_3$, and

a second receiver at said transmitting station including a mixer for combining signals repeated from said remote transponder with the frequencies, f_1 to f_2 of said variable oscillator displaced by the frequency f_3, of said fixed frequency oscillator, and a common display for both mentioned receivers.

3,939,464
COAXIAL CABLE SENSOR MOUNTING

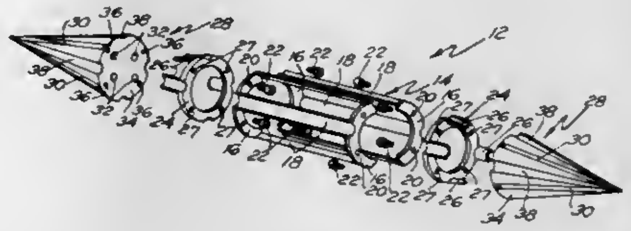
Richard C. Swenson, North Stonington, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 4, 1974, Ser. No. 520,501
Int. Cl.^{2} H04R *1/44*
U.S. Cl. 340—4 R 8 Claims

1. A sensor mount comprising:

a sensor cage having a cylindrical shape with a split ring at both ends and a plurality of grooved strongbacks connected there between; and

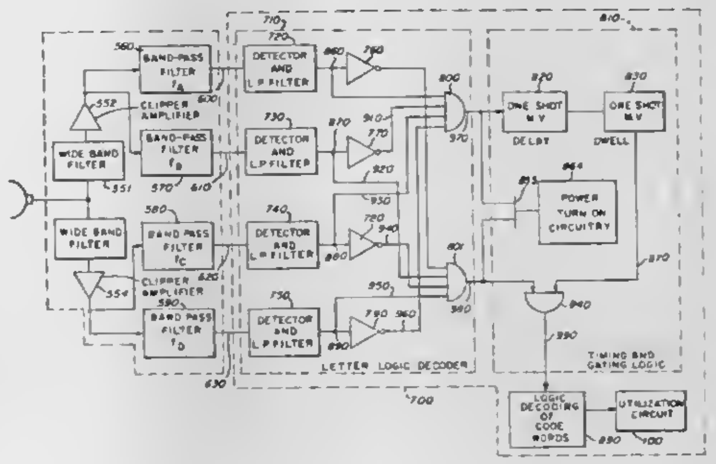
conically shaped flexible fairings connected at both ends of said sensor cage and each of said fairings having grooves aligned with the strongback grooves and at least one additional groove having an aperture at the base of said fairing.



3,939,465
REMOTE UNDERWATER DEVICE ACTIVATING SYSTEM

Robert A. Helton; George M. Walsh, both of Middletown, and Allan P. Alarie, Barrington, all of R.I., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 824,477, May 14, 1969, abandoned. This application June 15, 1970, Ser. No. 48,891
Int. Cl.^{2} H04B *11/00*
U.S. Cl. 340—5 R 5 Claims



1. Apparatus for activating a submerged device, the apparatus comprising:

detecting means responsive to incident acoustic waves which communicate a succession of signal pulses for detecting said signal pulses to provide signal indications of the presence or absence of predetermined frequencies therein;

a logic arrangement coupled to said detecting means for the coding only those signal indications manifesting a joint presence of certain preselected frequencies and the absence of other preselected frequencies, said logic arrangement further including means responsive to successive decoded signal indications, said logic arrangement including a delay means and a gate responsive to said delay means to permit activation of said submerged device only if a second one of said signal indications occurs a predetermined time after the occurence of a first one of said signal indications; and

said detecting means further comprising a first wideband filter for passing a first of said present preselected frequencies and a second wide band filter for passing a second of said present preselected frequencies, and a first and a second limiting means coupled respectively to said first wide-band filter and said second wide-band filter, the output of said first limiting means being coupled to a pair of band-pass filters tuned to a pair of said preselected frequencies, said second limiting means being coupled to a second pair of band-pass filters tuned to a second pair of frequencies of said preselected frequencies.

3,939,466

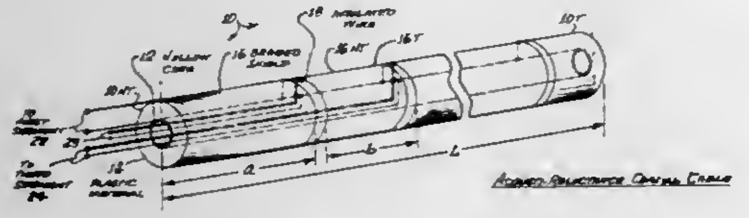
SPATIALLY DISTRIBUTED TRANSDUCER FOR TOWED LINE ARRAY APPLICATIONS

Tibor G. Horwath, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 24, 1975, Ser. No. 543,749

Int. Cl.² G01V *1/38, 1/16*

U.S. Cl. 340—7 R **6 Claims**



1. A coaxial cable, suitable for use in a towed line array, with one end trailing in the water when in use, comprising:
  a central, flexible, hollow, metallic conductor;
  a magnetizable, plastic, material, which is azimuthally magnetized to saturation before being put into use, surrounding the central conductor;
  a segmented shield, consisting of N segments, surrounding the magnetic material, one end, which corresponds to the trailing end of the cable, of each segment being connected to the central conductor, which serves as a common ground, the other end of each segment being connected to an insulated lead which is fed through the hollow central conductor to the non-trailing end of the cable;
  the central conductor, the magnetized material and the segmented shield forming a linear series of spatially distributed pressure-to-magnetic transducers;
  with the result that variations in pressure, for example due to an acoustic signal, along the cable, may be measured, for example by a spectrum analyzer.

3,939,467

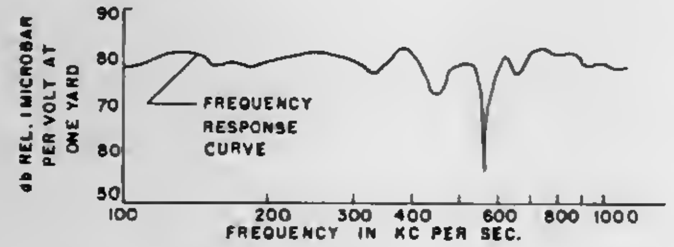
TRANSDUCER

Rufus L. Cook, and Henry L. Warner, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 8, 1974, Ser. No. 458,960

Int. Cl.² H04B *13/00*

U.S. Cl. 340—8 R **1 Claim**



1. A tunable electroacoustical transducer system adapted for broadcasting acoustical energy to and receiving acoustical energy from an aqueous environmental medium, comprising in combination:
  a plurality of piezoelectric posts, each of which has an active forward end face for broadcasting and receiving acoustical energy to and from the aforesaid aqueous environmental medium, each of which has a rearward end, each of which is spatially disposed from adjacent ones thereof, and all of which are disposed in a single row of predetermined configuration with predetermined successively decreasing lengths from one end of said row to the other;
  a piezoelectric spine, with the forward end thereof integrally connected to the rearward end of each of said piezoelectric posts;
  a pair of electrodes connected to predetermined surfaces of said plurality of piezoelectric posts and said piezoelectric spine for receiving electrical energy therefrom and supplying electrical energy thereto;
  a plastic support member having a slot therein within which said single row of piezoelectric posts, and piezoelectric spine, and said pair of electrodes are contained in such manner that the forward active end faces of said piezoelectric posts face outwardly therefrom and that said piezoelectric spine is located adjacent to but spatially disposed from the inner end of said slot;
  a predetermined backing-loading plate dispose in abutment with the rearward end of the aforesaid spine;
  a balsa wood frame disposed between the inside surface of the slot of said plastic support member and the outside of predetermined ones of those surfaces of said piezoelectric spine and posts consisting of the effectively inactive surfaces thereof, the rearward surface of said predetermined backing-loading plate, and the effective outside surfaces of said pair of electrodes;
  encasement means having a wall of predetermined geometrical configuration with an elongated aperture located therein, with said encasement means surrounding the aforesaid plastic support in such manner that the aforesaid aperture thereof is located adjacent to the active forward end faces of said plurality of piezoelectric posts;
  an acoustically clear plate means located within the end of and connected to said balsa wood frame in contiguous disposition with the active forward end faces of said plurality of piezoelectric posts for passing acoustical energy therethrough;
  means connected to said encasement means for the mounting thereof on a predetermined platform;
  a plurality of acoustically opaque shutters hinged to said encasement means in such manner that each one thereof may be rotated to effect the closure of predetermined portions of the aforesaid elongated aperture, thereby effectively inactivating predetermined ones of said single row of piezoelectric posts while permitting activation of the remaining ones thereof;
  means connected to said plurality of acoustically opaque shutters for effecting the rotation thereof in such manner as to cause the timely opening and closing of predetermined portions of the aforesaid elongated aperture in accordance with a predetermined program, so as to permit the playing of the aforesaid tunable electroacoustical transducer system in accordance with said predetermined program; and
  a sonar system connected to said pair of electrodes.

3,939,468

DIFFERENTIAL CHARGE AMPLIFIER FOR MARINE SEISMIC APPLICATIONS

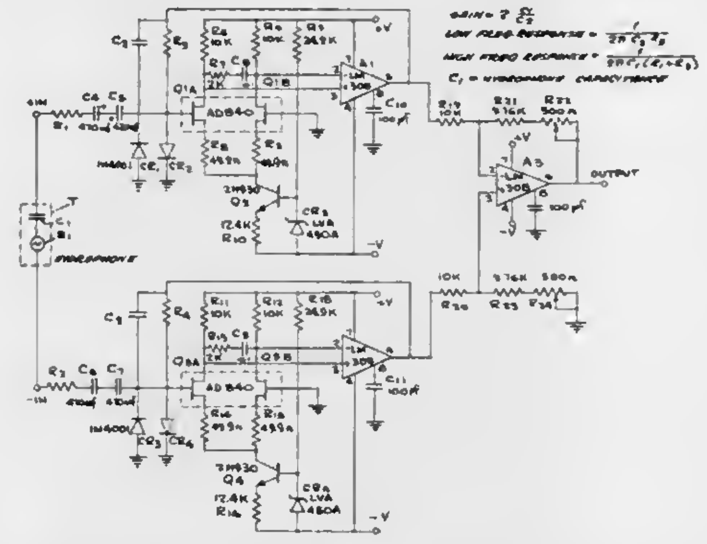
Robert H. Mastin, Dallas, Tex., assignor to Whitehall Corporation, Richardson, Tex.

Filed Jan. 8, 1974, Ser. No. 431,723

Int. Cl.² G01V *1/00*

U.S. Cl. 340—7 **29 Claims**

1. A marine hydrophone assembly for an elongated streamer designed to be towed underwater for passive underwater sound detection of acoustic pressure variations and the like, comprising a marine hydrophone of the capacitive transducer type responsive to varying acoustic pressure to produce a varying electrical charge output that is proportional to the acoustic pressure to which the hydrophone is subjected, an electrical conductor pair connected to the hydrophone to conduct the output from the hydrophone to signal processing equipment spaced therefrom, and a differential charge amplifier connected to the pair of conductors to respond to the varying electrical charge output from the hydrophone and produce amplified output voltage signals representative of said varying electric charge output, the differential charge amplifier comprising a pair of amplifier circuits each having negative and positive polarity inputs and an output arranged to form a pair of charge amplifier stages, each including a paralleled resistance-capacitance combination connected from the outputs of each of the respective amplifier circuits to the respective negative input thereof forming negative feedback circuits having equal capacitance to keep the two inputs of each respective amplifier circuit at the same potential, means connecting the pair of conductors respectively to the negative polarity inputs of the two respective amplifiers to feed said varying electric charge output thereto, and a differential amplifier having negative and positive polarity inputs and means connecting the outputs from said two charge amplifiers to said last-mentioned inputs for cancelling common mode signals appearing at the negative polarity inputs of said two charge amplifiers.



3,939,469

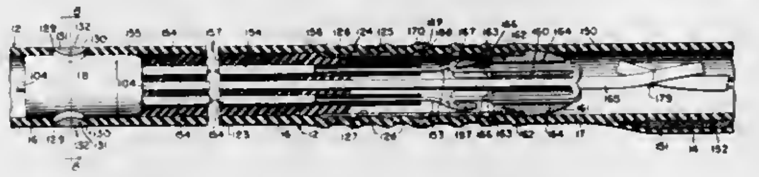
DETECTION STREAMER

Robert H. Park, Bernardsville, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 526,624, March 15, 1944. This application Dec. 29, 1944, Ser. No. 570,227

Int. Cl.² G01V *1/38*

U.S. Cl. 340—10 **4 Claims**



2. In combination with an air-filled flexible tube having two diametrically disposed wall portions adapted to transmit vibrations and sealed at both ends whereby it may be immersed in water, a hydrophone having a substantially uniform dumbbell shaped response pattern, comprising a rigid sleeve member within said flexible tube and arranged to support a portion of said tube throughout its circumference, said rigid sleeve member having two diametrically disposed openings adjacent said vibration transmitting portions of said tube, a substantially moisture-proof housing formed integrally with said sleeve member and extended thereacross between said two openings therein, piezo-electric crystal element means disposed within said substantially moisture-proof housing with both the signal sensitive end faces thereof respectively arranged in predetermined spaced relation with respect to the vibration transmitting wall portions of said tube, resilient means for mounting said piezo-electric element means within said housing without introducing variations in the transverse static loading thereof, resilient means secured to the housing and to said mounting means for maintaining the crystal element means in said predetermined spaced relation with respect to said wall portions of the tube, and a quantity of vibration transmitting liquid therein which has the same acoustic impedance as the surrounding water and which fills said housing for coupling the pressure sensitive ends of said crystal element means to said vibration transmitting portions of said flexible tube, said vibration transmitting liquid being inserted in the housing under pressure which exceeds the pressure of the air in said tube thereby to prevent air pockets in said liquid and to avoid azimuthal variations in the dumb-bell shaped response pattern of the hydrophone.

3,939,470

LIQUID LEVEL DETECTING AND INDICATING SYSTEM FOR VEHICLE

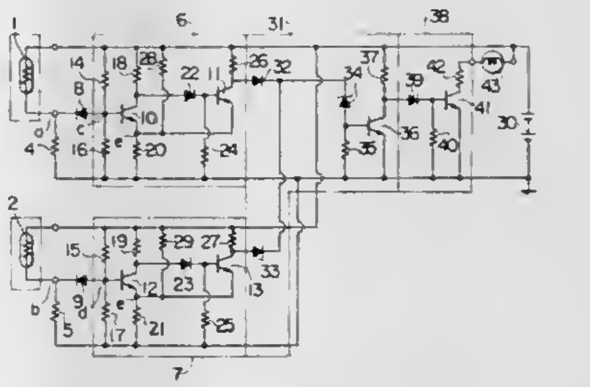
Hiroshi Arai; Jun Ohta, both of Toyota; Koichi Taniguchi; Yasuhiko Sakurai, both of Kariya, and Toshikazu Ohtake, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Feb. 5, 1974, Ser. No. 439,770

Claims priority, application Japan, Feb. 8, 1973, 48-15879

Int. Cl.² G08B *21/00*

U.S. Cl. 340—59 **7 Claims**



1. A liquid level detecting and indicating system for a vehicle having a liquid container comprising a pair of liquid level detecting elements arranged spaced apart in opposite positions on a detecting level of a liquid in said liquid container and along a straight line inclined with respect to the direction of movement of said vehicle, circuit means for generating an output signal when each of said liquid level detecting elements generates a signal indicating that the level of said liquid in said liquid container has dropped below said detecting liquid level, and an indicator actuated by said output signal from said circuit means.

3,939,471

LIQUID LEVEL TAMPER ALARM

Vernon B. Momberg, 113 Third St., Hood River, Oreg. 97031

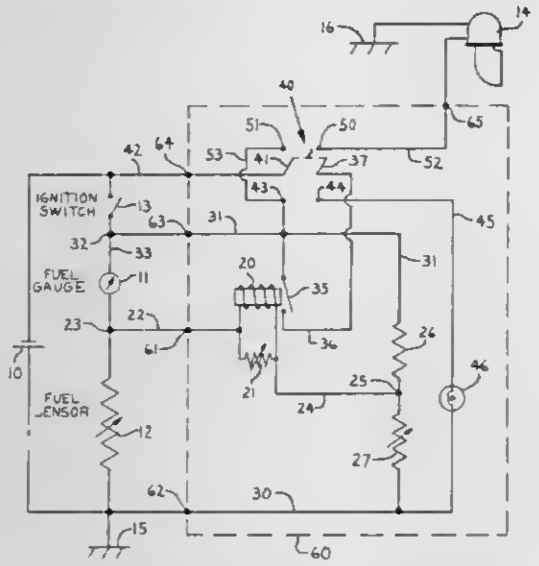
Filed Apr. 26, 1974, Ser. No. 464,499

Int. Cl.² B60Q *1/00*

U.S. Cl. 340—59 **5 Claims**

1. In a vehicle having a liquid fuel tank containing a variable resistance depth gauge transducer, an electric fuel gauge, an ignition switch, an electric traffic warning horn, and a battery, said transducer, fuel gauge and ignition switch being connected in series circuit across said battery; the improvement comprising a fixed resistance and an adjustable resistance connected in series between a terminal of said transducer which is connected to one terminal of said battery and a terminal of said fuel gauge which is connected to said ignition switch, a relay having one terminal connected between said fixed and adjustable resistances and another terminal connected between said transducer and fuel gauge to form a

bridge circuit which may be balanced by said adjustable resistance at any existing quiescent fuel level to maintain said relay normally deenergized and wherein any upward or downward movement of the fuel level will change the resistance of said transducer to unbalance said bridge circuit and energize said relay, and circuit means operable by energization of said relay to sound said horn, a signal lamp arranged to indicate a balanced or unbalanced condition of said bridge circuit; said circuit means comprising a relay switch which is closed by energization of said relay, and a three position manual switch, said manual switch having an open position disconnecting both said horn and said signal lamp to prevent the energization thereof, said manual switch having a first closed position connecting said signal lamp in series with said relay switch to energize said lamp when said relay switch is closed, and said manual switch having a second closed position connecting said horn in series with said relay switch to energize said horn when said relay switch is closed.



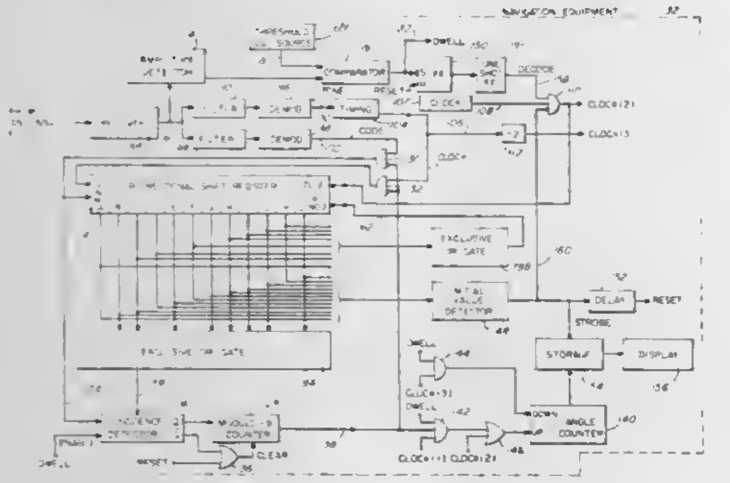
3,939,472
CODED NAVIGATION SYSTEM

Herbert L. Groginsky, Wellesley, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 280,320, Aug. 14, 1972, Pat. No. 3,818,478. This application Apr. 3, 1974, Ser. No. 457,539

Int. Cl.^{2} G06F *11/00;* G01S *1/16*

U.S. Cl. 340—146.1 R 4 Claims



1. In combination:

means for providing a sequence of signals;

means coupled to said sequence providing means and responsive to signals of said sequence for forming an additional signal;

a source of position data;

means, synchronized with said source of position data and coupled to said sequence providing means, for inserting said additional signal at an end of said sequence to provide a longer sequence;

means coupled to said sequence providing means and responsive to signals of a subsequence of said longer sequence for establishing the value of a signal external to said subsequence but contained within said longer sequence; and

means for replacing a signal of said subsequence with said signal which is external to said subsequence to recover said original sequence.

3,939,473
PROCESS FOR CORRECTING SIGNAL DISTORTIONS

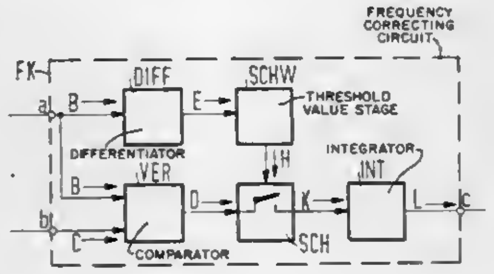
Ernst Alfred Fuchs, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 18, 1974, Ser. No. 462,025

Claims priority, application Germany, May 21, 1973, 2325765

Int. Cl.^{2} H03K *5/18;* H04L *1/00*

U.S. Cl. 340—146.1 R 6 Claims



1. A method for correcting signal distortions occurring in frequency-modulated data signals by deriving a rectangular binary signal from a defective demodulated signal using a correction signal, comprising the steps of:

differentiating the corrected demodulated signal to form a differential signal having zero transitions coinciding with the extreme values of the corrected demodulated signal,

forming a difference signal having amplitudes equal to the amplitude difference between the rectangular binary signal and the corrected demodulated signal at points in time coinciding with the time regions of the zero transitions of the differentiated signal and

producing said correcting signal from those components of said difference signal which occur at said points in time.

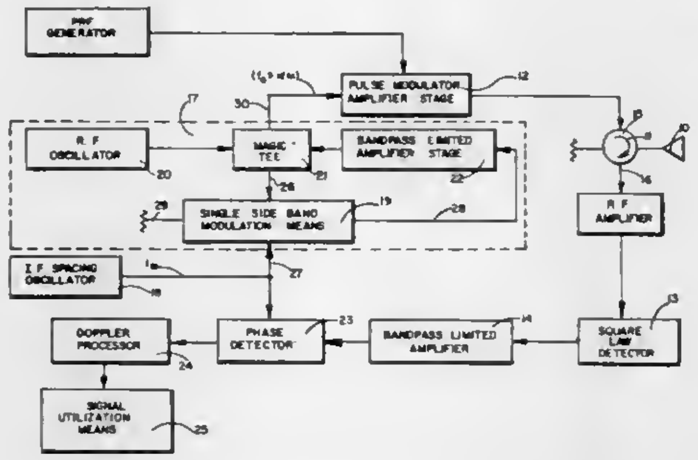
3,939,474
FULLY-COHERENT MULTIPLE FREQUENCY RADAR SYSTEM

Donald D. Coleman, Garden Grove, and Raymond F. Racine, Orange, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sept. 20, 1965, Ser. No. 488,560

Int. Cl.^{2} G01S *9/42*

U.S. Cl. 343—7.7 10 Claims



1. The combination comprising

a system for transmitting a plurality of mutually coherent frequencies uniformly spaced apart in frequency by a preselected spacing frequency and for receiving echoes of said transmitted frequencies, and having a spacing frequency oscillator for generating said spacing frequency; and

coherent signal processing means responsive to said oscillator of said system and the beat frequencies between received echoes for providing a phase-detected receiver signal.

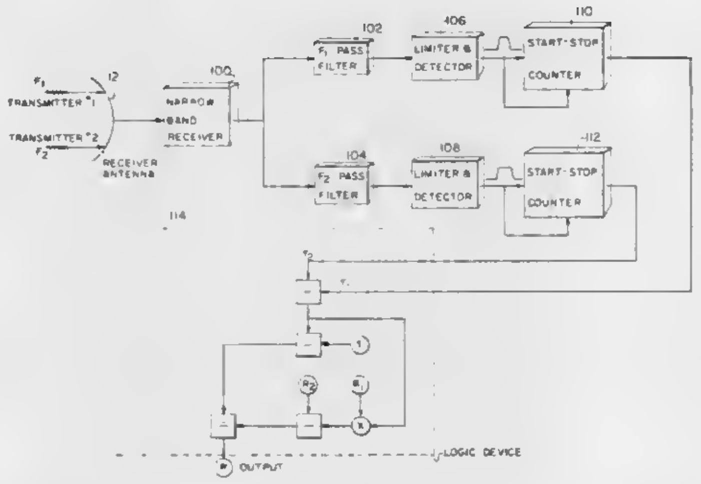
3,939,475
METHOD OF MEASURING RANGE WITH LARGE BISTATIC ANGLE RADAR

Bernard L. Lewis, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 11, 1974, Ser. No. 514,047

Int. Cl.^{2} G01S *9/37*

U.S. Cl. 343—12 R 3 Claims



1. A large bistatic-angle radar system for determining the distance, R, of a target from a receiving means comprising:

first and second transmitting means each adapted to transmit a radar signal of essentially the same frequency;

said receiving means receiving and separately processing target forward-scattered signals from said first and second transmitting means, and for measuring the time durations T_1 and T_2 during which each said respective forward-scattered signal is received at a signal strength greater than a predetermined level below its maximum received signal strength; and,

each said first and second transmitting means being spaced at a large bistatic-angle from said receiving means, said first transmitting means being spaced at a distance R_1 from said receiving means, and said second transmitting means being spaced at a distance R_2 from said receiving means wherein R_1 is greater than R_2;

whereby the distance R is computed from the equation

$$R=\frac{T_2R_1-T_1R_2}{T_2-T_1}$$

3,939,476
PASSIVE RANGING TAIL WARNING DEVICE

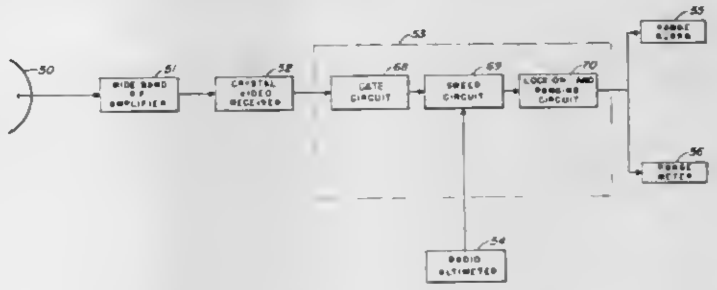
George W. Leopard, Rte. 1, Box 314C, Lexington Park, Md. 20653, and Kirby Hair, 9375 Knotte Ave., Anaheim, Calif. 92804

Filed May 19, 1959, Ser. No. 814,353

Int. Cl.^{2} G01S *9/04;* G08G *5/04*

U.S. Cl. 343—112 R 5 Claims

1. A system for passively measuring the range between a given point and a second point from which detectable radiations having distinguishable characteristics are emanating, comprising means for receiving at said given point direct radiations from said second point and indirect radiations from said second point which have been reflected from a reflecting surface, means for measuring the angle of elevation of said second point from said given point, means for measuring the altitude of said given point relative to said reflecting surface, a gate circuit for rejecting all direct signals which are not followed by a reflecting signal within a predetermined time span, and computing means for determining the range from said given point to said second point as a function of said direct and reflected signal, said angle of elevation, and said altitude of said given point.



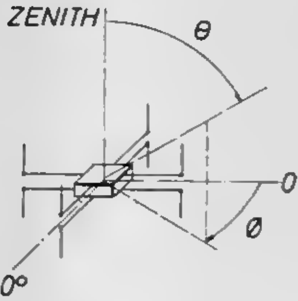
3,939,477
QUADRUPOLE ADCOCK DIRECTION FINDER AND ANTENNA THEREFOR

Terence C. Green; William G. Guion; Douglas N. Travers, and William M. Sherrill, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Apr. 6, 1973, Ser. No. 348,479

Int. Cl.^{2} G01S *5/04*

U.S. Cl. 343—113 R 39 Claims



1. An antenna system comprising a plurality of dipole elements arranged as an electric field sampling antenna system, wherein output signals of said dipole elements are summed into two groups such that the signal difference of said two groups forms a quadrupole azimuth response.

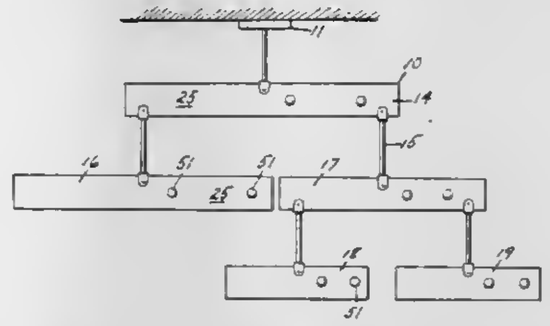
3,939,478
ILLUMINATED MOBILE CONSTRUCTION

Leonard G. Lorch, 115 Lafayette Place, Woodmere, N.Y. 11598

Filed July 5, 1974, Ser. No. 485,774

Int. Cl.^{2} H01Q *1/06*

U.S. Cl. 343—721 6 Claims



1. As a new article of manufacture, an illuminated mobile comprising: a plurality of generally planar mobile members,

one of said members having means for pendant attachment from a relatively fixed point, linkage means interconnecting said planar members for relative orbital movement about said point, at least some of said planar members being of laminated configuration, and including a medially disposed layer having electrically conductive circuit means thereon and means communicating with electrically conductive circuit means on at least one other of said planar mobile members, said last mentioned means being co-axially disposed with respect to a linkage means interconnecting to adjacent planar members.

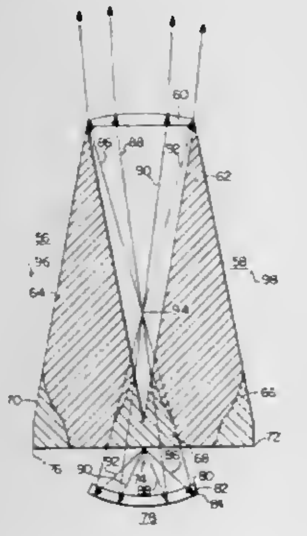
3,939,479
WAVEFRONT FLATTENER

Charles M. Redman, Las Cruces, N. Mex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 12, 1974, Ser. No. 487,948

Int. Cl.² H01Q *19/06*

U.S. Cl. 343—753 **1 Claim**



1. A wavefront flattener comprising:
an input surface,
an output surface parallel to said input surface,
said input surface and said output surface being dish shaped,
said input surface and said output surface comprising concentric rings of dielectric material,
said concentric rings having a high dielectric constant at the center thereof dropping to a low dielectric constant at the outermost rings, a reflective backing mounted on said output surface
whereby electromagnetic radiation is crowded into the center of said input and output surfaces to cause a flattening of a curved electromagnetic radiation wavefront.

3,939,480
LEVEL AND CROSS-LEVEL STABILIZATION TECHNIQUE FOR SEARCH RADAR ANTENNAS

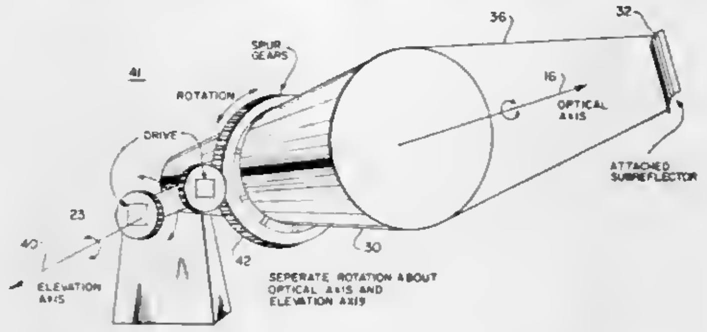
Bernard L. Lewis, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 17, 1974, Ser. No. 506,927

Int. Cl.² H01Q *3/12*

U.S. Cl. 343—761 **3 Claims**

1. A motion stabilized high-frequency antenna system comprising;
an antenna platform;
a high frequency antenna having a primary focusing structure moveable about both elevation and optical axes of said antenna, and a secondary focusing structure rigidly mounted on said antenna platform wherein said primary focusing structure is comprised of a high frequency feedhorn directed at an attached subreflector, said feed horn and subreflector movable in unison with respect to said secondary focusing structure;
means for sensing the position of said secondary focusing structure with respect to a desired position and for generating rotating means positioning signals proportional to the elevation axis and optical axis components of the position difference between said sensed position and said desired position, said optical axis positioning signal indicating a direction of motion opposite to said sensed position difference, and said elevation axis positioning signal indicating the same direction of motion as said sensed position difference; and
means connected to said sensing means for rotating said primary focusing structure separately and independently about said optical axis and said elevation axis of said antenna, whereby a change proportional to said sensed position difference as indicated by said positioning signals is produced in the position of said primary focusing structure.



3,939,481
FACSIMILE RECEIVER HAVING MOVABLE PRINTING BAR

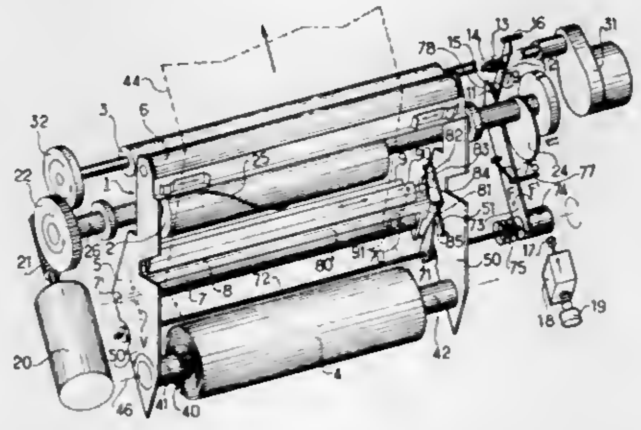
Jacques Mary, Bagneux, and Pierre Merillou, Grigny, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed July 30, 1974, Ser. No. 493,104

Claims priority, application France, Aug. 6, 1973, 73.28669

Int. Cl.² H04N *1/16;* **B41J** *3/20*

U.S. Cl. 346—74 E **4 Claims**



1. In a facsimile receiver including a printing bar and a rotatable drum carrying a printing helix adapted to cooperate with said printing bar to electrically print on a paper disposed therebetween, the improvement comprising printing bar support means for pivotably supporting said printing bar for movement from a rest position remote from said drum to an operative position where the printing bar bears on the helix, a control shaft mounted for axial rotation in parallel with said drum, a return lever mounted on said control shaft and bearing at one end against said printing bar support means so as to shift said printing bar support means to place said printing bar in its operative position upon rotation of said control shaft, bias means for normally biasing said printing bar support means to place said printing bar in its rest position, and control means responsive to rotation of said drum for rotating said control shaft, said control means including a cam mounted on the shaft of said drum for rotation therewith, a control lever mounted on said control shaft in the plane of said cam so as to be displaced by said cam from a standby position to a locking position upon rotation of said drum thereby rotating said control shaft to force said return lever against said printing bar support means to shift said printing bar to its operative position, locking means for locking said control lever in its locking position during the initial rotation of said cam, and means for normally biasing said control lever toward its standby position, said locking means including a locking lever carrying a locking finger disposed in the plane of said cam and being biased into a position in the path of movement of said control lever, the end of said control lever being provided with a nib so as to permit said locking finger to ride up over the end of said control lever only when said control lever moves from its standby position to its locking position in response to rotation of said cam, said locking finger preventing return movement of said control lever.

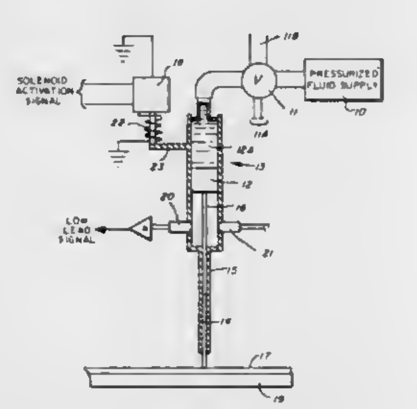
3,939,482
WRITING APPARATUS

William L. Cotter, P.O. Box 2045, Salem, Mass. 01970

Filed Mar. 28, 1974, Ser. No. 455,737

Int. Cl.² G01D *15/24*

U.S. Cl. 346—139 C **21 Claims**



1. An apparatus for writing or marking on a medium by means of an expendable piece of recording material said apparatus comprising;
means for retaining and guiding the piece of recording material having one end from which the piece of recording material is expelled,
movable means including means contacting the piece of recording material and means for selectively urging the contacting means,
means for commonly supporting said retaining means and movable means,
said means for selectively urging being operable to urge the contacting means against the recording material and to interrupt the urging force preparatory to retracting the piece,
and means for retracting the piece from contact with the medium comprising bidirectional means connecting to said supporting means and means for selectively operating said bidirectional means to move said supporting means and retaining means toward the medium and relative to the stationary piece to thereby cause the piece to be retracted into the retaining means, and to thereafter move said supporting means and retaining means away from the medium to retract the piece from contact with the medium.

3,939,483
SELF-PROCESSING CAMERA

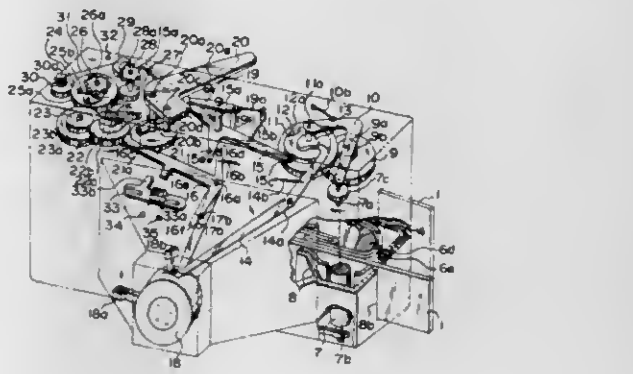
Yoshio Kuramoto, Toyonaka, and Hiroshi Ueda, Nara, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 12, 1974, Ser. No. 495,963

Claims priority, application Japan, Aug. 15, 1973, 48-90830; Aug. 15, 1973, 48-90831

Int. Cl.² G03B *17/50*

U.S. Cl. 354—83 **5 Claims**



1. A self processing camera having a shutter and an exposure station and adapted to receive a film magazine containing a plurality of self-processing film units arranged linearly and at equal spacing along a leader paper which is folded to stack said film units in superposed relation, each of said film units comprising an image recording unit, a processing fluid containing portion disposed at one side of said image recording unit, and a trap for excess processing fluid disposed on the other side of said image recording unit, said film magazine having an exposure frame which the top image recording unit is positioned to face, said film magazine also having a rotatable take-up reel to which one end of said leader paper is secured and said film magazine further having a guide member for guiding the leader paper and exposed film units; said self processing camera comprising:
means for mounting said film magazine in said camera with the exposure frame of said magazine in facing relation to the exposure station of said camera;
a rotating member adapted to rotate uni-directionally for rotating the take-up reel of said film magazine to wind said leader paper around said take-up reel in a direction to move the exposed top image recording unit to a developing position at the termination of exposure of the camera shutter;
means including a spring driven member and a drive spring for turning said rotating member;
means for operating said spring driven member in a direction to charge said drive spring;
means for restraining said spring driven member in its spring charged position thereof;
means for releasing said spring driven member from its restrained position in response to the termination of an exposure of the camera shutter to rotate said rotating member;
means for regulating the speed of said rotating member;
a roller rotatably mounted on said camera body and biased relative to the guide member of the film magazine so that said roller is rotated by the movement of the leader paper and the film unit by an amount proportional to the extent of advance of the leader paper through said roller and said guide member;
a cam member rotatable in response to the rotation of said roller;
means for bringing said restraining means to its restraining position when said cam member rotates to an extent which corresponds to the movement of the leader paper to completely discharge an exposed image recording unit.

3,939,484

SHUTTER COCKING AND RELEASE MEANS FOR PHOTOGRAPHIC APPARATUS WITH EXPANSIBLE HOUSING

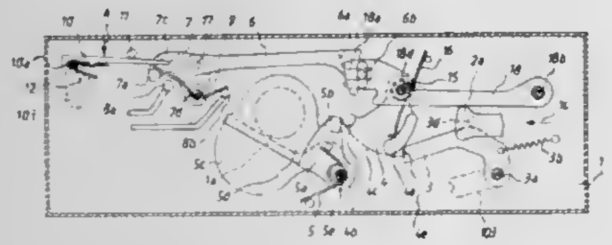
Alfred Winkler, Munich; Dieter Engelsmann, Unterhaching; Dieter Maas, Munich, and Rolf Schröder, Baldham, all of Germany, assignors to AGFA-Gevaert, AG, Leverkusen, Germany

Filed Sept. 23, 1974, Ser. No. 507,833

Claims priority, application Germany, Sept. 22, 1973, 7334432[U]

Int. Cl.² G03B *17/04, 17/38*

U.S. Cl. 354—187 **10 Claims**



1. In a photographic apparatus, a combination comprising a housing having a first section and a second section, said second section being reciprocable with respect to said first section between first and second positions; release means mounted in said first section and having a first member movable between starting and operative positions; a normally open shutter-actuating switch mounted in said first section; means for closing said switch, including a second member movable between starting and operative positions in which said switch is respectively open and closed, said second member being located in the path of movement of said first member at least when said second member assumes said starting position; and means for blocking the movement of at least one of said members while said second section assumes said first position, including a device which is movable by said second position and is arranged to move said one member to its respective starting position to thereby open said switch and to hold said one member against movement to the respective operative position when said second position assumes said first position but to permit the movement of said one member to the respective operative position in response to movement of said second section from said first to said second position so that each closing of said switch in response to movement of said first member from said starting to said operative position thereof must be preceded by a movement of said second section from said second to said first and back to said second position thereof.

3,939,485

MAGNETIC RECORDING AND/OR REPRODUCING SYSTEM

Shinji Amari, Hoya, and Takashi Masuda, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 18, 1975, Ser. No. 550,645

Claims priority, application Japan, Feb. 18, 1974, 49-19259

Int. Cl.² H04N *5/79*

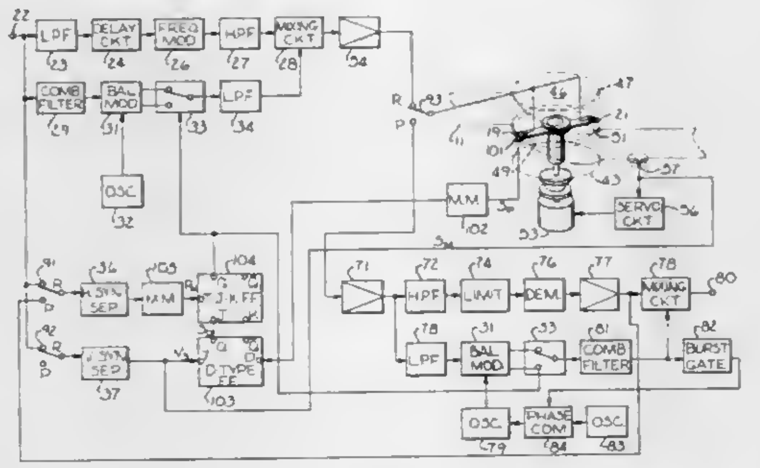
U.S. Cl. 358—4 **6 Claims**

1. In a system in which television signals comprising line intervals and field intervals are recorded on a recording medium by rotary transducer means, the television signal including chrominance components, the system including switching means to cause at least selected ones of the chrominance components to have one polarity in every line interval in alternate field intervals and to change from the one polarity to the opposite polarity at the end of selected line intervals of the remaining alternate field intervals, switch controlling means comprising:

A. a first flip-flop responsive to a first timing signal at the field repetition rate;

B. a signal generator to generate signals synchronous with rotation of the transducer means, said signal generator being connected to a control terminal of said flip-flop to control the polarity of the output signal therefrom to have a specific polarity during even fields and reverse polarity during odd fields;

C. a second flip-flop responsive to a second timing signal at the line repetition rate; and



D. a connection from an output terminal of said first flip-flop to a controlling input terminal of said second flip-flop to allow said second flip-flop to operate only during those alternate fields when the output signal of said first flip-flop has a predetermined one of said polarities, said second flip-flop having an output signal of predetermined polarity for the first line interval of each of the fields in which the second flip-flop operates.

3,939,486

CATHODE RAY TUBE HAVING INDEX STRIP ELECTRODE

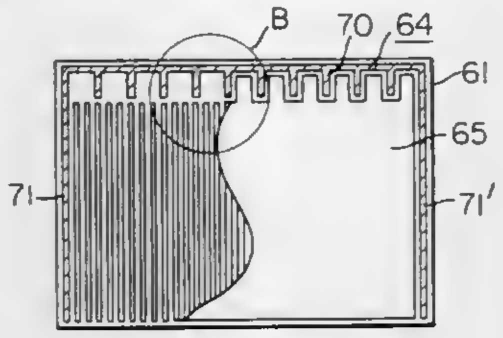
Kaoru Tomii, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 256,164, May 23, 1972, abandoned. This application July 19, 1974, Ser. No. 489,897

Claims priority, application Japan, May 26, 1971, 46-36536; Apr. 28, 1972, 47-42919

Int. Cl.² H04N *9/06, 9/22, 9/24*

U.S. Cl. 358—46 **14 Claims**



1. A color television camera tube comprising in combination: an evacuated envelope having a faceplate at one end thereof and an electron gun at the other end for emitting an electron beam toward said faceplate, a color filter on said faceplate and having recurrent groups of successively arranged vertically extending strips for passing light of different colors, a photoelectrical layer inwardly from said filter, means for scanning said electron beam in a horizontal direction, means for deflecting said beam in a vertical direction to scan a given rectangular area of said photoelectrical layer, a comb-like electrode disposed on said faceplate outside of said given rectangular area and adjacent to one horizontal edge of said scanned area and having a plurality of vertically extending, horizontally equally spaced apart teeth, and a pair of electrodes disposed within said scanned area and extending along the opposite vertical edges of said scanned area.

3,939,487

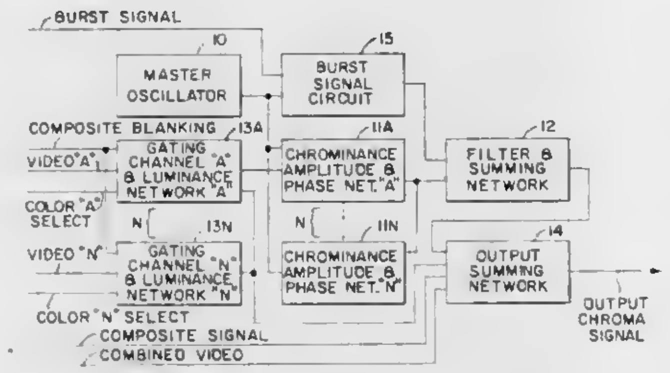
COLOR VIDEO SIGNAL GENERATORS

William Leventer, 18 Bruce Lane, East Northport, N.Y. 11731

Filed Oct. 5, 1973, Ser. No. 403,868

Int. Cl.² H04N *1/46, 9/02*

U.S. Cl. 358—81 **2 Claims**



1. Color video signal generating apparatus for providing video signals for TV transmission purposes, comprising:

means for providing a master square wave signal of at least 3,579,535 hertz to at most 3,579,555 hertz;

means responsive to said master signal for providing an intermediate signal being selectable between 0 or 180° phase;

means for providing a plurality of digital command signals;

a plurality of means, responsive to said master square wave signal, each for providing a chrominance signal having a predetermined amplitude and phase associated with a different predetermined color and including a resistive means responsive to said intermediate signal, an inverting logic element responsive to said intermediate signals, and a reactive impedance means responsive to the output of said inverting logic means and whose output is combined with the output of said resistive means;

a plurality of digital gating means, each corresponding to a different one of said chrominance signal means and responsive to said digital command signals, for selectively activating predetermined ones of said chrominance signal means, and each including means for providing a luminance signal having a preselected amplitude associated with a different predetermined color;

means for adjusting the amplitude of the combined output of said resistive means and reactive ampedance means to produce for each chrominance signal means a chrominance channel signal associated with a particular color;

means for combining the chrominance channel signals and for filtering said combined signal including an LC circuit tuned to 3,579,545 hertz for extracting the fundamental frequency of said combined chrominance channel signals; and

gating means responsive to a composite blanking signal, said master signal and a burst flag signal for providing a gated 3,579,545 hertz for combining with said combined chrominance channel signal.

3,939,488

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE AND RESULTING PRODUCT

Yoshiaki Wakashima, Kawasaki, and Hiroshi Suzuki, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan

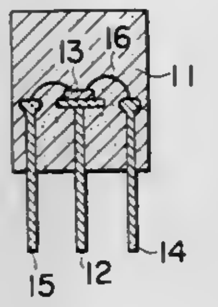
Filed Feb. 28, 1974, Ser. No. 446,792

Claims priority, application Japan, Feb. 28, 1973, 48-23209

Int. Cl.² H01L *29/34*

U.S. Cl. 357—72 **24 Claims**

1. A method for sealing a semiconductor device comprising covering a semiconductor element with a protective covering layer containing a metal-containing stabilizer which prevents the migration of mobile substances and mobile ions within the protective covering layer, said metal-containing stabilizer comprising a salt of an organic acid, an alcoholate, a phenolate or a mercaptide, the metal component of said metal-containing stabilizer being selected from the group consisting of Ca, Mg, Sr, Cd, Zn, Sn and Pb.



3,939,489

RECORDING AND REPRODUCING APPARATUS

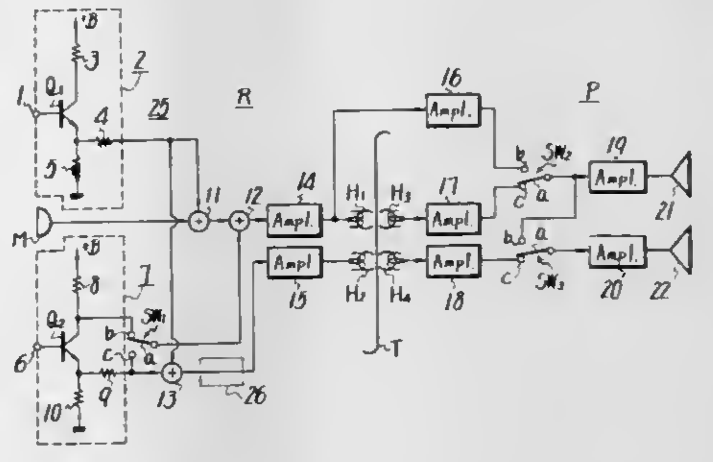
Norifumi Kawashima, Chigasaki; Kiyokazu Kamijima, Tachikawa, and Yoshiaki Yakeuchi, Ichikawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 26, 1974, Ser. No. 500,257

Claims priority, application Japan, Aug. 30, 1973, 48-101822

Int. Cl.² G11B *27/02*

U.S. Cl. 360—13 **20 Claims**



1. Recording and reproducing apparatus comprising:

means for supplying stereo signal components including a monaural signal component;

signal processing means for replacing said supplied monaural signal component included in said stereo signal components with a further monaural signal component;

first recording means for recording said processed stereo signal components including said further monaural signal component;

second recording means for recording said supplied stereo signal components including said supplied monaural signal component;

reproducing means for reproducing the recorded stereo signal components including said further monaural signal component and the recorded stereo signal components including said supplied monaural signal component; and

sound generating means coupled to said reproducing means for generating sounds corresponding to said respective reproduced signals.

3,939,490
APPARATUS FOR ASSEMBLING VIDEO SEQUENCES ON TAPE IN PHASE SYNCHRONIZATION

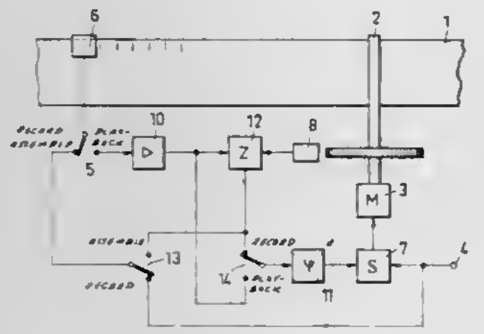
Christian Opelt, Bernbach, Germany, assignor to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Inh. Max Grundig, Furth, Bavaria, Germany

Filed Feb. 5, 1975, Ser. No. 547,265

Claims priority, application Germany, May 15, 1974, 2423489

Int. Cl.² H04N *5/795*

U.S. Cl. 360—14 **2 Claims**



1. Apparatus for recording and reproducing video signals on and from a magnetic tape respectively comprising one or more video heads rotating in a cylindrical drum surrounded helically by said video tape and comprising a fixed magnetic head to record or reproduce synchronizing signals on or from a longitudinal track of said magnetic tape; comprising further a tape transport mechanism to drive said tape at a constant speed, a motor of said tape transport mechanism, a servo mechanism to feed said motor, a tacho-generator coupled to said motor, a counter connected to the output of said tacho-generator, first and second inputs of said servo mechanism, adjustable phase shifting means with an output connected to said first input of said servo mechanism, a source of reference pulses connected to said second input of said servo mechanism to provide means to drive said servo mechanism at nominal tape speed; said tacho-generator producing at nominal tape speed pulses with a repetition rate surpassing the frequency of said reference pulses by a large fixed integer and the frequency of said tacho-generated pulses being divided in said counter by said same fixed integer; said servo mechanism comparing the frequencies of said first and second inputs and generating an error signal to minimize differences between nominal and actual tape speed; and switching means to provide normal record, playback and assemble modes of said apparatus whereby in the normal record mode said reference pulses are additionally fed to said fixed head and recorded thereby on said longitudinal track as synchronizing signals and the output of said counter is fed through said phase shifting means to said first input of said servo mechanism for comparison with said reference pulses in said servo mechanism; in the play back mode said synchronizing signals are reproduced by said fixed head from said longitudinal track and are fed through said phase shifting means to said first input of said servo mechanism and compared with said reference pulses in said servo mechanism, said phase shifting means being adjustable to the phase of said synchronizing pulses to provide the best tracking of said rotating video heads; said synchronizing pulses being additionally fed to said counter to set the phase of the divided tacho-generated pulses in said counter output; and in the assemble mode the preset output pulses of said counter are fed to said phase shifting means to said first input of said servo mechanism for comparison with said reference pulses in said servo mechanism and, at the same time, are fed to said fixed head and recorded there on said longitudinal track.

3,939,491
TAPE APPARATUS INCLUDING MEANS TO COUNT LENGTH-RELATED PULSES FOR VIDEO EDITING

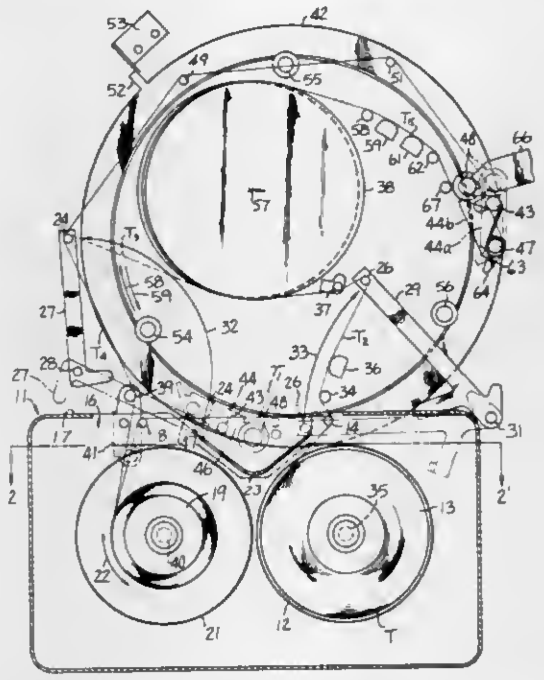
Yasuo Shigeta, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed July 24, 1974, Ser. No. 491,513

Claims priority, application Japan, Aug. 9, 1973, 48-89472

Int. Cl.² G11B *27/02, 27/30;* **H04N** *5/795*

U.S. Cl. 360—14 **17 Claims**



1. In video tape apparatus comprising a rotatable head drum, means for loading tape on said apparatus in a first position in which a loop of said tape is wrapped around a portion of said rotatable head drum and engages an arcuate surface of said drum, and means for moving said tape lengthwise along said loop at a controlled speed suitable for signal recording and playback when said tape is in said first position, the combination comprising:

A. means for loading said tape on said apparatus in a second position in which a shorter loop of said tape does not substantially engage said rotatable head drum;

B. means for moving said tape along its length at a higher speed than said controlled speed when said tape is in said second position;

C. timing pulse transducing means located adjacent said tape in said second position to generate pulses synchronous with tape synchronizing signals recorded on said tape; and

D. a counter for counting said pulses from said timing pulse transducing means.

3,939,492
LOCKING MECHANISM FOR CONTROL LEVER IN MAGNETIC TAPE RECORDER

Tekeshi Takeda, Iwaki, Japan, assignor to Alps Motorola Inc., Tokyo, Japan

Filed Dec. 18, 1974, Ser. No. 533,808

Claims priority, application Japan, Feb. 16, 1974, 49-18948

Int. Cl.² G11B *15/02*

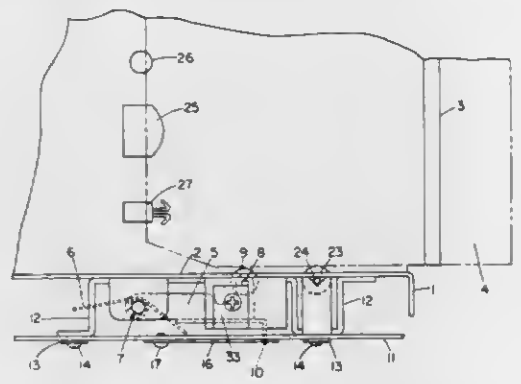
U.S. Cl. 360—61 **5 Claims**

1. A locking mechanism for a function control lever used in a magnetic tape recording/reproducing apparatus having a chassis with a cartridge receiving chamber adapted to receive a tape cartridge upon insertion of the cartridge therein, wherein the function control lever is operable in at least a first reproducing position and a second recording position, the locking mechanism including in combination:

at least first and second engageable portions on said function control lever corresponding to said first and second positions thereof, respectively;

a movable member mounted on said chassis adjacent the cartridge receiving chamber and including a cartridge engaging portion mounted thereon, said movable member being movable between a first position wherein said cartridge engaging portion is positioned inside the cartridge receiving chamber and a second position wherein said cartridge engaging portion is in engagement with a cartridge inserted in the cartridge receiving chamber and is substantially outside such chamber;

spring means on said chassis coupled with said movable member to bias said movable member from said second position to said first position; and



a control lever engaging portion mounted on said movable lever for movement therewith for engagement with whichever one of said first and second engageable portions of said function control lever is aligned therewith when said movable member is in said second position, whereby said function control lever is locked into whichever of said first and second positions it was in at the time said movable member moved from said first position to said second position, engaging portion being out of engagement with the engageable portions of said function control lever with said movable member in said first position.

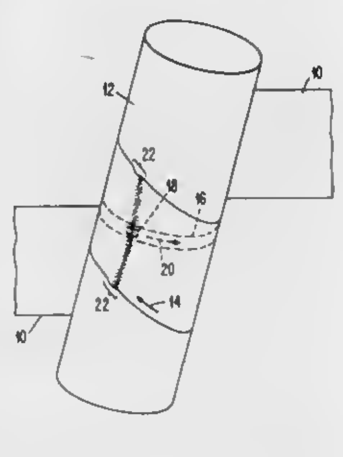
3,939,493
TAPE LIFTER

Thomas M. Fowler, Longmont; Harvey R. Fraser, Jr., and Francis E. Hauke, both of Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 30, 1974, Ser. No. 510,321

Int. Cl.² G11B *5/60*

U.S. Cl. 360—84 **12 Claims**



1. Apparatus for reducing wear on magnetic head and magnetic tape in a rotating-head tape recording device comprising:

mandrel means for supporting the tape along the arcuate path of the rotating head;

pneumatic means for generating an air flow locally about the head lifting the tape as the head rotates to avoid contact between head and tape when the head is not reading or writing information;

said mandrel means providing uniform support of tape as tape wraps said mandrel means except that additional support of tape due to air flow generated by said pneumatic means forms a chimney between the tape and said mandrel means;

said chimney conducts the additional air flow to the edge of the tape and travels with the rotating head lifting tape away from the head as the head passes under the tape.

3,939,494
RESILIENT TAPE GUIDE ASSEMBLY FOR TAPE RECORDING AND/OR REPRODUCING APPARATUS

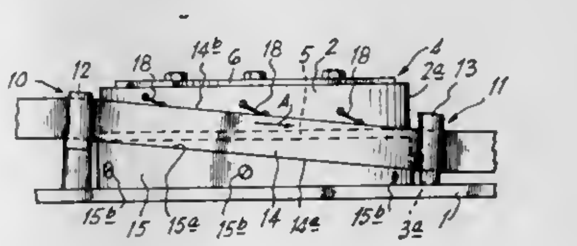
Shinji Okuda, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 20, 1974, Ser. No. 444,131

Claims priority, application Japan, Feb. 26, 1973, 48-24320[U]

Int. Cl.² G11B *15/60*

U.S. Cl. 360—84 **6 Claims**



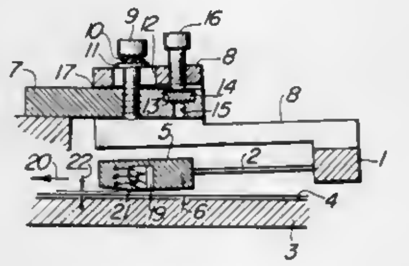
1. In a tape recording and/or reproducing apparatus having a tape guide drum with a circumferential slot, and at least one rotary transducer projecting through said slot for recording and/or reproducing signals on a tape running against the periphery of said drum in a path which extends about at least a portion of said periphery; a guide assembly for the tape on said drum comprising rigid guide means extending along said portion of the drum periphery and engageable by one longitudinal edge of the tape in said path for establishing the direction and location of said path, and a plurality of resilient elongated guide elements spaced apart along said portion of the drum periphery and having respective contact end portions individually acting yieldably against the other longitudinal edge of the tape at apaced apart locations along the latter in said path for holding the tape in contact with said rigid guide means while accommodating variations and changes in the width of said tape, each of said resilient guide elements including an anchoring end portion fixed relative to said drum, and an intermediate portion extending along the periphery of said drum from said anchoring end portion to said contact end portion and being inclined toward said path with said contact

end portion being resiliently swingable about an axis defined by said anchoring end portion.

3,939,495
METHOD FOR ADJUSTING THE ANGLE OF ATTACK OF A FLOATING MAGNETIC HEAD

Hiroshi Nagai, Chigasaki, and Yoshihiko Miyake, Odawara, both of Japan, assignors to Hitachi, Ltd., Japan
Filed Dec. 16, 1974, Ser. No. 533,024
Claims priority, application Japan, Dec. 19, 1973, 48-141309
Int. Cl.^{2} G11B *5/56, 5/60, 21/20*
U.S. Cl. 360—103 **6 Claims**

1. A method for adjusting the angle of attack of a floating magnetic head comprising selecting a speed of rotation of a magnetic member which is lower than the speed of rotation for normal operation of the magnetic member while the apparatus is in operation, rotating the magnetic member at approximately the preselected lower speed of rotation, and adjusting the angle of attack of the slider supporting the magnetic head so that the slider begins to float in the air approximately at the preselected lower speed of rotation of the magnetic member.

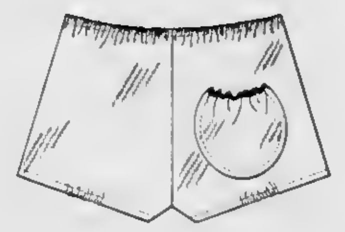


DESIGNS

FEBRUARY 17, 1976

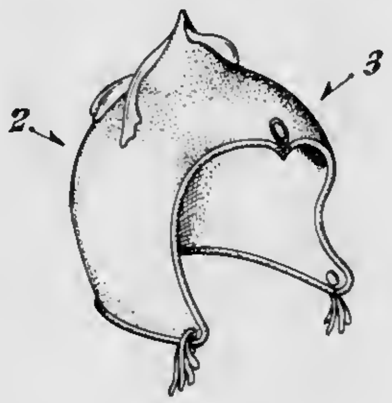
238,828
TENNIS SHORTS

Robert E. Reed, Woonsocket, R.I., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Jan. 14, 1974, Ser. No. 432,979
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—42



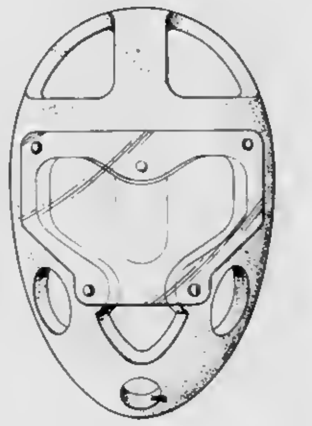
238,829
SAFETY HELMET

De Anna M. Breece, El Monte, Calif., (1336 Galway, Billings, Mont. 59101)
Filed Sept. 9, 1974, Ser. No. 504,037
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



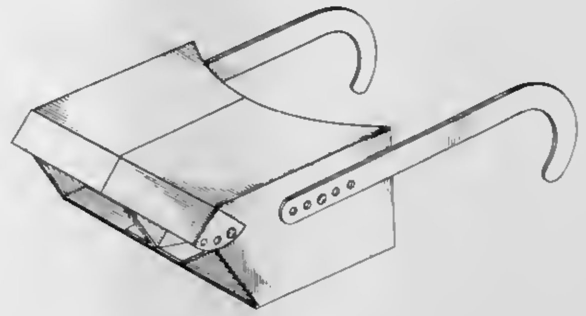
238,830
PROTECTIVE HELMET OR THE LIKE

Jhoon Goo Rhee, 2525 N. Ridgeview Road, Arlington, Va. 22207
Filed Nov. 27, 1974, Ser. No. 527,903
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



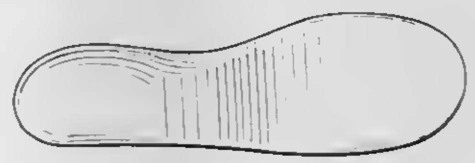
238,831
FOLDING FLIGHT TRAINING HOOD

Bernard B. Helfand, deceased, late of Tiburon, Calif., by Phyllis Jones Neidig Helfand, executrix, 240 Loma Ave., Tiburon, Calif. 94920
Filed May 20, 1974, Ser. No. 471,318
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—234



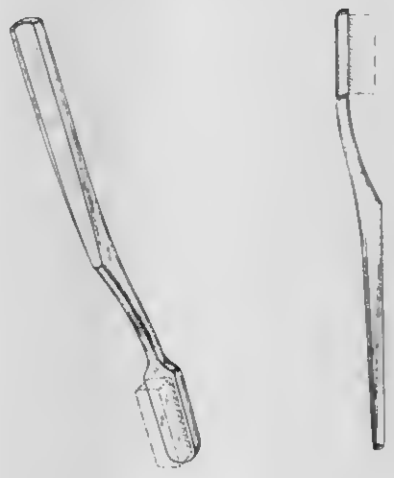
238,832
SLIPPER SOLE

Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.
Filed Aug. 22, 1974, Ser. No. 499,495
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

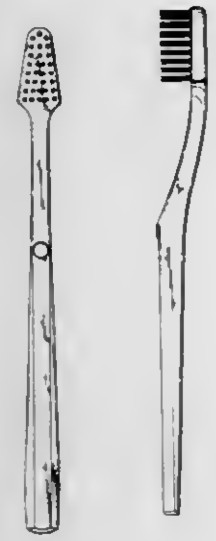


238,833
TOOTHBRUSH HANDLE

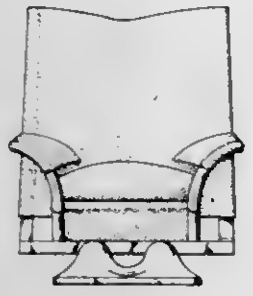
Lars Hjelle, Oslo, Norway, assignor to A/S W. Jordan Borste & Penselfabrik, Oslo, Norway
Filed June 26, 1973, Ser. No. 373,656
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



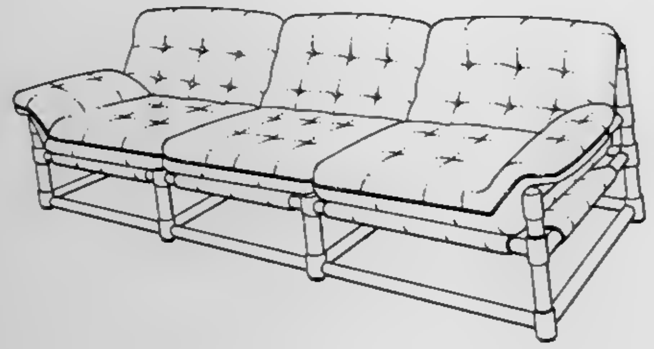
238,834
TOOTHBRUSH
Lars Hjelle, Oslo, Norway, assignor to A/S W. Jordan
Borste & Penselfabrik, Oslo, Norway
Filed Jan. 14, 1974, Ser. No. 433,105
Claims priority, application Norway Nov. 26, 1973
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



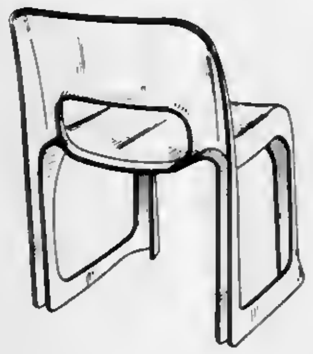
238,835
ARMCHAIR
Cesare Cassina, Carimate, Italy, assignor to
Centro Cassina S.r.l., Milan, Italy
Filed Feb. 4, 1974, Ser. No. 439,363
Claims priority, application Italy Aug. 3, 1973
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—26



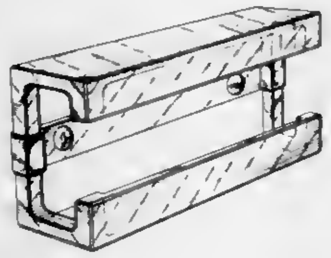
238,836
SOFA
Eugene J. Costabile, Oak Lawn, Ill., assignor to
Futorian Corporation, Amsterdam, N.Y.
Filed Oct. 11, 1974, Ser. No. 514,059
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



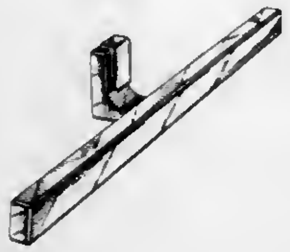
238,837
STACKABLE CHAIR
George C. Mulhauser, 545 Clinton Road,
Paramus, N.J. 07652
Filed Aug. 7, 1973, Ser. No. 386,322
Claims priority, application Sweden Feb. 7, 1973
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—65



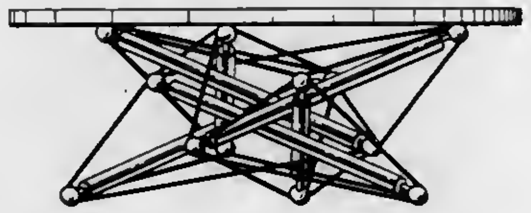
238,838
PAPER TOWEL DISPENSER
Guy Vrignaud, Grenoble, France, assignor to Allibert
Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,481
Claims priority, application France May 6, 1974
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—96



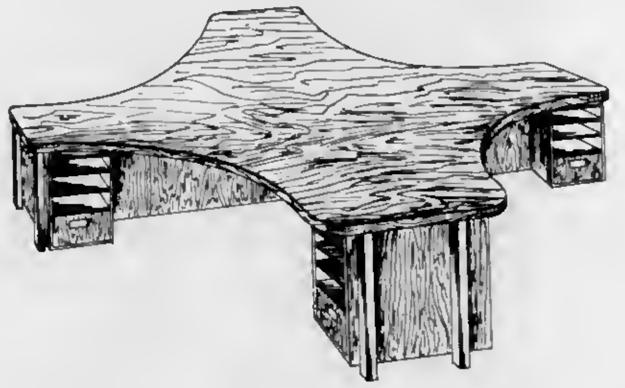
238,839
GLOVE RACK
Guy Vrignaud, Grenoble, France, assignor to Allibert
Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,488
Claims priority, application France May 6, 1974
Term of patent 14 years
Int. Cl. D6—*04;* D23—*02*
U.S. Cl. D6—116



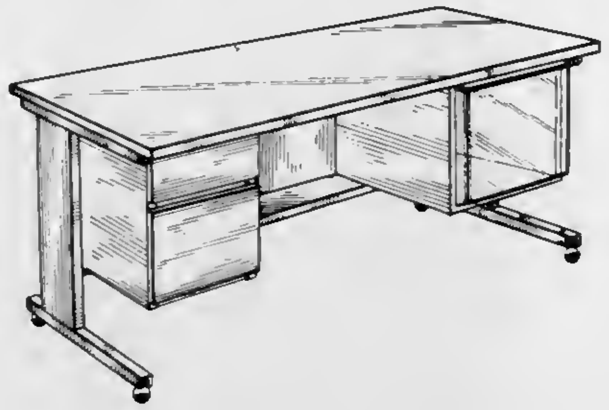
238,840
TABLE
Cesare Cassina, Carimate, Italy, assignor to
Centro, Cassina S.r.l., Milan, Italy
Filed Feb. 5, 1974, Ser. No. 440,130
Claims priority, application Italy Sept. 21, 1973
Term of patent 7 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



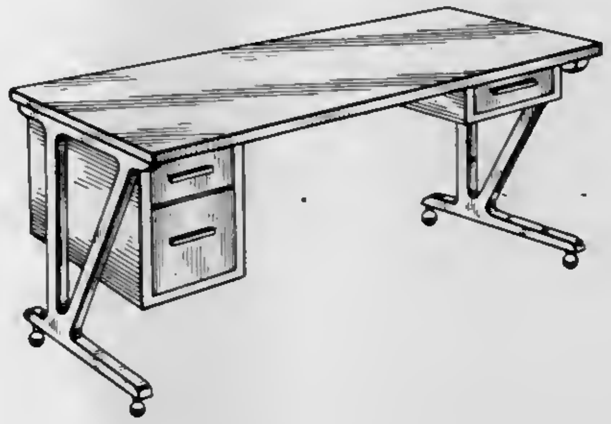
238,841
MULTIPLE STATION DESK
Ivan F. Goulooze, 3407 3 Mile Road NW.,
Grand Rapids, Mich. 49504
Filed Mar. 18, 1974, Ser. No. 451,963
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—146



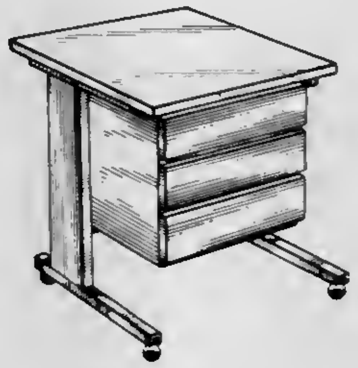
238,842
DESK
Robert J. Szucs, Midlothian, Ill., assignor to
Borg-Warner Corporation, Chicago, Ill.
Filed Aug. 5, 1974, Ser. No. 494,673
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



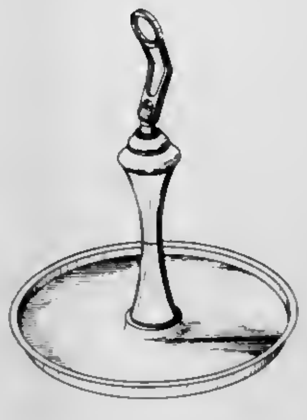
238,843
DESK
Robert J. Szucs, Midlothian, Ill., assignor to
Borg-Warner Corporation, Chicago, Ill.
Filed Oct. 31, 1974, Ser. No. 519,474
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



238,844
CABINET
Robert J. Szucs, Midlothian, Ill., assignor to
Borg-Warner Corporation, Chicago, Ill.
Filed Aug. 5, 1974, Ser. No. 494,805
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—165



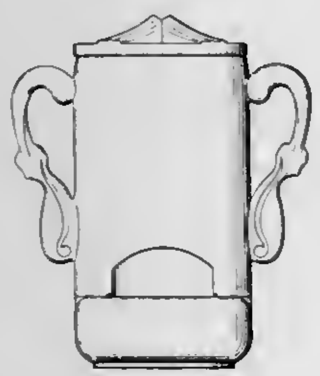
238,845
TRAY
Leland H. Logue, 150 S. Marion Parkway,
Denver, Colo. 80209
Filed Apr. 19, 1974, Ser. No. 462,236
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—20



238,846

NUT DISPENSER

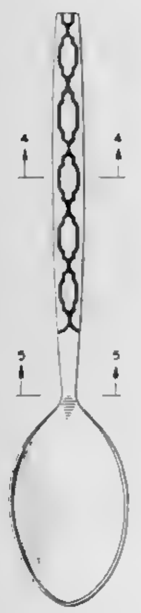
William Finnegan, 7200 Beverly Blvd.
Los Angeles, Calif. 90036
Filed Mar. 6, 1974, Ser. No. 448,554
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—98



238,847

SPOON OR SIMILAR ARTICLE

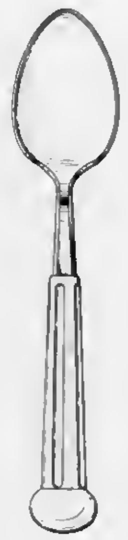
Ellen B. Manderfield, 306 N. McBride St.,
Syracuse, N.Y. 13203
Filed Oct. 25, 1973, Ser. No. 409,727
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



238,848

SPOON OR SIMILAR ARTICLE OF FLATWARE

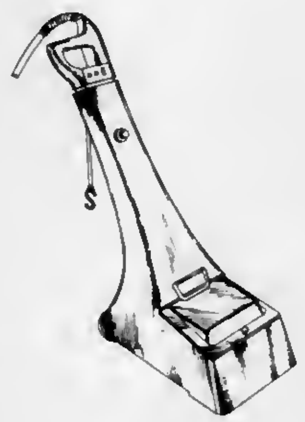
Ronald Sneidman, 66 Calvin Ave.,
Syosset Estates, N.Y. 11791
Filed Mar. 11, 1974, Ser. No. 450,129
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—151



238,849

CARPET CLEANING APPARATUS

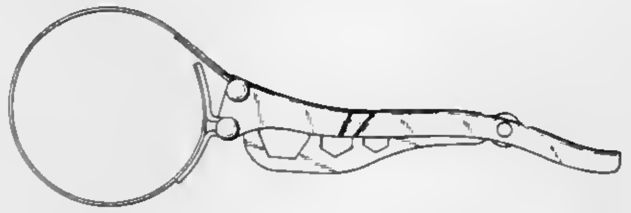
Terry H. Jones, 1226 Greenbriar Court,
Norman, Okla. 73069
Filed Sept. 17, 1973, Ser. No. 398,089
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—165



238,850

OIL CHANGING WRENCH

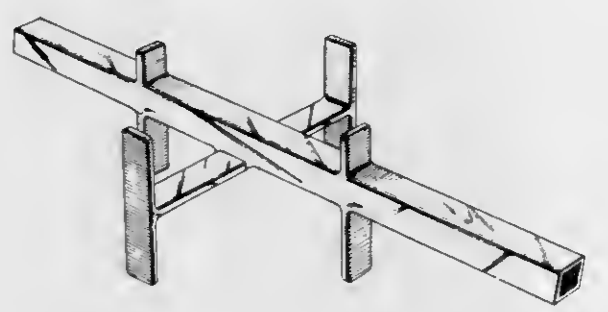
Steven R. Jensen, Brooklyn Park, Minn., assignor to
J-Mark Quality Products, Inc., Minneapolis, Minn.
Filed Feb. 13, 1975, Ser. No. 549,758
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—22



238,851

CAPPING TOOL FOR PLASTIC BARRELS CONTAINING PREGNANT MARE URINE

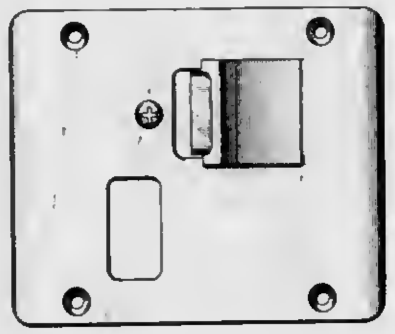
Russell D. Lawrence and Henry Heuchert,
Brandon, Manitoba, Canada
Filed Mar. 18, 1974, Ser. No. 452,024
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—27



238,852

COMBINED RESCUE DOOR STOP AND STRIKER PLATE

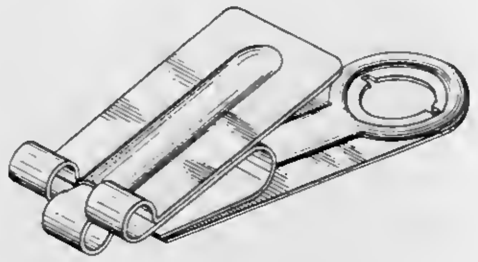
Larry K. Johnson, Sterling, Ill., assignor to
Lawrence Brothers, Inc., Sterling, Ill.
Filed May 2, 1974, Ser. No. 466,166
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—117



238,853

DECORATIVE CLIP

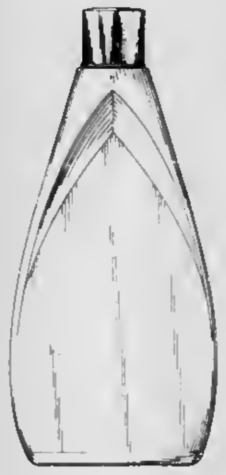
James Brompton Kruger, Oxford, Conn., assignor to
Scovill Manufacturing Company, Waterbury, Conn.
Filed Sept. 20, 1974, Ser. No. 507,682
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—259



238,854

BOTTLE OR SIMILAR ARTICLE

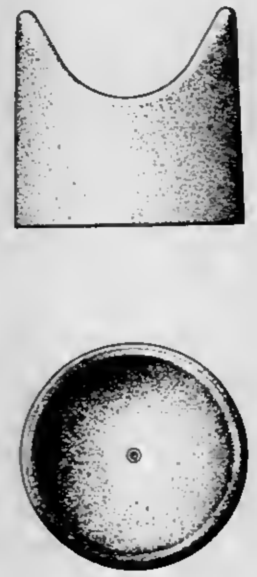
William J. Britt, Greenville, S.C., assignor to
Morton-Norwich Products, Inc., Norwich, N.Y.
Filed Apr. 18, 1974, Ser. No. 461,947
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—144



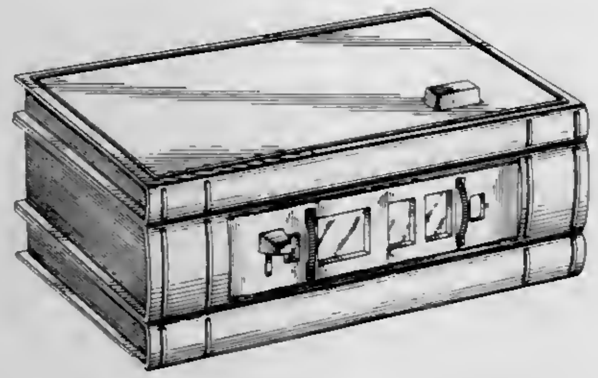
238,855

COMBINED ACTUATOR AND DISPENSING CAP FOR A PRESSURIZED CONTAINER

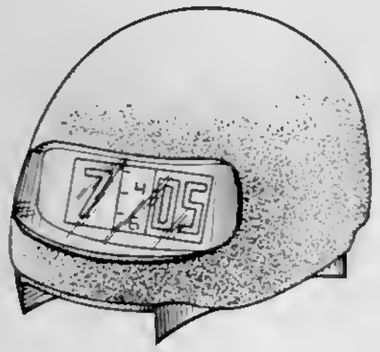
Thomas H. Hayes, Greenwich, Conn., assignor to
VCA Corporation, Greenwich, Conn.
Filed Dec. 10, 1973, Ser. No. 423,513
Term of patent 14 years
The portion of the term of the patent subsequent to
Feb. 26, 1989, has been disclaimed
Int. Cl. D9—*01*
U.S. Cl. D9—258



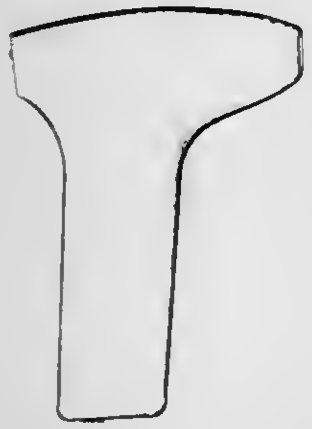
238,856
DIGITAL ELECTRIC ALARM CLOCK
Alan E. Koplar, Lincolnwood, Ill., assignor to Lava-Simplex Internationale, Inc., Chicago, Ill.
Filed Feb. 22, 1974, Ser. No. 444,851
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—6



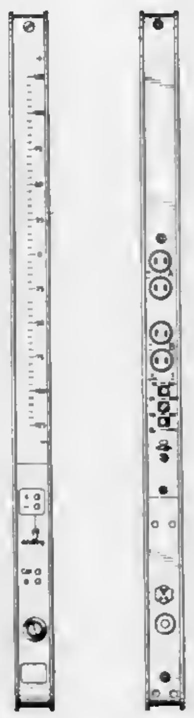
238,857
CLOCK
Henri Viatte, 48 Creation, Ch. du Vorbourg, 2800 Delemont, Switzerland
Filed Apr. 1, 1974, Ser. No. 456,889
Claims priority, application Switzerland Oct. 8, 1973
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D10—6



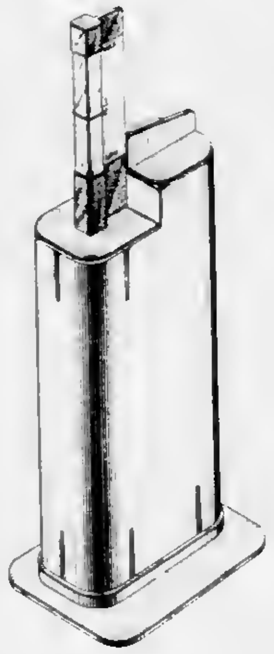
238,858
HAND HELD OPTICAL CHARACTER RECOGNITION SCANNING UNIT
Rodney Barclay, Richardson, and Robert B. Koenig, Dallas, Tex., assignors to Recognition Equipment Incorporated, Irving, Tex.
Filed Jan. 17, 1974, Ser. No. 434,192
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46



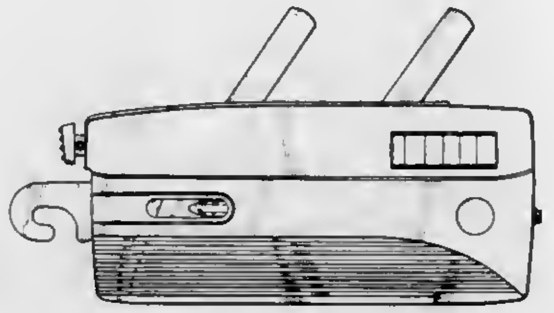
238,859
INSTRUMENT FOR THE DISPLAY OF PROCESSED INFORMATION
Colin Simister Gaskell, Waresley, and Rory Morgan O'Brien, Weston, England, assignors to Alfred Herbert Limited, Coventry, England
Filed Apr. 17, 1974, Ser. No. 461,716
Claims priority, application Great Britain Oct. 22, 1973
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46



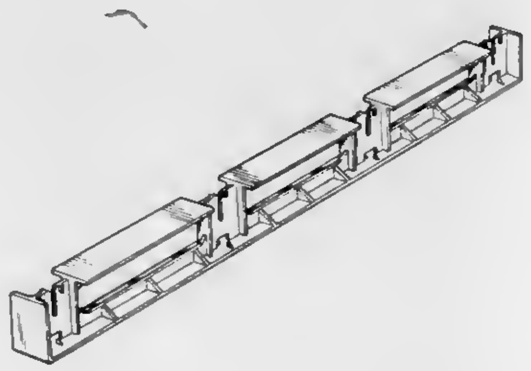
238,860
MOISTURE INDICATING UNIT FOR HYDRO-CULTURE DEVICES
Gerhard Baumann, Buempliz, Switzerland, assignor to Interhydro AG, Bern, Switzerland
Filed Feb. 28, 1974, Ser. No. 447,042
Claims priority, application Switzerland Sept. 6, 1973
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—56



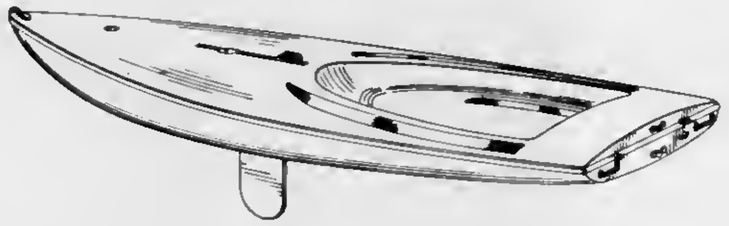
238,861
CABLE HANDLING DEVICE
Michel Cavalieri, Neuilly-sur-Marne, France, assignor to Tractel S.A., Paris, France
Filed June 5, 1973, Ser No 367,336
Claims priority, application France Dec. 26, 1972
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—53



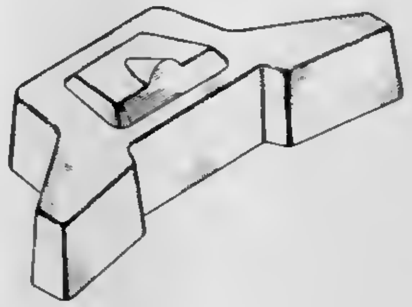
238,862
PALLET COMPONENT
Kenneth E. Hewson, 626 Colony Drive, Troy, Mich. 48084
Filed Nov. 11, 1974, Ser. No. 522,323
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D12—53



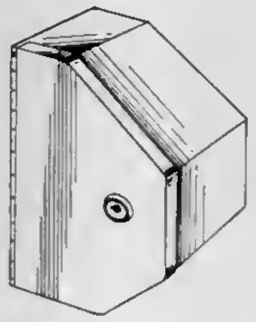
238,863
SAILBOAT
Hobart L. Alter, Capistrano Beach, Calif., assignor to Coast Catamaran Corporation
Filed May 28, 1974, Ser. No. 473,911
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—64



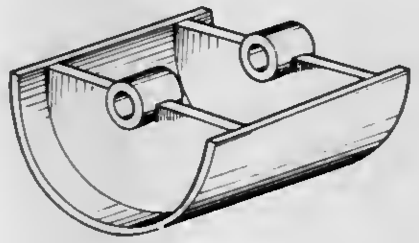
238,864
BODY FOR MOTORCYCLE RADIO CADDY
Manuel D. Masterson, 413 Stedman Place, Monrovia, Calif. 91016
Filed Feb. 24, 1975, Ser. No. 552,159
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114



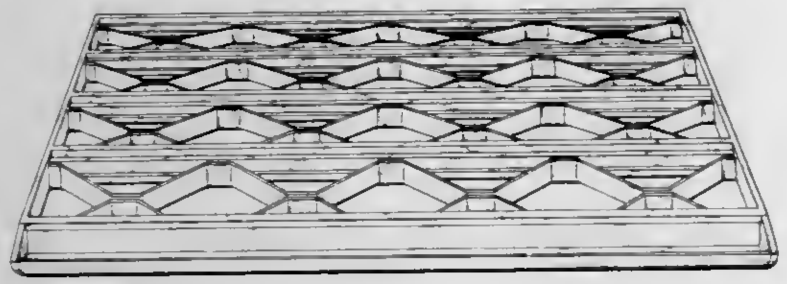
238,865
MOTORCYCLE CHAIN STORAGE COMPARTMENT
Bennett L. Heck, 2316 N. Neva, Chicago Ill. 60635, and Kenneth W. Raczynski, 2925 N. Normandy, Chicago, Ill. 60634
Filed Sept. 3, 1974, Ser. No. 502,779
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158



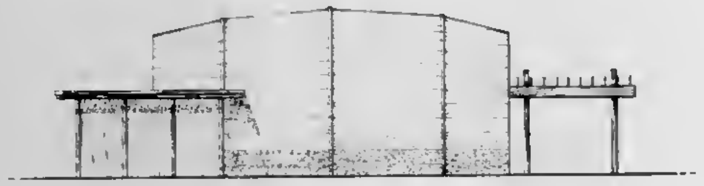
238,866
LANDING GEAR FOOT
Hyle K. Claflin, Kent, Mich., assignor to Westran Corporation
Filed Jan. 28, 1974, Ser. No. 437,508
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—217



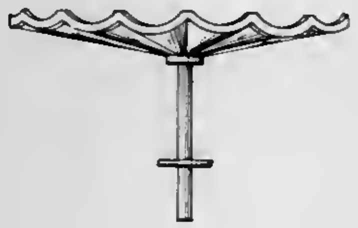
238,867
STAIR TREAD
Ronald McKenzie Howells, Yennora, New South Wales, Australia, assignor to Comalco (J & S) Pty. Limited
Filed Nov. 6, 1972, Ser. No. 303,851
Claims priority, application Australia June 8, 1972
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1.5



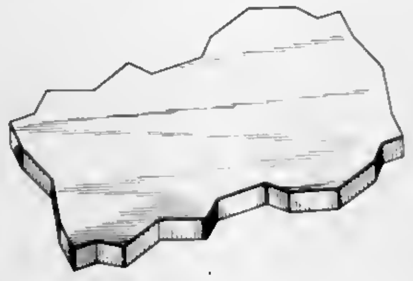
238,868
RESTAURANT BUILDING STRUCTURE
Albert C. Friedrich, San Jose, Calif., assignor to Wine Barrel Corporation, Campbell, Calif.
Filed July 30, 1973, Ser. No. 384,015
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B



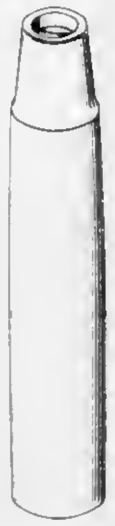
238,869
CANOPY
Nobujiro Isono, 2216 Hichiken-cho, Sano, Tochigi Prefecture, Japan
Filed June 18, 1974, Ser. No. 481,366
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 D



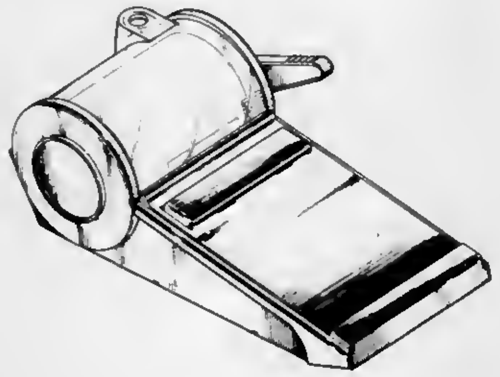
238,870
MASONRY BLOCK
Samuel Alan Appleton, Dytap House, Ruishton, Taunton, Somerset, England
Continuation-in-part of abandoned design application Ser. No. 296,540, Oct. 11, 1972. This application Oct. 10, 1973, Ser. No. 405,105
Claims priority, application Great Britain Apr. 19, 1972
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 R



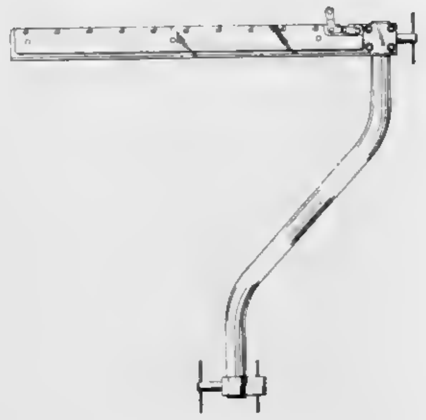
238,871
CAP FOR A WRITING INSTRUMENT
Clarence D. Zierhut, Granada Hills, and Walter Susumu Nakano, Los Angeles, Calif., assignors to The Gillette Company
Filed Apr. 20, 1973, Ser. No. 353,729
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—57



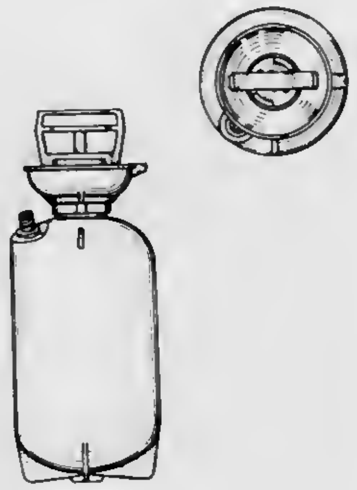
238,872
COMBINED MEMO PAPER DISPENSER AND PENCIL HOLDER
Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Company, Ltd., Tokyo, Japan
Filed July 19, 1972, Ser. No. 273,221
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—89



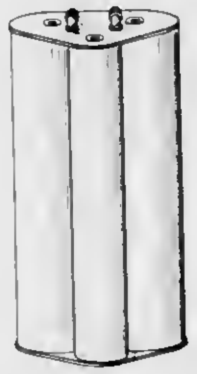
238,873
FISHING LURE HOLDER
Emery L. West, 6900 NW. 63rd St., Bethany, Okla. 73008
Filed May 17, 1974, Ser. No. 470,801
Term of patent 14 years
Int. Cl. D22—*99*
U.S. Cl. D22—99



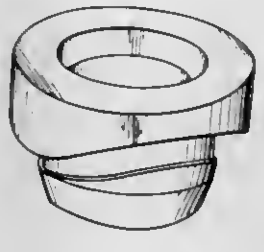
238,874
TANK FOR A PORTABLE SPRAYER
Fernand Berthoud, Belleville-sur-Saone, France, assignor to Berthoud, Belleville-sur-Saone, Rhone, France
Filed May 30, 1974, Ser. No. 474,401
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2



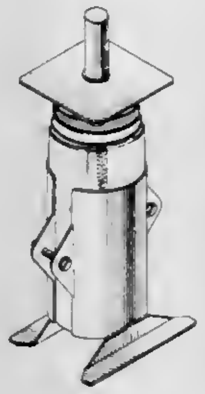
238,875
WATER PURIFICATION TANK COMBINATION
William J. Berry, Jr., and William J. Berry III, both of 1021 Green St., Durham, N.C. 27701
Filed Feb. 14, 1974, Ser. No. 442,311
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



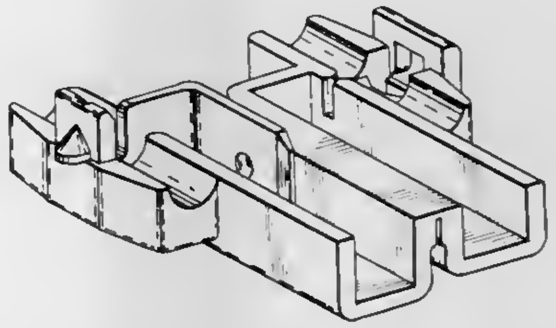
238,876
TUBE CONNECTOR
Rune Sigvard Andersson, Berchshill, Angelholm, Sweden
Filed July 30, 1973, Ser. No. 383,479
Claims priority, application Sweden Jan. 29, 1973
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43



238,877
ALCOHOL BURNER AND CAP THEREFOR
Robert Maddestra, Canton, and David E. Munn, Framingham, Mass., assignors to Damon Corporation, Needham Heights, Mass.
Filed Aug. 14, 1974, Ser. No. 497,197
Term of patent 14 years
Int. Cl. D7—*02*; D23—*03*
U.S. Cl. D23—72

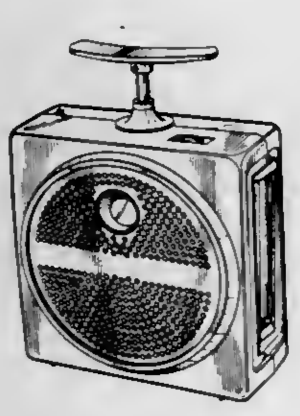


238,878
ELECTRICAL CONNECTOR
Guy Vernon Harkins, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Mar. 21, 1975, Ser. No. 560,742
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1



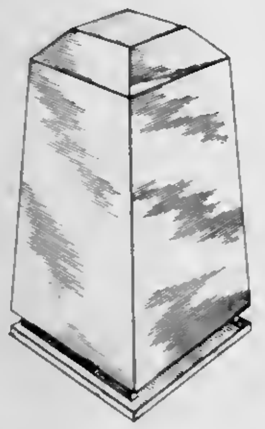
238,879
TAPE PLAYER

Susumu Yamamoto, Kadoma, Osaka, Japan, assignor to Matsushita Electric Industrial Company, Ltd., Kadoma, Osaka, Japan
Filed Apr. 30, 1974, Ser. No. 465,653
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



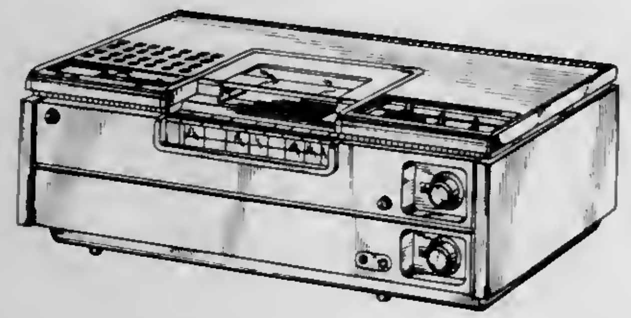
238,880
HOUSING FOR A STEREOPHONIC LOUDSPEAKER

Gary I. Elwell, 821 W. Roseburg Ave.,
Modesto, Calif. 95350
Filed June 25, 1974, Ser. No. 483,020
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



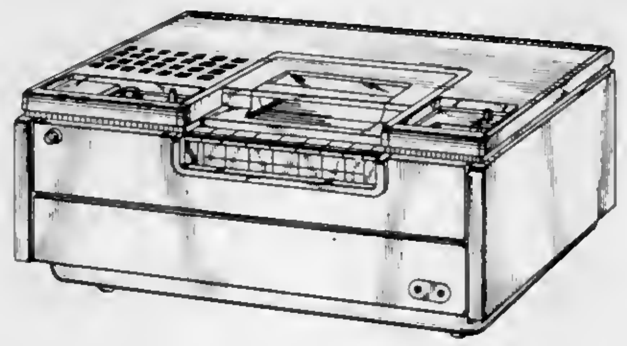
238,881
VIDEO TAPE RECORDER

Harumitsu Ishii, Yokosuka, and Noriaki Kozuka, Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Dec. 3, 1974, Ser. No. 529,128
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



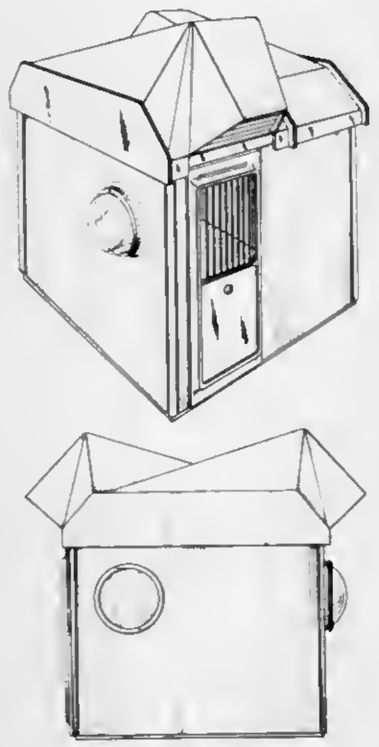
238,882
VIDEO TAPE RECORDER

Harumitsu Ishii, Yokosuka, and Noriaki Kozuka, Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Dec. 3, 1974, Ser. No. 529,216
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



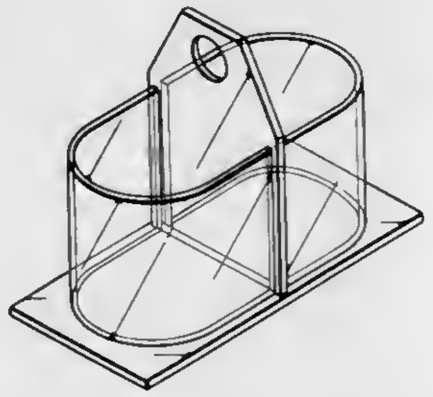
238,883
BOX FOR HORSES

Yves Chailleux and Jean-Paul Dumontier, Grigny, and Patrick Texier, La Varenne, France, assignors to Societe Civile Cooperative d'Architectes Atelier de la Reale
Filed Sept. 13, 1973, Ser. No. 397,210
Claims priority, application France Mar. 15, 1973
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



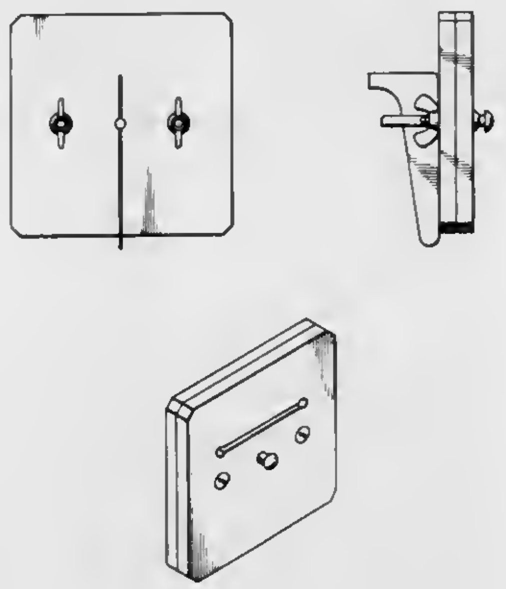
238,884
AQUARIUM OR SIMILAR ARTICLE

Tony Robert, 5701 Southwest Freeway,
Houston, Tex. 77027
Filed May 2, 1974, Ser. No. 466,235
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—6



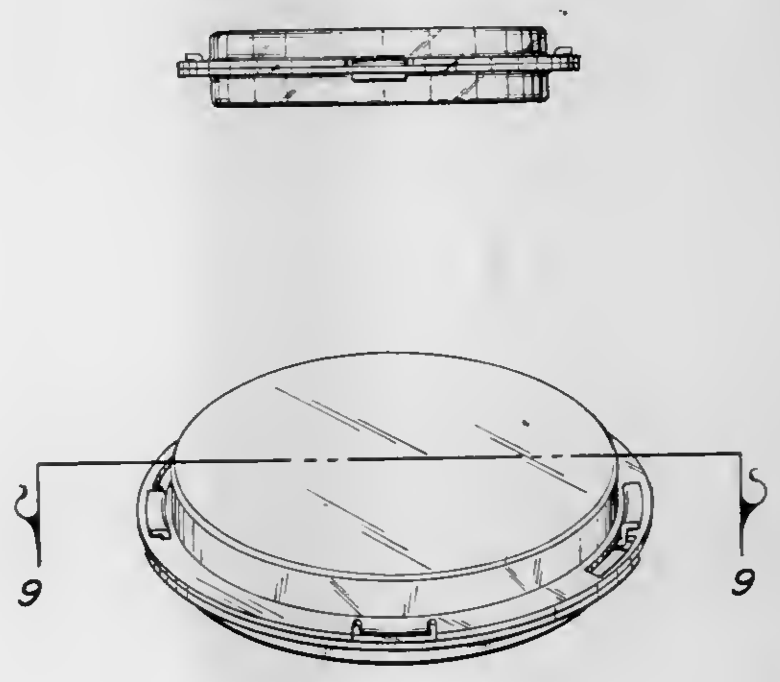
238,885
HOLDER FOR A FOOD BOWL FOR PETS

Tony Robert, 5701 Southwest Freeway,
Houston, Tex. 77027
Filed May 2, 1974, Ser. No. 466,233
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



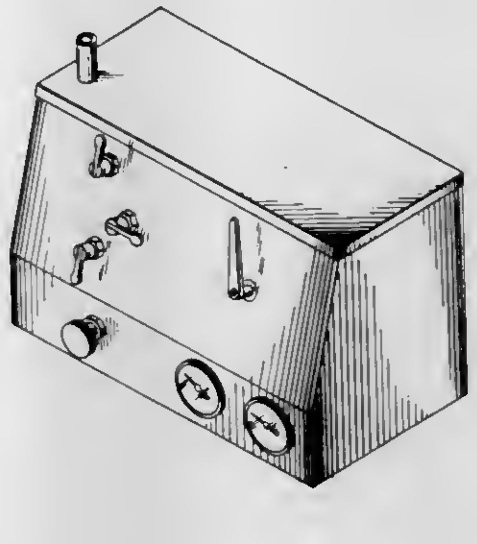
238,886
PETRI DISH

Manuel Goy, 1215 S. Cloverdale Ave.,
Los Angeles, Calif. 90019
Filed Dec. 11, 1974, Ser. No. 531,667
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D32—1 R



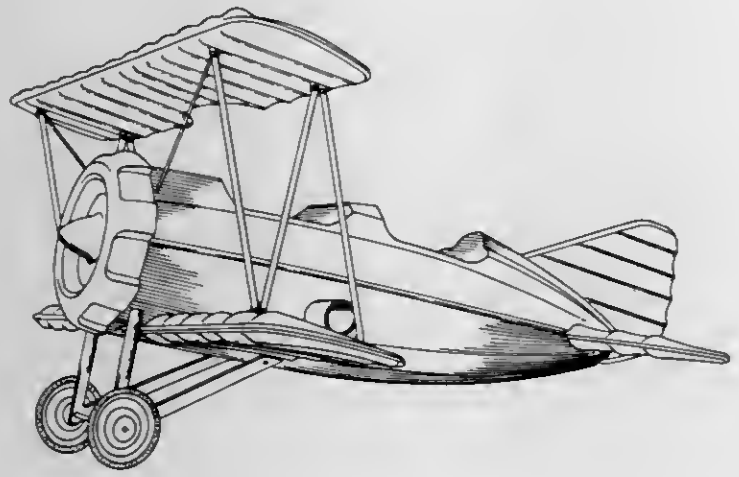
238,887
GAS SAMPLE SYSTEM CONSOLE

Edward A. O'Neal and Gottlieb C. Gaeke, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.
Filed Feb. 4, 1974, Ser. No. 439,006
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D32—2 C



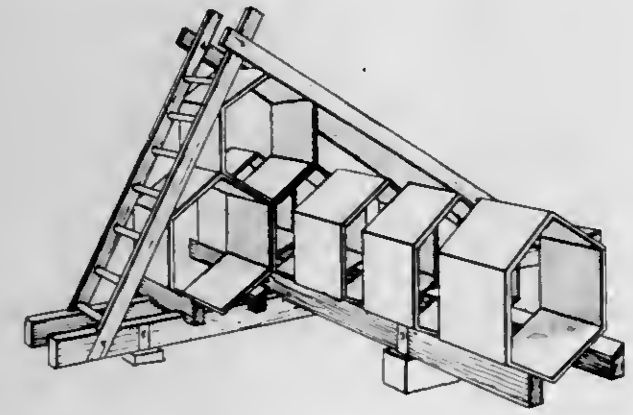
238,888
AMUSEMENT RIDE VEHICLE

David E. Bradley, Jr., 502 Huntley Drive,
Los Angeles, Calif. 90048
Filed Apr. 8, 1974, Ser. No. 458,773
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 L



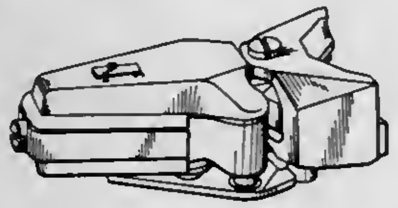
238,889
COMBINED PLAYGROUND TUNNEL AND SLIDE

Eric A. Holmquist, Malmo, Sweden, assignor to Trädgardsarkitekt Eric Holmquist AB, Malmo, Sweden
Filed Apr. 16, 1974, Ser. No. 461,441
Claims priority, application Sweden Oct. 24, 1973
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 E



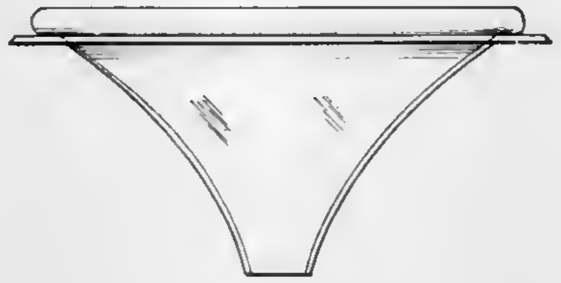
238,890
TOE FIXTURE FOR A SKI SAFETY BINDING

Noriyasu Hashioka, Tokyo-to, Japan, assignor to Hope Kabushiki Kaisha, Tokyo-to, Japan
Filed May 22, 1974, Ser. No. 472,381
Claims priority, application Japan Nov. 24, 1973
Term of patent 3½ years
Int. Cl. D21—*02*
U.S. Cl. D34—14 D



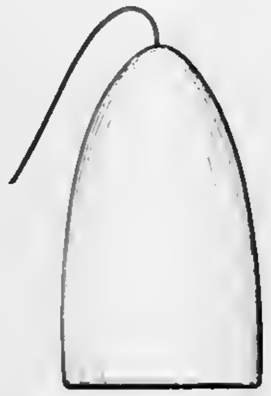
238,891
MARBLE RUNWAY

James Walton Smith, 20 Martindale,
Greenwich, Conn. 06380
Filed Oct. 3, 1973, Ser. No. 403,326
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 K



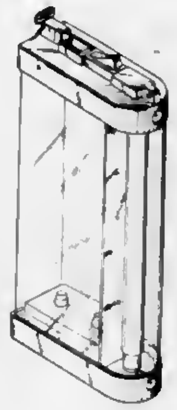
238,892
BILBOQUET-TYPE BALL OR THE LIKE

Matthew E. Morrison, 2455 8th Ave. N.,
St. Petersburg, Fla. 33713
Filed Aug. 13, 1974, Ser. No. 496,945
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 P



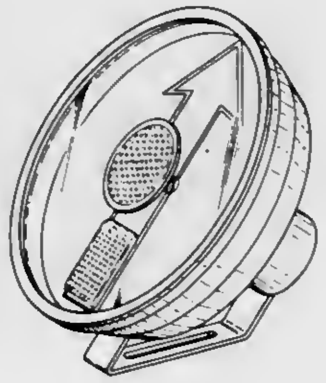
238,893
FLUORESCENT LAMP

Herbert Tang Wing-Hing, 326 Kwun Tong Road,
Kwun Tong, Kowloon, Hong Kong
Filed June 5, 1974, Ser. No. 476,923
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



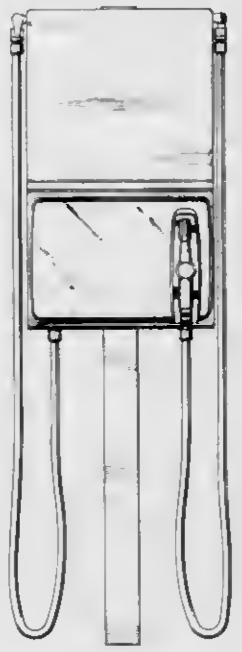
238,894
DIRECTION INDICATOR FOR VEHICLES, SPECIFICALLY FOR CYCLES AND MOTORCYCLES

Henriette Joly, 22 Avenue Parmentier,
75 Paris 11°, France
Filed June 19, 1974, Ser. No. 480,687
Claims priority, application Switzerland April 18, 1974
Term of patent 14 years
Int. Cl. D10—*06;* D26—*06*
U.S. Cl. D48—32 E



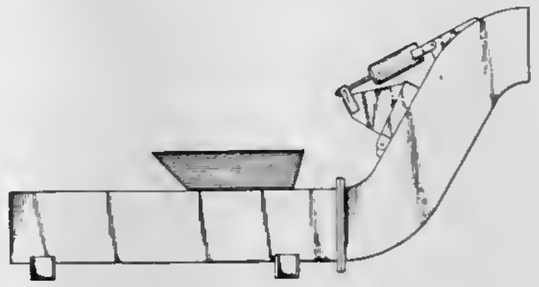
238,895
GASOLINE PUMP

Edward Albright, Paris, France, assignor to SATAM Industries, La Courneuve, France
Filed June 27, 1974, Ser. No. 483,550
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—2 A



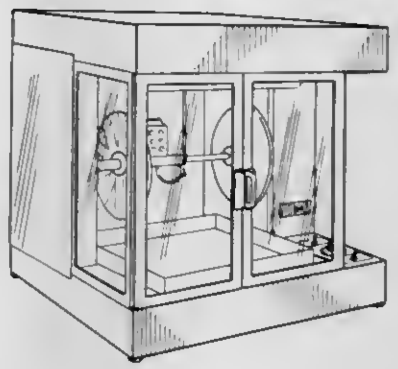
238,896
HORIZONTAL TRASH COMPACTOR

Lewis P. White, 3436 Brookwood Road,
Birmingham, Ala. 35223
Original design application Apr. 11, 1972, Ser. No. 243,113, now Patent No. 234,814, dated Apr. 8, 1975. Divided and this application Dec. 13, 1973, Ser. No. 428,342
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D55—1 B



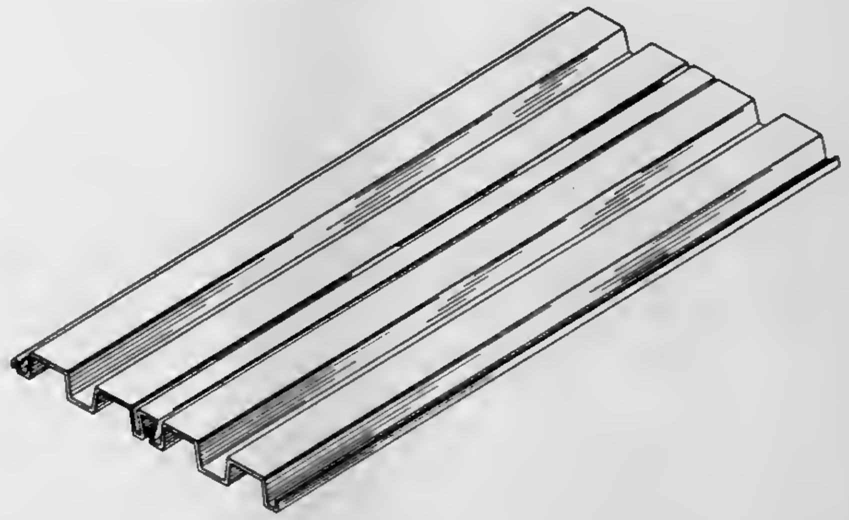
238,897
OVEN

Robert G. Wilson, 10 Chisolm Trail,
Greenville, S.C. 29607
Filed July 12, 1974, Ser. No. 488,023
Term of patent 14 years
Int. Cl. D7—*02;* D15—*08*
U.S. Cl. D55—1 E



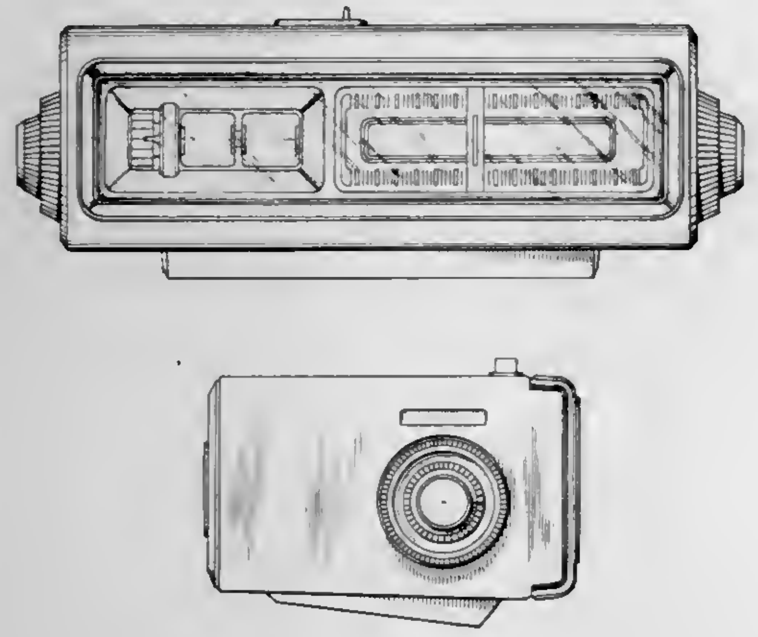
238,898
RIBBED METAL PANEL

Donald H. Landis, Pittsburgh, and Richard C. Pfaff, Murrysville, Pa., assignors to Epic Metals Corporation, Braddock, Pa.
Filed Jan. 15, 1973, Ser. No. 323,912
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D54—2 A



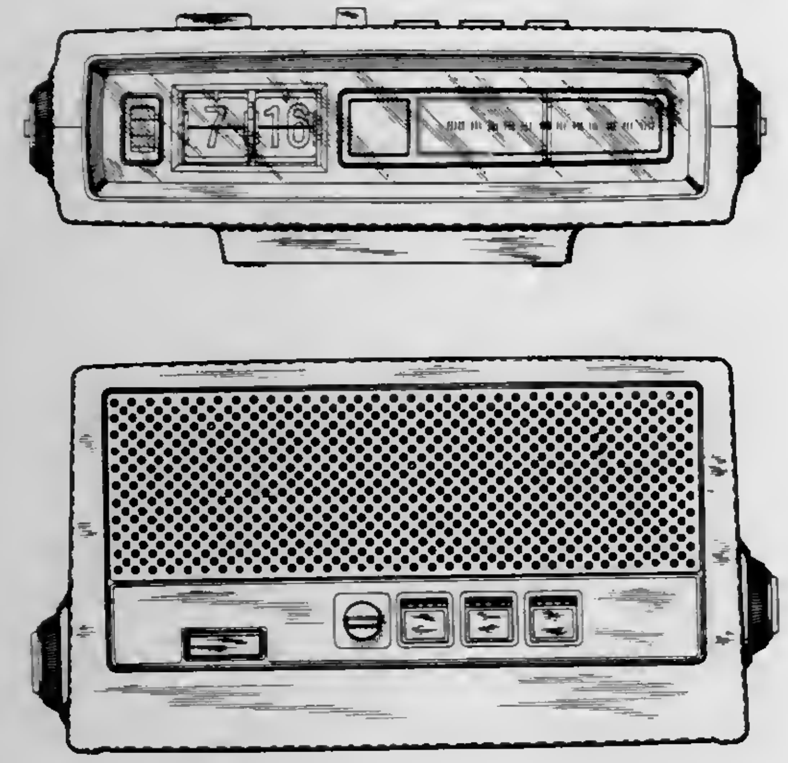
238,899
CLOCK RADIO

Cornelius W. Christie, Jr., Fulton, and John T. Houlihan, and George M. Buckler, Fayetteville, N.Y., assignors to General Electric Company, Syracuse, N.Y.
Filed Jan. 7, 1974, Ser. No. 431,290
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



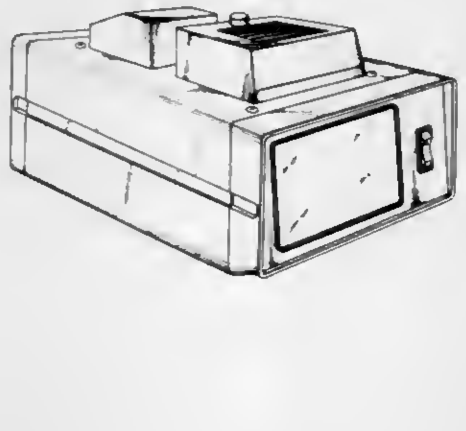
238,900
CLOCK RADIO

Cornelius W. Christie, Jr., Fulton, N.Y., assignor to General Electric Company, Syracuse, N.Y.
Filed Apr. 8, 1974, Ser. No. 458,578
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



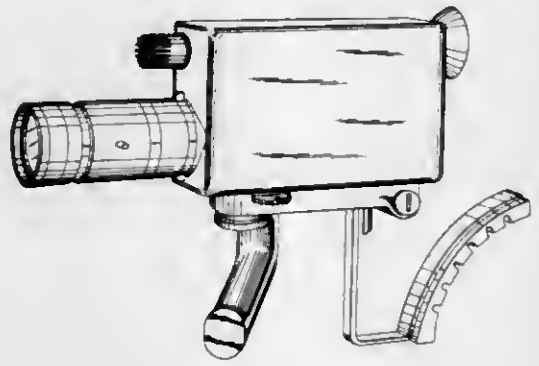
238,901
VIEWER-MAGNIFIER TO INSPECT SKIN PRINTS TO DETERMINE CONDITION OF THE SKIN FOR COSMETIC PURPOSES

Isozo Yoshida, Tokyo, Japan, assignor to Kanebo Ltd.
Filed Sept. 11, 1973, Ser. No. 396,294
Claims priority, application Japan Mar. 12, 1973
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 J



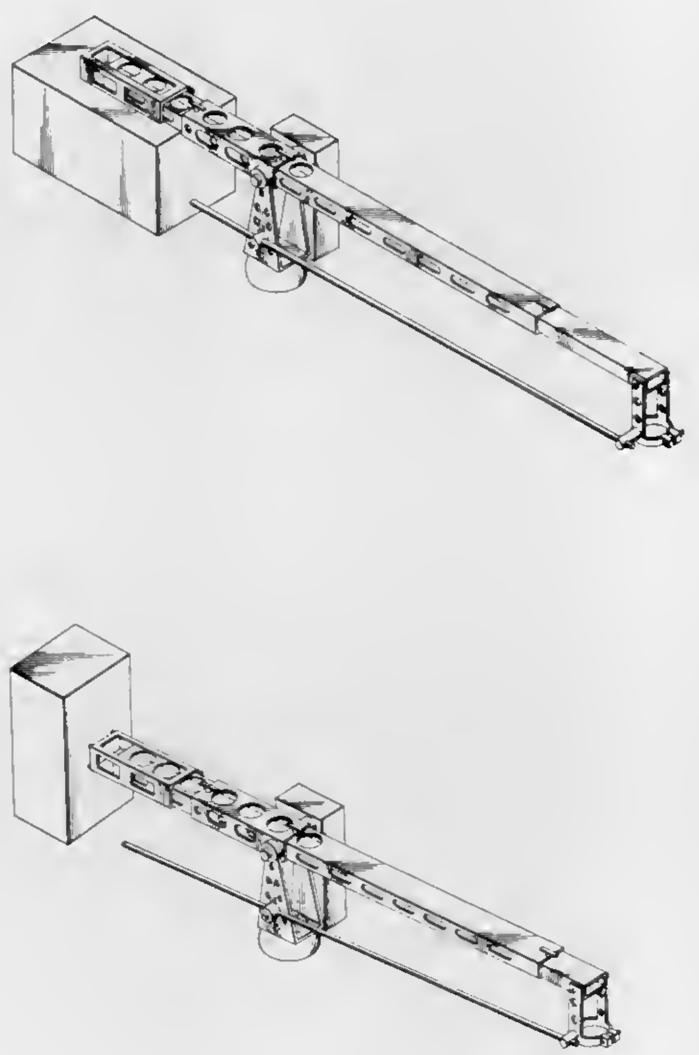
238,902
MOTION PICTURE CAMERA OR SIMILAR ARTICLE

Peter Hartwein, Schwalbach, Germany, assignor to Braun Aktiengesellschaft, Frankfurt, am Main, Germany
Filed Feb. 22, 1974, Ser. No. 445,297
Claims priority, application Germany Sept. 2, 1973
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B



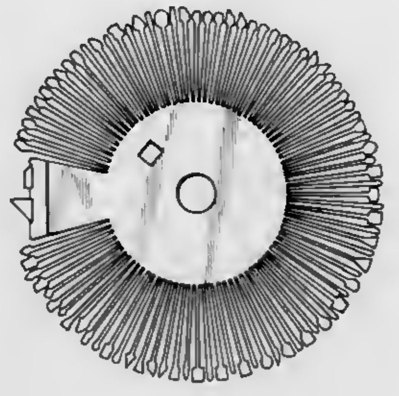
238,903
CAMERA BOOM

Vance D. Colvig, Los Angeles, Calif., assignor to Circle One Incorporated, Hollywood, Calif.
Filed Apr. 8, 1974, Ser. No. 458,811
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 G



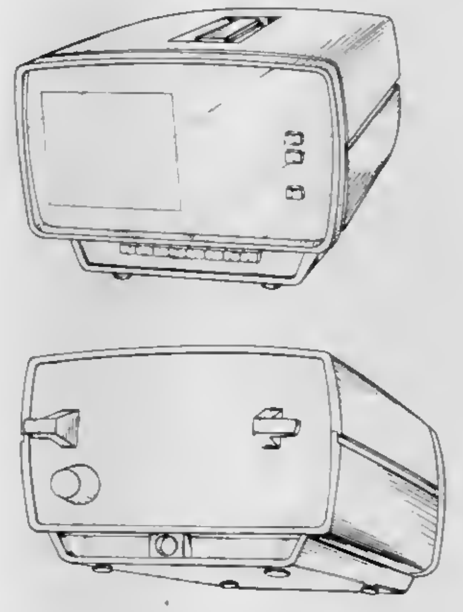
238,904
CHARACTER PRINT MEMBER

Roy J. Lahr, Sierra Madre, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 6, 1973, Ser. No. 422,392
Term of patent 14 years
The portion of the term of the patent subsequent to Feb. 24, 1990, has been disclaimed
Int. Cl. D18—*99*
U.S. Cl. D64—11 R



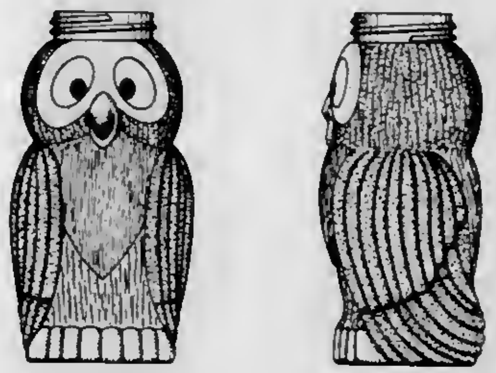
238,905
BEDSIDE MONITOR

Michael L. Sokol, Littleton, Mass., assignor to American Optical Corporation, Southbbridge, Mass.
Filed May 6, 1974, Ser. No. 467,438
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 F



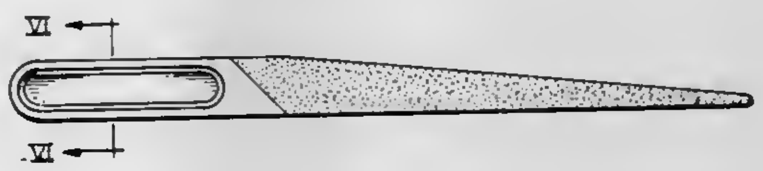
238,906
INFANT FEEDING BOTTLE

Richard E. Cone II, 249 Bowman Drive, Kent, Ohio 44240
Filed Oct. 16, 1974, Ser. No. 515,180
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D83—8 A



238,907
TOOTHPICK OR SIMILAR ARTICLE

Sigurd Walter Bengtsson, Bruksgatan 17, Goteborg, Sweden
Filed Nov. 7, 1973, Ser. No. 413,449
Claims priority, application Sweden May 16, 1973
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 D



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- Bajek, Walter A., to Universal Oil Products Company. Motor fuel blending control system. B 496,792, Cl. 44-2.000.
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  - Boehmke, Guenther; Theuer, Werner; Nonn, Konrad; and Pape, Georg, B 495,903.
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- Beck, James Richard, to Eli Lilly and Company. [1]Benzothieno[3,2-b]furans. B 574,996, Cl. 260-330.500.
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- Blake, William W.: *See—*
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NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 8			
10.2	B 430,334	C	Jan. 27, 1976
14	B 460,388	C	Jan. 27, 1976
	B 497,473	C	Feb. 3, 1976
17	B 458,060	C	Jan. 13, 1976
62	B 507,476	C	Feb. 10, 1976
74	B 354,959	C	Feb. 17, 1976
84	B 495,903	C	Feb. 17, 1976
115.7	B 389,304	C	Jan. 27, 1976
142	B 423,867	C	Feb. 3, 1976
161	B 461,352	C	Jan. 13, 1976
174	B 344,967	C	Feb. 3, 1976
Class 15			
229A	B 523,885	M	Feb. 17, 1976
256.53	B 579,116	M	Feb. 3, 1976
Class 17			
23	B 519,599	M	Feb. 17, 1976
2502	B 541,496	E	Jan. 27, 1976
Class 21			
2.7R	B 527,999	C	Feb. 3, 1976
Class 23			
285F	B 565,180	C	Jan. 27, 1976
Class 24			
75	B 532,476	M	Feb. 3, 1976
Class 28			
1.6	B 497,292	M	Feb. 3, 1976
Class 29			
96	B 546,911	M	Jan. 13, 1976
127	B 510,855	M	Jan. 27, 1976
428	B 520,928	M	Jan. 13, 1976
578	B 561,732	M	Feb. 3, 1976
580	B 492,301	M	Jan. 13, 1976
Class 32			
10A	B 491,501	M	Jan. 13, 1976
Class 37			
8	B 558,819	M	Feb. 3, 1976
142A	B 511,099	M	Feb. 3, 1976
Class 44			
2	B 496,792	C	Feb. 17, 1976
Class 47			
57.6	B 548,028	M	Feb. 3, 1976
Class 48			
73	B 541,376	C	Feb. 17, 1976
Class 52			
207	B 459,597	M	Feb. 17, 1976
484	B 522,354	M	Jan. 20, 1976
Class 53			
77	B 508,878	M	Feb. 3, 1976
Class 55			
105	B 490,806	C	Feb. 3, 1976
352	B 543,941	C	Jan. 13, 1976
Class 56			
14.5	B 549,244	M	Jan. 27, 1976
15.9	B 558,973	M	Feb. 10, 1976
Class 58			
21.13	B 516,825	M	Feb. 3, 1976
Class 60			
226A	B 445,459	M	Feb. 3, 1976
304	B 502,540	M	Jan. 13, 1976
349	B 541,464	M	Feb. 17, 1976
422	B 526,445	M	Jan. 20, 1976
424	B 584,520	M	Jan. 27, 1976
425	B 535,386	M	Jan. 13, 1976
445	B 400,871	M	Feb. 17, 1976
592	B 465,145	M	Jan. 27, 1976
645	B 538,472	M	Feb. 3, 1976
Class 61			
.5	B 554,283	M	Jan. 27, 1976
Class 62			
306	B 522,009	M	Feb. 17, 1976
353	B 564,314	M	Jan. 20, 1976
Class 65			
3A	B 532,969	C	Jan. 13, 1976
49	B 517,858	C	Feb. 17, 1976
239	B 545,777	C	Jan. 27, 1976
Class 71			
113	B 535,076	C	Jan. 20, 1976
Class 72			
43	B 546,631	M	Feb. 3, 1976
56	B 489,290	M	Feb. 17, 1976
88	B 575,757	M	Jan. 27, 1976
391	B 516,537	M	Feb. 17, 1976
Class 73			
24	B 506,744	M	Jan. 13, 1976
29	B 557,153	M	Feb. 3, 1976
37.7	B 532,319	M	Feb. 3, 1976
61.1R	B 511,909	M	Feb. 17, 1976
67.5H	B 522,309	M	Feb. 3, 1976
147	B 521,620	M	Jan. 27, 1976
190R	B 480,350	M	Feb. 10, 1976
302	B 464,290	M	Feb. 3, 1976
437	B 528,401	M	Feb. 3, 1976
557	B 523,080	M	Feb. 17, 1976
Class 74			
242.1A	B 567,854	M	Feb. 3, 1976
243C	B 558,818	M	Jan. 13, 1976
479	B 509,586	M	Feb. 3, 1976
481	B 497,021	M	Jan. 13, 1976
527	B 470,170	M	Jan. 13, 1976
546	B 518,999	M	Feb. 3, 1976
Class 75			
.5BA	B 385,631	C	Jan. 27, 1976
84.1R	B 538,491	C	Feb. 17, 1976
101BE	B 452,938	C	Feb. 17, 1976
135	B 525,961	C	Jan. 13, 1976
156.5	B 411,471	C	Feb. 17, 1976
165	B 483,256	C	Feb. 10, 1976
Class 83			
425	B 545,935	M	Jan. 27, 1976
Class 84			
1.16	B 556,897	M	Feb. 3, 1976
275	B 504,169	M	Jan. 13, 1976
Class 86			
1R	B 356,187	M	Jan. 20, 1976
Class 96			
1R	B 423,883	C	Jan. 27, 1976
1.4	B 200,759	C	Feb. 3, 1976
35	B 524,026	C	Feb. 10, 1976
35.1	B 530,873	C	Feb. 17, 1976
36.1	B 359,901	C	Jan. 13, 1976
78	B 503,029	C	Jan. 27, 1976
Class 99			
335	B 557,299	M	Feb. 3, 1976
Class 101			
93.13	B 496,999	M	Jan. 27, 1976
93.14	B 481,600	M	Jan. 27, 1976
129	B 416,589	M	Jan. 27, 1976
401.3	B 494,234	M	Feb. 10, 1976

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		CAT.	PUB. DATE
Class 102			
32	B 405,726	M	Jan. 13, 1976
42R	B 443,163	M	Feb. 3, 1976
69	B 412,068	M	Jan. 13, 1976
Class 106			
27	B 452,883	C	Jan. 27, 1976
57	B 502,773	C	Jan. 13, 1976
309	B 311,779	C	Feb. 10, 1976
Class 109			
1SB	B 358,427	E	Feb. 3, 1976
Class 110			
8R	B 512,324	M	Feb. 17, 1976
Class 116			
124L	B 469,228	M	Feb. 17, 1976
124.4	B 467,412	M	Jan. 13, 1976
Class 118			
637	B 563,301	M	Feb. 17, 1976
Class 123			
8.45	B 570,172	M	Feb. 3, 1976
25R	B 447,440	M	Feb. 17, 1976
75B	B 563,780	M	Feb. 3, 1976
182	B 558,251	M	Jan. 13, 1976
325T	B 425,588	M	Jan. 13, 1976
Class 126			
271	B 512,745	M	Jan. 13, 1976
350A	B 537,903	M	Jan. 20, 1976
Class 128			
260	B 520,277	M	Feb. 17, 1976
	B 524,121	M	Feb. 3, 1976
419P	B 535,466	M	Jan. 27, 1976
Class 131			
144	B 586,387	M	Feb. 3, 1976
Class 136			
86R	B 505,126	C	Feb. 10, 1976
	B 574,128	C	Feb. 17, 1976
148	B 524,464	C	Feb. 10, 1976
202	B 378,513	C	Jan. 27, 1976
Class 137			
255	B 508,940	M	Feb. 17, 1976
596.12	B 514,687	M	Jan. 27, 1976
614.11	B 530,605	M	Feb. 3, 1976
625.46	B 528,756	M	Feb. 3, 1976
798	B 430,172	M	Jan. 13, 1976
Class 140			
92.1	B 590,158	M	Feb. 10, 1976
	B 590,159	M	Feb. 3, 1976
Class 144			
241	B 545,630	M	Jan. 27, 1976
Class 148			
1.5	B 518,226	C	Feb. 10, 1976
Class 152			
213R	B 445,690	M	Feb. 3, 1976
Class 156			
3	B 563,722	C	Jan. 13, 1976
71	B 456,148	C	Jan. 13, 1976
73.6	B 414,481	C	Jan. 20, 1976
143	B 462,386	C	Jan. 13, 1976
Class 160			
229R	B 505,813	M	Jan. 13, 1976
Class 162			
5	B 491,673	C	Feb. 17, 1976
133	B 431,072	C	Jan. 20, 1976
198	B 150,142	C	Jan. 27, 1976
290	B 478,739	C	Feb. 17, 1976
Class 164			
26	B 499,227	M	Jan. 27, 1976
60	B 511,885	M	Jan. 27, 1976
330	B 522,038	M	Feb. 3, 1976
Class 165			
13	B 543,078	M	Feb. 17, 1976
Class 166			
272	B 569,519	M	Feb. 3, 1976
303	B 529,836	M	Feb. 3, 1976
311	B 511,156	M	Jan. 27, 1976
Class 173			
104	B 537,709	M	Jan. 13, 1976
170	B 567,058	M	Jan. 13, 1976
Class 176			
20R	B 384,330	C	Jan. 27, 1976
36R	B 367,621	C	Feb. 3, 1976
68	B 396,164	C	Feb. 3, 1976
Class 178			
6	B 546,426	E	Jan. 27, 1976
7.1	B 519,979	E	Feb. 3, 1976
7.3D	B 442,970	E	Feb. 3, 1976
7.5R	B 508,817	E	Feb. 3, 1976
58R	B 399,908	C	Jan. 13, 1976
88	B 561,764	E	Jan. 27, 1976
Class 179			
1A	B 513,756	E	Feb. 3, 1976
1CN	B 475,681	E	Jan. 20, 1976
1SM	B 476,577	E	Jan. 20, 1976
1G	B 554,594	E	Jan. 20, 1976
7.1R	B 545,050	E	Jan. 20, 1976
15AL	B 496,500	E	Feb. 3, 1976
81R	B 472,284	E	Jan. 13, 1976
170D	B 541,415	E	Feb. 3, 1976
Class 180			
5R	B 499,171	M	Jan. 27, 1976
49	B 433,094	M	Jan. 27, 1976
53R	B 551,527	M	Jan. 13, 1976
79.2R	B 533,968	M	Jan. 27, 1976
Class 188			
73.6	B 533,056	M	Jan. 13, 1976
165	B 567,435	M	Feb. 3, 1976
218XL	B 562,698	M	Jan. 13, 1976
Class 192			
3.57	B 548,719	M	Feb. 17, 1976
Class 195			
29	B 418,489	C	Jan. 13, 1976
Class 196			
14.52	B 520,384	M	Jan. 27, 1976
Class 197			
17	B 501,122	M	Feb. 17, 1976
18	B 535,391	M	Jan. 27, 1976
Class 198			
38	B 495,402	M	Feb. 17, 1976
129	B 569,646	M	Jan. 13, 1976
179	B 424,989	M	Feb. 3, 1976
202	B 499,352	M	Jan. 27, 1976
Class 200			
5R	B 579,104	E	Jan. 27, 1976
11TC	B 531,425	E	Feb. 3, 1976
38FA	B 494,383	E	Feb. 3, 1976
61.41	B 506,286	E	Jan. 20, 1976
67D	B 585,247	E	Feb. 3, 1976
83SA	B 428,877	E	Jan. 27, 1976
84C	B 453,533	E	Feb. 17, 1976
Class 202			
227	B 513,280	C	Jan. 20, 1976
Class 204			
15	B 542,135	C	Feb. 10, 1976
158HA	B 550,744	C	Feb. 17, 1976
159.18	B 498,205	C	Feb. 10, 1976
195S	B 843,038	C	Feb. 3, 1976
224M	B 534,314	C	Feb. 10, 1976
Class 206			
455	B 490,067	M	Jan. 27, 1976
Class 208			
15	B 437,596	C	Jan. 27, 1976
59	B 508,118	C	Feb. 17, 1976
78	B 467,250	C	Feb. 3, 1976
208R	B 508,119	C	Feb. 17, 1976
210	B 501,317	C	Jan. 13, 1976
253	B 438,916	C	Jan. 13, 1976
Class 210			
23H	B 364,797	C	Feb. 17, 1976
130	B 532,901	C	Jan. 13, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 214			
18N	B 373,344	M	Feb. 3, 1976
58	B 555,772	M	Jan. 13, 1976
152	B 480,604	M	Jan. 13, 1976
Class 215			
216	B 541,015	M	Jan. 27, 1976
Class 219			
233	B 463,388	E	Feb. 10, 1976
273	B 403,507	E	Feb. 10, 1976
553	B 513,027	E	Feb. 17, 1976
Class 220			
23.83	B 529,156	M	Jan. 13, 1976
288	B 516,032	M	Jan. 27, 1976
337	B 578,447	M	Jan. 20, 1976
Class 222			
43	B 497,853	M	Feb. 17, 1976
67	B 521,480	M	Jan. 13, 1976
136	B 487,260	M	Jan. 27, 1976
306	B 559,954	M	Feb. 3, 1976
325	B 515,303	M	Jan. 20, 1976
Class 226			
68	B 506,926	M	Feb. 17, 1976
Class 228			
190	B 473,972	M	Jan. 13, 1976
Class 229			
2.5	B 537,990	M	Jan. 13, 1976
17R	B 461,257	M	Jan. 13, 1976
62.5	B 429,157	M	Jan. 27, 1976
Class 235			
151.34	B 492,946	E	Jan. 27, 1976
152	B 559,737	E	Jan. 20, 1976
154	B 534,016	E	Feb. 3, 1976
156	B 536,009	E	Jan. 27, 1976
181	B 520,924	E	Jan. 27, 1976
Class 236			
15A	B 558,813	M	Feb. 3, 1976
Class 239			
424	B 580,921	M	Jan. 13, 1976
424	B 586,215	M	Jan. 20, 1976
652	B 520,534	M	Feb. 17, 1976
Class 240			
41.35R	B 454,283	E	Feb. 3, 1976
Class 242			
43R	B 521,600	M	Jan. 27, 1976
129.8	B 506,167	M	Feb. 10, 1976
Class 244			
134R	B 535,928	M	Jan. 13, 1976
169	B 423,441	M	Feb. 17, 1976
	B 511,346	M	Jan. 27, 1976
Class 248			
73	B 494,806	M	Feb. 3, 1976
Class 249			
135	B 548,155	M	Jan. 13, 1976
Class 250			
210	B 515,908	E	Jan. 20, 1976
227	B 522,577	E	Jan. 27, 1976
	B 560,765	E	Feb. 3, 1976
291	B 500,981	E	Jan. 27, 1976
364	B 526,190	E	Feb. 17, 1976
402	B 451,534	E	Jan. 13, 1976
577	B 507,396	E	Feb. 10, 1976
Class 251			
58	B 429,434	M	Feb. 17, 1976
129	B 534,333	M	Feb. 17, 1976
319	B 490,589	M	Feb. 3, 1976
Class 252			
182	B 471,405	C	Feb. 10, 1976
301.1W	B 548,058	C	Feb. 17, 1976
301.4S	B 535,813	C	Jan. 27, 1976
364	B 370,309	C	Jan. 20, 1976
429R	B 457,850	C	Feb. 10, 1976
432	B 509,640	C	Feb. 17, 1976
454	B 450,967	C	Jan. 13, 1976
500	B 479,242	C	Feb. 17, 1976
518	B 585,731	C	Feb. 3, 1976
543	B 403,766	C	Feb. 10, 1976
Class 254			
186R	B 511,407	M	Feb. 10, 1976
188	B 437,559	M	Feb. 3, 1976
Class 259			
4	B 486,614	N	Feb. 17, 1976
191	B 556,057	M	Jan. 13, 1976
Class 260			
2.5AC	B 497,194	C	Feb. 3, 1976
	B 537,102	C	Jan. 13, 1976
2.5AJ	B 557,856	C	Feb. 10, 1976
2.5AM	B 422,063	C	Feb. 3, 1976
2.5AR	B 483,606	C	Jan. 27, 1976
	B 502,589	C	Jan. 27, 1976
2.5AV	B 460,441	C	Jan. 13, 1976
2.5AW	B 483,762	C	Feb. 10, 1976
2.5R	B 471,579	C	Jan. 13, 1976
17R	B 510,998	C	Feb. 10, 1976
	B 519,487	C	Feb. 17, 1976
18TN	B 528,303	C	Feb. 10, 1976
23H	B 054,859	C	Feb. 17, 1976
23XA	B 483,865	C	Jan. 13, 1976
28P	B 489,331	C	Feb. 17, 1976
28.5AS	B 501,540	C	Jan. 13, 1976
29.2EP	B 526,997	C	Jan. 13, 1976
29.2TN	B 414,266	C	Feb. 10, 1976
29.6N	B 494,440	C	Feb. 17, 1976
29.6TA	B 494,450	C	Feb. 17, 1976
30.4R	B 485,060	C	Feb. 17, 1976
32.6R	B 596,692	C	Feb. 17, 1976
33.6AQ	B 657,438	C	Jan. 20, 1976
33.6R	B 479,175	C	Feb. 17, 1976
37EP	B 423,365	C	Feb. 17, 1976
	B 441,605	C	Feb. 3, 1976
37R	B 465,955	C	Feb. 3, 1976
42.15	B 415,122	C	Feb. 10, 1976
45.75W	B 561,387	C	Feb. 10, 1976
45.8N	B 506,648	C	Feb. 3, 1976
45.85R	B 236,342	C	Feb. 10, 1976
47EP	B 440,633	C	Feb. 10, 1976
75N	B 521,125	C	Feb. 10, 1976
	B 521,126	C	Feb. 10, 1976
	B 521,127	C	Feb. 17, 1976
	B 521,128	C	Feb. 10, 1976
	B 552,489	C	Feb. 10, 1976
77.5CR	B 306,668	C	Feb. 3, 1976
78.5R	B 437,209	C	Feb. 3, 1976
78S	B 451,308	C	Feb. 17, 1976
88.2C	B 417,014	C	Jan. 13, 1976
112.5R	B 471,617	C	Feb. 10, 1976
	B 503,817	C	Jan. 13, 1976
140R	B 503,579	C	Feb. 10, 1976
147	B 383,697	C	Feb. 17, 1976
239A	B 349,370	C	Jan. 27, 1976
239D	B 520,256	C	Jan. 13, 1976
	B 536,935	C	Jan. 13, 1976
239.1	B 538,753	C	Feb. 10, 1976
239.3A	B 506,148	C	Feb. 3, 1976
240A	B 484,067	C	Feb. 17, 1976
243C	B 473,039	C	Feb. 10, 1976
	B 473,040	C	Feb. 10, 1976
	B 516,047	C	Feb. 10, 1976
	B 516,296	C	Feb. 3, 1976
	B 526,096	C	Feb. 3, 1976
244R	B 348,433	C	Feb. 3, 1976
247.7T	B 468,052	C	Feb. 10, 1976
248NS	B 537,711	C	Jan. 13, 1976
250BC	B 491,883	C	Feb. 3, 1976
256.5R	B 531,096	C	Feb. 10, 1976
268BF	B 490,946	C	Feb. 17, 1976
274SA	B 494,944	C	Feb. 17, 1976
285.5	B 530,318	C	Jan. 13, 1976
293.54	B 545,464	C	Feb. 10, 1976
293.56	B 447,000	C	Feb. 3, 1976
293.57	B 426,802	C	Feb. 17, 1976
294.8D	B 526,510	C	Jan. 20, 1976
295.5B	B 458,617	C	Feb. 3, 1976
296R	B 477,252	C	Jan. 13, 1976
306.7C	B 385,024	C	Feb. 10, 1976
307D	B 486,280	C	Feb. 3, 1976
308A	B 488,111	C	Jan. 13, 1976
309.2	B 522,567	C	Feb. 17, 1976
	B 542,158	C	Jan. 13, 1976
326R	B 398,084	C	Feb. 3, 1976
326.5B	B 276,026	C	Feb. 3, 1976
326.5FN	B 484,269	C	Feb. 10, 1976
326.9	B 477,481	C	Feb. 3, 1976
327C	B 480,452	C	Feb. 10, 1976
330.5	B 552,498	C	Jan. 13, 1976

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		CAT.	PUB. DATE
	B 574,996	C	Feb. 17, 1976
343.2R	B 491,032	C	Feb. 10, 1976
343.3	B 536,675	C	Jan. 20, 1976
343.3R	B 495,550	C	Feb. 3, 1976
	B 495,554	C	Feb. 3, 1976
346.2M	B 440,858	C	Feb. 3, 1976
	B 302,160	C	Feb. 3, 1976
346.4	B 485,051	C	Feb. 17, 1976
348.5L	B 521,324	C	Jan. 27, 1976
348.6	B 546,295	C	Jan. 20, 1976
378	B 431,713	C	Feb. 10, 1976
429.7	B 464,587	C	Feb. 3, 1976
438.1	B 518,656	C	Feb. 17, 1976
448.2H	B 390,408	C	Feb. 3, 1976
448.2N	B 551,463	C	Feb. 17, 1976
465.5R	B 747,785	C	Feb. 10, 1976
465.9	B 456,900	C	Feb. 3, 1976
471R	B 385,483	C	Feb. 17, 1976
	B 388,521	C	Jan. 13, 1976
472	B 472,256	C	Jan. 13, 1976
501.12	B 544,899	C	Feb. 17, 1976
513R	B 494,669	C	Feb. 3, 1976
515A	B 390,031	C	Jan. 13, 1976
516	B 386,828	C	Feb. 3, 1976
534R	B 301,143	C	Jan. 27, 1976
544C	B 471,116	C	Feb. 17, 1976
554	B 529,974	C	Feb. 17, 1976
557R	B 386,257	C	Feb. 3, 1976
566A	B 513,014	C	Feb. 10, 1976
568	B 529,974	C	Feb. 17, 1976
580	B 503,742	C	Feb. 17, 1976
586C	B 438,484	C	Feb. 17, 1976
593R	B 468,350	C	Jan. 13, 1976
601R	B 208,916	C	Jan. 13, 1976
604HF	B 472,241	C	Feb. 17, 1976
609E	B 474,573	C	Jan. 20, 1976
621K	B 470,348	C	Jan. 13, 1976
632R	B 553,584	C	Feb. 17, 1976
647	B 394,248	C	Jan. 27, 1976
648F	B 330,736	C	Feb. 3, 1976
668D	B 430,157	C	Feb. 17, 1976
674SA	B 426,274	C	Jan. 20, 1976
683.15D	B 428,103	C	Feb. 10, 1976
683.48	B 526,027	C	Feb. 17, 1976
859R	B 519,485	C	Feb. 10, 1976
873	B 465,688	C	Jan. 27, 1976
	B 519,486	C	Feb. 17, 1976
876B	B 575,851	C	Feb. 10, 1976
876R	B 589,966	C	Feb. 17, 1976
	B 461,184	C	Feb. 17, 1976
	B 580,826	C	Feb. 17, 1976
	B 589,966	C	Feb. 17, 1976
880B	B 510,458	C	Feb. 10, 1976
884	B 456,579	C	Feb. 10, 1976
890	B 495,408	C	Feb. 3, 1976
929	B 502,993	C	Feb. 17, 1976
937	B 512,373	C	Feb. 10, 1976
940	B 496,430	C	Feb. 10, 1976
942	B 386,673	C	Feb. 3, 1976
948	B 534,591	C	Feb. 17, 1976
Class 261			
39A	B 562,462	C	Jan. 13, 1976
98	B 480,702	C	Jan. 27, 1976
Class 264			
36	B 308,659	C	Jan. 27, 1976
51	B 506,144	C	Feb. 10, 1976
	B 508,369	C	Jan. 13, 1976
161	B 555,437	C	Feb. 3, 1976
225	B 453,759	C	Jan. 27, 1976
Class 274			
37	B 526,388	M	Feb. 3, 1976
Class 277			
27	B 544,034	M	Feb. 17, 1976
81P	B 515,216	M	Feb. 17, 1976
184	B 426,819	M	Feb. 17, 1976
Class 280			
150.5	B 583,051	M	Feb. 3, 1976
236	B 572,642	M	Feb. 10, 1976
Class 290			
17	B 477,597	E	Feb. 17, 1976
Class 293			
71P	B 552,932	M	Feb. 3, 1976
Class 296			
35R	B 443,647	M	Feb. 17, 1976
	B 463,671	M	Jan. 13, 1976
Class 298			
35M	B 510,588	M	Jan. 27, 1976
Class 305			
27	B 506,566	M	Jan. 20, 1976
Class 307			
88.3	B 540,872	E	Jan. 20, 1976
137	B 466,444	E	Jan. 20, 1976
205	B 513,368	E	Feb. 3, 1976
232	B 540,078	E	Jan. 13, 1976
251	B 548,302	E	Feb. 17, 1976
255	B 492,688	E	Jan. 20, 1976
270	B 497,960	E	Jan. 20, 1976
293	B 519,932	E	Feb. 3, 1976
296	B 512,849	E	Feb. 3, 1976
Class 310			
4R	B 539,746	E	Feb. 17, 1976
9.6	B 501,482	E	Jan. 13, 1976
41	B 561,784	E	Jan. 27, 1976
155	B 592,143	C	Jan. 27, 1976
Class 313			
42	B 534,443	E	Jan. 27, 1976
60	B 513,706	M	Jan. 13, 1976
99	B 518,859	E	Feb. 3, 1976
273	B 531,929	E	Jan. 20, 1976
366	B 515,455	E	Jan. 27, 1976
404	B 523,696	E	Jan. 13, 1976
452	B 160,045	E	Jan. 13, 1976
477	B 279,969	E	Jan. 13, 1976
Class 315			
169TV	B 463,322	E	Jan. 20, 1976
371	B 483,615	E	Jan. 27, 1976
388	B 516,002	E	Jan. 13, 1976
399	B 467,971	E	Jan. 13, 1976
408	B 516,564	E	Feb. 17, 1976
Class 317			
9R	B 488,634	E	Jan. 20, 1976
120	B 527,187	E	Feb. 17, 1976
124	B 509,606	E	Feb. 3, 1976
259	B 506,461	E	Jan. 20, 1976
Class 318			
139	B 475,236	E	Feb. 3, 1976
231	B 511,886	E	Feb. 3, 1976
257	B 502,973	E	Jan. 27, 1976
Class 321			
2	B 533,734	E	Jan. 27, 1976
7	B 509,185	E	Feb. 3, 1976
61	B 495,759	E	Feb. 3, 1976
Class 323			
1	B 430,276	E	Jan. 20, 1976
17	B 459,811	E	Jan. 20, 1976
	B 583,089	E	Jan. 27, 1976
22T	B 501,181	E	Feb. 10, 1976
Class 324			
13	B 079,099	E	Jan. 13, 1976
51	B 534,767	E	Feb. 3, 1976
60C	B 540,218	E	Feb. 10, 1976
62	B 465,393	E	Jan. 27, 1976
Class 325			
40	B 558,220	E	Jan. 27, 1976
468	B 544,961	E	Jan. 13, 1976
Class 328			
129	B 078,315	E	Feb. 10, 1976
155	B 550,693	E	Jan. 20, 1976
Class 330			
15	B 530,813	E	Feb. 17, 1976
33	B 439,542	E	Jan. 27, 1976
207P	B 553,460	E	Feb. 3, 1976
Class 331			
44ST	B 527,669	E	Jan. 13, 1976
51	B 538,686	E	Jan. 13, 1976
94.5C	B 549,931	E	Jan. 20, 1976
94.5L	B 506,916	E	Feb. 3, 1976
94.5P	B 394,350	E	Jan. 13, 1976
116R	B 527,693	E	Feb. 3, 1976
Class 332			
9R	B 507,087	E	Feb. 17, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 333			
30R	B 453,616	E	Jan. 27, 1976
31A	B 568,770	E	Feb. 10, 1976
72	B 534,991	E	Jan. 27, 1976
73W	B 339,194	E	Feb. 3, 1976
Class 335			
210	B 541,517	E	Jan. 13, 1976
253	B 515,452	E	Feb. 10, 1976
Class 338			
166	B 489,526	E	Feb. 3, 1976
202	B 528,761	E	Feb. 10, 1976
Class 340			
8L	B 270,274	E	Feb. 17, 1976
172.5	B 461,336	E	Feb. 3, 1976
	B 482,907	E	Jan. 20, 1976
173R	B 545,945	M	Jan. 27, 1976
174DC	B 443,712	E	Jan. 27, 1976
174TF	B 429,018	C	Feb. 10, 1976
	B 455,425	E	Feb. 3, 1976
	B 476,681	E	Jan. 13, 1976
	B 499,718	E	Jan. 27, 1976
198	B 546,665	E	Jan. 20, 1976
347AD	B 507,647	E	Jan. 27, 1976
	B 526,106	E	Jan. 27, 1976
347CC	B 498,500	E	Jan. 20, 1976
Class 343			
7A	B 248,240	E	Jan. 13, 1976
7.7	B 484,029	E	Feb. 10, 1976
100LE	B 488,395	E	Jan. 27, 1976
100LE	B 496,502	E	Jan. 20, 1976
786	B 547,994	E	Jan. 20, 1976
815	B 563,244	E	Jan. 27, 1976
Class 346			
75	B 512,964	E	Feb. 10, 1976
Class 350			
96WG	B 381,985	M	Feb. 3, 1976
	B 537,722	M	Feb. 3, 1976
103	B 586,663	M	Feb. 3, 1976
160LC	B 527,054	M	Feb. 17, 1976
173	B 469,947	M	Jan. 20, 1976
310	B 520,543	M	Jan. 27, 1976
320	B 548,440	M	Feb. 3, 1976
Class 354			
46	B 515,135	E	Feb. 17, 1976
70	B 533,580	E	Feb. 3, 1976
298	B 489,328	E	Jan. 20, 1976
Class 355			
8	B 509,474	M	Feb. 17, 1976
17	B 493,501	M	Feb. 3, 1976
Class 356			
201	B 450,521	M	Feb. 17, 1976
Class 357			
16	B 496,487	E	Jan. 20, 1976
23	B 516,060	E	Feb. 17, 1976
36	B 508,961	E	Feb. 3, 1976
65	B 470,798	E	Jan. 20, 1976
Class 358			
8	B 554,939	E	Feb. 10, 1976
41	B 502,289	E	Jan. 13, 1976
Class 360			
1	B 484,365	E	Jan. 27, 1976
15	B 283,941	E	Feb. 3, 1976
17	B 461,874	E	Jan. 27, 1976
27	B 427,883	E	Jan. 20, 1976
60	B 491,111	E	Feb. 17, 1976
80	B 403,477	E	Feb. 3, 1976
81	B 500,176	E	Feb. 3, 1976
85	B 501,253	E	Feb. 3, 1976
130	B 579,806	E	Feb. 3, 1976
Class 401			
219	B 557,621	M	Feb. 3, 1976
Class 403			
107	B 513,789	M	Feb. 3, 1976
318	B 540,632	M	Jan. 13, 1976
Class 404			
71	B 452,672	M	Jan. 13, 1976
77	B 434,206	M	Feb. 3, 1976
Class 408			
124	B 501,993	M	Jan. 13, 1976
146	B 521,986	M	Feb. 3, 1976
Class 415			
14	B 471,735	M	Feb. 3, 1976
115	B 561,712	C	Feb. 17, 1976
213R	B 512,547	M	Jan. 13, 1976
214	B 552,006	M	Feb. 3, 1976
Class 416			
61	B 549,394	M	Jan. 27, 1976
Class 423			
238	B 485,401	C	Jan. 27, 1976
249	B 402,553	C	Feb. 17, 1976
283	B 521,984	C	Feb. 17, 1976
315	B 471,221	C	Jan. 13, 1976
390	B 549,198	C	Jan. 13, 1976
393	B 491,455	C	Feb. 3, 1976
448	B 414,028	C	Feb. 17, 1976
580	B 379,177	C	Jan. 27, 1976
Class 424			
9	B 426,424	C	Feb. 3, 1976
115	B 482,660	C	Feb. 10, 1976
122	B 524,179	C	Jan. 13, 1976
177	B 490,995	C	Feb. 3, 1976
203	B 576,903	C	Feb. 3, 1976
230	B 487,133	C	Jan. 27, 1976
257	B 374,588	C	Jan. 27, 1976
258	B 426,639	C	Feb. 3, 1976
263	B 466,929	C	Jan. 27, 1976
267	B 307,698	C	Feb. 3, 1976
	B 407,737	C	Feb. 3, 1976
270	B 521,711	C	Feb. 10, 1976
273	B 566,464	C	Feb. 3, 1976
274	B 496,431	C	Jan. 13, 1976
281	B 587,786	C	Feb. 17, 1976
311	B 457,862	C	Jan. 27, 1976
317	B 510,850	C	Feb. 3, 1976
362	B 495,489	C	Feb. 3, 1976
Class 425			
222	B 163,463	M	Jan. 27, 1976
384	B 562,813	C	Feb. 3, 1976
Class 426			
3	B 583,712	C	Feb. 10, 1976
276	B 535,944	C	Jan. 13, 1976
535	B 560,717	C	Feb. 10, 1976
548	B 439,778	C	Feb. 3, 1976
Class 427			
39	B 476,837	C	Jan. 20, 1976
70	B 381,709	C	Jan. 13, 1976
145	B 457,547	C	Feb. 17, 1976
186	B 537,085	C	Feb. 17, 1976
207	B 501,415	C	Jan. 13, 1976
343	B 160,099	C	Jan. 13, 1976
372	B 409,848	C	Jan. 27, 1976
389	B 519,377	C	Jan. 27, 1976
Class 428			
73	B 481,737	C	Jan. 13, 1976
289	B 402,929	C	Feb. 3, 1976
315	B 373,354	C	Jan. 27, 1976
341	B 450,196	C	Feb. 10, 1976
434	B 457,886	C	Jan. 13, 1976
Class 431			
175	B 534,313	M	Jan. 27, 1976
264	B 398,220	M	Feb. 3, 1976

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF FEBRUARY, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. O. Smith Corporation: *See*—
  - Phlaum, Edward G., 3,938,946.
- Aalpoel, Marten Geert, to Arenco P.M.B. B.V. Device for delivering objects of non-uniform thickness. 3,938,702, Cl. 221-238.000.
- AB Metalform: *See*—
  - Falk, Curt Gunnar; Strandell, Per-Olof; and Sundberg, Karl Lennart, 3,938,362.
- AB Stridsberg & Blorck: *See*—
  - Nedsten, Hans Ludvig, 3,938,417.
- Abbott Laboratories: *See*—
  - Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; Yamamoto, Mitsuyoshi; Sato, Seiji; Sato, Tomoyasu; and Morikawa, Atsuko, 3,939,043.
  - Ratajczyk, James Daniel; Stein, Robert George; and Swett, Leo Ralph, 3,939,161.
  - Scislowicz, Henry; and Frazier, Thomas A., 3,938,520.
- Abe, Eisuke; and Tanaka, Kiyonobu, to Kabushikikaisha Yokogawa Denki Seisakusho. Self-balancing instrument. 3,939,388, Cl. 318-321.000.
- Abella, Richard M.; Dodson, Keith D.; and Richardson, Jerry G., to Celanese Corporation. Thermoplastic melt apparatus. 3,938,924, Cl. 425-147.000.
- Abu-El-Haj, Marwan J.; and McFarland, James W., to Pfizer Inc. Certain 3-oxo-2-aryl-5,6-dihydro-4(H)-pyrrolo-(1,2-C)(1,2,3)triazolium compounds. 3,939,174, Cl. 260-308.00A.
- Acousa Saxon S.A.: *See*—
  - Haussels, Berthold, 3,938,864.
- Adam, Fritz Guenter; and Schat, Hermannus, to ITT Industries, Inc. Delay line for analogous signals. 3,939,364, Cl. 307-221.00C.
- Adam, Fritz Guenter, to ITT Industries, Inc. All-pass reverberator with an MOS delay line. 3,939,437, Cl. 330-84.000.
- Adams, James E.: *See*—
  - Haas, Werner E. L.; and Adams, James E., 3,938,880.
- Adams Laboratories, Inc.: *See*—
  - Garrett, Charles B., Sr.; Garrett, Roger L.; and Rubin, Alan B., 3,939,285.
- Aerojet-General Corporation: *See*—
  - Katzakian, Arthur, Jr.; and DePree, David O., 3,939,071.
- Agee, John Harvey: *See*—
  - Moore, William Percy; and Agee, John Harvey, 3,939,255.
- Agency of Industrial Science & Technology: *See*—
  - Ato, Yasuro; and Miyagawa, Soji, 3,939,366.
  - Yamaga, Joji; and Jido, Morio, 3,938,345.
- AGFA-Gevaert, AG: *See*—
  - Winkler, Alfred; Engelsmann, Dieter; Maas, Dieter; and Schroder, Rolf, 3,939,484.
- Ahs, Inge Wilgot, to Aktiebolaget Lennartsfors Mekaniska Verkstad. Cushion member for sound-proof sealing. 3,938,614, Cl. 181-129.000.
- Aidala, Dwain; and Welz, Albert W., Jr., to Arthur D. Little, Inc. Electronic timer switch. 3,939,361, Cl. 307-141.000.
- All Systems, Inc.: *See*—
  - Zook, James K., 3,938,258.
- Air Preheater Company, Inc., The: *See*—
  - McClure, Kenneth R., 3,938,971.
- Aisin Seiki Kabushiki Kaisha: *See*—
  - Ohmi, Atsushi, 3,938,424.
- Akamatsu, Hideaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with a plurality of exhaust valves. 3,938,482, Cl. 123-75.00C.
- Akin, Cavit; Flannery, Robert J.; and Darrington, Franklin D., to Standard Oil Company. Process for the production of meat, poultry and fish analogs and the products thereof. 3,939,284, Cl. 426-250.000.
- Akizawa, Nobuo. Apparatus for washing cereals. 3,938,534, Cl. 134-104.000.
- Aktiebolaget Lennartsfors Mekaniska Verkstad: *See*—
  - Ahs, Inge Wilgot, 3,938,614.
- Akzona Incorporated: *See*—
  - McNeill, William Allen, 3,938,952.
  - Rice, Charles M., 3,938,311.
- Aladiev, Ivan Timofeevich; Voskresensky, Kirill Dmitrievich; Gukov, Gennady Petrovich; Saperov, Evgeny Valentinovich; and Fardzinov, Valery Kombolatovich. Rock-exploitation method based on thermodynamic cycles utilizing in-situ energy source. 3,938,592, Cl. 166-299.000.
- Alarie, Allan P.: *See*—
  - Helton, Robert A.; Walsh, George M.; and Alarie, Allan P., 3,939,465.
- Albaric, Jacques E.; Burkhart, Charles W.; and Jones, Warren W., to Westinghouse Electric Corporation. Liquid-cooled rotor for dynamoelectric machines. 3,939,368, Cl. 310-59.000.
- Albrecht, Hans Peter; and Neugebauer, Gunter, to Knoll A.G. Chemische Fabriken. Cardenolides. 3,939,156, Cl. 260-239.570.
- Alexander, Ernest John; and Mooradian, Aram, to Sterling Drug Inc. 4-Aminomethyl-9-benzyl-1,2,3,4-tetrahydrocarbazoles. 3,939,177, Cl. 260-315.000.
- Alfred, P. Allan; Rothstein, Sven-Olle H.; and Popoff, Stig Vilhelm, to Frigoscandia Contracting AB. Self-supporting spiral conveyor. 3,938,651, Cl. 198-136.000.
- Alig, Leo; Furst, Andor; and Muller, Marcel, to Hoffmann-La Roche Inc. D-Homosteroids. 3,939,193, Cl. 260-457.000.
- Allan, Frank V.; Fenn, John B., Jr.; and Welkowsky, Murray S., to Xonics, Inc. Liquid crystal imaging of radiograms. 3,939,345, Cl. 250-315.00A.
- Allegheny Ludlum Industries, Inc.: *See*—
  - Hartline, Albert G., III, 3,938,990.
- Allen, Clifford Harry. Positive displacement rotary pump and drive coupling therefor. 3,938,744, Cl. 241-46.110.
- Allen, Dee Dexter, to U. S. Industries, Inc. Feed cleaner. 3,939,064, Cl. 209-44.000.
- Allied Chemical Corporation: *See*—
  - Barrett, Joseph J., 3,939,348.
  - Kavesh, Sheldon, 3,938,583.
  - Lees, Robert, 3,938,925.
  - Moore, William Percy; and Agee, John Harvey, 3,939,255.
  - Stephenson, Robert L.; and Loomba, Yogendra Singh, 3,938,754.
  - Stephenson, Robert L.; Pfeiffer, Robert C.; and Loomba, Yogendra Singh, 3,938,755.
- Allis-Chalmers Corporation: *See*—
  - Konyha, Peter P., 3,938,400.
- Allison, Lawrence McFarland, to Apor Industries, Inc. Shower heads. 3,938,741, Cl. 239-75.000.
- Allmanna Svenska Elektriska Aktiebolaget: *See*—
  - Claesson, Harry; and Traff, Anders, 3,938,361.
- Alm, Gerald F., to Wickes Corporation, The. Liquid level monitoring device. 3,939,383, Cl. 317-123.000.
- Alphen, Jacques M. Lighting system for a motorcycle. 3,939,339, Cl. 240-62.200.
- Alps Electric Co., Ltd.: *See*—
  - Kasahima, Masao, 3,939,451.
- Alps Motorola Inc.: *See*—
  - Takeda, Tekeshi, 3,939,492.
- Altscher, Siegfried; and Goswami, Jagadish C., to Stauffer Chemical Company. Bis(hydroxy and halo alkyl) alkyl or aryl phosphonates. 3,939,227, Cl. 260-953.000.
- Aluminum Company of America: *See*—
  - Hawkins, Ronald G., 3,939,300.
  - Kelsey, Ronald A., 3,938,363.
  - Urmston, Hugh C., 3,938,455.
- Alza Corporation: *See*—
  - Leeper, Harold M.; and Michaels, Alan S., 3,938,515.
- Amari, Shinji; and Masuda, Takashi, to Sony Corporation. Magnetic recording and/or reproducing system. 3,939,485, Cl. 358-4.000.
- Amaroso, James R.: *See*—
  - Coppock, Walter J.; Amaroso, James R.; and Griffith, John Q., III, 3,939,083.
- Ambruoso, Pasquale, Sr., to Motorola, Inc. Speaker grille screen and mounting structure. 3,938,618, Cl. 181-155.000.
- Amchem Products, Inc.: *See*—
  - Reed, Stuart, 3,939,014.
- American Can Company: *See*—
  - Colberg, Kenneth Herman; and Zukowski, Ronald Joseph, 3,939,110.
- American Cyanamid Company: *See*—
  - Behrens, Rudolf Adolf, 3,939,128.
  - Calbo, Leonard Joseph, Jr., 3,939,121.
  - Nau, Harold Henry, 3,938,469.
  - Preston, Peter Joseph, 3,938,832.
  - Spector, Richard Harvey; and Madison, Richard Keith, 3,939,211.
  - Wagner, Frank Albert, Jr., 3,939,263.
- American Gas Association: *See*—
  - Pangborn, Jon B.; and Sharer, John C., 3,939,257.
- American Hoechst Corporation: *See*—
  - Dornauer, Horst; and Anderson, Vernon Brian, 3,939,159.
- American Home Products Corporation: *See*—
  - Demerson, Christopher A.; Humber, Leslie G.; Dobson, Thomas A.; and Jirkovsky, Ivo L., 3,939,178.
- American Hospital Supply Corporation: *See*—
  - McPhee, Charles J., 3,938,519.
  - Ryan, Jay Edward, 3,938,688.
- American Locker Company, Inc.: *See*—
  - Stackhouse, Wells F.; and Barth, Douglas A., 3,938,640.
- American Safety Equipment Corporation: *See*—
  - Henderson, Cyril; and Broughton, John N., 3,938,859.
- AMP Incorporated: *See*—
  - Hollyday, Robert David; Bradbery, Jack Leo; and Hudson, William Jeffrey, Jr., 3,939,444.
  - Over, William Roderick; and Gress, Paul William, 3,938,246.
- Andco Incorporated: *See*—
  - Lucas, Theodore W., Jr., 3,938,451.

- Anderson, Carl C.; and Marchetti, Joseph R., to PPG Industries, Inc. Process for electrodeposition of cationic thermosetting compositions. 3,939,051, Cl. 204-181.000.
- Anderson, Carsten D. Teat cautery bullet. 3,938,517, Cl. 128-271.000.
- Anderson, James D. Boat trailer latching device. 3,938,829, Cl. 280-414.00R.
- Anderson, James K. Apparatus for improving printing surface of printing material. 3,938,261, Cl. 34-114.000.
- Anderson, Leroy E., to Manufacturers Systems, Inc. Flexible cylindrical metal tube. 3,938,558, Cl. 138-122.000.
- Anderson, Matthew E.; Redmond, Stephen L.; Horky, John W.; and Krolak, Leo V., to United States of America, Navy. Pressure-armed explosive apparatus. 3,938,438, Cl. 102-7.200.
- Anderson, Michael L.; Folwer, Harold W.; and McKie, David A., to Caterpillar Tractor Co. Apparatus for skiving and cleaning reinforced hose. 3,938,215, Cl. 15-304.000.
- Anderson, Vernon Brian: *See*—
  - Dornauer, Horst; and Anderson, Vernon Brian, 3,939,159.
- Anderson, Weston A.; and Waller, Bruce E. Electrical acupuncture needle heater. 3,938,526, Cl. 128-303.100.
- Andersson, Karl Gosta Bertil, to Duni Bila AB. Disposable cardboard plates. 3,938,727, Cl. 229-2.50R.
- Andoh, Shizuo; and Murase, Kenji, to Fujitsu Limited. Gas discharge panel information read-out system. 3,939,454, Cl. 340-173.0PL.
- Andrassy, Stella. Apparatus for solar cooking. 3,938,497, Cl. 126-270.000.
- Andreas Stihl Maschinenfabrik: *See*—
  - Dietzsch, Gunter; Frers, Gerd; and Wieland, Dieter, 3,938,633.
- Andrew Corporation: *See*—
  - Merle, Michel, 3,938,244.
- Andrews, Alvadore M., deceased (Oregon, The United States National Bank of, executor). Multiple mold rotary casting apparatus. 3,938,928, Cl. 425-430.000.
- Andrusiak, Peter W. M. Folding display easel. 3,938,772, Cl. 248-461.000.
- Anno, James N.: *See*—
  - Fawcett, Sherwood L.; and Anno, James N., 3,938,337.
- Antos, George J., to Universal Oil Products Company. Hydrocarbon conversion with an acidic sulfur-free multimetallic catalytic composite. 3,939,059, Cl. 208-139.000.
- Aoki, Hachiro, to Diesel Kiki Co., Ltd. Diesel engine fuel injection pump governor. 3,938,488, Cl. 123-140.00R.
- Apor Industries, Inc.: *See*—
  - Allison, Lawrence McFarland, 3,938,741.
- Apple, Charles N., Sr., to Metafab Industries, Inc. Tube joining system. 3,938,900, Cl. 403-263.000.
- Appleman, William S.: *See*—
  - Richmond, Albert R.; and Appleman, William S., 3,938,597.
- Applied Bioscience: *See*—
  - Wertlake, Paul Terence; and Harrison, James Steele, 3,938,366.
- Aquappliances, Inc.: *See*—
  - Kampf, William M.; and Law, Denny B., 3,938,496.
- Arai, Hiroshi; Ohta, Jun; Taniguchi, Koichi; Sakurai, Yasuhiko; and Ohtake, Toshikazu, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Liquid level detecting and indicating system for vehicle. 3,939,470, Cl. 340-59.000.
- Archuleta, William A. Evaporative cooler cover. 3,938,694, Cl. 220-77.000.
- Arctic Pac, Inc.: *See*—
  - Schmit, Justin M., 3,938,707.
- Arenco P.M.B. B.V.: *See*—
  - Aalpoel, Marten Geert, 3,938,702.
- Arendt, Hans F. Web finishing machines. 3,938,356, Cl. 68-5.00D.
- Armco Steel Corporation: *See*—
  - Burger, John H.; McClelland, John R.; and Dunkle, Robert P., 3,939,296.
- Armor Elevator Company, Inc.: *See*—
  - Maynard, John T., 3,938,624.
- Armour and Company: *See*—
  - Sato, Kunito; and Hegarty, Gerald R., 3,939,288.
- Armstrong, Albert Warner. Fluid lasting of shoes and similar operations. 3,938,211, Cl. 12-145.000.
- Arthur D. Little, Inc.: *See*—
  - Aidala, Dwain; and Welz, Albert W., Jr., 3,939,361.
- Arvidson, Harold C., Jr.; and Stottlemyer, Quayton Ray, to Du Pont de Nemours, E. I., and Company. Flat photographic film produced by heating above the second order transition temperature of the base. 3,939,000, Cl. 96-87.00R.
- Asahi Denka Kogyo Kabushiki Kaisha: *See*—
  - Terada, Kimio; Fujita, Satoshi; Oinuma, Shigeru; and Kohno, Hiroshige, 3,939,290.
- Asahi Dow, Ltd.: *See*—
  - Naito, Hirokuni; Yoshimura, Isao; and Tashiro, Hisao, 3,939,237.
- Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
  - Kawano, Takatsugu; Kojima, Hiroshige; Ohosawa, Hiroshi; and Morinaga, Kazuto, 3,939,279.
- Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
  - Takahashi, Yasuo, 3,938,883.
- Asahi Kogyo Kabushiki Kaisha: *See*—
  - Oishi, Michiro, 3,938,882.
- Asai, Shin-Ichiro: *See*—
  - Horiie, Shigeki; Asai, Shin-Ichiro; and Moriya, Yoshihisa, 3,939,224.
- Asami, Kazuto: *See*—
  - Ushio, Masatoshi; Asami, Kazuto; and Hirokuni, Matono, 3,938,303.
- Asano, Setunobu; and Nakamura, Tadasi, to Mitsubishi Gas Chemical Co. Inc. Process for methanol synthesis. 3,939,191, Cl. 260-449.500.
- Asayama, Kingo, to Kabushiki Kaisha Takechi Koumusho. Earth auger and method for driving piles and the like by means of said earth auger. 3,938,344, Cl. 61-53.660.
- Astra Lakemedel Aktiebolag: *See*—
  - Ekstrom, Bertil Ake; and Sjoberg, Berndt Olof Harald, 3,939,270.
- Astra Pharmaceutical Products Inc.: *See*—
  - Tischlinger, Edward A., 3,938,518.
- Ateliers des Charmilles, S.A.: *See*—
  - Bonga, Benno Ibo, 3,939,322.
- Atkins, George; and Evans, Philip J., to Dunlop Limited. Moulds. 3,938,921, Cl. 425-111.000.
- Atlas Copco Aktiebolag: *See*—
  - Bertilsson, Alf Georg; and Svensson, Sten Gunnar Hugo, 3,938,739.
  - Bertilsson, Alf Georg; Svensson, Sten Gunnar Hugo; and Soderman, Claes Erik, 3,938,740.
  - Olofsson, Hans Kristoffer, 3,938,915.
- Ato, Yasuro; and Miyagawa, Soji, to Agency of Industrial Science & Technology. Method of converting radioactive energy to electric energy and device for performing the same. 3,939,366, Cl. 310-3.00R.
- Atom Auto Pecas Ltd.: *See*—
  - Simon, Arpad, 3,939,230.
- Aubert, Jean. Method and a device for building immersed foundations. 3,938,342, Cl. 61-46.000.
- Audi NSU Auto Union Aktiengesellschaft: *See*—
  - van Basshuysen, Richard, 3,938,329.
- Aumuller, Walter; Weyer, Rudi; and Heerdt, Ruth, to Hoechst Aktiengesellschaft. Benzenesulfon YL-semicarbazides for lowering blood sugar levels. 3,939,269, Cl. 424-258.000.
- Austral-Erwin Engineering Co.: *See*—
  - Erwin, Ransome W., 3,939,036.
- Automated Packaging Systems, Inc.: *See*—
  - Lerner, Bernard, 3,938,299.
- Automobiles Peugeot: *See*—
  - Boudeville, Jean-Claude; and Gelin, Jacques, 3,938,612.
  - Roubinet, Pierre, 3,938,288.
- Automotive Products Co., Ltd.: *See*—
  - Davies, David Aubrey; and Johnson, Dennis Sydney, 3,938,635.
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  - McDavid, James E., Jr.; Truesdell, Stanley E.; and Chipps, Elmer Thomas, 3,938,698.
- Awazuhara, Hiroshi: *See*—
  - Shida, Shigeru; Yasuda, Kenichi; Awazuhara, Hiroshi; and Tsumura, Sukebumi, 3,938,360.
- Aylard, William F.; and Blank, Albert I., to Chase Brass & Copper Co., Incorporated. Stoker feed system. 3,939,297, Cl. 13-29.000.
- B. F. Goodrich Company, The: *See*—
  - Hallenbeck, Victor L., 3,938,573.
  - Schollenberger, Charles S.; and Dinbergs, Kornelius, 3,939,111.
- Baba, Ken-ichi: *See*—
  - Nishibayashi, Yoshifumi; Shimizu, Atsushi; Shiga, Yasuhiro; Okabe, Kenji; and Baba, Ken-ichi, 3,939,021.
- Babcock, Don L. Barrel handler. 3,938,768, Cl. 248-129.000.
- Babkin, Artur Grigorievich: *See*—
  - Motov, David Lazarevich; Konstantinov, Vladimir Ivanovich; Rumyantsev, Vladimir Georgievich; Belokoskov, Valentin Ivanovich; Ude, Eduard Osvaldovich; Babkin, Artur Grigorievich; Metelkin, Alexandr Ivanovich; Suchkov, Vasily Georgievich; Koleshikova, Nina Ivanovna; Motovilin, Alexandr Vasilievich; Rusakova, Nina Trofimovna; Nikonova, Tatyana Vladimirovna; Polyaninova, Nina Ivanovna; Sinenko, Mikhail Grigorievich; Krylova, Irina Fedorovna; and Yakutin, Vladimir Mikhailovich, 3,938,951.
- Babunovic, Momir, to Barry-Wehmiller Company. Container cleaning apparatus. 3,938,532, Cl. 134-43.000.
- Bacskai, Robert, to Chevron Research Company. Esters. 3,939,201, Cl. 260-488.00J.
- Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See*—
  - Koenig, Horst; Metzger, Horst; and Reif, Werner, 3,939,184.
  - Sliwka, Wolfgang; Gaefke, Wolf-Ruediger; and Korth, Tilmann, 3,939,095.
- Bagwell, James H., to Doonan Trailer Corporation. Door construction for hopper trailer. 3,938,861, Cl. 298-27.000.
- Baile, Clifton A.; McLaughlin, Carol Lynn; and Webb, Robert Lee, to SmithKline Corporation. Methods and compositions for increasing growth rate and feed efficiency of animals. 3,939,275, Cl. 424-310.000.
- Bailey, Leo L.; and Kimmel, David R. Gas generator. 3,938,327, Cl. 60-39.770.
- Bajer, Francis J., to Hooker Chemicals & Plastics Corporation. Selective oxyalkylation of mercaptophenols. 3,939,210, Cl. 260-609.00F.
- Balogh, John J., Jr.: *See*—
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- Ban, Thomas E., to McDowell-Wellman Engineering Company. Process for preparing a smelter furnace charge composition. 3,938,987, Cl. 75-3.000.
- Bangay, Albert: *See*—
  - Jackson, John A., 3,939,360.
- Barber, Lois M. Hand splint. 3,938,509, Cl. 128-77.000.
- Bard, Donald I. Fancy stitchery working frame support. 3,938,267, Cl. 38-102.100.

- Baremor, Jerry F., to Eaton Corporation. Differential drive mechanism. 3,938,408, Cl. 74-711.000.
- Barie, Walter P., Jr.; Onopchenko, Anatoli; and Schulz, Johann G. D., to Gulf Research & Development Company. Polyamic-acids prepared from 3,3,4,4-benzhydrol tetracarboxylic dianhydride. 3,939,109, Cl. 260-29.10R.
- Barlow, G. Benjamin; and Wolfe, Chester G., to International Harvester Company. Swingable rotary screen. 3,938,586, Cl. 165-51.000.
- Barnard, John David William; and Kurer, Peter Frank, to Kurer Research & Development. Dental instrument holder. 3,938,253, Cl. 32-40.00R.
- Barnes, Porter I.; and Steele, Carlton A., to Leesona Corporation. Strand delay device. 3,938,750, Cl. 242-36.000.
- Barnes, Stanley Charles; and Lawrie, Robert James, to Joseph Lucas (Batteries) Limited. Method of making battery plate grids for lead-acid batteries and alloys therefor. 3,939,009, Cl. 136-66.000.
- Barrett, Joseph J., to Allied Chemical Corporation. Infrared gas analysis. 3,939,348, Cl. 250-339.000.
- Barringer, Jerry M.; Harris, Raymond W.; and Woodward, John B., to General Electric Company. Circuit for indicating the battery voltage and operation of a radio transmitter. 3,939,421, Cl. 325-133.000.
- Barry-Wehmiller Company: *See*—
  - Babunovic, Momir, 3,938,532.
- Bartels, Klaus Peter: *See*—
  - Detzel, Josef; and Bartels, Klaus Peter, 3,938,730.
- Barth, Douglas A.: *See*—
  - Stackhouse, Wells F.; and Barth, Douglas A., 3,938,640.
- Barth, Jordan B., to Colgate-Palmolive Company. Flavored dentifrice. 3,939,261, Cl. 424-49.000.
- Bartholomew, Allan E., to Myers Industries, Inc. Cassette storage device with adjustable partitions. 3,938,871, Cl. 312-240.000.
- BASF Aktiengesellschaft: *See*—
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  - Fischer, Adolf, 3,938,984.
  - Nagel, Otto; Kuerten, Heribert; and Zehner, Peter, 3,938,738.
- Bastide, Paul. Special aircraft using a novel integrated lift, propulsion and steering system. 3,938,759, Cl. 244-9.000.
- Batchelor, John Frederick: *See*—
  - Hodson, Harold Francis; and Batchelor, John Frederick, 3,939,173.
  - Hodson, Harold Francis; and Batchelor, John Frederick, 3,939,276.
- Bats, Jules. Apparatus for deodorizing liquids. 3,939,073, Cl. 210-152.000.
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- Bauer, Frederick T., to Robertshaw Controls Company. Primary control and ignition system for oil burners. 3,938,940, Cl. 431-79.000.
- Bauer, Hans. Apparatus for grilling with heat storing arrangement. 3,938,493, Cl. 126-41.00R.
- Bauer, Hans, to Bauer, Hans; and Fa. Dietz-Druckguss KG. Grilling apparatus with supporting surface. 3,938,495, Cl. 126-41.00R.
- Bauer, James J., to Clark Equipment Company. Two-speed motor control for dual hydrostatic transmissions. 3,938,401, Cl. 74-471.00R.
- Bauer, William J. Sewage treatment process. 3,939,066, Cl. 210-6.000.
- Baum, Charles S.: *See*—
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- Beckman Instruments, Inc.: *See*—
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  - Wright, Herschel E.; and Ishimaru, Kenzo, 3,938,735.
- Beecham Group Limited: *See*—
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  - Nayler, John Herbert Charles; Pearson, Michael John; and Southgate, Robert, 3,939,157.
- Begrich, Rainer, to Ciba-Geigy AG. N-(2,4-dihalo-S-triazin-6-yl)-ureas and process for their manufacture. 3,939,158, Cl. 260-249.500.
- Behrens, Rudolf Adolf, to American Cyanamid Company. Vulcanization of halogen or epoxy-containing polyacrylate elastomers. 3,939,128, Cl. 260-79.50P.
- Behrenz, Wolfgang: *See*—
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- Bekoto: *See*—
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- Bell, Malcolm Charles Evert; and Sridhar, Ramamritham, to International Nickel Company, Inc., The. Arsenic removal from nickel matte. 3,938,989, Cl. 75-82.000.
- Bell, Thomas Robert; and Smith, Perrin Gary, to Pennwalt Corporation. Continuous production of thiophene from butane. 3,939,179, Cl. 260-332.800.
- Bell, William F.; and Van Deberg, Walter H., to F. Jos. Lamb Company. Workpiece elevator. 3,938,649, Cl. 198-38.000.
- Bellingham, Andrew Irwin, to Warman Equipment (International) Limited. Process for the separation of tungsten and molybdenum. 3,939,245, Cl. 423-55.000.
- Belliot, Christian; Cheylan, Etienne; Madelaine, Serge; and Ebbing, Johannes, to Compagnie Francaise Thnmson Houston-Hotchkiss Brandt. Catalytic product for the oxidative destruction of gaseous organic compounds and method for their preparation. 3,939,103, Cl. 252-455.00R.
- Beloit Corporation: *See*—
  - Hill, Lester M., 3,939,037."
- Belokoskov, Valentin Ivanovich: *See*—
  - Motov, David Lazarevich; Konstantinov, Vladimir Ivanovich; Rumyantsev, Vladimir Georgievich; Belokoskov, Valentin Ivanovich; Ude, Eduard Osvaldovich; Babkin, Artur Grigorievich; Metelkin, Alexandr Ivanovich; Suchkov, Vasily Georgievich; Koleshikova, Nina Ivanovna; Motovilin, Alexandr Vasilievich; Rusakova, Nina Trofimovna; Nikonova, Tatyana Vladimirovna; Polyaninova, Nina Ivanovna; Sinenko, Mikhail Grigorievich; Krylova, Irina Fedorovna; and Yakutin, Vladimir Mikhailovich, 3,938,951.
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- Benkoe, Erwin: *See*—
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- Bennett, Max E.; McCanse, James Edson; Lawson, Gordon L.; and Clark, William H., to Hesston Corporation. Grappling hayfork. 3,938,681, Cl. 214-147.00G.
- Bennett, Robert A., to Procter & Gamble Company, The. Safety device for aerosol can. 3,938,710, Cl. 222-153.000.
- Benzan, Luciano. Process for improving the combustion of solid. 3,938,932, Cl. 431-2.000.
- Beretta, Paolo: *See*—
  - Gandino, Mario; and Beretta, Paolo, 3,939,176.
- Berg, Richard D.; Brown, Donald R.; Masopust, Otto T., Jr.; and Stoltz, James F., to Western Electric Company, Inc. Wound resistor-capacitor network and method of forming. 3,939,440, Cl. 333-70.0CR.
- Bergt, Wolfgang, to Motoren- und Turbinen-Union Munchen GmbH. Aerodynamic flame holder. 3,938,325, Cl. 60-39.72R.
- Bermishev, Andrei Vasilievich: *See*—
  - Ovchinnikov, Viktor Sergeevich; Grigorov, Eduard Ivanovich; Magdesian, Arkady Lukyanovich; Gorelikov, Vladimir Ivanovich; Bermishev, Andrei Vasilievich; Utkin, Alexandr Stepanovich; Fedotov, Viktor Konstantinovich; and Volkov, Vladimir Yakovlevich, 3,938,346.
- Bernaerts, Henry J. Valve with heat transport monitor for leakage determining rate. 3,938,544, Cl. 137-334.000.
- Bernold, Jean. Apparatus for wet spraying of concrete. 3,938,786, Cl. 259-151.000.
- Bershtein, Ruvim Semenovich: *See*—
  - Bobylev, Vitaly Petrovich; Kravtsov, Alexandr Feodosievich; Bytkin, Vitaly Nikolaevich; and Bershtein, Ruvim Semenovich, 3,938,787.
- Bertele, Erhard; and Schudel, Peter, to Givaudan Corporation. Process for preparation of terpene flavorants and novel intermediates therefor. 3,939,206, Cl. 260-601.00R.
- Bertilsson, Alf Georg; and Svensson, Sten Gunnar Hugo, to Atlas Copco Aktiebolag. Nozzle for electrostatic spray gun. 3,938,739, Cl. 239-15.000.
- Bertilsson, Alf Georg; Svensson, Sten Gunnar Hugo; and Soderman, Claes Erik, to Atlas Copco Aktiebolag. Nozzle for electrostatic spray gun. 3,938,740, Cl. 239-15.000.
- Bertolasi, Robert B., to Kelsey-Hayes Company. Intake manifold valve throttle control for spin control system. 3,938,611, Cl. 180-77.00R.
- Bertrand, Isidore L. Q.; and Hays, Wilford R., to Lockheed Aircraft Corporation. Portable electrical discharge metalworking machine. 3,939,321, Cl. 219-69.00D.
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Bezerie, Jean Pierre; and Sirieix, Michel Benoit, to Societe Anonyme de Telecommunications. Device for measuring an angular deviation by heterodyne detection. 3,939,342, Cl. 250-203.00R.

Bichel, Darwin Carl, to Deere & Company. Combine grain tank loading conveyor. 3,938,683, Cl. 214-519.000.

Bickford, William J., to Raytheon Company. Plural channel communications system. 3,939,407, Cl. 325-47.000.

Biegelsen, David K.; Starkweather, Gary K.; and Zesch, James C., to Xerox Corporation. Acousto-optic modulation device. 3,938,881, Cl. 350-161.000.

Bildstein, Hubert; Knotik, Karl; and Leichter, Peter, to HOBEG Hochtemperaturreaktor-Brennelement GmbH. Method for the production of spherical particles. 3,939,233, Cl. 264-13.000.

Billeter, Thomas R.; Philipp, Lee D.; and Schemmel, Richard R., to Westinghouse Electric Corporation. Microwave fluid flow meter. 3,939,406, Cl. 324-58.50C.

Billi, S.p.A.: *See—*
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Billington, Arthur Ernest, to Beecham Group Limited. Colored foodstuffs and beverages. 3,939,283, Cl. 426-250.000.

Bingham, Rowland Hardy, to National Research Development Corporation. Electromechanical transducer. 3,938,379, Cl. 73-141.00A.

Birkle, Adolph John: *See—*
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Birnbaum, Michael R.; and Cosentino, Louis C., to Medtronic, Inc. Blood pressure monitoring system. 3,938,506, Cl. 128-2.05A.

Biro, Oszkar; Danyi, Edit; Fenyvesi, Magdolna; and Pamuk, Janos, to Finommechanikai Vallalat. Frequency-selective coupling for high-frequency electromagnetic waves. 3,939,443, Cl. 333-73.00R.

Birrell, Peter Leslie, to Cornelius Company, The. Portable dispenser for mixed beverages. 3,938,639, Cl. 194-87.000.

Bishop, Larry D., to General Electric Company. Arrangement for utilizing all pulses in a narrow band channel of a time-division multiplex, pulse code modulation system. 3,939,307, Cl. 179-15.00A.

Bitsch, Rainer; and Diessner, Armin, to Siemens Aktiengesellschaft. Arrangement for testing metal-clad, high-voltage installations. 3,939,410, Cl. 324-72.000.

Bjorkman, Claes: *See—*
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Blair, Richard F., to Tylan Corporation. Mass flow meter with reduced attitude sensitivity. 3,938,384, Cl. 73-204.000.

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Bloch, Herman S., to Universal Oil Products Company. Process for the preparation of alkaline sulfate esters of N-alkyl-substituted hydroxypolyalkoxymethylcyclohexenes. 3,939,197, Cl. 260-458.000.

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Bobbitt, William C., Jr., to Hafner, Rudolph; and Hafner, John, part interest to each. Vehicle servicing system. 3,938,621, Cl. 184-1.500.

Bobylev, Vitaly Petrovich; Kravtsov, Alexandr Feodosievich; Bytkin, Vitaly Nikolaevich; and Bershtein, Ruvim Semenovich. Apparatus for mixing and granulating bulk materials. 3,938,787, Cl. 259-177.00R.

Bocca, Giorgio: *See—*
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Bockmon, William E., Jr., to Gamut Games, Inc. Game apparatus including board and pieces. 3,938,808, Cl. 273-131.0BA.

Bodenger, Jacob. Stethoscope consisting of a stethoscope chest piece and a sound mixer. 3,938,615, Cl. 181-131.000.

Bodor, Nicolae S.; Sloan, Kenneth B.; and Hussain, Anwar A., to Interx Research Corporation. Novel, transient pro-drug forms of l-dopa useful in the treatment of parkinson's disease. 3,939,253, Cl. 424-309.000.

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Bogert, Clayton. Protective closures for containers. 3,938,715, Cl. 222-534.000.

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Boileau, Jacques, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Pneumatic tires. 3,938,575, Cl. 152-362.00R.

Bolha, John J., to Robertshaw Controls Company. Plural range pressure regulator construction and cap assembly therefor. 3,938,542, Cl. 137-271.000.

Bolton, Ivan Joseph; Fleck, Fritz; and Mercer, Alec Victor, to Sandoz Ltd., (Sandoz AG). Pyrazoline derivatives. 3,939,154, Cl. 260-239.900.

Bom, Nicolaas. Apparatus with a catheter for examining hollow organs or bodies with the ultrasonic waves. 3,938,502, Cl. 128-2.00V.

Bonga, Benno Ibo, to Ateliers des Charmilles, S.A. Electrode tool holder assembly for electrical machining apparatus. 3,939,322, Cl. 219-69.00R.

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Borum, Charles J., to Hobart Corporation. Trash compactor with clock timer control. 3,938,433, Cl. 100-51.000.

Borzym, Alexander. Tube cutoff apparatus. 3,938,415, Cl. 83-385.000.

Boser, Ronald J. Sewing machine cutting device. 3,938,454, Cl. 112-130.000.

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Boswell, George T. Vehicle safety apparatus. 3,938,825, Cl. 280-150.00B.

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Boucher, Lionel J. Bladder wash method and apparatus. 3,938,514, Cl. 128-232.000.

Boudeville, Jean-Claude; and Gelin, Jacques, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Anti-skid system for the driving wheels of automotive vehicles. 3,938,612, Cl. 180-82.00R.

Bourdon, Normand C., to Bendix Corporation, The. Electrical connector contact retention system. 3,938,874, Cl. 339-59.00M.

Bous, Karl. Spinning and winding of yarns. 3,938,306, Cl. 57-34.00R.

Bowmar Instrument Corporation: *See—*
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Boyd, Edward L.; and McInerney, John P., to Westinghouse Electric Corporation. Insulated transformer windings. 3,939,449, Cl. 336-60.000.

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Brakensiek, Lee Wesley. Sliding door lock. 3,938,838, Cl. 292-210.000.

Brandt, Bertil. Boat mooring apparatus. 3,938,462, Cl. 114-230.000.

Branson Ultrasonics Corporation: *See—*
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Brantingham, George L.; Phillips, Louis H.; and Novak, Larry T., to Texas Instruments Incorporated. Universal condition latch in an electronic digital calculator. 3,939,335, Cl. 235-156.000.

Brasa, Umberto. Method and apparatus for deviating objects transported along a conveyor. 3,938,646, Cl. 198-31.00R.

Bray, Donald T., to Desalination Systems, Inc. Apparatus for control of a reverse osmosis system. 3,939,074, Cl. 210-257.00M.

Bredeweg, Corwin J., to Dow Chemical Company, The. Chlorinated and brominated carbocyclic diethers. 3,939,212, Cl. 260-611.00R.

Brems, John Henry. Programmable multiple step indexing drive mechanism. 3,938,396, Cl. 74-55.000.

Brenner, Robert A.; and Cuthbert, Victor W., to Whirlpool Corporation. Adjustable baffle for appliance. 3,938,260, Cl. 34-108.000.

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Bridger, Andrew; and Dakss, Mark L., to GTE Laboratories Incorporated. Method for positioning an optical fiber. 3,938,895, Cl. 356-152.000.

Bright, William L. Safety lock for enclosures. 3,938,837, Cl. 292-149.000.

Brinkmann, Heinz; Gersbeck, Rolf; and Schlomach, Eckart, to Hermann Berstorff Maschinenbau GmbH. Apparatus for the continuous manufacture of chipboard panels, fibre panels or the like. 3,938,927, Cl. 425-373.000.

British Insulated Callender's Cables Limited: *See—*
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Broadbent, Lynn C.; and Thomas, William B. Root cellar. 3,938,284, Cl. 52-20.000.

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Brotzmann, Karl: *See—*
Knuppel, Helmut; Brotzmann, Karl; Fassbinder, Hans-Georg; Savard, Guy; and Lee, Robert, 3,938,790.

Broughton, John N.: *See—*
Henderson, Cyril; and Broughton, John N., 3,938,859.

Brown, Donald R.: *See—*
Berg, Richard D.; Brown, Donald R.; Masopust, Otto T., Jr.; and Stoltz, James F., 3,939,440.

Brown, Edward A., to G. D. Searle & Co. 4',5'-Dihydrospiro[androst/estr-4-ene-17,2'(3'H)-furan]3,4'-dione and congeners, and intermediates thereto. 3,939,155, Cl. 260-239.55R.

Brown, Gordon E., to Monsanto Company. Fire-retardant particle board and binder therefor from aminoplast with ammonium polyphosphate-formaldehyde product. 3,939,107, Cl. 260-17.300.

Brown, John, to Qantix Corporation. Front projection screen made from a transparent material. 3,938,876, Cl. 350-128.000.

Brown, John Graham; and Stocker, John Peter, to International Standard Electric Corporation. Electrical push-button switch. 3,939,318, Cl. 200-159.00R.

Brown, Neil F.: *See—*
Krier, Keith N.; Brown, Neil F.; and Waldhauser, Steven J. A., 3,938,212.

Brown, Neil L., to United States of America, Navy. Conductivity cell and measuring system. 3,939,408, Cl. 324-30.00B.

Brownfield, Swayze W. Sound multiplier. 3,938,616, Cl. 181-136.000.

Browning-Ferris Industries, Inc.: *See—*
Cradeur, Robert R.; and Cardone, John E., 3,938,535.

Brundin, Bengt: *See—*
Risberg, Sture; Lindgren, Alf; Rixon, Kjell; Wallden, Rickard; and Brundin, Bengt, 3,939,420.

Bruntink, Lammert: *See—*
Lohn, Klaus; Lutteke, Georg; Schiefer, Gerd; Bruntink, Lammert; Groenewegen, Paulus Petrus Maria; Weinerth, Hans Viktor; Zwijsen, Wilhelmus Antonius Joseph Marie; and Rooij, Karel Petrus Van, 3,939,429.

Brusic, Vlasta; and Lussow, Robert O., to International Business Machines, Corporation. Method for passivating chromium. 3,939,293, Cl. 427-403.000.

Bryant Grinder Corporation: *See—*
Schroeder, Roger L., 3,939,453.

BTR Industries Limited: *See—*
Smith, Edward Peter, 3,938,774.

Bucalo, Louis. Implant and implanting method and tool. 3,938,499, Cl. 128-1.00R.

Bucalo, Louis, to Investors in Ventures, Inc. Implanting and splicing articles and methods for living beings. 3,938,528, Cl. 128-334.00C.

Buchner, Werner: *See—*
Lucking, Hans Joachim; Seyfried, Klaus; Buchner, Werner; and Rudolph, Karl-Heinz, 3,939,195.

Buckland, Bonnie P. Combination tie rack. 3,938,667, Cl. 211-87.000.

Buckner, Horst E. Oral appliance for burn patients. 3,938,508, Cl. 128-76.00R.

Bugg, John W. J.: *See—*
Epstein, David; Watkins, Leslie A.; and Bugg, John W. J., 3,938,578.

Buhler, Wolfgang: *See—*
Kirsch, Ulrich; and Buhler, Wolfgang, 3,938,370.

Bultmann, Holger: *See—*
Studeny, Hermann; and Bultmann, Holger, 3,938,818.

Burger, John H.; McClelland, John R.; and Dunkle, Robert P., to Armco Steel Corporation. Annealing furnace base plate supports. 3,939,296, Cl. 13-25.000.

Burger, Norman D., to Burger, Norman D.; and Mardesich, Nicholas, part interest to each. Aerosol dispensing system. 3,938,708, Cl. 222-95.000.

Burkhart, Charles W.: *See—*
Albaric, Jacques E.; Burkhart, Charles W.; and Jones, Warren W., 3,939,368.

Burkl, Erich: *See—*
Schurger, Rainer; Walter, Lothar; and Burkl, Erich, 3,938,862.

Burlington Industries, Inc.: *See—*
Lewey, Ernest L.; Sharpe, Ned K.; and Sloan, James F., 3,938,671.

Burmester, Kurt; Wolff, Siegfried; Klotzer, Erhard; and Thurn, Friedrich, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Vulcanizable rubber mixture for tire treads having improved skid resistance. 3,938,574, Cl. 152-330.00R.

Burrell, Julius W., to Raymond Lee Organization, Inc., The, a part interest. Sock and shoe. 3,938,264, Cl. 36-1.000.

Burroughs Corporation: *See—*
Sargunar, John E., 3,938,757.

Burroughs Wellcome Co.: *See—*
Hodson, Harold Francis; and Batchelor, John Frederick, 3,939,173.
Hodson, Harold Francis; and Batchelor, John Frederick, 3,939,276.
Mentha, John W.; Shaffner, Janice V.; and Cresswell, Ronald M., 3,939,181.
Stuart, Alexander, 3,939,160.

Busch, Karl Alexander: *See—*
Radermacher, Gunter; and Busch, Karl Alexander, 3,938,625.

Butler, Edward A.: *See—*
Hecker, Richard; and Butler, Edward A., 3,938,463.

Butler, Robert C., to Raymond Lee Organization, Inc., The, a part interest. Spill-proof drinking container. 3,938,690, Cl. 220-90.400.

Buttermann, Gotz, to Schering Aktiengesellschaft. Radioactive functional diagnostic agents. 3,939,204, Cl. 260-518.00A.

Byers Photo Equipment: *See—*
Petry, Chester H., Jr.; and Hensley, J. Carl, 3,939,026.

Bytkin, Vitaly Nikolaevich: *See—*
Bobylev, Vitaly Petrovich; Kravtsov, Alexandr Feodosievich; Bytkin, Vitaly Nikolaevich; and Bershtein, Ruvim Semenovich, 3,938,787.

C.A.V. Limited: *See—*
Chalmers, Brian John; and Gibson, John Philip, 3,939,392.
Peltret, Pierre Henri, 3,938,487.

C. G. Doris: *See—*
Lamy, Jacques Edouard, 3,938,343.

C. Sherman Johnson Co., Inc.: *See—*
Johnson, Curtiss S., Jr., 3,938,844.

Calbo, Leonard Joseph, Jr., to American Cyanamid Company. Thermosetting toluene-soluble water-insoluble alkylated urea-formaldehyde resin and process for the manufacture thereof. 3,939,121, Cl. 260-70.00A.

Caldwell, Harold B., to Whiting Corporation. Process and apparatus for manufacturing phosphoric acid. 3,939,248, Cl. 423-166.000.

Camardella, Giuseppe. Machine tool with intermittently rotatable turret, more particularly a coil winder, and method of operating same. 3,938,748, Cl. 242-7.090.

Camelon, Melville J.; and Gibeau, Rodney C., to Ford Motor Company. Powder paints containing aluminum and nickel I. 3,939,114, Cl. 260-42.140.

Camp, Vernon Doyle; and Payne, Harry R., to Cavalier Corporation. Multi-rack article dispensing apparatus. 3,938,700, Cl. 221-109.000.

Campbell, John Stewart; Farmery, Keith; Heath, David John; and Harbord, Norman Henry, to Imperial Chemical Industries Limited. Catalytic process. 3,939,104, Cl. 252-455.00R.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Coleman, John Ralph; and Valand, Torstein, 3,939,010.

Canadian Patents and Development Limited: *See—*
Malcolm, J. Douglas, 3,938,557.

Cannalte, Gary A.; Crouse, Richard J.; Koenig, Richard D.; Rollins, Thomas J.; and Walker, Donald L., to Motorola, Inc. Emergency communications system. 3,939,417, Cl. 325-5.000.

Cannon, Robert B. Heat transfer apparatus. 3,938,233, Cl. 29-157.30R.

Canon Kabushiki Kaisha: *See—*
Uchidoi, Masanori; and Yamada, Tateo, 3,938,886.

Caramanian, Adele Jeannette, executrix: *See—*
Caramanian, Ara, deceased; and Caramanian, John A., 3,939,020.

Caramanian, Ara, deceased (by Caramanian, Adele Jeannette, executrix); and Caramanian, John A., to Caramanian, John A. Method of balancing a rotor. 3,939,020, Cl. 156-64.000.

Caramanian, John A.: *See—*
Caramanian, Ara, deceased; and Caramanian, John A., 3,939,020.

Carbonell, Nelson P.; and Perry, Roger L., to Gillette Company, The. Shaving system with pivotal head. 3,938,247, Cl. 30-47.000.

Cardenes Armas, Gregorio. Fuel oil burning method. 3,938,933, Cl. 431-4.000.

Carder, Charles H.; and Borden, George W., to Union Carbide Corporation. Acrylyl-terminated urea-urethane compositions. 3,939,126, Cl. 260-77.5CR.

Cardone, John E.: *See—*
Cradeur, Robert R.; and Cardone, John E., 3,938,535.

Carl Freudenberg, Firma: *See—*
Forch, Hans, 3,938,813.

Carlile, Norman John; and van Selm, Theodorus Johannes, to Lever Brothers Company. Food product. 3,939,282, Cl. 426-603.000.

Carlson, Elmer A., to International Telephone and Telegraph Corporation. Ignition system and components thereof. 3,938,938, Cl. 431-78.000.

Carlton, Ronald C. Storage means for motorcycles and like vehicles. 3,938,719, Cl. 224-36.000.

Carmody, John Maurice, to Republic Packaging Corporation. Packing brace. 3,938,661, Cl. 206-523.000.

Carnes, W. Robert; Balogh, John J., Jr.; and Selnick, Lester L., to Pitney-Bowes, Inc. Circuit for sorting currency. 3,938,663, Cl. 209-73.000.

Carrier Corporation: *See—*
Vizmeg, George, 3,938,936.

Carter, James L.: *See—*
Sinfelt, John H.; and Carter, James L., 3,939,062.

Carter, William E., Sr., to Thermo-Kinetics, Inc. High velocity filter. 3,938,970, Cl. 55-276.000.

Castleberry, William R. Rack assembly. 3,938,666, Cl. 211-49.00D.

Caterpillar Tractor Co.: *See—*
Anderson, Michael L.; Folwer, Harold W.; and McKie, David A., 3,938,215.
Beil, Richard C., 3,938,376.
Kershaw, Samuel L.; and Proeschl, Bernard E., 3,938,238.
Shelby, Robert L.; and Oestmann, Eldon D., 3,938,851.
Turner, Leland D.; and Smith, Donald L., 3,938,770.
Vinton, David S., 3,938,669.
Yancey, John W., 3,938,606.

Catteau, Jean. Case for displaying notices. 3,938,269, Cl. 40-30.000.

Cavalier Corporation: *See—*
Camp, Vernon Doyle; and Payne, Harry R., 3,938,700.

Cavaterra, Enrico; Petrera, Donato; Pignataro, Francesco; and Colucci, Gabriele, to Montedison S.p.A. Process for preparing methacrolein from isobutene and oxygen. 3,939,208, Cl. 260-604.00R.

Cecil, Richard R.: *See—*
Paynter, John D.; and Cecil, Richard R., 3,939,061.

Celanese Corporation: *See—*
Abella, Richard M.; Dodson, Keith D.; and Richardson, Jerry G., 3,938,924.
Richardson, Peter C., 3,939,096.

Centralny Osrodek Badan i Rozwoju Techniki Kolejnictwa: *See—*
Marszalek, Leszek; Lorenc, Tadeusz; and Hodbod, Andrzej, 3,938,629.

Centre de Recherche Industrielle de Quebec: *See—*
Rioux, Jacques E.; Turp, Gerald; and Jacques, Francois, 3,938,527.

- Centre National d'Etudes Spatiales: *See—*
  - Ribes, Andre Auguste, 3,939,304.
- Centro Sperimentale Metallurgico S.p.A.: *See—*
  - Imberti, Bruno, 3,938,791.
- Chacon, Rene Aragon. Sprinkler head cleaning device. 3,938,249, Cl. 30-300.000.
- Chalmers, Brian John; and Gibson, John Philip, to C.A.V. Limited. Inverters. 3,939,392, Cl. 321-11.000.
- Channell, William H. Fixed count underground cable terminal. 3,939,301, Cl. 174-72.00R.
- Chase Brass & Copper Co., Incorporated: *See—*
  - Aylard, William F.; and Blank, Albert I., 3,939,297.
- Cherney, Steven D.: *See—*
  - Hau, Thomas J.; and Cherney, Steven D., 3,939,100.
- Chesebrough-Pond's, Inc.: *See—*
  - Tusa, Philip; and Tranner, Frank, 3,939,099.
- Chesley, Ronald F.: *See—*
  - Goldfarb, Adolph E.; Benkoe, Erwin; Everitt, Delmar K.; Chesley, Ronald F.; and Frierdich, Richard D., 3,938,277.
- Chevron Research Company: *See—*
  - Bacskai, Robert, 3,939,201.
  - Comfort, Armand C.; and Messner, Harold D., 3,938,386.
  - Gardner, John D.; and Manning, John F., 3,939,183.
  - Goldschmidt, Alfred; and Stayner, Robert A., 3,939,088.
  - Kobzina, John W., 3,938,985.
- Cheylan, Etienne: *See—*
  - Belliot, Christian; Cheylan, Etienne; Madelaine, Serge; and Ebbing, Johannes, 3,939,103.
- Chicago Metal Mfg. Co.: *See—*
  - Wendt, William H., III; and Krieps, George D., 3,938,235.
- Chiellini, Enzo: *See—*
  - Console, Luciano; Bencini, Ferdinando; and Chiellini, Enzo, 3,939,120.
- Chipps, Elmer Thomas: *See—*
  - McDavid, James E., Jr.; Truesdell, Stanley E.; and Chipps, Elmer Thomas, 3,938,698.
- Chori Company Limited: *See—*
  - Kawasaki, Kentaro; and Takizawa, Keizo, 3,938,227.
- Christensen Diamond Products Company: *See—*
  - Jurgens, Rainer; and Ostertag, Alfred, 3,938,853.
- Christiansen, Soren Bent, to F. L. Smidth & Co. Method and apparatus for burning pulverulent materials. 3,938,949, Cl. 432-14.000.
- Christoph, Dieter: *See—*
  - Jonelis, Robert E.; Christoph, Dieter; and Schulz, Siegfried, 3,938,411.
- Chrysler Corporation: *See—*
  - Oda, Roy; De Frayne, Garry O.; and Walker, Paul L., 3,939,337.
- Ciba-Geigy AG: *See—*
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- Ciba-Geigy Corporation: *See—*
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  - Franke, Albrecht; and Traber, Walter, 3,939,274.
  - Gschwend, Heinz Werner, 3,939,271.
  - Hugelin, Bernard; and Troxler, Eduard, 3,939,147.
  - L'Eplattenier, Francois; Pugin, Andre; and Vuitel, Laurent, 3,939,194.
  - Porret, Daniel, 3,939,125.
  - Ramey, Chester E.; and Luzzi, John J., 3,939,163.
  - Randell, Donald Richard; and Smith, Malcolm John, 3,939,170.
  - Schmidt, Andreas; Peterson, Janet B.; and Dexter, Martin, 3,939,175.
  - Werner, Lincoln Harvey, 3,939,267.
  - Wick, Arnold; and Jost, Max, 3,939,113.
- Citizen Watch Co., Ltd.: *See—*
  - Morokawa, Shigeru; Hashimoto, Yukio; and Nishikubo, Yasuhiko, 3,938,316.
- Citrin, Paul, to Eastman Kodak Company. Manipulator. 3,938,402, Cl. 74-491.000.
- Claesson, Harry; and Traff, Anders, to Allmanna Svenska Elektriska Aktiebolaget. Press containing a pressure cell with a flexible diaphragm and a forming pad influenced by said diaphragm. 3,938,361, Cl. 72-63.000.
- Clark Equipment Company: *See—*
  - Bauer, James J., 3,938,401.
  - Frost, Barry L., 3,938,634.
  - Koch, Stanislaus H., 3,938,605.
- Clark, Morton L., to Guaranteed Weather, Inc. Cooking apparatus. 3,938,494, Cl. 126-41.00R.
- Clark, William H.: *See—*
  - Bennett, Max E.; McCanse, James Edson; Lawson, Gordon L.; and Clark, William H., 3,938,681.
- Clarke-Gravely Corporation: *See—*
  - Hommes, Jack L., 3,938,217.
- Clausi, Adolph Scott; Glicksman, Martin; and Farkas, Elizabeth, to General Foods Corporation. Spoonable frozen gelatin dessert concentrate. 3,939,001, Cl. 106-136.000.
- Clavenna, LeRoy R.: *See—*
  - Longo, John M.; and Clavenna, LeRoy R., 3,939,008.
- Clayton, John Peter: *See—*
  - Ferres, Harry; and Clayton, John Peter, 3,939,180.
- Clayton Manufacturing Co.: *See—*
  - Converse, Vernon G., III; Cline, Edwin L.; and Tinkham, Leland P., 3,938,377.
- Cleveland, Joseph J.: *See—*
  - Dziedzic, Chester J.; Kleiner, Richard N.; and Cleveland, Joseph J., 3,938,923.
- Cline, Edwin L.: *See—*
  - Converse, Vernon G., III; Cline, Edwin L.; and Tinkham, Leland P., 3,938,377.
- Clucker, Richard V.; and Kennedy, Roland R., to Harsco Corporation. Control system for refuse handling apparatus. 3,938,679, Cl. 214-83.300.
- Cobb, Bruce. Furniture formed of tubular elements. 3,938,860, Cl. 297-440.000.
- Cohen, Milton J. Mechanical fluid and paste dispenser. 3,938,706, Cl. 222-83.500.
- Cohlman, Donald C., to Motorola, Inc. Muting circuit for a radio receiver. 3,939,431, Cl. 325-478.000.
- Coit, Roland L.; and Slebodnick, Robert G., to Westinghouse Electric Corporation. Deaerating feedwater heater. 3,938,588, Cl. 165-113.000.
- Colberg, Kenneth Herman; and Zukowski, Ronald Joseph, to American Can Company. Aqueous polyelectrolytic electrocoating materials of organic resins. 3,939,110, Cl. 260-29.6ME.
- Coleman, Arthur; and Garland, Ronald M., to Veeder Industries, Inc. Fuel pump computer conversion means. 3,938,736, Cl. 235-94.00R.
- Coleman Company, Inc., The: *See—*
  - Madison, George Benjamin, 3,938,718.
- Coleman, Donald D.; and Racine, Raymond F., to Rockwell International Corporation. Fully-coherent multiple frequency radar system. 3,939,474, Cl. 343-7.700.
- Coleman, Edgar Padbury. Devices for making fluid-tight joints between two relatively rotating parts. 3,938,812, Cl. 277-41.000.
- Coleman, John Ralph; and Valand, Torstein, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Manganese dioxide cathode. 3,939,010, Cl. 136-114.000.
- Colgate-Palmolive Company: *See—*
  - Barth, Jordan B., 3,939,261.
  - Zmoda, Barney J., 3,939,090.
- Collar, Roland W., to Techon Systems, Inc. Gas pressure actuated plastic squeeze dispenser and valving means therefor. 3,938,709, Cl. 222-95.000.
- Collier, William S., to Raymond Lee Organization, Inc., The, a part interest. Sliding window lock. 3,938,839, Cl. 292-258.000.
- Collins, Dean Robert, to Texas Instruments Incorporated. Wrist watches. 3,938,318, Cl. 58-50.00R.
- Colucci, Gabriele: *See—*
  - Cavaterra, Enrico; Petrera, Donato; Pignataro, Francesco; and Colucci, Gabriele, 3,939,208.
- Combustion Engineering, Inc.: *See—*
  - Prestridge, Floyd L.; and Wallace, Harry G., 3,939,395.
- Comfort, Armand C.; and Messner, Harold D., to Chevron Research Company. Method and apparatus for monitoring temperatures during catalytic regeneration from a continuously moving infrared scanning and detection unit fixedly mounted aboard an aircraft, 3,938,386, Cl. 73-355.00R.
- Compagnie Francaise Thomson Houston-Hotchkiss Brandt: *See—*
  - Belliot, Christian; Cheylan, Etienne; Madelaine, Serge; and Ebbing, Johannes, 3,939,103.
- Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie: *See—*
  - Boileau, Jacques, 3,938,575.
- Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
  - Mary, Jacques; and Merillou, Pierre, 3,939,481.
- Compensating Tension Controls, Inc.: *See—*
  - Taitel, Charles M.; and Ryan, Ralph L., 3,939,032.
- Concrete Pipe Machinery Company: *See—*
  - Walchek, Ronald J., 3,938,685.
- Conn, Gordon A.; and Gass, William R., to Westinghouse Electric Corporation. Method of electroforming on a metal substrate. 3,939,046, Cl. 204-4.000.
- Conner, Claude Milton: *See—*
  - Jones, Allen Paul, Jr.; Knopf, Robert John; and Conner, Claude Milton, 3,939,105.
- Consiglio Nazionale Della Ricerche: *See—*
  - Strumia, Franco; and Beverini, Nicola, 3,938,877.
- Console, Luciano; Bencini, Ferdinando; and Chiellini, Enzo, to Societa' Italiana Resine S.p.A. Acrylonitrile copolymers suitable for making flame-resisting fibers. 3,939,120, Cl. 260-63.0HA.
- Console, Luciano; Zecchin, Alessandro; and Quarta, Antonio, to Societa' Italiana Resine S.I.R. S.p.A. Catalytic process for preparing polymers and copolymers of acrylonitrile. 3,939,134, Cl. 260-85.50R.
- Conti, Paolo, to Billi, S.p.A. Method of knitting a plurality of convergent tubular portions and resulting article. 3,938,355, Cl. 66-95.000.
- Continental Can Company, Inc.: *See—*
  - Herbst, Edward J., 3,938,696.
  - Patel, Anil U.; DePhillips, James V.; and Peyser, Harry A., 3,938,693.
- Continental Oil Company: *See—*
  - Essmeier, Donald E., 3,938,600.
- Contois, Lawrence E.: *See—*
  - Reynolds, George A.; Van Allan, James A.; and Contois, Lawrence E., 3,938,994.
- Converse, Vernon G., III; Cline, Edwin L.; and Tinkham, Leland P., to Scans Associates, Inc.; and Clayton Manufacturing Co., part interest to each. Method and apparatus for production hot testing of engines under load. 3,938,377, Cl. 73-117.000.
- Cook, Barry, to Ciba-Geigy Corporation. 4-Piperidine acetamides. 3,939,168, Cl. 260-293.770.
- Cook, Melvin S., to Holobeam, Inc. Adhesive system. 3,938,266, Cl. 36-19.500.

- Cook, Ralph L.: *See—*
  - Dooley, James K.; and Cook, Ralph L., 3,938,440.
- Cook, Rufus L.; and Warner, Henry L., to United States of America, Navy. Transducer. 3,939,467, Cl. 340-8.00R.
- Cope, Geoffrey Wilton, to Dresser Industries, Inc. Derailment detector. 3,938,765, Cl. 246-172.000.
- Coplastix Limited: *See—*
  - Hope, Bernard Francis, 3,938,548.
- Coppersmith, Morris, to Packaging Aids, Inc. Pouring spout dispensing system. 3,938,714, Cl. 222-525.000.
- Coppock, Walter J.; Amaroso, James R.; and Griffith, John Q., III, to Sun Oil Company of Pennsylvania. Textile-machinery lubricant composition. 3,939,083, Cl. 252-42.000.
- Corbett, Luke W., to Exxon Research and Engineering Company. Asphalt paving compositions from positive spot asphalt fractions. 3,939,004, Cl. 106-273.00R.
- Cornelius Company, The: *See—*
  - Birrell, Peter Leslie, 3,938,639.
- Corning Glass Works: *See—*
  - Lanier, Terry O.; and Martha, Eugene F., 3,938,957.
  - Lanier, Terry O.; and Martha, Eugene F., 3,938,958.
  - Lanier, Terry O., 3,938,961.
  - Lartigue, Donald J.; and Weetall, Howard H., 3,939,041.
- Corson, Blake W., Jr., to United States of America, General Counsel-Code GP. Cascade plug nozzle. 3,938,742, Cl. 239-265.110.
- Cosden Oil & Chemical Company: *See—*
  - Hahn, Granville J., 3,939,236.
- Cosentino, Louis C.: *See—*
  - Birnbaum, Michael R.; and Cosentino, Louis C., 3,938,506.
- Cotter, William L. Writing apparatus. 3,939,482, Cl. 346-139.00C.
- Coucher, Robert G., to Hogle-Kearns International. Plasma surgery. 3,938,525, Cl. 128-303.100.
- Coulter Electronics, Inc.: *See—*
  - Hogg, Walter R., 3,939,409.
- Cox, Clyde H. Sludge dewatering. 3,938,434, Cl. 100-117.000.
- Cradeur, Robert R.; and Cardone, John E., to Browning-Ferris Industries, Inc. Tube cleaning device. 3,938,535, Cl. 134-167.00C.
- Craig, Burnie M., to Fond, Loren S. Toothbrush with dentifrice cartridge. 3,938,897, Cl. 401-155.000.
- Craig, Charles H., to Hickory Springs Manufacturing Company. Rocker spring unit. 3,938,857, Cl. 297-263.000.
- Cramer, Thomas P. Aspirating system. 3,938,705, Cl. 222-59.000.
- Crandell, Paul A.: *See—*
  - Kozul, Theodore L.; and Crandell, Paul A., 3,939,446.
- Craven, Truxtun; Crecelius, Carlyle A.; and Philbrick, Clayton W., to Olympic Instruments Inc. Level wind for winch. 3,938,781, Cl. 254-175.700.
- Creators Limited: *See—*
  - Stent, Vernon Dennis; and Wright, Derek Cecil, 3,938,929.
- Crecelius, Carlyle A.: *See—*
  - Craven, Truxtun; Crecelius, Carlyle A.; and Philbrick, Clayton W., 3,938,781.
- Cresswell, Ronald M.: *See—*
  - Mentha, John W.; Shaffner, Janice V.; and Cresswell, Ronald M., 3,939,181.
- Crissman, Jay W., to Raymond Lee Organization, Inc., The, a part interest. Location indicating device. 3,938,466, Cl. 116-124.00R.
- Criswell, Homer C. Glazing panel support system. 3,938,291, Cl. 52-731.000.
- Crocker, Earle B., Jr., to General Electric Company. Quick settling gyrocompass having interaxis decoupling compensation for improved response time. 3,938,256, Cl. 33-324.000.
- Croese, Hendrik Magchiel Willem. Floating unloading installation for lighters. 3,938,676, Cl. 214-13.000.
- Cromwell, John E., to Koppers Company, Inc. Bearing member having a wear resistant coating on its bearing face. 3,938,814, Cl. 277-235.00A.
- Crooks, Robert Clement Allen, to Norlin Music, Inc. Reverberation mixer circuit. 3,939,305, Cl. 179-1.00J.
- Crosby, Philip Stephen, to Tektronix, Inc. Wideband DC current amplifier. 3,939,434, Cl. 330-40.000.
- Crouse-Hinds Company: *See—*
  - Norris, George W., 3,938,767.
- Crouse, Richard J.: *See—*
  - Cannalte, Gary A.; Crouse, Richard J.; Koenig, Richard D.; Rollins, Thomas J.; and Walker, Donald L., 3,939,417.
- Crowe-Gulde, Inc.: *See—*
  - Salts, Thomas R., 3,939,238.
- Crucible Inc.: *See—*
  - Powell, Joseph W.; and Fleck, James N., 3,939,241.
- Crull, Wolfgang: *See—*
  - Kalko, Jurgen; and Crull, Wolfgang, 3,938,537.
- Crute, Billy G., to Stant Manufacturing Company, Inc. Pressure-vacuum relief fuel tank cap with roll-over safety valve feature. 3,938,692, Cl. 220-203.000.
- Cryogenics Corporation of America: *See—*
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- Csukas, Bela: *See—*
  - Ormos, Zoltan; Csukas, Bela; Stefko, Bela; Pataki, Karoly; Blickle, Tibor; and Felmeri, Jozsef, 3,938,259.
- Cullen, Arthur Prosper. Covering or blanketing liquid surfaces and float members for effecting same. 3,938,338, Cl. 61-1.00R.
- Curtis International, Inc.: *See—*
  - Curtis, Thomas W.; and Bresnahan, Roger M., 3,939,456.
- Curtis, Thomas W.; and Bresnahan, Roger M., to Curtis International, Inc. Heating plant monitor system. 3,939,456, Cl. 340-213.00R.
- Cuthbert, Victor W.: *See—*
  - Brenner, Robert A.; and Cuthbert, Victor W., 3,938,260.
- Cutter Laboratories, Inc.: *See—*
  - Kahn, Paul; and Stubstad, James A., 3,938,198.
- Cyprus Metallurgical Processes Corporation: *See—*
  - Kazel, William G., 3,939,256.
- Dach, Hansjorg; Furtner, Horst; and Marion, Robert, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Hydraulic actuating system for a pair of concurrently operating clutches or brakes. 3,938,410, Cl. 74-869.000.
- Daihatsu Motor Company Limited: *See—*
  - Kensaku, Yano; Makoto, Kurose; and Toshiaki, Nagamitsu, 3,938,609.
- Daikin Kogyo Co., Ltd.: *See—*
  - Ueno, Takeo, 3,938,349.
- Daimler-Benz Aktiengesellschaft: *See—*
  - Patzelt, Helmut, 3,938,824.
- Dakss, Mark L.: *See—*
  - Bridger, Andrew; and Dakss, Mark L., 3,938,895.
- Dalmasso, Claudio, to Ing. C. Olivetti & C., S.p.A. Liquid crystal devices. 3,938,879, Cl. 350-160.0LC.
- D'Amato, Ralph James, to RCA Corporation. Spring mount for a cathode ray tube yoke. 3,939,447, Cl. 335-210.000.
- Damon Corporation: *See—*
  - Lehman, Ivan L., 3,938,354.
- Danyi, Edit: *See—*
  - Biro, Oszkar; Danyi, Edit; Fenyvesi, Magdolna; and Pamuk, Janos, 3,939,443.
- Darrington, Franklin D.: *See—*
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- Dashew, Stephen S., to Interform Inc. Method for sealing and stripping a concrete form. 3,939,234, Cl. 264-31.000.
- Data Source Corporation: *See—*
  - Humphrey, John H., 3,939,327.
- David, Melvin J. Blind rivet assembly. 3,938,657, Cl. 206-343.000.
- Davies, David Aubrey; and Johnson, Dennis Sydney, to Automotive Products Co., Ltd. Driven plates for friction clutches. 3,938,635, Cl. 192-106.200.
- Davis, Charles W.: *See—*
  - Salzgeber, Daniel; Raufeisen, Robert; and Davis, Charles W., 3,938,911.
- Davis, Guy E., to Westinghouse Electric Corporation. Control system with adaptive process controllers especially adapted for electric power plant operation. 3,939,328, Cl. 235-150.100.
- Davis, James L.; Lopke, Edward L.; and Huellmantel, Louis W., to General Motors Corporation. Gas turbine control. 3,938,321, Cl. 60-39.250.
- Dawson, David H., to Dow Chemical Company, The. Tube treating and method. 3,939,243, Cl. 264-296.000.
- Dayton Progress Corporation: *See—*
  - Stevens, Harry G.; and Randolph, Allan E., Sr., 3,938,794.
- DeAmicis, Ferdinando. Extensible cleaning tool. 3,938,218, Cl. 15-401.000.
- Deards, Henry Charles; and Pickford, Nigel Evans, to Imperial Chemical Industries Limited. Collapsible container. 3,938,728, Cl. 229-14.00B.
- de Bok, Adriaan, to ITT Industries, Inc. Arrangement for controlling the viscosity of a fluid. 3,938,369, Cl. 73-55.000.
- de Bree, Siegfried Emilius Maria, to N.V. Industrieele Handelscombinatie Holland. Pump. 3,938,908, Cl. 415-196.000.
- DeCorso, Serafino M.; and Seglem, Clifford E., to Westinghouse Electric Corporation. Catalytic combustor having a variable temperature profile. 3,938,326, Cl. 60-39.74R.
- Deere & Company: *See—*
  - Bichel, Darwin Carl, 3,938,683.
  - Mutziger, John Stefan, 3,939,405.
  - Penfold, Garn Farley; and Redman, Andrew Paul, 3,938,566.
  - Quoiffy, Harald; and Kuhn, Norbert, 3,938,684.
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- De Frayne, Garry O.: *See—*
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- DeHart, Arnold O.; Rosenberg, Richard C.; and Trachman, Edward G., to General Motors Corporation. Load supporting lubricant. 3,939,081, Cl. 252-12.000.
- Deise, Louis F., to Westinghouse Electric Corporation. Dynamic antenna tuner. 3,939,422, Cl. 325-163.000.
- Delahousse, Philippe J.: *See—*
  - Delahousse, Regis J.; and Delahousse, Philippe J., 3,938,224.
- Delahousse, Regis J.; and Delahousse, Philippe J., to Etablissements Delahousse et Bruant. Devices for use in the manufacture of articles of upholstery. 3,938,224, Cl. 24-102.00T.
- Delap, Joseph A.: *See—*
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- Delfiol, Lucio; and Marizzoli, Luigi, to Industrie Pirelli S.p.A. Accessory annular elements for textile machinery and relative manufacturing process. 3,938,399, Cl. 74-232.000.
- Del Vesco, Adriano: *See—*
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- De Marinis, Robert M.; and Hoover, John R. E., to SmithKline Corporation. Substituted sulfonylacetamido cephalosporins. 3,939,266, Cl. 424-246.000.
- Demerson, Christopher A.; Humber, Leslie G.; Dobson, Thomas A.; and Jirkovsky, Ivo L., to American Home Products Corporation. Certain pyrano [3,4-b]indoles and thiopyrano[3,4-b]indoles. 3,939,178, Cl. 260-326.280.
- de Munnik, Nicholas Marie. Processing tank. 3,938,689, Cl. 220-71.000.
- Dennis, Ronnie D.: *See*—
  - Lawson, John E.; Dennis, Ronnie D.; and Majewski, Robert F., 3,939,196.
- Densow, Ulrich O., to Outboard Marine Corporation. Chain saw oil pump with overload protection. 3,938,622, Cl. 184-15.00R.
- DePhillips, James V.: *See*—
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- DePree, David O.: *See*—
  - Katzakian, Arthur, Jr.; and DePree, David O., 3,939,071.
- Derkach, Nikolai Dmitrievich: *See*—
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- De Rosa, David. Electronic musical instrument. 3,938,419, Cl. 84-1.140.
- Desalination Systems, Inc.: *See*—
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- Detzel, Josef; and Bartels, Klaus Peter, to Lever Brothers Company. Food container. 3,938,730, Cl. 229-43.000.
- Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
  - Burmester, Kurt; Wolff, Siegfried; Klotzer, Erhard; and Thurn, Friedrich, 3,938,574.
- Dewey, C. Forbes, Jr., to Massachusetts Institute of Technology. Detecting trace gaseous species acoustically in response to radiation from an intense light source. 3,938,365, Cl. 73-24.000.
- Dewhirst, Geoffrey Wilson, to Thomson Shepherd and Company Limited. Method of making pile fabrics and the pile fabric made thereby. 3,938,559, Cl. 139-7.00R.
- Dexter, Martin: *See*—
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- DiBella, Eugene P.; and Rudner, Bernard, to Tenneco Chemicals, Inc. Fire-retardant polyurethane resins prepared from side-chain halogenated aromatic polyisocyanates. 3,939,124, Cl. 260-77.5AT.
- Dickens, Lawrence E.; and Maki, Douglas W., to Westinghouse Electric Corporation. Integrated circuit, image and sum enhanced balanced mixer. 3,939,430, Cl. 325-446.000.
- Dickinson, Ben Wade Oakes, III; and Dickinson, Robert Wayne. Method for measuring vagina dimensions. 3,938,504, Cl. 128-2.00S.
- Dickinson, Robert Wayne: *See*—
  - Dickinson, Ben Wade Oakes, III; and Dickinson, Robert Wayne, 3,938,504.
- Didek, Stanislav; Storek, Jaroslav; Kubovy, Miloslav; Svec, Zdenek; Hrdina, Jan; and Kasparek, Jaromir, to Vyzkumny Ustav Bavlnarsky. Apparatus for separating fibers in open-end spinning machines. 3,938,310, Cl. 57-58.910.
- Diepers, Heinrich; and Schmidt, Otto, to Siemens Aktiengesellschaft. Apparatus for the electrolytic polishing of niobium structures. 3,939,053, Cl. 204-212.000.
- Diesel Kiki Co., Ltd.: *See*—
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- Diessner, Armin: *See*—
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- Dieterich, Dieter, to Bayer Aktiengesellschaft. Production of polyurethane plastics. 3,939,222, Cl. 260-858.000.
- Dietzsch, Gunter; Frers, Gerd; and Wieland, Dieter, to Andreas Stihl Maschinenfabrik. Motor chain saw. 3,938,633, Cl. 192-48.300.
- DiFede, Dominic. Scorecard washing device. 3,938,213, Cl. 15-77.000.
- DiGiovanniantonio, Perry R., to United States of America, Navy. Space shuttle orbiter barricade. 3,938,763, Cl. 244-110.00C.
- Dimeff, John, to United States of America, General Counsel-Code GP. Modulated hydrogen ion flame detector. 3,938,956, Cl. 23-254.0EF.
- Dinbergs, Kornelius: *See*—
  - Schollenberger, Charles S.; and Dinbergs, Kornelius, 3,939,111.
- Dini, Mamiliano, to European Rotogravure Association. Depth measuring apparatus using reflected ultrasonic beams. 3,938,371, Cl. 73-67.80S.
- Dircksen, Arnold D.; and Dircksen, David H. Tractor mounted log splitter. 3,938,567, Cl. 144-193.00A.
- Dircksen, David H.: *See*—
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- Disston, Inc.: *See*—
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- Ditto, Donald R.; and Hare, Kenneth H. Toy cannon. 3,938,272, Cl. 42-55.000.
- Djokic, Slobodan: *See*—
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- Dobson, Thomas A.: *See*—
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- Dombro, Robert A.: *See*—
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- Dominion Foundries and Steel, Limited: *See*—
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- Donadio, Vincent J., to United States of America, Army. Serrated supporting keying system for a beehive projectile. 3,938,442, Cl. 102-67.000.
- Donaldson, James M., to Bowmar Instrument Corporation. Multiratio power transmitting device. 3,938,403, Cl. 74-217.0CV.
- Donini, Enrico. Continuous metal casting plant with controlled band-tensioning. 3,938,580, Cl. 164-154.000.
- Donnelly, Donald E., to Emerson Electric Co. Electrical coil assembly with means for securing external leads. 3,939,450, Cl. 336-90.000.
- Donnet, Henry, to Ste. d'Application Plastique Mecanique et Electronique Plastimecanique. Machine for automatically producing optionally empty or filled packaging containers made of thermoplastic film material. 3,938,302, Cl. 53-167.000.
- Dooley, James K.; and Cook, Ralph L., to Olin Corporation. Mixed propellant charge. 3,938,440, Cl. 102-38.000.
- Doonan Trailer Corporation: *See*—
  - Bagwell, James H., 3,938,861.
- Doran, J. Robert, to GTE Sylvania Incorporated. Interface means. 3,939,329, Cl. 235-151.100.
- Dornauer, Horst; and Anderson, Vernon Brian, to American Hoechst Corporation. Spiro(pyrrolo (1,2-A)quinoxalines). 3,939,159, Cl. 260-250.00Q.
- Dornier System GmbH: *See*—
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  - Dawson, David H., 3,939,243.
  - Stavropoulos, William S.; Thiegs, Bernard J.; and Mack, Robert F., 3,938,954.
- Downs, Dallas I., to Southern California Edison Company. Fish holding chamber. 3,938,340, Cl. 61-21.000.
- Doyle, David; and Shtulman, Murray M. Pick-proof lock. 3,938,358, Cl. 70-358.000.
- Draa, Wayne A., to Gottschall Tool & Die, Inc. Mine roof bolt anchor construction. 3,938,420, Cl. 85-76.000.
- Drabert, Fritz; and Geffers, Klaus. Chair with adjustable backrest. 3,938,858, Cl. 297-284.000.
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- Drescher, Gary Clyde. Swimmer's glove having joints bendable only in closing direction of the hand. 3,938,207, Cl. 9-308.000.
- Dresser Industries, Inc.: *See*—
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- Dubach, Werner: *See*—
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- DuBois, R. Clark: *See*—
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- Dumas, Sarah J. Newspaper container. 3,938,691, Cl. 220-94.00A.
- Duni Bila AB: *See*—
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- Dunleavy, Raymond A.; and Hawker, Leslie E., to Union Carbide Corporation. Energy absorbing polyurethane-polyurea cellular elastomers. 3,939,106, Cl. 260-2.5AM.
- Dunlop Limited: *See*—
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  - Mitchell, William Eric, 3,938,576.
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- Du Pont de Nemours, E. I., and Company: *See*—
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  - Kane, William Paul, 3,939,025.
  - Lovendusky, Charles Michael; and Wallick, Charles William, 3,938,245.
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- Durieux, Teddy, to Solvay & Cie. Apparatus for measuring out pulverulent materials. 3,938,712, Cl. 222-404.000.

- Duwe, Edward C.; and Duwe, William E., to Duwe Precast Concrete Products, Inc. Apparatus including cammed fastening means for making modular crypts. 3,938,773, Cl. 249-27.000.
- Duwe Precast Concrete Products, Inc.: *See*—
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- Duwe, William E.: *See*—
  - Duwe, Edward C.; and Duwe, William E., 3,938,773.
- Dwyer, Stanley J., to Gulf Oil Corporation. Tanker hull modification. 3,938,457, Cl. 114-56.000.
- Dye, Richard A.; and Rowley, Donald A., to Hughes Aircraft Company. Laser weapon simulator. 3,938,262, Cl. 35-25.000.
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- Dynatherm Corporation: *See*—
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- Dziedzic, Chester J.; Kleiner, Richard N.; and Cleveland, Joseph J., to GTE Sylvania Incorporated. Apparatus and method for forming a sealed outer ring for ceramic regenerator. 3,938,923, Cl. 425-127.000.
- Eastman Kodak Company: *See*—
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  - Gompf, Thomas Edward; and Faul, William Henry, 3,938,995.
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- Eberle, William J., to General Battery Corporation. Automatic air leak testing apparatus. 3,938,368, Cl. 73-45.100.
- Ebina, Riyuzo: *See*—
  - Nishitani, Kiyoshi; Kawada, Kimihiro; Ebina, Riyuzo; and Miyoshi, Katsunori, 3,938,448.
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- Edwards, Philip Neil, to Imperial Chemical Industries Limited. Alkylene bis(pyridiniumareylene quaternary salts). 3,939,169, Cl. 260-294.80R.
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- Eglseer, Franz: *See*—
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- Einarsson Ahlfors, Sten Eskil. Screening device. 3,939,065, Cl. 209-240.000.
- Eisenwerk-Gesellschaft Maximilianshutte mbH: *See*—
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- Ekimov, Vadim Petrovich: *See*—
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- Ekstrom, Bertil Ake; and Sjoberg, Berndt Olof Harald, to Astra Lakemedel Aktiebolag. Pharmaceutical preparations containing α-aminopenicillins. 3,939,270, Cl. 424-271.000.
- Elachi, Charles: *See*—
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- Elkay Manufacturing Company: *See*—
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- Elser, Wolfgang; and Ruske, Manfred, to BASF Aktiengesellschaft. Anthrapyrimidine dyes. 3,939,162, Cl. 260-256.40Q.
- Emerson Electric Co.: *See*—
  - Donnelly, Donald E., 3,939,450.
- Emhart Corporation: *See*—
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- Emmel, Leroy L., to Fortin Laminating Corporation. Apparatus for insulating electrically conductive elements. 3,938,931, Cl. 425-505.000.
- Emmons, William D.; and Levy, Jerome F., to Rohm and Haas Company. Aliphatic acyl-containing amine hydrochlorides. 3,939,200, Cl. 260-482.00R.
- Engel, Joseph C., to Westinghouse Electric Corporation. Circuitry with zener diode voltage surge suppressor connected to serve as half wave rectifier. 3,939,363, Cl. 307-202.00R.
- Engelbert, Harald, to Radiation Limited. Control systems for gaseous fuel fired appliances. 3,938,935, Cl. 431-47.000.
- Engelhard Minerals & Chemicals Corporation: *See*—
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- Engelsmann, Dieter: *See*—
  - Winkler, Alfred; Engelsmann, Dieter; Maas, Dieter; and Schroder, Rolf, 3,939,484.
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- Epperson, Otis A.; and Smith, Raymond H., to Gerber Products Company. Loose flap detector and case ejector system for wrap-around paperboard cartons. 3,939,063, Cl. 209-7.000.
- Epstein, David; Watkins, Leslie A.; and Bugg, John W. J., to White Sea & Baltic Company Limited, The. Method for making foundry moulds and cores utilizing a gas catalyst. 3,938,578, Cl. 164-16.000.
- Erastov, Alexandr Petrovich: *See*—
  - Mogilevsky, Vitaly Moritsovich; Ekimov, Vadim Petrovich; Erastov, Alexandr Petrovich; and Posokhin, Viktor Vladimirovich, 3,939,402.
- Erikson, Uno Eugen, to Siemens Aktiengesellschaft. Catheter for radiological renal aortography and selective arteriography. 3,938,501, Cl. 128-2.00A.
- Ernst, Franklin Henry, Jr.; and Travaglio, Dalny. Selective imprinting machine. 3,938,662, Cl. 209-73.000.
- Erspamer, James R., to Sperry Rand Corporation. Two-cycle compensator for flux valve heading repeater system. 3,938,257, Cl. 33-361.000.
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Giese, Emil; and Maurer, Ruprecht, to Ringspann Albrecht Maurer K.G. Overrunning clutch. 3,938,632, Cl. 192-41.00A.
Gilbert & Barker Manufacturing Company: *See—*
  Robinson, Genrge Dennis, Jr.; and Hartsell, Hal Craig, Jr., 3,938,565.
Gilbert, Everett E.: *See—*
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Gilbert, Nathan: *See—*
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Gilbu, Agnar, to Owens-Corning Fiberglas Corporation. Manhole and method of manufacture. 3,938,285, Cl. 52-20.000.
Gilhula, Harry C. Index system. 3,938,268, Cl. 40-23.00A.
Gill, John D. Contra-rotating propeller drive system. 3,938,464, Cl. 115-34.00C.
Gillette Company, The: *See—*
  Carbonell, Nelson P.; and Perry, Roger L., 3,938,247.
  Perry, Roger L., 3,938,250.
Gilliam, Kenneth D.; and Serres, Carl, to Standard Oil Company. Method of bonding utilizing a heat activated polyamide adhesive. 3,939,029, Cl. 156-331.000.
Gilliland, Barbara Faye; and Henisee, Christine Arentzen, to Scott Paper Company. Prefolded and packaged disposable diaper. 3,938,523, Cl. 128-287.000.
Ginaven, Marvin E., to Bauer Bros. Co., The. Thickening apparatus. 3,939,075, Cl. 210-258.000.
Giorgini, Gerardo; and Bocca, Giorgio, to Eaton Corporation. Aspirated vehicle occupant restraint system. 3,93[illegible],826, Cl. 280-150.0AB.
Givaudan Corporation: *See—*
  Bertele, Erhard; and Schudel, Peter, 3,939,206.
Gladwin, Floyd R. Bottle crusher. 3,938,745, Cl. 241-99.000.
Glance, Patrick M.; and Maten, Marvin A., Jr., to Ford Motor Company. Resilient bumper assembly. 3,938,841, Cl. 293-71.00R.
Glasgnw, Philip E.; and Gilbert, Nathan, to Pullman Incorporated. External fluid catalytic cracking unit regenerator plenum manifold. 3,938,960, Cl. 23-288.00B.
Glaverbel-Mecaniver: *See—*
  Plumat, Emile, 3,938,979.
Glen Raven Mills: *See—*
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Gleyze, Jean, to Societe Civile Textile dite Societex. Device for doffing a full bobbin on a textile machine. 3,938,749, Cl. 242-18.0PW.
Glick, David: *See—*
  Gosling, Cyril Henry; Glick, David; Pnwell, Alan Leslie; and Murray, William Young, 3,939,298.
Glicksman, Martin: *See—*
  Clausi, Adolph Scott; Glicksman, Martin; and Farkas, Elizabeth, 3,939,001.
Gliemeroth, Georg, to Jenaer Glaswerk Schott & Gen. Process for producing photochromicity in untreated glasses of suitable composition by a temperature treatment in a liquid. 3,938,977, Cl. 65-30.00R.
Glory Kogyo Kabushiki Kaisha: *See—*
  Ushio, Masatoshi; Asami, Kazuto; and Hirokuni, Matono, 3,938,303.
Goddard, Lloyd E., to Ethyl Corporation. Chemical process. 3,939,215, Cl. 260-624.00A.
Godley, Fred Darroll, to Modular Wall Systems, Inc. Means for forming a prestressed slab including collapsible bulkheads. 3,938,922, Cl. 425-111.000.
Goettel, Richard J.: *See—*
  Goettel, Robert J.; Goettel, Richard J.; and Smith, Willis D., 3,938,413.
Goettel, Robert J.; Goettel, Richard J.; and Smith, Willis D. Extrusion preparation apparatus. 3,938,413, Cl. 83-145.000.
Goings, Harford E. Dispenser for collapsible tubes. 3,938,474, Cl. 222-102.000.
Goldfarb, Adolph E.; Benkoe, Erwin; Everitt, Delmar K.; Chesley, Ronald F.; and Frierdich, Richard D., to Goldfarb, Adolph E.; and Benkoe, Erwin, a part interest. Articulated toy figure. 3,938,277, Cl. 46-161.000.
Goldschmidt, Alfred; and Stayner, Robert A., to Chevron Research Company. Fire-resistant hydraulic fluid. 3,939,088, Cl. 252-79.0HF.
Golik, Uri: *See—*
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Gompf, Thomas Edward; and Faul, William Henry, to Eastman Kodak Company. Silver halide color photographic element and process containing leuco dyes. 3,938,995, Cl. 96-55.000.
Gordon, Paul, to Strategic Medical Research Corporation. Novel ethereally monosubstituted monosaccharides. 3,939,145, Cl. 260-210.00R.
Gordon, Paul, to Strategic Medical Research Corporation. Novel ethereal monosubstitutions of monosaccharide derivatives. 3,939,146, Cl. 260-210.00R.
Gordon, Rohert A.: *See—*
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Gosling, Cyril Henry; Glick, David; Powell, Alan Leslie; and Murray, William Young, to British Insulated Callender's Cables Limited. Joints for electric cables. 3,939,298, Cl. 174-21.00R.
Goswami, Jagadish C.: *See—*
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Gottschall Tool & Die, Inc.: *See—*
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Goyal, Raghbir C., to Kawneer Company, Inc. Sliding door operator. 3,938,282, Cl. 49-137.000.
Gozzano, Renato; and Martinelli, Santino. Diffused light reflecting screen for taking photos and the like. 3,939,340, Cl. 240-103.00R.
Grandadam, Jean Andre. Novel zootechnical compositions. 3,939,265, Cl. 424-239.000.
Grange, Raymond A., to United States Steel Corporation. In-line heat treatment of hot-rolled rod. 3,939,015, Cl. 148-12.00B.
Granger, Alain; and Sausse, Andre, to Rhone-Poulenc-Textile. Artificial kidney and a method of ultrafiltering a liquid. 3,939,069, Cl. 210-22.00A.
Graves, Ross E., to Hughes Aircraft Company. Phase-locked optical homodyne receiver. 3,939,341, Cl. 250-199.000.
Green, Terence C.; Guion, William G.; Travers, Douglas N.; and Sherrill, William M., to Southwest Research Institute. Quadrupole adcock direction finder and antenna therefor. 3,939,477, Cl. 343-113.00R.
Green, William P.: *See—*
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Greer, Lucian F. Assembly for cleaning overflow passageway in lavatory bowl. 3,938,202, Cl. 4-255.000.
Greis, Ingemar Joel, to Kommanditbolaget United Stirling (Sweden) AB & Co. Sealing means for stirling engine crankcases. 3,938,811, Cl. 277-15.000.
Greive, Aloys, to Hamel G.m.b.H., Zwirnmaschinen. Spinning apparatus for glass-fiber yarn. 3,938,309, Cl. 57-58.860.
Grenawalt, John J.: *See—*
  Gardner, Larry E.; Grenawalt, John J.; and Birkle, Adolph John, 3,939,013.
Gress, Paul William: *See—*
  Over, William Roderick; and Gress, Paul William, 3,938,246.
Grey, Jerry. High temperature gas sampling apparatus and method. 3,938,390, Cl. 73-421.50R.
Grgach, Frank J.; and Harris, Everett A., to Branson Ultrasonics Corporation. Ultrasonic welding and cutting apparatus. 3,939,033, Cl. 156-515.000.
Grice, Karl R., to Fiber Controls Corporation. Auto leveler. 3,938,223, Cl. 19-240.000.
Griffith, John Q., III: *See—*
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Grimes, Homer L. Bucket attachment. 3,938,680, Cl. 214-145.00R.
Grimes, James E.; and Rovan, Joseph W., to Disston, Inc. Power pack with switch for plural primary-secondary connections. 3,939,362, Cl. 307-150.000.
Groenewegen, Paulus Petrus Maria: *See—*
  Lohn, Klaus; Lutteke, Georg; Schiefer, Gerd; Bruntink, Lammert; Groenewegen, Paulus Petrus Maria; Weinerth, Hans Viktor; Zwijsen, Wilhelmus Antonius Joseph Marie; and Rooij, Karel Petrus Van, 3,939,429.
Grof, Helmut: *See—*
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Groginsky, Herbert L., to Raytheon Company. Coded navigation system. 3,939,472, Cl. 340-146.10R.
Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Inh. Max Grundig: *See—*
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  Traub, Karl; and Benecke, Gunther, 3,939,426.
Gschwend, Heinz Werner, to Ciba-Geigy Corporation. Antidepressive and antianxiety composition comprising 2-pyrazolyl-benzophenones. 3,939,271, Cl. 424-273.000.
GSE Inc.: *See—*
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GTE Automatic Electric (Canada) Limited: *See—*
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GTE Automatic Electric Laboratories Incorporated: *See—*
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  Smith, James W., 3,939,311.
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GTE Sylvania Incorporated: *See—*
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  Dziedzic, Chester J.; Kleiner, Richard N.; and Cleveland, Joseph J., 3,938,923.

Guaranteed Weather, Inc.: *See—*
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Guerriero, Charles P., to Ford Motor Company. Adjustable tie rod assembly. 3,938,822, Cl. 280-95.00R.
Guest, Jack Bernard; and Guest, Kathleen Ethel Joyce. Document filing apparatus. 3,938,870, Cl. 312-184.000.
Guest, Kathleen Ethel Joyce: *See—*
  Guest, Jack Bernard; and Guest, Kathleen Ethel Joyce, 3,938,870.
Guilden, Paul: *See—*
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  Orendi, Roderich, 3,938,418.
Gypsum Industries Limited: *See—*
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Haar, Richard, to Volkswagenwerk Aktiengesellschaft. Resilient shock absorbing bumper. 3,938,795, Cl. 267-140.000.
Haas, Ronald H.; and Wohlscheid, Rny J., to General Motors Corporation. Occupant knee restraint. 3,938,821, Cl. 280-87.00C.
Haas, Werner E. L.; and Adams, James E., to Xerox Corporation. Spherulitic liquid crystalline texture. 3,938,880, Cl. 350-160.0LC.
Haase, Ernst-Gunter; and Konig, Rudolf, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Shock absorber for a vehicle. 3,938,840, Cl. 293-71.00P.
Hafner, John: *See—*
  Bobbitt, William C., Jr., 3,938,621.
Hafner, Rudolph: *See—*
  Bobbitt, William C., Jr., 3,938,621.
Hagenbach, Robert J., to Xerox Corporation. Highly classified oxidized developer material. 3,939,086, Cl. 252-62.10P.
Hagerman, Lynn W. Shelf retainer for mobile vehicle refrigerators. 3,938,872, Cl. 312-291.000.
Hagio, Akira: *See—*
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Hahn, Granville J., to Cosden Oil & Chemical Company. Method for blow molding foamed walled plastic open mouthed containers. 3,939,236, Cl. 264-53.000.
Hahnle, Reinhard: *See—*
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Hair, Kirby: *See—*
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Hale, Jesse R. Sandwich core panel having cured face sheets and a core formed with projecting modes. 3,938,963, Cl. 29-191.400.
Hall, Keith L.: *See—*
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Hall, Russell W., Jr.: *See—*
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Hall, William J.; and Myers, Robert A., to Monsanto Company. Lenses for exterior vehicle lamps. 3,939,225, Cl. 260-880.00R.
Hallenbeck, Victor L., to B. F. Goodrich Company, The. Run flat tire and wheel assembly. 3,938,573, Cl. 152-330.0RF.
Halsey, Carl C.: *See—*
  Sewell, Rnbert G. S.; and Halsey, Carl C., 3,938,441.
Hamada Heavy Industries Co., Ltd.: *See—*
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Hammond, Dean C., Jr.; and Quinn, Ronald E., to General Motors Corporation. Premix combustor with flow constricting baffle between combustion and dilution zones. 3,938,324, Cl. 60-39.650.
Hammond, John W. Vehicle with inflatable bumper. 3,938,828, Cl. 280-261.000.
Hammond, Thomas J.: *See—*
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Hansen, Kenneth P.; and Olson, Robert K., to United Technologies Corporation. Method and apparatus for protecting an immersed torque motor against contamination. 3,938,778, Cl. 251-129.000.
Hanson, Richard E.: *See—*
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Harbord, Norman Henry: *See—*
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Hardtle, Wilhelm. Apparatus for debarking logs. 3,938,568, Cl. 144-208.00F.
Hardwick, John H.; Jagoe, William H.; Tonnesen, Carl W.; and Jesse, Harold W., to TME Corporation. Method of making articles such as electrically insulated housings using striped laminates. 3,938,725, Cl. 228-155.000.
Hare, Kenneth H.: *See—*
  Ditto, Donald R.; and Hare, Kenneth H., 3,938,272.
Hargest, Thomas S. Syringe filter and valve combination. 3,938,513, Cl. 128-218.00R.
Harman, Eugene V. Automotive hood safety device. 3,938,610, Cl. 180-69.00C.
Harris, Everett A.: *See—*
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Hartley, Kenneth; and McIntosh, Arthur Edward, to United Kingdom Atomic Energy Authority. Sieves. 3,938,664, Cl. 209-233.000.
Hartline, Albert G., III, to Allegheny Ludlum Industries, Inc. Method of making corrosion resistant austenitic steel. 3,938,990, Cl. 75-122.000.
Hartman, Robert E., to Xerox Corporation. Sheet stacking apparatus. 3,938,802, Cl. 271-220.000.
Hartsell, Hal Craig, Jr.: *See—*
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Hashimoto, Yukio: *See—*
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Hastwell, Peter John: *See—*
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Hattan, Mark, to Green, William P., a part interest. Formation of fasteners having threads formed of coil structures. 3,938,209, Cl. 10-86.00A.
Hau, Thomas J.; and Cherney, Steven D., to Procter & Gamble Company, The. Combination alkali metal pyrophosphate-alkaline earth metal pyrophosphate detergent builder. 3,939,100, Cl. 252-532.000.
Hauke, Francis E.: *See—*
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Hauptman, Murray L. Automobile chassis jack. 3,938,780, Cl. 254-126.000.
Haussels, Berthold, to Acousa Saxon S.A. Journal rolling bearing. 3,938,864, Cl. 308-187.200.
Havera Development Ltd.: *See—*
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Hawker, Leslie E.: *See—*
  Dunleavy, Raymond A.; and Hawker, Leslie E., 3,939,106.
Hawkins, Ronald G., to Aluminum Company of America. Frameless damping spacer with close coil spring. 3,939,300, Cl. 174-42.000.
Hayakawa, Junshiro: *See—*
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Hayashi, Yoshikazu; and Sato, Mitsuo, to Kabushiki Kaisha Tokai Riki Denki Seisakusho. Rotary switch assembly having fixed contacts which may be selectively segmented. 3,939,313, Cl. 200-11.00J.
Hayashi, Yoshimasa: *See—*
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Hayden Trans-Cooler, Inc.: *See—*
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Hayes, John C., to Universal Oil Products Company. Hydrocarbon conversion with a sulfided acidic catalytic composite. 3,939,060, Cl. 208-139.000.
Hayes, John C., to Universal Oil Products Company. Hydrocarbon isomerization catalyst and process. 3,939,102, Cl. 252-439.000.
Hays, Robert Guy: *See—*
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Hechenbleikner, Ingenuin; and Enlow, William Plamer, to Borg-Warner Corporation. Preparation of aliphatic phosphates. 3,939,229, Cl. 260-985.000.
Hechler, Valentine, IV. Continuous flow ratio monitor. 3,938,550, Cl. 137-559.000.
Hecker, Richard; and Butler, Edward A., to United States of America, Navy. Inclined raked partially submerged propellers. 3,938,463, Cl. 115-34.00R.
Heerdt, Ruth: *See—*
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Heighberger, Robert N. Nut with sealing insert. 3,938,571, Cl. 151-7.000.

Hein, Richard D.; Welch, John A.; and Britton, James E., to General Tire & Rubber Company, The. Elastomeric structural bearing. 3,938,852, Cl. 308-3.00R.
Heise, Carl-Hermann. Method and apparatus for manufacturing a coating mass for road constructions. 3,938,785, Cl. 259-149.000.
Helton, Robert A.; Walsh, George M.; and Alarie, Allan P., to Raytheon Company. Remote underwater device activating system. 3,939,465, Cl. 340-5.00R.
Hempenstall, John, to Scenic Flying Limited. Aircraft with improved field of view for passengers. 3,938,761, Cl. 244-13.000.
Henderson, Cyril; and Broughton, John N., to American Safety Equipment Corporation. Child safety seat for vehicles with harness release inaccessible to child passenger. 3,938,859, Cl. 297-385.000.
Henderson, Don J.: *See—*
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Henecke, Charles F., to Stewart-Warner Corporation. Bicycle speedometer tire drive gear adaptor assembly. 3,938,395, Cl. 74-12.000.
Henisee, Christine Arentzen: *See—*
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Henkin, Melvyn L. Anesthesia rebreathing apparatus. 3,938,551, Cl. 137-613.000.
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Herbolsheimer, Bruce E.; and Marsh, Douglas D., to Garrett Tubular Products, Inc. Adjustable typewriter platform mechanism. 3,938,766, Cl. 248-23.000.
Herbst, Edward J., to Continental Can Company, Inc. Inclined integral rivet on end panel for tab control. 3,938,696, Cl. 220-273.000.
Herman, Walter H., to Franklin Mint Corporation. Metal covered books. 3,938,831, Cl. 281-29.000.
Hermann Berstorff Maschinenbau GmbH: *See—*
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Hermstein, Wolfgang; Rosenberger, Gerhard; and Muller, Willi, to Siemens Aktiengesellschaft. Voltage measuring device for an encapsulated high-voltage switching installation. 3,939,412, Cl. 324-96.000.
Hesston Corporation: *See—*
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Hickory Springs Manufacturing Company: *See—*
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Hicks, Glenn W. Faucet. 3,938,556, Cl. 137-636.400.
Higashigawa, Keizo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Carburetor. 3,939,232, Cl. 261-72.00R.
Hill, Lawrence E. Handbag. 3,938,569, Cl. 150-33.000.
Hill, Lawrence M.: *See—*
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Hill, Lester M., to Beloit Corporation. Headbox with flexible trailing elements. 3,939,037, Cl. 162-341.000.
Hillyard Chemical Company: *See—*
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Hilti Aktiengesellschaft: *See—*
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Hirai, Shoichi; and Kawata, Kyozo, to Shionogi & Co., Ltd. 3-(2-Methylthio-2-tertiary aminoacetyl)-5-phenylisoxazoles. 3,939,167, Cl. 260-293.670.
Hirokuni, Matono: *See—*
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Hirose, Itsuo: *See—*
  Nakamura, Takao; Hirose, Itsuo; Misawa, Rokuro; Horii, Hidenori; Hagio, Akira; and Sada, Tetsuo, 3,938,724.
Hiruma, Mituo, to Nissan Motor Company Limited. Fluid operated vehicle body level control system. 3,938,823, Cl. 280-124.00F.
Hirwe, Asha: *See—*
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Hitachi, Ltd.: *See—*
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  Maeda, Takeo, 3,939,387.
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  Nagasaki, Tadashi; Kimura, Isamu; and Tamura, Shingo, 3,939,393.
  Okada, Tomoyuki; and Suda, Seiji, 3,939,433.
  Ryugo, Noboru; Inaniwa, Keizo; and Sugiyama, Akira, 3,939,017.
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Hobart Engineering Limited: *See—*
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HOBEG Hochtemperaturreaktor-Brennelement GmbH: *See—*
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Hodges, Robert B. Stereophonic headset with ear to ear acoustical passageway. 3,939,310, Cl. 179-156.00R.
Hodsden, John B.; Middleton, James V.; and James, Edmund W., to Inland Steel Company. Cascade rinsing system and method. 3,938,214, Cl. 15-102.000.
Hodson, Harold Francis; and Batchelor, John Frederick, to Burroughs Wellcome Co. Substituted carbonyl compounds. 3,939,173, Cl. 260-308.00D.
Hodson, Harold Francis; and Batchelor, John Frederick, to Burroughs Wellcome Co. Cyclic carbonyl compounds. 3,939,276, Cl. 424-317.000.
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Hogg, Walter R., to Coulter Electronics, Inc. Particle study device and sample metering means used therein. 3,939,409, Cl. 324-71.0CP.
Hoggatt, John T., to Boeing Company, The. Structural reinforced thermoplastic laminates and method for using such laminates. 3,939,024, Cl. 156-242.000.
Hogle-Kearns International: *See—*
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Holbrook, Legrand K.; and Ostler, David S., to Medical Development Corporation. Vacuum-operated fluid bottle for tandem systems. 3,938,540, Cl. 137-205.000.
Holden, Morell J., Jr.; and LeBoutillier, Frank, to Mobil Oil Corporation. Nesting insulated hot-or-cold food tray. 3,938,726, Cl. 229-2.500.
Holden, Robert Stuart. Methods of providing a tube with a thread ring. 3,938,240, Cl. 29-512.000.
Holliday, David H. Continuous operating collator. 3,938,801, Cl. 271-173.000.
Hollyday, Robert David; Bradbery, Jack Leo; and Hudson, William Jeffrey, Jr., to AMP Incorporated. Printed circuit mountable, self grounding, multiple filter module. 3,939,444, Cl. 333-79.000.
Holm, Bengt Lennart; and Edelberg, Gustav Rudolf, to Kockums Mekaniska Verkstads AB. Signalling apparatus for ships. 3,939,385, Cl. 317-157.000.
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Hoopes, Howard S., to Leeds & Northrup Company. Digital signal linearizer. 3,939,459, Cl. 340-347.0NT.
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Hope, Frederick John Charles; and Pigney, James Malcolm. Method and apparatus for inhibiting vehicle wheel locking. 3,938,849, Cl. 303-21.00A.
Hopkins, David Alan, to Valeron Corporation, The. Center cutting end mill. 3,938,231, Cl. 29-103.00A.
Hopkins, David Alan, to Valeron Corporation, The. Vibration damping assembly. 3,938,626, Cl. 188-1.00B.
Hoppner, Heinzjochen; and Schwarzler, Hans-Jurgen, to Vereinigte Flugtechnische Werke-Fokker GmbH. Aircraft for short landing and takeoff distance. 3,938,760, Cl. 244-12.00D.
Horbach, Alfred; and Vernaleken, Hugo, to Bayer Aktiengesellschaft. Process for removing contaminants from polycarbonate solutions. 3,939,118, Cl. 260-47.0XA.
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Horn, Barry N.; Swain, Richard S.; and Rice, Richard C., to Horn, Barry N. Security alarm system. 3,939,460, Cl. 340-408.000.
Horn, Curtis L., to Hycalog, Inc. Rotary drill bit. 3,938,599, Cl. 175-329.000.
Hornyak, John; and Stahl, Howard D., to General Foods Corporation. Dry carbonation source for a beverage concentrate and method of preparing the same. 3,939,289, Cl. 426-548.000.
Horwath, Tibor G., to United States of America, Navy. Distributed temperature sensor. 3,938,385, Cl. 73-342.000.
Horwath, Tibor G., to United States of America, Navy. Spatially distributed transducer for towed line array applications. 3,939,466, Cl. 340-7.00R.
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Huf, Franz; and Lambrecht, Jurgen, to Dornier System GmbH. Rotary piston machine of trochoidal construction. 3,938,919, Cl. 418-183.000.
Hugelin, Bernard; and Troxler, Eduard, to Ciba-Geigy Corporation. Novel 1,2-diaza-1,5,9-cyclo dodecatrienes and 1,2-diaza-1-cyclododecenes. 3,939,147, Cl. 260-239.0BC.
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Hughes, James A. Trackway for overhead transportation system. 3,938,445, Cl. 104-124.000.
Huisman, Peter H., to Gypsum Industries Limited. Method and apparatus for treating sewage. 3,939,067, Cl. 210-7.000.
Humber, Leslie G.: *See—*
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Hummel, Merritt J., to PPG Industries, Inc. Method of making crystallized glass. 3,938,978, Cl. 65-33.000.
Humphrey, John H., to Data Source Corporation. Optical reading apparatus and method. 3,939,327, Cl. 235-61.11E.
Hunter, Edwin J., to Toro Company, The. Water powered drive for automatic controllers. 3,938,426, Cl. 92-140.000.
Husbands, Kelly. Net and portable net roller. 3,938,806, Cl. 273-95.00R.
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Hutner, Mark A., to Xerox Corporation. Dual ribbon fuser. 3,939,326, Cl. 219-216.000.
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Hynes, Charles P., to Raymond Lee Organization, Inc., The, a part interest. Screw machine cut-off tool. 3,938,229, Cl. 29-96.000.
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  Pomella, Piero; and Lauro, Luciano, 3,939,390.
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Isenberg, Gerhard; Bloch, Peter; and Tuzinsky, Wolfgang, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Flow machine for an aggressive, radioactive or special-purity flow medium. 3,938,913, Cl. 417-356.000.
Ishimaru, Kenzo: *See—*
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Jackson, W. Shaun; and Bohm, Leslie Eric. Convertible back-pack pannier. 3,938,716, Cl. 224-9.000.
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James, Wilbur G., to United States of America, Navy. Instantaneous frequency measurement system. 3,939,411, Cl. 324-77.00H.
Jamshidi, Khosrow. Soft tissue biopsy aspirating device. 3,938,505, Cl. 128-2.00B.
Janes, George Sargent, to Jersey Nuclear-Avco Isotopes, Inc. Method and apparatus for separation of ions from a plasma. 3,939,354, Cl. 250-484.000.
Jansen, Helmut; and Vollmer, Klaus, to Robert Bosch G.m.b.H. Apparatus for sealing containers. 3,938,305, Cl. 53-300.000.
Janssen, Lutz, to Volkswagenwerk Aktiengesellschaft. Water collecting device associated with the side window of a vehicle. 3,938,856, Cl. 296-154.000.
Jaronko, John C.; and Jaronko, John T., to Nutmeg Sanitation Inc. Mobile furnace vehicle. 3,938,450, Cl. 110-8.00C.
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Jelks, James W. Process for oxidizing and hydrolyzing plant organic matter particles to increase the digestability thereof by ruminants. 3,939,286, Cl. 426-312.000.
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Johnson, Burnett H.; and Henderson, Don J., to Exxon Research and Engineering Company. Self-supported, oriented high-performance films having minimal thermal distortion properties. 3,939,116, Cl. 260-47.0CB.
Johnson, Charles L. Bicycle interconnecting apparatus. 3,938,827, Cl. 280-209.000.
Johnson, Curtiss S., Jr., to C. Sherman Johnson Co., Inc. Adjustable pelican hook. 3,938,844, Cl. 294-83.00R.
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Johnston, Dean E., to Torrington Company, The. Thrust washer. 3,938,867, Cl. 308-235.000.
Jonelis, Robert E.; Christoph, Dieter; and Schulz, Siegfried, to Midwest Power Corporation. Pipe and tube end preparation apparatus. 3,938,411, Cl. 82-4.00C.
Jones, Allen Paul, Jr.; Knopf, Robert John; and Conner, Claude Milton, to Union Carbide Corporation. Microporous polyurethane hydrogels, method and composites with natural and other synthetic fibers or films. 3,939,105, Cl. 260-2.5AY.
Jones, Francis J. Toothpick dispenser. 3,938,701, Cl. 221-184.000.
Jones, Kendall, to Kaiser Aerospace and Electronics Corporation. Quick-release fuel coupling for racing cars. 3,938,564, Cl. 141-352.000.
Jones, Leon. Pressure regulator. 3,938,547, Cl. 137-488.000.
Jones, Richard William. Apparatus for forming a plurality of bales into a stack of predetermined size. 3,938,432, Cl. 100-7.000.
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Josey, Robert M. Golf bag supported beverage can holding assembly. 3,938,869, Cl. 312-100.000.
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Jurd, Leonard, to United States of America, Agriculture. 3,4-Methylenedioxy-cinnamyloxybenzene as a mosquito larvicide. 3,939,273, Cl. 424-282.000.
Jurgens, Rainer; and Ostertag, Alfred, to Christensen Diamond Products Company. Shrink-fit sleeve apparatus for drill strings. 3,938,853, Cl. 308-4.00A.
Kabushiki Kaisha Akashi Seisakusho: *See—*
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Kahn, Paul; and Stubstad, James A., to Cutter Laboratories, Inc. Hip joint prosthesis. 3,938,198, Cl. 3-1.912.
Kaiser Aerospace and Electronics Corporation: *See—*
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Kaiser, Carl; and Pendleton, Robert G., to SmithKline Corporation. 7 and 8-Halo substituted 1,2,3,4-tetrahydroisoquinoline compounds. 3,939,164, Cl. 260-286.00R.
Kajima Corporation: *See—*
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Kalko, Jurgen; and Crull, Wolfgang, to Lucca GmbH. Method of preparing liquid mixtures of predetermined composition. 3,938,537, Cl. 137-14.000.
Kamijima, Kiyokazu: *See—*
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Kampf, William M.; and Law, Denny B., to Aquappliances, Inc. Fireplace forced air circulation means. 3,938,496, Cl. 126-121.000.
Kane, William Paul, to Du Pont de Nemours, E. I., and Company. Method of making a polyethylene terephthalate laminate. 3,939,025, Cl. 156-244.000.
Kanno, Susumu: *See—*
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Kapoor, Inder: *See—*
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Kaptanis, Panayotis; and Fuhrmann, Castor, to Stabilus GmbH. Pneumatic spring with stop mechanism. 3,938,793, Cl. 267-120.000.
Kareman, James, to Raymond Lee Organization, Inc., The, a part interest. Saber or jig saw with demountable foot plate and shield. 3,938,251, Cl. 30-376.000.
Karl M. Reich Maschinenfabrik: *See—*
Mohr, Johannes, 3,938,654.
Karlsson, Einar. Hydraulic load sensing device. 3,938,380, Cl. 73-141.00R.
Karnemaat, John N., to General Environmental Systems Co., Inc. Process for treating animal waste. 3,939,280, Cl. 426-2.000.
Karpov, Vladimir Alexeevich: *See—*
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Kashiwagi, Teruya: *See—*
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Katoh, Hiroshi, to Victor Company of Japan, Limited. Recording and-/or reproducing apparatus using a tape cassette. 3,938,756, Cl. 242-188.000.
Katsumata, Ryoichi: *See—*
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Katzakian, Arthur, Jr.; and DePree, David O., to Aerojet-General Corporation. Recoverable regenerants for cationic exchange resins. 3,939,071, Cl. 210-34.000.
Kauffman, Joel M., to New England Nuclear Corporation. Compositions and process for liquid scintillation counting. 3,939,094, Cl. 252-301.20C.
Kaupp, Robert F., to Selas Corporation of America. Tube support. 3,938,476, Cl. 122-510.000.
Kavesh, Sheldon, to Allied Chemical Corporation. Apparatus for production of continuous metal filaments. 3,938,583, Cl. 164-276.000.
Kawada, Kimihiro: *See—*
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Kawakami, Heijiro; Kawaguchi, Yasunobu; and Fukinbara, Hazime. Device for continuously treating wires. 3,938,751, Cl. 242-47.010.
Kawamoto, Isao: *See—*
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Kawano, Takatsugu; Kojima, Hiroshige; Ohosawa, Hiroshi; and Morinaga, Kazuto, to Asahi Kasei Kogyo Kabushiki Kaisha. Feed and method of aquianimals cultivation. 3,939,279, Cl. 426-2.000.
Kawara, Masaru: *See—*
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Kawasaki, Kentaro; and Takizawa, Keizo, to Chori Company Limited. Method of producing deeply creped fabric with partially bulked yarn. 3,938,227, Cl. 28-72.0FT.
Kawasaki, Takato; and Ikuta, Yuko, to Takenaka Komuten Company, Ltd. Process for reinforced concrete wall forming. 3,938,292, Cl. 52-742.000.
Kawashima, Norifumi; Kamijima, Kiyokazu; and Yakeuchi, Yoshiaki, to Sony Corporation. Recording and reproducing apparatus. 3,939,489, Cl. 360-13.000.
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Keech, Eugene Elwin, to Electronic Engineering Co. of California. Previous events memory. 3,939,333, Cl. 235-153.0AP.
Keith, James A., Jr., to Singer Company, The. Dust bag support. 3,938,283, Cl. 51-170.00R.
Kella, Harry Y., to Raymond Lee Organization, Inc., The, a part interest. Hand and arm strength measuring device. 3,938,389, Cl. 73-381.000.
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Keller, Hans, to ITT Industries, Inc. Reverberation device. 3,939,436, Cl. 330-84.000.
Keller, Wolfgang, to Siemens Aktiengesellschaft. Method of producing monocrystalline semiconductor material, particularly silicon, with adjustable dislocation density. 3,939,035, Cl. 156-618.000.
Kellogg, Walter J., to Westinghouse Electric Corporation. Indicator lamp circuit having feedback protection. 3,939,398, Cl. 324-21.000.
Kelly, George B., Jr., to United States of America, Congress. Composition for use in deacidification of paper. 3,939,091, Cl. 252-189.000.
Kelly, James E.; Foulke, Richard F.; and Fitzsimmons, Raymond T., to Mech-El Industries, Inc. Ultrasonic thermal compression beam lead, flip chip bonder. 3,938,722, Cl. 228-1.000.
Kelly, Neil C.; McFarland, Robert L.; and Sampsell, Jack W., to United States of America, Navy. Acoustic transponder navigation system. 3,939,463, Cl. 340-3.00E.
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Kelsey, Ronald A., to Aluminum Company of America. Forming metal plate. 3,938,363, Cl. 72-364.000.
Kemkers, Pieter; and Derks, Antonius Lambertus, to U.S. Philips Corporation. Method of making a capacitor housing. 3,938,228, Cl. 29-25.420.
Kenki Kagaku Kogyo Kasushiki Kaisha: *See—*
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Kershaw, Eli J. Air filter. 3,938,973, Cl. 55-501.000.
Kershaw, Samuel L.; and Proeschl, Bernard E., to Caterpillar Tractor Co. Method for making a modular truck body. 3,938,238, Cl. 29-469.000.
Khanna, Ravi: *See—*
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Kihara, Nobutoshi, to Sony Corporation. Method and apparatus for recording and/or reproducing a video signal on a photographic record disc. 3,939,302, Cl. 178-6.60R.
Kim, Keun Y., to Monsanto Company. Dentifrices. 3,939,262, Cl. 424-52.000.
Kimball, James F. Electrical plug mounting device for power tools. 3,938,873, Cl. 339-58.000.
Kimmel, David R.: *See—*
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Kirsch, Ulrich; and Buhler, Wolfgang, to Intermedicat GmbH. Device for measuring sedimentation rates. 3,938,370, Cl. 73-61.400.
Kirschner, James B., to Wheeling-Pittsburgh Steel Corporation. Apparatus for wiping liquid from a strip. 3,938,468, Cl. 118-63.000.
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Kleiner, Hans-Jerg; and Rosinger, Sigurd, to Hoechst Aktiengesellschaft. Process for the preparation of ethane-1,2-diphosphinic acid diesters. 3,939,050, Cl. 204-162.0HE.
Kleiner, Richard N.: *See—*
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Klotzer, Erhard: *See—*
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Konyha, Peter P., to Allis-Chalmers Corporation. Single lever forward-reverse control. 3,938,400, Cl. 74-242.10R.
Koppang, Ronald N. Air vents. 3,938,430, Cl. 98-103.000.
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Kozul, Theodore L.; and Crandell, Paul A. Millimeter wave translating device with changeable insert element. 3,939,446, Cl. 333-98.00R.
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Krampe, Josef. Stripping tool for a cable having cover made of a synthetic material. 3,938,248, Cl. 30-90.400.
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Kuhle, Engelbert; Klauke, Erich; Kaspers, Helmut; and Scheinppflug, to Bayer Aktiengesellschaft. N-fluorodichl oromethylthio)-n-(trifluoromethyl)-aminobenzhydroxamic acids salts. 3,939,189, Cl. 260-429.900.
Kuhle, Engelbert; Siegle, Peter; Hammann, Ingeborg; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. N-sulfenylate-N-methylcarbamic acid esters of 2-oximino-alkanecarboxylic acid nitriles. 3,939,192, Cl. 260-453.00R.
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Kuo, Chan-Hwa; Taub, David; and Wendler, Norman L., to Merck & Co., Inc. Prostaglandin E_1 intermediate 6α-carboxy-5α(1-hydroxyethyl)-2-cyclohexene-1-heptanoic acid,γ-lactone, and lower alkyl or aralkyl esters thereof. 3,939,182, Cl. 260-343.30R.
Kurabayashi, Kinji; and Ono, Tatsuo, to Nisso-Sangyo Co. Ltd. Stanchion. 3,938,619, Cl. 182-113.000.
Kuramoto, Yoshio; and Ueda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Self-processing camera. 3,939,483, Cl. 354-83.000.

Kurata, Tokuzo; Okano, Takeshi; Ohfuchi, Kunihiko; Tamaru, Akio; Murata, Yoshifumi; and Nagashima, Saburo, to Mitsubishi Chemical Industries Ltd. Process for hydrating an unsaturated nitrile. 3,939,205, Cl. 260-561.00N.
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Lacefield, William B.; and Marshall, Winston S., to Eli Lilly and Company. Phenoxyphenyl-acetylenes and thio analogues thereof as antithrombotic agents. 3,939,278, Cl. 424-340.000.
Lachnit-Fixson, Ursula, to Schering Aktiengesellschaft. Method for contraception by the administration of sequential contraceptive preparations. 3,939,264, Cl. 424-239.000.
Lacon, John W., to Fiberglas Canada Limited. Method of forming articles of fibrous materials. 3,939,022, Cl. 156-200.000.
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Lamy, Jacques Edouard, to C. G. Doris. Platform structure for maritime installation. 3,938,343, Cl. 61-46.500.
Lane, Oscar B. Tow bar assembly. 3,938,830, Cl. 280-493.000.
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Lanier, Terry O.; and Martha, Eugene F., to Corning Glass Works. Fluid dispensing device. 3,938,958, Cl. 23-259.000.
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Lantz, Arne Nils: *See—*
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Larrabee, Robert Dean, to RCA Corporation. Suspension for depositing a pyroelectric material. 3,939,098, Cl. 252-518.000.
Larsen, Rex Stemann: *See—*
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Larson, Raymond E., to ECC Corporation. Shunt A.C. voltage regulator with modified full-wave bridge. 3,939,396, Cl. 323-8.000.
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Lauritsen, William Eger Nyboe. Apparatus for the mechanical operation of thread or yarn guides. 3,938,560, Cl. 139-59.000.
Lauro, Luciano: *See—*
Pomella, Piero; and Lauro, Luciano, 3,939,390.
Lauterbach, William L., to United States Steel Corporation. Expansion shim for hot briquette roll segments. 3,938,930, Cl. 425-472.000.
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Laven, Merrill L. Swimming pool components. 3,938,199, Cl. 4-172.190.
Law, Denny B.: *See—*
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Bennett, Max E.; McCanse, James Edson; Lawson, Gordon L.; and Clark, William H., 3,938,681.
Lawson, John E.; Dennis, Ronnie D.; and Majewski, Robert F., to Mead Johnson & Company. Diarylcyclobutanes. 3,939,196, Cl. 260-613.00R.
Le Telemecanique Electrique: *See—*
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Lee, Poy. Double action winter road conditioner apparatus. 3,938,835, Cl. 291-34.000.
Lee, Robert: *See—*
Knuppel, Helmut; Brotzmann, Karl; Fassbinder, Hans-Georg; Savard, Guy; and Lee, Robert, 3,938,790.
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Metzner, Arthur B.; Vaseleski, Raymond C.; and Lee, Wei-Kuo, 3,938,536.
Lee, Yuan Ho. Knockout mechanism for a high-speed automatic cold heading machine. 3,938,208, Cl. 10-11.00E.
Leeds & Northrup Company: *See—*
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Leeper, Harold M.; and Michaels, Alan S., to Alza Corporation. Novel drug permeable wall. 3,938,515, Cl. 128-260.000.
Lees, Robert, to Allied Chemical Corporation. Spin pack assembly. 3,938,925, Cl. 425-198.000.
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Lehmann, Hans-Gunter, to Schering Aktiengesellschaft. 15α,-Sulfonyloxy-12β-hydroxypregnanes and process for the preparation thereof. 3,939,187, Cl. 260-397.450.
Lehnert, Guenther: *See—*
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Leib, Joseph. Cleaning machine utilizing non-liquid cleaning agents. 3,938,357, Cl. 69-23.000.
Leichter, Peter: *See—*
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Leiponen, Matti Olavi; and Kivisto, Tuomo Veikko Juhani, to Outokumpu OY. Device for transferring a plate-like product from one station to another. 3,938,672, Cl. 214-1.0BD.
Leland Stanford Junior University, The Board of Trustees of: *See—*
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Leopard, George W.; and Hair, Kirby. Passive ranging tail warning device. 3,939,476, Cl. 343-112.00R.
L'Eplattenier, Francois; Pugin, Andre; and Vuitel, Laurent, to Ciba-Geigy Corporation. Bis-2-azomethine pigments, process for their manufacture and their use. 3,939,194, Cl. 260-439.00R.
Lerner, Bernard, to Automated Packaging Systems, Inc. Packaging system and method. 3,938,299, Cl. 53-22.00B.
Leventer, William. Color video signal generators. 3,939,487, Cl. 358-81.000.
Lever Brothers Company: *See—*
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Lewey, Ernest L.; Sharpe, Ned K.; and Sloan, James F., to Burlington Industries, Inc. Method and apparatus for handling large fabric rolls for slitting. 3,938,671, Cl. 214-1.00R.
Lewis, Bernard L., to United States of America, Navy. Method of measuring range with large bistatic angle radar. 3,939,475, Cl. 343-12.00R.
Lewis, Bernard L., to United States of America, Navy. Level and cross-level stabilization technique for search radar antennas. 3,939,480, Cl. 343-761.000.
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Lichte, Henry P., Jr., to Geolograph Industries. Cantilever-type inclinometer. 3,938,255, Cl. 33-311.000.
Liguori, Mario, to Messrs Elettronica Aster S.r.l. Ball universal joint for wave guides. 3,939,445, Cl. 333-98.0TN.
Lillig, Floyd A.: *See—*
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Linard, Robert, to Societe Anonyme dite: SETIM Societe d'Etudes Techniques des Industries Metallurgiques. Patient-lifter. 3,938,203, Cl. 5-81.00R.
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Lindgren, William A. Pulse peak detector. 3,939,365, Cl. 307-235.00A.
Lindner, Herbert G., to United States of America, Army. Security remote control method and system. 3,939,419, Cl. 325-33.000.
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- Littlejohn, David G.: *See*—
  - Wethington, Charles A.; and Littlejohn, David G., 3,939,030.
- Llewellyn, Rees Jenkin: *See*—
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- Loane, Edward S., to General Public Utilities Corporation. Hydro-air storage electrical generation system. 3,939,356, Cl. 290-52.000.
- Lockheed Aircraft Corporation: *See*—
  - Bertrand, Isidore L. Q.; and Hays, Wilford R., 3,939,321.
- Loeser, John K., to Positive Safety Manufacturing Company, The. Safety device for power-operated presses and the like. 3,939,314, Cl. 200-61.420.
- Lohn, Klaus; Lutteke, Georg; Schiefer, Gerd; Bruntink, Lammert; Groenewegen, Paulus Petrus Maria; Weinerth, Hans Viktor; Zwijsen, Wilhelmus Antonius Joseph Marie; and Rooij, Karel Petrus Van, to U.S. Philips Corporation. Tunable high frequency input circuit for a television receiver that tunes both VHF and UHF channels and can be readily integrated. 3,939,429, Cl. 325-432.000.
- Longo, John M.; and Clavenna, LeRoy R., to Exxon Research and Engineering Company. Use of perovskites and perovskite-related compounds as battery cathodes. 3,939,008, Cl. 136-6.0LN.
- Loomba, Yogendra Singh: *See*—
  - Stephenson, Robert L.; and Loomba, Yogendra Singh, 3,938,754.
  - Stephenson, Robert L.; Pfeiffer, Robert C.; and Loomba, Yogendra Singh, 3,938,755.
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- Lorch, Leonard G. Illuminated mobile construction. 3,939,478, Cl. 343-721.000.
- Lorenc, Tadeusz: *See*—
  - Marszalek, Leszek; Lorenc, Tadeusz; and Hodbod, Andrzej, 3,938,629.
- Lorkin, Clive Graham: *See*—
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- Loshbough, Richard C.: *See*—
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- Lovendusky, Charles Michael; and Wallick, Charles William, to Du Pont de Nemours, E. I., and Company. Terminal applicator. 3,938,245, Cl. 29-626.000.
- Lovqvist, Karl Bo Lennart. Arrangement in refuse chutes. 3,938,300, Cl. 53-124.00E.
- Lubbehusen, Paul: *See*—
  - Krambrock, Wolfgang; Lubbehusen, Paul; and Huck, Hans-Jurgen, 3,938,848.
- Lucas, Theodore W., Jr., to Andco Incorporated. Gasifier charging system. 3,938,451, Cl. 110-109.000.
- Lucca GmbH: *See*—
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- Lucking, Hans Joachim; Seyfried, Klaus; Buchner, Werner; and Rudolph, Karl-Heinz, to Bayer Aktiengesellschaft. Preparation of silanol containing organopolysiloxanes. 3,939,195, Cl. 260-448.20E.
- Luhman, Robert A.; and Ward, John R., to Minnesota Mining and Manufacturing Company. System for inflation and sealing of air cushions. 3,938,298, Cl. 53-7.000.
- Lummus Company, The: *See*—
  - O'Sullivan, Thomas F.; and Knol, Henricus J., 3,938,475.
  - Sze, Morgan C.; and Wang, Ruey H., 3,939,209.
- Lundberg, Robert D.; and Makowski, Henry S., to Exxon Research and Engineering Company. Fabrication process for multiphased plastics. 3,939,242, Cl. 264-294.000.
- Lussow, Robert O.: *See*—
  - Brusic, Vlasta; and Lussow, Robert O., 3,939,293.
- Luthi, Hanspeter; and Dubach, Werner. Ball game with shiftable labyrinthine platform. 3,938,807, Cl. 273-110.000.
- Lutteke, Georg: *See*—
  - Lohn, Klaus; Lutteke, Georg; Schiefer, Gerd; Bruntink, Lammert; Groenewegen, Paulus Petrus Maria; Weinerth, Hans Viktor; Zwijsen, Wilhelmus Antonius Joseph Marie; and Rooij, Karel Petrus Van, 3,939,429.
- Luzzi, John J.: *See*—
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- Lyons, John H. Signal device. 3,938,465, Cl. 116-63.00P.
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  - Ritota, Michael C.; and Mancini, L. Phillip, 3,938,521.
- Maas, Dieter: *See*—
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- MacAskill, Robert Bruce, Jr.; and Porter, Charles Norvin, to Sundstrand Corporation. Burner control system with secondary safety switch. 3,938,939, Cl. 431-79.000.
- Macedo, Pedro B.; and Litovitz, Theodore A. Method of producing optical wave guide fibers. 3,938,974, Cl. 65-3.00R.
- Mack, Robert F.: *See*—
  - Stavropoulos, William S.; Thiegs, Bernard J.; and Mack, Robert F., 3,938,954.
- Macke, Thomas F., to Hydrabind, Inc. Signature arranging device and method. 3,938,799, Cl. 270-55.000.
- Madelaine, Serge: *See*—
  - Belliot, Christian; Cheylan, Etienne; Madelaine, Serge; and Ebbing, Johannes, 3,939,103.
- Madison, George Benjamin, to Coleman Company, Inc., The. Backpack frame and assembly. 3,938,718, Cl. 224-25.00A.
- Madison, Richard Keith: *See*—
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- Madland, Thorvald: *See*—
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- Maeda, Nobutaka: *See*—
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- Maeda, Takeo, to Hitachi, Ltd. Variable frequency power converter for ac m otor drive. 3,939,387, Cl. 318-227.000.
- Maertens, Dieter: *See*—
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- Maggiolo, Allison, to Glen Raven Mills; and Peery, Lee H., part interest to each. Nondestructive method for quickly determining amount of lubricant on textile. 3,938,955, Cl. 23-230.300.
- Magidson, Herbert; Huber, Otto L.; and Hennrich, Helmut, to Moldex, Inc. Method of construction of bra pad. 3,939,023, Cl. 156-211.000.
- Magnaflux Corporation: *See*—
  - Rosauer, Peter J., 3,939,355.
- Magoveny, George S.; and Forgo, Eric J., to Windsunwatt, Inc. Horizontal multidirectional turbine windmill. 3,938,907, Cl. 415-141.000.
- Magyar Tudomanyos Akademia Muszaki Kemiai Kutato Intezete: *See*—
  - Ormos, Zoltan; Csukas, Bela; Stefko, Bela; Pataki, Karoly; Blickle, Tibor; and Felmeri, Jozsef, 3,938,259.
- Maier, Eckhard; Ostermeier, Heinrich; Kormendi, Kalman; and Schinke, Friedel, to Elbatainer Kunststoff- und Verpackungs- Gesellschaft m.b.H.; and Sulo Eisenwerk Streuber & Lohmann. Barrel of synthetic material. 3,938,687, Cl. 220-5.00R.
- Maisonville, Richard C., to Scans Associates, Inc. Method and apparatus for determining the timing angle in internal combustion engines. 3,939,397, Cl. 324-16.00T.
- Majewski, Robert F.: *See*—
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- Maki, Douglas W.: *See*—
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- Makowski, Henry S.: *See*—
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- Malamoud, Jean Gaston, to S.T. Dupont. Security device for a portable lighter. 3,938,943, Cl. 431-150.000.
- Malcolm, J. Douglas, to Canadian Patents and Development Limited. Liquid fluidic device. 3,938,557, Cl. 137-834.000.
- Malmgren, William A.; and Gearing, Bryan F., to GTE Automatic Electric Laboratories Incorporated. Communication switching system data retrieval and loading arrangement. 3,939,309, Cl. 179-18.0ES.
- Malz, Ute K.: *See*—
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- Mamula, Michael: *See*—
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- Manchester, William James, to PowerHold Products, Inc. Chuck of the indexing type. 3,938,816, Cl. 279-5.000.
- Mancini, L. Phillip: *See*—
  - Ritota, Michael C.; and Mancini, L. Phillip, 3,938,521.
- Mann, Donald V.; and Mann, Herman C. Auxiliary drive endless loop tape cartridge. 3,938,752, Cl. 242-55.19A.
- Mann, Herman C.: *See*—
  - Mann, Donald V.; and Mann, Herman C., 3,938,752.
- Mann, Hugh W.: *See*—
  - Wrenn, George T., Jr.; Mann, Hugh W.; and Sarma, Krishna R. K., 3,938,353.
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  - Rhudy, John S.; and Knight, Bruce L., 3,938,594.
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- March, Joseph E., to Platt Luggage, Inc. Fabricated case. 3,938,630, Cl. 190-24.000.
- March Manufacturing Company: *See*—
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- Marchetti, Joseph R.: *See*—
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- Mardesich, Nicholas: *See*—
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- Marie, Gilbert, to Societe Nationale des Petroles d'Aquitaine. Process for the preparation of random copolymers of mono-olefins or of mono-olefins and unconjugated dienes with lactams with substitution on the nitrogen atom by an unsaturated radical. 3,939,129, Cl. 260-79.700.
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- Marin, Heiner: *See*—
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- Marion, Robert: *See*—
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- Marizzoli, Luigi: *See*—
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- Marriner, John E. Flexible connection for articulating vessels. 3,938,461, Cl. 114-235.00R.
- Marsan, Semen: *See*—
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- Marsh, Douglas D.: *See*—
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- Marshall, Winston S.: *See*—
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- Marsik, Stanley J.: *See*—
  - Philipp, Warren H.; Marsik, Stanley J.; and May, Charles E., 3,939,048.
- Marszalek, Leszek; Lorenc, Tadeusz; and Hodbod, Andrzej, to Centralny Osrodek Badan i Rozwoju Techniki Kolejnictwa. Railway track brake. 3,938,629, Cl. 188-62.000.
- Martha, Eugene F.: *See*—
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  - Lanier, Terry O.; and Martha, Eugene F., 3,938,958.
- Martin, Edwin B., to Mar-Chem, Incorporated. Composition for neutralizing static electricity. 3,939,080, Cl. 252-1.000.
- Martin, Jacques Lucien Joseph, to Societe Anonyme dite: R.K.S. Roller cages formed from apertured separators for roller bearings. 3,938,866, Cl. 308-235.000.
- Martin, Patrick S.; and Moody, Barron M., to Cryogenics Corporation of America. Freeze tunnel. 3,938,350, Cl. 62-156.000.
- Martin, Robert G.: *See*—
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- Martin, William F., to Raymond Lee Organization, Inc., The, a part interest. Slidable multipurpose container device. 3,938,819, Cl. 280-19.000.
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- Marwick, Edward F. Heat engines. 3,938,335, Cl. 60-673.000.
- Mary, Jacques; and Merillou, Pierre, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Facsimile receiver having movable printing bar. 3,939,481, Cl. 346-74.00E.
- Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Reinforcement for tires and method of making same. 3,938,313, Cl. 57-149.000.
- Masao Kurokawa: *See*—
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- Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
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- Maskery, Arthur, to Westinghouse Brake & Signal Co., Ltd. Vehicle speed signal pulse source. 3,939,416, Cl. 324-174.000.
- Masopust, Otto T., Jr.: *See*—
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- Massachusetts Institute of Technology: *See*—
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  - Sheehan, John C., 3,939,151.
- Master Specialty Products: *See*—
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- Mastin, Robert H., to Whitehall Corporation. Differential charge amplifier for marine seismic applications. 3,939,468, Cl. 340-7.000.
- Masuda, Takashi: *See*—
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- Masukawa, Toyoaki: *See*—
  - Fujiwhara, Mitsuto; Satoh, Ryosuke; Masukawa, Toyoaki; and Uozumi, Takahiro, 3,938,996.
- Maten, Marvin A., Jr.: *See*—
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- Mathes, Stanley, to Syntex Puerto Rico, Inc. Inhalation device. 3,938,516, Cl. 128-266.000.
- Mathues, Thomas P., to General Motors Corporation. Master cylinder. 3,938,333, Cl. 60-574.000.
- Matsuda, Motonobu: *See*—
  - Nanba, Yasuhiro; Yamada, Seiji; and Matsuda, Motonohu, 3,938,893.
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  - Otani, Hiroshi; and Oda, Fujio, 3,939,325.
  - Tomii, Kaoru, 3,939,486.
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- Mausteller, John W.; McGoff, Miles J.; and Thiebaud, Daniel L., to Mine Safety Appliances Company. Emergency breathing apparatus. 3,938,512, Cl. 128-191.00R.
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  - Burger, John H.; McClelland, John R.; and Dunkle, Robert P., 3,939,296.
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  - McIntyre, Robert G.; and Minnich, Otto J., 3,938,764.
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  - Ban, Thomas E., 3,938,987.
- McDowell, Wendell V., to Bethlehem Steel Corporation. Apparatus for welding a joint between two closely spaced vertical members. 3,939,324, Cl. 219-126.000.
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- McGoff, Miles J.: *See*—
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- McGrew, Dan. Ventilator for a toilet bowl. 3,938,201, Cl. 4-213.000.
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- McKenna, Matthew P., Jr.: *See*—
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- McKie, David A.: *See*—
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- Meany, David P., to MCM Industries, Inc. Universal burn-in fixture. 3,939,381, Cl. 317-101.00R.
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- Mentha, John W.; Shaffner, Janice V.; and Cresswell, Ronald M., to Burroughs Wellcome Co. Intermediates for the preparation of pyrimidine compounds. 3,939,181, Cl. 260-340.700.
- Menzel, Willi; and Milde, Gundolf, to Siemens Aktiengesellschaft. Structural arrangement for electronic modules. 3,939,441, Cl. 333-70.00R.
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- Mercer, Norman Joseph, Jr., to Boyar Schultz Corporation. Over the wheel dresser. 3,938,492, Cl. 125-11.00R.
- Merck & Co., Inc.: *See—*
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- Messner, Harold D.: *See—*
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  - Motov, David Lazarevich; Konstantinov, Vladimir Ivanovich; Rumyantsev, Vladimir Georgievich; Belokoskov, Valentin Ivanovich; Ude, Eduard Osvaldovich; Babkin, Artur Grigorievich; Metelkin, Alexandr Ivanovich; Suchkov, Vasily Georgievich; Koleshikova, Nina Ivanovna; Motovilin, Alexandr Vasilievich, Rusakova, Nina Trofimovna; Nikonova, Tatyana Vladimirovna; Polyaninova, Nina Ivanovna; Sinenko, Mikhail Grigorievich, Krylova, Irina Fedorovna; and Yakutin, Vladimir Mikhailovich, 3,938,951.
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- Metzner, Arthur B., Vaseleski, Raymond C.; and Lee, Wei-Kuo, to University of Delaware, The. Process for reducing the turbulent drag in conduits and around submerged objects. 3,938,536, Cl. 137-13.000.
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- Meyer, Horst; Bossert, Freidrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. 2-Amino-1,4-dihydropyridine derivatives. 3,939,171, Cl. 260-294.80D.
- Meylan, Jean-Luc Charles. Apparatus for cooling continuous castings. 3,938,584, Cl. 164-283.00S.
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- Miesel, John L., and Wickiser, David I., to Eli Lilly and Company. 4-Substituted-5-cyano-7-nitro-2-(α,α-difluoroalkyl)benzimidazoles. 3,939,166, Cl. 260-293.600.
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- Milkovic, Miran, to General Electric Company. Low cutoff digital pulse filter especially useful in electronic energy consumption meters. 3,939,413, Cl. 324-142.000.
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- Miller, William R., Jr., to USM Corporation. Gaging assembly for automatically controlled wheel lathes. 3,938,254, Cl. 33-203.110.
- Millett, James A.; and Raymond, James W., to Raymond, James W. Lock assembly. 3,938,359, Cl. 70-363.000.
- Milligan, Robert T.; and Vernon, Robert H. Paint container. 3,938,686, Cl. 215-232.000.
- Milo, Simcha. Central flow prosthetic cardiac valve. 3,938,197, Cl. 3-1.500.
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- Mitchell, James G.; Mitchell, Winalee G.; and Purdy, Paul D., to Mitchell, James G.; and Mitchell, Winalee G. Scuff slipper and method and apparatus for the manufacture thereof. 3,938,210, Cl. 12-1.00W.
- Mitchell, William Eric, to Dunlop Limited. Rims for pneumatic tires. 3,938,576, Cl. 152-379.00R.
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- Mogensen, Rasmus Langballe; and Sallerup, Hans Erik, to Tempress A/S. Measuring instruments. 3,938,393, Cl. 73-431.000.
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- Morrison, Howard J.; and Keller, Albert G., to Marvin Glass & Associates. Walkie-talkie device. 3,939,418, Cl. 325-16.000.
- Morrow, Robert S.; and Penn, Lloyd D., to IRD Mechanalysis, Inc. Combination balance analyzer and vibration spectrum analyzer. 3,938,394, Cl. 73-462.000.
- Morton, Clyde M. Two-stroke internal combustion engine. 3,938,481, Cl. 123-69.00R.
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- Motov, David Lazarevich; Konstantinov, Vladimir Ivanovich; Rumyantsev, Vladimir Georgievich; Belokoskov, Valentin Ivanovich; Ude, Eduard Osvaldovich; Babkin, Artur Grigorievich; Metelkin, Alexandr Ivanovich; Suchkov, Vasily Georgievich; Koleshikova, Nina Ivanovna; Motovilin, Alexandr Vasilievich; Rusakova, Nina Trofimovna; Nikonova, Tatyana Vladimirovna; Polyaninova, Nina Ivanovna; Sinenko, Mikhail Grigorievich; Krylova, Irina Fedorovna; and Yakutin, Vladimir Mikhailovich. Method of obtaining titanium tanning agent and its application for tanning hides, pelts and fur skins. 3,938,951, Cl. 8-94.250.
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  - Motov, David Lazarevich; Konstantinov, Vladimir Ivanovich; Rumyantsev, Vladimir Georgievich; Belokoskov, Valentin Ivanovich; Ude, Eduard Osvaldovich, Babkin, Artur Grigorievich; Metelkin, Alexandr Ivanovich; Suchkov, Vasily Georgievich; Koleshikova, Nina Ivanovna; Motovilin, Alexandr Vasilievich; Rusakova, Nina Trofimovna; Nikonova, Tatyana Vladimirovna; Polyaninova, Nina Ivanovna; Sinenko, Mikhail Grigorievich; Krylova, Irina Fedorovna; and Yakutin, Vladimir Mikhailovich, 3,938,951.
- Mott, James D., to Hydril Company. Drilling tool. 3,938,589, Cl. 166-224.00A.
- Moule, Richard D., to Franklin Electric Subsidiaries, Inc. Apparatus for receiving and acknowledging the return of a vehicle at a check-in station. 3,938,638, Cl. 194-4.00C.
- Moustafa, Emad T.: *See—*
  - Weber, Leonard J.; Dominick, George G.; and Moustafa, Emad T., 3,938,733.
- Muck, Karl-Friedrich: *See—*
  - Paschalis, Stratos; Kern, Rudolf; and Muck, Karl-Friedrich, 3,938,953.
- Mueller, David J., to Quasar Electronics Corporation. Automatic fine tuning defeat circuit. 3,939,427, Cl. 325-418.000.
- Mueller, Reinhard, to Teves-Thompson GmbH. Valve stem retainer. 3,938,484, Cl. 123-90.670.
- Muller, Arno, to Omni Ray AG. Apparatus for advancing the feed frame of an automatic embroidery machine. 3,938,453, Cl. 112-102.000.
- Muller, Arnold. Variable speed three-phase motor. 3,939,370, Cl. 310-125.000.
- Muller, Erich: *See—*
  - Nickl, Josef; Muller, Erich; Narr, Berthold, and Roch, Josef, 3,939,268.
- Muller, Marcel: *See—*
  - Alig, Leo; Furst, Andor; and Muller, Marcel, 3,939,193.
- Muller, Willi: *See—*
  - Hermstein, Wolfgang; Rosenberger, Gerhard; and Muller, Willi, 3,939,412.
- Murachi, Mikio: *See—*
  - Noda, Fumiyoshi; and Murachi, Mikio, 3,938,232.

Murakami, Kiyoharu, to Kabushiki Kaisha Daikin Seisakusho. Control system for forward-reverse clutches and low pressure supply line. 3,938,637, Cl. 192-113.00R.

Murakami, Masuo; Isaka, Ichiro; Nakano, Khozi; Souzu, Isao; Koda, Akio; Ozasa, Teruaki; Kashiwagi, Teruya; and Murakami, Yukiyasu, to Yamanouchi Pharmaceutical Co., Ltd. Penicillin derivatives. 3,939,150, Cl. 260-239.100.

Murakami, Tadao, to Hitachi, Ltd. Rotary electric machine. 3,939,371, Cl. 310-154.000.

Murakami, Yukiyasu: *See—*

Murakami, Masuo; Isaka, Ichiro; Nakano, Khozi; Souzu, Isao; Koda, Akio; Ozasa, Teruaki; Kashiwagi, Teruya; and Murakami, Yukiyasu, 3,939,150.

Murase, Genyo; Mineda, Hisahal; and Yamaguchi, Yozo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Energy absorbing steering assembly. 3,938,404, Cl. 74-492.000.

Murase, Kenji: *See—*

Andoh, Shizuo; and Murase, Kenji, 3,939,454.

Murata, Yoshifumi: *See—*

Kurata, Tokuzo; Okano, Takeshi; Ohfuchi, Kunihiko; Tamaru, Akio; Murata, Yoshifumi; and Nagashima, Saburo, 3,939,205.

Murphy, Milford R., to Textron, Inc. Rotor blade force track sensing system and automatic span tracking system. 3,938,762, Cl. 244-17.130.

Murray, William Young: *See—*

Gosling, Cyril Henry; Glick, David; Powell, Alan Leslie; and Murray, William Young, 3,939,298.

Musher, Evelyn: *See—*

Musher, Jeremy; and Su, Kai, 3,939,190.

Musher, Jeremy; and Su, Kai, to Musher, Evelyn. Group V pentavalent atom-containing compositions. 3,939,190, Cl. 260-446.000.

Mutschler, Otto. Stylograph. 3,938,899, Cl. 401-260.000.

Mutziger, John Stefan, to Deere & Company. Apparatus and method for making decay rate measurements. 3,939,405, Cl. 324-57.00R.

Myers Industries, Inc.: *See—*

Bartholomew, Allan E., 3,938,871.

Myers, Robert A.: *See—*

Hall, William J.; and Myers, Robert A., 3,939,225.

Nabinger, Herman G. Invalid cart and lift. 3,938,820, Cl. 280-47.110.

Nagai, Hiroshi; and Miyake, Yoshihiko, to Hitachi, Ltd. Method for adjusting the angle of attack of a floating magnetic head. 3,939,495, Cl. 360-103.000.

Nagasaki, Tadashi; Kimura, Isamu; and Tamura, Shingo, to Hitachi, Ltd. High voltage rectifying arrangement having a fixing piece for an input terminal. 3,939,393, Cl. 321-15.000.

Nagashima, Saburo: *See—*

Kurata, Tokuzo; Okano, Takeshi; Ohfuchi, Kunihiko; Tamaru, Akio; Murata, Yoshifumi; and Nagashima, Saburo, 3,939,205.

Nagata, Takeshi, to Nippon Steel Corporation; and Hamada Heavy Industries Co., Ltd. Treatment of blast furnace slag. 3,938,975, Cl. 65-19.000.

Nagazumi, Yasuo, to Nissan Motor Company Limited. Mechanical energy absorbing device and safety harness using the same. 3,938,627, Cl. 188-1.00C.

Nagel, Otto; Kuerten, Heribert; and Zehner, Peter, to BASF Aktiengesellschaft. Process for drawing in and compressing gases and mixing the same with liquid material. 3,938,738, Cl. 239-9.000.

Nagumo, Tadanobu: *See—*

Nishi, Takuji; Mitsuhashi, Kenhachi; and Nagumo, Tadanobu, 3,938,572.

Nagy, Nicholas; and Egerton, Clinton F., to International Telephone and Telegraph Corporation. Access cover with moveable attaching devices for underground pumping stations and other installations. 3,938,545, Cl. 137-363.000.

Naito, Hirokuni; Yoshimura, Isao; and Tashiro, Hisao, to Asahi Dow, Ltd. Method of making a fluid transmitting porous tube or sheet. 3,939,237, Cl. 264-54.000.

Nakagawa, Jihei, to Olympus Optical Co., Ltd. Large aperture photographic lens system. 3,938,884, Cl. 350-215.000.

Nakajima, Yasuo; Hayashi, Yoshimasa; and Yamamoto, Tadahiro, to Nissan Motor Company Limited. Exhaust manifold with sluice valve. 3,938,330, Cl. 60-294.000.

Nakamori, Yasuo, to Sanyo Onkyo Seiki Co. Ltd. Starter device for toys. 3,938,278, Cl. 46-202.000.

Nakamura, Tadasi: *See—*

Asano, Setunobu; and Nakamura, Tadasi, 3,939,191.

Nakamura, Takao; Hirose, Itsuo; Misawa, Rokuro; Horii, Hidenori; Hagio, Akira; and Sada, Tetsuo, to Nippon Kokan Kabushiki Kaisha. Method of making butt welded tubes. 3,938,724, Cl. 228-147.000.

Nakano, Khozi: *See—*

Murakami, Masuo; Isaka, Ichiro; Nakano, Khozi; Souzu, Isao; Koda, Akio; Ozasa, Teruaki; Kashiwagi, Teruya; and Murakami, Yukiyasu, 3,939,150.

Nakayama, Hiroshi, to Iwatani & Co., Ltd. Electric timer switch. 3,939,384, Cl. 317-141.00S.

Nakayama, Kiyoshi; Kobata, Mamoru; Tanaka, Yoshitake; Nomura, Tadaaki; and Katsumata, Ryoichi, to Kyowa Hakko Kogyo Co., Ltd. Process for the production of L-glutamic acid. 3,939,042, Cl. 195-49.000.

Nakayama, Yasuhiro: *See—*

Yoneyama, Masakazu; Yamamoto, Nobuo; Sugimoto, Naohiko; Horie, Ikutaro; and Nakayama, Yasuhiro, 3,938,999.

Nanba, Yasuhiro; Yamada, Seiji; and Matsuda, Motonobu, to Minolta Camera Kabushiki Kaisha. Image focussing mechanism. 3,938,893, Cl. 356-125.000.

Nanba, Yasuhiro, to Minolta Camera Kabushiki Kaisha. Focus detecting device. 3,938,894, Cl. 356-125.000.

Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; Yamamoto, Mitsuyoshi; Sato, Seiji; Sato, Tomoyasu; and Mnrikawa, Atsuko, to Abbott Laboratories. Antibiotics designated XK-88 series and process for production thereof. 3,939,043, Cl. 195-80.00R.

Narr, Berthold: *See—*

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Nasser, Benny E.: *See—*

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National Starch and Chemical Corporation: *See—*

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Nau, Harold Henry, to American Cyanamid Company. Apparatus for coating particulate material with finely divided solids. 3,938,469, Cl. 118-303.000.

Nayler, John Herbert Charles; Pearson, Michael John; and Southgate, Robert, to Beecham Group Limited. 3-Benzyl-7-substituted acetamido-3-cephem-4-carboxylic acids and halogenated benzyl derivatives. 3,939,157, Cl. 260-243.00C.

NCR Corporation: *See—*

Pandey, Raghvendra K., 3,939,252.

Nedsten, Hans Ludvig, to AB Stridsberg & Blorck. Noise-suppressed circular saw blade. 3,938,417, Cl. 83-835.000.

Needham, Donald G., to Phillips Petroleum Company. Thermoplastic resin composition having high impact strength. 3,939,112, Cl. 260-33.6AQ.

Nehushtan, Jacob; and Schusberger, Meyer, to Tadiran Israel Electronics Industries Ltd. Battery charging and discharging system. 3,939,359, Cl. 307-66.000.

Nejtek, George: *See—*

Steele, William Henry; and Nejtek, George, 3,939,231.

Nelson, Larry Allan, to Tektronix, Inc. FM limiter with input level sensing and TTL level output. 3,939,432, Cl. 328-13.000.

Nelson, Richard Donald. Air filter restriction indicating device. 3,939,457, Cl. 340-239.00F.

Nelson, Robert E., to General Motors Corporation. Starting system for a helicopter power plant control. 3,938,320, Cl. 60-39.140.

Neotec Corporation: *See—*

Selgin, Paul J., 3,938,896.

Nerska, Karl, to Lipe-Rollway Corporation. Self-adjusting cover assembly for friction clutches improvement. 3,938,636, Cl. 192-111.00A.

Neugebauer, Gunter: *See—*

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Nicholas, Michael George: *See—*

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Nickl, Josef; Muller, Erich; Narr, Berthold; and Roch, Josef, to Boehringer Ingelheim GmbH. 2,4-Diamino substituted pyridol(3,2-d)pyrimidine as antithrombotic agents. 3,939,268; Cl. 424-246.000.

Nicolaisen, Bernard H., to Olin Corporation. Process for preparing alkali metal orthophosphates and ammonia. 3,939,254, Cl. 423-312.000.

Niemann, Elfriede, to Hoechst Aktiengesellschaft. Process for the manufacture of human transferrin labelled with indium 113m. 3,939,258, Cl. 424-1.000.

Nieschler, Werner: *See—*

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Nippon Electric Co., Ltd.: *See—*

Funatsu, Michiro; and Matsumura, Eiichi, 3,939,399.

Suda, Kazuyoshi; Isono, Tomoyuki; and Yashima, Teruo, 3,938,435.

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Nippon Gakki Seizo Kabushiki Kaisha: *See—*

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Nippon Kokan Kabushiki Kaisha: *See—*

Nakamura, Takao; Hirose, Itsuo; Misawa, Rokuro; Horii, Hidenori; Hagio, Akira; and Sada, Tetsuo, 3,938,724.

Nippon Soken, Inc.: *See—*

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Nippon Steel Corporation: *See—*

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Nippondenso Co., Ltd.: *See—*

Arai, Hiroshi; Ohta, Jun; Taniguchi, Koichi; Sakurai, Yasuhiko; and Ohtake, Toshikazu, 3,939,470.

Takeda, Yoshiaki, 3,938,489.

Nisbet, Kenneth J., to Ford Motor Company. Force limiting device for a motor vehicle parking brake. 3,938,406, Cl. 74-512.000.

Nisbet, Kenneth J., to Ford Motor Company. Variable ratio parking brake control. 3,938,407, Cl. 74-516.000.

Nishi, Takuji; Mitsuhashi, Kenhachi; and Nagumo, Tadanobu, to Yokohama Rubber Co. Ltd., The. Crack prevention for pneumatic tire. 3,938,572, Cl. 152-209.00R.

Nishihayashi, Yoshifumi; Shimizu, Atsushi; Shiga, Yasuhiro; Okabe, Kenji; and Baba, Ken-ichi, to Toyo Cloth Co., Ltd. Process for producing artificial leather. 3,939,021, Cl. 156-78.000.

Nishikubo, Yasuhiko: *See—*

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Nishitani, Kiyoshi; Kawada, Kimihiro; Ebina, Riyuzo; and Miyoshi, Katsunori, to Mitsubishi Chemical Industries Ltd. Plastic pallet. 3,938,448, Cl. 108-58.000.

Nishiyama, Toshiki. Passage structures for use in acquiring the techniques for driving motor cycles. 3,938,904, Cl. 404-35.000.

Nissan Motor Company Limited: *See—*

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Nakajima, Yasuo; Hayashi, Yoshimasa; and Yamamoto, Tadahiro, 3,938,330.

Nissen Corporation: *See—*

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Nissen, George P., to Nissen Corporation. Protective end covers for the resilient suspension members of trampoline beds and the like. 3,938,792, Cl. 267-69.000.

Nisso-Sangyo Co. Ltd.: *See—*

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Noack, Dieter; and Marin, Heiner, to Siemens Aktiengesellschaft. Electric compressed-gas circuit breaker. 3,939,317, Cl. 200-148.00A.

Noda, Fumiyoshi; and Murachi, Mikio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of manufacturing catalyst type exhaust gas purifier. 3,938,232, Cl. 29-157.00R.

Noda, Tomimitsu: *See—*

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Noguera, John Michael. Yarn spinning apparatus. 3,938,312, Cl. 57-103.000.

Nomura, Tadaaki: *See—*

Nakayama, Kiyoshi; Kobata, Mamoru; Tanaka, Yoshitake; Nomura, Tadaaki; and Katsumata, Ryoichi, 3,939,042.

Nopper, Peter, to Zumbach Electronic - Automatic. Positioning control apparatus. 3,939,389, Cl. 318-578.000.

Nordeen, Erwin: *See—*

Schmitz, Joseph F.; Malz, Ute K.; and Nordeen, Erwin, 3,938,216.

Nordgren, Gunnar, to Oy Suomen Vanutehdas - Finwad Ltd. Pretearing device for dry plates of wood pulp. 3,938,746, Cl. 241-186.00R.

Nordmann, Adolf, to Rheinmetall GmbH. Rammer for projectiles. 3,938,421, Cl. 89-47.000.

Norlin Music, Inc.: *See—*

Crooks, Robert Clement Allen, 3,939,305.

Norris, George W., to Crouse-Hinds Company. Cable tray. 3,938,767, Cl. 248-58.000.

Norsk Hydro A. S.: *See—*

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Nothiger, Paul J. Rope climber. 3,938,620, Cl. 182-135.000.

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Nutmeg Sanitation Inc.: *See—*

Jaronko, John C.; and Jaronko, John T., 3,938,450.

N.V. Industrieele Handelscombinatie Holland: *See—*

de Bree, Siegfried Emilius Maria, 3,938,908.

Nygaard, Sven; and Larsen, Rex Stemann, to Eskofot A/S. Reproduction camera. 3,938,887, Cl. 355-63.000.

Oberstadt, Allan L., to Bendix Corporation, The. Exhaust gas sensor operating temperature detection system. 3,938,479, Cl. 123-32.0EA.

O'Brien, James E.: *See—*

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Oda, Fujio: *See—*

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Oda, Roy; De Frayne, Garry O.; and Walker, Paul L., to Chrysler Corporation. Vehicle lamp construction. 3,939,337, Cl. 240-8.300.

Oehlert, Yves: *See—*

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Oestmann, Eldon D.: *See—*

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Ogawa, Kazuhiro: *See—*

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Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. Ceramic filter circuit. 3,939,442, Cl. 333-72.000.

Oglesby, Cecil D., to Borg-Warner Corporation. Pneumatically controlled fuel injection system. 3,938,486, Cl. 123-119.00R.

Ohfuchi, Kunihiko: *See—*

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Ohmi, Atsushi, to Aisin Seiki Kabushiki Kaisha. Brake servo-motor. 3,938,424, Cl. 91-369.00B.

Ohosawa, Hiroshi: *See—*

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Ohya, Shogo; Takagi, Momoyoshi; and Kurokawa, Masao, to Masao Kurokawa. Method of bonding fluoro plastics to a base. 3,939,027, Cl. 156-306.000.

Oinuma, Shigeru: *See—*

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Oishi, Michiro, to Asahi Kogyo Kahushiki Kaisha. High numerical aperture intermediate wide angle objective. 3,938,882, Cl. 350-214.000.

Okabe, Kenji: *See—*

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Okachi, Ryo: *See—*

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Okada, Tomoyuki; and Suda, Seiji, to Hitachi, Ltd. Feedback circuit. 3,939,433, Cl. 330-25.000.

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Okitsu, Kingo: *See—*

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Okuda, Shinji, to Sony Corporation. Resilient tape guide assembly for tape recording and/or reproducing apparatus. 3,939,494, Cl. 360-84.000.

Old, Charles Fraser; Nicholas, Michael George; and Howlett, Brian Wilfred, deceased (by Howlett, Margaret, administratrix), to United Kingdom Atomic Energy Authority. Method of producing composite bearing materials. 3,938,579, Cl. 164-87.000.

Olin Corporation: *See—*

Dooley, James K.; and Cook, Ralph L., 3,938,440.

Nicolaisen, Bernard H., 3,939,254.

Olofsson, Hans Kristoffer, to Atlas Copco Aktiebolag. Screw rotor machine with hollow thread rotor enclosing a screw cam rotor. 3,938,915, Cl. 418-9.000.

Olson, Robert K.: *See—*

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Olthow, Viktor Semenovich: *See—*

Ivanov, Evgeny Illarinovich; Olthow, Viktor Semenovich; Kostyrya, Evgeny Dmitrievich; and Derkach, Nikolai Dmitrievich, 3,938,596.

Olympic Instruments Inc.: *See—*

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Olympus Optical Co., Ltd.: *See—*

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Oostenbrink, Albertus Antony, to Wavin B.V. Pipe connection for plastic pipes comprising a transversely or helically corrugated pipe-connecting part. 3,938,834, Cl. 285-235.000.

Opelt, Christian, to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Inh. Max Grundig. Apparatus for assembling video sequences on tape in phase synchronization. 3,939,490, Cl. 360-14.000.

Optical Coating Laboratory, Inc.: *See—*

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Oregon, The United States National Bank of, executor: *See—*

Andrews, Alvadore M., deceased, 3,938,928.

Orendi, Roderich, to Gustav Wagner Maschinenfabrik. Circular saw blade. 3,938,418, Cl. 83-839.000.

- Ormos, Zoltan; Csukas, Bela; Stefko, Bela; Pataki, Karoly; Blickle, Tibor; and Felmeri, Jozsef, to Richter Gedeon Vegyeszeti Gyar Rt, and Magyar Tudomanyos Akademia Muszaki Kemiai Kutato Intezete. Process for continuous drying of chemical products by milling-fluidisation. 3,938,259, Cl. 34-10.000.
- Ortega, Robert. Valve construction. 3,938,553, Cl. 137-625.470.
- Orwig, David F.; and Roecklein, Robert G., to Spicecraft, Inc. Sterilizing apparatus and process 3,939,287, Cl. 426-316.000.
- Osbon, William O.: *See—*
  - Putman, Thomas H.; and Osbon, William O., 3,938,538.
- O'Shea, Francis X., to Uniroyal, Inc. Aromatic polyether-polythioether-polysulfone thermoplastics. 3,939,119, Cl. 260-49.000.
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- Ossip, Paul S.; and Dreher, Karl D., to Marathon Oil Company. Intermediate fluid systems for long distance oil displacement. 3,938,591, Cl. 166-275.000.
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- Othmer, Donald F. Method for producing aluminum metal from its salts. 3,938,988, Cl. 75-10.00R
- Outboard Marine Corporation: *See—*
  - Densow, Ulrich O., 3,938,622.
  - Irgens, Finn T., 3,938,458.
  - Miller, George E.; Griffith, Michael J.; and Van Rens, Russell J., 3,938,477.
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- Ovchinnikov, Viktor Sergeevich; Grigorov, Eduard Ivanovich; Magdesian, Arkady Lukyanovich; Gorelikov, Vladimir Ivanovich; Bermishev, Andrei Vasilievich; Utkin, Alexandr Stepanovich; Fedotov, Viktor Konstantinovich; and Volkov, Vladimir Yakovlevich. Cryostat. 3,938,346, Cl. 62-50.000.
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- Owen, Ronald Charles, to Illinois Tool Works Inc. Container carrier and method of making same. 3,938,656, Cl. 206-150.000.
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  - Marzocchi, Alfred, 3,938,313.
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  - Zaleski, John F., 3,939,011.
- Pace, J. Don. Movable supporting device for milking apparatus 3,938,470, Cl. 119-14.100.
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  - Coppersmith, Morris, 3,938,714.
- Pahl, Ottn Andrew. Snow cradle. 3,938,843, Cl. 294-54.000.
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- Pandjiris Weldment Co., The: *See—*
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- Panghorn, Jon B., and Sharer, John C., to American Gas Association Process for producing hydrogen from water. 3,939,257, Cl. 423-658.000
- Paolinelli, Antonio: *See—*
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- Papenfuhs, Theodor; Spietschka, Ernst; and Troster, Helmut, to Hoechst Aktiengesellschaft. Daylight fluorescent pigments. 3,939,093, Cl. 252-301 20R.
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- Parker, Russell H R., to Universe Machine Company, Inc. Mechanism for feeding and transporting brush blanks. 3,938,643, Cl. 198-19.000.
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- Patel, Anil U.; DePhillips, James V.; and Peyser, Harry A., to Continental Can Company, Inc. Non-detachable easy open flap and tab assembly. 3,938,693, Cl. 220-267.000.
- Patel, Jaykishan C., to General Electric Company. Control system. 3,938,941, Cl. 431-80.000.
- Patzelt, Helmut, to Daimler-Benz Aktiengesellschaft. Protective installation, especially for the passengers of motor vehicles. 3,938,824, Cl. 280-150.0AB.
- Paulson, Donald L.: *See—*
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- Payne, Harry R.: *See—*
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- Paynter, John D.; and Cecil, Richard R., to Exxon Research and Engineering Company. Process for reactivation of iridium-containing catalysts. 3,939,061, Cl. 208-140.000.
- Pearce, David, to British Petroleum Chemical International Ltd., The. Xylenes separation process. 3,939,221, Cl. 260-674.0SA.
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  - Nayler, John Herbert Charles; Pearson, Michael John; and Southgate, Robert, 3,939,157.
- Peer, John Charles, to RCA Corporation. Class D amplifier. 3,939,380, Cl. 315-397.000.
- Peery, Lee H.: *See—*
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- Peltret, Pierre Henri, to C.A.V. Limited Liquid fuel pumping apparatus. 3,938,487, Cl. 123-139.0ST.
- Pembleton, James D.; and Pratt, Keith C., to Ford Motor Company. Brake valve for a motor vehicle brake system. 3,938,850, Cl. 303-24.00F.
- Pendleton, Robert G.: *See—*
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- Penfold, Garn Farley; and Redman, Andrew Paul, to Deere & Company. Tree harvester delimbing control. 3,938,566, Cl. 144-2.00Z.
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  - Jadwin, Thomas A.; Khanna, Ravi; Merrill, Stewart H.; and Perry, Edmond S., 3,938,992.
- Perry, L. F., Jr. Portable concrete batch plant. 3,938,673, Cl. 214-2.000.
- Perry, Raymond S. B., to Plastic Components, Inc. Roof air vent. 3,938,429, Cl. 98-37.000.
- Perry, Roger L., to Gillette Company, The. Disposable blade unit. 3,938,250, Cl. 30-346.570.
- Perry, Roger L.: *See—*
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- Pescetti, Anthony. Coating composition and therapeutic preparation incorporating same. 3,939,259, Cl. 424-20.000.
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- Petrera, Donato: *See—*
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- Petry, Chester H., Jr.; and Hensley, J. Carl, to Byers Photo Equipment. Process of preparing a film strip for handling. 3,939,026, Cl. 156-304.000.
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- Peyton, John J., to Industrial Automation Corporation. Gripper means. 3,938,847, Cl. 294-110.00R.
- Pfeifer & Langen: *See—*
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- Pfeiffer, Robert C.: *See—*
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- Phillips Petroleum Company: *See—*
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  - Hogan, John P.; Nasser, Benny E.; and Delap, Joseph A., 3,939,137.
  - Kinney, Alfred W., 3,938,697.
  - Needham, Donald G., 3,939,112.
  - Quigg, Harold T.; and Schirmer, Robert M., 3,938,323.
  - Walker, Harry L., 3,939,045.
- Phlaum, Edward G., to A. O. Smith Corporation. Ignition enhancer for starting pilot burners. 3,938,946, Cl. 431-264.000.
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- Pickett, John E. P. Covering apparatus and method for film mounted serial tissue sections. 3,939,019, Cl. 156-57.000.
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- Pielkenrood, Jacob, to Pielkenrood-Vinitex B.V. Flow regulator for sediment collecting chambers of a separating device. 3,938,713, Cl. 222-486.000.
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- Pignataro, Francesco: *See—*
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- Plastic Components, Inc.: *See—*
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- Platt International Limited: *See—*
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- Plumat, Emile, to Glaverbel-Mecaniver. Method and apparatus for vertically drawing a glass ribbon 3,938,979, Cl 65-90.000.
- Pohjola, Jorma Toivo Tapani. Vehicle steering apparatus. 3,938,607, Cl. 180-9.440.
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- Polanco, Julio R. Relator for dental casts. 3,938,252, Cl. 32-32.000.
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- Ponticello, Ignazio S., to Indicon Inc. Polymers of monomers containing active methylene groups and other ethylenically unsaturated monomers. 3,939,130, Cl. 260-65.000.
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- Preston, Peter Joseph, to American Cyanamid Company. Packing gland for $TiCl_4$ inlet to oxidizer reactor. 3,938,832, Cl. 285-157.000.
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- Prins, Theodorus. Storage device for liquids. 3,938,341, Cl. 61-46.000.
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- Raborn, Eldridge W., to Gordon, Robert A. Motor kill switch with operator attached tether. 3,938,613, Cl. 180-99.000.
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- Radowicz, Richard D. End jointed beam and laminated beam adhesive application system and head for use therein. 3,938,467, Cl. 118-2.000.
- Ragard, Phillip Anthony; and Young, Keith Alan, to Universal Instruments Corporation. Wrapping post swaging apparatus. 3,938,364, Cl. 72-403.000.
- Ralph M. Parsons Company, The: *See—*
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- Ramirez, Juan A. Magnetically actuated reciprocating engine. 3,939,367, Cl. 310-20.000.
- Randall, David I.; and Wynn, Robert W., to GAF Corporation. Composition containing an aliphatic N-cycloalkyl-p-(2-chloroethyl)-phosphonamidate. 3,938,983, Cl. 71-86.000.
- Randell, Donald Richard; and Smith, Malcolm John, to Ciba-Geigy Corporation. Dehydro pyridinyl sulfides, sulfoxides and sulfones. 3,939,170, Cl. 260-294.80F.
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- Rasmussen, Gunnar Olaf Vestergaard, to Havera Development Ltd. Power transmitting mechanism. 3,938,397, Cl. 74-60.000.
- Ratajczyk, James Daniel; Stein, Robert George; and Swett, Leo Ralph, to Abbott Laboratories. 1,3-Dimethyl- 1H-pyrazolo(4,3-D) pyrimidine-7 (6H)-ones. 3,939,161, Cl. 260-256.40F.
- Ratner, Buddy D.; and Hoffman, Allan S., to United States of America, Energy Research and Development Administration. Process for radiation grafting hydrogels onto organic polymeric substrates. 3,939,049, Cl. 204-159.130.
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- Rausch, Richard E., to Universal Oil Products Company. Dehydrogenation method and multimetallic catalytic composite for use therein. 3,939,220, Cl. 260-668.00D.
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- Reash, Clair W., to Union Carbide Corporation. Alignment spring counteracting antenna type getter effect on electron gun alignment. 3,939,376, Cl. 313-451.000.
- Redford, David A.; and Mitchell, David L., to Texaco Exploration Canada Ltd. Method for recovering viscous asphaltic or bituminous petroleum. 3,938,590, Cl. 166-270.000.
- Redman, Andrew Paul: *See—*
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- Redman, Charles M., to United States of America, Army. Wavefront flattener. 3,939,479, Cl. 343-753.000.
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- Reed, Stuart, to Amchem Products, Inc. Aqueous zinc phosphating solution and method of rapid coating of steel for deforming. 3,939,014, Cl. 148-6.15Z.
- Reed, Thomas G., Jr. Process for treating oil shale. 3,939,057, Cl. 208-11.000.
- Rees, Herbert, to Husky Injection Molding Systems Limited. Pairing and stacking system for molded articles. 3,938,675, Cl. 214-6.00M.
- Regie Nationale des Usines Renault: *See—*
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- Reissmuller, Anton. Device for post-atomization for combustion engines using a compressed mixture and an external ignition. 3,938,967, Cl. 48-180.00R.
- Reiter, Robert: *See—*
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- Reitknecht, Jack. Swab applicator with adapter chuck and closure. 3,938,898, Cl. 401-183.000.
- Rejsa, Jack J.; and Reid, Francis R., to Pillsbury Company, The. Apparatus for inserting separator plates in cans and tamping them in place. 3,938,301, Cl. 53-157.000.
- Reliance Electric Company: *See—*
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- Remond, Pierre, to Saurer-Diederichs S.A. Scissor-type shear for loom. 3,938,414, Cl. 83-368.000.
- Rennie, Robert Allan Campbell, to Imperial Chemical Industries Limited. Oxidation of aromatic compounds with a tetravalent lead oxidation system. 3,939,214, Cl. 260-621.00G.
- Repke, Virginia L., to Johnson & Johnson. Disposable diaper. 3,938,522, Cl. 128-287.000.
- Republic Packaging Corporation: *See—*
  - Carmody, John Maurice, 3,938,661.
- Reynolds, George A.; Van Allan, James A.; and Contois, Lawrence E., to Eastman Kodak Company. Pyrylium dyes for electrophotographic composition and element. 3,938,994, Cl. 96-1.600.
- Rhee, Chongkook John: *See—*
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  - Granger, Alain; and Sausse, Andre, 3,939,069.
- Rhudy, John S.; and Knight, Bruce L., to Marathon Oil Company. Fracturing fluid. 3,938,594, Cl. 166-308.000.
- Ribes, Andre Auguste, to Centre National d'Etudes Spatiales. Decommutator for extracting zero and one bits from a coded message of duration-modulated pulses. 3,939,304, Cl. 178-68.000.
- Rice, Charles M., to Akzona Incorporated. Yarn stop-motion device. 3,938,311, Cl. 57-87.000.
- Rice, Gordon L., to Posa-Cut Corporation. Cutting tool. 3,938,230, Cl. 29-96.000.
- Rice, Richard C.: *See—*
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- Richard, Wilton. Automatic scullery system. 3,938,533, Cl. 134-63.000.
- Richards, Raymond E. Metallurgical cooling panel. 3,938,789, Cl. 266-16.000.
- Richards, Stanzer. Door structure employing an auxiliary door. 3,938,577, Cl. 160-90.000.
- Richardson, James Kipling: *See—*
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- Richardson, Peter C., to Celanese Corporation. Supported catalyst for acrolein oxidation. 3,939,096, Cl. 252-456.000.
- Richmond, Albert R.; and Appleman, William S., to Richmond Manufacturing Company, The. Portable earth boring machine. 3,938,597, Cl. 175-24.000.
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- Richter, Hans, to Siemens Aktiengesellschaft. Counter for measuring apparatus such as a water meter or the like. 3,938,737, Cl. 235-131.00R.
- Rickert, Glenn E. Ventilating and/or cooling dehumidifier. 3,938,348, Cl. 62-97.000.
- Ricketts, Ronald Edmund, to Imperial Chemical Industries Limited. Manufacture of non-woven materials. 3,938,221, Cl. 19-155.000.
- Riedel, Hans J.; and Spellman, Vernon C., to Optical Coating Laboratory, Inc. Level control apparatus and method for cryogenic liquids. 3,938,347, Cl. 62-55.000.
- Riegler, Ernst; and Schmidt, Manfred, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Large converter arrangement. 3,938,855, Cl. 308-6.00R.
- Riehl, Fred, to Robertshaw Controls Company. Electric ignition assembly. 3,938,944, Cl. 431-191.000.
- Riehl, Fred, to Robertshaw Controls Company. Burner construction and method of making the same. 3,938,945, Cl. 431-191.000.
- Riley, Leon H. Depositing optical fibers. 3,939,052, Cl. 204-192.000.
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- Ritota, Michael C.; and Mancini, L. Phillip, to M.E.D.S. Corporation. Collecting bag. 3,938,521, Cl. 128-283.000.
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- Roberts, Robert E., to Under Sea Industries Of Delaware, Inc. Mouthpiece regulator for an underwater breathing apparatus. 3,938,511, Cl. 128-142.200.
- Roberts, Thomas J.; and Paulson, Donald L., to Borg-Warner Corporation. Contamination prevention system for bathtub. 3,938,200, Cl. 4-173.00R.
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  - Bolha, John J., 3,938,542.
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- Robertson, Neil George Douglas, to Wiggins Teape Research & Development Limited. Apparatus for producing a foamed fibre dispersion. 3,938,782, Cl. 259-4.00R.
- Robertson, Robert; and Read, Reginald Arthur, to Radiation Limited. Protective coatings and frits therefor. 3,939,295, Cl. 428-539.000.
- Robin Products Company: *See—*
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- Robinson, George Dennis, Jr.; and Hartsell, Hal Craig, Jr., to Gilbert & Barker Manufacturing Company. Fluid dispensing nozzle including trigger retaining mechanism. 3,938,565, Cl. 141-392.000.
- Roccaforte, Harry I., to Hoerner Waldorf Corporation. Dispensing carton for nestable cups. 3,938,703, Cl. 221-305.000.
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- Romolt, Abraham, to Master Specialty Products. Removable stiffener for spectacle cases. 3,938,655, Cl. 206-5.000.
- Roodvoets, Mark R., to Firestone Tire & Rubber Company, The. Synergistic peroxide cures for high vinyl rubbers. 3,939,133, Cl. 260-85.100.
- Rooij, Karel Petrus Van: *See—*
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- Rosauer, Peter J., to Magnaflux Corporation. Automatic locking radioisotope camera lock. 3,939,355, Cl. 250-497.000.
- Rosenberg, Peretz. Regulated fluid tap particularly useful as water trickler nozzle. 3,938,552, Cl. 137-624.140.
- Rosenberg, Richard C.: *See—*
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- Rosenthal, Claude Roland Julius, to Uniflam, Societe Anonyme, Societe Universelle des Flammes. Device for feeding an expanded gaseous fuel to a burner nozzle for instance of a lighter and lighter such as a cigarette lighter provided with such a device. 3,938,947, Cl. 431-344.000.
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- Ross, Thorvald S., Jr.; and Entin, Leonard P., to Ross, Thorvald S., Jr. Receptacle for waste material. 3,938,731, Cl. 229-54.00R.
- Rosvold, Warren C., to Signetics Corporation. Schottky barrier diode semiconductor structure and method. 3,938,243, Cl. 29-578.000.
- Roszkowski, Theodore R.: *See—*
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- Roth, Hanspeter, to "Swissair" Schweizerische Luftverkehr-AG. Method and installation for the treatment of waste water to form useful water. 3,939,070, Cl. 210-23.00H.
- Rothstein, Sven-Olle H.: *See—*
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- Roubinet, Pierre, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Reinforcing device for automobile body. 3,938,288, Cl. 52-615.000.
- Routh, Claude C., to United States of America, Navy. Dopplerizing a signal of varying frequency. 3,939,462, Cl. 340-3.00E.
- Rouverol, William S. Cageless roller bearing. 3,938,865, Cl. 308-205.000.
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- Rudolph, Karl-Heinz: *See—*
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- Ruff, Stanley. Drink-through slosh-inhibiting closure lids for potable open-top containers. 3,938,695, Cl. 220-90.400.
- Ruhl, Edward A., to Robin Products Company. Bumper guard assembly. 3,938,842, Cl. 293-71.00R.
- Rumble, Clive St. John. Display units. 3,938,665, Cl. 211-4.000.
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- Rundell, Herbert A.; and Hall, Russell W., Jr., to Texaco Inc. Sensitive deep-well-drilling hook load measuring system. 3,938,381, Cl. 73-143.000.

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- S.A.R.L. Publigam: *See—*
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- Saad, Theodore S., to Micro-Tronics, Inc. Beam stirrer. 3,939,320, Cl. 219-10.55F.
- Sacht, Hans Otto; Honhold, Joost; and Elert, Uwe, to Gebrueder Welger. Feeder rake with an overload protection device for agricultural pick-up and other balers. 3,938,652, Cl. 198-223.000.
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- Sargunar, John E., to Burroughs Corporation. Tape transport system including a logical network for producing quadrature pulse trains and motor control utilizing same. 3,938,757, Cl. 242-186.000.
- Sarich, Tony Ralph. Gas seal for vane type internal combustion engine. 3,938,916, Cl. 418-137.000.
- Sarma, Krishna R. K.: *See—*
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- Sato, Kunito; and Hegarty, Gerald R., to Armour and Company. Inhibition of warmed-over flavor in meats. 3,939,288, Cl. 426-332.000.
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- Savich, Peter P., to Scott Paper Company. Method for forming fibrous pads. 3,939,240, Cl. 264-91.000.
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- Sayer, Wayne L. Method and apparatus for detecting the thermal characteristics of a subsurface formation in situ. 3,938,383, Cl. 73-154.000.
- Sayles, David C., to United States of America, Army. Solid propellant containing organic perchlorate salt as burning rate accelerator. 3,939,018, Cl. 149-19.100.
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- Schagen, Pieter; King, Hewson Nicholas Graham; Lamport, Daphne Louise; Pook, Roger; Stuhherfield, Pamela May; and Washington, Derek, to U.S. Philips Corporation. Electron multipliers having tapered channels. 3,939,374, Cl. 313-95.000.
- Schagen, Pieter; King, Hewson Nicholas Graham; and Washington, Derek, to U.S. Philips Corporation. Cathode ray tube having channel multiplier and electron reflecting system for energizing color phosphor strips. 3,939,375, Cl. 313-408.000.
- Scharf, Daniel J., to Hooker Chemicals & Plastics Corporation. Phosphonomethyl compounds. 3,939,226, Cl. 260-932.000.
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  - Lachnit-Fixson, Ursula, 3,939,264.
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- Schertz, Charles J., to United States of America, Army. Recoil operated firearm with unitary barrel and breech bolt lock member. 3,938,423, Cl. 89-176.000.
- Schiefer, Gerd: *See—*
  - Lohn, Klaus; Lutteke, Georg; Schiefer, Gerd; Bruntink, Lammert; Groenewegen, Paulus Petrus Maria; Weinerth, Hans Viktor; Zwijsen, Wilhelmus Antonius Joseph Marie; and Rooij, Karel Petrus Van, 3,939,429.
- Schiffarth, Josef; Lorkin, Clive Graham; and Fletcher, Kenneth John, to Foseco International Limited. Protection of carbon articles. 3,939,028, Cl. 156-306.000.
- Schinke, Friedel: *See—*
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- Schlage, Ernest L., to Schlage Lock Company. Electric switch contained within lock frame and actuated by movement of locking bar. 3,939,315, Cl. 200-61.640.
- Schlage Lock Company: *See—*
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- Schmauder, Johnnie Everett; and Richardson, James Kipling, to Tektronix, Inc. Storage cathode ray tube having auxiliary coils to correct non-symmetrical geometry. 3,939,378, Cl. 315-12.00R.

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- Schmidt, Andreas; Peterson, Janet B.; and Dexter, Martin, to Ciba-Geigy Corporation. Hydroxyphenylated hydantoins. 3,939,175, Cl. 260-309.500.
- Schmidt, Hans-Joachim: *See—*
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- Schmidt, Richard, to United States of America, Navy. Beryllium reinforced composite solid and hollow shafting. 3,938,964, Cl. 29-191.400.
- Schmit, Justin M., to Arctic Pac, Inc. Fluid containing and dispersing structure. 3,938,707, Cl. 222-83.500.
- Schmitz, Joseph F.; Malz, Ute K.; and Nordeen, Erwin, to Whirlpool Corporation. Handle mounting means for power driven vacuum cleaner. 3,938,216, Cl. 15-340.000.
- Schollenberger, Charles S.; and Dinhergs, Kornelius, to B. F. Goodrich Company, The. Stable polyurethane solutions. 3,939,111, Cl. 260-32.6NR.
- Scholz, Donald T., to Polaroid Corporation. Multipurpose audio-visual cassette system. 3,938,885, Cl. 352-78.00R.
- Schrimper, Vernon L.; Lillig, Floyd A.; and Ulch, Darrell J., to Iowa Manufacturing Company. Adjustment means for roll crushers with gas hydraulic springs. 3,938,732, Cl. 241-231.000.
- Schrock, Wilfried: *See—*
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- Schumacher, Ernest W., to Virginia Chemicals, Inc. Combination liquid trapping suction accumulator and evaporator pressure regulator device including a cartridge type expansion valve. 3,938,351, Cl. 62-217.000.
- Schurger, Rainer; Walter, Lothar; and Burkl, Erich, to SKF Industrial Trading & Development Company, B.V. Fluid bearing system. 3,938,862, Cl. 308-9.000.
- Schusberger, Meyer: *See—*
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- Schwartz-Domke, Wolfgang; Grof, Helmut; and Wamser, Anton, to Leybold Heraeus GmbH & Co. KG. Arrangement for continuous manufacture of metal ingots in a mold with open bottom. 3,938,582, Cl. 164-252.000.
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- Seislowicz, Henry; and Frazier, Thomas A., to Abbott Laboratories. Transfer unit having a dual channel transfer member. 3,938,520, Cl. 128-272.300.
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- Seibert, Kenneth T., to Straight Line Filters, Inc. Horizontal vacuum belt filter machine. 3,939,077, Cl. 210-401.000.
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- Seki, Katumi; Kawara, Masaru; and Tachi, Yasuo, to Hitachi, Ltd. Reactor core clamping device. 3,939,039, Cl. 176-87.000.
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- Shimizu, Ikuo; and Ichihara, Keiko, to Sony Corporation. Receiver with automatic pass band control. 3,939,428, Cl. 325-427.000.
- Shimizu, Masami; and Koyama, Masao, to Fuji Denki Seizo Kahushiki Kaisha; and Yokohama Rubber Company Ltd., The. Method and device for classifying tires. 3,939,349, Cl. 250-360.000.
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- Sloan, James F.: *See—*
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- Smith, Ian Edward; Hastwell, Peter John; and Vermeulen, Marinus Cornelus, to Savin Business Machines Corporation. Process for forming a liquid developer organisol. 3,939,085, Cl. 252-62.120.
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- Snygg, John; and Ebrok, Vello H. Rotary vane device. 3,938,918, Cl. 418-150.000.
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- Stanley, Robert K., to Textured Yarn Co., Inc. Rotary apparatus for crimping strands. 3,938,225, Cl. 28-1.600.
- Stant Manufacturing Company, Inc.: *See—*
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- Steele, Peter F. Battery test unit for testing batteries while stored in a cassette-type package. 3,939,400, Cl. 324-29.500.
- Steele, William Henry; and Nejtek, George, to Victa Limited. Carburettors and associated components. 3,939,231, Cl. 261-62.000.
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- Stephenson, Robert L.; and Loomba, Yogendra Singh, to Allied Chemical Corporation. Vehicle sensitive retractor with pendulum on flywheel. 3,938,754, Cl. 242-107.40A.
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- Stewart, Edra J. Dual purpose club head cover. 3,938,570, Cl. 150-52.00G.
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- Strumia, Franco; and Beverini, Nicola, to Consiglio Nazionale Della Ricerche. Hyperfine filter for the resonance lines of caesium and rubidium. 3,938,877, Cl. 350-148.000.
- Stuart, Alexander, to Burroughs Wellcome Co. Pteridines. 3,939,160, Cl. 260-251.500.
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- Suzuki, Tadao, to Sony Corporation. Constant voltage circuit. 3,939,394, Cl. 321-18.000.
- Suzuki, Tadao, to Sony Corporation. Power amplifier. 3,939,435, Cl. 330-51.000.
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- Taitel, Charles M.; and Ryan, Ralph L., to Compensating Tension Controls, Inc. Web hutt splicer. 3,939,032, Cl. 156-505.000.
- Takada, Tsutomu; Toyota, Toshio; Ogasawara, Akinobu; and Yamato, Syunsuke, to Nippon Steel Corporation. Method and apparatus for detecting shape of flat products. 3,938,382, Cl. 73-144.000.
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- Warjone, James E.; and Wilkison, Albert C., to Truckweld Equipment Company Pole reinforcement installation. 3,938,293, Cl. 52-742.000.
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- Wendt, William H., III; and Krieps, George D., to Chicago Metal Mfg. Co. Method for severing rings from a coil. 3,938,235, Cl. 29-412.000.
- Werner, Lincoln Harvey, to Ciba-Geigy Corporation. 4-Ethers of 3-amino-5-sulfamoylbenzoic acids. 3,939,267, Cl. 424-319.000.
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- Williams, Richard David, to Instrumatics, Inc. Multipoint thermocouple assembly using coil springs. 3,939,012, Cl. 136-221.000.
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- Wilmoth, Robert B.; and Wilmoth, Warren J. Dual purpose exercising device. 3,938,803, Cl. 272-57.00J.
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- Zakharov, Viktor Ivanovich; Zinichev, Alexandr Alexeevich; and Melnichuk, Oleg Ulyanovich. Automobile active receiving antenna. 3,939,423, Cl. 325-312.000.
- Zaleski, John F., to P. R. Mallory & Co. Inc. Lithium cell with internal automatic safety controls. 3,939,011, Cl. 136-177.000.
- Zambolin, Adriano; and Defalco, Gianfranco, to Ing. C. Olivetti & C., S.p.A. Horizontal tabulation apparatus for accounting machines or the like. 3,938,644, Cl. 197-176.000.
- Zaoui, Raymond. Trousers. 3,938,196, Cl. 2-227.000.
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Zmoda, Barney J., to Colgate-Palmolive Company. Antifogging cleaner. 3,939,090, Cl. 252-90.000.

Zook, James K., to All Systems, Inc. Vertical reference device. 3,938,258, Cl. 33-366.000.

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LIST OF REISSUE PATENTEES
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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Air Products and Chemicals, Inc.: *See*—
  Klee, David J., Re. 28,712.

AMF Incorporated: *See*—
  Montz, James R., Re. 28,716.

Audi NSU Auto Union Aktiengesellschaft: *See*—
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Klee, David J., to Air Products and Chemicals, Inc. Parallel flow cryogenic freezer. Re. 28,712, Cl. 62-216.000.

Montz, James R., to AMF Incorporated. Apparatus for detecting a ground connection on load side of neutral conductor. Re. 28,716, Cl. 317-18.00D.

Ruf, Max, to Audi NSU Auto Union Aktiengesellschaft; and Wankel GmbH. Internal seal for rotary piston combustion engine. Re. 28,714, Cl. 418-142.000.

Sherwood Medical Industries, Inc.: *See*—
  Stevens, Peter A.; and Utting, Donald W., Re. 28,713.

Stamberger, Paul. Polyurethanes, reactive solutions and methods and their production. Re. 28,715, Cl. 260-33.20R.

Stevens, Peter A.; and Utting, Donald W., to Sherwood Medical Industries, Inc. Hypodermic needle and support structure therefor. Re. 28,713, Cl. 128-221.000.

Utting, Donald W.: *See*—
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	3,938,998
84R	3,938,999
87R	3,939,000
CLASS 98	
1.5	3,938,428
37	3,938,429
103	3,938,430
CLASS 99	
425	3,938,431
CLASS 100	
7	3,938,432
51	3,938,433
117	3,938,434
CLASS 101	
2	3,938,435
18	3,938,436
228	3,938,437
CLASS 102	
7.2	3,938,438
	3,938,439
38	3,938,440
67	3,938,441
	3,938,442
76P	3,938,443
99	3,938,444
CLASS 104	
124	3,938,445
CLASS 105	
156	3,938,447
368R	3,938,446
CLASS 106	
41	3,939,002
65	3,939,003
136	3,939,001
273R	3,939,004
CLASS 108	
58	3,938,448
CLASS 110	
8C	3,938,449
	3,938,450
109	3,938,451
CLASS 112	
80	3,938,452
102	3,938,453
130	3,938,454
CLASS 113	
121C	3,938,455
CLASS 114	
23	3,938,456
56	3,938,457
66.5P	3,938,458
77R	3,938,459
106	3,938,460
230	3,938,461
235R	3,938,462
CLASS 115	
34C	3,938,464
34R	3,938,463
CLASS 116	
63P	3,938,465
124R	3,938,466
CLASS 118	
2	3,938,467
63	3,938,468
303	3,938,469
CLASS 119	
14.1	3,938,470
28	3,938,471
37	3,938,472
CLASS 122	
32	3,938,473
333	3,938,475
510	3,938,476
CLASS 123	
8.07	3,938,477
8.33	3,938,478
32EA	3,938,479
43B	3,938,480
69R	3,938,481
75C	3,938,482
90.12	3,938,483
90.67	3,938,484
117R	3,938,485
119R	3,938,486
139ST	3,938,487
140R	3,938,488
148DS	3,938,489
148E	3,938,490
149C	3,938,491
CLASS 125	
11R	3,938,492
CLASS 126	
41R	3,938,493
	3,938,494
	3,938,495
121	3,938,496
270	3,938,497
374	3,938,498
CLASS 127	
63	3,939,005
CLASS 128	
1R	3,938,499
2A	3,938,501
2B	3,938,505
2N	3,938,503
2S	3,938,504
2V	3,938,502
2Z	3,938,500
2.05A	3,938,506
2.06B	3,938,507
76R	3,938,508
77	3,938,509
85	3,938,510
142.2	3,938,511
191R	3,938,512
218R	3,938,513
221	Re.28,713
232	3,938,514
260	3,938,515
266	3,938,516
271	3,938,517
272	3,938,518
272.3	3,938,520
273	3,938,519
283	3,938,521
287	3,938,522
	3,938,523
303R	3,938,524
303.1	3,938,525
	3,938,526
303.17	3,938,527
334C	3,938,528
349R	3,938,529
	3,938,530
CLASS 131	
17A	3,938,531
CLASS 134	
43	3,938,532
63	3,938,533
104	3,938,534
167C	3,938,535
CLASS 136	
6FS	3,939,007
6GC	3,939,006
6LN	3,939,008
66	3,939,009
114	3,939,010
177	3,939,011
221	3,939,012
CLASS 137	
13	3,938,536
14	3,938,537
39	3,938,538
202	3,938,539
205	3,938,540
239	3,938,541
271	3,938,542
312	3,938,543
334	3,938,544
363	3,938,545
454.2	3,938,546
488	3,938,547
527.8	3,938,548
557	3,938,549
559	3,938,550
613	3,938,551
624.14	3,938,552

625.47	3,938,553
625.61	3,938,554
625.67	3,938,555
636.4	3,938,556
834	3,938,557
CLASS 138	
122	3,938,558
CLASS 139	
7R	3,938,559
59	3,938,560
122H	3,938,561
CLASS 141	
1R	3,938,562
298	3,938,563
352	3,938,564
392	3,938,565
CLASS 144	
2Z	3,938,566
193A	3,938,567
208F	3,938,568
CLASS 148	
2	3,939,013
6.15Z	3,939,014
12B	3,939,015
28	3,939,016
189	3,939,017
CLASS 149	
19.1	3,939,018
CLASS 150	
33	3,938,569
52G	3,938,570
CLASS 151	
7	3,938,571
CLASS 152	
209R	3,938,572
330RF	3,938,573
330R	3,938,574
362R	3,938,575
379R	3,938,576
CLASS 156	
57	3,939,019
64	3,939,020
78	3,939,021
200	3,939,022
211	3,939,023
242	3,939,024
244	3,939,025
304	3,939,026
306	3,939,027
	3,939,028
331	3,939,029
435	3,939,030
505	3,939,031
	3,939,032
515	3,939,033
522	3,939,034
618	3,939,035
CLASS 159	
47R	3,939,036
CLASS 160	
90	3,938,577
CLASS 162	
341	3,939,037
CLASS 164	
16	3,938,578
87	3,938,579
154	3,938,580
252	3,938,581
	3,938,582
276	3,938,583
2835	3,938,584
347	3,938,585
CLASS 165	
51	3,938,586
76	3,938,587
113	3,938,588
CLASS 166	
224A	3,938,589
270	3,938,590
275	3,938,591
299	3,938,592
307	3,938,593
308	3,938,594
CLASS 173	
1	3,938,595
73	3,938,596
CLASS 174	
21R	3,939,298
23R	3,939,299
42	3,939,300
72R	3,939,301
CLASS 175	
24	3,938,597
99	3,938,598
329	3,938,599
422	3,938,600
CLASS 176	
38	3,939,038
87	3,939,039
CLASS 177	
1	3,938,601
116	3,938,602
211	3,938,603
CLASS 178	
6.6R	3,939,302
7.1	3,939,303
68	3,939,304
CLASS 179	
1J	3,939,305
2TV	3,939,306
15A	3,939,307
17A	3,939,308
18ES	3,939,309
81R	3,939,311
115.5PV	3,939,312
156R	3,939,310
CLASS 180	
6.44	3,938,604
9.44	3,938,607
9.5	3,938,605
	3,938,606
21	3,938,608
27	3,938,609
69C	3,938,610
77R	3,938,611
82R	3,938,612
99	3,938,613
CLASS 181	
129	3,938,614
131	3,938,615
136	3,938,616
155	3,938,617
	3,938,618
CLASS 182	
113	3,938,619
135	3,938,620
CLASS 184	
1.5	3,938,621
15R	3,938,622
38R	3,938,623
CLASS 187	
29R	3,938,624
CLASS 188	
1B	3,938,625
	3,938,626
1C	3,938,627
18A	3,938,628
62	3,938,629
CLASS 190	
24	3,938,630
CLASS 192	
3.52	3,938,631
41A	3,938,632
48.3	3,938,633
56F	3,938,634
106.2	3,938,635
111A	3,938,636
113R	3,938,637
CLASS 194	
4C	3,938,638
87	3,938,639
92	3,938,640
CLASS 195	
6	3,939,040
31F	3,939,041
49	3,939,042
80R	3,939,043
126	3,939,044
CLASS 197	
1R	3,938,641
98	3,938,642
176	3,938,644
CLASS 198	
19	3,938,643
20R	3,938,645
31AA	3,938,647
31R	3,938,646
34	3,938,648
38	3,938,649
76	3,938,650
136	3,938,651
223	3,938,652
283	3,938,653
287	3,938,654
CLASS 200	
11J	3,939,313
61.42	3,939,314
61.64	3,939,315
82D	3,939,316
148A	3,939,317
159R	3,939,318
CLASS 203	
1	3,939,045
CLASS 204	
4	3,939,046
15	3,939,047
157.1H	3,939,048
159.13	3,939,049
162HE	3,939,050
181	3,939,051
192	3,939,052
212	3,939,053
213	3,939,054
295	3,939,055
297W	3,939,056
CLASS 206	
5	3,938,655
150	3,938,656
343	3,938,657
439	3,938,658
	3,938,659
451	3,938,660
523	3,938,661
CLASS 208	
11	3,939,057
120	3,939,058
139	3,939,059
	3,939,060
140	3,939,061
	3,939,062
CLASS 209	
7	3,939,063
44	3,939,064
73	3,938,662
	3,938,663
233	3,938,664
240	3,939,065
CLASS 210	
6	3,939,066
7	3,939,067
	3,939,068
22A	3,939,069
23H	3,939,070
34	3,939,071
96R	3,939,072
152	3,939,073
257M	3,939,074
258	3,939,075
400	3,939,076
401	3,939,077
436	3,939,078
504	3,939,079
CLASS 211	
4	3,938,665
49D	3,938,666
87	3,938,667
134	3,938,668
CLASS 212	
8B	3,938,669
46A	3,938,670
CLASS 214	
1BD	3,938,672
1R	3,938,671
2	3,938,673
6G	3,938,674
6M	3,938,675
13	3,938,676
17CB	3,938,677
38D	3,938,678
83.3	3,938,679
145R	3,938,680
147G	3,938,681
353	3,938,682
519	3,938,683
521	3,938,684
621	3,938,685
CLASS 215	
232	3,938,686
CLASS 219	
10.55B	3,939,319
10.55F	3,939,320
69D	3,939,321
69R	3,939,322
121LM	3,939,323
126	3,939,324
216	3,939,325
	3,939,326
CLASS 220	
5R	3,938,687
23.8	3,938,688
71	3,938,689
77	3,938,694
90.4	3,938,690
	3,938,695
94A	3,938,691
203	3,938,692
267	3,938,693
273	3,938,696
CLASS 221	
11	3,938,697
73	3,938,698
85	3,938,699
109	3,938,700
184	3,938,701
238	3,938,702
305	3,938,703
CLASS 222	
5	3,938,704
59	3,938,705
83.5	3,938,706
	3,938,707
95	3,938,708
	3,938,709
102	3,938,474
153	3,938,710
209	3,938,711
404	3,938,712
486	3,938,713
525	3,938,714
534	3,938,715
CLASS 224	
5R	3,938,720
9	3,938,716
13	3,938,717
25A	3,938,718
36	3,938,719
CLASS 226	
75	3,938,721
CLASS 228	
1	3,938,722
117	3,938,723
147	3,938,724
155	3,938,725
CLASS 229	
2.5R	3,938,726
	3,938,727
14B	3,938,728
30	3,938,729
43	3,938,730
54R	3,938,731
CLASS 232	
16	3,938,733
CLASS 233	
20R	3,938,734
26	3,938,735
CLASS 235	
61.11E	3,939,327
94R	3,938,736
131R	3,938,737
150.1	3,939,328
151.1	3,939,329
151.11	3,939,330
151.32	3,939,331
151.33	3,939,332
153AP	3,939,333
156	3,939,334
	3,939,335
184	3,939,336
CLASS 239	
9	3,938,738
15	3,938,739
	3,938,740
75	3,938,741
265.11	3,938,742
457	3,938,743
CLASS 240	
8.3	3,939,337
10P	3,939,338
62.2	3,939,339
103R	3,939,340
CLASS 241	
46.11	3,938,744
99	3,938,745
186R	3,938,746
231	3,938,732
CLASS 242	
4C	3,938,747
7.09	3,938,748
18PW	3,938,749
36	3,938,750
47.01	3,938,751
55.19A	3,938,752
71.2	3,938,753
107.4A	3,938,754
	3,938,755
186	3,938,757
188	3,938,756
201	3,938,758
CLASS 244	
9	3,938,759
12D	3,938,760
13	3,938,761
17.13	3,938,762
110C	3,938,763
117R	3,938,764
CLASS 246	
172	3,938,765
CLASS 248	
23	3,938,766
58	3,938,767
129	3,938,768
312	3,938,769
400	3,938,770
429	3,938,771
461	3,938,772
CLASS 249	
27	3,938,773
90	3,938,774
102	3,938,775
114	3,938,776
CLASS 250	
199	3,939,341
203R	3,939,342
262	3,939,343
281	3,939,344
315A	3,939,345
330	3,939,346
334	3,939,347
339	3,939,348
360	3,939,349
365	3,939,350
402	3,939,351
409	3,939,352
441	3,939,353
484	3,939,354
497	3,939,355
CLASS 251	
82	3,938,777
129	3,938,778
268	3,938,779
CLASS 252	
1	3,939,080
12	3,939,081
32.7E	3,939,082
42	3,939,083
47.5	3,939,084
62.1L	3,939,085
	3,939,087
62.1P	3,939,086
79HF	3,939,088
79.4	3,939,089
90	3,939,090
189	3,939,091
301.2C	3,939,094
301.2P	3,939,092
301.2R	3,939,093
316	3,939,095
408R	3,939,101
439	3,939,102
455R	3,939,103
	3,939,104
456	3,939,096
464	3,939,097
518	3,939,098
522	3,939,099
532	3,939,100
CLASS 254	
126	3,938,780
175.7	3,938,781
CLASS 259	
4R	3,938,782
7	3,938,783
8	3,938,784
149	3,938,785
151	3,938,786
177R	3,938,787
CLASS 260	
2.5AM	3,939,106
2.5AY	3,939,105
17.3	3,939,107
17.4ST	3,939,108
29.1R	3,939,109
29.6ME	3,939,110
32.6NR	3,939,111
33.2R	Re.28,715
33.6AQ	3,939,112
40P	3,939,113
42.14	3,939,114
45.8N	3,939,115
47CB	3,939,116
47XA	3,939,118
47C	3,939,117
49	3,939,119
63HA	3,939,120
65	3,939,130
70A	3,939,121
77.5AM	3,939,123
77.5AT	3,939,124
77.5CR	3,939,126
77.5C	3,939,125
77.5R	3,939,122
78.4D	3,939,127
79.5P	3,939,128
79.7	3,939,129
80.7	3,939,131
80.72	3,939,132
85.1	3,939,133
85.5R	3,939,134
87.1	3,939,135
93.1	3,939,136
94.9C	3,939,137
100	3,939,138
112.5R	3,939,139
145A	3,939,140
151	3,939,141
205	3,939,142
210E	3,939,144
210K	3,939,143
210R	3,939,145
	3,939,146
239BC	3,939,147
239HM	3,939,148
239.1	3,939,149
	3,939,150
	3,939,180
239.3A	3,939,153
239.3B	3,939,152
239.55R	3,939,155
239.57	3,939,156
239.9	3,939,154
243C	3,939,151
	3,939,157
249.5	3,939,158
250Q	3,939,159
251.5	3,939,160
256.4F	3,939,161
256.4Q	3,939,162
270C	3,939,163
286R	3,939,164
	3,939,165
293.6	3,939,166
293.67	3,939,167
293.77	3,939,168
294.8D	3,939,171
294.8F	3,939,170
294.8R	3,939,169
306.8R	3,939,172
308A	3,939,174
308D	3,939,173
309.5	3,939,175
310A	3,939,176
315	3,939,177
326.28	3,939,178
332.8	3,939,179
340.7	3,939,181
343.3R	3,939,182
346.8M	3,939,183
349	3,939,184
369	3,939,185
397.4	3,939,186
397.45	3,939,187
429R	3,939,188
429.9	3,939,189
439R	3,939,194
446	3,939,190
448.2E	3,939,195
449.5	3,939,191
453R	3,939,192
457	3,939,193
458	3,939,197
469	3,939,198
	3,939,199
482R	3,939,200
488J	3,939,201
489	3,939,202
518A	3,939,204
561N	3,939,205
566A	3,939,203
601R	3,939,206
	3,939,207
604AC	3,939,209
604R	3,939,208
609F	3,939,210
610B	3,939,211
611R	3,939,212
613R	3,939,196
615B	3,939,213
621G	3,939,214
624A	3,939,215
635P	3,939,216
643D	3,939,217
649DD	3,939,218
666P	3,939,219
668D	3,939,220
6745A	3,939,221
858	3,939,222
876R	3,939,223
880B	3,939,224
880R	3,939,225
932	3,939,226
953	3,939,227
973	3,939,228
985	3,939,229
CLASS 261	
50A	3,939,230
62	3,939,231
72R	3,939,232
CLASS 264	
13	3,939,233
31	3,939,234
46.6	3,939,235
53	3,939,236
54	3,939,237
71	3,939,238
89	3,939,239
91	3,939,240
111	3,939,241
294	3,939,242
296	3,939,243
CLASS 266	
13	3,938,788
16	3,938,789
35	3,938,790
42	3,938,791
CLASS 267	
69	3,938,792
120	3,938,793
130	3,938,794
140	3,938,795
CLASS 269	
2	3,938,796
20	3,938,797
	3,938,798

CLASS 270	
55	3,938,799
CLASS 271	
93	3,938,800
173	3,938,801
220	3,938,802
CLASS 272	
57J	3,938,803
CLASS 273	
25	3,938,804
32A	3,938,805
95R	3,938,806
110	3,938,807
131DA	3,938,808
176FA	3,938,809
CLASS 274	
13R	3,938,810
CLASS 277	
15	3,938,811
41	3,938,812
152	3,938,813
235A	3,938,814
CLASS 279	
1C	3,938,815
5	3,938,816
61	3,938,817
CLASS 280	
19	3,938,818
	3,938,819
47.11	3,938,820
87C	3,938,821
95R	3,938,822
124F	3,938,823
150AB	3,938,824
	3,938,826
150B	3,938,825
209	3,938,827
261	3,938,828
414R	3,938,829
493	3,938,830
CLASS 281	
29	3,938,831
CLASS 285	
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240	3,938,871
291	3,938,872
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95	3,939,374
408	3,939,375
451	3,939,376
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63	3,938,887
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332	3,939,288
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	232	238,829
		238,830
	234	238,831
	320	238,832
D4—	25	238,833
		238,834
D6—	26	238,835
	63	238,836
	65	238,837
	96	238,838
	116	238,839
	146	238,840
		238,841
	161	238,842
		238,843
	165	238,844
D7—	20	238,845
	98	238,846
	137	238,847
	151	238,848
	165	238,849
D8—	22	238,850
	27	238,851
	117	238,852
	259	238,853
D9—	144	238,854
D10—	6	238,856
		239,857
	46	238,858
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	56	238,860
D12—	53	238,861
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	64	238,863
	114	238,864
	158	238,865
	217	238,866
D13—	1B	238,868
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D18—	2R	238,870
D19—	57	238,871
	89	238,872
D22—	99	238,873
D23—	2	238,874
	3	238,875
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	72	238,877
D26—	1A	238,878
	14B	238,879
		238,881
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D30—	1	238,883
	6	238,884
	13	238,885
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D61—	1	238,902
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February 24, 1976

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PATENT AND TRADEMARK OFFICE NOTICES

Second Trial Voluntary Protest Program

A Second Trial Voluntary Protest Program will be conducted during the coming months. It will be increased in scale and somewhat modified in procedure from the first such program. Announcement of and description of the rules for the first program appeared in 923 O.G. 2 on June 4, 1974.

As before, the objective is to gain experience in carrying out such a program and to determine the extent of interest by the public in participating and in supplying pertinent references. To the extent there is participation, the program should be beneficial by bringing new art to the attention of the Office, preventing inadvertent issuance of invalid patents, and increasing confidence in the strength of those patents which survive the protest proceedings.

The first Trial Voluntary Protest Program showed a considerable interest by applicants and the public in taking part in protest proceedings. A summary of the results will be published soon in this Gazette. The second Trial Voluntary Protest Program is designed to gain additional information as to public participation and also to follow more closely the procedures which would be required in a continuing, permanent protest program.

Applications Involved

In the second Trial Voluntary Protest Program, a Request to Participate and Waiver of Confidentiality form (PTOL–224 Temp.) will be sent to each applicant to whom a Notice of Allowance is mailed during a selected three week period, probably in October, 1975. The total number of requests mailed will be about 4,500. Applications for plant patents will be excluded from the program. The reason for this exclusion is the high cost of printing colored drawings and the relatively limited prior art available. No other applications will be excluded from the trial program, regardless of subject matter, type of application or earlier proceedings.

Waiver of Confidentiality

Two copies of the form letter requesting voluntary waiver of confidentiality (form PTOL–224 Temp.) will be mailed in the same envelope along with the Notice of Allowance. An additional copy of the form letter will be made of record in each application at the time of mailing. The applicant will have three months from the notice of allowance date in which to either (1) elect to participate in the Trial Voluntary Protest Program by filing a signed waiver of confidentiality, or (2) elect not to participate in the program by paying the issue fee. If he does neither, the application will become abandoned, as provided in 37 C.F.R. 1.316. The waiver of confidentiality is a part of form PTOL–224 Temp. This procedure will avoid any increase in pendency time for those applications in which an election is made not to participate in the program. An early filing of a waiver of confidentiality by the applicant will result in early publication of the application.

Publication

If the applicant decides not to participate in the protest program and payment of the issue fee is timely made, the patent will issue routinely without delay.

If the applicant elects to participate in the protest program and a signed waiver of confidentiality is filed in the Office within 3 months of the notice of allowance date, the Notice of Allowance will be vacated. In such a case the issue fee should not be filed, as it will not be accepted and applied if filed with a signed waiver of confidentiality. An additional Notice of Allowance will be issued after the protest proceedings have been completed if only allowable claims remain in the application.

After a signed waiver has been filed, the application will be printed in the form of a patent and be available for sale as in the first Trial Voluntary Protest Program. At least one claim and a drawing figure, if any, will be printed in the OFFICIAL GAZETTE. These published applications will appear in about 6 to 9 issues of the OFFICIAL GAZETTE early in 1976. Advance notice will be given in the OFFICIAL GAZETTE of the dates on which applications will be published under this program.

Inspection of Files

The Patent and Trademark Office files of the published applications will be available for inspection by the public for a period of three months after publication. The application files will be retained in a single location in the Patent Issue Division during the protest period. This single location will be staffed with personnel to process papers directed to these files, supervise inspection of the files by the public, provide copies of file contents when ordered, and perform other related duties. A coin operated copying machine will also be available at this location.

Filing of Protests

Protests relating to the patentability of any published application must be filed in writing in the Patent and Trademark Office no later than three months after publication of the application. No extension of the three month protest period will be granted. Each protest must be filed in duplicate (one copy will be forwarded to the applicant and the other copy will be placed in the application file) and must indicate the grounds for protesting the allowance of any claim contained in the published application. If the protest involves prior art not of record in the application, two copies of the alleged prior art, together with an explanation of the relevance of such prior art to the allowed claims, should be included. The protester may also comment on the prior art record in the application and the manner in which it was applied.

In those applications where prima facie evidence of prior public use or sale the claimed invention is presented in accordance with 37 C.F.R. 1.292, public use proceedings will give the protester an opportunity to present evidence.

Should claims be copied from a published application for interference purposes, the applicant copying claims must also file a notice of such copying in the file of the published application to avoid the possibility of inadvertent issuance of the published application as a patent before conclusion of any interference proceedings.

For easy identification, all protests should be headed, "Protest Under Trial Voluntary Protest Program" and be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

The protester should fully identify himself and include his mailing address so that communications may be addressed to him. In view of administrative problems encountered in the first Trial Voluntary Protest Program in protecting the confidentiality of the identity of protesters, no attempt will be made by the Office to maintain the confidentiality of any protester under the new program.

If no protests are received during the protest period, the application file will be rerouted for the mailing of a new Notice of Allowance. The file will not be returned to the examining group except for consideration of matters which normally require return of an allowed file.

If one or more protests are filed in an application, the application file and the protest(s) will be returned to the examining group for consideration.

Consideration of Protest

The examining group will acknowledge receipt of all protests. The authority for deciding whether or not the evidence submitted constitutes a prima facie showing of unpatentability of any allowed claim will reside with the Group Director. If the Group Director decides that no such showing has been made, the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. Protesters will be notified in such cases that prosecution has not been reopened, and the applicant will be sent a duplicate copy of all protests. The decision of the Group Director will be final and will not be subject to petition by a protester.

If the Group Director decides that the submitted evidence constitutes a prima facie showing of unpatentability of any allowed claim, prosecution of the application will be reopened. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim considered unpatentable. The duplicate copy of each protest will be mailed to the applicant with the Office action. Protesters who submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

Response by the Applicant to Subsequent Office Actions

During this period, the applicant may present amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters who submitted evidence on which a rejection in the Office action is based to participate in later prosecution and to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response filed, including any appeal brief. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

Comment on Applicant's Response by the Protester

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent and Trademark Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

Any appeal by the applicant to the Board of Appeals in a protested application will be made special and will be taken up out of order.

Conclusion of Prosecution

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified and the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. A decision of the primary examiner to allow an application will not be subject to petition or appeal by any protester.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Sept. 16, 1975.

[938 O.G. 945]

PATENT NOTICES

Certificates of Correction for the Week of Feb. 24, 1975

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National Technical Information Service

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Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Room W513, 401 M St. SW., Washington, D.C.

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Branch of Patents, 18th and C Sts. NW.,
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U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research,
Code 302, Arlington, Va. 22217

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Patent 3,818,958. Self-Locking Holdback Cleat. Filed July 19, 1973. Patented June 25, 1974. Not available NTIS.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—
Code GP-2, Washington, D.C. 20456

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Branch of Patents, 18th and C Sts.,
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Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

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Patent 3,842,274. Photoconductively Activated Gated, Infrared Charge Coupled Imaging Device (PAGIRCCD). Filed Nov. 15, 1973. Patented Oct. 15, 1974. Not available NTIS.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters
NASA Code GP-2, Washington, D.C. 20546

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Patent 3,906,954. Ophthalmic Liquifaction Pump. Patented Sept. 23, 1975. Not available NTIS.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 31, 1976

PATENT EXAMINING GROUPS	Actual Filing Data of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-19-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-3-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-13-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-5-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-5-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination: Horology; Acoustics; Recorders; Weighing Scales.	12-23-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-17-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	8-1-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-1-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	9-23-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-14-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	4-15-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-2-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-28-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-7-75

Expiration of patents: The patents within the range of numbers indicated below expire during February 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,871,479 to 2,875,444 inclusive
Plant Patents	Numbers 1,805 to 1,813 inclusive

PATENT APPLICATIONS

PUBLISHED FEBRUARY 24, 1976
UNDER THE SECOND TRIAL VOLUNTARY PROTEST PROGRAM

NOTE- A copy of the notice setting forth the details of the Second Trial Voluntary Protest Program may be found in the Patent and Trademark Notices section of this issue.

Any protests relating to the patentability of these published applications must be filed in writing before April 13, 1976. These applications are available for inspection in the Allowed Files Branch, Crystal Plaza, Room 2-10C28. All correspondence should be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

Printed copies of the published applications may be purchased from the Patent and Trademark Office at 50 cents each.

An "Index of Applicants and Assignees of Published Applications" and a concordance entitled "Classification of Published Patent Applications" are located in the back of this issue.

GENERAL AND MECHANICAL APPLICATIONS

B 398,488

PIPE RESTRAINTS FOR NUCLEAR POWER PLANTS

Robert E. Keever, 318-B Casa Loma Road, Morgan Hill, Calif. 95037; Randolph Broman, 444 Saratoga Ave., No. 131, Santa Clara, Calif. 95050, and Serge Shevekov, 965 Greenwick Ave., Sunnyvale, Calif. 94087

Filed Sept. 18, 1973, Ser. No. 398,488

Int. Cl.^{2} F16L *3/12*

U.S. Cl. 248—49 **1 Claim**

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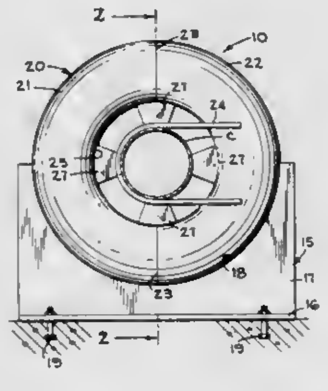

1. A restraint for a pipe comprising:

a. a rigid arcuate restrainer overlying a pipe, said arcuate restrainer being in the form of a toroid with an inner wall and an outer wall, said inner wall thereof being arranged to surround the pipe;

b. means on said restrainer for controlling the displacement of the pipe;

c. a supporting member fixed to a supporting surface for supporting said restrainer; and

d. a plurality of additional toroidal restraints, each having outer and inner walls, each successive one of said additional restrainers being of progressively decreasing cross-sectional area, each progressively smaller restrainer being disposed concentrically within the preceding restrainer between the outer and inner walls thereof, and said plurality of additional toroidal restrainers being disposed concentrically within said arcuate restrainer between the inner wall and the outer wall thereof to stiffen said arcuate restrainer.

B 411,765

APPARATUS FOR FASTENING A CORRUGATED SHEET TO A FLAT SHEET

Peter Gumm, Frankfurt am Main; Karl-Heinz Krussig, Hattersheim; Jörg Lohmann, Dortmund, and Josef Zimmermann, Niederhofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 245,347, April 19, 1972, Pat. No. 3,798,299. This application Nov. 1, 1973, Ser. No. 411,765

Claims priority, application Germany, Apr. 21, 1971, 2119321

Int. Cl.^{2} B29C *27/12, 27/14*

U.S. Cl. 425—521 **11 Claims**

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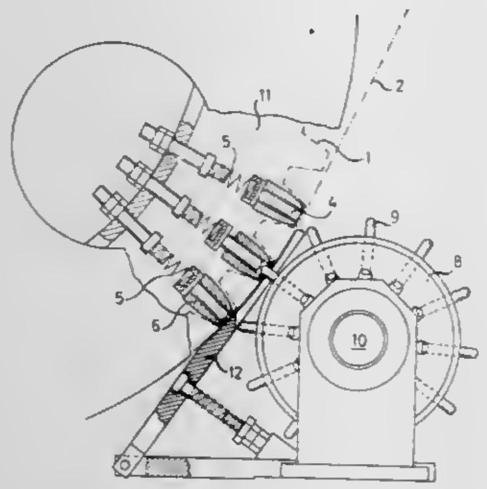
1. A device for use in manufacturing a structure consisting of interconnected corrugated and flat sheets of thermoplastic film, wherein said corrugated sheet is secured to the flat sheet along the corrugation crests on one side of the corrugated sheet; said device comprising first and second spaced mold elements positioned to receive the corrugated and flat sheets therebetween; said first mold element having a plurality of recessed female mold members adapted to be received between the corrugations of the corrugated sheet and said second mold element having a plurality of elongated male plugs projecting therefrom and means for inserting the plugs into the recesses of the female mold elements to form mating projections in the flat and corrugated sheets and for removing the plugs from said recesses and projections; said female mold elements including punch means movably mounted in the

recesses thereof and means for sequentially urging said punch means against said projections upon removal of said plugs therefrom and for compressing the projections against said sheets thereby to form undercuts interconnecting the sheets.

10. A device for the manufacture of a structure consisting of operably interconnected corrugated and flat sheets formed of thermoplastic film material positioned in superimposed relation to each other with portions of the corrugated sheets in contact with the flat sheet, said device comprising means for simultaneously forming mating projections in said sheets in the areas of contact therebetween, and means for thereafter compressing said projections against said sheets to form undercuts therein, thereby connecting the sheets; and wherein said forming means comprises recessed female mold members adapted to be received between the corrugations of said corrugated sheets, an opposed male member, and means for inserting the male member into the recesses of the female mold members through said sheets at the areas of contact therebetween to form mating projections in the flat and corrugated sheets and for removing the male members therefrom; said female mold members including punch means movably mounted in the recesses thereof and means for sequentially urging said punch means against said projections upon removal of said male member therefrom and for compressing the projections against said sheets thereby to form undercuts interconnecting the sheets.



B 436,724

ELEVATOR CABLE OSCILLATION-ABSORBING DEVICE

Masayuki Shigeta, Katsuta; Tadashi Shibata, Naka, and Toshihiko Nara, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 25, 1974, Ser. No. 436,724

Claims priority, application Japan, Jan. 29, 1973, 48-110541

Int. Cl.² B66B *7/06*

U.S. Cl. 187—1 R **12 Claims**

References Cited

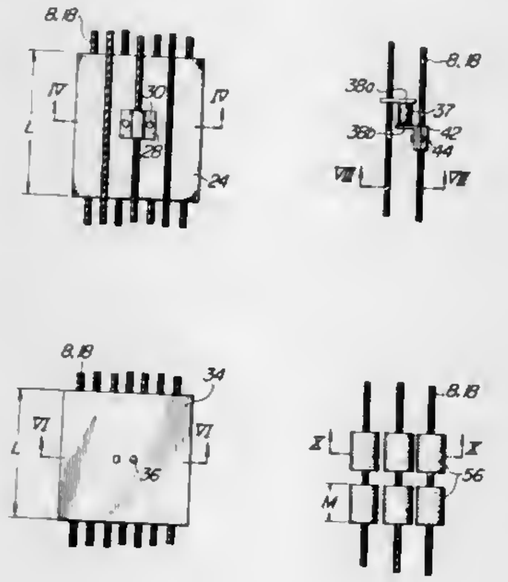
UNITED STATES PATENTS

2,227,528	1/1941	Adler	174/42 X
2,889,011	6/1959	Weaver	174/42 X
3,246,073	4/1966	Bouche et al.	248/358 R
3,291,892	12/1966	Bethea	174/42
3,448,222	6/1969	Greber	174/42
3,653,467	4/1972	Showalter	187/22

FOREIGN PATENTS OR APPLICATIONS

1,406,220	10/1968	Germany	187/20
1,431,865	11/1968	Germany	187/1 R

1. Apparatus comprising:
a first load member,
a second load member spaced from said first member,
a plurality of flexible line members extending in side by side relationship to one another from said first load member to said second load member with one end of each of said line members being attached to said first load member and the other opposite end of each of said line members being attached to said second load member,
moving means for moving said line members together with said first and second load members,
and oscillation-absorbing means for absorbing lateral oscillations of said line members, said absorbing means being connected to a first of said line members for movement both laterally and longitudinally with said first line member, said absorbing means being resiliently engageable with a second of said line members while permitting relatively free longitudinal movement of said second line member with respect to said absorbing means and said first line member, whereby absorption of lateral oscillations in said first and second line members by said absorbing means is obtained while permitting free relative longitudinal movement of said first and second line members to accommodate for different rates of longitudinal expansion and the like,
wherein said absorbing means includes a relatively flat sheet of resilient material disposed to have a plurality of said line members in lateral contact therewith at both opposite sides thereof with only said first line member attached thereto for both lateral and longitudinal movement therewith.



B 438,882

KNITTING NEEDLE

Hubert A. Rich, Westminster; James H. Fox, Torrance, and John W. Ryan, Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 1, 1974, Ser. No. 438,882

Int. Cl.² D04B *35/02*

U.S. Cl. 66—116 **3 Claims**

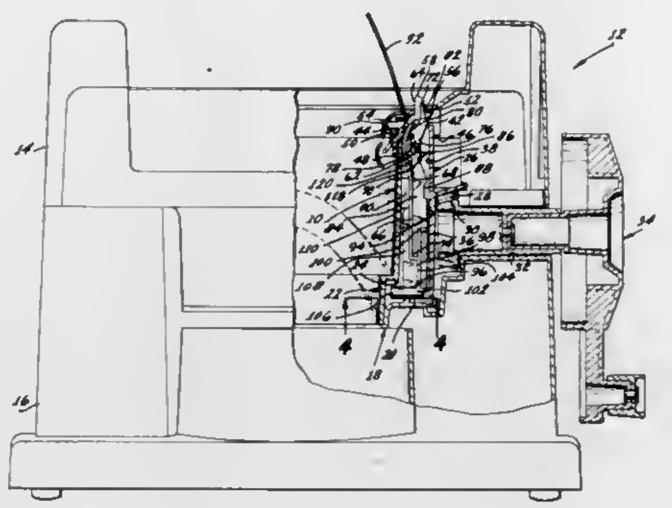
References Cited

UNITED STATES PATENTS

137,568	4/1973	Platt et al.	66/13
863,482	8/1907	Young	66/62
1,364,088	1/1921	Fenn	66/13
1,461,007	7/1923	Taft	66/120
2,560,872	7/1951	Pares et al.	66/104
3,828,582	8/1974	Widdowson et al.	66/13

FOREIGN PATENTS OR APPLICATIONS

294,652	2/1954	Switzerland	66/116



3. A knitting needle for depositing knitted loops on, and for removing them from, a loop-holding device, comprising:
an elongated shank having a front side, a rear side, an upper end and a lower end;
a hook formed at said upper end, said hook having an open side and a closed side, said closed side including a nose portion extending upwardly and outwardly away from said front side of said shank to a predetermined position;
an elongated web provided on said front side of said shank, said web including a ramp adjacent said open side of said hook and a loop-holding notch between said ramp and said lower end of said shank, whereby a knitted loop of yarn may leave said hook through said open side, move down said ramp and become engaged in said notch during upward movement of said needle, said predetermined position of said nose portion being slightly laterally outwardly beyond said loop-holding device, whereby said nose portion is adapted to move to the outer perimeter of said knitted loop to dislodge it from said loop-holding device when said needle starts a new stroke from its lowermost position after completing a preceding stroke wherein said notch carried said knitted loop to said loop-holding device; and
connecting means formed at said lower end of said shank for connecting said needle to a knitting machine for reciprocation thereby.

B 442,866

CAB MOUNTED REMOTE CONTROL APPARATUS

David W. Waldron, Valdosta, Ga., assignor to Lowndes Engineering Co., Inc., Valdosta, Ga.

Continuation of Ser. No. 216,395, Jan. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 20,364, March 17, 1970, Pat. No. 3,633,825. This application Feb. 15, 1974, Ser. No. 442,866

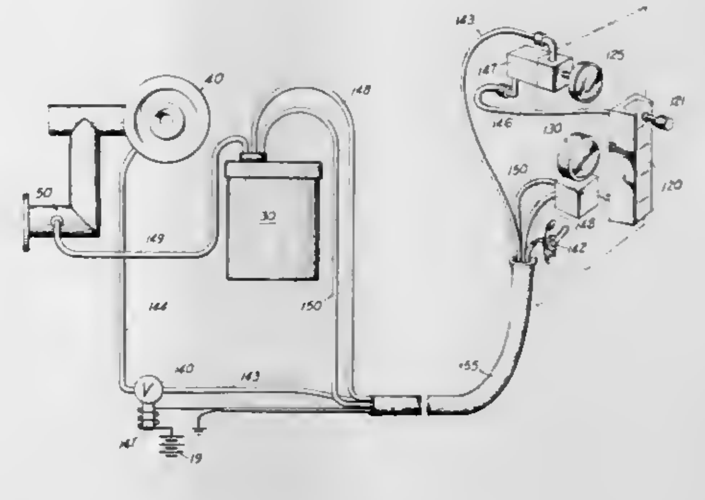
Int. Cl.² A01M *19/00*

U.S. Cl. 43—129 **10 Claims**

References Cited

UNITED STATES PATENTS

2,889,284	6/1959	Haynes et al.	252/359 CG
3,242,098	3/1966	Andrews	252/359
3,244,641	4/1966	Durr et al.	252/359



1. Apparatus for use in controlling a fog generator used in applying insecticides from a vehicle comprising in combination:
a. discharge head for use in developing a fog mixture of air and insecticide;
b. means for supplying insecticide under pressure to said discharge head including a supply tank;
c. means for supplying air pressure means to said discharge head; and,
d. control means operatively associated with said insecticide supply means for controlling the discharge of said insecticide under pressure, said control means including a flow meter having an adjustable flow rate control valve and thermometer means for sensing the temperature of insecticide flowing through said flow rate control valve and said flow meter, said flow meter and said thermometer means and said flow rate control valve being located in the vehicle operator's position and remote from said supply tank and from said discharge head, supply lines for said liquid including a first supply line in flow communication between said supply tank and said control means and a second supply line in flow communication between said control means and said discharge head, and transfer means for transferring liquid through said supply lines from said supply tank through said first supply line, through said flow meter, through said second supply line to said discharge head, said flow meter and said adjustable flow rate control valve being connected in series between said supply tank and said discharge head whereby flow of insecticide to said discharge head may be monitored and controlled in said vehicle operator's position in accord with temperature variations occuring in said insecticide, an electromagnetic valve in one of said supply lines operable between an insecticide off position

and an insecticide discharge position, and switch means in said vehicle operator's position for controlling said electromagnetic valve whereby a vehicle operator may not only control the associated vehicle but may also completely control discharge of said insecticide, said flow meter and said thermometer being disposed adjacent to each other for simultaneous observation by the operator, said valve being disposed for manipulation thereof by the operator as he observes said flow meter.

B 489,685

ADJUSTABLE FAIRLEAD ROLLER SYSTEM

Eugen J. Bexten, Ancaster, Canada, assignor to International Harvester Company, Chicago, Ill.

Filed July 18, 1974, Ser. No. 489,685

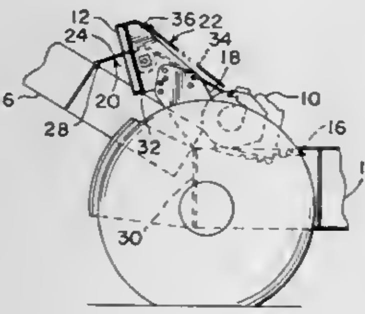
Int. Cl.² B66D *1/36;* B60P *3/00*

U.S. Cl. 254—190 R **11 Claims**

References Cited

UNITED STATES PATENTS

3,515,297	6/1970	Symons	214/85.5
3,576,266	4/1971	Widley	214/85.5



1. An adjustable fairlead roller system for a log skidder with a frame, a power source mounted on said frame, said system comprising:

a fairlead roller assembly having a plurality of apertures and capable of being rigidly connected to said frame, and capable of pivotal and walking vertical position adjustment;

a logging arch rigidly attached to said frame, and having a plurality of apertures capable of rigidly supporting and pivotally adjusting the vertical location of said fairlead roller assembly;

attaching means for adjustably connecting said fairlead roller assembly and said logging arch through said apertures; and

adjusting means connecting said power source and said fairlead roller assembly for having said power source provide the power necessary to pivotally vary the vertical position of said fairlead roller assembly.

B 490,547

HIGH PRESSURE SAMPLE INJECTOR AND INJECTION METHOD

Miner N. Munk, Walnut Creek, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed July 22, 1974, Ser. No. 490,547

Int. Cl.² G01N *1/10*

U.S. Cl. 73—422 GC **14 Claims**

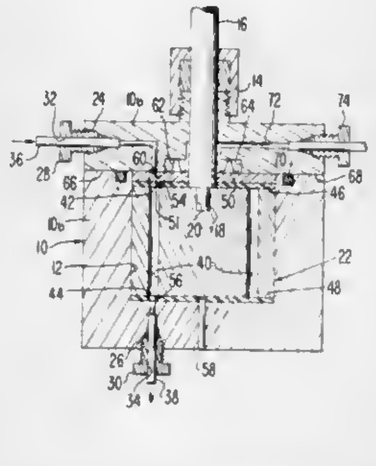
References Cited

UNITED STATES PATENTS

1,081,768	12/1913	Kitts	251/230
2,757,541	8/1956	Watson	73/422 GC
3,475,950	11/1969	Ferrin	73/422 GC
3,583,230	6/1971	Patterson	73/422 GC
3,621,719	11/1971	Goodman	73/422 GC
3,777,572	12/1973	Hrdina	73/61.1 C

FOREIGN PATENTS OR APPLICATIONS

1,318,788	1/1963	France	73/422 GC



1. Apparatus for controlledly injecting each of a plurality of fluid samples into a high pressure environment, said apparatus comprising:

a. sample holding means comprising a cylinder having a plurality of bores therethrough extending in the axial direction of said cylinder, the axes of said bores being substantially equidistant from the axis of said cylinder, said bores defining a plurality of sample cells for holding the samples,

b. A pressure-tight vessel defining a chamber for containing said sample holding means, said sample holding means being movably mounted within said chamber,

c. means for maintaining said chamber at a pressure approximately equal to the pressure of the high pressure environment,

d. means for moving said sample holding means within said chamber so that each end of each of said bores is selectively connectable to an injection means for forcing the sample out of a bore so connected and into the high pressure environment,

e. said injection means comprising an inlet conduit connectable to a source of carrier fluid at a pressure at least equal to the pressure of the sample in said chamber, said inlet conduit being selectively connectable to a first end of each of said bores, and said injection means further comprising an outlet conduit extending between said chamber and said high pressure environment, said outlet conduit being selectively connectable to a second end of each of said bores, said inlet and outlet conduits being positioned in said chamber for successive simultaneous connection to said first and second ends of the same one of each of said bores as said sample holding means moves within said chamber,

f. a first gasket adjacent one end of said cylinder, and a second gasket adjacent the opposite end of said cylinder, each of said first and second gaskets being mounted at the axis of said cylinder for relative movement between said cylinder and said gaskets, each of said first and second gaskets having an aperture, each of said gasket apertures being connected to a different one of said inlet and outlet conduits, the edge of each of said gasket apertures adjacent said cylinder defining a geometrical figure having a transverse dimension which is greater than the minimum spacing between adjacent ones of said bores through said cylinder, and

g. means for holding each of said first and second gaskets stationary with respect to said vessel.

B 490,647

SINGLE SWITCH SAFETY START SYSTEM

Joseph P. Deschamps, Naperville, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed July 22, 1974, Ser. No. 490,647

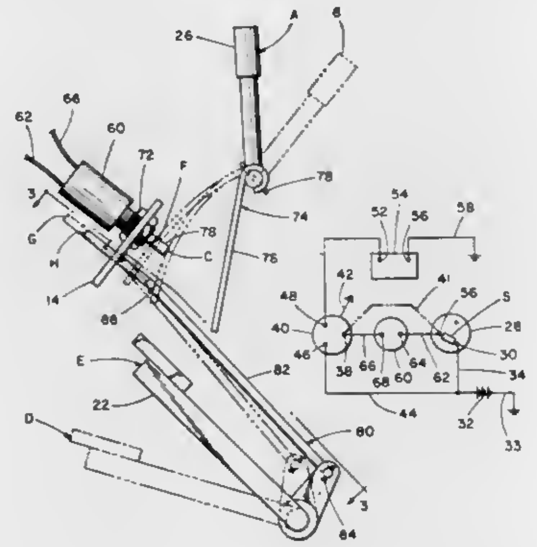
Int. Cl.² A01D *75/28;* H01H *3/14;* B60K *28/00*

U.S. Cl. 180—103 **5 Claims**

References Cited

UNITED STATES PATENTS

2,989,134	6/1961	Kamlukin et al.	180/1 F X
3,419,115	12/1968	Glenn	200/61.89 X
3,521,233	7/1970	Inoue	200/61.89 X
3,608,285	9/1971	Berk	56/10.2
3,731,471	5/1973	Bening	180/53 R
3,736,729	6/1973	Peterson	56/10.5
3,763,976	10/1973	Prokop et al.	192/3.63
3,811,020	5/1974	Johnson et al.	200/61.88



1. For use with a lawn and garden tractor having a mobile frame with steerable wheels and traction wheels, a power source having a starting circuit mounted on said frame, a main clutch means operably connecting said power source and said traction wheels capable of selectively engaging and disengaging said operable connection by rotation of a clutch pedal, a power implement operably connected to said mobile frame and said power source, an implement clutch means capable of selectively engaging and disengaging said implement driving connection by rotation of an implement clutch handle, a safety start system comprising, in combination:

an electrical switch means in series with said starting circuit for closing said starting circuit will be when said clutch pedal and said implement clutch handle are in the disengaged position, and for opening said starting circuit when at least one of said implement clutch handle and said clutch pedal is in the engaged position;

a resilient switch actuator means mounted on and responsive to the rotation of said implement clutch handle for having the disengaged position of said implement clutch handle cause said resilient contact means to close said electrical switch means and complete said starting circuit;

a rigid opening means slidably mounted on said tractor, pivotally attached to said clutch pedal and responsive to the rotation of said clutch pedal for having the engaged condition of said main clutch means cause said rigid opening means to open said starting circuit by changing the deflection point of said resilient switch actuator means.

B 492,120

CONTINUOUS ORIFICE FILL DEVICE

Peter W. Seitz, Wichita Falls, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 26, 1974, Ser. No. 492,120

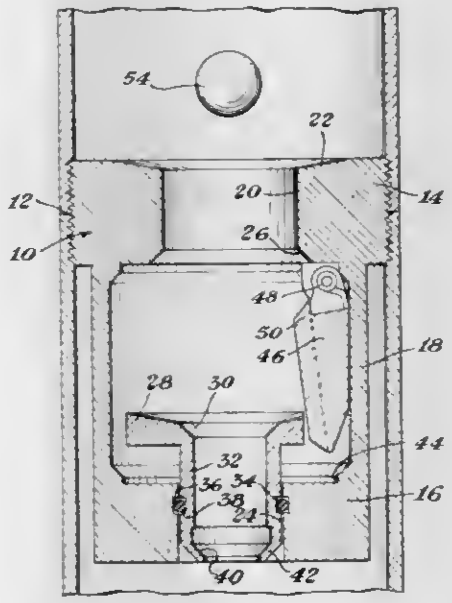
Int. Cl.² E21B *41/00*

U.S. Cl. 166—224 **6 Claims**

References Cited

UNITED STATES PATENTS

3,275,080	9/1966	Nelson et al.	166/225
3,289,769	12/1966	Nelson et al.	166/224
3,292,707	12/1966	Nelson et al.	166/224



1. A continuous orifice fill device comprising a disc-like cross member having edge coupling means for attaching it in a sealing relationship around the inner wall of a string of casing, said cross member having a top which is beveled towards the center of said cross member, an axial bore extending through said cross member, and a bottom part including a flapper valve assembly including a valve seat surrounding said axial bore and a hinged flapper valve, a second cross member, said second cross member being disposed below said first cross member and coupled and sealed with respect to said first cross member by tubular walls which are disposed within said string of casing, said second cross member having an axial bore extending therethrough, a movable metal valve seat member having an upper position and a lower position, said valve seat member having a tubular walled part having an upper end including an outwardly extending flanged part and an inwardly extending non-resilient pressure deformable valve seat including a valve seating surface at its lower end, said valve seat member having its walled part extending closely but slidably through said axial bore in said second cross member

whereby its outwardly extending flanged part retains said hinged flapper valve in an open position when said valve seat member is in its upper position, means for maintaining said valve seat member in its upper position until a predetermined pressure is reached on said pressure deformable valve seat, said axial bore of said first cross member and said tubular walled part of said valve seat member being dimensioned to permit a valve element to pass through and seal against said inwardly extending pressure deformable valve seat.

B 499,209

UNDERGROUND EXCAVATING MACHINE HAVING INDEPENDENTLY MOVABLE HALF-FRAMES

Michel Dubois, Ittre, Belgium, assignor to Linden-Alimak AB, Skelleftea, Sweden

Filed Aug. 21, 1974, Ser. No. 499,209

Claims priority, application Luxemburg, Aug. 22, 1973, 68283

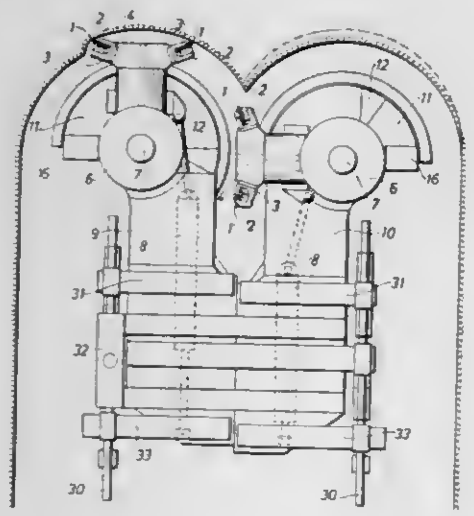
Int. Cl.² E21D *9/10*

U.S. Cl. 299—31 **29 Claims**

References Cited

UNITED STATES PATENTS

2,452,632	11/1948	Cameron	180/8 D
3,106,825	10/1963	Barall et al.	299/31 X
3,512,597	5/1970	Baron	180/8 C
3,663,054	5/1972	Dubois	299/31



1. A machine for excavating an underground gallery, comprising a frame structure consisting essentially of two half-frames vertically arranged side by side, means for supporting each half-frame on the gallery floor independent of the other half-frame, two parallel vertical shafts respectively supported by said two half-frames, a separate turret pivotally supported around each of said shafts, each of said turrets having a cutting head which can rotate around a horizontal axis and which is equipped with tools for excavating, said two half-frames being movable horizontally in relation to one another, a control member connected between said half-frames for controlling said relative movement, the two half-frames being selectively and independently positionable on the gallery floor by said relative movement, one half-frame being movable while the other half-frame remains fixed in position.

B 500,945

TRANSMISSION INCLUDING DUAL INPUT CLUTCH ASSEMBLY

James Elmer Winzeler, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 27, 1974, Ser. No. 500,945

Int. Cl.² F16H *57/10;* F16D *19/00*

U.S. Cl. 74—765 **5 Claims**

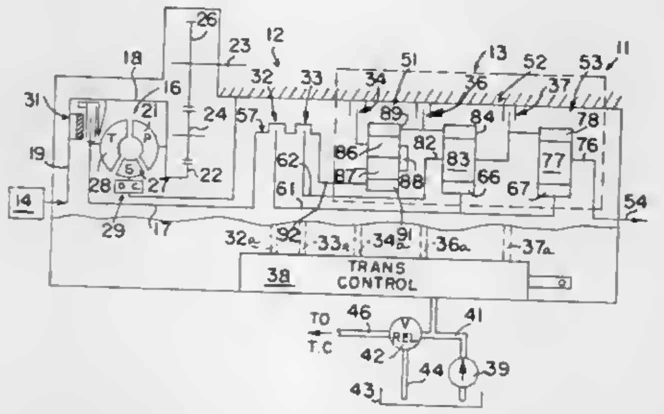
References Cited

UNITED STATES PATENTS

2,693,721	11/1954	Forster	74/759 X
3,318,174	5/1967	Clapp et al.	74/753
3,486,398	12/1969	Waclawek	74/759 X
3,575,067	4/1971	Herman	74/759
3,713,354	1/1973	Edmunds	74/753 X
3,733,928	5/1973	Vozumi et al.	74/753
3,820,418	6/1974	Ott	74/759

FOREIGN PATENTS OR APPLICATIONS

545,064	8/1957	Canada	74/765



1. A transmission comprising

an input shaft,

an output shaft,

first, second and third planetary gear sets each including a sun gear, a ring gear and intermeshing planetary gear means rotatably supported by a carrier, the ring gears of the first and second planetary gear sets being secured for rotation with each other, the ring gear of the third planetary gear set being secured for rotation with the carrier of the second planetary gear set, the carrier of the third planetary gear set being coupled with the output shaft, the input shaft being coupled with the sun gear of the first planetary gear set,

first and second intermediate shafts being arranged in concentric relation with the planetary gear sets, the first intermediate shaft being coupled with the sun gears of the second and third planetary gear sets, the second intermediate shaft being coupled with the carrier of the second planetary gear set and the ring gear of the third planetary gear set,

a first friction device comprising a clutch being selectively actuatable in order to couple the first intermediate shaft for rotation with the input shaft,

a second friction device comprising a clutch being selectively actuatable in order to couple the second intermediate shaft for rotation with the input shaft,

a third friction device comprising a brake being selectively actuatable for securing the carrier of the first planetary gear set against rotation,

a fourth friction device comprising a brake being selectively actuatable for securing the ring gears of the first and second planetary gear sets against rotation,

a fifth friction device comprising a brake being selectively actuatable for securing the ring gear of the third planetary gear set against rotation, and

means for selectively actuating each of the first, second, third, fourth and fifth friction devices.

B 502,652

ENGINE INDUCTION AIR FLOW CONTROL

John D. McMichael, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 3, 1974, Ser. No. 502,652

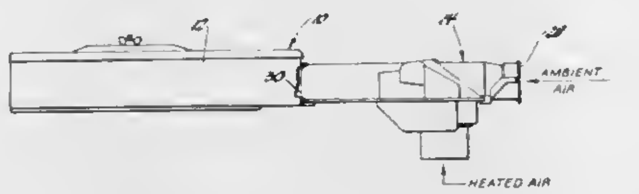
Int. Cl.² G05D *23/08*

U.S. Cl. 236—13 **4 Claims**

References Cited

UNITED STATES PATENTS

3,513,817	5/1970	Kearsley	123/122 D
3,744,715	7/1973	Maddocks	236/13
3,779,223	12/1973	Piech et al.	123/122 D
3,782,349	1/1974	Kamo et al.	236/101 C X



1. An internal combustion engine induction air flow control comprising means defining a generally horizontal air flow conduit having a primary air inlet and an air outlet at opposite ends thereof, an auxiliary air inlet below said air flow conduit, and a channel leading from said auxiliary air inlet upwardly to said conduit, a damper having a main portion disposed in said conduit for controlling air flow through said primary inlet and an auxiliary portion disposed in said channel and adapted to slide across said auxiliary inlet for controlling air flow therethrough independent of the rate of air flow therethrough, and pivot means mounting said damper for pivotal movement between a first position wherein said main portion obstructs air flow through said primary inlet and said auxiliary portion permits air flow through said auxiliary inlet and a second position wherein said main portion permits air flow through said primary inlet and said auxiliary portion obstructs air flow through said auxiliary inlet, whereby said damper may proportion air flow through said primary and auxiliary inlets independent of the rate of air flow through said auxiliary inlet.

B 502,667

MOP FRAME ASSEMBLY

James E. Thielen, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 3, 1974, Ser. No. 502,667

Int. Cl.² A47L *13/254*

U.S. Cl. 15—147 A **5 Claims**

References Cited

UNITED STATES PATENTS

2,618,003	11/1952	Robey	15/176
2,632,192	3/1953	Mallory	15/119 A
2,840,839	7/1958	Benedetti	15/244 A
3,012,264	12/1961	Nash	15/144 A X
3,616,481	11/1971	Van Spronsen	15/244 R
3,778,860	12/1973	Thielen	15/147 A

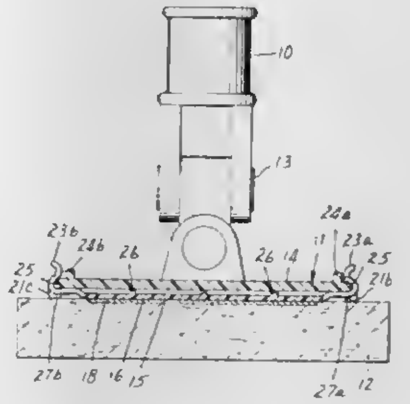
FOREIGN PATENTS OR APPLICATIONS

1343/31	5/1932	Australia	15/228

1. A mop frame assembly comprising:

a mop frame, a handle holder attached to said mop frame, said handle holder and mop frame being formed of materials that are resistant to normal cleaning solutions, and said mop frame comprising:

a rigid body member and a rigid base member removably engageable with said body member wherein said body member is formed with opposed parallel edge portions and having parallel depending flange portions along said edge portions, said flange portions being directed in the same direction and commencing on either side of an intermediate portion of each of said edge portions, the edge portions of said intermediate portions being slightly inset from and parallel to said parallel edge portions of said body member, said base member having (1) a pair of parallel upstanding opposed elongate S-shaped stiff but flexible engaging members positioned to engage said intermediate edge portions between the intermediate ends of said flange portions, the curved portion of said engaging members adjacent said base member being spaced apart a distance corresponding to the spacing



between edge portions of said body member (2) and substantially parallel opposed edge portions on said base member which are spaced apart so that said base member fits loosely within the area defined by said flange portions but close enough to permit one of said base member edge portions to come into contact with an adjacent body member flange portion when the opposite S-shaped engaging member is disengaged from said body member to prevent the base member from being completely disengaged,

one of said body member or said base member being attached to said handle holder.

B 503,436

APPARATUS FOR INSERTING SMALL-DIAMETER PIPE INTO LARGE-DIAMETER PIPE AND/OR PULLING THE FORMER OUT OF THE LATTER

Toshiyuki Sato, Takatsuki, Japan, assignor to Kabushiki Kaisha Suiken, Osaka, Japan

Filed Sept. 5, 1974, Ser. No. 503,436

Claims priority, application Japan, Sept. 7, 1973, 48-105446

Int. Cl.² B23P *19/04*

U.S. Cl. 29—237 **11 Claims**

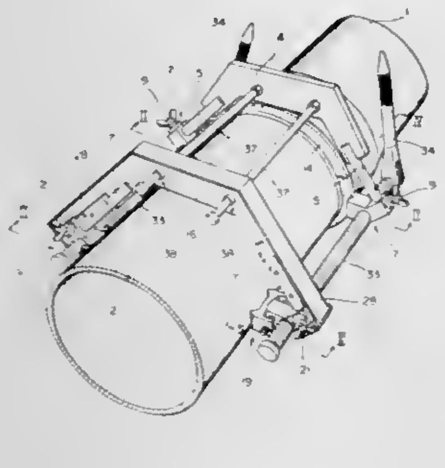
References Cited

UNITED STATES PATENTS

889,315	6/1908	Kenyon	254/29 R
3,426,417	2/1969	Austin	29/237
3,653,115	4/1972	Perkins	29/237
3,710,427	1/1973	Doty	29/237

1. An apparatus for advancing pipes telescopically into and/or out of engagement comprising first and second frame means arranged to straddle axially aligned pipes, said first and second frame means further including free end portions provided with slidable means serving to accommodate the frames of said apparatus to pipes of varying diameters, lockable jaw means associated with each of said slidable means arranged to be brought into contact with the respective pipes, parallel

longitudinally disposed bar means associated with and extending through said lockable jaw means and actuator means carried by each of said bar means for advancing and retracting said telescopic pipes into and out of contact and vice versa.



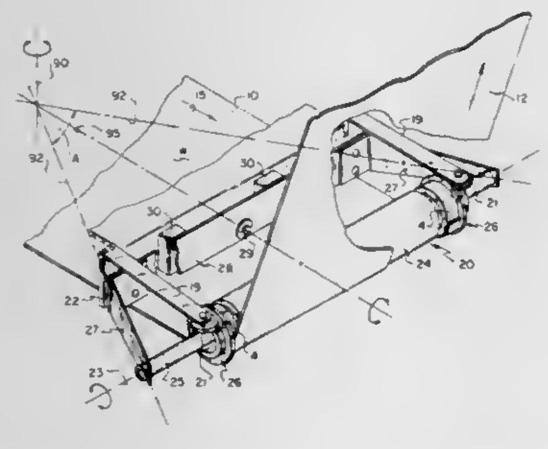
B 504,778
POSITIONALLY CONSTRAINING WEB SUPPORT

Thaddeus Swanke, Rochester, and Richard T. O'Marra, Churchville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 10, 1974, Ser. No. 504,778
Int. Cl.² B65H ***25/26***
U.S. Cl. 226—21 **9 Claims**

References Cited
UNITED STATES PATENTS

3,315,859	4/1967	Owen	226/21
3,507,437	4/1970	Lips	226/192 X
3,598,332	8/1971	Sharkey	226/196 X
3,658,227	4/1972	Stephens	226/196
3,753,517	8/1973	Takenaka	226/196 X



1. A web support mounted on a fixed frame for rotation in engagement with a moving web, the web defining an entering web portion relative to said web support and a closed path of movement, said web support comprising:
   a. edge guide means mounted in a predetermined location in the path of movement, said edge guide means having opposed web engaging portions a fixed maximum distance apart which distance corresponds substantially to the width of the moving web for establishing at said edge guide means a fixed lateral spatial position of the web relative to the frame; and
   b. means defining a web supporting surface at the predetermined location for rotating in tracking engagement with the moving web, said surface-defining means presenting negligible resistance to changes in the lateral angular position of the entering web portion;

said web support laterally constraining the entering web portion against change in its spatial position while permitting freedom of the entering web portion to change its angular position.

B 509,043
ELASTIC COUPLING

Leonhard Geislinger, Hofelgasse 26, A-5020 Salzburg, Austria

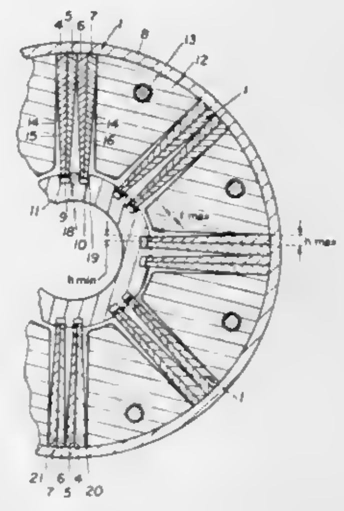
Filed Sept. 25, 1974, Ser. No. 509,043
Claims priority, application Austria, Sept. 25, 1973, 8254/73
Int. Cl.² F16D ***3/14***
U.S. Cl. 64—27 L **6 Claims**

References Cited
UNITED STATES PATENTS

1,990,683	2/1935	Wood	64/27 L
2,029,516	2/1936	Tower	64/27 L
2,266,872	12/1941	Kuhns et al.	64/27 L
2,363,257	11/1944	Mitteucci	64/27 L
2,379,175	6/1945	Mulheim	24/27 L

FOREIGN PATENTS OR APPLICATIONS

1,206,219	12/1965	Germany	64/27 L



1. An elastic coupling for transmitting torque from a driving element rotating about an axis to a driven element and for damping torsional vibrations, the coupling comprising
   1. a hub connected to one of the elements,
   2. a clamping ring concentric with the hub,
      a. the hub and the clamping ring defining therebetween an annular damping chamber,
   3. a damping fluid in the chamber, and
   4. packets of flexible leaf springs arranged in the chamber and extending radially between the hub and the clamping ring, the clamping ring locking the leaf springs in position,
      a. each of the packets having outer leaf springs having a cross section transverse to the axis which tapers radially inwardly from an outer end to an inner end thereof, and
      b. the outer leaf springs being so dimensioned that their maximum flexure is at least equal to the difference between the thickness of the leaf springs at their outer ends and the thickness of the leaf springs at their inner ends.

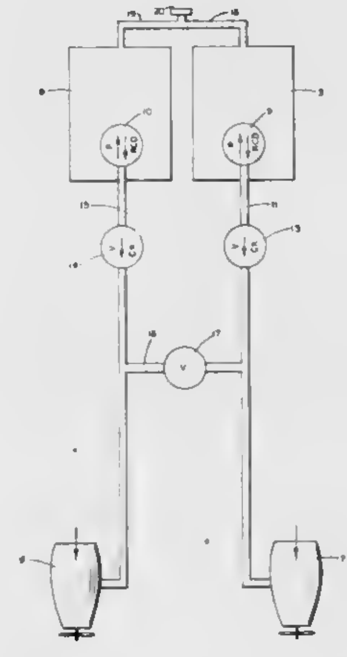
B 509,238
FUEL DEGASSING METHOD

Earl T. Rookey, Long Beach, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Sept. 25, 1974, Ser. No. 509,238
Int. Cl.² F01B ***21/04, 25/00;*** **F02C** ***9/04***
U.S. Cl. 60—706 **4 Claims**

References Cited
UNITED STATES PATENTS

2,932,309	4/1960	Godden et al.	137/255 X
3,011,504	12/1961	Klank, Jr.	55/182 UX
3,635,604	1/1972	Petersen	417/435 X



1. A method of operating a fuel system in an aircraft equipped with two or more fuel tanks, each tank having a reversible fuel booster pump submerged therein and connected to an engine fuel supply line, said tanks being vented to atmosphere, and means to selectively reverse the rotation of said fuel booster pumps, said method comprising reversing the rotation of the fuel booster pump in the unused fuel tanks when all engine fuel is being supplied from one tank only, whereby the reversed fuel booster pump agitates the fuel in said unused tanks to release entrained air and vapor from said fuel to escape from said tank vents.

B 511,454
COLORCODE SPELLER

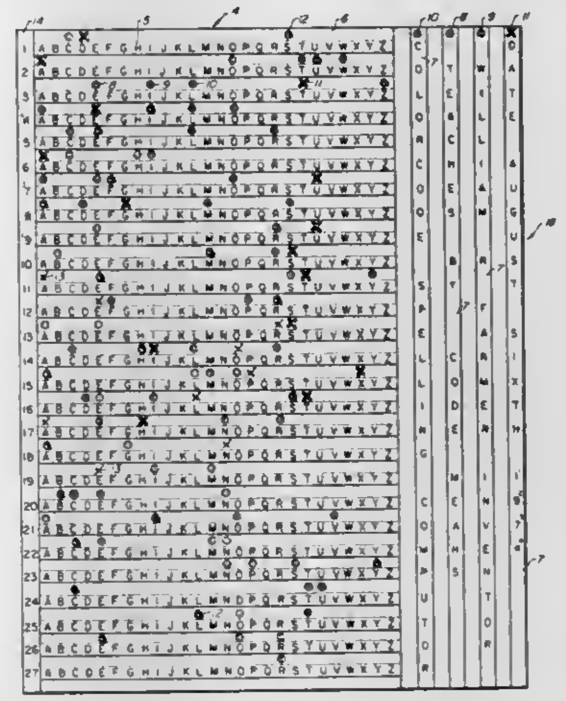
William Robert Farmer, 215 Campbell St., New Westminister, British Columbia, Canada (V3M-5K8)

Filed Oct. 2, 1974, Ser. No. 511,454
Int. Cl.² G09B ***11/00***
U.S. Cl. 35—36 **7 Claims**

References Cited
UNITED STATES PATENTS

165,126	6/1875	Shepherd	35/62
450,092	4/1891	Wyman	35/62
1,286,157	11/1918	Vizcarra	35/75
2,439,413	4/1948	Mitchell	35/2

1. A color coded speller comprising:
a surface;
a plurality of horizontally disposed lines of alphabet letters on said surface;
an equal plurality of horizontally disposed code marking lanes on said surface, each code marking lane disposed directly above a line of alphabet letters;
said horizontal code marking lanes adapted to removably receive code marks;
a plurality of vertically disposed word and sentence lanes on said surface adapted to removably receive alphabet letters whereby a teacher may place a code mark above a selected letter in some or all of said lines and a pupil may copy said selected letters in one of said vertically disposed lanes to spell words and sentences which were preselected by the teacher.



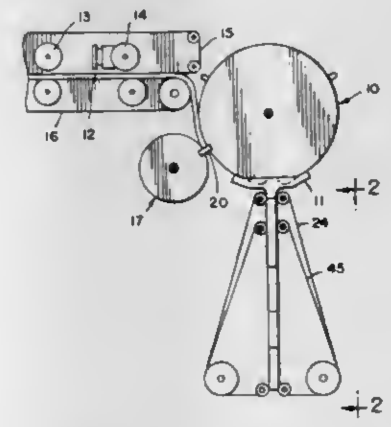
B 516,609
DIAPER FOLDING APPARATUS

Ernst Daniel Nystrand, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Continuation-in-part of Ser. No. 404,037, Oct. 5, 1973, Pat. No. 3,860,004, which is a continuation-in-part of Ser. Nos. 297,750, Oct. 16, 1972, abandoned, and Ser. No. 373,247, June 25, 1973, abandoned. This application Oct. 21, 1974, Ser. No. 516,609
Int. Cl.² B65H ***45/00***
U.S. Cl. 270—62 **5 Claims**

References Cited
UNITED STATES PATENTS

2,114,124	4/1938	Horton	270/76
3,537,461	11/1970	Imbert	270/76



1. Apparatus for folding disposable diapers comprising a frame, means operably associated with said frame for advancing unfolded disposable diapers along a predetermined path whereby each diaper has leading and trailing edge portions.
   a drum mounted on said frame in the path of diaper advancement, said frame being equipped with means for rotating said drum about its axis and with further means

for applying suction to circumferentially spaced apart areas of the periphery of said drum for holding said leading and trailing edge portions of the diaper against the drum, said drum having an opening in the periphery thereof between said circumferentially spaced apart areas and confronting the portion of said diaper between said leading and trailing edge portions,

a tucker mounted in said drum for rapid projection from said drum against said diaper confronting portion to develop a transverse outfold in said diaper,

a pair of wheels rotatably mounted in side-by-side spaced relation on said frame adjacent said drum in axially aligned relation thereto and positioned adjacent a point in said path where said tucker projects from said drum whereby said tucker is adapted to project said diaper confronting portion between said wheels for takeaway from said drum,

a pair of aligned, spaced apart generally planar folding plates mounted on said frame extending generally radially of said drum and positioned along a plane passing between said wheels so as to also be positioned adjacent a point in said path where said tucker projects from said drum, the spacing of said plates permitting said tucker to project between said plates in developing said transverse outfold, said plates opposing the development of an outfold extending the full diaper width but instead forming an infold in each diaper aligned with the partially developed outfold and on each side thereof, each plate being equipped with an inwardly directed air jet, and

a belt system for gripping a diaper to move the same generally radially away from said drum while said diaper infolds are passing over said plates.

B 521,793

TREE FELLING APPARATUS

Lars Öjvind Bruun, Filipstad, Sweden, assignor to Bruun System AB, Filipstad, Sweden

Filed Nov. 7, 1974, Ser. No. 521,793

Claims priority, application Sweden, Nov. 15, 1973, 7315516

Int. Cl.² A01G *23/08*

U.S. Cl. 144—34 R **6 Claims**

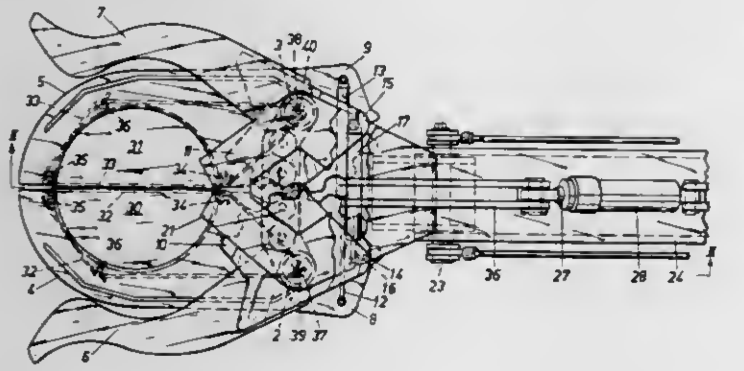
References Cited

UNITED STATES PATENTS

3,527,272	9/1970	Hamilton	144/3 D
3,640,322	2/1972	Allen	144/3 D X
3,854,510	12/1974	Matlik	144/34 R

FOREIGN PATENTS OR APPLICATIONS

330,602	11/1970	Sweden	144/309 AC



1. An improved tree felling apparatus comprising two saw supports on a supporting member and arranged for swinging motion towards and away from one another, one guide bar on each saw support, a continuous saw chain supported on each guide bar so as to run around it in the horizontal plane of said bar, and at least one pair of gripping arms pivotally mounted in the apparatus (at a higher level) and adapted to grip a tree trunk, said two saw chains arranged to be driven in synchrony, while said saw supports approach one another, to cut said tree trunk, the improvement comprising single means incorporated in said apparatus to mechanically control the movement of each of said saw supports as well as those of said gripping arms relative to an imaginary vertical longitudinal medium plane through said apparatus.

B 525,809

HAND AND FOOT GOVERNOR CONTROL SYSTEM

Richard A. Hale, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Nov. 21, 1974, Ser. No. 525,809

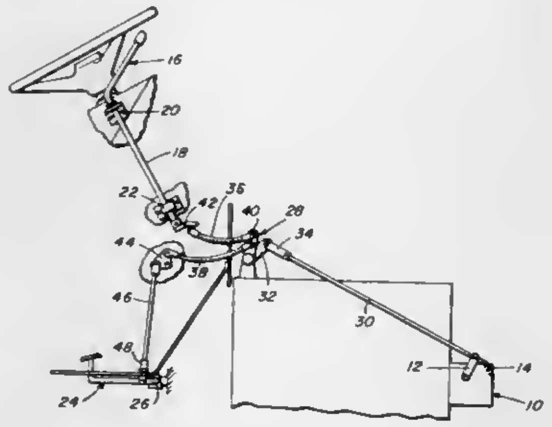
Int. Cl.² G05G *11/00, 1/14*

U.S. Cl. 74—482 **8 Claims**

References Cited

UNITED STATES PATENTS

1,308,707	7/1919	Gross	74/482
1,364,113	1/1921	Johnson	74/482 X
1,398,625	11/1921	Clough	74/482
1,549,719	8/1925	Henke	74/482
2,185,170	1/1940	Armstrong	74/481
3,535,951	10/1970	Larson et al.	74/482



1. Control apparatus for a power control unit of a prime mover, said apparatus comprising first and second throttles, and first and second linkage means respectively extending from the first and second throttles to the power control unit for a selective actuation thereof, each of said linkage means including at least one link capable of transmitting only tension for a tension actuation of the control unit by either throttle independently of the other throttle.

B 529,659

INTREGRAL HYDRAULIC PUMP AND WHEEL STEERING MECHANISM FOR SAILBOATS

Martens Isenberg, Jr., 23 Cypress Ave., Glen Head, N.Y. 11545

Filed Dec. 4, 1974, Ser. No. 529,659

Int. Cl.² B63H *25/00;* **B63B** *41/00*

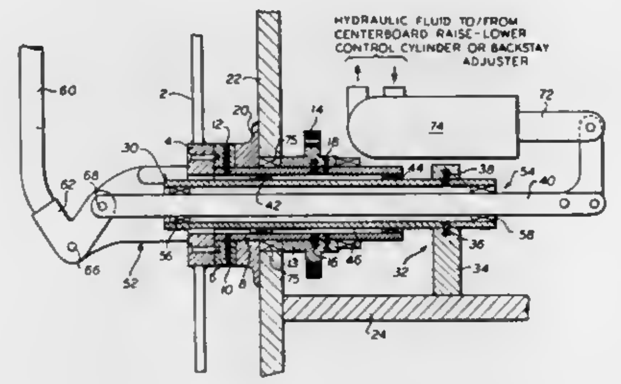
U.S. Cl. 114—144 R **10 Claims**

References Cited

UNITED STATES PATENTS

667,158	1/1901	Webster	114/138
1,101,692	6/1914	Goodspeed	180/77 R
1,799,257	4/1931	Schauman	114/210
2,121,894	6/1938	Torjussen	114/144 R
3,620,182	11/1971	Russell	114/109

1. In a steering assembly for navigating a boat having a vertically movable centerboard movable by a hydraulic means including a hydraulic pump whereby to raise or lower said centerboard, said boat having a steering wheel connected to a hollow steering wheel shaft which shaft in turn is connected to a steering sprocket, the improvement for simultaneously raising or lowering the centerboard which comprises a hydraulic pump shaft disposed through said steering wheel shaft, said hydraulic pump shaft connected to an actuating means at said steering wheel and at its opposite end connected to said hydraulic pump.


HYDRAULIC FLUID TO/FROM CENTERBOARD RAISE-LOWER CONTROL CYLINDER OR BACKSTAY ADJUSTER

B 531,267

TRANSMISSION CONTROL CONSOLE WITH RECESSED BRAKE LEVER

Frederick C. O'Neill, and Alfred W. Sieving, both of Decatur, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 10, 1974, Ser. No. 531,267

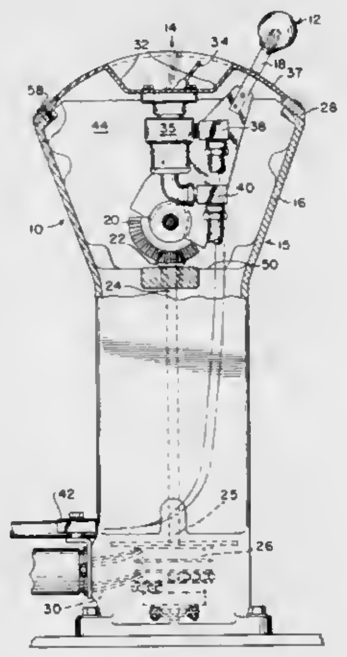
Int. Cl.² B60K *29/02*

U.S. Cl. 192—4 A **6 Claims**

References Cited

UNITED STATES PATENTS

2,039,553	5/1936	Roehrl	192/4 A
3,410,151	11/1968	Adams et al.	74/483
3,626,780	12/1971	Lowder et al.	74/491
3,858,695	1/1975	Whisler	192/4 A



1. A console attachable to a vehicle to control a transmission thereof; comprising:

an enclosure;

a plate forming the top of said enclosure, said plate including an indentation forming a trough therein and including a channel through said plate in an upraised portion thereof adjacent said trough;

a gearshift regulator extending through said channel, said regulator serving to control a transmission of a vehicle; and

a parking brake actuator recessed within said trough, said actuator serving to control a parking brake of said vehicle.

B 533,259

DEMAND CARDIAC PACEMAKER WITH INPUT CIRCUIT PORTION OF INCREASED SENSITIVITY

Clifton Alferness, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 16, 1974, Ser. No. 533,259

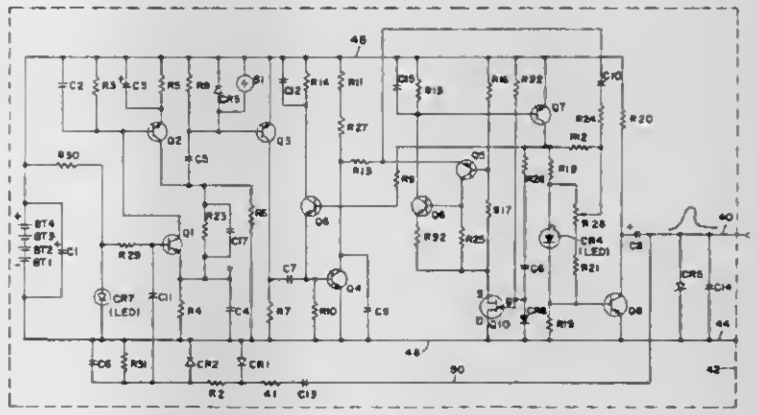
Int. Cl.² A61N *1/36*

U.S. Cl. 128—419 PG **6 Claims**

References Cited

UNITED STATES PATENTS

3,661,158	5/1972	Berkovits	128/419 PG
3,768,486	10/1973	Berkovits et al.	128/419 PG
3,832,703	8/1974	Lenert	307/318



1. A demand cardiac pacemaker circuit comprising:

a. pulse generator means including timing circuit means operable for generating and applying output stimulator pulses at a selected frequency to the heart of the patient in which said demand pacemaker circuit is implanted; and

b. sensing circuit means responsive to a heart signal not always above a predetermined amplitude and comprising a first bipolar transistor of relatively high gain, unidirectional conducting means coupled to its base for maintaining the bias level of the base of said transistor, said unidirectional conducting means comprising a semiconductor device having a junction whose temperature dependent coefficients are coextensive with those of said first bipolar transistor, input means for applying the heart signal to said base of said first transistor, a second bipolar transistor of relatively high gain for further amplifying the output of said first transistor, and a feedback circuit including filter circuit means for applying the output of said second transistor to said first transistor, said filter circuit means for shaping the feedback signal to provide desired amplitude/frequency response characteristics of said sensing circuit means, whereby said sensing circuit is responsive to input signals of an amplitude above a predetermined level for generating and applying inhibit signals to said pulse generator means.

B 534,574
INSTALLATION FOR THE PROCESSING OF EKG SIGNALS

Michael Maas, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Dec. 19, 1974, Ser. No. 534,574

Claims priority, application Germany, Dec. 22, 1973, 2364312

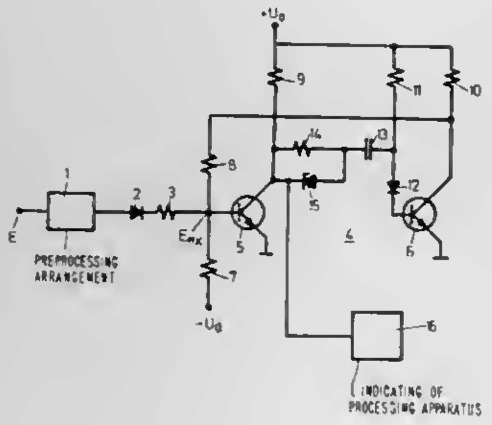
Int. Cl.² A61B *5/04*

U.S. Cl. 128—2.06 R **2 Claims**

References Cited

UNITED STATES PATENTS

3,554,188	11/1971	Lasch et al.	128/2.06 F
3,593,705	7/1971	Thomas et al.	128/2.06 A
3,853,119	12/1974	Peterson et al.	128/2.06 R
3,857,399	12/1974	Zacouto	128/419 P



1. In an installation for the processing of EKG signals, including a threshold element for detecting R-displays in the EKG; a signal suppressor element for suppressing the EKG signal in the signal channel for a predetermined time period after each R-display detected by said threshold element, said signal suppressor element comprising a monostable flip-flop including two capactively reactively connected transistors, one said transistor forming said threshold element for the R-displays of said EKG signals, said last-mentioned transistor having a collector resistance, said flip-flop having a condenser charged to a predetermined initial voltage value preceding the incidence of the respective R-display through the collector resistance of the blocked threshold element transistor, said suppressive time period being determined by the time span within which said flip-flop condenser discharges to a lower cutoff voltage value for said flip-flop through a base resistance of the other transistor and through the collector-emitter section of the threshold element transistor responsive to the latter being controlled into a conductive condition upon the incidence of the R-display, the improvement comprising: a high-ohmic resistance relative to the collector resistance of the threshold element transistor being connected in series in the charging path of said flip-flop condenser for increasing the charging time constants of said flip-flop condenser to a value so that, at heart frequencies not exceeding a median normal heart frequency value of about 80/min, the charging time period for a full condenser charging essentially corresponds to the time differential between R-display spacings and the refractive period of the heart at the selected heart frequency; and a diode bridging said high-ohmic resistance for discharging said condenser during said refractive period.

B 535,411
BRAKE LINING CONDITIONING MEANS

Richard S. Grewette, Utica; Robert J. Hammersmith, Rochester, and Richard F. Honigsbaum, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1974, Ser. No. 535,411

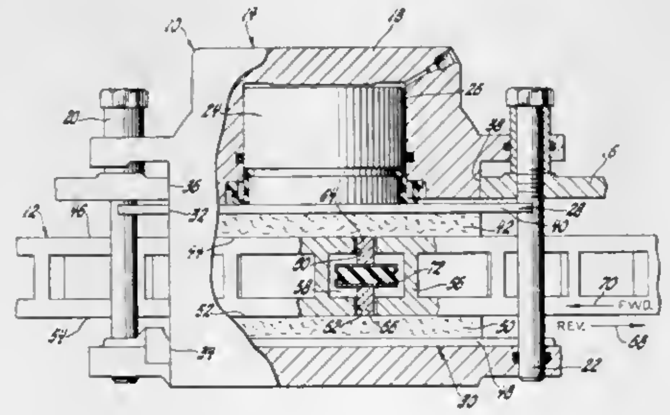
Int. Cl.² F16D *55/224*

U.S. Cl. 188—71.1 **6 Claims**

References Cited

UNITED STATES PATENTS

2,102,915	12/1937	Riskel	51/DIG. 3
2,389,772	11/1945	Gilbert	188/73.1
2,695,695	11/1954	Gilfillan et al.	192/111 A
3,590,537	7/1971	Hennig et al.	51/132
3,628,639	12/1971	Daley, Jr.	188/73.3



1. In a disc brake assembly having a disc to be braked rotatable in forward and reverse directions, and a pair of brake pad assemblies having friction surfaces engageable in braking relation with opposed sides of said disc,

means for intermittently dressing said friction surfaces of said brake pad assemblies during brake operation, said dressing means comprising:

a pair of dressing members mounted in slots formed through said disc opposed sides,

means yieldably urging said dressing members toward engagement with said friction surfaces of said brake pad assemblies,

said dressing members being movable in said slots so as to extend outward beyond said disc opposed sides and being oriented relative to said disc and said brake pad assemblies to dress said friction surfaces of said brake pad assemblies only when said disc is rotating in the reverse direction,

and means limiting the dressing depth of said dressing members so as to obviate the dressing action when the brake is released and to limit the dressing depth when dressing action takes place.

B 541,710
ANNULAR TYPE BLOWOUT PREVENTER

Bolie C. Williams, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Jan. 17, 1975, Ser. No. 541,710

Int. Cl.² E21B *33/06*

U.S. Cl. 251—1 B **14 Claims**

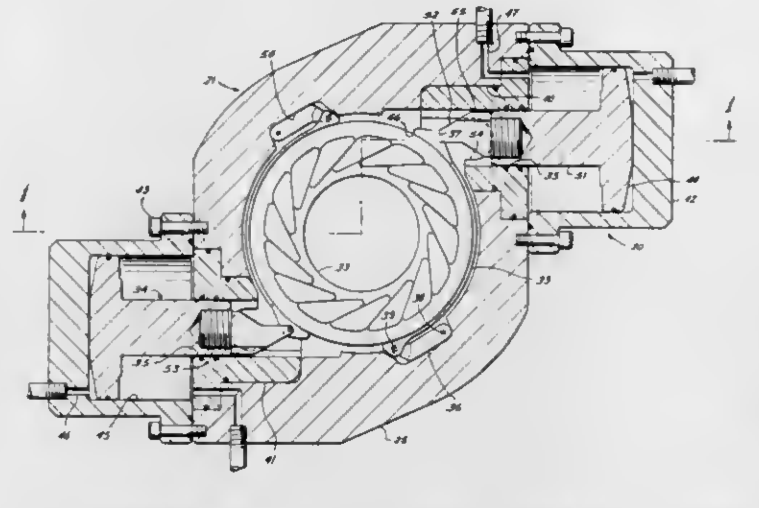
References Cited

UNITED STATES PATENTS

2,434,835	1/1948	Colley	251/4 X
2,609,836	9/1952	Knox	277/73
3,572,627	3/1971	Jones	251/1
3,737,139	6/1973	Watts	251/1

FOREIGN PATENTS OR APPLICATIONS

961,045	3/1957	Germany	251/5



1. An annular blowout preventer, comprising a housing having a bore therethrough and an annular recess about the bore, a packer including an annulus of resilient material within the recess, a plurality of flexible bands arranged within the recess about the packer in substantially equally spaced relation, means pivotally connecting one end of each band to the housing, a plurality of actuators each mounted for reciprocation in the housing and pivotally connected to the other end of each band, and means for moving each actuator in one direction to move said band toward the bore in order to contract the packer into sealing engagement about an object in the bore or upon itself when the bore is empty, and in another opposite direction to move said band away from the bore in order to permit the band to expand into the recess.

B 549,964
MICROWAVE OVEN INTERLOCK

Coy M. Tippy, and David F. Graff, both of New Iberia, La., assignors to Hobart Corporation, Troy, Ohio

Filed Feb. 14, 1975, Ser. No. 549,964

Int. Cl.² E05C *3/30*

U.S. Cl. 292—254 **11 Claims**

References Cited

UNITED STATES PATENTS

3,611,762	10/1971	McBurnie et al.	292/254 X
3,733,456	5/1973	Blackburn	219/10.55 C

1. A microwave oven interlock for preventing oven operation when the oven door is open or unlatched comprising:

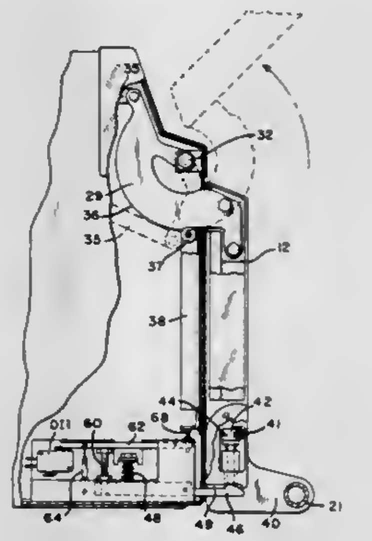
a cabinet with a front opening,

a door covering said opening and hinged to said cabinet to move between a closed position covering said opening and an open position permitting access into the oven,

strike means movably mounted on said cabinet for latching said oven door in its closed position with said strike means in a first position,

disengagement means in said oven door for moving said strike means to a second position allowing said oven door to open,

position sensing means for sensing the position of said oven door, and



means, responsive to said strike means moving to said second position, or to said position sensing means indicating that said oven door is not in said closed position, arranged to prevent operation of the oven.

B 551,809
UNDERSPEED ACTUATOR WITH PART THROTTLE CONTROL

Cyril W. Habiger, and William J. Spivey, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 20, 1975, Ser. No. 551,809

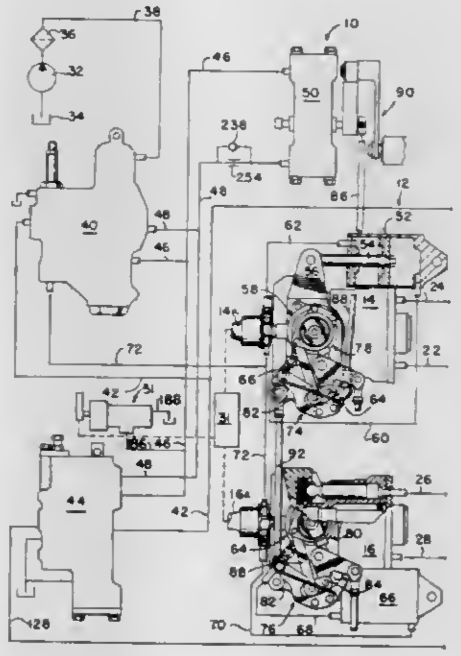
Int. Cl.² F16H *39/46*

U.S. Cl. 60—431 **8 Claims**

References Cited

UNITED STATES PATENTS

3,228,184	1/1966	Harbidge et al.	60/433
3,477,225	11/1969	Cryder et al.	60/433
3,528,243	9/1970	Cryder et al.	60/451 X
3,785,754	1/1974	Miller	60/449 X



1. A control system for regulating displacement of a pump unit in a hydrostatic transmission including input means coupled with a prime mover having a variable throttle setting and output means, the control system having a pump means driven in conjunction with the transmission input means to produce output fluid flow proportional to the operating speed of the transmission input means, and comprising

control means coupled with the pump unit for selectively adjusting its displacement,

a hydraulically responsive underspeed actuator operatively coupled with the control means in order to vary the amount of actual change in pump displacement relative to movement of the control means, and

signal means for receiving output fluid flow from the pump means and communicating a variable fluid signal to which the underspeed actuator is responsive, and

part throttle control means coupled with the prime mover and responsive to a reduced throttle setting for the prime mover to condition the underspeed actuator for maintaining an increased displacement setting of the pump means and thereby establishing more efficient transmission operation.

B 553,629
CLEANING APPARATUS

Masahiko Maruyama, and Shosuke Oka, both of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1975, Ser. No. 553,629

Claims priority, application Japan, Feb. 27, 1974, 49-23572

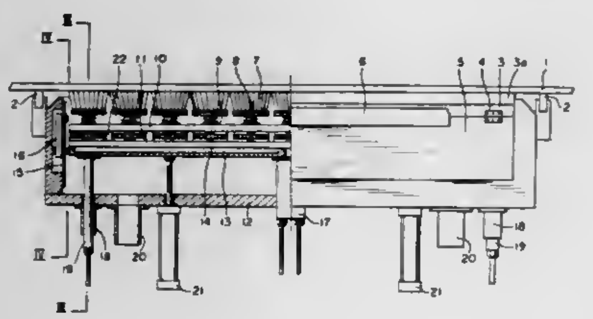
Int. Cl.² A47L *1/02*

U.S. Cl. 15—302 **10 Claims**

References Cited

UNITED STATES PATENTS

3,497,902	3/1970	Hartigan	15/302
3,715,774	2/1973	Fannon	15/302
3,775,804	12/1973	Hoener	15/302



1. A cleaning apparatus comprising:

a housing having an opening in a forward end thereof,

brush means movably disposed in said housing between a first retracted position within said housing and a second projecting position wherein said brush means projects from said opening;

nozzle means for feeding a cleaning solution from within said housing through said opening to be applied against a surface to be cleaned;

means for moving said brush means in said second projecting position thereof under contacting relation with said surface to be cleaned for cleaning said surface;

a movable member supported on said forward end of said housing for closing said opening therein when said brush means is disposed in said first retracted position; and

wiper means carried by said movable member for contacting said surface to be cleaned.

B 563,412
STATOR VANE ASSEMBLY FOR GAS TURBINES

Claude R. Booher, Jr., West Chester, Pa., and Elbert H. Wiley, Wenonah, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 28, 1975, Ser. No. 563,412

Int. Cl.² F01D *9/02, 5/14*

U.S. Cl. 415—136 **9 Claims**

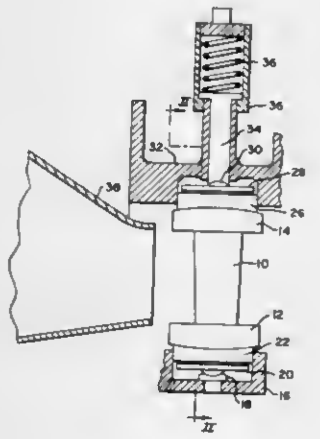
References Cited

UNITED STATES PATENTS

1,891,948	12/1932	Rice	416/500
2,595,829	5/1952	Dean	416/500
2,801,076	7/1957	Terrell et al.	415/200
2,819,869	1/1958	Meyer, Jr.	416/500
3,843,279	10/1974	Crossley et al.	415/138
3,857,649	12/1974	Schaller et al.	415/217
3,864,056	2/1975	Gabriel et al.	415/116
3,867,065	2/1975	Schaller et al.	415/214

FOREIGN PATENTS OR APPLICATIONS

226,940	9/1958	Australia	416/500
826,673	1/1952	Germany	415/200
846,342	8/1952	Germany	415/214
919,802	11/1954	Germany	416/500



1. A stator vane assembly for a gas turbine comprising a plurality of airfoil vanes, an end cap at each end of each vane, said vanes and end caps being made of a ceramic material and the end caps being disposed to support the vanes in a circular array, each vane and the end caps associated therewith having interengaging surfaces constituting pivot and seat surfaces, said surfaces being curved surfaces of compound curvature having major and minor radii of curvature, the major radius of each pivot surface being less than the major radius of the corresponding seat surface and the minor radius of each pivot surface being less than the minor radius of the corresponding seat surface and resilient means for pressing said pivot and seat surfaces into engagement with each other.

B 570,862
APPARATUS FOR PROTECTING TOOLS OF HYDRAULIC PRESSES

Friedrich Pfeifer, Waghausel, Germany, assignor to SMG Suddeutsche Maschinenbau-Gesellschaft mbH, Waghausel, Germany

Filed Apr. 23, 1975, Ser. No. 570,862

Claims priority, application Germany, Apr. 23, 1974, 2419390

Int. Cl.² B26D *7/24*

U.S. Cl. 83—61 **4 Claims**

References Cited

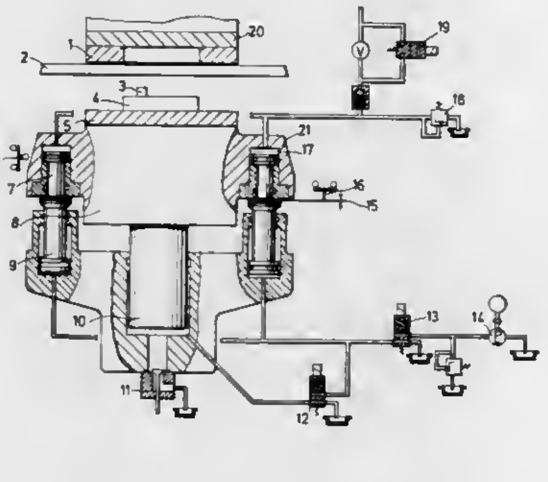
UNITED STATES PATENTS

3,568,553	3/1971	Wanner et al.	83/58

1. Tool protecting apparatus for protecting tools of hydraulically operated fine-punch presses of the type having main piston means for imparting primary punching movements to a movable press ram and quick-closing piston means arranged at the ram separate from the main piston means for imparting final punching movement to said ram; said apparatus comprising:

keying piston means arranged at said ram in series with and extending in the same direction as the quick-closing piston means, said keying piston means forming a keying gap which is variable in size depending on the resistance pressure applied to the ram by the workpieces being processed and impediments disposed between the workpieces and the ram whereby said keying gap is reduced below a predetermined distance when undersirable impediments above a certain size and rigidity are disposed in the travel path of the ram,

and safety stop switch means operable to stop application of pressing forces to said press ram in response to closing of said gap below said predetermined value.



B 576,859
SYNTHETIC FIBROUS BUFF

Burton E. Frank, Shoreview; Lloyd W. Legacy, White Bear Lake, and Dean S. Walker, Grant Township, Washington County, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 12, 1975, Ser. No. 576,859

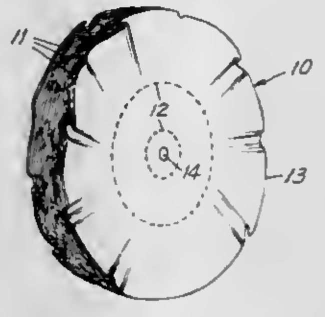
Int. Cl.² B24D *17/00, 11/00;* **A47L** *25/00;* **B24D** *13/04*

U.S. Cl. 51—358 **15 Claims**

References Cited

UNITED STATES PATENTS

2,108,985	2/1938	Hague	15/230.15
2,885,834	5/1959	Rock	15/230.14
3,260,582	7/1966	Zimmer et al.	51/401
3,387,956	6/1968	Blue	51/297
3,597,887	8/1971	Hall	51/400
3,733,754	5/1973	Jeske	51/358



1. A rotary buff comprised of a plurality of layers of nonwoven fabric held together by fastening means, said nonwoven fabric having a fabric density on the order of 0.1 to 0.6 grams per cc, being at least about 0.1 mm thick and consisting essentially of a multiplicity of randomly disposed, adhesively bonded, flexible, durable, tough, resilient organic fibers no larger in size than about 8 denier, having a length on the order of 1 cm to 15 cm and a break strength of at least about 3.5 grams per denier, said fibers being formed of a synthetic organic fiber-forming polymeric material having a melting or decomposition temperature above about 175°C, said fibers being firmly adhesively bonded at points where they cross and contact one another to form a uniform web with a rigid but not brittle binder material which has a melting or decomposition temperature above about 175°C, said binder material being contained in said fabric in an amount sufficient to firmly adherently bind said fibers together but insufficient to immobilize said fibers.

B 66,272
AIR POLLUTION CONTROL SYSTEM AND METHOD

Herschel A. Klein, Windsor, and Carl R. Bozzuto, Waterbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 24, 1970, Ser. No. 66,272
Int. Cl.² B01D *53/34*
U.S. Cl. 423—242 **4 Claims**

References Cited
UNITED STATES PATENTS

2,042,477	6/1936	Miller et al.	23/132
2,080,779	5/1937	Lessing	23/2
2,090,143	8/1937	Nonhebel et al.	23/2
2,113,198	4/1938	Nonhebel et al.	23/2

OTHER PUBLICATIONS

Pearson, J. L., et al.; "A Dissertation on the Howden – I.C.I. Flue Gas Washing System," The Institute of Fuel; London; 1934; pp. 1, 12–16, 19–23.

Pascal, et al.; Nouveau Traite de Chimie Minerale, Vol. IV, pp. 416–417; Masson et Cie., Paris, 1958.

1. A method of removing sulfur dioxide from the flue gas produced by the combustion of sulfur-containing fuels comprising the steps of:

a. contacting said flue gas in a scrubbing zone with an aqueous scrubbing stream containing an alkaline earth metal bicarbonate in solution, the amount of said alkaline earth metal bicarbonate in solution being in excess of the amount required to completely react with said sulfur dioxide in said flue gas whereby said sulfur oxides react with said bicarbonate to produce alkaline earth metal bisulfite in solution and whereby the pH of said aqueous scrubbing stream during said contact is maintained between 6.0 and 4.5,

b. withdrawing said aqueous scrubbing solution from said scrubbing zone,

c. contacting said aqueous scrubbing stream containing said bisulfite in solution with an oxygen-containing gas stream whereby said bisulfite is oxidized to form alkaline earth metal sulfate precipitate and sulfuric acid in solution,

d. introducing alkaline earth metal carbonate into said aqueous scrubbing stream whereby said carbonate reacts with said sulfuric acid to form additional alkaline earth metal sulfate precipitate and said excess alkaline earth metal bicarbonate in solution,

e. separating said alkaline earth metal sulfate precipitate from said aqueous scrubbing stream, and

f. recycling said aqueous scrubbing stream containing said excess alkaline earth metal bicarbonate to step (a).

B 339,446
BUTT WELDER CUTTING ELEMENT TEMPERATURE CONTROL

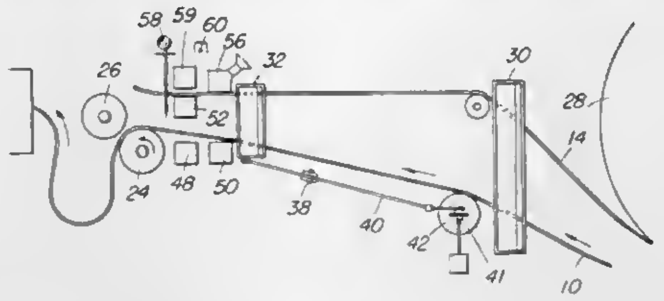
David Emil Johoson, Macedon, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 8, 1973, Ser. No. 339,446
Int. Cl.² B31F *5/00;* **B65H** *19/08*
U.S. Ct. 156—159 **6 Claims**

References Cited
UNITED STATES PATENTS

2,707,985	5/1955	Binnall	156/515
3,015,600	1/1962	Cook	156/515
3,135,077	6/1964	Siegel et al.	156/515
3,384,527	5/1968	Fener	156/515
3,586,584	6/1971	Wilkins	156/504 X
3,595,456	7/1971	Rosenthal	83/171 X
3,721,801	3/1973	Bate	156/515 X
3,769,124	10/1973	Johnson	156/504 X
3,834,971	9/1974	Johnson	156/507

1. In an apparatus comprising means for feeding a first thermoplastic sheet into the nip of a pair of rolls; drive means operating said rolls drawing said first sheet into proximity to said first sheet and said pair of rolls; clamp means associated with said second sheet; clamp means associated with said first sheet; electrical conductive heating and cutting means proximate to said clamp means movably positioned to pass through both said first and said second sheets, thereby severing said first and second sheets; gate means adopted to allow said heating and cutting means to move in and out of a heat insulating enclosure; and means for contacting the thus severed, hot edges for a time sufficient to weld said first and second edges together; the improvement comprising a gate means which comprises adjacent sections of a flexible material adapted to allow said heating and cutting means to pass through said flexible material comprising said gate, thereby preventing residual thermoplastic build-up.



B 351,455
METHOD OF PREPARING POLYFLUOROALKYL GROUP CONTAINING COMPOUNDS

Takao Hayashi, and Masashi Matsuo, both of Yokohama, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1973, Ser. No. 351,455
Claims priority, application Japan, Apr. 14, 1972, 47-37520
Int. Cl.² C07C *27/00, 29/00, 67/20*
U.S. Cl. 260—493 **12 Claims**

References Cited
UNITED STATES PATENTS

3,157,705	11/1964	Pearce	260/631 R
3,226,449	12/1965	Blanchard et al.	260/493
3,562,315	2/1971	Cookson et al.	260/493

1. A method of preparing perfluoroalkyl group containing compounds which comprises reacting a polyfluoroalkyl halide having the formula $R_fCH_2CH_2X$, wherein R_f represents a perfluoroalkyl group containing 1–23 carbon atoms and X represents a bromine atom or an iodine atom, with water and an amide having the formula RCONR′R″, wherein R, R′ and R″ represent hydrogen atoms or lower alkyl groups under conditions in which the mole ratio of water to said polyfluoroalkyl halide is in the range from 1 : 1 to 10 : 1 and the ratio of said amide to said polyfluoroalkyl halide is at least 1 : 1 at a temperature from about 80° to 200°C.

B 369,221
PHOSPHAZENE COMPOSITION

James T. F. Kao, 1122 Castle Kirk Drive, Baton Rouge, La. 70808

Continuation-in-part of Ser. No. 339,902, March 9, 1973, abandoned. This application June 12, 1973, Ser. No. 369,221
Int. Cl.² C07F *9/15*
U.S. Cl. 260—927 N **8 Claims**

References Cited
UNITED STATES PATENTS

2,681,295	6/1954	Hamalainen	260/927 N X
3,294,872	12/1966	Allcock	260/973 X
3,459,838	8/1969	Klender	260/973 X
3,795,526	3/1974	Bergeron	260/927 N X

1. In a process for the preparation of a fire retardant phosphonitrilate polymer consisting essentially of the steps of (a) heating a phosphonitrilic halide with at least a stoichiometric amount of an alkali metal compound of the formula MOR, wherein M is an alkali metal and R is a hydrocarbyl or halogen-substituted hydrocarbyl radical having up to about 8 carbon atoms to produce a phosphonitrilate polymer, (b) reacting a phosphonitrilic halide with less than the stoichiometric amount of said alkali metal compound producing a phosphonitrilate polymer containing a substantial amount of residual halide groups and (c) heating the phosphonitrilate polymer of (a) with the phosphonitrilate polymer containing a substantial amount of residual halide groups of (b) under conditions sufficient to drive off an organic halide, whereby the viscosity of the resultant phosphonitrilate polymer and its average molecular weight are increased, the improvement comprising preparing at least one of the polymers of (a) and (b) by a process of adding said alkali metal compound to said phosphonitrilic halide, said phosphonitrilic halide being contained in an inert solvent such that during the reaction a substantial excess of said phosphonitrilic halide is maintained.

B 399,098
VETERINARY FEEDSTUFFS

Florin Seng, Cologne-Buchheim; Kurt Ley, Odenthal-Globusch, and Karl Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 323,953, Jan. 15, 1973, Pat. No. 3,856,957, which is a division of Ser. No. 130,007, March 31, 1971, Pat. No. 3,819,616. This application Sept. 20, 1973, Ser. No. 399,098
Int. Cl.² A61K *31/54*
U.S. Cl. 424—246 **34 Claims**

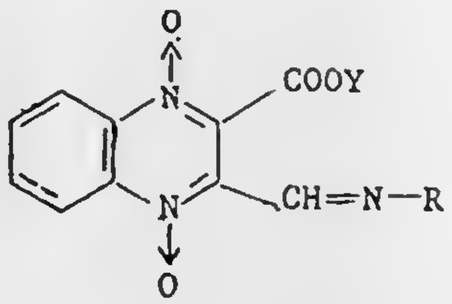
References Cited
UNITED STATES PATENTS

3,371,090	2/1968	Johnston	260/240 G
3,493,572	2/1970	Johnston	260/250 QN
3,793,323	2/1974	Seng et al.	260/250 QN

FOREIGN PATENTS OR APPLICATIONS

1,215,815	12/1970	United Kingdom	260/250 Q
7,104,392	10/1974	Netherlands	260/250 QN

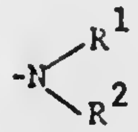
17. A method of promoting or enhancing growth in animals which comprises feeding an animal a growth promoting amount of a veterinary feedstuff or additive which comprises a growth promoting amount of a compound of the formula



or a pharmaceutically acceptable nontoxic salt thereof wherein

Y is hydrogen, an alkali metal cation or the cation R^5-NH_3; and

each of R and R^5 is



in which each R^1 and R^2 when taken independently is identical to or different from the other, and is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and hydroxyalkyl of 1 to 4 carbon atoms, or when R^1 and R^2 are taken together with the nitrogen atom to which they are attached, a 6-membered heterocyclic ring wherein the nitrogen atom is the only heteroatom or wherein oxygen or SO_2 is also present as a ring member, in combination with a nutritious material or drinking water.

B 410,074
PRODUCTION OF ω-FORMYL CARBOXYLIC ACID ESTERS

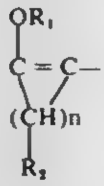
Helmut Waldmann, Leverkusen; Wulf Schwerdtel, Leverkusen-Steinbuechel, and Wolfgang Swodenk, Odenthal-Gloebusch, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 26, 1973, Ser. No. 410,074
Claims priority, application Germany, Oct. 27, 1972, 2252780
Int. Cl.² C07C *67/00*
U.S. Cl. 260—483 **11 Claims**

References Cited
OTHER PUBLICATIONS

J.A.C.S., 64, (1942), p. 1419.
J. Org. Chem., 12, (1947), p. 163.

1. A process for the production of an ω-formyl carboxylic acid ester, comprising reacting hydrogen peroxide with an enol ether of a cyclic ketone of the formula

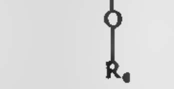


wherein

R_1 is alkyl of 1 to 3 carbon atoms, or alkyl of 1 to 3 carbon atoms substituted by fluorine, chlorine, alkoxy of 1 to 3 carbon atoms, cyano or phenyl,

n is an integer of about 3 to 10, and R_2 each independently is hydrogen, fluorine, chlorine, cyano, alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms substituted by fluorine, chlorine, cyano or alkoxy of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms substituted by fluorine, chlorine, cyano, alkoxy of 1 to 4 carbon atoms or alkyl of 1 to 6 carbon atoms,

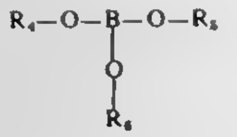
in the presence of a catalyst consisting essentially of a member selected from the group consisting of a compound of boron, a compound of boron plus a compound of a metal of the Fifth Secondary Group of the Periodic Table, and a compound of boron plus a compound of a metal of the Sixth Secondary Group of the Periodic Table, said compound of boron being selected from the group consisting of a boron oxide, a boric acid, a salt of a boric acid, boron trifluoride, boron trichloride, a boric acid ester of the formula



$$R_4—O—\underset{\underset{R_6}{|}}{\underset{O}{\underset{|}{B}}}—O—R_5$$

wherein

R_4, R_5 and R_6 each independently is alkyl of 1 to 6 carbon atoms, alkyl of 1 to about 6 carbon atoms substituted by hydroxyl, fluorine, chlorine, alkoxy of 1 to 3 carbon atoms, phenyl or phenyl substituted by fluorine, chlorine or alkyl of 1 to 3 carbon atoms, or an adduct of boron trifluoride, boron trichloride or a boric acid ester of the formula



$$R_4-O-\underset{\substack{|\\O\\|\\R_6}}{B}-O-R_5$$

with an alcohol of the formula R_4-OH, an alcoholate of the formula R_4-OMe, a carboxylic acid of the formula R_4—-COOH, an ether of the formula R_4-O-R_5 or a hydrogen halide, wherein Me is an alkali or alkaline earth metal, zinc or aluminum, said compound of a metal of the Fifth or Sixth Secondary Group of the Periodic Table being selected from the group consisting of a carboxylate, carbonyl, nitrosocarbonyl, acetonate and acetylacetonate at a temperature of −80° to +30°C.

B 431,785

APPARATUS FOR CRYSTAL GROWTH IN OUTER SPACE

Hans Nagorsen, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Erlangen, Munich, Germany

Continuation of Ser. No. 214,704, Jan. 3, 1972, abandoned. This application Jan. 8, 1974, Ser. No. 431,785

Claims priority, application Germany, Jan. 7, 1971, 2100540

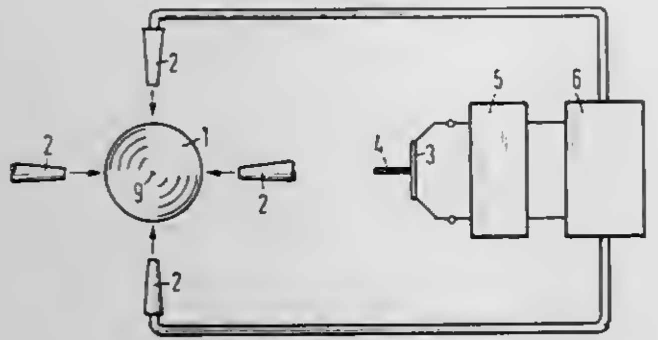
Int. Cl.² B01J *17/00, 17/20*

U.S. Cl. 23—273 SP **7 Claims**

References Cited

UNITED STATES PATENTS

2,686,864	8/1954	Wroughton et al.	23/301 SP
3,258,314	6/1966	Redmond et al.	23/301 SP



1. Means for producing semiconductor crystals particularly silicon crystals by oriented crystallization from a melt which is produced in a suspended state under cosmic vacuum, on a space vehicle comprising six beam emitters affixed to a common holder for producing an oriented holding beam whereby two of said beam emitters are provided for each of three cartesian coordinates of space and each said two of said beam emitters are so oriented relative to each other that the beams which are emitted from the beam emitters which are related to each in pairs, are oriented in opposition to one another in each pair, and the beams emitted by the said six beam emitters all meet in a common point between said beam emitters, means for controlling the intensities of the beams emitted by the six beam emitters that said six beam emitters retain, in a freely suspended state, the melt which is located at the point of intersection of the six beams, and means for heating the melt in such a manner that the heating effect is focused upon the point of intersection of the six beams.

B 442,810

PROCESS FOR THE PREPARATION OF 7-ACYLAMINO-ESACETOXYCEPHALOSPORANIC DERIVATIVES

Hans-Joachim Kabbe, Leverkusen, and Uwe Petersen, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 14, 1974, Ser. No. 442,810

Claims priority, application Germany, Feb. 26, 1973, 2309599

Int. Cl.² C07D *501/10*

U.S. Cl. 260—243 C **14 Claims**

References Cited

UNITED STATES PATENTS

3,725,397	4/1973	Graham et al.	260/243 C
3,725,399	4/1973	Ellerton et al.	260/243 C
3,781,283	12/1973	Bormann et al.	260/243 C
3,799,924	3/1974	Jackson et al.	260/243 C
3,852,281	12/1974	Verweij	260/243 C
3,853,861	12/1974	Garbrecht	260/243 C

1. In the process for the preparation of a 7-acylamido-3-methylceph-3-em-4-carboxylate by heating the corresponding 6-acylamidopenicillanate sulfoxide at temperatures of from 60° to 150°C in an organic solvent with removal of the water formed, the improvement which comprises conducting the heating in the presence of from 1 to 20 mol percent, based on the sulfoxide present, of a heavy metal sulfonate of the formula:

$$Me(R''SO_3)_n$$

in which

Me is a cation having a valence of 1 to 3 and selected from the group consisting of the copper, silver, gold, zinc, cadmium, mercury thallium, tin, lead, iron, cobalt and nickel cations;

R'' is alkyl of 1 to 4 carbon atoms, fluoroalkyl of 1 to 4 carbon atoms, phenyl, naphthyl or phenyl or naphthyl substituted by at least one substituent selected from the group consisting of methyl and halo; and

n has a value of 1 to 3 and corresponds to the valence of Me.

B 443,563

NOVEL N-(AR-VINYLBENZYL)AZIRIDINES

Donald A. Tomalia, and Jerry D. DeVrieze, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 246,872, April 24, 1972, Pat. No. 3,833,557. This application Feb. 19, 1974, Ser. No. 443,563

Int. Cl.² C08F *26/06, 126/06, 226/06*

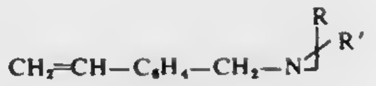
U.S. Cl. 260—82.1 **11 Claims**

References Cited

UNITED STATES PATENTS

3,226,372	12/1965	Tousignant et al.	260/88.1 PA X
3,833,557	9/1974	Tomalia et al.	260/88.1 PA X

1. A thermally curable vinyl addition polymer containing an N-(m or p-vinylbenzyl)aziridine corresponding to the structural formula



wherein R and R′ are hydrogen or alkyl of from interpolymerized 1 to 4 carbon atoms in therpolymerized form in sufficient quantity to make the polymer thermally curable.

B 455,481

METAL HALIDE COMPLEXES OF 4-CYANO-2,2-DIMETHYLBUTYRALDOXIME-N-METHYLCARBAMATE

William Arthur Henderson, Jr., Stamford, Conn., and Fausto Ramirez, Goshen, Va., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 27, 1974, Ser. No. 455,481

Int. Cl.² C07F *3/06*

U.S. Cl. 260—429.9 **12 Claims**

References Cited

UNITED STATES PATENTS

3,621,049	11/1971	Addor	260/465.4
3,644,453	2/1972	Onsager	260/438.1
3,686,244	8/1972	Marks	260/438.1 X

OTHER PUBLICATIONS

Lindqvist, Inorganic Adduct Molecules Academic Press, Inc., N.Y., pp. 19, 30 and 31, (1963).

1. The solid metal halide complex of 4-cyano-2,2-dimethylbutyraldoxime-N-methylcarbamate wherein said metal is cobalt, copper or zinc.

B 455,759

METHOD FOR FORMING A LENTICULAR ARRAY BY PHOTOGRAPHIC MEANS

Robert L. Lamberts, Penfield, and Nelson R. Nail, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 28, 1974, Ser. No. 455,759

Int. Cl.² G03F *5/00;* **G03C** *5/00*

U.S. Cl. 96—45 **7 Claims**

References Cited

UNITED STATES PATENTS

2,794,739	6/1957	Gretener	96/81
3,425,770	2/1969	Mueller et al.	350/162 R
3,582,329	6/1971	Ivanov et al.	96/35
3,592,529	7/1971	Juhlin et al.	350/162 R
3,617,281	11/1971	Lindin	96/81
3,656,849	4/1972	Lu	96/27 H
3,775,110	11/1973	Bestenreiner et al.	96/81

1. A method for photographically producing a transparent master target for use in making a transparent screen element having an array of discrete, contiguous lenticules each of which has the same predetermined profile, the master target being a photosensitive material comprising a transparent support having at least one layer of a photographic emulsion on a surface thereof, comprising the steps of:

determining an exposure intensity from the exposure factors for the emulsion on the photosensitive material with respect to each of a number of discrete, contiguous areas forming a pattern of areas corresponding to the size of a lenticule for producing the predetermined profile;

moving the photosensitive material intermittently in X-Y mutually perpendicular directions to position each discrete area relative to a source of illumination;

exposing each discrete area, while the photosensitive material is stationary, to the source of illumination in accordance with the established exposure intensity for the respective discrete area; and

processing the photosensitive material, whereby each discrete area has an optical density related to a corresponding portion of the predetermined profile of the lenticule.

4. A method of exposing a photosensitive material having predetermined exposure factors in a repetitive and overlapping sequence to a transparent master target, the target having at least one pattern comprising a plurality of discrete, contiguous areas, each of which has an optical density related to the exposure factors of the material, for producing, upon processing of the material, an array of discrete, contiguous lenticules each of which has the same predetermined profile, comprising the steps of:

moving the material continuously in one direction at a generally uniform rate;

moving continuously an imaging system including a source of illumination, the transparent master target, and a lens system for projecting a minified image of the pattern of areas on the material in an other direction at a generally uniform rate in synchronism with and normal to the movement of the material in the one direction, the rate of movement of the imaging system being less than that of the material;

triggering the source of illumination in timed relation to the movement of the material so as to expose the material to successive contiguous images of the pattern of areas in the one direction, each exposure of an image of the pattern of areas being displaced in the other direction by a distance generally equivalent to one of the areas; and

repeating the triggering step for a number of times equivalent to the number of areas comprising one dimension of the pattern of areas, after which, overlapping exposure of the material to the pattern of areas will occur with continued repetition of the triggering step.

B 460,846

PREPARATION AND USE OF MAGNESIUM ACETYLENE COMPLEX

John Nicholson Gardner, Garrison, N.Y., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 402,544, Oct. 1, 1973, abandoned. This application Apr. 15, 1974, Ser. No. 460,846

Int. Cl.² C07F *3/02*

U.S. Cl. 260—665 R **3 Claims**

References Cited

UNITED STATES PATENTS

2,125,384	8/1938	Macallum	260/665 R X
2,200,941	5/1940	Vogt	260/665 R
2,938,932	5/1960	Normant	260/665 G
3,441,621	4/1969	Tedeschi	260/665 R
3,770,655	11/1973	Vandenberg	260/665 R

OTHER PUBLICATIONS

Chemical Abstracts, V. 70, 86920e, (1969).
Chemical Abstracts, V. 41, 5043q, 5405g, (1947).
Chemical Abstracts, V. 64, 17623c, (1966).
Chemical Abstracts, V. 63, 17908e, (1965).

1. A process of producing a magnesium acetylene complex comprising reacting in liquid ammonia, magnesium and acetylene gas wherein the reaction medium contains from about 5 to 97% by weight of sodium in the form of sodium metal or combined with ammonia as sodamide, based upon the weight of sodium and magnesium in the reaction medium, said reaction taking place at a temperature of from −100°C. to +100°C. and a pressure of from about 15 psia to 1000 psia.

B 462,424
METHOD OF MAKING REINFORCED COMPOSITE STRUCTURES

Lee C. McCandless, Silver Spring, Md., and Glenn E. Weber, Vienna, Va., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 19, 1974, Ser. No. 462,424

Int. Cl. C23b *7/02, 5/46*

U.S. Cl. 204—9 **6 Claims**

References Cited

UNITED STATES PATENTS

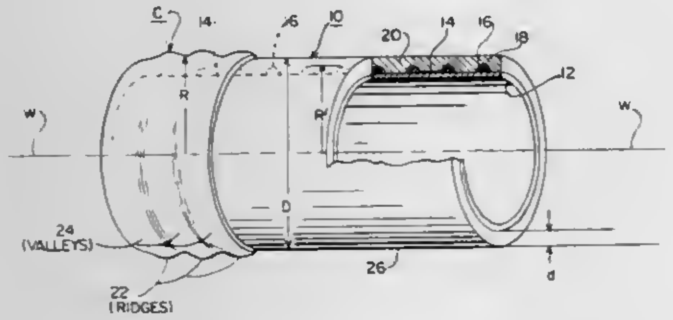
3,505,177	4/1970	Chester et al.	204/9
3,763,001	10/1973	Withers	204/16

FOREIGN PATENTS OR APPLICATIONS

85,173	5/1895	Germany	204/3

OTHER PUBLICATIONS

Plating, Apr. 1970, pp. 342–347.



1. The process of making a composite structure on a mandrel having a smooth outer surface, said structure including multiple layers of reinforcing filaments spaced at different levels and embedded in a metallic matrix material, including the steps of:

a. winding a filament having at least one flat side as viewed in cross-section onto said smooth outer surface with the flat side thereagainst and precision spacing successive convolutions;

b. depositing metallic matrix material by electroforming onto the convolutions of the filament and onto said outer surface exposed therebetween, and continuing such electroforming until the matrix material between the convolutions builds up above the level of the wound filament;

c. machining the structure by removing matrix material until a new smooth outer surface is exposed above the level of the filament; and

d. repeating said steps to produce another layer.

B 462,893
IMAGING PROCESSES AND ELEMENTS THEREFOR

Roger W. Nelson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 22, 1974, Ser. No. 462,893

Int. Cl.^{2} G03C *1/68, 1/70*

U.S. Cl. 96—35.1 **27 Claims**

References Cited

UNITED STATES PATENTS

2,892,712	6/1959	Plambeck	96/35.1
3,779,778	12/1973	Smith et al.	96/35.1

OTHER PUBLICATIONS

Aso, C. et al., J. of Polymer Science: part A-1, Vol. 7, pp. 497–511, 1969.

1. A radiation-sensitive element comprising a thin film of a depolymerizable polymer of an aromatic 1,2-dialdehyde, said polymer having hydroxyl or polystyrene endcaps and a sensitizer capable, upon absorption of radiation, of producing products capable of initiating the depolymerization of said polymer.

16. A process of producing an image by imagewise depolymerization comprising imagewise exposing to radiation a coating comprising a polymer of an aromatic 1,2-dialdehyde, said polymer having hydroxyl or polystyrene endcaps.

21. A process of producing an image by imagewise depolymerization comprising imagewise exposing a coating comprising a polymer of an aromatic 1,2-dialdehyde, said polymer having hydroxyl or polystyrene endcaps and a sensitizer capable, upon absorption of radiation, of yielding an acidic product, and heating said composition to about 90° C to about 150° C.

25. A process of obtaining an image by depolymerization comprising exposing to electromagnetic radiation a photographic element comprising a polymer of an aromatic 1,2-dialdehyde, said polymer having hydroxyl or polystyrene endcaps and a sensitizer which, upon exposure, gives acidic products, contacting said element with a developer sheet comprising a support and a heat labile ammonia or amine-releasing compound and heating to a temperature of about 90° to about 150° C.

B 465,202
ISOMERIZING CIS-CAROTENOIDS TO ALL-TRANS-CAROTENOIDS

Joseph Donald Surmatis, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 392,597, Aug. 29, 1973, abandoned. This application Apr. 29, 1974, Ser. No. 465,202

Int. Cl.^{2} C07C *45/00*

U.S. Cl. 260—598 **8 Claims**

References Cited

UNITED STATES PATENTS

3,441,623	4/1969	Surmatis	260/666

OTHER PUBLICATIONS

Eliel, Stereochemistry of Carbon Compounds, (1962), pp. 341–342.

1. A process for converting a cis-isomer of a solid carotenoid to an all-trans-isomer of the carotenoid, comprising: immersing the cis-isomer in water and heating to a temperature of from about 50°C. to about 120°C.

B 470,576
NOVEL OIL AND WATER REPELLENT COMPOSITION

Kazusuke Kirimoto, and Takao Hayashi, both of Yokohama, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 291,335, Sept. 22, 1972, abandoned. This application May 16, 1974, Ser. No. 470,576

Int. Cl.^{2} C08F *214/18, 216/18, 216/20*

U.S. Cl. 260—63 UY **2 Claims**

References Cited

UNITED STATES PATENTS

2,991,277	7/1961	Schildknecht	260/86.1
3,025,279	3/1962	Barr	260/86.1
3,306,879	2/1967	Pattison	260/77.5
3,341,497	9/1967	Sherman et al.	260/72
3,403,122	9/1968	Sherman et al.	260/29.6
3,532,659	10/1970	Hager et al.	260/29.6
3,546,187	12/1970	Tandy	260/80.76
3,775,386	11/1973	Citron	260/80.3 E

1. An oil- and water-repellent composition, which comprises: a copolymer containing at least 25 weight percent, based on the total weight of monomers, of a fluoroalkyl monomer ester having the formula:

$R_fR'OCOCR^2 = CH_2$

wherein R_f represents a straight or branched chain perfluoroalkyl group containing $C_{3\text{-}15}$ carbon atoms; R′ represents a straight or branched chain alkylene group containing $C_{1\text{-}10}$ carbon atoms; and R² represents a hydrogen atom or a methyl group,

$CF_3(CF_2)_7SO_2N(C_3H_7)(CH_2)_2OCOCH = CH_2$,
$CF_3(CF_2)_7SO_2N(CH_3)(CH_2)_2OCOC(CH_3) = CH_2$,
$(CF_3)_2CF(CF_2)_6CH_2CH(OH)CH_2OCOCH = CH_2$,
$(CF_3)_2CF(CF_2)_6CH_2CH(OCOCH_2)OCOC(CH_3) = CH_2$,
$CF_2ClCF_3CF(CF_2)_7CONHCOOCH = CH_2$,
$H(CF_2)_{10}CH_2OCOCH = CH_2$, or
$CF_2Cl(CF_2)_{10}CH_2OCOC(CH_3) = CH_2$; and from 5 to 50 weight percent, based on the total weight of monomers, of an alkyl vinyl ether selected from the group consisting of chloromethylvinyl ether, bromomethylvinyl ether, 2-chloroethylvinyl ether and chloropropylvinyl ether.

B 471,836
PERFLUOROALKYL ISOXAZOLES

Aime Cambon; Francois Jeanneaux, and Colette Massyn, all of Nice, France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed May 21, 1974, Ser. No. 471,836

Claims priority, application France, May 22, 1973, 73.18486

Int. Cl.^{2} C07D *261/08*

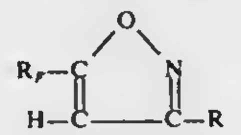
U.S. Cl. 260—307 H **1 Claim**

References Cited

OTHER PUBLICATIONS

Quilico, A. — "Chemistry of Heterocyclic Compounds" Vol. 17 (1962) Wiley Press — pp. 6–7, 105.

1. A perfluoroalkylated isoxazole having the formula:



wherein R_F is $C_3 - C_{13}$ perfluoroalkyl and R is the same as R_F or a different $C_3 - C_{13}$ perfluoroalkyl or $C_1 - C_7$ alkyl or phenyl or phenyl substituted by a $C_1 - C_7$ alkyl.

B 474,747
PROCESS AND POLYVINYL CHLORIDE INTERPOLYMER COMPOSITION FOR COATING A MATERIAL AND THE PRODUCT THEREFROM

Joseph A. Aurichio, Bronx, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed May 30, 1974, Ser. No. 474,747

Int. Cl.^{2} C08F *259/04*

U.S. Cl. 428—515 **20 Claims**

References Cited

UNITED STATES PATENTS

3,504,053	3/1970	Williams	260/884
3,551,372	12/1970	Bader et al.	260/28.5
3,764,638	10/1973	Hwa et al.	260/884 X

1. A process for coating a material to confer wear resistance thereto comprising applying to said material an effective amount of a coating composition which comprises an interpolymer formed by polymerizing an acrylate in the presence of a vinyl chloride containing polymer, formed by suspension polymerization, said interpolymer containing from about 50 % to 95%, by weight, vinyl chloride polymer and about 5% to 50%, by weight, of an acrylate, said vinyl chloride containing polymer having a particle size of from about 5 to about 150 microns.

B 476,372
TOTAL STEROID SYNTHESIS EMPLOYING SUBSTITUTED ISOXAZOLE DERIVATIVES

Gabriel Saucy, Essex Fells, and John William Scott, Montclair, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 298,036, Oct. 16, 1972, Pat. No. 3,838,163, which is a division of Ser. No. 778,314, Nov. 28, 1968, Pat. No. 3,700,661. This application June 5, 1974, Ser. No. 476,372

Int. Cl.^{2} C07D *317/26*

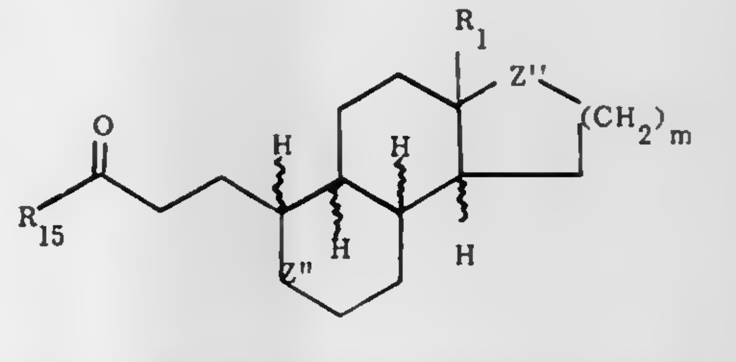
U.S. Cl. 260—340.9 **6 Claims**

References Cited

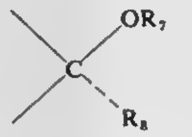
UNITED STATES PATENTS

3,591,606	7/1971	Warnant et al.	260/340.9
3,591,607	7/1971	Furst et al.	260/340.9 X

1. A compound of the formula

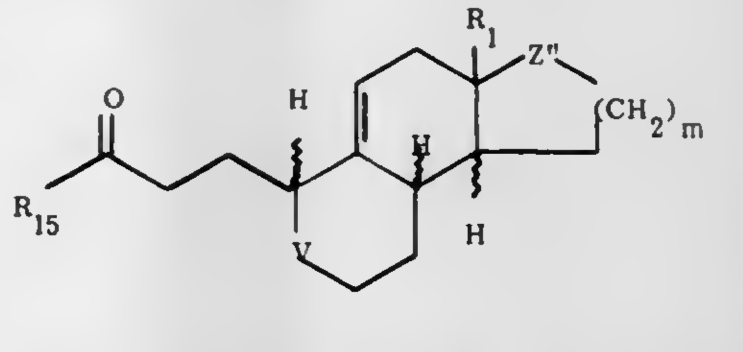


wherein Z″ is ketalized oxomethylene or a group of the formula

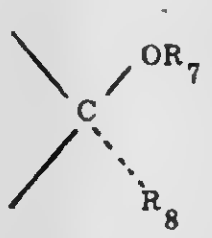


R_1 is a primary alkyl group from 1 to 5 carbons;
m is an integer having a value of 1 or 2; R_{15} is lower alkyl or hydrogen;
R_7 is hydrogen, lower alkyl, lower alkoxy-lower alkyl, phenyl-lower alkyl, tetrahydropyranyl or lower acyl derived from a hydrocarbyl monocarboxylic acid; and R_8 is hydrogen, lower alkyl, lower alkenyl or lower alkynyl.

3. A compound of the formula



wherein Z″ is ketalized oxomethylene or a group of the formula



m is an integer having a value of 1 or 2;
R_1 is a primary alkyl group from 1 to 5 carbons;
R_{15} is lower alkyl or hydrogen; V is ketalized oxomethylene;
R_7 is hydrogen, lower alkyl, lower alkoxy-lower alkyl, phenyl-lower alkyl, tetrahydropyranyl or lower acyl derived from a hydrocarbyl monocarboxylic acid;
and R_8 is hydrogen, lower alkyl, lower alkenyl or lower alkynyl.

B 480,625

7-METHYL-1-ISOPROPYL-4-PHENYL-5,6,7,8-TETRAHYDRO-2(1H)-QUINAZOLINONE

William G. Salmond, Mount Arlington, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation of Ser. No. 160,960, July 8, 1971, abandoned. This application June 19, 1974, Ser. No. 480,625

Int. Cl.² C07D *239/82*

U.S. Cl. 260—251 A **1 Claim**

References Cited

UNITED STATES PATENTS

3,563,990 2/1971 Hardtmann 260/251

FOREIGN PATENTS OR APPLICATIONS

2,232,919 2/1973 Germany
2,254,325 7/1973 Germany

1. The compound which is 7-methyl-1-isopropyl-4-phenyl-5,6,7,8-tetrahydro-2(1H)-quinazolinone.

B 482,709

STEREOSPECIFIC TOTAL STEROIDAL SYNTHESIS VIA SUBSTITUTED C/D-TRANS INDANONES

Zoltan George Hajos, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 765,023, Oct. 4, 1968, Pat. No. 3,897,460. This application June 24, 1974, Ser. No. 482,709

Int. Cl.² C07E *119/00*

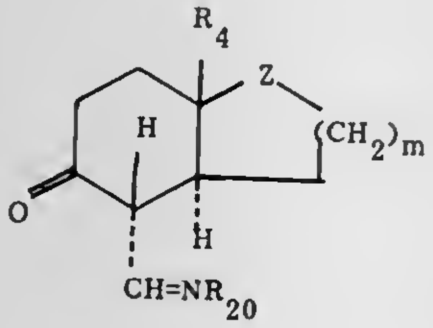
U.S. Cl. 260—240 G **1 Claim**

References Cited

UNITED STATES PATENTS

3,321,511 5/1967 Los 260/488

1. A compound of the formula



wherein R_4 is hydrogen or lower alkyl; Z is carbonyl, lower alkylenedioxy or $CH(OR_2)$; m is an integer having the value of 1 or 2; R_2 is hydrogen, lower alkyl, phenyl-lower alkyl, tetrahydropyranyl, lower alkanoyl, benzoyl, nitrobenzoyl, carboxy-lower alkanoyl, carboxy-benzoyl, trifluoroacetyl, or camphorsulfonyl and R_{20} is lower alkyl, phenyl and phenyl having one or more substituents selected from the group consisting of lower alkyl, lower alkoxy, amino, halogen and hydrogen
its optical enantiomer and the racemate thereof.

B 492,039

LACTONES OF THE BENZAZAXANTHENE SERIES AND DYE-FORMING COMPONENTS FOR DUPLICATION PROCESSES

Ernst Schefczik, Ludwigshafen, and Hellmut Kast, Bobenheim-Roxheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed July 26, 1974, Ser. No. 492,039

Int. Cl.² C07D *217/24*

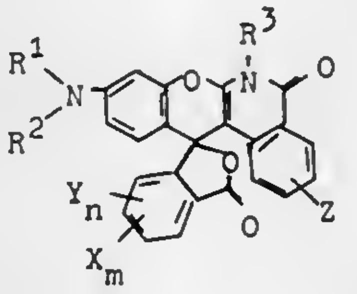
U.S. Cl. 260—287 C **5 Claims**

References Cited

UNITED STATES PATENTS

3,787,325 1/1974 Hoover .... 260/287 CF

1. A lactone of the benzazaxanthene series of the formula:



in which
R^1 is hydrogen or alkyl of one to three carbon atoms;
R^2 is phenyl or phenyl bearing alkyl of one to three carbon atoms, chloro or bromo as a substituent;
R^2 is hydrogen, phenyl, alkyl of one to six carbon atoms, phenyl-substituted alkyl of one to six atoms in the alkyl, phenyl bearing alkyl of one to three carbon atoms as a substituent, or phenyl bearing chloro as a substituent;
X is hydrogen, chloro, bromo or alkyl of one to three carbon atoms;
Y is hydrogen, chloro, bromo or alkyl of one to three carbon atoms;
Z is hydrogen, chloro, bromo, alkyl of one to four carbon atoms or phenyl;
m is the integer 1 to 2; and
n is the integer 1 to 2.

B 497,584

METHOD FOR APPLYING CLOSURE STRIPS TO PLASTIC FILM

H. Keith Howard, Ulysses, Kans., assignor to Uly-Pak, Inc., Ulysses, Kans.

Division of Ser. No. 279,905, Aug. 11, 1972, Pat. No. 3,846,209. This application Aug. 15, 1974, Ser. No. 497,584

Int. Cl.² A41H *37/00;* **A44B** *19/00*

U.S. Cl. 156—66 **23 Claims**

References Cited

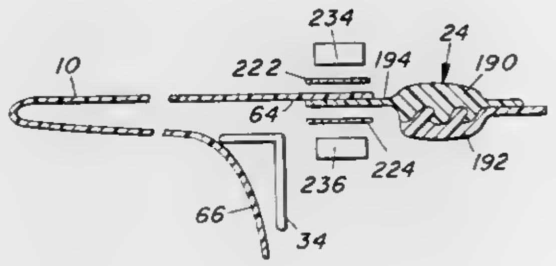
UNITED STATES PATENTS

2,878,849 3/1959 Lingenfelter et al. 156/202
3,202,559 8/1965 Laguerre 156/66
3,839,128 10/1974 Arai 156/66

FOREIGN PATENTS OR APPLICATIONS

1,186,733 4/1970 United Kingdom 156/66

1. A method of continuously sealing the longitudinal edges of a strip of heat-weldable material to the corresponding longitudinal edges of two contiguous plies of heat-weldable material comprising the steps of
aligning said two plies of material in a generally horizontal plane to form an upper ply and a lower ply, the edge of said lower ply extending beyond the edge of said upper ply;
drawing said plies continuously along a sealing path;
aligning the edge of only a first one of said plies with a first heat sealing unit;
vertically aligning a first edge of said strip with the edge of said first ply;
continuously feeding said strip and first ply through said first heat sealing unit while guiding the second of said plies away from said first ply to bypass said first heat sealing unit;
heat-welding said first edge of said strip to the edge of said first ply in said heat sealing unit;



guiding said two plies and said strip along said sealing path from said first heat sealing unit to a second heat sealing unit;
aligning the edge of the second of said plies with said second heat sealing unit;
vertically aligning the second edge of said strip with the edge of said second ply;
continuously feeding said strip and said second ply through said second heat sealing unit; and
heat-welding said second edge of said strip to the edge of said second ply, whereby the longitudinal edges of said strip are sealed to the corresponding edges of said plies.

B 497,780

PROCESS AND COMPOSITION FOR WATER- AND OIL-ROOFING TEXTILES

Walter L. Vaughn, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 242,747, April 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 10,008, Feb. 9, 1970, abandoned. This application Aug. 15, 1974, Ser. No. 497,780

Int. Cl.² C08K *5/02*

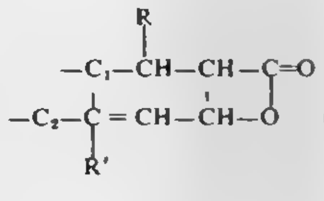
U.S. Cl. 260—33.8 UA **6 Claims**

References Cited

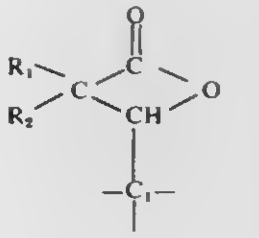
UNITED STATES PATENTS

2,803,615 8/1957 Ahlbrecht et al. .... 260/79.3 MU X
3,147,066 9/1964 Brown et al. .... 8/115.5 X
3,378,609 4/1968 Fasick et al. 260/890
3,523,930 8/1970 Maloney 260/80.8

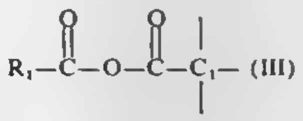
1. A composition for improving the water- and/or oil-repellent properties of textiles which comprises an inert anhydrous solvent containing from about 0.1 to about 10 weight percent of a polymeric fluorocarbon finishing agent, and from about 0.3 to about 10 weight percent of one or more polyalkylene copolymer extenders of the formulae



(I),



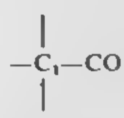
(II),



$$R_1—\overset{\overset{O}{\|}}{C}—O—\overset{\overset{O}{\|}}{C}—\underset{|}{\overset{|}{C_1}}—$$

(III)

or



$$—\underset{|}{\overset{|}{C_1}}—COX$$

(IV).

wherein C_1 and C_2 are, independently, carbon atoms of the polyalkylene chain represented by $—CH_2—CH_2—_n$; R and R' are, independently, hydrogen, an alkyl group of up to about 20 carbon atoms, phenyl, —COOH, or a segment of the polyalkylene chain; R_1 and R_2 are, independently, alkyl, aryl, aralkyl or alkaryl groups of up to about 20 carbon atoms, and X is a halogen, said polymeric extender having a molecular weight of from about 800 to about 8000.

B 501,128

PREPARATION OF 2,3,6-TRI-LOWER ALKYL PHENOLS

Pius Anton Wehrli, Verona, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 260,024, June 2, 1972, Pat. No. 3,857,892, which is a division of Ser. No. 805,365, March 7, 1969, Pat. No. 3,692,839. This application Aug. 28, 1974, Ser. No. 501,128

Int. Cl.² C07C *39/06*

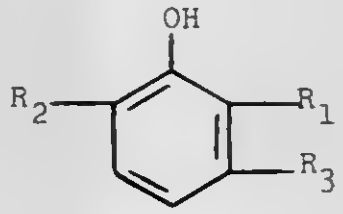
U.S. Cl. 260—621 H **3 Claims**

References Cited

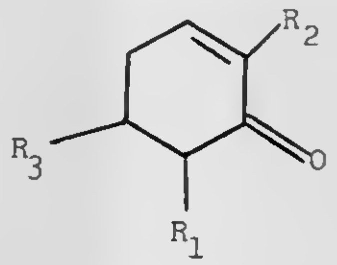
UNITED STATES PATENTS

2,503,641 4/1950 Taylor .... 260/621 H
2,640,084 5/1953 Chitwood et al. .... 260/621 H
2,708,208 5/1955 Furman .... 260/621 H

1. A process of producing a hydroxy compound of the formula:



wherein R_1, R_2 and R_3 are lower alkyl;
comprising treating a compound of the formula:



wherein R_1, R_2 and R_3 are as above;
with a dehydrogenating agent selected from the group consisting of dichlorodicyanoquinone, mercuric acetate, and palladium on carbon, said treatment being carried out in the presence or absence of an inert organic solvent and at a temperature of from about 25°C. to about 300°C.

B 503,345
2-AMINO-1,4-DIHYDROPYRIDINE DERIVATIVES

Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 455,304, March 27, 1974, Pat. No. 3,857,849, which is a division of Ser. No. 336,639, Feb. 28, 1973, Pat. No. 3,867,393. This application Sept. 5, 1974, Ser. No. 503,345

Claims priority, application Germany, Mar. 6, 1972, 2210674

Int. Cl.² C07D *239/26*

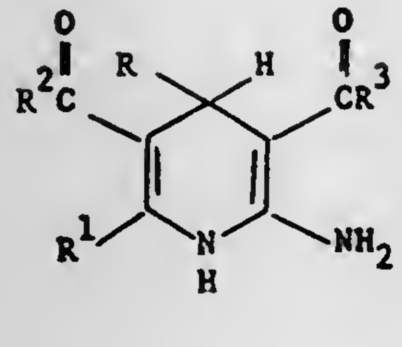
U.S. Cl. 260—256.4 Q **5 Claims**

References Cited

UNITED STATES PATENTS

2,359,329	10/1944	Phillips et al.	260/287 CE

1. A compound of the formula:



wherein

R is quinolyl, isoquinolyl, or pyrimidyl unsubstituted or substituted by one or two members selected from the group consisting of lower alkyl, lower alkoxy and halogeno;

R^1, when taken independently, is hydrogen, lower alkyl, phenyl or pyridyl;

R^2, when taken independently, is lower alkyl, lower alkoxy, lower alkoxy(lower alkoxy), lower alkenyloxy, lower alkynyloxy, amino, lower alkylamino or di(lower alkyl)-amino,

R^1 and R^2 when taken together are alkylene of 2 to 4 carbon atoms; and

R^3 is lower alkyl, lower alkoxy, lower alkoxy(lower alkoxy), lower alkenyloxy, lower alkynyloxy, amino, lower alkylamino or di(lower alkyl)amino.

B 504,056
COATING FOR X-RAY TUBE ROTARY ANODE SURFACE REMOTE FROM THE ELECTRON TARGET AREA

Frederik Magendans, and Gerhardus Albertus te Raa, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 9, 1974, Ser. No. 504,056

Claims priority, application Netherlands, Sept. 20, 1973, 7312945

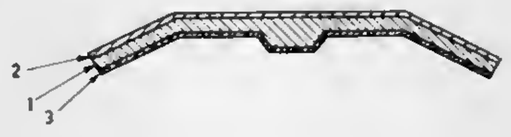
Int. Cl.² H01J *35/08*

U.S. Cl. 313—330 **10 Claims**

References Cited

UNITED STATES PATENTS

1,579,779	4/1926	Rentschler	313/330
2,090,636	8/1937	Olshevsky	313/60 X
3,761,761	9/1973	Van Oostrom	313/311
3,819,971	6/1974	Kaplan et al.	313/60



1. A rotary anode for an X-ray tube having an electron target area and a surface remote therefrom, comprising on the surface remote from the electron target area a metal oxide coating comprising at least 94 percent by weight aluminum oxide and at least 2 percent by weight titanium dioxide.

B 504,877
N-(3,4-METHYLENEDIOXY-PHENYL)UREAS

George A. Cooke, Indian Lake, Denville, and William J. Houlihan, Mountain Lakes, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 351,093, April 13, 1973, Pat. No. 3,856,960, which is a division of Ser. No. 141,010, May 6, 1971, Pat. No. 3,748,331, which is a continuation-in-part of Ser. No. 34,902, May 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 881,325, Dec. 1, 1969, abandoned. This application Sept. 11, 1974, Ser. No. 504,877

Int. Cl.² C07D *317/68*

U.S. Cl. 260—340.5 **4 Claims**

References Cited

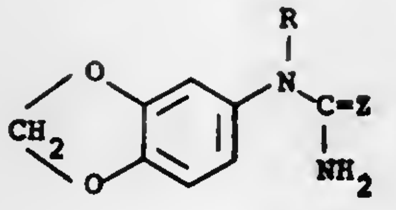
UNITED STATES PATENTS

3,496,179	2/1970	Hess	260/340.5

OTHER PUBLICATIONS

Sandoz Ltd., Chemical Abstracts, Vol. 64, 16550h to 16551a, (1966).

1. A compound of the formula:



wherein

R is alkyl of 1 to 5 carbon atoms, cycloalkyl of 3 to 6 carbon atoms or cycloalkylalkyl of 4 to 7 total carbon atoms in which the cycloalkyl is of 3 to 6 carbon atoms and the alkyl is straight chain alkyl of 1 to 3 carbon atoms, and

Z is oxygen or sulfur.

B 510,677
SOLAR CELL ASSEMBLY

Henry W. Brandhorst, Jr., Berea, Ohio, assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Office of General Counsel-Code GP, Washington, D.C.

Filed Sept. 30, 1974, Ser. No. 510,677

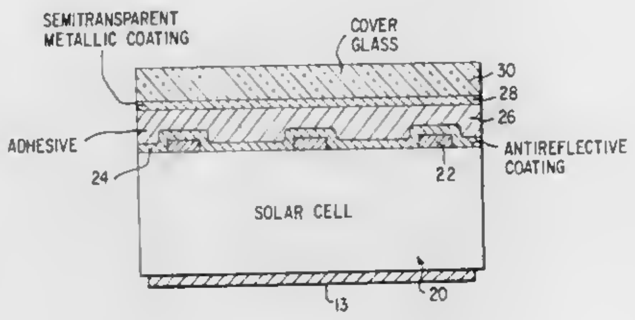
Int. Cl.² H01L *31/00, 31/04*

U.S. Cl. 136—89 **9 Claims**

References Cited

UNITED STATES PATENTS

3,313,971	4/1967	Nagy	136/89 X
3,472,698	10/1969	Mandelkorn	136/89
3,490,950	1/1970	Myer	136/89
3,532,551	10/1970	Scott	136/89
3,533,850	10/1970	Tarneja et al.	136/89
3,539,883	11/1970	Harrison	136/89 X
3,615,853	10/1971	Goldsmith et al.	136/89
3,653,970	4/1972	Iles	136/89
3,888,697	6/1975	Bogos et al.	136/89



1. A solar cell assembly comprising

a solar cell, and

a semi-transparent metallic layer of approximately 100–1000 Angstroms thickness, which covers substantially the entire upper surface of the solar cell, for controlling the radiant energy which is transmitted to the solar cell.

8. A solar cell assembly comprising

a solar cell,

a cover plate for protecting the upper surface of said solar cell,

a semi-transparent metallic layer on the surface of the said cover plate facing said protected surface of said solar cell, and

a high emissivity, low absorptivity anti-reflective layer overlying said protected surface of the solar cell, said cover plate being secured to said anti-reflective layer.

B 513,781
PROCESS FOR PRODUCING N-MONO-SUBSTITUTED FORMAMIDES

Florin Seng, Schildgen, and Kurt Ley, Odenthal-Globusch, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 10, 1974, Ser. No. 513,781

Claims priority, application Germany, Nov. 2, 1973, 2354717

Int. Cl.² C07C *103/02*

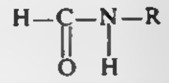
U.S. Cl. 260—561 R **7 Claims**

References Cited

UNITED STATES PATENTS

3,852,349	12/1974	Turner et al.	260/561 R

1. Process for producing an N-monosubstituted formamide having the formula:



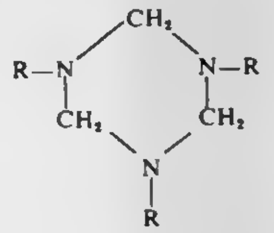
$$H-\underset{\displaystyle O}{\underset{\|}{C}}-\underset{\displaystyle H}{\underset{|}{N}}-R$$

in which R is selected from the group of linear and branched alkyl having up to 18 carbon atoms, cycloalkyl having 4 to 12 carbon atoms, phenyl and naphthyl, the foregoing substituted by nitro, cyano, aryl or alkoxy, and aralkyl wherein the aromatic portion is phenyl or naphthyl and the alkyl portion has up to 8 carbon atoms;

which comprises reacting a formaldimine having the formula:

$H_2C = N - R$

in which R is as defined above; or a hexahydrotriazine having the formula



in which R is as defined above, with hydrogen peroxide.

B 515,642
2-AMINO-1,4-DIHYDROPYRIDINE DERIVATIVES

Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 336,639, Feb. 28, 1973, Pat. No. 3,867,393. This application Oct. 17, 1974, Ser. No. 515,642

Claims priority, application Germany, Mar. 6, 1972, 2210674

Int. Cl.² C07D *213/56*

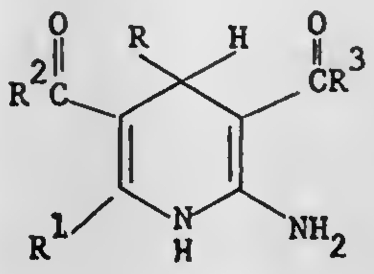
U.S. Cl. 260—295.5 A **5 Claims**

References Cited

UNITED STATES PATENTS

3,775,422	11/1973	Bossert et al.	260/294.9
3,799,934	3/1974	Meyer et al.	260/295.5 R
3,799,936	3/1974	Meyer et al.	260/295.5 R

1. A compound of the formula:



wherein

R is phenyl; substituted phenyl in which the substituents are one of three members selected from the group consisting of lower alkyl, lower alkoxy, halogeno, nitro, cyano, trifluoromethyl, azido, carbo(lower alkoxy), lower alkylsulfonyl, lower alkylsulfinyl, lower alkylthio or phenyl; or naphthyl;

R^1 is hydrogen, lower alkyl, phenyl, or pyridyl; and one or both of R^2 and R^3 are independently selected from the group consisting of amino, lower alkyl-amino or di(lower alkyl)amino and the other of R^2 and R^3 when both are not so selected is lower alkoxy, lower alkoxy(lower alkoxy), lower alkenyloxy or lower alkynyloxy.

B 519,095
REINFORCED STYRENE ACRYLONITRILE COPOLYMER HAVING IMPROVED TEMPERATURE RESISTANT PROPERTIES

Edward J. McInerney; John C. Rieber, and Douglas P. Thomas, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Oct. 30, 1974, Ser. No. 519,095

Int. Cl.² C08K *7/14*

U.S. Cl. 260—42.18 **7 Claims**

References Cited

UNITED STATES PATENTS

2,807,603	9/1957	Parks et al.	260/42.49
3,075,944	1/1963	Wick	260/41
3,148,234	9/1964	Boyer	264/211
3,287,288	11/1966	Reiling	260/4
3,644,577	2/1972	Lee et al.	260/876 R
3,671,487	6/1972	Abolins	260/40 R
3,682,859	8/1972	Taylor	260/42.18

OTHER PUBLICATIONS

Hattori, Plastics Design & Processing, "The Effects of Fiber Glass Reinforcement on the Flammability Properties of Thermoplastics," Aug. 1967.

1. A composition comprising:
about 50 to about 80 weight percent of a styrene-acrylonitrile copolymer, reinforcing glass fibers in the range of about 8 to about 30 weight percent, a brominated flame-retarding additive, and polytetrafluorethylene in an amount sufficient to prevent dripping of the composition at flaming combustion conditions, said brominated flame-retarding additive being one of a brominated biphenyl or a brominated biphenyl oxide.

B 519,446
AQUEOUS CRYSTALLIZATION OF XYLITOL

Gerald Myer Jaffe, Verona, and Peter Hans Weinert, Wayne, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 296,404, Oct. 10, 1972, abandoned. This application Oct. 31, 1974, Ser. No. 519,446

Int. Cl.² C07C *27/26, 29/24*

U.S. Cl. 260—637 R **3 Claims**

References Cited

UNITED STATES PATENTS

2,749,371	6/1956	Kasehagen	260/635 C
2,752,270	6/1956	Specht	260/635 C
2,917,390	12/1959	Apel et al.	260/635 C
2,989,569	6/1961	Apel et al.	260/635 C
3,558,725	1/1971	Kohno et al.	260/635 C
3,586,537	6/1971	Steiner et al.	260/635 C
3,627,636	12/1971	Jaffe et al.	260/635 C
3,784,408	1/1974	Jaffe et al.	260/635 C

OTHER PUBLICATIONS

Vogel, "Practical Organic Chemistry," 3rd ed. (1957), pp. 122 to 132.

1. In a process for obtaining crystalline xylitol substantially free of xylose from a mixture consisting essentially of about 30% xylitol, about 0.3% to about 0.5% xylose and water; said mixture being obtained by hydrogenating an aqueous xylose solution;
wherein the improvement comprises:

a. concentrating said mixture by heating at a temperature of about 30°C. to about 50°C. under reduced pressure to provide an aqueous solution consisting essentially of about 60% to about 75% xylitol, from about 1% to less than about 5% xylose, and water;
b. fractionally crystallizing xylitol from said aqueous solution by cooling to a temperature below 15°C.;
c. separating the crystallized xylitol from said solution;
d. recovering the mother liquor from said crystallization and combining said mother liquor with a subsequent aqueous hydrogenated xylose solution batch; and
e. recycling the combined solutions of step (d) through steps (a) to (d) to provide crystalline xylitol containing no more than 0.05% xylose.

B 526,447
METHOD OF PREPARING METHYLCHLOROMETHYLTETRACHLOROBENZENES AND DI-(CHLOROMETHYL)-TETRACHLOROBENZENES

Georg Blumenfeld, St. Augustin, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Nov. 22, 1974, Ser. No. 526,447

Claims priority, application Germany, Nov. 27, 1973, 2358949

Int. Cl.² B01J *1/10*

U.S. Cl. 204—163 R **10 Claims**

References Cited

FOREIGN PATENTS OR APPLICATIONS

1,568,607	3/1970	Germany	204/163

1. A process for preparing a chloromethyltetrachlorobenzene which comprises the steps of:

A. Contacting a xylene in a chlorine resistant solvent with greater than 1 and up to 2 weight percent of ferric chloride, based on the weight of said xylene, at a temperature of 20° to 70°C in the the absence of light in a vessel having a vapor space over the level of the xylene solution;
B. Introducing into said vapor space gaseous chlorine and passing the same over said solution while strongly agitating the solution, said chlorine being introduced such that an excess pressure of 0.01 to 1 atmospheres exist over said solution;
C. Maintaining said solution at said temperature of 20° to 70°C for a period of time of at least 0.5 hours.
D. Thereafter directing energy-rich light at the vapor space over said solution while adding chlorine to said vapor space and maintaining the excess pressure over said solution at 0.01 to 1 atmospheres while maintaining the solution at a temperature of 50° to 80°C for a period of time of at least 0.5 hours and while continuing said agitation; and
E. Separating and recovering chloromethyltetrachlorobenzene.

B 528,962
CROSSLINKER-PLATINUM CATALYST-INHIBITOR AND METHOD OF PREPARATION THEREOF

Randolph G. Nieml, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 2, 1974, Ser. No. 528,962

Int. Cl.² C08G *77/04*

U.S. Cl. 260—46.5 UA **20 Claims**

References Cited

UNITED STATES PATENTS

3,445,420	5/1969	Kookootsedes et al.	260/37
3,715,334	2/1973	Karstedt	260/46.5 UA

1. A method of preparing a crosslinker-platinum catalyst-inhibitor composition comprising mixing a siloxane having an average of at least three silicon-bonded hydrogen atoms per molecule, an acetylenic alcohol and a platinum catalyst to form a mixture, heating the mixture in a closed system for 10 to 30 hours at a temperature of from 50°C. to 90°C. and thereafter removing unreacted acetylenic alcohol by applying a reduced pressure of 700 to 750 millimeters of mercury for at least 10 hours at a temperature of from 20°C. to 30°C., said siloxane having an average of at least three silicon-bonded hydrogen atoms per molecule, there being in addition an average of up to two monovalent organic radicals per silicon atom selected from the group consisting of monovalent hydrocarbon radicals free of aliphatic unsaturation and monovalent fluorinated hydrocarbon radicals free of aliphatic unsaturation, the remaining valences of the silicon atoms being satisfied by divalent radicals selected from the group consisting of divalent oxygen atoms, divalent hydrocarbon radicals free of aliphatic unsaturation, divalent hydrocarbon ether radicals free of aliphatic unsaturation and divalent fluorinated arylene radicals wherein at least one divalent radical is a divalent oxygen atom and said divalent radicals linking silicon atoms, said siloxane being liquid at a temperature of 50°C. to 90°C. in said mixture, said acetylenic alcohol having a vapor pressure sufficient to be removed from the mixture after the heating step at the temperature and pressure specified for the removal of unreacted acetylenic alcohol.

B 528,966
OLEFINIC SILOXANES AS PLATINUM INHIBITORS

Chi-Long Lee, and Ollie W. Marko, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 2, 1974, Ser. No. 528,966

Int. Cl.² C08G *77/04*

U.S. Cl. 260—46.5 UA **26 Claims**

References Cited

UNITED STATES PATENTS

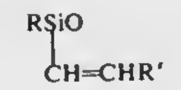
3,445,420	5/1969	Kookootsedes et al.	260/37
3,697,473	10/1972	Polmanteer et al.	260/46.5 UA

1. A polyorganosiloxane consisting essentially of from 3 to 10 siloxane units in which

a. at least one siloxane unit is selected from the group consisting of

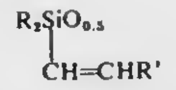
$$RHSiO \text{ and } R_2HSiO_{0.5} \text{ and}$$

b. at least one siloxane unit is selected from the group consisting of



$$\begin{array}{l} RSiO \\ \quad | \\ \quad CH{=}CHR' \end{array}$$

and



$$\begin{array}{l} R_2SiO_{0.5} \\ \quad | \\ \quad CH{=}CHR' \end{array}$$

where the sum of siloxane units in (a) and (b) is equal to at least three siloxane units,

c. any remaining siloxane units being selected from the group consisting of

$$R_3SiO_{0.5}, SiO_2 \text{ and } RSiO_{1.5}$$

where each siloxane unit of (c) does not exceed three siloxane units,

where R is a monovalent radical selected from the group consisting of hydrocarbon radicals and perfluoroalkylethylene radicals, both having no more than six carbon atoms and R' is a monovalent hydrocarbon radical having a secondary or tertiary hydroxy substitution and having no more than ten carbon atoms.

B 530,174
FLAME RESISTANT POLYSTYRENE

Louis A. Mango, III, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 6, 1974, Ser. No. 530,174

Int. Cl.² C08F *8/40, 8/24*

U.S. Cl. 260—93.5 A **7 Claims**

References Cited

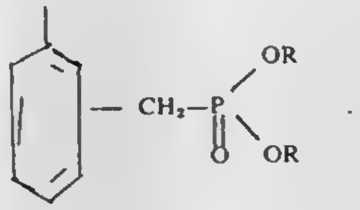
UNITED STATES PATENTS

3,008,939	11/1961	Schroeder et al.	260/88.2 S
3,220,989	11/1965	Rolih et al.	260/88.2 S
3,311,602	3/1967	Roley	260/93.5 A

FOREIGN PATENTS OR APPLICATIONS

865,331	4/1961	United Kingdom	450/611

1. A copolymer of styrene and phosphorylated styrene, said copolymer containing phenyl groups and being represented by the formula



where R is an alkyl group having 1–8 carbon atoms of the group consisting of alkyl and at least about 5 wt. pct. phosphorus, said phosphorus being bonded to the phenyl group by an intervening methylene group and said polystyrene copolymer being substantially non-crosslinked.

B 530,925
OXIDATION OF UNSATURATED AMINES

John S. McConaghy, Jr., St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 9, 1974, Ser. No. 530,925

Int. Cl.² C07C *120/00*

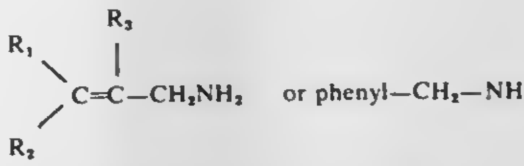
U.S. Cl. 260—465.9 **12 Claims**

References Cited

UNITED STATES PATENTS

2,375,015	5/1945	Marple et al.	260/465.9
2,375,016	5/1945	Marple et al.	260/465.9
2,471,927	5/1949	Bortnick et al.	260/465.9
2,849,478	8/1958	Zubay et al.	260/465.9 X
3,719,701	3/1973	Bach	260/465.9

1. A process for the oxidation of an unsaturated amine having the formula



$$\begin{array}{l} R_1 \quad\quad R_3 \\ \quad \diagdown \quad\; | \\ \quad\;\; C{=}C{-}CH_2NH_2 \quad \text{or phenyl}{-}CH_2{-}NH_2 \\ \quad \diagup \\ R_2 \end{array}$$

wherein R_1, R_2 and R_3 represent hydrogen or a C_1 to C_4 alkyl group, to the corresponding unsaturated nitrile which comprises reacting the amine with molecular oxygen in the presence of a solution in a nitrogen base which is not oxidized under the reaction conditions of;

a. a cuprous halide and
b. an alcoholic compound having the formula R—OH

wherein R is an alkyl, aryl, alkaryl or aralkyl radical, in a halide to alcohol compound ratio of from 10:1 to 1:100, the reaction taking place at atmospheric or superatmospheric pressures and at a temperature of 0° to 200°C.

B 532,005

(1-ALKYL-5-NITRO-IMIDAZOLYL-2-ALKYL)-HETEROARYL COMPOUNDS AND PROCESS FOR THEIR MANUFACTURE

Erhardt Winkelmann, Kelkheim, Taunus, and Wolfgang Raether, Dreieichenhain, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 12, 1974, Ser. No. 532,005

Claims priority, application Germany, Dec. 14, 1973, 2362171

Int. Cl.² C07D *257/04*

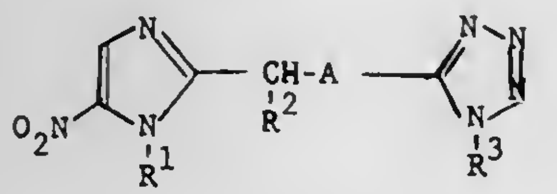
U.S. Cl. 260—308 D **4 Claims**

References Cited

UNITED STATES PATENTS

3,574,195	4/1971	Hajeck	260/308 D X

1. A (1-alkyl-5-nitro-imidazolyl-2-alkyl)-heteroaryl sulfide, sulfoxide or sulfone of the formula



in which R¹ stands for methyl or ethyl, R² stands for hydrogen or methyl, R³ stands for hydrogen, alkyl of 1 to 4 carbon atoms, phenyl, tolyl or chlorophenyl, and A stands for sulfur (—S—), sulfoxide (—SO—) or sulfone (—SO₂—).

B 535,437

4-PHENYL-1-HYDROXYALKYLPYRAZOLES

Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Dec. 23, 1974, Ser. No. 535,437

Int. Cl.² C07D *231/12;* **A61K** *31/415*

U.S. Cl. 260—310 R **10 Claims**

References Cited

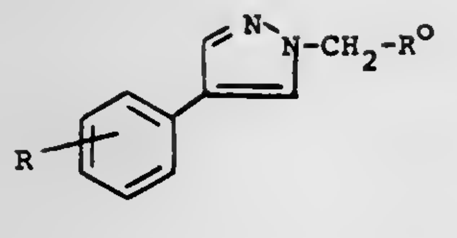
UNITED STATES PATENTS

2,883,392	4/1959	Karmas et al.	260/310 R
3,043,819	7/1962	Lynn	260/310 R

FOREIGN PATENTS OR APPLICATIONS

1,364,310	7/1963	France	260/310 R

1. A compound of the formula:



wherein

R° is hydroxyalkyl of 1 to 5 carbon atoms, and

R is hydrogen, fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or trifluoromethyl,

or a pharmaceutically acceptable acid addition salt thereof.

B 542,226

ANTIBIOTIC U-47,929 AND ITS PREPARATION

Alexander D. Argoudelis; Fritz Reusser, and Howard A. Whaley, all of Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 20, 1975, Ser. No. 542,226

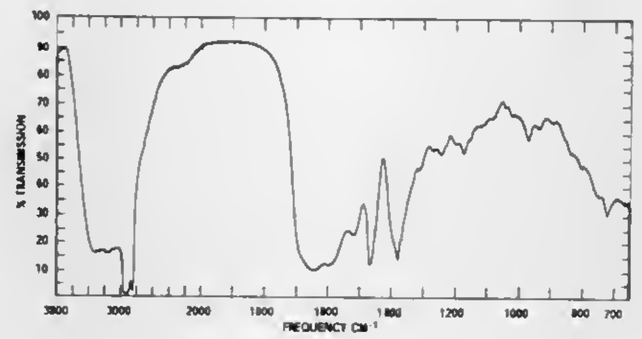
Int. Cl.² A61K *35/70*

U.S. Cl. 424—118 **8 Claims**

References Cited

UNITED STATES PATENTS

3,043,830	7/1962	Haskell et al.	424/118
3,454,696	7/1969	Weinstein et al.	424/118
3,499,078	3/1970	Luedemann et al.	424/118



1. Antibiotic U-47,929, which is active against *S. aureus* and which in its essentially pure form:

a. has the molecular formula $C_{12}H_{24}N_6O_3$;

b. has the following elemental analysis: C, 50.00; H, 7.69; H, 26.92; O, 15.38;

c. has a specific rotation of $[\alpha]_D^{25} = +39°$ (c, 1, water);

d. is soluble in water and lower alcohols, for example, methanol and ethanol; is relatively insoluble in ketones, halogenated or saturated hydrocarbon solvents, ethyl acetate, or other ester-type solvents;

e. has a characteristic infrared adsorption spectrum when dissolved in a mineral oil mull as shown in FIG. 1 of the drawings;

f. has a characteristic NMR spectrum as shown in FIG. 2 of the drawings, or acid addition salts thereof.

2. A process for preparing antibiotic U-47,929, which comprises cultivating *Streptomyces ficellus* Dietz, sp. n., having the identifying characteristics of NRRL 8067, and mutants thereof, in an aqueous nutrient medium under aerobic conditions until substantial antibiotic activity is imparted to said medium.

B 544,476

ELEVATED HUMAN LIPIDS CONTROL

Joseph Diago Pinto, Hollywood Hills, and Raj Kumar, Pembroke Pines, both of Fla., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 27, 1975, Ser. No. 544,476

Int. Cl.² G01N *33/16*

U.S. Cl. 252—408 R **5 Claims**

References Cited

UNITED STATES PATENTS

3,736,263	5/1973	Parekh et al.	252/408
3,891,573	6/1975	Stary et al.	252/408

1. The method of making an all human elevated lipid control serum for use as a control in assays for lipids which comprises the steps of:

a. treating normal anticoagulant containing plasma with an ion exchange resin to effect clotting;

b. heating the supernatant plasma at 30° to 40°C. for 15 to 45 minutes to precipitate the clot;

c. dialyzing the recovered serum against polyethylene glycol to concentrate the serum; and

d. adding a 10% to 30% solution of Cohn Fraction III-2,1 in 0.1M, pH 7.0–7.4 phosphate buffer to the dialyzed serum in a proportion which provides a final product having concentrations of lipid components in an elevated range.

3. A human elevated lipid control serum for use as a control in assays for lipids prepared by the method of claim 1.

B 545,299

3,6-DIAMINO-3,4-DIHYDRO-2-PYRIDONES

Horst Meyer; Friedrich Bossert, both of Wuppertal; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 30, 1975, Ser. No. 545,299

Claims priority, application Germany, Feb. 9, 1974, 2406200

Int. Cl. C07d *213/56*

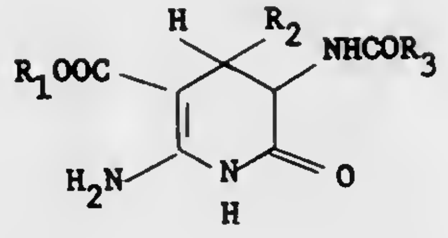
U.S. Cl. 260—295.5 A **10 Claims**

References Cited

UNITED STATES PATENTS

3,860,601	1/1975	Meyer et al.	260/295.5 R
3,862,161	1/1975	Bossert et al.	260/295.5 R

1. A 3,6-diamino-3,4-dihydro-2-pyridone of the formula



wherein

R₁ is straight or branched chain alkyl of 1 to 6 carbon atoms; straight or branched chain alkenyl of 2 to 6 carbon atoms; straight or branched chain alkoxyalkyl of 2 to 6 carbon atoms;

R₂ is straight or branched chain alkyl of 1 to 6 carbon atoms; cycloalkyl of 3 to 6 carbon atoms; phenyl unsubstituted or substituted by 1 or 2 of the same or different substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, nitro, cyano, trifluoromethyl, carb(lower alkoxy) of 1 to 4 carbon atoms in the alkoxy portion and SO_n-(lower alkyl) in which alkyl contains 1 to 4 carbon atoms and *n* is 0 or 2; naphthyl; and

R₃ is straight or branched chain alkyl of 1 to 6 carbon atoms; or phenyl unsubstituted or substituted by methyl, ethyl, methoxy, ethoxy, nitro, trifluoromethyl or chloro or bromo.

B 547,208

PENICILLINS

Gunter Schmidt, and Karl Georg Metzger, both of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 419,950, Nov. 29, 1973. This application Feb. 5, 1975, Ser. No. 547,208

Claims priority, application Germany, Dec. 8, 1972, 2260118

Int. Cl.² C07D *499/68, 499/70*

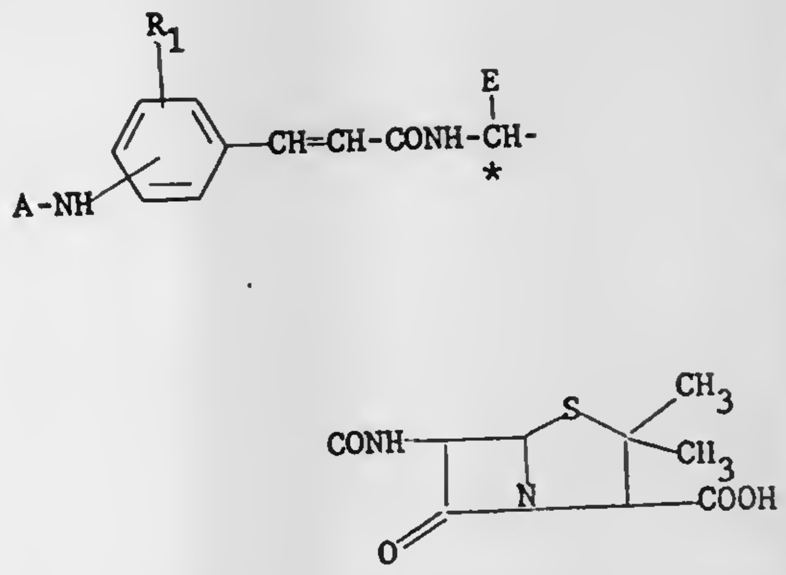
U.S. Cl. 260—239.1 **16 Claims**

References Cited

UNITED STATES PATENTS

3,268,513	8/1966	Grant et al.	260/239.1
3,433,784	3/1969	Long et al.	260/239.1

1. A compound of the formula:



or a pharmaceutically acceptable nontoxic salt thereof wherein

the carbon atom designated by * is asymmetrically substituted;

R₁ is hydrogen, halo, lower alkyl, hydroxy, nitro or A—NH—;

A is R₃CO- or R₄CS- in which

R₃ is hydrogen; lower alkyl; halo(lower alkyl); cycloalkyl of 3 to 11 carbon atoms unsubstituted or substituted by hydroxy or alkyl of 1 or 2 carbon atoms; cycloalkenyl of 3 to 11 carbon atoms; bicycloalkyl of up to 8 carbon atoms; bicycloalkenyl of up to 8 carbon atoms; aryl of 6 to 10 carbon atoms, unsubstituted or substituted by from 1 to 3 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, nitro, amino and alkylsulfonyl of 1 to 4 carbon atoms, or substituted by methylenedioxy; azidoaryl of 6 to 10 carbon atoms; azido(lower alkyl; amino; or thienyl; and

R₄ is lower alkylamino or arylamino of 6 to 10 carbon atoms; and

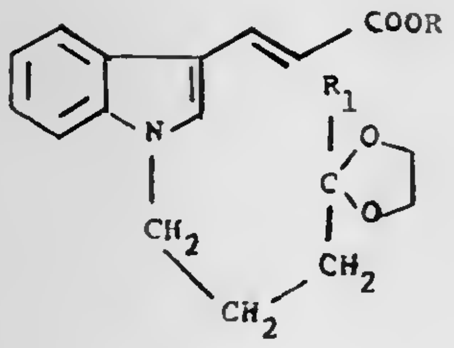
E is phenyl; phenyl substituted by hydroxy, azido, lower alkyl, lower alkoxy, lower alkylthio or chloro; or thienyl.

B 547,547
1-DIOXOLANYLPROPYL-3-INDOLEACRYLIC ACID ESTERS

Marcel K. Eberle, Madison, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Feb. 6, 1975, Ser. No. 547,547
Int. Cl.² C07D *209/18*
U.S. Cl. 424—274 **6 Claims**

1. A compound of the formula



where

R represents straight chain lower alkyl having 1 to 4 carbon atoms, and

R_1 represents hydrogen, straight chain lower alkyl having 1 to 4 carbon atoms, or unsubstituted phenyl.

6. A method of treating lipidemia which comprises administering to a mammal in need of said treatment a hypolipidemic effective amount of a compound of claim 1.

B 554,039
DETECTION OF BREAST CANCER

Norman Grosser, 1745 Cedar Ave., Apt. No. 210, Montreal, Quebec, and David Marshall Parks Thomson, 137 Wicksteed, Mount Royal, Quebec, both of Canada

Filed Feb. 28, 1975, Ser. No. 554,039
Int. Cl.² G01N *33/16*
U.S. Cl. 23—230 B **4 Claims**

References Cited
UNITED STATES PATENTS

3,594,466	7/1971	Guffroy	424/12
3,663,684	5/1972	Freedman	424/12 X
3,840,655	10/1974	Lerner	424/12
3,852,415	12/1974	Vandervoorde	424/12 X
3,867,363	2/1975	Hansen	424/12 X

OTHER PUBLICATIONS

Chemical Abstracts, 77:99494p (1972).

1. A method for detecting the presence of breast cancer in humans which comprises incubating a measured amount of a patient's blood leukocytes with aqueous basic extracts of human breast tumor, then determining the leukocytes non-adherence index by comparison to a non-specific antigen control, and concluding that breast cancer is present if the non-adherence index of the patient being tested is higher than the control non-adherence index.

B 554,655
CERAMIC ARTICLES HAVING CORDIERITE COATINGS

Francis W. Martin, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 3, 1975, Ser. No. 554,655
Int. Cl.² C03C *3/22, 12/00*
U.S. Cl. 428—428 **10 Claims**

References Cited
UNITED STATES PATENTS

3,024,303	3/1962	Smothers et al.	427/95 X
3,084,053	4/1963	Arlett et al.	106/39.6 X
3,275,493	9/1966	MacDowell	106/39.6
3,450,546	6/1969	Stong	106/39.6
3,673,049	6/1972	Giffen et al.	428/428
3,883,337	5/1975	Hengesson et al.	65/33 X

OTHER PUBLICATIONS

Karkhanavala, M. D. et al. – "The Polymorphism of Cordierite" J. Am. Cer. Soc. 36(12) pp. 389–392.

MacMillan, P. W. – *Glass–Ceramics* (1964) Academic Press New York – pp. 116–117, 134, 164–165.

1. A ceramic article having on at least a portion of the surface thereof a non-porous sintered cordierite glass-ceramic coating, wherein

a. said coating has an oxide composition consisting essentially, in mole percent, of about 22.2–26 mole percent MgO, 23.6–27.8 mole percent Al_2O_3, 44.3–52.7 mole percent SiO_2, 0.7–5.6 mole percent MO, wherein MO is one or more modifying oxides selected from the group consisting of BaO, PbO, SrO and CaO, and at least 23.6 mole percent total of (MO + MgO), said Al_2O_3 being present in an amount which exceeds the amount of said modifying oxides by about 21–23 mole percent,

b. said coating contains crystals of a structure corresponding to hexagonal cordierite as the sole crystal phase, being essentially free of residual glass and the secondary crystal phases magnesia quartz, sapphirine and celsian; and

c. said coating is provided by heating a glass powder coating having said oxide composition at a temperature in the range of about 900°–1050°C. for a time sufficient to obtain the sintering and crystallization thereof.

5. A glass-ceramic article having on at least a portion of the surface thereof a nonporous, sintered cordierite glass-ceramic coating, wherein

a. said coating has an oxide composition consisting essentially in mole percent, of about 22.2–26 mole percent MgO, 23.6–27.8 mole percent Al_2O_3, 44.3–52.7 mole percent SiO_2, 0.7–5.6 mole percent MO, wherein MO is one or more modifying oxides selected from the group consisting of BaO, PbO, SrO, and CaO, and at least 23.6 mole percent total of (MO + MgO), said Al_2O_3 being present in an amount which exceeds the amount of said modifying oxides by about 21–23 mole percent,

b. said coating contains crystals of a structure corresponding to hexagonal cordierite as the sole crystal phase, being essentially free of residual glass and the secondary crystal phases magnesia quartz, sapphirine and celsian; and

c. said coating is provided by heating a glass powder coating having said oxide composition at a temperature in the range of about 900°–1050°C. for a time sufficient to obtain the sintering and crystallization thereof.

B 554,848
3,4-DIMETHYL-5-ISOXAZOLYLSULFAMYLANILINE

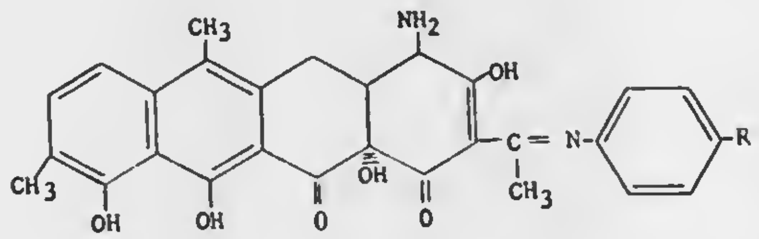
Daniel Tim-Wo Chu, Greenfield Park, and David Lyon Garmaise, Montreal, both of Canada, assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 378,305, July 11, 1973, Pat. No. 3,894,061. This application Mar. 3, 1975, Ser. No. 554,848
Int. Cl.² C07D *261/16*
U.S. Cl. 260—307 H **2 Claims**

References Cited
UNITED STATES PATENTS

3,671,539	6/1972	Saucy	260/307 H
3,689,498	9/1972	Lumgruber et al.	260/307 H

1. A compound of the formula:



wherein R is 4-dimethyl-5-isoxazolylsulfamyl or the corresponding tautomeric form or a pharmaceutically acceptable acid addition salt thereof.

B 569,125
SYNERGISTIC ANTIOXIDANT COMPOSITION COMPRISING ASCORBIC ACID AND 6-HYDROXY-2,5,7,8-TETRAMETHYLCHROMAN-2-CARBOXYLIC ACID

Winifred Cort, Little Falls, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 465,217, April 29, 1974, Pat. No. 3,803,317. This application Apr. 17, 1975, Ser. No. 569,125
Int. Cl.² A23D *5/04;* C09K *15/06;* C07D *259/00*
U.S. Cl. 252—404 **2 Claims**

References Cited
UNITED STATES PATENTS

2,511,428	6/1950	Buxton	426/228
3,313,826	4/1967	Gale	426/228
3,364,234	1/1968	Schoenewaldt	426/328
3,502,594	3/1970	Ahrens	260/398.5

FOREIGN PATENTS OR APPLICATIONS

45-29413	9/1970	Japan	426/183
949,715	2/1964	United Kingdom	260/345.5

1. A synergistic antioxidant composition consisting essentially of from about one part by weight to about 20 parts by weight of ascorbic acid per part by weight of rac. 6-hydroxy-2,5,7,8-tetramethylchroman-2-carboxylic acid.

B 572,726
TARTAR REMOVAL BY ELECTRODIALYSIS AND POTASSIUM LEVEL CONTROL IN WINE

Taro Nagasawa; Mamoru Tomita; Yoshitaka Tamura, and Teruhiko Mizota, all of Tokyo, Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1975, Ser. No. 572,726
Int. Cl.² A27D *6/00*
U.S. Cl. 426—239 **10 Claims**

References Cited
UNITED STATES PATENTS

2,754,212	7/1956	Wiseman	426/271
3,369,906	2/1968	Chen	204/180 P
3,437,491	4/1969	Peterson	426/271
3,865,960	2/1975	Wucherpfennig	426/239
3,865,961	2/1975	Wucherpfennig	426/239

1. A method of treating wine, which comprises: introducing crude wine to both the dilution and concentration chambers of an electrodialysis apparatus; operating said apparatus so that the potassium concentration of the wine in the dilution chamber falls to below 500 mg/liter and the potassium content of the wine in the concentration chamber is increased into the range 1000 to 2000 mg/liter; cooling the wine from the concentration chamber to below 10°C and adding tartaric acid crystals to said wine in order to adjust the pH into the range 2.8 to 3.2 thereby precipitating tartar; separating the tartar from the wine and admixing said wine with wine emerging from the dilution chamber of the electrodialysis apparatus in a ratio such that the potassium content of the resulting mixture is below 500 mg/liter.

B 384,654

METHOD AND MEANS FOR CONTROLLING POPULATION INVERSION AND ELECTRONICALLY SCANNING SOLID STATE LASER OUTPUT DEFLECTIONS

Robert D. Haun, Jr., Pittsburgh, and John D. Feichtner, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 1, 1973, Ser. No. 384,654

Int. Cl.² H01S *3/10, 3/094*

U.S. Cl. 331—94.5 M **12 Claims**

References Cited

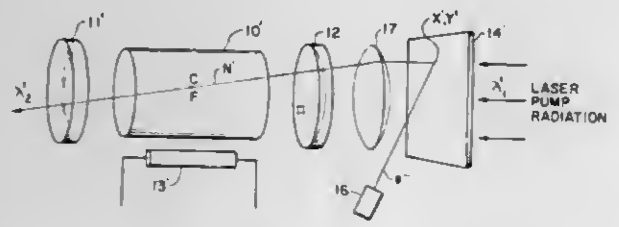
UNITED STATES PATENTS

3,178,657	4/1965	Morse	331/94.5
3,292,103	12/1966	Soules et al.	331/94.5
3,439,169	4/1969	Lynch	331/94.5
3,774,121	11/1973	Ashkin et al.	331/94.5

OTHER PUBLICATIONS

Birnbaum et al., Proceedings of the IEEE, June 1968, pp. 1096–1097.

Dienes et al., IEEE J. Quantum Electronics, Vol. 8, No. 3.



1. A method for controlling the spatial and temporal output of a laser oscillator, said method comprising:
directing a broad area pump laser beam through an end reflector of said oscillator into the laser medium to pump a substantial portion of the height and breadth of said medium for raising said laser above its oscillation threshold,
positioning a spatial and temporal modulator between said oscillator and said pump laser,
varying the transmission of the modulator to vary the transmission of the pump laser beam at selected small portions of the beam's cross section for selectively varying the cross sectional portion of said laser medium which is raised above its oscillation threshold by said pump laser beam.

B 420,472

INTEGRATED CIRCUIT STRUCTURE HAVING A PLURALITY OF SEPARABLE CIRCUITS

Theodore H. Baker; Majid Ghafghaichi; Richard C. Stevens, all of Poughkeepsie, and Daniel Tuman, Beacon, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Division of Ser. No. 364,791, May 29, 1973, Pat. No. 3,801,905, which is a division of Ser. No. 129,500, March 30, 1971. This application Nov. 30, 1973, Ser. No. 420,472

Int. Cl.² H01L *19/00*

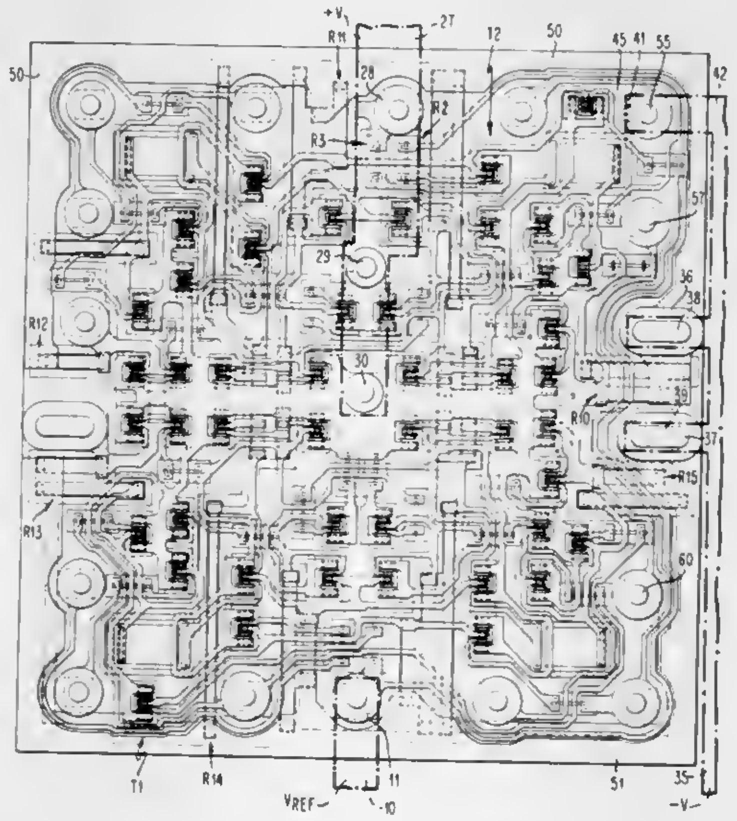
U.S. Cl. 317—101 A **4 Claims**

References Cited

UNITED STATES PATENTS

3,303,400	2/1967	Allison	317/101 A
3,539,876	11/1970	Feinberg et al.	317/101 A
3,553,830	1/1971	Jenny et al.	317/101 A
3,689,803	9/1972	Baker et al.	317/101 A

1. An integrated circuit structure comprising
a plurality of separable circuits, at least one of said separable circuits being functional and at least one of said separable circuits being defective, each of said separable circuits comprising an interconnected plurality of regions of different conductivity types, and each of said separable circuits requiring the application of two voltage levels in order to be operable,
at least one voltage supply for applying one of said voltage levels connected to all of said separable circuits by interconnections common to all of said separable circuits,
an additional voltage supply providing the other of said voltage levels,
receiving and distributing means in each of said separable circuits for receiving and distributing said other voltage level, said receiving and distributing means in each circuit being independent of each other,



connecting means connecting said additional voltage supply to said receiving and distributing means of only the functional separable circuits to thereby provide said other voltage level required in order for said functional separable circuits to be operable, and
at least one common region of one-type conductivity extending between all of said separable circuits and connected to said additional voltage supply,
said receiving and distributing means in each of said defective separable circuits not connected to said additional voltage supply being free of short-circuits to said common region, and thereby completely electrically isolated from said common region.

B 458,500

RESILIENT ELECTRIC MOTOR BEARING SEAL

Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Apr. 8, 1974, Ser. No. 458,500

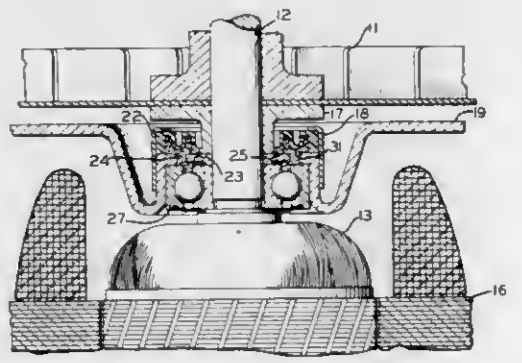
Int. Cl.² F16C *33/78;* F16J *15/32, 15/52;* H02K *5/16*

U.S. Cl. 310—90 **11 Claims**

References Cited

UNITED STATES PATENTS

1,370,803	3/1921	Fesler	308/36.1
2,783,067	2/1957	Foss	308/36.1
2,905,267	9/1959	Thompson	55/363
3,062,939	11/1962	Kiespe et al.	74/18.1
3,141,708	7/1964	Evangelista	308/36.1
3,243,617	3/1966	Cunningham	310/63
3,250,579	5/1966	Tupper et al.	308/127
3,499,654	3/1970	Lower	277/82
3,785,660	1/1974	Bush	277/134
3,788,650	1/1974	Place	277/38
3,788,653	1/1974	Sigmon	277/70
3,794,392	2/1974	Scott	308/36.1



1. A dynamoelectric machine comprising a rotating member, rotatable structure including a shaft extending axially through the rotating member, a stator and coil winding assembly having a bore for receiving the rotating member, an enclosure containing the stator and coil winding assembly, and an end shield through which the shaft extends, the dynamoelectric machine further comprising:
at least one bearing mounted to support the shaft for rotation;
a seal engaging member mounted on the shaft; and
a sealing member formed of a resilient material accommodated in a predetermined position relative to the seal engaging member and the end shield; the sealing member having a circumferentially extending wall defining an opening, the opening accommodating at least part of the rotatable structure with a radial clearance; the sealing member further having at least one sinuous in shape portion and a contact surface oriented crosswise relative to the shaft, with the contact surface effectively making mutual mating contact with the seal engaging member and with the sinuous in shape portion of the sealing member urging the contact surface thereof into effective mating contact between the contact surface of the seal and the seal engaging member even when the seal engaging member rotates in a misaligned manner.

B 466,390

ELECTRICAL SWITCH

Dann W. Denny, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed May 2, 1974, Ser. No. 466,390

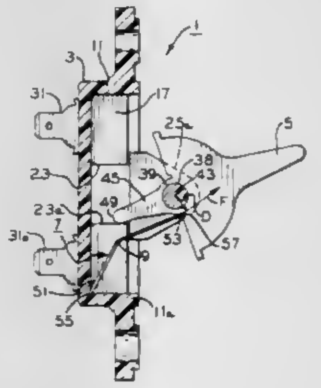
Int. Cl.² H01H *19/14*

U.S. Cl. 200—339 **15 Claims**

References Cited

UNITED STATES PATENTS

2,599,437	6/1952	Dickson	200/67 DB
3,067,301	12/1962	Yamamoto	200/67 DB
3,519,775	7/1970	Weremy	200/153 K
3,668,353	6/1972	Raab	200/153 K
3,694,607	9/1972	Fontana	200/339
3,749,872	7/1973	Foster	200/159 A X
3,763,341	10/1973	Willis	200/67 DB X



1. An electrical switch comprising a housing, means for controlling a circuit through the housing and operable generally between circuit making and breaking positions, means electrically disassociated from the controlling means and adapted to be selectively momentarily movable in the housing for operating the controlling means, and means for yielding generally as a collapsible column to oppose the selective momentary movement of the operating means including a pair of generally opposite portions respectively mounted between the housing and the operating means to bias the operating means against the controlling means urging it toward one of its circuit making and breaking positions, and a permanent bend in the yielding means for determining the magnitude range of the compressive force of the yielding means in opposition to a momentarily applied force on the operating means to effect the selective momentary movement thereof against the yielding means, and the controlling means assuming the other of its circuit making and breaking positions upon the selective momentary movement of the operating means against the compressive force of the yielding means.

B 481,930

HOUSING FOR A COMPRESSION BONDED ENCAPSULATION OF A SEMICONDUCTOR DEVICE

Leslie R. Rice, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 21, 1974, Ser. No. 481,930

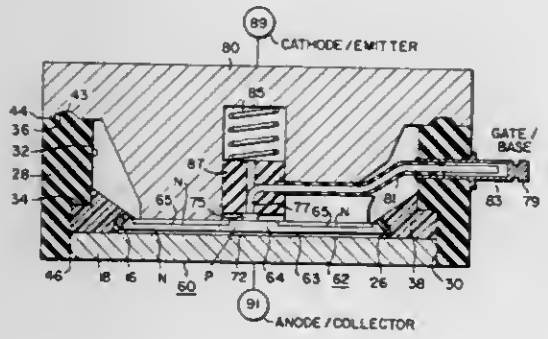
Int. Cl.² H01L *23/28*

U.S. Cl. 357—72 **3 Claims**

References Cited

UNITED STATES PATENTS

3,450,962	6/1969	Ferree et al.	357/79
3,499,095	3/1970	Haus	357/74
3,515,955	6/1970	Butenschon	357/74
3,548,267	12/1970	Siddell	357/74
3,559,001	1/1971	Cooper et al.	357/79
3,597,524	8/1971	Schreiner	357/79
3,686,542	8/1972	Rindner et al.	357/79
3,721,867	3/1973	Schierz	357/79
3,837,000	9/1974	Platzoeder et al.	357/79



1. A semiconductor device, said semiconductor device comprising:

a. a fusion element, said fusion element comprising a wafer of semiconductor material, said wafer having top and bottom major opposed flat parallel surfaces, an upper metal electrode affixed to said top surface of said wafer, a lower metal electrode affixed to said bottom surface of said wafer, siad lower metal electrode being cylindrical in shape with flat top and bottom surfaces and extending beyond the periphery of said wafer of semiconductor material to which it is affixed, means coating and protecting the edge of said wafer of semiconductor material;

b. a flexible electrical insulating sleeve member having at least one cylindrical shaped inside wall elastically held against the cylindrical shaped edge of said lower electrode, said sleeve member extending from a point above said upper metal electrode to a point flush with said bottom surface of said lower metal electrode;

c. an elastomeric material disposed in the cavity formed by the inside wall of the insulating sleeve member and the edges of the fusion element;

d. a metal pole piece contact adjoined to the upper end of the sleeve member and having a projection extending into the sleeve and making electrical contact with the fusion element.

B 485,575

PROGRAMMABLE SEQUENCE CONTROLLER

Hisaji Nakao, Toyota; Yasufumi Tokura; Toshihiko Yomogida, both of Kariya, and Kazuo Matsuura, Chiryu, all of Japan, assignors to Toyoda-Koki Kabushiki-Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha, both of, Japan

Filed July 3, 1974, Ser. No. 485,575

Claims priority, application Japan, Apr. 19, 1974, 49-44626; Apr. 19, 1974, 49-44627

Int. Cl.² G05B *11/32*

U.S. Cl. 340—172.5 **7 Claims**

References Cited

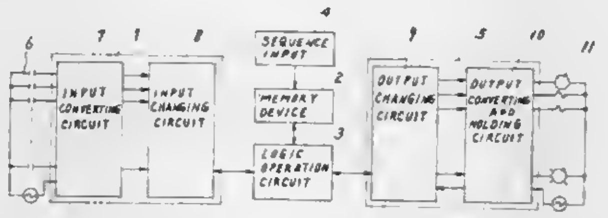
UNITED STATES PATENTS

3,686,639	8/1972	Fletcher et al.	340/172.5
3,753,243	8/1973	Ricketts, Jr. et al.	340/172.5
3,806,714	4/1974	Otsuka et al.	235/152
3,810,118	5/1974	Kiffmeyer	340/172.5
3,849,765	11/1974	Hamano	340/172.5

OTHER PUBLICATIONS

G. Lapidus, "Programmable Logic Controllers—Painless Programming to Replace the Relay Bank," *Control Engineering*, Apr. 1971, pp. 49–60.

N. Andreieu, "Programmable Logic Controllers—An Update," *Control Engineering*, Sept. 1972, pp. 45–47.



1. A programmable sequence controller comprising:

memory means for memorizing a sequence program comprising a train of instructions identified respectively by memory addresses thereof, each of said instructions having an examine command and an address information therein;

an input module operatively connected to a plurality of addressed external input devices for converting states of said external input devices into logical values;

an output module operatively connected to a plurality of addressed external output devices to be energized or deenergized;

a logic operation circuit operatively connected to said memory means and to said input and output modules;

reading means for reading out and feeding said train of instructions from said memory means to said logic operation circuit;

said logic operation circuit comprising:

circuit means for examining a logical value of one of said external input devices specified by the address information of one of said instructions with one examine command of said one of said instructions read out by said reading means;

second memory means for temporarily memorizing an examined result of said circuit means;

said output module being operable to energize or deenergize one of said addressed external output devices in response to an output of said second memory means; and

discontinuance means operatively connected to said second memory means for causing said circuit means to discontinue a next examination of a logical value of another of said external input devices specified by the address information of another of said instructions with another examine command of said another of said instructions read out by said reading means to execute a logic operation nonsequentially when said second memory means memorizes satisfaction of the preceding examination of the logical value of said one of said external input devices with said one examine command of a logical OR function or unsatisfaction of the preceding examination of the logical value of said one of said external input devices with said one examine command of a logical AND function.

B 487,411

TWO-CHANNEL AND FOUR-CHANNEL CARTRIDGE TAPE PLAYER

Motoshi Nishinakagawa, Iwaki, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan

Filed July 10, 1974, Ser. No. 487,411

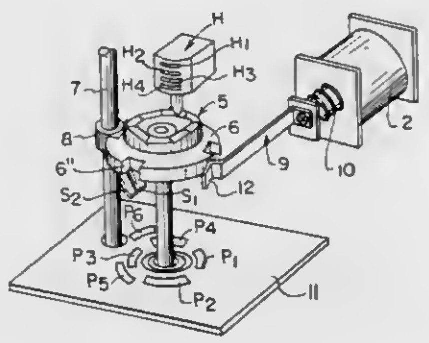
Int. Cl.² G11B *21/08*, *23/04*, *5/54*, *5/56*

U.S. Cl. 360—78 **4 Claims**

References Cited

UNITED STATES PATENTS

3,492,005	1/1970	Ueno et al.	360/78
3,532,347	10/1970	Parsons	360/106
3,592,476	7/1971	MacDonald	360/78
3,601,409	8/1971	Marshall	360/106
3,730,532	5/1973	Miyamoto	360/106
3,839,737	10/1974	Vogel	360/106
3,846,838	11/1974	Okamoto	360/106
3,869,717	3/1975	Kawada	360/106
B350,589	1/1975	Tozawa	360/78



1. A cartridge-type tape player adapted to receive and play two-channel and four-channel tape cartridges, and having amplifier means and output means connected to said amplifier means for receiving signals therefrom for audible reproduction thereof, said player including in combination:

changeover switch means operable between a first position when a two-channel tape cartridge is inserted into the player and a second position when a four-channel tape cartridge is inserted into the player,

magnetic tape head means having four magnetic pick-up areas, said tape head means being movable upon the insertion of two-channel and four-channel tape cartridges to align said pick up areas with selected tracks on the tape,

head shifting means mounted in said player and movable between first, second, third and fourth positions, said head shifting means being engageable with said magnetic tape head means to move the same to align said pickup areas with selected tracks on the tape, said head shifting means includes a rotatable disc having a top and a bottom surface thereon and having a plurality of notches on the peripheral edge thereof, said top surface having four successive cam regions thereon which correspond to the four-channel tape tracks and said bottom surface having a pair of contacts mounted thereto and selectively engageable with said rotary switch means,

drive means coupled to said head shifting means for rotating said head shifting means between said first, second, third and fourth positions, said drive means further includes a coupling member engageable with and driven by the capstan drive and positioned in a spaced relation for engagement with said rotatable disc to cause the same to be rotated by the coupling member, a solenoid, a lever adapted to engage a notch on the rotatable disc and magnetic linkage means coupled to the said lever, said solenoid operating to move said magnetic linkage means to cause said lever to engage said rotatable disc to move the same whereby said rotatable disc is engaged and rotated by the coupling on the capstan drive shaft to thereby position said pick-up areas on said magnetic tape head means with selected tracks on the tape,

rotary switch means including a first switch portion and a second switch portion, means coupling said second switch portion to said drive means for actuating the same to move said head shifting means, and

said drive means being responsive to operation of said second portion of said switch means to rotate said head shifting means between said first, second, third and fourth positions when said changeover switch means is in said first position and responsive to operation of said second switch portion of said rotary switch means to rotate said head shifting means to successive positions when said changeover switch means is in said second position.

B 492,902

FLUID-TIGHT ENCLOSURE FOR GEOPHONE AND CABLE

William O. McNeel, Houston, Tex., assignor to GEO Space Corporation, Houston, Tex.

Filed July 29, 1974, Ser. No. 492,902

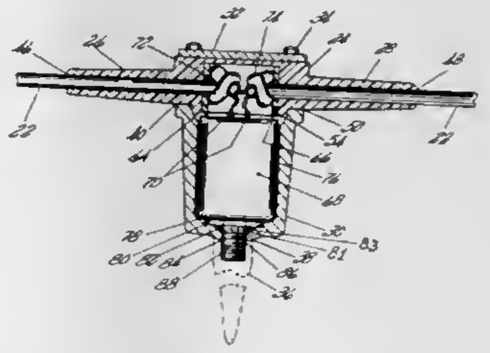
Int. Cl.² G01V *1/16*

U.S. Cl. 174—52 R **17 Claims**

References Cited

UNITED STATES PATENTS

1,974,297	9/1934	Benander	339/106 X
2,908,890	10/1959	Campbell	340/17
3,119,978	1/1964	Sears	174/154 X
3,445,809	5/1969	McLoad	340/17



1. A fluid-tight enclosure adapted to encase a geophone electrically connected to a cable comprising

a housing means having an open end and inner walls defining a cavity adapted to receive a said geophone;

a flexible sealing means positioned in the open end of said housing and having a hollowed out central area and cable entry means adapted to have a said cable extended therethrough into the hollowed out central area to be electrically connected to a said geophone, said flexible sealing means having a resilient sealing edge located on the surface of the flexible sealing means for forming a fluid-tight sealing engagement with said housing means;

a stress ring having a relatively thin outer wall and a pair of aligned opposing holes extending through said thin outer wall, said stress ring being positioned within the hollowed out central area of said flexible sealing means and having the opposing holes thereof in alignment with the cable entry means enabling a said cable to extend therethrough into the hollowed out central area, said stress ring having an inner diameter to enclose a knot-anchored takeout formed in said cable and to support a knot-anchored takeout and a cable in a substantially fixed position thereagainst to prevent withdrawal of a said cable from said stress ring through said flexible sealing means;

insulating means positioned in engagement with the inner walls of said housing means to electrically insulate the housing means from the exterior of a said geophone; and
means clamping said flexible sealing means into intimate fluid-tight contact with said housing means and fluid-tight contact between the cable entry means and a said cable extending therethrough forming a pressured fluid-tight seal between said flexible sealing means and said housing means and between the outer periphery of said sealing means and said cable and for urging said stress ring against a said geophone to prevent movement thereof in the cavity of said housing means.

B 504,404

ZENER DIODE EFFECT ON LONG ACCELERATION MODULE

Wardell Gary, and Glenn R. Taylor, both of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 9, 1974, Ser. No. 504,404
Int. Cl.² H02H *7/08, 3/10*
U.S. Cl. 317—36 TD **5 Claims**

References Cited
UNITED STATES PATENTS

3,602,783	8/1971	Engle	317/36 TD
3,792,313	2/1974	Conrad	317/36 TD
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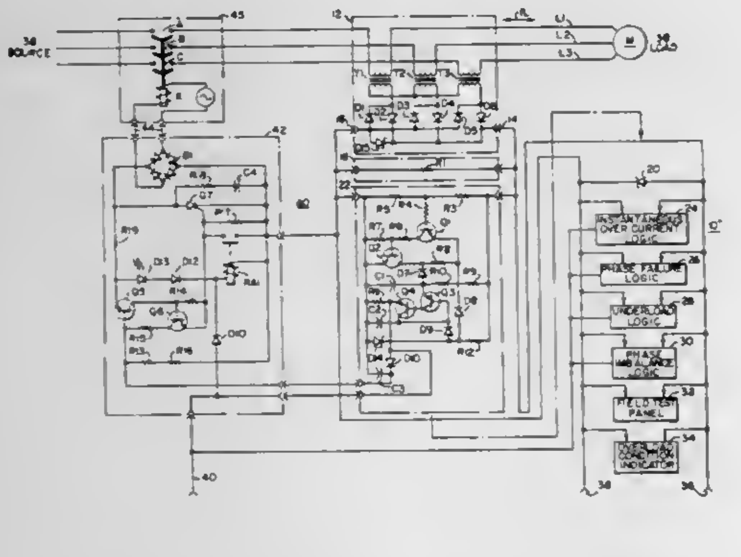
"Improved Static Over-current Relay with I.D.M.T. Characteristic;" by S. C. Gupta, Dr. T. S. M. Rao; IE(I) Journal EL, pp. 138–140, 2–73.



1. An electrical circuit protecting device, comprising:
sensor means for sensing circuit current in an electrical circuit, said sensor means having an output for providing an output current related to said circuit current;
inverse time overload means having an input which is connected to said output of said sensor means, said overload means providing a trip signal for a circuit breaker trip means, said latter signal being provided at a time which is inversely proportional to the magnitude of said electrical circuit current after said electrical circuit current is sensed and provided said magnitude of said electrical current persists for a predetermined period of time;
long acceleration corrective means connected in parallel circuit relationship with said inverse time means input for overriding said inverse time overload means and preventing the provision of said signal for said circuit breaker means for a fixed period of time regardless of said magnitude of said circuit current once said magnitude of said circuit current attains a predetermined value; and
circuit breaker trip means connected to said inverse time overload means for opening said electrical circuit when said trip signal is provided.

B 520,075

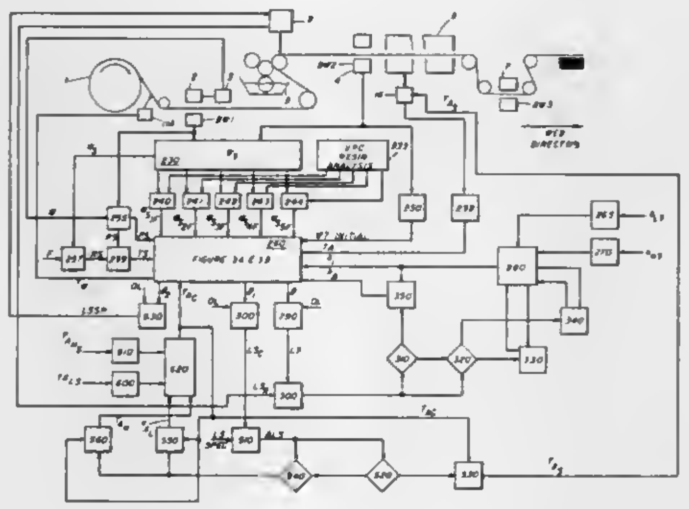
METHOD AND APPARATUS FOR CONTROLLING A MATERIAL TREATER

Charles Robert Fay, Cincinnati, Ohio, assignor to Formica Corporation, Cincinnati, Ohio

Filed Nov. 1, 1974, Ser. No. 520,075
Int. Cl.² G06G *7/58*
U.S. Cl. 235—151.1 **12 Claims**

References Cited
UNITED STATES PATENTS

3,073,153	1/1963	Petitjean	73/73
3,260,642	7/1966	Canter, Jr.	162/252
3,378,676	4/1968	Clement	235/151.3
3,596,071	7/1971	Doering	235/151.35 X



8. In a fibrous host material treating process wherein said material is treated with a resinous solution in a treater and dried in a dryer, apparatus for controlling the drying of said treated material comprising
1. first gauge means adjacent to said material for measuring the weight of said material before treating and providing a signal (A) representative of said weight before treating,
2. second gauge means mounted before said dryer and adjacent to said material for measuring the treated, undried weight of said material and providing a signal (B) representative of said treated, undried weight,
3. third gauge means mounted after said dryer and adjacent to said material for measuring the dried weight of said material and providing a signal (C) representative of said dried weight,
4. means for providing a signal (D) representative of the resin solids fraction of said resinous solution,
5. means responsive to said signals (A), (B), (C) and (D) for computing the actual percent volatiles of the dried, treated material and providing a signal (E) representative of said percent volatiles,
6. means for providing a signal (F) representative of the specification percent volatiles of said dried, treated material,
7. means for providing a signal (G) representative of the solvent component percentages and a signal (H) representative of heat of vaporization of each solvent component of said resinous solution,
8. means for measuring the line speed of said material and providing a signal (I) representative of said line speed,
9. means for providing a signal (J) representative of the dryer length,
10. means for measuring the temperature of said dryer and providing a signal (K) representative of said temperature,
11. means for providing a signal (L) representative of the heat capacity of the host material,
12. means for measuring the temperature of said host material before treating and providing a signal (M) representative of said temperature before treating,
13. means responsive to said signals (A), (B), (C), (D), (E), (G), (H), (I), (J), (K), (L) and (M) for computing the actual film coefficient of the material undergoing drying and providing a signal (N) representative of the actual film coefficient,
14. means for providing a signal (O) representative of the specification line speed of said host material,
15. means responsive to said signals (A), (B), (D), (F), (G), (H), (J), (L), (M), (N) and (O) for computing the temperature needed in the dryer to achieve said specification percent volatiles at said specification line speed and providing a signal (P) representative of said needed temperature,
16. means responsive to said signal (P) for controlling the dryer temperature,
17. means responsive to said signals (A), (B), (D), (F), (G), (H), (J), (K), (L), (M) and (N) for computing the line speed necessary to achieve said specification percent volatiles in accordance with said signal (K) and providing a signal (Q) representative of said necessary line speed and
18. means responsive to said signal (Q) for controlling said line speed.

B 521,044

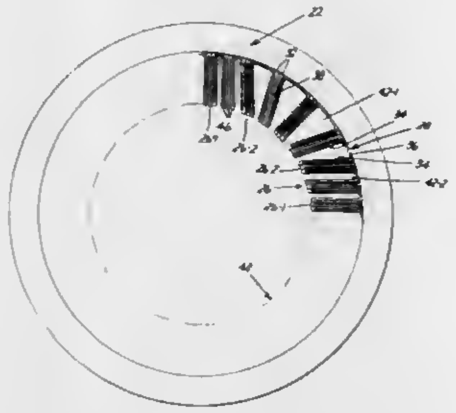
STATOR ASSEMBLY FORMED OF FLAT, STRIP MATERIAL

Marion W. Sims, South Whitley, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Nov. 5, 1974, Ser. No. 521,044
Int. Cl.² H02K *1/06, 1/12*
U.S. Cl. 310—259 **9 Claims**

References Cited
UNITED STATES PATENTS

1,255,606	2/1918	Hensley	310/216 X
2,236,291	3/1941	Kilbourne	310/218
2,351,316	6/1944	Borden	310/216 X
2,516,140	7/1950	Nahman	310/216 X
2,913,603	11/1959	Carlson	310/218 X
3,064,147	11/1962	Porter et al.	310/216 X
3,339,132	8/1967	Schafft	310/216 X
3,591,819	7/1971	Laing	310/217



1. A stator assembly for a dynamoelectric machine comprising a yoke member formed of a continuous strip of ferro-magnetic material and having an inner surface facing toward a bore; a plurality of spaced teeth extending generally axially along and inwardly from the inner surface and having inner ends defining the bore, each of the teeth having a plurality of generally axially and inwardly extending ferro-magnetic flat segments; and connecting portions respectively positioned between adjacent ones of the teeth, each of the connecting portions including a pair of leg elements respectively forming parts of the adjacent teeth, and a bight portion between the leg elements and disposed adjacent the bore; the teeth and connecting portions providing a plurality of coil winding slots open adjacent the yoke.

B 521,045

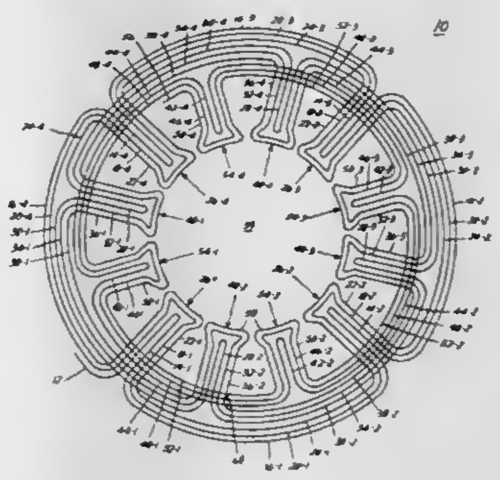
WIRE STATOR CORE STRUCTURE AND METHOD OF MAKING SAME

Marion W. Sims, South Whitley, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Nov. 5, 1974, Ser. No. 521,045
Int. Cl.² H02K *1/06, 1/12*
U.S. Cl. 310—254 **18 Claims**

References Cited
UNITED STATES PATENTS

794,998	7/1905	Mott	310/216 X
1,255,606	2/1918	Hensley	310/216 X
1,255,607	2/1918	Hensley	310/217 X
2,913,603	11/1959	Carlson	310/218 X
3,064,147	11/1962	Porter et al.	310/218 X
3,339,132	8/1967	Schafft	310/216 X
3,591,819	7/1971	Laing	310/217



1. A stator core structure for a dynamo-electric machine comprising a filament of ferro-magnetic material generally spirally disposed in at least one generally planar layer and including a plurality of spaced apart teeth in the layer each respectively constituted by a plurality of generally contiguous open loop portions of the filament, one of the loop portions in each of the teeth having an end defining at least in part a bore in the stator core structure, and a plurality of connecting portions of the filament respectively joined between the loop portions.

B 521,046

SEGMENTED STATOR CORE STRUCTURE AND METHOD FOR MAKING SAME

Marion W. Sims, South Whitley, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Nov. 5, 1974, Ser. No. 521,046
Int. Cl.² H02K *1/12*
U.S. Cl. 310—254 **16 Claims**

References Cited
UNITED STATES PATENTS

794,998	7/1905	Mott	310/216 X
1,255,606	2/1918	Hensley	310/216 X
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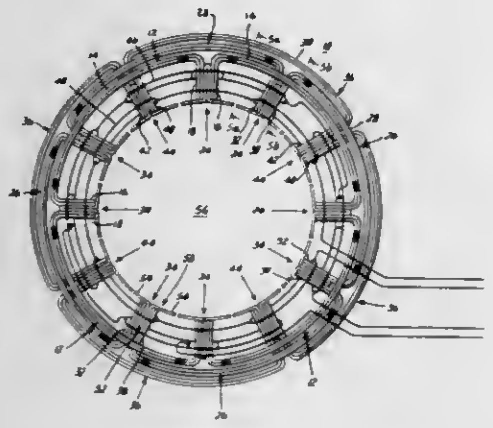
1,946,468	2/1934	Bindschedler	310/216 X
2,487,692	11/1949	Brouwer	310/216
2,503,092	4/1950	Brouwer	310/216
3,591,819	7/1961	Laing	310/217

1. A stator core structure for a dynamoelectric machine comprising a first plurality of generally U-shaped segments each having a bight portion and a pair of leg portions, each of said first segments being formed of at least one flat strip of ferro-magnetic material, the bight portions of each of said first segments having an opening formed therethrough intermediate its leg portions, said first segments being arranged with

said bight portions thereof forming a first periphery and with said leg portions thereof extending radially, the leg portions of adjacent first segments being in adjacent, parallel relationship mutually to form first teeth, and at least a second plurality of generally U-shaped segments equal in number to said first segments and each having a bight portion and a pair of leg portions, each of said second segments being formed of at least one flat strip of ferro-magnetic material, said second segments being arranged with their bight portions forming generally a second periphery larger than and coaxial with said first periphery, the leg portions of adjacent second segments being in adjacent, parallel relationship and extending radially through a said opening in the bight portion of a respective one of said first segments thereby mutually to form second teeth respectively between said first teeth, said first and second teeth having inner ends terminating in a bore defining configuration within the stator core structure.



B 526,289
POLYPHASE DISC RELUCTANCE MOTOR

Theodore M. Heinrich, Murrysville, and Bhate, Suresh K., Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 22, 1974, Ser. No. 526,289

Int. Cl.² H02K *17/42*

U.S. Cl. 310—168 **12 Claims**

References Cited

UNITED STATES PATENTS

3,230,406	1/1966	Henry et al.	310/268 X
3,327,191	6/1967	Goto	310/49 X
3,343,014	9/1967	Giles	310/49
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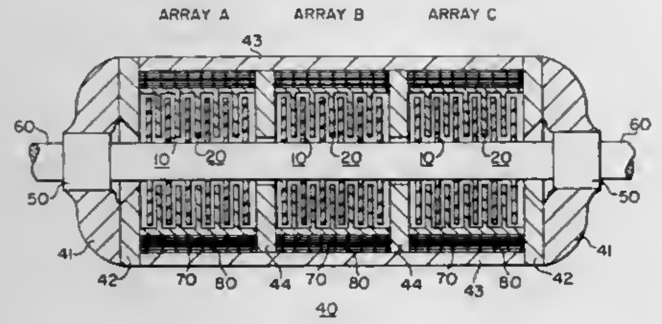
3,401,284	9/1968	French	310/268 X
3,401,323	9/1968	French	318/138
3,411,059	11/1968	Kaiwa	310/49 X
3,437,854	4/1969	Oiso	310/49
3,549,918	12/1970	Croymans	310/49
3,700,944	10/1972	Heintz	310/168



1. A polyphase variable reluctance dynamoelectric machine comprising:

a frame;

a shaft mounted for rotation within said frame;

a group of *K* rotor-stator arrays supported in tandem within said frame, *K* being a positive integer greater than 2, said group comprising a first array, a last array, and an array intermediate of said first and last arrays;

each of said rotor-stator arrays comprising one or more axially spaced stator discs secured to said frame and one or more axially spaced rotor discs secured to said shaft, said rotor and stator discs being arranged in interleaved relation one with another and spaced apart to define an axial air gap therebetween;

each of said rotor and stator discs comprising a plurality of magnetic and non-magnetic segments, a non-magnetic segment being disposed intermediate of two of said magnetic segments, said magnetic and non-magnetic segments having a pitch of ρ mechanical radians;

corresponding magnetic segments of adjacent stator discs being disposed in alignment with each other within each array and in alignment with corresponding magnetic segments of said stator discs contained within adjacent arrays; and

corresponding magnetic segments of adjacent rotor discs being disposed in alignment with each other within each array, the magnetic segments of said rotor discs contained within the N^{th} array being angularly displaced by $(N-1)$-$(2/K)\rho$ mechanical radians with respect to corresponding magnetic segments of the rotor discs contained within said first array, N being a positive integer from the set of integers $(1,2, \ldots, K)$, $N=1$ referring to said first array and $N=K$ referring to said last array.

B 559,111
ONE-PIECE LIGHT CONE BAFFLE

Dana Whitney Wolcott, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 17, 1975, Ser. No. 559,111

Int. Cl.² G03B *17/02*

U.S. Cl. 354—288 **7 Claims**

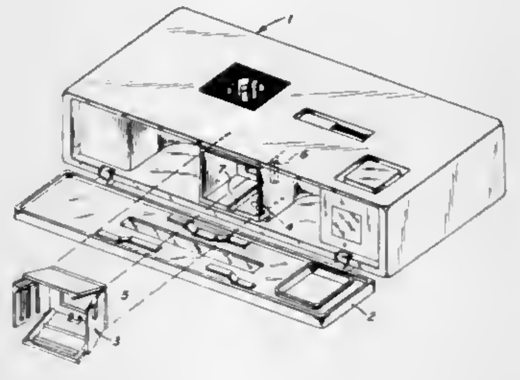
References Cited

UNITED STATES PATENTS

259,064	6/1882	Walker	354/174
993,047	5/1911	Folmer	354/288 X
1,291,405	1/1919	Champeau	354/188
1,479,112	1/1924	Sparks	354/202
2,557,297	6/1951	Lea	354/219 X
2,665,618	1/1954	Heidecke	354/288
3,344,725	10/1967	Finelli	354/288

FOREIGN PATENTS OR APPLICATIONS

838,063	6/1960	United Kingdom	



1. A light cone baffle for use in photographic apparatus containing a light-sensitive material, said baffle comprising:

a member defining a light-transmitting window;

a plurality of walls;

means for integrally connecting said member with each of said walls so that said walls are movable between a relaxed position and an operative position;

means positioned on said walls when in said operative position for reflecting non-image forming light passing through said window away from the light-sensitive material; and

means for securing said baffle in place in the photographic apparatus with said walls in said operative position.

B 568,226
FAIL-SAFE SPEED COMMAND SIGNAL DECODER

Arun P. Sahasrabudhe, Monroeville, Pa., and Michael V. McGinty, Alameda, Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 15, 1975, Ser. No. 568,226

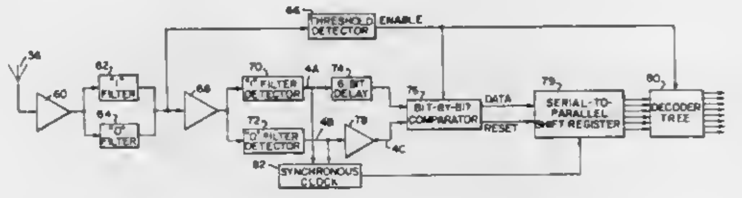
Int. Cl.² H04Q *9/00;* **G08C** *25/00*

U.S. Cl. 340—167 B **3 Claims**

References Cited

UNITED STATES PATENTS

3,354,433	11/1967	Minc	340/167 B
3,577,187	4/1971	Benson	340/163
3,588,825	6/1971	Shook	340/163
3,624,603	11/1971	Delcomyn	340/146.1 BA
3,703,706	11/1972	Ogura et al.	340/146.1 BA
3,737,577	6/1973	Birkin	178/23 A
3,742,481	6/1973	Nickerson	340/164 R
3,790,821	2/1974	Adamson	340/365 E



1. In a transportation vehicle control system having a vehicle receiver for decoding a vehicle command signal having complementary message signals which carry coded information, the apparatus comprising:

means for isolating signals which are substantially equal to said message signals of said vehicle command signal;

means for amplifying said message signals;

first and second means for detecting first and second messages from said first and second message signals respectively;

means for delaying said first detected message;

means for storing, in a fail-safe manner, said delayed message when it is substantially equal to said second detected message; and

means for decoding said stored message.

B 571,219
START-STOP TRANSISTOR COLPITTS OSCILLATOR CIRCUIT

John H. Harshbarger, Xenia, Ohio, assignor to Visual Information Institute, Inc., Xenia, Ohio

Filed Apr. 24, 1975, Ser. No. 571,219

Int. Cl.² H03B *5/12*

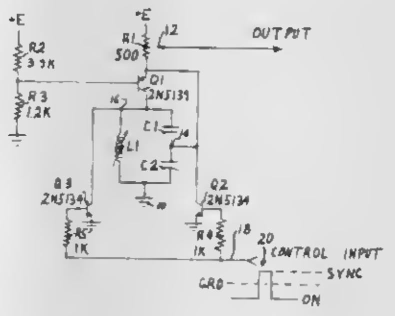
U.S. Cl. 331—117 R **5 Claims**

References Cited

UNITED STATES PATENTS

2,905,907	9/1959	Sanders	331/173
3,229,227	1/1966	Popodi	331/117 R

1. A start-stop transister colpitts oscillator circuit comprising a tank circuit in the form of an inductor and a pair of serially connected capacitors in parallel with the inductor, one end of said tank circuit forming a first control point and the junction between said capacitors forming a second control point, a first voltage terminal connected to the other end of the tank circuit, a second voltage terminal, a transistor having collector, emitter, and base terminals and having the collector-emitter path connected between said second voltage terminal and said one end of the tank circuit, a source of biasing voltage connected to the base terminal of said transistor and biasing the transistor to conduction, a feedback connection from the juncture of said capacitors to the emitter terminal of said transistor, first and second switch means each having conductive and nonconductive conditions and connected between said one voltage terminal and said first and second control points respectively, and means for changing both of said switch means between conductive and nonconductive conditions in unison.



REISSUES

FEBRUARY 24, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

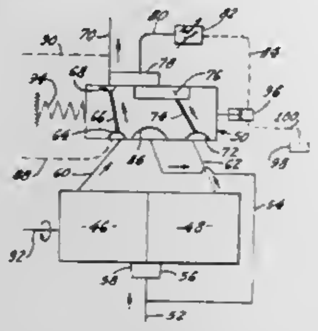
Re. 28,717
NOISE REDUCTION APPARATUS AND METHOD

Fred T. Smith, Newark, Ohio, assignor to Sargent Industries, Inc., Los Angeles, Calif.

Original No. 3,822,551, dated July 9, 1974, Ser. No. 401,222, Sept. 27, 1973. Division of Ser. No. 274,798, July 24, 1972, abandoned. Application for reissue Dec. 9, 1974, Ser. No. 530,693

Int. Cl.^{2} F16H *39/48*

U.S. Cl. 60—428 **8 Claims**



1. A noise reduction apparatus for operating a variable volume and variable pressure auxiliary load, said apparatus comprising:

- pump means having a capacity which is sufficiently large to supply said load at a relatively low pump speed;
- said pump means including a plurality of fixed displacement pumps supplying hydraulic fluid to the variable load;
- means to vary the number of pumps supplying fluid to the load in response to the demands of the load;
- engine means operably connected to said pump means for supplying power to said pump means in performing a secondary work function at a speed near the idling speed of said engine means;
- throttle control means governing the flow of fuel to the engine means to maintain its horsepower output at a level sufficient to operate the pump means while maintaining the speed of said engine means at a speed near its idling speed; and
- means to maintain the flow rate from the pump means at a sufficiently low level to not exceed the capacity of the pump means or the auxiliary load when the engine speed is increased to a predetermined level in excess of its idling speed;
- whereby the engine means operates in the low noise level region of speeds near its idling speed or less when supplying power for the pump means in operating the variable volume and variable pressure load, and the pump means and auxiliary load are protected from use in excess of their capacity when the engine means is operating at increased speeds.

Re. 28,718
TEXTILE MATERIAL AND MANUFACTURE

Engelbert Ehrlich, Floha, Saxonia, and Martin Schonfuss, Hohenstein-Ernstthal, both of Germany, assignors to VEB Nahwirkmaschinenbau Malimo Karl-Marx-Stadt, Karl-Marx-Stadt, Germany

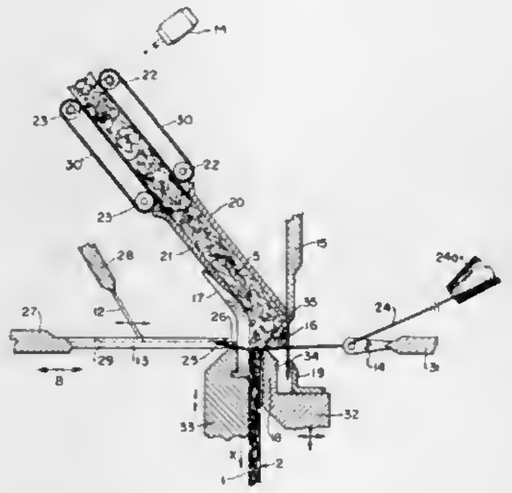
Original No. 3,611,754, dated Oct. 12, 1971, Ser. No. 829,363, June 2, 1969. Application for reissue Mar. 5, 1973, Ser. No. 337,780

Int. Cl.^{2} D04B *23/10*

U.S. Cl. 66—192 **3 Claims**

1. A textile material comprising a base, said base including a plurality of loose fibers, a warp knitted yarn system constituted of parallel rows of interlocking loops piercing said base and forming stitches on the opposite side thereof to secure said yarn system on said base, and a plurality of discrete fiber loops intermediate said base and said yarn system, each of said fiber loops being formed of at least one of said loose fibers and having ends which are located within the base and a closed loop portion closely underlying and following the configuration of a respective loop of the warp knitted yarn system, each of the fiber loops thereby being paired with a respective loop of the warp knitted yarn system, each of the pairs of loops passing through a next adjacent one of the pair of loops in the same row.

2. A method of producing a textile material on a warp knitting machine comprising feeding a relatively voluminous web of loose fibers in a relatively uncompressed condition into the operating range of the reciprocating needles of the warp knitting machine, advancing the knitting needles into and through said web for perforation of the web and for positioning of the hooks at the far side of the web, inserting warp yarns into the hooks of said knitting needles at the far side of the web, retracting said knitting needles into the web thereby to insert loose fibers into the hooks of the knitting needles, closing said hooks of said needles after said insertion of loose fibers but prior to withdrawal of the needles from said mass, forming the inserted warp yarns together with the inserted fibers into warp knit stitches on the near side of the web, and immediately proximate the operating range of the needles on the far side of the needles in the direction of travel of the web compressing the web into a cross section in the direction of reciprocation of the needles pronouncedly smaller than the cross section of the web in said direction as it is fed to the operating zone.



Re. 28,719
METHOD OF MAKING FLAT STEEL FILES

John G. Cutton, Youngstown, Ohio, assignor to United States Steel Corporation, Pittsburgh, Pa.

Original No. 3,820,372, dated June 28, 1974, Ser. No. 211,091, Dec. 22, 1971. Application for reissue Mar. 5, 1975, Ser. No. 555,485

Int. Cl.^{2} B21B *3/02*

U.S. Cl. 72—203 **5 Claims**

1. A method of making high-carbon steel flat bar stock, the steps comprising:

- a. hot rolling a high-carbon steel slab at a temperature within the range 1,600° to 2,2000°F on a strip mill to form a strip having a thickness as desired for the final bar stock,
- b. coiling said strip at a temperature above 1,000°F,
- c. annealing said coiled strip in a reducing atmosphere at a temperature above the A_1 critical temperature for at least 2 hours to austenitize the steel microstructure,
- d. maintaining the reducing annealing atmosphere at a dewpoint of less than +15°F at least at temperatures above about 1,100°F,
- e. furnace cooling the annealed coiled strip at a rate of about 20° to 40°F per hour to a temperature of about 1,250°F while maintaining the reducing atmosphere at a dewpoint of less than +15°F to form spheroidized carbide precipitates, and then furnace cooling the coiled strip to a temperature below about 400°F while maintaining the reducing atmosphere to avoid surface oxidation, and
- f. uncoiling [and slitting] the strip [into bars of the desired width] *and cutting bars of the desired size therefrom.*

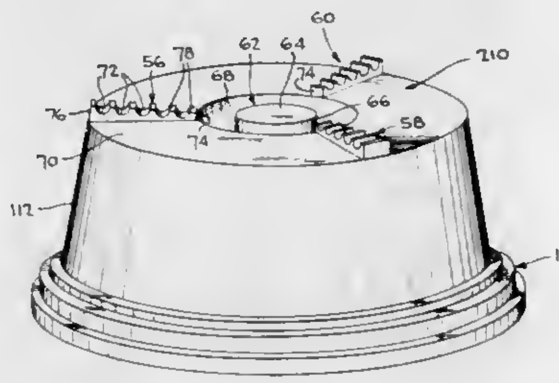
Re. 28,720
FOOD PLATE SERVICE COVER

Mirko S. Sedlak, 1991 Delowe Drive, SW., Atlanta, Ga. 30311

Original No. 3,815,736, dated June 11, 1974, Ser. No. 207,398, Dec. 13, 1971. Continuation-in-part of Ser. No. 103,992, Jan. 5, 1971, abandoned. Application for reissue Oct. 21, 1974, Ser. No. 516,177

Int. Cl.^{2} A47G *19/02, 23/04*

U.S. Cl. 206—501 **9 Claims**



7. A food plate service cover comprising a round top portion having a peripheral rim, and a side wall depending from said peripheral rim having a bottom peripheral lip adapted to engage a food plate, said top portion having stabilizing means disposed thereon and having an upper surface extending inwardly from said peripheral rim toward the center of said top portion whereby sliding of a food plate stacked on said food plate service cover is reduced, said stabilizing means including three circumferentially spaced radially extending means, each defining a plurality of radially spaced recesses therein to receive a portion of the stacked food plate.

Re. 28,721
TIME SAVER PLASTIC DRAW-BACK VALVE ASSEMBLY

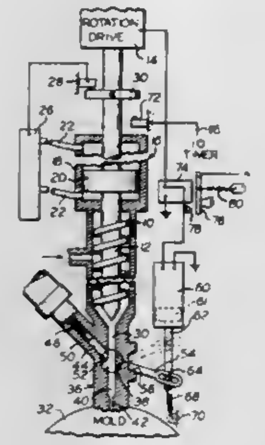
John J. Farrell, Green Brook, N.J., assignor to Farrell Patent Company, Green Brook, N.J.

Original No. 3,709,644, dated Jan. 9, 1973, Ser. No. 92,816, Nov. 25, 1970. Application for reissue Nov. 14, 1973, Ser. No. 415,639

Int. Cl.^{2} B29F *1/04*

U.S. Cl. 425—159 **16 Claims**

10. *An injection molding apparatus including a barrel for holding molten plastic material, a first passage connected at one end with the barrel for receiving hot plastic material from the barrel, a runner that supplies molten material to a mold cavity, a second passage connected with the other end of the first passage for receiving molten material from the first passage for supplying the material to the mold runner, a plasticizer including a helically threaded screw in the barrel, with a front end of the screw facing the first passage, pressure means for advancing the screw longitudinally toward the first passage to discharge material from the barrel on an injection stroke, a motor for rotating the screw in a direction to urge material in the barrel toward the first end of the screw during rotation of the screw as it backs away from said first passage, during its recovery stroke, automatic means for stopping further rotation of the screw after it has backed away far enough to accumulate, between the screw and the first passage, enough material for the next mold charging operation, means for regulating the plasticizer cycle to be less than that absent such means including a cylinder for communication at one end with the mold runner, a piston in the cylinder, movable in one direction providing means to maintain pressure on any molten material in the cylinder and in the mold runner during shrinkage of the molten material, the piston being movable in the other direction providing means to exert a suction action in the cylinder for drawing molten material in the runner back toward the cylinder, and valve means, located between the first and second passages and movable into different positions including a first position that puts the first passage in communication with the second passage, and a second position that shuts off the first passage from the second passage and provides communication between the cylinder and the second passage, said valve preventing communication between said cylinder and said first passage so that recovery of the plasticizer can begin before shrinkage of the plastic in the mold and before drawback of plastic from the runner.*



Re. 28,722
BUTADIENE-STYRENE COPOLYMER-CEMENT COMPOSITION AND METHOD OF PREPARATION

Phillip F. Sanders, Glen Mills, Pa., assignor to The Dow Chemical Company, Midland, Mich.

Original No. 3,043,790, dated July 10, 1962, Ser. No. 685,078, Sept. 20, 1957. Application for reissue Jan. 11, 1974, Ser. No. 432,701

Int. Cl.^{2} C04B *7/35;* **C08K** *5/54;* **C08L** *9/08*

U.S. Cl. 260—29.7 S **5 Claims**

1. A cement *mortar* composition comprising a mixture of Portland cement, mineral aggregate, about 5%–25% based on the weight of said Portland cement of styrene-butadiene-1,3 copolymer having a styrene to butadiene weight ratio of about 30:70 to 70:30, water in amount not in excess of about 40% based on the weight of said Portland cement, and, based on the weight of said copolymer, (a) 2–10% of non-ionic surfactant, (b) 1–7.5% of anionic surfactant, at least 15% of which is a sodium alkyl sulfate in which the alkyl group contains 9–17 carbon atoms, and (c) [1–5% of] polyorganosiloxane fluid surfactant, *in an amount equal to about 2.5% of a polyorganosiloxane emulsion containing 29% of the polyorganosiloxane* the sum of (a) and (b) not exceeding about 11% by weight of said copolymer and the weight ratio of (a) to (b) being within the range of about 0.7:1 to 10:1.

Re. 28,723
POLYCARBONATE RESINS BLENDED WITH ACRYLATE ELASTOMERS FOR IMPROVED IMPACT STRENGTH

Charles B. Holder; Isaac D. Rubin, both of Wappingers Falls; and Carmen M. Cusano, Poughkeepsie, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Original No. 3,742,088, dated June 26, 1973, Ser. No. 104,789, Jan. 7, 1971. Application for reissue April 10, 1974, Ser. No. 459,744

Int. Cl.^{2} C08L *67/06*

U.S. Cl. 260–873 **5 Claims**

1. A polycarbonate resin composition characterized by increased impact strength and comprising a blend of polycarbonate resin having an average molecular weight of at least 8000 and from about 3 to 35 percent by weight based on the weight of polycarbonate–elastomer blend of at least one elastomer having an average molecular weight between about 100,000 and 2,000,000 with a second order transition below 0°C., said elastomer being selected from the group consisting of *a copolymer of* lower alkyl acrylates with stearyl acrylates, *lower alkyl acrylate homopolymers* and lauryl methacrylate rubber [and poly(methyl methacrylate].

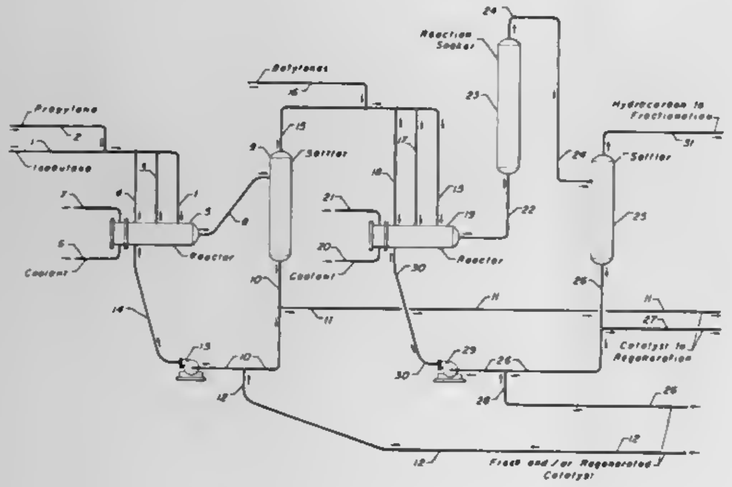
Re. 28,724
ISOPARAFFIN ALKYLATION WITH A LIGHTER OLEFIN AND SUBSEQUENTLY WITH A HEAVIER OLEFIN

Jay E. Sobel, Highland Park, Ill., assignor to Universal Oil Products Co., Des Plaines, Ill.

Original No. 3,780,131, dated Dec. 18, 1973, Ser. No. 269,907, July 7, 1972. Application for reissue Apr. 28, 1975, Ser. No. 572,600

Int. Cl.^{2} C07C *3/54*

U.S. Cl. 260–683.45 **9 Claims**



1. A process for producing an alkylation reaction product from an isoparaffin reactant, a lighter olefinic reactant and a heavier olefinic reactant which comprises the steps of:

(a) contacting said isoparaffinic reactant and said lighter olefinic reactant with a first *hydrogen fluoride* alkylation catalyst in a first alkylation zone at first alkylation conditions;

(b) settling from said first alkylation zone a first hydrocarbon phase which comprises a portion of said isoparaffinic reactant and a portion of said alkylation reaction product;

(c) contacting said heavier olefinic reactant and at least a portion of said first hydrocarbon phase with a second *hydrogen fluoride* alkylation catalyst in a second alkylation zone at second alkylation conditions;

(d) settling from said second alkylation zone a second hydrocarbon phase which comprises at least a portion of said alkylation reaction product; and,

(e) recovering said alkylation reaction product from said second hydrocarbon phase.

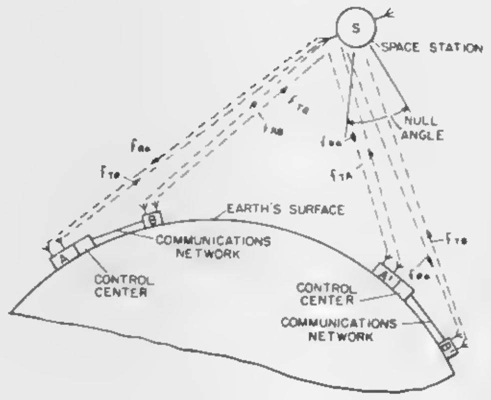
Re. 28,725
SATELLITE AND SPACE COMMUNICATIONS SYSTEMS

Henry P. Hutchinson, Ridgewood, and Paul R. Arendt, Eatontown, both of N.J., assignors to Satellite and Space Communications Systems, Inc., Summit, N.J.

Original No. 3,262,116, dated July 19, 1966, Ser. No. 338,179, Jan. 16, 1964. Continuation-in-part of Ser. No. 29,111, May 13, 1960, abandoned. Application for reissue July 31, 1970, Ser. No. 60,779

Int. Cl. H04b *7/20;* **B64g** *3/00*

U.S. Cl. 343—100 ST **31 Claims**



1. The method of communicating intelligence by radio waves between at least two bodies in space in motion with respect to each other where a first of said bodies includes an antenna having at least one null orientation with respect to radio waves received from a predetermined direction, said method comprising the steps of:

(a) transmitting the intelligence simultaneously via at least two separate radio waves from at least two geographically widely separated transmitting stations on said second body respectively and with said stations having sufficient separation that the two lines of sight from the location of said antenna on said first body to each of said separated transmitting stations on said second body form a finite angle therebetween which exceeds the angular cross section of the antenna null;

(b) and responding at said first body in space only to strongest of the several signals received from said transmitting stations on said second body;

whereby said antenna on said first body can have at any time a null orientation with respect to, at most, one of said radio waves and said first body thereby continually receives said intelligence from said second body.

PATENTS

GRANTED FEBRUARY 24, 1976

ERRATA

For CLASS	See PATENT NO.
032-014 B	3,939,598
032-059	3,939,599
269-002	3,939,915
197-187	3,939,963
269-023	3,940,122
208-137	3,940,190
254-002 R	3,940,338

PATENTS

GRANTED FEBRUARY 24, 1976

NOTE—A cross reference listing of applications published under Trial Voluntary Protest Program on January 28, 1975 is located in the back of this Issue. These entries will be in numerical order by document publication number.

GENERAL AND MECHANICAL

3,939,496

ENDOPROSTHETIC BONE JOINT

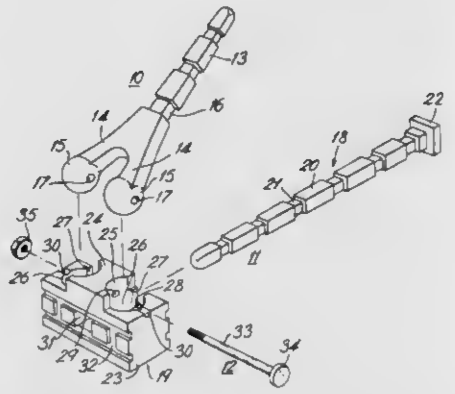
Robin Sydney Mackwood Ling, Teignmouth, and Alan John Clive Lee, Exeter, both of England, assignors to National Research Development Corporation, London, England

Filed Oct. 2, 1974, Ser. No. 511,264

Claims priority, application United Kingdom, Oct. 15, 1973, 47961/73

Int. Cl.² A61F *1/24*

U.S. Cl. 3—1.91 **4 Claims**



1. An endoprosthetic bone joint device comprising:

a first hinge component of forked form with two form arms similarly defining at their free end portions respective spherically-shaped ball bearing surfaces, and said arms being diametrally bored relative to said ball surfaces to define respective, coaxially aligned, concave, circular cylindrical bearing surfaces therethrough;

a second hinge component including a bearing part of generally T-shape with a cross-bar and stem, said cross-bar similarly defining at its free end portions respective spherically-shaped socket bearing surfaces in articulatory engagement with said ball surfaces, and said stem being bored to define a further concave circular cylindrical surface coaxially aligned with, and disposed between, the first-mentioned concave surfaces; and

a hinge-coupling component defining a convex circular cylindrical surface located in articulatory engagement with said concave surfaces, said hinge-coupling component being releasably connected with said hinge components.

3,939,497

FASTENING MEANS FOR HIP JOINT PROSTHESIS SOCKETS

Günther Heimke, Mannheim; Peter Griss, Plankstadt; Hanns Von Andrian-Werburg, Ilvesheim; Herbert Heil, Edingen, and Paul Wachter, Mannheim, all of Germany, assignors to Friedrichsfeld GmbH. Steinzeug-und Kunstoffwerke, Mannheim, Germany

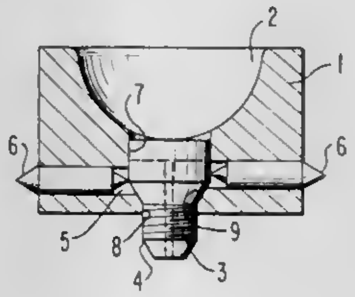
Filed Dec. 9, 1974, Ser. No. 530,553

Claims priority, application Germany, Dec. 28, 1973, 2365022

Int. Cl.² A61F *1/24*

U.S. Cl. 3—1.912 **5 Claims**

1. A socket for hip joint prosthesis for cement free implantation comprising a body of biologically inert material provided with a semi-spherical concentric bearing cavity, a series of pegs longitudinally slidably mounted in said body in space relation to each other, a threaded screw mounted for axial movement in a concentric bore provided in said body for operative engagement with one end of each of said pegs, the threads being disposed on one end of the screw for self-tapping engagement with the tissue of the bone, a portion of the screw remote from said one end being of larger diameter than the threaded portion to define an annular shoulder, said bore having a portion of reduced diameter defining an annular shoulder for engagement with the first mentioned shoulder for assisting in holding the body in place.



3,939,498

ENDOPROSTHETIC FEMORAL HEAD

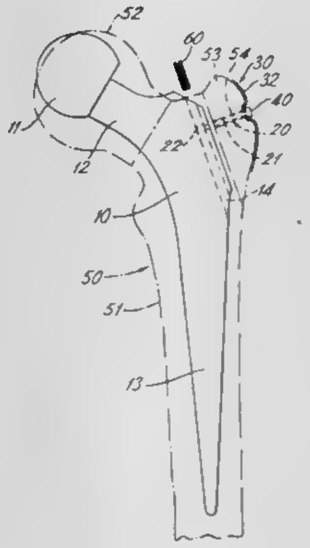
Alan John Clive Lee, and Robin Sydney Mackwood Ling, both of Devon, England, assignors to National Research Development Corporation, London, England

Filed May 28, 1975, Ser. No. 581,475

Claims priority, application United Kingdom, May 29, 1974, 23794/74

Int. Cl.² A61F *1/24*

U.S. Cl. 3—1.913 **5 Claims**



1. An endoprosthetic femoral head device comprising:

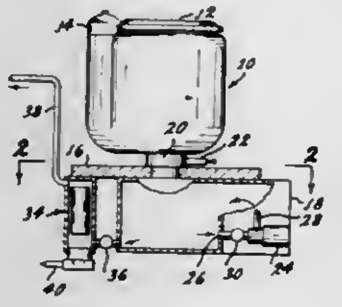
a component including a ball-shaped head connected, by way of a necked portion, to the wider end of a tapered intramedullary stem, said wider end having a slot formed longitudinally therein, which slot is open at one end and has an interior width greater than that at its longitudinal mouth;

an elongate member enlarged at one end, said one end being engaged in said slot at said open end thereof and captively movable therealong with the remainder of such member projecting transversely from said slot;

and a fastener connected around the other end of said member.

3,939,499
RECIRCULATING ELECTROLYTIC TOILET

George C. Roberts, Venice, Calif., assignor to Monogram Industries, Inc., Santa Monica, Calif.
Continuation-in-part of Ser. No. 286,593, Sept. 5, 1972, abandoned. This application July 22, 1974, Ser. No. 490,347
Int. Cl.^{2} E03D *5/00;* **A61L** *11/00*
U.S. Cl. 4—10 **16 Claims**



1. A self-contained toilet system comprising:

a holding tank in fluid flow communication with a toilet bowl for accepting a mixture of a salt-containing fluid, and solid and liquid waste matter deposited in said bowl;

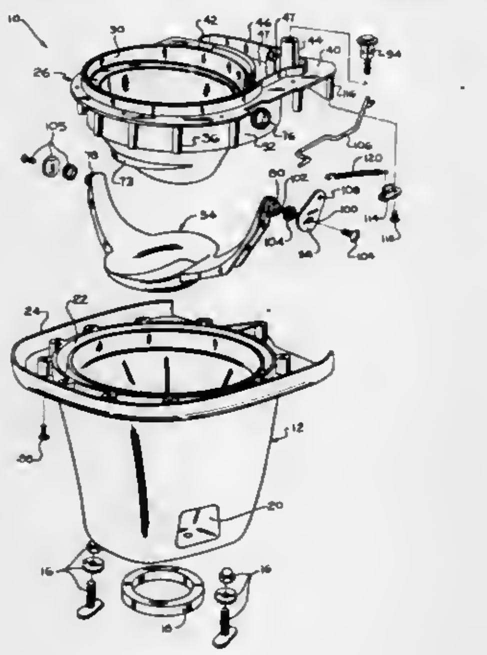
an electrolytic decomposition unit spaced from and separate from said holding tank and in fluid flow communication therewith, said unit having a pair of spaced electrodes disposed therein, and voltage means operatively connected to each of said electrodes; and

macerating and communiting pump means separate from said tank and in fluid communication with both said unit and said holding tank for pumping the mixture of salt-containing fluid and solid and liquid waste matter from said holding tank, macerating and communiting said pumped matter into a fine slurry in colloidal solution and circulating said fine slurry back into said holding tank, then from said holding tank into the interior of said unit in an agitated state and into contact with said electrodes therein until liberated chlorine and oxygen produced by the contact of said slurry with said electrodes react with the remainder of the slurry to clarify said slurry and generate an odor-free effluent therefrom.

3,939,500
WATER CLOSET

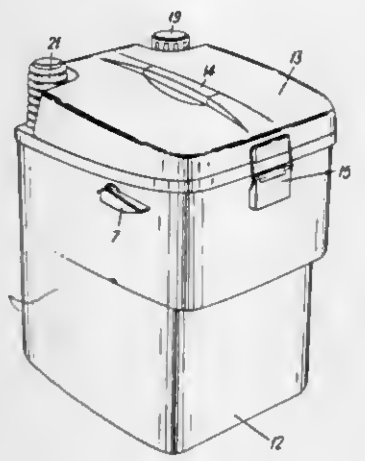
Marshall W. Miller; Christiaan J. H. Vanden Broek, both of Ann Arbor, Mich.; Benjamin H. Stansbury, Jr., Beverly Hills; Thomas H. Jamison, Culver City; Charles W. McHose, Hawthorne, and Paul T. Dubson, Westchester, all of Calif., assignors to Thetford Corporation, Ann Arbor, Mich.
Filed Dec. 21, 1973, Ser. No. 427,338
Int. Cl.^{2} E03D *11/00, 11/10*
U.S. Cl. 4—10 **17 Claims**

1. A water closet comprising a bowl having an open upper end and an open lower end, a concave pan beneath said bowl and supported thereon at the upper end thereof for pivotal movement about a horizontal axis between a first position in which said pan encloses said open lower end and a second position in which said pan is tilted in an elevated position at one side of said bowl, said pan being in spaced relation to said bowl and having a depth so that when in its first position its peripheral lip is at a higher elevation than the open lower end of said bowl, water flushing means actuable for discharging flush water to the interior of said bowl, and an actuator mechanism connected to said pan and to said water flushing means for moving said pan to its second position and for simultaneously actuating said flushing means to deliver flush water to the bowl while the pan is tilted and for returning the pan to its first position and for rendering said flushing means inactive, said actuator mechanism including a control means, a crank having at one end a crank axis coincident with said horizontal axis, said crank being operably connected at said one end to said pan for pivotal movement with said pan around said horizontal axis, and a link connected to the other end of said crank and to said control means for pivoting said crank and thereby said pan around said horizontal axis in response to movement of said control means.



3,939,501
TOILET

Frank T. Sargent, Jacksonville, Fla., assignor to Thetford Corporation, Ann Arbor, Mich.
Filed Nov. 1, 1974, Ser. No. 519,804
Claims priority, application United Kingdom, Nov. 22, 1973, 54343/73
Int. Cl.^{2} E03D *11/10*
U.S. Cl. 4—78 **18 Claims**

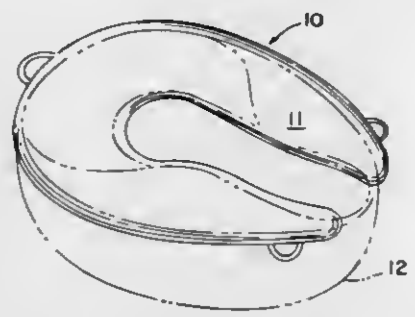


1. A toilet comprising a bowl having an outlet port, a flexible diaphragm, means supporting said diaphragm for movement between a first position in which said diaphragm closes said outlet port and a second position in which said diaphragm uncovers said outlet port, and said means being operable to tension said diaphragm into contact with said outlet port when said diaphragm is in said first position.

3,939,502
DISPOSABLE PAD

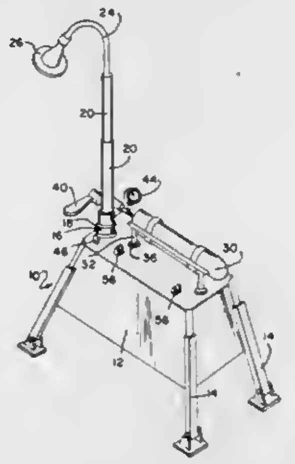
Marjorie A. Miller, Rte. 2 Box 414A, Sleepy Hollow Road, Dundee, Ill. 60118
Filed Aug. 5, 1974, Ser. No. 494,458
Int. Cl.^{2} A61G *9/00*
U.S. Cl. 4—113 **6 Claims**

1. A disposable bedpan pad comprising a pad member having generally the shape and size of the flesh-engaging seat portion of a bedpan, and shielded pressure sensitive retention means on the underside of said pad member for releasably anchoring said pad member in place on said seat portion, said retention means being located at least at the distal portions and at the bight portion of said pad and being shielded prior to use of said bedpan pad by removable sheet material so as to expose pressure sensitive adhesive material.



3,939,503
PORTABLE EMERGENCY SAFETY SHOWER

Harold W. Nazworth, Lake Charles, La. 70601
Filed Apr. 16, 1975, Ser. No. 568,690
Int. Cl.^{2} B05B *9/04, 13/02;* **A47K** *3/22*
U.S. Cl. 4—145 **4 Claims**



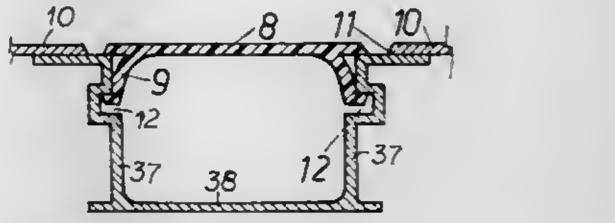
1. A portable emergency safety shower comprising a large capacity water supply tank having water-resistant, corrosion-proof, inner and outer surfaces thereof, leg elements extending from the supply tank for supporting said tank, a telescoping series of pipe elements having its large diameter terminal securely connected to an outlet in the upper surface of said tank and having elements of the telescoping series when in the collapsed form positioned within the tank and when in the extended arrangement positioned upwardly from the tank in a generally vertical alignment so that its small diameter terminal is above the tank, a curved pipe connection extending from the small diameter terminal to a shower head element, a pressurized cylinder for storage of air or nitrogen under high pressures therein and being mounted upon a portion of the water supply tank, and a valved conduit connecting said pressurized cylinder to the water supply tank including a manual valve to selectively release and shut off the passage of high pressure gas such as air or nitrogen from the pressurized cylinder to the water supply tank for in turn driving water into the water supply tank through the telescoping series of pipe elements and the shower head element.

3,939,504
SWIMMING-POOL STRUCTURE

Josef Linecker, Rosengasse 5, 5230 Mattighofen, Austria
Filed June 20, 1974, Ser. No. 481,480
Claims priority, application Austria, June 22, 1973, 5524/73
Int. Cl.^{2} E04H *3/18*
U.S. Cl. 4—172.17 **6 Claims**

1. In a swimming pool the improvement which comprises:

a plurality of plates secured in substantially contiguous relationship and defining the bottom of the swimming pool, channels lying below the bottom surfaces of the plates bridging the adjacent side edges of said plates and upwardly open at the bottom of said swimming pool, said channels having outwardly extending portions at the upper end thereof for attaching adjacent sides of the bottom surfaces of said plates to said channels said channels further having flanks provided with inwardly open grooves;

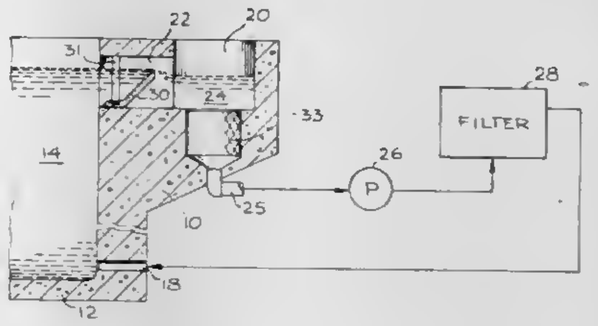


respective covers closing the mouths of said channels and having downwardly extending flanges received in said grooves, said covers having planar portions substantially flush with said plates along said bottom of said pool, said covers being formed at spaced locations with orifices communicating between the interiors of said channels and said pool; transverse duct means interconnecting said channels; and

recirculation means connected to said duct means for forcing water through said channels to distribute water into said pool through said orifices.

3,939,505
SELF-HINGED, BUOYANT WEIR PLATE FOR SKIMMERS

Richard S. Gross, 1618 Calle De Oro, Thousand Oaks, Calif. 91360
Filed Jan. 6, 1975, Ser. No. 538,739
Int. Cl.^{2} E04H *3/16, 3/18;* **F16L** *2/02*
U.S. Cl. 4—172.17 **11 Claims**



1. A one piece self-hinging, buoyant, skimmer weir for skimmers employed in swimming pools, and the like, comprising:

a substantially rectangular weir plate constructed from a substantially homogeneous, low-density, cellular material; and

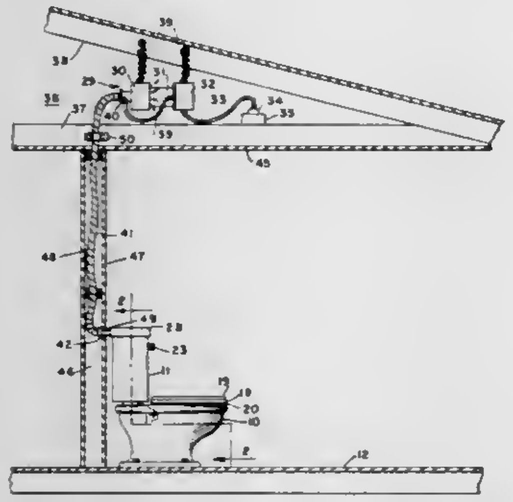
means for retaining said weir plate along a seam on the upper surface thereof, said seam being a groove disposed transverse to the direction of liquid flow in said skimmer proximate to the base of said weir plate and said retaining means being cooperatively disposed in said groove.

3,939,506
ODOR CONTROL VENTILATOR

Raymond H. Pearson, 627 Sherwood Drive, Richardson, Tex. 75080
Continuation-in-part of Ser. No. 434,519, Jan. 18, 1974. This application Aug. 13, 1974, Ser. No. 496,954
Int. Cl.^{2} E03D *9/04;* **A47K** *13/00*
U.S. Cl. 4—213 **12 Claims**

1. A toilet deodorizing accessary for use in combination with a conventional water tank and toilet bowl, the water tank

having a water discharge conduit through the bottom of the tank, a flush valve controlling the flow of water from the tank into said conduit, and an overflow pipe connected into said discharge conduit below the valve, said toilet bowl having a water distribution channel in communication with said discharge conduit for distributing water from said tank into said bowl when said flush valve is operated to flush said bowl, said accessary comprising a cover for said tank having a top wall and spaced inner and outer side walls depending from said top and integrally connected by a narrow bottom wall to form a continuous hollow passage extending peripherially beneath said top wall, a hole through said outer wall, and at least one hole through said inner wall, an electrically driven air blower, having a suction side and a discharge side, an air duct connected between said suction side and the hole in the outer side wall of said cover whereby odor laden air may be drawn by said blower in seriatim from said toilet bowl through said water distribution channel, said water discharge conduit, said overflow pipe, the hole in said inner side wall of the cover, the continuous hollow passage in said cover, the hole in said outer wall into said air duct and discharged through said blower.



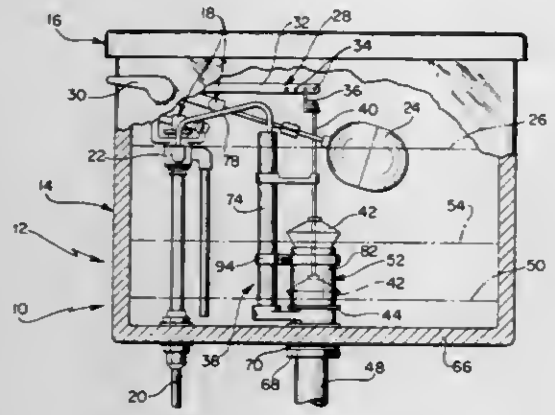
3,939,507
WATER CLOSET WATER VOLUME CONTROL

Edward C. Clark, 8840 4th St. N., St. Petersburg, Fla. 33702

Filed July 1, 1974, Ser. No. 484,614

Int. Cl.^{2} A61B *19/00*; E03D *1/34, 5/02*

U.S. Cl. 4—67 A **27 Claims**



1. A water closet comprising, a flushing water tank including an outlet valve unit having an outlet passage with a valve seat, said unit further having a valve member operatively associated with said valve seat in conventional assembly of the outlet valve unit for controlling the flow of flushing water from the tank through the outlet passage, and a device including a conduit operatively fixed to a fixed portion of said outlet valve unit and having one end portion in substantially fixed sealed telescoped engagement with said outlet passage, and an opposite end portion having a valve seat spaced upwardly from the first said valve seat, and said valve member being operatively associated with the conduit valve seat for controlling the flow of flushing water from the tank through the conduit and the outlet passage, thereby reducing the quantity of flushing water discharged from the tank over the quantity discharged when the outlet valve unit is in said conventional assembly.

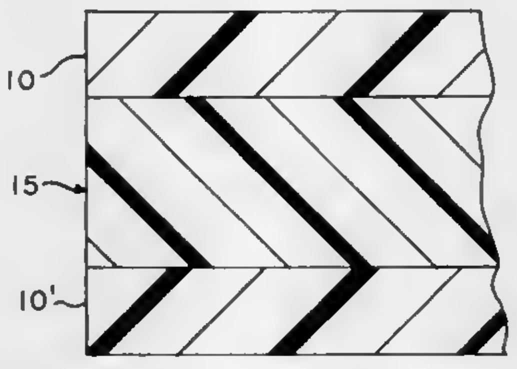
3,939,508
MATTRESS AND CUSHIONING CONSTRUCTION

Ervin T. Hall; Miles E. Talbert; James R. Walsh, and Max E. Hinkle, all of High Point, N.C., assignors to Thomasville Products, Inc., High Point, N.C.

Filed Jan. 8, 1975, Ser. No. 539,524

Int. Cl.^{2} A47C *27/08, 27/22*

U.S. Cl. 5—345 R **3 Claims**



1. A laminated cushioning construction comprising outer layers of resilient cellular material and an inner layer of reground, bonded, resilient cellular material, the compression modulus of said cushioning construction being at least 3, said inner layer being substantially equal in length and width to said outer layers and having an thickness in the range of 1–5 times the thickness of one of said outer layers, said outer layers having a first firmness ILD value and said inner layers having a second ILD value, said second value being greater than said first value.

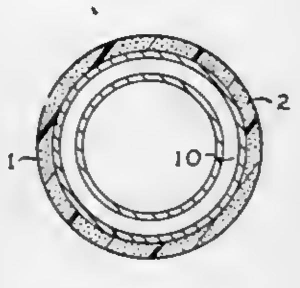
3,939,509
LIGHT-WEIGHT BUOY

Alvin Edward Moore, 916 Beach Blvd., Waveland, Miss. 39576

Continuation of Ser. No. 414,441, Nov. 9, 1973, abandoned, which is a continuation-in-part of Ser. No. 225,386, Feb. 11, 1972, Pat. No. 3,803,651, which is a continuation-in-part of Ser. No. 23,789, March 30, 1970, Pat. No. 3,670,349, said Ser. No. 23,789, is a continuation-in-part of Ser. No. 531,564, March 3, 1966, Pat. No. 3,503,825. This application Feb. 24, 1975, Ser. No. 552,621

Int. Cl.^{2} B63B *21/52*

U.S. Cl. 9—8 R **12 Claims**



1. A hollow article of manufacture, including:

a unitary, toroidal, blown tube of thermoplastic material which is heated and blown into a desired hollow toroidal shape, the said tube having integral, solid walls of strength-providing thickness, capable of substantially resisting its breakage or bending;

the walls being of sufficient thickness and rigidity to allow the tube to independently house and support a gas substantially permanently sealed inside said toroidal tube;

a matrix of porous shape-holding material, encompassing said toroidal tube, extending outward of the tube and protecting it from shock; and

waterproof skin means, sheathing the said porous material.

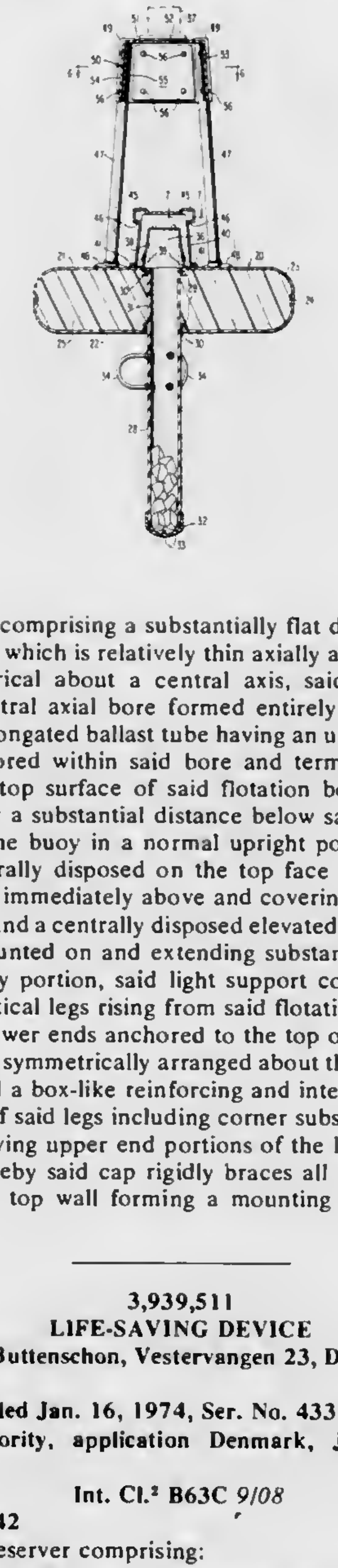
3,939,510
LIGHTED PLASTIC DISCREPANCY BUOY

Robert F. Curd, Jr., Fort Marshall, Sullivans Island, S.C. 29482

Filed Nov. 7, 1974, Ser. No. 521,779

Int. Cl.^{2} B63B *21/52*; B63C *9/21*

U.S. Cl. 9—8.3 E **4 Claims**



1. A buoy comprising a substantially flat disc-like flotation body portion which is relatively thin axially and wide laterally and symmetrical about a central axis, said flotation body having a central axial bore formed entirely therethrough, a depending elongated ballast tube having an upper end portion fixedly anchored within said bore and terminating substantially at the top surface of said flotation body portion and extending for a substantial distance below said body portion to stabilize the buoy in a normal upright position, a battery housing centrally disposed on the top face of said flotation body portion immediately above and covering the top of said ballast tube, and a centrally disposed elevated light support for the buoy mounted on and extending substantially above the flotation body portion, said light support comprising paired generally vertical legs rising from said flotation body portion and having lower ends anchored to the top of said body portion, said legs symmetrically arranged about the central axis of the buoy, and a box-like reinforcing and interconnecting cap for the tops of said legs including corner substantially tubular sockets receiving upper end portions of the legs and secured thereto, whereby said cap rigidly braces all of the legs, said cap having a top wall forming a mounting seat for a light means.

3,939,511
LIFE-SAVING DEVICE

Ove Hviding Buttenschon, Vestervangen 23, DK-4550 Asnaes, Denmark

Filed Jan. 16, 1974, Ser. No. 433,785

Claims priority, application Denmark, Jan. 17, 1973, 271/73

Int. Cl.^{2} B63C *9/08*

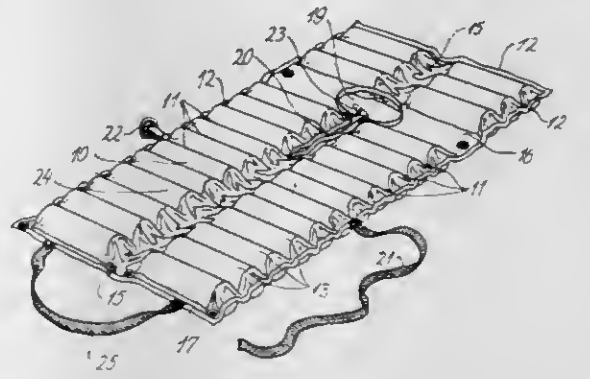
U.S. Cl. 9—342 **3 Claims**

1. A life preserver comprising:

a flexible apron-like portion, a substantially shorter flexible head-supporting portion, and a flexible intermediate region intermediate said portions, said portions having two rows of transversely extending elongated narrow longitudinally spaced pockets along the entire length thereof, said pockets in said two rows being laterally disposed and laterally spaced in end-to-end relationship and being axially spaced from each other sufficiently to define therebetween a flexible central region of each of said portions, said flexible intermediate region having a head receiving opening for receiving the head of a user therein, said head-supporting portion overlying the shoulders of said user when in use out of the water and said apron-like portion overlying the chest of the user when in use and extending below the waist of said user down to his thighs out of the water;

a plurality of generally cylindrical buoyant members each in a respective one of said pockets to impart buoyancy to said portions, said apron-like portion being flexible for flexing at intervals between said pockets containing said buoyant members for conforming in shape to the body of said user when said user changes position or posture out of the water and for being reversibly foldable at about the waist of said user to allow the reversely folded part to be selectively positioned overlying that part of said apron-like portion overlying the chest of the user, said head-supporting portion being flexible for freely floating away from said user's shoulders in the water and for underlying and supporting said user's head above the water; and

means for holding the reversely folded part in a folded condition overlying that part of said apron-like portion overlying the chest of the user.



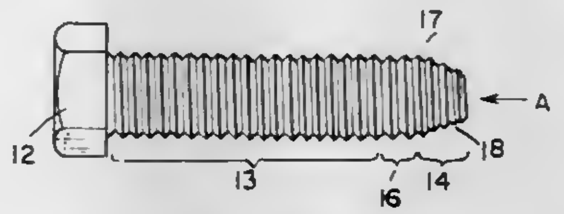
3,939,512
MALE SCREW-FORMING MEMBERS

Walter Thurston, 28 Atwood Ave., Kew, Surrey, and William Kerrigan, 22 Feltham Road, Ashford, Middlesex, both of England

Division of Ser. No. 59,333, July 29, 1970, abandoned, which is a continuation of Ser. No. 760,924, Sept. 19, 1968, abandoned. This application Nov. 21, 1974, Ser. No. 525,874

Int. Cl.^{2} B21H *3/02*; B23G *9/00*; B21K *1/44*

U.S. Cl. 10—10 R **1 Claim**



1. A method of making a male, screw-forming member comprising; forming a blank with a shank having first and third portions of substantially constant circular cross-section and a second portion at the free end of the shank and which tapers towards said end and has a generally conical surface, the third portion being interposed between the first and second portions; forming an intermediate product by forming a machine-screw thread of constant form on said shank and extending continuously from said free end onto said first portion, there being at least one complete turn of thread on said third portion; the crests of the thread on the first portion lying on a first

imaginary surface which is generally cylindrical and coaxial with the shank; after the completion of the thread formation and as an operative separate therefrom, deforming said second and third portions of the threaded intermediate product by applying a radially inwardly directed force at positions spaced around the circumference of the blank by internally threaded dies, the sole relative movement between the blank and the dies being in a direction radially inwardly of the blank thus to move parts of the second and third portions inwardly relative to said axis to form relief portions with the consequent outflow of metal between such parts to provide a series of lobes each of which extends axially of the shank for the whole of the axial length of the second and third portions, the lobes being spaced circumferentially around the shank in axial alignment by the relief portions and being arranged such that; the crests of the thread on the lobes of the second portion have a second imaginary circumscribing surface which is generally conical, is coaxial with the shank and which tapers towards said free end; the crests of the thread on the lobes of the third portion have a third imaginary circumscribing surface which is generally cylindrical and co-axial with the shank; the radial distance of said third surface from the longitudinal axis of the shank is greater than the radial distance of said first surface from said axis; the roots of the thread on the first portion lie on a fourth imaginary surface and the roots of the thread on the lobes of the second and third portions lie on a fifth imaginary circumscribing surface, the fourth and fifth surfaces being cylindrical and coaxial with the shank; the radial distance of said fifth surface from the longitudinal axis of the shank being greater than the radial distance of said fourth surface from said axis; the crests of the thread on the axial relief portions of said third portion lie on a sixth imaginary inscribed surface, the roots of the thread on the axial relief portions of said second and third portions have a seventh imaginary inscribed surface, the sixth and seventh surfaces being generally cylindrical and coaxial with the shank; the radial distances of said sixth and seventh surfaces being less than the radial distance of the first and fourth surfaces from said axis respectively, and the crests of the thread on the axial portions of the second portion have an eighth imaginary inscribed surface which is generally conical, is coaxial with said shank and tapers to said free end; such that the thread on the lobes forms, in a plain hole of appropriate diameter, a female thread of a greater effective diameter than the effective diameter of the thread on said first portion.

3,939,513
PROCESS AND APPARATUS FOR BINDING

Charles F. H. Crathern, III, Contoocook, and Sherman W. Twitchell, Hopkinton, both of N.H., assignors to Crathern Engineering Co., Inc., Contoocook, N.H.

Filed Nov. 15, 1974, Ser. No. 523,976

Int. Cl. B42c *19/00*

U.S. Cl. 11—1 A **13 Claims**

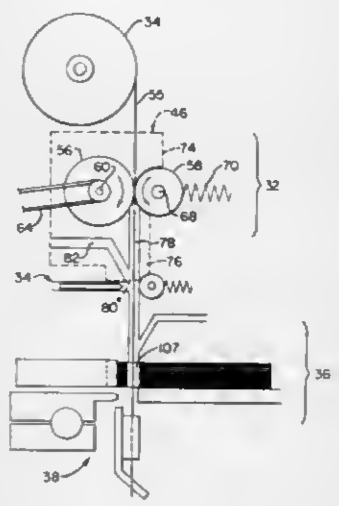
1. Apparatus for binding a stack of perforated sheets together at one edge with at least one loop of flexible tape, said apparatus comprising in combination:

means for supporting said stack of said perforated sheets so that at least one perforation in each sheet is registered with a corresponding perforation in each of the other sheets;

means for pneumatically stringing said tape from a substantially continuous supply thereof through said registered perforations;

cut-off means for severing from said supply a length of tape including the portion thereof strung through said registered perforations;

forming means for flexing said length of tape so that the latter forms a loop extending around an adjacent edge of said stack of sheets and through said registered perforations; and



means for sealing together end portions of said looped length of tape.

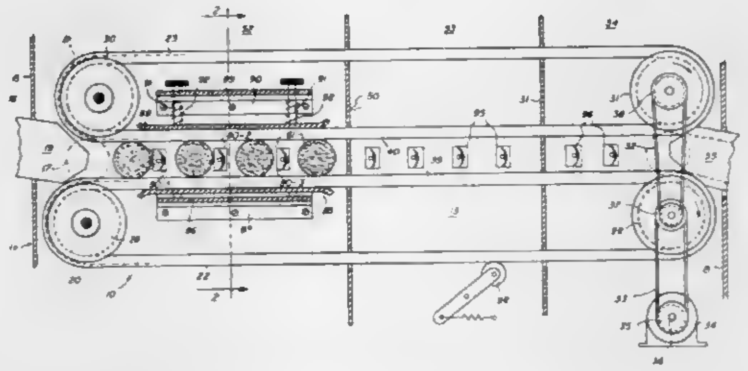
3,939,514
APPARATUS FOR CLEANING THIN, FRAGILE WAFERS OF A MATERIAL

Richard L. Cook, Seneca Falls, N.Y., assignor to Kayex Corporation, Rochester, N.Y.

Filed Nov. 11, 1974, Ser. No. 522,786

Int. Cl.² A46B *13/04*

U.S. Cl. 15—21 C **19 Claims**



1. Apparatus for simultaneously cleaning the surfaces of a number of thin, disc-like wafers being moved in a linear path comprising, in combination:

at least one pair of endless belts defining the linear path of movement for the wafers, one belt being arranged relative to the other with the facing portions of the belts being spaced apart by at least the diameter of the wafers interposed therebetween so as to frictionally engage the peripheral edges thereof for simultaneously moving and rotating the wafers in one direction along the path;

a plurality of abrading members rotatably mounted on each side of the path for engaging and cleaning the respective surfaces of the wafers, the abrading members being arranged in pairs along the path and each pair comprising an abrading member on each respective side of the path; and

drive means operatively coupled to the belts for moving one belt at a faster rate than the other for imparting rotary motion to the wafers in a direction corresponding to that of the faster moving belt and to the abrading members for rotating the same, the abrading members comprising a pair being rotated in opposite directions, the rotary forces applied to surfaces of the wafers by each pair of abrading members being nullified to the extent that rotation of the wafers in the one direction and movement along the path by the belts is not inhibited.

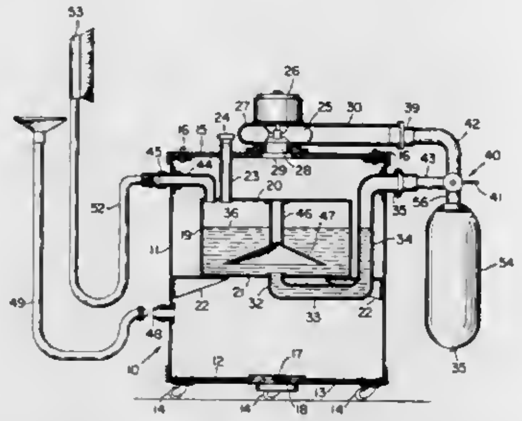
3,939,515
DUAL PURPOSE CLEANING APPARATUS

Stanley F. Platek, 187 Maplewood Ave., Maplewood, N.J. 07040

Continuation-in-part of Ser. No. 444,781, Feb. 22, 1974, abandoned. This application Feb. 10, 1975, Ser. No. 548,405

Int. Cl.² A47L *11/20*

U.S. Cl. 15—321 **10 Claims**



1. In cleaning apparatus of the type including a main container having an inlet port open to the atmosphere, a second container supported within the main container and adapted to hold a detergent solution, a blower fan having an intake port communicating with the interior of the main container and a discharge port communicating through a first conduit to the interior of the second container and communicating through a second conduit to a bag means for collection contamination, the second container having a discharge conduit leading from the interior thereof and external to the main container, the improvement comprising:

baffle means arranged with the discharge conduit of the second container and including means selectively operator-operated to a first position for permitting air drawn into the main container through the inlet nozzle upon operation of the blower fan to flow through the first conduit to the second container for passage through the detergent solution therein to provide suds for delivery through the discharge conduit;

the baffle means selectively operator-operated to a second position for blocking delivery of suds through the discharge conduit of the second container, whereupon the air backs up in the first conduit and flows through the second conduit; and

valve means supported within the collection bag means and closed when the air flows through the first conduit for sealing the bag means, and opened by the air flowing through the second conduit for unsealing the bag means whereupon said bag means receives the air flow.

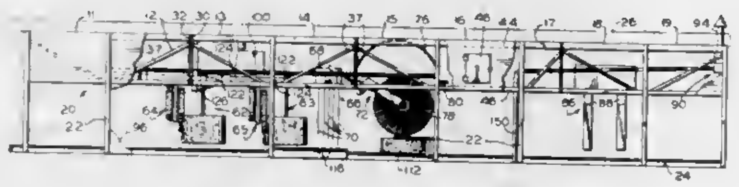
3,939,516
MODULE CAR WASH

Daniel C. Hanna, 1133 Rivington Drive, Portland, Oreg. 97201

Continuation of Ser. No. 445,214, Feb. 25, 1974, abandoned, which is a continuation of Ser. No. 267,088, June 28, 1972, abandoned. This application Mar. 7, 1975, Ser. No. 556,317

Int. Cl.² B60S *3/06*

U.S. Cl. 15—53 AB **7 Claims**



1. In a car wash,

a pathway of a predetermined width along which cars to be washed can be moved,

an attic-like building structure including a framework and sides,

post means at the sides of the pathway supporting the building structure in a position raised completely above the height of a car to be moved along the pathway, the sides being open for sight except for the post means,

a plurality of cleaning mechanisms including an articulated wraparound brush device, a top cleaning device and a window brush device,

and mounting mechanisms mounting all of said devices and constituting the sole supports for said devices, all of said mounting mechanisms being mounted by said framework above said height and suspending said devices into the path of the cars,

the overall width of the combined building structure and post means providing a narrow building and the building structure being overhead and mounting the mounting means serving to keep them above the spray area to reduce wear and make maintenance convenient.

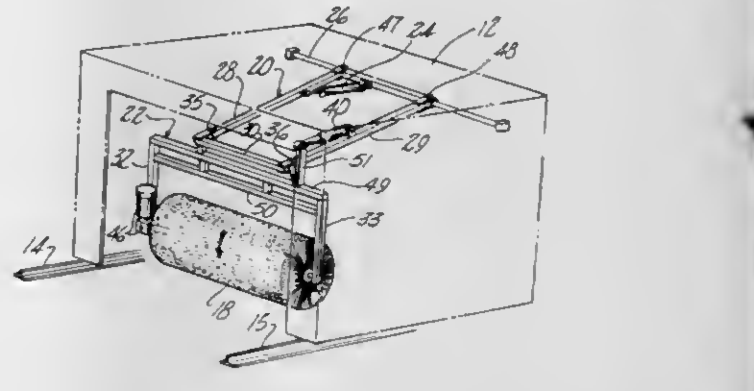
3,939,517
OVERHEAD BRUSH SYSTEM WITH LATERAL MOVEMENT

David J. Bivens, 205 E. Lawn Ave., Danville, Va. 24541

Filed Nov. 29, 1973, Ser. No. 419,940

Int. Cl.² B60S *3/06*

U.S. Cl. 15—53 A **8 Claims**



1. In a car washer assembly: a cylindrical scrubbing brush having a longitudinal axis of symmetry for contacting a vehicle in a wash lane; means for rotating the brush about said axis; support means carrying the brush in a position to contact vehicles in the wash lane with said axis transversely to the lane; and power means operatively connected with said support means for axially reciprocally displacing the brush relative to the wash lane while contacting a vehicle, said support means comprising a first frame suspended over the wash lane and supporting the brush with the axis thereof substantially horizontal for relative displacement over vehicles in the lane; said frame further including first and second pivotal and rigid parallel arms of equal length, the brush being carried by and between the arms, the power means being connected to at least one of the arms to control the angular relation between the arms and the brush thereby to laterally shift the brush relative to the wash lane.

3,939,518
FLOOR TREATMENT MACHINE

Robert P. Whitney, Grand Haven, and Melvin R. Smith, Muskegon, both of Mich., assignors to Clarke-Gravely Corporation, Muskegon, Mich.

Filed Nov. 30, 1973, Ser. No. 420,433

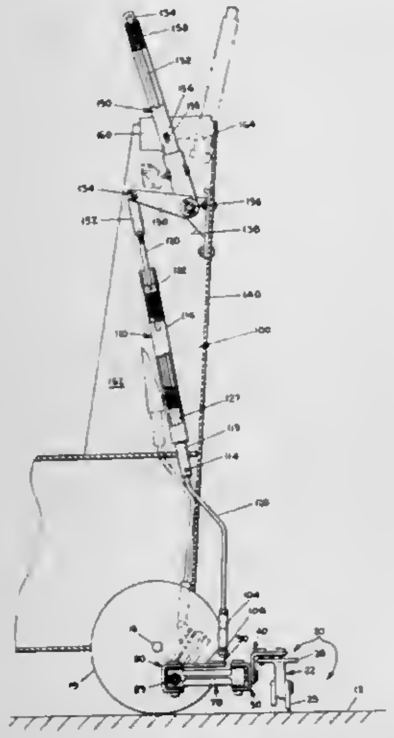
Int. Cl.² A47L *11/30*

U.S. Cl. 15—98 **11 Claims**

1. In a floor treatment machine including a squeegee for contacting a floor surface to be treated, improved means for

mounting said squeegee such that it tracks the movement of the floor treatment machine comprising:

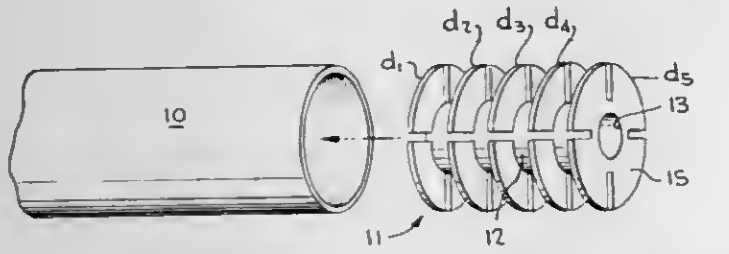
- a squeegee assembly including a squeegee blade for contacting the surface of the floor;
- a pivot mounting bracket;
- means pivotally coupling said squeegee assembly to said pivot mounting bracket for restricted pivotal motion about the longitudinal axis of motion of the floor treatment machine, said coupling means includes a pin extending between said pivot mounting bracket and said squeegee assembly, said pin spaced from the pivot axis between said pivot mounting bracket and said squeegee assembly and an aperture formed in one of said bracket or assembly to receive said pin, said aperture dimensioned larger than said pin to permit controlled pivoting of said squeegee assembly;
- a lifting bracket pivotally coupled to the floor treatment machine for rotation about an axis transverse to the motion of said machine; and
- second means pivotally coupling said lifting bracket and said pivot mounting bracket to permit said squeegee assembly to swing laterally to follow the movement of said floor treatment machine.



3,939,519

CONDENSER TUBE CLEANING PLUG

Walter B. Muirhead, Rte. 2, Box 155, Jasper, Tenn. 37347
Filed Jan. 16, 1974, Ser. No. 433,875
Int. Cl.² B08B *9/04*
U.S. Cl. 15—104.06 R **14 Claims**



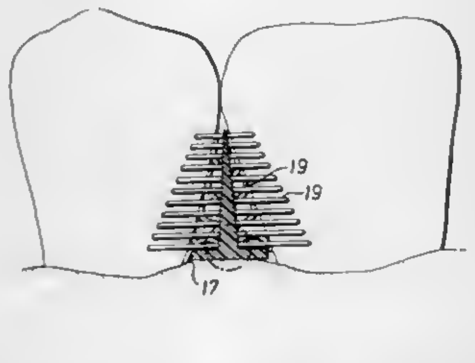
1. A cleaning plug for condenser tubes or the like adapted to be propelled through a tube to be cleaned by differential fluid pressure comprising:

- an elongated core body for support of a plurality of axially spaced scraper means, said scraper means comprising a plurality of single, separate scraper discs, said scraper discs having slits extending from adjacent said body to the outer periphery to form annular segments,
- said slits being open on both sides of said discs, each of said discs being separated from the adjacent disc,
- said annular segments being axially flexible so as to readily deflect when said plug is placed in a confining tube to be cleaned,
- said discs being sufficiently larger in outside diameter than the inside diameter of said tube to be cleaned and said slits sufficiently narrow to cause the outer tips of said segments to at least touch when said core body is centered in said tube for cleaning action, whereby substantially full peripheral scraping action of the inside wall of said tube by each single disc is gained.

3,939,520

TOOTH BRUSH

Per Axel Torbjörn Axelsson, Drottninggatan 27, 652 25 Karlstad, Sweden
Filed June 11, 1975, Ser. No. 585,871
Claims priority, application Sweden, June 13, 1974, 7407798
Int. Cl.² A46B *9/04*
U.S. Cl. 15—167 R **8 Claims**



1. A tooth brush for cleaning of teeth interspaces, comprising a straight stem of an approximately T-shaped cross-section forming a base plate adapted for insertion into a tooth interspace so as to rest upon and protect the gum, and also forming an attachment plate protruding at right angles to the longitudinal center line of the former, substantially parallel brush bristles extending outwardly therefrom in opposite directions and capable of working simultaneously upon opposed faces of two adjacent teeth, the lengths of the bristles decreasing as the distance from the base plate increases.

3,939,521

BRUSH CONSTRUCTION

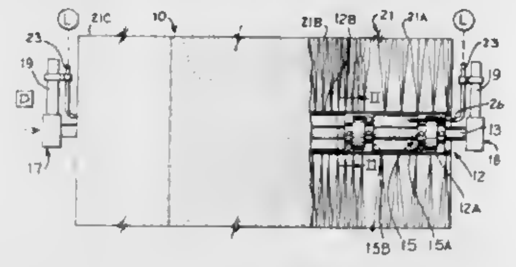
Gaylord J. Clark, 4769 Paw Paw Lake Road, Coloma, Mich. 49038
Filed Oct. 15, 1974, Ser. No. 514,827
Int. Cl.² A46B *7/10, 13/04*
U.S. Cl. 15—179 **16 Claims**

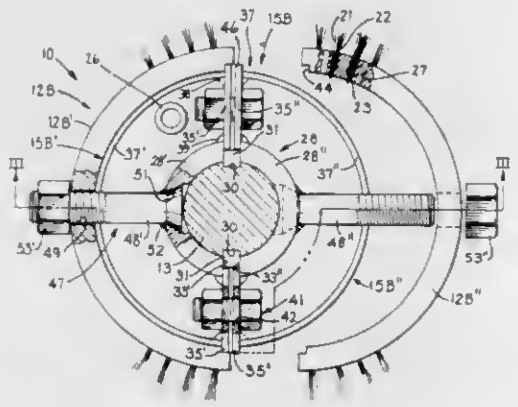
11. A rotary brush construction, particularly for top washing of vehicles, and adapted for mounting on a rotary shaft, comprising:

- a hollow cylindrical perforate core means mounting brush bristles thereon and adapted to loosely receive the shaft therethrough;
- at least a pair of split annular means spaced axially from each other within the core means for securing the core means to the shaft, each said annular means being mounted on the shaft for rotation therewith and having a substantially cylindrical outer surface means spaced radially from the shaft for backing the core, substantially radially extending portions associated with the annular means for circumferentially positioning the core means relative to the annular means, and tension means for pressing the core means against the annular means;
- said core means comprising a pair of longitudinally aligned cylindrical core sections having adjacent ends overlapping the outer surface means of one said annular means, so that said outer surface means extends into both said core sections, said tension means of said one annular means comprising elongate members extending substantially radially from the annular means and into fixed releasable engagement with corresponding ones of said core sections for holding the core section ends against said annular means and for preventing axial separation of said core sections.

15. A rotary top brush construction for washing of vehicles and mountable on a rotary shaft, comprising:

- an elongated cylindrical core having outwardly projecting similar length bristles distributed circumferentially and axially over the surface thereof and forming a substantially continuous cylindrical wall of bristle tips circumferentially of and surrounding said core, said core comprising separate but axially adjacent cylindrical core sections, including an elongate intermediate core section and a pair of shorter flanking end core sections, and means for reducing entanglement of brush bristles with projecting trim items at and adjacent the sides of the vehicle to be washed and comprising an axial distribution density of brush bristles on the end core sections which is substantially less than the axial distribution density of brush bristles on said intermediate core section;
- a plurality of collar means spaced axially along and fixed to said shaft for rotation therewith, ones of said collar means being disposed adjacent the outer ends of said end core sections for coaxially supporting same on said shaft for rotation therewith, and others of said collars being axially disposed at the axial interfaces between adjacent core sections for axially joining same together and coaxially fixing same to said shaft for rotation therewith.

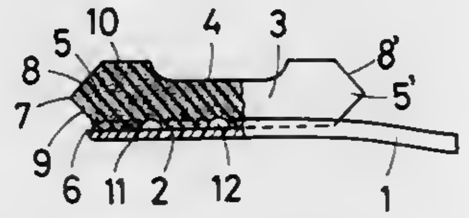




3,939,522

TOOTHBRUSH

Hiromichi Shimizu, 26, 4-chome, Kuwazu-cho, Higashisumiyoshi, Osaka, Japan
Filed July 22, 1974, Ser. No. 490,392
Int. Cl.² A61H *13/00*
U.S. Cl. 15—244 R **8 Claims**

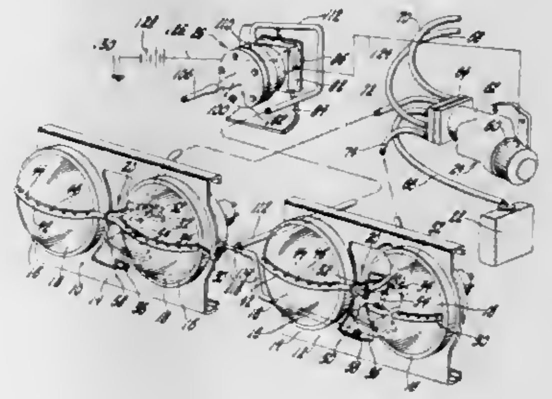


1. A toothbrush having a rigid handle, a head on one end of the handle and a multicellular, resilient, compressible sponge pad fixed on a pad mounting surface of the head, said sponge pad having a configuration of a hexagonal cylinder of which a section perpendicular to the mounting surface of the head is hexagonal elongated along a line parallel to the longitudinal direction of the handle, and upper side-surface parallel to the mounting surface of the hexagonal cylinder, said upper surface having a concavity of relatively large area along the axis of the hexagonal cylinder to form two planar top surfaces on opposite sides of the concavity, the under side-surface of the hexagonal cylinder contacting the pad mounting surface being provided with at least one groove through the pad along the axis of the hexagonal cylinder, and the pad being located on the mounting surface so that one of the longitudinally projecting parts between the top surface and the under side surface of the pad extends beyond the free end of the head.

3,939,523

HEADLAMP WASHER AND WIPER SYSTEM

William H. Kolbe, Birmingham, and Donald C. Unger, Grosse Pointe Park, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 16, 1974, Ser. No. 515,184
Int. Cl.² B60S *1/48*
U.S. Cl. 15—250.02 **3 Claims**



1. In a motor vehicle, a headlamp mounted on the vehicle and having a lens, a source of fluid pressure, a reservoir, pump means having inlet means and outlet means, said inlet means fluidly communicating with the reservoir, said pump means operative to draw solvent from the reservoir through said inlet means and dispense solvent through said outlet means, a wiper and washer holder supported on the vehicle adjacent the headlamp for pivotal movement between first and second positions at opposed locations with respect to the headlamp, a wiper blade on said holder adapted to wipe the surface of the lens during said movement, nozzle means on said holder fluidly connected to the outlet means of the pump means, fluid motor means operated by fluid pressure for moving the holder from said first position to said second position, spring means for returning said holder from said second position to said first position, and operator actuated switch means having an electrical switch portion for energizing the pump means for delivering solvent to said nozzle means for distribution on the lens as the wiper blade moves toward said second position, a fluid switch portion for connecting the fluid motor means with said source of fluid pressure to move the holder to the second position and actuating means for mechanically simultaneously actuating both said electrical switch portion and said fluid switch portion, whereby solvent is distributed on said lens from the nozzle means as the fluid motor means moves the holder to the second position and wiped therefrom by the blade as said spring means returns the holder to the first position.

3,939,524

WINDSCREEN WIPERS

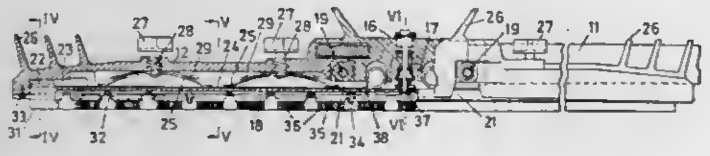
Robert Edgar Knights, 180, Park Farm Drive, Allestree, Derbyshire, England

Filed Oct. 30, 1972, Ser. No. 301,736

Claims priority, application United Kingdom, Nov. 2, 1971, 50931/71

Int. Cl. B60s *1/52, 1/38*

U.S. Cl. 15—250.04 11 Claims



9. A windscreen wiper comprising a reciprocable arm a blade carrier pivotally mounted on the said arm, a flexible blade element mounted on the carrier by means of variable rate springs means, and wind-responsive means adapted to vary the rate of the said spring means to counteract wind lift effects on the blade element.

3,939,525

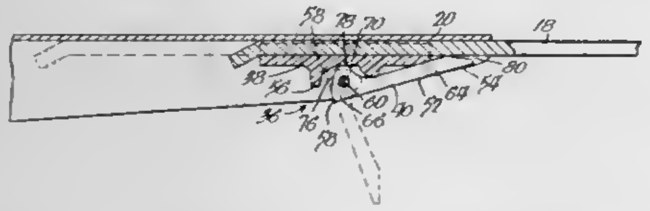
LOCKING PLATE FOR ADJUSTABLE ARMS

Donald W. Stratton, St. John, Ind., assignor to The Anderson Company, Gary, Ind.

Filed Jan. 6, 1975, Ser. No. 538,964

Int. Cl.² B60S *1/32*

U.S. Cl. 15—250.35 3 Claims



3. In a windshield wiper arm having a channel-shaped section pivotally carried by an attaching section, and an elongate arm extension member extending into the outer end of said channel-shaped member, in the combination, an elongate non-metallic latching shim nested in said channel-shaped member and having an upper portion shaped to partially surround the one end portion of the arm extension, lever means pivotally connected between the side walls of the channel-shaped member, said shim having a hollowed-out lower portion forming a bearing surface in alignment with said lever means, and eccentric means on said lever in engagement with the bearing surface on said hollowed-out portion of said locking shim whereby said eccentric on said lever either locks the shim and arm extension relative to the channel member or permits the arm extension to be moved relative to the channel member.

3,939,526

CLEANING DEVICE FOR FLANGED REELS

Max Joachim Mania, Eckartsweier, and Albrecht Weidmann, Offenburg, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed July 30, 1974, Ser. No. 493,055

Claims priority, application Germany, Aug. 1, 1973, 2338939

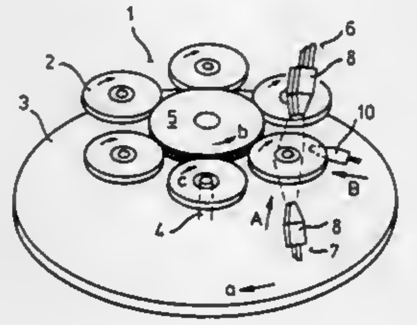
Int. Cl.² A47L *5/38*

U.S. Cl. 15—306 B 7 Claims

1. A device for cleaning from the surfaces of flanged reels, especially magnetic tape reels, dust and dirt particles, said device comprising:

a means for conveying the reels along a path of gas nozzles in such a position that both outer flange surfaces, both inner flange surfaces and the hub surfaces of said reels are accessible by several jets of cleaning gas leaving said gas nozzles, whereby each gas nozzle is capable of and suitably arranged for directing a jet of gas onto a surface of said reels as they are conveyed and the impacting of said gas on said surface removes said dust and dirt particles therefrom;

said path of gas nozzles comprising at least three groups of gas nozzles, each group consisting of at least one gas nozzle, the first and second groups of gas nozzles being respectively positioned along said path to direct gas onto each of said outer flange surfaces of said reels and the third group being positioned along said path to direct gas onto both of said inner surfaces and the hub of said reels;



a means for ionizing the jets of cleaning gas whereby the static charge on the surfaces of said reels is neutralized so as to enable the easy removal of dust and dirt particles therefrom by said cleaning gas; and

a suction device for withdrawing the dust and dirt particles as they are removed from the vicinity of the cleaned surfaces.

3,939,527

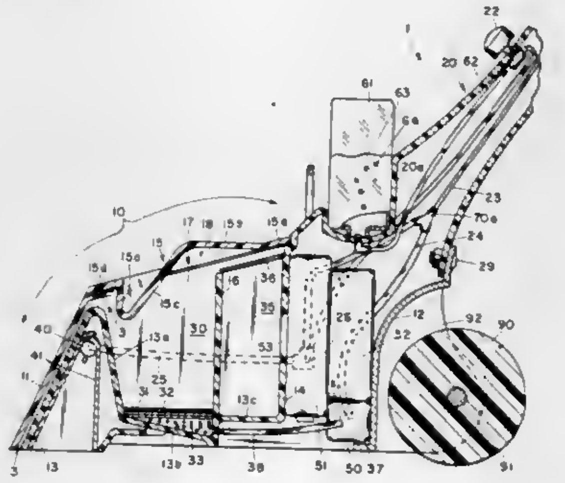
PORTABLE SURFACE CLEANER

Terry H. Jones, Norman, Okla., assignor to Clarke-Gravely Corporation, Muskegon, Mich.

Filed Oct. 12, 1973, Ser. No. 405,819

Int. Cl.² A47L *7/00*

U.S. Cl. 15—353 8 Claims



7. A portable surface cleaning apparatus comprising: a housing defining a used cleaning fluid recovery chamber having front and rear walls and an open top; means on said housing for facilitating said housing over the surface to be cleaned; a suction nozzle on said housing adjacent said front wall of and opening into the top of said recovery chamber; a passageway generally at the rear of said recovery chamber and including an opening through said rear wall of said recovery chamber; blower means positioned within said housing at the rear of said recovery chamber behind said rear wall of said recovery chamber and in flow communication with said recovery chamber through said passageway and said opening for effecting the rapid evacuation of air from said recovery chamber, causing a large volume of air and used cleaning fluid to be drawn through said suction nozzle; a shield extending upwardly from the bottom of said recovery chamber in front of and spaced from said rear wall and from said blower means for preventing liquid from being drawn into said blower means; pump means positioned within said housing adjacent said recovery chamber and in flow communication with said recovery chamber for pumping liquid and suds out of said recovery chamber; a conduit operably connected to said pump means through which liquid and suds can be pumped to a discharge point remote from said housing; a cover removeably mounted on the top of said housing over the open top of said recovery chamber, said cover defining a first baffle at the top of said recovery chamber, adjacent and to the rear of said opening of said suction nozzle into said recovery chamber whereby air and used cleaning fluid being drawn through said nozzle and into said recovery chamber are directed downwardly into said recovery chamber by said first baffle.

3,939,528

VEHICLE FOR CLEANING PAVEMENTS

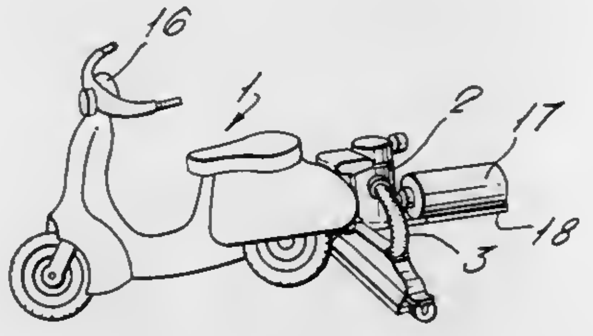
Igal Mossinsohn, 24, Spinoza St., Tel-Aviv, Israel

Continuation-in-part of Ser. No. 271,927, July 14, 1972, abandoned. This application May 13, 1974, Ser. No. 469,152

Claims priority, application Israel, July 21, 1971, 37363

Int. Cl.² A47L *9/00*

U.S. Cl. 15—340 4 Claims



1. A light, versatile vehicle for cleaning narrow passages, comprising:

a. two wheels secured to the vehicle, which comprise the sole support for the vehicle, and which are arranged in tandem fashion, the forward wheel being steerable,
b. at least one elongated rectangular funnel pivotably fastened to a side of the vehicle at the rear part thereof,
c. a dust collecting container carried on the vehicle and removably connected to the rear part thereof behind said at least one funnel,
d. a vacuum pump and a motor for operating the same, both mounted onto the vehicle,
e. means associated with the pump for providing communication between the said at least one funnel and the container,
f. means for deflecting the said at least one funnel up to an angle of 90 ° relative to the longitudinal axis of the vehicle, and
means for retracting the said at least one funnel upon encountering an obstruction to lie adjacent the side of the vehicle.

whereby the vehicle is capable of moving in sharp curves while cleaning sidewalks, narrow passages and insides of containers.

3,939,529

WINDOW OR THE LIKE STAYS

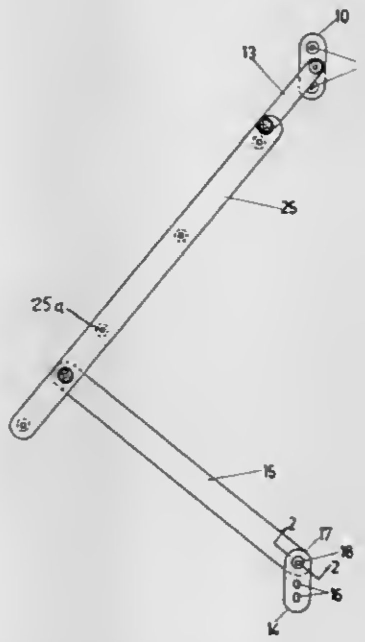
Ronald Percival Davis, Wellington, New Zealand, assignor to Interlock Industries Limited, Wellington, New Zealand

Filed Mar. 14, 1974, Ser. No. 451,197

Claims priority, application New Zealand, Mar. 16, 1973, 170109

Int. Cl.² E05D *15/58, 7/04*

U.S. Cl. 16—179 7 Claims



1. A window stay for swingably mounting a window sash on a window frame, said stay comprising two mounting plates, two arms each of which is pivoted at one end to a said mounting plate, a single mounting plate to which the other end of each arm is pivotally mounted, at least one of the pivot joints at the ends of said arms being a wear resistant friction joint, said mounting plates having openings therethrough for securing said mounting plates to one of said frame and sash, and said single mounting plate having openings therethrough for securing said single mounting plate to the other of said frame and sash.

3,939,530

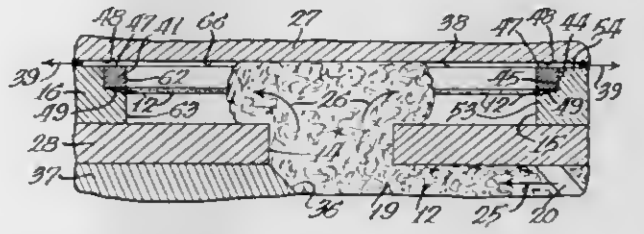
MOLDING APPARATUS

Harry H. Holly, Olympia Fields, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.

Filed Feb. 21, 1974, Ser. No. 444, 299. The portion of the term of this patent subsequent to Mar. 11, 1992, has been disclaimed.

Int. Cl.² A22C *7/00*

U.S. Cl. 17—32 21 Claims

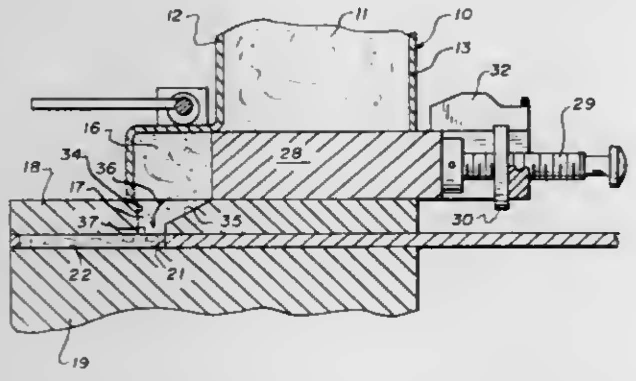


17. For use in an apparatus for pressure shaping articles from a moldable material, a combined mold and valved air vent means, comprising: a mold plate having opposite plate surface means and a mold opening extending through the plate, one of said surface means comprising an air vent for directing air from said opening under the pressure of an entering pressurized charge of said material, said opening being defined by a peripheral edge surface; a rigid valve within said opening at said edge surface; means mounting said valve for movement relative to said edge to vent closing position when said valve is subjected to said entering material; and means on

said plate for retaining said valve in normally open vent position when said mold opening is substantially empty.

3,939,531
MOLDING DEVICE

James A. Holly, Richton Park, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.
Filed May 9, 1973, Ser. No. 359,199
Int. Cl.^{2} A22C *7/00*
U.S. Cl. 17—32 **7 Claims**

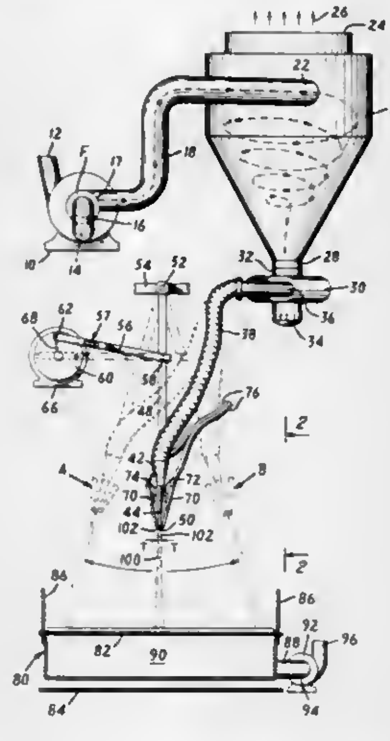


1. Apparatus for molding a shaped portion of a plastic food material that tends to shrink during cooking and the like, comprising: supply means for providing a supply of said plastic material; a mold having a shaping cavity with a peripheral edge for forming said shaped portion; spaced wall means forming a supply passage from said supply means to said cavity; and pressure means at one side of said supply passage for applying pressure to said plastic material supply and thereby forcing said material in a stream through said supply passage and into said cavity at said cavity edge for filling the cavity, said wall means supply passage externally of and adjacent to said shaping cavity having a first side opposite to said pressure means generally parallel to the general direction of said stream entering said cavity and a second side adjacent to said pressure means angled toward said cavity and said one side, said first and second sides forming a converging included angle of about 50°–65° and said wall means supply passage having a width at said cavity of about 5/16–7/16 inch, said first and second wall sides and said supply passage width in combination with said pressure means comprising means for tumbling and kneading said food material during its flow into said cavity.

3,939,532
MANUFACTURE OF FIBROUS WEB STRUCTURES

Donald E. Wiegand, Minneapolis, Minn., assignor to Conwed Corporation, St. Paul, Minn.
Continuation-in-part of Ser. No. 253,098, May 15, 1972, abandoned, which is a continuation-in-part of Ser. No. 46,594, June 16, 1970, abandoned. This application Oct. 19, 1973, Ser. No. 407,934
Int. Cl.^{2} D01G *25/00*
U.S. Cl. 19—156.3 **5 Claims**

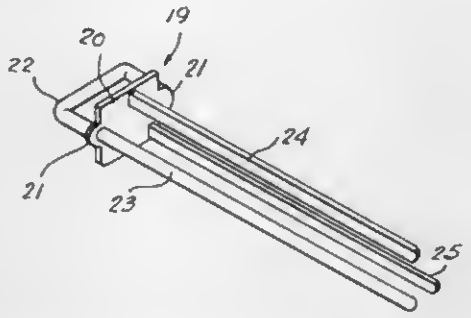
1. The method of forming a uniform felted fibrous structure by projecting an air fiber stream of fibers from a nozzle for collection on a collecting screen having edges comprising:
a. selecting cellulosic type fibers having a length of 0.25 inch or less;
b. forming a relatively dilute air suspension of substantially individualized fibers in which at least about one-half of the fibers are the said selected fibers having a length of 0.25 inch or less;
c. subsequently concentrating said air-fiber suspension by removing air therefrom;
d. selecting a nozzle configuration for projecting said suspension as a jet stream;
e. oscillating said nozzle;
f. projecting said suspension of fibers from said selected nozzle as a jet stream at a linear velocity of at least 2,000 feet per minute toward the collectng screen and without said suspension of fibers passing over the edges of the collecting screen;
g. applying a suction to the opposite side of said screen;
h. correlating the selected nozzle configuration to the distance betweeen the nozzle outlet and screen;



i. positioning the screen at a selected correlated distance from the nozzle to maintain the integrity of said stream and the dispersion of said fibers as individual fibers without the formation of clots during transit from the nozzle to the scrren area; and
j. collecting the fibers of said stream on said screen to form a felted mat.

3,939,533
QUICK-REMOVABLE BAG CLOSURE

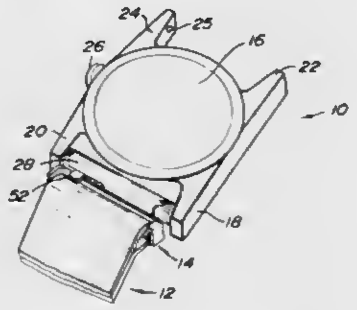
John A. Benepe, Rte. 2, Box 23, Shaw, Miss. 38773
Filed Dec. 13, 1974, Ser. No. 532,733
Int. Cl.^{2} B65D *33/16, 77/10*
U.S. Cl. 24—30.5 R **9 Claims**



8. A quickly attachable and detachable closure clip for a flexible hopper bag spout such as used for loading agricultural aircraft, or the like, comprising a rigid thin plate member, an elongated guide rod considerably longer than any dimension of said plate member and of sufficient length to completely span the width of and be received in the fold of a bag spout when such spout is flattened and folded upwardly, said guide rod being rigidly secured to said plate member to extend substantially perpendicular thereto from one side surface thereof, a pair of similarly elongated gripping bar elements rigidly secured to the same side of said plate member and extending substantially parallel to said guide rod, spaced upwardly therefrom and located on opposite sides thereof, and a handle member projecting outwardly from the opposite side of said plate member, whereby a folded flexible hopper bag spout may be grippingly received between said gripping bar elements to close the bag spout and the bag spout may be quickly released to a depending opening condition when the clip is disengaged therefrom.

3,939,534
WRISTBAND CONNECTOR WITH INTEGRAL PINS

Robert R. Hayes, Euclid, Ohio, assignor to Cole National Corporation, Cleveland, Ohio
Filed Jan. 28, 1975, Ser. No. 544,857
Int. Cl.^{2} A44C *5/18*
U.S. Cl. 24—265 B **5 Claims**

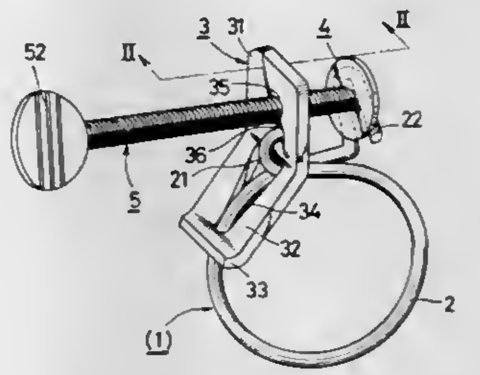


1. A wristband connector comprising:
an outer tubular member having at least one radially inwardly extending projection near an end of the tubular member and a lug slot which extends longitudinally along the outer tubular member;
at least one inner tubular member having an outside diameter slightly less than the inside diameter of the outer tubular member, said inner tubular member having a guide slot which cooperates with and slidably receives the projection to prevent relative rotation of the inner tubular member and outer tubular member while permitting the inner tubular member to telescope inside the outer tubular member;
the inner tubular member further including a finger lug extending outwardly therefrom which slides inside the lug slot in order to provide a means for moving the inner tubular member while in the outer tubular member;
a pin integral with and extending longitudinally outwardly from the inner tubular member so that the wristband connector may engage a receptacle in a wristband, biasing means inside the outer tubular member and secured between the outer tubular member and inner tubular member to bias outwardly the inner tubular member; and
means for holding one end of a wristband spaced from the outer tubular member, said means for holding being operatively attached to the outer tubular member.

3,939,535
TUBE FASTENER

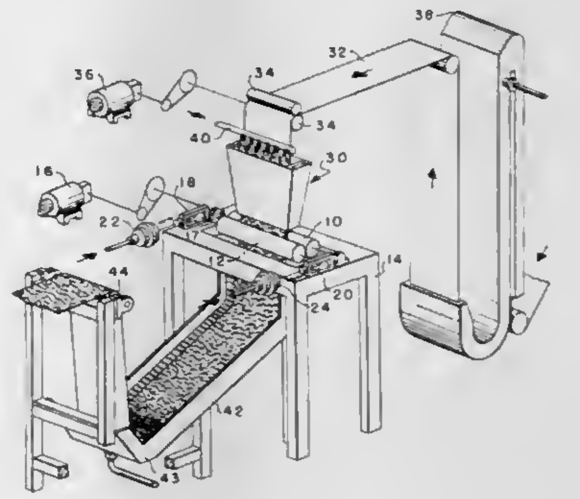
Norio Matsuura, 4-12 Nishishoji 4-chome, Minou, Osaka, Japan
Filed Mar. 18, 1975, Ser. No. 559,538
Claims priority, application Japan, Nov. 30, 1974, 49-137871
Int. Cl.^{2} B65D *63/06*
U.S. Cl. 24—283 **6 Claims**

1. A fastener comprising:
a. a clamping wire comprised of a spring wire wound in a ring shape, with the ends intersecting each other and projected upward;
b. a supporting plate with a through-hole, in contacting relation with one end of the clamping wire;
c. a holding plate having a vertical element with the lower end thereof bent and extended upward, the vertical element having a screw hole at the center of the upper portion thereof, and adapted to hold the other end of the clamping wire in an anchored fashion thereto;
d. a screw shaft threaded through the screw hole of the holding plate, with one end thereof being stayed by the supporting plate, rotationally supported in the aforementioned through-hole, and being provided with a rotational driving means at the other end; and
e. wherein a slit is located in the lower portion of the holding plate, and the folded-back end of the clamping wire is inserted into said slit, to be anchored to the vertical piece.



3,939,536
APPARATUS FOR IMPARTING A RANDOM WRINKLED OR CRUSHED APPEARANCE TO PILE FABRICS

Charles R. Ruppe, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Continuation of Ser. No. 346,679, March 30, 1973, abandoned, which is a continuation of Ser. No. 157,965, June 29, 1971, abandoned. This application Nov. 6, 1974, Ser. No. 521,354
Int. Cl.^{2} D06C *23/04*
U.S. Cl. 26—2 R **5 Claims**



1. Apparatus for imparting a crushed appearance to pile fabrics comprising a pair of compression rolls for applying a compressive force to a moving length of fabric fed therebetween, means mounting said compression rolls for rotation in side by side relation with an upwardly facing nip portion between said rolls for receiving fabric fed thereto, means positioned above said nip portion of said rolls for accumulating a moving length of fabric and for continuously gravitationally feeding the accumulated fabric into the nip portion of said rolls, and means for continuously feeding fabric to said fabric accumulating means to maintain an accumulation of fabric therein; said accumulating means including two opposed pairs of sidewalls extending downwardly toward said rolls and defining a fabric accumulating compartment of substantially rectangular cross-section, said compartment having an upper fabric inlet for receiving fabric from said feeding means and a lower fabric outlet positioned directly above and closely

adjacent the nip portion of said rolls for continuously gravitationally discharging the accumulated fabric to the rolls, each of the opposed pairs of said sidewalls continuously converging downwardly from said inlet to said outlet to permit random folding of the accumulating fabric in said compartment in lengthwise and widthwise direction for gravitational discharge from said outlet to the nip portion of said rolls in randomly bunched configuration.

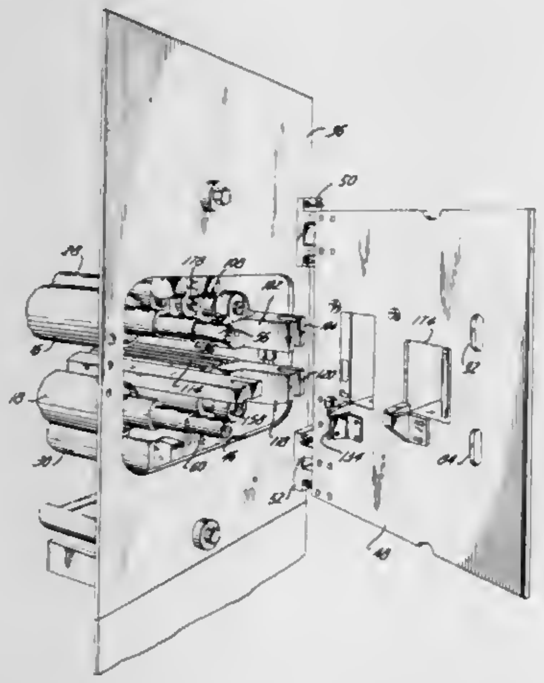
3,939,537
APPARATUS FOR LONGITUDINALLY COMPRESSING TEXTILE MATERIAL

John Kreeft, Wykoff; Peter Stanislaw, Stockhom, and Rudolph G. Gulbrandsen, Demarest, all of N.J., assignors to Morrison Machine Co., Paterson, N.J.

Filed Oct. 24, 1973, Ser. No. 409,052

Int. Cl.^{2} D06C *21/00*

U.S. Cl. 26—18.6 **37 Claims**



1. An apparatus for longitudinally compressing material, said apparatus comprising:

- a frame, said frame including first and second spaced apart side walls;
- first and second drive rollers supported between said side walls;
- first and second idler roller assemblies supported between said side walls;
- first endless belt means passing around said first drive roller and said first idler roller assembly;
- second endless belt means passing around said second drive roller and said second idler roller assembly to define a path of travel for said material between said first and second endless belt means;
- drive means for rotating said drive rollers whereby said first and second endless belt means will be moved with respect to the material passing therebetween, the material being longitudinally compressed in transit during said path of travel between said first and second endless belt means;
- said second side wall having an opening therethrough and closure means movable between a closed and open position with respect to said opening, said closure means supporting one end of said first and second drive rollers and first and second idler roller assemblies when said closure means is in its closed position;
- means for supporting said first and second drive rollers and said first and second idler roller assemblies in a cantilever arrangement on said first wall when said closure means is moved to said open position whereby said first and second endless belt means may be removed.

28. An apparatus for longitudinally compressing material; said apparatus comprising:

- a frame, said frame including first and second spaced apart side walls;
- first and second drive rollers supported between said side walls;
- first and second idler roller assemblies supported between said side walls;
- first endless belt means passing around said first drive roller and said first idler roller assembly;
- second endless belt means passing around said second drive roller and said second idler roller assembly to define a path of travel for said material between said first and second endless belt means;
- drive means for rotating said drive rollers whereby said first and second endless belt means will be moved with respect to the material passing therebetween, the material being longitudinally compressed in transit during said path of travel between said first and second endless belt means;
- first tension roller means engaging said first endless belt means;
- second tension roller means engaging said second endless belt means;
- first support means carried on the inner surface of said second side wall for adjustably carrying one end of said first tension roller means to permit selective vertical movement thereof; and
- second support means rotatably carried on the inner surface of said first side wall for adjustably carrying the other end of said first tension roller means so as to permit both rotational and vertical movement thereof.

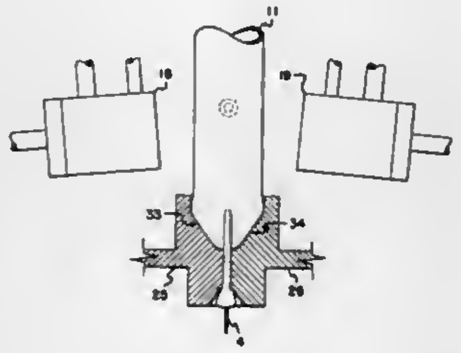
3,939,538
METHOD OF MAKING DISCHARGE LAMP HAVING BLOW-MOLDED ARC TUBE ENDS

Wayne R. Hellman, Euclid; Klaus Gottschalk, Solon, and Edward C. De George, South Euclid, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 374,566, June 28, 1973, Pat. No. 3,870,919. This application Nov. 11, 1974, Ser. No. 522,825

Int. Cl.^{2} H01J *9/00*

U.S. Cl. 29—25.11 **6 Claims**



1. In a method of making an electric arc tube the improvement which comprises:

- placing an end of a tube of vitreous quartzlike material of a given diameter around an inlead conductor;
- heating said end to plasticity while flowing an inactive gas through the tube;
- compressing said end to seal the material about the inlead;
- forming a mold about the tube next to the compressed end;
- and pressurizing said tube with inactive gas in order to expand the region of the tube next the compressed end into the mold to a diameter greater than said given diameter whereby to achieve an end chamber of constant size and shape.

3,939,539
CUTTING TOOL HOLDER

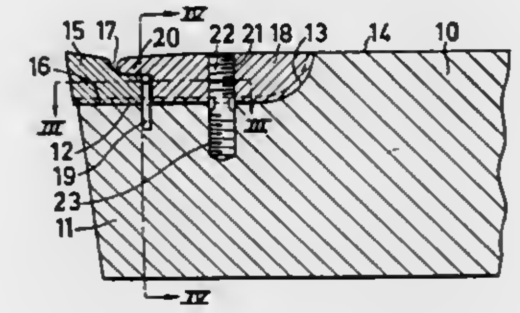
Arne Novak, Sollentuna, Sweden, assignor to Wlajko Mihic, Gavle, Sweden

Filed Apr. 2, 1975, Ser. No. 564,396

Claims priority, application Sweden, Apr. 8, 1974, 74047184

Int. Cl.^{2} B26D *1/00*

U.S. Cl. 29—96 **8 Claims**



1. A cutting tool holder including a holder body, a changeable cutting bit insert and a clamping means, the holder body having a generally horizontal, slender, section-profiled seat whose upper surface is below the upper surface of the holder body and intended to support the insert in its front part while the rear part supports the clamping means, characterized by: the part (13) connecting said upper surface of the seat with the upper surface (14) of the holder body having the same profiled shape as the horizontal part of the seat, and the clamping means having a shape corresponding to the seat and the connecting part.

3,939,540
CUTTING BIT HOLDER WITH REVERSIBLE CLAMP

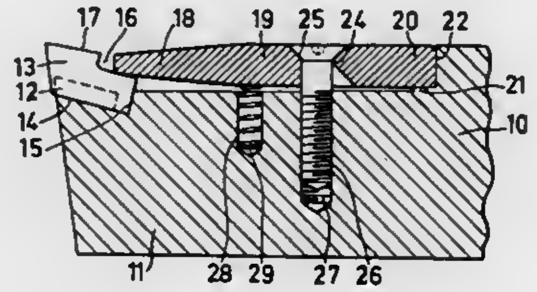
Arne Novak, Sollentuna, Sweden, assignor to Wlajko Mihic, Gavle, Sweden

Filed Apr. 2, 1975, Ser. No. 564,397

Claims priority, application Sweden, Apr. 8, 1974, 74047176

Int. Cl.^{2} B26D *1/00*

U.S. Cl. 29—96 **5 Claims**



1. A cutting tool holder including a holder body having an extended slender part (11) and a seat (12) intended to receive a detachable cutting bit (13) fastened to the body by a clamping device (19), characterized by: the clamping device, in relation to a vertical plane longitudinally bisecting the slender part (11), being unsymmetrical and being L-shaped, with one leg being substantially the same width as the slender part and one end of such leg abutting the bit while the other leg is accommodated in a recess in the front part of the holder body with the rear end of said other leg pressed against a shoulder formed in the recess, the recess extending over the entire width of the holder body, whereby the clamping device in a first position can be placed on a holder body having a cutting bit to the left of the longitudinal centerline of the holder body and in a second, reversed position can be placed on a holder body where the citting bit is to the right to said centerline.

3,939,541
MACHINE FOR MANUFACTURING, IN A CONTINUOUS AND AUTOMATIC CYCLE, STRINGS OF LIGHTS FOR MICROLAMPS

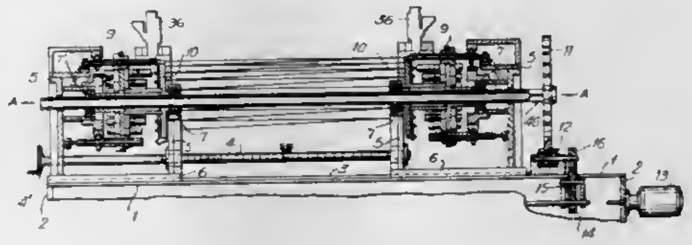
Dino Magherini, Via Osservatorio 36, Firenze, Italy

Filed June 11, 1974, Ser. No. 478,399

Claims priority, application Italy, June 13, 1973, 9501/73; May 31, 1974, 9466/74

Int. Cl.^{2} H01R *43/00*

U.S. Cl. 29—203 R **14 Claims**



1. Apparatus for continuously and automatically manufacturing strings of sockets for microlamps wherein the sockets are moulded onto an insulated flexible single wire cable, said apparatus comprising: (a) deflecting means for forming a series of bights in said cable; (b) socket applying means for securing sockets to said cable at successive bights thereof; and (c) tail forming means for forming a tail in said cable following the securement of a predetermined number of sockets thereto, said tail providing the end of one string of sockets and the beginning of a subsequent string.

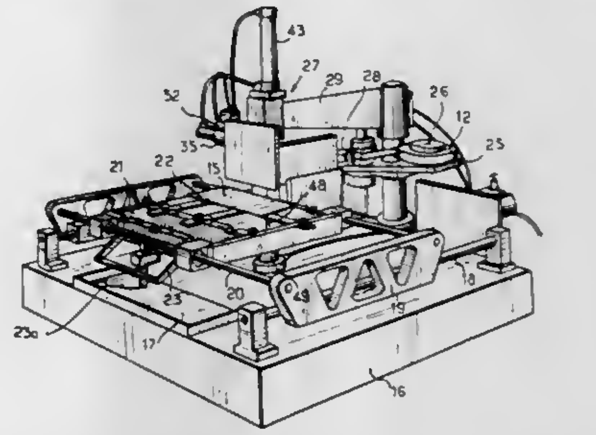
3,939,542
METHOD FOR INSERTING CONNECTING PINS IN A PRINTED CIRCUIT AND MACHINE FOR EXECUTING SAID METHOD

Romano Reggi, Lugo, Italy, assignor to COMATEL — Comptoir Europeen de Materiel Electronique, Issy les Moulineaux, France

Filed Jan. 21, 1974, Ser. No. 435,309

Int. Cl.^{2} H05K *13/00*

U.S. Cl. 29—203 B **8 Claims**



1. A machine for inserting connecting pins into predetermined locations of a printed circuit, comprising a first conveying channel for conveying a plurality of pins, means for feeding succession of pins into said channel each said pin being parallel to each adjacent pin and being aligned transversely to the conveying direction of the conveying channel, a spool carrying an adhesive strip, means for leading said strip off the spool along a path adjacent the pins in the conveying channel means for bringing the said strip into adhesive contact with the pins whereby the pins become adhered to said strip and form a pin-carrying strip, a take-up spool for the pin-carrying strip, means for feeding the pin-carrying strip over a pre-determined path towards the printed circuit and stripping the pins near the end of said path off the strip to allow them to be inserted in succession into the desired locations of the circuit, and means for inserting the pins in the desired locations.

3,939,543

SLIDER HOLDER FOR ATTACHING A SLIDER TO A FASTENER CHAIN SECURED TO AN ARTICLE

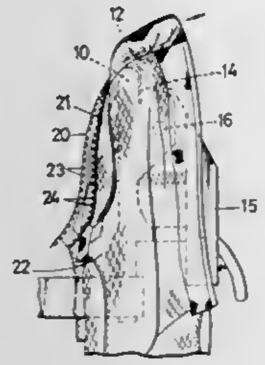
Hiroshi Yoshida, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan

Division of Ser. No. 387,192, Aug. 9, 1973. This application Oct. 9, 1974, Ser. No. 513,266

Claims priority, application Japan, Aug. 12, 1972, 47-80897

Int. Cl.² B21D *53/50*; B29D *5/00*

U.S. Cl. 29—207.5 SL 2 Claims



1. A slider holder for use in attaching a slider having a pair of guide channels to a pair of fastener stringers which are already secured to an article, wherein the fastener stringers are provided along a pair of opposed inside edges thereof with rows of fastener elements capable of elastic deformation, said slider holder comprising: a support structure having a slider mount on a top portion thereof, said slider mount having a top surface which is inclined at an angle to the plane of the horizon for receiving and positioning the slider upside down with the bottom end thereof directed downwardly; and means for locking the slider in position on said slider mount, whereby the fastener stringers may be threaded through the guide channels in the slider and forcibly pulled downwardly therethrough to adjust the relative positions of mismatched fastener elements by elastic deformation thereof, and then the stringers may be smoothly pulled back upwardly through the slider to engage the fastener elements.

3,939,544

ASSEMBLY MACHINE HAVING IMPROVED TOOLING MOUNTING

Donald Stevens, Erie, Pa., assignor to Assembly Machines, Inc., Erie, Pa.

Filed Jan. 24, 1975, Ser. No. 543,678

Int. Cl.² B23P *19/04*

U.S. Cl. 29—208 F 17 Claims

1. An assembly machine for use in manufacturing an article comprising:

a rotatable assembly table on which at least a portion of the article to be assembled can be positioned at selected locations;

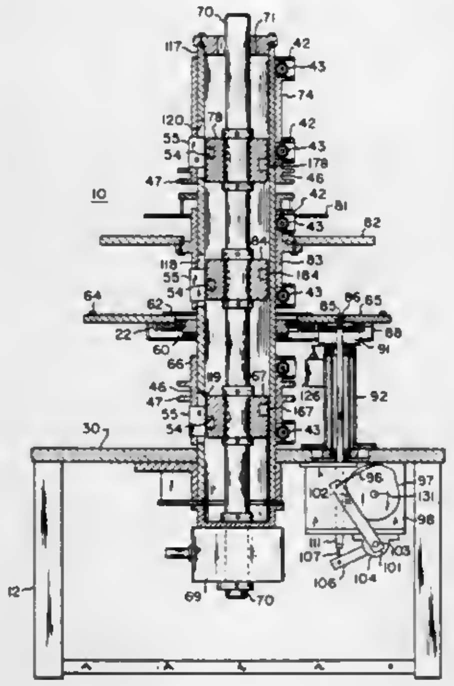
a plurality of work stops located at predetermined positions around said rotatable assembly table;

indexing means connected to said rotatable assembly table for rotating said rotatable assembly table a predetermined distance at repeatable intervals;

an upper tooling mount disposed above said rotatable assembly table on which tooling can be mounted;

first tooling driver means disposed above said rotatable assembly table;

a lower tooling mount located beneath said rotatable assembly table on which tooling can be mounted; and,



second tooling driver means disposed between said rotatable assembly table and said lower tooling mount.

3,939,545

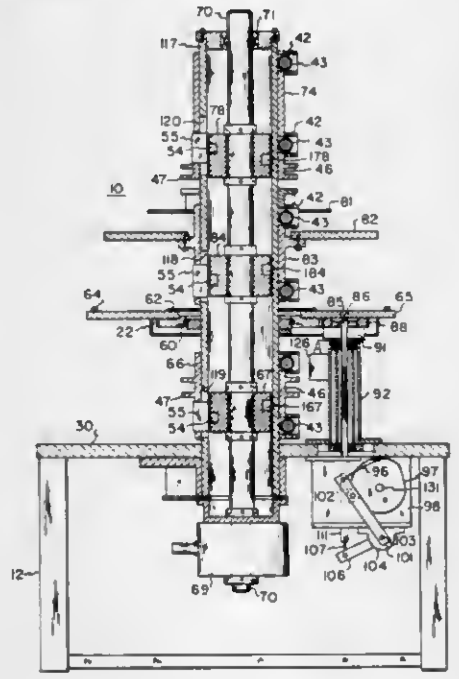
ASSEMBLY MACHINE ACTUATOR

Donald S. Stevens, Erie, Pa., assignor to Assembly Machines, Inc., Erie, Pa.

Filed Jan. 24, 1975, Ser. No. 543,679

Int. Cl.² B23P *19/04*

U.S. Cl. 29—208 F 20 Claims



1. An assembly machine for use in manufacturing an article comprising:

a rotatable assembly table on which at least a portion of the article is positioned at a selected location;

a plurality of work stops located at predetermined positions around said rotatable assembly table;

indexing means connected to said rotatable assembly table for rotating said rotatable assembly table a predetermined distance at repeatable intervals;

a tooling mount located above said rotatable assembly table upon which tooling which performs operations on the article can be mounted;

a reciprocating actuator driver mounted above said rotatable assembly table for supplying power to tooling which can be located on said upper tooling mount;

an actuator engaging said actuator driver for transmitting power to tooling which can be mounted to said upper tooling mount; and,

said actuator comprising a first lever, a second lever, and a spring clamping means for maintaining said first lever and said second lever to move in unison as long as said second lever is subjected to forces below a predetermined overload level.

3,939,546

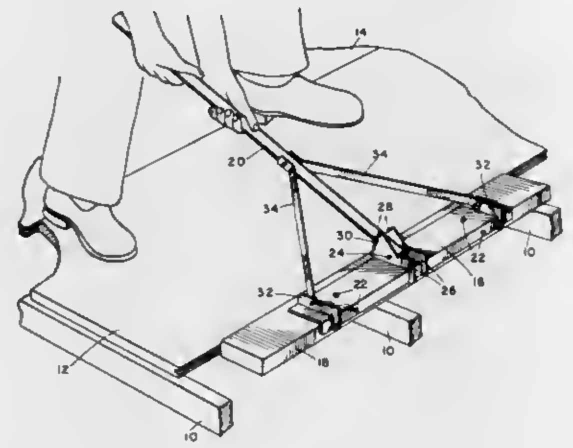
TOOL FOR SETTING JOINTED FLOORING PANELS

Ralph G. Hernandez, 4070 Huerfano Ave., San Diego, Calif. 92117

Filed Aug. 7, 1974, Ser. No. 495,438

Int. Cl.² B25B *27/02*

U.S. Cl. 29—278 1 Claim



1. A tool for setting jointed flooring panels by impact comprising:

- a. a bracket of generally L-shaped lateral cross section;
- b. an elongated length of lumber having a flat leading edge and a flat trailing edge, said length of lumber being mounted in said L-shaped bracket such that one of the angulated portions thereof engages the trailing edge of said length of lumber;
- c. a plurality of generally L-shaped support ribs longitudinally spaced along and mounted to said L-shaped bracket, two of said ribs being located generally centrally of said bracket;
- d. an elongated handle having one end rigidly mounted to and between said centrally located ribs and extending at an angle over the trailing edge of said board and in a plane perpendicular to the length of said board;
- e. two angulated braces extending from said handle in generally opposite direction to respective ones of said ribs, whereby three point direct support is provided between said handle and the trailing edge of said length of lumber to reinforce same on impact during use.

3,939,547

METHOD OF PRODUCING A DYEABLE COATING ON METAL ARTICLE

Lornie J. Bernier, Guys Mills, and Tapan K. Das, Meadville, both of Pa., assignors to Textron, Inc., Providence, R.I.

Filed Aug. 28, 1974, Ser. No. 501,371

Int. Cl.² B21D *53/50*; B29D *5/00*

U.S. Cl. 29—408 5 Claims

1. A method of producing a color dyed non-metal article and attached matching metal element comprising the steps of

forming a polymerized film containing a substantial quantity of active proton acceptor groups on the metal element,

attaching the metal element to the article, and

subjecting the article and the polymerized film on the attached metal element to an aqueous dye solution to produce a color-dyed article with a color matching metal element.

5. A method of forming a colored slide fastener having stringers and a metal slider comprising the steps of

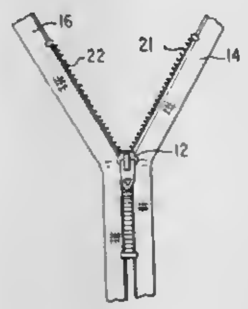
treating the slider to form an adherent surface on the slider,

dipping the slider into a liquid solution containing an uncured phenol aldehyde resin,

spinning the slider to remove excess liquid solution and form a film having a thickness less than about 13 microns,

heating the slider to cure the phenol aldehyde film,

electrostatically forming on the slider a coating of a powdered solid polymer resin having an average particle size less than about **200** microns and containing proton acceptor groups which are subject to irreversible transformation by heating above a predetermined temperature,



heating the coating sufficiently to convert the coating into a coherent polymer film but below the predetermined temperature and for less than a predetermined duration to allow a substantial quantity of the proton acceptor groups to remain untransformed,

assembling the slider on fastener elements of a pair of stringer tapes which are made from a textile material selected from the group consisting of polyester fabric and nylon fabric, and

dyeing the slider and pair of stringer tapes to form a colored slide fastener.

3,939,548

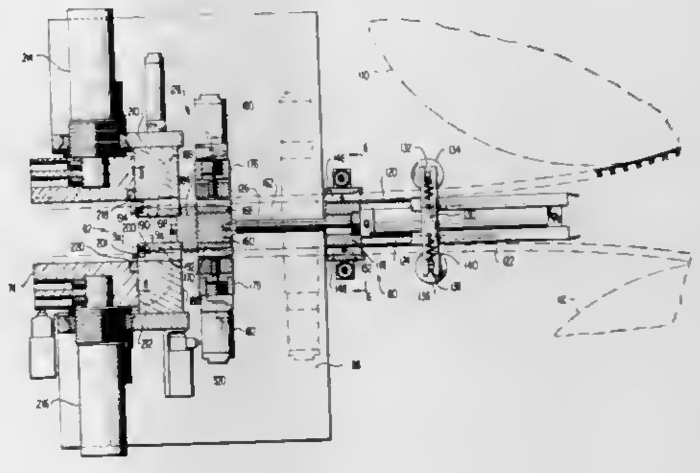
METHODS FOR FABRICATING WOODEN FRAMES AND THE LIKE

John Calvin Jureit, Coral Gables; Roy Leutwyler, Miami; Larry Brodsky, Miami; Benjamin Kushner, Miami, and Adolfo Castillo, Miami, all of Fla., assignors to Automated Building Components, Inc., Miami, Fla.

Division of Ser. No. 317,095, Dec. 20, 1972, abandoned. This application Apr. 19, 1974, Ser. No. 462,443

Int. Cl.² B23P *11/00*

U.S. Cl. 29—432 25 Claims



1. A method for joining a pair of wooden members by applying a sheet metal connector plate, of the type having integrally struck teeth projecting from one side thereof, to the wooden members at their juncture comprising the steps of:

providing a coil of connector stock of the type having integrally struck teeth projecting from one side thereof, feeding the connector stock from the coil into the path of movement of a presshead carrying a cutting edge thereby defining relative to the cutting edge a predetermined line of cut along the connector stock,

providing a reaction surface cooperable with the cutting edge and comprised of a plurality of tines defining a plurality of laterally spaced recesses;

guiding the teeth of the stock along the recesses as the stock is fed into the path of movement of the presshead;

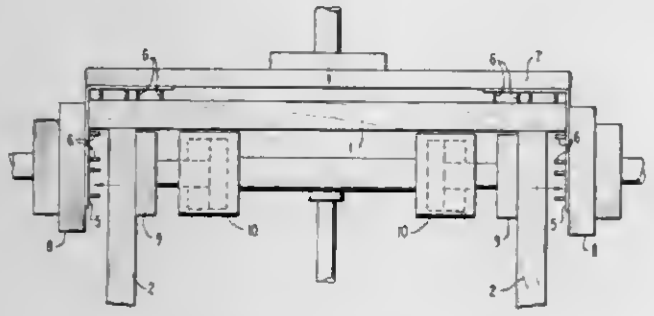
displacing the presshead to engage the cutting edge and reaction surface tines along opposite sides of the stock and along its predetermined line of cut and, upon continued displacement of the presshead, cutting the stock to form a connector plate of predetermined length, and

pressing the teeth of the connector plate thus formed into one side of the adjoining wooden members upon continued displacement of the presshead in the same stroke thereof.

3,939,549
PROCESS OF ASSEMBLING FURNITURE CORNER JOINTS

William W. Masengill, Sr., P.O. Box 1520, Morristown, Tenn. 37814

Filed Nov. 14, 1974, Ser. No. 523,872
Int. Cl.² B23P *11/00*
U.S. Cl. 29—432 **4 Claims**



1. A method of making a furniture corner joint between framing members in planes set at an angle to each other comprising placing over the corner a toothed connector plate having end portions disposed at an angle to each other corresponding with the framing members, each end portion having integral teeth struck out from the body of the plate over substantial areas thereof normal to the plane of the respective end portions and normal to the plane of the adjacent framing member, relatively moving one of the framing members with respect to the other framing member and the adjacent end portion of the connector plate toward each other penetrating the teeth thereof into said one framing member in a straight line, lengthwise of the teeth, and thereafter relatively moving the other framing member with respect to the one framing member and the adjacent end portion of the connector plate toward each other penetrating the teeth thereof into said other framing member in a straight line lengthwise of the teeth thereof.

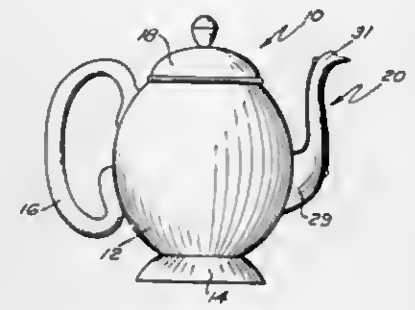
3,939,550
METHOD OF MAKING SPOUT CONSTRUCTION FOR USE IN LIQUID CONTAINERS

Samuel J. Winslow, 19 Clarendon Ave., Providence, R.I. 02906

Division of Ser. No. 359,885, May 14, 1973, Pat. No. 3,893,601

Filed Jan. 3, 1975, Ser. No. 538,419
Int. Cl.² B23P *3/00, 25/00*
U.S. Cl. 29—458 **6 Claims**

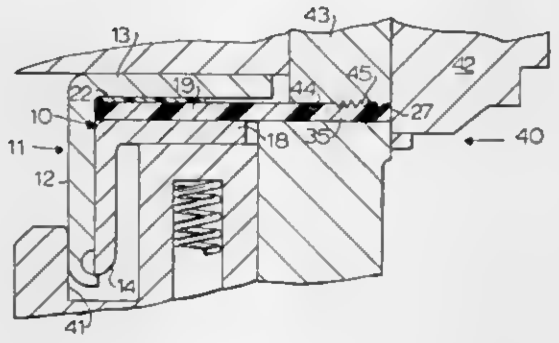
1. A method of forming a spout for use in a liquid container, comprising the steps of forming a pair of complementary spout elements into longitudinally extending sections, wherein each section extends the length of said spout and is formed with a concave inner surface so that a through passage is defined by said sections when they are located in the joined position thereof, coating the concave inner surface of each section with a plating material prior to joining said sections together for eliminating any deleterious effects of the material from which said sections are formed when the container is in use and liquid in the container is poured through the passage in the spout, joining the spout elements together along their longitudinally extending edges to form the spout, and mounting the spout on said container.



3,939,551
METHOD OF MAKING POLYTETRAFLUOROETHYLENE SEALING ELEMENTS WITH HYDRODYNAMIC ACTION

William E. Clark, Chelsea, Mich., and John David Butler, Van Wert, Ohio, assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Feb. 4, 1975, Ser. No. 546,882
Int. Cl.² B23P *17/00*
U.S. Cl. 29—417 **15 Claims**



1. A method for manufacturing an oil seal having an element made from a disc-like flat washer of polytetrafluoroethylene or the like having an outer circular rim and a generally concentric inner circular rim, comprising the steps of:

assembling the washer into a metal case between an outer case member having a cylindrical wall and an inner case member, and

then coining one face of each said washer to provide, adjacent said inner rim, hydrodynamic means for returning oil.

3,939,552
METHOD AND APPARATUS FOR FEEDING A PAIR OF WIRES

Granville Spencer Hart, and Joseph Edward Brandewie, both of Clearwater, Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 26, 1974, Ser. No. 527,512
Int. Cl.² B23P *19/02*
U.S. Cl. 29—427 **25 Claims**

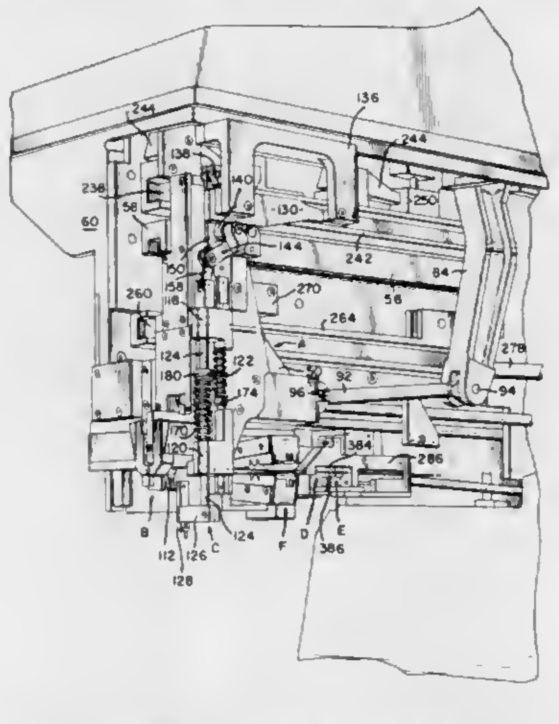
1. A method for feeding a plurality of wires of differing lengths to a receiving station, said method comprising the steps of:

initially supporting the leading end portion of each of a plurality of wires at a first location, each of said plurality of wires being initially interconnected to a source of supply;

engaging the leading end portion of each of said plurality of wires and simultaneously moving the leading end portion of each of said plurality of wires away from said first location to a second location adjacent a receiving station;

engaging an intermediate portion of a selected wire after the leading end portion of each of the plurality wires has been moved away from said first location to cause the length of the selected wire between the leading end and the first location to be increased relative to the other wires of said plurality of wires; and

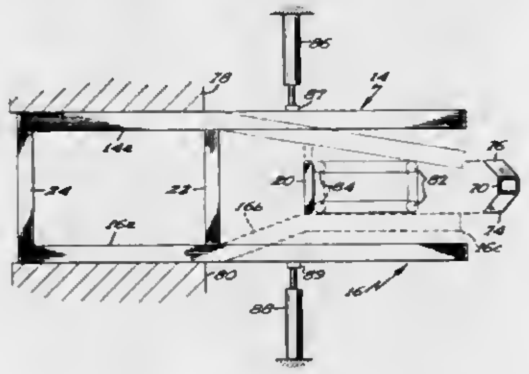
cutting said plurality of wires at a location between the intermediate portion of the selected wire and the first location to cause the cut plurality of wires to be of differing lengths.



3,939,553
METHOD OF MANUFACTURING A TRAILER FRAME STRUCTURE

Leon G. Feterl, Salem, S. Dak., assignor to SOS Consolidated, Inc., Birmingham, Mich.

Division of Ser. No. 439,397, Feb. 4, 1974, Pat. No. 3,905,644. This application Apr. 17, 1975, Ser. No. 569,052
Int. Cl.² B23P *17/00;* **B23K** *31/00;* **B62D** *21/02*
U.S. Cl. 29—469 **3 Claims**



1. A method of fabricating a chassis structure for a truck trailer comprising the steps of:

securing a pair of elongated frame beams in place in laterally spaced, parallel relation to each other in a fixture with holding means bearing against the outside faces of said frame beams at rear end portions thereof, with the front ends of said frame beams unrestrained and spaced laterally, outwardly from a first set of laterally spaced stop members positioned between said frame beams adjacent the front end thereof and a second set of laterally spaced stop members positioned between said frame beams rearwardly from said first set of stop members in alignment therewith in a lengthwise direction with respect to said frame beams;

fastening a crossbar member between opposed bend points on said frame beams intermediate their ends;

applying opposed, laterally directed bending forces to the outside faces of said frame beams at opposed pressure points intermediate the front ends of said frame beams and said crossbar member in an inward direction and bending the front ends of said frame beams inwardly towards each other about said opposed bend points established by said crossbar member until the front ends of said frame beams engage said first set of stop members; thence

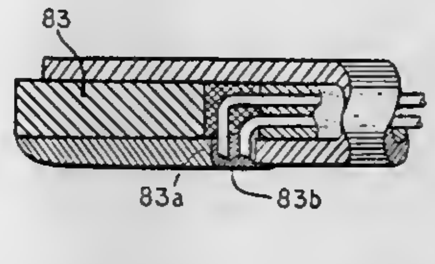
applying continuing, opposed bending forces at the same opposed pressure points in an inward direction on the outside faces of asid frame beams and further bending the front ends of said frame beams inwardly intermediate said first crossbar member and said first set of stop members until intermediate portions on the front ends of said frame beams adjacent said pressure points engage said second set of stop members, thereby forming a pair of laterally spaced frame beams having a pair of parallel, relatively widely spaced rear beam segments, a pair of intermediate beam segments angling inwardly and forwardly from their juncture points with said rear beam segments, and a pair of parallel, front beam segments extending forwardly from their juncture points with said intermediate beam segments and laterally spaced more closely together than said rear beam segments; and

fastening additional tie members between said frame beam members to rigidize said chassis structure.

3,939,554
SURFACE THERMOCOUPLE

Philip F. Finney, Villa Park, Ill., assignor to Thermo-Couple Products Company, Inc., Winfield, Ill.

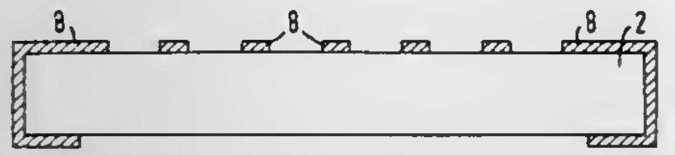
Division of Ser. No. 447,961, March 4, 1974, Pat. No. 3,874,239. This application Dec. 4, 1974, Ser. No. 529,405
Int. Cl.² B01J *17/00*
U.S. Cl. 29—573 **7 Claims**



1. The method of making a thermocouple assembly from a bulk length of sheathed thermocouple conductors wherein the bulk length includes a tubular metal sheath having a pair of thermocouple conductors therein held in spaced relation from each other and from the sheath by electrical insulating material, said method comprising the steps of forming a keyhole slot in the sheath at one end thereof aligned with the sheath axis with the hole of the slot spaced from the end of the sheath, removing the insulation from the sheath in the area of the slot, bending the conductors through the slot to a position at right angles to the sheath axis and so the conductors extend through the slot hole, packing insulation in the sheath around the bend of the conductors, inserting a ceramic plug with conductor holes over the ends of the conductors and fitting the plug in the hole of the slot thereby supporting the portions of the conductors extending through the hole in electrically insulated relation to each other and to the sheath, press fitting a solid metal plug into the end of the sheath at the slot and up against the insulation inserted at the bend of the conductors, fusion welding the conductors together outside the ceramic plug to form a thermoelectric junction, welding the metal plug to the sheath including filling the slot with weld, and forming a V-shaped welded pad on the sheath over the junction without voids in the weld material.

3,939,555
STRIP TYPE RADIATION DETECTOR AND METHOD OF MAKING SAME

Ottomar Jantsch; Ingmar Feigt, both of Erlangen, and Wolf Rudiger Willig, Erlangen-Bruck, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed June 27, 1973, Ser. No. 374,019
Claims priority, application Germany, July 20, 1972, 2235680
Int. Cl.² B01J *17/00*
U.S. Cl. 29—577 24 Claims

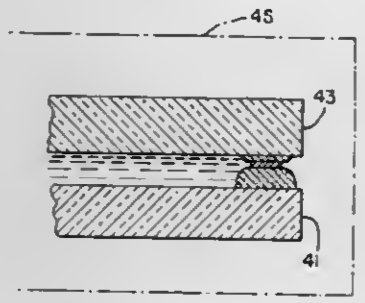


1. A method for making a detector for ionizing radiation which detector contains a plurality of strip-like electrodes on two flat sides of a semi-conductor body with the points of intersection each forming a detector to thereby provide spatial resolution comprising the steps of:

a. preparing an N conduction semi-conductor body having a resistivity of at least 100 ohm-centimeters so as to have two substantially flat sides;
b. forming by diffusion a plurality of P conduction elongated electrodes on one side of said semi-conductor in the form of parallel space strips and in such a manner that the PN junction at the surface of the semi-conductor material is covered by an oxide layer;
c. removing a portion of the semi-conductor material on the other side of the semi-conductor to thereby form a thin semi-conductor layer; and
d. providing a second plurality of elongated parallel spaced metal electrodes on said other side, said electrodes being at an angle to said electrodes on said first side.

3,939,556
LIQUID CRYSTAL CELL

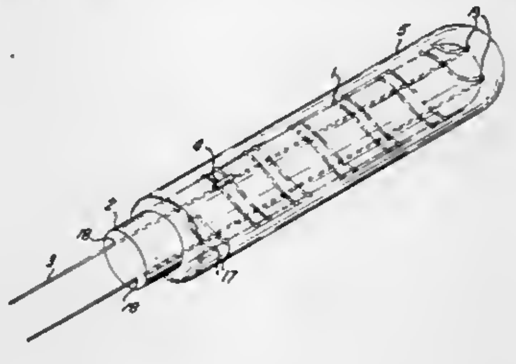
Joseph Borel, Echirolles; Louise Peccoud nee Toupillier, Claix, and Jacques Robert, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France
Continuation-in-part of Ser. No. 302,396, Oct. 31, 1972, abandoned. This application June 7, 1974, Ser. No. 477,361
Claims priority, application France, Nov. 4, 1971, 71.39513
Int. Cl.² G02F *1/00*
U.S. Cl. 29—592 2 Claims



1. Process for the manufacture of a liquid crystal cell having a film of liquid crystal between a first wafer, covered with a first system of electrodes and a second transparent wafer covered with a second system of transparent electrodes, the steps of mounting a system of electrodes on at least one of the wafers, depositing through a first mask on the periphery of the wafer a wall of controlled thickness, depositing through a second mask on at least one of the wafers a thread of material of low fusion point around a periphery corresponding to the periphery of the wall, applying the two wafers against each other and applying the thread on the top of the wall, connecting the two wafers to each other by heating the material of low point of fusion to the point of fusion, said step of depositing the wall including evaporation under vacuum in an enclosure of the material constituting the wall and said step of depositing said thread including evaporation under vacuum in said enclosure of the material of low point of fusion.

3,939,557
METHOD OF MAKING RESISTANCE THERMOMETER SENSORS

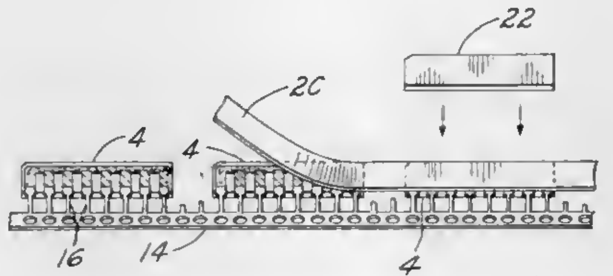
Kenneth George Rendle, Bognor Regis, England, assignor to Rosemount Engineering Company Limited, Bognor Regis, England
Filed Jan. 9, 1975, Ser. No. 539,576
Claims priority, application United Kingdom, Feb. 19, 1974, 7521/74
Int. Cl.² H01C *7/02, 7/04*
U.S. Cl. 29—612 10 Claims



1. A method of making a resistance thermometer sensor comprising the steps of providing a base of insulating material and, firmly attaching thereto a path of electrically conducting material with a temperature responsive coefficient of resistance, with at least a part of the length of the path configured as a loop, with two portions in side-by-side relationship and adjusting, along the length of the said portions, the position of a shorting bar connected across said two portions to provide a desired value of ice point resistance for the sensor and then fastening the shorting bar in this position.

3,939,558
METHOD OF FORMING AN ELECTRICAL NETWORK PACKAGE

Richard E. Riley, Riverside, Calif., assignor to Bourns, Inc., Riverside, Calif.
Filed Feb. 10, 1975, Ser. No. 548,326
Int. Cl.² H05K *3/28, 3/10*
U.S. Cl. 29—627 8 Claims

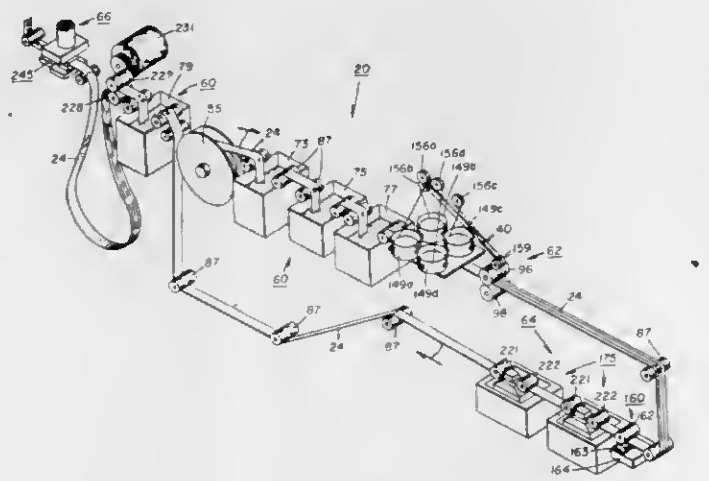


1. The method of joining a substrate with a superstrate to form an electrical network package, said substrate bearing a network of electric circuit elements on one face, comprising the sequential steps of:

sandwiching a B-stage thermosetting adhesive material between said superstrate and the circuit-bearing face of said substrate,
heating the resulting sandwiched package sufficiently to initiate the formation of said B-stage material into a gel,
compressing said substrate and superstrate together sufficiently to cause said adhesive material to flow into sealing relation with said electric network,
releasing said compression, and
heating the resulting network package to substantially cure said adhesive material subsequent to releasing of said compression.

3,939,559
METHODS OF SOLID-PHASE BONDING MATING MEMBERS THROUGH AN INTERPOSED PRE-SHAPED COMPLIANT MEDIUM

Richard L. Fendley; Gerhard E. Hoenig; George Poehlmann, and John M. Prendergast, Jr., all of Indianapolis, Ind., assignors to Western Electric Company, Inc., New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Division of Ser. No. 294,755, Oct. 3, 1972, Pat. No. 3,834,604. This application Mar. 1, 1974, Ser. No. 447,419
Int. Cl.² H01R *43/00*
U.S. Cl. 29—628 13 Claims

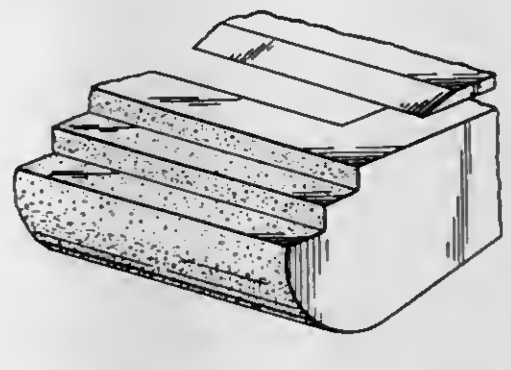


1. A method of solid-phase bonding a first metallic member to a second metallic member, comprising:

solid-phase bonding a compliant metallic medium to the first metallic member;
simultaneously shaping the metallic medium into a cross-sectional profile having a raised compliant crest region which is smaller in surface area at an outer portion thereof than a base-interface of the medium with the first metallic member; and
solid-phase bonding the first metallic member to the second metallic member, with the compliant metallic medium interposed therebetween and the second metallic member engaged with the small outer portion of the raised compliant crest region, by the application of at least a metal working force exerted on the preshaped compliant crest region of the medium through at least one of said first and second metallic members in the direction of the other member, the compliant crest region being slightly depressed and tangentially cold-flowed by the metal working force so as to effect mechanical cleaning of the second member-medium interface and to produce a reliable adhering bond at the second member-medium interface of enlarged cross-sectional area as compared to the initial surface area of the small outer portion of the raised compliant crest region.

3,939,560
SHAVING EQUIPMENT

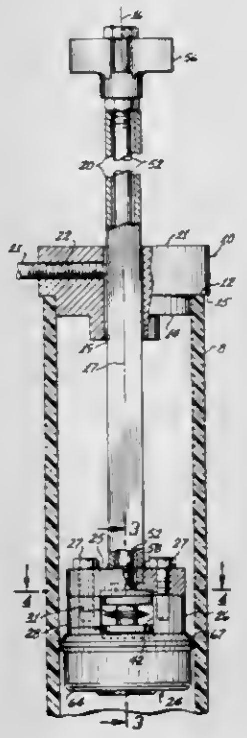
Robert Lyall, Slough, England, assignor to Wilkinson Sword Ltd., England
Filed Jan. 30, 1974, Ser. No. 437,933
Claims priority, application United Kingdom, Jan. 31, 1973, 4870/73
Int. Cl.² B26B *19/42*
U.S. Cl. 30—34.2 14 Claims



1. Shaving equipment having a longitudinally extending razor blade and a guard surface which bears against the skin of the user during shaving, wherein a part at least of said surface has a roughness of between 0.5 and 10.0 micrometers centre-line-average values.

3,939,561
PIPE CUTTING MECHANISM

Amon Nichols, 20802 N. 36th Ave., Glendale, Ariz. 85308
Filed June 21, 1974, Ser. No. 481,530
Int. Cl.² B23D *21/08*
U.S. Cl. 30—107 4 Claims



1. A mechanism for cutting pipe from the inside comprising:

a. a plate rotatably mountable on the end of the pipe, said plate having an axial bore and means for axially aligning the bore of said plate with the longitudinal axis of the pipe when said plate is mounted on the end thereof;
b. an elongated tubular arbor axially slidable within the bore of said plate and fixed for rotation with said plate;
c. means on said plate for locking said arbor against axial sliding movement relative to said plate;
d. a cutter head on one end of said arbor, said cutter head comprising, an adapter plate transversely affixed to one end of said arbor and having a recessed groove with closed ends formed in the surface thereof which faces away from said arbor and having a substantially rectangular slot extending from the recessed groove toward said

arbor, said adapter plate having an axial bore formed therethrough which communicates with the interior of said tubular arbor, and a housing demountably attached to said adapter plate, said housing having an open ended channel formed in the end thereof which faces said adapter plate and having a recessed groove with closed ends formed in the bottom of the channel thereof, the channel and the groove of said housing extending in the same direction as the groove of said adapter plate, said housing having an axial bore formed therein and a pair of diametrically opposed axially extending guide slots radially extending from the axial bore thereof, the guide slots of said housing in alignment with the rectangular slot of said adapter plate in a plane transverse with respect to the extending direction of the channel and recessed groove of said housing and the recessed groove of said adapter plate;

e. a pair of cutter assemblies mounted in oppositely facing directions within said cutter head, said pair of cutter assemblies in abutting engagement with each other for positioning thereof in a retracted position within the periphery of said cutter head, said pair of cutter assemblies radially movable in diametrically opposite directions to an extended position of protruding beyond the periphery of said cutter head; and

f. expander means within said cutter head and passing around said pair of cutter assemblies and extending from said cutter head through said arbor, said expander means axially movable to engage and radially move said pair of cutter assemblies from the retracted to the extended position thereof.

3,939,562

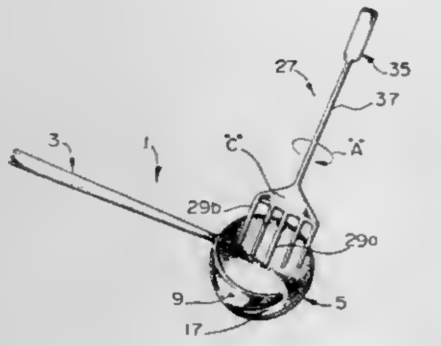
UTENSILS FOR EATING STRANDS OF FOODS

Emery A. Pellerin, 194 Smith St., Lasalle City, Quebec, Canada

Continuation-in-part of Ser. No. 521,841, Nov. 7, 1974, abandoned. This application Jan. 17, 1975, Ser. No. 541,789

Int. Cl.^{2} A47J *43/28*

U.S. Cl. 30—147 **16 Claims**



1. A spoon-type utensil for use in eating strands of food, the utensil having a handle, a dished bowl attached to one end of the handle and an elongated tapering slot provided at least partly around the bowl of the utensil for cutting strands of food, the said slot opening on the side of the rim of the bowl and tapering down in the general direction of the handle, at least one of the edges of the said slot being a cutting edge, whereby the strands of food while penetrating into the tapering slot are gradually applied against the cutting edge to be cut.

3,939,563

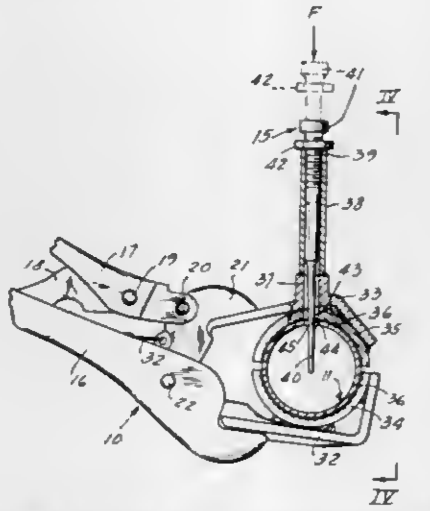
VISE AND PUNCH TOOL

Robert F. Deike, Cheyenne, Wyo., assignor to Foresight Industries, Cheyenne, Wyo.

Filed Feb. 3, 1975, Ser. No. 546,326

Int. Cl.^{2} B26F *1/02*

U.S. Cl. 30—361 **5 Claims**



1. A vise and punch tool comprising a pair of hand grip levers, a pair of opposed jaw members controlled by said levers, an adjustable toggle linkage between one of the jaws and the hand grips locking the jaws around the work piece, said jaws having opposed enlarged sleeve portions for surrounding and gripping the work piece to prevent distortion thereof, one of said jaws having a tubular housing extending laterally therefrom, a prick punch slidably mounted in said housing adapted to penetrate a work piece surrounded by the jaw sleeves, and means limiting the penetration of the punch into the work piece.

3,939,564

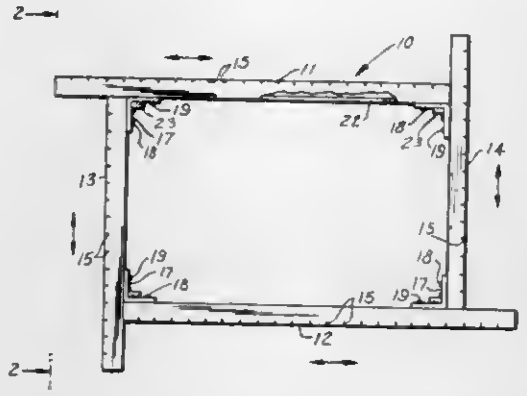
ADJUSTABLE GRID LINE DEVICE

Sr. Slawinski, 1537 Castle Hill Ave., Bronx, N.Y. 10462

Filed Feb. 20, 1975, Ser. No. 551,100

Int. Cl.^{2} B43L *13/00*

U.S. Cl. 33—1 K **1 Claim**



1. An adjustable grid line device comprising: a frame including two pairs of parallel spaced apart bars, each having an L-shaped cross-section and each having a plurality of equally spaced apart notches along the edges thereof corresponding to the outer peripheral edge of the frame; means for adjustably connecting the bars for the expansion and contraction of the frame comprising L-shaped brackets each fixedly secured on one outside face to one of the bars and means securing each bracket on the other outside face to an adjacent bar comprising a bolt fastener, means defining an elongated slot in the adjacent bar freely and slideably receptive of the bolt, a winged nut fastener engaged with the bolt fastener and spring means cooperative with the bolt fastener for urging the bracket against the adjacent bar; thread means received in said notches on the oppositely opposed bars to form grid lines for the enlarging, reducing or copying of pictures; and a pair of parallel spaced apart spring clips receptive of a canvas therebetween and fixedly secured to the inside corners of each bracket.

3,939,565

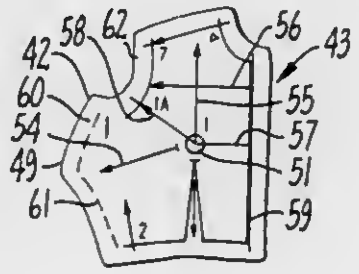
PATTERN FITTING TOOL AND METHOD OF CUSTOM FITTING PATTERS

Roberta F. Bush, 232 Sierra Drive, Walnut Creek, Calif. 94596

Division of Ser. No. 832,043, June 11, 1969, Pat. No. 3,883,955. This application Apr. 22, 1974, Ser. No. 462,756

Int. Cl.^{2} A41H *3/04*

U.S. Cl. 33—17 R **2 Claims**



1. A method of fitting patterns to a human figure, comprising:

a. attaching tapes to the figure being fitted at the waist and at the high around areas of the bust and seat,
b. marking the front, back and side seam locations on each of said tapes,
c. measuring front and back lengths between tapes and front and back widths between seam locations,
d. providing a plurality of transparent plastic sheet materials having basic clothing pattern sections imprinted thereon, said plastic pattern sections having:
    i. indicia showing fixed reference points, some of which indicate the location of selected high round areas of the figure and other of which locate areas and serve as reference points for enlarging or reducing said plastic pattern sections in said areas, and
    ii. correctable reference markings including seam lines and markings indicating areas for locating darts,
e. transferring the measured lengths and widths to the plastic pattern sections,
f. altering the plastic pattern sections in accordance with the measured lengths and widths from the figure,
g. joining plastic pattern sections together in a non-permanent manner to form a partial garment and placing it over the figure,
h. aligning said partial garment of plastic pattern sections to the figure by means of said some fixed reference points, enlarging or reducing said plastic pattern sections in said areas indicated by said other fixed reference points and further adjusting the plastic pattern sections relative to each other as required to determine proper dart and seam lines for an accurate fit of the figure, and
    i. removing the plastic pattern sections from the figure, separating the sections and further marking the sections with the indicated dart and seam lines to produce a set of custom-tailored clothing patterns.

3,939,566

COPYING TRACER PARTICULARLY FOR STAMPING MACHINES

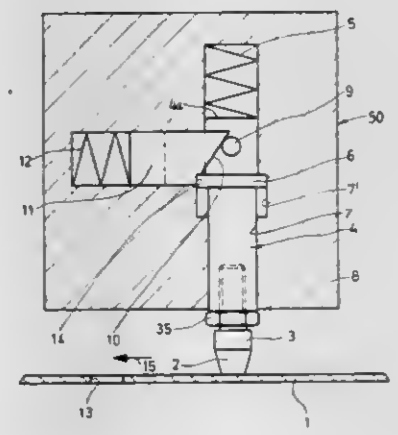
Erich Brekle, Benningen; Eugen Herb, Ditzingen, and Hans Klingel, Moglingen, all of Germany, assignors to Firma Trumph Maschinene AG, Switzerland

Filed Sept. 12, 1974, Ser. No. 505,249

Claims priority, application Germany, Sept. 15, 1973, 2346541

Int. Cl.^{2} B23B *39/26;* B26D *5/02*

U.S. Cl. 33—23 K **11 Claims**



1. A copying tracer for tracing templates having depressions, such as hollows, recesses, bores, etc., particularly for stamping or nibbling machines, comprising a housing having a bore therein, a copying tracer movable in the bore of said housing and having an outer template engaging end portion, and pressure means in said housing acting on said tracer to apply a biasing force against said tracer in a direction to urge the template engaging end into engagement with the template, said pressure means having a separate force applicator effective to apply an increased biasing force against said tracer after said tracer is displaced downwardly below the template by a predetermined amount when said tracer enters into the depression said tracer including means movable thereby to control said separate force applicator such that said separate force is applied only after said tracer moves said predetermined amount.

3,939,567

METHOD AND RELEVANT APPARATUS FOR THE INDIRECT MEASUREMENT OF THE LONGITUDINAL DEVELOPMENT OF CURVED SEATS OR GROOVES IN MECHANICAL WORKPIECES

Gastone Albertazzi, Bologna, Italy, assignor to Finike Italiana Marposs, Soc. In Accomandita Semplice di Mario Possati & C., Bentivoglio, Italy

Filed Aug. 28, 1974, Ser. No. 501,255

Claims priority, application Italy, Sept. 4, 1973, 3489/73

Int. Cl.^{2} G01B *7/28*

U.S. Cl. 33—143 L **9 Claims**

5. An apparatus for the measurement of the longitudinal development between the ends of a groove defined in a workpiece by two side surfaces having a part-circular profile of unknown bending radius, comprising:

a frame;
a support, carried by the frame, for supporting the workpiece;
a first measuring device arranged at a side of the workpiece, said measuring device including: a first measuring element for contacting the workpiece at one end of the groove; a second measuring element for contacting the workpiece at the other end of the groove; and first position transducer means coupled to said elements for providing a signal responsive to the distance between the ends of the groove along the straight line passing through said ends;

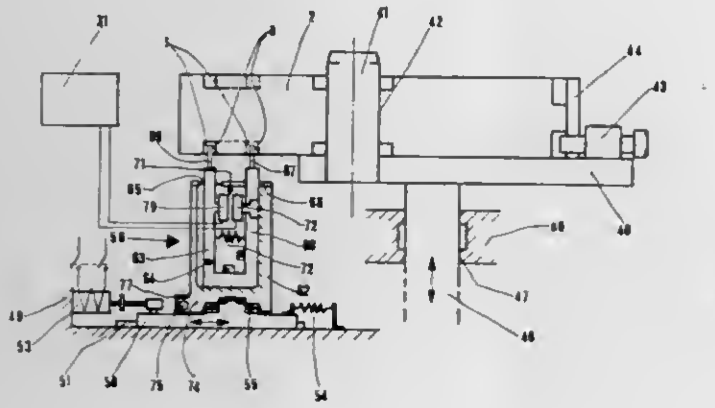
a slide carried by the frame;

a second measuring device carried by said slide at a side of the workpiece, the second measuring device including: a first member comprised of two feelers stationary with respect to each other; a second member comprised of a third feeler movable in a transversal direction with respect to the line passing through said stationary feelers; an oscillating support, carried by said slide, for supporting said first member and second member and permitting said stationary and movable feelers to contact three relevant points on a side of said groove; and second position transducer means coupled to said movable and stationary feelers to provide a signal responsive to the distance between the movable feeler and said line passing through the stationary feelers;

thrusting means coupled between said frame and the slide for displacing the slide to bring the stationary and movable feelers towards said side of the groove;

a retracting device coupled to said slide for displacing it to a rest position adapted for inserting the stationary and movable feelers into said groove; and

processing means for processing the signals provided by the first and second transducer means to obtain the longitudinal development of the groove.



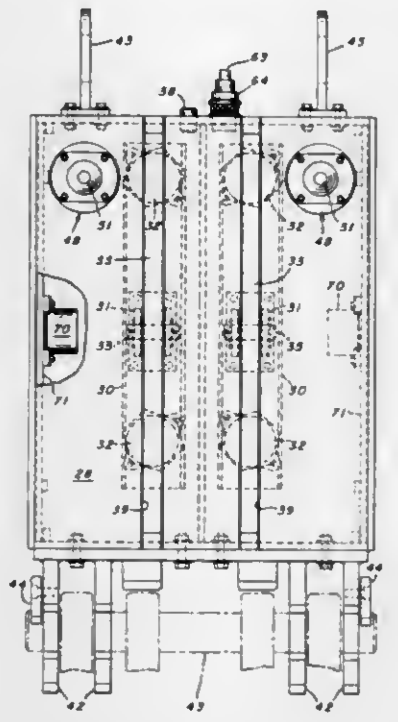
3,939,568
METHOD AND APPARATUS FOR LOCATING IMPROPERLY POSITIONED OR BENT ROLLS

Michael G. Gooos, Monroeville Borough; Kenneth D. Ives, Plum Borough, and Ronald S. Vranka, Monroeville Borough, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 4, 1974, Ser. No. 503,147
Int. Cl.² G01B *5/00*

U.S. Cl. 33—143 L **27 Claims**

1. An apparatus for locating improperly positioned rolls among a set of rolls which are arranged in opposed pairs and have work-engaging faces defining a confined path of travel for a workpiece, said apparatus comprising a housing movable along said path, means carried by said housing at opposite faces thereof for abutting said work-engaging faces and guiding said housing, and a plurality of gap sensors carried by said housing and including heads supported for relative movement normal to the direction of movement of said housing along said path and adapted to contact the work-engaging faces of the individual roll-pairs successively at a plurality of locations along the length of the rolls, and transducer means operatively connected with said heads for transmitting signals representative of the measurements of the gaps between the work-engaging faces of each roll-pair contacted by said heads.

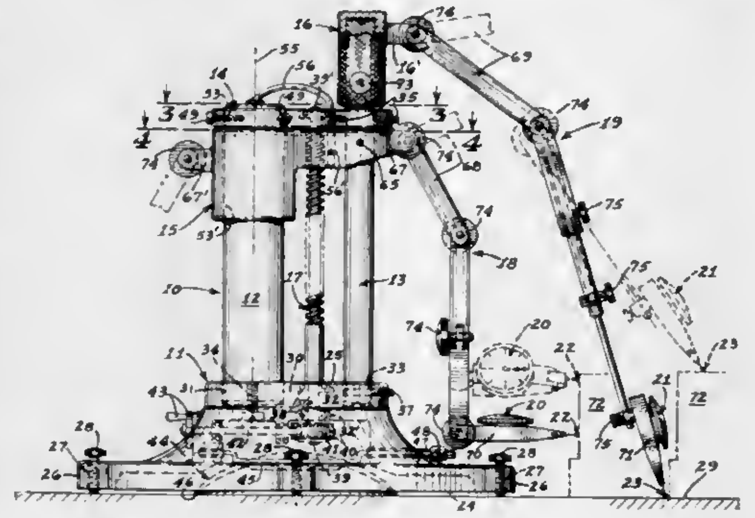


3,939,569
INSPECTION TOOL OR DEVICE

Wayne H. Squires, 8005 N. 28th Ave., Phoenix, Ariz. 85021

Filed Oct. 15, 1974, Ser. No. 514,737
Int. Cl.² G01B *3/22, 5/00*

U.S. Cl. 33—174 L **4 Claims**



1. An inspection tool for positioning on a level surface and manually adjusted so that its base and associated movable and stationary components are in vertical and horizontal planes relative to the surface on which it is mounted so that the tool may be used for determining the relative squareness, angularity and other characteristics of the surface of an object being inspected comprising:

a base member,

a pair of cylindrical support posts mounted to extend laterally from said base member,

a stationary tie bar fixedly mounted on the upper ends of said support posts,

a first movable tramming head, means mounting said head for sliding and rotating movement on one of said pair of support posts, and said head having groove means for detechably engaging the other of said pair of support posts,

a second rotating tramming head being mounted on the other of said posts,

a hearing mounted in said tie bar,

a moveable head activating shaft mounted on said base and arranged to extend substantially parallel with said support posts with its free end rotatably mounted in said hearing, said shaft being threadedly engageable with said first movable tramming head for causing movement of said first moveable head axially along said support posts,

said first tramming head having a second groove means for detachably engaging said shaft,

a pair of tramming arms one mounted on each of said first and second moveable tramming heads, and

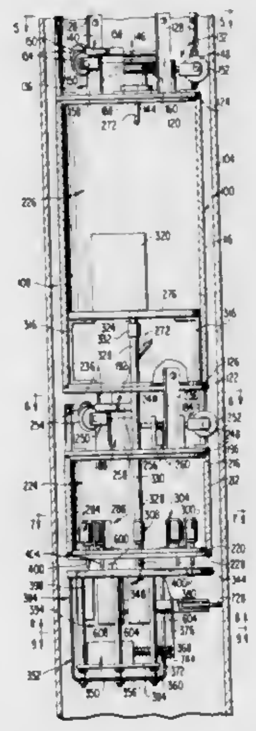
a pair of dial indicators one mounted at the end of each of said tramming arms for indicating surface conditions over which they traverse.

3,939,570
APPARATUS FOR AND PROCESS OF DETERMINING OVERSTRESS IN PIPE PILES

William F. Loftus, 78a Ridge Road, Valley Cottage, N.Y. 10989

Filed June 20, 1974, Ser. No. 481,475
Int. Cl.² G01B *5/20, 5/12;* **E21B** *47/08*

U.S. Cl. 33—178 E **18 Claims**



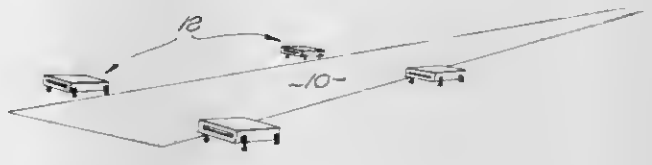
1. An apparatus for determining the load-carrying capability of a hollow pile driven into the ground to carry a load whereby changes in the internal surface configuration of said pile at various point along its length are measured, comprising: a body member defining a longitudinal axis; rotatable sensing means, which is rotatable in relation to said body member about said axis, for entering and sensing the distance of a straight line extending from the longitudinal axis of said apparatus to the internal wall of said pile in any radial direction at any point along the length of said pile and for producing a signal representative of the distance of said line; means, independent of the longitudinal position of said apparatus in said pile, for rotating said rotatable sensing means to any desired radial position; and drive means for moving said body member longitudinally in said pile to any desired point along the length of said pile.

3,939,571
METHOD AND APPARATUS FOR AIMING AIRCRAFT VISUAL APPROACH SLOPE INDICATOR

James F. Studdard, Lake View Terrace, Calif., assignor to West Tech Systems, Inc., Los Angeles, Calif.

Filed June 26, 1974, Ser. No. 483,197
Int. Cl.² G01C *9/28*

U.S. Cl. 33—180 R **5 Claims**



1. A method for adjusting the vertical angle of an aircraft visual approach slope indicator, wherein the approach indicator includes a vertically adjustable housing containing at least one landing light mounted behind a horizontal crossbar across one housing wall to direct light through a horizontal aiming slit in the opposite housing wall at an adjustable vertical angle towards approaching aircraft, the cross bar being centrally aligned between said light and the slit and the angle of the directed light being determined by adjustment of the vertical angle of the slope indicator housing, comprising the steps of:

leveling a T-shaped calibration bar, having a T-leg and a cross arm, on an adjustable leveling system;

mounting the first linear bar of an alignment assembly on top of and parallel to the calibration bar T-leg, said alignment assembly further comprising: a second linear bar pivotally mounted at one end of the first bar in a vertical plane parallel to the vertical plane of the first bar, said second bar being directed rearwardly back towards the remote end of the first bar and carrying clamping means; a slotted angle plate secured to the first bar adjacent the free end of the second bar for engagement by said clamping means, said angle plate being marked so that the upper surface of the second bar is aligned with an indication of the vertical angle formed between the first and second bars when the second bar is horizontal; and an adjustable level mounted on the upper surface of the second bar;

rotating the second bar to a position parallel to the first bar so that the upper surface of the second bar is aligned with a zero angle indication on the angle plate;

adjusting the adjustable level until it indicates a horizontal position;

removing the alignment assembly from the calibration bar;

mounting the alignment assembly on the aircraft visual approach slope indicator by inserting said remote end of the first bar through the indicator housing slit and securing said remote end to said cross bar whereby said first bar assumes the vertical angle of the directed light;

rotating the second bar until its top surface is aligned with an angle plate indication corresponding to the desired angle of the directed light;

securing the second bar in its rotated position by engaging the clamping means with the slotted angle plate,

adjusting the vertical angle of the indicator housing until the level on the second bar indicates a horizontal position; and

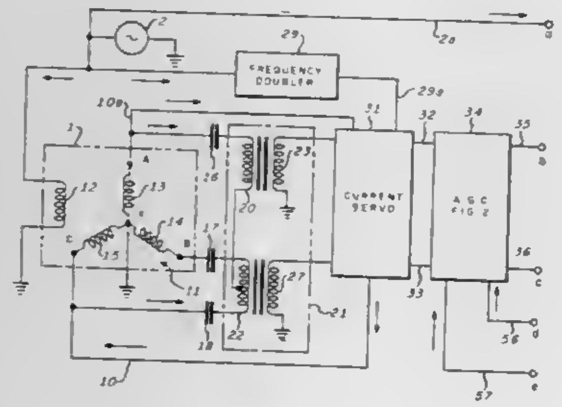
removing the alignment assembly from the indicator housing.

3,939,572

LATITUDE COMPENSATOR FOR FLUX VALVE HEADING REPEATER SYSTEM

James R. Erspamer, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 2, 1974, Ser. No. 528,760
Int. Cl.^{2} G01C *17/30*; G05B *11/06*
U.S. Cl. 33—361 **3 Claims**



1. In a magnetic compass data transmission system for navigable craft, the combination comprising:

magnetic field detector means including a plurality of inductive windings responsive to the direction and magnitude of the earth's magnetic field with respect thereto for providing a first plurality of alternating signals representative of said earth's magnetic field direction and magnitude,

current servo means responsive to said first plurality of alternating signals for generating first and second unidirectional signals representative of said earth's magnetic field direction and magnitude,

gain control means responsive to said first and second unidirectional signals for generating third and fourth unidirectional signals representative of said earth's magnetic field direction and substantially independent of the magnitude thereof, said gain control means including:

  first and second variable conductivity circuits having respective first and second conductivity states,

  switching means for causing said first and second separate variable conductivity circuits simultaneously to change from one to the other of said first and second conductivity states at a controlled duty cycle,

  filter means residing respectively in said first and second variable conductivity circuits for smoothing the respective currents flowing through said switching means for forming said third and fourth unidirectional signals,

circuit means for separately modulating said third and fourth unidirectional signals with a reference alternating signal for forming first and second output alternating signals representative of said earth's magnetic field direction,

control means responsive to said first and second output alternating signals for control of said gain control means, said control means including:

  comparator means for comparing a signal representative of said first and second output alternating signals to a reference unidirectional signal, and

  variable pulse-width generator means responsive to said comparator means for supplying controlled pulse-width modulated signals for controlling said controlled duty cycle, and

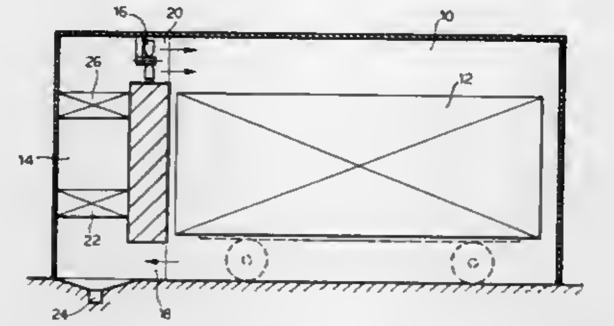
utilization means additionally responsive to said first and second output alternating signals.

3,939,573

PROCESS FOR DRYING WOOD

Furio Berti, Viale Thovez 40 Int. 32, Turin, Italy

Filed Oct. 31, 1974, Ser. No. 519,712
Int. Cl.^{2} F26B *3/00*
U.S. Cl. 34—26 **10 Claims**



1. In a process for the forced drying of wood, wherein air is circulated around a closed circuit in which the air is heated, passed over the wood to be dried, de-humidified by cooling and then re-heated to commence another circuit, the improvement comprising the steps of:

- a. a first stage of heating and maintaining the air passing over the wood at between 20°C and 30°C until the moisture content of the wood has fallen to between 16 and 25 percent by weight; and
- b. a second stage of raising the temperature of the air passing over the wood to between 34°C and 38°C and maintaining the air passing over the wood at between 34°C and 38°C until the moisture level of the wood has fallen to a predetermined level at which drying is considered complete.

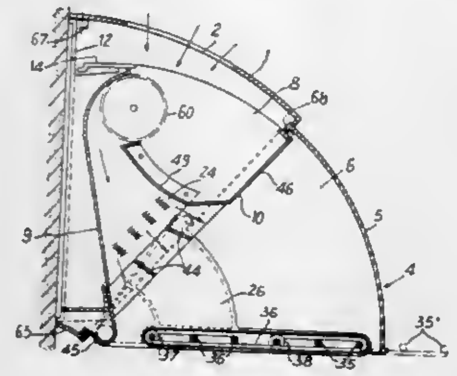
8. A process as in claim 7, wherein the first stage is preceded by a preliminary heat-up stage during which the air is not de-humidified, dehumidification being initiated when the temperature of the air passing over the wood has reached a value of at least 20°C.

3,939,574

LINEN DRIER

Claude Garot, Colombes, France, assignor to Societe Universelle de Fabrication d'Appareils Menagers S.U.F.A.M., Colombes, France

Filed Jan. 27, 1975, Ser. No. 544,556
Claims priority, application France, Jan. 29, 1974, 74.2832
Int. Cl.^{2} F26B *9/00*
U.S. Cl. 34—163 **19 Claims**



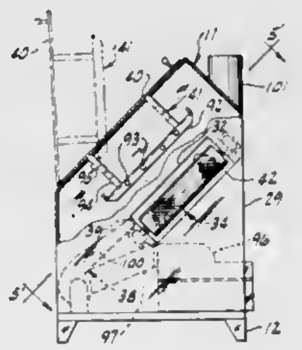
1. Linen drier adapted to be mounted on a wall, said drier comprising a box having one side adapted to lie against said wall and being equipped with means for producing a current of hot air, a visor mounted to pivot about an axis parallel to said one side between a retracted position adjacent the top of said box and an extended and lowered position in which it projects further away from said box, two supports mounted to pivot independently of said visor about an axis parallel to said one side between a retracted position lying mainly within said box and a lower position lying mainly outside said box, said supports being positioned inside said visor and carrying a set of wires which are parallel to said one side of said box, said visor permitting access to said wires when said supports are in their extended position and said visor is in its retracted position and guiding said current of air toward said wires when both visor and supports are in their extended positions.

3,939,575

DRYER UNIT FOR PRINTING PLATES

Charles Wayne Schnelle, Aurora, Mo., assignor to Tasope' Limited, Aurora, Mo.

Filed Dec. 4, 1974, Ser. No. 529,375
Int. Cl.^{2} F26B *19/00*
U.S. Cl. 34—216 **4 Claims**



1. A dryer unit for printing plates comprising:

- a. a housing having opposed ends,
- b. a belt conveyor assembly mounted to the housing and including a continuous movable belt having a perforate flat upper surface inclined in a direction transverse to the direction of motion, the belt carrying a printing plate flat on its upper surface at least part of the distance between opposed housing ends,
- c. drying means mounted within the housing for circulating air above and below the perforate upper belt surface to dry both faces of the plate, the drying means including a blower having an elongate nozzle orifice disposed adjacent the lower side and substantially in the plane of the perforate flat upper surface of the belt, and disposed to blow heated air upwardly across the flat printing plate and both above and below the perforate flat upper belt surface, and
- d. the housing including an outlet vent disposed above the nozzle orifice and adjacent the opposite upper side of the perforate flat upper belt surface.

3,939,576

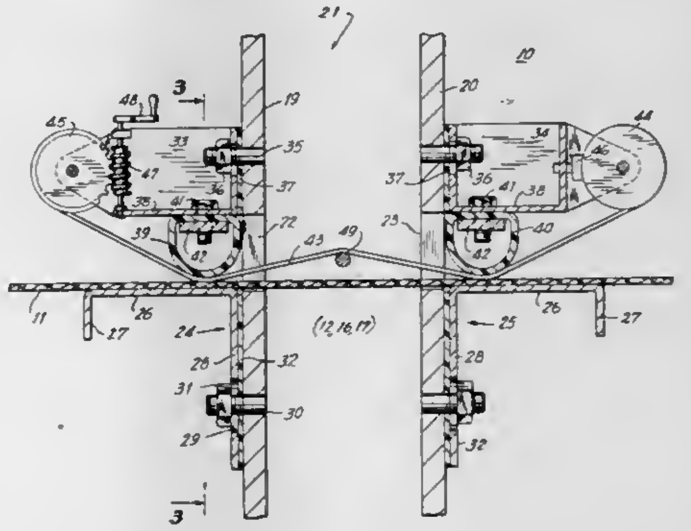
LOW FRICTION PRESSURE SEAL FOR FABRIC PROCESSING CHAMBER

Jackson Lawrence, West Sand Lake, N.Y., assignor to Cluett, Peabody & Co., Inc., New York, N.Y.

Filed July 19, 1974, Ser. No. 490,199
Int. Cl.^{2} F26B *25/00*
U.S. Cl. 34—242 **3 Claims**

1. A low-friction, low pressure seal for use in combination with a processing chamber for the continuous liquid ammonia processing of fabrics, wherein the chamber is maintained at a slight negative pressure in relation to the surrounding ambient and wherein the fabric is conveyed through the chamber with minimum tension applied at the seal, wherein the seal comprises and is characterized by

- a. means forming a smooth stationary rigid guide member mounted in the region of the chamber opening, for engaging, guiding and supporting one surface of the fabric web as it passes through the opening,
- b. said guide member extending across the full width of the opening,
- c. a stationary seal support mounted in spaced, parallel relation to said guide member and defining therewith a web passageway associated with said chamber opening,
- d. an elongated, resilient, hollow, deformable sealing member carried by said stationary seal support and extending toward said guide member,
- e. said deformable sealing member extending across the full width of said opening,
- f. a thin, flexible, web-like section of low friction material secured in normally stationary manner in a region spaced from said deformable sealing member and extending between said sealing member and said rigid guide member,



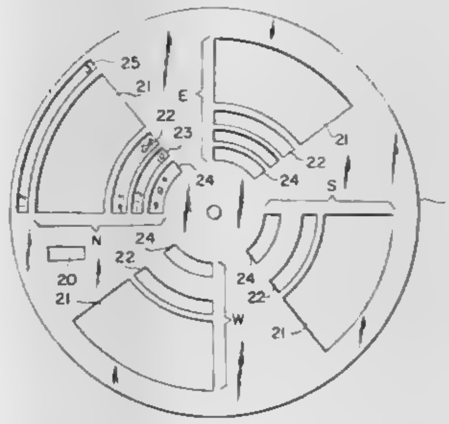
- g. said web-like section being urged lightly toward said guide member by said sealing member,
- h. said resilient sealing member being maintained free of internal inflation pressures, whereby sealing pressures applied by said sealing member are derived exclusively by limited elastic deformation of said sealing element, whereby said fabric can be advanced with a minimum of tension resulting from said seal, and
- i. said low pressure seal being adapted for the low resistance passage of a fabric web between and in sealed relation with said guide member and said section of low friction material.

3,939,577

PRACTICE BOARD FOR CONTRACT BRIDGE GAMES

Kozo Amano, No. 480, Sasaya, Fuyacho-Takeyamachi Sagaru, Nakagyo, Kyoto, Kyoto, Japan

Continuation-in-part of Ser. No. 278,458, Aug. 7, 1972, Pat. No. 3,797,128. This application Feb. 20, 1974, Ser. No. 444,046. The portion of the term of this patent subsequent to Mar. 19, 1991, has been disclaimed.
Int. Cl.^{2} G09B *19/22*
U.S. Cl. 35—8 B **3 Claims**



1. A practice board for contract bridge, comprising a circular sheet having indicia marked thereon and arranged in accordance with a predetermined contract bridge game, said

indicia including four sets of first indicia showing the cards of each player's hand and being arranged such that one of said cards for each of said player's hand is eliminated each trick, second indicia showing cards to be played by each player on respective tricks, said first and second indicia being arranged in rows, trick by trick, representing thirteen tricks, four sets of third indicia, each of said four sets of third indicia showing bids of the corresponding player at respective rounds of bidding in a row; a circular cover member overlying said sheet and being provided with apertures formed therein corresponding to said sets of indicia on said sheet and through which said indicia on each single trick can be seen, said apertures comprising first, second and third apertures corresponding to said first, second and third sets of indicia of said sheet, said first and second apertures being of a width sufficient to show the indicia of a single trick, said third aperture being arranged to said third indicia when the remaining apertures show the indicia on the first trick; and means permitting said sheet to be rotated relative to said cover at the end of each trick.

3,939,578

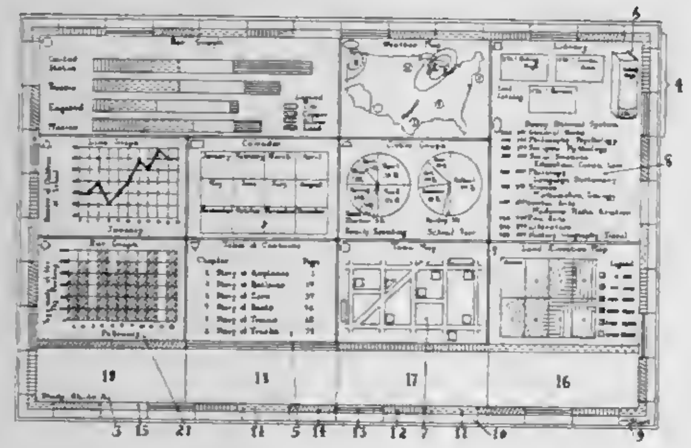
EDUCATIONAL BOARD GAME APPARATUS

Elizabeth Jane Putnam Coffey, 1322 6th St., Coachella, Calif. 92236

Filed June 20, 1973, Ser. No. 137,278

Int. Cl.² G09B *3/00*

U.S. Cl. 35—9 R **4 Claims**



1. A game apparatus that embodies, in combination, a game board containing printed matter, pictures, maps, diagrams, and/or other subject matter designed to help players with responses, wherein some responses and/or methods of arriving at some responses are contained on said game board; cards that primarily contain any combinations of a question, questions, a command, commands, a symbol, symbols, a name, and/or names on one side of the card, with the matching and required answer, answers, statement, statements, word, words, name, and/or names on the reverse side of the same card, the questions, etc., and answers, etc., on said cards being at least in part related to the printed matter on said game board.

3,939,579

INTERACTIVE AUDIO-VISUAL INSTRUCTION DEVICE

Lawrence Paul Andrews, Manassas; Raymond Graham Fox, Warrenton; Clayton Potter Ludeman, Manassas, all of Va.; Thomas Wilbur Rounds, Jr., Endwell, N.Y.; Victor Anthony Scuderi, Gaithersburg, Md., and Douglas Howard Strait, Vienna, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

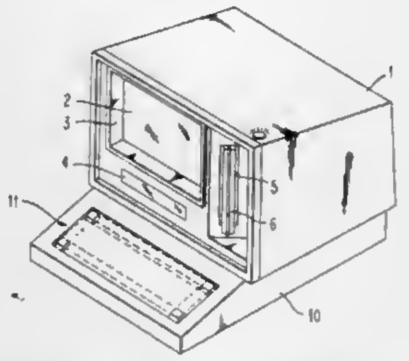
Filed Dec. 28, 1973, Ser. No. 429,308

Int. Cl.² G09B *7/04*

U.S. Cl. 35—9 A **2 Claims**

1. An audio-visual device of the type described having a film tape with projectable images thereon, projector devices, a film drive, and a counter selectively energizable by said film drive to maintain a count indicative of the film image at the projecting position of the projector device, an audio tape having a plurality of separate messages thereon in one or more channels, said tape also including at least one channel having indicia indicating the start of each message and a following block of device control information for each message, a read head for each channel of said audio tape, an audio tape drive and a second counter selectively energizable under control of said start of message indicia to maintain a count indicating the identification of the audio message present at the read head, a pair of settable indicators, one for each tape and each to indicate a desired tape position of the associated tape, two comparators, one for each tape, to compare the desired tape position for the corresponding tape with a present tape position, a drive controller for each tape, each drive controller energized by its related comparator to actuate its tape drive in a direction to move the associated tape toward the desired position, a control data storage device connected to said read head for the control information channel to retain device control information as read from said audio tape, a plurality of user selectable response devices, means under control of said response devices to cause transfer of related device control information action from said information storage device to said settable indicators thereby causing movement of either or both of said tapes to response dependent positions and

a character display service, a character storage means, character entry devices selectively operable by a user to enter character indicia into said character storage means for control of said display device, a start key and circuits controlled by said start key to successively compare character indicia stored in said storage means with character indicia in said device control information stored in said control data storage device.



3,939,580

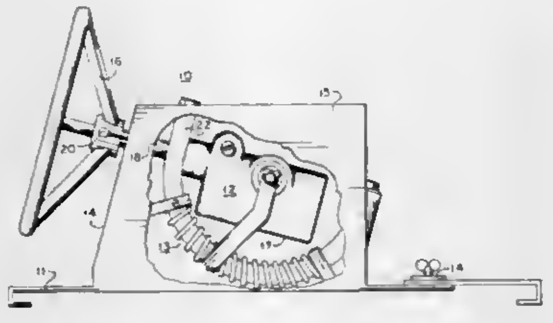
DRIVER TRAINING AID

George S. Nakano, 6926 Ashland Drive, Boise, Idaho 83705, and Robert J. O'Mera, 965 Orlin Drive, Idaho Falls, Idaho 83401

Filed Jan. 27, 1975, Ser. No. 544,537

Int. Cl.² G09B *9/02*

U.S. Cl. 35—11 **3 Claims**



1. A driver training aid, comprising:

a base having an upstanding houseing;

a steering assembly comprising a worm gear shaft a steering wheel and a steering assembly having a sector shaft fastened to said steering wheel to provide substantially the same mechanical cooperation as is found in an actual steering wheel and steering gear, said steering assembly being mounted in said housing with the face of said steering wheel mounted at predetermined acute angle to the vertical; and

a variable resistance spring assembly comprising a spring arm fastened at one of its terminal ends to the worm gear shaft of said steering gear assembly, an arcuately shaped spring carring rod being substantially in a plane disposed perpendicularly to said worm gear shaft and fastened at its terminal ends to said housing with the geometrical center thereof being congruent with the center line of said worm gear shaft, and a spring being substantially coextensive with and being slidably carried on and having its ends secured to said spring carrying rod, the terminal end of said spring arm opposite the end connected to said worm gear shaft being fastened to the spring substantially midway of the length of said spring.

3,939,581

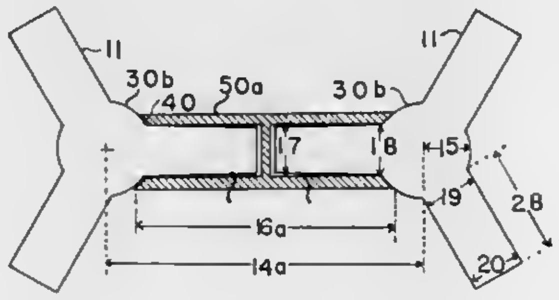
ORGANIC MOLECULAR MODEL ASSEMBLY

Frank H. Clarke, Jr., 14 Long Pond Road, Armonk, N.Y. 10504

Continuation-in-part of Ser. No. 369,097, June 11, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,103

Int. Cl.² G09B *23/26*

U.S. Cl. 35—18 A **9 Claims**



1. A color coded molecular model assembly kit for representing complex organic macromolecular structures and shapes, comprising two basic and complementary construction units capable of being interlocked, said first basic construction units being color coded tubes to represent at least the major part of the bonds of joined atoms or organic molecules consisting of three different lengths of said tubes; said lengths being such that when coupled to two of said second basic construction units the distances between the centers of the coupling means represent and are substantially proportional to 1.36 Angstroms, 1.54 Angstroms and 1.81 Angstroms respectively and said second basic construction units being color coded coupling means for said first construction units according to the valency of each said atom and centers of said coupling means representing atom centers, said coupling means having radial arms for precisely positioning said tubes, said radial arms being rods substantially located on the surface of a sphere with the center of the coupling unit being the center of the sphere, wherein said first and second construction units are made of plastic and are capable of being joined together and held immobile by friction by having said radial arms and/or the cavities of said tubes tapered so that a rigid bond is formed when said tube is pressed firmly onto the arm of said coupling means so that models of complex organic macromolecules may be constructed such that the distance between the centers of two coupling means represents and is substantially proportional to the distance between joined atoms, at least one type of said coupling means adapted for planartrigonal coupling of three said tubes separated by angles of about 120° and/or adapted for tetrahedral coupling of four said tubes separated by angles of about 109°.

3,939,582

SKI BOOT WITH FLEXIBLE INTERCONNECTED TOP AND BOTTOM PORTIONS

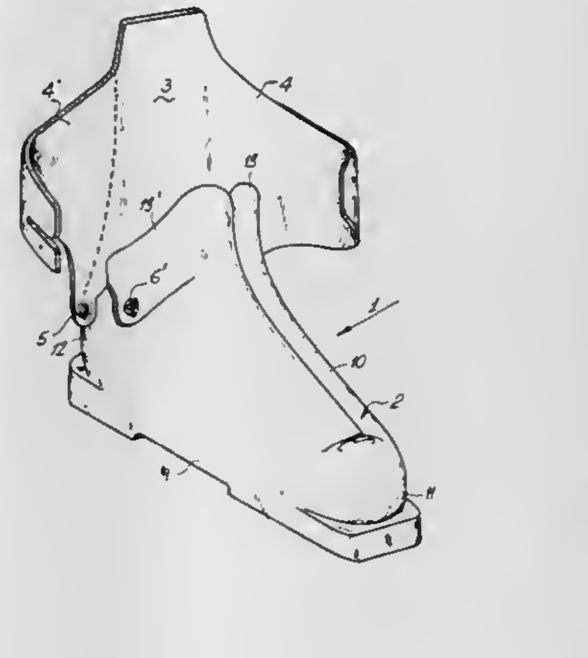
Carlo Garbuio, Volpago Del Montello, Treviso, Italy

Filed Aug. 22, 1974, Ser. No. 499,405

Claims priority, application Italy, Oct. 4, 1973, 29731/73

Int. Cl.² A43B *00/00*

U.S. Cl. 36—2.5 AL **5 Claims**



1. A ski boot comprising an integral body of polymeric sheet material including a bottom portion with a toe end and a heel end and further including a top portion connected with said bottom portion at said heel end by a pair of substantially inextensible lateral bridges and by a vertically extensible part flanked by said bridges, said top portion being provided with a pair of first lateral flaps extending forwardly from the region of said bridges, said bottom portion being provided with rearwardly extending second lateral flaps overlapped by said first flaps, said first and second flaps carrying mating fastener halves positioned on a horizontal axis in the region of the ankle upon mutual interengagement, said axis lying forwardly of said bridges.

3,939,583

ICE HOCKEY BOOT

Oskar Paul Daumann, Schney, Germany, assignor to LICO-Sportschuhfabriken Link & Co., GmbH, Schney, Germany

Filed Oct. 2, 1974, Ser. No. 511,319

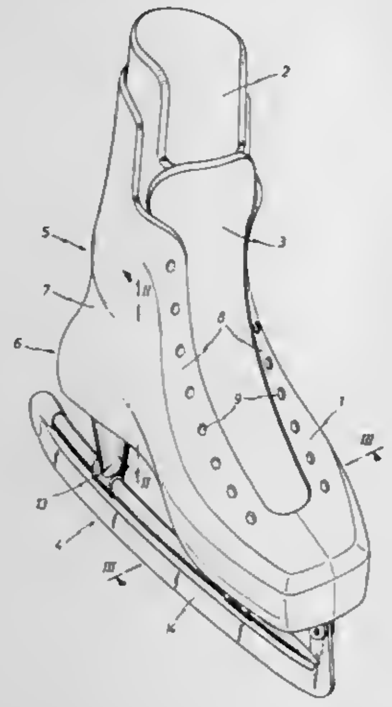
Claims priority, application Germany, Oct. 2, 1973, 7335607[U]

Int. Cl.² A43B *00/00;* A63C *1/02*

U.S. Cl. 36—2.5 R **12 Claims**

1. Ice hockey boot with a one piece outer shell of a relatively hard synthetic resin and an inner shoe of a relatively soft synthetic resin and with a blade support mounted to the sole

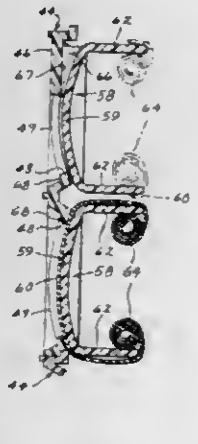
of the outer shell, characterized in that the outer shell is fashioned to be adapted to the shape of the foot in the joint zone,



in the ankle zone, in the heel zone, and with respect to the constriction above the heel zone in the Achilles tendon zone.

3,939,584
DISPLAY WITH INTERLOCKING STRIPS

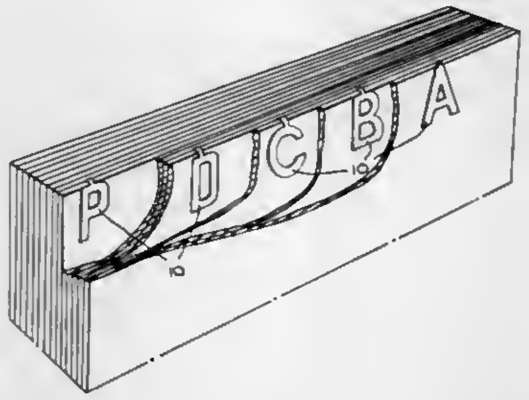
Charles E. Trame, Milwaukee, Wis., assignor to Everbrite Electric Signs, Inc., South Milwaukee, Wis.
Filed Oct. 29, 1974, Ser. No. 518,560
Int. Cl.^{2} G09F *3/18*
U.S. Cl. 40—10 R **7 Claims**



1. In a display an opaque generally planar holder of finite thickness adapted to be positioned in front of a source of light, said holder having a front and having at least one window opening, said window opening having a pair of oppositely-disposed lateral margins which are convexly curved toward the front of the holder, and each window having another pair of margins which extend generally transversely of said lateral margins, a tape support subjacent said window opening and at least co-extensive therewith and including a curved tape-supporting face of light-transmitting material matingly curved with respect to the convexly curved lateral margins of the window opening, and said tape support having oppositely-disposed guiding portions subjacent said transverse window margins, means mounting said tape support in position while leaving curved tape-guiding grooves between the curved face of the tape support and the convexly curved lateral window opening margins, and also providing tape-guiding slots between said oppositely-disposed guiding portions of said tape support and said transverse margins of said window opening through which tape is guided for movement, and a pre-curled tape having a display portion with light-transmitting indicia supported on said curved face of the tape support of said window opening, with the natural curvature of the tape maintained in a position to conform to the curvature of said curved face of said tape support and to the curvature of said lateral window opening margins, said tape having a curl at each end, the oppositely-disposed guiding portions of the tape support being each engaged with one of said end curls, said end tape curls being supported in spaced relationship so that the indicia on the curved face of the tape support is exposed to the source of light, the lateral margins of said tape being overlapped by said convexly curved lateral margins of said window opening whereby the tape is shiftable by a finger inserted through a window from the front of the display while the edges of the tape are inaccessible for grasping.

3,939,585
FILING SYSTEM

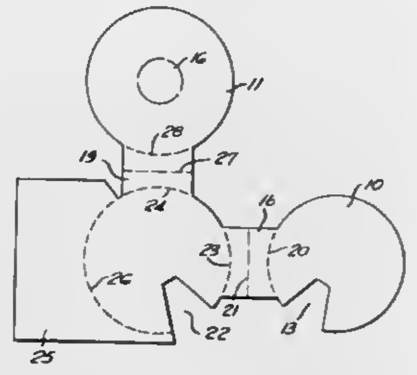
Evelyn G. Kahn, 165 Stanwich Road, Greenwich, Conn. 06830
Continuation of Ser. No. 317,052, Dec. 20, 1972, abandoned. This application July 25, 1974, Ser. No. 491,685
Int. Cl.^{2} G09F *3/16*
U.S. Cl. 40—23 A **8 Claims**



1. A filing system comprising a plurality of combination indexing and fastening clips, each clip having a front indicium member and a rear opposing member attached to the front indicium member at the top thereof, the rear opposing member lying in substantially the same plane as the front indicium member and having a configuration surrounding and enclosing the sides and bottom of the front indicium member in non-intersecting relationship thereto, the front indicium member having a shape consisting of a particular reference character defined by the front indicium member of each clip in the set being readily distinguishable from the reference character defined by every other clip in the set, the rear opposing member having a torsionally resilient portion at the top thereof, said torsionally resilient portion being biased to hold the front indicium member and the rear opposing member in substantially the same plane and having two aligned bar-shaped elements each extending across a portion of the top of the front indicium member, the front indicium member being attached to the rear opposing member by two connecting arms each extending from the top of the reference character to one of said bar-shaped elements, whereby any separation of the planes of the front indicium member and the rear opposing member rotates the connecting arms and twists the torsionally resilient bar-shaped elements thereby giving rise to a resilient opposing force which tends to realign the front indicium member and the rear opposing member in substantially the same plane, and whereby when documentary materials are inserted between the front indicium member and the rear opposing member, the torsionally resilient portions of the rear opposing member bias the front indicium member and the rear opposing member toward substantially the same plane thereby securely binding the documentary materials therebetween.

3,939,586
RELATIVELY MOVABLE BODIES AND METHODS OF MAKING THEM

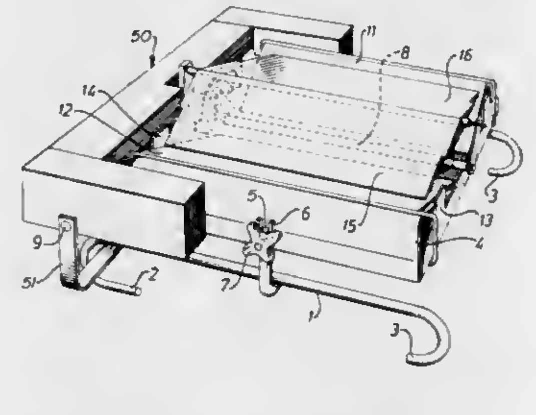
Charles F. Clark, 99 Avondale Road, Yonkers, N.Y. 10710
Continuation of Ser. No. 150,538, June 7, 1971, Pat. No. 3,820,263, which is a continuation-in-part of Ser. No. 795,305, Jan. 30, 1969, Pat. No. 3,604,134. This application Nov. 12, 1973, Ser. No. 414,759. The portion of the term of this patent subsequent to Sept. 13, 1988, has been disclaimed.
Int. Cl.^{2} G09F *11/04*
U.S. Cl. 40—70 R **7 Claims**



1. The method of making a device having relatively movable parts, said method comprising: providing at least first and second sheets, forming at least one perforation within said first sheet thereby defining a substantially completely enclosed formed section having at least one discontinuity within the periphery thereof, superposing said first and second sheets so that said formed section in said first sheet overlies said second sheet, adhering one side of said formed section to one side of said second sheet, whereby manipulation of said first and second sheets relative to one another shears said discontinuity thereby separating said formed section from said first sheet, said forming of said perforation including defining said formed section so that said first sheet is capable of movement relative to said formed section fixed to said second sheet.

3,939,587
PAGE-TURNER FOR BOOKS AND THE LIKE

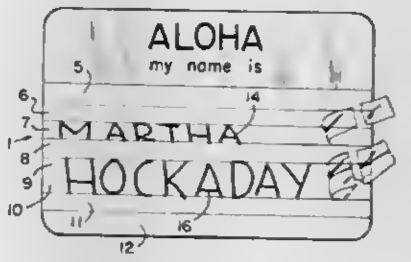
Jan Hakan Weststrom, P-antskogsvagen 5, 140 22 Upplands Balinge, Sweden
Filed Feb. 4, 1974, Ser. No. 439,280
Claims priority, application Sweden, Feb. 8, 1973, 73017055
Int. Cl.^{2} G09F *11/00*
U.S. Cl. 40—104 A **12 Claims**



1. A page-turner for turning the pages of an open publication having a spine and front and back covers, the page-turner comprising:
- a frame;
- a support for supporting an open publication;
- first means for carrying said support on said frame;
- second means for clamping the covers of such open publication on said support;
- a rotatable page-turning roller having an axis extending in a first direction substantially parallel to the spine of such publication when the publication is supported by said support;
- third means coupled to said frame for carrying said page-turning roller over said support and for selectively displacing said page-turning roller from one side of the support to the other in a second direction substantially perpendicular to said first direction;
- fourth means for selectively rotating said page-turning roller in a desired direction of the two possible rotational directions;
- fifth means for bringing said page-turning roller into contact with the pages of such open publication;
- sixth means for pressing down the pages of such open publication not being turned, said sixth means including two page-retainers arranged in conjunction with the page-turning roller; and
- seventh means for operating said third, fourth and fifth means to sequentially bring said page-turning into engagement with a page to be turned, selectively rotate said page-turning roller so that at least said page to be turned is brought up on the page-turning roller, and displace said page-turning roller to the opposite side of the open publication, whereby said page is turned.

3,939,588
LETTERING GUIDE APPARATUS

Robert C. Hockaday, 1053 Koohoo Place, Kailua, Hawaii 96734
Filed June 24, 1974, Ser. No. 482,656
Int. Cl.^{2} B43L *13/00;* **G09F** *7/00*
U.S. Cl. 40—125 A **6 Claims**



1. Lettering apparatus comprising a flat card stock lettering plate having a series of parallel individually peelable disposable strips mounted on the plate, and a releasable bonding means connected to the strips on sides thereof adjacent the plate for holding the strips on the plate and for permitting selected strips to be pulled from the plate and for leaving remaining strips on the plate, and surface discontinuities formed between the plate and strips remaining on the plate, whereby the surface discontinuities form guides for lettering on the plate, wherein a first space on a front face of the plate is devoid of the peelable, disposable strips and wherein the peelable, disposable strips are mounted adjacent each other on a second portion of the front face of the plate.

3,939,589
FIREARMS WITH FORESTOCK

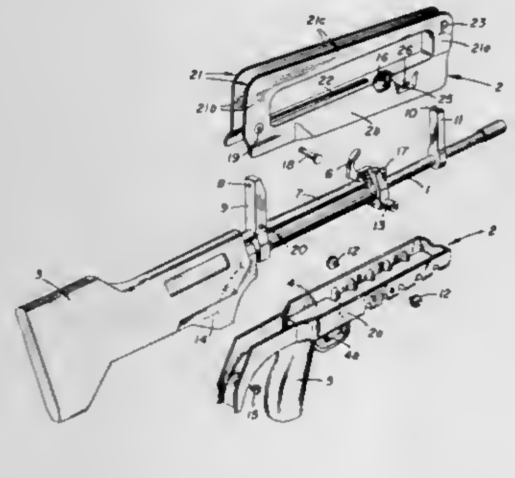
Paul E. Tellie, 20, rue Bergson-42000, St. Etienne, France
Filed May 17, 1974, Ser. No. 470,840
Claims priority, application France, June 1, 1973, 73.1995
Int. Cl.^{2} F41C *23/00;* **F41G** *1/46*
U.S. Cl. 42—71 R **8 Claims**

1. A firearm comprising:
- a breech housing,
- a launching tube,
- a forestock, said forestock surrounding the rear portion of said launching tube, said forestock comprising:

a lower housing portion for supporting firing mechanisms, said housing portion being fastened by removable fastening means to the launching tube and to the breech housing,

an upper hood portion for protecting mechanisms in the upper region of the firearm, said hood portion being fastened by removable fastening means to said launching tube, said hood portion comprising:

a longitudinal base in the form of an inverted channel adapted to come over the upper portion of the firearm near the rear region of the launching tube,



two hoops forming a carrying handle permitting a marksman to carry the firearm, said hoops extending above said base and the two hoops each comprising a front upright and a rear upright connected together by a flat upper strip which is directed vertically and extends parallel to the axis of the launching tube, and

a transverse partition connecting the lower edges of the upper strips of the two hoops at least over the major portion of their length, said transverse partition together with the upper strips defining a channel which is open towards the top, is parallel to the axis of the tube, and forms a sighting channel, and

said upper portion and said lower portion are two separate parts which are removable independently of each other.

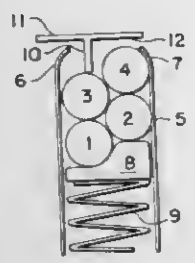
3,939,590
MAGAZINE EMPTYING DEVICE

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731

Filed Sept. 11, 1974, Ser. No. 504,901

Int. Cl.^{2} F41C *27/00*

U.S. Cl. 42—90 8 Claims



1. A magazine emptying device comprising: mounting means having a stud fixed integrally thereto, said stud being inserted into a feed mouth of a magazine and positionally adapted for exerting thrust against a cartridge in said magazine adjacent to the cartridge nearest said feed mouth; and means to limit insertion of said stud into said feed mouth.

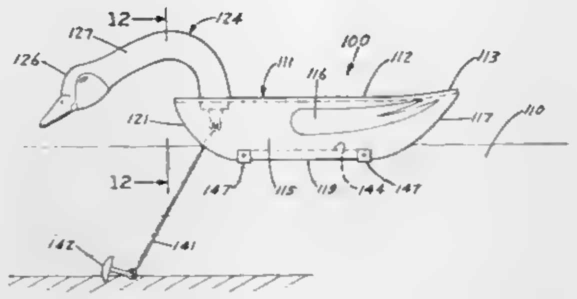
3,939,591
DECOY

George H. Schwartztrauber, 925 N. Ninth, West Des Moines, Iowa 50265

Continuation-in-part of Ser. No. 414,918, Nov. 12, 1973, abandoned. This application Dec. 26, 1974, Ser. No. 536,545

Int. Cl.^{2} A01M *31/06*

U.S. Cl. 43—3 26 Claims



1. A decoy comprising: body means simulating the body of a fowl, said body means comprising an inverted generally U-shaped member having a back section, downwardly directed sides joined to the back section, and a longitudinal passage through said member with open forward and rear ends whereby fluids can flow through said body means to orient the body means with the direction of the flow on the fluids, head means simulating the head of a fowl releasably connected to said member, and coacting means on said member and head means to releasably attach the head means to the member, said coacting means including first means on said head means to permit rotation of the head means about an upright axis, and second means on the member accommodating the first means to hold the head means in assembled relation with the member and permit said rotation of the head means, said second means including an opening in the back section, said first means including projection means on said head means extended through said opening, and means cooperating with the projection means and back section to hole the bottom surface of the head means in firm surface engagement with the back section, said means cooperating with the projection means and back section including a plurality of leg members mounted on the projecton means and engageable with the back section, said leg members having inwardly directed feet engageable with the back section, said projection means having recesses to accommodate the feet whereby the projection means and leg members can be inserted through said opening in the back section.

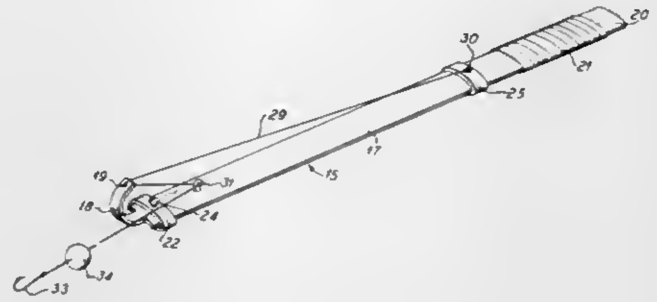
3,939,592
EXTENSIBLE TAPE DEVICES

Richard D. Johnson, 715 Marcella Road, Des Plaines, Ill. 60016

Filed Jan. 27, 1975, Ser. No. 544,328

Int. Cl.^{2} A01K *97/00*

U.S. Cl. 43—15 14 Claims



1. An extensible rollup device, comprising:

an elongated resiliently flexible tape body having a normal rollup bias, and a transversely arching bias for retaining the body selectively extended in opposition to said rollup bias;

rollup of the extended body being triggered by relatively flattening a terminal portion thereof to overcome the arching bias; and

a utility element carried on said terminal portion, in noninterfering relation to functioning of said rollup bias or said arching bias, and adapted to be rolled up within the tape.

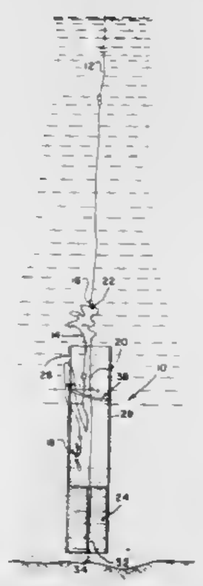
3,939,593
FISH HOOK AND ASSEMBLY SNAPPER MASTER OR IMPROVED FISH HOOK AND ASSEMBLY (SNAPPER MASTER)

Hudson C. East, POB 1299, 1924 Western, Lake Charles, La. 70601

Filed Mar. 22, 1974, Ser. No. 453,815

Int. Cl.^{2} A01K *97/04*

U.S. Cl. 43—41.2 1 Claim



1. An improved fish hook and assembly comprising

a line for connection to a fishing reel and line,

a leader element forming a line having a loop for connection and being secured to the end of the line at one of its ends and having a hook at its other end and having a sink weight (leader) connected at an intermediate point of the leader element,

a weight leader having a loop end means disposed on said leader element between its loop and its weight identity element, said loop end means so sized to stop at the weight identity element,

a sleeve of essentially plastic metal material having a weight element at one end,

a slot extending along the exterior surface of said sleeve and sufficiently large to receive the ingress and egress of said hook when baited and a length of said weight leader and said leader element,

an aperture in the weighted end of said sleeve,

and the distal end of said weight leader passing through said aperture and terminating in a crimped sleeve,

said weight element filling a substantial portion of said sleeve,

said weight leader and said leader element being retained within said sleeve by a rubber band.

3,939,594
FISH LINE HOLDER

Lawrence R. Wagner, 7843 E. 49th St., Tulsa, Okla. 74145

Filed Aug. 12, 1974, Ser. No. 496,383

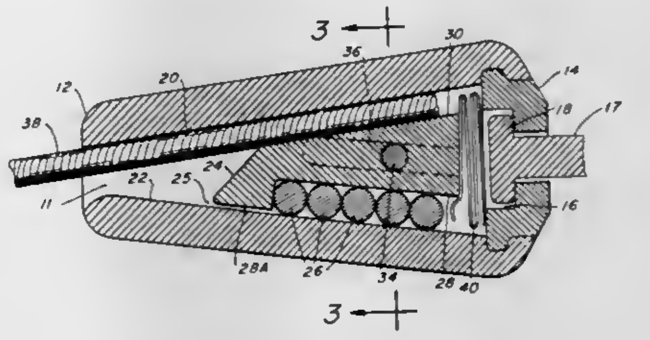
Int. Cl.^{2} A01K *85/00*

U.S. Cl. 43—42.49 18 Claims

1. A quick grasp and release line holder comprising:

a housing having an integral cavity, the cavity being defined by a rectangular cross section formed of first and second parallel side walls and a top and bottom which are tapered towards each other with a selected angle therebetween, the small end of said cavity opening to the oustide of said housing, the housing having a slot opening therein parallel the cavity bottom surface, the opening intersecting one of said side walls;

a tapered wedge inside said cavity, said wedge having parallel side surfaces spaced apart by a dimension less than the spacing between said first and second side walls of said cavity, and tapered top and bottom edges, the angle of taper of the edges being the same as the angle of taper of said top and bottom cavity walls;



spring means urging said wedge toward the small end of said cavity; and

a member connected to one side of said wedge extending through said housing side opening to retract said wedge against the force of said spring toward the large end of said cavity to permit the insertion of a line through the open end of said housing and between said cavity top surface and said wedge top edge.

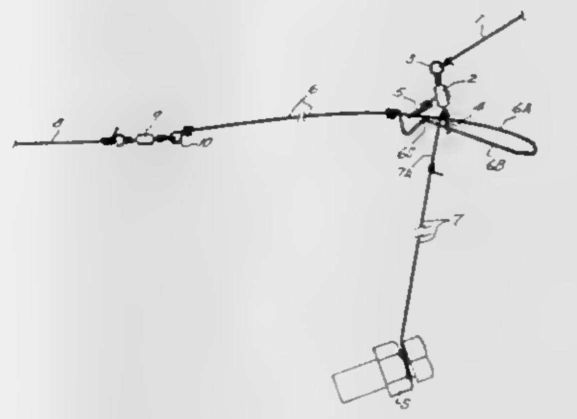
3,939,595
SINKER RELEASE MEANS

Neal R. Lockett, 3701 SW. 105th, Seattle, Wash. 98146

Filed May 7, 1975, Ser. No. 571,713

Int. Cl.^{2} A01K *91/00*

U.S. Cl. 43—43.12 10 Claims



1. Sinker release means for fishing gear, said means including,

an attachment for securement to a fishing line, said attachment including first and second eyelets,

a flexible wire member interconnecting said line attachment with a length of leader ahead of a lure, said wire member of elongate loop configuration adjacent its forward end and thereat engaged with said eyelets and adapted to detachably support sinker attachment means, and

said first and second eyelets normally confining said sinker attachment means on said wire member, said wire member displaceable rearwardly relative to said eyelets upon a fish striking the lure whereby said sinker attachment means is released from said wire member.

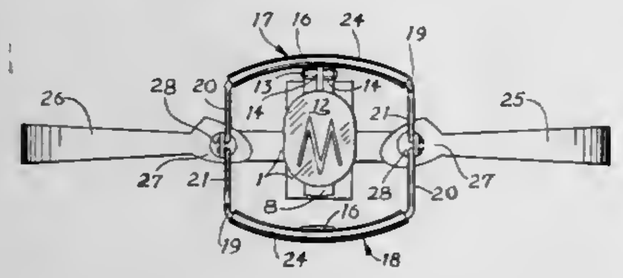
3,939,596
ANIMAL TRAP

Lawrence E. Webley, P.O. Box 91, Wilson Creek, Wash. 98860

Filed Jan. 3, 1975, Ser. No. 538,352

Int. Cl.^{2} A01M *23/26*

U.S. Cl. 43—90 **3 Claims**



1. In an animal trap of the type having two U-shaped jaws with downturned legs and having a base plate with two upturned ends with apertures therein for mounting lower ends of the downturned legs for pivotal movement about parallel horizontal axes between horizontal coplanar open set positions and vertical abutting closed positions, an improvement comprising:
- a pan mount secured to the base plate:
- a pan pivotably mounted to the pan mount about an axis parallel to the axes of said jaws;
- a protruding rib on one of the jaws, said rib extending inwardly toward the remaining jaw when the jaws are in their open positions;
- trigger notch means formed on the pan protruding outward toward said one jaw for engagement with the rib when the jaws are in an open set condition with said one jaw located alongside said pan for holding the jaws in their open positions until a downward force is applied against the pan;
- spring means for urging the jaws toward a closed condition comprising a V-shaped leaf spring having top and bottom leaves with holes at opposite spring ends to receive one upturned end of the base plate and the jaw legs pivoted thereto;
- wherein the upper leaf includes an oblong upturned cam surface surrounding the hole that receives the jaw legs, the cam surface being longitudinally oriented parallel to the length of the leaf spring with opposed raised cam tips spaced longitudinally and equidistant from the hole; and
- lower cam sides joining the cam tips having longitudinal edges spaced transversely apart relative to the length of the leaf spring by a distance less than the distance between the cam tips, whereby the cam tips are positioned under the jaw legs with the lower cam sides projecting toward the pan when the leaf spring is oriented transverse to the pivot axes of the jaws.

3,939,597
CRAB OR FISH TRAP

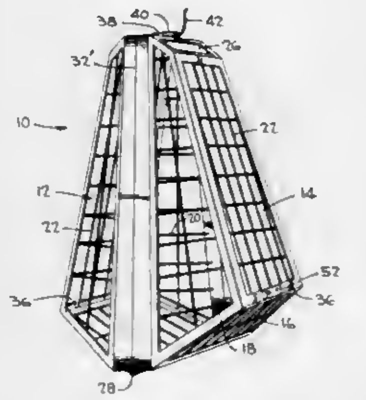
Thomas McSherry, Bayport, N.Y., assignor to Woodstream Corporation, Lititz, Pa.

Filed Dec. 11, 1974, Ser. No. 531,776

Int. Cl.^{2} A01K *69/10*

U.S. Cl. 43—105 **6 Claims**

1. A crab or fish trap comprising a pair of compartment half members, each said member comprising a mesh structure generally defining a truncated oblique rectangular pyramid having a trapezoidal base, two opposed trapezoidal end faces, a trapezoidal rear face, an open trapezoidal front face, and a frustum defining a trapezoidal top face, said front and rear faces being substantially larger than said base; hinge means joining said members at the edge joining said base and said front face such that when said trap is in a closed position the respective front faces are juxtaposed in a mating relationship to thereby form an enclosed compartment, and when said trap is in an open position said bases of said compartment half members form a substantially planar trap base and said front faces are spaced apart to allow ingress of a crab or fish; and means for moving said members to the opened or closed positions.



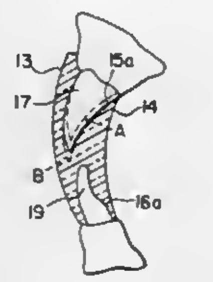
3,939,598
ORTHODONTIC POSITIONER WITH OVERBITE OR OPEN BITE CORRECTING OR RELAPSE INHIBITING CAPABILITY

Earl O. Bergersen, 950 Linden Ave., Winnetka, Ill. 60093

Filed Jan. 23, 1975, Ser. No. 543,356

Int. Cl.^{2} A61C *7/00*

U.S. Cl. 32—14 B **14 Claims**



1. An orthodontic tooth positioning appliance which is generally U-shaped in plan view and which includes at least one tooth receiving trough of a size and shape for positioning at least one row of a patient's upper and lower row of teeth, said trough being defined by lingual and labial-buccal flanges and including an isthmus interconnecting said flanges,
- the thickness of the isthmus being such that as the side thereof opposite the trough rests against the occlusal surfaces of the row other than said one row, the anterior teeth of said one row engage the isthmus before the posterior teeth of said one row to exert a force against the anterior teeth depressing them into the gum to correct for overbite or to retain a previous overbite correction as the posterior teeth complete their movement towards engagement with the isthmus.

3,939,599
POLISHING DEVICE

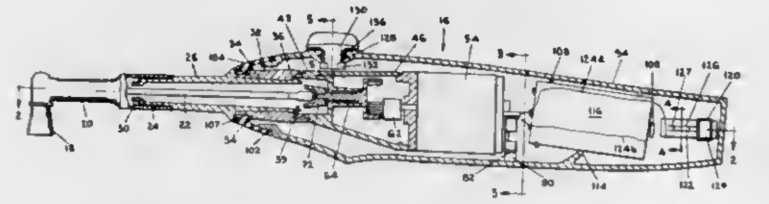
Ormond L. Henry, Muskegon, and Raymond P. Smith, Southfield, both of Mich., assignors to D & H Industries, Inc., Oxen Hill, Md.

Filed July 12, 1973, Ser. No. 378,773

Int. Cl.^{2} A61C *3/06*

U.S. Cl. 32—59 **14 Claims**

1. In a tooth polishing device wherein a polishing tool is secured to a power drive means and said power drive means is pivotably mounted in a casing for movement between first and second positions within said casing; and power supply means, including a switch, are coupled to said power drive means for supplying electrical power thereto; the improvement which comprises:
- said switch means includes a leaf spring made of a resilient electrically conductive material, said leaf spring mounted at one end to said power drive means and having a free end bearing against said casing, said leaf spring being positioned on said power drive means to bias said power drive means to said first position, said switch means being open when said power drive means is in said first position and being closed when said power drive means is moved to said second position.



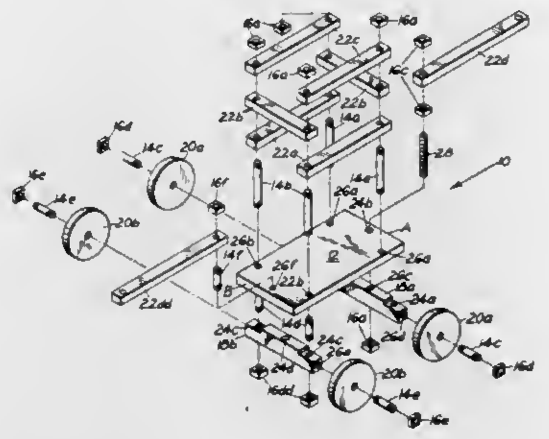
3,939,600
TAKE-APART TOY

Ellen G. Eid, 15666 SE. Johnson Road, Clackamas, Oreg. 97015

Filed Oct. 30, 1974, Ser. No. 519,258

Int. Cl.^{2} A63H *33/06*

U.S. Cl. 46—17 **4 Claims**



1. A take-apart toy whose parts may be assembled to resemble one or more particular devices, comprising:
- a. a rectangular base having a pair of threaded circular side apertures extending through said base along each side thereof and a circular aperture extending through said base adjacent each end thereof, one said end aperture having interior threads;
- b. a plurality of round bolts, each of a sufficiently small diameter for insertion into at least one said circular apertures in said rectangular base, said bolts having two separate sets of threads each disposed at the respective ends thereof and a smooth surface portion disposed therebetween, the outside diameter of the threaded portions of said bolts being substantially equal to the diameter of the smooth portion and the threads of said bolts being matingly matched to the threads of said threaded apertures in said rectangular base, the end aperture in said base opposite said threaded end aperture being of sufficient size for slidably accepting one of said bolts;
- c. a plurality of nuts having interior threads for mating with the threads of said bolts;
- d. a plurality of wheels each having a circular aperture of a diameter larger than the diameter of said bolts formed at its center for rotatably mounting said wheels on said bolts; and
- e. multiple elongate axle members for attachment to said rectangular base to support said wheels, each said axle member having threaded apertures formed longitudinally at each end thereof for mating with the threads of one of said bolts and multiple longitudinally spaced apertures extending transversely through said elongate member each of a diameter larger than that of said bolts for slidably accepting said bolts, the longitudinal spacing between said transverse apertures in said axle members being equal to the side-to-side spacing between said two pairs of side apertures in said rectangular base to permit said respective apertures to align with one another.

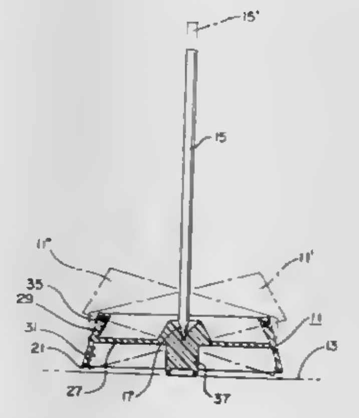
3,939,601
SPINNING TOY

Samuel H. Kernell, 1052 Railton, Memphis, Tenn. 38111

Filed Oct. 26, 1972, Ser. No. 301,083

Int. Cl.^{2} A63H *1/32*

U.S. Cl. 46—47 **7 Claims**



1. A spinning toy for spinning on a planar surface and for actuation by an elongated rod having a sharp pointed end, said toy comprising a disklike body having a circular rim for engaging the planar surface, said rim being disposed on the bottom of said body and defining the perimeter thereof, and an upwardly directed concentrically disposed protuberance having an upwardly opening conical shaped socket provided therein for guidingly receiving the sharp pointed end of said rod to cause an acceleration of a wobble spinning movement of said toy by an intermittent downwardly directed force being applied along the longitudinal axis of said rod.

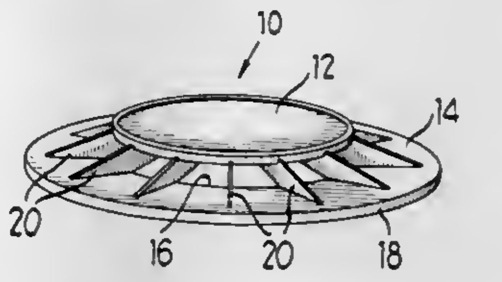
3,939,602
CIRCULAR AIR GLIDER

Harry E. Burke, Chicago, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed May 27, 1975, Ser. No. 580,663

Int. Cl.^{2} A63H *27/00*

U.S. Cl. 46—74 D **8 Claims**



1. An aerodynamic toy, comprising:
- a generally circular upper disc portion;
- a lower annular ring portion concentric with said upper disc portion, with a central aperture therethrough; and
- angularly spaced support means connecting said upper disc portion and said lower ring portion in a parallel, spaced relation providing air passage means through said aperture and the spaced support means and between the upper disc portion and lower annular ring portion, and whereby precession of the toy through the air will impart lift to the toy.

3,939,603

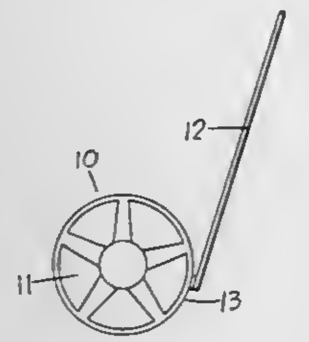
TRUNDLE AND WHEEL WITH SOUNDING MEANS

Emmett Skinner, Sunrise, Fla., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Nov. 4, 1974, Ser. No. 520,250

Int. Cl.^{2} A63B *71/00*

U.S. Cl. 46—114 **2 Claims**



1. A noise generating wheel game, which comprises:

a. a wheel having a center hub, an outer circular rim, and a plurality of spoke members joining said center hub to said outer circular rim, said center hub having a hollow interior chamber therein;

b. a lateral screw cap face affixed to said center hub for closing said hollow interior chamber;

c. a control stick for engaging tangentially said rim to roll said wheel on the ground; and

d. a plurality of solid elements removably contained in said hollow interior chamber, said solid elements striking the walls of said interior chamber within said center hub to generate said noise as said wheel rolls on said ground.

3,939,604

EXCHANGEABLE-DRESSING DOLL

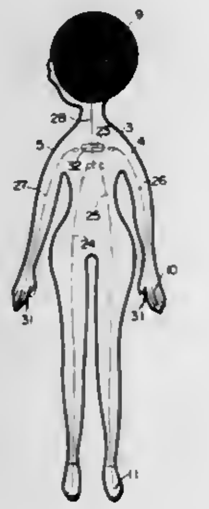
Shinhachiro Nishizawa, 1-279, Okuyama, Ashiya, Hyogo, Japan

Filed Nov. 4, 1974, Ser. No. 520,657

Claims priority, application Japan, Aug. 20, 1974, 49-99787[U]; Aug. 23, 1974, 49-101669[U]; Aug. 20, 1974, 49-95651; Aug. 23, 1974, 49-97324

Int. Cl.^{2} A63H *03/04*

U.S. Cl. 46—151 **8 Claims**



1. An exchangeable-dressing doll comprising:

a body of the said exchangeable-dressing doll characterized in that a front sheet of flexible thermoplastic synthetic resin having a contour simulated to the front contour of the whole human body and a rear sheet of the same quality as the said front sheet having a contour symmetric thereto are welded together along the whole contour line, a flexible foam sheet of thermoplastic synthetic resin packed in and between the said two sheets, the peripheral portions of the foam sheet adjacent to the weld forming a weld layer together with the whole peripheral portions of the contours of the said front and rear sheets and with the inner peripheral portions adjacent thereto, wires free to flex being inserted in and between at least those portions of the said two sheets which correspond to the limbs of the said doll, and that the pattern of the front side of the head part including the face is printed at least on that portion of the said front sheet corresponding to the head of the doll, while the pattern of the rear side of the head part is printed at least on that portion of the said rear sheet corresponding to the head of the said doll, and

freely detachable exchangeable-dressing parts for the said exchangeable-dressing doll including clothes, shoes, gloves, hats, wigs and the like and being so formed that front and rear flexible sheets with colors, designs, etc. dyed or printed on their external surfaces are integrally stuck at contour portions except opening portions for the dress exchanging.

3,939,605

CONTROL OF ACCESSORIES FOR TOY OR MODEL VEHICLES

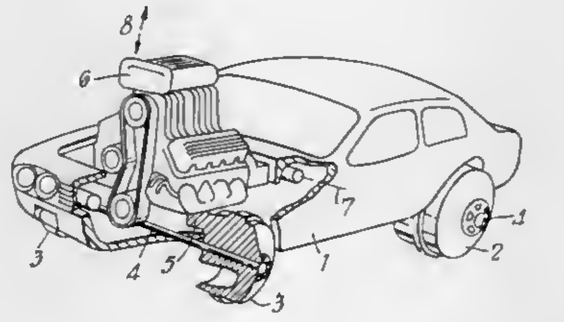
John Allen, 15 Ridge Road, Winchmore Hill, London, N21 3EB, England

Filed Mar. 13, 1973, Ser. No. 340,839

Claims priority, application United Kingdom, Mar. 15, 1972, 12174/72

Int. Cl.^{2} A63H *11/10*

U.S. Cl. 46—204 **1 Claim**



1. A toy vehicle having wheels and axles freely and independently rotatable in either direction; an eccentric pin formed integrally with at least one of said wheels; a member on said vehicle and movable relative to the rest of the vehicle, said pin transmitting motion to said member, said member comprising a simulated engine moulding pivotably secured to the body of the toy and engaged by said pin, said pin rocking the engine during movement of the toy.

3,939,606

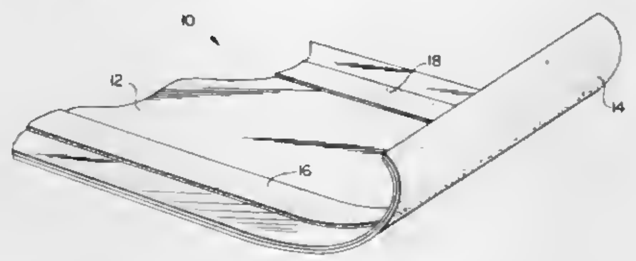
MULCH AND METHODS OF MANUFACTURING AND UTILIZING THE SAME

Joseph S. Vandemark, Urbana, Ill., and Robert T. Seith, Tuscaloosa, Ala., assignors to Gulf States Paper Corporation, Tuscaloosa, Ala.

Filed May 17, 1974, Ser. No. 470,910

Int. Cl.^{2} A01G *7/00*

U.S. Cl. 47—9 **5 Claims**



1. An improved mulch comprising a sheet of paper substantially completely covered at one side thereof with a water-impervious material and coated at the opposite side thereof, only at marginal regions including planar side surfaces along opposite edges of the sheet, with a water-insoluble fungicide.

3,939,607

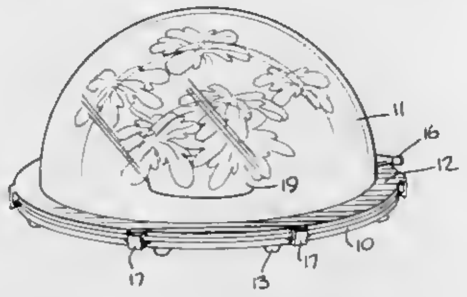
INFLATABLE TERRARIUM ASSEMBLY

Donald Spector, 380 Mountain Road, Union City, N.J. 07087

Filed Dec. 17, 1974, Ser. No. 533,518

Int. Cl.^{2} A01G *9/02*

U.S. Cl. 47—34 T **5 Claims**



1. A inflatable and deflatable collapsible closed terrarium assembly which can be inflated to assume a desired configuration for housing a potted plant or other watered article to be protectively enclosed, said assembly comprising a disc-like base and a dome attachable thereto, said dome being formed of a flexible, non-selfsupporting clear plastic film envelope having an open mouth, a coupling ring secured to the mouth of the envelope and sealably joinable to the base to form a hermetically-sealed enclosure enveloping said plant or other article to prevent evaporation therefrom, and a valve mounted on the envelope for selectively inflating said envelope to assume said configuration and deflating said envelope to a collapsed condition.

3,939,608

WINDOW PANE WEATHER STRIP FIXTURE

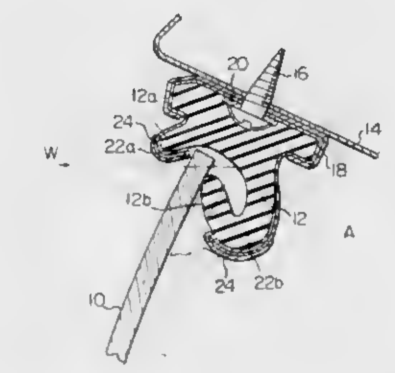
Masaru Asakai, Tokyo, and Hiroshi Inamoto, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 15, 1974, Ser. No. 515,064

Claims priority, application Japan, Oct. 19, 1973, 48-122289[U]

Int. Cl.^{2} E06B *7/16*

U.S. Cl. 49—488 **7 Claims**



1. A window pane fixing and sealing device for an automotive door window pane having a lowered, window open position and a raised, window closing position, comprising a weatherstrip with an outboard lip and an inboard lip contiguous to one another, said inboard lip having a bulbous bottom portion and an upwardly directed end portion; a clip surrounding substantially the whole contour of the weatherstrip, said clip having a first leg extending around the outboard lip and bearing on the upper edge of the window pane in its window closing position to hold the window pane preventing it from shifting outboard, and a second leg extending around the inboard lip excluding the end portion, wherein said inboard lip and said second leg of the clip are so located and configured that the upper edge of the window pane is guided successively along said second leg portion engaging the bulbous bottom portion and along said end portion of the inboard lip and is then correctly located between the inboard and outboard lips while moving from the window open position to the window closing position; and a retaining means for fixing the weatherstrip to an upper edge portion of a door opening of an automotive body and surrounding a part of said clip.

3,939,609

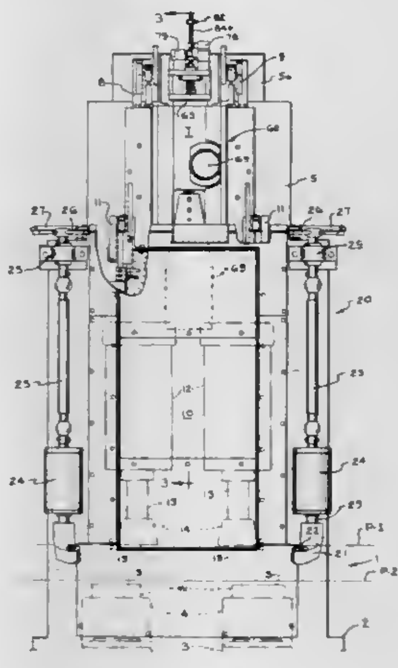
GRINDING MACHINE CONSTRUCTION

Anthony Wasco, Jr., Saginaw, Mich., assignor to The Wickes Corporation, San Diego, Calif.

Filed Apr. 4, 1974, Ser. No. 457,774

Int. Cl.^{2} B24B *49/18*

U.S. Cl. 51—5 D **19 Claims**



11. A grinding machine construction comprising frame means; workpiece supporting means carried by said frame means; slide means; support means for a tool composed of erodable material; means mounting said support means on said slide means for movements with the latter in a direction toward said workpiece supporting means and for movements relative to said slide means in said direction; means mounting said slide means on said frame means for movement in said direction from a first position in which a surface of said tool is spaced from said workpiece supporting means to a second position in which said surface is less spaced from said workpiece supporting means and is located a predetermined distance from a workpiece supported by said workpiece supporting means; drive means; drive transmitting means coupling said drive means and said slide means for moving the latter between said positions; operating means for moving said tool support means relative to said slide means toward said workpiece support means; and means for operating said operating means to vary the location of said tool support means by an amount such that said predetermined distance is substantially constant regardless of erosion of the surface of such grinding wheel.

3,939,610

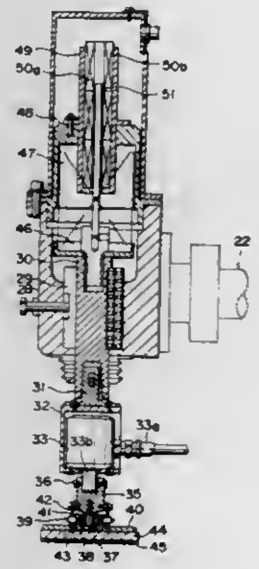
DEVICE AND METHOD OF GRINDING METALLIC MOLDS AND PRODUCTS AUTOMATICALLY

Junichi Suzuki, Yamato; Toru Matsuda, Sagamihara, and Takahiro Katsube, Yokohama, all of Japan, assignors to Shatai Kogiyo Co. Ltd., Japan

Filed July 30, 1973, Ser. No. 383,491

Int. Cl.^{2} B24B *49/08, 49/10*

U.S. Cl. 51—56 R **2 Claims**



1. A device for grinding metallic molds and workpieces automatically comprising, a column, a cross rail support movably mounted on said column and movable in a vertical direction, a cross rail projecting from said cross rail support in the horizontal direction, a head mounted on said cross rail movable automatically in the longitudinal direction of said cross rail, an arm slidable in a direction at right angles to said cross rail and supported by said head so that it can be freely inclined, a case fixed at the end of said arm, a ball spline in said case, a shaft in said case mounted on said ball spline and freely raised and lowered, a differential transformer having a core connected to the top of said shaft, a hydraulic motor directly coupled to the bottom of said shaft and having an output shaft, a universal joint installed on the output shaft of said hydraulic motor, a delivery shaft having rotation transfer bars mounting said universal joint on said output shaft, an abrasives supporting unit having rotation transfer pins on said universal joint, said rotation transfer bars having a long hole for inserting said rotation transfer pin loosely therein, an elastic member on said abrasives supporting unit, abrasives fixed to said elastic member, a load setting means for setting a specific grinding pressure applied to said abrasives, a servo mechanism movable vertically in accordance with voltage difference resulting from a difference between the actual grinding pressure detected by said differential transformer during grinding operation and the set grinding pressure, and a servo cylinder having a piston rod on said head for inclining said arm.

3,939,611

WORKPIECE FEEDING APPARATUS, ESPECIALLY FOR MACHINING EQUIPMENT

Dietrich Hesler, Frickenhausen; Gerhard Gresser, Oberboihingen, and Helmut Brandstetter, Nuertingen, all of Germany, assignors to Karl M. Reich Maschinenfabrik GmbH, Nuertingen, Germany

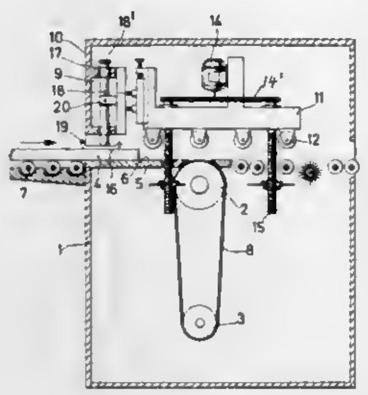
Filed Mar. 11, 1974, Ser. No. 450,228

Claims priority, application Germany, Mar. 28, 1973, 2315389

Int. Cl.^{2} B24B *21/06*

U.S. Cl. 51—139 **14 Claims**

1. An apparatus for feeding a workpiece through a machine comprising conveyor means movably supporting a workpiece, sensing means arranged proximate to said conveyor means for contacting said workpiece to determine at least one dimension of said workpiece, first control means coupled to said sensing means and responsive to said sensing means, workpiece guiding means arranged in said machine at a level above said conveyor means and adjacent to said sensing means, said workpiece guiding means comprising drive means for moving said workpiece guiding means relative to said workpiece, and second control means coupled to said workpiece guiding means for cooperation with said first control means for controlling said drive means and thus the movement of said workpiece guiding means in accordance with the dimension of said workpiece as determined by said sensing means.



3,939,612

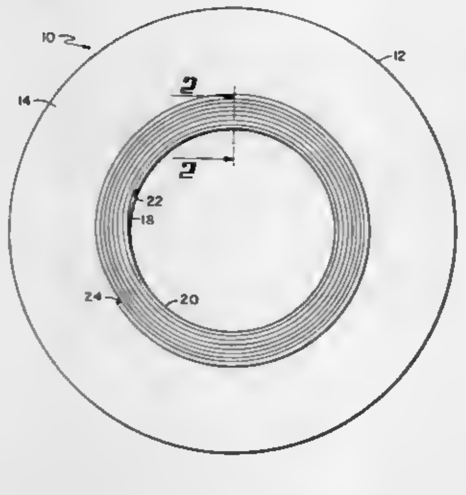
REINFORCED GRINDING WHEEL

George N. Peterson, Grafton, Mass., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 2, 1971, Ser. No. 149,145

Int. Cl.^{2} B24D *5/04, 7/02*

U.S. Cl. 51—293 **7 Claims**



1. A reinforced grinding wheel comprising:

an abrasive grinding wheel having an inner diameter and a pair of side faces;

a length of wire positioned on at least one of the side faces of said wheel in a spiral pattern beginning adjacent the inner diameter and having successive turns substantially abutting one another and positioned progressively radially outward with respect to the side face of said wheel; and

means for bonding the wire to the side wall of the wheel whereby the wheel is reinforced.

3,939,613

IMPACTING PROCESS

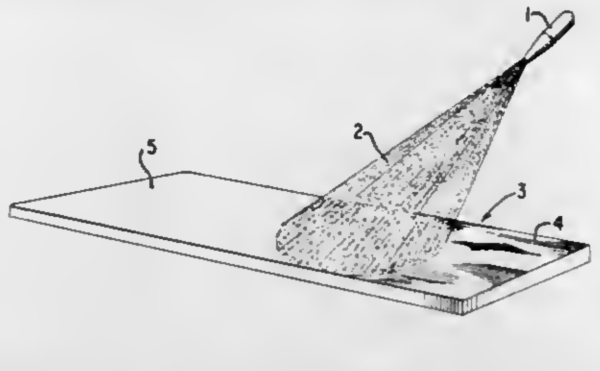
Joseph W. Ayers, 640 N. 13th St., Easton, Pa. 18042

Filed Nov. 8, 1973, Ser. No. 413,818

Int. Cl.^{2} B24C *11/00*

U.S. Cl. 51—320 **5 Claims**

1. In the process of treating hard surfaces by impact which comprises continually bombarding them with selectively sized fine hard granules hurled against them at high velocity, the improvement wherein said granules are a selectively sized fraction of the grains of a mass of refined zircon sand, said grains having rounded oblong configurations and having a specific gravity of about 4.7 and their sizes being within the range of from −60 mesh to +325 mesh sieve sizes.



3,939,614

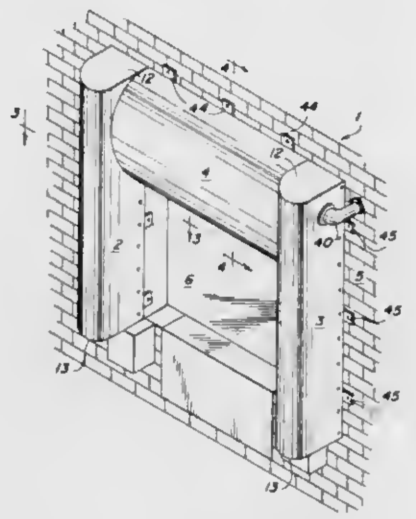
LOADING DOCK SEAL

Cyril P. Frommelt, and Sylvan J. Frommelt, both of Dubuque, assignors to Dubuque Awning & Tent Company, Dubuque, Iowa

Filed July 26, 1974, Ser. No. 492,161

Int. Cl.^{2} E06B 7/22

U.S. Cl. 52—2 **8 Claims**



1. In a loading dock seal of the type to sealingly engage a truck disposed in loading and unloading position relative to a doorway in a warehouse wall,
   a. an elongated section, and
   b. means for securing said section on such a wall in position to extend along such a doorway in position to so engage such a truck
   c. said section comprising
      1. an elongated backing member adapted to be mounted on such a wall with one side thereof disposed in facing relation to said wall,
      2. an elongated compressible resilient pad mounted on the side of said backing member remote from said one side, and
      3. an inflatable member
         a. secured to said backing member by means disposed exteriorly of said pad, and
         b. projecting outwardly from the side of said pad remote from said backing member,
   d. said pad being secured to said second mentioned side of said backing member in substantially covering relation thereto,
   e. said inflatable member comprising a tubular portion having two spaced securing means extending therefrom, and
   f. said securing means being secured to respective opposite edge portions of said backing member in position to support said tubular portion in overlying juxtaposition to said side of said pad remote from said backing member.

3,939,615

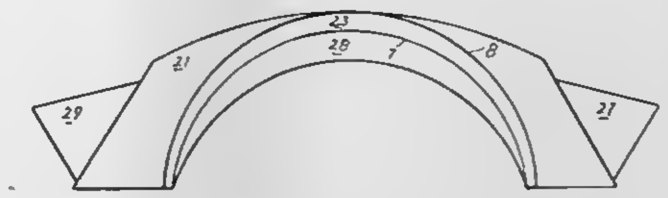
FOLDABLE ROOF CONSTRUCTION ELEMENT

Roger Sorkin, 17 Dug Road, Lansing, N.Y. 14882

Filed Apr. 5, 1974, Ser. No. 458,320

Int. Cl.^{2} E04B *1/32*

U.S. Cl. 52—80 **26 Claims**



1. A foldable construction element for forming a roof construction, comprising
   a. a plane four-sided polygonal sheet containing at least four sets of fold lines associated with the edges of said sheet, respectively, thereby to cause each of the edges of said sheet to be intersected by at least one of said sets of fold lines;
   b. each of said fold-lines of said set defining a curve which extends from a first point of intersection with the associated edge inwardly toward a central region of said sheet and back to a second point of intersection on said associated edge, whereby upon selective folding of the sheet along the fold lines, a three-dimensional structural body of desired configuration is obtained.

3,939,616

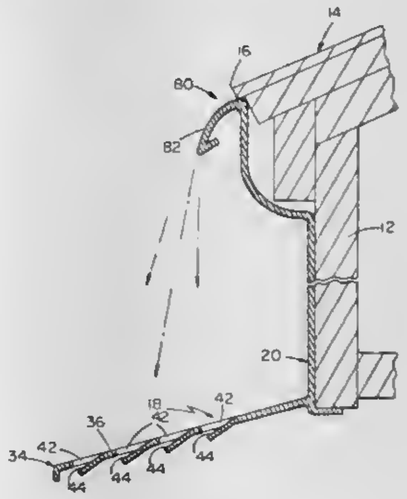
RAIN WATER RUN-OFF DISPERSER

Richard L. Schapker, 134 Farnum St., North Andover, Mass. 01845

Continuation-in-part of Ser. No. 382,758, July 26, 1973, abandoned. This application Jan. 3, 1975, Ser. No. 538,364

Int. Cl.^{2} E04D *13/00*

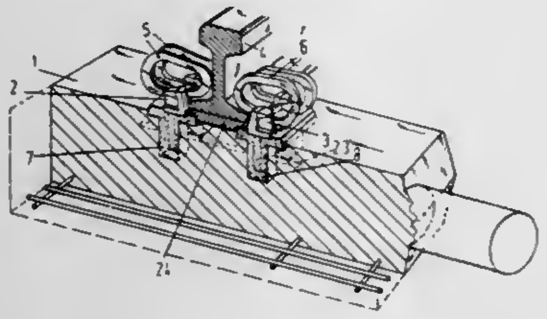
U.S. Cl. 52—94 **6 Claims**



1. A rain water run-off disperser capable of intercepting the consolidated flow of water run-off from a roof of a building and, without collection, dispersing it in a non-erosive shower of water over an extended area of ground, said disperser comprising a disperser structure adapted for mounting in a position horizontally aligned with and spaced a distance below the edge of a roof and a substantial distance above the ground in the path of water falling from said roof, said disperser structure being elongated and of width sufficient to intercept the path of the falling water, said disperser structure defining a multiplicity of separate paths constructed to separate into a dispersed shower downwardly the consolidated flow of water run-off intercepted by said disperser structure and cooperative non-collecting mounting means for said disperser structure, capable of supporting said disperser structure in said position without impeding the flow of water to and through said disperser structure in shower to the ground.

3,939,617
METAL HOLDER FOR DISPOSING A GUIDE STRUCTURE ON A CONCRETE FOUNDATION

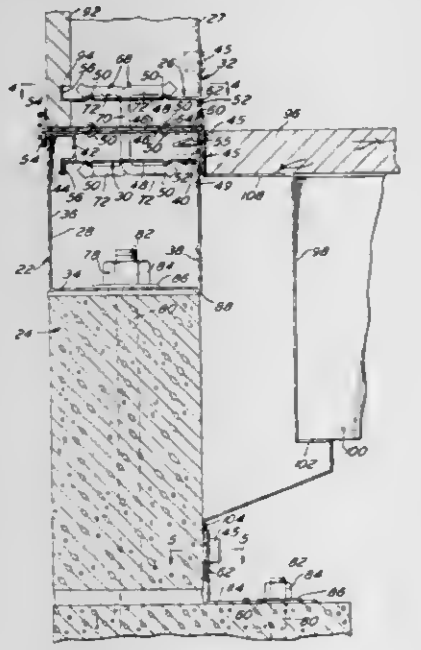
Jacob Albertus Eisses, Haydnlaan 4, Bilthoven, Netherlands
Filed July 2, 1974, Ser. No. 485,211
Claims priority, application Netherlands, July 10, 1973, 7309640
Int. Cl.² E02D *5/74*
U.S. Cl. 52—166 **9 Claims**



1. A metal holder for disposing a guide structure on a concrete foundation, the holder having a top part in the form of an open housing which serves for lateral retention of the guide structure and in which fastening means can engage, the housing being provided with anchoring parts at the underside, characterised in that the housing is provided with a metal baseplate disposed in a plastic mortar panel which adjoins all round the housing by a horizontal top surface and which adjoins a layer of plastic mortar on the underside, said layer of plastic mortar completely surrounding the anchoring parts of the housing.

3,939,618
FOUNDATION ASSEMBLIES FOR BUILDING STRUCTURES

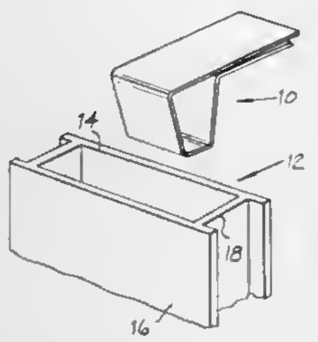
Wesley T. Murphy, Auburn, N.Y., assignor to Vercon Products, Inc., Charlotte, N.C.
Continuation-in-part of Ser. No. 160,018, July 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 85,533, Oct. 30, 1970, abandoned. This application May 7, 1973, Ser. No. 358,193
Int. Cl.² E02D *27/01*
U.S. Cl. 52—274 **9 Claims**



1. A foundation assembly for a building including a concrete foundation and a vertical wall panel having an edge, said assembly comprising a sill plate and a sill locking plate mounted on the sill plate, said sill locking plate comprising a first longer wall and a second shorter wall, said walls running generally parallel to one another and connected by a bridging section, each wall terminating in a free edge tab which defines a space therebetween, said sill plate comprising a base having a first and a second wall projecting upward therefrom, said first wall including a portion disposed between said free edge tabs of the sill locking plate and supporting said sill locking plate thereon, said second wall abutting a portion of the short wall of said sill locking plate and supporting said sill locking plate thereon, securement means for mounting said sill plate directly on said foundation and for securing it in place and a wall plate connected to said sill locking plate by rotating clamp means, said wall plate comprising a first longer wall disposed generally parallel to and immediately adjacent said first longer wall of sill locking plate and a second shorter wall, the first and second walls running generally parallel to one another and connected by a bridging section, each wall terminating in a vertical free edge tab which defines a space therebetween into which the edge of a vertical wall panel is disposed.

3,939,619
FACING WALL CONSTRUCTION

Richard Bell Mason, Cherry Hill, N.J., assignor to Johns-Manville Corporation, Denver, Colo.
Continuation of Ser. No. 166,237, July 26, 1971, abandoned, which is a continuation of Ser. No. 846,830, Aug. 1, 1969, abandoned. This application Apr. 19, 1974, Ser. No. 462,474
Int. Cl.² E04B *1/38*
U.S. Cl. 52—509 **3 Claims**

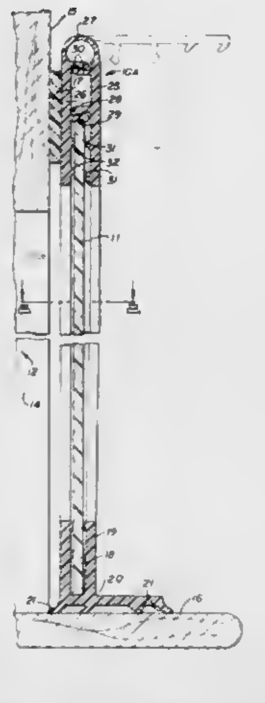


1. In a facing panel installation in which a hollow core panel is attached to a building structure, the panel having an opening extending substantially throughout the vertical extent of the panel, the improvement comprising:

a. a clip having a cup portion inserted in said opening of the hollow core panel adjacent a horizontal edge of the panel,
b. the cup portion having two oppositely facing side walls, each of which engages one of the interior panel wall surfaces forming the opening, and a bottom wall connecting the ends of the side walls remote from the horizontal edge of the panel,
c. the cup portion of the clip normally being of tapered shape with the ends of the side walls remote from the bottom wall being spaced farther apart than the ends of the side walls connected to the bottom wall, and the distance between the interior panel wall surfaces forming the opening being slightly less than the maximum spacing of the side walls of the cup portion in normal unstressed condition, whereby the said ends of the side walls remote from the bottom wall are forced toward each other by the interior panel wall surfaces upon insertion of the cup portion into the opening of the hollow core panel,
d. extension means connected to the other ends of the side walls of the cup portion of the clip and attached to the structural wall, said extension means comprising two laterally extending arms connected to the side walls of the cup portion of said clip, and
e. the side walls of the cup portion, at least adjacent to the horizontal edge of the panel, being biased away from each other toward and into engagement with the interior wall surfaces forming the opening of the hollow core panel.

3,939,620
EXTRUDED PLASTIC PANEL-HOLDING STRIP HAVING INTEGRAL FLEXIBLE HINGE

Robert D. Bero, Huntington Beach, Calif., assignor to Plaskolite, Inc., Columbus, Ohio
Filed Nov. 11, 1974, Ser. No. 522,598
Int. Cl.² E04C *2/38*
U.S. Cl. 52—716 **5 Claims**



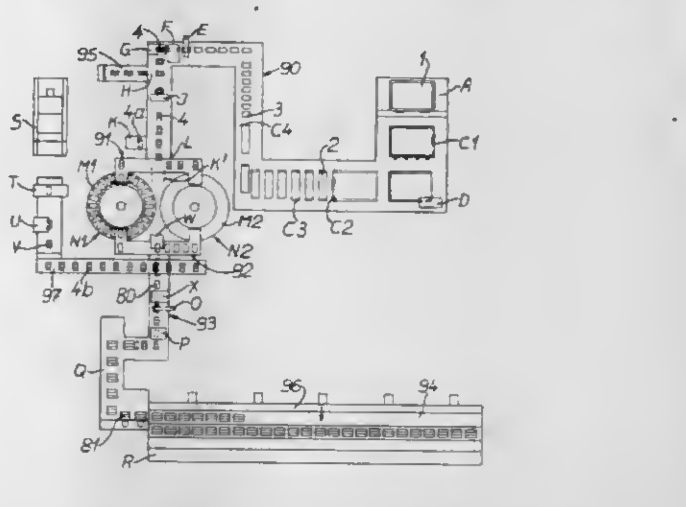
1. A panel-holding strip comprising an elongated, one-piece body of dual durometer, extruded plastic composition, said body including a pair of opposed, longitudinally coextensive, generally flat rectangular, rigid, channel-forming webs connected along adjacent longitudinal edges thereof by an integral, flexible hinge web, said channel-forming webs being movable between an angularly related open position and a closed, channel-defining position in which said channel-forming webs are disposed in relatively closely spaced apart parallel relation, and each of said channel-forming webs having an inner surface which includes sets of longitudinally coextensive, transversely spaced apart, parallel, inwardly projecting ribs, one set of the ribs on one of said channel-forming webs being arranged to frictionally interlock with a set of ribs on the other of said channel-forming webs to releaseably hold said channel-forming webs in their closed, channel-defining position, and other sets of the ribs on each of said channel-forming webs being flexible and being arranged in spaced opposition to one another to frictionally grip and seal the edge of a panel inserted between said channel-forming webs when they occupy their closed, channel-defining position.

3,939,621
PROCESSING OF SHEETS OF PRINTED SECURITY PAPERS INTO BUNDLES AND PACKETS

Gualtiero Giori, Lonay, Switzerland, assignor to De La Rue Giori S.A., Switzerland
Filed Mar. 17, 1975, Ser. No. 559,236
Claims priority, application Switzerland, Mar. 26, 1974, 4183/74
Int. Cl.² B65B *63/00, 57/14*
U.S. Cl. 53—23 **20 Claims**

1. An installation for processing piles each formed of a constant number of sheets each printed with N numbered security papers such as banknotes, in which the numbering of the security papers at like positions of the successive sheets of each pile and of the successive piles is in an uninterrupted sequence, and on which sheets some of the security papers may bear control marks recording imperfections, into bundles of security papers each having said constant number of security papers in sequential order and arranged in packets of sequentially numbered bundles, in which said imperfect security papers are replaced by perfect ones, comprising:

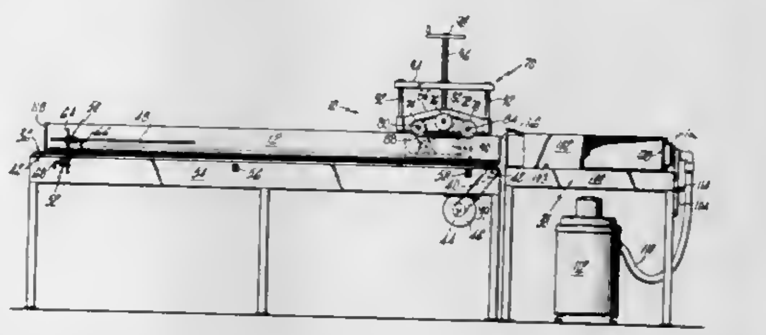
means for receiving a pile of sheets and cutting the pile into N bundles of security papers;
means for conveying the bundles of each successively cut pile in a given order along a first path;
a detector for detecting the presence in a bundle along said first path of at least one marked imperfect security paper;
means responsive to said detector for deviating from said first path said bundles including imperfect security papers;
means for placing dummy bundles each in the place in said first path formerly occupied by a deviated bundle;
a bundle collecting device including N individual magazines for receiving respective ones of the N bundles formed from each pile of sheets, and the respective replaced dummy bundles, at the end of said first path to form N packets of a given number of bundles from a given number of piles;



means for conveying the packets of bundles from said collecting device along a second path to a packet wrapping device;
a substitution station for receiving said deviated bundles and treating them to remove imperfect security papers and replace them by perfect numbered security papers, and reform the bundles in the correct order;
and at least one bundle replacement station located before said packet wrapping device where said dummy bundles are removed from the at least partly formed packets and replaced by the respective reformed bundles delivered by said substitution station.

3,939,622
METHOD AND APPARATUS FOR PACKAGING INSULATED DUCT

Robert Murphy, West Hartford, and Norman J. Perusse, Farmington, both of Conn., assignors to The Wiremold Company, West Hartford, Conn.
Filed Nov. 15, 1974, Ser. No. 523,987
Int. Cl.² B65B *63/02*
U.S. Cl. 53—24 **14 Claims**

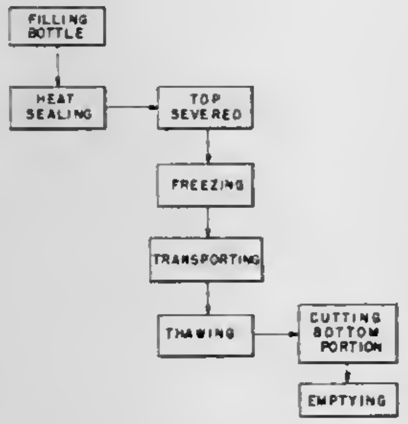


14. A method of packaging tubular duct, which is longitudinally compressible, into a container of reduced length relative to the duct and comprising the steps of conveying a leading end of fully extended duct into an open entry end of a container, exhausting air from the duct to produce a partial vac-

uum within the duct after the leading end of the duct is received in the container and an end closure is temporarily applied to an open trailing end of the duct while a vacuum nozzle is exhausting air from an apertured end of the container opposite its entry end, and driving the trailing end of the duct into the container under partial vacuum.

3,939,623
PLASMA COLLECTION SYSTEM

Dennis F. Shine, Huntington Beach, Calif., and Gunther W. Torau, Buffalo Grove, Ill., assignors to Baxter Laboratories, Inc., Deerfield, Ill.
Continuation of Ser. No. 427,197, Dec. 21, 1973, abandoned. This application May 22, 1975, Ser. No. 579,768
Int. Cl.² B65B *3/04*
U.S. Cl. 53—25 3 Claims

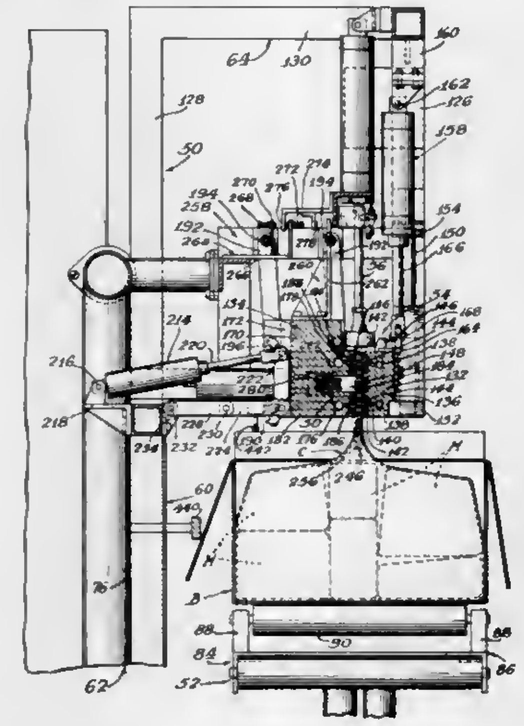


1. A method of sterile collecting blood plasma for use in blood fractionation procedures comprising providing ingress through the top of a thermoplastic bottle, with a sharpened cannula at the distal end of a tubular means, said thermoplastic bottle having been sterile blow-molded and hermetically sealed without a port and with a flattened constricted neck portion, the proximal end of said means being connected to a blood plasma donor set, introducing a quantity of blood plasma from said blood plasma donor set through said tubular means into said thermoplastic bottle, further flattening said flattened constricted neck portion whereby the inner surfaces of the oppositely disposed flattened constricted neck portion sealingly abut, simultaneously applying heat to said flattened neck portion whereby the said abutting surfaces adhere to one another, and thereafter freezing and thawing said collected blood plasma and transferring into larger containers by cutting open said thermoplastic bottle substantially near the bottom portion and pouring said blood plasma therefrom.

3,939,624
PACKAGING APPARATUS

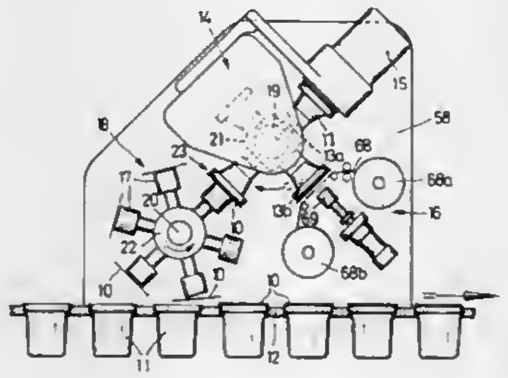
Kenneth L. Gidewall, Clarendon Hills, and Larry W. Heavner, Glen Ellyn, both of Ill., assignors to C. V. P. Systems Inc., Lombard, Ill.
Continuation of Ser. No. 364,305, May 29, 1973, abandoned. This application Mar. 4, 1975, Ser. No. 555,284
Int. Cl.² B65B *31/06*
U.S. Cl. 53—112 B 71 Claims

1. Apparatus for packaging articles in a substantially gas impermeable flexible container having an open end, said apparatus comprising, in combination, means for supporting said flexible container with said articles therein in a substantially fixed position relative to said apparatus, means for releasably gripping said container on opposite sides thereof along said open end, means for moving said gripping means between open and closed positions while carrying said container sides, passage defining means, means for moving said passage defining means into and out of said container, means for temporarily sealing said flexible container along said gripping means whether said passage means is in or out of said container, said temporary sealing means being carried by said gripping means, means for selectively vacuumizing and adding a gas into said container through said passage defining means while said container is temporarily sealed, said temporary sealing means maintaining said container in said temporarily sealed condition as said passage defining means is being moved out of said container, and means for effecting a self-sustaining seal of the sides of said container after said passage defining means is out of said container for maintaining said gas in said container and while said temporary sealing means continues to maintain said container in a sealed condition.



3,939,625
DEVICE FOR PRINTING AND FEEDING COVERS TO CONTAINERS

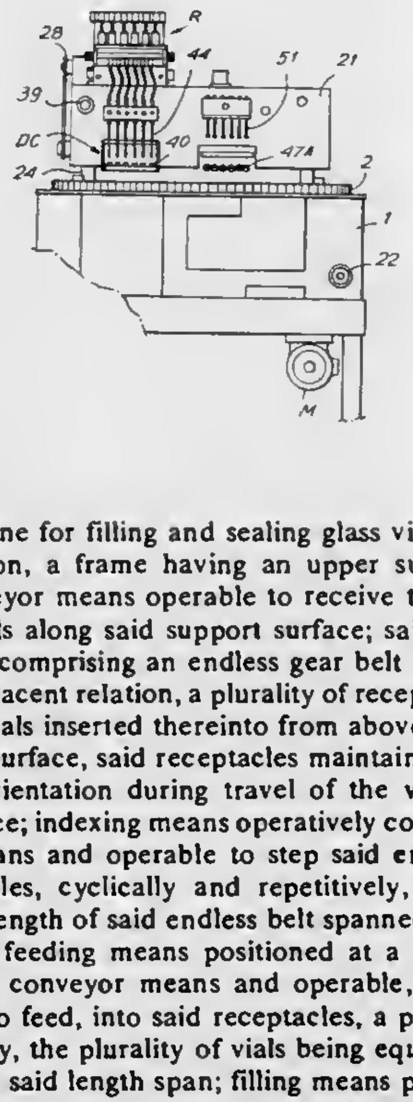
Karl Remele, and Dieter Welberg, both of Schloss Holte-Stukenbrock, Germany, assignors to Karl Remele, Schloss Holte-Stukenbrock, Germany
Filed Apr. 21, 1975, Ser. No. 570,133
Claims priority, application Germany, Apr. 19, 1974, 2418893
Int. Cl.² B65B *61/00*
U.S. Cl. 53—131 16 Claims



1. A device for printing and feeding covers to containers, characterised in that a rotating pick-up is provided above a conveyor for moving the containers and provided with a plurality of suction heads for taking the covers from a magazine by their side opposed to the visible side, and keeping them on a certain path of rotation, a printing mechanism printing the covers on their visible side, being associated with this pick-up, and a rotating turning device, provided with several suction heads for engaging the printed covers by their visible side and receiving them from the pick-up, keeping them in a certain path of rotation and then depositing them on the containers, is provided for the pick-up in the direction of rotation behind the printing mechanism.

3,939,626
MACHINE FOR AUTOMATIC FILLING AND SEALING OF GLASS VIALS

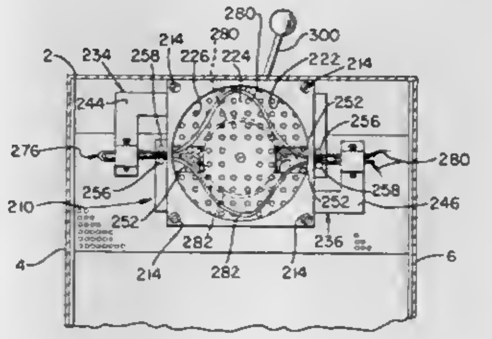
Elisabetta Cioni; Lucia Cioni, and Rovena Anichini Cioni, all of Via di Marciano 22, Siena, Italy (I-53100)
Filed Aug. 16, 1974, Ser. No. 498,043
Claims priority, application Italy, Aug. 21, 1973, 9594/73
Int. Cl.² B65B *7/16*
U.S. Cl. 53—167 8 Claims



1. A machine for filling and sealing glass vials comprising, in combination, a frame having an upper support surface; endless conveyor means operable to receive the vials and to move the vials along said support surface; said endless conveyor means comprising an endless gear belt having secured thereto, in adjacent relation, a plurality of receptacles adapted to have the vials inserted thereinto from above for resting on said support surface, said receptacles maintaining the vials in an upright orientation during travel of the vials along said support surface; indexing means operatively connected to said conveyor means and operable to step said endless belt and said receptacles, cyclically and repetitively, so a distance equal to the length of said endless belt spanned by a plurality of said vials; feeding means positioned at a feeding station adjacent said conveyor means and operable, cyclically and repetitively, to feed, into said receptacles, a plurality of vials simultaneously, the plurality of vials being equal to the number of vials in said length span; filling means positioned adjacent said conveyor means downstream of said feeding means in the direction of movement of said endless belt, for filling the vials with a liquid; said filling means comprising a plurality of syringes equal in number to said plurality of vials fed simultaneously by said feeding means and a plurality of needles, equal in number to said plurality of syringes, each communicating with a respective syringe; sealing means positioned adjacent said conveyor means downstream from said filling means in the direction of movement of said endless belt; said sealing means comprising a plurality of burners equal in number to the number of vials fed simultaneously to said receptacles by said feeding means, and a plurality of pinch means, equal in number to the number of said burners; said burners and the respective associated pinch means being disposed at contiguous sealing stations along the length of said conveyor means whereby the plurality of vials can be sealed simultaneously; rotating means at said sealing means operable, during the sealing operation, to engage and rotate the plurality of vials being simultaneously sealed; discharge means positioned adjacent said conveyor means downstream of said sealing means in the direction of movement of said endless belt and operable to remove, from said conveyor means, the filled and sealed vials; and drive means mounted in said frame and including respective control cams for said indexing, feeding, filling, sealing, rotating and discharge means.

3,939,627
APPARATUS FOR CAPPING CONTAINERS

Seymour Mermelstein, Newton, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.
Filed June 10, 1974, Ser. No. 477,700
Int. Cl.² B67B *3/04*; B65B *53/02*
U.S. Cl. 53—329 19 Claims

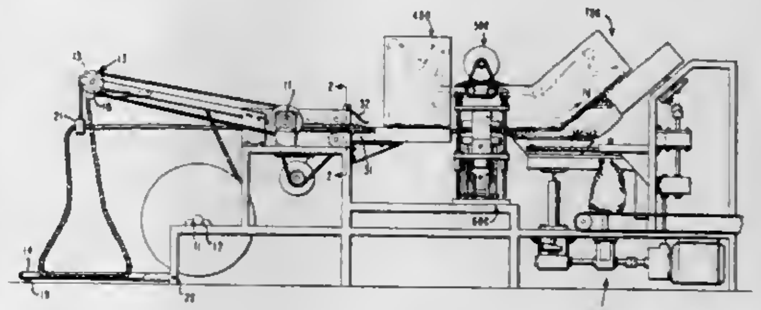


18. Apparatus for heat shrinking a sheet of heat shrinkable plastic film onto a container so as to form a closure for said container comprising:

- first and second flexible heatable members;
- first means for gripping said first and second members together at one end thereof;
- second means for gripping said first and second members together at the end opposite said one end thereof; and
- bidirectionally movable means coupled to said first and second means for moving said first and second means so as to selectively cause said members to (a) flex in a first direction and move away from one another intermediate their opposite ends so as to provide a space therebetween for insertion of a sheet of heat shrinkable film and a container to be capped with said film or (b) flex in a second opposite direction and move closer to one another intermediate said opposite ends so as to press portions of said sheet against said container.

3,939,628
BAG AND PACKAGE MAKING METHOD

Gilmore T. Schjeldahl, Minnetonka, Minn., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.
Filed July 26, 1974, Ser. No. 492,227
Int. Cl.² B65B *9/10*, *9/14*, *1/02*
U.S. Cl. 53—29 5 Claims

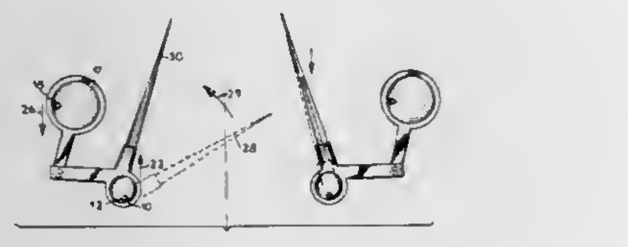


1. In a method of forming in-line on a package-making machine a closure for a package using tubular plastic open-mesh netting in continuous rope form unwound from a reel, in a continuous repetitive manner, an improvement including the steps of:

- expanding such netting in the cross-machine direction;
- gathering such expanded netting in rucked form;
- expanding a portion of such rucked netting in the machine direction and into an elongated sleeve;
- moving a portion of this elongated sleeve while maintained in the expanded state into operative relationship with a closure applying means; and
- applying a closure across such portion of this expanded sleeve while holding such portion of the sleeve in such operative relationship with such closure applying means, thereby forming a closure for such package.

3,939,629
TRANSVERSE BEATING DEVICE FOR A GRAPE-GATHERING MACHINE

Alain Bruel, Domaine du Petit Chaumont, Alques-Mortes (Gard), France
Filed July 26, 1973, Ser. No. 383,015
Claims priority, application France, Jan. 10, 1973, 73.01356
Int. Cl.² A01D *46/00*
U.S. Cl. 56—330 **4 Claims**



1. In a mobile grape gathering machine of the type wherein a generally inverted U-shaped structure passes over at least one row of vine stocks, said structure having at least two beating devices with a plurality of flexible rods emanating therefrom to beat or shake the vine stocks to remove the graps therefrom, mounted within said said inverted U-shape, the improvement wherein each beater mechanism comprises:

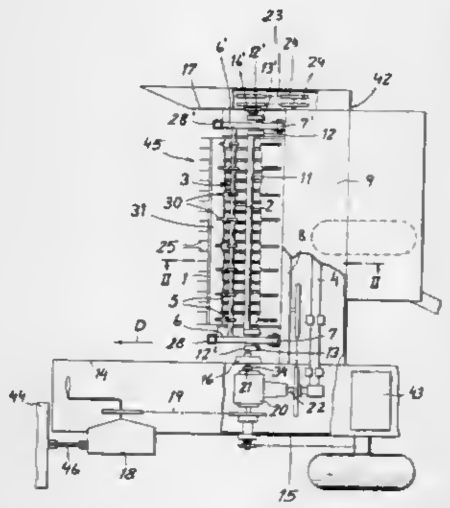
a. a rod carrying plate to which is affixed one end of each of the plurality of flexible rods, said rod carrying plate having an integral crank pin extension with a first circular opening therethrough,
b. a lever having a first end rigidly affixed to said rod carrying plate and a second end,
c. a connecting rod having a first end pivotally attached to said second end of said lever, and a second end having an integral enlarged portion with a second circular opening therethrough,
d. a first spindle pivotally attached to said inverted U-shaped structure,
e. a first eccentric rigidly affixed to said first spindle and rotatably mounted within said first circular opening,
f. a second spindle pivotally attached to said inverted U-shaped structure,
g. a second eccentric rotatably mounted within said second circular opening, and
h. means to rotate said first and second eccentrics, in the same direction to cause said rod carrying plate to translate along a curved path with respect to said U-shaped structure.

3,939,630
CROP-FEED ARRANGEMENT FOR HAY BALER

Rudolf Schulze, Neustadt; Horst Schumacher, Langburkersdorf, and Ferdinand Simora, Bonnewitz, all of Germany, assignors to VEB Kombinat Fortschritt Landmaschinen, Neustadt in Saxony, Germany
Filed Mar. 8, 1973, Ser. No. 339,185
Claims priority, application Germany, May 23, 1972, 163124
Int. Cl.² A01D *39/00*
U.S. Cl. 56—341 **1 Claim**

1. A baling apparatus comprising:

a housing displaceable along the ground in a travel direction;
a pickup drum at the front of said housing and rotatable about an axis transverse to said direction;
means forming a channel in said housing extending transverse to said direction in back of said drum all along the latter;
means forming a baling chamber extending in said direction on said housing at one end of said channel and along a side of said drum;
drive means on said housing for rotating said drum and thereby lifting crop off the ground and displacing the crop back toward said channel;
an oscillatable shaft member on said housing extending transversely to said direction above said drum and said channel;
a plurality of pusher elements on said member displaceable from said drum to said channel;



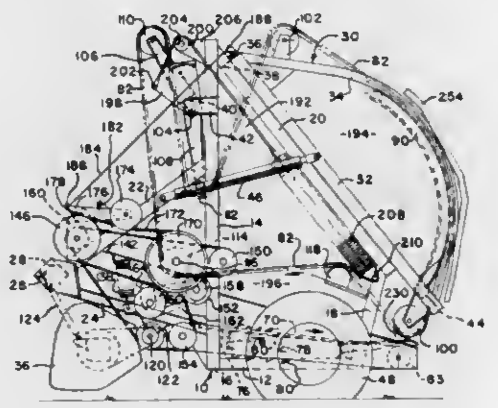
torsion spring means between each element and said shaft member for yieldably resisting uneven displacement of each element relative to said shaft member;
eccentric means operable by said drive means and coupling means connecting said eccentric means to said member for oscillating said elements at a relatively slow rate to displace said crop from said drum into said channel and at a relatively rapid rate away from said channel;
a rod extending along said member and engageable with said elements for retaining same against the force of said spring means;
means in said channel and mounted on said housing for displacing crop therealong into said chamber; and
means in said chamber and mounted on said housing for forming bales of said crop.

3,939,631
HAY ROLL FORMING MACHINE

Allison W. Blanshine, Lititz, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed June 3, 1974, Ser. No. 476,020
Int. Cl.² A01D *39/00*
U.S. Cl. 56—341 **6 Claims**

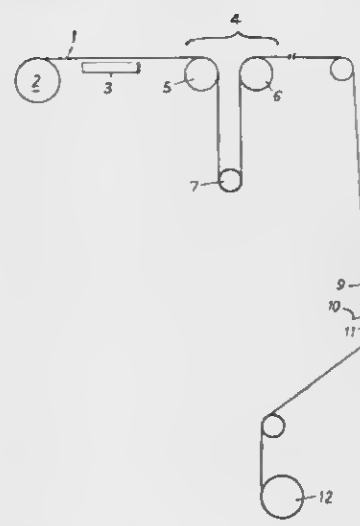
1. A machine for forming a roll of crop material, comprising in combination:

a. a mobile frame adapted to travel across a field;
b. material delivery means supported by said frame;
c. endless flexible means mounted upon said frame above said delivery means;
d. said delivery means together with said endless flexible means defining a roll forming region therebetween spaced above the field and extending between opposite sides of said frame;
e. means on said frame to drive at least a portion of said delivery means in a predetermined direction to deliver crop material from the field to said roll forming region and also drive said endless flexible means for movement in a direction opposite to that of said portion of said delivery means, said endless flexible means engaging a circumferential area of a roll of crop material when said roll is being formed within said roll-forming region;
f. positioning means movably mounted by said frame and engaged with said endless flexible means; and
g. spring means supported by said frame and interconnected to said positioning means for imposing a pulling force thereon which normally disposes the same in a first position which in turn disposes said endless flexible means in a contracted position, said spring means being capable of progressively yielding under the imposition of a progressively increasing reverse pulling force thereon, said spring means so yielding when such reverse force is imposed thereon by said endless flexible means through said positioning means as said flexible means expands from its contracted position and said positioning means moves away from its first position due to engagement of said endless flexible means with increasing circumferential areas of the roll as the diameter thereof increases during forming of the roll at said roll-forming region, said spring means in so yielding due to such increasing reverse pulling force being imposed thereon causing a substantially uniform pressure to be exerted upon said roll within said roll-forming region by said endless flexible means as increasing circumferential areas of said roll are engaged by said endless flexible means to thereby produce a roll of crop material having substantially uniform density throughout said roll.



3,939,632
PROCESS FOR THE PRODUCTION OF EFFECT YARNS

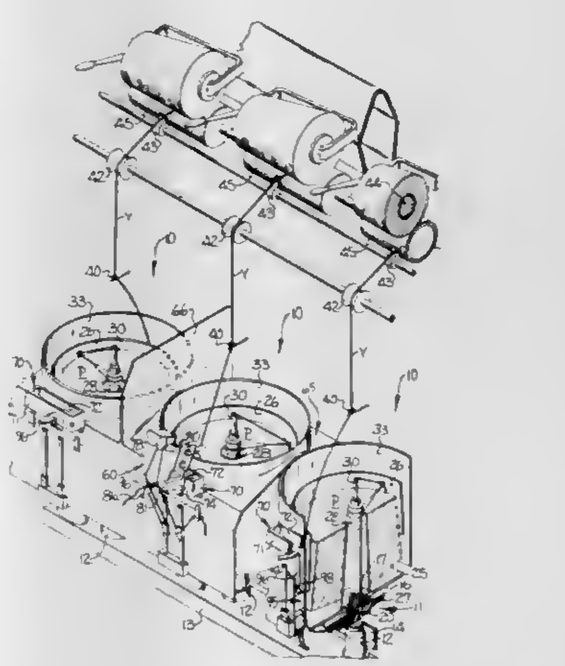
Werner Doschko, Nussloch, and Hans Pscheidl, Heidelberg, both of Germany, assignors to Imperial Chemical Industries Limited, London, England
Filed May 14, 1973, Ser. No. 257,404
Int. Cl.² D02G *1/02;* D01H *7/92;* D02G *1/04*
U.S. Cl. 57—34 HS **10 Claims**



10. In an apparatus for the production of continuously textured effect yarns comprising yarn feed means, means for heating the yarn to a temperature above its second order transition temperature, means for false twisting comprising a friction twist bush which bears against the yarn, and takeup means, the improvement constituting means for periodically reducing the twist set in the yarn, said means comprising a yarn guide for altering the arc of contact between the twist bush and the yarn.

3,939,633
SPINDLE START CONTROL DEVICE FOR TEXTILE YARN PROCESSING MACHINE HAVING KNOTTING MECHANISM

Ulrich Lossa, Krefeld, Germany, assignor to Palitex Project Company GmbH, Germany
Filed Oct. 17, 1974, Ser. No. 515,694
Claims priority, application Germany, Oct. 17, 1973, 2352022
Int. Cl.² D01H *15/00*
U.S. Cl. 57—34 R **7 Claims**



1. In a textile yarn processing machine, such as a twister, spinning frame or the like, having a plurality of spindle assemblies positioned in side-by-side relationship thereon for processing of yarn, control means operatively connected with each of said spindle assemblies for selectively stopping and starting operation of said respective spindle assemblies, and a yarn knotter mechanism for being selectively positioned in front of each spindle assembly in the event of a broken or otherwise separated yarn therein for knotting together the two ends of the separated yarn when said spindle assembly is stopped by said control means and including selectively actuatable means for operating said knotter mechanism for the knotting operation; the improvement of

means operatively connected with said operating means of said knotter mechanism and said spindle assembly stopping and starting control means and being responsive to actuation of said operating means of said knotter mechanism for actuating said control means to start operation of said spindle assembly for the processing of yarn, thereby reducing lost operating time due to the yarn separation.

3,939,634

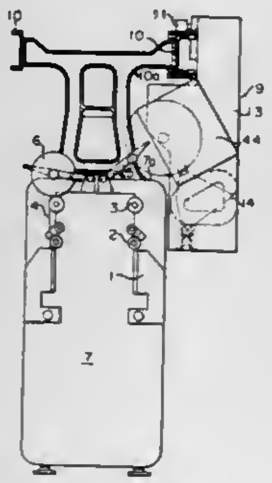
EMPTY BOBBIN SUPPLY DEVICE

Toshio Yoshizawa, Chiryu; Yasuo Yamada; Toshinori Taniguchi, both of Kariya; Tatsuo Kose; Kazuo Ohchi, both of Wakayama, and Kiyokazu Hori, Sabae, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya and Daiwa Boseki Kabushiki Kaisha, Osaka, both of, Japan

Filed Jan. 3, 1974, Ser. No. 430,513

Int. Cl.^{2} D01H *9/10*

U.S. Cl. 57—53 **15 Claims**



1. An empty bobbin supply device for use in an automatic doffing machine which travels in front of a plurality of spinning units for doffing fully wound cheeses by means of a doffing mechanism and donning empty bobbins in place thereof by means of a donning mechanism, comprising:

bobbin containing means for containing empty bobbins and having an opening in the bottom thereof;

endless conveyor means located in a position under the bottom of said bobbin containing means for separately carrying thereon empty bobbins moving down through the opening of said bobbin containing means and transferring the carried empty bobbins substantially downwardly; and

transfer means located in a position below the lower run of said conveyor means for receiving the bobbins coming down from said conveyor means in the absence of a bobbin on said transfer means and transferring the bobbins to the donning mechanism while remaining at a level below the lower run of said conveyor means.

3,939,635

BALLOON LIMITER WITH WETTING MEANS IN A TEXTILE MACHINE

Karl-Heinz Rehn, Remscheid-Lennep, and Heinz Middelmann, Radevormwald, both of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Feb. 19, 1975, Ser. No. 551,065

Claims priority, application Germany, Feb. 21, 1974, 7406049[U]

Int. Cl.^{2} D01H *13/12, 13/30*

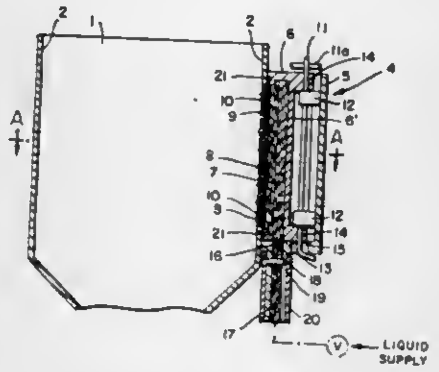
U.S. Cl. 57—108 **7 Claims**

1. In a textile machine having a balloon limiter of circular cross-section with wetting means to supply a liquid for treatment of a thread conducted through the balloon limiter, said wetting means including a casing which contains at least one liquid impregnated insert arranged over openings in the wall of the balloon limiter to permit a flow of the treatment liquid from said impregnated insert into the interior of said limiter, the improvement which comprises:

a holder arranged on the outer circumference of the balloon limiter wall to hold said casing;

clamping means to releasably fasten said casing in said holder; and

at least one absorbent insert within said casing for transmitting the treatment liquid into the balloon limiter interior,



said insert including projections extending through the flow openings in the balloon limiter wall for direct contact with the thread being conducted therethrough.

3,939,636

MIXED YARN

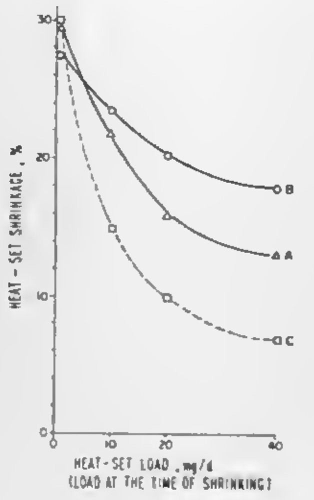
Yuzaburo Nakayama; Akinori Yamamoto, both of Otsu; Tomohiko Asahara, Ehime; Masaharu Shimamura; Yoshizo Tsuda, both of Otsu; Keisuke Igawa, Obu, and Mitsuhiro Okamoto, Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed July 24, 1974, Ser. No. 491,273

Claims priority, application Japan, Aug. 24, 1973, 48-94347

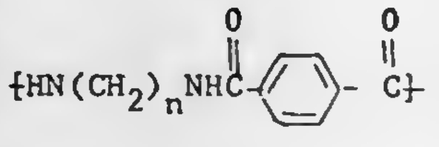
Int. Cl.^{2} D02G *3/24, 1/18*

U.S. Cl. 57—140 BY **11 Claims**



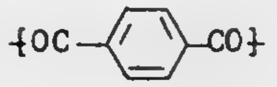
1. A mixed yarn having a uniform dyeability to an acid dye which comprises at least two kinds of polyamide filaments differing in shrinkage, characterized in that

A. a lower shrinkage filament in which the amount of units each represented by the general formula



(n = 10 - 13) (1)

or the sum total of the amount of said units and the amount of other isomorphous units is at least 75 mole %, and in the carboxylic acid component in the polymer,

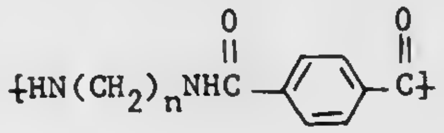


unit ≧ 40 mole % (2)

and in the diamine component in the polymer,

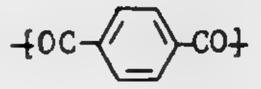
$\left[HN(CH_2)_6NH\right]$ unit ≧ 70 mole % (3)

and, (B) a higher shrinkage filament in which the amount of units each represented by the general formula



(n = 10 - 13) (4)

or the sum total of the amount of said units and the amount of other isomorphous units is smaller than that of said lower shrinkage filament by at least 15 mole % and at least 20 mole % of non-isomorphous units is contained, and wherein in the carboxylic acid component in the polymer,



unit ≧ 40 mole % (5)

and in the diamine component in the polymer,

$\left[HN(CH_2)_6NH\right]$ unit ≧ 50 mole %, (6)

wherein the content of amino end groups in the lower shrinkage polymer is about $5 \times 10^{-5} - 12 \times 10^{-5}$ mole/g, said content in the higher shrinkage polymer is about $3 \times 10^{-5} - 10 \times 10^{-5}$ mole/g and the content of amino end group in the lower shrinkage filament is larger than that in the higher shrinkage filament by about $2 \times 10^{-5} - 8 \times 10^{-5}$ mole/g.

3,939,637

UNSTRETECHED POLYETHYLENE TEREPHTHALATE YARN IN CONTINUOUS STRETCHING AND FALSE TWIST TEXTURIZING PROCESSES

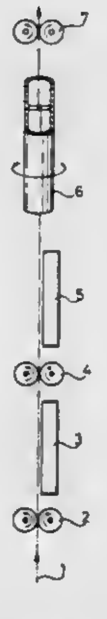
Günther Franz, Goggingen; Karl Heinrich, Bobingen, and Herbert Poppe, Konigsbrunn, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 5, 1973, Ser. No. 338,312

Claims priority, application Germany, Mar. 11, 1972, 2211843

Int. Cl.^{2} D02G *1/02*

U.S. Cl. 57—140 R **4 Claims**



1. Improvement in continuous stretching and false twist texturizing processes for the manufacture of voluminous yarns from unstretched spun filaments of polyesters comprising at least preponderantly polyethylene terephthalate structural units, which comprises using unstretched but pre-oriented spun filaments having a degree of pre-orientation characterized by a natural stretching ratio of about 1:2.0 to about 1:1.4, feeding the said filaments to continuously working stretching and false twist texturizing devices, stretching the said yarns at a stretch ratio of about 1:2.3 to about 1:1.7, and winding up the texturized yarns obtained.

3,939,638

METHOD FOR AUTOMATICALLY STARTING AND STOPPING AN OPEN-END SPINNING MACHINE

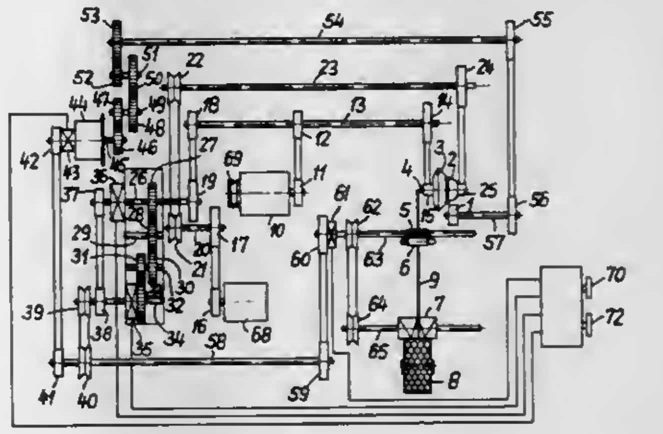
Klaus Bruckert, Bremen; Herbert Hoffmann, Schwanewede; Gerhard Kutscher, Bremen; Rolf Neubert, Bremen, and Rolf Wehling, Bremen, all of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Mar. 20, 1974, Ser. No. 453,072

Claims priority, application Germany, Mar. 20, 1973, 2313788

Int. Cl.^{2} D01H *1/30, 1/34*

U.S. Cl. 57—156 **12 Claims**



1. In a method for the automatic starting and stopping of an open-end spinning machine system containing a plurality of spinning units, the components of each unit including a spinning turbine having a fiber collection trough, a breakup roller, a feed roller, a yarn extraction device and a yarn winding apparatus, wherein, during stopping of the system, the rates of rotation of the turbine, the feed roller, the yarn extraction device and the yarn winding apparatus of each unit are simultaneously reduced to below the normal spinning speed before being completely stopped, and the end of each yarn being spun remains in its spinning turbine and during restarting of the system each yarn extraction device and winding apparatus are caused to move opposite to their direction of normal movement for a limited time to feed the yarn end back into the spinning turbine, and the spinning turbine, the feed roller, the yarn extraction device and the yarn winding apparatus are brought to a rated speed below the normal spinning speed in order to start the spinning process, the improvement wherein:

a. the stopping of the system, from an operating state, comprises the steps of:
   i. effecting such simultaneous reduction in the rates of rotation of the turbine, feed roller, yarn extraction device and yarn winding apparatus of each unit by permitting the rates of rotation thereof to decrease in unison in a free run-down manner while remaining within the range permitting yarn spinning to continue, and
   ii. positively and rapidly braking such components only when their rates of rotation reach the lower limit of such range; and
b. the restarting of the system comprises effecting such movement of the yarn extraction device and the winding apparatus of each unit opposite to their normal direction of movement by initially driving the yarn extraction device and the yarn winding apparatus of each unit through

a selected, fixed, distance in the direction opposite to their normal operating direction, which distance is independent of the existing speed of the system, for feeding a fixed, predetermined, length of yarn back into the fiber collection trough of the associated spinning turbine.

3,939,639

SPIN STRETCHING AND SPIN STRETCH TEXTURING OF MULTIFILAMENT YARNS

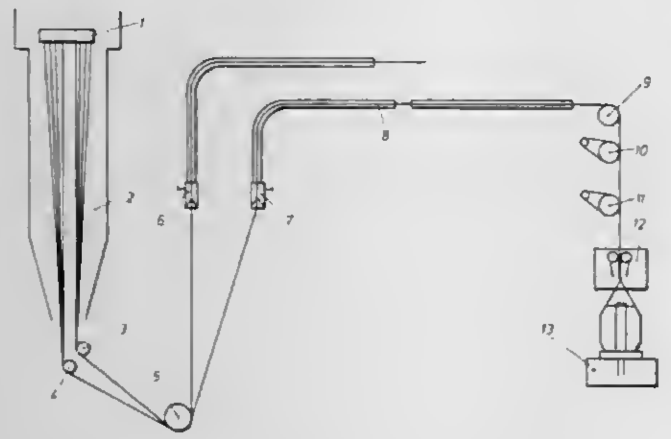
Konrad Ellegast, Leichlingen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 5, 1974, Ser. No. 476,460

Claims priority, application Germany, June 5, 1973, 2328499

Int. Cl.² D02J *1/22*

U.S. Cl. 57—157 R **7 Claims**



1. Process for the continuous production of multifilament yarns from synthetic thermoplastic high molecular weight polymers wherein unstretched multifilament yarn is passed from a spinning zone to a stretching zone through protective tubes.

3,939,640

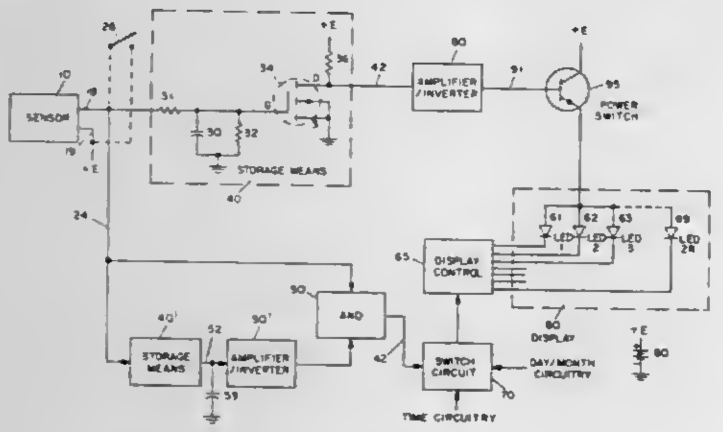
SYSTEM FOR ILLUMINATING THE DISPLAY OF A WRIST WATCH

Leonard R. Kahn, 70 N. Grove St., Freeport, L.I., N.Y. 11520

Filed Dec. 12, 1974, Ser. No. 532,065

Int. Cl.² G04C *3/00*

U.S. Cl. 58—23 R **10 Claims**



1. A watch display system comprising;

a specific motion sensor,

a first storage means activated by the motion sensor for maintaining illumination of the display for a sufficient reading period after each perception of said motion,

means for connecting an electrical energy source to the display where said connecting means is controlled by the first storage means,

a second storage means having an appreciably longer storage period than the first storage means and which second storage means is also activated by the motion sensor,

AND gate means for sensing repeated specified motion within a specified period of time, and

means for switching the display system from time of day information circuitry to day/month circuitry when the AND circuitry output indicates the occurrence of the repeated specified motion within said longer storage period of time.

3,939,641

ELECTRONIC CIRCUIT FOR INDIVIDUALLY CORRECTING EACH DIGIT OF TIME DISPLAYED

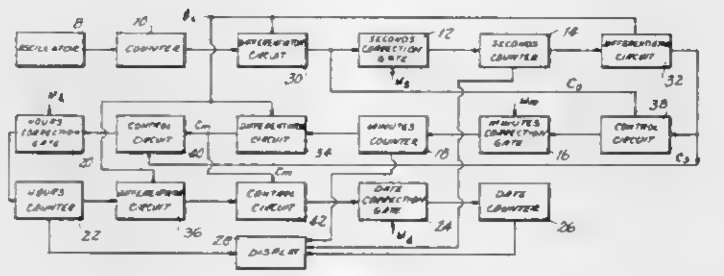
Izuhiko Nishimura, and Mitsuharu Kodaira, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed July 31, 1974, Ser. No. 493,428

Claims priority, application Japan, July 31, 1973, 48-86185

Int. Cl.² G04C *3/00;* G04B *27/08*

U.S. Cl. 58—23 R **8 Claims**



1. In an electronic timepiece comprising a quartz crystal oscillator circuit for producing a high frequency time standard signal, divider means coupled to said oscillator means for producing a low frequency time standard carry signal in response to said high frequency time standard signal, at least two series-connected divider stages coupled in series with said divider means, each divider stage other than the last of said series connected divider stages producing a low frequency carry signal in response to the low frequency carry signal applied thereto, at least a portion of said divider stages each producing timekeeping signals and display means associated with each said divider stage producing said timekeeping signals for displaying time in response to said respective timekeeping signals applied thereto, the improvement comprising correction gate means coupled to each said divider stage producing a timekeeping signal, each said correction gate means being adapted to apply the carry signal from the next previous divider stage to the divider stage to which said correction gate means is coupled and being adapted to correct each divider stage by advancing the count thereof, and a control circuit means connected to each divider stage to be corrected to receive the carry signal produced thereby and the carry signal applied to said divider stage to be corrected, said control circuit means inhibiting the transmission to the next divider stage following said divider stage to be corrected of that portion of the corrected carry signal representative of a carry due to correction.

3,939,642

ELECTRONIC TIMEPIECE SEMICONDUCTOR INTERGRATED CIRCUIT

Shinji Morozumi, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

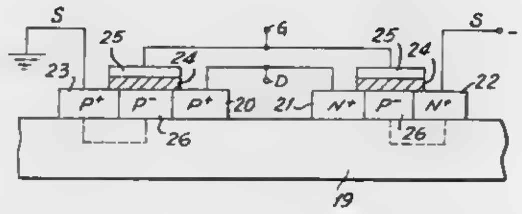
Filed Jan. 2, 1974, Ser. No. 429,992

Claims priority, application Japan, Dec. 29, 1972, 48-503

Int. Cl.² G04C *3/00;* H03K *21/00*

U.S. Cl. 58—23 A **9 Claims**

1. In an electronic timepiece including an oscillator circuit for providing high frequency time standard signals, a divider circuit including a plurality of series-connected divider stages having applied thereto a high frequency time-keeping signal and in response thereto supplying low frequency timekeeping signals corresponding to present time, and display means for receiving and displaying time in response to said timekeeping signals counted by said dividing circuit, the improvement comprising said oscillator circuit and each of said divider stages being integrated on a single circuit chip having a substrate formed from an insulating material including complementary coupled P-channel and N-channel MOS field effect transistors formed on the insulating substrate thereof in layers, the respective transistors on said substrate having a space therebetween.



3,939,643

CRYSTAL-CONTROLLED ELECTRONIC TIMEPIECE WITH CMOS SWITCHING AND FREQUENCY-DIVIDING CIRCUITS

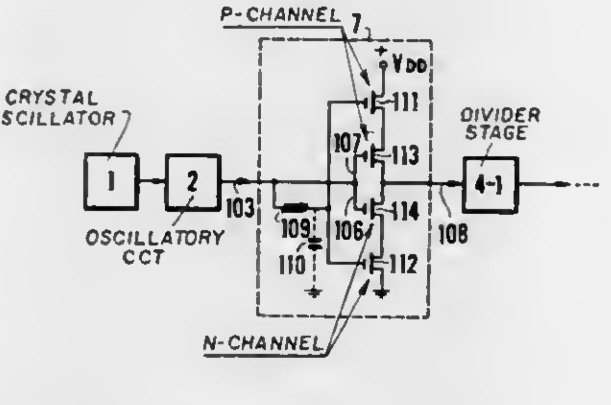
Yasuhiko Nishikubo, Iruma, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 30, 1974, Ser. No. 474,698

Claims priority, application Japan, June 7, 1973, 48-64183; Dec. 5, 1973, 48-138388; Jan. 7, 1974, 49-5175

Int. Cl.² G04C *3/00*

U.S. Cl. 58—23 A **9 Claims**



1. An electronic timepiece comprising:

crystal-controlled oscillator means of elevated operating frequency provided with an output circuit;

time-indicating means operable at a reduced frequency;

frequency-divider means inserted between said oscillator means and said time-indicating means for stepping down said elevated frequency to said reduced frequency; and

a switching circuit interposed between said output circuit and said frequency-divider means for deriving periodic trigger pulses for said frequency-divider means from an oscillator voltage of said elevated frequency, said switching circuit comprising two complementary MOSFETs and at least one further MOSFET with insulated gates serially connected across a direct-current supply, said output circuit including a first lead terminating at the gates of said complementary MOSFETs, a second lead terminating at the gate of said further MOSFET and delay means in one of said leads for relatively dephasing the oscillator voltage on said leads to an extent making all said MOSFETs simultaneously conductive for a time substantially shorter than a period of passage of said oscillator voltage between respective conduction thresholds of said complementary MOSFETs.

3,939,644

CIRCUIT ARRANGEMENT FOR CONTROLLING THE RUNNING OF A QUARTZ-CONTROLLED ELECTRIC CLOCK

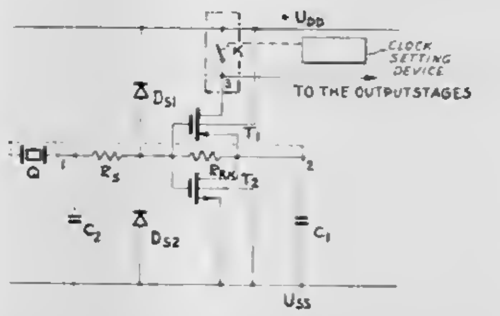
Hans-Peter Wolf, Horkheim, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed June 25, 1974, Ser. No. 483,072

Claims priority, application Germany, June 25, 1973, 2332237

Int. Cl.² G04C *3/00;* G04B *27/08*

U.S. Cl. 58—23 R **4 Claims**



1. In a circuit arrangement for a quartz-controlled electric clock which can be set, the circuit arrangement including a supply voltage source, a motor, an oscillator stage, frequency divider stages connected to said oscillator stage, pulse shaper stages connected to said frequency divider stages, and two output stages connected to said pulse shaper stages for controlling the drive of the motor, at least the oscillator stage and each output stage each being composed of at least one Metal-Insulator-Semiconductor field effect transistor having a controllable current path, the improvement comprising a switch arranged to be operated during setting of the clock and connected to the controllable current paths of said transistors only in said oscillator stage and said two output stages for disconnecting said current paths from the supply voltage source, in order to terminate oscillation of said oscillator stage and stop said motor whereby said voltage source remained connected to said frequency divider stages during setting of the clock.

3,939,645

CALENDER TIMEPIECE MOVEMENT COMPRISING THREE INDICATORS

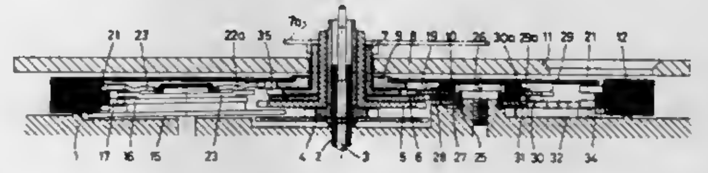
Adrien Maurice Charbonney, deceased, late of St. Blaise, Switzerland, by Jean-Jacques Thorens, legal representative, assignor to ETA A.G. Ebauches-Fabrik, Switzerland

Filed Aug. 9, 1974, Ser. No. 496,294

Claims priority, application Switzerland, Aug. 9, 1973, 11522/73

Int. Cl.² G04B *27/08*

U.S. Cl. 58—85.5 **9 Claims**



1. A calendar time piece movement comprising three indicators, the first displaying the units figure of the date, the second displaying the tens figure of the date, and the third displaying the days of the week, an hour wheel, a driving mechanism actuated by said hour wheel and driving said indicators stepwise, and a correction mechanism, wherein said indicators are coaxial with said hour wheel, said correction mechanism comprising a rotating correction assembly and said driving mechanism comprising a calendar wheel actuating said first indicator, an intermediate rotating part coaxial with

said calendar wheel, actuated by said first indicator and actuating said second indicator, and a shifting member coaxial with said correction assembly for shifting said third indicator.

3,939,646

WATER TIGHT WATCH CASE USING AN INORGANIC GLASS CRYSTAL

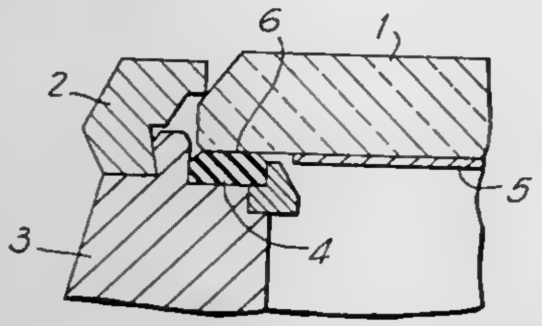
Hideaki Uchiyama, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed May 17, 1974, Ser. No. 471,053

Claims priority, application Japan, May 21, 1973, 48-59681

Int. Cl.² G04B *37/08*

U.S. Cl. 58—90 R **8 Claims**



1. A water-tight watch case comprising an inorganic glass crystal, means hermetically sealing said crystal in a peripheral region thereof in the case, and a layer of water-absorptive resin having an unsaturated OH radical applied to said crystal at the inner surface thereof in a limited region to leave a bare peripheral zone at which the crystal is hermetically sealed, said means which hermetically seals the crystal in the case comprising a sealing element which bears against said crystal exclusively in said peripheral region where the layer of water-absorptive material is absent.

3,939,647

STRUCTURE OF WATER-TIGHT WATCH CASE

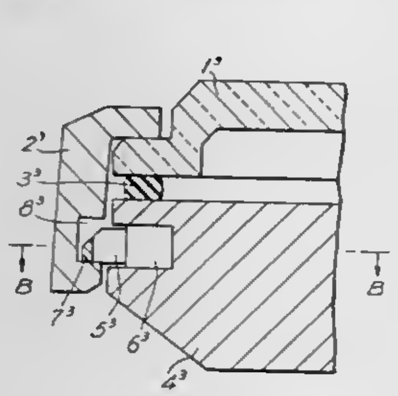
Tsutomu Miyasaka, and Akio Kitazume, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Aug. 19, 1974, Ser. No. 498,872

Claims priority, application Japan, Aug. 24, 1973, 48-94340

Int. Cl.² G04B *37/08*

U.S. Cl. 58—90 R **12 Claims**



1. A water-tight watch case comprising outer and inner case bodies, glass means, an elastic gasket between said glass means and said inner case body, said outer case body sandwiching said glass means and gasket against said inner case body to provide a water-tight relation, said bodies being provided with opposed openings, an extended elastic element in one of the openings, said elastic element having free opposite ends with integral projections at said ends engaged in the other of said openings to press the gasket between the glass means and inner case body, said elastic element being secured in said one opening with its free ends extending in cantilever fashion such that said projections are resiliently engaged in said other of the openings.

3,939,648

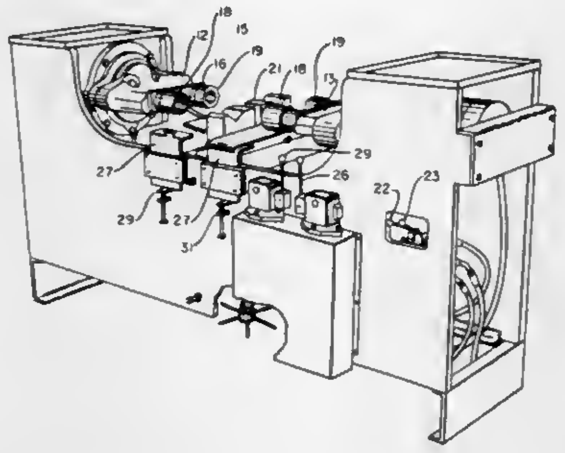
MULTI-PITCH TOOL BAR FOR TRACK PRESSES

Laurie J. Cullen, Burlingame, Calif., assignor to Wolff Manufacturing Company, Burlingame, Calif.

Filed Dec. 6, 1974, Ser. No. 530,371

Int. Cl.² B21L *21/00*

U.S. Cl. 59—11 **4 Claims**



1. For use in a track press of the type adapted to receive a track chain having pins and bushings and present the chain to a movable tool head for removing or inserting the pins and bushings during disassembly or assembly, a multi-pitch tool bar adapted to be mounted on said head for receiving pin and bushing tool holding bolts whereby the pin and bushing tools are positioned to engage the chain pins and bushings, said bar including means for receiving a tool bar mounting bolt for securing the bar to the tool head at at least two heights, a plurality of pairs of spaced threaded holes for receiving the pin and bushing tool holding bolts formed in said tool bar, each pair of spaced threaded holes having a centerline, and at least two pairs of threaded holes disposed on different parallel spaced centerlines whereby the height of the tools as well as the pitch can be selected.

3,939,649

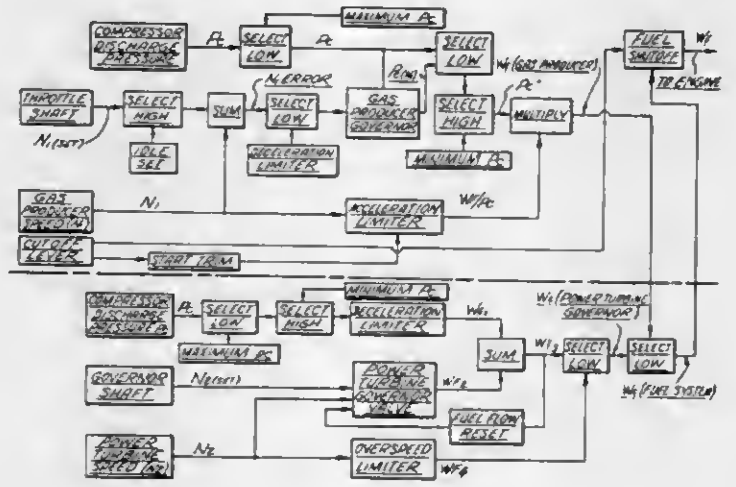
FUEL CONTROL

Ralph P. McCabe, Forest Park, Ohio, assignor to Chandler Evans Inc., West Hartford, Conn.

Division of Ser. No. 111,294, Feb. 1, 1971, Pat. No. 3,712,055. This application Nov. 8, 1972, Ser. No. 304,622

Int. Cl.² F02C *9/08*

U.S. Cl. 60—39.28 R **3 Claims**



1. In a fuel control for a gas turbine engine with a gas producer and a power turbine, a power turbine governor comprising:

- an inlet for receiving fuel from a gas producer control;
- an outlet for delivering fuel to the engine;
- conduit means to fluidly interconnect the inlet and the outlet for providing a path for fuel flow;

- sensor means to generate an actual speed signal representative of the speed of the power turbine;
- speed setting means to generate a set speed signal for the power turbine;
- governor valve means responsive to the actual speed signal and the set speed signal to meter fuel flow in the conduit means;
- overspeed valve means responsive to the actual speed signal to present a restriction to fuel flow in the conduit means upstream of the governor valve means when an overspeed condition of the power turbine arises; and
- regulator means to maintain a substantially constant differential pressure between locations in the conduit means upstream of the overspeed valve means and downstream of the governor valve means by bypassing fuel, the overspeed valve means not presenting a substantial restriction to fuel flow until an overspeed condition arises, whereby the regulator means maintains a substantially constant differential pressure across the governor valve means during normal operation and governing and whereby the overspeed valve means causes the regulator means to bypass more fuel when an overspeed condition arises to thereby reduce fuel flow to the governor valve means.

3,939,650

OPERATIONAL CIRCUITRY FOR USE IN A GAS TURBINE ENGINE CONTROL SYSTEM

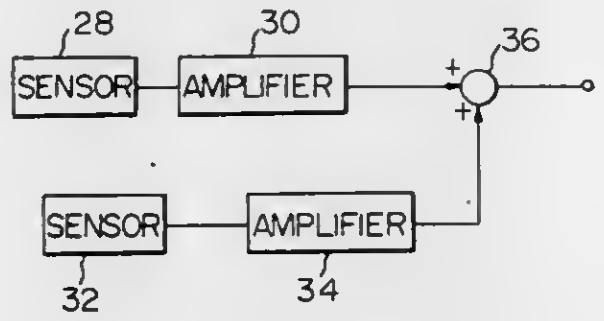
Takane Itoh, Yokohama, and Takao Kamide, Zushi, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 26, 1974, Ser. No. 527,372

Claims priority, application Japan, Nov. 28, 1973, 48-132560

Int. Cl.² F02C *9/08*

U.S. Cl. 60—39.28 T **1 Claim**



1. An operational electronic circuitry for use in a gas turbine engine control system for modifying a first signal into a second signal with respect to an actual ambient temperature, said first signal representing an optimum gas temperature at an inlet of a compressor turbine under a condition of a standard average engine ambient temperature, comprising:

- first means for receiving said first signal to amplify it by a factor of $273/T_{sd}$ and to generate a signal according to the amplification, where T_{sd} is a standard average ambient temperature in degrees absolute;
- second means for sensing said actual ambient temperature to generate a signal representing it in degrees absolute;
- third means for receiving said signal from said second means to amplify it by a factor of T_{2sm}/T_{sd} and to generate a signal in proportion thereto, where T_{2sm} is a median of values of said first signal; and
- fourth means for summing said signals from said first and third means to develop said second signal.

3,939,651

MOUNTING FOR ATTACHING A TUBULAR MEMBER IN CO-AXIAL REGISTRATION WITH AN APERTURE IN A WALL

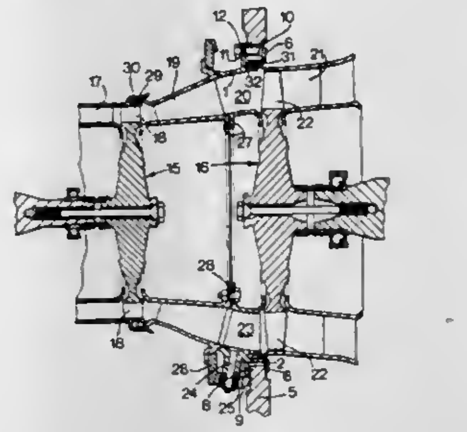
Robert Noel Penny, Solihull, England, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 25, 1974, Ser. No. 491,801

Claims priority, application United Kingdom, Aug. 8, 1973, 37658/73

Int. Cl.² F02C *7/20*

U.S. Cl. 60—39.32 **7 Claims**



1. A gas turbine engine including a turbine, ducting positioned upstream and downstream of said turbine and defining a working fluid passage through said turbine, the ducting including a tubular nozzle shroud member, supporting structure for said shroud member, said shroud member having at one end thereof a spigot which is to be fitted into an aperture in said supporting structure, and a mounting supporting the tubular nozzle shroud member in co-axial registration with the aperture in said supporting structure, said mounting comprising said spigot, which is of complementary shape to said aperture, a plurality of radially outwardly extending lugs spaced apart around the periphery of said spigot, and the supporting structure having a corresponding number of notches spaced apart around the periphery of the aperture, said lugs when aligned with the notches being insertable through said notches by axial movement of said tubular member and retained, in the manner of a bayonet-type of coupling, by portions of said supporting structure between said notches when said tubular member has been partly turned abouts its longitudinal axis, said tubular member also having a flange spaced axially from said lugs and sealingly engageable with said supporting structure when said lugs are located behind said portions between said notches, said lugs and said flange together holding said tubular member from axial movement with respect to said supporting structure, said supporting structure and said flange each having a pin-receiving opening therein, said openings being so positioned in said supporting structure and said flange respectively that when said tubular member has been turned to said retained position said openings are in registration one with the other, a removable locking pin insertable in said registered openings to prevent turning of said tubular member from said retained position, one of said openings being elongate in a direction radially of the longitudinal axis of said tubular member to permit limited relative movement between said tubular member and said supporting structure.

3,939,652

DEVICE COMPRISING AN EXPANSION ENGINE AND A SEPARATE APPARATUS FOR FEEDING SAID ENGINE

Cornelis Hubers, van Ostadelaan 2, Rozenburg, Netherlands

Continuation of Ser. No. 193,636, Oct. 29, 1971, abandoned. This application Jan. 11, 1974, Ser. No. 432,670

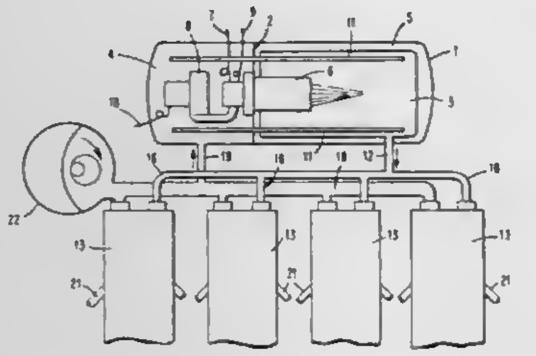
Claims priority, application Netherlands, Oct. 29, 1970, 70/15852

Int. Cl.² F02G *3/02*

U.S. Cl. 60—39.63 **6 Claims**

1. A device comprising an expansion engine, having at least one cylinder provided with at least one scavenge port and with

a piston moving therein, a separate apparatus for feeding said expansion engine with combustion gases under pressure, said separate apparatus comprising a housing with a heat insulating liner, said housing being subdivided into a first and a second chamber by means of a partition, at least one burner being mounted in said partition to receive all air from said first chamber and, and in such a way that the combustion takes place in the second chamber, said first chamber being connected by a conduit to the cylinder of said expansion engine for supplying air under pressure by said expansion engine to



said first chamber, a non return valve being provided in said conduit which opens due to the compression of the air during the return stroke of the piston, said first chamber acting as the only source of supply of air under pressure for said burner, means for controlling a continuous supply of fuel and air to said burner in such amounts that a substantially complete combustion of said fuel in said second chamber is obtained, said second chamber being connected by a conduit to the cylinder of the expansion engine, a controlled valve being provided in said conduit for supplying combustion gases to the cylinder of said expansion engine.

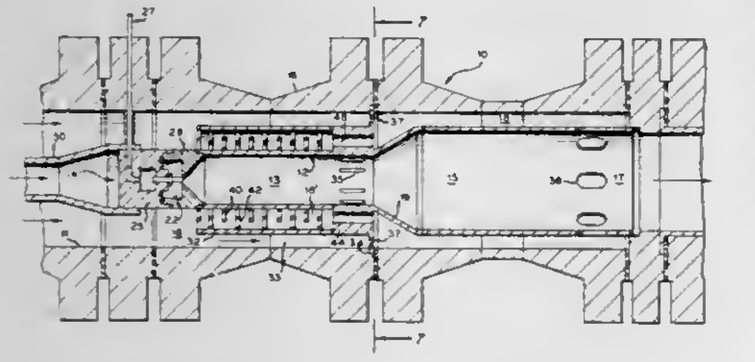
3,939,653
GAS TURBINE COMBUSTORS AND METHOD OF OPERATION

Robert M. Schirmer, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 29, 1974, Ser. No. 456,180

Int. Cl.^{2} F02C *3/00*

U.S. Cl. 60—39.65 **15 Claims**



1. A combustor comprising, in combination:
an outer casing;
a flame tube disposed within said casing and spaced apart therefrom to form a first annular chamber between said flame tube and said casing;
an air inlet means for introducing a first stream of air into the upstream end portion of said flame tube;
a fuel inlet means for introducing fuel into the upstream end portion of said flame tube;
an imperforate sleeve surrounding an upstream portion of said flame tube and spaced apart therefrom to longitudinally enclose an upstream portion of said first annular chamber and define a second annular chamber between said sleeve and said outer casing;
means for supporting said sleeve in said spaced apart position from said flame tube;
a wall member secured to said outer casing and substantially closing the downstream end of said second annular chamber;
at least one opening provided in the wall of said flame tube at a first station located intermediate the upstream and downstream ends thereof;
first conduit means extending from said second annular chamber into communication with said opening located at said first station for admitting a second stream of air from said second annular chamber into the interior of said flame tube;
at least one other opening provided in the wall of said flame tube at a second station located downstream from said first station for admitting a third stream of air from said first annular chamber into the interior of said flame tube; and
at least one opening provided in said wall member for providing communication between said second annular chamber and the portion of said first annular chamber downstream therefrom.

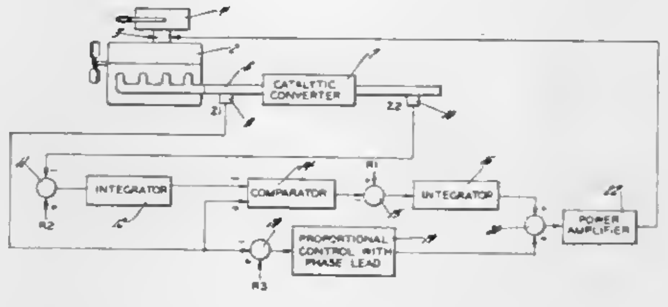
3,939,654
ENGINE WITH DUAL SENSOR CLOSED LOOP FUEL CONTROL

Weodell D. Creps, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 11, 1975, Ser. No. 548,969

Int. Cl.^{2} F02B *75/10*

U.S. Cl. 60—276 **6 Claims**



1. For use with an internal combustion engine including means for supplying air and fuel thereto in variable ratio and exhaust means including a catalytic converter effective, when supplied with exhaust gases containing air and fuel in a certain ratio, to accelerate simultaneously the oxidation of unburned fuel and the reduction of nitrogen oxides and characterized by time delay effects when the content of the gas introduced therein is varied, apparatus for controlling the ratio of air and fuel in said exhaust system to said certain ratio, said apparatus comprising:
means for generating a first signal indicative of the air-fuel ratio within said exhaust means upstream from said catalytic converter, said first signal generating means being characterized by time-related drift in closed cycle control operation;
means for generating a second signal indicative of the air-fuel ratio within said exhaust means downstream from said catalytic converter, said second signal generating means being characterized by catalytic converter-related, time-delayed response in relation to said first signal generating means; and
means for continually adjusting said fuel and air supply means to vary the ratio of fuel and air supplied to said engine in response to the direction of the deviation of said first signal from the time integral of the extent the second signal deviates from a fixed reference, said adjustment being in sense to reduce the deviation of the ratio of fuel and air in the exhaust means from said certain ratio.

3,939,655
ROTARY PISTON FOUR-STROKE INTERNAL COMBUSTION ENGINE

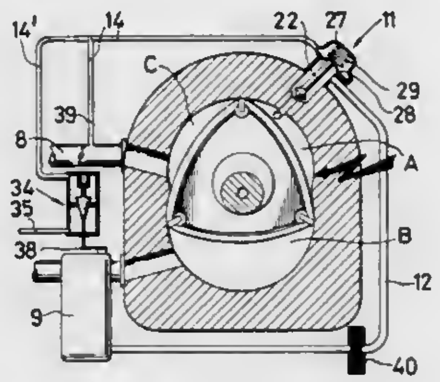
Max Ruf, Oberelsesheim, and Johannes Steinwart, Bad Friedrichshall II, both of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft and Wankel GmbH, both of, Germany

Filed Oct. 17, 1974, Ser. No. 515,645

Claims priority, application Germany, Oct. 19, 1973, 2352482

Int. Cl.^{2} F02B *75/10*

U.S. Cl. 60—286 **9 Claims**



1. A rotary piston four-stroke internal combustion engine of the trochoid type having a housing composed of a shell and two parallel end parts together bounding an inner chamber, a polygonal piston being rotatably arranged in the chamber, inlet and outlet passages being provided in the housing, respectively, for supply of air or fresh gas and for ejection of burned gases, the inlet passage being connected with an intake duct and the output passage with an exhaust gas reactor, a line leading from the region of the inner chamber where compression is taking place to the exhaust gas reactor, a valve being arranged in said line, the valve being controlled by the negative pressure in the intake duct in such a way that the line is cleared above a certain negative pressure and shut off below that value.

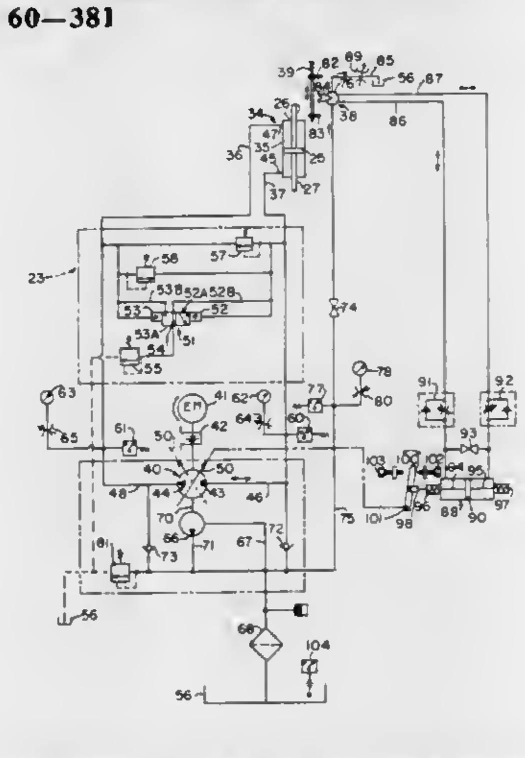
3,939,656
HYDROSTATIC TRANSMISSION PUMP

Harold A. Goldfein, Lincolnwood, Ill., assignor to Inca Inks, Inc., Northbrook, Ill.

Filed Feb. 2, 1973, Ser. No. 329,027

Int. Cl.^{2} F15B *9/04, 21/04*

U.S. Cl. 60—381 **10 Claims**



1. In combination with a well pumping apparatus having, a walking beam pivotally supported for rocking movement and adapted to have a polish rod connected to one end thereof and counterweights to its opposite end, double-acting hydraulic cylinder means operatively connected with said walking beam for imparting rocking movement thereto, and reversing control means operatively associated with said walking beam for sensing the movement of said beam and controlling the action of said double-acting cylinder means in driving said walking beam: a substantially closed circuit hydrostatic drive system operatively connected in driving relatinsip with said double-acting hydraulic cylinder means and operatively connected with said reversing control means for control thereby, said circuit hydrostatic drive system comprising, a variable displacement reversing swashplate pump, a prime mover operatively connected with said pump for driving the same at predetermined speed, hydraulic circuit means operatively interconnecting each of two discharge/return ports of said pump with one of two inlet/outlet ports of said double-acting hydraulic cylinder means, and means operatively interconnecting said reversing control means with the swashplate of said pump for reversing the same in synchronism with the rocking movement of said walking beam, said reversing control means including a four-way valve and actuating means therefor whereby each time said walking beam rocks up or down said four-way valve is actuated into one of its two operative positions, said four-way valve having a pressure inlet port interconnected with a pressure discharge connection of a make-up pump supplying fluid under pressure to said variable displacement reversing swashplate pump, an outlet port, and a pair of discharge/-return ports, and said four-way valve in one of its operative positions having one of said discharge/return ports in communication with said inlet port with the other discharge/return port in communication with said outlet port and in the other of its operative positions having said one of its discharge/-return ports in communication with said discharge port and having said other discharge/return port in communication with said inlet port, and wherein said means operatively interconnecting said reversing control means with the swashplate of said pump comprises a second double-acting cylinder means having two inlet/outlet ports each of which is interconnected with one of said discharge/return ports of said four-way valve whereby said second double-acting cylinder means is actuated in one direction when said four-way valve is in one of its operative positions, and linkage means operatively interconnecting said second double-acting cylinder means with said swashplate.

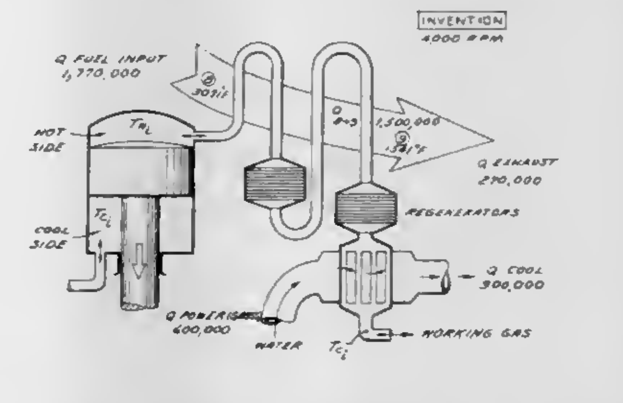
3,939,657
MULTIPLE REGENERATORS

Norman D. Postma, Northville, and David W. Barton, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sept. 5, 1974, Ser. No. 503,588

Int. Cl.^{2} F02G *1/04*

U.S. Cl. 60—526 **8 Claims**



1. In a hot gas engine having at least one high temperature space and at least one low temperature space, a high pressure gas in said spaces, and means for reciprocally displacing said high pressurized gas between said spaces, apparatus for transferring heat to said high pressure gas and for isolating the heat

content thereof to one zone of displacement of said gas, comprising:

a. heat source means effective to generate a heated medium within a first location, and

b. means defining heat conductive passages interconnecting said spaces and through which said high pressurized gas passes for displacement, said passage means having at least first and second heat accumulators disposed in a series therein with portions of said passages which are particularly disposed between said accumulators and portions which are disposed in advance of the first accumulator, said portions being directed through said first location for exposure to said heated medium.

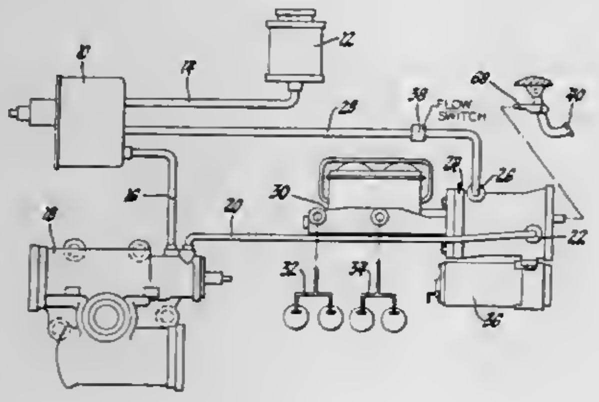
3,939,658
POWER BRAKE BOOSTER

Robert A. Horvath, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 21, 1974, Ser. No. 516,155

Int. Cl.² B60T *13/12*

U.S. Cl. 60—548 **3 Claims**



1. A hydraulic brake booster comprising:

a housing;

a power piston reciprocably received in said housing and defining therewith

first and second inlet chamber sections, said first section being operatively fluid connected to a source of hydraulic fluid pressure, said second section being in restrictive flow communication with said first section through a restrictive passage,

and an outlet chamber on the other side of said piston from said inlet chamber sections;

an input member;

valve means controlled by said input member for establishing a hydraulic pressure differential across said piston to actuate the booster;

an output member connected to said piston for transmitting forces between said booster and a brake master cylinder assembly;

said inlet chamber sections being pressurized substantially concurrently upon booster actuation with said second section freely receiving pressurized fluid through said restrictive passage from said first section until the rate of pressure increase in said first section exceeds the rate transmitrable through said restrictive passage, at which time said first section is pressurized at a faster rate than is said second section to move said piston and said output member in the brake actuating direction;

and check valve means between said second inlet chamber section and said outlet chamber permitting fluid flow from said outlet chamber to said second inlet chamber section when said piston is moved by pressure only in said first inlet chamber section, due to a high rate of pressure increase therein, and the consequent increase in volume of said second inlet chamber section at a rate faster than fluid can be supplied thereto through said restrictive passage, thereby preventing a vacuum block or retardation effect.

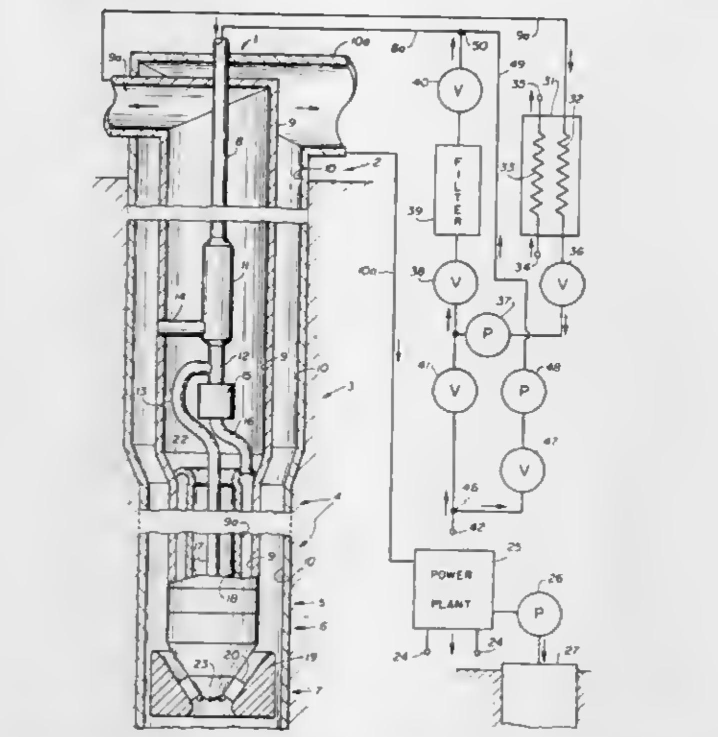
3,939,659
GEOTHERMAL ENERGY SYSTEM FLUID FILTER AND CONTROL APPARATUS

Hugh B. Matthews, Acton, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 10, 1974, Ser. No. 487,109

Int. Cl.² F03G *7/02*

U.S. Cl. 60—641 **9 Claims**



1. In geothermal deep well pump apparatus located at a subterranean source of geothermal well fluid and of the kind including deep well pump means for pumping said geothermal well fluid always in liquid state for flow in cooperative energy exchanging relation with respect to a second fluid toward the earth's surface:

conduit means for conveying said second fluid from a station adjacent the earth's surface at a first pressure above the pressure of said geothermal well fluid,

heat exchanger means responsive to said geothermal well fluid for converting said second fluid into a working fluid, said deep well pump means utilizing said working fluid for pumping said geothermal well fluid, and

filter means normally in series flow relation with said conduit means and said heat exchanger means including cavity means having a multiply-apertured upper portion, whereby said second fluid normally flows through said multiply-apertured upper portion, while particulate matter tends to be captured in a lower portion of said cavity means.

3,939,660
ACCELERATION CONTROL ARRANGEMENT FOR TURBINE SYSTEM, ESPECIALLY FOR HTGR POWER PLANT

Ola J. Aanstad, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 367,991, June 7, 1973, abandoned. This application Oct. 31, 1974, Ser. No. 519,703

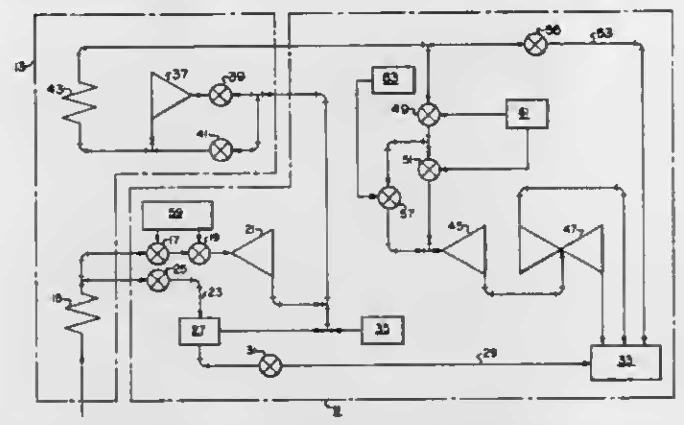
Int. Cl.² F01K *9/00*

U.S. Cl. 60—661 **31 Claims**

1. In a steam turbine system with first and second turbine stages and having first flow control valving in the flow path of the first turbine stage, a bypass line in parallel with the first flow control valving and the first turbine stage, first actuating means to adjust the first flow control valving, second flow control valving in the flow path of the second turbine stage, a bypass line in parallel with the second turbine stage and the second flow control valving, a second actuating means to adjust the second flow control valving, and an auxiliary steam turbine means connected in the flow path between the exhaust

of the first turbine stage and the inlet of the second flow control valving, the exhaust pressure of said auxiliary steam turbine means causing an elevated steam pressure at the inlet of the second flow control valving at least during acceleration of the turbine system, an improved acceleration control arrangement for bringing the turbine system to operating speed comprising:

second flow control valving connected to govern a flow of steam through the second turbine stage,



a start-up bypass valve connected across the second flow control valving; and

third actuating means to open said bypass valve upon latching of the turbine system and to close said bypass valve upon initial loading of the turbine system, the second actuating means not opening the second flow control valving until initial loading of the turbine system is begun.

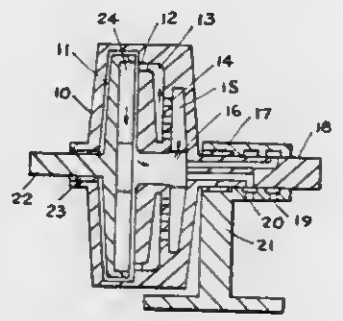
3,939,661
POWER GENERATOR

Michael Eskell, 7994-41 Locke Lee, Houston, Tex. 77042

Continuation-in-part of Ser. No. 386,273, Aug. 7, 1973, Pat. No. 3,879,152. This application Aug. 27, 1974, Ser. No. 501,064

Int. Cl.² F01K *27/00*

U.S. Cl. 60—682 **6 Claims**



1. A power generator comprising:

a. a support for supporting a shaft;

b. a shaft journalled in bearings in said support for rotation;

c. a rotating first rotor mounted on said shaft so as to rotate in unison therewith; said rotor being hollow for circulating a fluid therewithin; said rotor having a first cavity near the center of said rotor adapted for passing said fluid and connected with a second cavity extending outward from the center of said rotor; said second cavity having vanes therewithin for assuring that said fluid will rotate with said rotor for acceleration of said fluid for pressurization of said fluid; said second cavity having a plurality of discharge nozzles for passing said fluid into a third cavity, said third cavity being a caviry for forming a free vortex by said fluid; said second cavity discharge nozzles being located a predetermined distance away from the center of rotation of said rotor; said second cavity discharge nozzles being sized and shaped to obtain highest attainable exit velocity for said fluid from said nozzles for the pressure differential available between entry and exit ends of said discharge nozzles; said second cavity discharge nozzles being oriented to discharge said fluid in nearly tangentially forward direction that is in the direction of rotation of said first rotor; said fluid being pressurized within said third cavity by being forced to follow a curved path formed by said third cavity, with the highest fluid pressure existing at the radial distance furthest away from the center of rotation of said rotor; said fluid being then passed to exit nozzles from said third cavity with said exit nozzles being located near the periphery of said third cavity and with said exit nozzles being oriented to discharge said fluid in forward direction that is in the direction of rotation; said fluid being at a higher pressure at the entry to said third cavity exit nozzles than at the entry to said first cavity;

d. a second rotor for generating power and being rotatably mounted and supported by a shaft and bearings; said second rotor cavity at periphery being adjacent to said first rotor third cavity exit nozzles for receiving said fluid; said fluid being passed inward toward the center of rotation via inward extending fluid passageways with said inward extending fluid passageways being provided with vanes for assuring that said fluid will rotate with said second rotor and for recovery of the work associated with the deceleration of said fluid; said second rotor being sealed with said first rotor for retention of pressure of said fluid; said fluid being discharged from said second rotor near the rotor center with said fluid being passed into said first rotor first cavity;

e. a means for adding heat to said fluid.

3,939,662
LIQUID IMPERVIOUS SURFACE STRUCTURES

Herbert A. Volz, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 12, 1973, Ser. No. 426,675

Int. Cl.² E02D *3/00;* **C09J** *3/04;* **E02B** *5/02*

U.S. Cl. 61—1 R **19 Claims**

1. A liquid-impervious surface structure comprising an earthen foundation covered with a fabric wherein said fabric and a portion of said earthen foundation are permeated with an aqueous gel formed from a water-soluble polymer.

3,939,663
OIL FENCE HAVING DIRECTIONAL CONTROL DEVICE

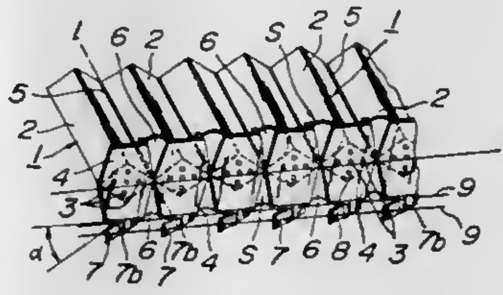
Toshiyata Tezuka; Hiroshi Kawakami, both of Kamakura, and Katsutoshi Miura, Yokohama, all of Japan, assignors to Bridgestone Tire Company, Ltd., Tokyo, Japan

Filed Sept. 27, 1974, Ser. No. 509,888

Claims priority, application Japan, Sept. 28, 1973, 48-112300[U]

Int. Cl.² E02B *15/04*

U.S. Cl. 61—1 F **4 Claims**



1. A floating oil fence for collecting floating pollutants from the water surface comprising:

a plurality of vertical skirt members, each of said members separating in proximity to the water surface;

a flexible membrane attached to said vertical skirt members and connecting them in a water tight manner;

a float associated with each of said vertical skirt members to float said skirt members on the water surface;
directional control means including rudder plates at a suitable angle to a plane of said vertical skirt and substantially perpendicular to the water surface, said control means being arranged on a portion of said vertical skirt under said water surface; and,
wherein said control means prevent said vertical skirt from being tilted by relative movement of the water caused by a towing of said oil fence or by the natural flow of said water, said control means thereby maintaining said fence in a longitudinal direction at a determined orientation.

3,939,664

LARGE DIAMETER TUBULAR PILES AND THE BEDDING THEREOF

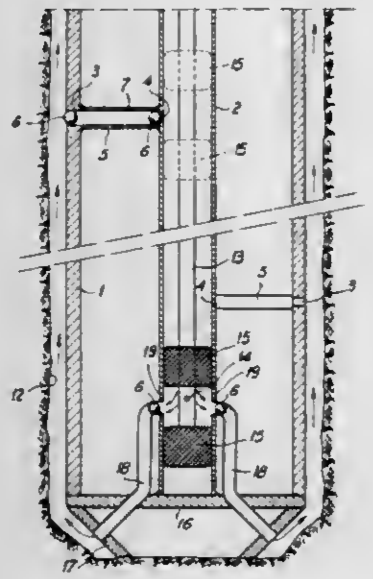
Georges Mazier, Avon; Jean Paul Geffriaud, Croissy-sur-Seine, and Daniel Gouvenot, Clichy, all of France, assignors to Solmarine S.A., Paris, France

Filed July 3, 1974, Ser. No. 485,705

Claims priority, application France, July 9, 1973, 73.25034

Int. Cl.² E02D *23/16, 5/22*

U.S. Cl. 61—53.58 **6 Claims**



1. A method of bedding a main tube of relatively large diameter in a borehole, comprising adding to the main tube to be bedded an auxiliary injection-tube of smaller diameter arranged in this main tube and which communicates with openings from the latter by means of sidepipes furnished with non-return valve means enabling the flow of an injection grout only from the auxiliary tube towards the main tube, and injecting grout into the borehole through said pipes and said openings by introducing into the auxiliary tube and injection-pipe having plugs which are arranged on opposite sides of a side pipe through which the grout is to flow.

3,939,665

METHOD FOR PROTECTING METAL H-PILING IN UNDERWATER ENVIRONMENTS AND PROTECTED H-PILING

Joseph F. Gosse, Coopersburg, and George V. Fehr, Nazareth, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

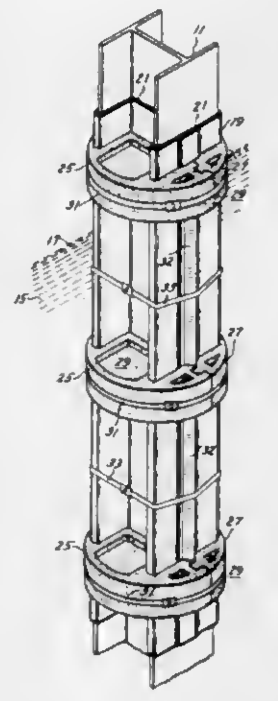
Filed Jan. 8, 1974, Ser. No. 431,814

Int. Cl.² E02D *5/60*

U.S. Cl. 61—54 **3 Claims**

1. An improved protective corrosion retarding shield assembly for protecting ferrous metal piling having a generally H-shaped cross-section from corrosion in submerged marine environments comprising:

a. a plurality of sheet-like plastic resin shield members having a contour conforming to the outer surface configuration of the H-piling for encompassing the surfaces of the pile in a circumferential close fitting layer of said shield members,
b. a viscous corrosion resistant material upon the inner surfaces of the shield members and adapted to be sandwiched between the plastic shield members and the surface of the pile to intimately engage the inner surfaces of the shield members and the outer surfaces of the pile, said viscous material serving to exclude passage of water between said pile and said shield members as long as said shield members are securely clamped against the external surfaces of the pile, and
c. a plurality of clamping members comprised of interengaging expanded plastic foam resin clamp sections having an internal surface configuration conforming to the outer surface configuration of the shield members, said internal surface configuration including pairs of spaced grooves for receiving the outer surfaces of the shield members which conform to the flanges of the H-pile and an internal contour between said grooves conforming to the outer surfaces of the portions of the shield members which conform on their internal surfaces to the web portion of the H-pile, for circumferential clamping at spaced intervals about the exterior of the shield members assembled about the surface of the pile and serving to maintain said shield members in a sealing relationship against the exterior surfaces of the pile in order to exclude water from passage between said shield members and said pile surface.



3,939,666

STILE AND MULLION HEATER CONTROL

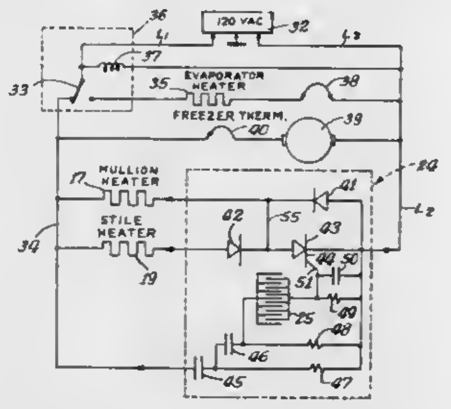
Larry Thomas Bashark, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 30, 1974, Ser. No. 510,485

Int. Cl.² F25D *21/08*

U.S. Cl. 62—150 **9 Claims**

1. In an apparatus having a cabinet with a refrigerated enclosure, and electrical heater means for preventing water condensation on the cabinet from ambient air surrounding the cabinet, control means for automatically controlling said heater means as a function of a condition of said ambient air, said control means comprising: power circuit means for providing electrical power to said heater means, said power circuit means providing a preselected full power to said heater means in a first state and a preselected partial power to said heater means in a second state; means for sensing said condition of the ambient air; and circuit means responsive to said sensing means for placing said power circuit means at all times selectively in one or the other of said first and second states as a function of said sensed ambient air condition.



3,939,667

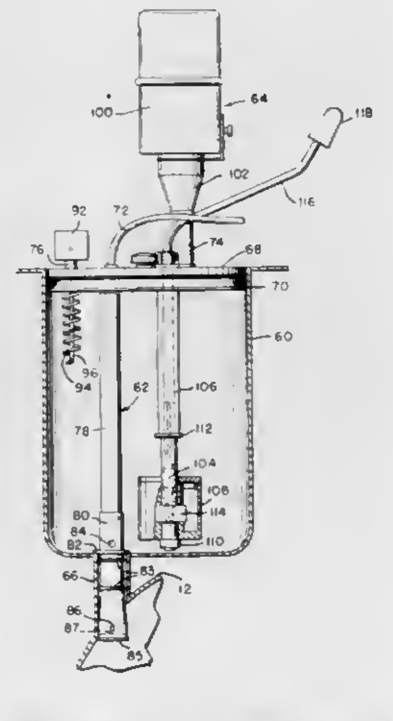
FROZEN CARBONATED DRINK DISPENSING SYSTEM

Maynard L. Halverson, Seattle, Wash., assignor to Sweden Freezer Manufacturing Co., Seattle, Wash.

Filed Sept. 9, 1968, Ser. No. 758,393

Int. Cl.² A23G *9/20*

U.S. Cl. 62—188 **7 Claims**



1. A frozen carbonated drink dispensing apparatus which comprises product freezing and dispensing means comprising a freezing cylinder pressure vessel and a frozen product dispensing valve communicating with said cylinder; and liquid mix supply means comprising a carbonated liquid mix reservoir pressure vessel, a mix entry tube extending between said reservoir and said freezing cylinder; means enabling said reservoir to be pressurized with CO_2 to a predetermined pressure level, a carbonated liquid mix valve in said tube communicating with said reservoir and with said cylinder for feeding liquid product under pressure from said reservoir into said cylinder according to the quantity of water and syrup in said freezing cylinder, and a carbonated water and syrup dispensing assembly communicating with said reservoir for charging said reservoir with proportioned quantities of carbonated water and syrup, said mix valve comprising a tubular valve sleeve removably positioned in said tube and opening into said freezing cylinder and communicating with the reservoir interior through a metering port, and a screened frozen product barrier removably fitted to the lower end of said sleeve to inhibit entry of frozen slush into said reservoir.

3,939,668

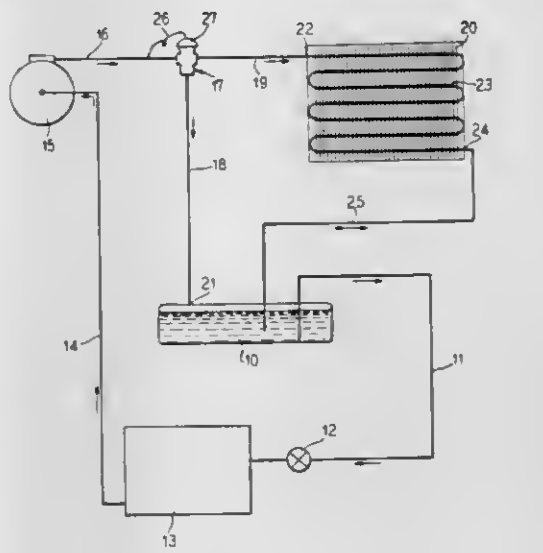
BALANCED LIQUID LEVEL HEAD PRESSURE CONTROL SYSTEMS

Herman H. Morris, P.O. Box 3129, Chattanooga, Tenn. 37404

Filed Nov. 21, 1974, Ser. No. 525,937

Int. Cl.² F25B *41/00*

U.S. Cl. 62—196 **2 Claims**



1. A method of maintaining balanced liquid level in a refrigerant condenser system, comprising the steps of driving refrigerant through a closed circuit in the form of a stream,
at a first point in the stream compressing refrigerant vapor to a pressure;
at a second point directing the compressed vapor to a liquid receiver when the pressure is low, to a vapor condenser when the pressure is high, and proportionately to the liquid receiver and the condenser when the pressure is intermediate, as a function of the pressure;
at a third point directing liquid to the condenser from the liquid receiver in a reversed flow when the pressure is low; and
at a fourth point directing liquid to an expansion valve and through an evaporator and back to the said first point,
thereby to operate said condenser at optimum capacity when ambient conditions give said condenser system an excess capacity, through control of said liquid level in said condenser.

3,939,669

COMBINATION LIQUID TRAPPING SUCTION ACCUMULATOR AND EVAPORATOR PRESSURE REGULATOR DEVICE INCLUDING A DRIER AND THERMOSTATIC EXPANSION VALVE

Ernest W. Schumacher, Portsmouth, Va., assignor to Virginia Chemicals Inc., Portsmouth, Va.

Division of Ser. No. 388,281, Aug. 14, 1973, Pat. No. 3,858,407. This application Oct. 30, 1974, Ser. No. 519,305

Int. Cl.² F25B *49/00*

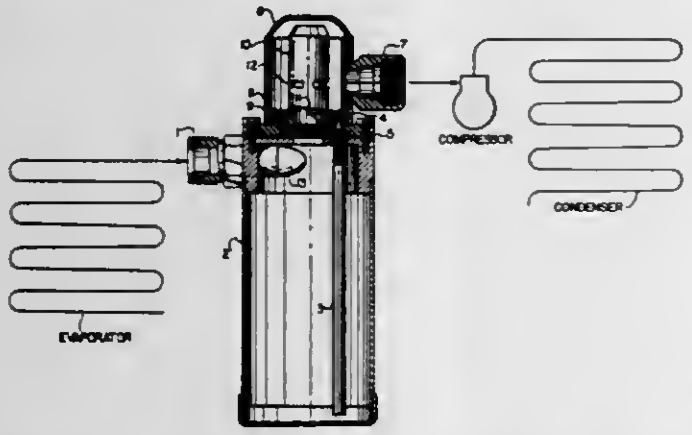
U.S. Cl. 62—217 **2 Claims**

1. A liquid trapping suction accumulator adapted for insertion in a vapor-compression regrigeration system between the evaporator and compressor, comprising:

A. an accumulator chamber defined by a casing vertically extending and having a top and a bottom;
B. inlet and outlet ports opening into the top of said chamber and respectively adapted for operative connection to said evaporator and said compressor;
C. an evaporator pressure regulator chamber interposed between said inlet and outlet ports in communication with said accumulator chamber, said chamber including:
   i. a pressure responsive evaporator pressure regulator device, vertically positioned in said evaporator pressure chamber proximate said outlet port, so as to gauge admission of vapor through said evaporator pressure regulator chamber and said outlet;

D. an eductor tube vertically extending independently from the bottom of said accumulator into said evaporator pressure regulator chamber whereby the pressure drop from said accumulator to said chamber controls both said regulator device and oil eduction;

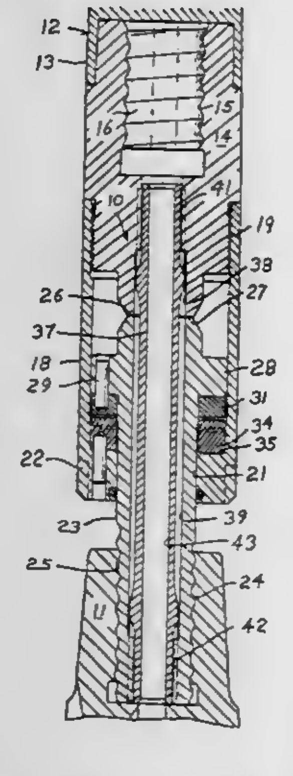
E. a drier and thermostatic expansion valve subassembly for gauging liquid flow from said drier to said evaporator said subassembly comprising a separate thermostatic expansion valve housing having a horizontally disposed exit for refrigerant to said evaporator and including a threadably removable filter drier casing vertically suspended from said valve housing and in flow communication between said entrance and said thermostatic expansion valve within said subassembly.



3,939,670
ROTATABLE DRILL STRING HAVING A TORSIONALLY ELASTIC SHAFT DRIVING CONNECTION WITH ROCK BIT

Lester A. Amtsberg, Utica, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed June 12, 1974, Ser. No. 478,471
Int. Cl.² F16D *3/14*
U.S. Cl. 64—27 B **2 Claims**

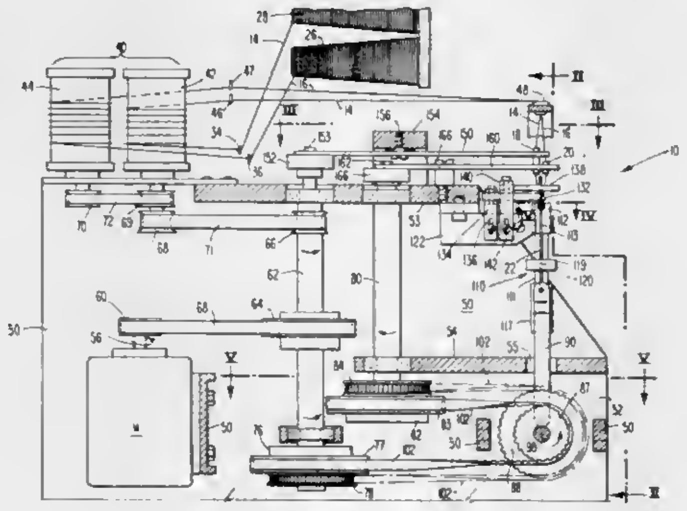


1. The combination comprising a continuously rotatable rock drill string having a drill pipe pilot section defining its forward end, a rock bit, and a unit for limiting excessive torque being imparted to the joints of the drill string drivingly connecting the pilot section with the rock bit; wherein the unit comprises an adapter section of drill pipe threadedly connected to the pilot section having an axially projecting thrust transmitting end face, a coupling threadedly connected to a lower end of the adapter section having an open upper end into which the thrust transmitting end face axially depends, a rock bit rod having a shank depending axially through a hole in a bottom end of the coupling carrying the rock bit at its bottom end, the shank having a collar about its upper end located within the coupling and a thrust receiving end face projecting axially above the collar in underlying abutment with the thrust transmitting end face, a driven clutch member defined by a ring of clutch jaws facing an annular undersurface of the collar, the coupling having an internal annular shoulder faced with an opposed ring of clutch jaws defining a driving clutch member, the jaws of each clutch member being spaced circumferentially from one another by spaces of greater circumferential dimension than the circumferential dimension of the jaws of the other clutch member, and the jaws of each clutch member having a normal position seated centrally of the spaces of the other clutch member, the rock bit having an axially extending bore opening through its thrust receiving end face aligned with an axially extending bore opening out of the thrust receiving end face of the adapter section, and a torsion shaft disposed in part in the bore of the adapter section and in part in the bore of the rock bit rod, wherein the shaft has at its upper end a splined driven connection with the adapter section and has at its lower end a splined driving connection with the rock bit rod.

3,939,671
MACHINE FOR KNITTING CORD-LIKE STRUCTURES

John B. Lawson, Providence, R.I., and Stephen C. Dangel, Cambridge, Mass., assignors to Lawson-Hemphill, Inc., Central Falls, R.I.

Filed June 10, 1974, Ser. No. 477,927
Int. Cl.² D04B *23/00, 27/00*
U.S. Cl. 66—86 R **32 Claims**



1. A machine for knitting cord-like structures having

a. at least one needle,

b. at least one movable guide for delivering a strand to the needle,

c. a crank for imparting reciprocatory movement to the needle,

d. a timing pulley connective operatively to the crank to drive the crank,

e. a shaft for imparting strand delivery movement to the guide,

f. the crank and the shaft having axes disposed in directions transverse to each other,

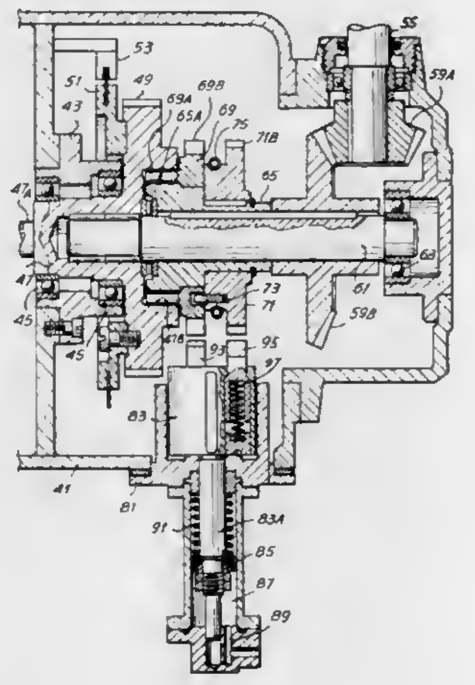
g. a timing pulley connected to the shaft and

h. an endless twisted timing belt connecting the shaft pulley to the crank pulley for driving the needle crank to cause the needle to reciprocate in timed relation to the strand delivery movement of the guide.

3,939,672
CLUTCH DEVICE FOR KNITTING MACHINES

Giorgio Billi, Viale Torricelli 23, Florence, Italy

Filed July 30, 1973, Ser. No. 383,521
Int. Cl.² D04B *15/66, 9/00*
U.S. Cl. 66—155 **1 Claim**



1. In a circular knitting machine having a continuously moving drive member and a driven member, a quick clutch means selectively coupling said continuously moving drive member and said driven member, said quick clutch means including a locking means which assures the locking of the driven member in a prescribed angular position upon disconnection from said drive member, said clutch means including a continuous circumferential surface on one of said members and a set of flats arranged on the other of said members to define with said circumferential surface a plurality of wedge spaces, a cage positioned between said circumferential surface and said set of flats and said cage including a plurality of roller elements confined in said wedge spaces to selectively couple said circumferential surface with said set of flats, said locking means being operatively engageable with said cage to selectively lock said driven member in a release position, and means responsive to disengagement of said locking means from said cage to couple the said circumferential surface with said set of flats, whereby said driven member is operatively connected to said drive member, said locking means including a first radially movable unit including a first rigid retaining tooth and a second radially movable unit including a second wedge-shaped spring-pressed retaining tooth, means for moving said rigid retaining tooth into engagement with one of a plurality of peripheral stops on the cage, and means for moving said wedge-shaped spring-pressed retaining tooth into engagement with one of a plurality of correspondingly shaped indentations on the periphery of said driven member, the configuration of said second spring-pressed wedge-shaped retaining tooth and the corresponding configuration of the indentations on the periphery of said driven member conforming with each other, thereby centering and correcting the stop position of the driven member upon engagement with said second retaining tooth.

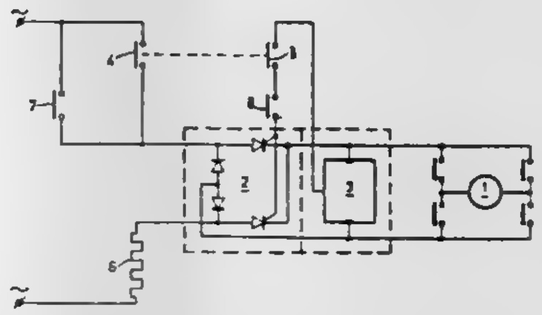
3,939,673
DEVICE FOR PREVENTING UNBALANCE IN WASHING MACHINES DURING SPINDRYING

Yves Albert Daniel Thibaut, Amiens (Somme), France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 13, 1974, Ser. No. 450,726

Claims priority, application France, Mar. 15, 1973, 73.09350

Int. Cl.² D06F *33/02*
U.S. Cl. 68—12 R **3 Claims**



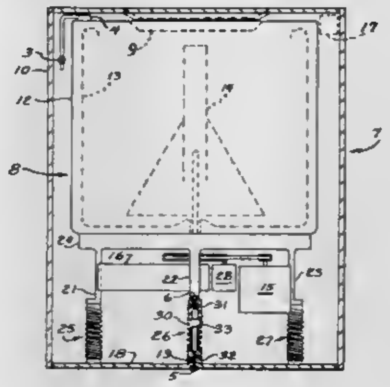
1. A device for preventing excessive imbalance in a clothes washing machine, comprising a drum driving motor, means for supplying voltage to the motor, regulating means sensitive to rotational speed of said motor for providing an output electrical control signal in response to said speed being below a predetermined speed, means for controlling voltage supplied by said supply means in response to an electrical control signal input, a water level switch contact for sensing a tub empty condition, an operating function controller contact for selecting a spin drying function, and means connecting said water level sensing contact and said operating function contact between the regulating means output and said voltage controlling means input such that voltage supplied to said motor will be controlled in response to said speed sensitive signal only when said spin drying function is selected and a tub empty condition is sensed.

3,939,674
SUSPENSION MOUNTING ASSEMBLY FOR AUTOMATIC WASHERS

James I. Czech, Lexington, Mass., and Roy C. Oakley, Jr., Coloma, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Continuation-in-part of Ser. No. 325,983, Jan. 23, 1973, Pat. No. 3,854,308. This application Nov. 26, 1973, Ser. No. 419,128. The portion of the term of this patent subsequent to Dec. 10, 1991, has been disclaimed.

Int. Cl.² D06F *37/24*
U.S. Cl. 68—23.3 **8 Claims**



1. In an automatic wash machine having a cabinet, a cabinet base, and a rotatable receptacle assembly within said cabinet for spin drying laundry therein,

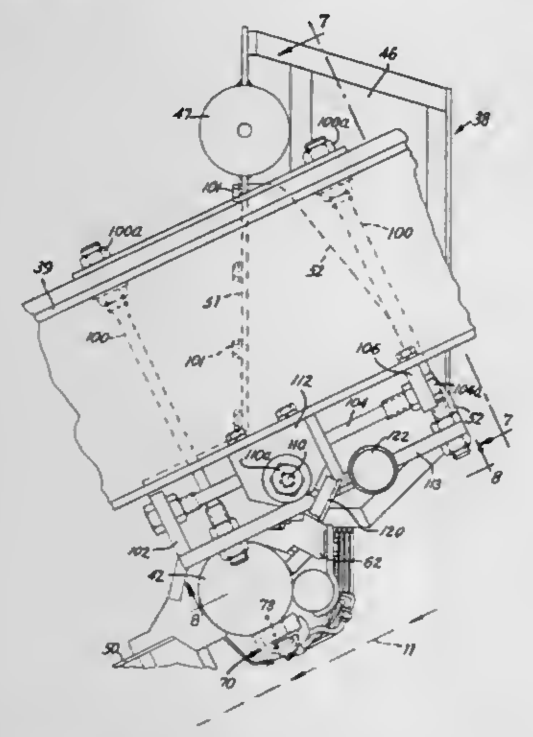
a suspension means for suspending said receptacle assembly within said cabinet and above said base,

said suspension means being formed by a plurality of vertically oriented spring assemblies each extending between

a pair of machine members composed of said receptacle assembly and said cabinet base,
each of said spring assemblies comprising,
a helical spring having a pair of opposed end regions,
an end member attached to each of said end regions,
each of said end members further being connected to a different one of said machine members,
said receptacle assembly suspended by the springs constituting a displaceable system subject to horizontal excursion during unbalanced rotatable spin drying,
one of said end members having a projection with a free end thereof extending into the coils longitudinally
within a portion of said helical spring, the outer side surface portions of said projection normally being spaced from the inner surface portions of said helical spring in the absence of any substantial horizontal displacement of said receptacle assembly and affording no vertical dampening when so spaced,
said outer side surface portions of said projection being engageable with said inner surface portions of said helical spring for sliding frictional contact therebetween beginning adjacent said free end of said projection in response to substantial horizontal displacement of said receptacle assembly to oppose and dampen vertical forces acting on the receptacle assembly, and
the degree to which vertical forces are opposed and dampened increasing proportionately as a function of the magnitude of such horizontal movement.
thereby to contribute to preventing the receptacle assembly from contacting the cabinet.

3,939,675
APPARATUS FOR DYEING AND PRINTING MATERIALS HAVING IMPROVED MEANS FOR SUPPORT THEREOF

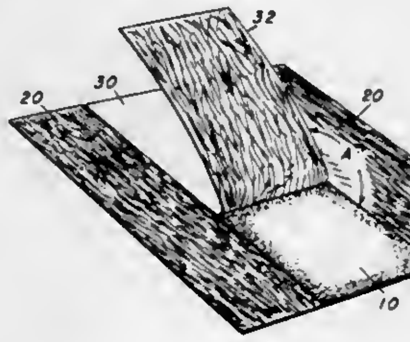
Norman E. Klein, Inman, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed May 17, 1974, Ser. No. 471,109
Int. Cl.² D06B *1/02*
U.S. Cl. 68—205 R **8 Claims**



1. In apparatus for applying dye to a moving material to print a pattern thereon including means for moving the material in a path of treatment, an elongate dye jet gun bar having a plurality of dye emitting jet orifices along the bar for directing dye in plural streams onto the material, a support frame for positioning the gun bar adjacent the path of material treatment, and means for attaching the gun bar to the support frame; the improvement wherein said attaching means comprises elongate resilient rod means at each end of said gun bar having one end attached to said gun bar and the other end attached to said support frame to supportingly suspend said gun bar on said support frame, and means operatively connecting said gun bar and said frame for applying multidirectional forces to said gun bar to bend said resilient elongate rod means and thereby adjustably position said gun bar relative to said support frame and said path of material treatment.

3,939,676
ADHESIVE GUARD HAIR REMOVAL

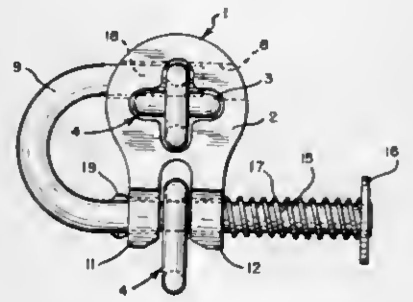
Nicholas D. Gallagher, Troy; Herbert N. Johnston, Columbus, both of Ohio; Robert J. Vallhura, Lexington, Mass., and Henry E. Hull, Columbus, Ohio, assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.
Division of Ser. No. 687,510, Dec. 4, 1967. This application Sept. 25, 1970, Ser. No. 75,398
Int. Cl.² C14B *15/00*
U.S. Cl. 69—22 **10 Claims**



1. A method for selectively removing guard haid from animal pelts chosen from the group consisting of fur seal, beaver, otter, coney, muskrat and nutria which comprises:
pressing an adhesive coated substrate against the guard hair of said animal pelt, said adhesive comprising a polyvinyl acetate emulsion, and
pulling the substrate away from the pelt thereby removing guard hair from the pelt without substantial removal of fur which underlies the guard hair.

3,939,677
THEFT DETERRENT CHAIN LOCKING DEVICE

Walker E. Drayton, York, Pa., assignor to American Chain & Cable Company, Inc., Bridgeport, Conn.
Filed Apr. 23, 1973, Ser. No. 353,461
Int. Cl.² E05B *73/00*
U.S. Cl. 70—14 **3 Claims**

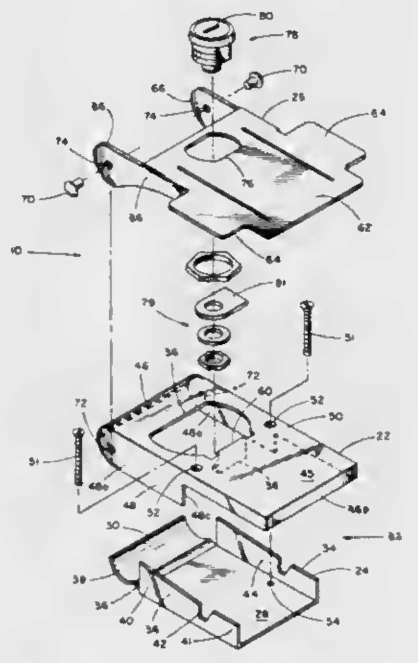


1. An adjustable locking device comprising:
a. a chain;
b. a locking shackle having an extended arm portion;
c. an adjustment device including:
1. a first orifice extending therethrough for slidably receiving the chain and holding it against rotation,
2. a second orifice extending crosswise of the first orifice for receiving the shackle member in the path of axial movement of alternate links of the chain, and
3. spaced apertured flanges for receiving the end link of said chain therebetween and the extended arm of the shackle member therethrough; and

d. spring means mounted about the extended arm and urging the body member in one direction to normally position the shackle in the second orifice of said body member.

3,939,678
TELEPHONE LOCKING APPARATUS

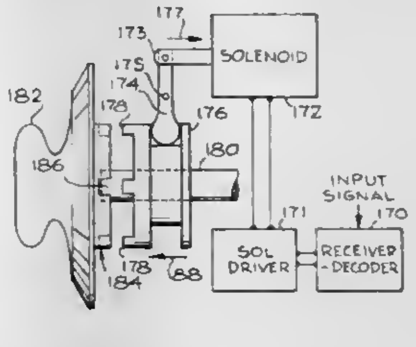
Floyd M. Wagoner, Merrillville, Ind., assignor to New Product Development Corporation, Chicago, Ill.
Filed Jan. 6, 1975, Ser. No. 538,811
Int. Cl.² E05B *65/00*
U.S. Cl. 70—57 **10 Claims**



1. An apparatus for locking a telephone, said telephone having a switch hook and a handhold shelf, comprising, in combination:
means for rigidly attaching said apparatus to said telephone, said attaching means including a base plate, a keeper plate, and means for adjustably securing said base plate to said keeper plate, said keeper plate having a pair of side walls, said side wall having a first end portion, an intermediate portion and a second end portion, said side wall having a height greatest at said first end portion and inclining downwardly from said first end portion to said intermediate portion, said first end portion engaging said base plate in an assembled state, said base plate, keeper plate and securing means cooperatively defining jaw means for adjustably clamping said handhold shelf, said keeper plate pivoting substantially about said engagement of said first end portion and said base plate as said securing means is adjusted;
a locking plate hingedly connected to said attaching means and operable in at least a first state, said locking plate engaging and depressing said switch hook in said first state; and
means for selectively interlocking said locking plate and said attaching means whenever said locking plate is in said first state, said interlocking means being fixedly secured to said locking plate, said attaching means substantially enclosing said interlocking means in said first state, whereby tampering with said interlocking means in said first state is substantially avoided.

3,939,679
SAFETY SYSTEM

James N. Barker, Ontario, and Edward A. Cartwright, Montclair, both of Calif., assignors to Precision Thin Film Corporation, Los Angeles, Calif.
Continuation-in-part of Ser. No. 371,378, June 19, 1973, abandoned. This application Mar. 18, 1974, Ser. No. 451,975
Int. Cl.² E05B *47/00*; F41C *17/00*; G08B *13/08*
U.S. Cl. 70—277 **10 Claims**



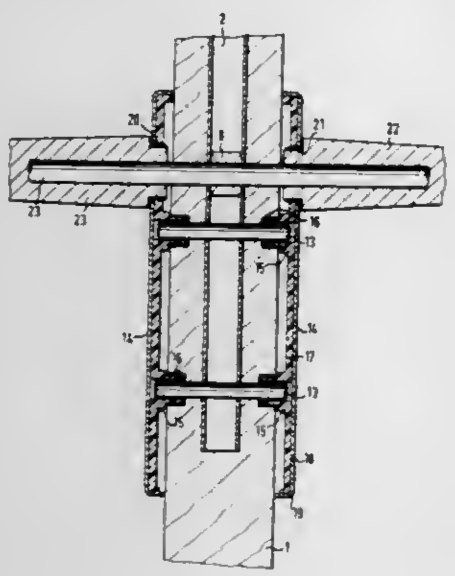
1. In a safety system:
a. first operating means;
b. disabling means coupled to said operating means to prevent the operation thereof; and
c. enabling means including a first portion and a second portion;
said first portion being adapted for carrying upon the person of authorized personnel and including a source of signals having predetermined, distinctive characteristics;
said second portion including means coupled to said disabling means for effectively decoupling said disabling means from said operating means only in response to said signals having said predetermined, distinctive characteristics;
said enabling means also including distinct, self-contained first and second power supplies in said first and second portions thereof respectively, at least said second power supply containing a rechargeable power source, and means for transferring electrical energy from said first portion to said second portion for charging said rechargeable power source by an inductive coupling established when said two portions are adjacent one another in a predetermined juxtapositon.

3,939,680
INSTALLATION FOR MOUNTING A DOOR PANEL OR ROSETTE ON A DOOR

Karl-Josef Heidkamp, Velbert, Germany, assignor to Otto Grossstelnbeck GmbH, Velbert, Germany
Filed May 1, 1973, Ser. No. 356,191
Claims priority, application Germany, May 9, 1972, 2222717
Int. Cl.² E05B *15/02*
U.S. Cl. 70—452 **15 Claims**

1. In an installation for mounting a door panel on at least one side of a hollow door; including a door lock-containing receptacle being positioned within the door from the forward surface thereof; at least one fastener means for securing said door panel to said door and being invisible from exteriorly of said door panel being immovably secured in said door in a direction towards the plane of the door; and fastener connecting means cooperating with said fastener means for securing said door panel against axial movement, the improvement comprising: said fastener means including at least one fastening pin located in a breakthrough in said receptacle in a gripping engagement, the ends of said pin projecting outwardly of and normally to the two surfaces of the door; said door panel including an outer ornamental plate portion and an inner plastic material portion fixedly connected thereto positioned intermediate the surface of the door and said plate portion, projecting means integrally formed with said plastic material

portion and facing said pin, a bore formed in said projecting means in coaxial alignment with said pin, said pin having the end proximate said projecting means inserted into said bore in interference fit for preventing axial movement therebetween and to fixedly mount said door panel on said door.



3,939,681

METHOD OF EXPLOSIVELY EXPANDING TUBES

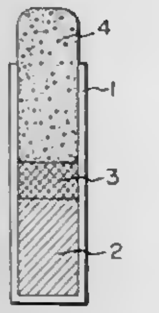
Hirohiko Yoshitomi; Junji Hasbimoto; Taro Kodama, and Fujiharu Hirose, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 17, 1974, Ser. No. 480,297

Claims priority, application Japan, July 4, 1973, 48-74738; July 4, 1973, 48-74739; Nov. 16, 1973, 48-128156

Int. Cl.² B21D *26/02*

U.S. Cl. 72—56 **11 Claims**



1. A method of securing the tube ends of a plurality of explosively expandable metallic tubes to a tube plate in which said tubes are inserted, which comprises the steps of:

1. inserting a cartridge containing an explosive charge in each of the metallic tubes to be secured to the tube plate, there being heat sensitive means in operative proximity to each of said explosive charges, each of said heat sensitive means having an end portion projecting beyond the tube in which said cartridge is inserted; and
2. successively igniting said heat sensitive means thereby successively to explode said explosive charges and expand said expandable metallic tubes by applying heat energy to said heat sensitive means through heating means positioned adjacent said projectend portions to successively transfer heat energy to said heat sensitive means.

3,939,682

METHOD AND MACHINE FOR USE IN HYDROSTATIC EXTRUSION

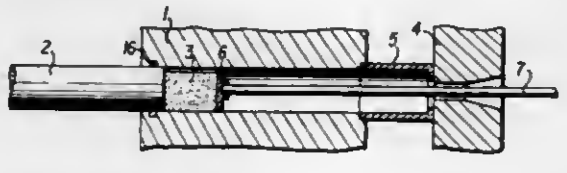
Masao Nishihara, Kyoto; Yoshihiro Yamaguchi, Ashiya; Tomiharu Matsushita, Nishinomiya; Tatsuo Yamasaki, Kobe; Masataka Nogushi, Nishinomiya, and Nishioka, Kunihiko, Kobe, all of Japan, assignors to Kobe Steel Ltd., Kobe, Japan

Filed Sept. 19, 1973, Ser. No. 398,861

Claims priority, application Japan, Sept. 19, 1972, 47-93997

Int. Cl.² B21C *33/00*

U.S. Cl. 72—60 **5 Claims**



1. A method of use in hydrostatic extrusion comprising the steps of:

sealing a stem in the rear portion of a container in a fluid-tight manner;

inserting, from the forward end of said container, a lump of viscous pressure medium being capable of hydrostatically transmitting pressure, into the rear portion of said container;

subsequently charging, from the forward end of said container, a pre-heated billet together with a die mounted at the front end of said billet into said container, thereby causing said pressure medium to fill around said pre-heated billet, discharging substantially all air from said container, before any excess flow of said pressure medium flows out of said container;

immediately thereafter, elevating the pressure required for hydrostatic extrusion by pushing said stem forwardly from said rear portion of said container such that homogeneous pressure is hydrostatically applied to said billet by means of said viscous pressure medium.

3,939,683

PIERCING TOOLS

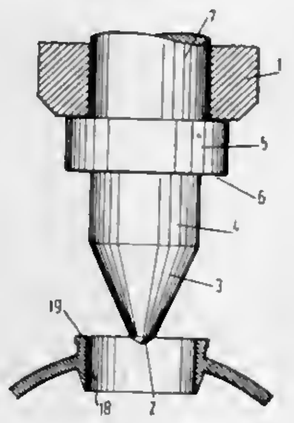
Johannes Adrianus van Geffen, Oratoriumstradt 9, Apeldoorn, Netherlands

Filed Dec. 19, 1974, Ser. No. 534,412

Claims priority, application Netherlands, Nov. 28, 1974, 7415559

Int. Cl.² B21D *28/36*

U.S. Cl. 72—71 **5 Claims**



1. A rapidly rotatable piercing tool of hard material for forming, substantially by frictional heat and pressure, a hole surrounded by a boss in a metal plate or the wall of a metal pipe, the active part of said tool for making the diameter of the hole to size having a leading portion extending to and tapering towards the free end of the tool, said active part of the tool having cross sectional areas, of each one of which the basic shape is an equilateral triangle, each cross sectional shape consisting in and near each apex of said triangle of two arcs adjoining each other and touching the circumscribing circle of said triangle at the respective apex and of connecting lines interconnecting and blending with said arcs, the radii of curvature of said arcs being smaller than that of said circumscribing circle and the arcs which extend from the apices of the triangle in the direction of rotation of the piercing tool having a radius of curvature which is smaller than any radius of curvature of the arcs extending from said apices in the opposite direction.

3,939,684

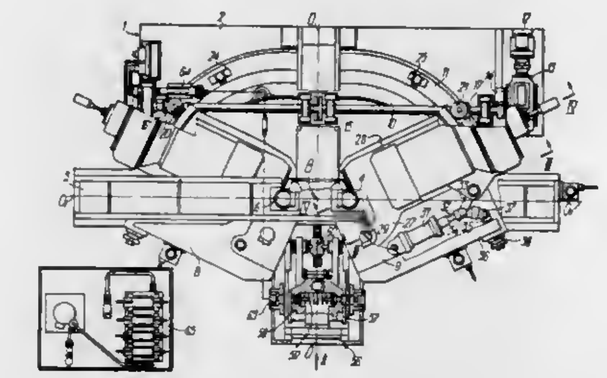
TWO-ROLL MACHINE FOR ROLLING-OUT DISC-TYPE ARTICLES

Alexei Kirillovich Ignatiev, Volgogradsky prospekt, 71, kv. 167; Nikolai Ivanovich Volodin, Pyatnitskaya ulitsa, 2, kv. 39; Mikhail Yankelevich Alshits, 16 Parkovaya ulitsa, 39, kv. 33; Evgeny Rozhdenevich Maskulia, M.Kalitnikovskaya ulitsa, 5, kv. 102; Alexandr Khaimovich Grailer, Lesnaya ulitsa, 8/12, kv. 29; Lia Menakhimovna Kurs, ulitsa Vorovskogo, 28, kv. 10; Jury Ivanovich Zelenov, Bolshevistsky pereulok, 11, kv. 6; Erlina Mavrikievna Rakhmanova, Zatsepsky val, 10/22, kv. 4; Nikolai Alexandrovich Cherchintsev, deceased, late of Moscow; by Nonna Alexeevna Krasilnikova, administrator, M.Kalitnikovskaya ulitsa, 5, kv. 72, and by Alexandr Nikolaevich Cherchintsev, administrator, Molodogvardeiskaya ulitsa, 28, korpus 1, kv. 67, all of Moscow, U.S.S.R.

Filed July 31, 1974, Ser. No. 493,734

Int. Cl.² B21H *5/00*

U.S. Cl. 72—86 **1 Claim**



1. A two-roll machine for rolling-out disc-type articles, comprising: a portal-type bed; circular guides fastened to said bed; two slide rests arranged on said circular guides rotatable about vertical shafts attached to said bed; rolling heads mounted each in one of said slide rests movable with respect to the corresponding slide rest; rolling rolls with a rotating gear with each roll being set up in one of said heads; a gear for turning the slide rests along the circular guides, said gear being installed on said bed; a gear for carrying said heads relative to said slide rests; a carriage with an article clamping gear, said carriage being movably mounted on said bed to introduce the article into the rolling zone and to withdraw it herefrom; a carriage transfer gear set up on the bed, and linked mechanically to said rest turning gear; drives for the above-mentioned gears.

3,939,685

MECHANISM FOR CENTERING METAL HOLLOW BODIES DURING A DRAWING OPERATION

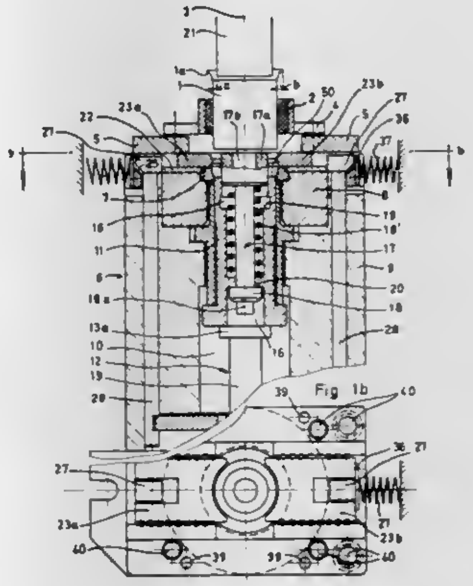
Wilhelm Hortig, Auerbach, Germany, assignor to KM Engineering AG, Basel, Switzerland

Filed Sept. 16, 1974, Ser. No. 506,657

Claims priority, application Switzerland, Sept. 19, 1973, 13466/73

Int. Cl.² B21D *22/30*

U.S. Cl. 72—361 **6 Claims**



1. A mechanism for centering drawn metal hollow bodies in front of a die of an ironing tool where each metal hollow body has a flared section along the edge zone of its open face, said mechanism comprising:

- a. at least two centering-cheeks adapted to the circumference of the metal hollow body,
- b. said centering-cheeks being movably supported for sliding movement within a place extending transversely to the tool axis and in a direction toward and away from the tool axis,
- c. a crossbar disposed across the bottom of a housing for the die,
- d. a main ejector slidingly supported in the die housing,
- e. said main ejector including a freely slidable section disposed above the crossbar and a rod lying under resilient prestress,
- f. said rod being guided concentrically with the crossbar and including an area portion which, upon ejection motion of the rod, lies against said slidable section to cause said section to slide away in front of the rod,
- g. said crossbar having a central bore with a cross section which is greater than that of the top part of the rod but smaller than said area portion facing the crossbar of said slidable section, and
- h. mechanical control means for effecting periodic opening motion of said centering-cheeks in a direction away from the tool axis in dependence upon the motion of a draw punch,
- i. said control means being effective to cause the centering-cheeks to embrace the hollow body centeringly at at least a fraction of its overall height and after it has been thrust into the die by the draw punch,
- j. said control means including means for withdrawing said centering-cheeks away from the circumference of the hollow body at a time just before said flared section passes thereby and by an amount equal to at least the radial dimension of the flared section.

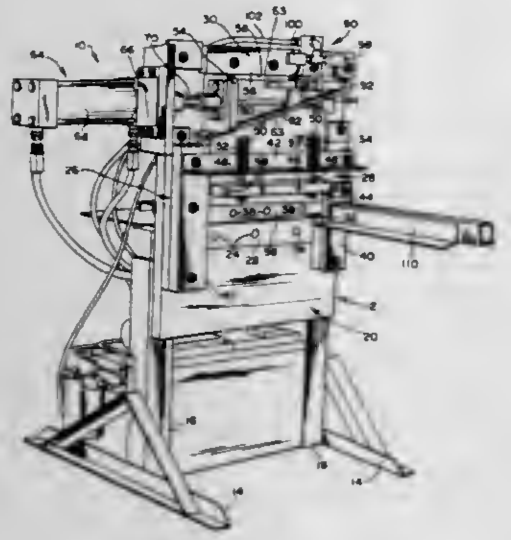
3,939,686
WEDGE ACTUATED CUTTING AND/OR FORMING TOOLS

Andrew C. Walters, Dallas, and William M. Goss, Richardson, both of Tex., assignors to Fabco, Incorporated, Lewisville, Tex.

Division of Ser. No. 331,237, Feb. 9, 1973. This application July 15, 1974, Ser. No. 488,792

Int. Cl.² B21D *7/06*

U.S. Cl. 72—441 3 Claims



1. A press brake comprising:
- a generally vertically extending frame including a pair of vertically extending guide portions and a hydraulic fluid reservoir containing a substantial quantity of hydraulic fluid, whereby the hydraulic fluid reservoir and the hydraulic fluid therein tend to stabilize the press brake and tend to absorb vibrations caused by the operation thereof;
- a fixed platen extending between the upper ends of the guide portions of the frame and supporting a first forming tool;
- a movable platen slidably supported on the guide portions of the frame beneath the fixed platen and supporting a second forming tool;
- a backup extending between the lower ends of the guide portions of the frame;
- a wedge mounted between the backup and the movable platen for lateral reciprocation with respect thereto;
- said wedge and backup including cooperating camming surfaces whereby the movable platen is reciprocated toward and away from the fixed platen in response to lateral reciprocation of the wedge;
- said hydraulic fluid reservoir being positioned beneath the fixed platen, the movable platen, the backup and the wedge;
- a hydraulic cylinder mounted on the frame and operatively connected to the wedge and having a predetermined maximum stroke;
- switch means including portions mounted on the wedge for reciprocation therewith to effect reciprocation of the hydraulic cylinder through a stroke shorter than the predetermined maximum;
- hydraulic pump means mounted on the frame for withdrawing hydraulic fluid from the hydraulic fluid reservoir and supplying pressurized hydraulic fluid; and
- valve means for controlling the flow of pressurized hydraulic fluid from the hydraulic fluid pump means to the hydraulic cylinder and thereby selectively reciprocating the wedge and the movable platen.

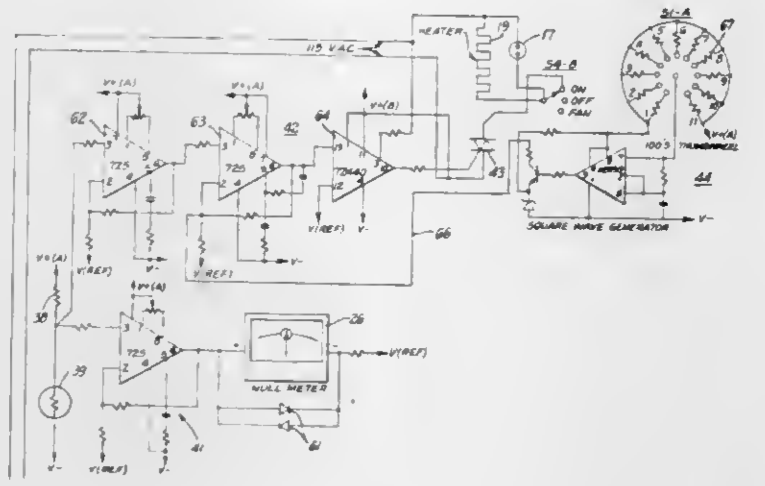
3,939,687
TEMPERATURE CALIBRATION SYSTEM

Bradley C. Waldron, Canoga Park, Calif., assignor to King Nutronics Corporation, Woodland Hills, Calif.

Filed July 15, 1974, Ser. No. 488,586

Int. Cl.² G01K *15/00;* **G05F** *11/16*

U.S. Cl. 73—1 F 6 Claims



1. In an on-off zero crossing non-proportional control circuit for a system for providing an accurate temperature for calibration of a temperature probe, the system including a well with a heater, a heat sink having an opening for receiving a temperature probe, and a temperature sensing resistor, the combination of:
- a bridge circuit with four legs and four corners, and having a temperature setting resistance in at least one leg and having said temperature sensing resistor in another leg, said temperature setting resistance being manually variable to designate a desired temperature;
- a voltage source connected across first and second opposite corners of said bridge;
- a bridge null indicator having first and second inputs;
- first amplifier means having the third corner of said bridge connected as an input and providing a reference voltage as an output;
- second amplifier means having the fourth corner of said bridge and said reference voltage connected as inputs and providing an output varying as a function of the difference of said inputs, and including an on-off circuit and threshold detector for switching the output between full on and full off;
- switching means for connecting said heater to a power source;
- means for connecting said second amplifier means output to said switching means in controlling relation;
- means for connecting said reference voltage and said fourth corner to said indicator inputs with said indicator indicating a null when the well temperature is substantially at the desired temperature;
- a pulse generator providing a pulse train output;
- means for setting the pulse rate of said generator as a function of said desired temperature with a higher rate for a higher temperature; and
- means for connecting said generator pulse train output to said second amplifier means for controlling said switching means and limiting the full on output when the well temperature is less than a predetermined amount less than the desired temperature so that said heater is energized during only a portion of each cycle of the pulse generator output.

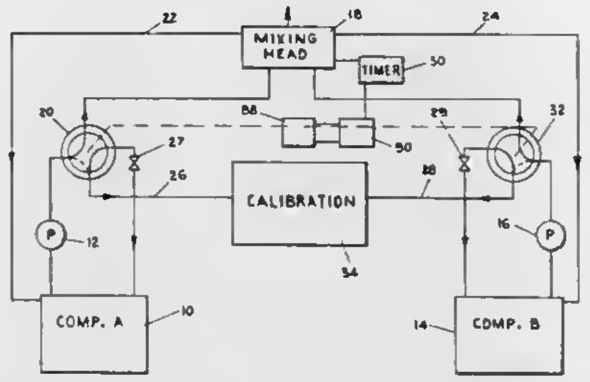
3,939,688
VOLUMETRIC CALIBRATION

Dieter R. Misch, Tallmadge, and Otto A. Hulber, Barberton, both of Ohio, assignors to Edge Saw Manufacturing Company, Grand Rapids, Mich.

Filed Sept. 16, 1974, Ser. No. 506,356

Int. Cl.² G01F *25/00*

U.S. Cl. 73—3 8 Claims



1. A volumetric calibration device for measuring amounts of at least one moisture sensitive liquid material flowing in a liquid circulating system, said device comprising:
- volumetric holding means;
- measuring means on said holding means for ascertaining the amount of material being contained therein;
- valve means in flow communication with said holding means and said liquid circulating system, said valve means being capable of selectively controlling the flow of liquid material to said holding means and from said liquid circulating system;
- means for returning the liquid material from said holding means to said liquid circulating system; and
- drive means in flow communication with said holding means for displacing the liquid material contained in said holding means to return said liquid material through said liquid material returning means to said liquid circulating system, said drive means including a moisture-free fluid material inert with respect to said one liquid material and means for selectively pressurizing said inert fluid material, and further comprising a solid movable separator in said volumetric holding means to separate said one liquid material from said inert fluid material;
- whereby said liquid can be supplied and returned to said circulating system without contamination or exposure to the operators.

3,939,689
METHOD AND APPARATUS FOR DISTINGUISHING APERIODIC NOISE INPUT SIGNALS FROM PERIODIC INPUT SIGNALS DURING MEASUREMENT

Pierre Desarzens, Bienne, Switzerland, assignor to Omega, Louis Brandt & Frere S.A., Bienne, Switzerland

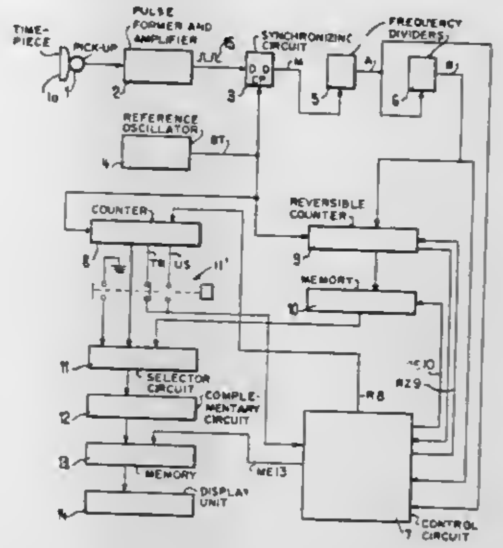
Filed Sept. 29, 1972, Ser. No. 293,642

Claims priority, application Switzerland, Oct. 5, 1971, 14552/71

Int. Cl.² G04B *17/00*

U.S. Cl. 73—6 6 Claims

1. An apparatus for distinguishing aperiodic noise signals from period input signals comprising a pulse counter, a reference generator adapted to produce pulses at a constant reference frequency, an indicating unit adapted to indicate a measuring value, means for transmitting reference pulses from said generator to said pulse counter, a control circuit interconnected with said transmitting means and said pulse counter for controlling transmission and addition of reference pulses from said generator into said counter during a predetermined number of cycles of said input signals and for transmission and subtraction of reference pulses during an equal number of cycles of said input signals, and a memory for storing the results of the addition and subtraction of pulses in said counter, wherein said counter is controlled to add reference pulses during a half cycle of said input signals, to subsequently subtract reference pulses during a full cycle of said input signals, and then to add reference pulses during a half cycle of said input signals, the counting result of these operations being stored in said memory.



3,939,690
DEVICE FOR MEASURING FRICTION AND WEAR UNDER SURROUNDING HIGH PRESSURE

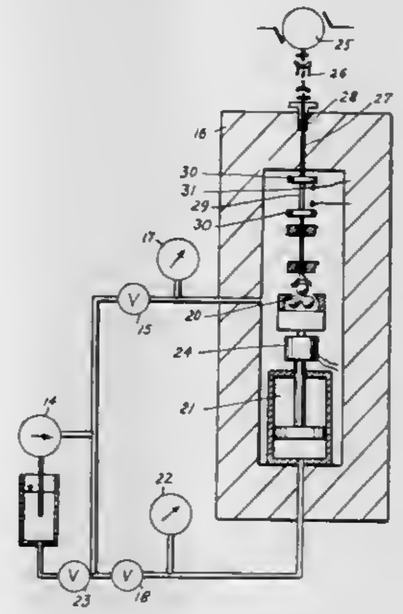
Eduard Kuss, Hannover, and Friedhelm Hotte, Misburg, both of Germany, assignors to Edward Kuss, Hannover, Germany

Filed Apr. 16, 1974, Ser. No. 461,327

Claims priority, application Germany, Apr. 18, 1973, 2319668

Int. Cl.² G01N *3/56, 19/02*

U.S. Cl. 73—9 18 Claims



1. A device for measuring friction and wear under coexisting surrounding high pressure, comprising:
- a. a high-pressure autoclave including walls defining a chamber,
- b. means for supporting at least one test element in said chamber,
- c. a rotatably mounted drive shaft extending through a wall from the exterior to the interior of said chamber and arranged to rotate said support means in said chamber,
- d. a pressure-tight seal between said drive shaft and said wall,
- e. means for applying fluid pressure in said chamber,
- f. means located in said chamber for exerting contact pressure in the form of a unidirectional load on said test element,

- g. means located in said chamber for detecting the torsional moment applied to said test element and comprising a torsional rod extending between said drive shaft and said support means, a pair of magnetized discs spaced on said torsional rod and a pair of stationary inductive scanning heads positioned within said chamber, and
- h. means outside said chamber for indicating both said contact pressure and said torsional moment as detected by said detecting means.

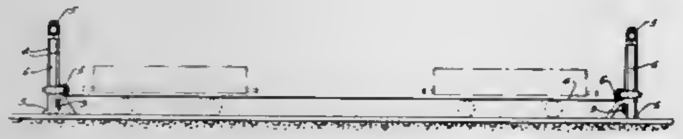
3,939,691
METHOD AND APPARATUS FOR IMPACT TESTING RAILROAD CARS

Tzvyatko Penchev Stanev, and Adrian Kostov Lambiev, both of Sofia, Bulgaria, assignors to DSO "Bulgarski Darjavni Jeleznitzi", Sofia, Bulgaria

Filed Sept. 10, 1973, Ser. No. 396,049

Int. Cl.² G01M *17/04*

U.S. Cl. 73—11 **13 Claims**



1. A method of impact-testing a railway car comprising the steps of:
   - entraining a first railway car along a stretch of track from an initial position with a drive rope displaced alongside said track;
   - intercepting the first railway car with a second railway car under impact, thereby causing said second railway car to rebound along said track in the direction of displacement of the first railway car;
   - braking the momentum of said second railway car while storing force upon the braking of the momentum of said second railway car; and
   - displacing said second railway car in the opposite direction along said track at least in part with the stored force.

3,939,692
ASSEMBLY FOR TESTING SHOCK ABSORBERS INCORPORATED IN VEHICLES

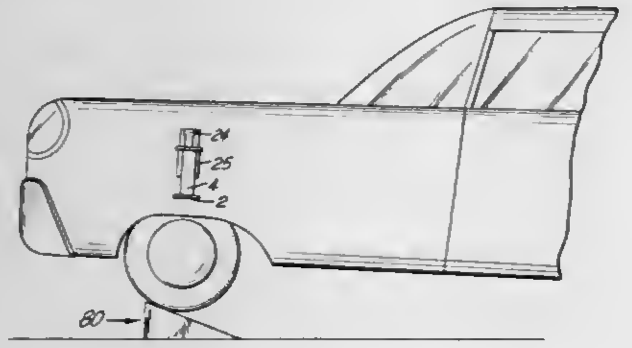
Alfred R. Bolliger, Im Sidefadeli, 8803 Ruschlikon, Switzerland

Filed June 3, 1974, Ser. No. 475,920

Claims priority, application Switzerland, Nov. 5, 1973, 15556/73

Int. Cl.² G01M *17/04*

U.S. Cl. 73—11 **6 Claims**



1. An assembly for testing a shock absorber associated with a wheel pair of a spring suspended vehicle having a vehicle body, said assembly comprising

- a. a step to produce a drop motion of said wheel pair so that said vehicle body will rise in oscillation under the influence of springs but damped by a shock absorber after dropping motion thereof,
- b. means for indicating the condition of a shock absorber of said wheel pair by evaluating the acceleration inherent in the rise of said vehicle body during the first oscillation and first oscillation only of said vehicle body after dropping motion thereof, said means comprising
  - i. means for sensing the acceleration of said vehicle body during the rise thereof, said means including an inertia body member which is freely mounted for vertical movement in a vertical path,
  - ii. means for mounting said sensing means to a body component of said vehicle body in the vicinity of a shock absorber to be tested,
  - iii. means extending into the vertical path of movement of said inertia body member for generating a signal upon movement of said body member in said vertical path more than a predetermined amount, and
  - iv. an indicating device responsive to the signal generated by said signal generating means for indicating movement more than said predetermined amount by said body member.

3,939,693
PROCESS AND APPARATUS FOR THE QUALITATIVE AND QUANTITATIVE ANALYSIS OF SOLID MATERIAL

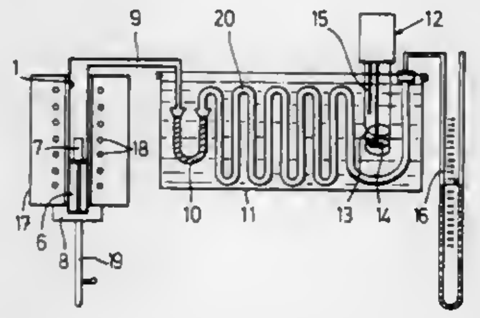
Philippe A. Dumont, Stokay St Georges, Belgium, assignor to Carrieres et Fours A Chaux Dumont-Wautier, Hermalle-sous-Huy, Belgium

Filed Apr. 18, 1974, Ser. No. 462,150

Claims priority, application United Kingdom, Apr. 26, 1973, 19786/73

Int. Cl.² G01N *7/16*

U.S. Cl. 73—19 **6 Claims**



1. Process for measuring qualitatively and quantitatively at least one volatile fraction contained in a solid, in which a sample of a given weight of the solid is introduced in a first enclosure having a known internal capacity, the sample is then brought up to a temperature at which said volatile fraction becomes gaseous in the first enclosure, the gasified volatile fraction is allowed to become distributed both in said first enclosure and in a second enclosure connected to the first enclosure by a capillary tube and having a higher internal capacity than the first enclosure, the second enclosure having previously been brought to a constant temperature having a known value which is higher than the temperature at which the gasified volatile fraction become liquid but lower than the temperature reached in the first enclosure, the pressure increase which occurs in the whole system due to the gasification of said volatile fraction is measured and gas state equations for said enclosures are solved.

3. Apparatus for measuring qualitatively and quantitatively at least one volatile fraction contained in a solid, comprising a furnace, a first enclosure or chamber of a given capacity in said furnace, adapted for receiving a sample of a given weight of the solid and having means for closing it in a tight manner, a second enclosure of chamber of a higher capacity than the first enclosure and connected to the first enclosure or chamber by means of a capillary tube, a device for maintaining in the second enclosure or chamber a constant temperature which is lower than the temperature reached in the first enclosure, and means for measuring the pressure developed within the two enclosures or chambers.

3,939,694
METHOD AND APPARATUS FOR MEASURING THE CONCENTRATION OF SOLID PARTICLES SUSPENDED IN A GAS PHASE

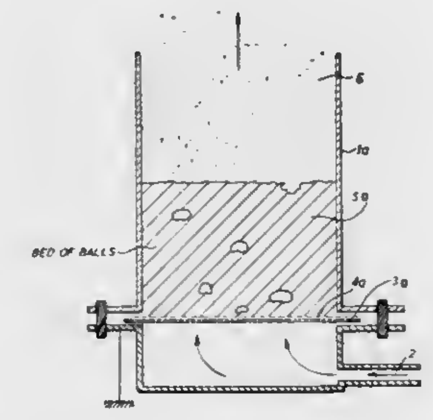
Jean-Claude Guichard, Ris-Orangis, and Claude Chauveller, Ballancourt, both of France, assignors to Institut National de Recherche Chimique Appliquee, Paris, France

Filed Feb. 26, 1974, Ser. No. 445,927

Claims priority, application France, Feb. 28, 1973, 73.07160

Int. Cl.² G01N *33/00*

U.S. Cl. 73—28 **6 Claims**



1. A method for measuring the concentration of solid particles suspended in a gaseous phase comprising the steps of
   - fluidizing at least one bed of solid balls placed in a metallic container, with the balls having diameters and weights greater than those of the largest particles of said gaseous phase, by admitting at its bottom a stream of said gaseous phase;
   - recording a current of an intensity proportional to the weight concentration of the solid particles of said gaseous phase during separation of particles from the balls with a recorder connected through an amplifier circuit connected to the wall of said metallic container.

3,939,695
APPARATUS FOR DETECTING LEAKS

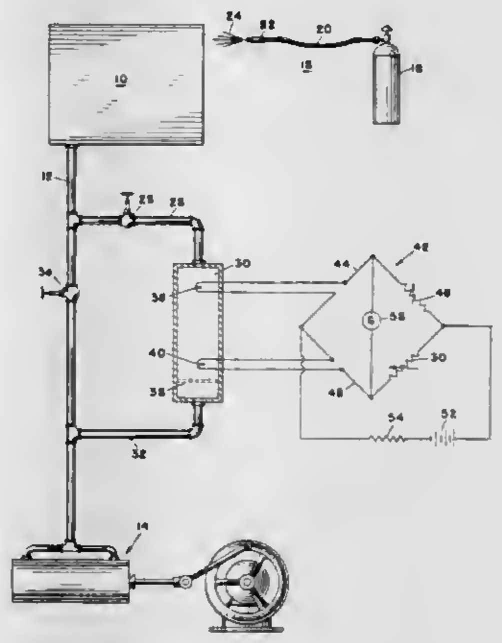
Eugene T. Booth, New York, N.Y., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Feb. 26, 1974, Ser. No. 12,455

Int. Cl.² G01M *3/04*

U.S. Cl. 73—40.7 **3 Claims**

1. A device adapted to be used in testing for leaks an apparatus that is being evacuated by a vacuum pump, comprising in combination, a conduit through which gases from said apparatus are drawn by said pump, a finely porous membrane mounted in said conduit to cause gases immediately upstream of said membrane to be enriched with respect to a heavy component of said gases, first thermal conductivity measuring means positioned close to the upstream side of said membrane in contact with said enriched gas, second thermal conductivity measuring means positioned in said conduit at a point sufficiently spaced upstream from said membrane that said second measuring means is in contact with unenriched gas from said apparatus, and indicating means operatively connected to said first and second thermal conductivity measuring means for indicating the relation between said two measuring means as an indication of the presence of a leak in said apparatus.



3,939,696
SCANNING ULTRASONIC INSPECTION METHOD AND APPARATUS

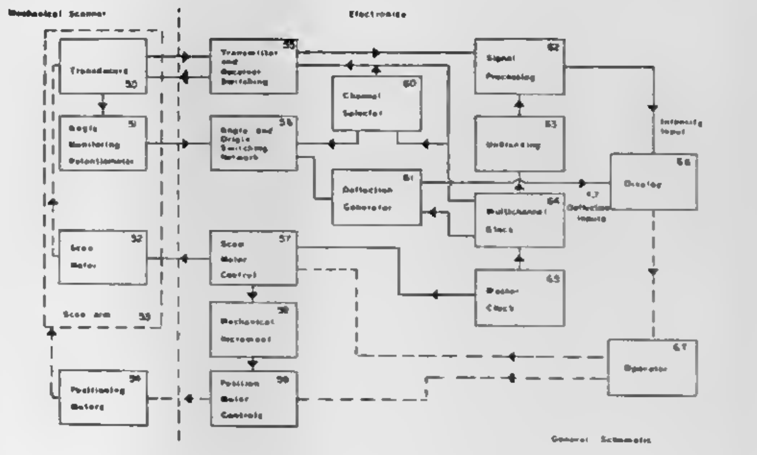
George Kossoff, Northbridge, Australia, assignor to The Commonwealth of Australia, Australia

Filed June 8, 1973, Ser. No. 368,357

Claims priority, application Australia, June 8, 1972, 9262/72; May 1, 1973, 3143/73

Int. Cl.² G01N *29/04*

U.S. Cl. 73—67.8 S **4 Claims**



4. A method of ultrasonic examination of an object which comprises directing pulses of ultrasonic energy along a plurality of beams into said object, and receiving echoes of said pulses reflected along said beams by acoustic impedance discontinuities in said object, said directing step including:
   - directing said beams into the object from positions spaced relative to each other;
   - steering said beams to a plurality of angular directions in a single plane; and
   - directing said pulses sequentially along each of said beams in each of said angular positions at a rate sufficiently fast, compared to the rate of movement of the transducer beams; that the beam of each transducer moves only a small distance between successive activations thereof.

3,939,697

METHOD AND APPARATUS FOR ULTRASONIC EXAMINATION

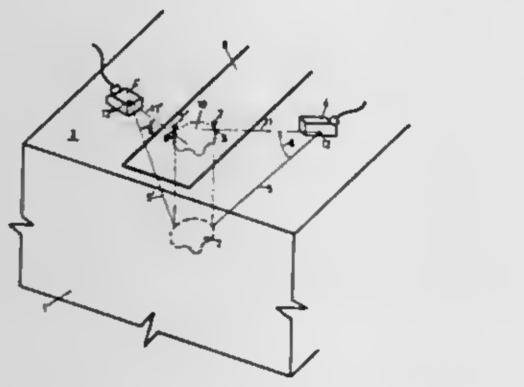
Svend Aage Lund, Birkerod, and Palle Rasmus Jensen, Vanlose, both of Denmark, assignors to Akademiet for de Tekniske Videnskaber, Svejsecentralen, Glostrup, Denmark

Filed Mar. 8, 1973, Ser. No. 339,215

Claims priority, application Denmark, Aug. 28, 1972, 4256/72

Int. Cl.² G01N *29/04*

U.S. Cl. 73—67.8 S **31 Claims**



1. A method of indicating, or of recording images of internal inhomogeneities in otherwise homogeneous bodies which have a substantially plane or slightly curved surface, by ultrasonic examination according to the pulse echo method, including guiding at least one angle probe connected to an ultrasonic apparatus across the surface of the body to scan its interior by emitting and receiving short-duration ultrasonic pulses in directions that form a predetermined angle with the surface of the body, and activating indicating means in response to received reflected sound pulses to produce punctiform markings on a substantially plane recording surface, characterized by the steps of moving the indicating means having an axis of indication along which the markings on the recording surface are made to thereby move the axis in the plane of the recording surface in such a way that the displacement of a reference point on the axis of indication in relation to the recording surface follows the two-dimensional displacement of the sound emission point of the probe in relation to the surface of the body on a predetermined scale, the axis of indication in relation to the recording surface following the direction of the projection of the sound path on the surface of the body, each of said markings being effected at a distance from the reference point that is proportional to the time interval that has elapsed from the emission to the reception of a sound pulse.

3,939,698

METHOD AND APPARATUS FOR MEASURING POROSITY USING A SURFACE-TEMPERATURE POROSIMETER

Thomas J. De Lacy, La Mesa, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed May 23, 1974, Ser. No. 472,572

Int. Cl.² G01N *15/08*

U.S. Cl. 73—73 **6 Claims**

1. A porosimeter comprising:

means to supply a selected quantity of volatile liquid to a point on a porous structure surface;

a chamber in contact with said surface surrounding said point to maintain the space adjacent to said point within said chamber at a substantially constant temperature;

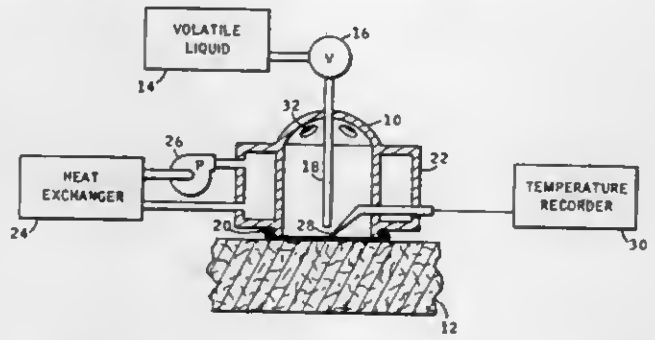
temperature measuring means in contact with said surface at said point; and

recording means for recording temperature over a time period after said liquid is applied at said point.

5. The method of measuring the surface porosity of a structure which comprises:

applying a selected quantity of a volatile liquid to a point on a porous structure surface;

maintaining the space adjacent to said surface near said point at a substantially constant temperature;



continuously measuring the temperature of said surface at said point;

continuously recording the temperature over a time period after said liquid is applied to said surface.

3,939,699

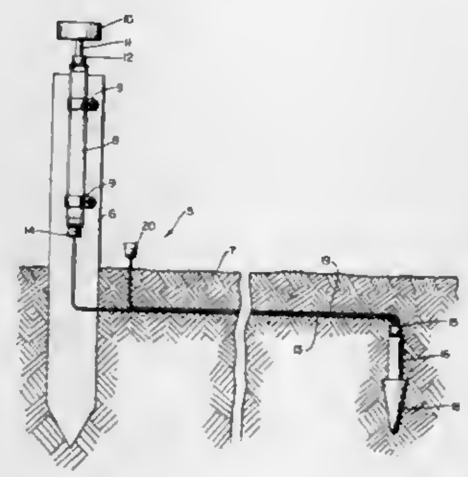
TENSIOMETER WITH REMOTE SENSING UNIT

John P. McCormick, 521 Hilmar St., Santa Clara, Calif. 95050

Filed Sept. 27, 1974, Ser. No. 509,900

Int. Cl.² G01N *7/14*

U.S. Cl. 73—73 **5 Claims**



1. A tensiometer with remote sensing unit comprising a sight glass having an upper end and a lower end, a ceramic cup buried in the earth remote from said sight glass, a flexible capillary conducting tube having one end communicating with the lower end of the sight glass and an opposite end communicating with the cup cavity, means sealing said tube ends in the lower end of the sight glass and in said cup, a closure sealing the upper end of the sight glass, a vacuum gauge supported by said closure and communicating with the interior of the sight glass, said sight glass, tube and cup cavity being filled with water, a second flexible capillary bleeder tube having one end communicating with the cup cavity and sealed in said cup, said blender tube having a second upper end disposed below the level of the end of the conducting tube which is connected to the sight glass, and a removable cap for sealing said upper bleeder tube end.

3,939,700

MATERIAL HARDNESS TESTER

Clifford E. Anderson, Stratford, Conn., assignor to American Chain & Cable Company, Inc., Bridgeport, Conn.

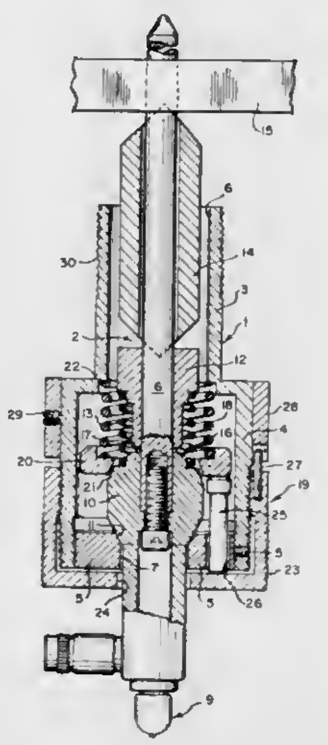
Filed Aug. 15, 1972, Ser. No. 280,875

Int. Cl.² G01N *3/44*

U.S. Cl. 73—83 **6 Claims**

1. In a material hardness tester having an apparatus for applying a major and a minor load including a housing, a plunger assembly having a plunger rod slidably secured in said housing, and a first spring means operatively connected to said plunger rod for urging it axially in one direction under a first predetermined spring load for applying a first minor load, the improvement comprising:

a. second spring means adapted to be operatively connected to said plunger rod for urging it axially in said one direction under a second predetermined spring load for applying a second minor load different than said first minor load;



b. control means for selectively removing the second spring means from operative connection with a plunger rod to selectively permit loading of the plunger rod under said first spring load alone and under said first and second spring loads together such that either minor load can be applied independently of the other; and

c. said plunger assembly including means, with said spring means and said control means, for replacing a plunger assembly of a standard hardness tester to convert the standard tester to a multiple tester.

3,939,701

METHOD AND DEVICE FOR MEASURING THE SHEARING STRESS OF POWDERY AND/OR GRANULAR MATERIAL

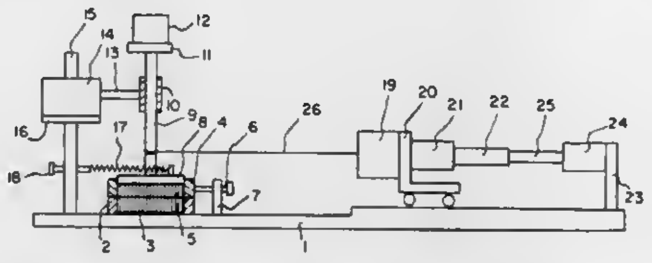
Ivan Anton Slavko Zdravko Peschl, Kennedylaan 8, Sterksel, Netherlands

Filed Sept. 11, 1974, Ser. No. 504,906

Claims priority, application Netherlands, Sept. 14, 1973, 7312665

Int. Cl.² G01N *3/24*

U.S. Cl. 73—101 **9 Claims**



1. Method for measuring the shearing stress of powdery and/or granular material with a pair of members displaceable relative to each other about a common intersection therebetween, the members being of circular cross-section with equal diameters and enclosing hollow cavities therebetween, the cavities having a common center line, said method comprising the steps of:

A. filling the cavities completely with a sample of the material,

B. placing a freely movable weight on the material in the members,

C. turning the completely filled members with respect to each other about the center line of the cavities by rotating the weight to shear the material at the intersection between the members, and

D. measuring the force required to shear the material.

3,939,702

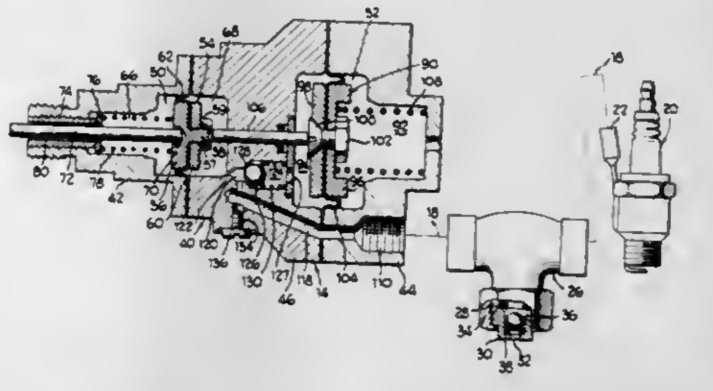
ENGINE TORQUE SENSOR DEVICE

Howard C. Paul, Des Plaines, and John J. Tuzson, Evanston, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed May 31, 1973, Ser. No. 365,779

Int. Cl.² G01M *15/00*

U.S. Cl. 73—115 **8 Claims**



1. A mechanism for developing a signal responsive to torque output of an internal combustion automotive engine, an automatic transmission for said engine, a control mechanism for said automatic transmission, said mechanism comprising a pressure responsive actuator connected to said control mechanism, said pressure responsive actuator having a pressure chamber with a piston therein movable in response to a pressure applied to said actuator, said piston comprising a flexible diaphragm, means connecting said chamber to at least one cylinder of said engine whereby said piston will be actuated by the average pressure in said cylinder to provide said control mechanism with an indication of torque load.

3,939,703

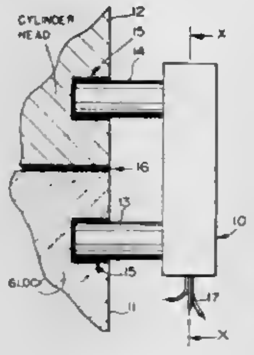
APPARATUS FOR MEASURING ENGINE CYLINDER PRESSURES

William S. Heggie, Ottawa, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Filed Sept. 16, 1974, Ser. No. 506,094

Int. Cl.² G01M *15/00*

U.S. Cl. 73—115 **3 Claims**



1. Apparatus for measuring engine cylinder pressures comprising:

a. an arcuate metal strip,

b. a pair of metal dowels attached to the ends of the strip, one of said dowels rigidly mounted in an opening in the

cylinder block and the other rigidly mounted in an opening in the cylinder head, and
- c. a transducer mounted on the strip for measuring the amount of bowing of the strip and providing an output signal related to this.

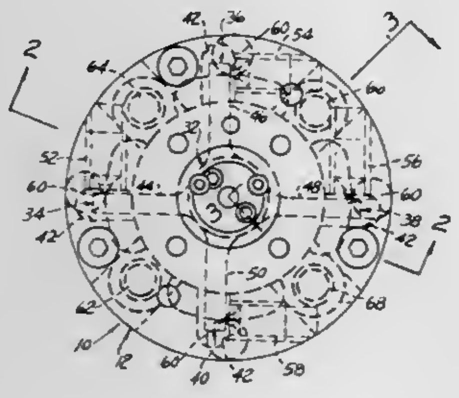
3,939,704
MULTI-AXIS LOAD CELL

Richard B. Zipin, Englewood, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 7, 1974, Ser. No. 495,364

Int. Cl.^{2} G01L *5/16*

U.S. Cl. 73—133 R **7 Claims**



1. A multi-axis load cell comprising:
a housing member,
a hub member;
means drivingly connecting said hub and said housing including a plurality of cantilever bars extending between said hub and said housing and connecting means therefor, said connecting means fixing one end of each cantilever bar to one of said hub and said housing and freely connecting the other end of each bar to the other of said hub and said housing to allow relative movement therebetween in a direction along each respective cantilever bar axis; and
means sensing relative displacements between said hub and said housing in directions parallel with the axes of said cantilever bars and producing signals corresponding thereto, whereby forces corresponding to said displacement can be measured.

3,939,705
REMOVABLE DOWNHOLE MEASURING INSTRUMENTS WITH ELECTRICAL CONNECTION TO SURFACE

Bernard J. P. Glotin, Saint Maur, and Andre J. Guimard, Le Mee-sur-Seine, both of France, assignors to Schlumberger Technology Corporation, New York, N.Y.

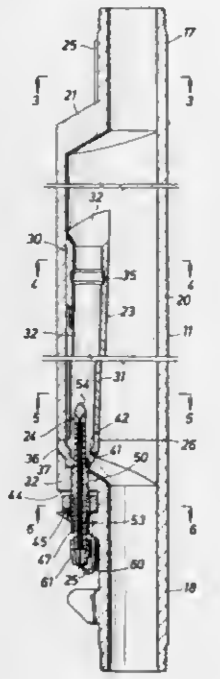
Filed Mar. 1, 1974, Ser. No. 447,443

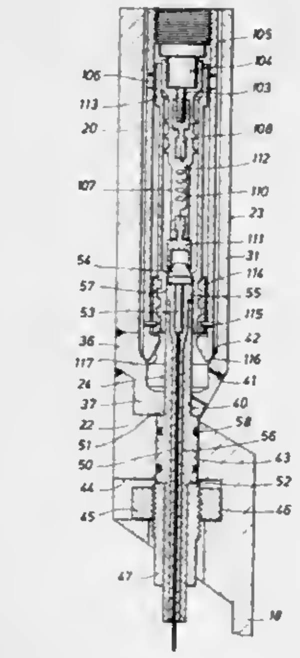
Claims priority, application France, Mar. 2, 1973, 73.7449

Int. Cl.^{2} E21B *47/06*

U.S. Cl. 73—151 **9 Claims**

1. A measuring instrument installation for a well having a pipe string provided with a landing mandrel, said mandrel having an internal recess means, comprising: an elongated tubular housing having running and retrieving means thereon and adapted to be run through the pipe string and releasably secured within said recess means; a measuring instrument mounted within said housing and arranged to furnish at an output terminal an electrical signal representative of a measurement of a downhole parameter; contact means on said mandrel including an insulated conductor that extends from the interior of said recess means to the exterior of said mandrel; and a connector assembly fixed to one end of said housing and adapted to interconnect with said contact means to provide an electrical link between said contact means and said output terminal.





3,939,706
HIGH ENERGY SENSOR

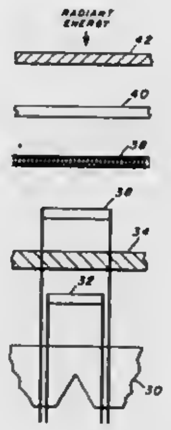
George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 10, 1974, Ser. No. 459,464

Int. Cl.^{2} G01K *17/00;* G01J *5/58*

U.S. Cl. 73—190 EW **9 Claims**

1. An electromagnetic wave energy sensor comprising a substrate of electrical insulating material, a first thermally sensitive electrical element carried on said substrate, a layer of electrically insulating thermally resistive material covering said first electrical element, a second thermally sensitive electrical element deposited on said thermally resistive material on the side thereof opposite said first electrical element, dielectric material covering said second electrical element and adapted to become heated by wave energy incident on the sensor, a layer of metallic reflective material deposited on said dielectric material for absorbing a fixed percentage of incident wave energy, the sensor being positioned with respect to incident wave energy so that said reflective material will reflect the major portion of the incident wave energy, and electrical circuit means coupled to the respective electrical elements for determining the energy per unit of area impinged on said sensor.



3,939,707
MEASUREMENT OF LIQUID FLOW

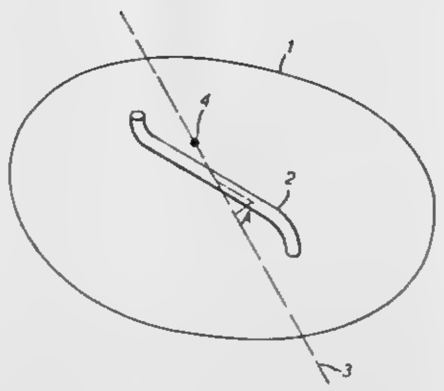
George Kossoff, Northbridge, Australia, assignor to The Commonwealth of Australia, Phillip, Australia

Filed May 15, 1974, Ser. No. 470,125

Claims priority, application Australia, May 15, 1973, 3316/73

Int. Cl.^{2} G01F *1/66*

U.S. Cl. 73—194 A **6 Claims**



1. A method of ultrasonic examination of a vessel within an examined object to obtain a quantitative measurement of flow of liquid in the vessel, comprising the steps of:
- a. transmitting pulses of ultrasonic energy into the object and receiving echoes of said pulses reflected by acoustic impedance discontinuities within the object, the pulses being transmitted and echoes received along a plurality of beams in a single plane, the axis of a portion of the vessel within the object lying in said plane;
- b. displaying said received echoes as a visualization of said portion of the vessel in said plane;
- c. transmitting pulses of ultrasonic energy into said portion of the vessel along a beam in said plane at an angle to the axis of said portion and determining the shift in frequency of echoes of said pulses caused by flow of liquid in said portion;
- d. determining from the display the diameter of said portion of the vessel in said plane and the angle between the axis of said portion and the beam along which the shift of frequency is determined; and
- e. correlating said shift in frequency with the diameter of said portion of the vessel and said angle to obtain a measurement of the velocity of flow of liquid in the vessel.

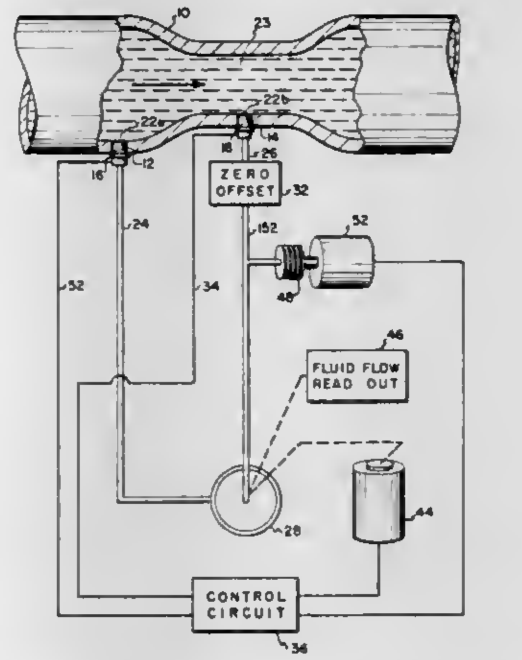
3,939,708
CLOSED PRESSURE REBALANCE SYSTEM FOR MEASURING THE RATE OF FLUID FLOW

Homer L. Greer, Bryn Athyn, and William F. Newbold, Philadelphia, both of Pa., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Sept. 12, 1974, Ser. No. 505,758

Int. Cl.^{2} G01F *1/38;* G01L *7/08*

U.S. Cl. 73—205 R **10 Claims**



1. A pressure rebalance system for measuring a rate of fluid flow through apparatus which creates a relatively high pressure region and a relatively low pressure region the differential pressure between which is proportional to the rate of fluid flow comprising in combination:
means for supporting one flexible diaphragm with a pressure proportional to the pressure of the high pressure region exerted on one of its surfaces;
means for supporting another flexible diaphragm with a pressure proportional to pressure of the low pressure region exerted on one of its surfaces;
a fluid pump having an impeller driven by an electric motor;
a closed system providing a fluid coupling between an outlet of said pump and the other surface of said one diaphragm;
a closed system providing a fluid coupling between an inlet of said pump and the other surface of said other diaphragm;
means for generating a first electrical signal indicative of the position of said one diaphragm with respect to said supporting means;
means for generating a second electrical signal indicative of the position of said other diaphragm with respect to said supporting means;
means responsive to said first and second signals for controlling the speed of said motor so that the pressure exerted by the pump on each diaphragm surface maintains each diaphragm in a predetermined position with respect to its respective supporting means; and
means responsive to the rotational speed of the impeller for determining the rate of flow.

3,939,709
APPARATUS FOR MEASURING THE FLOWRATE OF PARTICULATE SOLID MATERIAL

Joseph P. Echtler, Pittsburgh, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Filed Feb. 4, 1974, Ser. No. 438,994

Int. Cl.^{2} G01F *1/30*

U.S. Cl. 73—228 **7 Claims**

1. Apparatus for measuring the flowrate of particulate solid material moving vertically downwardly comprising,

an expansion chamber having an internal surface with a passageway therethrough,

said expansion chamber having an upper end portion with an inlet therethrough and a lower end portion with an outlet therethrough,

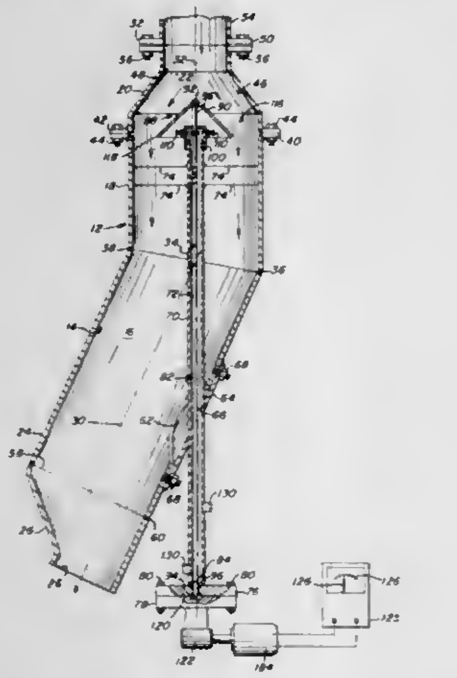
said inlet converging inwardly and upwardly from said upper end portion to form a throat for receiving the flow of the particulate solid material,

said lower end portion disposed angularly relative to said upper end portion and having an opening coaxially aligned with said upper end portion,

an impact member axially positioned in said upper end portion and having a cross-sectional area greater than that of said upper end portion inlet,

a rod coaxially aligned with said upper end portion and extending through said opening in said lower end portion, said rod having a top portion supporting said impact member within said throat of said upper end portion inlet so that substantially the entire flow of particulate solid material passing through said throat impinges upon said impact member,

responsive means positioned externally of said expansion chamber passageway, said rod having a bottom portion in contact with said responsive means externally of said expansion chamber, said responsive means operable to instantaneously measure the momentum of said particulate solid material flowing through said upper end portion inlet throat and impinging upon said impact member,



a tubular member concentrically surrounding said rod and passing through said lower end portion opening to permit vertical reciprocal movement of said rod relative to said tubular member,

said tubular member having an upper end portion positioned below said rod top portion and a lower end portion securely positioned in contact with said responsive means with said rod bottom portion extending beyond said tubular member,

said tubular member positioned in a fluid-tight relationship with said opening of said expansion chamber lower end portion,

means for maintaining axial alignment of said tubular member in said expansion chamber upper end portion,

means positioned adjacent said impact member for centering said rod within said tubular member having a sleeve threadedly engaged to said tubular member,

said sleeve having a top surface with an annular opening through which said rod passes,

a plurality of adjustment screws extending through said sleeve and having end portions positioned in abutting contact with said rod, and

locking means for selectively positioning said adjustment screws relative to said sleeve.

3,939,710
LIQUID FLOW METER

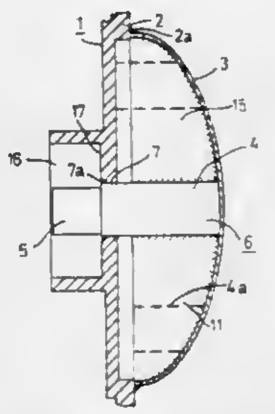
Klaus-Dieter Rothert, Gleidingen; Herbert Stilkenbaumer, Hildesheim; Gudrun Fischer; Armin Madler, and Ulrich Ross, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany and Diessel GmbH & Co., Hildesheim, Germany

Filed Aug. 8, 1974, Ser. No. 495,821

Claims priority, application Germany, Aug. 8, 1973, 2340704

Int. Cl.² G01F *3/08, 15/14*

U.S. Cl. 73—253 **13 Claims**



1. In a liquid flow meter through which can be passed both warm and cool liquids, the meter including a measuring chamber having base members between which at least one rotatable measuring member having end-faces is mounted so that the end-faces glide along the base members when the measuring member is rotated, the improvement comprising: a support structure for at least one of the base members to prevent the same from deflecting inwardly in response to the warm liquid whereby jamming of the rotatable member is precluded, said support structure including a bell-shaped stiffening member arranged at the side of the base member facing away from the measuring chamber, said stiffening member being joined to the base member about the periphery thereof; and, a rigid connecting member joining the apex region of said bell-shaped member with the center region of the base member.

3,939,711
ENGINE MISFIRE DETECTION SYSTEM

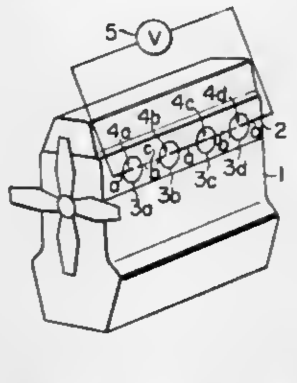
Masanori Hanaoka, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Sept. 21, 1973, Ser. No. 399,610

Claims priority, application Japan, Dec. 4, 1972, 47-120602

Int. Cl.² G01M *15/00*

U.S. Cl. 73—346 **18 Claims**



1. For an engine having cylinders with gas exhaust ports a misfire detection apparatus, comprising a plurality of temperature-responsive electrical means each mounted in the exhaust ports and each having respective variable electrical characteristics for changing their electrical characteristics in response to the temperatures at the gas exhaust ports, circuit means connecting said electrical means for comparing the electrical characteristics of one with the electrical characteristics of another at any one time and for producing a balance when the electrical means are subject to the same termperatures and for producing an unbalance when the electrical means are subject to different temperatures, and indicator means coupled to said circuit means for indicating the condition of balance, at least one of said circuit means and the temperature imparting to each electrical means a unidirectional electrical condition, said circuit means connecting said electrical means so that the electrical condition in an equal number of electrical means oppose each other.

3,939,712
PNEUMATIC DIFFERENTIAL PRESSURE SENSOR

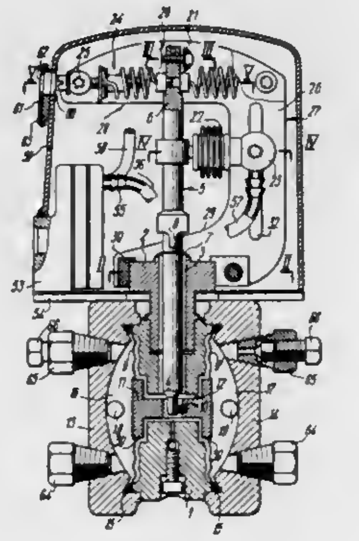
Albert Yakovlevich Jurovsky, ulitsa Baltiiskaya, 4, kv. 94; Gennady Samuilovich Zelenko, Schelkovskoe shosse, 90, kv. 120, and Jury Markovich Brodkin, 1 ultisa Mashinostroenia, 8, kv. 43, all of Moscow, U.S.S.R.

Filed June 18, 1974, Ser. No. 480,496

Claims priority, application U.S.S.R., June 18, 1973, 1933183

Int. Cl.² G01L *7/00*

U.S. Cl. 73—388 BN **5 Claims**



1. A pneumatic differential pressure sensor comprising: a body with a hole; a bushing installed in said hole so that a portion of said bushing is located inside said body and its other portion is outside the body; a two-arm lever extending through said bushing into the body so that one arm of said lever is inside the body and the other arm outside it; a support for said lever secured to said bushing outside said body; a split block fitted around said bushing and secured to the external portion of the bushing; two flat unidirectional clamps secured to the opposite sides of said block, each clamp having one longitudinal side and two transverse sides, and being located in the planes which are parallel to the swinging plane of said lever; at least three crosspieces installed between said clamps; a pneumatic amplifier having means for feeding supply pressure to said amplifier, inlet means, pneumatic output signal means from said amplifier, which serves simultaneously as the output of the pneumatic sensor; an element sensitive to the differential pressure accomodated in said body; a nozzle-shutter element secured to one of the crosspieces and communicating pneumatically with the inlet means of the pneumatic amplifier; one arm of said two-arm lever interacting with said element sensitive to the differential pressure, and the other arm interacting with said nozzle-shutter element; a bellows secured to the second crosspiece communicating pneumatically with the sensor output and interacting with the other arm of said lever; and a zero indicator secured to the next crosspiece and linked kinematically with the other arm of said lever.

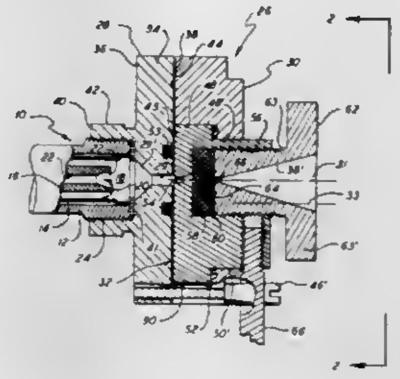
3,939,713
SEPTUM MOUNTING AND SHIELDING ASSEMBLY FOR SAMPLE INJECTION IN AN ANALYTICAL INSTRUMENT

Willard E. Estey, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 28, 1975, Ser. No. 554,280

Int. Cl.² G01N *1/00*

U.S. Cl. 73—422 GC **9 Claims**



1. In a sample injector for analytical instruments in which a sample is introduced into the instrument by means of a probe which is thrust through a self-sealing septum, a septum mounting and shielding assembly comprising:

means defining a passage through which the probe may be inserted into communication with the instrument;

a septum holder member containing a bore aligned with and constituting a part of said passage;

and means mounting said septum holder member for rotary movement about an axis eccentric to said passage whereby rotation of said member selectively moves said bore into and out of registration with said passage.

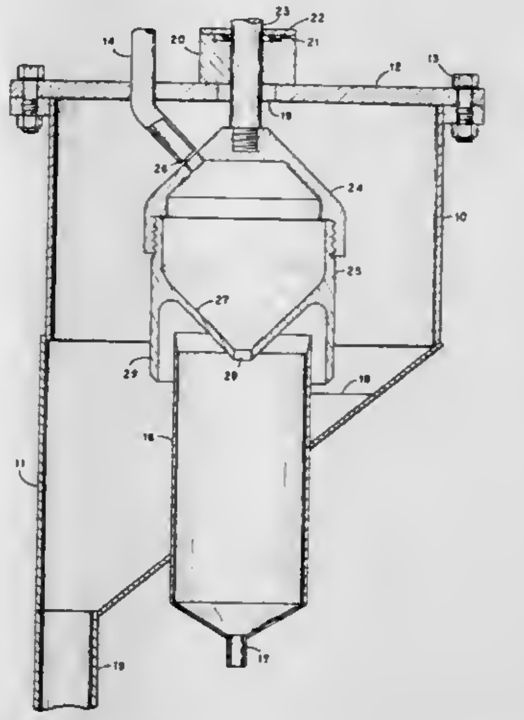
3,939,714
VARIABLE PERCENTAGE SAMPLER

William H. Miller, Jr., Knoxville, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed June 10, 1975, Ser. No. 585,626

Int. Cl.² G01N *1/20*

U.S. Cl. 73—424 **4 Claims**

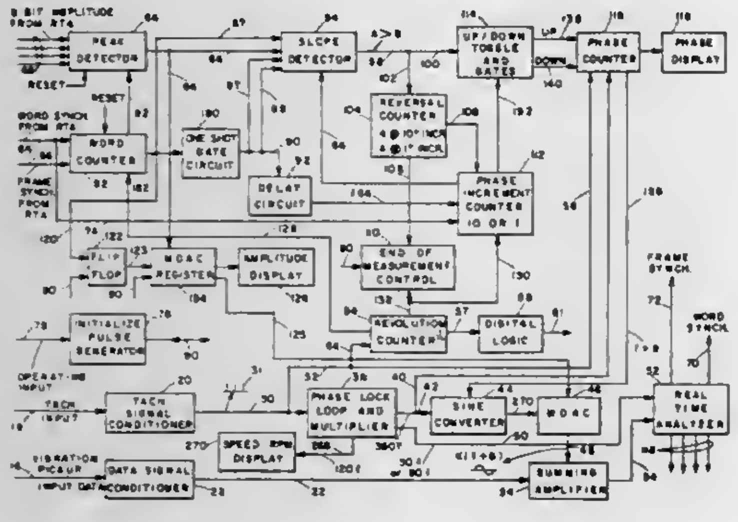


1. A sampler for obtaining variable percentage samples of particles for subsequent analyses comprising a hopper provided with a top closure member and a particle discharge conduit mounted at the lower end of an inverted conical lower

shell portion of said hopper, a drive shaft extending through said top closure member into the upper portion of said hopper and being bearingly supported by said member, a conical cap affixed to the lower end of said drive shaft and provided with a side aperture, a base member affixed to said conical cap and provided with an inverted inner conical surface terminated by an exit hole at the bottom thereof, an open top sample receiving column extending through said conical shell portion of said hopper and affixed thereto with the top open end of said column encompassing the lower end of said base member for receiving particles exiting therefrom, said column being provided at its lower end with a sample outlet conduit, and a particle feed tube extending through said top closure member with its exit end positioned closely adjacent to and aligned with said side aperture of said conical cap, said conical cap and its affixed base member functioning as a particle sample catcher, said conical cap and base member affixed thereto adapted to be rotated by said drive shaft at a selected desired speed, whereby during rotation of said sample catcher a portion of the particles exiting from said feed tube are caught by said sample catcher through said side aperture as a function of the speed of rotation of said sample catcher.

3,939,715
METHOD AND APPARATUS FOR DEVELOPING BALANCE INFORMATION FOR ROTATING EQUIPMENTS AND ASSEMBLIES

Robert D. Davis, Spring Valley, Calif., assignor to Spectral Dynamics Corporation of San Diego, San Diego, Calif.
Filed June 24, 1974, Ser. No. 482,336
Int. Cl.² G01M *1/22*
U.S. Cl. 73—462 22 Claims



1. A system for locating the unbalance and determining the signal phase of vibration data signals relative to tachometer point signals of a rotating member comprising,

means for determining the amplitudes of the unbalance signals of the vibration data signals and providing amplitude output signals,

means responsive to said amplitude output signals and the tachometer point signals for synthesizing balancing signals having the frequency of the tachometer point signals and the amplitude of the unbalance signals,

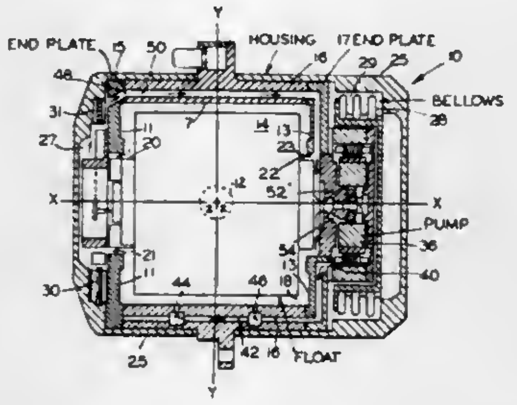
means for nulling the balancing signals and the unbalance signals and providing summing output signals representative of the phase difference,

means responsive to the summing output signals for shifting the phase of the synthesized balancing signals to null the unbalance signals in said nulling means,

and means for determining the phase of the nulling synthesized balancing signals relative to the tachometer point signals.

3,939,716
ACCELEROMETER WITH LIQUID HYDROSTATIC GIMBAL SUPPORT

Howard E. Schullen, Montville; William H. Ficken, Berkeley Heights, and Robert J. Sgambati, Secaucus, all of N.J., assignors to The Bendix Corporation, Teterboro, N.J.
Filed July 17, 1974, Ser. No. 489,210
Int. Cl.² G01P *15/08*
U.S. Cl. 73—516 R 4 Claims



1. An accelerometer including a liquid hydrostatic bearing system, comprising:

a sleeve and a pair of opposite end plates having annular grooves and surfaces defining recesses, said sleeve and end plates arranged to provide a substantially cylindrical chamber;

a float disposed within the chamber in slightly spaced relation to the sleeve and end plates and including shaft members at opposite ends thereof disposed in spaced relation to the corresponding recesses defined by end plate surfaces, said space between the chamber and float and shaft members and recesses being both axial and radial;

a pendulous mass supported by the float relative to mutually perpendicular accelerometer input, output and pendulous reference axes for pendulousity about the output axis in response to a sensed acceleration;

the chamber including at least two longitudinally extending channels and radially disposed ports at opposite ends of the float connecting one of said channels with the space;

a casing surrounding the chamber and including opposite end sections;

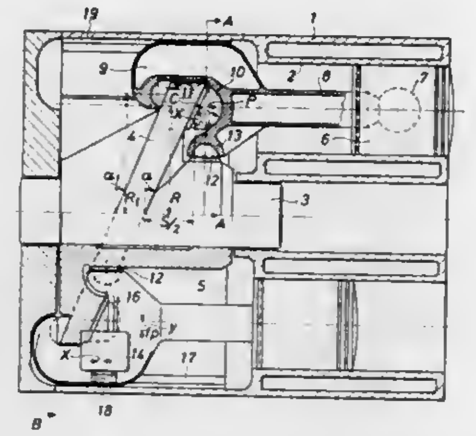
a pump mounted in one of the end sections and including outlet ports open to the one channel and inlet ports open to the other channel, a connecting port, and the pump being effective for pumping a liquid from the pump outlet ports through the connecting port, channel and space to the pump inlet ports to provide axial and radial lift for the float; and

a pickoff and torquer operably connected to the float shaft member and being supported in the other of the end sections, and means electrically connecting the pickoff and torquer, with the torquer current being indicative of the sensed acceleration.

3,939,717
POWER TRANSMITTING MECHANISM FOR RECIPROCATING ENGINES OR PUMPS

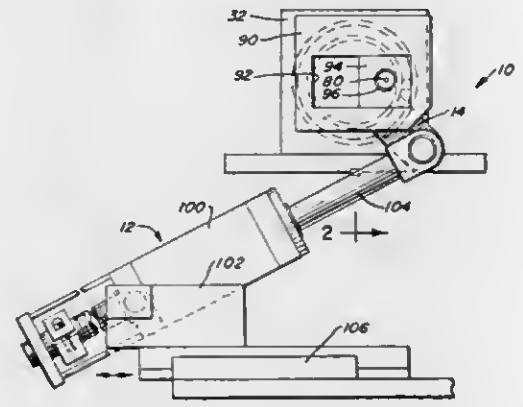
Mogens Roesdahl Groth Telsen, Copenhagen, Denmark, assignor to Havera Development Ltd., London, England
Filed July 3, 1974, Ser. No. 485,757
Claims priority, application Denmark, July 5, 1973, 3746/73
Int. Cl.² F16H *23/00*; F02B *75/26*; F04B *1/02*
U.S. Cl. 74—60 8 Claims

1. A reciprocating-piston engine or pump having a main shaft and a plurality of cylinders arranged circumferentially around the main shaft of the motor or pump, the axes of said cylinders being parallel to the main shaft, each piston being connected to a crosshead through a piston rod, a swash-plate fixed to the main shaft and gripped by the crosshead while the swash-plate side surfaces are abutted by a main thrust bearing and a rear thrust bearing, slide bearings for absorbing the force components perpendicular to the main shaft, said slide bearings absorbing the inward directed components of the rotating transverse force vector, said slide bearings comprising at least one Michell thrust blocks sliding on an outwardly facing rotating cylindrical surface coaxial with said main shaft and rigidly connected to said swash-plate, said cylindrical surface being arranged on a thickening portion of said main shaft and locally cutting into one of the swash-plate side surfaces so as to form a recess in the swash-plate.



3,939,718
MECHANISM TO CONVERT ROTARV MOTION TO TRANSVERSE MOTION

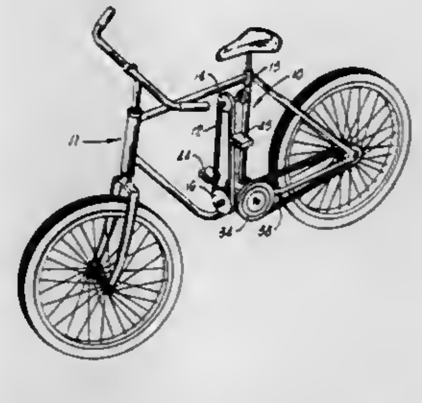
James W. Banks, Bozman, Md., assignor to Chemetron Corporation, Chicago, Ill.
Filed May 30, 1974, Ser. No. 474,727
Int. Cl.² F16H *21/44*
U.S. Cl. 74—99 7 Claims



1. A mechanism for converting rotary motion to transverse motion with high mechanical advantage comprising a housing adapted to be mounted on the frame of a bellows forming machine, an element journalled to rotate about its axis in said housing and provided eccentrically with a journal, a lever extending into said housing and connected to said element, a trunnion provided with a journal, a trunnionway connected to said housing adjacent said lever and supporting said trunnion for transverse linear movement of said trunnion within said trunnionway to said axis, a shaft journalled to rotate within the journal provided in said element, one end of said shaft being provided eccentrically with an axially extending first pin journalled to rotate within the journal provided in said trunnion, said shaft having a mounting means on the other end, forming means rotatably mounted on said mounting means, power means adapted to be mounted on said frame and connected to said lever, whereby said lever rotates said element and therefore moves said shaft and said trunnionway forces said trunnion to move said first pin and therefore rotate said shaft and thereby force said mounting means and said forming means in a linear direction transverse to said axis.

3,939,719
POWER CONVERTER APPARATUS

William R. Stovall, Rte. 2, Box 30, Stuart, Okla. 74570
Filed Nov. 15, 1973, Ser. No. 416,196
Int. Cl.² F16H *27/02*
U.S. Cl. 74—128 9 Claims



1. A reciprocator drive apparatus, comprising:

a frame;

a reciprocator supported on the frame for movement in a first and a second reciprocating direction in a driven position;

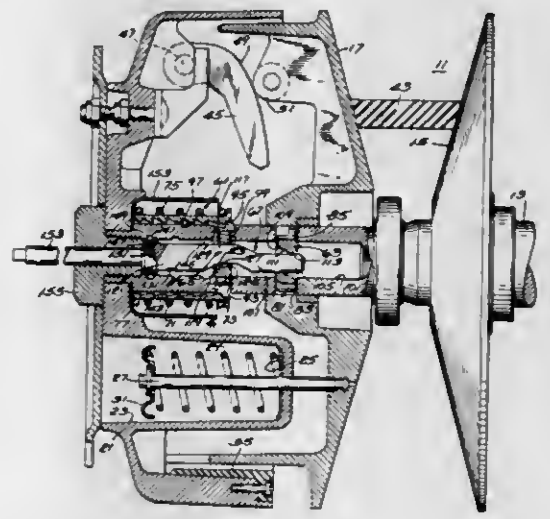
a first coupling shaft rotatingly supported on the frame;

a second coupling shaft rotatingly supported on the frame;

first connecting means drivingly connected to the reciprocator and to the first coupling shaft for rotating the first coupling shaft in a first direction of rotation and in a second direction of rotation, generally opposite the first direction of rotation, in response to the movement of the reciprocator, and, the first connecting means drivingly further connected to the second coupling shaft rotating the second coupling shaft in the first direction of rotation and in the second direction of rotation.

3,939,720
VARIABLE TRANSMISSION DRIVE PULLEY ASSEMBLY WITH SELECTIVE DRIVE

Olav Aaen, Kenosha, Wis., and Edgar Rose, Glencoe, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed July 26, 1974, Ser. No. 492,030
Int. Cl.² F16H *55/52*
U.S. Cl. 74—230.17 E 30 Claims



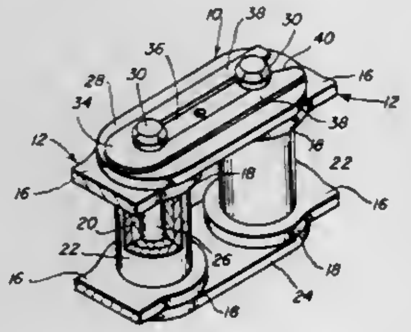
1. A variable transmission drive pulley assembly comprising a drive shaft, a fixed sheave connected to said drive shaft for common rotation therewith, a movable sheave carried by said drive shaft for movement axially thereof relative to a retracted position spaced from said fixed sheave, means urging said

movable sheave toward said retracted position in the direction away from said fixed sheave, speed responsive means for displacing said movable sheave toward said fixed sheave, additional means movable relative to said fixed sheave for modifying the effectiveness of said speed responsive means, and control means operative independently of the rotation of said drive shaft for selectively preventing displacement of said movable sheave toward said fixed sheave by said speed responsive means and for selectively controlling operation of said additional means for modifying the effectiveness of said responsive means.

3,939,721
MASTER LINK ASSEMBLY

Frederick J. Kuenzig, 16 Bob White Way, Weatogue, Conn. 06089, and Joseph V. Montano, 120 Amherst St., Hartford, Conn. 06106

Filed Jan. 15, 1975, Ser. No. 541,267
Int. Cl.² F16G *13/02, 13/08*
U.S. Cl. 74—258 4 Claims



1. A master link assembly for releasably coupling the opposing ends of a series of articulated links to form a chain, wherein the opposing ends are defined by a pair of roller link assemblies each having a pair of opposing link plates with pitch holes extending between the opposing faces thereof and a pair of tubular bushings press fitted thereinto comprising

first and second link plates each including a pair of pitch holes extending between the opposing faces thereof,

a pair of connecting pins selectively configured for slidable insertion into the tubular bushings and for insertion into the pitch holes of said first and second link plates,

means for limiting the separation of said first and second link plates to a predetermined maximum separation,

said limiting means including a bifurcated clip spring selectively configured for placement about said connecting pins adjacent the outer face of one of said first and second link plates,

a locking plate having a U-shaped configuration, wherein the legs of said locking plate extend substantially perpendicularly from the top portion thereof and are in parallel spaced relation, said spacing being selected to correspond to the width of said spring clip

an aperture in said one link plate,

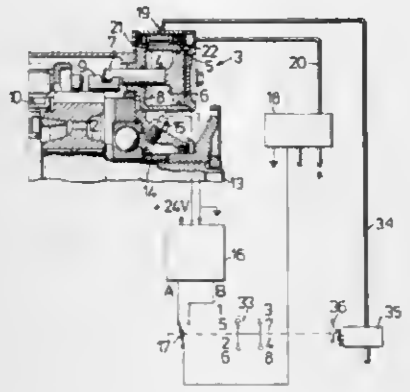
an aperture in the top portion of said locking plate, and screw means for securing said locking plate to said one link plate.

3,939,722
ARRANGEMENT FOR CONTROLLING GEAR CHANGES IN A MOTOR VEHICLE GEAR BOX

Jan Erling Gunnar Stromberg, Partille, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Nov. 15, 1973, Ser. No. 416,093
Claims priority, application Sweden, Nov. 17, 1972, 14981/72
Int. Cl.² F16H *5/60, 3/02*
U.S. Cl. 74—336 6 Claims

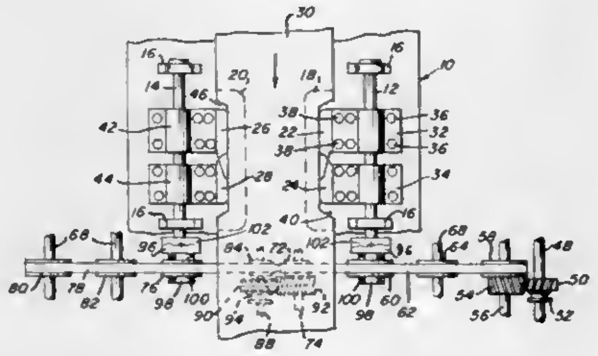
1. In a gear box comprising a main gear box with a number of gear ratios, and a two-geared range gear box coupled to a driven shaft of the main gear box, said range gear box having such gear ratios that the total gear ratio of the gear box with the higher ratio in the range box and the lowest ratio in the main box is higher than that with the lower ratio in the range gear box and the highest ratio in the main gear box, and an arrangement for controlling the shifting between two gear ratio ranges, said arrangement comprising a servo-aggregate which is connected to the gear-driving mechanism of the range gear box and which is coordinated with means which start operation of the servo-aggregate only upon shifting in the main gear box, as well as a sensor device which coacts with the driven shaft of the range gear box for reading the rpm of the shaft; the improvement in which said sensor device is connected to a control unit having at least two outputs over which the control unit provides a signal for maneuvering the servo-aggregate during shifting in the main gear box for shifting in the range gear box, said control unit providing a signal over the first output when the rpm of the driven shaft passes a first low rpm while increasing or decreasing, and over the second output when the rpm passes a second, greater rpm while increasing or decreasing, at least one of a plurality of two-position changeover switches adjusted by the lateral movement of a gear lever in the neutral position being connected between the two outputs for shifting an operating output of the gear box.



3,939,723
DRIVE FOR ROTATABLE CUTTER MECHANISMS

Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Filed Oct. 16, 1974, Ser. No. 515,534
Int. Cl.² F16H *35/08, 7/12*
U.S. Cl. 74—401 3 Claims



1. Apparatus for providing automatic take-up of a timing belt comprising,

a drive shaft mounted for planar linear movement in opposite directions,

a drive shaft fixedly positioned and rotatably mounted adjacent to said driven shaft,

a pulley mounted on said driven shaft,

a drive pulley mounted on said drive shaft,

a take-up pulley rotatably mounted between said drive pulley and said driven pulley, said take-up pulley mounted for planar linear movement in opposite directions,

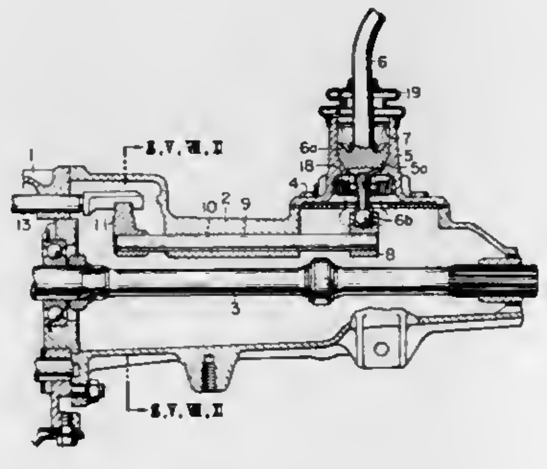
an endless timing belt reeved about said drive pulley, said driven pulley and said take-up pulley so that rotation of said drive shaft transmits rotation to said driven shaft, and

means connecting said driven pulley to said take-up pulley so that both said driven pulley and said take-up pulley move the same linear distance in the same plane so that said driven shaft may be adjusted in said linear plane while said timing belt maintains the same tension.

3,939,724
AUTOMOTIVE VEHICLE SHIFT CONTROL MECHANISM FOR MANUAL TRANSMISSIONS

Yasuie Takahashi, Toyota, and Isao Tsuzuki, Kariya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed July 18, 1974, Ser. No. 489,610
Claims priority, application Japan, Nov. 19, 1973, 48-129159
Int. Cl.² F16H *57/06*
U.S. Cl. 74—476 15 Claims

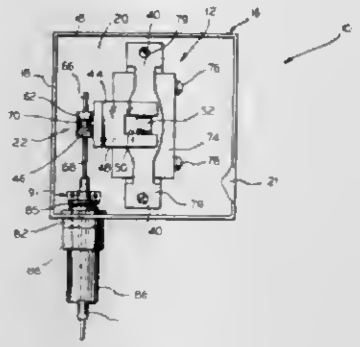


1. In a manual multiple-forward-speed vehicle transmission having transmission means shiftable between a reverse drive and a plurality of forward speed ratios, a manual shift lever controlling said transmission means by movement through a shift pattern of selection positions including a neutral position, said shift lever being connected to shift said transmission means to said reverse drive and to one forward speed ratio by movement thereof, respectively, to a pair of selection positions lying at the ends of a substantially linear path extending across said neutral position, and a transmission lever operatively interconnected between said shift lever and said transmission means; a misshift preventive mechanism for controlling movement of said shift lever along said linear path between said selection positions for said reverse drive and said one forward speed ratio, said misshift preventive mechanism comprising a projection extending from said transmission lever, a pin located to be engaged by said projection, a housing having said pin mounted therein for movement relative thereto between an extended position and a retracted position, said housing being mounted for movement in directions transversely of the directions of movement of said pin with the path of movement of said housing including an initial position defined therealong, said projection being configured to cause retraction of said pin when said shift lever is within said linear path at said neutral position and to permit movement of said pin to said extended position when said shift lever is moved along said linear path away from said neutral position, said pin being arranged to be engaged by said projection when said pin is in said extended position to cause movement of said housing when said shift lever is moved along said linear path, stopper means for restricting movement of said housing, and spring means biasing said housing for movement to its initial position.

3,939,725
REMOTE SWITCH ACTUATING DEVICE

William J. Fisher, Lisle, Ill., assignor to Maynard Braverman, Chicago, Ill., a part interest

Filed Oct. 25, 1973, Ser. No. 409,479
Int. Cl.² G05G *1/00*
U.S. Cl. 74—503 4 Claims



1. In an arrangement for shifting an off-on electrical switch, between off and on positions, that is remote from the operator, in which arrangement the switch is mounted in a fixedly mounted switch box and includes a rocker arm for shifting the switch between its said positions, an electrically insulated actuator mechanism for actuation by the operator, which actuator mechanism is located remotely from said box, and drive rod means extending between said box and said actuator mechanism and operatively connected between said switch rocker arm and said mechanism for effecting shifting of said switch between its said positions utilizing said actuator mechanism, the improvement wherein:

said actuator mechanism is mounted in an electrically isolated box and includes a rocker arm adapted to be hand operated by the operator.

electrical conduiting extending between said boxes,

said conduiting having one of its ends connected to said switch box and the other of its ends connected to said isolated box,

said conduiting ends being connected to the respective boxes by electrical fitting means each including a tubular body extending into the respective boxes and means for making the respective bodies fast to their respective boxes,

said drive rod means comprising:

a guide tube extending between said boxes and through said conduiting and said bodies of the respective fitting means,

each of said fitting means bodies having a compressible bushing press fitted therein into compressed gripping relation with said guide tube,

stop means carried by said guide tube for maintaining the respective bushings in said gripping relation with said guide tube,

and a drive rod extending through said guide tube and having one of its ends operably connected to said switch rocker arm and the other of its ends operably connected to said actuator mechanism rocker arm,

said guide tube and said drive rod being formed from materials of self lubricating characteristics and being resiliently flexible laterally thereof whereby said conduiting may be shaped in diverse configurations between said boxes and said guide tube may be housed within said conduiting in substantial conformity to the configuration of said conduiting longitudinally thereof,

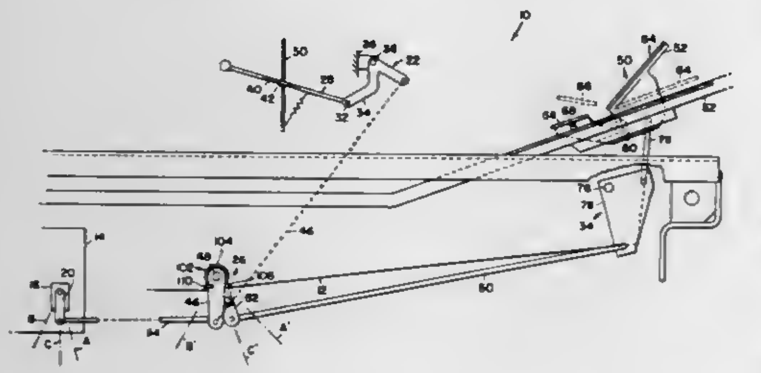
said electrical conduiting being free of electrical wiring extending therethrough,

said means for maintaining the respective bushings in their said gripping relations with said guide tube comprising clamp devices fixed to said guide tube within the respective boxes and substantially abutting the respective bushings, said bushings being jam fitted in their respective fitting means bodies to resist movement exteriorly of the respective boxes.

3,939,726

INTERLOCKED HAND- AND FOOT-OPERABLE ENGINE SPEED CONTROL

Barry Louis Ahrens, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Mar. 7, 1974, Ser. No. 448,910
Int. Cl.² G05G ***1/14***
U.S. Cl. 74—513 **5 Claims**

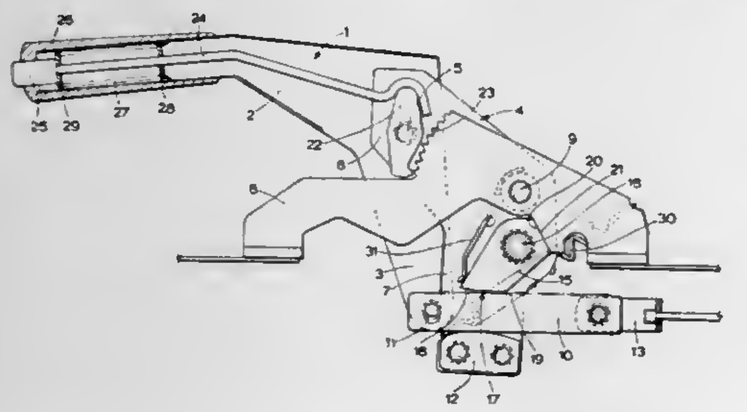


1. A foot pedal arrangement for actuating an engine fuel control device so as to selectively effect acceleration or deceleration of an internal combustion engine, comprising: first and second separate pedal sections pivotally mounted for independent swinging in opposite first and second directions about a fixed pivot axis; a control linkage means interconnecting said first pedal section with said fuel control device for respectively affecting increases and decreases in fuel flow and respective attendant acceleration and deceleration of engine speed when the first pedal section is respectively moved in said first and second directions; and said first and second pedal sections including one-way connecting means for effecting movement of said second section in said first direction in response to and concurrently with movement of said first section in said first direction and for effecting movement of said first section in said second direction in response to and concurrently with movement of said second section in said second direction.

3,939,727

MECHANICAL ACTUATING SYSTEM

Aotbooy Asquith, Nuneaton, England, assignor to Girling Limited, Birmingham, England
Filed Sept. 17, 1974, Ser. No. 506,857
Claims priority, application United Kingdom, Sept. 18, 1973, 43655/73
Int. Cl.² G05G ***1/04***
U.S. Cl. 74—516 **14 Claims**

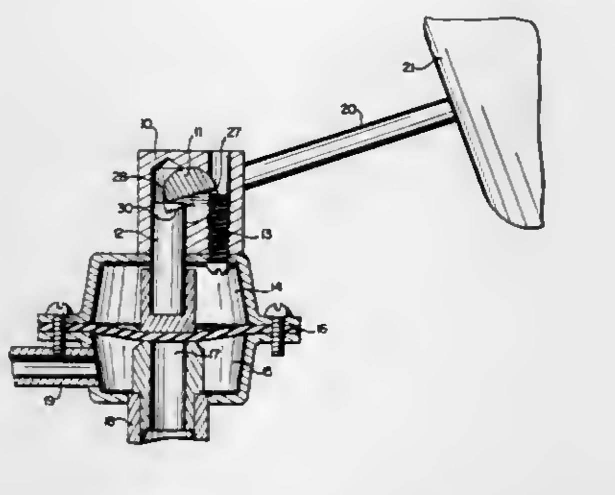


1. A mechanical actuator system for applying an actuating force to an actuated member which is to be moved or to which pressure is to be applied comprising a primary lever, a secondary lever, a fixed part, a first pivot on said secondary lever about which said primary lever is movable by an actuating force through a first range until reaction to said actuating force attains a predetermined value, a second pivot on said fixed part about which said secondary lever is angularly movable with said primary lever through a second range into an applied position after said reaction attains said predetermined value whereby said actuating force is transmitted to said actuated member through a higher leverage, a one-way clutch for coupling said secondary lever to said actuated member through said second range, said clutch normally being disengaged but being engaged as said secondary lever is moved about said second pivot, ratchet teeth on said fixed part, and a pawl connected to said first and second levers by said first pivot and engageable with said ratchet teeth to hold said levers in said applied position at least when said clutch is engaged.

3,939,728

DOUBLE LEVER-FULCRUM CONTROL DEVICE FOR CONTROLLING THE OPENING AND CLOSING OF A FLUID VALVE

Enrique Klien Wallstein, Lima, Peru, assignor to Tecnologia Aplicada S.A., Lima, Peru
Filed Mar. 12, 1974, Ser. No. 450,447
Claims priority, application Peru, Mar. 15, 1973, 135955; Argentina, June 26, 1973, 248757
Int. Cl.² G05G ***1/04;*** **F16K** ***31/18, 31/44***
U.S. Cl. 74—519 **9 Claims**



1. A control device for controlling the opening and closing of a fluid valve of the type having a thrust element movable from a first open valve position to a second closed valve position, said control device being of the double lever-fulcrum type having a longer power lever and a shorter thrust lever fixed together to pivot about a fulcrum to move said thrust element from said first position to said second position upon the application of a force to said power lever, the improvement comprising:

a control lever body fixed to the body of said valve, said control lever body having therein a first opening for receipt of at least a portion of said thrust element, said control lever body having therein a second opening transverse to said first opening;

a single solid cylindrical shaft mounted to rotate about the longitudinal axis thereof at a position adjacent to said thrust element, said fulcrum comprising said longitudinal axis of said shaft, said shaft rotatably mounted in said second opening of said control lever body;

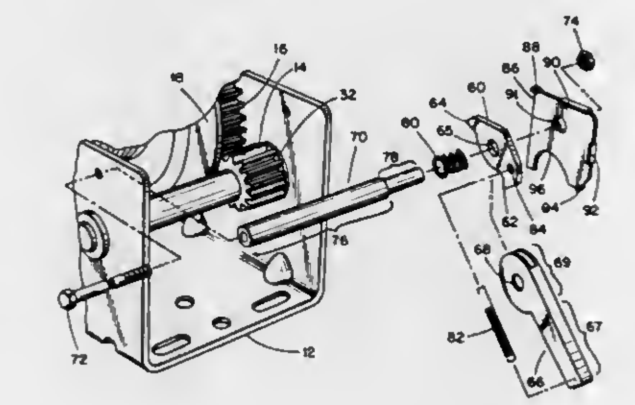
said shaft having therein a notch providing a flat surface having first and second end edges on the periphery of said shaft, said flat surface being a diameter of said shaft passing through said longitudinal axis, said first end edge of said surface contacting said thrust element, said thrust lever comprising a radius of said shaft extending from said longitudinal axis to said first end edge of said surface; and

said power lever being fixed to said shaft to extend outwardly from said periphery thereof.

3,939,729

PAWL AND RATCHET CONSTRUCTION FOR HAND WINCH

Norman D. Brockelsby, Grand Island, Nebr., assignor to Dutton-Lainson Company, Hastings, Nebr.
Filed Oct. 3, 1974, Ser. No. 511,657
Int. Cl.² F16D ***49/00***
U.S. Cl. 74—575 **10 Claims**



1. In a winch having a winch reel, a driving gear, a driven gear engaging with the driving gear connected to the winch reel, and a ratchet and pawl apparatus for permitting forward and reverse movement of the winch, said pawl having first and second ratchet-engaging members thereon and pivotal on a shaft into a first position permitting winch rotation in only one rotational direction and into a second position permitting winch rotation in only the opposite rotational direction, an improvement in the ratchet and pawl arrangement comprising, in combination:

handle means for pivoting said pawl into said first and second positions, said handle means mounted for translational and rotational movement on the shaft,

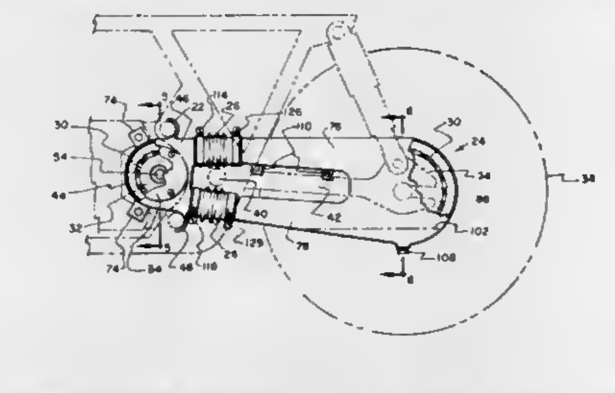
latching means for engaging with said handle means and maintaining said handle means in fixed position when in contact with said handle means; and

biasing means for translating said handle means against said latching means whereby the pawl is maintained in the desired position until a deliberate translational force is exerted on the handle means sufficient to overcome the force of the biasing means.

3,939,730

HOUSING FOR MOTORCYCLE DRIVE CHAIN

Robert D. DeHaan, 775 SE. 16th St., Hillsboro, Oreg. 97123
Filed Oct. 8, 1974, Ser. No. 513,077
Int. Cl.² F16P ***1/00***
U.S. Cl. 74—611 **10 Claims**



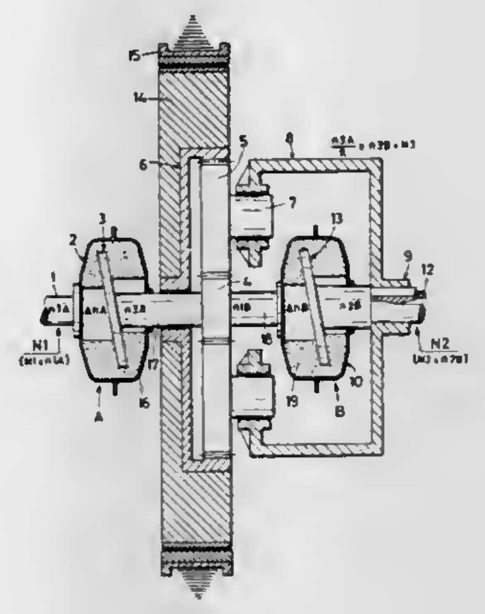
1. A chain housing, adapted for mounting on a conventional chain-driven motorcycle to enclose the drive sprocket, drive chain and rear wheel sprocket thereof, comprising:

a. a front housing section enclosing a drive sprocket and a portion of a drive chain;
b. a rear housing section enclosing a rear wheel sprocket and the remaining portion of said drive chain;
c. means for flexibly coupling said front housing section to said rear housing section;
d. means for removably attaching said rear housing section to a frame member of a motorcycle;
e. a cup-shaped gland member removably attached to the rear wheel hub of said motorcycle; and
f. an annular lip seal removably attached to said rear housing section and sealingly engaging said gland member.

3,939,731

DIFFERENTIAL TORQUE MULTIPLYING DEVICE

Ubaldo Ranzi, deceased, late of Legnano, Italy, by Cristiana Ranzi, Cesare Giannetta Ranzi, Giulio Ranzi, Riccardo Ranzi and Matteo Ranzi, heirs, assignor to S.p.A. Ranzi Legnano, Legnano, Italy
Continuation-in-part of Ser. No. 127,323, March 23, 1971, abandoned. This application Jan. 8, 1974, Ser. No. 431,777
Claims priority, application Italy, Mar. 24, 1970, 22396/70
Int. Cl.² F16H ***47/08, 57/10***
U.S. Cl. 74—688 **5 Claims**



1. A differential torque transmitting device comprising first and second rotary slip couplings, the second being of a type whereof the torque-transmitting capacity increases as the rotational speed of the coupling increases, each of which couplings has an input member and an output member, the output member of the first coupling being directly connected to the input member of the second coupling and the output member of the second coupling being connected to the input of a driven machine, an epicyclic reduction gear train having an input element connected to the output member of the first coupling at a speed which bears a constant relationship to the speed of the input member of the second coupling, a reaction element, associated with said gear train, and an output element drivingly connected to the output element of the second coupling, and means acting to hold said reaction element of said gear train fixed against rotation in one direction only and adapted automatically to release said reaction element for rotation in the opposite direction to discontinue the transmission of power through the epicyclic gear train to the output element of the second coupling and to permit the speed of the output member of the second coupling to rise to a value equal to that of the input member of the second coupling, said second coupling being designed so that, whenever the input shaft of the driven machine slows down as a result of an external cause, the torque transmitted backwards by the output member of the second coupling to the first coupling is always lower than the torque transmitted by the output member of the said first coupling to the second coupling.

3,939,732

POWER UNIT FOR VEHICLES INCORPORATING AN AUTOMATIC STEPLESS SPEED CHANGE GEAR

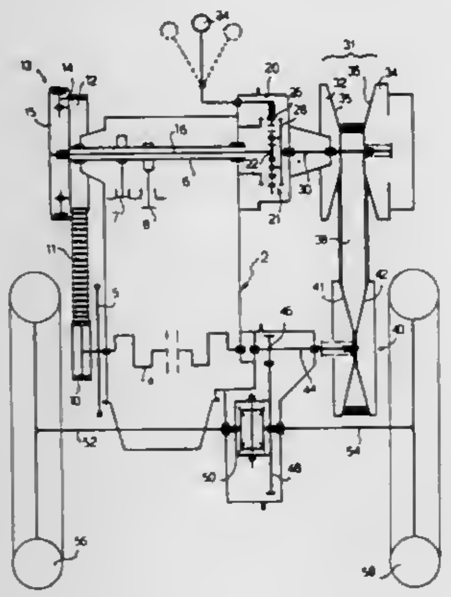
Dante Giacosa, Turin, Italy, assignor to Sira Societa Industriale Richerche Automotoristiche, Turin, Italy

Filed May 2, 1974, Ser. No. 466,338

Claims priority, application Italy, May 10, 1973, 68333/73; Jan. 8, 1974, 67027/74

Int. Cl. F16h *37/08*, *55/52*; B60k *17/34*

U.S. Cl. 74—701 **3 Claims**



1. Vehicular power unit for a motorized vehicle having an internal combustion engine having a crankshaft and an overhead camshaft, and an automatic stepless speed change gear having at least one expansible driving pulley connected to the engine and driven thereby, at least one expansible driven pulley, and a belt connecting said driving and driven pulleys, wherein the improvements comprise said camshaft is hollow and has a central longitudinal axial cavity; an intermediate drive shaft extending within said longitudinal axial cavity within said camshaft; toothed belt transmission means drivingly connecting one end of said intermediate drive shaft to said engine; a centrifugal friction clutch coupling said intermediate drive shaft to said toothed belt transmission, said centrifugal friction clutch having centrifugal elements which are carried by a toothed pulley of said toothed belt transmission and a drum which is connected to the adjacent end of said intermediate drive shaft; and means operatively connecting the other end of said drive shaft to said at least one driving pulley of the speed change gear.

2. Vehicular power unit for a motorized vehicle having an internal combustion engine having a crankshaft and an overhead camshaft, and an automatic stepless speed change gear having at least one expansible driving pulley connected to the engine and driven thereby, at least one expansible driven pulley, and a belt connecting said driving and driven pulleys, wherein the improvements comprise said camshaft is hollow and has a central longitudinal axial cavity; an intermediate drive shaft extending within said longitudinal axial cavity within said camshaft; first means drivingly connecting one end of said intermediate drive shaft to said engine; and second means operatively connecting the other end of said drive shaft to said at least one driving pulley of speed change gear, wherein the stepless speed change gear is provided with a single driving pulley situated upon the same axis as the intermediate drive shaft and including a reversing device connecting said driving pulley to said drive shaft.

3,939,733

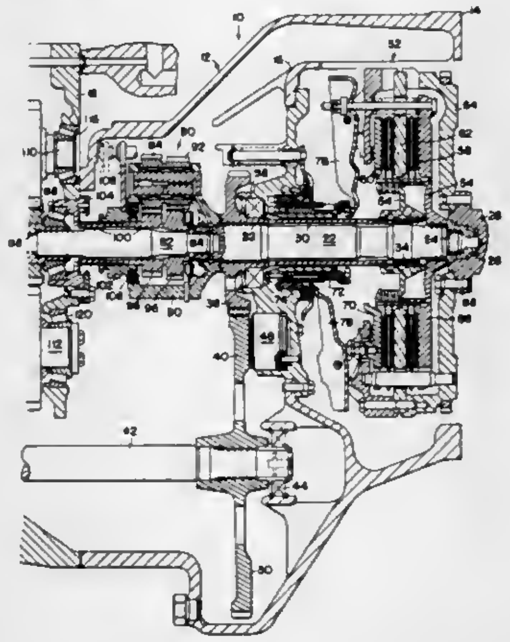
MECHANICAL TRANSMISSION AND CONTROLS THEREFOR

Peter Donald Wetrich, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed July 30, 1974, Ser. No. 492,951

Int. Cl.^{2} F16H *37/00*

U.S. Cl. 74—740 **7 Claims**



1. A mechanical transmission including an input member, an output member, speed change means coupled between the input and output members and being selectively setable in a plurality of transfer ratio conditions, first and second manual control means rockable about a fixed axis, first control linkage means coupled between the first manual control means and the speed change means to set the speed change means in direct or underdrive transfer ratio conditions upon movement of the first manual control means between first and second positions, respectively, second control linkage means coupled between the speed change means and the second manual control means to set the speed change means in any one of a plurality of transfer ratio conditions within the direct or underdrive transfer ratio conditions upon movement of the second manual control means to any one of a plurality of positions, and interlock means acting between the first and second manual control means to prevent movement of the first and second manual control means to positions in which the speed change means is set in the highest of the plurality of transfer ratio conditions within the underdrive transfer ratio condition.

3,939,734

AUTOMATIC TRANSMISSION WITH CENTRIFUGAL CLUTCHES

Henri Blanchette, 99 Haudel, Candiac, Quebec, and Gerard Belanger, 543 de la Verendrye, Boucherville, Quebec, both of Canada

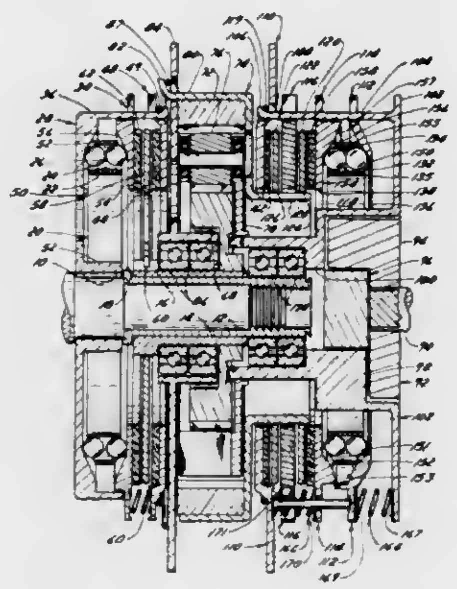
Filed Apr. 11, 1974, Ser. No. 460,204

Claims priority, application Canada, Feb. 12, 1974, 192454

Int. Cl.^{2} F16H *3/74*; F16D *43/06*, *43/24*

U.S. Cl. 74—752 E **20 Claims**

1. In an automatic transmission: an input shaft; extensible roller bearing means mounted about the longitudinal axis of said input shaft and carrying radially movable centrifugal roller means; pressure disc means enclosing said bearing means and having surface presenting means for contacting engagement with said roller means, at least one of said pressure disc means being axially displaceable under the influence of a first predetermined centrifugal force on said roller means; first clutch disc means disposed adjacent said one of said pressure disc means and adapted to be frictionally contacted by said one of said pressure disc means when axially displaced; a planetary gear assembly including a sun gear, planet gear means and an outer ring gear, said sun gear being operatively connected to said first clutch disc means; means to prevent rotation of said outer ring gear in a direction opposite to that of said sun gear; an output shaft operatively connected to said planet gear means and in axial alignment with said input shaft; second clutch disc means disposed adjacent another of said pressure disc means: said other of said pressure disc means being axially displaceable under the influence of a second centrifugal force on said ring means and adapted to frictionally engage said second clutch disc means, said second clutch disc means being operatively connected to said outer ring gear; the size of said gear means of said planetary assembly being such as to provide a reduction in rotational speed between said input shaft and said output shaft for a low rotational speed of said input shaft; said surface presenting means on said one of said pressure disc means including a radially extending face in contacting engagement with said roller means for idle speeds of said input shaft and a first inclined face to receive pressure from said roller means for increased rotational speeds of said input shaft causing said one of said pressure disc means to engagedly contact said first clutch disc means; said other of said pressure disc means including a second inclined face to receive pressure from said roller means for further increased rotational speeds of said input shaft causing said other pressure disc means to engagedly contact said second clutch disc means whereby a direct drive is obtained between input and output shafts.



3,939,735

DOUBLE EPICYCLIC TRANSMISSION STRUCTURE

George E. Lewis, Gastonia, N.C., assignor to Power-Flo Products, Inc., Gastonia, N.C.

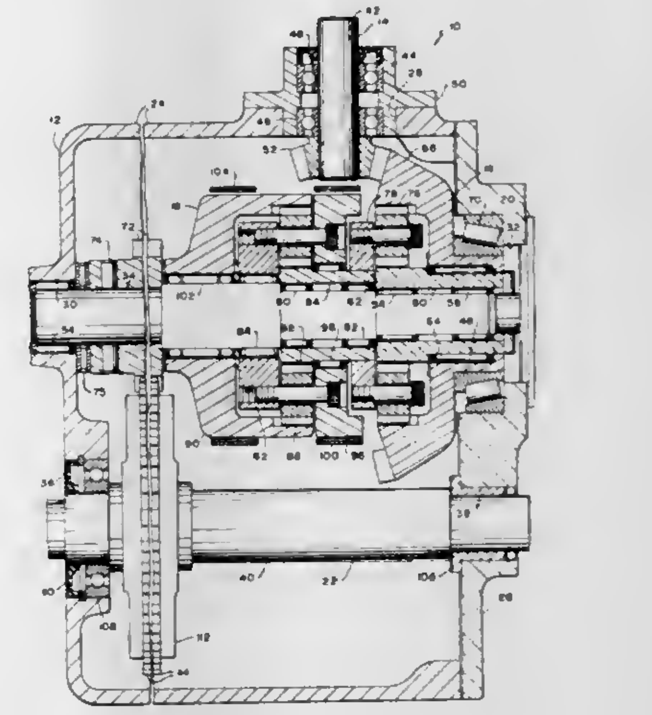
Filed Apr. 18, 1974, Ser. No. 461,862

Int. Cl.^{2} F16H *57/10*; F16D *41/02*

U.S. Cl. 74—758 **9 Claims**

1. A transmission comprising a housing, a drive shaft extending through said housing and journaled therein for rotation, an input shaft extending into the housing, first eipcyclic gear structure rotatably mounted on said drive shaft, means for driving the first epicyclic gear structure from said input shaft, second epicyclic gear structure positioned on said drive shaft adjacent said first epicyclic gear structure and engaged with said first epicyclic gear structure for rotation thereby and including means for rotating the drive shaft in opposite directions to provide forward and reverse drive in accordance with the rotation of the second epicyclic gear structure, an output shaft and means for driving the output shaft from the drive shaft.

2. Structure as set forth in claim 1 and further including speed control structure operably associated with said first epicyclic gear structure.



3,939,736

PLANET CARRIER FOR A PLANETARY GEAR TRAIN

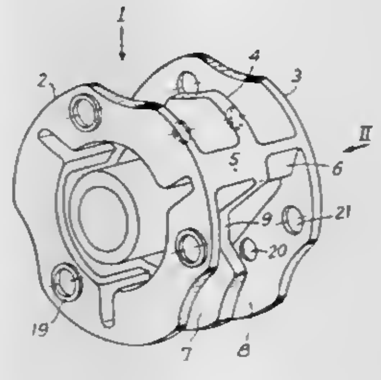
Jean Morin, Rueil-Malmaison, France, assignor to Regie Nationale des Usines Renault, France

Filed Sept. 12, 1974, Ser. No. 505,373

Claims priority, application France, Oct. 10, 1973, 73.36224

Int. Cl.^{2} F16H *1/28*

U.S. Cl. 74—801 **7 Claims**

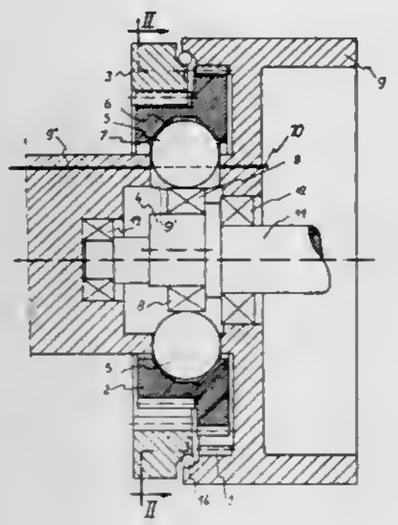


1. In a planet carrier comprising two lateral radial flanges and a middle radial flange, the improvement comprising two sets of ribs of equal number connecting the respective lateral flanges and the middle flange, the ribs being spaced around the planet carrier and extending longitudinally and radially inward from the periphery of the planet carrier, each pair of adjacent ribs of each set together with the corresponding lateral flange and the middle flange delimiting a recess, each recess between one lateral flange and the middle flange opening through an aperture in the middle flange into a corresponding one of the recesses between the middle flange and the other lateral flange.

3,939,737

EPICYCLIC TRANSMISSION WITH ECCENTRIC DRIVE AND THRUST-TRANSMITTING BODIES IN STATIONARY GUIDE

Eduard Horvath, Vienna, Austria, assignor to Otto Bock Orthopäedische Industrie K G, Duderstadt, Germany
Filed Mar. 12, 1974, Ser. No. 450,478
Claims priority, application Austria, Mar. 16, 1973, 2387/73
Int. Cl.² F16H *1/28*
U.S. Cl. 74—805 **10 Claims**



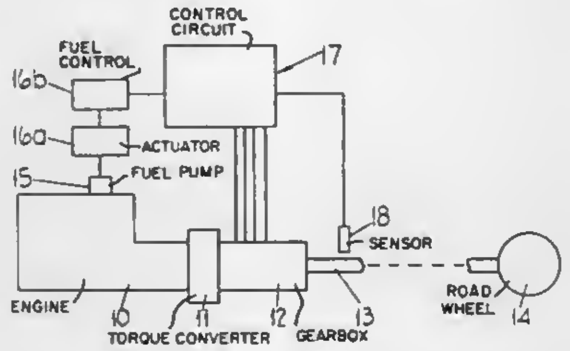
1. An epicyclic transmission comprising:
- a stationary member;
- a fixed ring gear secured to said member;
- a driven ring gear coaxial with and adjacent said fixed ring gear, said ring gears being of different diameters;
- a drive shaft journaled in said member;
- an eccentric on said drive shaft offset from the axis of said ring gears;
- a multiplicity of independently movable thrust-transmitting bodies bearing generally radially upon said eccentric at peripherally spaced locations;
- stationary guide means for said bodies integral with said member; and
- a stepped annular planet pinion movably disposed between said guide means and said ring gears in meshing engagement with the latter, said pinion being internally supported by said bodies for displacement thereby upon rotation of said eccentric by said shaft with consequent relative rotation of said ring gears.

3,939,738

SPEED RESPONSIVE CONTROL SYSTEM FOR VEHICLE MOTOR & TRANSMISSION

Anthony John Adey, Slough; Geoffrey Richard French, Weybridge; Gordon Harris Leonard, Gerrards Cross, and Malcolm Williams, Solihull, all of England, assignors to C.A.V. Limited, Birmingham, England
Filed Apr. 9, 1974, Ser. No. 459,344
Claims priority, application United Kingdom, Apr. 14, 1973, 18092/73
Int. Cl.² B60K *41/04;* **F02B** *3/00*
U.S. Cl. 74—859 **4 Claims**

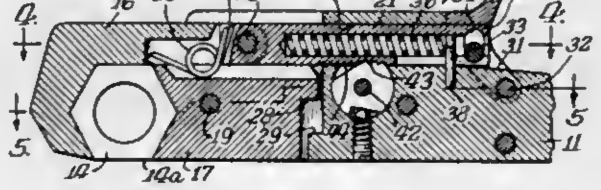
1. A control system for a vehicle, the vehicle including an engine which is coupled through a multi-ratio gear box to the transmission of the vehicle, ratio engaging means for selecting the gear ratios of the gear box respectively, the engine have a fuel system including a pump, the control system including control networks associated with the ratio engaging means respectively, means responsive to the speed of the vehicle for supplying a vehicle speed signal to the control networks, said networks being arranged to effect a change in the selected ratio of the gear box as the vehicle speed increases, the control system also including an electronic fuel control system for adjusting the quantity of fuel supplied to the engine by the pump in accordance with an engine parameter and a desired operating condition, the control system also including first electrical circuit means responsive to a change in the state of a component in one of the control networks as occurs when the particular network is effecting engagement of a new ratio, said first electrical circuit means effective a temporary change in a control signal of the electronic fuel control system to produce a temporary reduction in the quantity of fuel supplied to the engine, a temporary reduction in the quantity of fuel supplied to the engine, said first electrical means including means for delaying the temporary change in the control signal of the electronic fuel control system and further means for causing a gradual change in said control signal whereby the quantity of fuel supplied to the engine is gradually reduced, second electrical circuit means associated with said control networks respectively for delaying engagement of the new ratio, and said first electrical circuit means being divided into first and second portions, there being as many of said first portions as there are control networks and there being provided a single second portion, each of said first portions providing a control pulse of a predetermined time duration for said second portion when the associated control network is effecting engagement of its associated gear ratio.



3,939,739

ADJUSTABLE RATCHET WRENCH

Mike D. Kotsakis, Des Plaines, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.
Filed June 3, 1974, Ser. No. 475,975
Int. Cl.² B25B *13/28, 13/14*
U.S. Cl. 81—91 R **7 Claims**

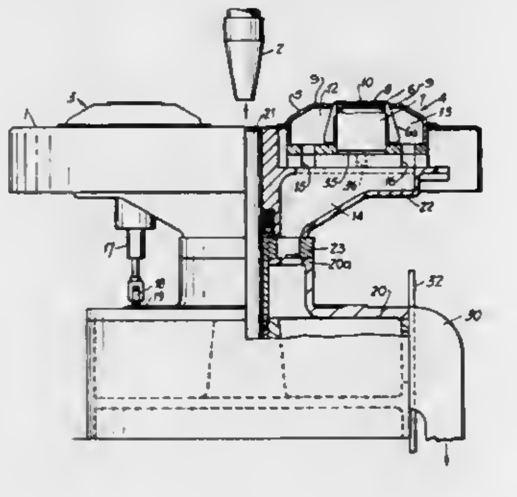


1. In an adjustable ratchet wrench having a handle, a first jaw, means for pivotally mounting said jaw to the handle, a second jaw, a carrier, means for pivotally mounting said second jaw to said carrier, means for movably mounting the carrier to the handle for variably spacing the second jaw relative to the first jaw permitting the jaws to be disposed in a gripping position wherein they grip therebetween an element to be turned as an incident of the handle being swung in a gripping direction and move in a release direction to a release position wherein they release the element therebetween as an incident of the handle being reversely swung thereby to provide a ratcheting of the element, the improvement comprising stop means on the handle for limiting pivotal jaw release movement of said first jaw to maintain the ratcheting arrangement of the jaws, said means for movably mounting the carrier to the handle comprising one-way ratchet means for adjustably spacing said second jaw relative to said first jaw in any one of a plurality of preselected discrete positions, and further including manually operable means for urging said second jaw to an element-engaging adjusted position in the direction of free movement of the ratchet means, whereby said ratchet means retains the said second jaw in the adjusted element-engaging position for selective gripping and release of the element as an incident of said swinging of the handle, manually operable release means for releasing the ratchet means to permit free adjustable increased spacing of said second jaw relative to the first jaw, and means biasing said second jaw toward a retracted maximumspaced position whereby said second jaw is moved to said retracted position upon release of the ratchet means.

3,939,740

WRAPPER CUTTER FOR AUTOMATIC CIGAR WRAPPING MACHINE

Herman W. Johnson, Richmond, Va., assignor to AMF Incorporated, White Plains, N.Y.
Filed May 7, 1974, Ser. No. 467,690
Int. Cl.² A24C *1/04*
U.S. Cl. 83—24 **9 Claims**

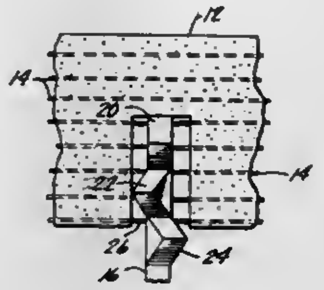


9. The method of processing a strip of tobacco having a first surface and a second oppositely facing surface in a cigar machine which comprises a cutting die unit for cutting a strip of tobacco to the desired shape, said die unit being movable from a first position to a second position and having a cutting edge which conforms to said shape and defines a space of said shape therewithin and having a portion adjacent to said cutting edge at the side thereof opposite from said space, said portion having apertures extending therethrough, said method comprising placing a strip of tobacco larger than the area of said shape on said cutting edge with said first face of said strip facing said portion, maintaining said strip thereon by drawing air through said apertures in a first direction extending away from said first face, pressing said strip against said cutting edge with said die unit in said first position to cut a portion of said strip into said shape while leaving other portions thereof on said portion of said die unit, removing said cut portion of said strip from said die unit, moving said die unit away from said first position toward said second position, and after said die unit has been moved from said first position, passing air through said apertures in a second direction opposite to said first direction to dislodge said other portions of said strip from said portion of said die unit while removing said other portions by suction directed away from said portion of said die unit.

3,939,741

METHOD AND APPARATUS FOR CUTTING REINFORCED FOAM

Winford K. Allan, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.
Filed Dec. 23, 1974, Ser. No. 535,186
Int. Cl.² B26D *3/00*
U.S. Cl. 83—52 **2 Claims**

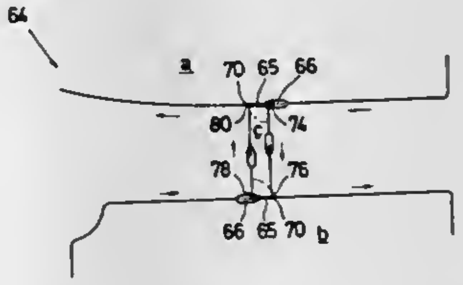


1. A method of cutting reinforced foam insulation comprising the steps of:
- a. passing a cutting tool through the insulation first cutting across strands extending through said insulation; and
- b. thereafter cutting the foam along a plane spaced from the cut ends of said strands and removing said foam adjacent thereto to thus expose the cut ends of said strands, said method being repeated until the cutting of the strands and foam has been completed whereby the plane of the tips of said ends is spaced from the plane of the cut surface of said insulation.

3,939,742

METHOD AND APPARATUS FOR AUTOMATICALLY CUTTING FABRICS AND THE LIKE

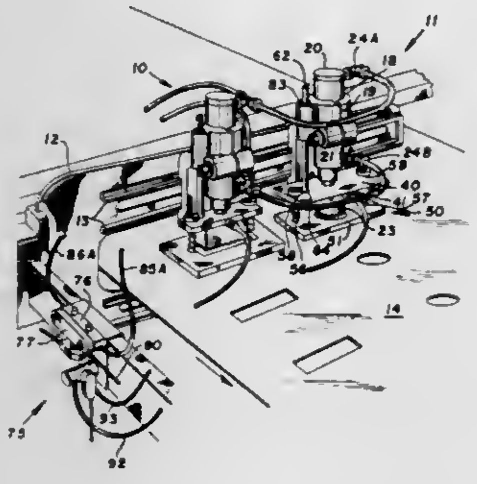
Rolf Jung, Waiblingen, Germany, assignor to Krauss & Reichert Spezialmaschinenfabrik, Fellbach, Germany
Filed May 13, 1974, Ser. No. 469,297
Claims priority, application Germany, May 18, 1973, 2325426
Int. Cl.² D06H *7/00*
U.S. Cl. 83—56 **4 Claims**



1. In a process for automatically cutting fabric in a cutting plane by means of a knife having a cutting edge the movement of which is controlled by a sensor in accordance with a cutting pattern template containing the cutting information to be sensed in the form of a single continuous line made up of contour lines of pattern parts and contour line parts of small bars interconnecting the pattern parts and in which said contour lines and contour line parts run together to form sharp corners in said line, the step of running said cutting edge through at least one of said sharp corners for a distance substantially equal to the width of a bar following its approach to said one corner from one direction and before turning said edge to a new direction.

3,939,743
PUNCH FOR FILM PRODUCTS HAVING IMPROVED SLUG REMOVAL FACILITY

William S. Coombes, Somerset, Mass., assignor to Sheldahl, Inc., Northfield, Minn.
Filed Feb. 18, 1975, Ser. No. 550,203
Int. Cl.² B26D *7/18*
U.S. Cl. 83—98 **2 Claims**

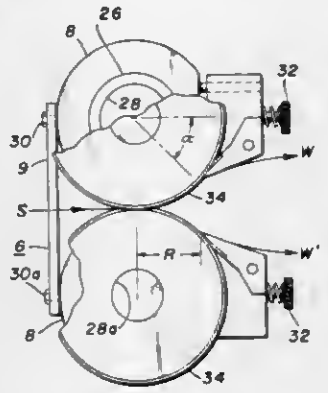


1. In combination with a punch assembly for perforation of flexible film products with cooperatively arranged punch and die assemblies, and means for ejecting film slugs from said punch means; pneumatic punch drive means and control means for said punch drive means and said film slug-ejecting means:

- a. said punch assembly including frame means for retaining a reciprocating punch and a stationary die, a punch assembly including a punch member mounted on said frame means and including drive means for stroking said punch member in reciprocatory to-and-fro motion for extension and retraction thereof along a certain linear path;
- b. a die-assembly mounted on said frame means and having a punch-receiving bore formed therein;
- c. said pneumatic punch drive means comprising a double acting cylinder with a piston and ram operatively associated therewith, axially spaced port means for introducing compressed gaseous fluid into said cylinder including a first port for drivably extending and a second port for drivably retracting said piston and ram;
- d. said film slug-ejecting means comprising slug-ejection port means on said punch means for receiving compressed gaseous fluid and delivering said compressed gaseous fluid to the interior of said punch means for ejection of film slugs outwardly of said punch means;
- e. said control means comprising manifold means for receiving compressed gaseous fluid under pressure, first control valve means having an inlet coupled to said manifold means and having a pair of outlets alternately coupled to said inlet and including a normally open and a normally closed outlet with said normally open outlet having conduit means coupling said normally open outlet to said second cylinder port and with said normally closed outlet having conduit means coupling said normally closed outlet to said first cylinder port;
- f. second control valve means having an inlet coupled to said manifold means and having an outlet port intermittently coupled to said inlet port with conduit means coupling said outlet port to said slug-ejecting port means; and
- g. first control valve timing means for controllably actuating said first control valve means to simultaneously close said normally open outlet port and open said normally closed outlet port for ram extension; and
- h. second control valve timing means for controllably actuating said second control valve means to intermittently couple said second control valve means inlet port to said second control valve means outlet port.

3,939,744
WIRE EXTRACTOR

Bernhard T. Junker, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.
Filed Oct. 30, 1974, Ser. No. 519,165
Int. Cl.² B23D *19/06, 33/00*
U.S. Cl. 83—118 **7 Claims**

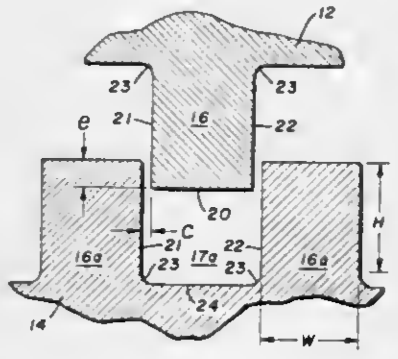


1. A wire extractor for use in combination with a slitter having a stationary housing, a pair of arbors mounted in said housing and grooved cutters positioned on said arbors, comprising:

- a body member having teeth and grooves wherein said teeth are adapted to mesh with said grooved cutters;
- a holder for receiving and positioning said body member on said housing;
- an annular support ring for supporting said holder on said arbor so that the teeth of said body member mesh with the grooves of said cutter whereby axial movement of said body member is prevented; and
- means for aligning said body member so that the angular position of the teeth of said body member with respect to the grooved cutters is such that slit wire is readily extracted.

3,939,745
APPARATUS FOR SLITTING COIL STOCK

James E. Weeks; Charles J. Runkle; Bernhard T. Junker, and Gary E. O'Connor, all of Raleigh, N.C., assignors to Monsanto Company, St. Louis, Mo.
Filed Oct. 30, 1974, Ser. No. 519,173
Int. Cl.² B23D *19/06*
U.S. Cl. 83—425.3 **16 Claims**

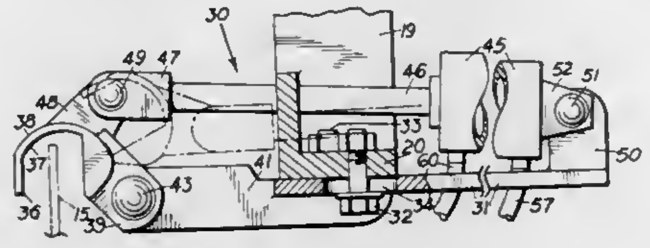


1. An apparatus for slitting metallic coil stock into multiple continuous lengths of small cross-sectional wire, comprising:

- a rigid stationary housing;
- a first arbor positioned in the upper portion of said housing;
- a second arbor positioned in the lower portion of said housing and substantially parallel to said first arbor;
- a first and a second monolithic cutter roll positioned in engaging relationship on said arbors, each roll comprising, a plurality of lands and grooves wherein the grooves are characterized by essentially vertical sides and a curved root, the ratio between groove width and said coil thickness being less than 5:1 and the spacing between the lands of said first roll and the groove roots of said second roll being a pre-determined distance so that during slitting fracture occurs in the shear mode.

3,939,746
SAW GUARD

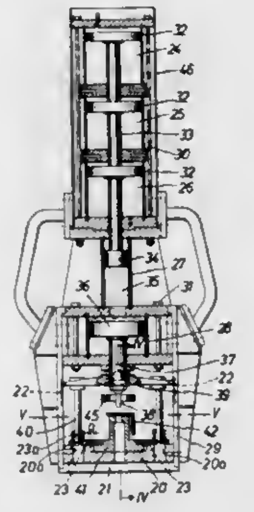
Gary W. Rogers, Aloha; Leroy A. Tottie, Aberdeen; Vaughn G. Hamilton; Orville O. Goodwin, both of Pacific Beach, and Jean A. Baker, Hoquiam, all of Wash., assignors to Evans Products Company, Portland, Oreg.
Filed Oct. 16, 1974, Ser. No. 515,189
Int. Cl.² B27G *19/02;* **B23D** *59/00*
U.S. Cl. 83—544 **5 Claims**



1. A saw machine having a work piece holder which moves the work piece into contact with a moving saw blade by relative motion of the holder and blade during a cutting cycle and which may be opened to replace the work piece during a work piece restocking cycle; a saw guard mounted on the leading edge of the work piece holder, means for holding the guard in a retracted position so that it does not shield the saw blade during said cutting cycle, and means to move the guard into shielding position adjacent the cutting edge of said saw blade during the time when the work piece holder is in said work piece restocking cycle.

3,939,747
PROFILE PRESS AND PRECISION CUTTING APPARATUS WITH A PRESSURE MULTIPLIER

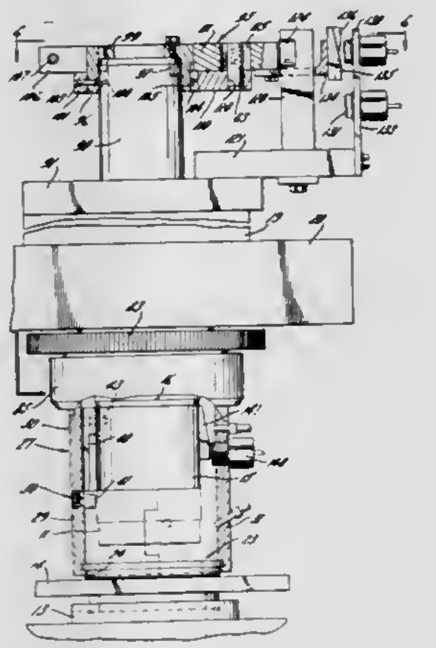
Siegfried Harcuba, Saarbrucken, and Herbert Dits, Schmelz, both of Germany, assignors to Siegfried Harcuba, Saarbrucken, Germany
Filed Apr. 18, 1974, Ser. No. 461,994
Int. Cl.² B26F *1/02*
U.S. Cl. 83—637 **3 Claims**



1. A profile press and precision cutting apparatus having a pressure multiplier for converting air pressure into oil pressure, said multiplier comprising an oil pressure-operated cylinder containing a piston having a piston rod to which is attached a cutting tool acting as a punch, wherein the improvement comprises a base plate, a cutting die assembly which rests on the base plate and is freely movable horizontally in all directions relative to the base plate, said base plate having a portion which at least partly surrounds the cutting die assembly, but is radially spaced therefrom in all directions, thereby accomodating free horizontal movement of the cutting die assembly in all directions relative to the base plate, and a plurality of guide rods which are rigidly connected to said piston rod and are parallel to the direction of travel of said piston rod, said guide rods extending into bores in the cutting die assembly and being long enough so that they extend into said bores throughout the entire stroke of said piston rod, to maintain the cutting die assembly in alignment with said piston rod during the cutting operation, irrespective of misalignment of the cutting die assembly with the base plate, thereby producing torsion-free guidance of the cutting tool and permitting the base plate to take up internally acting forces.

3,939,748
HYDRAULIC PUNCH PRESS WITH RAM ORIENTING MECHANISM

William B. Scott, Steward, and Roger V. Sawvell, New Milford, both of Ill., assignors to W. A. Whitney Corporation, Rockford, Ill.
Division of Ser. No. 274,391, July 24, 1972, Pat. No. 3,805,658. This application Feb. 13, 1974, Ser. No. 442,090
Int. Cl.² B26F *1/02*
U.S. Cl. 83—639 **9 Claims**



1. A punch press having a vertically reciprocable punch adapted to coact with an underlying die to punch a hole in an intervening workpiece, said press comprising a support, and upright cylinder mounted on said support, a piston slidable upwardly and downwardly within said cylinder, a ram projecting downwardly from said piston and out of the lower end of said cylinder and carrying said punch on its lower end, a rod rigid with the upper end of said piston and projecting upwardly through and journaled slidably in the upper end of said cylinder to help resist the lateral forces imposed on said ram when said punch engages said workpiece, and mechanism connected between said support and the projecting upper end portion of said rod for adjustably orienting the rod and the ram in a selected angular position within said cylinder and for thereafter anchoring the rod and the ram in said selected position.

3,939,749

BAND SAW

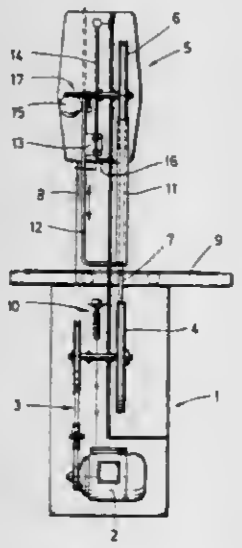
Ernst Müller, Balingen, and Alois Butz, Geislingen, both of Germany, assignors to Bizerba-Werke, Wilhelm Kraut KG, Germany

Filed May 5, 1975, Ser. No. 574,400

Claims priority, application Germany, May 27, 1974, 2425531

Int. Cl.² B27G *19/06, 3/00;* **B23D** *55/02*

U.S. Cl. 83—814 **12 Claims**



1. A band saw for cutting stocks of material such as bone and meat comprising a frame on which are supported spaced upper and lower rotatable wheels, a saw blade extending between and mounted on said wheels and adapted to be driven thereby, a feed table positioned between said wheels for supporting stock adjacent to the saw blade during a cutting operation, a guard rail having an idle position covering the saw blade in its cutting region above the feed table, support means for said guard rail mounted to allow movement of the guard rail (1) in a parallel direction with respect to said saw blade an amount sufficient to expose the cutting region of said saw blade to the height of passage necessary for cutting said stock and (2) a limited amount toward the cutting edge of the saw blade upon application of pressure of the stock against the guard rail, and actuating means operatively associated with said support means for moving said support means and thereby said guard rail upward in said parallel direction so as to expose said saw blade the necessary amount to allow cutting of the stock, said actuating means being responsive to the movement of said guard rail toward said cutting edge to move said support means and thereby said guard rail an amount sufficient only to expose said saw blade to the necessary height of passage of said stock.

3,939,750

ELECTRONIC ORGAN

Michihiro Inoue; Takeji Kimura, both of Hirakata, and Masaharu Sato, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

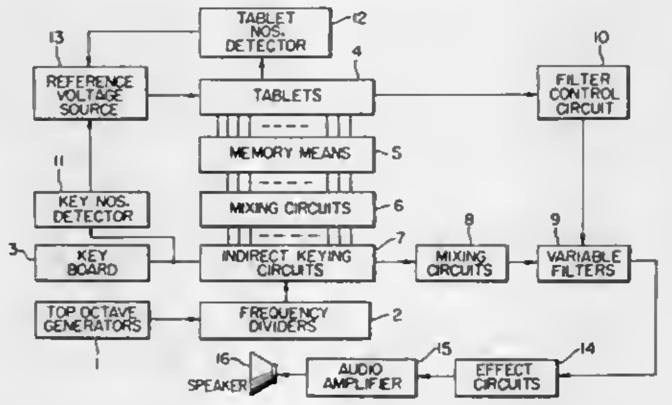
Filed Mar. 6, 1975, Ser. No. 555,731

Claims priority, application Japan, Mar. 6, 1974, 49-25964; Mar. 6, 1974, 49-25965

Int. Cl.² G10H *1/06*

U.S. Cl. 84—1.22 **18 Claims**

1. An electronic organ comprising
- a. a reference voltage source,
- b. at least one group of tablets for selectively passing the current from said reference source,
- c. at least one group of memory means for separating the current which has passed through each of said tablets into a plurality of currents each with a predetermined different magnitude with respect to each other,
- d. at least one group of first means for mixing selected currents from said memory means,
- e. means for generating top octave waves,
- f. a plurality of groups of means for dividing stepwise the frequency of the waves of each interval of said top octave waves,
- g. a DC voltage source,
- h. at least one keyboard consisting of keys for selectively passing the voltage from said DC voltage source,



- i. a plurality of indirect keying means each for modulating the current from each of said mixing means by the frequency-divided waves and selectively passing the modulated waves in response to the operation of each of said keys of said keyboard, and
- j. at least one means for converting the waves of said indirect keying means into the musical sounds.

3,939,751

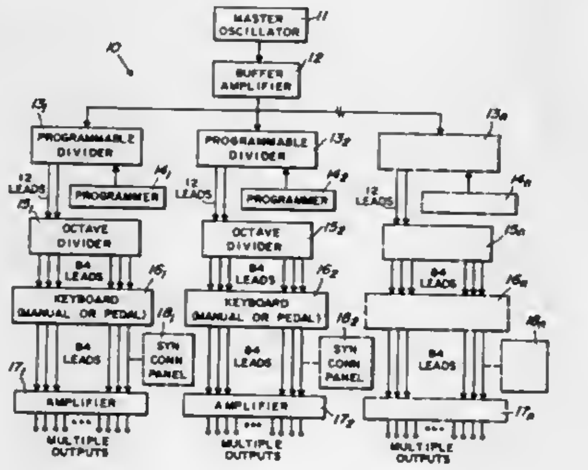
TUNABLE ELECTRICAL MUSICAL INSTRUMENT

Richard J. Harasek, Northbrook, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Sept. 16, 1974, Ser. No. 506,072

Int. Cl.² G10H *5/06*

U.S. Cl. 84—1.17 **5 Claims**



1. In an electronic musical instrument for playing scales including those with more than twelve tones per octave and those with unequal temperament, a master programmable unit comprising:
- oscillator means for providing a fixed reference frequency signal; and
- a plurality of individually programmable sections, each said programmable section having capability for producing twelve tones per octave independently of any other programmable section, and each including
  - at least twelve divider chains connected to said oscillator means for receiving said fixed reference frequency signal and for producing simultaneously a first twelve distinct signals from said reference frequency signal, the divisor number of each said divider chain being adjustable and the divisor number of one of said divider chains being related to the divisor number of any second one of said chains by a factor greater than one and less than two,
  - program means connected to said frequency divider chain for changing the divisor numbers of individual chains to vary the frequencies of said first twelve distinct signals,
  - octave divider means connected to receive said first twelve distinct signals from said twelve divider chains and to produce therefrom at least a second twelve signals, each of the second twelve signals having a frequency related to the frequency of one of said first twelve signals by a multiple of two, and said octave divider means having an output for each of said second twelve signals,
  - reproducing means for receiving and reproducing signals applied thereto, and having a multiplicity of output terminals, and
  - switching means having at least twelve key switches, each key switch connected to an output of said divider means, for coupling the signal from said divider means output to said reproducing means.

3,939,752

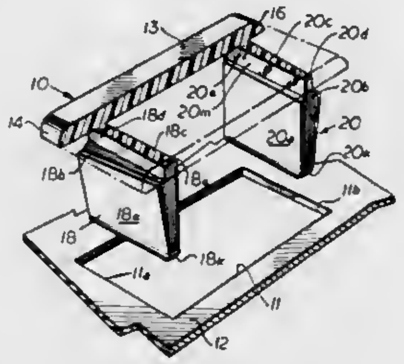
FASTENER STRUCTURE

Richard A. Koscik, Richton Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 23, 1974, Ser. No. 536,936

Int. Cl.² F16B *19/00*

U.S. Cl. 85—5 R **10 Claims**



1. A device for insertion into a bi-sided panel, comprising: a head portion, a pair of spaced apart prongs extending from said head portion for insertion through aperture means formed in said panel, at least one of said prongs including a body portion for passing completely through said panel from one side thereof, a shoulder portion extending transversely of said body portion to engage an opposite side of said panel when said prong is inserted therethrough, a neck portion extending between said head portion and said shoulder portion and of a length corresponding to the thickness of said panel, said neck portion having a tapering cross-section, when viewed in a plane parallel to said panel, from a thin neck edge to a thick neck edge for providing different degrees of flexure from the thin neck edge to the thick neck edge, whereby said neck portion will flex inwardly and twist arcuately about one neck edge inwardly of the periphery of said aperture means during assembly of the device with the panel for facilitating passage of the shoulder portion beneath the panel.

3,939,753

THREE AXIS COIL MAGNETIC MINESWEEPING SYSTEM

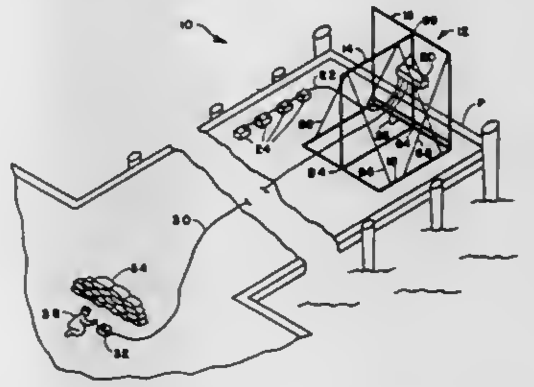
Jerry J. Rosborough, and William A. Rhyne, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 15, 1974, Ser. No. 470,256

Int. Cl.² B63G *7/06*

U.S. Cl. 89—1 M **4 Claims**

4. A method of sweeping magnetic influence mines that are directional in sensitivity and are of unknown orientation, said method comprising the steps of:
- providing first, second, and third air core solenoid coils of large transverse dimensions compared with axial length and disposed in mutually orthogonal planes;
- energizing said first air core solenoid coil for a first predetermined time period with alternating electrical current to generate a first magnetic field having a first principal axis;



- energizing said second air core solenoid coil for a second predetermined time period with alternating electrical current to generate a second magnetic field having a second principal axis perpendicular to said first principal axis; and
- energizing said third air core solenoid coil for a third predetermined time period with alternating electrical current to generate a third magnetic field having a third principal axis perpendicular to each of said first and second principal axes.

3,939,754

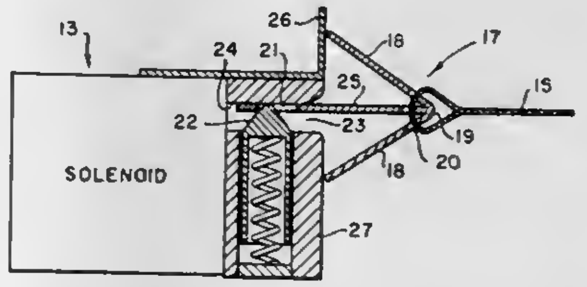
OMNI-DIRECTIONAL WEAPON ARMING WIRE CONNECTION

John B. Dexter, California, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 28, 1974, Ser. No. 455,758

Int. Cl.² F41F *5/02*

U.S. Cl. 89—1.5 D **5 Claims**



1. A weapon arming wire connector for releasing a weapon having a fuse therein and
- an arming wire one end of which is attached to said fuse, said connector comprising:
- mechanical means, for attachment to the other end of said arming wire, having a central portion and two diverging legs on opposite sides of and joined to said central portion, each attached at one end to one end of said central portion, said central portion being of plate-like configuration and extending beyond the free ends of said legs which are opposite the attached ends, and having a hole therethrough also located beyond the free ends of said legs, said legs forming acute angles with the plane of said central portion and being integral therewith, the other end of the arming wire being attached to the connector near the junction between the central portion and the diverging legs.

3,939,755
LINEAR HYDRAULIC MOTOR

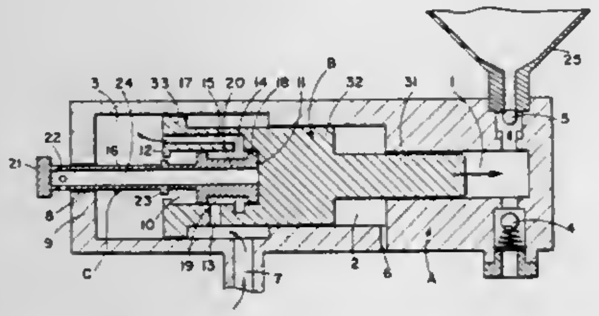
Hanani Tabor, Carmiel, Israel, assignor to Amiad Systems Limited, Khorazim, Israel

Filed Jan. 28, 1974, Ser. No. 437,102

Claims priority, application Israel, Mar. 5, 1973, 41682

Int. Cl.² F01L *15/12;* F01B *7/18;* F01L *23/00*

U.S. Cl. 91—224 3 Claims



1. A linear hydraulic motor for operation by a liquid under pressure, comprising:

a stepped cylinder casing having: a front cover, a large bore portion in its front part closed by said front cover, a smaller bore portion in its rear part, and a liquid inlet in the rear of the large bore;

a differential piston unit reciprocable in the cylinder casing, said unit consisting of a large diameter front piston slidingly movable in the large bore portion, and of a smaller-diameter rear piston slidingly movable in the smaller-diameter bore,

said piston unit having a smooth central bore whose front end extends through the front end of the large-diameter piston whereat the bore diameter is narrowed by an inwardly projecting stop, and the central bore's rear end being within the confines of the smaller-diameter piston,

said central bore providing a first fluid communication path with said large-bore portion through a first port extending from the front end of the piston to a point distanced from the central bore's rear end, and a second port extending between a surface of the smaller-diameter piston and the central bore at a point situated to the front of the first port, and providing a second fluid communication path between the central bore and said liquid inlet,

a hollow spool valve adapted to slide in the central piston bore in reciprocal motion from a frontal position in the bore defined by contact of the valve's front end with the said stop to a rearward position defined by contact of the valve's rear end with the rear end of the central bore,

said spool valve comprising a front collar, a rear collar and an annular groove extending between the two collars, the valve being elongated towards the front in the shape of a cylindrical outlet tube which is guided in a bore provided in the front cover of the casing and protrudes through this cover to the outside,

an outer limit stop and an inner limit stop on said tube adapted to alternately contact the outer and the inner surfaces of the front cover, the outer stop being positioned on the tube so as to define, by its contact with the front cover, the rear limit of the piston stroke during the front position of the spool valve in the central bore, and the inner stop being positioned on the tube so as to define by its contact with the front cover, the front limit of the piston stroke during the rearward position of the spool valve in the central bore,

a central port in the spool valve opening at the rear end of the spool valve and extending through the outlet tube to a point short of the front end of this tube where it is in fluid communication with the atmosphere through at least one radial opening positioned to the rear of the outer limit stop,

disposition of said first and second ports in the piston unit being such that in the frontal position of the piston unit with the spool valve in its rear position, fluid communication is created between the liquid inlet and the large-bore cylinder through the first port, the annular groove and the second port, and that in the rear position of the piston unit with the spool valve in its frontal position, fluid communication is created between the large-bore portion and the atmosphere through the first port, the rear end of the central bore, the central valve port, and the radial opening at the end of the outlet tube.

3,939,756
ROTARY TYPE HYDRAULIC SERVO-MECHANISM

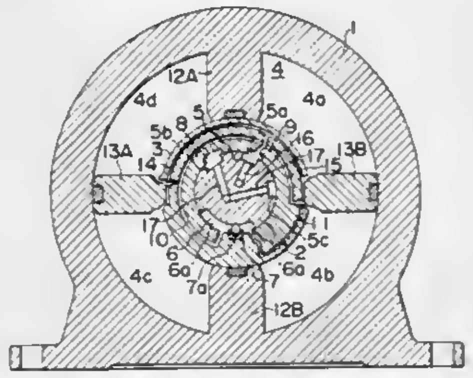
Youichi Saida, Kawasaki; Hajime Ito, Yokohama, and Kojiro Imanaga, Tokyo, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 319,019, Dec. 27, 1972, abandoned. This application Sept. 5, 1974, Ser. No. 503,518

Claims priority, application Japan, Dec. 27, 1971, 47-742; Dec. 27, 1971, 47-743

Int. Cl.² F15B *9/10*

U.S. Cl. 91—370 4 Claims



1. In a rotary type hydraulic servo-mechanism of the type including a hollow cylindrical casing closed at both ends thereof and having at least one partition wall radially and inwardly projecting from the inner surface of said casing and extending toward the center axis thereof; a cylindrical input shaft passing axially and concentrically through said casing; a driven output member rotatably mounted on said input shaft within said casing and having one end thereof extending out of the casing as an output portion, and having at least one partition wall radially and outwardly projecting from the outer periphery thereof and extending toward the inner surface of said casing; said partition walls of said casing and said output member defining therebetween at least one pair of hydraulic drive chambers; a servo-valve mechanism provided between opposed cylindrical sliding surfaces of said input shaft and said output member and comprising mutually opposed axial grooves formed in the cylindrical outer surface of said input shaft and in the cylindrical inner surface of said output member; first hydraulic fluid supplying and discharging passage means formed in said input shaft and connecting said grooves in said input shaft to a hydraulic fluid source and a fluid reservoir; second hydraulic fluid supplying and discharging passage means formed in said output member and connecting said grooves in said output member to said hydraulic drive chambers; and means for generating a counter-torque against a rotational force applied to said input shaft; the improvement wherein said means for generating a counter-torque comprises:

means positioned around said input shaft and comprising at least one pair of isolated hydraulic fluid reaction chambers which are hydraulically isolated from one another;

said reaction chambers being formed at a side of said input shaft diametrically opposite to said servo-valve mechanism and communicating with said second hydraulic fluid supplying and discharging passage means through passage means formed in said output member;

each of said reaction chambers being defined by a first radial face on a first radial wall formed on said input shaft and a second radial face on a second radial wall circumferentially opposing the first radial face and formed on said output member;

said first and second walls having their radially outer and inner ends in sliding sealed engagement with the inner surface of said output member and with an outer surface of said input shaft, respectively;

said first and second radial faces having the same area; and

said pair of reaction chambers comprising a first reaction chamber for imposing to said input shaft a torque counteracting the rotation of said input shaft in a first circumferential direction, and a second reaction chamber for imposing to said input shaft a torque counteracting the rotation of said input shaft in a second opposite circumferential direction, whereby upon introduction of hydraulic fluid into one of said reaction chambers a reaction force is exerted on said input shaft against and relative to said output member for causing relative rotation between said input shaft and said output member.

3,939,757
FLUID POWER STEERING SYSTEM WITH VALVE OPERATOR CONTROL MEANS

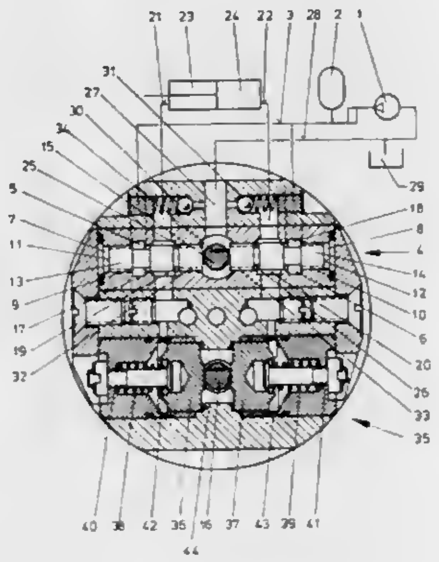
Erich Jablonsky, Bobingen, Rems, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed May 7, 1973, Ser. No. 357,601

Claims priority, application Germany, May 6, 1972, 2222332

Int. Cl.² F15B *13/10, 11/08, 13/04*

U.S. Cl. 91—391 R 4 Claims



1. In combination with a power steering device adapted for a vehicle, having a servo motor (**23–24**) to which a fluid medium is supplied under an operating pressure for powered operation and a source (**2**) of said fluid medium under a storage pressure, a control valve (**4**) connected to said source, comprising a valve operator (**15**), two valve pistons (**13** and **14**) symmetrically engaging the valve operator and having opposed pressure faces continuously exposed to said storage pressure, conduit means (**21** and **22**) connected between the valve pistons and the servo motor for conducting flow of the fluid medium, said valve pistons being displaceable from a neutral position in which said flow of the fluid medium under said storage pressure is blocked and check valve means (**30** or **31**) responsive to depressurization of the source for conducting follow-up flow of the fluid medium to the servo motor through the conduit means in by-pass relation to the valve pistons, whereby mechanical operation of the steering device is enabled.

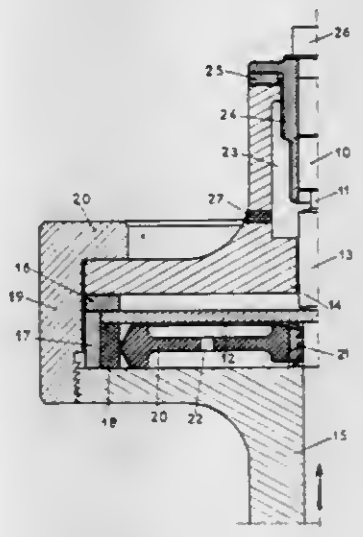
3,939,758
PRESSURE SENSOR

Jacques Faisandier, 32, Bd Felix Faure, Chatillon-sous-Bagneux 92, France

Filed Oct. 17, 1973, Ser. No. 407,210

Int. Cl.² F15B *21/04*

U.S. Cl. 92—1 10 Claims



1. A pressure sensor comprising:

chamber defining means, said chamber defining means including first and second cover members, each of said cover members having a planar surface, said planar surfaces being disposed parallelly in opposed facing relationship, said chamber defining means further comprising clamping means for mechanically maintaining said cover members in spaced apart relationship to define a housing having an internal chamber;

a yieldable diaphragm;

means supporting said diaphragm within said chamber, said diaphragm dividing the chamber into two portions, said supporting means defining a resilient seal for preventing leakage of fluid between said chamber portions;

first spacer means disposed in said chamber between said cover member facing parallel surfaces, said first spacer means extending on both sides of said diaphragm and contacting said first and second cover members to define the width of said chamber;

read out means coupled to said diaphragm, said read out means including a freely movable connecting rod having oppositely disposed end faces, said connecting rod being at least in part disposed in a first of said chamber portions with a first end face contacting a first side of said diaphragm only in the central area of said diaphragm;

second spacer means positioned in the second of said chamber portions and extending radially outward substantially beyond the area of contact between the read out means connecting rod and said diaphragm, said second spacer means comprising a spacer member, said spacer member having a center aperture and contacting said supporting means about its periphery; shim means positioned in said spacer member center aperture, said shim means contacting and centering said spacer member and also contacting said diaphragm, said shim means determining the shape of said diaphragm in the absence of an applied pressure; and

means for delivering pressurized fluid to one of said chamber portions.

3,939,759

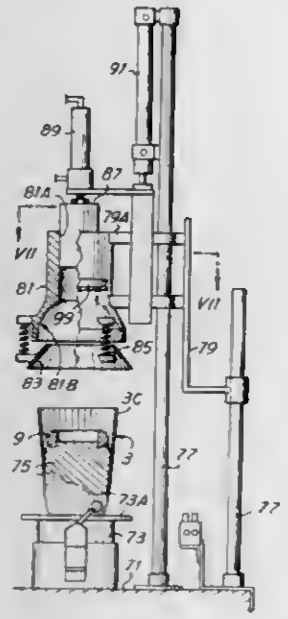
DEVICE FOR FORMING A SHAPED COVER FOR A FLASK

Carlo Brandigi, Tosi, Reggello, and Giuliano Fantechi, S. Ellero, Reggello, both of Italy (I-50060)

Division of Ser. No. 308,722, Nov. 22, 1972, Pat. No. 3,869,966. This application Oct. 8, 1974, Ser. No. 513,074

Int. Cl.² B31B *1/28*

U.S. Cl. 93—54.3 3 Claims



1. A device for forming a shaped cover, for a flask having a bottom, a side wall and a neck, from a skirt constituted by lengths of strip-like material having free end portions, said device comprising, in combination, a supporting body adapted to receive an inverted flask having a skirt engaged therearound with the lengths of strip-like material extending along the exterior surface of its side wall with their free end portions extending upwardly beyond the flask bottom; means operable to center, relative to the flask bottom, an annular core, for forming a base of the cover, with such free end portions of the lengths of strip-like material extending upwardly beyond the annular core; an axially movable assembly including an inlet cup portion operative to engage such free end portions of the lengths of strip-like material to displace the same radially inwardly over the annular core to project radially inwardly from the inner periphery thereof; said assembly including means defining a cylindrical recess communicating with said inlet cup portion and coaxial with the annular core; means operable to feed laterally into said recess plug means engageable in the annular core; and piston means in said assembly displaceable axially to engage and displace the plug means axially inwardly from said cylindrical recess into engagement with the radially inwardly extending free end portions of the lengths of strip-like material to displace such free end portions axially inwardly over the inner periphery of the annular core and to force the plug means into the annular core to clamp the free end portions of the lengths of strip-like material between the plug means and the inner periphery of the annular core.

3,939,760

PERCOLATOR

John Littell Eaton, Jr., Delanco, N.J.; Richard Henry Brill, and Walter E. Myers, both of Philadelphia, Pa., assignors to SCM Corporation, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 451,336

Int. Cl.² A47J *31/00*

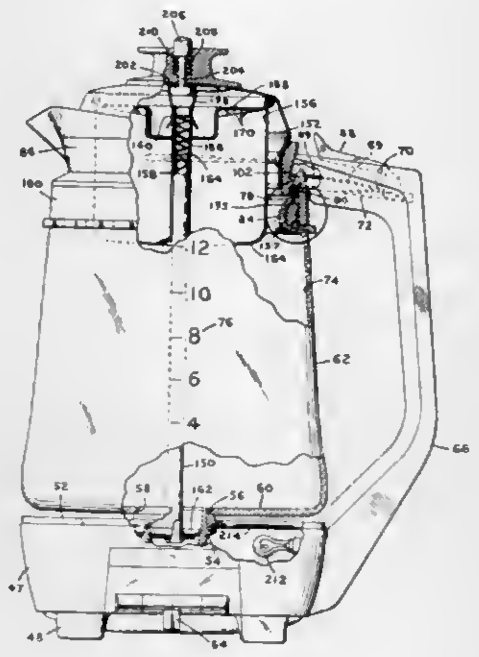
U.S. Cl. 99—312 12 Claims

9. A unitary tightening collar structure adapted to join two components, comprising:

a ring portion having a fixed inside and outside diameter;

expanding and contracting means adapted to provide an inside diameter for the tightening collar which can be varied from the inside diameter of the ring;

engaging means on said collar adapted to engage a component with the collar;



said engaging means on said collar coacting with said expanding and contracting means to cause a decrease in the inside diameter of the collar to less than the inside diameter of the ring.

3,939,761

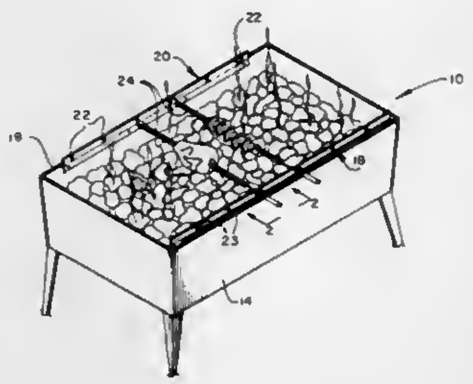
BARBECUE ROTISSERIE APPARATUS

Clarence E. McGinty, 6226 Marjorie Lane, Wichita, Kans.

Filed May 1, 1972, Ser. No. 249,677

Int. Cl.² A47J *37/04*

U.S. Cl. 99—421 H 2 Claims



1. A barbecue rotisserie apparatus having a plurality of stations adapted to be mounted on the sides of a varying width cooking bed comprising:

a pair of longitudinal frame members having a plurality of longitudinally spaced slots for receipt and support of the individual skewers, the frame members adapted to be mounted on the side of said cooking bed;

a motor driven closed loop chain rotatably mounted on one of the frame members passing below each of said slots;

a plurality of multiple tine skewers, the tines baving free ends, each skewer being removably positioned in one of said slots, gear means adjustably positioned longitudinally on each of the skewers in driving engagement with said chain and a removable support receptacle for each skewer having openings therein closed at one end for slidable receipt of the free ends of the skewer, the depth of the openings being sufficient to provide bending support for the tines and lug means for rotatably supporting the skewers.

3,939,762

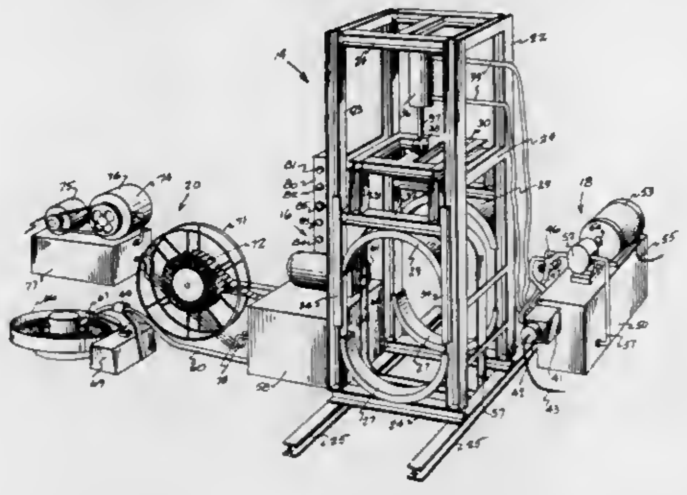
APPARATUS FOR BUNDLING FIREWOOD

Stephen N. Smitherman, Loveland, and Lemuel A. Dougherty, Longmont, both of Colo., assignors to Big Elk Wood Corporation, Longmont, Colo.

Filed Oct. 7, 1974, Ser. No. 513,006

Int. Cl.² B65B *13/04*

U.S. Cl. 100—4 13 Claims



1. An apparatus for bundling firewood, said apparatus comprising: a frame assembly; first wood engaging means fixed to said frame assembly and including a first wood pressing member engaging said firewood at only the outer portions thereof; second wood engaging means mounted on said frame assembly for movement in a predetermined path toward and away from said first wood engaging means, said second wood engaging means including a second wood pressing member engagable with said firewood at only the outer portions thereof so that movement of said second engaging means toward said first wood engaging means compresses a plurality of pieces of firewood positioned in said predetermined path between said first and second wood engaging means while not contacting the center portion of said pieces of firewood; actuating means connected with said second wood engaging means to cause movement of the same toward and away from said first wood engaging means, said actuating means causing a predetermined multi-ton pressure to be applied between said wood engaging means to compress firewood therebetween when said wood engaging means are brought toward one another; binding means mounted on said frame assembly for binding firewood at said central portion while said firewood is under compression between said first and second wood engaging means; and control means including an electrical system for controlling operation of said actuating means and said binding means.

3,939,763

CONTINUOUS PRESS

Hachiro Sato, Tokyo, Japan, assignor to Fukoku Kogyo Company Limited, Tokyo, Japan

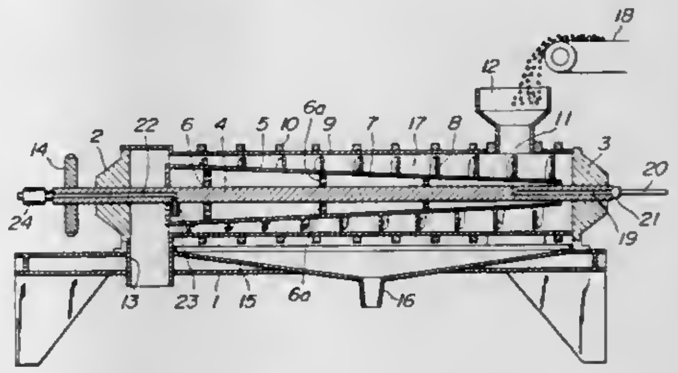
Filed Sept. 20, 1974, Ser. No. 508,012

Claims priority, application Japan, June 13, 1974, 49-67351

Int. Cl.² B30B *9/14*

U.S. Cl. 100—93 S 3 Claims

1. A continuous press comprising: a substantially solid screw shaft, a screw drum disposed around said screw shaft to rotate therewith, a screw blade disposed helically around the outer surface of said screw drum, an outer drum arranged around said screw blade and having a number of small filtering holes, an inlet provided at one end of said outer drum, an outlet provided at the other end of said outer drum, means for heating said screw drum and screw blade through said screw shaft, said means for heating comprising: a supply conduit formed by a first bore in said screw shaft at one end thereof for introducing a heated fluid from said supply means into a space between said screw shaft and said screw drum and an exhausting conduit formed by a second bore in said screw shaft at the other end thereof for exhausting said fluid from said space to the outside, whereby raw materials to be pressed are introduced through said inlet into said space between said screw drum and outer drum, said space being gradually made smaller in a direction from said inlet to said outlet, and said press including in addition at least one supporting ring for reinforcing the coupling between said screw shaft and said screw drum, said supporting ring being provided with at least one passage through which said heated fluid passes.



3,939,764

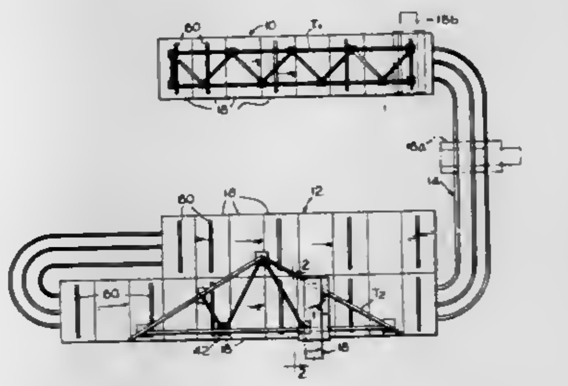
APPARATUS FOR MANUFACTURING WOODEN TRUSSES AND THE LIKE

Gerald M. McCormack, 3395 Fillmore St., Eugene, Oreg. 97405

Filed Sept. 20, 1973, Ser. No. 399,143

Int. Cl.² B30B *15/32*

U.S. Cl. 100—100 31 Claims



1. Apparatus for embedding connector plates in the joints of wooden frame members to form trusses and the like, comprising:

a traveling press means movable along a trackway for pressing said connector plates into said joint, said press means having a self-propelled generally C-shaped rigid frame defining an open throat with upper and lower press platens mounted within said throat, one for movement toward the other,

a stationary jig table including a continuous planar panel-like, stationary tabletop of sufficient expanse to support multiple joints of said wooden frame members, said tabletop being positioned along said trackway and cantilevered generally horizontally from support means at one side of said table to define an unsupported open opposite side and open ends, said tabletop being at a level such that said open opposite unsupported side of said tabletop projects into said open throat between said upper and lower platens when said press means travels along said table,

said platens being sized to span substantially the full width of said jig table such that said platens can embed connector plates adjacent both opposite side edges of said tabletop while projecting over and under said tabletop from said unsupported side.

3,939,765
TRASH COMPACTOR

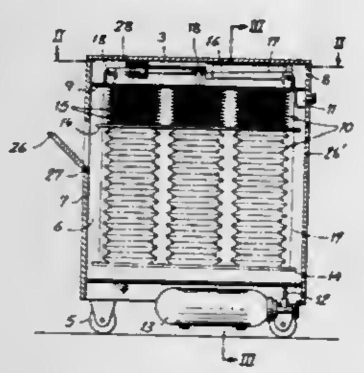
Anton Ladislaus Jung, Herborn; Manfred Lapczyna, Wetzlar; Peter Möws, Wetzlar; Gerhard Schmidt-Burbach, Wetzlar, and Heinz Strauss, Lohnberg, all of Germany, assignors to Buderus'sche Eisenwerke, Wetzler, Germany

Filed Sept. 3, 1974, Ser. No. 502,798

Claims priority, application Germany, Sept. 3, 1973, 2344366

Int. Cl.^{2} B30B *15/14*

U.S. Cl. 100—100 **6 Claims**



1. A trash compactor comprising:
a housing defining a compaction chamber provided with a ceiling and with access means for the introduction of uncompacted trash;
inflatable bladder means normally occupying a minor part of said chamber and bearing from below upon said ceiling;
a pressure plate in said chamber separated from said ceiling by said bladder means;
fluidic retraction means for said pressure plate above said ceiling;
flexible link means connecting said pressure plate to said retraction means;
a compressed-gas container carried on said housing; and
valve-controlled conduit means for alternately connecting said container to said bladder means and to said retraction means, expansion of said bladder means by gas pressure from said container forcing said pressure plate onto an accummulation of loose trash in said chamber for compacting same.

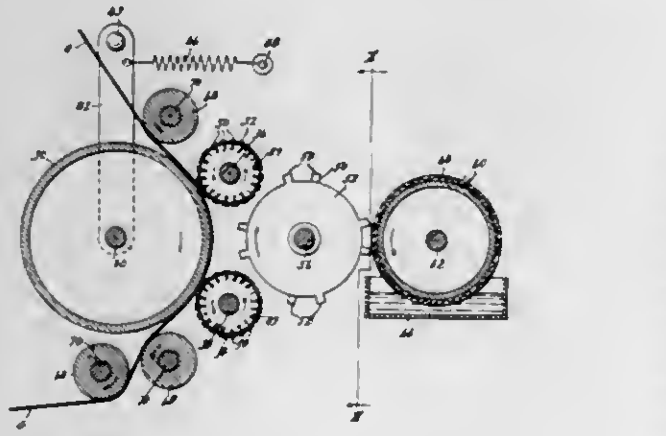
3,939,766
TEXTILE SHADE MARKER

Frank S. Darwin, 7005 Yorkshire, Knoxville, Tenn. 37919

Filed July 15, 1974, Ser. No. 488,308

Int. Cl.^{2} B41L *47/46*

U.S. Cl. 101—92 **8 Claims**



1. A textile shade marking device comprising:
a. a frame through which a width of fabric is moved continuously in one direction,
b. a printing wheel carried by said frame for rotation about an axis parallel to the plane of said cloth and transverse to said direction of travel, said printing wheel having a series of angularly spaced raised printing elements on its peripheral surface, and engaging said cloth,
c. driving means carried by said frame and operable to cause said printing wheel to turn at a peripheral linear speed equal to the speed of movement of said cloth,
d. inking means carried by said frame and operable to apply ink only to certain of said printing elements during each rotation of said printing wheel, whereby only said inked printing elements will imprint their images on said cloth, said inking means comprising, an inking wheel carried by said frame for rotation on an axis parallel to the axis of said printing wheel, and having one or more raised inking faces operable to engage the printing elements of said printing wheel as said inking wheel rotates, the angular extent of each inking face being such that it can apply ink to only a single printing element of said printing wheel, the linear circumferential spacing between certain of said inking faces, relative to said inking wheel, being equal to the circumference of said printing wheel,
e. means operable to turn said inking wheel at a linear peripheral speed equal to that of said printing wheel,
f. means operable to apply ink to the inking faces of said inking wheel, and
g. selector means operable to adjust said inking wheel to apply ink selectively to any of said printing elements.

3,939,767
APPARATUS FOR IMPRINTING SELECTED CHARACTERS ON A MOVABLE RECORD MEDIUM

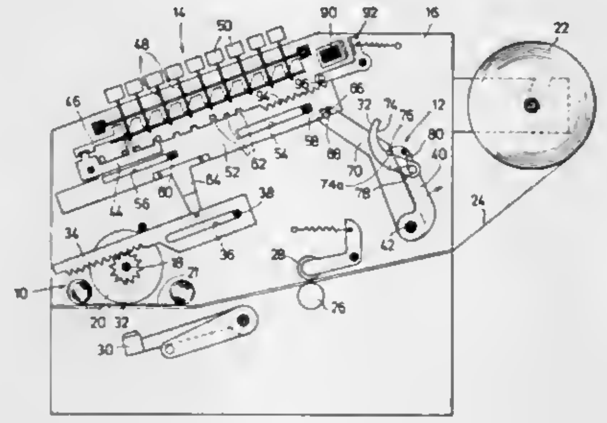
Dieter Belge, Schwenningen, Germany, assignor to Carl Valentin GmbH, Schloss Burgberg, Germany

Filed Feb. 28, 1974, Ser. No. 446,770

Claims priority, application Germany, Apr. 25, 1973, 2320792

Int. Cl.^{2} B41J *11/18*

U.S. Cl. 101—99 **5 Claims**



1. In a printing apparatus for printing characters on a printing medium, including a plurality of rotatable type wheels (20) each having a plurality of characters on the periphery thereof, drive means normally rotating said wheels through operating angles causing all of the characters thereon to be successively arranged in printing positions relative to said printing medium, and keyboard means for interrupting the rotation of the type wheels to positions in which selected characters thereon are in printing positions, respectively, relative to said printing medium; the improvement wherein said drive means comprises
a. common drive lever means including a plurality of pivotable drive levers (40) associated with said type wheels, respectively, and means (42) for simultaneously pivoting said drive levers between first and second positions, respectively; and
b. means connecting each of said type wheels with its associated drive lever, respectively, comprising
1. a toothed set wheel (32) coupled with the associated type wheel;
2. a longitudinally slidable rack (34) having teeth that engage the teeth of said set wheel;
3. a setting lever (70) pivotable at one end about an axis parallel with the pivot axis of said drive lever;
4. connecting rod means (52) associated with said keyboard means for connecting the other end of said setting lever with said rack; and
5. means (72, 80) resiliently connecting said setting lever with said drive lever, said connecting means being normally operable, upon pivotal movement of said drive lever from said first position to said second position, to rotate the associated type wheel through the aforementioned operating angle, whereby when all of the drive levers are pivoted from their first positions toward their second positions, displacement of said connecting rod means may be interrupted by said keyboard means at positions causing desired characters on said type wheels to be in printing positions, respectively, relative to said printing medium.

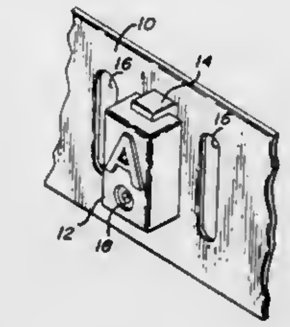
3,939,768
CHARACTER BELT APPARATUS WITH REPLACEABLE SLUGS FOR LINE PRINTER

Harold C. Medley, Los Gatos, Calif., assignor to Shugart Associates, Sunnyvale, Calif.

No Drawing. Filed Apr. 26, 1974, Ser. No. 464,472

Int. Cl.^{2} B41J *1/20*

U.S. Cl. 101—111 **10 Claims**



1. Character belt apparatus for use on a line printer, comprising:
a flexible belt formed into an endless band;
a plurality of elongated slug mounting elements, each such mounting element including a body portion affixed to the outer surface of said belt and vertical registration means formed by at least one extremity of the elongated mounting element turned so that at least a terminal portion of said one extremity extends normal to said body portion and to the outer surface of said belt to define at least one horizontally extending vertical registration surface, said body portion having parallel side edges oriented transverse to the length of said belt to define a pair of horizontal registration surfaces;
a plurality of replaceable character slugs, each such slug including a front face on which on alphanumeric character is provided and a rear face having a recess extending vertically therealong to mate with and receive said body portion, the horizontal boundaries of said recess being formed by a pair of opposed spaced-apart vertically extending surfaces for engaging said horizontal registration surfaces to provide horizontal registration of said slug relative to said belt, each such slug also including at least one horizontally extending surface for mating with said vertical registration surface to provide vertical alignment of said slug relative to said belt; and
slug fastening means for securing each of said character slugs to corresponding ones of said mounting elements.

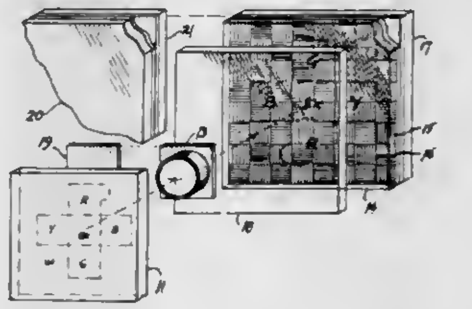
3,939,769
PROCESS FOR REPRODUCING A FULL-COLOR PICTURE IN TWO IMPRESSIONS

Leslie H. Lorber, Boston, Mass., assignor to Bernard Olcott, Weehawken, N.J.

Filed Aug. 13, 1973, Ser. No. 388,033

Int. Cl. B41m *1/20, 3/00*

U.S. Cl. 101—211 **12 Claims**



1. Process for reproducing a full color picture in two printing impressions, comprising the steps of:
a. Projecting a multi-color image upon a first panchromatic type film through a composite separation screen having first areas which pass long record light rays and attenuate short record light rays and second areas which pass short record light rays and attenuate long record light rays;
b. Projecting said multi-color image upon an ortho type film;
c. Developing said first panchromatic type film and said ortho type film;
d. Forming a first printing plate by said developed first panchromatic type film;
e. Projecting long record light rays through said developed ortho type film and said composite separation screen upon a second panchromatic type film;
f. Removing said developed ortho type film and projecting short record light rays through said composite separation screen upon said second panchromatic type film;
g. Developing said second panchromatic type film;
h. Forming a second printing plate from said developed second panchromatic type film;
i. Inking a selected one of said printing plates with a first ink and transferring therefrom a first ink image upon a substrate; and
j. Inking the other of said printing plates with a second ink and transferring therefrom a second ink image upon said substrate in registration with said first ink image.

3,939,770
SHORT RANGE PASSIVE ELECTROMAGNETIC DETECTOR

Paul H. Amundson, China Lake, Calif., and Prescott D. Crout, Lexington, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

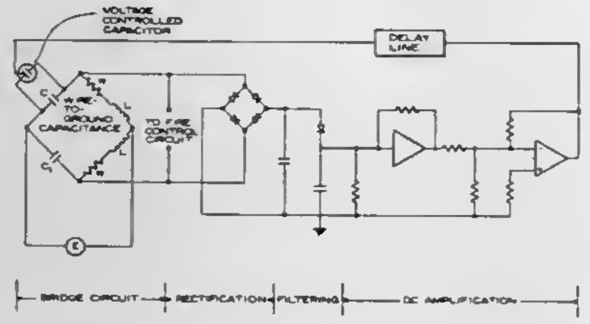
Filed Dec. 22, 1971, Ser. No. 211,136

Int. Cl.^{2} F42C *13/08*

U.S. Cl. 102—19.2 **1 Claim**

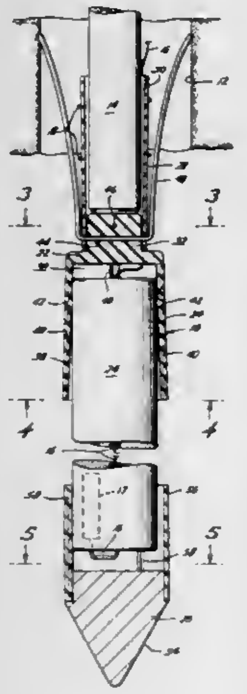
1. A short range low power passive detector having a portion thereof with a certain device-to-ground capacitance comprising;
a bridge circuit having arm portions;
one arm of said bridge circuit comprising the devie-to-ground capacitance of said device;
additional capacitance connected in parallel with said first mentioned capacitance;
a feedback circuit connected across the output of said bridge circuit and having an output;
the output of said feedback circuit being connected to said additional capacitance means to adjust the additional capacitance means in response to unbalance in the bridge circuit caused by device-to-ground distance;

and delay means connected between the output of said feedback circuit and the additional capacitance means so that the device responds to rapid changes in capacitance



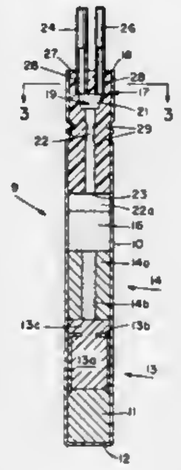
in said one arm of the bridge and is returned to null balance by relatively slower changes caused by changes in device to ground distance.

3,939,771
SEISMIC EXPLOSIVE CHARGE LOADER AND ANCHOR
Oliver B. McReynolds, P.O. Box 1235, Palestine, Tex. 75801
Filed June 3, 1974, Ser. No. 475,521
Int. Cl.² F42B *3/20*
U.S. Cl. 102—21.8 6 Claims



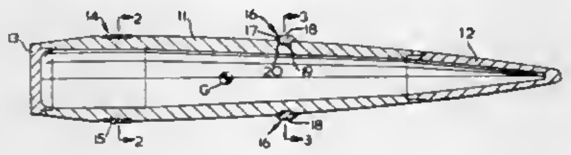
1. A seismic explosive charge loader comprising,
a first tubular member having an upwardly-facing, internal recess of sufficient diameter to loosely receive a loading means,
a second tubular member having a downwardly-facing internal recess and a side wall of sufficient internal diameter to fit about and to receive a generally cylindrical explosive charge container having an outwardly extending circumferential projection and an explosive charge container free of such a projection, and
a plurality of upwardly and inwardly tapered griping members on an internal wall of the side wall arranged to grip and hold sides of the container free of the circumferential projection,
the ribs being provided with an internally and circumferentially extending groove arranged to receive and grip the circumferential projection on the container having it.

3,939,772
BLASTING CAPS INITIATABLE BY THERMAL DETONATION ENERGY OF AN EXPLOSIVE GAS MIXTURE, AND BLASTING SYSTEM
David T. Zebree, Kingston, N.Y., assignor to Hercules Incorporated, Wilmington, Del.
Filed Oct. 4, 1974, Ser. No. 512,267
Int. Cl.² F42B *3/10*
U.S. Cl. 102—22 10 Claims



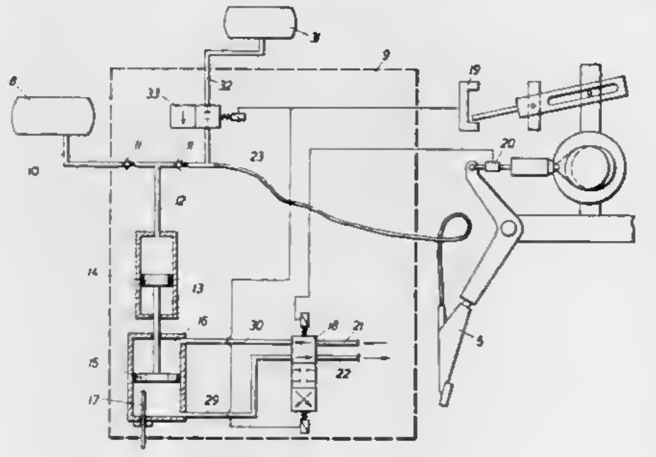
1. A nonelectric blasting cap assembly, which comprises,
a closed shell including an elongated closure member therefor, deformable for crimping described hereinafter, and an initiator charge within said shell ignitable in response to action of thermal detonation energy of an explosive gas mixture;
said closure member containing an open space substantially coaxial therewith including a cavity disposed intermediate its ends and a perforation extending from said cavity through one end of said closure into open communication with said initiator charge;
first and second conduits each extending within said closure member from the opposite end thereof in open communication with the outside of said shell and with said cavity, and in water tight relationship with said closure;
an explosive charge within said shell detonatable in operative response to ignition of said initiator charge; and
crimp means on the exterior of said shell extending through the shell wall around said perforation and then into said end closure member in support of said closure member and said shell in water tight relationship.

3,939,773
SPIN-STABILIZED PROJECTILES
Dennis H. Jenkins, and Luis Palacio, both of Newport, Vt., assignors to Space Research Corporation, Montreal, Canada
Continuation-in-part of Ser. No. 127,321, March 23, 1971, abandoned. This application Mar. 6, 1974, Ser. No. 448,565
Claims priority, application Sweden, Mar. 12, 1973, 7303390
Int. Cl.² F42B *13/00*
U.S. Cl. 102—93 10 Claims



1. A gun-fired spin-stabilized projectile having a longitudinally extending body, a driving band mounted on a rear portion of the body and being engageable with rifling in a gun barrel during firing to cause spin to be imparted to the projectile, said body tapering smoothly from a maximum diameter forwardly of the driving band to the forward end of the body, said tapering portion carrying a series of circumferentially spaced apart, permanently fixed, radially-extending projections, each projection having an outer surface parallel to the longitudinal axes of the body and engageable with the wall of the gun barrel to center the forward portion of the projectile therein, and also being shaped to minimize air drag during flight of the projectile after firing, and the major part of the radial extent of the projections lying within the maximum diameter of the body.

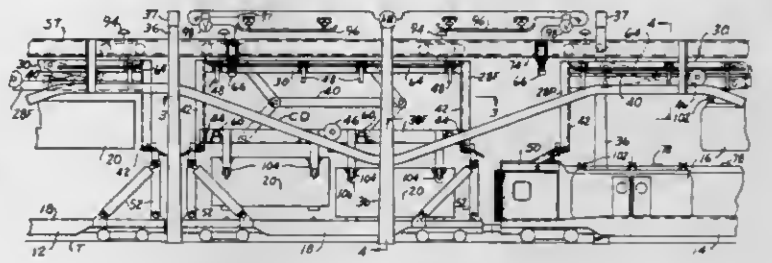
3,939,774
APPARATUS FOR BONDING TOGETHER PIECES OF TRACK BALLAST
Josef Theurer, and Klaus Riessberger, both of Vienna, Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria
Filed Jan. 10, 1975, Ser. No. 539,947
Claims priority, application Austria, Jan. 17, 1974, 378/74
Int. Cl.² E01B *27/16*
U.S. Cl. 104—11 5 Claims



1. An apparatus for bonding together pieces of tamped ballast forming the bed of a track consisting of ties and rails fastened to the ties, comprising
1. a mobile track tamping machine having a frame mounted for mobility on the track,
2. a ballast tamping tool having an internal conduit ending in an opening for ejecting a liquid passing through the conduit under pressure,
3. a vertically movable carrier for the tamping tool mounted on the frame for moving the tamping tool between an upper position out of engagement with the ballast and a lower position wherein the tamping tool is immersed in the ballast for tamping thereof,
4. a storage container for a liquid bonding medium,
5. conduit means between the storage container and the internal conduit of the ballast tamping tool for delivering the liquid bonding medium from the container to the internal conduit,
6. a metering means for the liquid bonding medium arranged in the conduit means,
   a. the metering means consisting of a cylinder-and-piston device with an adjustable piston stroke, and
7. a pressure fluid operated drive for moving the piston of the device in response to the vertical movement of the tamping tool carrier.

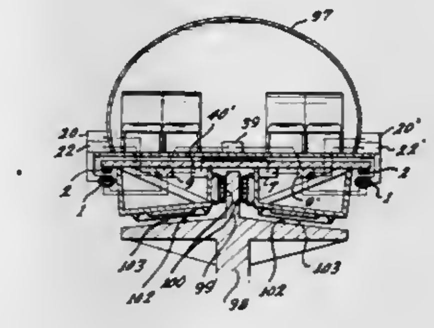
3,939,775
OVERHEAD TRANSFER CARRIER AND TRACKS
Leonard D. Barry, 19300 Pennington Drive, Detroit, Mich. 48221
Filed May 15, 1973, Ser. No. 360,527
Int. Cl.² B61K *1/00*
U.S. Cl. 104—18 12 Claims

1. In a container transfer system comprising a track, thereon having at least one container vehicle, a station track run above the track substantially parallel therewith for a distance, at least one container, a container carrier on said station track for loading and unloading said container onto said vehicle while moving therewith, said carrier having a first frame and a second frame, wheel means supporting said first frame on said station track, said second frame being a container lifting frame, guide means on said carrier for guiding said lifting frame parallel and in alignment with said first frame, the



improvement being at least one cam wheel on said lifting frame, a cam track comprising at least one rail on which said cam wheel runs along side of and above the first said track and including a dip down and up for lowering and raising said lifting frame to set down and pick up said container from said vehicle.

3,939,776
RAILWAY TRUCK MAGNETIC SUSPENSION
James A. Ross, La Jolla, and Bert C. Harris, Foster City, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.
Continuation-in-part of Ser. No. 251,118, May 8, 1972, Pat. No. 3,886,871. This application Aug. 1, 1974, Ser. No. 493,688
Int. Cl.² B61F *5/04, 5/52;* **F16C** *39/06;* **F16F** *6/00*
U.S. Cl. 104—23 FS 3 Claims



1. An improved attractive magnetic suspension and vertical damping apparatus for providing an air gap spaced apart support between the bolster and side frame assembly and surface supported portions of the truck of a high speed vehicle comprising:
elongated ferromagnetic side frames carried by said surface supported portion;
air cushion support means positioned between said surface supported portions and the supporting surface;
elongated electromagnets having windings and carried by said bolster and side frame assembly portion, each of said electromagnets positioned below one of said ferromagnetic side frames in opposing spaced relation therewith for magnetic attraction therebetween; and
active control means for constantly varying the strength of the force fields of said electromagnets responsive to the length of said gap and to the vertical movement of the bolster and side frame assembly portion for maintaining a predetermined spaced gap relationship and damping control between said bolster and side frame assembly and surface supported poritons.

3,939,777

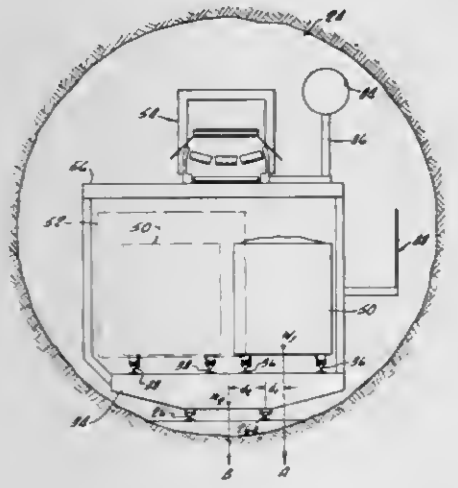
MOBILE TRACKWAY

Raymond D. Moran, 11607 E. Firestone Blvd., Norwalk, Calif. 90650

Continuation of Ser. No. 447,997, June 10, 1974, abandoned. This application Jan. 24, 1975, Ser. No. 543,799

Int. Cl.² E21D *9/12*; B61B *13/00*; B65G *67/08*; E02F *7/00*

U.S. Cl. 104—137 28 Claims



11. The mobile trackway of claim 1, in which said existing trackway is an existing railroad track, in which said carriage means has wheels adapted to roll on the rails of said existing railroad track, and in which said first and second trackway means respectively are first and second railroad tracks each adapted to have said wheels roll thereon, said first railroad track being laterally spaced from said second railroad track, the lateral spacing being sufficient to permit movement of said load-transporting cars on said first and second railroad tracks.

3,939,778

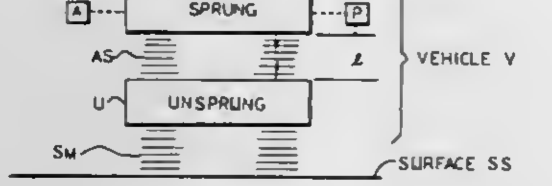
RAILWAY TRUCK MAGNETIC SUSPENSION METHOD

James A. Ross, La Jolla, and Bert C. Harris, Foster City, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Division of Ser. No. 251,118, May 8, 1972, Pat. No. 3,886,871. This application Aug. 1, 1974, Ser. No. 493,689

Int. Cl.² B61F *5/04*, *5/52*; F16C *39/06*; F16F *6/00*

U.S. Cl. 104—148 MS 3 Claims



1. An improved method for providing non-contact support and vertical damping between the surface supported and bolster and side frame assembly portions of a vehicle comprising the steps of:

suspending without physical contact at a predetermined gap spacing said bolster and side frame assembly portion with respect to said surface supported portion by electromagnetic attraction therebetween;

sensing and producing therefrom an electrical output signal responsive to the acceleration of vertical movement of said bolster and side frame assembly portion of said vehicle with respect to a point fixed in free space;

sensing and producing therefrom an electrical output signal responsive to a change in the length of said predetermined gap; and

controlling the strength of said electromagnetic attraction to linearize the inverse relationship between said strength and said gap changes.

3,939,779

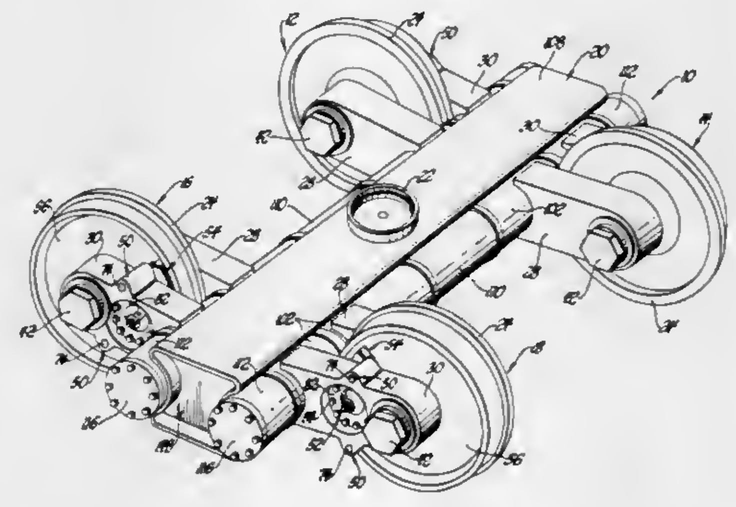
RAILWAY TRUCK ASSEMBLY

William L. Pringle, Grosse Pointe Shores, Mich., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 20, 1974, Ser. No. 534,674

Int. Cl.² B61D *15/00*

U.S. Cl. 105—180 21 Claims



1. A railway truck assembly comprising;

carriage means for connection to a railway car, four wheels for engaging railway track, four axles with each axle supporting one of said wheels, four arm means with each arm means supporting one of said axles, and four torsion means with each torsion means connecting one of said arm means to said carriage means so that each of said wheels is independently rotatable and is movable relative to said carriage means independently of the other wheels, each of said arm means including inside and outside arms, one of said axles extending between the distal ends of each pair of said inside and outside arms and rotatably supporting one of said wheels between each pair of said inside and outside arms, one of said arms of each pair including brake shoe support means and brake shoe actuator means adjacent said brake shoe support means for urging a brake shoe supported by said brake shoe support means toward the adjacent wheel, said brake shoe support means including first and second retainer means disposed on opposite sides of each of said brake shoe actuator means for releasable connection to a brake shoe.

3,939,780

APPARATUS FOR SHIPPING FLAT GLASS WITHOUT PACKING CASES

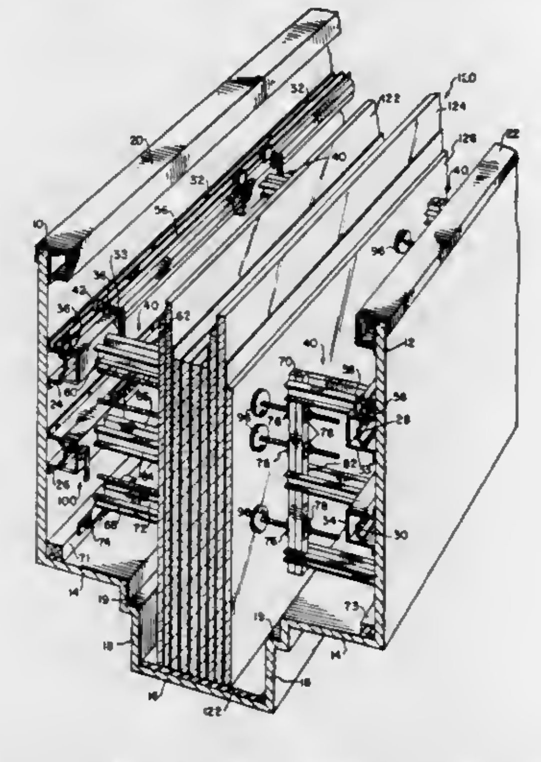
Albert J. Bundy, Kingsport, Tenn., assignor to ASG Industries, Inc., Kingsport, Tenn.

Filed Oct. 9, 1974, Ser. No. 513,303

Int. Cl.² B61D *3/16*; B65D *81/02*

U.S. Cl. 105—367 5 Claims

1. An apparatus for shipping stacks of sheet glass comprising a container having a pair of parallel vertical walls and a substantially horizontal floor therebetween, a track secured to each of said walls extending horizontally lengthwise thereof, a pair of movable frames supported from each of said tracks, said frames being slidable with respect to their respective tracks for positioning at any one of a plurality of selected points therealong, at least one jack screw supported by and extending outwardly of each of said movable frames, each of said jack screws terminating in a glass engaging surface, the jack screws of that pair of movable frames supported by one of said walls having their glass engaging surfaces facing toward the glass engaging surfaces of those jack screws of the pair of movable frames supported by the other of said walls, threaded means on each of said movable frames in which said jack screws are threadedly engaged whereby said jack screws may be adjusted to hold a stack of glass sheets resting on edge on said floor firmly gripped between said opposed engaging surfaces.



3,939,781

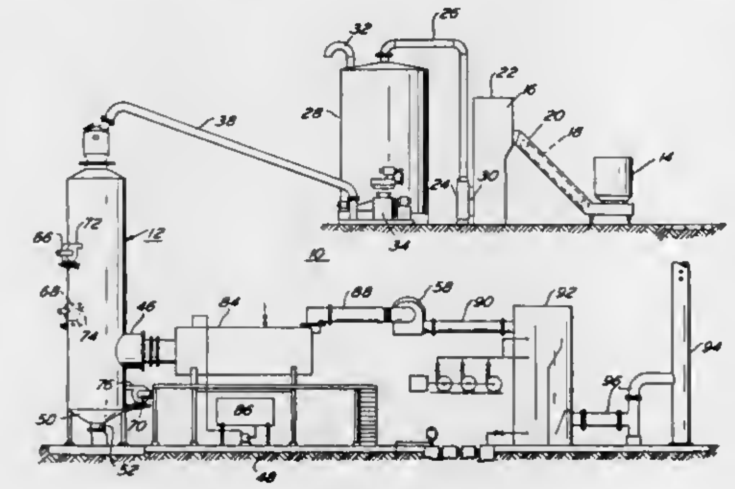
INCINERATOR, INCINERATION SYSTEM AND METHOD

Jack C. Adams, York, Pa., assignor to Ecologenics Corporation, Red Lion, Pa.

Filed May 30, 1974, Ser. No. 474,796

Int. Cl.² F23G *5/12*

U.S. Cl. 110—8 C 27 Claims



1. A waste material incineration method including the step of:

a. comminuting said waste material to a predetermined size;

b. inserting said comminuted waste material to a vertically extending incinerator; and

c. applying a pressure differential to said incinerator throughout said vertical extension of said incinerator to control a flow rate of said comminuted waste material combustion gases through a plurality of vertically contiguous zones within said incinerator to provide spontaneous combustion of said comminuted waste material within said incinerator.

12. An incinerator for combusting waste material, comprising:

a. waste material combustion means forming a vertically extending enclosed chamber having a plurality of vertically contiguous combustion zones; and,

b. means for applying a predetermined pressure differential across said contiguous combustion zones within said combustion means for controlling a flow rate of said combusting waste material through said combustion zones to provide spontaneous combustion of said waste material within said combustion means.

3,939,782

FLUIDIZED FURNACE CONSTRUCTION FOR BURNING PARTLY DEHYDRATED SLUDGE

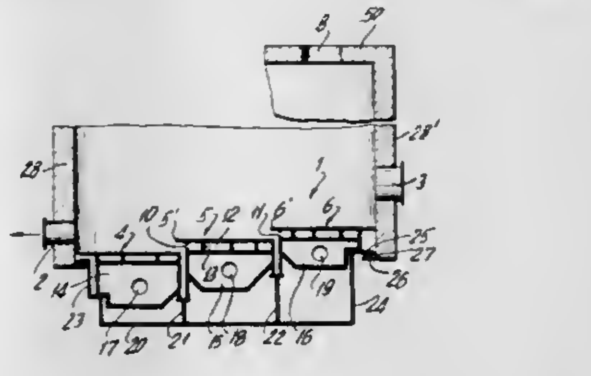
Erhard Albrecht, Essen, Germany, assignor to Rheinstahl Aktiengesellschaft, Essen, Germany

Filed Nov. 1, 1974, Ser. No. 520,207

Claims priority, application Germany, Nov. 9, 1973, 2356060

Int. Cl.² F23G *5/12*; F26B *17/00*

U.S. Cl. 110—8 F 12 Claims



1. A fluidized bed furnace for burning partly dehydrated sludge, comprising a furnace housing having a bottom forming a fluidized bed support, side walls extending upwardly from said bottom and above the fluidized bed and defining a combustion chamber above the fluidized bed, an inlet for sludge on one side of said housing extending through said side walls, a discharge for the sludge on the opposite side of said housing extending outwardly through said side walls, said bottom comprising a plurality of step portions arranged at distinct elevations in descending order from said inlet to said discharge, and means for directing air upwardly through said step portions for maintaining a vertical operation of said bed and for supporting combustion in said combustion chamber.

3,939,783

FURNACE FOR INCINERATING WASTE MATERIALS

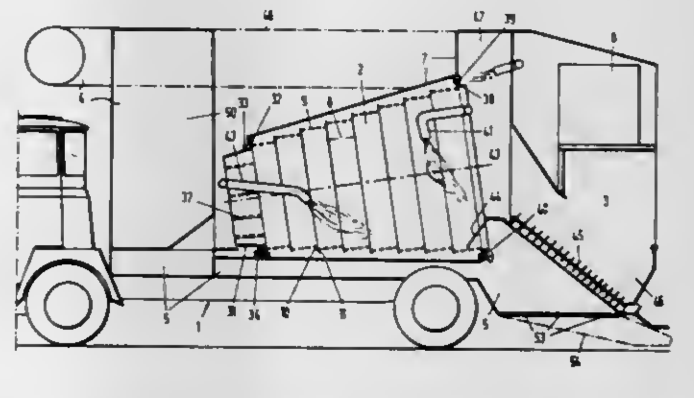
Michel Georges Jean Picard du Chambon, Versailles, France, assignor to B. V. Peximac, Netherlands, Netherlands

Filed Sept. 23, 1974, Ser. No. 508,355

Claims priority, application France, Sept. 28, 1973, 73.34778

Int. Cl.² F23G *5/06*

U.S. Cl. 110—14 10 Claims



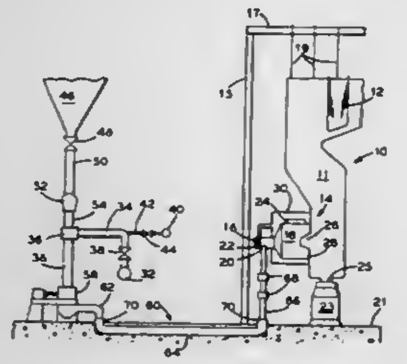
1. A furnace for incinerating waste materials which comprises:

a stationary casing;

a frusto-conically shaped grate mounted for rotational movement within said casing; said grate formed by a plurality of cylindrically-shaped, juxtaposed rings, said rings having radially and outwardly extending face members including orifice means for joining adjacent face members for expansion by pins, each ring member being formed of a plurality of overlapping subsections; and means for rotating said grate.

3,939,784
FUEL CONDUIT

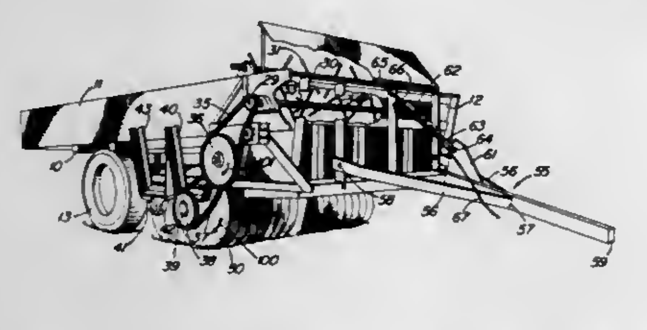
Kenneth Brandby, Akron, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed Oct. 31, 1974, Ser. No. 519,445
Int. Cl.² F23K *3/02*
U.S. Cl. 110—104 R **3 Claims**



1. In combination with a fuel firing system comprising fuel supply and burner means spaced from one another, conduit means for conveying the fuel from the supply to the burner means, a rigid floor disposed below said supply and burner means, the floor being formed with trench means defining at least a portion of said conduit means, and said trench means being covered by detachable plate means.

3,939,785
SPRIG PLANTING APPARATUS

Willard W. Duffy, Rte. 1, Box 33, Okarche, Okla. 73762
Filed Mar. 18, 1974, Ser. No. 451,752
Int. Cl.² A01C *11/00*
U.S. Cl. 111—3 **16 Claims**

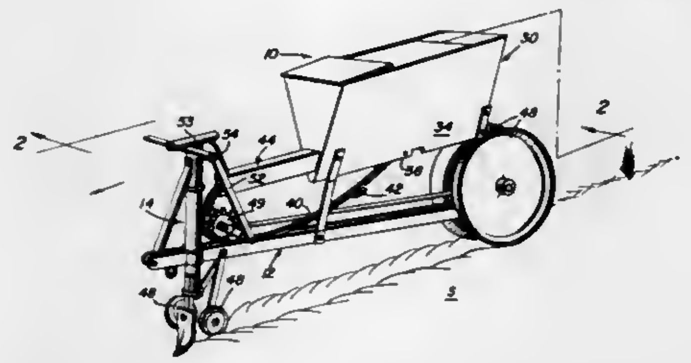


1. In a device for planting sprigs into the surface of the earth said device having a frame having a forward and a rear end, a sprig storage bin mounted on top of said frame, a sprig outlet, a conveyer means for moving material in said sprig storage bin to and through said outlet and onto the surface of said ground, and means at said outlet for separating and distributing said sprigs along said outlet, an improved device comprising:

- a. a shaft means mounted under said frame behind said outlet;
- b. a plurality of disc sprig planting means axially mounted to and spaced along said shaft means by a distance substantially equal to the width of said outlet to roll said sprigs into said ground;
- c. wheel support means mounted behind said shaft and journaled to the rear end of said frame;
- d. draw bar means attached to the forward end of said frame; and
- e. means on said device for controlling penetration of said disc sprig planting means into said surface of the earth.

3,939,786
SELF-PLANTER

George L. Greene, Rte. 1, Box 362; Sylvester A. Williams, and Freddie L. Franklin, both of Rte. 1, Box 356, all of Crawfordville, Fla. 32327
Filed Aug. 20, 1974, Ser. No. 499,020
Int. Cl.² A01C *11/00*
U.S. Cl. 111—3 **10 Claims**

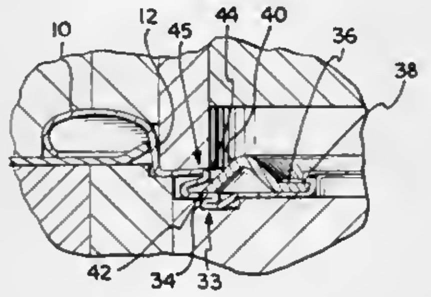


1. A self-planter, comprising, in combination:

- a. a frame capable of being moved along a supporting surface;
- b. planting elements mounted on the frame, the elements including a furrow opener, setter, and packing wheels; and
- c. projector means mounted on the frame for sequentially forcing plants into the ground, the projector means including a cylinder having a pair of open ends, a piston slidably disposed in the cylinder, a rod connected to the piston and arranged extending out one of the ends of the cylinder, the other of the ends of the cylinder being restricted to form a plant holding device, an opening provided in the cylinder for permitting a plant to pass into the cylinder between an extreme position of the piston and the other of the ends, and actuator means mounted on the frame and connected to the rod for sliding the piston in the cylinder.

3,939,787
CONVENIENCE CLOSURE WITH SAFE EDGES

John Morrison, and William F. Elser, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 19, 1974, Ser. No. 498,710
Int. Cl.² B21D *51/26*
U.S. Cl. 113—121 C **1 Claim**

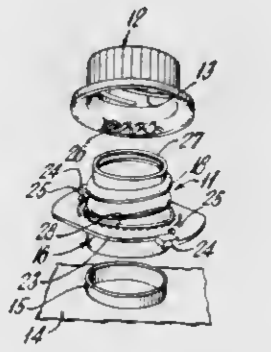


1. A method for forming a metallic closure from a closure blank having a central panel and a perimetrical upstanding wall portion which comprises the steps of:

forming an upper and a lower ledge, connected by a wall portion, in said perimetrical upstanding wall portion;
bending the outer margin of said central panel to form a first loose loop;
scoring an endless severing line in said lower ledge;
bending said upper ledge and said wall portion connecting said upper and lower ledges to form a second loose loop;
folding said first loose loop into abutting relationship with said lower ledge to form a continuous three-layer panel fold having a projecting nose portion, said projecting nose portion being positioned below said severing line essentially in vertical alignment with said severing line;
fixing a pull tab to said central panel, said pull tab having a nose portion extending to said severing line; and
folding said second loose loop to a position overlying said severing line and said nose portion of said pull tab to form a continuous loose chuck wall fold so that said severing line lies completely under said chuck wall fold.

3,939,788
METHOD OF MAKING A SAFETY CLOSURE FOR A CONTAINER

Seth R. Schneible, South Salem, N.Y., assignor to Eyelet Specialty Co., Inc., Wallingford, Conn.
Division of Ser. No. 414,448, Nov. 9, 1973, Pat. No. 3,892,326. This application Nov. 11, 1974, Ser. No. 522,890
Int. Cl.² B65D *55/02*
U.S. Cl. 113—121 A **5 Claims**

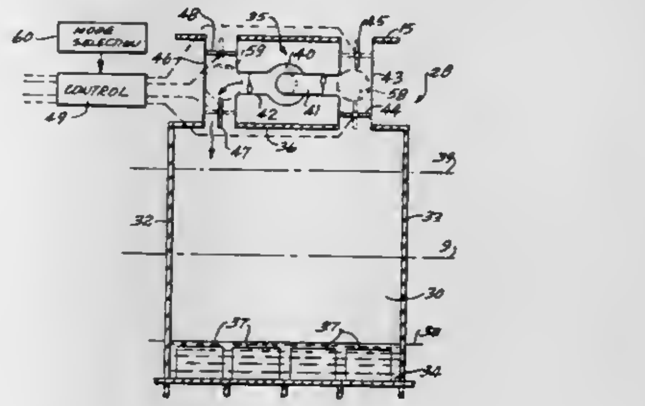


5. The method of making a self-locking safety closure for a dispensing container having a threaded neck to be closed by a threaded cap, which comprises selecting a container having a body and a reduced neck part with threads at a region predominantly near the dispensing end and with an outwardly projecting retaining bead beneath the threads and axially spaced from the body by an intermediate region, the intermediate region having an outwardly projecting key formation between the bead and the body, selecting a stiffly yieldable plastic locking ring with a splined bore sized to fit between the bead and the body and to non-destructively interfere with the bead, selecting a threaded cap compatible with the neck threads and having one-way ratchet-locking engeageability with a part of the ring, the direction of locking being in the unthreading direction, and axially assembling the ring over the threaded end of the neck part and into keyed detent retention between the bead and the body by using the threaded advance of the cap to axially drive the ring into its keyed detent-retained position.

3,939,789
DOUBLE-ACTING PNEUMATIC SYSTEM FOR INDUCING MOTION IN A FLOATING VESSEL

Edward O. Anders, Houston, Tex., assignor to Global Marine, Inc., Los Angeles, Calif.
Continuation-in-part of Ser. No. 183,466, Sept. 24, 1971, Pat. No. 3,850,125. This application Mar. 14, 1974, Ser. No. 450,994
Int. Cl.² B63B *43/06*
U.S. Cl. 114—40 **4 Claims**

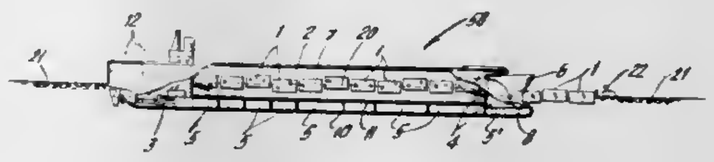
1. An improved vessel for use in ice-covered waters comprising a hull, a motion inducing tank disposed in the hull at a location spaced from the hull even-keel center of buoyancy, port means for communicating the lower extent of the tank to the exterior of the hull below the load waterline for flow of water into and out of the tank in response to pressure in the tank being different from ambient pressure outside the hull, the tank extending vertically in the hull from a lower end located below the hull load waterline to an upper end located above said waterline substantially as far as the location of said port means below said waterline, and air flow means coupled to the upper extent of the tank and operable alternately for generating superatmospheric and subatmospheric air pressure in the tank, the airflow means including an air pressurizing device having a suction connection and a discharge connection, duct means for coupling the suction connection separately to the upper extent of the tank and to atmosphere and for coupling the discharge connection separately to the upper extent of the tank and to atmosphere, and valve means in the duct means operable between



- a. a first state in which
  1. the suction connection is coupled to the tank and
  2. the discharge connection is coupled to atmosphere thereby to generate subatmospheric pressure in the tank, and
- b. a second state in which
  1. the suction connection is coupled to atmosphere and
  2. the discharge connection is coupled to the tank thereby to generate superatmospheric pressure in the tank.

3,939,790
TRANSPORT SHIP CONSTRUCTION AND METHOD OF LOADING FLOATING CARGO INTO A FLOATABLE CARGO SPACE OF A SHIP

Günter Varges, Emden, and Franz Graalmann, Leer, both of Germany, assignors to Rheinstahl Aktiengesellschaft, Germany
Filed Mar. 13, 1973, Ser. No. 340,812
Claims priority, application Germany, Mar. 23, 1972, 2214177
Int. Cl.² B63B *35/40*
U.S. Cl. 114—43.5 VC **35 Claims**

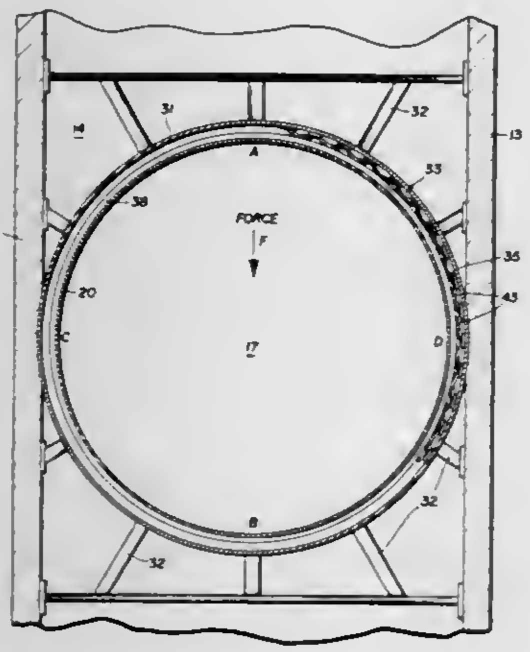


1. A transport ship for the transportation of floating cargo such as a buoyant container, particularly barges, comprising a ship's hull having at least one vertically undivided plural tier cargo space with means in said cargo space for stowing containers in a plurality of tiers one above the other, said cargo space being capable of being flooded to float the cargo therein and to be drained and being communicable with the open sea to permit the floating in of buoyant cargo, said floating cargo being vertically movable within said cargo space from the level of the lowermost tier to the uppermost tier by flotation upon variations of the level of the water in the cargo space.

3,939,791

LATERAL SUPPORT OF AN LNG SHIP TANK USING FLEXIBLE BRACING

Elmer Weyman Rothrock, Hinsdale, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.
Filed Sept. 23, 1974, Ser. No. 508,280
Int. Cl.² B63B *25/16*
U.S. Cl. 114—74 A **7 Claims**



1. In combination:

a ship having a hold with a bottom,

a vertically positioned tank with a top and bottom standing in gravity support on the hold bottom, said tank having a portion circular in horizontal section between the tank top and tank bottom,

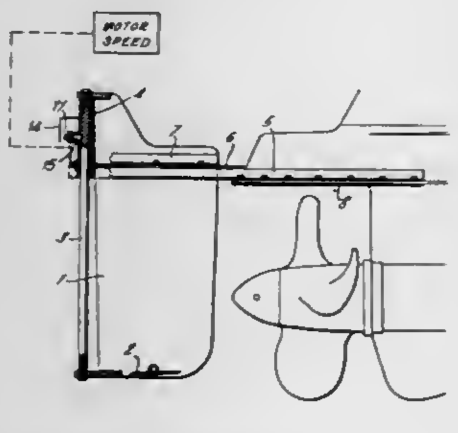
a circular restraining wall horizontally positioned around the tank, and equally spaced from, the circular portion of the tank, and

a plurality of pairs of flexible cross-braces fixedly joined substantially tangentially to the circular portion of the tank and extending therefrom and fixedly joined to the circular restraining wall, said cross-braces accommodating expansion and contraction of the tank with temperature change while providing support against lateral movement of the tank during pitching and rolling of the ship.

3,939,792

VERTICALLY LIFTABLE RUDDER BLADE

Reidar Wasenius, Signalveien 6, 1500 Moss, Norway
Filed June 25, 1974, Ser. No. 482,994
Claims priority, application Norway, June 26, 1973, 2639/73
Int. Cl.² B63H *25/06*
U.S. Cl. 114—162 **10 Claims**



1. The combination comprising

a motor for a boat, said motor having a propelling means which produces a slipstream as the boat moves through the water,

a rudder for steering the boat at speeds below a predetermined speed,

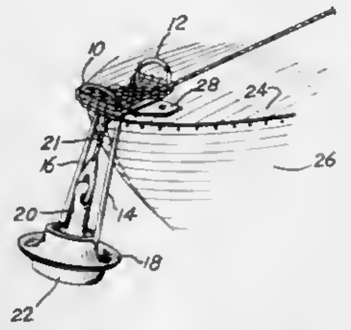
means independent of the boat mechanically coupling the rudder to the motor propelling means so that the rudder is in a position to react to the slipstream produced by the propelling means and both turn together as the boat is steered,

and means on said rudder responsive to the movement of the water at said predetermined speed and above lifting the entire rudder up in the water and out of the slipstream when the boat has reached said predetermined speed to make the steering of the boat substantially independent of the rudder.

3,939,793

ANCHOR BRACKET AND CLEAT

Norman D. Brockelsby, Grand Island, Nebr., assignor to Dutton-Lainson Company, Hastings, Nebr.
Filed Feb. 7, 1975, Ser. No. 547,862
Int. Cl.² B63B *21/22*
U.S. Cl. 114—210 **7 Claims**



1. An anchor bracket and cleat comprising, in combination:

support member means including first and second parallel, spaced rods;

first and second opposed spaced ring means joined to the support member means, said ring means being inclined in opposite directions and spaced from each other to form a cleat, said ring means including openings for guiding a line;

means for attaching the ring support member means to a deck surface; and

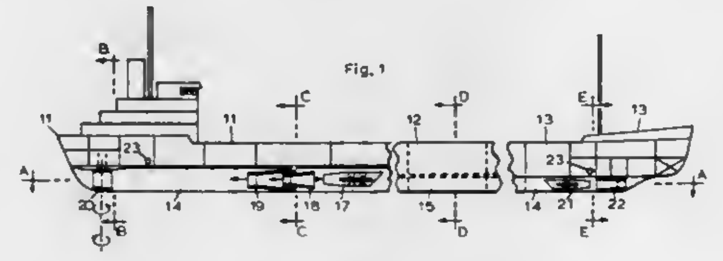
an extension of said support member means, including first and second diverging rod extensions of said first and second rods, respectively, said rod extensions connected to a support collar member, being spaced from said ring means to form a separate anchor support, whereby an anchor may be retained by the collar member.

3,939,794

MARINE PUMP-JET PROPULSION SYSTEM

Francis R. Hull, 567 E. 26th St., Brooklyn, N.Y. 11210
Continuation-in-part of Ser. Nos. 814,475, Feb. 17, 1969, Pat. No. 3,620,183, and Ser. No. 182,760, Sept. 22, 1971, Pat. No. 3,779,200. This application Sept. 25, 1973, Ser. No. 400,659
Int. Cl.² B63H *11/02, 25/46*
U.S. Cl. 115—16 **4 Claims**

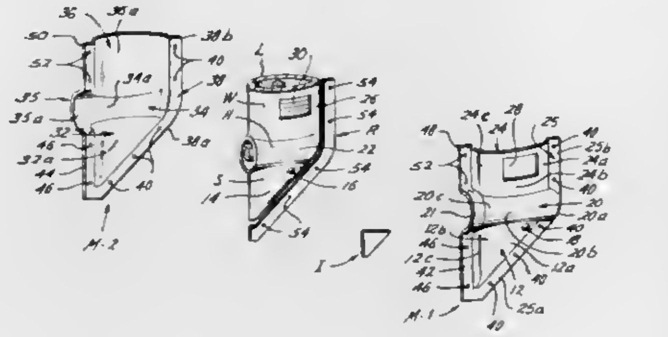
1. A marine propelling device to facilitate ahead-and-astern propulsion comprising a reversible hydraulic-jet ejector structure extending longitudinally within the hull of a marine vessel and disposed below the normal waterline; said reversible ejector structure being bounded by sidewalls of a longitudinal open-channel conduit formed by downwardly depending chines or keels from the hull structure of said marine vessel; oppositely-directed thrust-augmenting secondary-nozzle ejector stagings centrally disposed in said open channel conduit to discharge towards their respective adjacent propelling end of said ejector structure; each ejector staging having a ducted axial pump disposed within said open-channel conduit to supply high-velocity motive fluids into the central bore of at least one adjacent secondary-nozzle member; the inlet casing of each ducted axial pump being disposed to admit pump suction fluids from the direction of positive differential pressure when underway and the outlet casing of each ducted axial pump being disposed to discharge high-velocity motive fluids therefrom.



3,939,795

OUTBOARD MOTOR PROTECTIVE COVER

Arthur J. Rocka, Rte. 1, Box 276, Tomball, Tex.
Filed June 3, 1974, Ser. No. 475,864
Int. Cl.² B63H *21/26*
U.S. Cl. 115—17 **7 Claims**



1. An apparatus for protecting an outboard motor, which motor includes a skeg, a propeller shaft housing for a propeller shaft and a propeller, comprising:

a. first cover member means for enclosing and covering a first portion of the outboard motor;

b. second cover member means for enclosing and covering a second portion of the outboard motor;

c. said first and second cover member means enclosing and covering the skeg and propeller shaft housing of the motor and each having a recess formed therein for passage of the propeller shaft for connection with the propeller, said first and second member means each comprising:
   1. a lower cover portion for enclosing and covering the skeg; and
   2. an intermediate cover portion for enclosing and covering the propeller shaft housing;
   3. a rear collar formed on said intermediate cover portion adjacent said recess for forming an opening for passage of the propeller shaft therethrough wherein the propeller is external of said first and second cover member means;

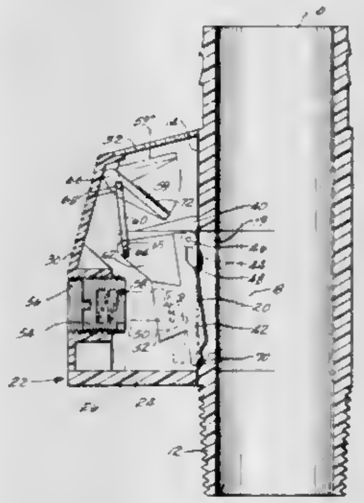
d. said first and second cover member means being formed from a solid member and in substantial conformity to the portions of the outboard motor enclosed and covered thereby for reducing impairment of the hydrodynamic flow characteristics of the outboard motor; and

e. coupling means for connecting said first cover member means and said second cover member means together to enclose the covered portions of the outboard motor therein.

3,939,796

APPARATUS FOR VISUALLY INDICATING WHEN A POOL FILTER IS DIRTY

Clarence G. Smith, Pomona, and Richard O. Lightfoot, Pacific Palisades, both of Calif., assignors to Muskin Corporation, Colton, Calif.
Filed Sept. 27, 1974, Ser. No. 510,004
Int. Cl.² B01D *35/14*
U.S. Cl. 116—114 PV **2 Claims**



1. Apparatus for indicating when a swimming pool filter needs to be cleaned, comprising a conduit member adapted to be connected to the inlet side of a pool filter for directing water into the filter, the conduit having an opening along the side, means projecting around the opening forming a flat surface, a diaphragm of flexible material in contact with said surface and extending across the opening, housing means covering the diaphragm and clamping the diaphragm against said surface, a piston member movably supported in the housing means, the piston member having a surface engaging the diaphragm, spring means urging the piston surface and diaphragm toward the conduit against the pressure exerted against the diaphragm by water in the conduit, the housing means having a window therein, a pivoted flag positioned adjacent the window, and linkage means connecting the piston means to the flag for moving the flag in response to movement of the piston means, the flag being movable between a position viewable through the window and a position out of view through the window, the linkage means moving the flag into the viewable position when the piston means moves against the urging of the spring a predetermined distance, the piston means including a hinged member extending across said opening with one side in contact with the diaphragm, the linkage means being pivotally connected at one end to the flag means and at the other end to the hinged member, the linkage means including lost motion means for allowing the hinged member to move a predetermined distance before it begins to move the flag through the linkage means.

3,939,797

ROTARY MEASURING INSTRUMENTS USING INCH OR METRIC SCALE

Cyril William Medhurst, Weybridge, England, assignor to British Aircraft Corporation Limited, London, England
Filed June 28, 1974, Ser. No. 484,291
Claims priority, application United Kingdom, June 30, 1973, 31282/73
Int. Cl.² B23Q *17/00*
U.S. Cl. 116—115.5 **7 Claims**

1. A rotary instrument for selectively indicating measurements in English and Metric units and suitable for use with apparatus having a shaft whose rotational movement is proportional to a linear movement to be measured by the instrument, including in combination,

a first rotary unit adapted to be secured to the shaft,

a secondary rotary unit rotatable with respect to the first rotary unit,

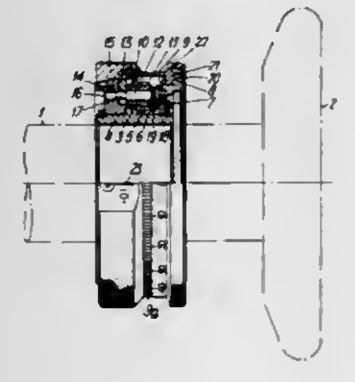
a first external annular gear member fixed to said first rotary unit,

a second external annular gear member fixed to said second rotary unit and co-axial with said first gear member,

an annular scale member, on which a single continuous scale is formed, carried by said second rotary unit,

an annular stationary unit,

a drive unit for transmitting rotary movement between said first rotary unit and said second rotary unit including a first pinion gear member meshing with said first annular gear member, a second pinion gear member meshing with the second annular gear member, and an axially shiftable stub shaft upon which the first and second pinion gear members are fixed,



location means to anchor the stub shaft selectively to the stationary member, wherein a drive ratio which corresponds to or bears a simple relationship to the ratio between English and Metric units of length is provided between said first and said second rotary unit, or to the second rotary unit, wherein a 1:1 gear ratio is provided between said first and said second rotary unit,

gear ratio shift means, operatively associated with said stub shaft, and

co-operating means mounting said shift means on said stationary member such that rotation of said shift means effects axial translation of said stub shaft from a position anchored to said stationary unit to a position anchored to said second rotary unit, and

two spaced marks formed upon said shift means against which the continuous scale can be read, the marks being so spaced that when the stub shaft is anchored to said stationary unit only one mark is visible to an operator and when the stub shaft is anchored to said second rotary unit only the other mark is visible.

3,939,798
OPTICAL THIN FILM COATER

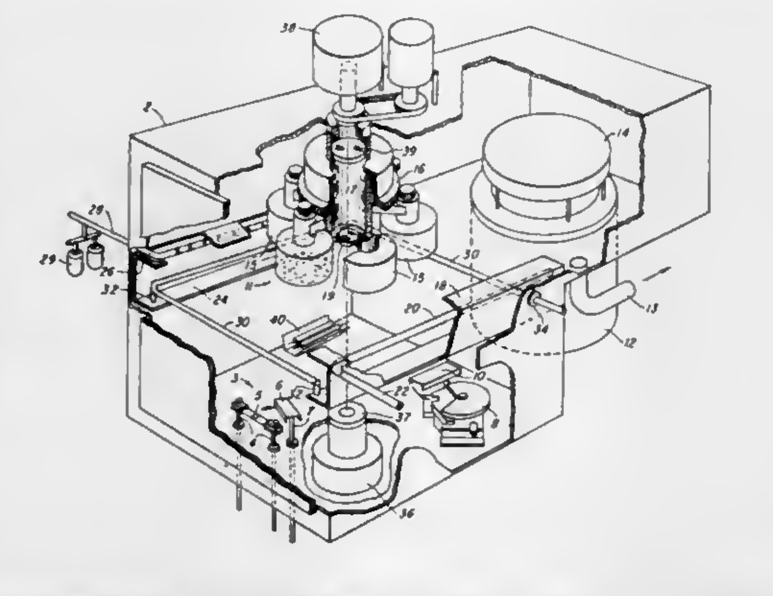
Dale E. Morton, Farmers Branch, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 19, 1974, Ser. No. 534,327

Int. Cl.² B05C ***11/02;* C23C *13/12***

U.S. Cl. 118—7 **8 Claims**

1. An optical thin film deposition system comprising a vacuum chamber, evaporative deposition means within said chamber, reactive plasma deposition means within said chamber, chemical vapor deposition means within said chamber, a movable substrate support means within said chamber, and means for selectively activating the evaporative deposition means, the reactive plasma deposition means, and the chemical vapor deposition means whereby thin films are deposited upon a substrate by evaporative deposition, RPD, and CVD in any sequence or in combination without removal of the substrate between deposition of layers.



3,939,799
MAGNETIC FORCE SEALANT FOR PLATING TANK

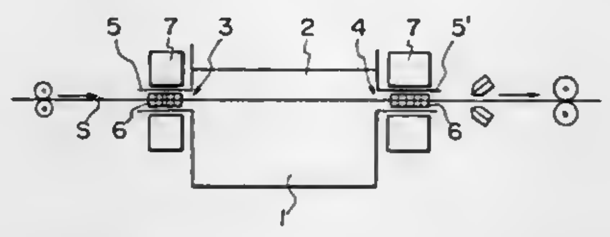
Shigeo Kanbara, Yokohama, and Takeshi Adaniya, Fukuyama, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed July 12, 1974, Ser. No. 488,056

Claims priority, application Japan, July 17, 1973, 48-79812

Int. Cl.² B05C ***5/02***

U.S. Cl. 118—620 **4 Claims**



1. A molten metal plating apparatus comprising: two electrodes arranged within a chute at each of a feeding and discharging ends of a plating tank in parallel with the side edges of a strip to supply a flow of current in the direction of the width of said strip; and a magnet arranged on the outside of each of said chutes to apply a magnetic field substantially over the whole area of said chute in the direction of the thickness of said strip, whereby on simultaneous application of said current and magnetic field a magnetic force is developed which is directed inwardly with respect to said tank and whereby the amount of leakage of said molten metal through each of said chutes at said strip feeding and discharging ends is controlled to zero or to a desired value by suitably adjusting the amount of said current or the intensity of said magnetic field.

3,939,800
APPARATUS AND PROCESS FOR DEPOSITING ELECTROSTATICALLY AND MAGNETICALLY RESPONSIVE PARTICULATE MATTER ON A CONDUCTIVE SURFACE

Harold J. Baoker, Bethel Park, Pa., assignor to Pram Inc., Wilmerding, Pa.

Filed July 23, 1974, Ser. No. 490,969

Int. Cl.² B05B ***5/02;* G03G *15/08***

U.S. Cl. 118—636 **11 Claims**

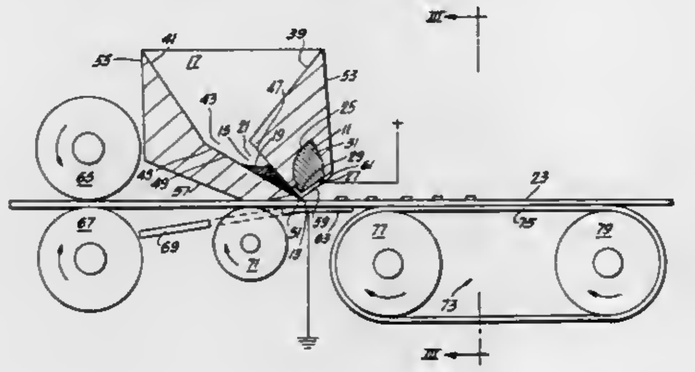
1. Apparatus for depositing electrostatically and magnetically responsive particulate matter comprising:

a. A conductive surface bearing a latent electrostatic image;

b. Storage means for storing electrostatically and magnetically responsive particulate matter;

c. Channeling means that is disposed adjacent to said conductive surface and that is capable of channeling a quantity of said particulate matter from said storage means to said conductive surface; and,

d. Magnetic field producing means disposed adjacent to said conductive surface that is capable of producing a distorted and asymmetrical magnetic field having a region of concentrated magnetic flux permeating said conductive surface, and a region of dilute magnetic flux that is inclined and adjacent to said conductive surface; said distorted and asymmetrical field being oriented with respect to said conductive surface and said channeling means so that said quantity of said particulate matter is caused to move from said storage means through said channeling means by gravitational and magnetic forces of said region of dilute magnetic flux and caused to be moved from said channeling means to said conductive surface by magnetic forces of said region of concentrated magnetic flux, and further caused to be deposited on said conductive surface by the electrostatic forces thereon overcoming the said magnetic forces of said concentrated magnetic flux.



3,939,801
MAGNETIC BRUSH DEVELOPING APPARATUS

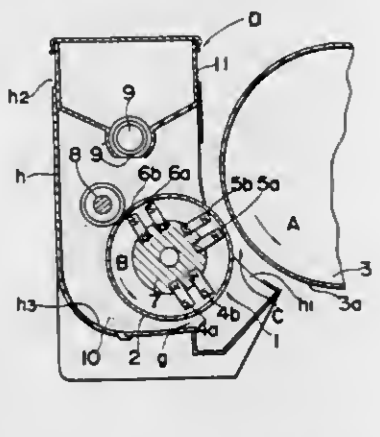
Susumu Tanaka, Sakai; Yuji Enoguchi, Osaka, and Hidetoshi Kawabata, Tondabayashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 23, 1974, Ser. No. 500,169

Claims priority, application Japan, Sept. 10, 1973, 48-106098[U]; Oct. 26, 1973, 48-124143[U]

Int. Cl.² B05B ***5/02***

U.S. Cl. 118—637 **7 Claims**



1. In a magnetic brush developing apparatus for use in an electrophotographic copying apparatus which has a housing, and a developing roller rotatably provided adjacent to and in close spaced relation to a movable photoreceptor surface on which an electrostatic latent image on an original to be copied is formed, said developing roller including a rotatable outer cylinder and magnet means fixedly enclosed in said outer cylinder and disposed in such a position that the magnetic field of said magnet means intersects said cylinder to form magnetic brush bristles of developing material on said outer cylinder for developing said latent image into a visible toner powder image, the improvement in which, for forming soft magnetic brush bristles on said outer cylinder to maintain uniform quality of copied images, said magnet means comprises a pair of stationary magnets directed with the same polar orientation toward the photoreceptor surface and disposed in parallel to and at a distance from 5 to 20 mm from each other, said distance providing a space between said two magnets in which space magnetic lines of force of said two magnets repel each other with said space almost free from influence of said magnetic lines of force of said two magnets.

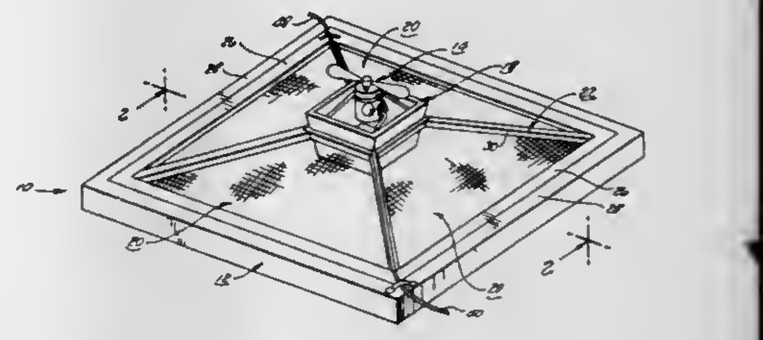
3,939,802
INSECT FEEDING

Gregor N. Neff, 85 Myrtle Ave., Dobbs Ferry, N.Y. 10522

Continuation-in-part of Ser. No. 213,966, Dec. 30, 1971, abandoned. This application Apr. 12, 1974, Ser. No. 460,619

Int. Cl.² A01K ***5/00***

U.S. Cl. 119—51 R **22 Claims**



1. A device for feeding aquatic animals in a body of water, said device comprising, in combination, insect retention means including a canopy structure, support means for supporting said canopy structure above the surface of said water, said canopy structure defining an enclosed peripheral area of substantial size with said canopy structure covering said area for preventing insects from escaping from the vicinity of the surface of said body of water below the canopy, insect attraction means supported by said support means with said canopy means so as to attract insects towards said area covered by said canopy structure, and insect directional means supported by said support means with said attraction means for directing insects towards said covered area.

3,939,803
HIGH TEMPERATURE BOILER AND METHOD

Herman P. Meissner, Winchester, Mass., and Frank C. Schora, Palatine, Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 414,202, Oct. 9, 1973. This application Aug. 12, 1974, Ser. No. 496,763

Int. Cl.² F22B ***1/06***

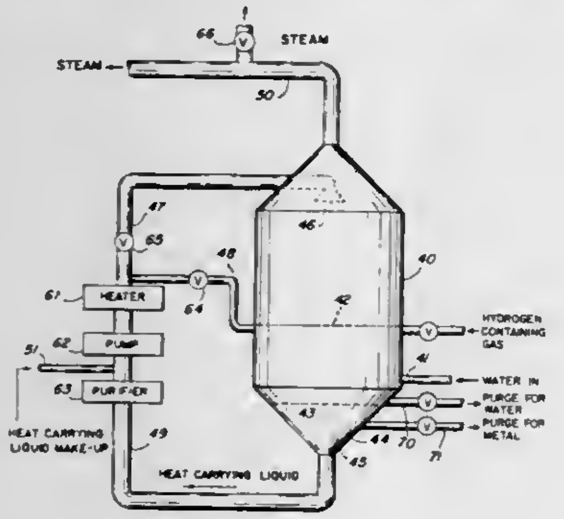
U.S. Cl. 122—31 R **12 Claims**

1. A process for vaporizing liquid water comprising the steps:

providing a heat-carrying liquid having a low vapor pressure over the temperature range used selected from the group consisting of lead, tin and bismuth and alloys consisting principally thereof at a predetermined elevated temperature to a boiler;

providing liquid water to said boiler; transferring heat from the heat-carrying liquid directly to the liquid water to be vaporized within the boilers; and

separately withdrawing the produced steam from the boiler.



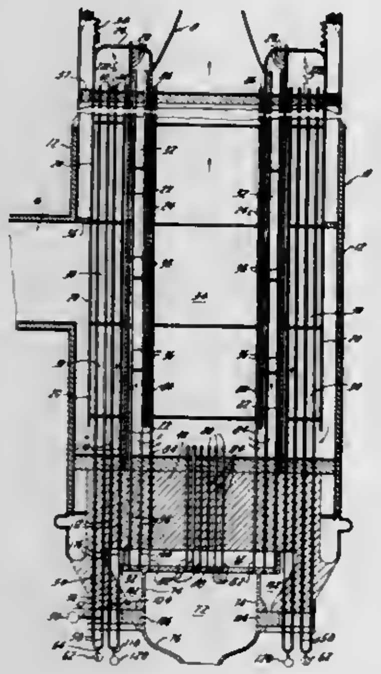
3,939,804
HELIUM HEATED BAYONET TUBE STEAM GENERATOR

Robert O. Barratt, Cedar Knolls, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed July 8, 1974, Ser. No. 486,286

Int. Cl.² F22B *1/06, 21/00*

U.S. Cl. 122—32 **11 Claims**



1. A helium heated steam generator comprising:
an outer shell;
a helium intake in said outer shell;
a helium exhaust in said outer shell;
a main tube sheet in said outer shell;
a plurality of economizer bayonet tube assemblies extending upward from said main tube sheet;
a plurality of evaporator bayonet tube assemblies extending upward from said main tube sheet;
a plurality of superheater bayonet tube assemblies extending upward from said main tube sheet;
each of said bayonet tube assemblies having an inner tube and a coaxial outer tube of larger diameter, said outer tubes having closed upper ends and being connected with said main tube sheet, said inner tubes extending below said main tube sheet;
a feed water inlet for supplying fluid to said economizer bayonet tube assemblies;
first conduit means permitting communication between said economizer bayonet tube assemblies and said evaporator bayonet tube assemblies;
second conduit means permitting steam leaving said evaporator bayonet tube assemblies to flow into the annular space between the inner and outer tubes of said superheater bayonet tube assemblies; and
a steam outlet through said shell connected with the inner tubes of said superheater bayonet tube assemblies;
whereby when hot helium gas is flowed through said helium intake over said outer tubes and out of said helium exhaust, and feedwater is flowed through said feedwater inlet, and said economizer bayonet tube assemblies to said evaporator bayonet tube assemblies and steam flows from said evaporator bayonet tube assemblies through said superheater bayonet tube assemblies and through said steam outlet, steam will be superheated in said superheater bayonet tube assembly while flowing upward in the space between said outer and inner tube of said superheater bayonet tube assemblies and leave said superheater bayonet tube assemblies by said inner tubes of said superheater bayonet tube assemblies.

3,939,805
STEAM GENERATOR

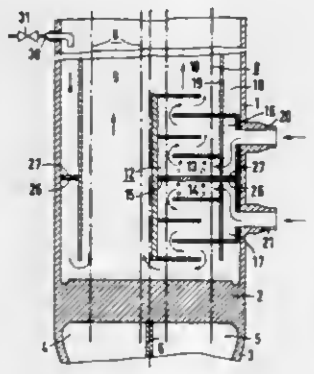
Eberhard Michel, Nurnberg, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim, Germany

Filed Nov. 26, 1974, Ser. No. 527,349

Claims priority, application Germany, Nov. 26, 1973, 2358830

Int. Cl.² F22B *1/06*

U.S. Cl. 122—32 **4 Claims**



1. A steam generator comprising an upstanding substantially cylindrical casing having a lower portion and a tube plate closing said portion, a U-tube bundle in said casing and having hot and cold legs mounted in said plate, means for flowing primary fluid up through said hot leg and down through said cold leg, a substantially cylindrical shroud encircling said bundle and forming a descent space therearound inside of said casing and opening to the inside of the shroud adjacently above said tube plate, a feed-water preheater enclosing a lower portion of said cold leg and having upper and lower outlets separated by a partition normally closing the preheater against through-flow by way of said outlets, said casing having upper and lower feed-water inlets, upper and lower manifold sections respectively connecting said upper and lower inlets with said preheater respectively above and below said partition, means for closing said inlets, and means for controllably bypassing said partition to establish a flow path from said lower outlet through said preheater and out through said upper outlet.

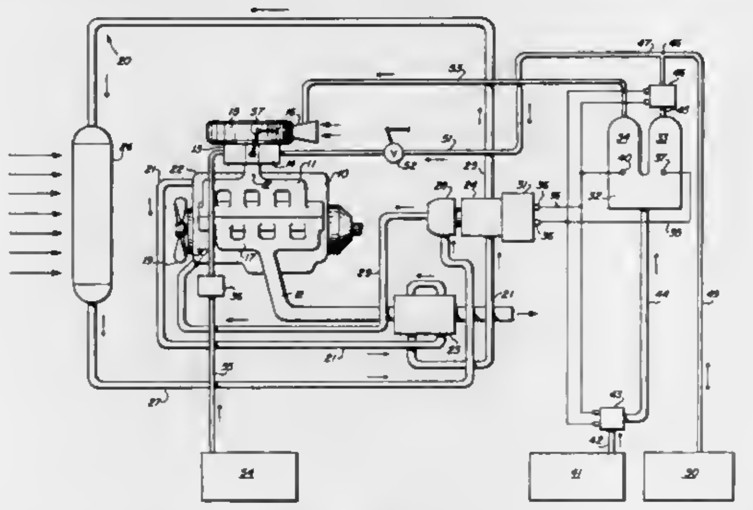
3,939,806
FUEL REGENERATED NON-POLLUTING INTERNAL COMBUSTION ENGINE

Curtis E. Bradley, 4517 Calle Ventura, Phoenix, Ariz. 85018

Filed Apr. 1, 1974, Ser. No. 456,974

Int. Cl.² F02B *43/08*

U.S. Cl. 123—3 **5 Claims**



1. In an internal combustion engine,
a. an engine block;
b. an exhaust pipe extending from said block;
c. a closed system for a working fluid including a pump for circulating the working fluid through the system, a turbine which is operated by the working fluid when in a gaseous state and a condenser for returning the working fluid from a gaseous state to a liquid;
d. a heat exchanger disposed about said exhaust pipe and through which said closed system passes to derive heat from the exhaust pipe and heat the working fluid;
e. a generator driven by said turbine to produce a DC electric current;
f. an electrolysis cell containing water and connected to said generator so that the DC current therefrom decomposes the water into oxygen and hydrogen;
g. a water tank for supplying water to said electrolysis cell;
h. a hydrogen carburetor on said engine block for delivering hydrogen to a combustion chamber in said block;
i. a conduit extending from said electrolysis cell to said hydrogen carburetor which conveys hydrogen from the cell to the carburetor;
j. a fuel tank for a hydrocarbon fuel;
k. a hydrocarbon fuel carburetor on said engine block and connected to said hydrocarbon fuel tank, and
l. linkage connected to said carburetors and operable to vary the ratio of hydrogen and hydrocarbon fuel which is introduced into the combustion chamber of said engine block.

3,939,807
ENGINE TEMPERATURE CONTROL SYSTEM

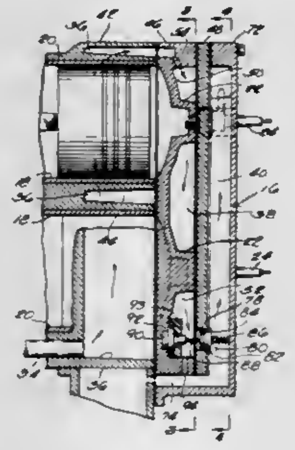
Charles H. Eichinger, Oshkosh, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 384,063, July 30, 1973, abandoned. This application Nov. 25, 1974, Ser. No. 526,899

Int. Cl.² F01P *7/14*

U.S. Cl. 123—41.08 **14 Claims**

10. An internal combustion engine comprising an engine block member including wall means at least partially defining an engine cylinder, and a cooling system including a coolant jacket, means for supplying coolant to said coolant jacket, a discharge conduit connected to said coolant jacket for discharging coolant from said coolant jacket, a normally closed valve connecting said coolant jacket and said discharge conduit, and means including a temperature responsive element in direct contact with said block member and operably connected to said valve for opening said valve to afford flow of the coolant from said coolant jacket portion to said discharge conduit when the temperature of said engine block member is above a predetermined level, and means for preventing said valve from opening when the temperature of said engine block member is below said predetermined level.



3,939,808
CIRCULAR MOTION RECIPROCATING ENGINE

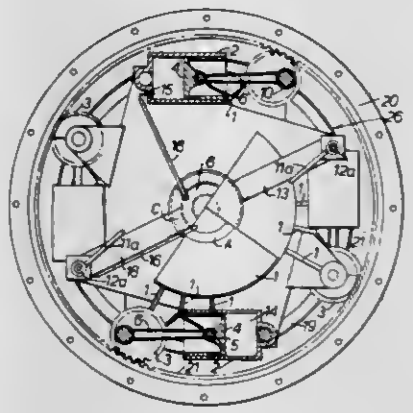
Bohdan Kosteckl, and Eugene Kosteckl, both of 21 Bath Road, Morley, Australia

Filed July 2, 1974, Ser. No. 485,071

Claims priority, application Australia, July 4, 1973, 3930/73

Int. Cl.² F02B *57/00;* **F01L** *1/34*

U.S. Cl. 123—43 R **17 Claims**

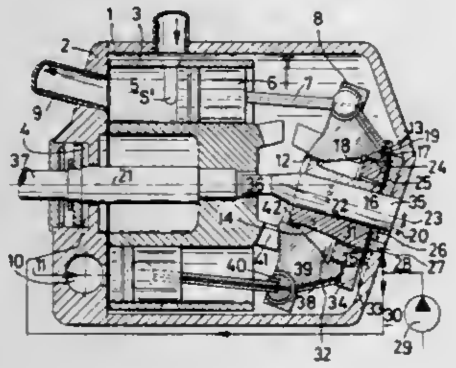


1. A revolving cylinder internal combustion engine comprising an outer body, a rotor mounted for rotation within the body, a plurality of piston and cylinder assemblies carried by the rotor and having axes extending at right angles to the axis of rotation of the rotor, each of the cylinders having an inlet and an exhaust port provided respectively with inlet and exhaust valves supported for rotation with the rotor, means for rotating the rotor in the body responsive to reciprocating movement of the pistons in the cylinders, and cams carried by the body for co-operation with the inlet and exhaust valves for controlling opening and closing of the valves responsive to the rotational movement of the rotor in the body, at least one of the cams comprising an adjustable portion displaceable relative to the remainder of the cam to change the cam profile to vary the dwell time proportion of rotational movement of the rotor during which each valve controlled by the cam is open.

3,939,809

AXIAL-PISTON COMBUSTION ENGINE

Ulrich Rohs, Roonstrasse 11, D 516 Dueren, Germany
Filed Oct. 11, 1974, Ser. No. 513,990
Claims priority, application Germany, Oct. 12, 1974, 2351252
Int. Cl.² F02B *75/26*
U.S. Cl. 123—58 B **11 Claims**

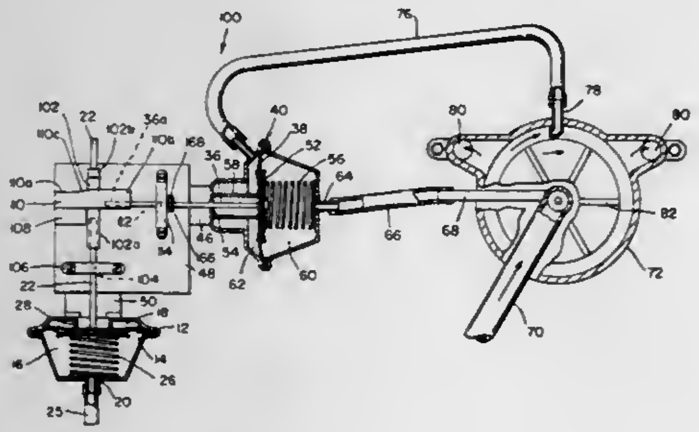


1. An axial-piston combustion engine comprising, in combination, a rotating drum (3) journaled in a stationary housing (1) and provided with cylinder bores (5), an inclined crank disc (8) coupled with said drum, pistons (6) with their rods (7) being pivotally attached to said drum, said pistons being guided in said cylinder bores, wherein said crank disc is supported against the encountered gas pressures, on the one hand, on a customary axial thrust bearing (34), and on the other hand, on two consecutive, hydraulically interconnected series arranged hydrostatic axial thrust bearings (32, 33) fed by an oil-pressure source (28 to 30), only the rearward one (33) of said two thrust bearings having a control slit (16) for controlling oil pressure, and the other one (32) of said two bearings constituting a hydraulic relief for said customary bearing.

3,939,810

ENGINE SPEED RESPONSIVE MEANS FOR CHANGING THE POSITION OF A VACUUM SPARK ADVANCE LIMITER STOP

Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133
Filed Apr. 12, 1974, Ser. No. 460,541
Int. Cl.² F02P *5/04*
U.S. Cl. 123—117 A **7 Claims**

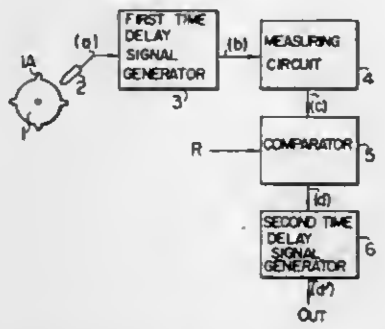


1. In a vacuum spark advance mechanism for an internal combustion engine of the kind in which an operating element of an intake suction operated spark advance motor is connected to an electrical interrupter mechanism controlling some of the timing of the ignition advance or retard and is normally movable to a maximum vacuum spark advance position by high engine intake suction from the engine when transmitted past control valves, the improvement comprising,
- limiting means for limiting the movement of the operating element to an amount less than said normal maximum vacuum spark advance position while still permitting a substantial vacuum controlled spark advance,
- speed responsive means associated with the limiting means for changing the limit on the movement in response to a selected change in engine or vehicle speed to permit a greater amount of movement above the selected speed then below the selected speed,
- said limiting means including a mechanical stop element having first and second stop surfaces for engaging the operating element to limit movement of the operating element, and
- positioning means associated with the speed responsive means and effective at speeds below said selected speed to locate the first stop surface in an operating position where the first stop surface can engage the operating element and effective at speeds above said selected speed to move the first stop surface from said operating position and to locate the second stop surface in said operating position.

3,939,811

IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE

Takao Sasayama, Hitachi, Japan, assignor to Hitachi, Ltd., Japan
Filed Apr. 10, 1974, Ser. No. 459,800
Int. Cl.² F02P *5/04*
U.S. Cl. 123—117 R **20 Claims**

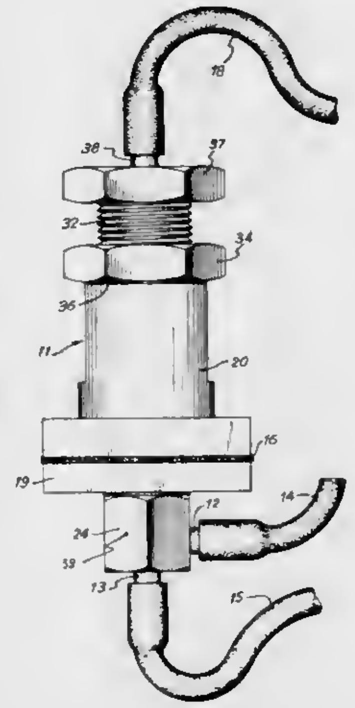

1A
1
2
(a)
FIRST TIME DELAY SIGNAL GENERATOR
3
(b)
MEASURING CIRCUIT
4
(c)
R
COMPARATOR
5
(d)
SECOND TIME DELAY SIGNAL GENERATOR
6
(d')
OUT

1. An ignition apparatus for an internal combustion engine comprising:
- means for generating a rotational angle signal associated with the rotational speed of the engine prior to the optimum ignition timing of an engine;
- first time delay establishing means adapted to be actuated from the simultaneous time point with the generation of a first rotational angle signal derived from said rotational angle signal generator means;
- first measuring means for measuring at a first predetermined coefficient independent of the engine speed the length of time from the time point following the lapse of a predetermined period of time established by said first time delay establishing means until the time point of the generation of a second rotational angle signal derived from said rotational angle signal generator means;
- second measuring means adapted to be actuated from the time point of the generation of said second rotational angle signal for measuring at a second predetermined coefficient independent of the engine speed the difference between the measured value of said first measuring means and a predetermined reference value;
- means for generating an ignition timing signal when the measured value of said second measuring means reaches a predetermined value;
- switching means disposed in a primary coil circuit of ignition coils and adapted to be controlled by the ignition timing signal so that electromagnetic induction is caused in said ignition coils by the actuation of said switching means to generate ignition energy of high voltage in a secondary coil circuit of said ignition coils.

3,939,812

VACUUM ADVANCE REGULATING VALVE

Jose Leobardo Gonzalez, Mexico City, Mexico, assignor to Monocar HC Internacional, S.A.
Filed July 29, 1974, Ser. No. 492,809
Claims priority, application Mexico, Aug. 9, 1973, 145477
Int. Cl.² F02P *5/04*
U.S. Cl. 123—117 A **6 Claims**



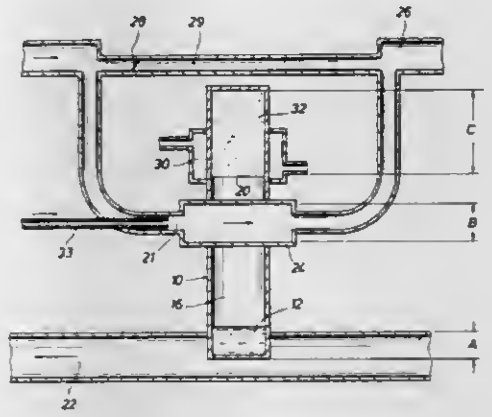
1. A valve to prevent atmospheric contamination which automatically regulates the vacuum advance of the distributor in internal combustion engines, in which is included a passage which communicates a vacuum connection of the carburetor with a vacuum advance mechanism of the distributor, characterized in that it includes a conduit having two terminals, one of which is connected to the vacuum connection of said carburetor, and the other one is connected to the vacuum advance mechanism of the distributor, and in that the referred conduit can be obstructed by a valve closing element connected to a diaphragm confined between two principal bodies, one of which comprises said conduit and the other one is composed of a tubular body with inside threading which houses a spring that presses with one of its ends against the diaphragm and with the other end beasing against the lower portion of a threaded nipple, which screws into said inside threaded portion of said tubular body; said threaded nipple comprising a lengthwise bore which extends through a tube which by means of a hose is connected to the intake manifold of the carburetor, permitting the opening of the valve when the engine is working without load.

3,939,813

LIQUID FUEL VAPORIZING DEVICE FOR INTERNAL COMBUSTION ENGINES

Geoffrey A. Harrow, Wirral; Walter D. Mills, Mold, both of England; John L. Wilson, and Ian C. Finlay, both of Glasgow, Scotland, assignors to Shell Oil Company, Houston, Tex.
Filed Apr. 15, 1974, Ser. No. 461,180
Claims priority, application United Kingdom, Apr. 19, 1973, 18888/73
Int. Cl.² F02M *31/00*
U.S. Cl. 123—122 A **6 Claims**

1. In a device for vaporizing the liquid fuel charge in the inlet system of an internal combustion engine prior to its introduction into a combustion chamber of said engine, said inlet system including combustion air supply means which comprises a main air supply duct to supply the main portion of the combustion air, and liquid fuel supply means disposed to supply liquid fuel to said main air supply duct; said device comprising
- at least one heat pipe, said heat pipe being in the form of a substantially sealed vessel;
- said heat pipe containing a heat transfer fluid having a boiling point at atmospheric pressure up to 400°C;

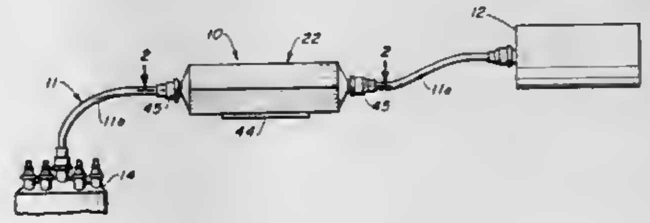


- said heat pipe being disposed so that a liquid phase of the heat transfer fluid accepts heat in a heat-recovery zone adapted to contact hot exhaust gases from said engine, and a vapor phase of the fluid being disposed to condense in a heat-discharging zone, the improvement comprising that said heat discharging zone is disposed in heat transfer relationship with said main air supply duct to heat said liquid fuel charge which has been mixed with at least the main portion of the combustion air.

3,939,814

DEVICE FOR PROLONGING IGNITION SPARK

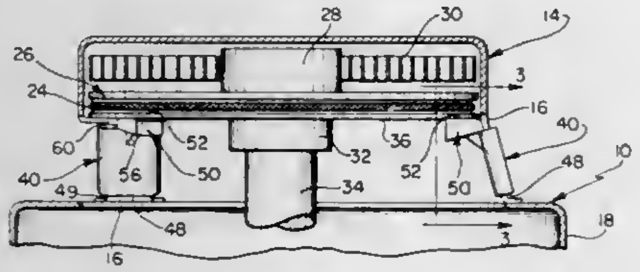
Ralph E. Bergstresser, Hollywood, Calif., assignor to Energy Innovations, Newbury Park, Calif.
Filed Jan. 10, 1975, Ser. No. 539,937
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 A **15 Claims**



1. An ignition spark prolong device located in the electrical line connecting the secondary winding of an ignition coil to the distributor comprising:
- a core of electrically inert material;
- an insulated wire conductor wound around said core and connected at one end to said secondary winding and at the other end to said distributor;
- the end of said conductor connected to said secondary winding being wound into a first winding portion along said core in coils of wire spaced apart;
- the other end of said first portion being connected to a first section of a second winding portion wound along said core in the same direction as said first portion in coils closely adjacent one another;
- a second section of said second winding portion connected to the end of said first section and wound in a reverse direction from said first section along said core in closely adjacent coils; and
- a third section of said second winding portion connected to the end of said second section and wound in a reverse direction from said second section along said core in closely adjacent coils;
- the wire conductor at the end of said third section being connected to said distributor.

3,939,815
ENGINE STARTER AND BRACKET

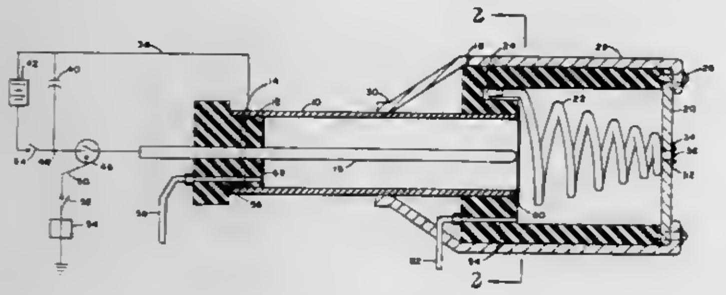
Donald K. Spivey, 3645 N. 50th St., Tampa, Fla. 33619
Filed Nov. 19, 1974, Ser. No. 525,206
Int. Cl.² F02N *3/02*; B23P *7/00*
U.S. Cl. 123—185 BA 11 Claims



1. A starter mechanism comprising a housing having a support with opposite edge portions, a starter reel received within said housing, a bracket including a body having a face and an end portion, said body including means for mounting the bracket on the support, the mounting means extending outwardly from said face and including opposed channels, one for each of the support edge portions, for receiving the associated one of the support edge portions, the channels being transverse to the body end portion, said body further including means for supporting said reel, the supporting means being proximate said end portion and extending in a direction opposite that of the mounting means.

3,939,816
GAS FILLED COAXIAL ACCELERATOR WITH COMPRESSION COIL

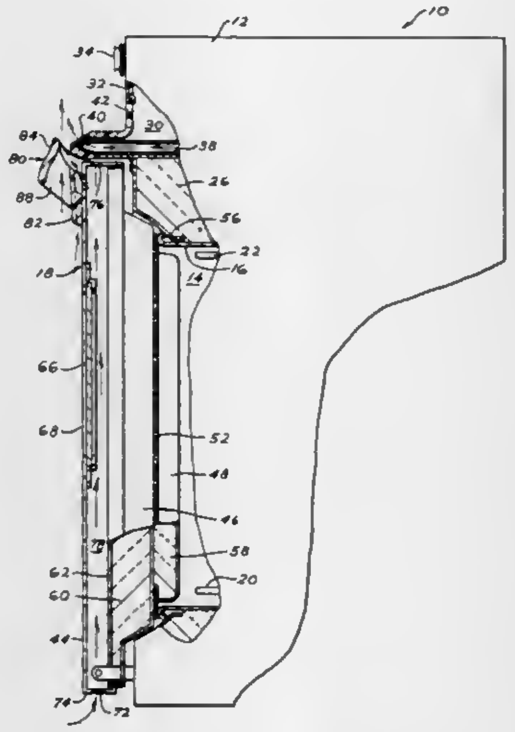
Patrick N. Espy, Huntsville, Ala., assignor to The United States of America as represented by the National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.
Filed July 12, 1974, Ser. No. 488,614
Int. Cl.² F41F *1/02, 1/04*
U.S. Cl. 124—11 R 5 Claims



1. An apparatus for accelerating and compressing plasma comprising:
a. an elongated cylindrical first electrode;
b. a central rod electrode disposed coaxially of said first electrode out of contact therefrom;
c. an electrically conductive element extending between said central rod electrode and an inner end of said first electrode;
d. a plug sealing said inner end of said first electrode;
e. a rupturable seal carried over an outer end of said first electrode;
f. means for inserting gas within said elongated cylindrical first electrode;
g. an elongated electrically conductive helical coil having a large diameter end and a small diameter end;
h. said large diameter end of said helical coil being carried adjacent said outer end of said first electrode and said small diameter end being spaced longitudinally therefrom;
i. means for electrically connecting the small diameter end of said helical coil to said first electrode;
j. means for applying a high voltage to said first electrode and said central rod electrode for causing said electrically conductive element to ionize producing a plasma which is accelerated forcing said gas out of said outer end of said first electrode; and
k. said helical coil being in axial alignment with said elongated cylindrical first electrode so that a current path is formed between an outer end of said central rod electrode and said helical coil as said plasma is accelerated out the outer end of said first electrode producing current flow through said helical coil, which in turn produces a time varying magnetic field that compresses said plasma and gas adjacent said small diameter end of said coil;
whereby a source of compressed plasma is produced adjacent said small diameter end of said helical coil.

3,939,817
OVEN DOOR HANDLE CONSTRUCTION

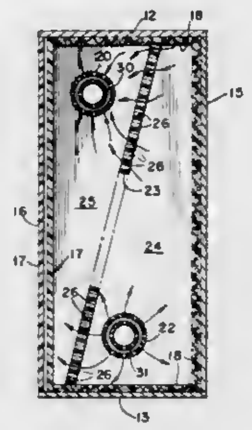
James J. Nuss, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Dec. 6, 1974, Ser. No. 530,072
Int. Cl.² F23M *7/00*
U.S. Cl. 126—190 3 Claims



1. A door construction for a high temperature oven comprising an outer door panel and a spaced inner door liner that is adapted to be exposed to the high temperatures within the oven, thermal insulating means within the door for retarding the flow of heat from the inner door liner to the outer door panel, and cooling air channel means behind the outer door panel to allow room ambient air to enter the bottom of the door and rise up through the door and exit adjacent the top edge of the door; the invention comprising an elongated door handle having attaching means fastened to the door adjacent the top edge thereof and elevated gripping means spaced away from the door and extending above the top edge of the door, said gripping means also serving as an upward deflector means for the hot air expelling from the door and as a shielding means to prevent ready access to the oven area immediately above the door, wherein the said door handle substantially extends from one side of the door to the other and the door gripping means is spaced away from the said attaching means by a plurality of spaced strut members thereby forming air passages up through the handle so that room air may pass up through the handle and mix with the hot air coming from the oven.

3,939,818
SOLAR ENERGY HEATING MODULE AND ASSEMBLY

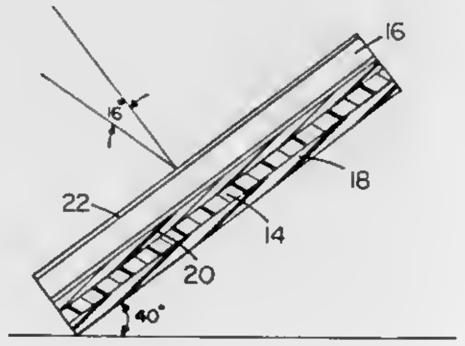
George Henry Hamilton; Robert McLean Turner, both of Washington, D.C., and Jesse Lee Ward, Jr., Arlington, Va., assignors to Solar Energy Company, Washington, D.C.
Filed Apr. 23, 1974, Ser. No. 463,358
Int. Cl.² F24J *3/02*
U.S. Cl. 126—270 6 Claims



1. A solar energy module comprising a sealable chamber having cross-flow radiator means having honeycomb cells and dividing said chamber into fluid inlet and outlet compartments, means to supply fluid to said inlet chamber including at least one perforated sleeve extending through said inlet compartment and supported by said chamber, and a perforated manifold extending through said inlet compartment and generally concentrically disposed within said perforated sleeve, wherein said manifold and said sleeve are positionable relative to each other for enabling adjustment in direction and volume of fluid flow through said sleeve.

3,939,819
SOLAR RADIANT ENERGY COLLECTOR

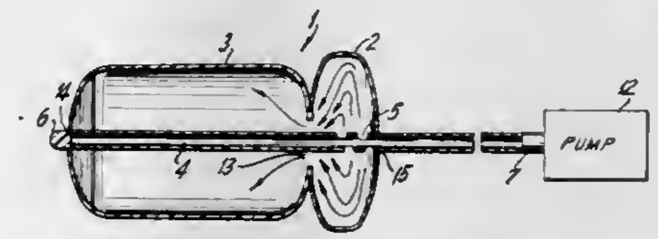
John E. Minardi, Kettering, Ohio, assignor to The University of Dayton, Dayton, Ohio
Filed Mar. 29, 1974, Ser. No. 456,177
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 4 Claims



1. A solar radiant energy collector comprising a source of liquid having a medium dispersed therein with a high absorptance to solar energy, a transparent tube of an extended length wound in a configuration to provide a flat-like planar surface for maximum exposure to solar radiant energy, a reflector surface positioned on the opposite side of said planar surface to that exposed to said solar radiant energy a liquid inlet and outlet joined with said transparent tube; and liquid pressure means to cause said liquid to flow from said inlet through said tube and to said outlet.

3,939,820
SINGLE-CHAMBER, MULTI-SECTION BALLOON FOR CARDIAC ASSISTANCE

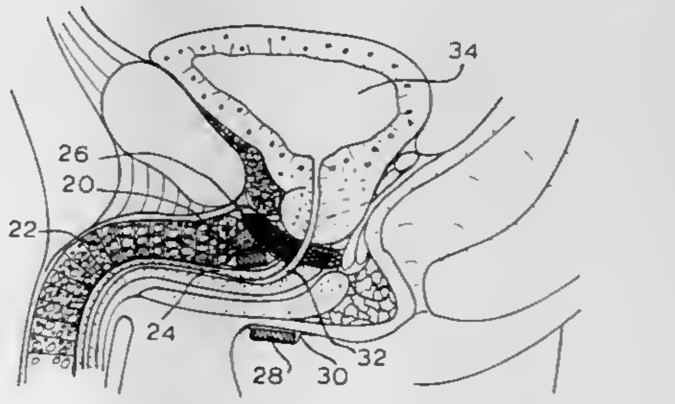
Joseph Grayzel, Englewood, N.J., assignor to Datascope Corporation, Paramus, N.J.
Filed Oct. 29, 1974, Ser. No. 518,979
Int. Cl.² A61B *19/00*
U.S. Cl. 128—1 D 4 Claims



1. A device to be inserted within a blood vessel for assisting unidirectional blood flow within said vessel comprising:
a. an inflatable and deflatable chamber mounted upon support means within said chamber, said chamber being divided into an occluding section and a pumping section, said sections being secured to said support means only at their non-adjacent ends, their adjacent ends being only partially separated from each other, not secured to said support means, and thus in direct communication with each other;
b. gas delivery means terminating only in said occluding section; and
c. gas providing means connected to said gas delivery means such that gas passes from said providing means to said delivery means and from said delivery means into said occluding section and then from said occluding section directly to said pumping section so as to inflate said occluding section and said pumping section in that order causing said pumping section to pump blood in a direction away from said occluding section.

3,939,821
MAGNETICALLY ACTUATED TUBE COMPRESSING VALVE

Russell B. Roth, Erie, Pa., assignor to Altair, Incorporated, Plymouth, Conn.
Continuation of Ser. No. 415,645, Nov. 14, 1973, abandoned. This application Feb. 25, 1975, Ser. No. 552,935
Int. Cl.² A61B *19/00*
U.S. Cl. 128—1 R 14 Claims



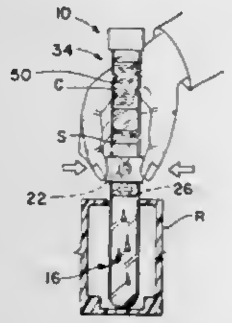
1. A valve means for controlling the flow of liquid through an intercorporeal duct having tissue adjacent thereto comprising a first permanent magnet, a biologically inert sheath means contiguously surrounding the first magnet and immovably fixed with respect to the first magnet for securely attaching the first magnet to said tissue adjacent to said duct, a second magnet, and means for selectively positioning the second magnet extracutaneously adjacent the duct for magnetically interacting with the first magnet thereby causing the first

magnet and the sheath means to clamp the duct in a position to stop the flow of liquid therethrough.

3,939,822
DISPOSABLE BLOOD COLLECTION AND FILTERING DEVICE

Jack Markowitz, 3705 Fieldstone Road, Randallstown, Md. 21133

Filed Aug. 14, 1974, Ser. No. 497,284
Int. Cl.² A61B *19/00, 5/14*
U.S. Cl. 128—2 F **3 Claims**

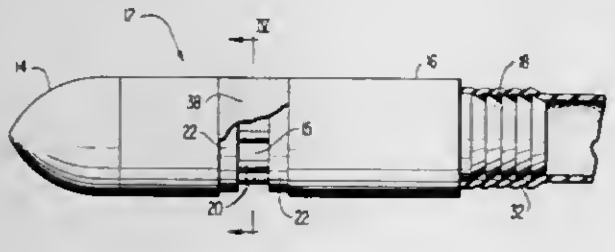


1. In a blood handling system having first and second evacuated chambers, means for affixing the chambers together detachably, means for admitting fluid into the first chamber including a resilient closure at one end thereof, means for valving fluid from the first chamber to the second chamber, and means for separating components of the fluid, the improvement comprising: the means for affixing comprising a resilient tubular conduit having a first end resiliently fitted into the first evacuated chamber, a second end resiliently fitted into the second evacuated chamber, a middle portion larger in diameter than said first and second ends spacing-apart the ends of said first and second evacuated chambers a distance permitting said middle portion to be manually squeezed inward between the ends of the first and second evacuated chambers; means for valving, comprising a spherical member of frangible material resiliently fitted in sealing contact within the bore of the resilient tubular conduit in said middle portion between the ends of said first and second evacuated chambers in position to be crushed by a said manual squeeze; and a filter resiliently fitted in the bore within said second end of the resilient tubular conduit inserted in said second evacuated chamber, with the end of said second evacuated chamber positioned for retaining the filter against disturbance by a said manual squeezing to crush the frangible member.

3,939,823
ESOPHAGEAL TRANSDUCER

Michael D. Kaye, Burlington, Vt.; Kingsley Carlton Rock, Jr., Littleton, Colo.; Charles E. Johnson, Denver, Colo., and J. Philip Showalter, Denver, Colo., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Jan. 28, 1975, Ser. No. 544,932
Int. Cl.² A61B *5/10*
U.S. Cl. 128—2 S **9 Claims**



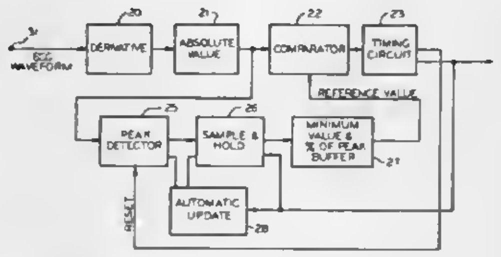
1. A pressure sensing device for measuring pressure circumferentially in internal body cavities comprising:

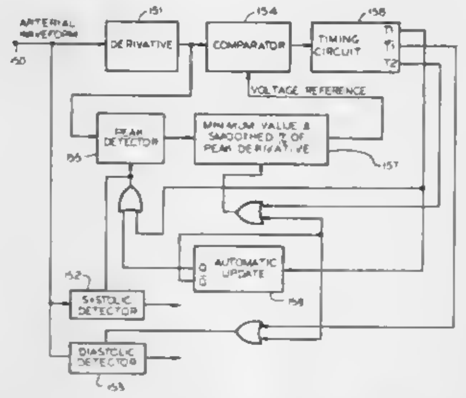
a catheter for introducing said pressure sensing device into the internal body cavities,
a rigid cylindrical transducer housing connected to said catheter and defining an open cavity therein spaced along the length thereof, said housing having a distal end,
pressure sensing means, mounted entirely within said housing and in pressure communication with said cavity, for generating an electrical signal in response to pressure in said cavity,
means for sensing the pressure impinging on said transducer housing circumferentially comprising an annular flexible sleeve member contacting said housing coaxial therewith and surrounding said cavity,
a liquid medium contained within said cavity and in contact with said flexible sleeve and said pressure sensing means for transferring pressure from the entire circumference of said flexible sleeve member to said pressure sensing means,
electrical transmitting means connected to said pressure sensing means and passing through the distal end of said housing and passing through said catheter for transmitting said electrical signal to a receiver external to the body.

3,939,824
PHYSIOLOGICAL WAVEFORM DETECTOR

Harold N. Arneson, Oak Creek, and Louis J. Heitlinger, Waukesha, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 404,408, Oct. 9, 1973, Pat. No. 3,878,833.
This application Jan. 9, 1975, Ser. No. 539,698
Int. Cl.² A61B *5/04*
U.S. Cl. 128—2.05 A **7 Claims**





1. A device for detecting a waveform signal portion in the presence of other signals by using the characteristic time rate of change or slope of the waveform signal portion as criteria for its existence, comprising:

a. means for differentiating said waveform signal to produce a differentiated signal having a portion whose magnitude is representative of said slope criteria,
b. means for detecting the peak magnitude of said differentiated signal,
c. means for producing a reference signal including means for converting said peak magnitude signal to a signal representing a predetermined percentage thereof, said last named signal constituting said reference signal and corresponding in magnitude with the derivative of the slope of said waveform signal portion,
d. comparator means having inputs for receiving said differentiated signal and reference signal, respectively, said comparator means producing an output signal change when said differentiated signal magnitude is greater than said reference signal,
e. timing means responsive to occurrence of said last named output signal change by initiating measurement of a first time interval which, if completed, is indicative of said waveform portion meeting the time criteria, said timing means also being responsive to terminate measurement of said first interval if said output signal discontinues before expiration of said predetermined period,
f. means responsive to completion of said first time interval by actuating said timing means to continue to measure a second time interval, and
g. resetting means responsive to completion of said second interval by resetting said reference signal producing means to produce a reference signal having a different value than the preceding reference signal existing when said comparator produced the aforementioned output signal.

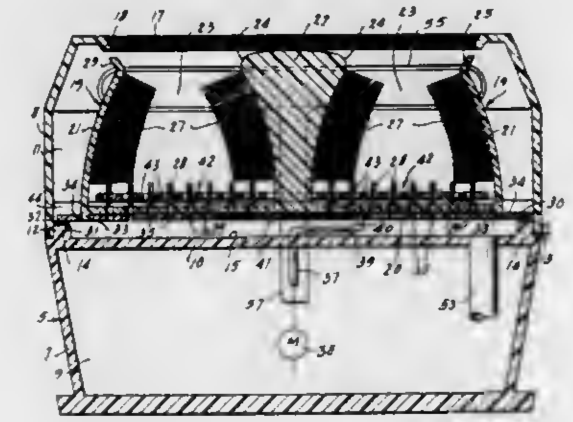
3. A device for detecting the minimum and maximum magnitudes of a particular waveform signal in the presence of other signals by using plural characteristics of said waveform signal for identification thereof, comprising:

a. means for receiving and differentiating said signals,
b. means for producing a reference signal,
c. means for comparing the magnitude of said differentiated signals with the magnitude of said reference signal, said comparing means changing its output signal in response to said differentiated signal magnitude being greater than said reference signal magnitude, said signal change being indicative of one characteristic of said waveform if said change is sustained for a predetermined time interval and being indicative of a waveform which it is not desired to detect if it is sustained for less than said predetermined time interval.
d. timing means for measuring the duration of said change,
means for detecting said undifferentiated waveform signal, and
f. means for sampling the minimum and maximum magnitudes of said last named detected signal in response to said timing means measuring a change duration at least as long as said predetermined interval, and
means for storing said minimum and maximum signals.

3,939,825
APPARATUS FOR PEDICURE

Leo Krummenacher, Luzernerstrasse 36, 6030 Ebikon, Switzerland

Filed Jan. 29, 1975, Ser. No. 545,106
Claims priority, application Switzerland, Jan. 29, 1974, 1163
Int. Cl.² A61H *7/00, 9/00*
U.S. Cl. 128—52 **15 Claims**

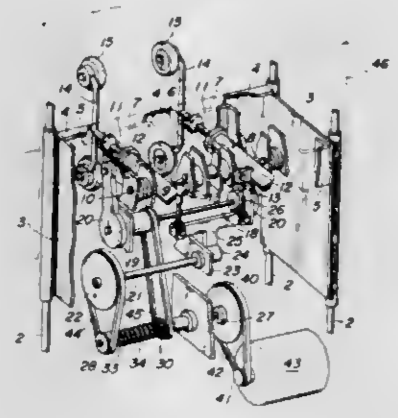


1. Apparatus for pedicure, comprising:
means defining an open top treatment chamber receptive of at least one human foot;
at least one foot-receiving scrubbing device within said chamber provided with an upwardly opening generally channelshaped cavity having foot scrubbing means therein affixed to the device;
foot rest means within said cavity; and
means for effecting relative reciprocation of the device and the foot rest means for foot scrubbing action between the scrubbing means with respect to a foot located on the foot rest means within the cavity.

3,939,826
ELECTROMOTIVE MASSAGE APPARATUS FOR BEATING AND KNEADING BODY

Shinichiro Fujimoto, 6-8 Hannanchounaka, Abeno, Osaka, Japan

Filed Nov. 7, 1974, Ser. No. 521,795
Int. Cl.² A61H *23/00*
U.S. Cl. 128—55 **3 Claims**



1. An electromotive massage device comprising in combination: an electrically-driven power means for driving a shaft rotatably; first drive shaft means including a first drive shaft adapted to be driven by the electrically-driven power means, and a second drive shaft spaced axially from the first drive shaft, and a third drive shaft mounted as a tubular shaft coaxially around and separately rotatably from the first drive means; and a tubular gear means providing a tubular gear slidably shiftable axially to and fro for shifting driving torque alternately between engagement with the second drive shaft and the third drive shaft providing for alternate driving of the second and third drive shafts selectively intermittently as desired; lever selector means for selectively moving the tubular gear means in either of to and fro axially engageable directions for alternate driving of the second and third drive shafts; a massage means providing for alternate use as a massager and a tapping device, including a pivotably mounted shaft element and a mounting base therefor; a first lever means for drivably interconnecting said pivotably mounted element and one of the second drive shaft and the third drive shaft and including a first eccentric cam mounted to impart reciprocatable upright motion to said pivotably mounted element; and a second lever means drivably interconnected to the remaining one of the second drive shaft and the third drive shaft and including a second eccentric cam mounted to impart reciprocatable upright motion to the massage means, and a tapping element axially reciprocatably mounted and adapted for horizontal movement on the mounting base and drivably connected to said second lever; such that the pivotably mounted element is movable pivotably uprightly intermittently selectively and alternately said tapping element is reciprocatable axially horizontally intermittently selectively.

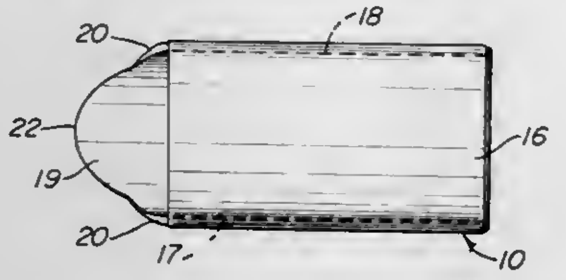
3,939,827
ERECTION AID FOR A PENIS

Frank H. Brunstetter, San Antonio, Tex., assignor to Hi-Torr Inventions Corporation, San Antonio, Tex.

Filed Oct. 29, 1974, Ser. No. 518,295

Int. Cl.^{2} A61F *5/00*

U.S. Cl. 128—79 **12 Claims**



1. An erection aid for a penis including:

a support splint adapted to extend along the ventral surface of the penis, said splint adapted to extend from adjacent to the base of the penis to the glans of the penis prior to erection and said splint being formed of a firm, bendable material;

a thin, resilient cover adapted to enclose at least that portion of the penis not enclosed by said splint and adapted to extend from the rear end of said splint and terminating behind the glans of the penis;

said cover including releasable retaining means to secure longitudinal edges of said cover to mating, longitudinally extending edges of said splint and being dimensioned together with said splint so as to effect a snug but non-tight fit on the penis to support the penis for penetration into a vagina without causing any restriction of blood flow through a penis.

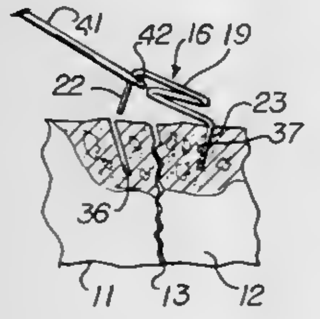
3,939,828
METHOD AND CLASP FOR INTERNAL OSSEOUS FIXATION

Robert N. Mohr, 1350-9th Ave., and Howard J. Zlotoff, 1341-12th Ave., both of San Francisco, Calif. 94122

Filed Sept. 9, 1974, Ser. No. 504,052

Int. Cl.^{2} A61F *5/04*

U.S. Cl. 128—92 B **5 Claims**



1. A clasp for osseous fixation formed of a unitary piece of resilient wire and having a horizontal portion formed of first, second and third stretches, a first 180° bend interconnecting a first end of said first stretch with a first end of said second stretch, a second 180° bend interconnecting a second end of said second stretch with a first end of said third stretch, said first, second and third stretches in the unstressed condition of said clasp being substantially parallel to each other and being of substantially identical lengths, a first leg depending from a second end of said first stretch, a second leg depending from a second end of said third stretch, said legs being located on diagonal corners of said clasp, said legs converge and each said leg is disposed at an acute angle relative to said horizontal portion said horizontal portion being stressed when said legs are pulled away from each other by increasing the arcuate extents of said bends, said legs being remote from each other so that said legs may be inserted in holes drilled in bone segment on opposite sides of an osteotomy or fracture.

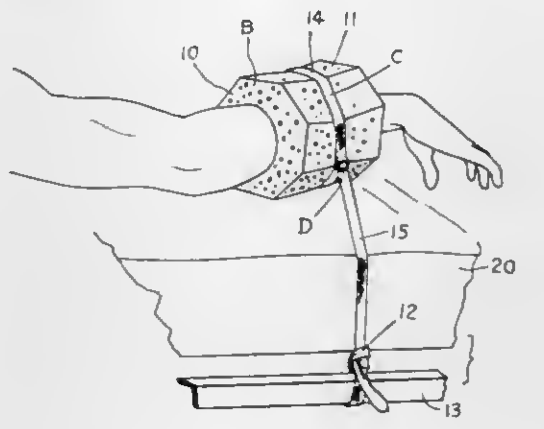
3,939,829
RESTRAINING CUFF

Donald C. Spann, 5 Ferncreek Court, Greenville, S.C. 29607

Filed July 9, 1974, Ser. No. 486,763

Int. Cl.^{2} A61F *5/37*

U.S. Cl. 128—133 **2 Claims**



1. A restraining cuff and the like comprising:

restraining means for placement upon the extremities of a patient confined to prolonged bed rest for elevating the extremities, and for restraining undesireable movement of a patient reclining upon a bed;

said restraining means including,

an elongated block of resilient deformable polyurethane foam material;

said elongated block including a bore therethrough defining a continuous internal wall extending longitudinally of said elongated block for receiving an extremity:

said restraining means further defining a thickened, closed integral circumferential cylindrical layer of resilient deformable material, wherein the distance in cross section from said internal wall to the perimeter of said layer maintains an extremity placed within said wall in elevated position above a mattress of the bed so as to avoid pressure point contact between the extremity and the mattress as would result in the formation of decubitus ulcers;

a strap encircling a medial outer portion of said block and extending free of said block providing a tie portion for fastening to the bed; and

adjustable fastening means for securing said strap encircling the block constricting said circumferential layer of foam resiliently engaging an extremity of a patient;

whereby chaffing of the extremity engaged by the cuff may be avoided and the extent of contact between the extremity and the mattress reduced.

3,939,830
MANUALLY OPERABLE DECHOKING AND RESUSCITATING DEVICE

Harry da Costa, 5925 Foothill Drive North, Scottsdale, Ariz. 85253

Filed Mar. 10, 1975, Ser. No. 557,111

Int. Cl.^{2} A61M *16/00*

U.S. Cl. 128—145.7 **10 Claims**

1. In a device for removing an obstruction from the throat of a human being or generating artificial respiration in said being,

a. a face mask of a flexible material for application over the mouth and nose of said human being including a main body portion and side wall structures having marginal peripheral portions that are pressed against the nose-chin area in airtight relation therewith to define a cavity over said mouth and nose,

b. an opening in said main body portion,

c. a rigid cylinder having one end open and its other end closed by an end wall formed with a central opening in alignment with the opening in the main body portion of the mask,

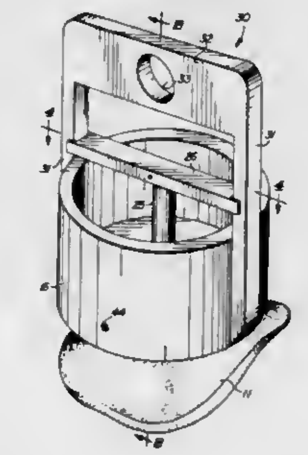
d. means for securing said end wall to said main body portion,

e. a one way check valve in said end wall offset from said central opening which when open permits passage of air from the interior of said cylinder to the exterior thereof and which when closed inhibits passage of air through the end wall to the interior of said cylinder,

f. a moveable detent means on said end wall for holding said check valve in closed position,

g. a piston reciprocal in said cylinder,

h. said piston having an orifice together with a safety valve controlling the passage of air through said orifice which opens when a safe limit of suction is reached on an outstroke of said piston,



i. a rod upstanding from said piston centrally thereof and projecting beyond the open end of the cylinder when the piston is in its innermost position,

j. a finger engageable handle on the outer end of said rod,

k. spring means biasing said piston towards said end wall whereby instrokes of the piston are powered by said spring means,

l. a frame including a cross-members extending transversely of said open end and mounted on the exterior of said cylinder whereby said member is gripped by the hand of an operator whose fingers are in engagement with said finger engageable member and tightening of the grip of said hand causes an outstroke of said piston against the influence of said spring means,

m. a bleed hole in said cylinder adjacent to said end wall; and

n. a tube secured to said main body portion and communicating with the opening therein, said tube having an extent just long enough to provide for its insertion between the teeth and over the tongue of said human being to function as a gag and tongue depressor.

3,939,831
PROCESS FOR PREPARING MEDICINAL DRESSINGS

Gheorghe Cioca; Nicolae Tigaeru; Agrippa Ionescu; Nicolae Chiotan; Mihai Constantinescu, and Gheorghe Niculescu, all of Bucharest, Romania, assignors to Intreprinderea Flacara Rosie, Bucharest, Romania

Filed Mar. 4, 1974, Ser. No. 447,559

Int. Cl.^{2} A61L *15/00*

U.S. Cl. 128—156 **4 Claims**

1. A method of making a collagen-based medicinal dressing comprising the steps of:

freezing a collagen polydispersion containing a bacteriocide, bacteriostat or healing-promotion agent in water to a temperature between −65°C and −70°C for a period of 2.5 to 3.2 hours,

drying the frozen polydispersion by vacuum sublimation over a period of substantially 24 to 48 hours at a pressure of 10^{-3} to 10^{-5} torr, and

maintaining the temperature during the vacuum sublimation period up to +35°C.

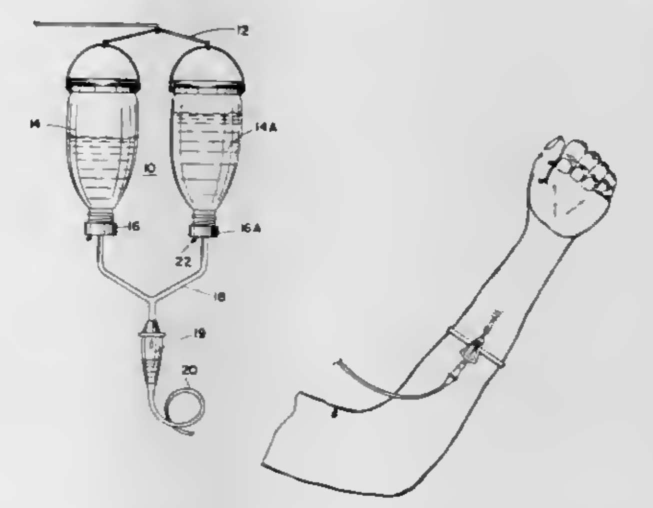
3,939,832
LIQUID FLOW REGULATOR AND MONITOR FOR INFUSION SYSTEM

John J. Miller, Marietta, Ohio, assignor to Med-Pak Corporation, Charleston, W. Va.

Filed Mar. 9, 1973, Ser. No. 339,839

Int. Cl.^{2} A61M *5/00*

U.S. Cl. 128—214 R **7 Claims**



1. Apparatus for administering medicated liquid to a patient including a container for the liquid, a drip chamber immediately adjacent to said container and connected thereto with a hose line, and an extended hose line connecting said fluid in the container through said drip chamber to a body insertable cannula, means for suspending said liquid container above the body of the patient for gravitational flow of said liquid through said drip chamber and said extended hose line; the improvement comprising:

liquid flow control means having an input fluid passage directly connected to the terminal end of said extended hose line opposite to that of said drip chamber, and an output fluid passage;

said control means including metering means for metering and indicating the liquid passing therethrough;

means for securing said control and metering means to the body of a patient adjacent to the point of entry of said body insertable cannula;

said output fluid passage in said control means directly connected to said body insertable cannula and;

valve means connected with said control means to vary the size of said fluid passage;

whereby said control and metering means controls and meters the fluid passage at the point of entry of said body insertable cannula.

3,939,833
PISTON CONSTRUCTION FOR SYRINGES

Bengt Eve Hansson, Holden, Mass., and Edward A. Tischlinger, Niantic, Conn., assignors to Astra Pharmaceutical Products Inc., Worcester, Mass.

Filed Jan. 15, 1975, Ser. No. 541,202

Int. Cl.^{2} A61M *5/00*

U.S. Cl. 128—218 P **3 Claims**

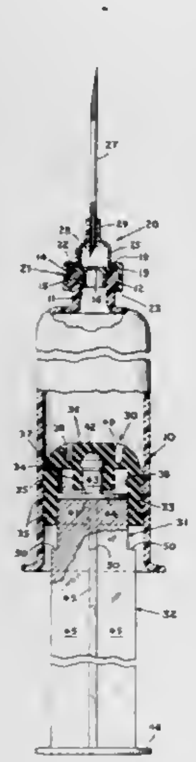
1. In a prefilled, disposable hypodermic syringe, or cartridge intended therefor, of the type sealed at its foward end with a destructible diaphragm, a piston and piston rod construction comprising:

a. a unitary piston of molded resilient material and composed of a main piston body constituted of a hollow cylinder having an annular inner wall and an exterior formed to sealably engage the inner surface of a syringe barrel;

b. an auxiliary member or reduced diameter and substantially shorter than said hollow cylinder coaxially enclosed within the forward end of said main cylindrical piston body with the external surface of said auxiliary member spaced from said inner piston body wall, and

c. a transverse, annularly-shaped elastic membrane connecting said auxiliary member in yieldable sealed engagement with the inner wall of said main cylindrical piston body;

d. a piston rod having a forward portion and a following portion fixedly connected together, and movable as a unit relative to the main piston body, said forward portion having a lateral cross-section dimension approximating the inner cross-sectional area of the main piston body and slidably engageable with the inner wall of said main piston body, said forward portion being of such length that when advanced within the chamber formed by the inner wall of said main piston body it comes into contact with the inner-facing end of the auxiliary member spaced from such inner wall and moves said member forwardly for a predetermined distance limited by the length of said forward position without causing movement of said main piston body, the outer-facing end of the auxiliary member having an area substantially less than the cross-sectional area of the syringe barrel and such that as said member moves through such predetermined distance while said main piston body remains stationary, it exerts a forwardly directed force through the liquid contacts in the syringe barrel sufficient to rupture the distructible diaphragm; and

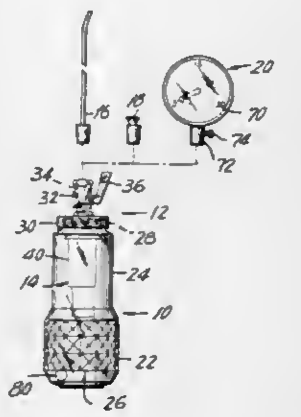


e. a forwardly directed shoulder formed by said forward piston rod portion and the following portion of said piston rod, and having a lateral cross-section dimension greater than the inside diameter of said main piston body so that when the auxiliary member has been distended to the desired distance, continued application of pressure to the piston rod will cause such shoulder to engage the main piston body and to coact with said forward piston rod portion in engagement with the auxiliary member to move the piston as a whole with said auxiliary member distended within the syringe barrel.

3,939,834
METAL COATED ARTICLES
Patrick J. McMahon, 87 Interlaken Ave., New Rochelle, N.Y. 10801
Filed Sept. 24, 1974, Ser. No. 508,827
Int. Cl.^{2} A61J *1/00*
U.S. Cl. 128—272 17 Claims

1. A container for biological media comprising a transparent or translucent receptacle having the interior surface coated with a coherent light transmitting barrier layer of metal selected from stainless steel, chromium, gold, nickel, platinum, palladium, vanadium, cadmium, tin, tantalum and tungsten.

3,939,835
MEDICAL ASPIRATION SYSTEM VACUUM LEVEL INDICATOR
Henry Bridgman, P.O. Box 71, Convent Station, N.J. 07961
Division of Ser. No. 258,960, June 2, 1972, Pat. No. 3,833,000.
This application July 3, 1974, Ser. No. 485,335
Int. Cl.^{2} A61M *1/00;* G01L *21/00*
U.S. Cl. 128—276 2 Claims

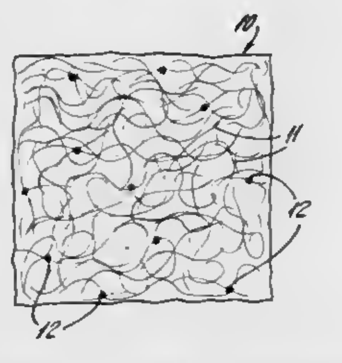


1. A vacuum level indicator for use in an evacuated empty medical uterine aspiration collection bottle comprising an expandable non-porous elastic membrane positioned inside said collection bottle and adapted to be used with means for regulating the introduction of material from the uterus into said evacuated bottle, said bottle being transparent to permit viewing of said indicator, said membrane defining an enclosed volume inside said evacuated bottle, a predetermined quantity of gas within said enclosed volume sufficient to provide a first visually observable expansion of said elastic membrane when said bottle is empty and evacuated, and a different expansion when said bottle is either substantially filled with aspirated material or when said bottle is no longer evacuated.

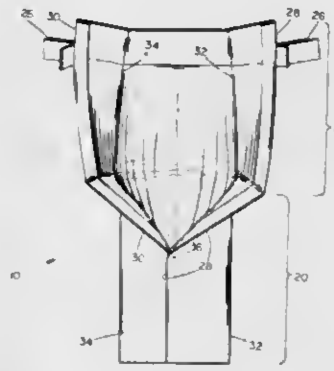
3,939,836
WATER DISPERSIBLE NONWOVEN FABRIC
Deger C. Tunc, East Brunswick, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Feb. 7, 1974, Ser. No. 440,427. The portion of the term of this patent subsequent to Apr. 16, 1991, has been disclaimed.
Int. Cl.^{2} A61F *13/16, 13/18, 13/20;* A41B *13/02*
U.S. Cl. 128—284 20 Claims

1. A water-dispersible nonwoven fabric comprising: a layer of overlapping, intersecting fibers, said fibers having a length not more than about 2 inches; and from about 4 to about 35 percent by weight of the fabric of an alkali salt of a sulfated cellulose ester resin binder distributed in said fabric, said resin binder having an average of from about 0.1 to about 0.45 sulfate groups per anhydroglucose unit.

12. An absorbent product for contacting body fluids comprising: an absorbent core and a fluid-pervious, water-dispersible nonwoven fabric covering at least a portion of said absorbent core; said nonwoven fabric comprising a layer of overlapping, intersecting fibers, said fibers having a length not more than about 2 inches; and, distributed in said fabric, from about 4 to about 20 percent by weight of the fabric of an alkali cellulose ester sulfate resin binder, said resin binder having an average of from about 0.27 to about 0.40 sulfate groups per anhydroglucose unit.

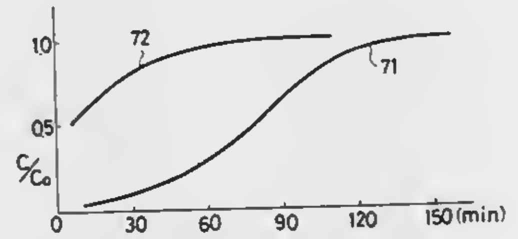


3,939,837
DISPOSABLE DIAPER WITH FIT IMPROVING MEANS
Glenn N. Taylor, Cary, Ill., assignor to The Kendall Company, Walpole, Mass.
Filed Feb. 4, 1974, Ser. No. 439,100
Int. Cl.^{2} A61F *13/16*
U.S. Cl. 128—287 4 Claims



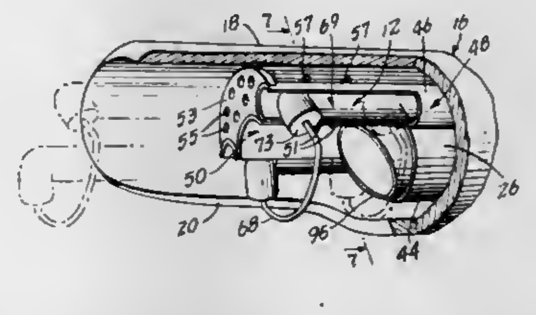
1. In a generally rectangular disposable diaper comprising an outer water impervious backing sheet, an inner water pervious liner and an absorbent body therebetween and having opposite lateral margins and having a front section and a back section on opposite sides of a longitudinal midpoint of the diaper, the improvement wherein said diaper is folded into a configuration with said lateral margins in contact, said lateral margins being releasably adhesively secured to each other only in said diaper front section at a location between from about two inches to about four inches along said margins from said diaper midpoint, whereby said front section may be temporarily retained in said folded configuration while said back section is unfolded for application of the diaper to an infant.

3,939,838
ARTICLE FOR TREATING MENSTRUAL FLUID
Nobuakira Fujinami, Yokosuga, and Tadashi Nagano, Tokyo, both of Japan, assignors to Unicharm Kabushiki Kaisha, Kawanoe, Japan
Filed Aug. 20, 1974, Ser. No. 498,893
Int. Cl.^{2} A61F *13/16*
U.S. Cl. 128—290 R 2 Claims



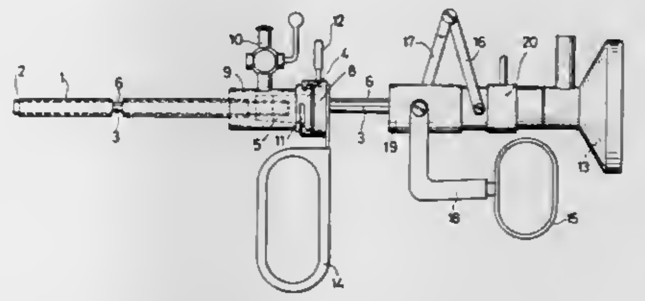
1. An article for treating menstrual fluid comprising: a cover member forming an enclosure, said cover member being made of a porous non-woven sheet of cellulose fiber and artificial fiber; a cottony thin web attached to the inside of said enclosure; an absorbent layer means positioned within said enclosure and said web for absorbing the menstrual fluid; a first water-proofing layer means positioned under said absorbent layer means; a deodorizer means located within said enclosure and having the function of absorbing and holding the menstrual fluid and simultaneously removing the odor released from the menstrual fluid; and a second water-proofing layer means in contact with the cottony web and positioned under and around the sides of said first water-proofing layer, said absorbent layer and said deodorizer means; said first and second water-proofing layers defining means for preventing any menstrual fluid not absorbed by the absorbent layer from permeating to the outside of said cover member.

3,939,839
RESECTOSCOPE AND ELECTRODE THEREFOR
Lawrence E. Curtiss, Stamford, Conn., assignor to American Cystoscope Makers, Inc., Stamford, Conn.
Filed June 26, 1974, Ser. No. 483,117
Int. Cl.^{2} A61B *17/32*
U.S. Cl. 128—303.15 19 Claims



1. A working element assembly for use in a resectoscope having a sheath, said assembly including a stem portion for insertion within the sheath, and having a telescope channel member with a central axis and a pair of parallel cutting electrode guide channel members spaced apart and sealingly mounted on the telescope channel member on opposite sides thereof substantially along its full length above its central axis and in which a portion of the cutting electrode guide channel members and the telescope channel member portion between them and above said axis form a roof member which extends a distance distally beyond the portion of the telescope channel member below said axis.

3,939,840
OPERATION ENDOSCOPE
Karl Storz, Auf dem Schildrain, Germany, assignor to Storz-Endoskop GmbH, Schaffhausen, Switzerland
Filed July 18, 1974, Ser. No. 489,775
Claims priority, application Germany, July 26, 1973, 7327364
Int. Cl.^{2} A61B *17/32*
U.S. Cl. 128—303.15 3 Claims



1. An operation endoscope, comprising:

a. an electrotome including an electrode, an elongated operating rod connected to said electrode and a head member slidably supporting the operating rod for longitudinal movement relative thereto,

b. an elongated hollow sleeve of electrical insulating material mounted at its rearward end on the head member and extending forwardly therefrom freely around the operating rod, and

c. an elongated hollow metal endoscope shaft freely encircling the sleeve and mounted removably at its rearward end on the head member independently of the sleeve, whereby the endoscope shaft and sleeve are separable from each other by relative longitudinal movement in the direction by which the sleeve is retracted rearwardly relative to the shaft,

d. the sleeve extending forwardly at least to the forward end of the shaft.

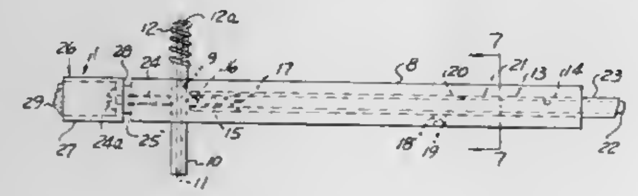
3,939,841
ACUPUNCTURE NEEDLE GUIDE AND RESTRAINT

Albert A. Dohring, and Grace H. Dohring, both of 24028 Union, Dearborn, Mich. 48124

Filed Mar. 6, 1974, Ser. No. 448,618

Int. Cl.^{2} A61H *39/08*

U.S. Cl. 128—303.19 **6 Claims**



1. A guide assembly for an acupuncture needle, including a tubular guide to receive and guide an acupuncture needle, said tubular guide having both ends open, and

a yieldably resilient restraint carried by said tubular guide, and having a section extending substantially transversely across an open end thereof to form an opening between the interior surface of the guide and the section, said section being adapted to yieldably engage a needle against the interior surface of said guide to frictionally resist undesired movement of such needle longitudinally of said tubular guide.

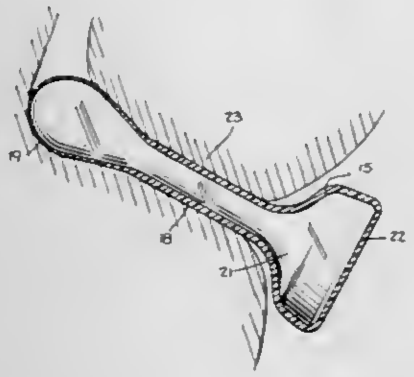
3,939,842
HEMORRHOIDAL DEVICE

Arthur M. Harris, Miami Shores, Fla., assignor to Key Pharmaceuticals, Inc., Miami, Fla.

Filed Sept. 5, 1974, Ser. No. 503,335

Int. Cl.^{2} A61F *7/12*; A61B *17/36*

U.S. Cl. 128—401 **4 Claims**



1. A disposable hollow rectal insert adapted for self-administered treatment of hemorrhoids by cold temperature therapy comprising a unitary molded plastic enclosure containing a freezable medium including an elongated tubular stem portion having enclosed ends and dimensioned for manual rectal insertion at a first of said ends and having an enlarged stop portion at the second of said ends to prevent rectal insertion of the latter, said stem portion adjacent said first end having a relatively thin wall thickness rendering the same collapsible under rectal pressure when said medium is in the liquid state, said stop portion being of bulbous shape and having a relatively thin wall portion being extensible and providing increased internal volume therein to compensate for the collapse of said first end portion under said rectal pressure, said first end portion in the absence of rectal pressure having a bulbous configuration of insertable dimensions.

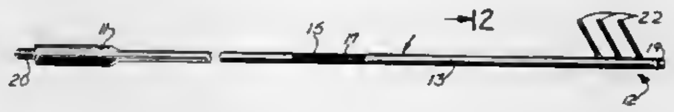
3,939,843
TRANSVENOUS ELECTRODE

Nicholas P. D. Smyth, Bethesda, Md., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 4, 1974, Ser. No. 447,552

Int. Cl.^{2} A61N *1/04*

U.S. Cl. 128—404 **23 Claims**



11. A body implantable lead adapted to make electrical contact with the inner wall of an internal body organ or chamber which comprises:

electrical conductor means;

means for connecting said electrical conductor means to a source of electrical energy;

insulating means encapsulating and electrically insulating said conductor means, said insulating means being of a material which is substantially inert in body fluids and tissue;

electrode means electrically connected to said electrical conductor means; and

a plurality of pliant non-conducting tine means extending from said insulating means for engaging body tissue, without penetration of the tissue, to urge said electrode means in a given, nominally transverse direction, none of said tine means extending in a direction less than 90° from said given direction.

3,939,844
METHOD AND APPARATUS FOR STIMULATING A HEART TO ELIMINATE RHYTHMIC ABNORMALITIES, ESPECIALLY TACHYCARDIAS

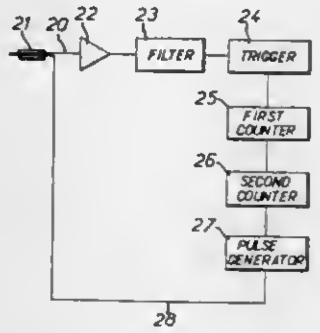
Michel Pequignot, 14 Villa Desire Filleaud, 92140 Clamart, France

Filed Oct. 11, 1974, Ser. No. 514,263

Claims priority, application France, Oct. 18, 1973, 73.37161

Int. Cl.^{2} A61N *1/36*

U.S. Cl. 128—419 PG **11 Claims**



1. A method of electrically stimulating a heart, comprising monitoring the heart for rhythmic abnormalities, measuring the duration of a first cardiac cycle immediately preceding a second cardiac cycle during which the heart is to be electrically stimulated, determining a delay period as a function of the said first cardiac cycle, generating a train of *n* consecutive stimulation pulses, *n* being greater than two, so that the train

of *n* pulses straddles the end of the delay period running from the natural electrosystole at the beginning of said second cardiac cycle, and applying said train of *n* pulses to the heart.

3,939,845
BRASSIERE WITH SLIDING TIES, AND ARRANGED IN A GENERAL "V" SHAPE, IN PARTICULAR FOR BATHING SUITS

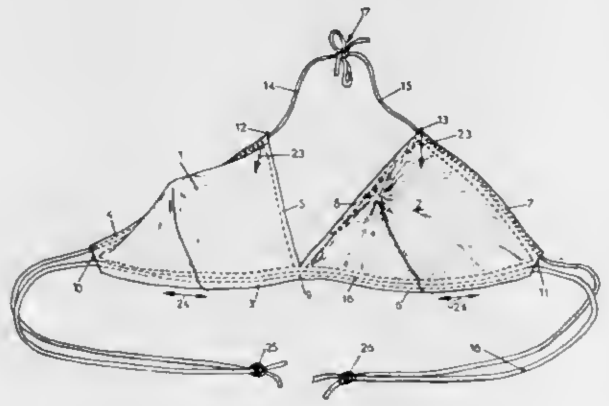
Christian Guidoni, Immeuble "Le Plein Horizon," 62 Chemin du Bois, Rillieux La Pape Rhone, France

Filed June 14, 1974, Ser. No. 479,195

Claims priority, application France, June 15, 1973, 73.22579

Int. Cl.^{2} A41C *3/00*

U.S. Cl. 128—492 **8 Claims**



1. A brassiere comprising, in combination:

two fabric pouches directly connected to each other only at the inner ends of their lower edges;

three ties of adjustable length;

two of the edges of each said pouch being provided with hems which define tubes inside of which said ties of adjustable length may slide freely;

at least one of said tubes being common to the two pouches;

one of said three ties is substantially horizontal and common to the two pouches and slides inside the lower hems of said pouches which define the common tube;

the length of said ties being adjustable by the wearer to vary the length, the width, and, consequently, the depth and the visible area of each said pouch; and

the position of the brassiere with respect to the shoulders of said wearer also being adjusted through predetermined ones of said ties connected to each other behind the nech of the wearer.

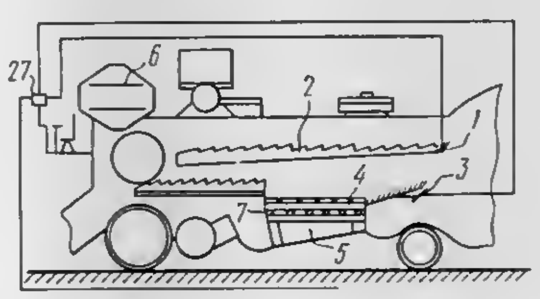
3,939,846
DEVICE FOR MONITORING AND CONTROLLING THE RELATIVE FLOWS AND LOSSES OF GRAIN IN A GRAIN COMBINE THRESHER

Vladimir Kirillovich Drozhzhio, 3 Artilleriisky proezd, 32; Alexandr Pavlovich Sergeev, ulitsa Frunze, 55a, kv. 67; Vladimir Pavlovich Shevchenko, ultisa P. Tolyatti, 42, kv. 24; Vitaly Evdokimovich Buyanov, ulitsa Dzerzhinskogo, 177, kv. 2; Viktor Ivanovich Bolotov, ulitsa Sverdlova, 43, kv. 7; Viktor Mikhailovich Yakut, ulitsa Portovaya, 1, kv. 32; Jury Tikhonovich Polenov, prospekt Ukrainsky, 25, kv. 4, all of Taganrog; Nikolai Nikolaevich Luchinsky, ulitsa Vavilova, 56, kv. 188; Mai Mikhailovich Dvorkind, ulitsa Vavilova, 56, kv. 180; Sergei Alexeevich Alferov, ulitsa Mikhailova, 33, korpus 3, kv. 81, all of Moscow; Alexaodr Fedorovich Morozov, ulitsa Tsentralnaya, 9, kv. 7, Soloechnogorsk Moskovskoi oblasti; Alexandr Trofimovich Anashkin, ulitsa Trudovykhrezervov, 2-1, kv. 25; Isaak Zinovievich Avrutin, Oktyabrskaya ploschad, 2, kv. 48, both of Taganrog, U.S.S.R., and Tatyana Moiseevna Voronova, ulitsa Kirova, 24, kv. 71, Moscow, all of U.S.S.R.

Filed June 27, 1974, Ser. No. 483,513

Int. Cl.^{2} A01F *12/00*

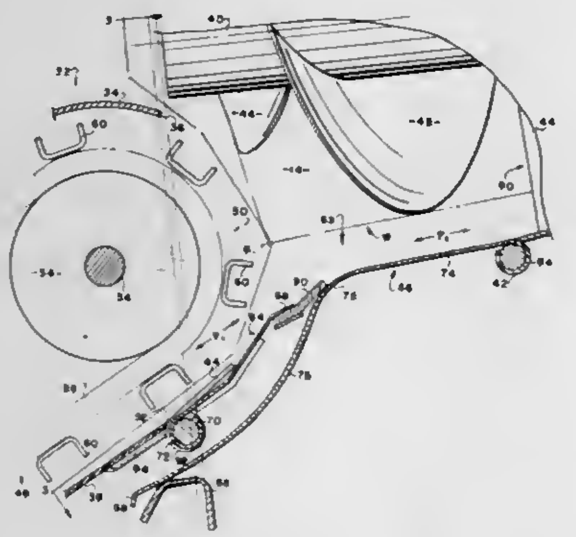
U.S. Cl. 130—27 R **4 Claims**



4. Device for controlling the rates of flow of grain supplied to the hopper of a grain combine and the losses in the latter, comprising first means mounted on the combine at a location where grain is lost for detecting the amount of grain lost from the combine and having an output and generating an output signal proportional to the amount of grain lost at said location; second means mounted on the combine at a location along the path which the grain moves on the way to the hopper for detecting the amount of grain supplied to the hopper of the grain combine and having an output and generating an output signal proportional to the amount of grain supplied to the hopper; electronic circuit means having first and second inputs and an output, said first input of said electronic circuit means being connected to said output of said first means for receiving a signal proportional to the amount of lost grain, said second input of said electronic circuit means being connected to said output of said second means for receiving a signal proportional to the amount of grain supplied to the hopper, said electronic circuit means generating a signal proportional to the ratio of said signals supplied by said first and second means; and an indicator having an input and an output and a scale calibrated in units characterizing the relative magnitudes of grain flow and losses, said input of said indicator being connected to said output of said electronic circuit means for receiving said signal proportional to said ratio and transferring its value through the output to said scale to provide an indication of the relative values of grain stored and lost in the combine.

3,939,847
COMBINE WITH IMPROVED FEED PLATE

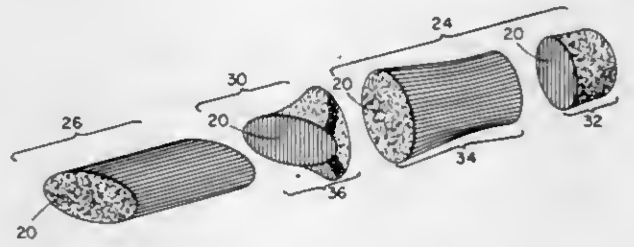
James E. Straeter, Bresse, Ill., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed Mar. 24, 1975, Ser. No. 561,406
Int. Cl.² A01F *7/06*
U.S. Cl. 130—27 T **10 Claims**



1. In an axial flow combine having at least one axially arranged threshing and separating unit which includes elements arranged for coaction together to thresh and separate crop material and feeding means forwardly thereof having peripherally-arranged crop material engaging structure and being operable for feeding crop material to said threshing and separating elements, said combine further having means for elevating crop material from the field to said feeding means and being disposed generally forwardly of said threshing and separating unit, said elevating means including a bottom wall inclined upward and rearward and having an upper terminal end located in a position spaced below a forward end of said engaging structure of said feeding means and operable means disposed above said bottom wall and having a rear discharging portion extending upwardly beyond said terminal end of said bottom wall to adjacent said forward end of said engaging structure for conveying crop material rearwardly and upwardly along said bottom wall to a discharge location above said terminal end thereof and spaced below said forward end of said engaging structure, the improvement which comprises: feed ramp means for guiding crop material from said elevating means of said combine to said feeding means and then to said threshing and separating elements thereof, said feed ramp means including a forward portion which extends generally longitudinally from proximate said terminal end of said bottom wall to an upper end of said forward portion being spaced below, rearwardly of and in close proximity to, a lower boundary of the working area of said forward end of said engaging structure of said feeding means, said forward ramp means portion together with said discharging portion of said conveying means and said forward end of said engaging structure of said feeding means defining an upward and rearward inclined passageway for crop material from said terminal end of of said bottom wall to said engaging structure, said forward ramp means portion defining a lower boundary of said inclined passageway and being adapted to guide crop material from said terminal end of said bottom wall through said inclined passageway upon operation of said conveying means so as to postpone or delay the discharge of said crop material by said discharging portion of said conveying means until leading portions of said discharging crop material are at least partially engaged by said forward end of said engaging structure of said feeding means.

3,939,848
SMOKING ARTICLE

George Le Roy, 9649 LeClaire Ave., Skokie, Ill. 60076
Filed Jan. 16, 1975, Ser. No. 541,637
Int. Cl.² A24B *15/027;* **A24D** *1/04;* **A24F** *1/02*
U.S. Cl. 131—10 R **4 Claims**



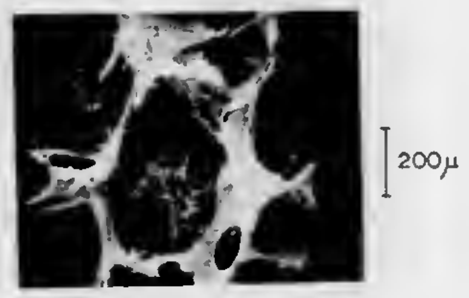
1. An improved smoking article comprising:
a generally cylindrical, combustible first outer wrapper having first and second ends;
an amount of tobacco disposed in and filling the first outer wrapper between its ends and adapted, with the first outer wrapper, to be burned; and
filter means for filtering products of combustion which pass there through in a direction parallel to the longiudinal axis of the filter means and which result from the burning of the tobacco, the filter means comprising:
one end that is connected with a first end of the first outer wrapper;
another end that is adapted to be placed in the mouth of the smoker;
a second outer wrapper; and
an assembly of crimped, cellulose acetate fibers disposed in and filling the second outer wrapper; the filter means comprising:
a first zone adjacent to the one end of the filter means and having an elongated, elliptical cross-section in a plane transverse to the longitudinal axis of the filter means;
a second zone adjacent to the other end of the filter means and having an elongated, elliptical cross-section in a plane transverse to the longiudinal axis of the filter means, with the major axis of the transverse cross-section of the second zone being disposed at an angle of substantially ninety degrees to the major axis of the transverse cross-section of the first zone; and
a third zone disposed between the first and second zones and having a varying, non-circular cross-section containing fibers transverse to the central longitudinal axis wherein said third zone provides a smooth transition between the first and second zones.

3,939,849
FILTER ELEMENTS

Samuel Baxter, Penhow, England, and Pushpkumar Dewanmal Changani, Glasgow, Scotland, assignors to Monsanto Chemicals Limited, London, England
Continuation of Ser. No. 193,710, Oct. 29, 1971, abandoned. This application July 8, 1974, Ser. No. 486,549
Claims priority, application United Kingdom, Nov. 18, 1970, 54806/70; Apr. 16, 1971, 9646/71
Int. Cl.² A24B *15/027;* **A24D** *1/04;* **A24F** *1/02*
U.S. Cl. 131—269 **18 Claims**

1. A rod shaped cigarette filter comprised of a polypropylene foam or a foam of high density polyethylene, said foam having a substantially open-cell structure wherein more than half of the cells present contain cell walls which are perforated, and wherein the microstructure of said foam is characterized by the presence of numerous fine fibre-like elements having thicknesses within the range of from about 0.1 to 2 microns which bridge across said perforations in the cell walls, said fibre-like elements being interconnected with each other or with the part of the cell wall that forms the boundary of the perforation and thereby being substantially free of loose ends; said cigarette filter having a TPM filtration efficiency of from

20 to 60 percent, a ΔP_{10} of from about 0.5 to 15 centimeters water gauge, and a hardness of from about 50 to 100 percent, said percent hardness being determined by subjecting a 120 millimeter length sample of said cigarette filter rod of predetermined initial diameter to compression under a 300 gram load for 15 seconds and thereafter measuring the rod diameter to determine the decrease in initial diameter, the percent hardness is then calculated from the equation:

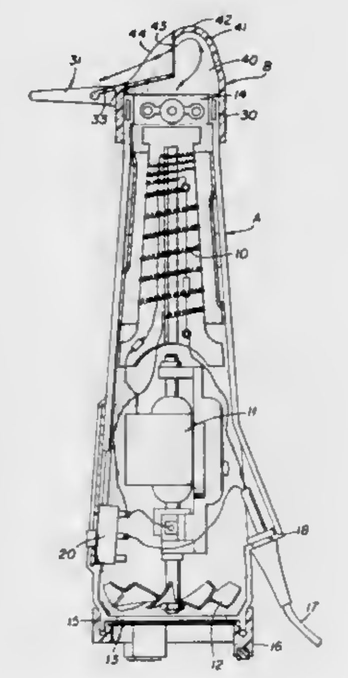


Percent hardness $= [(D - A)/D] \times 100$

wherein D represents the initial diameter of the rod and A represents the decrease in said initial diameter following 15 seconds under said load.

3,939,850
HAIR COMB AND DRYER DEVICE

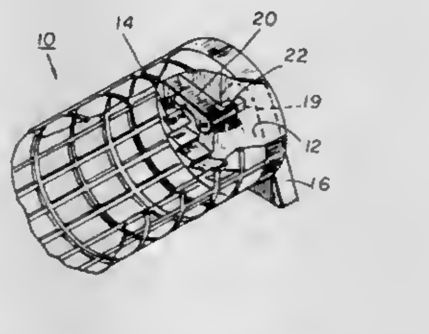
John F. Wahl, Sterling, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill.
Filed Dec. 10, 1973, Ser. No. 422,991
Int. Cl.² A45D *24/00*
U.S. Cl. 132—11 R **6 Claims**



1. In a hair comb and drying device, an elongated tubular casing, means contained within said casing for projecting air therethrough and discharging air through an outlet at one end thereof, and a comb structure at said one end of said casing including a row of teeth extending in a plane which makes an angle of substantially 90° with the axis of said casing, said structure having an internal passageway connecting with said outlet and leading to an air discharge opening which is above the transverse plane of said row of teeth, said discharge opening facing toward said row of teeth, whereby upon the passing of air through said casing and through said passageway the air is directed along the top of said row of teeth.

3,939,851
SINGLE STEP HAIR CURLER WITH INDEPENDENT SELF-CONTAINED SUPPORTING AND SECURING MEANS

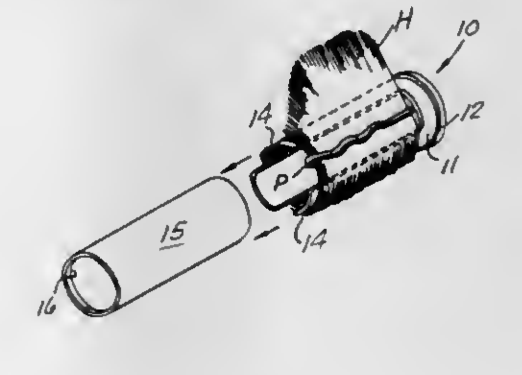
Thomas J. Parlagreco, 5 Ferris Court, Ho-Ho-Kus, N.J. 07423
Filed Apr. 9, 1974, Ser. No. 459,289
Int. Cl.² A45D *2/12*
U.S. Cl. 132—34 R **9 Claims**



1. A hair roller assembly having independently rotatable end supports with at least one of the end supports restricted as to the freedom of rotation, said roller assembly including: (a) an intermediate roller member of generally cylindrical configuration; (b) a closed end member of disc-like configuration secured to each of the ends of the intermediate roller member so as to seat in and close the open end; (c) a short axle rotatably carried in each of the closed end members, said axle independently movable with respect to the other axle; (d) a support member carried by the axle, each support member independently movable with respect to the other support member, each support member formed with a broad base support portion adapted to rest on the hair of the user's head and while in resting condition lifting the roller sufficiently for the hair of the user to be wound on the intermediate roller member while said member is being rotated on the axles; (e) at least one ratchet gear carried by one of the closed end members and the associated end of the roller member, and (f) a ratchet engaging pawl carried by and with the support member and moved as the support member moves in an arch around the axis of the intermediate roller member, this pawl adapted to prevent rotating of the roller with the hair thereon it until the desired tension has been developed in the hair wound on the roller after which the rotation of the intermediate roller is terminated with the pawl engaging this ratchet gear and preventing unwanted reverse rotation of the roller.

3,939,852
HAIR CURLING METHOD AND CURLER USED THEREWITH

Mary Irwin Waite, 14101 Ventura Blvd., Sherman Oaks, Calif. 91403, and Eric L. Waite, 14808 Clark St., Van Nuys, Calif. 91401
Filed Oct. 12, 1973, Ser. No. 405,886
Int. Cl.² A45D *2/02*
U.S. Cl. 132—39 **5 Claims**



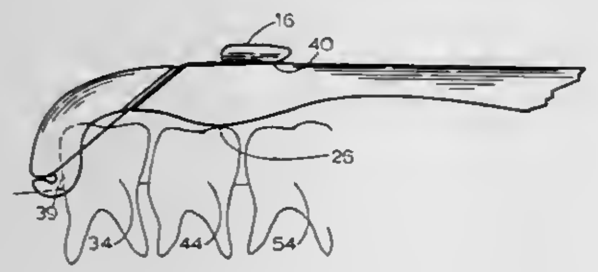
1. A hair curler comprising:
a first member; and
a second member, said second member being tubular having at least one open end, said first member being tele-

scopingly receivable within said second member establishing a close fitting relationship therebetween, said second member having a plurality of longitudinal slots connecting with one end of said second member and extending to a point close to but spaced from the other end of said second member, said slots being spaced apart with the portions of said second member between adjacent said slots forming inwardly deflectable fingers, a lock of hair is to be tightly wound upon said second member and said first member is to be removed which permits said fingers to deflect inwardly which facilitates removal of the resultant hair curl after insertion of a hair pin through a said slot across the hair curl to clamp the curl and maintain its curled position.

3,939,853
DENTAL FLOSSER

Michael E. Spanondis, 685 Hope St., Tarpon Springs, Fla. 33589

Filed Sept. 4, 1974, Ser. No. 503,171
Int. Cl.^{2} A61C *15/00*
U.S. Cl. 132—91 9 Claims

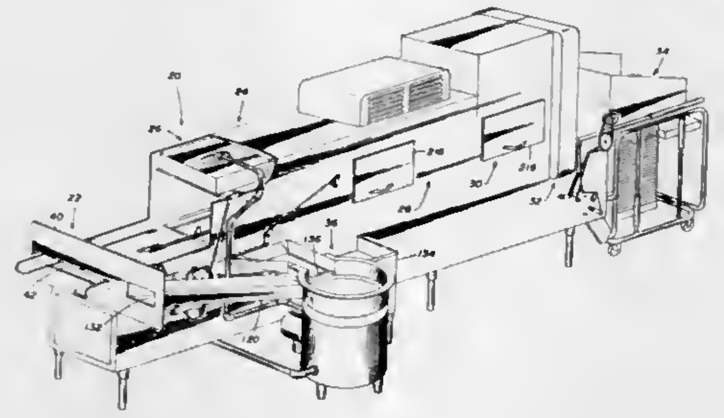


1. A dental flosser for cleaning and removing debris and dental plaque from the opposed surfaces of adjacent teeth comprising in combination an elongated handle having a longitudinal axis, a bifurcated head provided integrally at one end of said handle, and including a pair of downwardly, extending spaced and curved arms having concaved and notched extremities for receiving a length of dental floss, and floss anchoring means comprising a button affixed to the top surface and at the base of the elongated handle, said floss anchoring means having an undersurface which is tapered outward from its center, and a bulbed fulcrum portion being formed as an integral protrusion on the bottom surface of the elongated handle, said fulcrum portion being directly disposed on the opposite face of the elongated handle from the floss anchoring button, whereby during the cleaning operation the bulbed fulcrum portion may be seated upon an adjacent tooth and allowed to rock in an up and down or rotational fashion on the tooth such that a length of floss bridging the spaced arms may project onto the backside of the next back molar to clean the entire surface above and below the gum margin, and wherein said floss anchoring means is capable of positively securing a length of dental floss between the spaced arms by virtue of the ends being wrapped around one side of the floss anchoring means and pulled tightly transverse to the longitudinal axis of the dental flosser, said spaced arms having interior tip surface portions which are flared outwardly from the longitudinal axis of the dental flosser to protect the gums from injury when a length of floss bridging the spaced arms is engaged between adjacent teeth during the cleaning operation.

3,939,854
TRAY WASHING SYSTEM

Lawrence Pete Kitterman, 1309 Woodway, Hurst, Tex. 76053, and Howard Gene Rice, 1109 Hadrian Court, Irving, Tex. 75060

Division of Ser. No. 89,401, Nov. 13, 1970, Pat. No. 3,798,065. This application Dec. 14, 1973, Ser. No. 424,685
Int. Cl.^{2} B08B *3/00*
U.S. Cl. 134—57 R 4 Claims



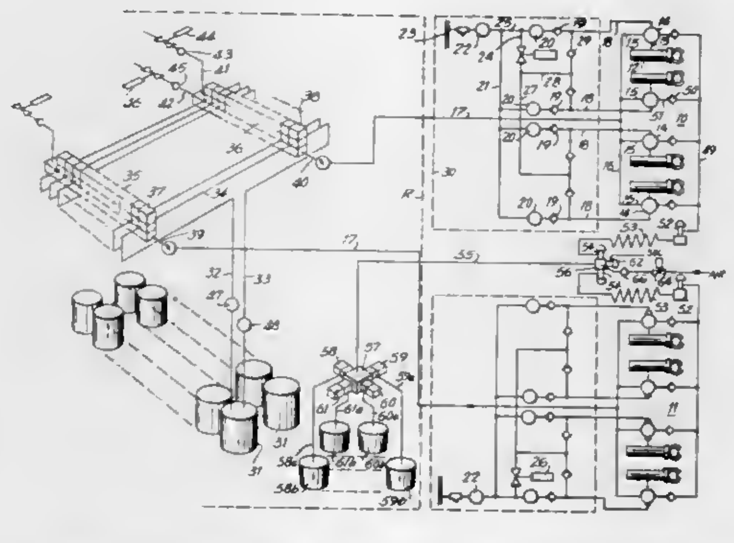
1. In a tray cleaning system, a tray inverting mechanism comprising:

- means for moving a tray along a predetermined path;
- at least one rigid arm supported for pivotal movement about a horizontal axis and for cooperation with the moving means to pivot the tray from a first orientation wherein the food receiving surface of the tray faces upwardly to a second orientation wherein the food receiving surface extends vertically;
- at least one second rigid arm pivotally supported for pivoting the tray from the second orientation to a third orientation wherein the food receiving surface faces downwardly; and
- drive means including a source of rotational motion and lever means drivingly interconnecting the source of rotational motion and the second arm for pivoting the second pivotally supported arm into engagement with the tray when the tray is in the second orientation.

3,939,855
RECOVERY SYSTEM FOR SPRAY PAINTING INSTALLATION WITH AUTOMATIC COLOR CHANGE

Richard F. Wiggins, Fairfield, Conn., assignor to The Gyromat Corporation, Stratford, Conn.

Filed May 10, 1974, Ser. No. 468,973
Int. Cl.^{2} B05B *5/02*
U.S. Cl. 137—15 5 Claims



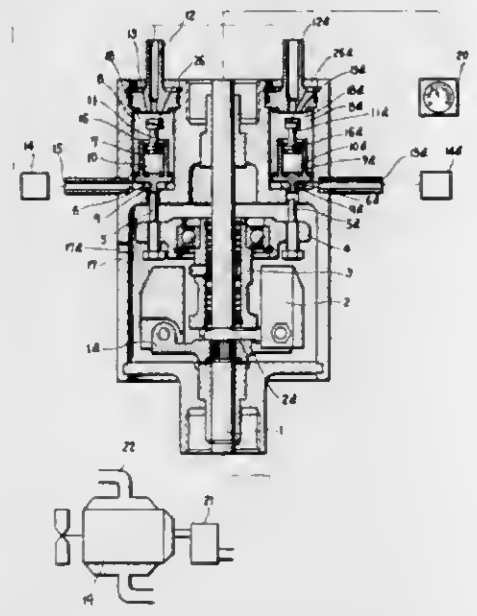
1. A method of performing a color change cycle for a paint spray installation of the type including a paint supply means, a paint spray station and discharge conduit means for receiving the fluids discharged during a color change operation, which comprises

- a. communicating with the paint spray station by separate supply and purge conduit means,
- b. initially supplying coating material of a selected color to said spray station through said supply conduit,
- c. during a color change cycle, initially supplying cleaning fluids to the paint spray station through the supply conduit, and subsequently supplying coating material of a new color through said supply conduit,
- d. the initially supplied cleaning fluids displacing coating material of the first color in advance thereof through said supply conduit and into said discharge conduit,
- e. displacing said cleaning fluids through said supply conduit and into said discharge conduit by a coating material of a new color,
- f. continuing the last mentioned displacement until the coating material of said new color flows into said discharge conduit,
- g. determining the presence of the front of the new color of coating material in said discharge conduit, and
- h. thereafter blocking said discharge conduit at locations upstream and downstream of the front of the new coating material.

3,939,856
ROTATIONAL SPEED RESPONSIVE TYPE FLUID PRESSURE SIGNAL CONTROL VALVE

Yasuhiro Yamamoto, Kariya, and Michikatsu Naito, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 11, 1974, Ser. No. 450,236
Claims priority, application Japan, Mar. 12, 1973, 48-29268
Int. Cl.^{2} G05D *13/10;* F02P *5/04*
U.S. Cl. 137—54 1 Claim

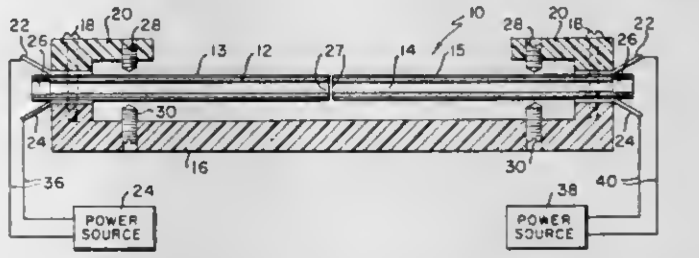


1. A rotational speed responsive type fluid pressure signal control valve comprising, a drive shaft for transmitting rotating force, fly weights connected with said drive shaft, means combined with said fly weights for reciprocating according to the rotation of said fly weights including a push rod member for operating a valve body means, fluid passage means connected to a vacuum pressure source, actuators and atmospheric area, and valve body means associated with said fluid passage means for operation by said push rod member and said reciprocating means for opening and closing said fluid passage means according to the operation of said reciprocating means to provide a fluid pressure signal including a first valve body member associated with said push rod member to connect said actuators with said atmospheric area and a second valve body member comprising a dished spring valve thereby providing hysteresis of valve operation and for cutting off connection between said vacuum pressure source and said actuators.

3,939,857
DUAL PIEZOELECTRIC FLUID JET TRANSFER VALVE

Henry J. Bernaerts, R.F.D. 10, Box 1610, Annapolis, Md. 21401

Filed June 24, 1975, Ser. No. 589,739
Int. Cl.^{2} G05D *16/20;* F15B *5/00*
U.S. Cl. 137—83 7 Claims



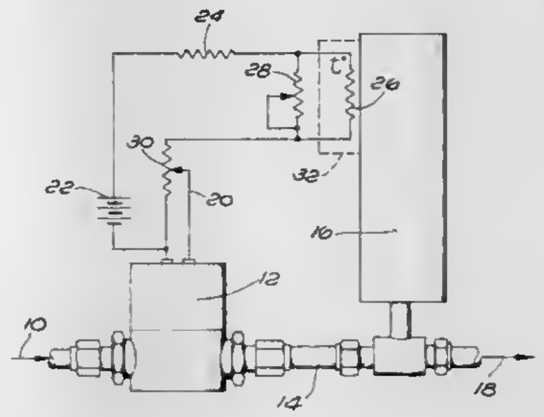
1. A dual piezoelectric fluid jet transfer valve comprising:

- a pair of piezoelectric bender tubes each mounted at one end for cantilever action and the free ends coaxially opposing each other;
- means for mounting said tubes at their outer, ends; and,
- means for applying controlled amounts of electrical charge independently to each of said bender tubes on selected faces to cause said free end to move in a plane;
- whereby when the bender tubes are unenergized or energized to the same magnitude and polarity fluid transfer will occur, but when energized to a different magnitude and/or polarity, fluid transfer will not occur.

3,939,858
ASSEMBLY AND METHOD OF OBTAINING A CONTROLLED GAS MIXTURE

Dan B. LeMay, Palos Verdes Estates, Calif., assignor to Tylan Corporation, Torrance, Calif.

Filed Sept. 13, 1974, Ser. No. 505,893
Int. Cl.^{2} G05D *11/13*
U.S. Cl. 137—90 8 Claims



1. Apparatus for obtaining a controlled mixture of a first gas and a carrier gas, comprising:

- a mass flow controller for delivering carrier gas at a controlled rate of flow;
- a source of said first gas which emits said gas at a mass flow rate which is a repeatable function of the ambient temperature of said source;
- means for adding said first gas into carrier gas delivered by said mass flow controller for dilution in predetermined proportionality with said carrier gas; and
- means for automatically changing the flow rate of said mass flow controller in accordance with variations in said ambient temperature of said source to compensate for temperature-dependent changes in the emission rate therefrom whereby to substantially maintain their proportionality.

3,939,859
UNLOADER VALVE WITH FLOW DIVIDER

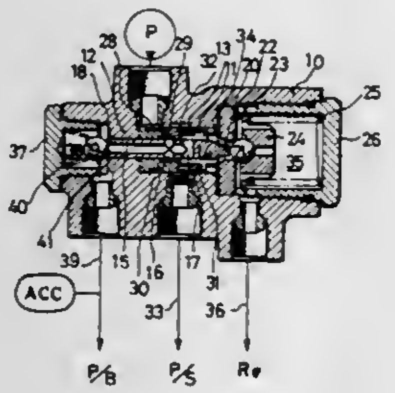
Atsumi Ueda, Toyota, and Uichiro Kobashi, Okazaki, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 22, 1974, Ser. No. 435,601

Claims priority, application Japan, Feb. 13, 1973, 48-18011

Int. Cl.² G05D *11/00*

U.S. Cl. 137—118 **2 Claims**



1. An unloader valve with flow divider having a fluid pressure source with a pump and a reservoir for providing a substantially constant hydraulic fluid pressure, a first fluid pressure circuit with an accumulator, and a second fluid pressure circuit, comprising:

a main body having a large diameter cylinder and a small diameter cylinder coaxial therewith,

an annular spool valve slidably inserted into said large diameter cylinder and having an inner bore;

a piston slidably inserted into said small diameter cylinder and in the bore of said spool valve, respectively;

a first chamber provided in said large diameter cylinder and defined by said spool valve and said large diameter cylinder and a passage fluidly connecting said first chamber with said fluid pressure source;

a second chamber provided in said large diameter cylinder and defined by said spool valve, said piston and said large diameter cylinder and a passage fluidly connecting said second chamber with said first chamber, an annular member disposed within said second chamber for dividing said second chamber into third and fourth chambers, the passage of hydraulic fluid within said third and fourth chambers being controlled according to the movement of said spool valve,

orifice means within the fluid passage between said first chamber and said second chamber;

spring means disposed within said second chamber and biasing said spool valve into said first chamber;

first valve means controlling the communication between said fluid pressure source and said first fluid pressure circuit via said orifice means, said spool valve controlling the communication between said first chamber and said second fluid pressure circuit; and

second valve means controlling the communication between said second chamber and said reservoir of said fluid pressure source, said second valve means being operated by actuation of said piston according to the pressure in said accumulator and said second chamber when the pressure within said second chamber reaches a preset value and being closed by actuation of said piston when the pressure in said accumulator falls below a preset value.

3,939,860
CLOSURE UNITS FOR CONTAINERS

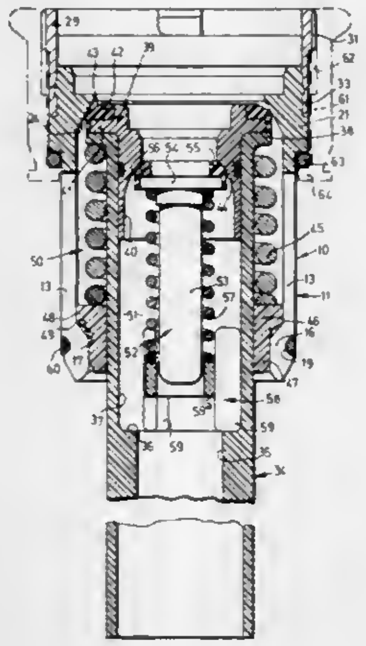
Cyril George Golding, Sedgeley, England, assignor to GKN Sankey Limited, Bilston, England

Filed Apr. 3, 1975, Ser. No. 564,757

Claims priority, application United Kingdom, Apr. 9, 1974, 15601/74

Int. Cl.² B67D *5/54*; **B65D** *83/00*

U.S. Cl. 137—212 **14 Claims**



1. A closure unit for an opening in a container comprising a cup assembly having first and second opposite ends and adapted to be received in the opening, a downtube having an end portion within the assembly and projecting from said first end of the assembly, the down-tube providing an inner passage while an outer passage is provided between said end portion and the assembly, and inner and outer concentric valve members associated with the inner and outer passages respectively and spring biased to close said passages, wherein the cup assembly comprises (1) a component of plastics material having a collar adjacent to said second end of the assembly and a plurality of legs projecting from the collar to said first end of the assembly and (2) a reaction ring received within the legs adjacent to said first end and surrounding the downtube, the ring forming a reaction member for the spring means acting on the outer valve member and having abutment means which are forced by the spring means into engagement with oppositely facing abutment means on the legs, the component being such that the legs are sufficiently resilient to be sprung apart to allow the ring to be inserted into position between the legs from said first end during assembly of the closure unit, and an outer ring embracing the legs adjacent to said first end to prevent the legs springing apart in the assembled closure.

3,939,861
FIRE HYDRANT

William J. Thompson, 8133 Ridge Ave., Philadelphia, Pa. 19128

Filed July 19, 1974, Ser. No. 490,212

Int. Cl.² E03B *9/04*; **F16L** *37/28*

U.S. Cl. 137—299 **7 Claims**

1. In a fire hydrant having a barrel portion located above ground and provided with a laterally extending flow outlet nozzle, the improvement comprising:

valve means located within the barrel portion for controlling the flow of water through the outlet nozzle,

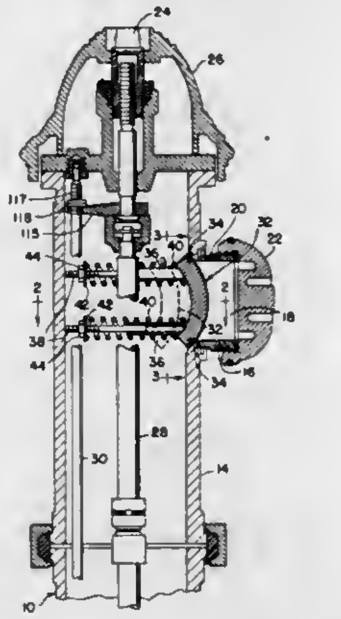
said valve means including a valve member movable between a closed position in an outlet opening extending across the upstream end of the outlet nozzle to block the flow of water from the interior of the barrel portion into the outlet nozzle and to prevent the insertion of articles into the barrel portion through the outlet nozzle and an open position spaced away from the upstream end of the outlet nozzle to permit the flow of water from the interior of the barrel portion into the outlet nozzle and spring means biasing said valve member towards said closed position, and

valve actuator means for moving said valve member from said closed position to said open position away from the outlet nozzle against the bias of said spring means,

said valve actuator means comprising a collar means adapted to be mounted on the outlet nozzle of the fire hydrant, and a valve actuating member mounted on said collar means and arranged to move the same from said closed position to said open position as said collar means is mounted in said position on the fire hydrant,

said valve means being adapted to be located entirely within the barrel portion of the fire hydrant with only the valve member being exposed to view and accessible through the outlet nozzle, and

guide means for guiding said valve member between said closed and open positions, said guide means extending transversely across the barrel portion and including a plurality of pins slidable within cooperating sleeves.



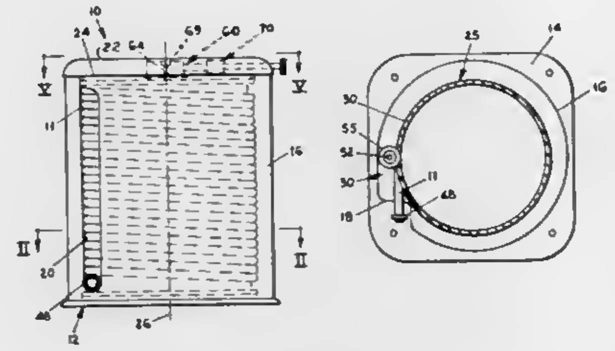
3,939,862
HOSE REEL

William M. Booth, Grand Haven, Mich., assignor to Edward E. Brondyke, Holland, Mich.

Filed May 22, 1974, Ser. No. 472,144

Int. Cl.² B65H *75/34*

U.S. Cl. 137—355.16 **16 Claims**



1. Hose reel apparatus comprising in combination, a cylindrical hose reel; support means for rotatably supporting said reel on an axis of rotation; winding means for directing and guiding a hose around and along said reel as said reel is rotated on said axis including fluid motive power means on said support means for rotating said reel about said axis; fluid valve means for controlling operation of said fluid motive power means and for controlling fluid flow to a hose on said reel when the hose is connected to said fluid valve means, said fluid valve means having a first fluid conducting means for admitting and directing fluid through the hose, a second fluid conducting means for directing said fluid through said fluid motive power means for rotating said reel to wind the hose on said reel prior to the passage of the fluid through the hose, and movable valve sealing means responsive to a fluid pressure increase for closing said first and second fluid conducting means and shutting off the flow of said fluid through said fluid motive power means and the hose on said reel; and fluid control means responsive to the winding of a predetermined amount of hose on said reel for providing an increase in fluid pressure in said fluid valve means whereby the increase in fluid pressure moves said valve sealing means to shut off fluid flow through the hose and stop rotation of said reel when the predetermined amount of the hose is wound on said reel.

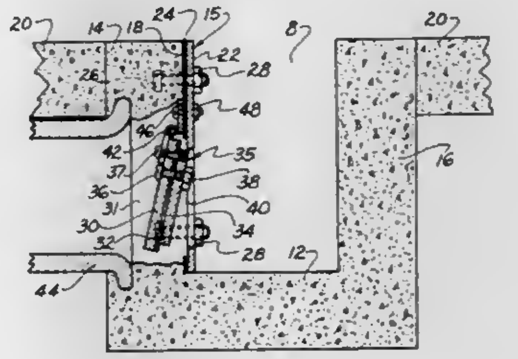
3,939,863
BASEMENT SUMP CONSTRUCTION

John Crosby Robison, Shawnee Hills, Ohio, assignor to Mildred M. Robison, Shawnee Hills, Ohio; a part interest.

Filed July 10, 1974, Ser. No. 487,299

Int. Cl.² F16K *15/00*

U.S. Cl. 137—357 **3 Claims**



1. A basement sump construction comprising, in combination, a sump chamber including a top access opening, a sump side wall provided with an inner wall surface and a drain outlet opening; a trap frame plate mounted on said inner wall surface and including a plate side facing said drain outlet opening and a trap opening communicating with said drain outlet opening; a trap door pivotally mounted to said frame plate above said trap opening for unidirectional opening movement towards said drain outlet opening responsive to pressure exerted on said door when water is present in said sump chamber, said door being normally disposed in a closed position covering said trap opening; and mounting means accessible through said top access opening and removably securing said trap frame plate to said sump side wall.

3,939,864
VALVE LOCK

James F. Donnelly, Leicester, Mass., assignor to Jamesbury Corporation, Worcester, Mass.

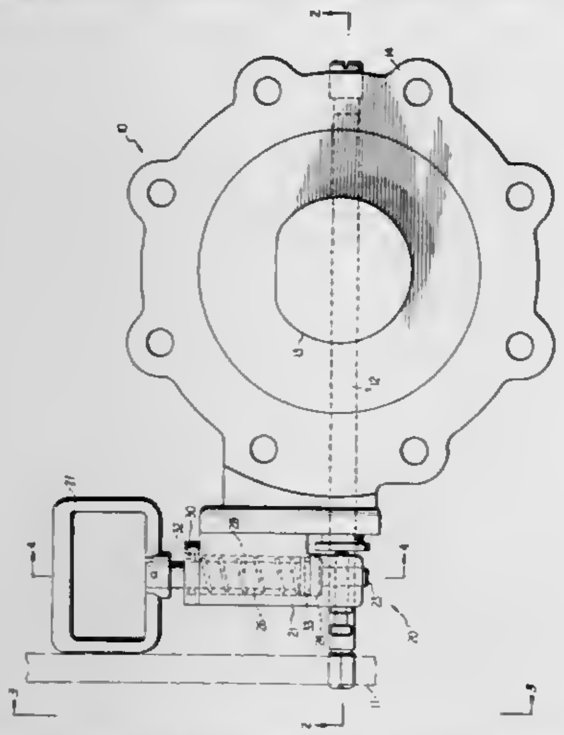
Filed May 29, 1974, Ser. No. 474,453

Int. Cl.² F16K *35/04*

U.S. Cl. 137—385 **5 Claims**

1. A lock for a valve having a stem, the opening and closing of the valve being controlled by rotation of the stem, said lock comprising:

a housing having a first opening therein to receive the stem, a second opening in said housing, a locking member disposed in said second opening, the longitudinal axis of said second opening being substantially perpendicular to and offset from the longitudinal axis of said first opening, said locking member including an elongated terminal portion which in the closed position of the locking member extends beyond said longitudinal axis of said first opening so that the elongated periphery of said terminal portion is disposed adjacent to a flat on the stem to prevent rotation thereof, said locking member also including biasing means to bias said terminal portion into its locking position whereby a force must be exerted axially along said locking member against the force of said biasing means in order to move said terminal portion away from its locking position and permit rotation of the stem.



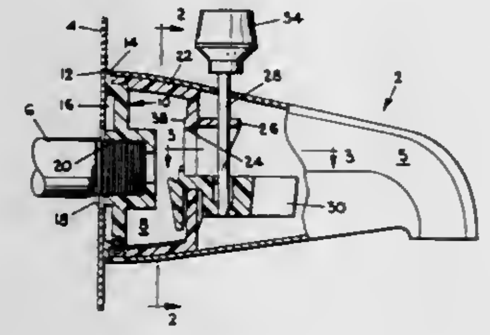
3,939,865
DIVERTER SPOUT VALVE MECHANISM

Merritt J. Nelson, Sparta, Mich., assignor to Zin-Plas Corporation, Grand Rapids, Mich.

Filed May 13, 1974, Ser. No. 469,314

Int. Cl.^{2} F16K ***15/00***

U.S. Cl. 137—467 **7 Claims**



1. In a diverter spout comprising a hollow pressure chamber having an inlet and a substantially vertical wall with an outlet; a vertically movable valve member including a face place mounted for reciprocable movement between an open position wherein the face plate is substantially below the outlet so as to permit liquid to flow from the pressure chamber through the outlet, and a closed position wherein the face plate is raised so as to block the outlet from the inside of the pressure chamber; and a manually actuatable valve stem means connected to the valve member for opening and closing the valve member; an improvement in said valve member which comprises:

the valve member being integrally formed of a light weight plastic material and the face place thereof having a downwardly curved frontal cavity at an upper portion of said face plate for reacting with the flow of water through the outlet such that the water flowing through the outlet applies a downward force on the valve member to hold it in the open position when water flows through the outlet.

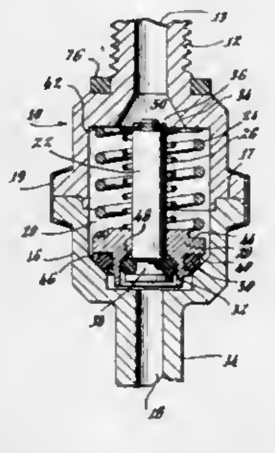
3,939,866
FUEL SAVING DEVICE

Enrico Pignatelli, Rome, Italy, assignor to COM. E. IRA, S.r.C., Padova, Italy

Filed Jan. 21, 1974, Ser. No. 435,307

Int. Cl.^{2} F16K ***17/04***

U.S. Cl. 137—493.4 **3 Claims**



1. A valve device for restricting the flow of gaseous material into and out of a container for volatile material owing to relative pressure differentials between the interior and exterior of said container, comprising in combination a housing consisting of an upper part and a lower part, a ferrule connecting said two parts with one another, a tank conduit in said lower part opening at its lower end toward the interior of said container, a vent conduit in said upper part opening at its upper end toward the exterior of said container and having a threaded outer surface, an enlarged cavity within said lower and upper parts communicating with said vent conduit and said tank conduit, an annular pressure valve gate arranged on the bottom of said cavity, a shaft inserted into a central bore of said annular gate and extending upwardly in the center of said cavity and downwardly toward the upper end of said tank conduit, an annular groove provided at the lower end of said shaft within said annular gate, a first O-ring seal arranged in said annular groove to contact a beveled annular inner surface of said gate, a second O-ring seal placed in an outer annular groove of said gate to contact a beveled annular lower wall surface of said cavity, a pressure relief spring arranged around said shaft within said cavity and abutting at its lower end on the upper surface of said annular gate and at its upper end on the upper surface of said cavity, a stop washer fastened to the upper end of said shaft by means of a groove-clip connection, a vacuum relief spring abutting at its lower end on the upper surface of said annular gate and at its upper end on said stop washer.

3,939,867
VALVE FOR COMPRESSORS

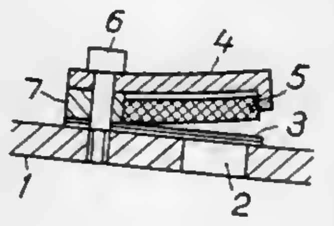
Bertil Lundvik, Norrkoping, and Nils-Arne Johansson, Aby, both of Sweden, assignors to Stal-Refrigeration AB, Norrkoping, Sweden

Filed July 25, 1972, Ser. No. 275,074

Claims priority, application Sweden, Aug. 2, 1971, 9844/71

Int. Cl.^{2} F16K ***15/00***

U.S. Cl. 137—514 **5 Claims**



1. In a valve having a valve plate defining an aperture, a flexible longitudinally extending valve body normally seated and connected at one end thereof to the valve plate over the aperture, a longitudinally extending valve catcher connected at said one end thereof to the valve plate, the valve catcher being positioned above the valve body and curving away from the valve body, and the valve catcher acting as a limiting support for the valve body when the latter is flexed, the improvement in the valve catcher providing a gradual curve of the valve body when flexed and reducing the strain therein while dampening the valve body impact and operation noise, comprising a layer of resilient material retained by said valve catcher and extending along the entire length of the valve catcher portion positioned over the length of the flexible portion of the valve body, the resilient layer being positioned to permit the valve body to flex away from the aperture along a gradually increasing curve in response to increased pressure.

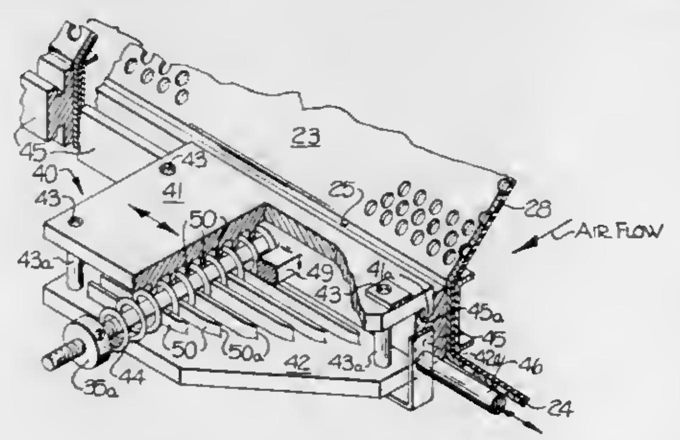
3,939,868
ADJUSTABLE AIR VOLUME REGULATOR FOR AIR-CONDITIONING SYSTEMS

Hillard Glenn Logsdon, Charlotte, N.C., assignor to Aeronca, Inc., Pineville, N.C.

Filed Mar. 8, 1974, Ser. No. 449,441

Int. Cl.^{2} F16K ***15/14, 17/30***

U.S. Cl. 137—517 **9 Claims**



1. In an air volume regulator comprising a housing defining a passageway for the flow of air therethrough, valve means mounted for movement in said housing for adjustably restricting the air flow therethrough, and a coil compression spring cooperating with said valve means for exerting an opening bias on the valve means in opposition to a closing bias exerted thereon by the pressure of the air in the housing whereby said valve means is adapted for maintaining the air flow through the housing at a substantially constant rate, the combination therewith of spring adjustment means carried by said housing and positioned alongside of said coil spring and including means normally positioned out of engagement with said coil spring but movable into said spring from opposite sides thereof between a plurality of the turns of the spring for varying the number of working turns in the coil spring so as to thereby adjust the regulator to maintain a different rate of air flow therethrough.

3,939,869
HYDRAULIC CONTROL VALVE FOR REMOTE RECEIVER

Peter G. Clarke, Crewkerne, and Bernard P. Rayner, Beaminster, both of England, assignors to Sterling Hydraulics Limited, Crewkerne, England

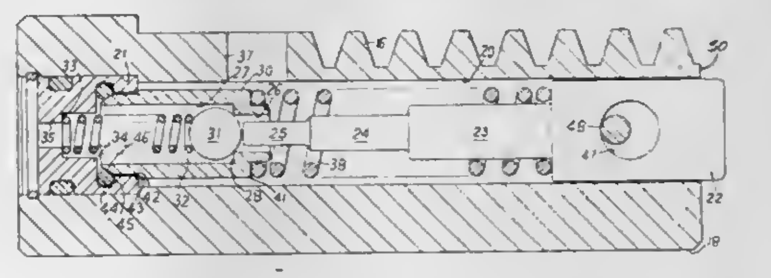
Filed Aug. 21, 1973, Ser. No. 390,256

Claims priority, application United Kingdom, Aug. 30, 1972, 40255/72; Nov. 6, 1972, 51066/72

Int. Cl.^{2} F16K ***31/00, 17/00***

U.S. Cl. 137—595 **16 Claims**

1. A hydraulic control valve for transmitting fluid under pressure from a fluid pressure source to an actuating line of a receiver, said control valve comprising a housing, a bore in said housing, first means carried by said housing for coupling one end of said bore to a fluid pressure source and second means carried by said housing for coupling an opposite end of said bore to an actuating line, an actuating element slidably mounted in said bore, a manually movable operating member operatively connected to said actuating element for shifting said actuating element in said bore with movement of said operating member causing said actuating element to slide in said housing to transmit fluid under pressure from said first means to said second means, fluid flow passage means through said actuating element for placing said first means and said second means in fluid communicating relation, a pressure relief valve carried by said actuating element normally closing said fluid flow passage means and for relieving excess pressure at said second means, and cooperating synchronizing means carried by said actuating element and said housing for automatically opening said fluid flow passage means at a predetermined point in the shifting of the actuating element.



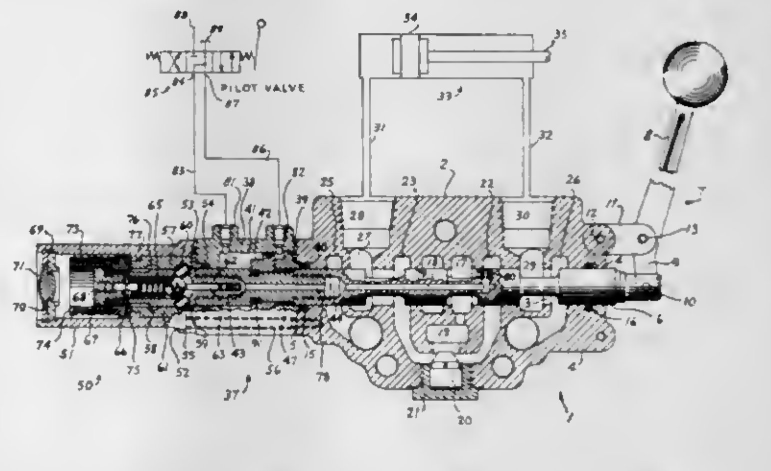
3,939,870
COMBINATION MANUAL AND PILOT OPERATED DIRECTIONAL CONTROL VALVE

Anthony V. Giugliano, Lisle, Ill., assignor to Deltrol Corporation, Bellwood, Ill.

Filed Nov. 14, 1974, Ser. No. 523,912

Int. Cl.^{2} F15B ***13/01***

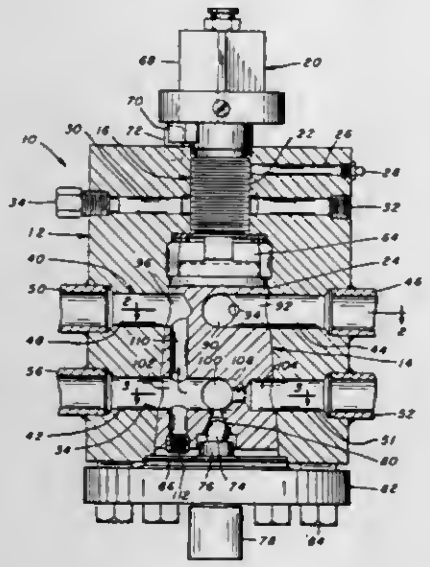
U.S. Cl. 137—624.27 **2 Claims**



1. In a fluid power system including a combination manually operable and pilot operable spool valve, the combination of, a multi-ported spool valve body having two ends and receiving a double ended spool valve member axially movable in the valve body relative to its two ends, manual operating means at one end of the valve body for engaging the corresponding end of the spool valve member for actuating same, pilot operated means associated with the spool valve member for actuating same independently of the manual operating means, said pilot operated means including a piston and a cylinder therefor arranged to provide a first pressure chamber on one side of the piston, and a second pressure chamber on the other side of the piston whereby the pilot operated means is operable to drive the spool valve member in both directions, means including pilot valve means for controlling pressures in said pressure chambers, said pilot valve means being constructed and arranged to selectively apply pressures to said chambers to cause positive pressure powered movement of the spool valve member in either one direction or the other, said pilot valve means also having a neutral position arranged to neutralize the pilot operated means by neutralizing said pressure chambers to permit free and independent movement of the spool valve member when the pilot valve means is in said neutral position,

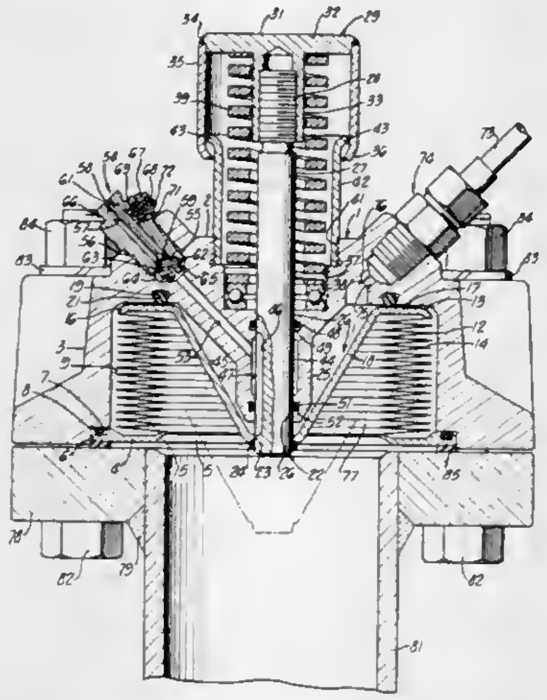
a valve positioning mechanism also associated with the spool valve member, said mechanism including yieldable detent means arranged to hold the spool valve member in position after movement by the pilot operated means and subsequent neutralization thereof, said mechanism also including automatic means for releasing said detent means and moving the spool valve member in response to a predetermined condition, said yieldable detent means allowing movement of the spool valve member at any time by the manual operating means after the pilot operated means is neutralized, the manual operating means being located at one end of the valve body and engages one end of the spool valve member and the pilot operated means being mounted at the other end of the valve body and actuates the other end of the spool valve member, said pilot operated means and valve positioning mechanism being mounted at the same end of the valve body and include axially movable parts in axial alignment with the valve member, said pilot operated means being mounted between the valve member and valve positioning mechanism, said pilot operated means including a movable piston rod actuated by the piston, said rod serving to connnect the valve member with the valve positioning mechanism.

3,939,871
BURNER BLOCK ASSEMBLY
Fred D. Dickson, Sulphur Springs, Tex., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Jan. 28, 1975, Ser. No. 544,801
Int. Cl.² F16K *11/083*
U.S. Cl. 137—625.47 **2 Claims**



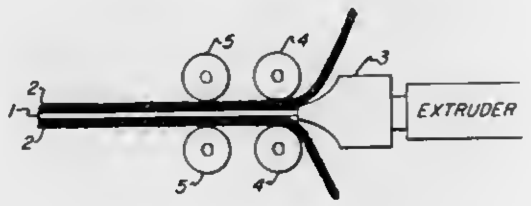
1. A burner block valve assembly for selectively distributing oil and steam to a steam atomized oil burner, comprising:
a valve body having a bore therein;
a valve plug in the bore rotatable between first and second positions;
an oil inlet in the body communicating with the bore for fluid connection with the oil source;
a steam inlet in the body communicating with the bore for fluid connection with the steam source;
an oil bypass port in the body communicating with the bore for fluid connection with the oil source;
a first outlet port in the body communicating with the bore for fluid connection with the burner;
a second outlet port in the body communicating with the bore for fluid connection with the burner;
first passage means in the plug establishing in the final position a fluid connection between the oil inlet and the first outlet for supplying oil thereof through the valve from the oil source and the burner, and establishing in the second position a fluid connection in an oil bypass route between the oil inlet and the oil bypass port;
second passage means in the plug establishing in the first position a fluid connection between the steam inlet and the second outlet for supplying steam from said steam source to the burner and including supplementary passage means for establishing the fluid connection in advance of the communication between the oil source and the burner through said first passage means, said second passage means establishing in said second position a fluid connection between the steam source and the first outlet for routing purging steam through the latter;
whereby steam and oil are supplied through the valve in the first position and purging steam is delivered to both outlets in the second position with oil flowing through the bypass route to prevent oil stagnation, return of the plug to the first position providing steam at the burner through said supplementary passage means in advance of oil.

3,939,872
PRESSURE TRANSFER UNIT
Robert S. Wentworth, Jr., Murrieta, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Oct. 17, 1973, Ser. No. 407,364
Int. Cl. F16I *51/02, 55/04*
U.S. Cl. 138—31 **11 Claims**



1. A pressure transfer unit comprising: a housing having walls defining an internal cavity; partition means mounted in said cavity and sealed to said walls to divide said cavity into a first pressure chamber and a second pressure chamber, and being movable to expand and contract a volume of said first chamber; said walls providing first port means for communicating said first chamber with a zone to be pressurized and second port means for communicating said second chamber with a reference source of fluid pressure; spring means biasing said partition means to move in a direction to contract the volume of said first chamber; liquid conduit means through which liquid is introduced into said first chamber, thereby moving said partition means against the bias of said spring means in a direction to expand the volume of said first chamber; valve means for limiting the volume of liquid introduced through said conduit means and received in said first chamber, said valve means having a stationary valve member and a cooperating movable valve member mounted on said partition means and actuable to close said valve means in response to movement of said partition means in a direction to expand the volume of said first chamber and to a position corresponding to a preselected volume of said first chamber, and conduit closure means in said liquid conduit means operable to close said liquid conduit means for preventing the flow of liquid outwardly from said first chamber through said liquid conduit means.

3,939,873
CORROSION RESISTANT GLASS-REINFORCED PLASTIC PIPE LINER
James W. Rinker, Orwigsburg, Pa., and William M. Jacobs, Severna Park, Md., assignors to Exxon Research and Engineering Company, Linden, N.J.
Division of Ser. No. 391,866, Aug. 27, 1973. This application June 7, 1974, Ser. No. 477,254
Int. Cl.² F16L *9/16*
U.S. Cl. 138—144 **9 Claims**



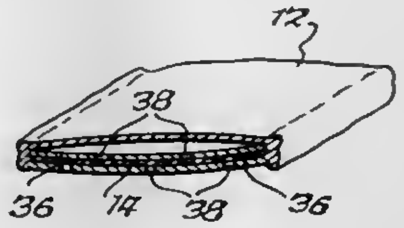
8. A composite reinforced plastic pipe which comprises:
a. an innerliner of a composition comprising a central barrier core of elastomeric material selected from the group consisting of butyl rubber, natural rubber, and styrene butadiene rubber sandwiched between two porous members, said liner being impregnated with a curable plastic resin; and
b. an overlayer of resin impregnated glass reinforcing material selected from the group consisting of glass mat, glass fabric and mixtures thereof.

3,939,874
EXTERNAL PIPE COATINGS FOR A REINFORCED PIPE
David Gray, Newcastle, England, assignor to British Gas Corporation, London, England
Filed Feb. 19, 1974, Ser. No. 443,746
Claims priority, application United Kingdom, Feb. 27, 1973, 09486/73
Int. Cl.² F16L *9/04, 9/16*
U.S. Cl. 138—145 **6 Claims**

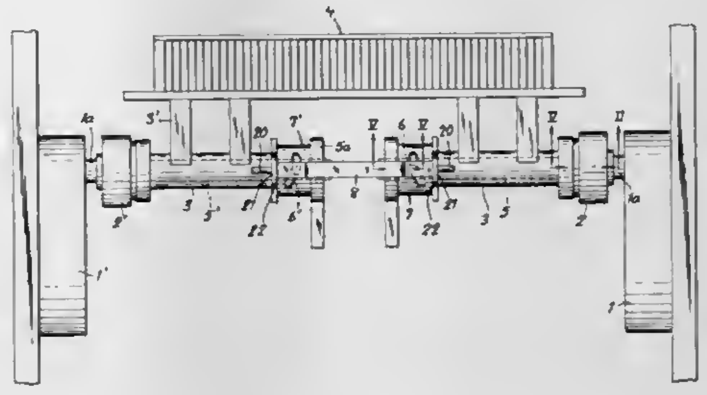
1. In a metal pipe for the transmission of a fluid under pressure, the exterior of said metal pipe being coated with a reinforced protective layer comprising coal tar for corrosion protection reinforced with a layer of reinforcement fiber, the improvement wherein resistance to cracking and failure of the protective layer due to strain on the metal pipe are increased by utilizing, as the reinforcement fiber, a layer of longitudinally extensible porous synthetic organic polymer tissue and a layer of longitudinally extensible glass based fabric, both of said layers of reinforcement fiber being wrapped around the pipe in contact with said coal tar layer whereby the coal tar passes freely through to form a second layer of coal tar on the outside of said organic polymer tissue.

3,939,875
PERMEABLE FLEXIBLE PLASTIC TUBING
Robert O. Osborn, Richmond, Va., and Donn G. Boyle, Lockport, N.Y., assignors to Boyle and Osborn, Lockport, N.Y.
Division of Ser. No. 61,661, Aug. 6, 1970, Pat. No. 3,830,067. This application Apr. 23, 1973, Ser. No. 353,238
Int. Cl.² F16L *11/12;* **E02B** *13/00*
U.S. Cl. 138—178 **5 Claims**

1. Flexible thermoplastic tubing which comprises: a plurality of superposed, elongated, flexible thermoplastic strips, said strips being firmly heat-sealed together along their longitudinal edges; at least one of said strips having a permeable, fibrous structure and consisting of a non-woven fabric formed of spun-bonded polyethylene fiber, communication between the inside of said tubing and the outside thereof being provided by the pores in said permeable strip.



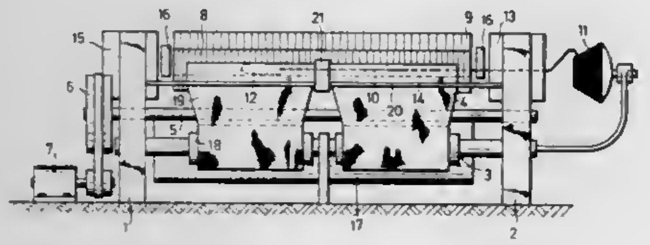
3,939,876
WEFT-BEATING MECHANISM WITH VARIABLE-STROKE REED
Jean Robert, Bourgoin, France, assignor to Saurer Diederichs (Societe Anonyme), Bourgoin, France
Filed Apr. 12, 1974, Ser. No. 460,575
Claims priority, application France, Apr. 19, 1973, 73.15061
Int. Cl.² D03D *39/22*
U.S. Cl. 139—26 **4 Claims**



1. In a loom for weaving toweling fabric having a reed carried by a sley for beating up the weft and a sley drive having an output shaft for displacing said sley, the improvement which comprises a transmission between said shaft and said sley for varying the stroke of said reed, said transmission including a first cylindrical member connected to said drive, a second cylindrical member coaxial with said first member and connected to said sley, a cylindrical control element coaxial with and interposed between said members, said first member and said element being formed with a first set of confronting grooves and respective bridging elements received in the confronting grooves and mobile therein, said control element and said second member being formed with a second set of mutually confronting grooves and respective bridging elements received in and mobile in the confronting grooves of said second set, the grooves of one of said sets being rectilinear parallel to the axis of said members and said control element and the grooves of the other set lying on a helix centered on said axis; and means for selectively regulating the axial displacement of said control element to vary the stroke of said sley.

3,939,877
WEAVING MACHINE HAVING A BORDER FORMING MEANS

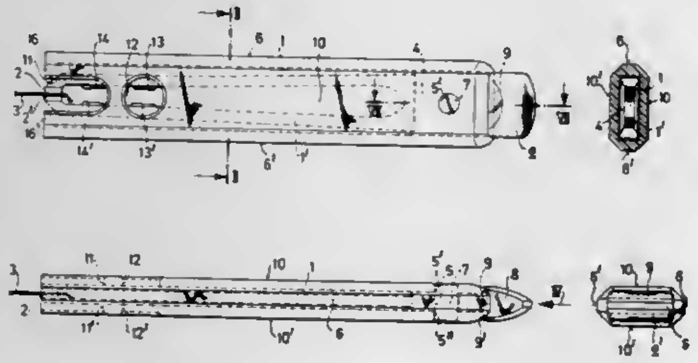
Hans Demuth, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Nov. 1, 1973, Ser. No. 411,928
Claims priority, application Switzerland, Nov. 3, 1972, 16022/72
Int. Cl.^{2} D03D *47/40*
U.S. Cl. 139—54 **12 Claims**



1. In a weaving machine having at least one means for forming a fabric border, said means including a housing having an opening, at least one operating element movably mounted in said housing and extending through said opening and a drive means for moving said operating element transversely of said opening, said drive means extending through said opening; a cover means disposed about said operating element and secured to said drive means for covering over said opening in each transverse position of said operating element.

3,939,878
GRIPPER SHUTTLE FOR WEFT YARNS

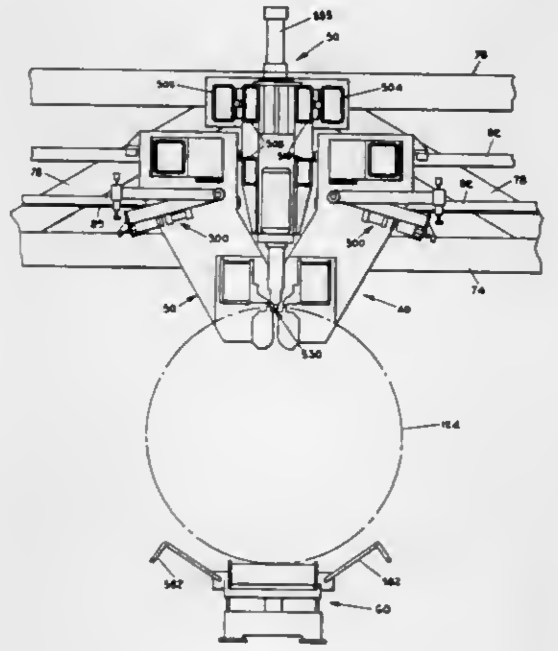
Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Oct. 21, 1974, Ser. No. 516,507
Claims priority, application Switzerland, Oct. 23, 1973, 14908/73
Int. Cl.^{2} D03J *5/06*
U.S. Cl. 139—125 **15 Claims**



1. A gripper shuttle for picking weft yarns in a weaving machine comprising
- a shuttle body housing of tubular construction having a front end;
- a nose member at said front end of said housing and having inwardly and rearwardly facing inclined surfaces thereon engaging at least part of said front end of said housing;
- a spigot within said front end of said housing secured to said nose member; and
- means securing said spigot to said housing to press said surfaces of said housing and said nose member together under a longitudinally directed compressive force.

3,939,879
METHOD AND APPARATUS FOR FORMING PIPE REINFORCING CAGES AND LIKE CLOSED LOOP OBJECTS

Wilbur E. Tolliver, Holland, and Daniel J. Borodin, Detroit, both of Mich., assignors to New York Wire Mills Corporation, Tonawanda, N.Y.
Filed Jan. 20, 1975, Ser. No. 542,343
Int. Cl.^{2} B21F *33/00*
U.S. Cl. 140—107 **50 Claims**

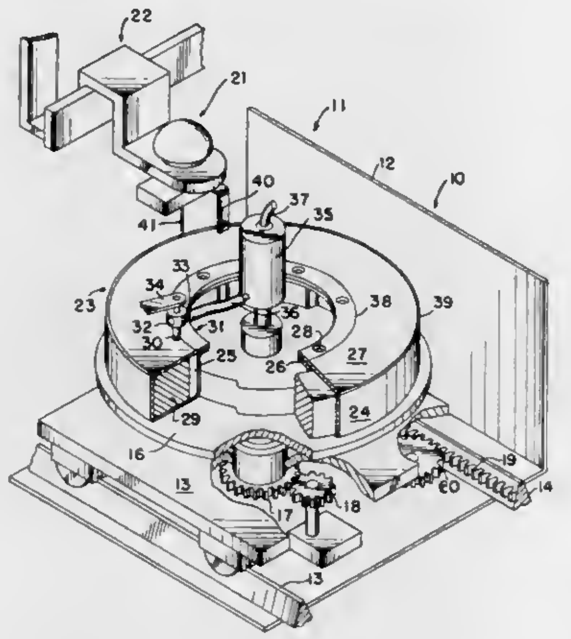


43. A method for forming pipe reinforcing cages, pipe or like closed loop member from a formable work piece comprising:
- gripping opposite ends of the work piece and advancing the ends toward one another while simultaneously rotating said ends towards one another such that the work piece is formed to define a closed loop as the ends thereof are brought together.

3,939,880
METHOD OF VACUUM PRESSURE FILL OF VISCOUS DAMPERS

Donald G. Zook, Metamora; Kenneth J. Miller, and Eugene K. Patton, both of Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed June 10, 1974, Ser. No. 477,914
Int. Cl.^{2} B65B *3/04*
U.S. Cl. 141—1 R **2 Claims**

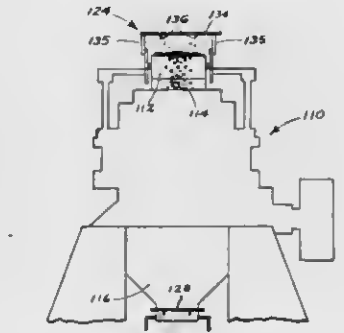
1. A torsional vibration damper filling method, the damper comprising a housing having an inertia weight mounted therein to define a space therebetween adapted to be at least partially filled with a viscous damping fluid and an aperture formed through said housing, comprising the steps of:
- fitting a valve in sealing relationship within said aperture;
- placing the viscous damper in a chamber;
- simultaneously evacuating said chamber and evacuating said space through said valve;
- maintaining said space in an evacuated state by closing said valve;
- connecting said valve to a source of viscous damping fluid under pressure;
- communicating said pressurized viscous damping fluid to said evacuated space through said valve;



- removing said valve from the aperture; and
- securing a plug in sealing relationship in said aperture.

3,939,881
APPARATUS FOR CONTROLLING DUST EMISSIONS

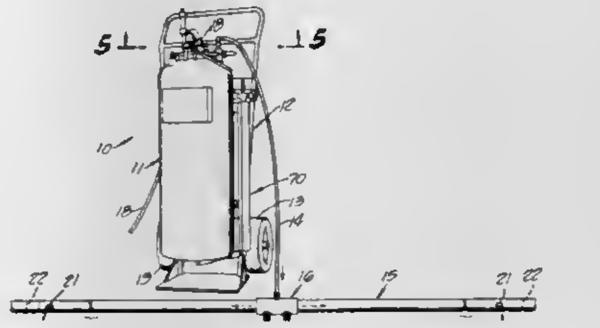
William H. Scott, 14326 SE. 162 Place, Renton, Wash. 98055
Filed May 28, 1974, Ser. No. 474,039
Int. Cl.^{2} B65B *1/28*
U.S. Cl. 141—91 **3 Claims**



1. In combination with material handling means, which during operation, produces dust which drifts into a region adjacent said material handling means, dust control apparatus for precipitating dust from the air in said region comprising
- a first set of nozzles comprising a first nozzle spaced radially outwardly from said material handling means and a second nozzle spaced a distance radially outwardly from said first nozzle,
- a second set of first and second radially spaced nozzles, spaced laterally from said first-mentioned set,
- fluid supply means connected to said nozzles operable to supply a flow of fluid under pressure to said nozzles, and
- injecting means for injecting a preselected quantity of surfactant into such flow of fluid to produce a mixture having preselected proportions of fluid and surfactant,
- each of said nozzles being operable to atomize said mixture and dispense it in a curtain of finely dispersed spray, said nozzles being so disposed that the sprays from said first and second nozzles in each set are directed in substantially the same direction to produce a double curtain of spray in said region, and said second set is positioned sufficiently closely to said first set to produce intermixing of the spray dispensed from said first and second sets of nozzles in a region therebetween to provide a substantially continuous spray curtain.

3,939,882
CABLE RECLAMATION METHOD AND APPARATUS

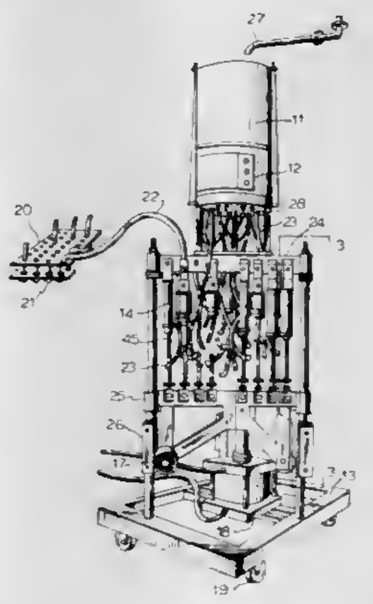
George W. Gillemot, Santa Monica, Calif., assignor to John T. Thompson, Los Angeles, Calif., a part interest
Filed Feb. 25, 1974, Ser. No. 445,278
Int. Cl.^{2} B65B *3/04*
U.S. Cl. 141—231 **10 Claims**



1. Cable reclamation apparatus for injecting a pre-mixed two-part liquid compound into and along a sheathed electrical cable, through a compound entry port in the sheath of the cable, to purge the cable of moisture, comprising a gas-pressurized tank having compound dispensing hose means terminating in a charging means sealably engageable with the exterior of the cable around the compound entry port with the hose means in communication with the compound entry port, means for supplying pressurized gas to said tank to pressurize and dispense liquid compound therefrom and into the cable along said dispensing hose means, and mixing means, comprising means for bubbling pressurized gas through the liquid compound, for mixing the two parts of the compound before starting to dispense the compound into the cable.

3,939,883
MACHINE TO FILL INSECT REARING CELLS WITH DIET

Edsel A. Harrell; Alton N. Sparks; William D. Perkins, and Woodrow W. Hare, all of Tifton, Ga., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Oct. 1, 1974, Ser. No. 510,974
Int. Cl.^{2} B65B *3/04*
U.S. Cl. 141—231 **4 Claims**



1. An apparatus for filling insect rearing cells with diet comprising in combination:
- a. a means of storing insect diet, provided with a heater and insulated for temperature retention, said storing means attached to

b. a plurality of vertical metering means wherein each vertical metering means comprises in combination:
  1. a vertical pneumatic cylinder having its upper end affixed to a upper horizontal stationary support for stability, and its lower stem end affixed to a lower horizontal movable support to impart function by upward and downward movement,
  2. an adjusting collar on said lower stem end for calibrating dispensed quantities of insect diet,
  3. a single passage serving for volume intake and outlet and communicating intermediate its ends with
  4. a working intake and outlet chamber in said cylinder
  5. a safety valve in said single passage to regulate pressure control
  6. an intake check valve at one end of said single passage operating within a negative pressure limitation and attached to
  7. a pressure hose supplying insect diet from said storing means under a negative intake pressure,
  8. an outlet check valve at the other end of said single passage operating within a positive pressure limitation and attached to
  9. a pressure hose dispensing insect diet under a positive outlet pressure,

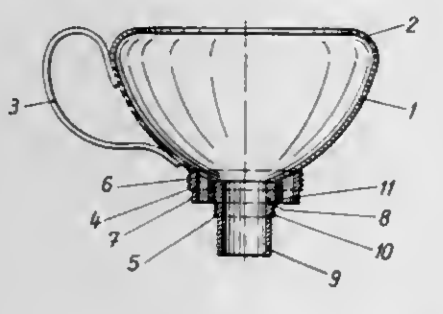
c. a frame comprising:
  1. a base mounted on casters,
  2. vertical post supports,
  3. said upper horizontal stationary support affixed to said vertical post supports at the ends thereof and also attached to the upper end of each vertical metering means,
  4. said lower horizontal movable support affixed to the vertical post supports by a vertical sliding means and also attached to the lower end of each vertical metering means thereby imparting controlled function by upward and downward movement to each metering means and said lower horizontal movable support attached to and actuated into upward and downward movement by a pneumatic means, said lower horizontal support also affixed to a system of braces and rollers which travel on vertical tracks affixed to the vertical post supports thus imparting stability and maintaining the vertical metering means plumb,

d. a nozzle means communicating with said pressure dispensing hose for dispensing insect diet in controlled and preset quantity and into

e. a rearing cell structure comprising individual cells.

3,939,884
MULTI-PURPOSE FUNNEL

Karl Werner Mader, Obere Reppischstrasse 35, 8953 Dietikon, Zurich, Switzerland
Filed Aug. 9, 1973, Ser. No. 387,162
Claims priority, application Switzerland, Nov. 3, 1972, 016165/72
Int. Cl.^{2} B65B ***39/00***
U.S. Cl. 141—333 7 Claims

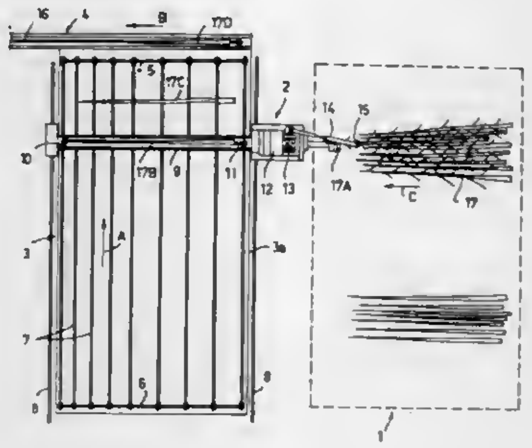


1. The combination of a multi-purpose funnel and attachment therefor, said funnel comprising a bowl with inwardly flanged open top and a bottom opening, a handle on said bowl, a ring being fixed to said bowl and having a threaded periphery, an outflow tube being fixed to said bowl around said bowl opening and within said ring, said tube having a partially threaded periphery and portion of smaller diameter than said tube threaded periphery, a gasket being mounted on said tube, said attachment comprising a second tube having an internally threaded end portion in threaded engagement with said first mentioned tube threaded periphery, said second tube having said first

mentioned tube portion of smaller diameter telescopically extending therein and said second tube having a portion of smaller diameter relative to and extending angularly from said threaded portion of said second tube.

3,939,885
EQUIPMENT FOR TRANSFERRING HEAPED TREE TRUNK ONTO A TRANSPORTER FOR FURTHER PROCESSING

Antti Tapani Valo, 08100 Lohja 10, Finland
Division of Ser. No. 502,587, Sept. 3, 1974. This application June 11, 1975, Ser. No. 585,901
Claims priority, application Finland, Sept. 3, 1973, 2740/73
Int. Cl.^{2} A01G ***23/08***
U.S. Cl. 144—2 Z 4 Claims



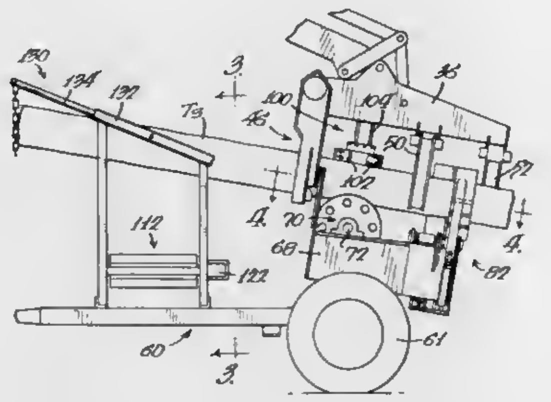
1. Equipment for transferring tree trunks one-by-one from a first region to a second region, the equipment comprising a feeding device for removing the tree trunks from the first region, a receiving table, and a conveyor means on the receiving table for receiving tree trunks which have been removed from the first region by the feeding device and conveying them to the second region, the feeding device comprising:
  a gripper for gripping a tree trunk disposed in said first region;
  a roller conveyor having its feeding direction transverse to the feeding direction of said conveyor means and positioned to receive the tree trunk from the gripper and advance it longitudinally;
  a second conveyor having its feeding direction aligned with the feeding direction of said roller conveyor and arranged to receive the tree trunk from the roller conveyor and advance it longitudinally to discharge it onto said conveyor means; and
  a lopping machine arranged between the gripper and the second conveyor to lop the tree trunk as it passes from said first region to the second conveyor.

3,939,886
TREE HARVESTER AND PROCESSOR

Frank J. Tucek, Wausau, Wis., assignor to J. I. Case Company, Racine, Wis.
Filed Oct. 24, 1974, Ser. No. 517,461
Int. Cl.^{2} A01G ***23/08;*** **F01B** ***15/04***
U.S. Cl. 144—3 D 12 Claims

1. A tree harvesting apparatus including an articulated power actuated boom pivoted thereon by a first fluid ram, and elongated mast pivoted on the outer end of said boom by a second fluid ram, tree gripping means and tree severing means

on said mast, said articulated boom and fluid rams adapted to be manipulated to position said mast adjacent the base of a tree, so that said tree may be gripped by said gripping means and severed adjacent the base by said severing means, a frame adjacent said mast, a tree advancing roll on said frame for engaging and supporting said tree on said frame, drive means for rotating said tree advancing roll, tree delimbing means on said frame adjacent said tree advancing means for encircling said tree, and tree engaging means on said mast for pressing said tree into engagement with said tree advancing roll so that said power actuated boom or said fluid rams may be utilized to press said tree into engagement with said tree advancing roll and actuation of said drive means will pull said tree through said delimbing means, said tree engaging means being positioned on said mast so that said severing means is aligned with said tree to sever said tree into sections.

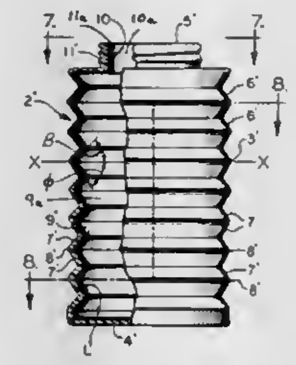


10. A method of harvesting trees with a vehicle having a boom pivoted thereon with an elongated tree harvesting mast pivoted on the boom and a tree gripping assembly and a cutting assembly supported on the mast, comprising the steps of positioning the elongated mast adjacent the base of a standing tree, gripping the tree with the tree gripping assembly, severing the tree adjacent the base with the cutting assembly, repositioning the mast so that the severed tree is in a generally horizontal position with the base end above a drive mechanism, releasing the gripping assembly to deposit the base end of the tree onto the drive mechanism, encircling the tree with a delimbing mechanism, forcing the base of the tree into engagement with said drive mechanism by engaging an opposed portion with tree engaging means on said mast, intermittently operating said drive mechanism to pull said tree through the delimbing mechanism, and intermittently operating said cutting assembly on said tree harvesting mast to sever the tree into sections.

3,939,887
HERMETICALLY SEALABLE COLLAPSIBLE CONTAINER

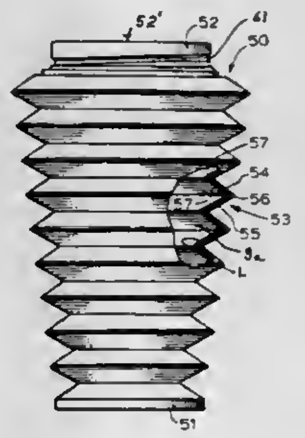
Thomas J. Scarnato, 381 Valley Road, Barrington, Ill. 60010
Continuation-in-part of Ser. No. 162,551, July 14, 1971, abandoned, and a continuation-in-part of Ser. No. 324,756, Jan. 18, 1973, abandoned. This application Sept. 19, 1974, Ser. No. 507,587
Int. Cl.^{2} B65D ***1/02***
U.S. Cl. 150—.5 17 Claims

1. A reusable plastic container comprising: a self-expanding pleated cylindrical body having an access opening at the top and a base at the bottom thereof; said body comprising a plurality of folds disposed between said top and base and having upper and lower converging portions; and each fold characterized by increased rigidity from the upper to the lower portions thereof whereby upon pressure being applied to the top of said container, said body will collapse progressively from the top to the bottom thereof.



3,939,888
HERMETICALLY SEALABLE COLLAPSIBLE CONTAINER

Thomas J. Scarnato, 381 Valley Road, Barrington, Ill. 60010
Continuation-in-part of Ser. No. 162,551, July 14, 1971, abandoned, and a continuation-in-part of Ser. No. 324,756, Jan. 18, 1973, abandoned. This application Sept. 19, 1974, Ser. No. 507,586
Int. Cl.^{2} B65D ***37/00***
U.S. Cl. 150—.5 20 Claims



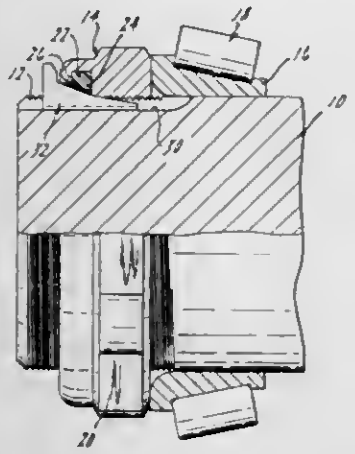
1. A hermetically sealable container comprising; a self-expanding body having an access opening at the top and a base at the bottom thereof; said body comprising at least one fold disposed between said top and base and having upper and lower fold portions of substantially uniform thickness joined in an outwardly directed apex; and said upper fold portion being of different radial length than said lower fold portion and said fold being characterized by increased rigidity from the upper to the lower portions thereof whereby upon pressure being applied to the top of said container, said body will collapse progressively from the top to the bottom thereof.

3,939,889
THREADED ASSEMBLY

Bogdan Bereznicki, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed May 8, 1974, Ser. No. 467,984
Int. Cl.^{2} F16B ***39/04***
U.S. Cl. 151—8 1 Claim

1. A threaded device comprising a member having an externally threaded portion,
  a longitudinally extending groove formed in said portion,
  a nut having an internal thread positioned on said member,

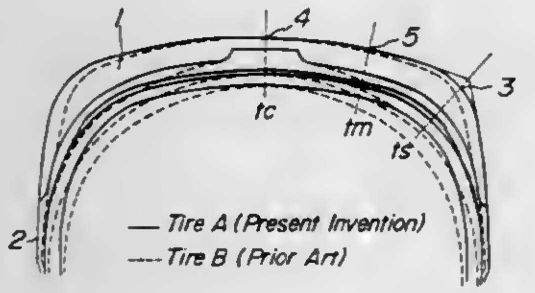
said nut having an inwardly opening annular channel and an annular organic plastic insert positioned in said channel engaging said externally threaded portion,
an elongated locking element operatively interposed between said member and said nut,
said locking element being positioned in said groove and constructed to prevent the angular displacement of said nut relative to said member,
said locking element having a greater dimension in the radial direction than the depth of said groove whereby said locking element extends radially outwardly beyond the circumference of said externally threaded portion,



said plastic insert engaging said locking element and constructed to prevent the longitudinal displacement of said locking element relative to said nut,
said locking element having a generally channel shape defined by a base portion and a pair of parallel flange portions,
said flange portions each having an inclined surface in wedged engagement with said plastic insert,
said inclined surfaces causing the deformation of said plastic insert,
at least one of the edges of said inclined surfaces being bent outwardly to enhance the retaining effect of said wedged engagement between said locking element and said plastic insert.

3,939,890
WIDE BASE TYPE PNEUMATIC TIRE FOR CONSTRUCTION VEHICLE

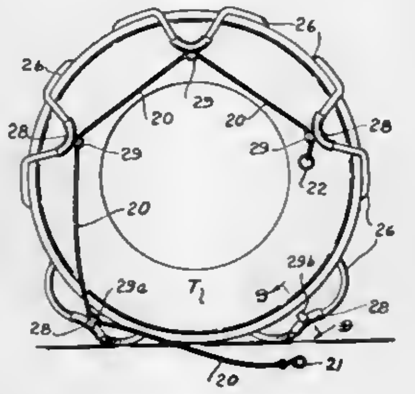
Masaru Abe, Sayama, Japan, assignor to Bridgestone Tire Company, Ltd., Kyoba, Japan
Filed Apr. 21, 1975, Ser. No. 570,148
Claims priority, application Japan, Apr. 23, 1974, 49-45029
Int. Cl.² B60C *11/04, 9/04*
U.S. Cl. 152—209 B **8 Claims**



1. A wide base type pneumatic tire for construction vehicle comprising a crown portion and a shoulder, said tire having such a sectional thickness distribution that a thickness at a middle point between crown center and shoulder is 0.95–1.08 times and a thickness at said shoulder is 1.00–1.30 times on the basis of the thickness of said crown center measured at meridional section of tire, said crown portion having at its surface a tread pattern forming a lug arrangement as a whole, the width of said lug measured along the circumferential direction of tire being 2.0–2.2 times at the crown center area and 1.25–1.35 times at the shoulder area with respect to a width of a groove between said lugs measured along the circumferential direction of tire, and the radius of said crown portion being not less than 75% of the overall tire width under normal inflation pressure.

3,939,891
NON-SKID DEVICE FOR VEHICLE WHEELS

Forest H. Barnett, 2602 N. Baltimore, Tacoma, Wash. 98407, and Clarence E. Barnett, 5208 156th NE., Redmond, Wash. 98052
Filed Oct. 18, 1974, Ser. No. 516,038
Int. Cl.² B60C *27/20*
U.S. Cl. 152—225 R **9 Claims**

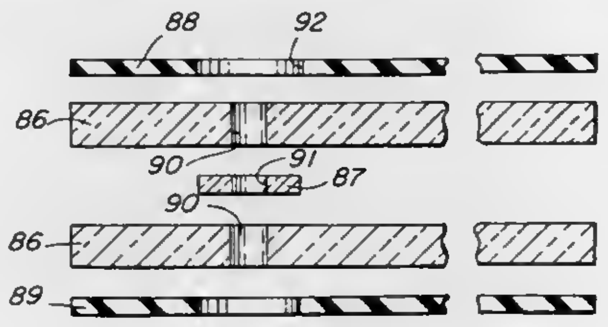


1. A non-skid device for a pneumatic tire on a vehicle wheel comprising an inner anchor member having two ends; readily detachable means connected with said two ends operable in securing said two ends together; an outer anchor member; said two anchor members being adapted to be positioned at the inner and outer sides of a tire respectively and each anchor member being capable of forming a closed loop of substantially smaller size than the tire; and a plurality of skid resisting members secured to and extending diagonally in zigzag fashion between said two anchor members back and forth across the tire, the inside anchor member being detachable from the skid resisting members at a location adjacent its two relatively attachable and detachable ends, whereby when said two detachable ends of said inside anchor member are detached from each other and the adjacent detachable connection with the skid resisting members is detached slackness and clearance are provided and the non-skid device is applicable to a tire on a wheel with the tire resting on the ground.

3,939,892
MAKING INSULATOR GASKETS

Robert G. Farnam, New Lisbon, and Michael T. Passarella, Wisconsin Rapids, both of Wis., assignors to F. D. Farnam Co., Lyons, Ill.
Division of Ser. No. 120,526, March 3, 1971, which is a continuation-in-part of Ser. No. 76,459, Sept. 29, 1970, Pat. No. 3,655,210, which is a continuation-in-part of Ser. No. 66,958, Aug. 26, 1970, abandoned. This application Aug. 20, 1973, Ser. No. 389,491
Int. Cl.² B32B *31/00;* **B65D** *53/00*
U.S. Cl. 156—252 **12 Claims**

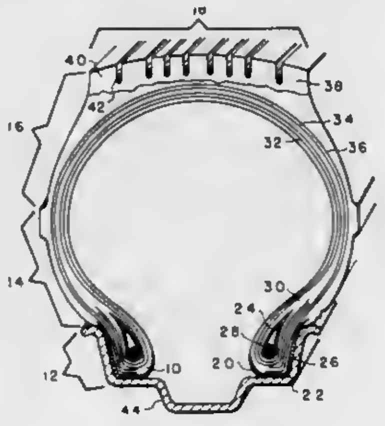
1. The method of forming heat insulating gasket structures for installation between an automotive engine and a carburetor mounted thereon comprising:
a. die-cutting a member from a sheet of heat insulating material to form a core;
b. providing said core with tab-like portions, some of which have a bolt hole therethrough; and
c. pressing the core only at the tab-like portions to densify and decrease the volume of the core at the tab-like portions, and



d. applying a gasket layer to at least one side of the core having a density less than that of the core, said gasket structure being thus densified, prior to installation of the gasket structure between said engine and carburetor.

3,939,893
TIRE CORD FABRIC

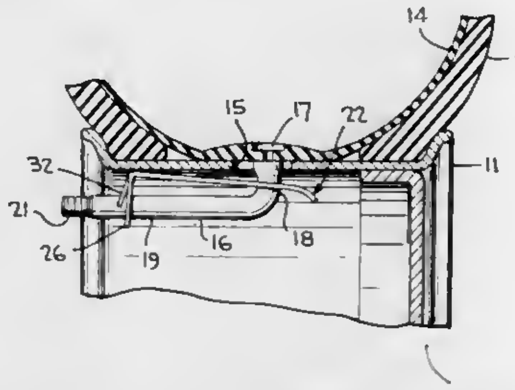
Calvin P. Schmidt, Clemson, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Division of Ser. No. 374,556, June 28, 1973. This application Oct. 25, 1974, Ser. No. 517,989
Int. Cl.² B60C *15/06*
U.S. Cl. 152—362 CS **1 Claim**



1. In a tubeless tire having a ply turn-up portion, a bead area, a sidewall area, a shoulder area and a tread area the improvement comprising: a chafer fabric connected to the outside of the ply turn-up area adapted to contact the inside of a tire rim, said chafer fabric being a woven fabric constructed of a round monofilament warp yarn and a bulked multifilament fill yarn.

3,939,894
VALVE STEM LOCK

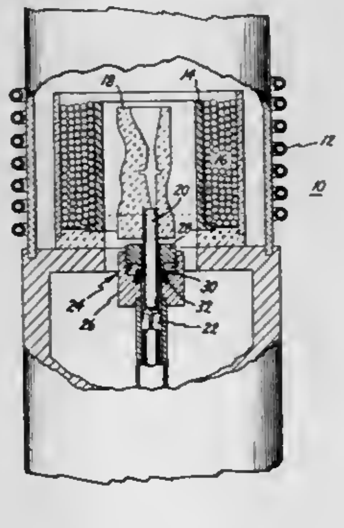
H. James Curtis, Miami, Fla., assignor to Ryder Truck Rental, Inc., Miami, Fla.
Filed Oct. 23, 1974, Ser. No. 517,248
Int. Cl.² B60C *29/00*
U.S. Cl. 152—427 **9 Claims**



1. A valve stem lock for motor vehicle tire, comprising a flat plate member of springy material having an open slot at one end for embracing the valve stem, a transverse rigid flange on said plate member extending perpendicular thereto, said flange having an opening through which the valve stem extends, opposing pairs of locking projections on said flange extending into said opening, one pair of said locking projections defining a portion of said opening, a portion of said flange defining a spring finger member connected at its base, the other pair of said locking projections being located at the free end of said spring finger member, whereby during installation of said plate member wherein said opening surrounds the valve stem and said slot embraces the valve stem, said spring finger is shifted outwardly of said flange for spring locking said plate member to the valve stem as said locking projections engage the valve stem, and whereby said locking projections may be disengaged from the valve stem as said plate member is spring bent toward the valve stem thereby causing said flange to shift therealong.

3,939,895
METHOD FOR CASTING DIRECTIONALLY SOLIDIFIED ARTICLES

Thomas F. Sawyer, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Nov. 18, 1974, Ser. No. 524,396
Int. Cl.² B22D *25/06*
U.S. Cl. 164—60 **7 Claims**

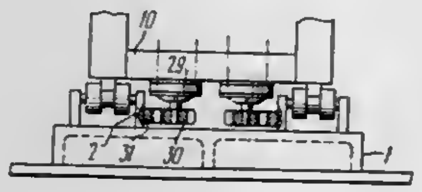


1. A method of producing a directionally solidified cast alloy article in a shell mold, said method comprising
providing a mold having a cavity divided into an upper portion and a lower portion, said mold being disposed in a heating zone,
placing one end of a longitudinal heat extractor element of said alloy into the lower portion of the cavity, said other end of said heat extractor extending therefrom and being exposed to a continuous flow of fluid coolant,
heating said mold and said one end of said heat extractor placed therein at a temperature above the melting range of said alloy to melt a portion of said one end of the heat extractor,
filling said mold with said alloy in a molten state, and
controllably lowering said mold out of the heating zone to allow said mold and contents thereof to cool and to establish directional solidification of the alloy in said cavity.

3,939,896
METHOD OF ROLLING A CONTINUOUSLY CAST INGOTS

Evgeny Alexeevich Korshunov, pereulok Otdelny, 5a, kv. 29; Evgeny Zakharovich Freidenzon, ulitsa Lunacharskogo, 161, kv. 23; Vladimir Arkadievich Tyagunov, ulitsa Mira, 36/7 kv. 3; Mikhail Ivanovich Fedorov, ulitsa Komsomolskaya, 72, kv. 27, all of Sverdlovsk; Alexandr Ivanovich Kalinin, ulitsa Mira, 12, kv. 49, Nizhny Tagil; Konstantin Alexeevich Malikov, ulitsa Komsomolskaya, 59a, kv. 7, Sverdlovsk; Mikhail Iosipovich Arshansky, prospekt Lenina, 23/40, kv. 8, Nizhny Tagil; Igor Nikolaevich Petrov, ulitsa Malysheva, 152b, kv. 30, and Evgeny Valentinovich Melnikov, ulitsa Narodnogo Fronta, 56, both of Sverdlovsk, all of U.S.S.R.

Filed Dec. 5, 1973, Ser. No. 422,071
Int. Cl.² B22D *29/00*
U.S. Cl. 164—76 1 Claim

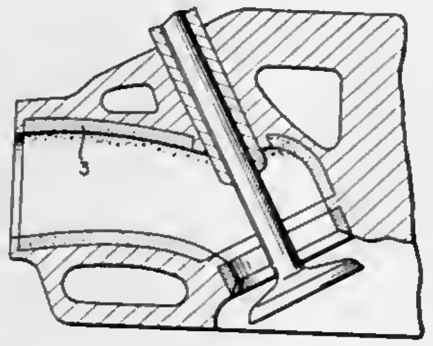


1. In a method of rolling continuous cast ingots which are periodically withdrawn from a mould, including the use of a stand with reversibly rotatable shaped rolls each having at least one working portion, with the reversible rotation of the rolls being limited to an angle encompassing said working roll portion comprising a shaped section and two cylindrical sections located at the edges of the above section having different radii, one radius being large and corresponding to a final thickness of an ingot being rolled and one radius being small and corresponding to the thickness of the ingot being cast, the shaped section being arcuate so as to provide a prescribed drafting schedule to the ingot portion being rolled, said method comprising the following steps: feeding an ingot being cast to a rolling mill; forming an ingot head by reducing said ingot to a final thickness corresponding to the cylindrical section of the large radius of the roll working portion and further rolling the remaining portion of the ingot by progressive repeated reduction between the shaped rolls of the stand through reciprocation against the direction of movement of the ingot and in the direction of movement of the ingot, the stand with the shaped rolls incorporated therein being set prior to each reciprocating stroke to such a position that during each next working stroke of the stand the ingot is rolled between the shaped sections of the rolls only with a preset reduction degree; said further rolling including the operations of (a) setting the rolls of the movable stand to one of their extreme positions, (b) displacing the stand in a "backward" direction with respect to the ingot direction to a position corresponding to the subsequent preset reduction of the ingot, (c) carrying the stand further "backward" together with the rotating rolls while reducing the ingot first between the cylindrical roll sections with large radii of the roll working portion, then between the shaped roll sections, and finally between the cylindrical sections with small radii, said cylindrical sections with small radii tempering the ingot and eliminating any slight bulging of the ingot being cast at the end of the stand "backward" stroke, (d) setting the rolls of the movable stand to another extreme position, (e) moving the stand with stopped rolls further "backward" at a distance which is the function of the required reduction during a successive "forward" stroke of the stand, (f) reversing the rolls of the movable stand until they grip the ingot and (g) carrying the stand "forward" together with the rotating rolls while successively tempering the ingot between the cylindrical sections with small radii on the roll working portions and reducing the ingot between the shaped roll sections and then between the cylindrical sections with large radii of the working roll portions, the ingot portion rolled between the cylindrical sections with large radii is that resulting from the stand extension during two reciprocating stand strokes, (h) removing the work rolls of the movable stand from contact with the rolled ingot, (i) displacing said movable stand in a "backward" direction at a distance which is the function of the preset reduction during the next "backward" stroke of the stand, (j) repeating the "backward" — "forward" strokes of the stand until the portion of the ingot extracted from the mould over the withdrawal period is rolled out, (k) carrying the movable stand with the stopped rolls "forward" at a distance equal to the ingot length extracted from the mould over the withdrawal period, and repeating the rolling cycles after each next extraction of the ingot being cast from the mould so as to enable the rolling of the remaining portion of the ingot being cast.

3,939,897
METHOD FOR PRODUCING HEAT-INSULATING CASTING

Yasuhisa Kaneko; Yasuhiko Komatsu; Yoshihiro Hibino, and Yasuo Okada, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed July 10, 1973, Ser. No. 378,012
Claims priority, application Japan, Nov. 1, 1972, 47-109749
Int. Cl.² B22D *19/08*
U.S. Cl. 164—103 5 Claims

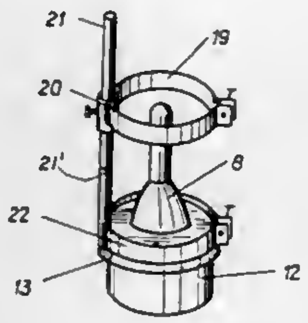


1. A method for manufacturing heat-insulating castings comprising the steps of: setting a flexible semifinished ceramic product, having a smooth surface, an elastic modulus of 200 to 5,000 kg/mm², a bending strength of 8 to 200 kg/cm², and a wall-thickness less than ¼ of its inside diameter, inside a casting mold and casting molten metal to enclose the ceramic semifinished product.

3,939,898
MOULD MANUFACTURING DEVICE

Claude Petro, 3 rue des Alpes, Geneva, Switzerland, and Andre Glise, Le Coin, Collonges-Sous-Saleve, France

Filed Nov. 26, 1973, Ser. No. 419,055
Int. Cl.² B22C *7/02, 13/00*
U.S. Cl. 164—150 3 Claims

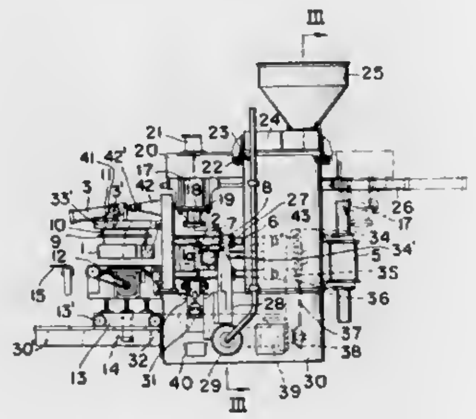


1. A mold manufacturing device comprising a support, an ogival head extending vertically above said support to support in turn a set of rods carrying blanks of pieces to be molded in calcinable or fusible material, a lower ring detachably secured to said support in surrounding relationship, a vertical rod carried by and upstanding from said lower ring, an upper ring mounted for vertical sliding movement on said rod coaxially with said lower ring, said upper ring being horizontally disposed, there being at least one graduation on said rod indicating the position of the upper ring along said rod relative to the location of the thermal center of a mold to be cast on said support about said head after said rod and rings are removed from said support, and means for releasably securing said upper ring in predetermined positions along said rod.

3,939,899
SHELL MOLDING MACHINE IN WHICH BLOWN CORE CAN BE EJECTED OUTSIDE VISE ASSEMBLY

Kiyomitsu Kawai, Osaka, Japan, assignor to Naniwa Products Co., Ltd., Osaka, Japan

Filed June 13, 1974, Ser. No. 479,125
Claims priority, application Japan, July 3, 1973, 48-75514
Int. Cl.² B22C *17/08, 13/12*
U.S. Cl. 164—181 7 Claims



1. A shell molding machine comprising a fixed frame, a blow head assembly supported from said fixed frame, said blow head assembly including an outlet, a vise assembly supported rotatably by said fixed frame below the outlet of said blow head, a pair of cooperating mold halves, said mold halves being mounted in said vise assembly, one of said mold halves being pivoted with respect to said vise assembly, means for pivoting said one mold half from a first position adjacent to the other of said mold halves to a second position substantially exterior of said fixed frame for ejection of molded articles from said one mold half, and means for so ejecting said articles when said one mold half is in said second position.

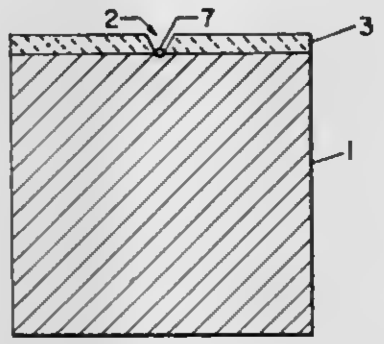
3,939,900
APPARATUS FOR CONTINUOUS CASTING METAL FILAMENT ON INTERIOR OF CHILL ROLL

Donald E. Polk, Morristown, and John R. Bedell, Sparta, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 416,720, Nov. 16, 1973, Pat. No. 3,881,542. This application Jan. 27, 1975, Ser. No. 544,165
Int. Cl.² B22D *11/06*
U.S. Cl. 164—27 8 Claims

1. In an apparatus for the production of continuous length shaped metal filaments from a molten stream wherein the filament is shaped by casting onto the inside surface of a rotating cylindrical chill roll, the improvement wherein said apparatus comprises:

a. at least one groove formed in the inner periphery of the roll, said groove being flanked by a smooth tapered surface of a thermal insulating material which has a substantially greater thermal insulating property than the chill roll and which is not wetted by the molten metal said tapered surface directing into the groove the molten metal impinged thereon; and

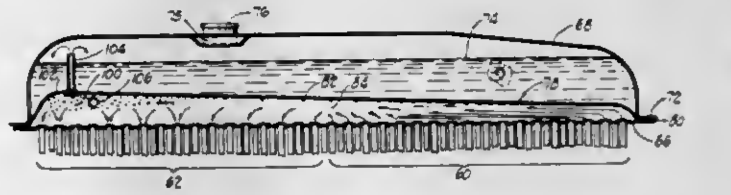


b. means for removing the solidified shaped filaments from the groove.

3,939,901
METHOD AND APPARATUS FOR COOLING AND DEAERATING INTERNAL COMBUSTION ENGINE COOLANT

Joseph T. Cieszko, Richmond Heights, and Charles L. Moon, Brecksville, both of Ohio, assignors to White Motor Corporation, Cleveland, Ohio

Filed Apr. 19, 1973, Ser. No. 352,414
Int. Cl.² F01P *5/10*
U.S. Cl. 165—1 8 Claims



1. A method of cooling an internal combustion engine comprising:

a. circulating a coolant comprising a mixture of ethylene glycol and water through coolant passages in the engine by an engine driven pump;

b. communicating coolant exiting from the engine to a radiator header chamber via a radiator inlet;

c. passing the coolant through a plurality of first radiator coolant passages extending from said header chamber at velocities which establish a minimum Reynolds number of about 5000 at the torque peak speed of the engine;

d. exhausting coolant from projecting ends of said first radiator coolant passages into a second header chamber;

e. progressively reducing the coolant velocity as the coolant flows in said second header chamber;

f. establishing a region of substantially quiescent coolant in said second header chamber;

g. providing a coolant reservoir;

h. communicating said coolant reservoir with said substantially quiescent region;

i. detraining gas from the coolant in said substantially quiescent region and directing the detrained gas to said coolant reservoir;

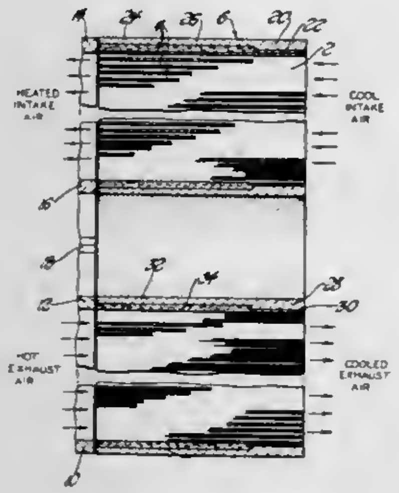
j. fractioning off coolant from said second header chamber via a plurality of second radiator coolant passages opening into said second header chamber;

k. passing coolant through said second radiator coolant passages at velocities for establishing a minimum Reynolds number of about 5000 at the torque peak speed of the engine; and,

l. exhausting coolant from said second radiator coolant passages into a third header chamber.

3,939,902
HEAT EXCHANGER RIM AND HUB WITH L-SHAPED CROSS-SECTION

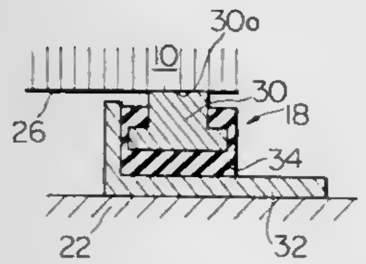
Lawrence E. Coubrough, Golden, Colo., assignor to Coors Porcelain Company, Golden, Colo.
Filed Feb. 5, 1975, Ser. No. 547,304
Int. Cl.² F28D *19/00*
U.S. Cl. 165—8 **7 Claims**



1. A heat exchanger for use in transferring heat from the exhaust gases of a turbine engine to the intake air for the engine, said heat exchanger comprising a rotatable cylindrical ceramic body having axially extending passages therethrough, an annulus of ceramic bordering a cylindrical surface of said body and having a radially extending annular flange bonded to said cylindrical surface of said body at one axial end thereof, there being an annular gap between said ceramic annulus and said cylindrical surface of said body at the other axial end of said body, and an annulus of resilient sealing material in said annular gap.

3,939,903
SEAL ASSEMBLY FOR A ROTARY REGENERATIVE HEAT EXCHANGER

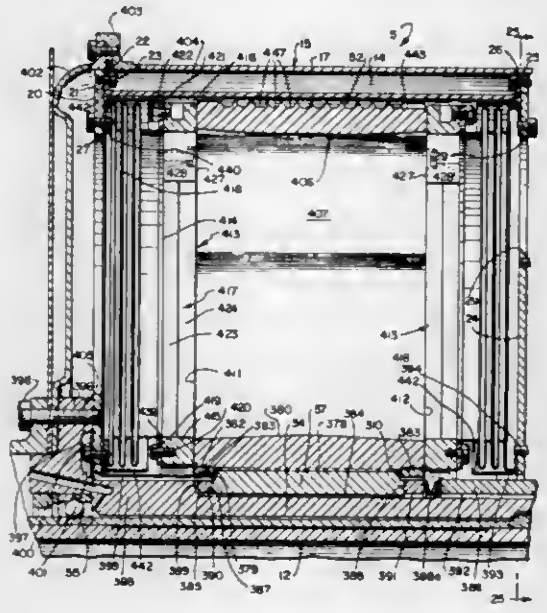
Yoshihiro Sakaki, Yokohama, and Kensuke Eishima, Urawa, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Nov. 2, 1973, Ser. No. 412,104
Claims priority, application Japan, Nov. 20, 1972, 47-132633
Int. Cl.² F28D *19/00*
U.S. Cl. 165—9 **2 Claims**



1. In a rotary regenerative heat exchanger having disc-type rotary heat accumulator mounted for rotation within a casing having an interior wall adjacent to and spaced from one end of the disc-type rotary heat accumulator, a seal assembly comprising:
- a L-shaped retainer mounted securely to the interior wall of said casing;
- an elastomeric resilient member fixed to said L-shaped retainer; and
- a seal element having a carbon sealing face adjacent to the one end of said disc-type rotary heat accumulator and a base with a T-shape embedded in said elastomeric resilient member, said elastomeric resilient member being so constructed and arranged as to maintain said sealing face in sealing engagement with the end of said disc-type rotary heat accumulator.

3,939,904
ROTARY DISC REGENERATOR

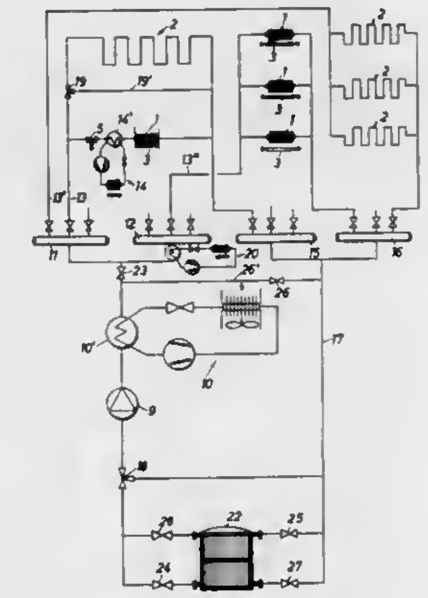
Albert H. Beaufrere, Private Road, Huntington, N.Y. 11743
Division of Ser. No. 300,774, Oct. 25, 1972, Pat. No. 3,818,696. This application Mar. 18, 1974, Ser. No. 452,352
Int. Cl.² F28D *19/00*
U.S. Cl. 165—9 **13 Claims**



3. In a rotary heat exchanger useful as a regenerator for gas turbine engines, the combination of a rotary disc comprising:
- hub means located at the center of the disc and having an outer surface which is of outwardly convex radial cross-sectional shape, an annular member forming the outer periphery of the disc and having an inner surface of inwardly convex radial cross-sectional shape, and
- an integrated axial through flow heat exchange matrix which, when cool and undistorted, has generally right cylindrical inner and outer peripheral surfaces and two circular major faces which are flat and lie in planes transverse to the axis of rotation of the disc,
  - said matrix defining heat exchange passages extending from one of said major faces to the other and through which gas can flow in heat exchange relation to the matrix,
  - said matrix, when cool and undistorted, having an effective thickness, in a plane intermediate said major faces, such as to completely fill the annular space between said hub means and said annular member in said intermediate plane, the intermediate portions of said inner and outer surfaces of said matrix being affixed to the intermediate portions of said outer surface of said hub means and said inner surface of said annular member, respectively,
  - said matrix, when heated, expanding radially in the portions thereof adjacent said major faces, with space for such expansion being afforded by the fact that the radial distance between said onvex surfaces increases from said intermediate portions toward said major faces, such expansion being accompanied by a corresponding bowing of said major faces; and
- a stationary seal device mounted adjacent one of said major faces of said matrix, said seal device being constructed and arranged to enclose a gas flow space through which gas under pressure can be supplied to the matrix in a direction parallel to the axis of rotation of said disc, said seal device comprising:
  - bimetal means extending at least generally along a diameter of the matrix in close proximity to but out of contact with said one major face,
  - said bimetal means being operative to warp the seal device in conformity to said one major face of said matrix as that face warps under the influence of temperature changes, whereby close proximity of the seal device to said one major face of the matrix is preserved and rubbing of the matrix against the seal device is avoided.

3,939,905
SYSTEM FOR REGULATING THE TEMPERATURE IN ROOMS, MORE PARTICULARLY FOR COOLING ROOMS

Hermann Gettmann, Sythen, Germany, assignor to Tour Agenturer AB, Johanneshov, Sweden
Filed May 18, 1973, Ser. No. 361,554
Claims priority, application Germany, May 18, 1972, 2224242
Int. Cl.² F24H *9/08*
U.S. Cl. 165—49 **12 Claims**

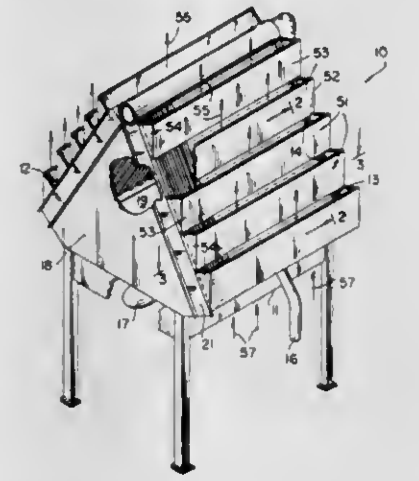


1. A water circulation type cooling system for regulating the temperature of air in rooms comprising:
- a. a pipeline means included in a structural member such as a floor, ceiling or wall, the pipeline means being supplied with a charge of water; and
- b. dehumidifier means in the room for reducing the temperature of the air to condense and remove moisture therefrom, the dehumidifier means comprising a convector coupled to the pipeline means, such that the charge water flows through the convector in series or in parallel with the charge water through the pipeline means, a blower and a collector tray for collecting the condensate from the convector, wherein the dehumidifier and pipeline means are positioned with respect to each other in the room, such that air first passes through the dehumidifier means and then is cooled by the pipeline means, whereby condensation on the structural members is reduced due to the removal of moisture by the dehumidifier means.

3,939,906
AIR COOLED EXCHANGER

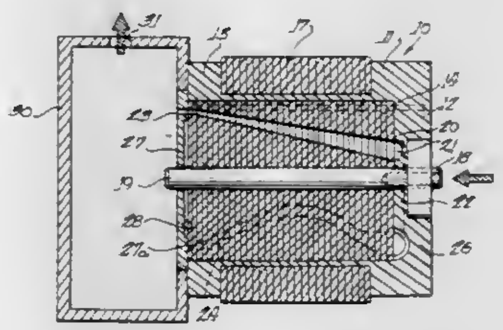
Rober. K. Rothenbucher, Bloomingdale, N.J., assignor to The Lummus Company, Bloomfield, N.J.
Filed Dec. 28, 1973, Ser. No. 429,649
Int. Cl.² F28F *7/00*
U.S. Cl. 165—76 **1 Claim**

1. An air cooled heat exchanger, comprising:
- a pair of tube banks positioned in oppositely inclined vertical planes to define an A-shape, each of said tube banks having exposed tubes supported in a tube plane;
- a pair of side walls connected to the tube banks to define a chamber having an open bottom between the side walls and the lower portion of the tube banks;
- means for passing fluid through the tubes;
- means for drawing air from the atmosphere into the open bottom of the chamber to pass air upwardly through the tube banks and into the surrounding atmosphere; and
- a plurality of individual and separate wind shields for each tube bank, said wind shields each being comprised of a wind defecting front wall and integral triangularly shaped side walls, said side walls being attached to the tube frame of each of the tube banks whereby each of the wind shields are separately supported by the tube frame, said front walls being disposed in a substantially vertical plane, each of said front walls extending across the width of the tube banks and being spaced over the length thereof to prevent wind from passing through each of the tube banks when the tube banks are exposed to the atmosphere and permitting air to flow through the tube banks and upwardly to the atmosphere between the wind shields and tube banks, said wind shields being supported as evenly supported loads on the tube frame.



3,939,907
ROTARY COMPRESSOR AND CONDENSER FOR REFRIGERATING SYSTEMS

John A. Skvarenina, 2639 W. Augusta, Chicago, Ill. 60622
Filed May 21, 1974, Ser. No. 472,066
Int. Cl.² F28D *11/00;* **F28F** *5/00*
U.S. Cl. 165—86 **5 Claims**

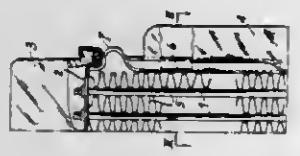


1. A heat exchanger comprising in combination: a helically wound tubing, an inlet formed at one end of said tubing, an outlet formed at the other end of said tubing, a plurality of heat radiating fins secured to the tubing and arranged along a longitudinal axis of rotation of the helically wound tubing, drive means coupled to said helically wound tubing for rotating said tubing about said longitudinal axis of rotation, whereby heated fluid passing through said helically wound tubing will be cooled during rotation thereof.

3,939,908

METHOD FOR EQUALIZING DIFFERENTIAL HEAT EXPANSIONS PRODUCED UPON OPERATION OF A HEAT EXCHANGER AND HEAT EXCHANGER EMBODYING SAID METHOD

André Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, Hauts de Seine, France
Filed Apr. 1, 1974, Ser. No. 456,886
Claims priority, application France, Apr. 4, 1973, 73.12174
Int. Cl.² F28D *1/00*
U.S. Cl. 165—149 27 Claims

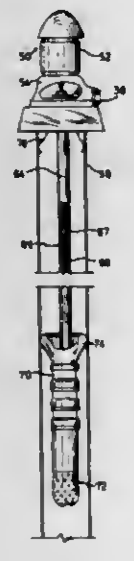


1. A method for compensating differential heat expansions produced upon operation of a heat exchanger of the type having inner tubes and end tubes, tube plates fitting ends of said tubes, and rigidly connected therewith, lateral flanges, and corrugated fins inserted between the tubes and between said tubes and the lateral flanges to form a unit, comprising the steps of welding or brazing as a one-piece unit with said lateral flanges and tube-plates rigidly connected together, and providing means for precluding bonding between said lateral flanges and said fins in the proximate area of said tube-plates wherein the connection of said end tubes to said lateral flanges through said fins in the proximate area of said tube plates is non-bonded.

3,939,909

SYSTEM OF SUPPRESSING THE DISCHARGE CASING STRING IN DEEP-WELL VERTICAL PUMPS

Carlos Mayer Ortiz, Blas Pascal 135-1002, Mexico City 10, Mexico
Filed Feb. 4, 1974, Ser. No. 439,041
Claims priority, application Mexico, Feb. 16, 1973, 141636
Int. Cl.² F04B *47/02*
U.S. Cl. 166—68.5 3 Claims

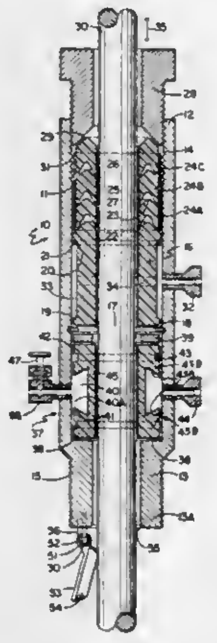


1. A pumping system for a deep-well having a wall including upper and lower ends, said system comprising:
- driving means disposed adjacent the bottom of the well and having a lower suction inlet and an upper outlet for driving the fluid to be pumped from the bottom of the well to the surface;
- actuating means for said driving means connected to a suitable power source and being suitably drivingly connected to said driving means;
- a first sealing means located at the upper end of said wall to hermetically seal said upper end of the wall and to form a discharge outlet of said well;
- a second sealing means adjacent the bottom of the well for sealing said driving means to the wall of the well between the lower suction inlet and the upper outlet of the driving means;
- said first and second sealing means providing a sealed wall section between the first and second sealing means forming the only conduit in the well from the upper outlet of the driving means to the discharge outlet of the well for the fluid being pumped; and
- said second sealing means including a hollow frusto-conical seal portion with the greater diameter end of the seal portion extending upward and formed inwardly to form a smooth curved surface tangentially engaging the wall of the well, the lower smaller diameter end of the seal portion being secured to the driving means.

3,939,910

STUFFING BOX AND BLOW OUT PREVENTING DEVICE FOR POLISH RODS OF OIL WELL PUMPING UNITS

Albert I. Bruce, Calgary, Canada, assignor to GAR Industries Ltd., Calgary, Canada
Filed Dec. 23, 1974, Ser. No. 535,222
Int. Cl.² E21B *33/03*
U.S. Cl. 166—84 14 Claims



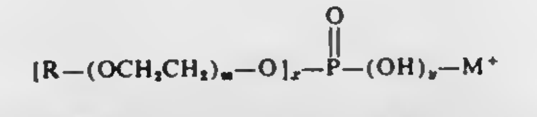
1. A stuffing box for polish rods of oil well pumping units comprising in combination a cylindrically bored body portion, a cylindrically bored substantially cylindrical upper guide component formed of resilient elastomeric material situated in said body portion and surrounding the polish rod when said polish rod is positioned within said stuffing box for reciprocation therein, means to support said upper guide component within said body portion, and a plurality of substantially ringline packing elements of resilient elastomeric material stacked one upon the other and upon the upper end of said guide component and a packing gland nut screw threadably engageable within said body portion and bearing upon the uppermost of said packing elements to compress same in sealing relationship with said guide component and said polish rod and a cylindrical sleeve surrounding said packing elements to enclose and restrain same against outward spreading movement, the diameter of said sleeve being slightly less than the inner diameter of said body portion whereby said packing elements and said sleeve are free floating within said body portion.

3,939,911

SURFACTANT OIL RECOVERY PROCESS USABLE IN HIGH TEMPERATURE FORMATIONS CONTAINING WATER HAVING HIGH CONCENTRATIONS OF POLYVALENT IONS

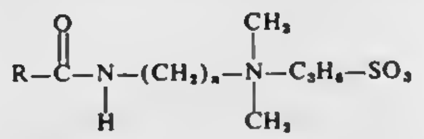
Jim Maddox, Jr., and Jack F. Tate, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Filed Mar. 14, 1975, Ser. No. 558,404
Int. Cl.² E21B *43/22*
U.S. Cl. 166—274 21 Claims

1. In a method for recovering petroleum from a subterranean, petroleum-containing formation penetrated by at least one injection well and at least one production well, said formation containing water having polyvalent ions dissolved therein in a concentration of from about 200 to about 14,000 parts per million and at a pH from 5 to about 9, said recovery method being of the type wherein an aqueous fluid is injected into the formation via the injection well, and oil displaced by the injected fluid is recovered from the formation via the production well, wherein the improvement comprises injecting into the formation an aqueous three component surfactant solution comprising:
- a. an anionic surfactant with an average molecular weight not to exceed about 360 selected from the group consisting of water-soluble salts of alkyl sulfonates having from 5 to 25 carbon atoms, and water soluble salts of alkylaryl sulfonates wherein the alkyl chains have from 5 to 25 carbon atoms;
- b. a phosphate ester surfactant with an average molecular weight not to exceed about 1000 having the following formula



$$[R-(OCH_2CH_2)_m-O]_x-\overset{\overset{O}{\|}}{P}-(OH)_y-M^+$$

wherein R is alkylphenyl or an alkyl radical having from 12 to 24 carbon atoms, m is an integer between 1 and 20, *x* and *y* are 1 or 2 and the sum of *x* and *y* is 3, and M is a monovalent cation; and
- c. a sulfonated betaine having the following structure:



$$R-\overset{\overset{O}{\|}}{C}-\underset{\underset{H}{|}}{N}-(CH_2)_n-\overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{N}}-C_3H_6-SO_3$$

wherein R is an alkyl group having from 12 to 24 carbon atoms and *n* is an integer from 1 to 5.

3,939,912

METHOD FOR REDUCING THE PRODUCTION OF WATER FROM OIL WELLS

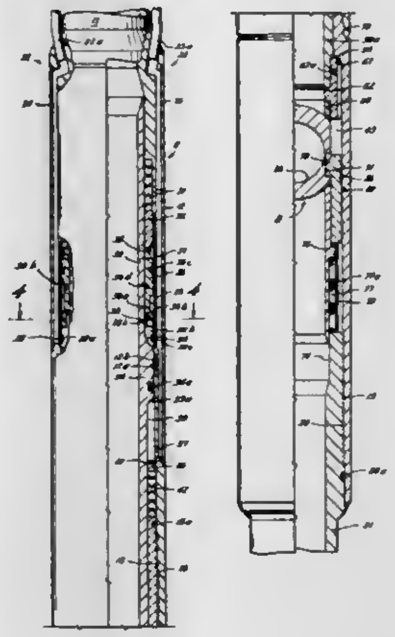
Derry D. Sparlin, and Harry A. Wahl, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed Mar. 21, 1975, Ser. No. 560,845
Int. Cl.² E21B *33/138, 43/00*
U.S. Cl. 166—295 8 Claims

1. A method for reducing the production of water from subterranean formations penetrated by a wellbore, said method consisting essentially of:
- a. mixing an oil having a viscosity from about 50 to about 10,000 cp at the pressure and temperature of said subterranean formations with a coupling agent selected from the group consisting of phenolic and furan resins and combinations thereof to produce a mixture containing from about 0.01 to about 10 weight percent coupling agent, said resins being liquid at the pressure and temperature of said subterranean formations; and,
- b. injecting said mixture into said formation in an amount sufficient to saturate said subterranean formations radially from said wellbore for a distance up to about 100 feet.

3,939,913

METHOD OF USING A SUBSURFACE SAFETY VALVE

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.
Continuation of Ser. No. 362,784, May 22, 1973, abandoned, which is a division of Ser. No. 131,710, April 6, 1971, Pat. No. 3,750,751. This application Nov. 4, 1974, Ser. No. 520,847
Int. Cl.² E21B *43/12, 43/01*
U.S. Cl. 166—314 20 Claims



1. A method of regulating flow through a well tubing with a subsurface safety valve having a controllable stopper operating independently of the pressure in the tubing comprising the step of:
- forming a pressure differential independent of well tubing pressure between first and second expansible control chambers formed by the valve when a greater pressure is selectively introduced in one of either first and second expansible chambers to control the movement of the stopper; and
- adjusting the position of the stopper in response to the pressure differential between the first and second chambers to enable flow through the well tubing when the greater pressure is selectively introduced into one of either of the first and second expansible chambers.

3,939,914

COMBINATION AIR CONDITIONING AND FIRE PROTECTION SYSTEM FOR A BUILDING

John L. Carroll, P.O. Box 42413, Portland, Oreg. 97242
Continuation-in-part of Ser. No. 307,382, Nov. 17, 1972, abandoned. This application Apr. 26, 1974, Ser. No. 464,340
Int. Cl.² A62C *35/00*
U.S. Cl. 169—16 6 Claims

1. A combination air conditioning and fire protection system for a building comprising:
- a heat exchanger through which fluid may be passed under pressure, said heat exchanger having a fluid inlet and a fluid outlet;
- fluid temperature conditioning means spaced from said heat exchanger for bringing fluid to a preselected temperature,
- fluid supply conduit means operatively connected to said conditioning means for carrying fluid under pressure from said conditioning means toward said heat exchanger,

fluid return conduit means operatively connected to said conditioning means through which fluid under pressure may be conveyed from the heat exchanger to the conditioning means,

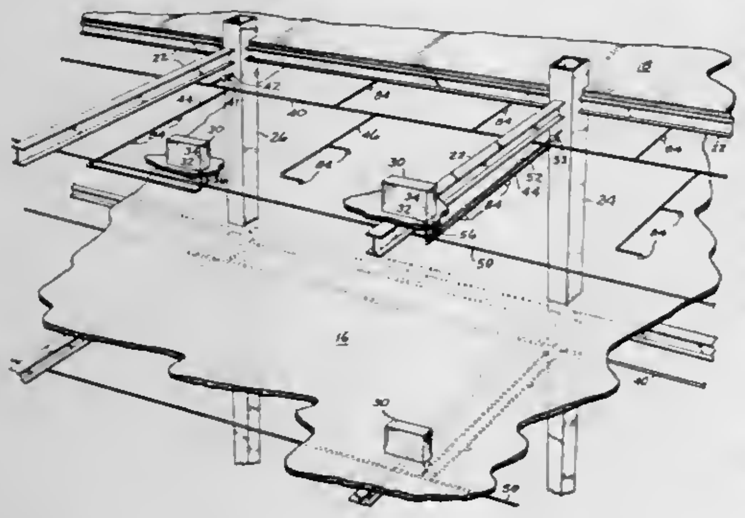
discharge means mounted on said fluid supply and return conduit means operable to discharge fluid therefrom within said building in case of fire,

first connecting conduit means operatively connecting the supply conduit means to the inlet of the heat exchanger,

second connecting conduit means operatively connecting the return conduit means to the outlet of the heat exchanger,

check valve means in said connecting conduit means permitting flow of fluid therethrough in a direction from said supply conduit toward said return conduit and inhibiting fluid flow in the opposite direction, and

flow control means operable continuously to control the rate of fluid flow from said supply conduit to said return conduit as it passes through said heat exchanger for maintaining sufficient pressure in said supply conduit means to produce proper fluid discharge from said discharge means on said supply conduit means in the event of loss of pressure in said return conduit means or connecting conduit means downstream from said flow control means.



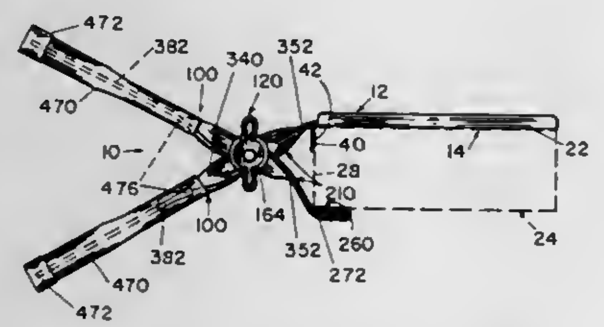
3,939,915
SAW GUIDE

James W. Wood, 8612 Templeton Drive, Omaha, Nebr. 68134

Filed Aug. 26, 1974, Ser. No. 500,384

Int. Cl.^{2} B25B *5/16*

U.S. Cl. 269—2 **10 Claims**



1. A saw guide assembly for flat-sided workpieces comprising a guide means having a rigid straight saw guiding surface, a pair of elongated lever assemblies, means pivotally connecting central portions of said lever assemblies together for rotation about an axis transverse to said straight saw guiding surface, certain portions of said lever assemblies being disposed generally on a same side of said axis when said levers are in approximate parallelism and defining rearward portions thereof respectively and serving as handles, the opposite ends of said lever assemblies each extending generally forwardly, the forward end of one of said lever assemblies being attached to said guide means, a pressing means mounted on the forward end of the other of said lever assemblies, said pressing means having pressing surface means disposed opposite said guide means, said rearward portions of said lever assemblies being grippable in the hand of an operator to force them toward each other so as to simultaneously force said pressing means toward said guide means so as to be able to grip a workpiece disposed therebetween, clamping means operably correlated with said lever assemblies for clamping said lever assemblies laterally together into fixed positions with respect to each other, a workpiece engaging positioning flange means extending from said guide means, said flange means having a forwardly facing workpiece engaging surface having forwardmost portions disposed substantially on a flange means plane arranged parallel to said axis and at a right angle to said saw guiding surface, outermost portions of said flange means forwardmost portions being spaced apart a substantial distance in a direction normal to said saw guiding surface for positioning said assembly with stability against twisting as pressure is applied onto said workpiece, said assembly being free of any impediment means disposed in a plane so closely adjacent to said saw guiding surface as to be located where a saw blade of any width would be interfered with by said impediment means.

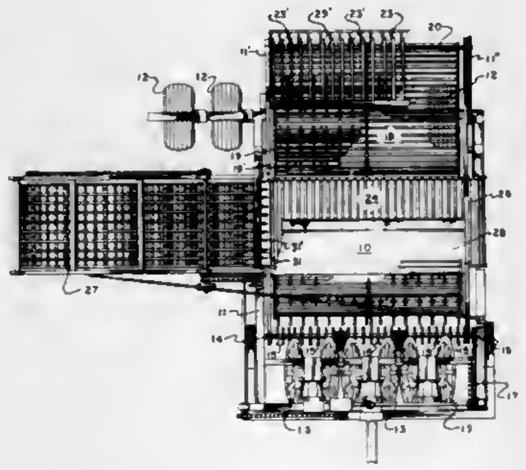
3,939,916
APPARATUS FOR CLEANING TUBEROUS PLANTS

Delwin G. Woerman, 521 W. Ash St.; David G. Johnson, P.O. Box 221, and Donald F. Murphy, 609 W. Hazel, all of Caldwell, Idaho 83605

Filed May 19, 1972, Ser. No. 254,974

Int. Cl.^{2} A01D *21/00*

U.S. Cl. 171—18 **4 Claims**



1. An apparatus for cleaning tuberous plants, comprising

a frame;

a plurality of digging wheels substantially upstandingly mounted to the lowermost side of a suitable, horizontally disposed, framing member at the forwardmost terminal end of said frame;

a disk-renk including a plurality of pentagonally shaped plates fastened on a suitable shaft journally mounted horizontally and transversely on said frame, rearwardly of said digging wheels, said shaft being driven by a suitable drive means;

a belt-renk subassembly including an elevating conveyor and a belt-renk, said elevating being mounted on suitable framing members of said frame and being operable to elevate and to move rectilinearly rearwardly plant tubers from said disk-renk, said elevating conveyor being driven by suitable drive means similar to said disk-renk, said belt-renk being disposed on a suitable framing member of said frame parallel to and substantially beneath said elevating conveyor, said belt-renk including an upwardly inclined, substantially chain conveyor-like belt being driven by suitable drive means driving said belt-renk in an upwardly inclined rearward direction, the angle of said belt-renk being disposed to suitably reduce downward gravitational travel of a tuber on said belt-renk to overcome the counteracting rearward direction of travel of said belt-renk; and

a discharging subassembly being suitable mechanically powered and being carried on said frame, said discharging subassembly having means to collect said tubers discharged from said belt-renk and means to convey said tubers to a transporting vehicle.

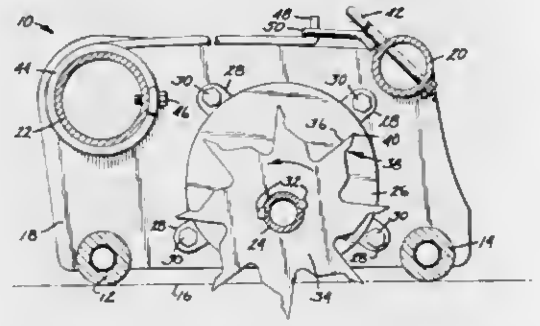
3,939,917
SPIKER BLADE

E. Smith Reed, Jr., Deephaven, and David J. Scherbring, Richfield, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed May 28, 1974, Ser. No. 473,745

Int. Cl.^{2} A01B *21/02*

U.S. Cl. 172—555 **9 Claims**



1. A spiker blade for mounting on a rotatable shaft of a turf spiker assembly to break a ground surface and facilitate penetration of air, water and nutrients through the ground surface comprising:

a. blade means having a center of rotation and a plurality of teeth spaced about the periphery thereof, each tooth having a profile defined by a leading and a trailing edge which meet to form a tooth tip, said trailing edge having two segments thereon;

b. a piercing segment leading upward from the tooth tip which, together with said entrance edge, forms a tapered profile proximate said tip; and

c. a counterdepression segment above said piercing segment and directed outward from a line between the center of rotation and the tooth tip at a faster rate than said piercing segment so that the portion of the tooth profile bounded in part by said counterdepression segment increases in thickness at a rate faster than the portion bounded in part by said piercing segment.

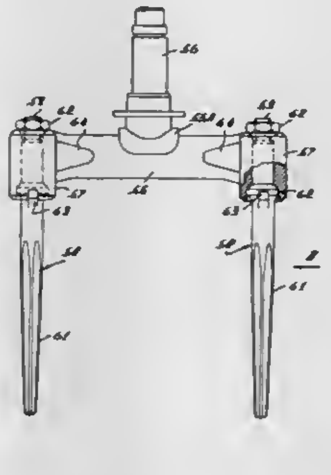
3,939,918
TINE MOUNTINGS

Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland, and Ary van der Lely, 10 Weverskade, Maasland, Netherlands Division of Ser. No. 218,667, Jan. 18, 1972, Pat. No. 3,809,166. This application Jan. 28, 1974, Ser. No. 436,892. The portion of the term of this patent subsequent to May 7, 1991, has been disclaimed.

Int. Cl.^{2} A01B *15/00*

U.S. Cl. 172—763 **6 Claims**

1. A tine for a rotary harrow, comprising an upper fastening portion and a lower soil-working portion, said fastening portion and said soil-working portion each having a longitudinal axis, the longitudinal axes of the portions being angled with respect to one another, said fastening portion comprising an upper threaded end portion adapted to receive a fastening nut, a collar having an encircling upper conical surface, an integral junction between said fastening and said soil-working portions, said collar being positioned immediately above said junction, said conical surface facing said threaded end portion, integral projection means on said tine, said projection means being located adjacent said collar and extending laterally beyond the periphery of said collar and in a direction substantially perpendicular to a plane extending through the longitudinal axis of said fastening portion.



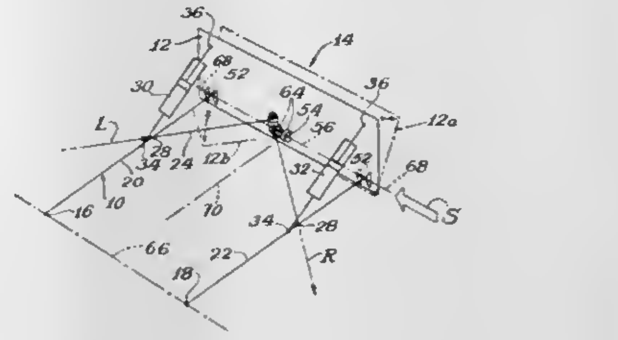
3,939,919
BULLDOZER FRAME WITH ARM STRESS EQUALIZER

Bernard L. Winker, Chicago, and John W. Gaines, Wheaton, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Dec. 5, 1974, Ser. No. 529,782

Int. Cl.^{2} E02F *3/76*

U.S. Cl. 172—803 **10 Claims**



9. In a dozer blade frame in which pusharms are provided, having mounting means of connection for mounting the blade thereon, having diagonal struts extending from the pusharm inner sides toward the blade, and having means to effect pitching of the blade on the blade mounting means about a horizontal pitch axis defined by the pusharm front ends, the improvement in stress equalization means for the pusharms, comprising:

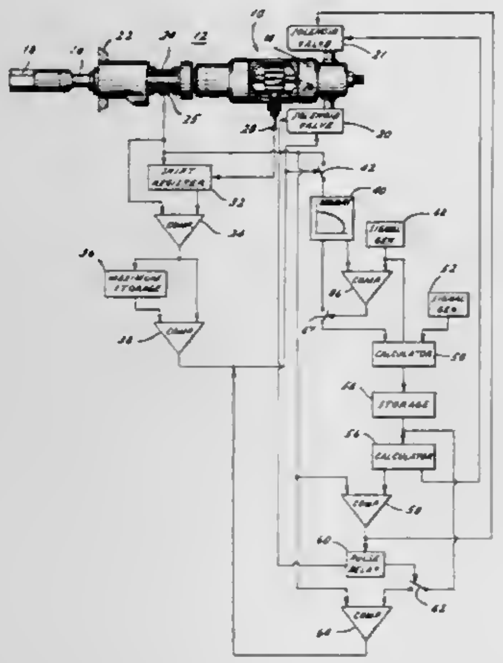
a link supporting, single swing connection on approximately the center rear of the blade essentially in coaxial alignment with said generally horizontal pitch axis; and

a generally upstanding one piece, common connecting link proper, arranged with closely adjacent portions of the connecting link proper pivotally connected to different ones of the diagonal struts at their inner end, and arranged with a downward prolongation to the upstanding link proper connected to the single swing connection for the common link.

3,939,920
TIGHTENING METHOD AND SYSTEM

Russell J. Hardiman, Sellersville, and Stanley K. Smith, Lansdale, both of Pa., assignors to Standard Pressed Steel Co., Jenkintown, Pa.

Filed Sept. 19, 1974, Ser. No. 507,429
Int. Cl.² B23Q *19/06*
U.S. Cl. 173—1 27 Claims



11. A method of tightening a fastener to a desired axial load comprising;

applying torque and imparting rotation to said fastener and tightening said fastener to its yield point;

measuring one of the input characteristics experienced by said fastener at its yield point;

determining the magnitude of a parameter related to said measured input characteristic and thereafter calculating the magnitude of said measured input characteristic required to develop said desired axial load in said fastener using said parameter; and

reapplying torque to said fastener while measuring said input characteristic and stopping the reapplication of torque when said measured input characteristic approximately equals said calculated input characteristic.

3,939,921
METHOD AND DEVICE FOR DAMPING THE MOVEMENT OF A HAMMER PISTON

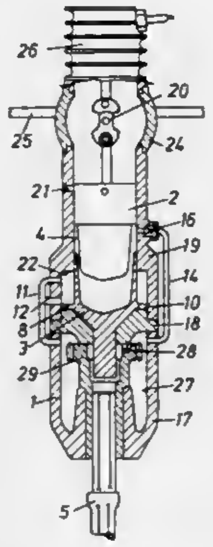
Kurt Östen Brännström, Saltsjo-Boo, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Dec. 16, 1974, Ser. No. 533,135
Claims priority, application Sweden, Dec. 31, 1973, 7317608
Int. Cl.² E21B *9/10*
U.S. Cl. 173—121 8 Claims

1. A method for damping the movement of a hammer piston (3) incorporated in a hammer mechanism, the hammer mechanism including a driving piston (2) reciprocably movable in a machine housing (1), the method comprising:

driving said hammer piston (3) towards a tool (5) by said driving piston (2) via a pressure-gas cushion formed in a working chamber (4) of said housing (1) between said driving piston (2) and said hammer piston (3), and

pneumatically damping the movement of said hammer piston (3) during the main part of the return stroke of the hammer piston (3), and pneumatically damping the movement of the hammer piston (3) when it exceeds its normal working stroke and catching the hammer piston (3) essentially without recoil at its forward end position when the tool is situated outside the operating range of the hammer piston,

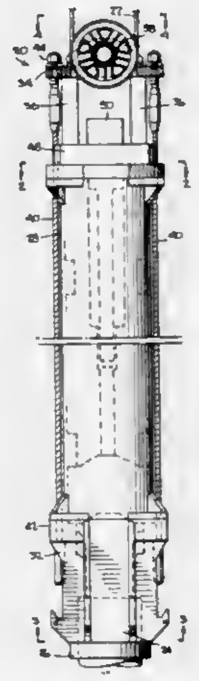


the pneumatic damping during the return stroke being greater than that applied when the hammer piston (3) exceeds its normal working stroke.

3,939,922
HYDRAULIC HAMMER ASSEMBLY

William J. Swenson, Houston, Tex., assignor to Raymond International, Inc., Houston, Tex.

Filed Nov. 13, 1974, Ser. No. 523,527
Int. Cl.² E02D *7/10*
U.S. Cl. 173—125 31 Claims

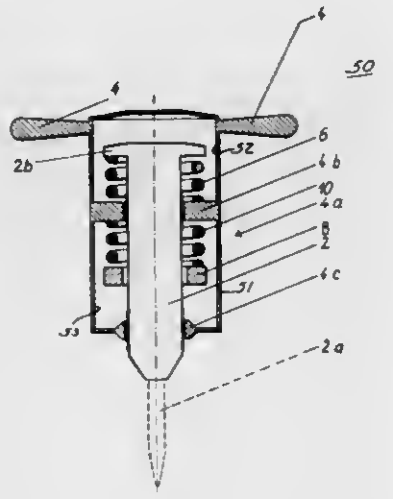


1. A hydraulic hammer assembly comprising an outer casing, a central piston secured at one end to said casing, said piston having a large cross section region between regions of intermediate cross section and small cross section, a ram reciprocally moveable along said piston, said ram including a cylinder surrounding said piston and slideable therealong, said cylinder having a central internal region which closely accommodates said large cross section region of said piston and end regions which closely accommodate respectively, said regions of intermediate and small cross section of said piston said large cross section region of said piston thereby dividing said central internal region of said cylinder into two chambers of larger and smaller working area, respectively, an anvil mounted on said casing in the path of ram movement, hydraulic supply means including accumulator means for accommodating fluid flow while maintaining a substantially uniform high hydraulic pressure, said hydraulic supply means being in fluid communication with the chamber of small working area and hydraulic switching means being alternately connectable to said hydraulic supply means and to a drain, said hydraulic switching means being in fluid communication with the chamber of larger working area.

3,939,923
POWER-DRIVEN IMPACT TOOL HAVING AN IMPACT-ESISTANT HAND GRIP ASSEMBLY

Friedrich-Wilhelm Aldag, Meerbusch; Robert Hans Scheipner, Dusseldorl, and Helmut Schluessler, Norf, all of Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed Jan. 17, 1975, Ser. No. 541,764
Claims priority, application Germany, Jan. 23, 1974, 2403074
Int. Cl.² B25D *17/24*
U.S. Cl. 173—162 4 Claims

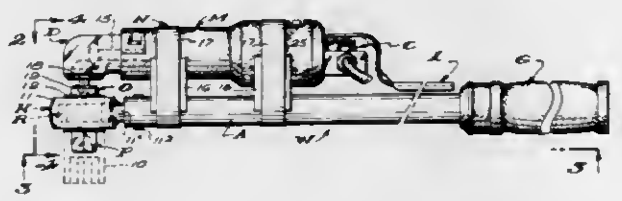


1. In a power-driven impact tool including an elongated tool drive housing having a flange at its upper end and adapted to receive at its lower end a drive member operative at a predetermined first frequency, and a hand grip assembly coupled to the tool drive housing via a first spring for axial movement with respect to the tool drive housing, the hand grip assembly having at its upper end a hand piece adapted to be grasped by a tool operator, the improvement which comprises, in combination, a second spring surrounding the tool drive housing and having one end carried by the hand grip assembly, and a weighted ring surrounding the tool drive housing and affixed to the other end of the second spring, the characteristic frequency of the subsystem defined by the second spring and the weighted ring being chosen to be equal to the first frequency, whereby the hand piece is substantially isolated from impacts and shaking movements set up by the drive member when the latter is operative.

3,939,924
POWER TORQUE WRENCH

Bosko Grabovac, Mission Viejo, Calif., assignor to Consolidated Devices, Inc., South El Monte, Calif.

Filed Nov. 29, 1974, Ser. No. 528,409
Int. Cl.² B25B *21/00*
U.S. Cl. 173—163 8 Claims

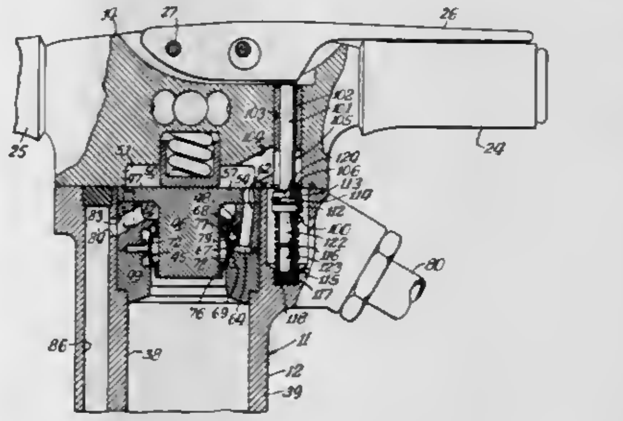


1. A torque wrench comprising an elongate lever arm with front and rear ends, a hand grip at the rear end of the arm, a ratchet head pivotally connected with and projecting forward from the front end of the arm and selectively pivotally shiftable laterally relative thereto, said head including a body, a spindle rotatably carried by the body on an axis parallel to the pivotal axis of the head and normal to the longitudinal axis of the arm, ratchet means between the body and spindle establishing driving engagement therebetween upon rotation of the arm and body in a predetermined direction about the axis of the spindle and a work engaging projection in axial alignment with and projecting from the spindle and laterally relative to the axis of the arm, said wrench including means in and related to the arm and the head responsive to the torsional forces at said projection resolved from manually applied forces on the hand grip, whereby said torsional forces applied by the wrench can be controlled and result in lateral pivotal shifting of the head relative to the arm, a drive motor fixedly carried by the arm remote from the spindle, a transmission connected with and between the motor and the spindle and manually operable control means for the motor to selectively set the motor in operation, said motor and transmission operable to selectively rotate the spindle and projection relative to the body in the direction of driving rotation afforded by said ratchet means whereby the spindle and projection are drivingly rotated without rotation of said arm, said transmission including means to afford pivotal lateral shifting of the head relative to the motor and the arm.

3,939,925
THROTTLE VALVE CONSTRUCTION FOR A PERCUSSION TOOL

Irvin R. Danielson, Burr Ridge, Ill., assignor to Thor Power Tool Company, Aurora, Ill.

Filed Jan. 21, 1974, Ser. No. 435,328
Int. Cl.² B25D *9/14*
U.S. Cl. 173—170 10 Claims



1. In a percussion tool including an elongated tool body having a cylinder therein and handle means at one end of said body for manipulating said tool, a piston mounted in said cylinder for reciprocating movement and operable to impart impact blows to a workpiece or the like mounted in one end of said body, said tool body also having passage means therein for conveying fluid under pressure to the opposite ends of said cylinder and control valve means for controlling the direction of the flow of fluid under pressure through said passage means so as to effect reciprocation of said piston in said cylinder, the improvement of throttle valve means including a throttle valve member adapted to be operatively connected to said passage means for controlling the quantity of fluid under pressure flowing therethrough, said throttle valve member having a first position preventing fluid flow through said passage means and into said cylinder to prevent operation of said tool, a second position permitting substantially unrestricted fluid flow through said passage means to permit normal operation of said tool, and a third position restricting the flow of fluid under pressure through said passage means so that the frequency of reciprocation and kinetic energy of said piston are substantially reduced, lever means mounted on said body adjacent to said handle means, said lever means being pivotal about an axis perpendicular to tool movement and operable to move said throttle valve member to said first, second and third positions, said lever means being positioned so as to hold said

throttle valve member in said second position when said lever means is fully depressed by the operator, and said lever means also being positioned so as to permit movement of said throttle valve member to and to hold the same in said third position when a pulling force is applied to said handle means by the operator, whereby the magnitude and frequency of the vibrations generated by said tool and transferred to the operator thereof, and the operating noise level of the tool, when said throttle valve member is in said third position, are substantially less than when said throttle valve member is in said second position, said throttle valve member having a constant flow area for a substantial length of movement thereof adjacent said third position.

3,939,926

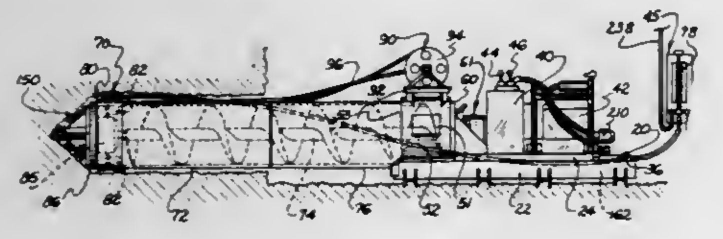
PORTABLE EARTH BORING MACHINE

Thomas W. Barnes, Franklin, and Albert R. Richmond, West Salem, both of Ohio, assignors to The Richmond Manufacturing Company, Ashland, Ohio

Continuation-in-part of Ser. No. 497,245, Aug. 14, 1974. This application Nov. 29, 1974, Ser. No. 528,460

Int. Cl.^{2} E21B *7/10*

U.S. Cl. 175—24 **8 Claims**



1. In an earth boring apparatus of the type that forms horizontal holes and pushes sections of casing into said holes, the combination of casing means comprising a lead casing section provided with a plurality of side openings; bearing means mounted in said lead casing section; a rock head mounting shaft journaled in said bearing means; a rock drilling head mounted on the forward end of said mounting shaft; a wedging means radially moveably mounted at each of said side openings and extendable outwardly therefrom; wedge driving means for said wedging means for extending and retracting said wedging means against and away from the rock surrounding said lead casing section; sensing means for progressive extension into the earth fill; gauge means for location adjacent the earth fill and connected to the sensing means, said gauge means including read-out indicia for informing the operator of grade deviations of the sensing means; and automatic control means for energizing said wedge driving means responsive to sensing of a deviation in grade by said sensing means.

3,939,927

COMBINED GRAVEL PACKING AND PERFORATING METHOD AND APPARATUS FOR USE IN WELL BORES

Floyd O. Bohn, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 4, 1974, Ser. No. 520,585

Int. Cl.^{2} E21B *43/11*

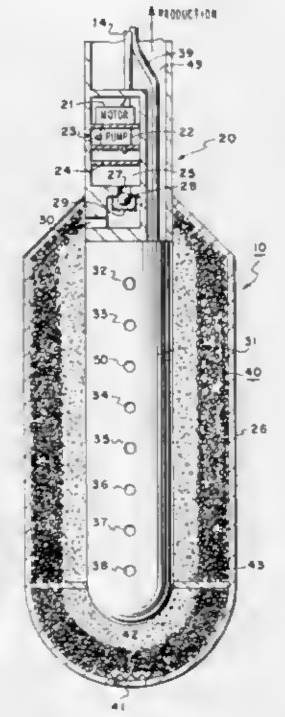
U.S. Cl. 175—4.52 **4 Claims**

1. An apparatus for perforating casing in an earth borehole, comprising:

an elongated instrument adapted to traverse said borehole;

a perforating section carried by, and being a portion of, said instrument, said perforating section having at least one perforating element therein; and

an enclosure having a gravel pack medium therein carried by said instrument and positioned in the line of fire of said at least one perforating element, whereby the activation of said at least one perforating element causes at least a portion of said perforating element to perforate said gravel pack medium prior to perforating said casing.



3,939,928

WEIGHING METHOD AND APPARATUS

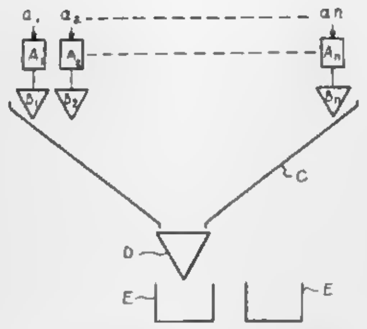
Katsuhiko Murakami, Kyoto; Tetsuo Ikeda, Otsu; Zenjiro Miebori, Muko; Kunio Noguchi, Otsu, and Kaoru Nakanishi, Shiga, all of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusyo, Kyoto, Japan

Continuation-in-part of Ser. No. 387,314, Aug. 10, 1973, abandoned. This application Oct. 1, 1974, Ser. No. 511,012

Claims priority, application Japan, Aug. 12, 1972, 47-81047

Int. Cl.^{2} G01G *19/04*; **B07C** *5/16*

U.S. Cl. 177—25 **1 Claim**



1. Apparatus for making up a predetermined weight of objects from a plurality of objects comprising a plurality of weighing machines including means for feeding objects into said weighing machines, a common chute associated with said weighing machines for receiving articles discharged therefrom and a single pool hopper for collecting the objects from said common chute, an addition code selected circuit associated with said weighing machines for determining the combinations of actually measured values provided by said plurality of weighing machines and to calculate the combinations thereof, a first adder for selectively adding together a plurality of actually measured values in accordance with a command given by said addition code selecting circuit and thereby providing an output corresponding to the absolute value of the difference from the predetermined weight, a second adder for adding together the actually measured values including the one of the preceding combinations which most approximates that of the predetermined weight and thereby providing an output value corresponding to the absolute value of the difference from the predetermined weight, a comparator for comparing the outputs from said first and second adders, an addition code memory circuit for memorizing the combination code present in the first adder only when the output from the first adder is smaller than the output from the second adder, and a code reading circuit for reading the combination code memorized in the addition code memory circuit to release the weighing hoppers of the weighing machines corresponding to said codes in question.

3,939,929

APPARATUS FOR REGULATING SUPPLY QUANTITY OF TEXTILE FIBERS TO A WEIGHING DEVICE

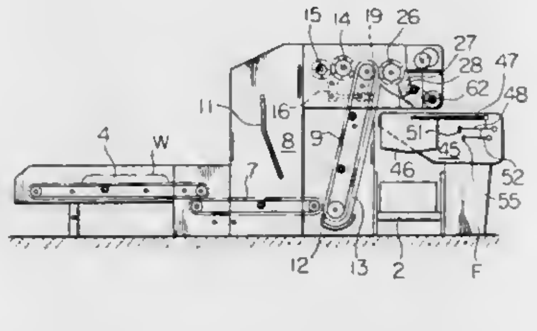
Hideo Hidaka, Aichi, and Setsuo Yamamoto, Obu, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation-in-part of Ser. No. 466,723, May 3, 1974, abandoned. This application Feb. 21, 1975, Ser. No. 551,655

Claims priority, application Japan, May 9, 1973, 48-51382; May 9, 1973, 48-51383

Int. Cl.^{2} G01G *13/04*

U.S. Cl. 177—121 **10 Claims**



1. In a spinning machine comprising a hopper for receiving textile fiber material and a weighing device for supplying a predetermined quantity of opened fiber tufts to a subsequent process by intermittently repeated unit operations, a lifting apron for carrying fiber tufts supplied into said hopper towards an upper portion of said spinning machine and an evener cylinder for preventing possible supply of fiber tufts having excess size to said weighing device and a doffer for stripping fiber tufts carried to a top portion of said lifting apron towards said weighing device, a feed chute disposed above said weighing device, a shutter disposed at a bottom aperture of said feed chute capable of closing said bottom aperture, said evener cylinder disposed at a position adjacent to a top portion of said lifting apron, a driving means for driving said lifting apron, said weighing device provided with a weigh-pan, an apparatus for regulating a supply quantity of fiber tufts to said weigh-pan in each unit supply operation, comprising in combination, means for selectively reducing a gauge between said lifting apron and said evener cylinder, a first device for actuating said gauge reducing means at a time of shortly before the completion of said unit supply operation, a second device for substantially opening said weigh-pan and closing said shutter when a predetermined final quantity of fiber tufts are accumulated in said weigh-pan during said unit supply operation.

3,939,930

VEHICLE TRACK RETENTION DEVICE

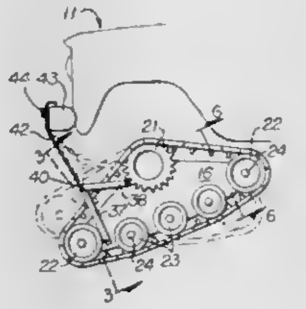
Harold S. Firstenberg, 131 Townsend St., San Francisco, Calif. 94101

Continuation-in-part of Ser. No. 372,220, June 21, 1973, Pat. No. 3,860,080. This application Sept. 3, 1974, Ser. No. 502,519

Int. Cl.^{2} B62D *55/04*

U.S. Cl. 180—5 A **13 Claims**

1. For use with a vehicle track drive member suitable for attachment to a vehicle wheel drive wall to replace the vehicle wheel and wherein is provided a frame having a normally substantially horizontal bottom, a drive sprocket, idlers and bogie wheels rotatably mounted in said frame and an endless track extending around said sprocket, idlers and bogie wheels, said track having a plurality of sections pivotally connected together, each said section having on either side thereof a lug which protrudes inward on either side of said frame, the improvement which comprises an inverted channel extending longitudinally and having a web, means rigidly connecting said web flush with the underside of said bottom, and flanges on the underside of said web, said flanges disposed immediately inward of the path of travel of said lugs as said track is driven by said sprocket and holding said track sections spaced below said bottom.



3,939,931

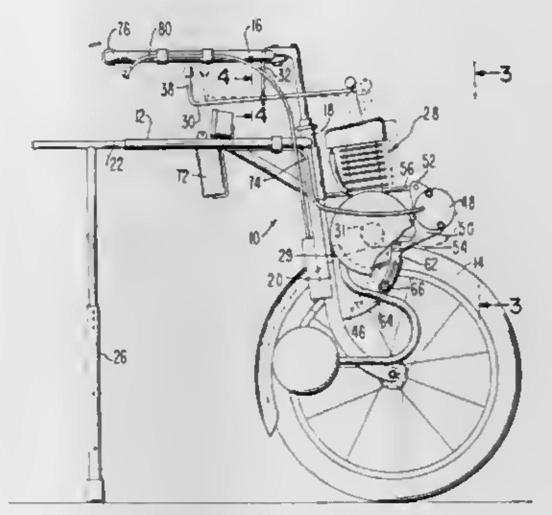
ELECTRIC STARTER DRIVE FOR MOTOR ENGAGING VEHICLE DRIVE WHEEL

William G. Benz, San Jose, Calif., assignor to Benz Vehicle Corporation, San Jose, Calif.

Filed Aug. 5, 1974, Ser. No. 494,665

Int. Cl.^{2} B60K *17/30*

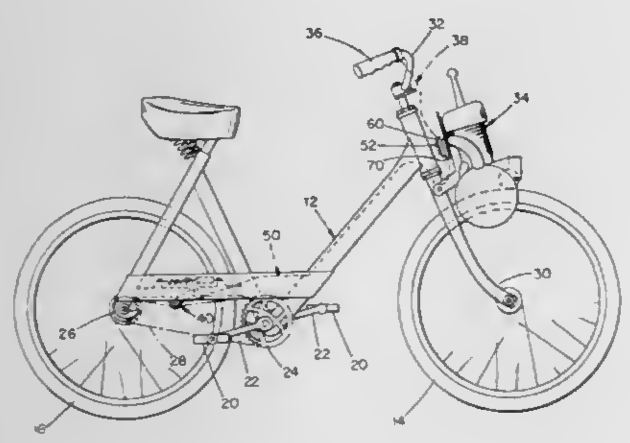
U.S. Cl. 180—13 **10 Claims**



1. An electric starter unit for an engine having a drive shaft and mounted for driving a wheel of a vehicle, comprising a frame for rotatably mounting the driven wheel, a pulley mounted on the drive shaft, means for pivotably mounting the engine on the frame so that the drive shaft is selectively engageable with the driven wheel, electric starter means including a starter motor having a drive shaft, a belt connecting the starter motor drive shaft and the pulley, means for pivotably attaching one portion of the starter motor to the engine and another portion of the starter motor to the frame so that the starter motor drive shaft is movable from a first position relatively close to the engine pulley when the engine is engaged with the driven wheel and a second position further away from the engine pulley, thereby pulling the belt taut, when the engine is disengaged from the driven wheel.

3,939,932
EXERCISE APPARATUS

Henri E. Rosen, 67 Long Wharf, Boston, Mass. 02110
Filed July 22, 1974, Ser. No. 490,588
Int. Cl.^{2} B62K *11/00*
U.S. Cl. 180—33 C **12 Claims**

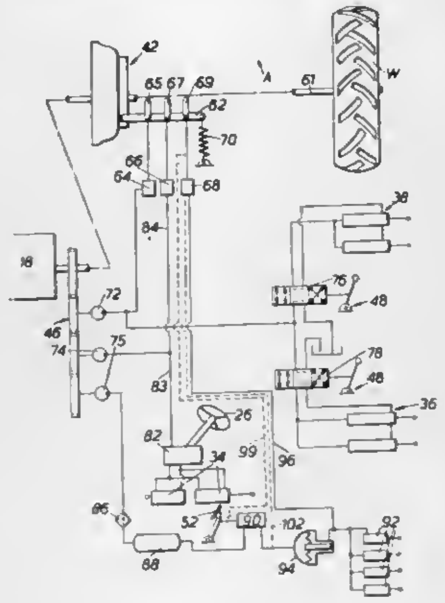


1. A vehicle having at least one traction wheel and foot peddling exercise means connectable to said wheel comprising:
   - motor operated power means providing motive power for said vehicle;
   - control means for variably controlling the effective motive power output of said motor operated power means to drive said vehicle at variable speed;
   - said foot pedalling exercise means including a pair of pedals operable by the application of pumping force thereto by the vehicle operator;
   - drive means for connecting said exercise means said traction wheel to apply as motive power thereto independently of said motor operated power means, the pumping force exerted by the operator on said exercise means;
   - force sensing means for sensing the pumping force applied by the operator to said pedals independently of the pumping speed thereof; and
   - connecting means for connecting said force sensing means to actuate said control means to vary the effective motive power output from said motor operated power means responsive to varying operator pumping force applied to said pedals for driving said vehicle at varying speed while said exercise means and said traction wheel are connected by said drive means.

3,939,933
TRANSMISSION CONTROL SYSTEM

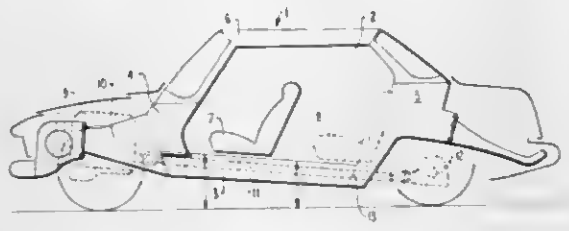
Anthony Clubley Armstrong, Abergavenny, Wales, assignor to Massey-Ferguson-Perkins Limited, London, England
Filed Mar. 22, 1973, Ser. No. 343,808
Claims priority, application United Kingdom, Mar. 22, 1972, 013447/72
Int. Cl.^{2} F16D *33/04*
U.S. Cl. 180—53 R **11 Claims**

1. In a vehicle having an engine, a tractive drive with at least one wheel, a selectively variable torque converter driven by said engine, said torque converter being connected to said driven wheel or wheels said torque converter having a control element for varying the torque of the converter, at least one auxiliary service including a pump directly driven by said engine, the improvement comprising a control system having an actuator operatively connected to and operable on the control element, and a conduit interconnecting said auxiliary service and actuator to position the control element with said actuator upon said conduit transmitting a signal from said auxiliary service to said actuator and thereby proportion the power from the engine between the tractive drive and said auxiliary service.



3,939,934
LONGITUDINAL BEARER ARRANGEMENT IN VEHICLES

Béla Barényi, Maichingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany
Continuation-in-part of Ser. No. 190,746, Oct. 20, 1971, abandoned. This application Mar. 27, 1974, Ser. No. 455,405
Claims priority, application Germany, Oct. 22, 1970, 2051773
Int. Cl.^{2} B62D *21/00*
U.S. Cl. 180—54 R **19 Claims**

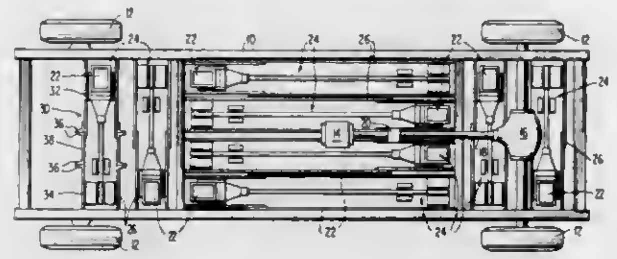


1. A framework arrangement for vehicles comprising at least two parallel transversely spaced longitudinal bearer members extending only between the areas of the front and rear wheels at each side of a vehicle, said at least two longitudinal bearer members rising from the horizontal upwardly from the area of the rear wheels to the area of the front wheels, forward and rearward cross frame means for connecting said at least two longitudinal bearer members, and at least one vehicle floor connected to said at least two longitudinal bearer members and having the inclination of the longitudinal bearer members.

3,939,935
ELECTRIC POWER MEANS FOR VEHICLES

Walter L. Gill, 225 S. Buena Vista, Redlands, Calif. 92373
Filed May 17, 1974, Ser. No. 471,125
Int. Cl.^{2} B60L *11/18*
U.S. Cl. 180—65 R **10 Claims**

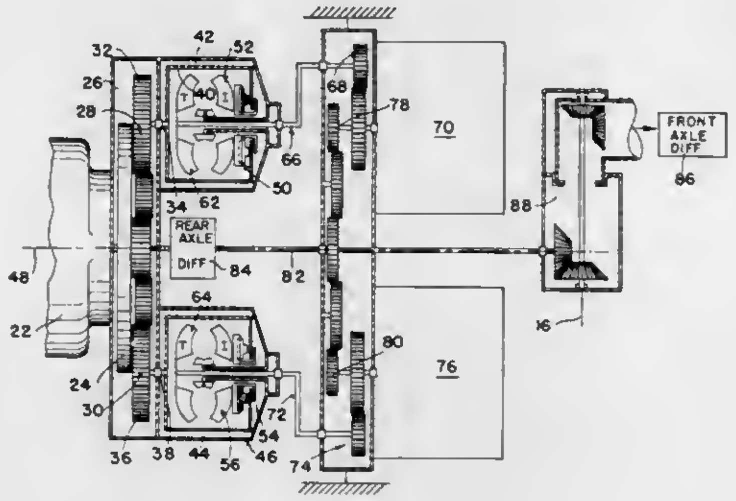
1. A vehicle having a frame supporting an electric system and battery means for operating said system, comprising two relatively reciprocatory parts on said frame means supporting one said part from the other said part for reciprocatory movement in accordance with variations in the supporting medium, at least one of said parts being reciprocatory relative to the vehicle frame, means connected between such parts for converting such reciprocal movement into rotary mechanical power, power reserve means receiving and storing said rotary mechanical power, and current generating means for recharging said battery and driven by said power reserve means, said



battery means comprising a plurality of batteries and said one part comprising means individually supporting said batteries in spaced relation for reciprocal movement relative to the vehicle frame.

3,939,936
DUAL CONVERTER TRANSMISSION ARRANGEMENT

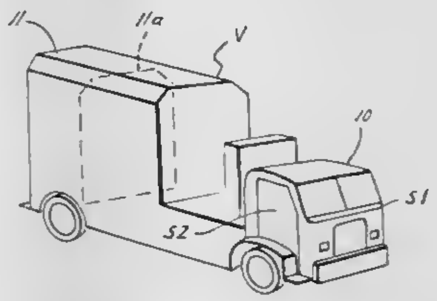
David S. Vinton, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed May 17, 1974, Ser. No. 470,845
Int. Cl.^{2} B60K *17/06, 17/34*
U.S. Cl. 180—70 R **1 Claim**



1. In combination with a vehicle including forward and rearward means rotatable to drive said vehicle, and a motor including rotary output means;
   - a first output gear train drivingly connected with said rotary output means;
   - a first output shaft rotated by the output gear of said first output gear train;
   - a second output gear train drivingly connected with said rotary output means;
   - a second output shaft rotated by the output gear of said second output gear train;
   - each output gear being independently driven through a respective one of said output gear trains to in turn drive a respective output shaft;
   - a first torque converter connected to said first output shaft to be driven thereby;
   - a second torque converter connected to said second output shaft to be driven thereby;
   - a third shaft rotatably supported relative to said vehicle and connected to the forward and rearward means, so that rotation of said third shaft rotates said forward and rearward means to drive said vehicle;
   - a first multi-speed transmission drivingly connecting said third shaft and first torque converter;
   - a second multi-speed transmission drivingly connecting said third shaft and second torque converter, so that said third shaft is driven through both said first and second torque converters by the rotary output means;
   - the first and second torque converters being spaced laterally of each other relative to the forward-rearward axis of the vehicle on either side of the centerline of the vehicle;
   - the first and second transmissions being spaced laterally of each other relative to the forward-rearward axis of the vehicle on either side of the centerline of the vehicle.

3,939,937
SAFETY APPARATUS FOR SERVICE VEHICLE

James W. Moberg, San Jose, Calif., assignor to Browning-Ferris Industries, Inc.
Filed Nov. 1, 1974, Ser. No. 519,840
Int. Cl. B60k *41/24*
U.S. Cl. 180—77 D **7 Claims**



1. Apparatus for operating a service vehicle making frequent starts and stops having a primary engine, an automatic transmission and first and second drive stations, wherein said automatic transmission has a gearshift lever at said first station, and wherein said gearshift lever is maintained in a drive position under such conditions, comprising:
   - brake-set means mounted at said second drive station for actuating the brakes of said vehicle;
   - safety means mounted at said second drive station in operative connection with said automatic transmission for neutralizing said automatic transmission with said gearshift lever in said drive position substantially simultaneously with said brake-set means actuating the brakes of said vehicle;
   - pump means operably connected to the primary engine for providing hydraulic power to a power take-off unit substantially simultaneously with the actuation of said brakes; and
   - throttle control means for adjusting the throttle of said internal combustion engine substantially simultaneously with the actuation of said brakes.

3,939,938
AUTOMOTIVE STEERING SYSTEM

Naohiko Inoue, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Mar. 4, 1974, Ser. No. 447,740
Claims priority, application Japan, Mar. 5, 1973, 48-25793; Mar. 20, 1973, 48-31388
Int. Cl.^{2} B62D *5/08*
U.S. Cl. 180—79.2 R **11 Claims**

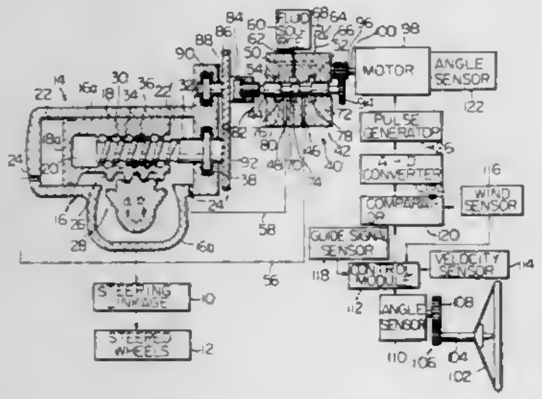
1. An automotive power-assisted steering system comprising:
   - a steering wheel;
   - a steering shaft carrying the steering wheel and a steering linkage drivingly connected to steered road wheels;
   - a hydromechanical leverage unit mechanically connected to the steering linkage and movable between a right-turn positional range to drive the steering linkage into a condition effecting right-turn of the steered road wheels and a left-turn positional range to drive the steering linkage into a condition effecting left-turn of the steered road wheels;
   - a rotary piston-valve rotatable about a longitudinal axis thereof and longitudinally movable between first and second positional ranges across an equilibrium position depending upon its rotational position about said axis, the

rotary piston-valve being hydraulically connected to said leverage unit for moving the leverage unit into the right-turn or left-turn positional range when moved to the first or second positional range, respectively, thereof or holding the leverage unit in a locked condition when moved to said equilibrium position;

a valve re-set mechanism operatively connected between the leverage unit and the rotary piston-valve and operative to be driven by the leverage unit for longitudinally moving the rotary piston-valve from the first or second positional range back to the equilibrium when the leverage unit is moved by the piston-valve to the right-turn or left-turn positional range, respectively, thereof;

a drive source having an output shaft drivingly connected to the rotary-valve for driving the piston-valve about said axis when actuated; and

an electric control circuit including means responsive to turning of the steering wheel for producing a first signal related to the angle and direction of turning of the steering wheel, means responsive to the velocity of the vehicle for producing a second signal related to the velocity of the vehicle, means responsive to an external force imparted sideways to the vehicle for producing a third signal related to the intensity of the force, a control module receiving the first second and third signals from the means for thereby producing an output signal representative of a desired angle of steering, means for producing a fourth signal representative of the rotational position of the output shaft of the said drive source, a comparator operative to compare the output signal from said control module with the fourth signal for producing an output signal representative of a difference between the two signals which are introduced thereto, an analog-to-digital converter for converting the output signal from the comparator into a pulsating signal, and a drive pulse generator for supplying to said drive source a pulsating current in accordance with the pulsating signal from the analog-to-digital converter, whereby the drive source is actuated to have its output shaft rotated in a direction and through an angle dictated by the pulsating current from the pulse generator.



3,939,939
TRANSMISSION LOCKING DEVICE

Nobuo Okazaki, Chigasaki, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

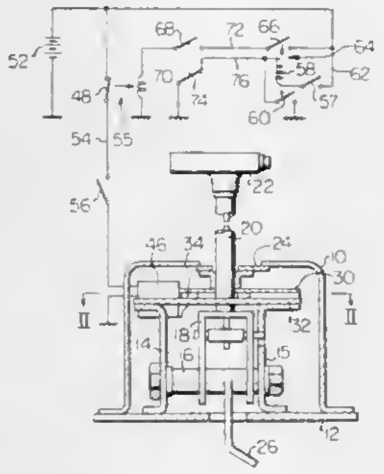
Filed Sept. 18, 1974, Ser. No. 507,121

Claims priority, application Japan, Sept. 20, 1973, 48-109343[U]

Int. Cl. B60r *21/10*

U.S. Cl. 180—82 C **3 Claims**

1. A locking device for preventing an automatic transmission of a motor vehicle from being shifted to a driving gear when a vehicle occupant fails to carry out precautionary safety steps to protect the occupant, comprising a selector lever movable to control setting of said automatic transmission, a locking member movable from a rest position to a locking position for directly locking said selector lever in a neutral position, electric means for, when actuated, moving the locking member from the rest position to the locking position, and sensing means for actuating the electric means when the sensing means sense that the occupant fails to carry out the precautionary safety steps, in which the locking member comprises a locking plate having a recess engageable with the selector lever which is positioned in the neutral position for locking the selector lever when in the locking position and biasing means urging the locking plate to hold the same in the rest position when the occupant carries out the precautionary safety steps and the electric means comprises a solenoid the coil of which when energized urges the core and the locking plate from the rest position to the locking position against the force of the biasing means when the occupant fails to carry out the precautionary safety steps, and in which the locking member further comprises two guide plates which are fixedly disposed opposite to each other and between which said locking plate is slidably interposed, each of the two guide plates having formed therein an elongate aperture through which said selector lever passes and in which the same is swingable.



3,939,940
INTERLOCKING DEVICE FOR A MANUAL POWER TRANSMISSION SYSTEM

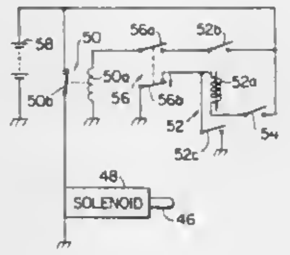
Yukiyoshi Sasabe, and Kunihiko Suzuki, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sept. 20, 1974, Ser. No. 507,880

Claims priority, application Japan, Nov. 5, 1973, 48-127134[U]

Int. Cl. B60r *21/10*

U.S. Cl. 180—82 C **4 Claims**



1. In an automotive manually operated power transmission having a gear-shift mechanism including a rotatable guide member for a striking rod, an interlocking device for interlocking the gear-shift mechanism responsive to incompletion of prescribed manipulative procedure taken by a vehicle occupant, comprising a first movable member which is movable with a movable member forming part of said gear-shift mechanism, a second movable member having a first position disengaged from said first movable member and a second position in interlocking engagement with the first movable member, electromagnetically operated actuating means having an operative condition to actuate said second movable member into said second position thereof, an electric control circuit responsive to completion of said prescribed manipulative procedure taken by the vehicle occupant and in which said first movable member is in engagement with said rotatable guide member.

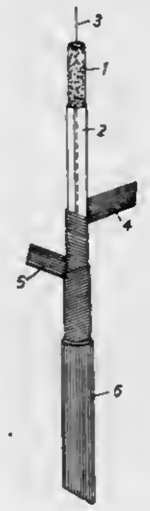
3,939,941
FUSE CORD

Daniel Steele, Stevenston, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 28, 1972, Ser. No. 229,810

Int. Cl.² C01V *1/10*

U.S. Cl. 181—116 **8 Claims**



1. A method of seismic prospecting wherein a detonating fuse-cord comprising an explosive core and an outer layer of elastomeric material formed with longitudinal external ribs is fed in a continuous manner through an advancing tubular conduit to lie in a position substantially parallel to the upper ground layer of a prospect area, the fuse-cord is detonated and the resulting seismic waves are recorded after reflection or refraction from subterranean rock layer interfaces, said longitudinal external ribs enabling said fuse-cord to pass through the advancing tubular conduit with less drag and greater abrasion resistance than a plain fuse-cord without the external ribs.

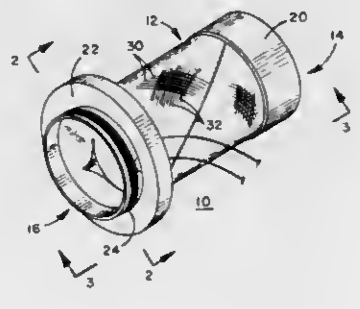
3,939,942
ELECTROACOUSTIC TRANSDUCERS

David E. Gore, 900 N. Broadway, Suite 725, Santa Ana, Calif. 92701

Filed Apr. 22, 1974, Ser. No. 462,608

Int. Cl.² G10K *13/00;* **H04R** *7/00*

U.S. Cl. 181—157 **15 Claims**



1. A wave transmission line comprising a cylindrical having a radially pulsating thin surface; and a mechanical driving force directed on a circumference of the cylinder in an axial direction to deform the surface of the cylinder.

3,939,943
LUBRICATION OF PISTON OPERATED DRILL WITH CENTRAL FLUSHING TUBE

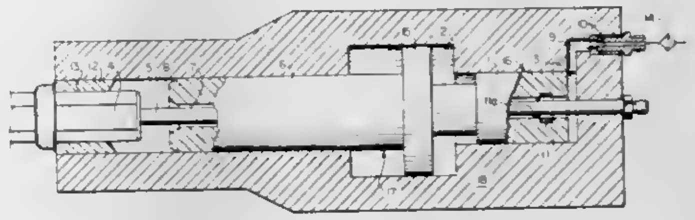
Pekka Salmi, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland

Filed Apr. 18, 1975, Ser. No. 569,532

Claims priority, application Finland, Apr. 25, 1974, 1269/74

Int. Cl.² F16N *25/02*

U.S. Cl. 184—6.14 **2 Claims**



1. A drill means, which comprises:

body means having an axial, generally cylindrical, interior space, said body means having an inlet means;

first cylindrical piston means axially slidable between a first position and a second position within said cylindrical space, the outer surface of said first piston means being in sliding contact with an inner surface of said body means,

said first piston means having an axially disposed extension, said extension being a second piston means axially slidable with said first piston means;

said first piston means and said second piston means surrounding an axial flushing tube means, said flushing tube means and said first and second piston means defining a first annular oiling space;

said flushing tube means, said first piston means and said body means defining a second annular oiling space, said flushing tube means, said second piston means and said body means defining an annular pumping space; and

a source of lubricating fluid connected to said inlet means;

first one-way valve means communicating with said inlet means for preventing said source of lubricating fluid from communicating with said pumping space as said first piston means is moving towards said second slidable position and for permitting said source to communicate with said pumping space as said first piston means is moving towards said first slidable position; and

second one-way valve means communicating with said first annular oiling space for preventing said second annular oiling space from communicating with said pumping space as said first piston means is moving toward said first slidable position and for permitting said pumping space to communicate with said second annular oiling space as said first piston means is moving toward said second slidable position.

3,939,944

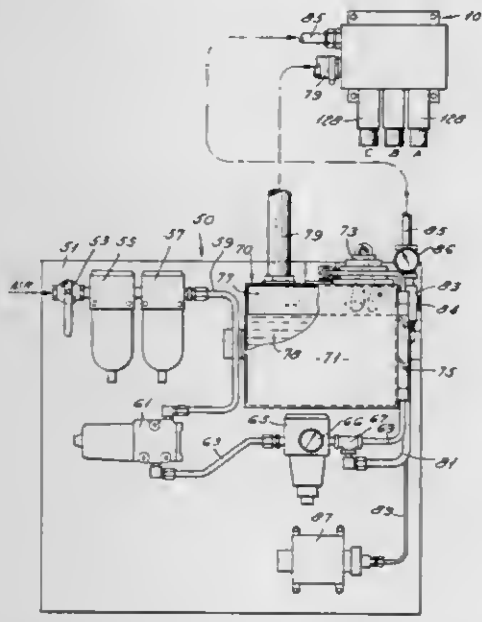
OIL-MIST LUBRICATION SYSTEM

William A. Mitchell, and Charles V. Thayer, both of Springfield, Vt., assignors to Bryant Grinder Corporation, Springfield, Vt.

Filed July 24, 1974, Ser. No. 491,572

Int. Cl.² F01M *1/16*

U.S. Cl. 184—6.26 **3 Claims**



1. An oil-mist lubrication system for bearings on a machine, comprising:

- a an oil mist generating means;
  - b. a blender-distributor unit, said unit comprises:
  - 1. a body having an air chamber and an oil-mist chamber;
  - 2. at least one blending nozzle means connecting with said air chamber;
  - 3. an oil-mist delivery means for each blending nozzle means connected with said oil-mist chamber and each mounted coaxially with a respective one of said blending nozzle means, each said oil-mist delivery means comprises a tube extending from said oil-mist chamber into the larger diameter of its associated said blending nozzle means providing a blending area for producing lower density oil-mist;
- c. an air supply means, said air supply means comprises:
  - 1. means to adjustably control main air supply means, said main air supply means being connected to said oil mist generating means to produce an adjustably controlled high density oil mist;
  - 2. means to control bypass air supply means, said bypass air supply means being connected to said air chamber of said blender-distributor unit to produce an adjustably controlled air supply to said air chamber;
- d. means for distributing said adjustably controlled high density oil-mist to said oil-mist chamber of said blender-distributor unit; and
- e. means for distributing said lower density oil-mist from said blending area to selected areas of said machine, whereby said lower density oil-mist is reclassified on bearings of a machine as its exits through the orifice of a nozzle

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3,939,945

CLOSED-LOOP TYPE DISC BRAKE

Gordon Alfred Habgood, Shipston-on-Stour, England, assignor to Girling Limited, Birmingham, England

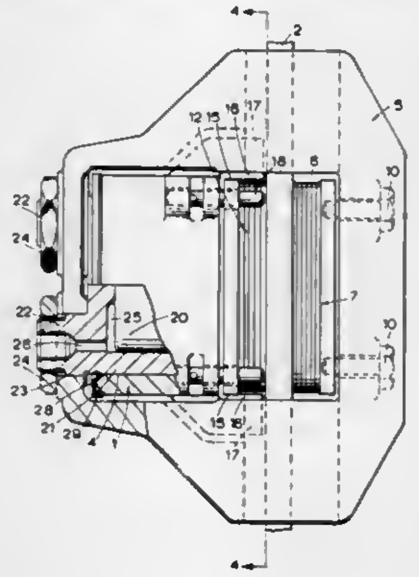
Filed July 22, 1974, Ser. No. 490,662

Claims priority, application United Kingdom, July 24, 1973, 35205/73

Int. Cl.² F16D *55/228*

U.S. Cl. 188—73.4 **7 Claims**

1. An hydraulically-operated disc brake for a vehicle comprising a rotatable disc, friction pad assemblies for engagement with opposite faces of said disc, an hydraulic actuator for applying said friction pad assemblies to said disc located on one side of said disc, said hydraulic actuator comprising a stationary housing incorporating spaced arms projecting towards said disc, and first and second oppositely acting pistons movable relative to said housing, said second piston being of an axial length substantially equal to that of said housing, a yoke straddling a portion of the periphery of said disc and fitting loosely over said housing and said arms, said yoke being movable with respect to said housing in a direction parallel with the axis of said disc, one of said friction pad assemblies hereinafter referred to as "a directly actuated friction pad assembly" being applied directly to said disc by said first piston and the other friction pad assembly hereinafter referred to as "an indirectly actuated friction pad assembly" being applied to said disc by said second piston which acts on said indirectly actuated friction pad assembly through said yoke, a rigid connection between said yoke and said second piston constructed and arranged so that the drag on said indirectly actuated friction pad assembly is transmitted to said housing only through said second piston, flexible sealing boots connected between said housing and each piston, and said directly actuated friction pad assembly being guided for movement with respect to said disc between said arms which take the drag on said directly actuated friction pad when the brake is applied so that the drag on said indirectly actuated pad assembly is taken by said housing through said second piston independently of said arms.



3,939,946

ASSEMBLY COMPRISING A WHEEL AND A DISC BRAKE DISC, IN PARTICULAR FOR A RAILWAY VEHICLE

Jacques Pierre, Belleville, and Pierre Simon, Pont-a-Mousson, both of France, assignors to Pont-A-Mousson S.A., Nancy, France

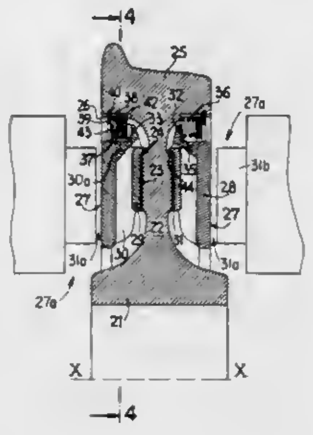
Filed Oct. 10, 1974, Ser. No. 513,786

Claims priority, application France, Oct. 15, 1973, 73.36659; Sept. 25, 1974, 74.32309

Int. Cl.² F16D *65/12*

U.S. Cl. 188—218 XL **26 Claims**

1. An assembly comprising a wheel having a radially-extending web and an annular substantially axially-extending surface, a disc brake comprising a brake pad structure movable axially of the wheel and defining a brake pad surface, a disc structure which is coaxial with the wheel and defines a braking first surface for cooperation with the brake pad surface and defines a radially-extending friction second surface axially opposed to said first surface, the web structure defining a radially-extending third surface adjacent to said second surface for frictional engagement with said second surface upon application of the brake pad structure against the disc structure for braking, and a device centering the disc structure on the substantially axially extending surface of the wheel, one of said second and third surfaces having a coefficient of friction on the other of said second and third surfaces which exceeds the coefficient of friction of said first surface on the brake pad surface.



3,939,947

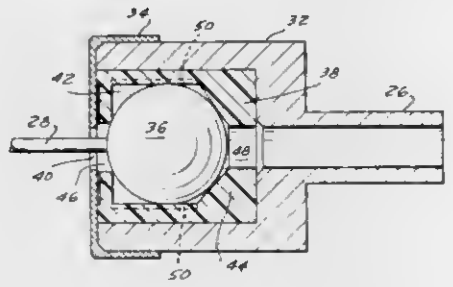
DASHPOT FOR EITHER PUSH OR PULL DAMPING

Arthur M. Cohen, deceased, late of Westport, Conn. (by Ruth S. Cohen); Irving Evall, Freeport, and Leonard Zalkin, executors, Woodmere, both of Conn., assignors to Airpot Corporation, Norwalk, Conn.

Filed Aug. 19, 1974, Ser. No. 498,585

Int. Cl.² F16F *9/34*

U.S. Cl. 188—282 **23 Claims**



1. In a dashpot comprising a cylinder, a piston sealingly slidable in said cylinder, a piston rod operatively connected to said piston for moving the latter and fluid flow means extending through said piston; the improvement which comprises a first valve member operatively connected to said piston rod for movement therewith, and a reversible second valve member within which said first valve member is received, said second valve member being associated with said first valve member in either a first or a second orientation relative thereto, said second valve member being mounted on said piston and having a fluid passage therethrough defining a part of said fluid flow means, and said first and second valve members having parts operative when force is applied to said piston rod in one axial direction or the other to close or open said fluid passage respectively, one orientation of said second valve member relative to said first valve member closing said fluid passage when said piston rod is urged in one axial direction and the other orientation of said second valve member relative to said first valve member closing said fluid passage when said piston rod is urged in the other axial direction.

3,939,948

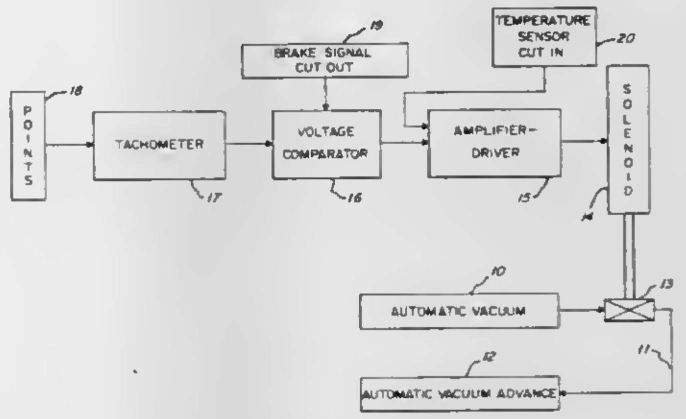
BRAKE CONTROLLED IGNITION RETARDER

Thomas A. Kalogerson, Bloomington, Minn., and Joseph E. Dandois, Montoursville, Pa., assignors to Optimizer Control Corporation, Minneapolis, Minn.

Division of Ser. No. 231,766, March 3, 1972, Pat. No. 3,871,341, which is a continuation of Ser. No. 100,081, Dec. 21, 1970. This application Jan. 16, 1975, Ser. No. 541,592

Int. Cl.² B60K *29/02*

U.S. Cl. 192—3 R **10 Claims**



1. An ignition retarding device for an automotive vehicle having an internal combustion engine for propelling the vehicel and brakes for stopping the vehicle, in which the internal combustion engine has temperature sensing means controlled thereby for indicating when the temperature of the engine is excessively high, an ignition distributor adjustable to vary the ignition timing, means including a fluid motor for adjusting the ignition timing, and means including a connection between said fluid motor and the intake manifold of the engine for normally causing said motor to adjust the distributor to advance the timing as the vacuum in said intake manifold increases; and in which the brakes are controlled by a brake control having a switching device which is actuated to indicate the actuation of the brakes when the brake control is so operated; said ignition retarding device comprising:

- a control device for insertion into the connection between the motor and the intake manifold of the engine to prevent advance of the timing from an increase in the vacuum in the intake manifold;
- control means for said control device and designed for connection to the brake control switching device and effective when so connected and when said brake control is operated to actuate the brakes to cause said control device to prevent advance of the timing from the intake manifold vacuum;
- and means connected to said control means and designed for connection to the temperature sensing means and effective when so connected and when the temperature of the engine is excessively high to prevent said control device from preventing advance of the timing from the intake manifold vacuum.

3,939,949

HYDRAULIC SYSTEM FOR BRAKING TRUCK ENGINES

John D. Hale; Frank L. Hale, both of P.O. Box 11, Swisshome, Oreg. 97480, and Samuel J. Hale, Jr., Star Rte., Box 33, Chesire, Oreg. 97419

Filed Jan. 24, 1975, Ser. No. 543,802

Int. Cl.² F16D *57/02*

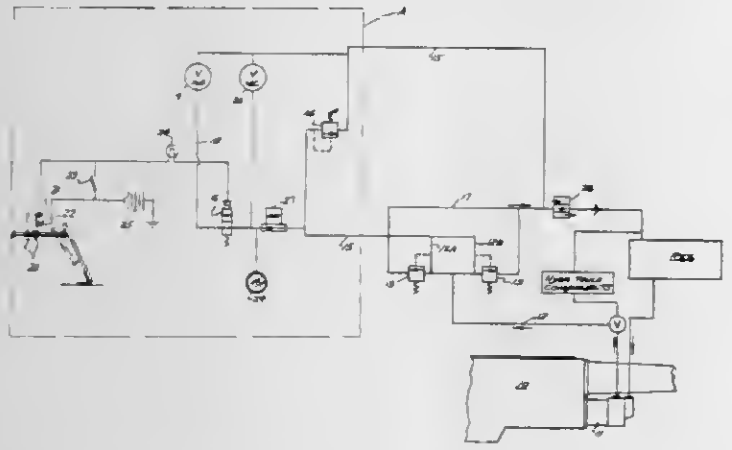
U.S. Cl. 192—3 TR **5 Claims**

1. An energy absorbing system for a vehicle drive train of the type having a power take-off pump associated therewith, said system comprising,

- a control panel for said system located at the driver's station, said control panel including a driver settable relief valve in fluid communication with said pump, a system pressure indicator, a relief valve by-pass line,

a solenoid actuated valve in the relief valve by-pass line operable in a closed position to divert pump output through said relief valve,

switch means in circuit with said solenoid valve and operable to close said solenoid valve during vehicle deceleration, and



pilot operated relief valve means in communication with the power take-off pump, said relief valve means having its pilot in fluid communication with said pump and also with the driver controlled relief valve whereby upon closure of the by-pass line by said solenoid during vehicle deceleration the build up of fluid pressure acting on the pilot may be regulated by adjustment of the driver operated relief valve which in turn regulates the opening and closing of the pilot operated relief valve means to affect loading of the power take-off pump for energy absorbing purposes.

3,939,950

FLUID OPERATED BRAKES AND REVERSING CLUTCHES FOR WINCH DRUMS

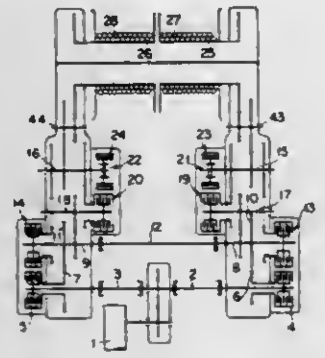
Kazumori Nishida; Toshinori Kawahashi, both of Hirakata, and Yoshimasa Tanaka, Kyoto, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakasho, Japan

Filed Mar. 5, 1974, Ser. No. 448,239

Claims priority, application Japan, Mar. 5, 1973, 48-25152

Int. Cl.^{2} F16D *67/04*; B66D *1/26*

U.S. Cl. 192—4 R **4 Claims**



1. An operating mechanism for a double-drum winch which comprises:

a. a pump for pumping hydraulic oil from a source thereof into a hydraulic oil supply circuit of the mechanism,

b. low and high speed clutches capable of being hydraulically engaged to transmit power from a power source and being disengaged by the action of spring means provided respectively therein,

c. a speed selecting control valve situated between said hydraulic oil supply circuit and a return circuit of said hydraulic oil and capable of selectively permitting hydraulic communication between one of said low and high speed clutches and said pump,

d. a hook hoisting rotary clutch connected to said low and high speed clutches and capable of being hydraulically engaged to hoist the hook and being disengaged by the action of spring means provided therein,

e. a hook dropping rotary clutch connected to said low and high speed clutches and capable of being hydraulically engaged to drop the hook and being disengaged by the action of spring means provided therein,

f. a boom upward swinging rotary clutch connected to said low and high speed clutches and capable of being hydraulically engaged to swing the boom upward and being disengaged by the action of spring means provided therein,

g. a boom downward swinging rotary clutch connected to said low and high speed clutches and capable of being hydraulically engaged to swing the boom downward and being disengaged by the action of spring means provided therein,

h. a hook brake having a brake shaft and connected through a one-way clutch to said hook dropping rotary clutch,

i. a boom brake having a brake shaft and connected through a one-way clutch to said boom downward swinging rotary clutch,

j. hydraulically operated variable control valves situated between said hydraulic oil supply circuit and said return circuit in the vicinity of the respective rotary clutch and capable of selectively permitting hydraulic communication between said respective rotary clutch and said pump,

k. a relief circuit situated between said hydraulic oil supply circuit and said return circuit, both the circuits being located between said speed selecting control valve and said pump, and provided therein with a pressure regulator valve to maintain the hydraulic oil pressure supplied into one of said low and high speed clutches at a predetermined constant value, wherein said low and high speed clutches and said rotary clutches are permitted to hydraulically communicate with said return circuit respectively through said speed selecting control valve and said hydraulically operated variable control valves when said clutches are not operated.

3,939,951

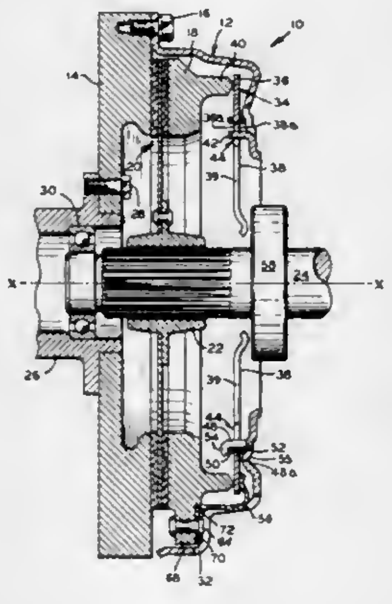
DIAPHRAGM CLUTCH SPRING HAVING RADIAL AND ROTATIONAL RESTRAINTS

William Howard Sink, Auburn, and Richard Allen Flotow, Fort Wayne, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 23, 1974, Ser. No. 535,338

Int. Cl.^{2} F16D *13/71*

U.S. Cl. 192—89 B **1 Claim**



1. In a clutch the combination comprising:

a. a rotatable flywheel;

b. a cover secured to said flywheel for rotation therewith;

c. an axially movable driven member positioned adjacent said rotatable flywheel and movable into driving engagement therewith;

d. an axially movable pressure plate disposed between said cover and said driven member for engaging said driven member with said flywheel;

e. resilient strap means drivingly connecting said pressure plate to said cover and permitting relative axial movement therebetween;

f. a diaphragm spring disposed between said cover and pressure plate having an annular bearing portion engaging said cover and said pressure plate to move the latter into engagement with said driven member and a plurality of integral radially inwardly extending levers defined by radial slots in said spring operable to move said spring out of contact with said pressure plate;

g. a series of spaced openings formed in said diaphragm spring and at the radial extremity of said slots and adjacent said bearing portion of said spring, each opening defining a pair of flat, radially extending side walls on said levers and a flat, outer horizontally extending connecting wall adjacent the radially inward edge of said bearing portion, said side walls being connected to said outer wall by radiused corners;

h. axially extending radial supporting means integral with said cover, extending through certain of said spaced openings and having a flat, circumferentially extending surface engaging said flat, outer, horizontally extending connecting wall between said radiused corners for preventing relative radial movement between said cover and said diaphragm spring; and

i. axially extending rotational support means integral with said cover, located radially inwardly of said radial support means, extending through certain other of said spaced openings and extending across said openings from one of said side walls to the other of said side walls and having flat radial side edges engaging said pair of flat side walls on said levers for preventing relative rotational movement between said cover and said diaphragm spring.

3,939,952

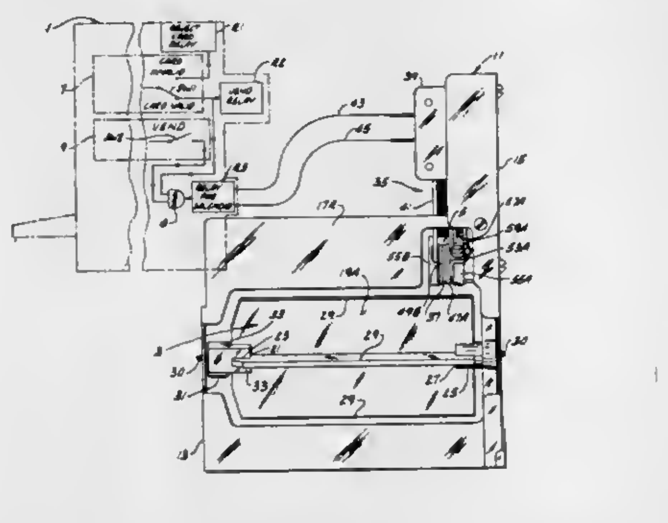
CONTROL FOR A VENDOR INCLUDING CARD RETENTION MEANS

James T. Schuller, St. Louis County, and Anton Okolischan, Crestwood, both of Mo., assignors to UMC Industries, Inc., New York, N.Y.

Filed Oct. 30, 1974, Ser. No. 519,114

Int. Cl.^{2} G07F *7/08*

U.S. Cl. 194—4 C **4 Claims**



1. A control for a vendor operable by a coded card comprising:

a validator in which a customer inserts a card at one end thereof with the card in horizontal position, said validator being operable to validate the card, to enable a vend if the card is valid, to reject the card back to the customer at said one end if the card is invalid, and to feed the card in horizontal position out of the validator at its other end on a vend;

means adjacent the other end of the validator for receiving a validated card in horizontal position from the validator as it is fed out of the validator upon a vend and releasably retaining it in horizontal position for verification of the insertion of a proper card by the customer; and

means operable upon a vend for operating said receiving means to release a previously received card to storage.

3,939,953

COIN DISCRIMINATING APPARATUS

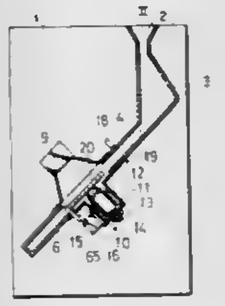
Kuniaki Miyazawa, Tokyo, Japan, assignor to Mitani Shoji Kabushiki Kaisha, Japan

Filed June 18, 1974, Ser. No. 480,466

Claims priority, application Japan, June 20, 1973, 48-68676; June 20, 1973, 48-68677; June 20, 1973, 48-68678

Int. Cl.^{2} G07F *3/02*

U.S. Cl. 194—100 A **14 Claims**



1. A coin discriminating apparatus comprising: a coin detector means for sensing a coin fed to the apparatus and for producing a starting signal; a mechanical filter mechanism including a speaker, a pressure sensitive senser, a horizontally and vertically inclined passageway for said coin, a stopper for projection into said passageway, said coin fed to the apparatus being held between said speaker and said senser in said passageway by said stopper as said coin rolls down said passageway; a selective oscillator circuit having a positive feedback loop connected in series with said senser and speaker in which said mechanical filter mechanism is interposed to generate an oscillation output at the same frequency as the mechanical natural frequency of the coin fed to the apparatus; a one cycle selector circuit connected to said selective oscillator circuit adapted to take out one period of the oscillation frequency generated at said selective oscillator circuit; means connected to said one cycle selector circuit for producing impulses whose number depends on the wave length of said one period each time a coin is fed to the apparatus; and means connected to said means for producing impulses for determining whether the number of said impulses is within a range predetermined by a genuine coin to be discriminated.

3,939,954

CHECK RECEIVING AND TESTING APPARATUS

Terence John Collins, Schaumburg, Ill., assignor to Qonaar Corporation, Elk Grove Village, Ill.

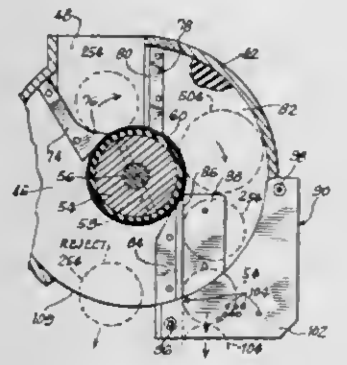
Filed Mar. 18, 1974, Ser. No. 451,890

Int. Cl.^{2} G07F *3/02*

U.S. Cl. 194—102 **35 Claims**

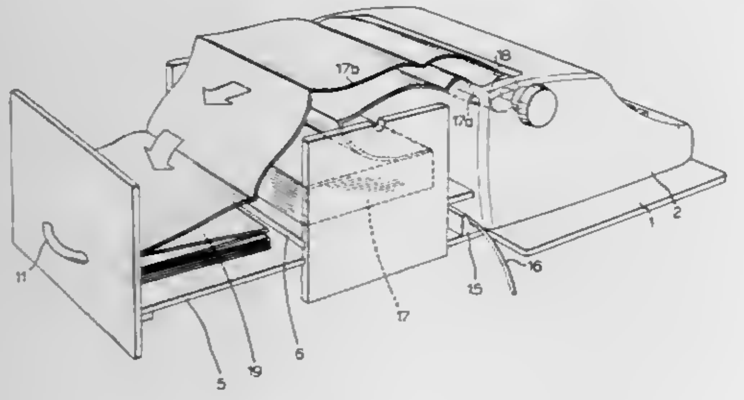
1. In an apparatus adapted to receive checks including coins, tokens and the like wherein detecting means are provided for inspection of the checks, the improvement comprising means for receiving the checks and separating means for the checks whereby the checks are moved one at a time to the detecting means, said separating means comprising a first engaging surface for engaging one side of said checks, a sec-

ond engaging surface positioned in spaced relationship with said first surface for engaging the opposite side of said checks, drive means for driving at least one of said surfaces relative to the other surface whereby checks in overlying relationship are engaged one by the first surface and the other by the second surface to separate the checks one from the other due to movement of the one check relative to the other check, a barrier ramp positioned at least partially between said surfaces, said ramp being positioned in spaced relationship to the position of said means for receiving the checks, separated checks being driven one at a time into engagement with said ramp, said detecting means comprising means for measuring the diameter of said checks while they are in engagement with the ramp.



3,939,955
MECHANISM FOR SELECTIVELY CONTROLLING AT LEAST TWO FUNCTIONS IN A TYPEWRITER

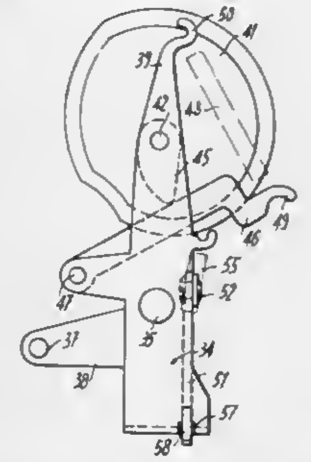
Ulrich Menzi, Yverdon, Switzerland, assignor to Paillard S.A., Sainte-Croix, Switzerland
Filed May 1, 1974, Ser. No. 465,850
Claims priority, application Switzerland, May 8, 1973, 6503/73
Int. Cl.^{2} B41J *21/08, 25/02, 25/04, 25/06*
U.S. Cl. 197—17 **9 Claims**



1. In a typewriter, a mechanism for selectively controlling at least two functions, said mechanism comprising a driving member, a single cam cooperating with said driving member, control levers for each of said functions, an actuating member acting on said control levers, a selector member carried by said actuating member for selectively coupling said actuating member to the control lever of the selected function, a single lever providing means for placing said cam in driving contact with said driving member and for positioning said selector member, and means for selectively acting on said lever to select each of said functions.

3,939,956
HOLDER FOR TYPEWRITER PAPER

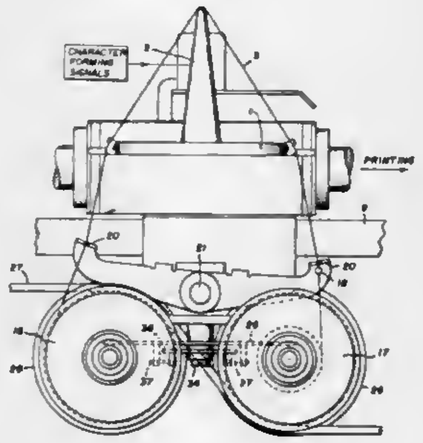
Sam Stamou, 178 Prescott Ave., Toronto, Ontario, Canada (M6N 3H1)
Filed July 24, 1974, Ser. No. 491,365
Int. Cl.^{2} B41J *15/04, 29/06*
U.S. Cl. 197—133 R **6 Claims**



1. A holder for typewriter paper comprising a frame having upright and side portions and open front and rear ends, said upright side portions having means for supporting a roll of paper, an upper and a lower shelf between the upright side portions, and means supporting said upper and lower shelves for frontward and rearward sliding, the upper shelf being capable of supporting a stack of consecutively joined sheets of rectangular paper to be fed to a typewriter and the lower shelf being movable from under the upper shelf to a position where it can receive said paper after typing, and one of said shelves being withdrawable from between said uprights and insertable rearwardly behind the other of said shelves on said supporting means when said other shelf is partially withdrawn forwardly, to provide a paper support of increased area.

3,939,957
CARRIAGE OPERATED RIBBON DRIVE AND REVERSE MECHANISM

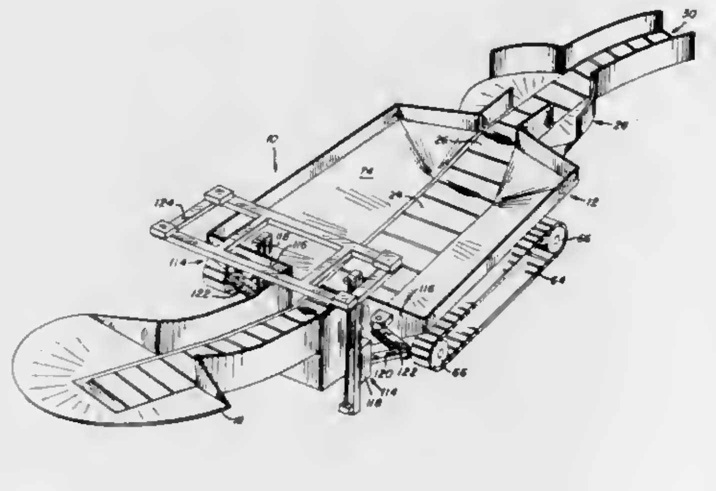
John R. Bittner, Waynesboro, Va., assignor to General Electric Company, Waynesboro, Va.
Filed Dec. 11, 1973, Ser. No. 423,734
Int. Cl.^{2} B41J *33/14*
U.S. Cl. 197—151 **3 Claims**



1. A printer wherein a print head is mounted on a carriage and the print head and carriage are advanced in one direction to traverse a line of movement across a record medium to effect printing and are returned in an opposite direction to the beginning of said line of movement for effecting printing on a following line, an inked ribbon drive mechanism, means for causing said mechanism to move a ribbon in a stop and go and continuous movement across said record medium, said drive mechanism comprising a pulley, a driving means for moving said ribbon, a drive belt mounted to be stationary with respect to carriage and print head movement, said drive belt being wrapped around said pulley to drive the driving means in response to advance of said carriage and said print head.

3,939,958
VARIABLE DISCHARGE SURGE FEEDER AND BOLTER

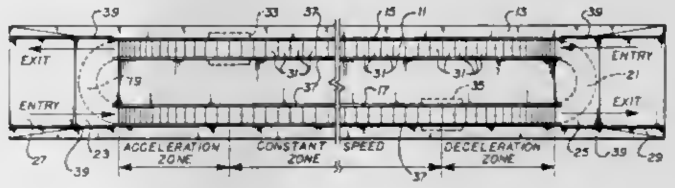
Harley G. Pyles, Fairmont, W. Va., assignor to Mining Equipment Division of FMC Corporation, Fairmont, W. Va.
Filed Jan. 8, 1974, Ser. No. 431,796
Int. Cl.^{2} B65B *65/02*
U.S. Cl. 198—7 R **8 Claims**



1. An apparatus for handling disintegrated material including,
a base member having ground traction means,
an elongated body member supported on said base member,
vertical plate members secured to opposite sides of said body member,
said body member and said vertical plate members cooperating to define a material receiving bin,
a continuous conveyor positioned within said material receiving bin,
said continuous conveyor having a material receiving end portion, a material discharge end portion and a pivotal section positioned closer to said material discharge end portion than said material receiving end portion, said pivotal section arranged to pivot upwardly about a horizontal transverse axis and control the discharge of material from said discharge end portion,
said continuous conveyor adapted to receive material at said receiving end portion of said continuous conveyor and convey the material longitudinally in said bin toward said material discharge end portion,
said pivotal section arranged to pivot upwardly a sufficient distance to a first position so that during continuous operation of said conveyor said pivotal section substantially stops the discharge of said material from said material discharge end portion of said continuous conveyor while said continuous conveyor is in operation and other material is being conveyed from said material receiving end portion to said material discharge end portion,
means for pivoting said pivotal section having at least one hydraulic cylinder,
said pivotal section also arranged to pivot to a plurality of intermediate positions in addition to said first position for discharging said materials at preselected rates,
sensing means positioned within said material receiving bin for indicating the quantity of said material within said bin, and
said hydraulic cylinder responsive to the indication of the quantity of said material within said bin by said sensing means to position said pivotal section.

3,939,959
ACCELERATING AND DECELERATING MOVING WALKWAY

Phillip Elwyn Dunstan, and Sam Shapiro, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Mar. 11, 1974, Ser. No. 450,093
Int. Cl.^{2} B66B *9/12*
U.S. Cl. 198—16 MS **17 Claims**



1. An accelerating and decelerating moving walkway comprising:
1. path of travel defining means for defining an oval, substantially planar, path of travel;
2. a plurality of overlapping platforms mounted in said path of travel defining means for movement about said oval, substantially planar, path of travel;
3. overlapping control means for controlling the amount of overlap between adjacent platforms of said plurality of overlapping platforms, said overlapping control means comprising:
   a. cam means mounted beneath said plurality of overlapping platforms for controlling the position of cam follower means associated with each of said plurality of platforms;
   b. cam follower means associated with and mounted on each of said plurality of platforms so as to contact with and be positioned adjustable by said cam means in a plane lying parallel to the plane defined by said oval, substantially planar, path of travel; and
   c. flexible extendable and retractable means running between pairs of adjacent platforms of said plurality of platforms and operatively connected to said cam follower means such that the position of said cam follower means controls the length of said flexible extendable and retractable means running between pairs of adjacent platforms to thereby control the amount of platform overlap; and,
4. drive means adapted to be selectively coupled to said plurality of platforms for moving said plurality of platforms about said oval, substantially planar, path of travel.

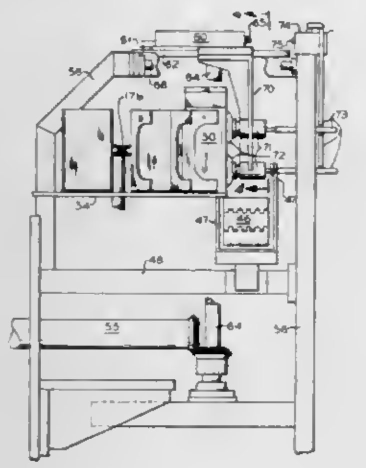
3,939,960
VACUUM CARTON TRANSFER APPARATUS AND METHOD

Silvio T. Farfaglia, Fulton, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Sept. 7, 1973, Ser. No. 395,029
Int. Cl.^{2} B65G *47/52*
U.S. Cl. 198—20 R **17 Claims**

1. Apparatus comprising:
an intermittently actuated conveyor for moving a container to a first station located thereon;
a continuously actuated conveyor having a second station located immediately above a portion of a continuously moving surface thereof; and
transfer means for moving a container from said first station to said second station, said transfer means comprising
one or more suction cup means for producing a substantially air-tight seal with a generally vertical side surface of the container to be transferred,
vacuum supply means operably connected to said one or more suction cup means for providing a vacuum thereto,
reciprocating means for moving said one or more suction cup means in a generally horizontal straight line from

a first position at which contact is made by said suction cup means with said side surface of a container located at said first station to a second position at which said container is released by said suction cup means at said second station, and

vacuum control means interposed between said vacuum supply means and said one or more suction cup means for applying a vacuum to said one or more suction cup means when said reciprocating means is in said first position and traveling between said first position and said second position and for interrupting the vacuum supply to said one or more suction cup means in response to arrival of said reciprocating means at said second position.



3,939,961

APPARATUS FOR CONVEYING PILES OF NEWSPAPERS IN PERPENDICULAR DIRECTIONS

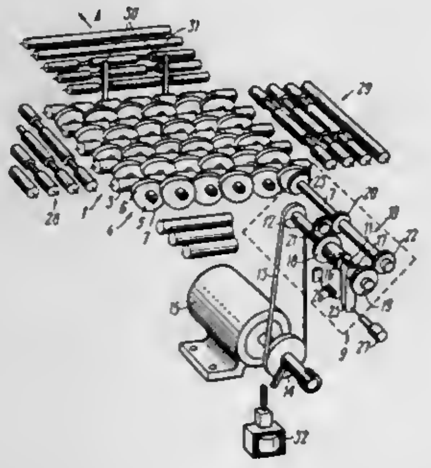
Nikolai Ivanovich Anikanov, Bolshaya Bronnaya ulitsa, 2/6, kv. 6; Leonid Pavlovich Grachev, ulitsa Lva Tolstogo, 7, kv. 32, both of Moscow; Grigory Iosifovich Zax, ulitsa Mechnikova, 14a, kv. 24, Kiev; Grigory Avramovich Radutsky, 16 Parkovaya ulitsa, 49, korpus 2, kv. 68, Moscow, and Rafail Efimovich Kheifets, Brest-Litovsky prospekt, 162, kv. 30, Kiev, all of U.S.S.R.

Filed June 12, 1974, Ser. No. 478,704

Claims priority, application U.S.S.R., Dec. 21, 1973, 1975407

Int. Cl.² B65G *47/54*

U.S. Cl. 198—25 **1 Claim**



1. An apparatus for conveying piles of newspapers in mutually perpendicular directions, including a main driven rollerway having a load supporting surface for conveying piles of newspapers in a first direction, the rollers of the main rollerway being mounted to provide a space between each pair of the adjacent ones of the rollers, rotatable drive shafts, and discs mounted on the rotatable drive shafts in the spaces and serving to convey the piles of newspapers in a second direction perpendicular to the first direction, the improvement that each roller of the main rollerway is provided with portions of reduced diameter, the number of the reduced portions being equal to the number of rotatable drive shafts, the rotatable drive shafts extending through the portions of reduced diameter under the main rollerway, each disc being constituted by two portions, one of the portions being a semi-circle and the other portion adjacent the one portion being a semi-ellipse, the length of the major axis thereof being equal to the diameter of the semi-circle, and the length of the minor axis thereof being shorter than the spacing between of the axis of the shaft and the load supporting surface of the main rollerway on which the pile of newspapers is being conveyed.

3,939,962

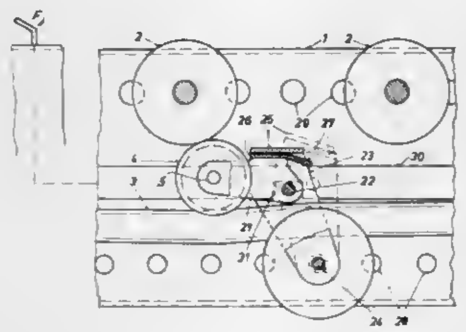
STOW ROLLER TRAIN FOR STORAGE AND CONVEYANCE OF CARGO

Richard Gebhardt, H. Thomastrasse 10, 6920 Sinsheim, Germany

Filed Mar. 19, 1973, Ser. No. 342,436

Int. Cl.² B65G *13/02*

U.S. Cl. 198—127 R **19 Claims**



1. A stow roller train installation for storing and conveying cargo; said installation comprising:

support means;

at least one rotatable cargo supporting roller directly engageable with cargo to be stored and conveyed;

continuously movable traction means;

at least one rotatable intermediate roller interposed between said at least one cargo supporting roller and said traction means;

means for mounting said at least one rotatable cargo roller on said support means;

means operatively connected with each of said at least one intermediate rollers for adjustably mounting each of said intermediate rollers to be independently displaceable between a driving position with the intermediate roller drivingly connecting the traction means and one of said at least one cargo supporting rollers and an idling position with the intermediate roller and the traction means out of driving connection with one of said at least one cargo supporting roller;

said means for adjustably mounting each of said at least one intermediate rollers including control force means for providing a continuous individual adjusting control force on each of said at least one intermediate rollers in the direction of the driving position;

said means for adjustably mounting each of said at least one intermediate rollers includes means for axially fixing the axis of rotation of said intermediate rollers and for permitting movement in a radial direction with respect to said axis between said driving and idling positions;

said means for axially fixing the intermediate roller and permitting movement in the radial direction includes at least one first lever and means for disposing each of said intermediate rollers on a respective first lever;

said control force means including means provided on said support means for supporting said first lever so as to be

obliquely pivotable in a direction toward the driving position of the respective intermediate roller;

said means for disposing each of said at least one intermediate rollers is a second lever hingedly connected to a respective first lever, said second lever directly rotatably supporting a respective intermediate roller;

said control force means further includes abutments provided on said first and second levers which are engageable with one another to lift the respective intermediate roller away from engagement with the associated cargo supporting roller while maintaining engagement of said traction means and said intermediate roller.

3,939,963

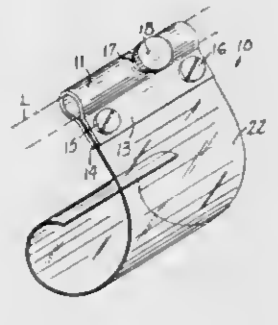
TYPE CORRECTION AID

John Barchilon, 556 Chapel St., New Haven, Conn. 06511

Filed Aug. 19, 1974, Ser. No. 498,275

Int. Cl.² B41J *29/00*

U.S. Cl. 197—187 **5 Claims**



1. An aid for positioning a paper in a typewriter which includes a line guide, a paper bar and a paper platen where the paper bar has bushings thereon which space the bar from the platen; said aid comprising a transparent strip of material having at least a portion thereof shaped on a radius of curvature less than the radius of curvature of the platen, means on said strip attachable to a paper bar so that said strip is rotatable and slidable on the paper bar, said strip extendible from a paper bar with the smaller radius portion over and about a platen behind a line guide.

3,939,964

APRON OR PLATE BELT CONVEYOR

Jannes Jonge Poerink, 25 Prins Bernardlaan, Borne, Netherlands

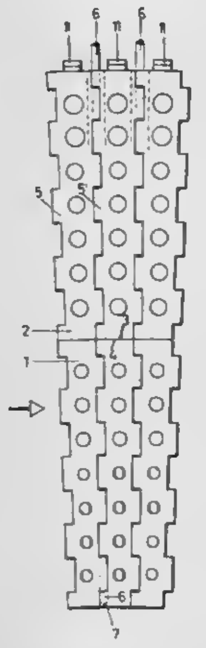
Filed Apr. 23, 1974, Ser. No. 463,644

Claims priority, application Germany, Apr. 26, 1973, 2321036

Int. Cl.² B65G *17/06*

U.S. Cl. 198—195 **4 Claims**

1. In a platform conveyor, the combination comprising two laterally adjacent, interconnected rows each having a plurality of flat panel members of plastic material hingedly connected together along transversely extending edges thereof, the upper surface of said flat panel members being adapted to support a load, a plurality of integrally formed eyes along each transversely extending edge of each of said panel members and being aligned to receive an interconnecting transverse bar member which connects both rows of said panel members together to form a conveyor belt, the eyes on one transversely extending edge of each panel being staggered relative to the eyes on the opposite edge thereof, said transverse bar member extending to a stop at one side of a panel member forming one edge of the conveyor belt, and at the other edge of the conveyor belt being retained by a pin inserted through a transverse aperture in said eye, and at least one hook attached to one side of said panel members, which hook engages a web at the edge of the laterally adjacent member.



3,939,965

CONVEYOR BELT

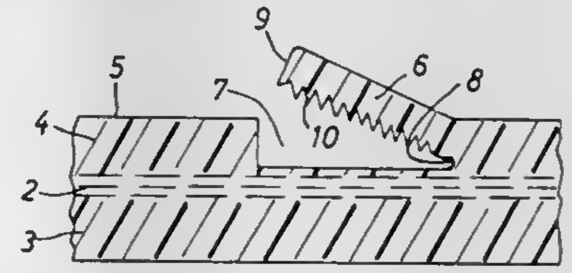
Karl-Günther Blattermann, Hamburg-Rahlstedt, and Günther Nolte, Mannheim, both of Germany, assignors to Conrad Scholtz AG, Hamburg, Germany

Filed Apr. 17, 1974, Ser. No. 461,808

Claims priority, application Germany, Apr. 17, 1973, 2319480

Int. Cl.² B65G *15/42*

U.S. Cl. 198—198 **11 Claims**



1. An endless conveyor belt of cords embedded in rubber or plastic for conveying articles up a steep incline, said belt comprising:

a substantially continuous smooth surface on one side adapted for engagement with guide rolls;

a load supporting surface on the other side having a plurality of recesses at spaced locations along the length thereof;

a plurality of article engaging flaps each resiliently attached at its trailing edge to the trailing end of one of said recesses and having an underside and being shaped to fit into said recess to pass over support rolls engaging the load supporting surface;

each said flap having a volume substantially filling the volume of its corresponding recess when disposed therein and being resiliently biased outwardly at a small acute angle with the load supporting surface of the belt whereby its leading edge normally extends above the load supporting belt surface at a loading zone for engagement with articles to be conveyed;

said flaps being made of a strip of rubber or plastic material and formed to bend due to loading with the leading edge moving rearwardly in a generally arcuate path to cause the underside of said flap to engage a large article being conveyed.

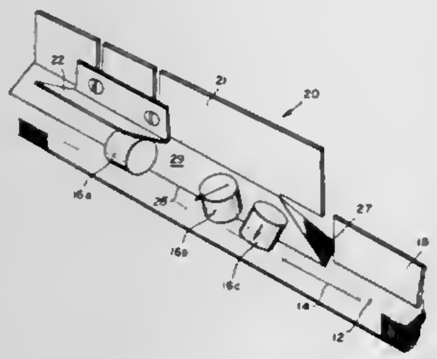
3,939,966
ORIENTER FOR SQUARE CYLINDERS

George Szenczy, Fayetteville, N.Y., assignor to Lipe Rollway Corporation, Syracuse, N.Y.

Filed June 24, 1974, Ser. No. 482,219

Int. Cl.^{2} B65G *47/24*

U.S. Cl. 198—240 **12 Claims**



1. In a vibratory feeder having an output path with an inside edge elevated above a lower input region, an orienter in the region of said output path for axially orienting uniform cylinders having a length-to-diameter ratio of substantially one, said orienter comprising:

a. a guide plate having a bottom edge in close proximity to said output path and substantially parallel with said inside edge of said output path, said guide plate extending upward from said output path;

b. means for adjusting the lateral distance between said bottom edge of said guide plate and said inside edge of said output path;

c. said guide plate having an obliquely upward facing surface inclined to extend upward and away from said inside edge with increasing distance above said output path;

d. a wiper plate mounted above said obliquely upward facing inclined surface of said guide plate;

e. means for adjusting the height of said wiper plate above said output path;

f. said wiper plate being inclined to extend upward and toward said inside edge with increasing distance above said output path; and

g. said guide plate and said wiper plate cooperating with each other to provide means for allowing the cylinders having axes aligned with said inside edge to move along said output path between said inside edge and said guide plate and underneath said wiper plate with a cylindrical side portion overhanging said obliquely upward facing inclined surface of said guide plate while the cylinders having axes transverse to said inside edge are forced over said inside edge by said bottom edge of said guide plate to fall to said lower region and are tilted by said obliquely upward facing inclined surface of said guide plate to tip over said inside edge to fall to said lower region and any of said transversely oriented cylinders reaching said wiper plate are tilted by said obliquely upward facing inclined surface of said guide plate so as to engage said wiper plate and are then tipped over said inside edge to fall to said lower region.

3,939,967
CONTAINERS FOR PROJECTILES

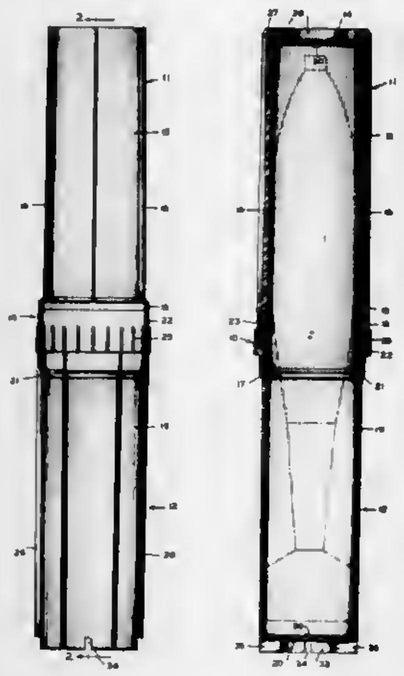
Kenneth S. Tenney, Winchester, Va., and Daniel Tomo, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Aug. 1, 1974, Ser. No. 494,259

Int. Cl.^{2} F42B *37/02*; **B65D** *11/22, 41/04*

U.S. Cl. 206—3 **5 Claims**

1. A shipping and storage container for items of ordnance, said container comprising top and bottom mating portions each of which includes a substantially cylindrical wall portion having an open mouth at the inner extremity thereof and a closed end wall at the outer extremity thereof; said top portion having an integral outwardly projecting peripheral rib spaced from the lower open extremity thereof, the end surface of said peripheral rib providing an abutment shoulder, the outer peripheral surface of said top portion including an externally threaded portion located intermediate said peripheral rib and said open mouth, and the outer peripheral surface of said top portion having a plurality of uniformly spaced longitudinally disposed ribs extending from said peripheral rib to the upper extremity of said top portion; said bottom portion having an outwardly flared portion spaced from the upper open extremity thereof and an integral upper extremity of increased diameter complementary to that of the peripheral rib on said upper portion, the end surface of said extremity of increased diameter contacting said abutment shoulder when said top and bottom mating portions are in assembled relationship thus limiting the extent of entry of the bottom portion into said top portion, said extremity of increased diameter being interiorly threaded for the reception of said complementarily externally threaded portion, the peripheral surface of said upper portion of increased diameter having a plurality of uniformly and closely spaced ribs located intermediate said outwardly flared portion and said open mouth, and the outer peripheral surface of said bottom portion having a plurality of uniformly spaced longitudinally disposed ribs extending from said outwardly flared portion to the lower extremity of said bottom portion.



3,939,968
CONTACT LENS CAPSULE WITH INDICATING MEANS

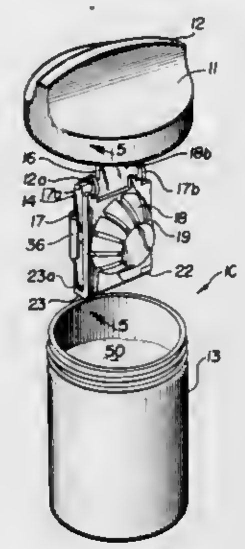
Francis E. Ryder, Barrington, Ill., assignor to Ryder International Corporation, Barrington, Ill.

Filed Sept. 30, 1974, Ser. No. 510,639

Int. Cl.^{2} A45C *11/00*; **G01K** *11/00*; **G01D** *21/00*; **B65D** *85/38*

U.S. Cl. 206—5.1 **4 Claims**

1. In the combination of a contact lens holder including a container body, a closure member for said container body and a central support member carried by said closure member and positionable within said container body, said central support member including means for receiving contact lenses to be sterilized by the subjecting thereof to a sterilizing temperature within said container body, said central support including a relatively rotatable transparent vessel, a quantity of eutectic material container within said vessel which material will be substantially solid at temperatures below said sterilization temperature and will become liquid at said sterilizing temperature or above, said quantity of eutectic material only partially filling said vessel, means rotatably mounting said vessel to said central support for rotative movement about a horizontally disposed axis, and means for releasably fixing the position of said vessel relative to said horizontal axis, such that prior to sterilization, said vessel being positioned with the solid eutectic material in an elevated orientation, such that upon achieving the sterilizing temperature, said eutectic material will become liquid and will flow to the bottom of said vessel, thereby providing a visual indication as to the achievement of said sterilizing temperature, with said rotatable mounting enabling said vessel to be repositioned for subsequent sterilizing operations.



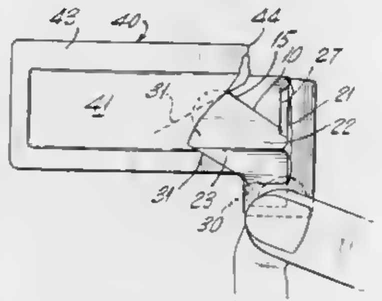
3,939,969
SUTURE PACKAGE

David C. Miller, Camillus, N.Y., and Clifton C. Sutton, Somerville, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed July 24, 1974, Ser. No. 491,200

Int. Cl.^{2} A61L *17/02*

U.S. Cl. 206—63.3 **9 Claims**



1. A suture package comprising (a) a sealed envelope and (b) an inner suture retainer intimately connected to said envelope and containing at least one suture, said sealed envelope comprising two panels sealed at the peripheral edges and adapted to be opened by a pulling force exerted on at least a portion of the envelope, said inner retainer comprising multiple panels, foldably connected to one another and folded together with the suture positioned and retained between said panels;

wherein the top retainer panel of said retainer has a terminal detachable section intimately connected to the envelope at a place near the end where a pulling force is to be exerted so that when the sealed envelope is opened by the pulling force, the pulling force exerts a simultaneous force on the top retainer panel bringing about a separation of said detachable section of said panel thereby exposing the suture end.

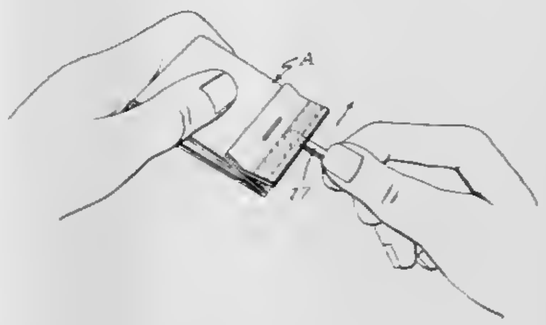
3,939,970
MATCH PACKAGES

Philip J. Schoenberger, 947 Bellows, West St. Paul, Minn. 55118

Filed Nov. 27, 1974, Ser. No. 527,642

Int. Cl.^{2} A24F *27/12*

U.S. Cl. 206—108 **1 Claim**



1. A match package including:
a back panel
a top panel foldably connected to said back panel,
a front panel foldably connected to said top panel,
a partial front panel connected to the lower edge of said back panel,
a similar partial front panel overlying said first named front panel,
a simulated match striking surface on said similar partial front panel,
a group of matches having base portions secured between said partial front panel and said back panel,
a match striking surface between said first named front panel and said similar front panel.

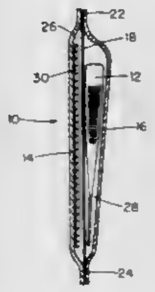
3,939,971
STERILANT PACKAGE ASSEMBLY

Jerry J. Tulis, Raleigh, N.C., assignor to Becton, Dickinson and Company, Rutherford, N.J.

Filed Feb. 13, 1973, Ser. No. 332,215

Int. Cl.^{2} B65D *31/12, 81/24*

U.S. Cl. 206—205 **12 Claims**



1. A package for sterilizing implements comprised of two gas impermeable outer walls and an inner wall sandwiched therebetween thereby forming two compartments, said inner wall being pervious to sterilizing gas but impervious to water vapor.

3,939,972
POUCH MADE OF COEXTRUDED POLYMERS

Robert G. Mayworm, Barrington, Ill., assignor to Tower Products, Inc., Mundelein, Ill.

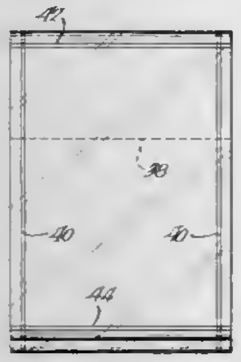
Filed May 17, 1974, Ser. No. 470,966

Int. Cl.^{2} B65D *25/08*

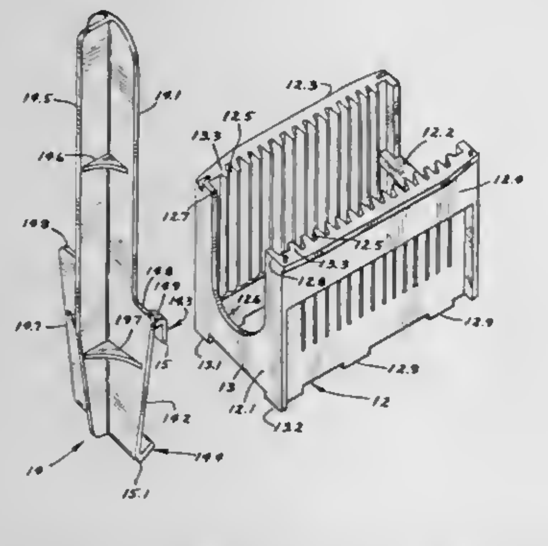
U.S. Cl. 206—219 **7 Claims**

1. A pouch comprising a single tubular section of coextruded laminated film having free edges at opposite ends said tubular section comprising an inner laminate and an outer laminate surrounding the inner laminate said section being

flattened and overfolded medially along a line perpendicular to said free edges and defining a closed end in said pouch and a pair of superimposed walls each having two layers of said film, and means securing said walls together adjacent facing edges, said outer laminate constituting the innermost and outermost surface of each of said walls, the outer laminate being a heat sealable polymer selected from the group consisting of low density ethylene homo- and copolymers, polyisobutylene modified polyethylene and mixtures thereof, said inner laminate being a polymer selected from the group consisting of ionomers, polyamides, pigmented polyethylene, medium and high density polyethylene.

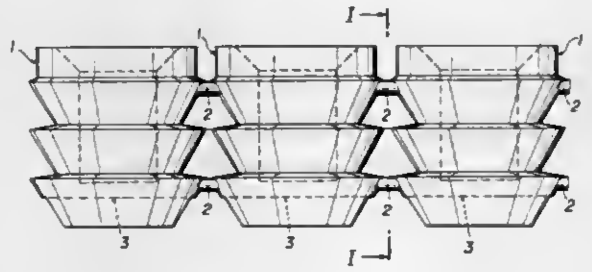


3,939,973
WAFER BASKET AND EASILY ATTACHED AND DETACHED CARRIER FOR SAME
Victor C. Wallestad, Edina, Minn., assignor to Fluoroware, Inc., Chaska, Minn.
Filed Jan. 14, 1974, Ser. No. 433,121
Int. Cl.² B65D *25/28, 85/30*
U.S. Cl. 206—328 **12 Claims**



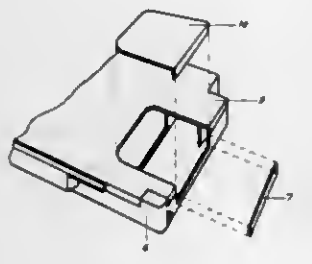
1. In combination, a wafer basket and an easily attachable and detachable carrier for the basket, the wafer basket having substantially vertical side and end walls and an open top and bottom, lower edges of at least two opposing walls having supports lying in a horizontal plane to support the basket on a horizontal surface, an end wall of the basket having upper and lower edges adjacent the top and bottom of the basket with the lower edge spaced above the horizontal plane; the carrier comprising a handle having at its lower end a plate configured to abut the end wall of the basket, the plate having a lower edge with an upwardly and inwardly projecting lip configured to hook beneath the lower edge of the end wall, the plate further having a hook spaced above its lower edge and configured to hook over the upper edge of the end wall, the depth of the hook permitting the upper edge of the end wall to move vertically within the hook while restraining horizontal escape of that edge from the hook, the hook and upwardly and inwardly projecting lip being vertically spaced to supportively retain between them the basket end wall when the lip is in contact with the lower edge of that end wall, but having a vertical inner dimension between the hook and lip greater than the vertical dimension between the upper and lower edges of the end wall and permitting the lip to escape outwardly of the lower end wall edge when the upper edge of the end wall is fully inserted within the hook to permit the carrier to be easily attached to and detached from the basket when the basket is resting on a horizontal surface.

3,939,974
DOWEL
Anton Holzer, Wien-Fischamend, Austria, assignor to Wien-Fischamender Metallwarenfabrik Josef Suschny & Sohne, Vienna, Austria
Filed Oct. 22, 1974, Ser. No. 517,060
Claims priority, application Austria, Oct. 25, 1973, 9051/73
Int. Cl.² B65D *85/24*
U.S. Cl. 206—343 **5 Claims**



1. A plurality of dowels of synthetic material for use with a dowel driving apparatus of the type having a longitudinally extending magazine including dowel guiding means extending along the length of the magazine, each of said dowels having a head at one end thereof and a front face at the other end thereof and a body extending between said head and face, each said body having a substantially circular cross-section, each front face of each dowel having at least one recess extending across said body along a selected axis, said bodies of said dowels being connected by severable strap means to form an elongated strip with each said strap means extending parallel to said selected axis so that each said recess of each dowel will be alignable along said selected axis.

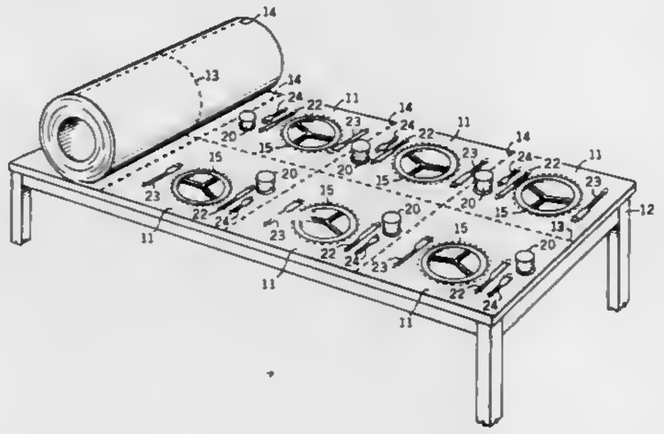
3,939,975
PROJECTION CASSETTE
Jean Thevenaz, Grandson, Switzerland, assignor to Bolex International SA, Ste. Croix, Switzerland
Filed Nov. 15, 1973, Ser. No. 415,932
Claims priority, application Switzerland, May 11, 1973, 6844/73
Int. Cl.² B65D *85/672*
U.S. Cl. 206—387 **3 Claims**



1. A cassette for storing alternatively at least two different kinds of information-bearing strips, the strip of a first kind having a single track of a first information type whereas the strip of a second kind has at least one additional information type coded thereon,

walls forming a cassette case to protect the strip contained,
means for forming a loop of said strip within the cassette case,
a first information-handling zone on at least one of said walls for guiding said loop of strip to enable handling said first information type, the improvement comprising
wall portions defining a second information-handling zone on at least one of the walls within the range of said loop, said wall portions being connected to the remainder of the cassette case by at least one predetermined breaking point to facilitate removing said wall portions and forming an opening for handling said additional information types if a strip of said second kind is stored within the cassette.

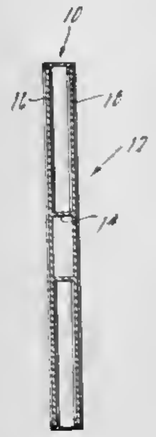
3,939,976
PREFABRICATED TABLE SETTING
Edmond J. VanIseghem, Jr., 96 W. Sherwood Drive, Overland, Mo. 63114
Filed Sept. 5, 1974, Ser. No. 503,304
Int. Cl.² B65D *1/34, 85/67;* **A45B** *13/08*
U.S. Cl. 206—390 **4 Claims**



1. Multiple prefabricated table place settings, comprising:
a. an elongate web of flexible material including a plurality of longitudinally disposed and integral place setting sections stored in a web roll prior to use, each section including a first relatively raised rim portion formed integrally with and as a continuation of the web, the rim portion defining a relatively depressed plate portion formed integrally with and as a continuation of the web, the web extending from the rim portions of the sections conforming flexibly to the support between the plate portions,
b. a plurality of eating utensils disposed on each section, and
c. means holding said utensils in place on each section.

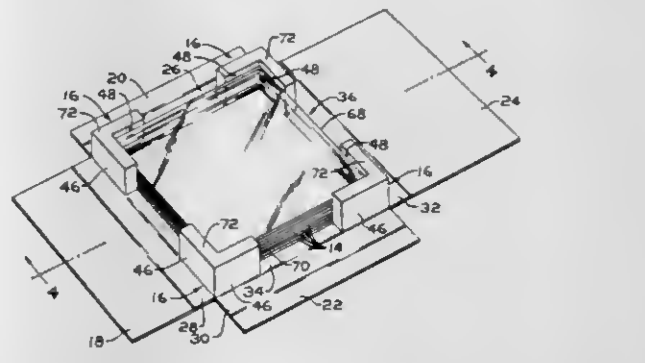
3,939,977
SEALING RING
Macy J. Price, 44560 Country Lane, Northville, Mich. 48167, and Earl H. Pickett, 5902 Edinbrugh, Apt. 103, Plymouth, Mich. 48170
Filed July 24, 1974, Ser. No. 491,268
Int. Cl.² B65D *85/67*
U.S. Cl. 206—400 **9 Claims**

1. A sealing ring for use with a reel of the type including a central hub and spaced flanges, said ring comprising a molded unitary strip of homogeneous plastics material adapted to be formed into a loop to sealingly encircle said reel and including:
A. means defining a first end portion having a transverse, generally radially extending end surface and a smooth radially outer seating surface extending circumferentially away from said end surface;
B. means defining a second end portion adapted to be brought into overlapping relationship to said first end portion and having a smooth radially inner circumferentially extending seating surface adapted to seat on the smooth radially outer circumferentially extending seating surface of said first end portion;
C. means defining a transverse seating surface extending generally radially inwardly from said radially inner circumferentially extending surface at the end thereof remote from the free end of said second end portion;
D. means defining an aperture in one of said end portions within the smooth surface area of the circumferentially extending seating surface of that end portion; and



E. means defining a latching finger projecting radially from the smooth surface area of the circumferentially extending seating surface of the other end portion for latching coaction with said aperture to releasably latch said end portions together in lapping disposition with said radially inner and outer circumferentially extending seating surfaces in juxtaposition and the transverse end surface of said first end portion abuttingly urged against said transverse seating surface.

3,939,978
FLAT GLASS SHIPPING CONTAINER
Ronald J. Thomaswick, Kittanning, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed July 23, 1974, Ser. No. 490,837
Int. Cl.² B65D *65/02, 65/44, 81/04, 85/48*
U.S. Cl. 206—454 **13 Claims**



1. A container for shipping a stack of flat glass sheets having a generally rectangular shape wherein the width, length and height of the stack are of predetermined dimensions, comprising:
a corrigated fiberboard cut and scored to a generally T-shaped configuration to include a bottom portion, sides, a top lid flap portion, a bottom lid flap portion, a right side flap portion and a left side flap portion, said bottom portion having dimensions greater than corresponding dimensions of the stack of glass sheets and the width of said sides approximately equal to the height of the stack; and
corner pad made of a resilient, compressible, shock-absorbing material positioned at the corners of said base and having a height in the uncompressed state greater than

the width of said sides, and a thickness approximately equal to the difference between the corresponding dimension of the stack and of said base, said corner pads being compressed between said corresponding side flap portion and bottom portion when the container is formed from said fiberboard to unitize the stack of glass sheets.

3,939,979

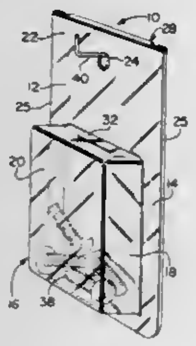
DISPLAY CONTAINER

George Anton Neumayer, Deerfield, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 21, 1975, Ser. No. 561,023

Int. Cl.² B65D *73/00*

U.S. Cl. 206—461 7 Claims



1. A display container adapted to hang from a rack, including a cover portion with a bubble section having upstanding wall sections and a top wall section, a flange section at least partially surrounding the bubble section, a portion of said flange section extending for a predetermined distance in a given direction from the wall sections, a generally rectangular base portion slidably associated with and beneath the cover portion and having perimetrical dimensions substantially identical to the perimetrical dimensions of the cover portion, the surrounding flange section of the cover portion including reversely bent portions providing spaced opposing marginal surface areas adjacent opposing side edges of the cover and one end edge facilitating the sliding association and retention of the base portion beneath the cover portion, a pivotable flap element and tab element connected in seriatim and integral with one end extremity of the base portion thereby adapted to bend and underlie a segment of the base portion, the flap element being of a length at least equal to said predetermined dimension of the flange section, a slot means in the base portion located inwardly of one end thereof so that the flap portion may be bent beneath the base portion and the tab inserted through the slot in supporting adjacency to an inner peripheral upstanding wall section of the bubble section to temporarily retain the base portion in a closed position beneath the cover portion.

3,939,980

NESTING CONTAINER

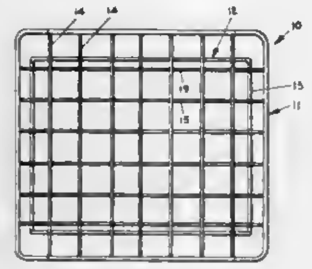
Clarence J. King, Ludington, Mich., assignor to Straits Steel & Wire Co., Ludington, Mich.

Filed July 10, 1974, Ser. No. 487,001

Int. Cl.² B65D *7/20, 21/04*

U.S. Cl. 206—507 3 Claims

1. A stackable-nestable container for storage and transport of articles, said container having an upper rim and a lower rim, a bottom formed of a grid of interconnected, intersecting wires, both ends of said wires of said grid being bent to extend upwardly to form the ends and sides of said container, the tops of said upstanding wires being rigidly secured to said upper rim, said lower rim being rigidly secured to said grid, said container characterized in that the side portions of said upper rim are provided with recesses, said recesses adjacent the ends of said container terminating in an upstanding shoulder, one adjacent each end of said container; said lower rim being ring-shaped and secured to the underside of the bottom of said container, the ends of said lower rim extending downwardly to form a pair of spaced leg-hooks and the sides of said rim being nested firmly against and secured to said bottom, said legs of an upper container resting on the bottom of a lower container when the containers are nested whereby the load of the upper of said containers when nested is supported entirely by its legs and the bottom of the container beneath; the spacing between said leg-hooks being such as to receive the side portions of the top rim therebetween and the horizontal length of said side hooks being such as to seat in said side portion recesses of said side portion recesses of said upper rim closely adjacent said upstanding shoulders whereby one container can be stacked upon another like container when the sides of the one container are parallel to the ends of the other container, and when so stacked, said leg-hooks prevent relative displacement of said containers with respect to each other in one direction and said shoulders prevent relative displacement in the other direction.



3,939,981

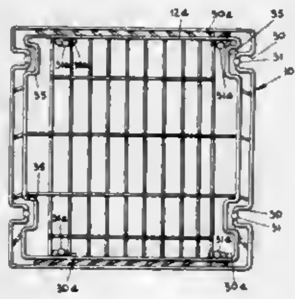
NESTING BASKET

Clarence J. King, Ludington, Mich., assignor to Straits Steel & Wire Co., Ludington, Mich.

Filed July 10, 1974, Ser. No. 487,048

Int. Cl.² B65D *7/20, 21/04*

U.S. Cl. 206—507 1 Claim



1. A nestable-stackable container for the transport and storage of articles, said container having spaced endless upper and lower rim elements, said lower rim element enclosing a smaller area than said upper rim element, first and second spaced members arranged in an intersecting pattern to form a grid, said grid forming the bottom thereof and being secured to said lower rim element, first upstanding spaced members forming the sides of said container and second upstanding spaced members forming the ends of said container, said container characterized in that said upper and lower rim elements at each of their ends have a pair of inwardly offset portions, said inwardly offset portions on opposite ends being spaced equally from both sides of said container; the sides of said upper and lower rim elements being straight; the spacing between the sides of said lower rim element whereby the lower rim element of an upper container will rest upon the inner ends of the offset portions of the upper rim element of a lower container when one container is rotated 90° with respect to and stacked upon the other thereof; the exteriorly facing opening formed by each of the offset portions in said lower rim being of a size to permit the offset portion in the upper rim to pass vertically therethrough when the containers are nested; upstanding stops on the top of said offset portions of said upper rim element, said stops being so spaced as to engage the inner face of the lower rim element of the upper of the stacked containers; the vertical height of said stops being no greater than the vertical thickness of said bottom whereby no portion of said stops will project into the interior of the upper of the containers when said containers are stacked and the stops of the container beneath support the container above by contact with the lower face of the upper rim of the upper of the containers when said containers are nested.

3,939,982

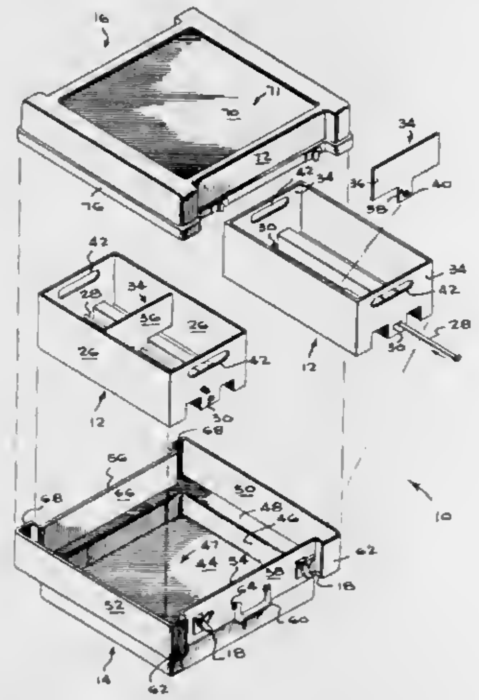
DOCUMENT TRANSPORTATION CASE

Carroll E. Russell, Rte. 5, Box 508, Wetumpka, Ala. 36092

Filed Mar. 20, 1975, Ser. No. 560,516

Int. Cl.² B65D *51/18, 1/34, 21/02, 85/54*

U.S. Cl. 206—509 10 Claims



1. A document transportation case for carrying and storing computer data cards, computer printouts and the like, said case comprising at least one elongated tray in which the computer cards may be carried, a case container of open-topped box configuration to receive the tray, said case container having a bottom surface with a printout storage recess projecting outwardly from said bottom surface, a support surface on the inside of the case container adjacent the printout-storage recess to support the card tray above the printout-storage recess when the tray is placed in the case container, a case cover of open-topped box configuration having a top surface and an inwardly directed recess in said top surface which is complementary to said printout-storage recess in the case container, thereby permitting transportation cases to be stacked with the recesses of adjacent cases interlocking to prevent any sliding between adjacent cases, and locking means for retaining the case cover on the case container.

3,939,983

APPARATUS FOR SORTING TOBACCO LEAVES

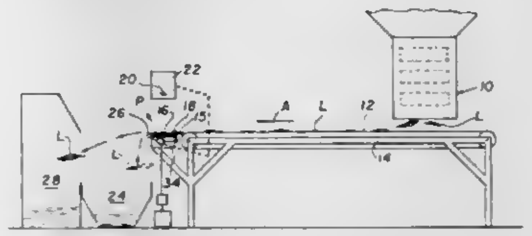
Emil S. Asfour, 21 Wengirain, 8704 Herrliberg, Switzerland

Continuation of Ser. No. 235,169, March 16, 1972, abandoned. This application Sept. 20, 1974, Ser. No. 507,699

Int. Cl. B07c *5/342*

U.S. Cl. 209—73 29 Claims

1. Apparatus for sorting tobacco leaves, comprising a conveyor for moving leaves, an end plate comprising a substantially horizontally disposed surface over which said leaves pass, said plate being arranged in cooperation with the forward end of said conveyor to receive said moving leaves therefrom, means for resiliently mounting said end plate to be movable away from said conveyor on accumulation of leaves between said conveyor and said end plate, said end plate being adapted to provide a preselected level of light reflection, a photoelectric sensor spaced above said end plate adapted to provide a signal indicative of the reflection of light from the leaves passing over said end plate and means responsive to said signal to classify said leaves.



3,939,984

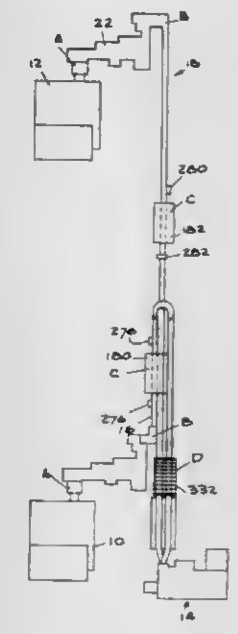
PACKAGE INSPECTION AND HANDLING SYSTEM

Dean C. Butner, Rte. 1, Clemmons, N.C. 27012, and Douglas C. Clark, Rte. 8, 5120 Angelia Drive, Winston-Salem, N.C. 27106

Filed Dec. 20, 1974, Ser. No. 534,939

Int. Cl.² B07C *5/02*

U.S. Cl. 209—74 M 28 Claims



1. An accumulator for use on an inter-connecting conveyor between a packaging machine and a cartoning machine comprising:

a. a frame;

b. a magazine mounted for movement on said frame for receiving and storing packages from said conveyor, said conveyor passing through said magazine; and

c. means for varying the position of said magazine with respect to said conveyor so that packages can be selectively removed from and deposited on said conveyor.

3,939,985

HOOK DISPLAY ASSEMBLY

Arthur Hochman, Union City, N.J., assignor to Art-Phyl Creations, Newark, N.J.

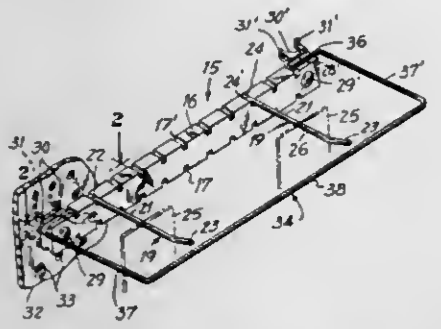
Filed June 18, 1974, Ser. No. 480,344

Int. Cl.² A47F *7/00*

U.S. Cl. 211—57 5 Claims

1. An improved hook display assembly for displaying carded items for sale which comprises a rack, said rack having a substantially rectangular cross-section and respective plurali-

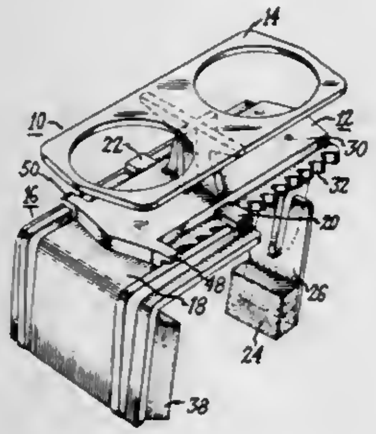
ties of aligned undercut and overcut notches and a through hole provided in each overcut notch extending widthwise through said rack into an aligned undercut notch, at least one hook member releasably connected at one end thereof to said rack and having another free end, said at least one hook member being arranged perpendicularly relative to said rack, said at least one hook member including a shank portion adapted to extend into a through hole provided in said rack, a stem portion integrally connected at one end to said shank portion at an elbow and an offset free end, the offset angle between said free end and said stem being acute, and a safety bumper guard releasably connected to said rack and extending beyond said free end of said at least one hook member so as to prevent an inadvertent encounter with said at least one hook member of said display, said bumper guard being releasably connected to said rack and comprising a pair of shank portions engageable in respective through holes provided in remote notches of said rack, a pair of opposed outwardly turned shoulders arranged to overlie respective opposite end portions of said rack and extending respectively therebeyond, a pair of inwardly turned substantially parallel arms issuing from said respective shoulders and a cross member connected at each end thereof to a respective arm.



3,939,986
ADJUSTABLE SUPPORT MEANS

Joseph W. Pierro, 119 Unkament Drive, Pittsfield, Mass. 01201

Filed Nov. 4, 1974, Ser. No. 520,540
Int. Cl.² A47B *73/00, 23/00*
U.S. Cl. 211—74 **5 Claims**



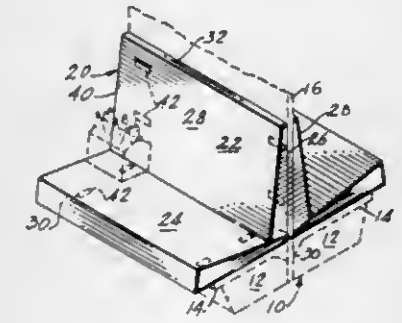
1. An adjustable support means for supporting a tray-like device on a portion of upholstered furniture comprising:
   - a. a first member including a tray-like device,
     - 1. an arm portion of said first member having sides, one of said sides having a plurality of teeth formed therein and the other of said sides being beveled,
   - b. a second member movable into locking engagement with said first member,
     - 1. said second member having a pair of slot-like extensions for sliding engagement with said sides of said first member.
       - a. one of said slot-like extensions having a cam means coacting with said beveled side of said first member,
       - b. the other of said slot-like extensions having at least one projection coacting with said teeth on said first member,

whereby as said second member engages said first member said cam means coacts with said beveled side to move said teeth into locking engagement with said at least one projection.

3,939,987
SOLID PLASTIC FOAM MERCHANDISE SUPPORT

Rafael T. Bustos, Atlanta, and Ladd M. Orr, Clarkston, both of Ga., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Continuation of Ser. No. 217,056, Jan. 11, 1972, abandoned. This application May 13, 1974, Ser. No. 469,741
Int. Cl.² A47F *7/00*
U.S. Cl. 211—134 **3 Claims**



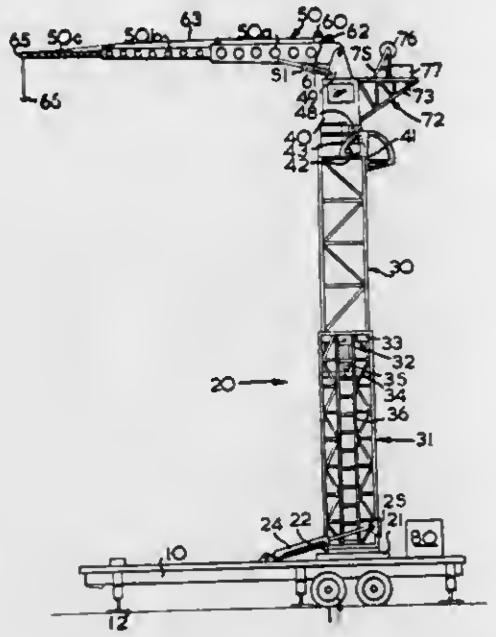
1. A lightweight merchandise rack for use on an underlying support counter and comprising,
   - a bottom shelf panel and an upright back panel, each of which is of similar construction, each of said panels being wedge-shaped and having a flat, planar back surface, a flat planar top surface, a wide edge and a narrow edge, said panels being made from lightweight solid plastic foam material which may be cut to desired size with a common instrument, including a knife or an ordinary hand saw to accommodate the panel size to the underlying support counter,
   - said bottom panel having its back surface located in a generally horizontal plane and its wide edge facing to the front of said rack so that the top surface of said bottom panel extends downwardly from the front edge toward the rear of said shelf panel,
   - said upright panel having its back surface located in a generally vertical plane and its wide edge resting atop the rear portion of said top surface of said bottom panel such that the included angle between the top surface of said shelf panel and said top surface of said upright panel is approximately a right angle, and the included angle between said back surface of said shelf panel and said back surface of said upright panel is also approximately a right angle.

3,939,988
TOWER CRANE

Donald E. Wellman, Komoka, Canada, assignor to General Crane Industries Limited, London, Canada

Division of Ser. No. 144,199, May 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 818,751, April 23, 1969, abandoned. This application Aug. 21, 1974, Ser. No. 499,418
Claims priority, application Canada, Apr. 9, 1969, 48201
Int. Cl.² B66C *23/62*
U.S. Cl. 212—46 A **4 Claims**

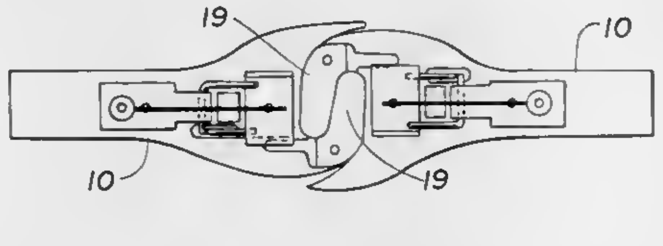
1. A mobile tower crane comprising mobile platform means, a tower pivotally mounted at its base on said platform means for tilting movement between a vertical operating position and a substantially horizontal travelling position, raising means interconnecting said tower and said platform means for moving the tower between said positions, jib support means mounted at the top of the tower and including at least a part rotatable about a vertical axis when the tower is vertical, pivot means connecting said jib to said tower, said pivot means including a jib pivot connecting said jib to said jib support means to allow luffing movement of said jib, and jib luffing hydraulic cylinder means connected at one end to said jib and operative to cause said luffing movement of said jib, and wherein there is provided jib alignment means operatively connected between the jib support means and the jib movable to alter the relative disposition of said tower, the jib pivot and an end of the jib luffing hydraulic cylinder means in such manner as to alter the angle between the jib and the tower axis without operation of said jib luffing hydraulic cylinder means, the jib alignment means being arranged to move between an operating position and a folded position, in which operating position the jib luffing hydraulic cylinder means is capable of luffing the jib between a raised position above the top of the tower and a lowered position in which the jib forms a substantial angle of the order of 90° with the tower axis, and in which movement of the jib alignment means to the folded position causes angular movement of the jib through a folding angle roughly equivalent to said substantial angle, whereby the jib can be moved to a folded position in alignment with the tower by combined operation of said jib alignment means and said jib luffing cylinder means, and wherein said pivot means are so arranged that the jib lies close to the tower when in said aligned position.



3,939,989
COUPLING APPARATUS

William H. Thomson, Nice, Calif., assignor to The Raymond Lee Organization, Inc., a part interest

Filed Dec. 13, 1974, Ser. No. 532,371
Int. Cl.² B61G *1/00*
U.S. Cl. 213—75 TC **4 Claims**

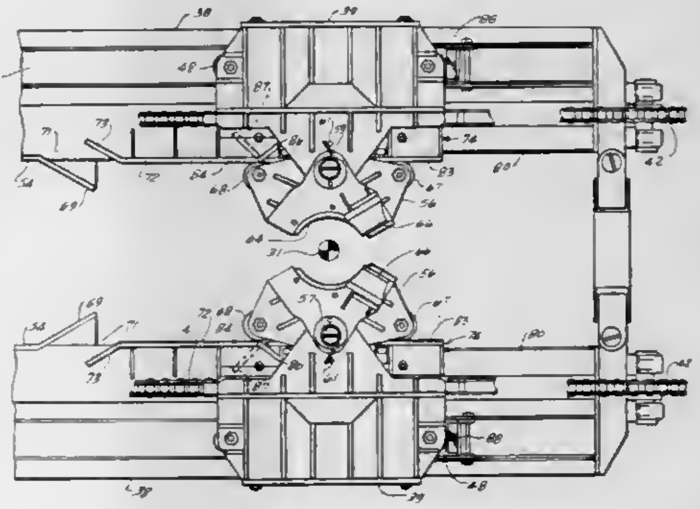


1. Coupling apparatus comprising:
   - first and second horizontally elongated members having adjacent ends which can be moved toward or away from each other into or out of coupling position, said ends having curved openings;
   - first and second latching means, each latching means being pivotally secured to an adjacent end of a corresponding member, each latching means being disposed in the curved opening of its member and engaging the other latching means when the members are coupled, said latching means being disposed outside of the curved openings when the members are uncoupled;
   - first and second locking elements, each element being disposed on a corresponding member adjacent the latching means, each element being normally in a first position at which the corresponding latching means is locked in position within the corresponding opening, each element having a second position at which the corresponding latching means is unlocked and is free to be moved out of the opening; and
   - first and second tiltable control levers having positions extending downward through openings in the members, said levers when inclined in either direction causing said elements to be placed in the second position whereby the members can be moved out of coupling position and the elements returned to the first position, each lever having means cooperating with the corresponding element to produce the desired action.

3,939,990
AUTOMATIC ROUGHNECK

Charles R. Johnson, San Pedro, Calif., assignor to Global Marine, Inc., Los Angeles, Calif.

Filed June 13, 1974, Ser. No. 478,930
Int. Cl.² E21B *19/14*
U.S. Cl. 214—1 P **17 Claims**



1. An apparatus for handling the lower end of a pipe during a portion of its travel between a horizontal storage position and a vertical use position comprising:
   - a pair of opposed jaws;
   - means for traversing the jaws in a generally horizontal direction between a center line position wherein a pipe is vertical for use and a lateral position wherein a pipe is tilted for transportation to or from storage the means for traversing including a pair of parallel tracks,
   - means for mounting one of the jaws on each track, and
   - means for traversing the jaws along the respective tracks in synchronism with each other;
   - means for opening the jaws into a generally U-shaped opening facing towards the lateral position for receiving a pipe in the opening and constraining it from uncontrolled lateral movement towards the center line position;
   - means for closing the jaws into a generally O-shaped opening adjacent the center line position for holding the pipe; and
   - means for opening the jaws into a generally U-shaped opening facing away from the lateral position adjacent the center line position for clearing a pipe located in the center line position.

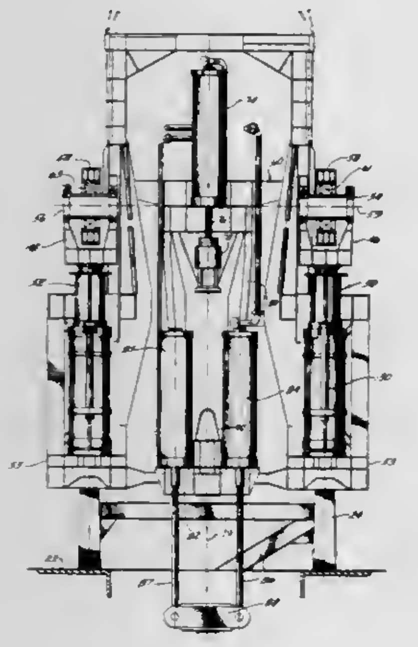
3,939,991
PARKING BRAKE FOR SUBSEA MINING LIFT SYSTEM

Abraham Person, Los Alamitos, Calif., assignor to Global Marine, Inc., Los Angeles, Calif.

Filed June 13, 1974, Ser. No. 478,932

Int. Cl.^{2} E21B *19/14*

U.S. Cl. 214—1 P **6 Claims**



1. Apparatus for raising and lowering a string of pipe having collars at intervals along the pipe, comprising first supporting means positioned along the pipe for releasably supporting a collar, first linear drive means for moving said first supporting means reciprocally lengthwise of the pipe, second supporting means positioned along the pipe for releasably supporting a collar, second linear drive means for moving said second supporting means reciprocally lengthwise of the pipe, and third supporting means positioned along the pipe for releasably supporting a collar, means retaining the third supporting means in fixed position along the path of movement of the pipe string in between the limits of movement of the first and second supporting means, either drive means moving the pipe string sufficiently to position a collar at the third supporting means.

3,939,992
WORKPIECE TRANSFER MECHANISM

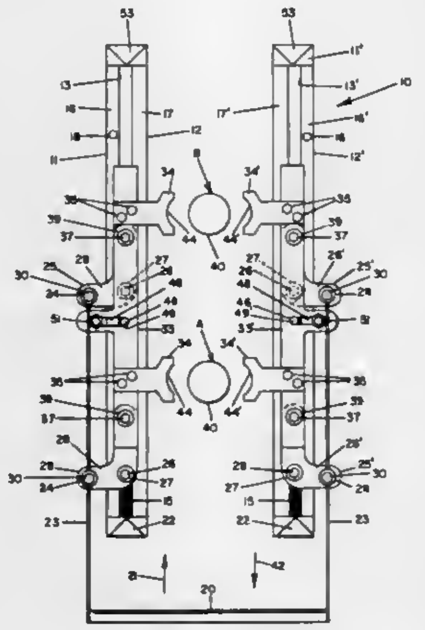
Richard A. Mikulec, 325 Sherbrooke Ave., Amherst, N.Y. 14221

Filed Sept. 26, 1974, Ser. No. 509,327

Int. Cl.^{2} B65G *25/04*

U.S. Cl. 214—1 BB **8 Claims**

1. A workpiece transfer mechanism comprising base means, first and second spaced parallel ways on said base means, first and second slide members slidable in a longitudinal direction in said first and second ways, respectively, means for maintaining a predetermined frictional engagement force between said slide members and said ways, said frictional engagement force being overcomeable by a first force, first and second workpiece engaging means, first and second mounting means movably mounting said first and second workpiece engaging means on said first and second slide members, respectively, said first and second mounting means being moveable on said side members in response to a second force which is less than said first force, and actuating means coupled to said mounting means for transmitting said second force thereto to cause said mounting means to carry said workpiece engaging means to and from its limits of travel between a workpiece engaging position and a totally open position while said slide members remain stationary in said ways because said second force is less than said first force, said first force being transmitted to said slide members through said mounting means when said workpiece engaging means are at their limits of travel to thereby cause said slide members to move in said ways.



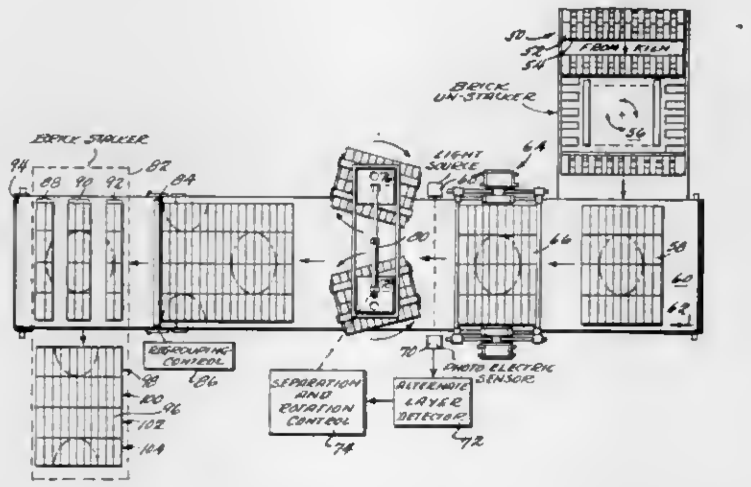
3,939,993
APPARATUS AND METHOD FOR BRICK BLENDING

Hans Lingl, Jr., Paris, Tenn., assignor to Lingl Corporation, Paris, Tenn.

Division of Ser. No. 352,033, April 17, 1973. This application Aug. 7, 1974, Ser. No. 496,013

Int. Cl.^{2} B65G *57/22*

U.S. Cl. 214—6 A **12 Claims**



1. Apparatus for blending a layered stack of bricks having a central core section of lesser hardness and lighter color than in the surrounding outer shell section, said apparatus comprising:

means for unloading the stack into layers which each include a corresponding core section and shell section,

means for rearranging the bricks in each alternate layer by placing bricks from the normally occurring core section areas into the normally occurring shell section areas and from the normally occurring shell section areas into the normally occurring core section areas, said means comprising means for gripping the bricks in a first half as a first group, means for gripping the bricks in the remaining half as a second group, and means for moving the gripped first and second halves relative to one another to reverse their respective relative positions, and

means for restacking all the layers into a blended stack.

3,939,994
STACKING APPARATUS

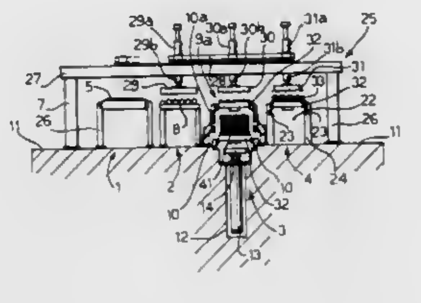
Gianoberto Suzzi, Modena, Italy, assignor to Riva Calzoni S.p.A., Milan, Italy

Filed Jan. 22, 1975, Ser. No. 543,109

Claims priority, application Italy, Jan. 23, 1974, 67177/74

Int. Cl.^{2} B65G *57/04*

U.S. Cl. 214—6 M **4 Claims**



1. An apparatus for stacking sheets of asbestos cement interleaved with patterns, comprising feeding means for feeding fresh asbestos cement sheets, first and second flanking guideways for guiding respectively pattern-carrying trolleys and trolleys carrying mixed stacks of sheets interleaved with patterns, a bridge structure arranged above said guideways and said feeding means, a carriage displaceably mounted on the said bridge structure and provided with respective suction boxes for picking up, transporting and depositing the said sheets and the patterns, a trolley elevator in the area where the stacks of interleaved sheets and patterns are formed, wherein the improvement consists in the provision at the station where the mixed stack of sheets and patterns is formed on the respective trolley, under the bridge structure, of a section of auxiliary guideway, disposed above the second guideway for the mixed stack-carrying trolley, at a higher level than the maximum height attainable by the top of the mixed stack when said trolley is on said second guideway, a transfer mechanism for transferring said trolleys from the first guideway to the auxiliary guideway, and means for disengaging the section of auxiliary guideway from the trolley when the latter is engaged by the said elevator such that said elevator lowers the trolley onto the second guideway.

3,939,995
VALVE PLACEMENT IN A MULTI-PLY, INFLATABLE BAG

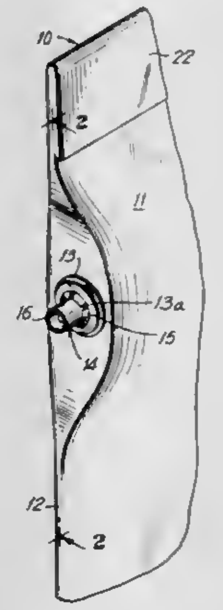
Robert Olin Baxter, Camden, Ark., assignor to International Paper Company, New York, N.Y.

Filed Nov. 1, 1974, Ser. No. 519,814

Int. Cl.^{2} B60P *7/14*

U.S. Cl. 214—10.5 D **5 Claims**

1. In a multi-ply, inflatable bag, which includes an inner, inflatable bladder; an outer, protective shell, enclosing the bladder and having a fold line defining a fold in an edge thereof; a valve connected to the bladder and extending outwardly of the bladder and the shell; and a rigid grommet; the valve being located in the eyelet of the grommet; the improvement which comprises: the grommet being secured to the shell about the fold in an edge of the shell, whereby the edge of the shell is indented in the area of the grommet and the area of the indent in the shell being substantially greater than the shell contact area of the grommet.



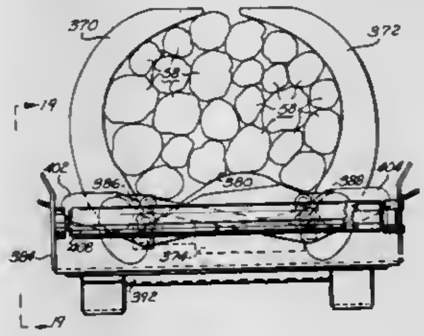
3,939,996
TREE HARVESTING APPARATUS

Theodore B. Golob; Sylvester J. Hauck; Stanley C. Jasinski; Bruce A. Margerum, all of Ontario, Canada, and Antti Jarvi, Niittykumpu, Finland, assignors to Eaton Yale Ltd., Ontario, Canada

Division of Ser. No. 888,746, Dec. 29, 1969, Pat. No. 3,796,241. This application July 30, 1973, Ser. No. 384,147

Int. Cl.^{2} B60P *3/00*

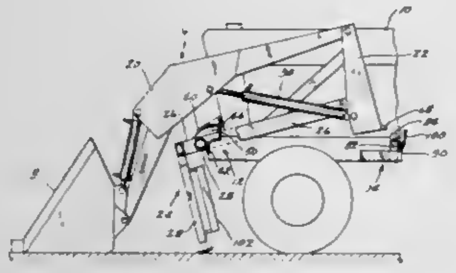
U.S. Cl. 214—82 **4 Claims**



1. Apparatus for use in association with a vehicle for harvesting and transporting trees, said apparatus comprising a clamp assembly comprising a pair of arms adapted to be mounted on the vehicle for gripping logs to be transported, said pair of arms being operable between a closed condition in which the logs are held against a lower portion of said clamp assembly to retard relative movement between the logs and the vehicle while the logs are being transported and an open condition in which the logs are released, and a roller mounted on the frame of said clamp assembly and movable upwardly against the logs for raising the logs off said lower portion of said clamp assembly in response to operation of said arms from said closed condition to said open condition to thereby facilitate disengaging the logs from said clamp assembly.

3,939,997
TRACTOR MOUNTED IMPLEMENT DEVICE

Eldon M. Frank, Lake View, Iowa, assignor to F & W Company Inc., Lake View, Iowa
Continuation-in-part of Ser. No. 260,465, June 7, 1972, Pat. No. 3,863,786. This application Feb. 3, 1975, Ser. No. 546,433
Int. Cl.² E02F *3/72*
U.S. Cl. 214—131 A **11 Claims**

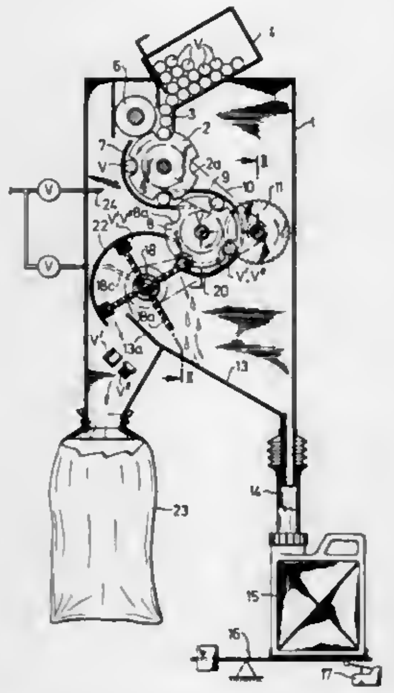


3. In combination, an implement mountable on a tractor, comprising,
an implement having a boom with a ground engaging tool on the outer end and pivotably mounted to upright standards at its inner end carried on a U-shaped frame and power means extendably interconnects said U-shaped frame and boom for relative pivotal movement therebetween, said U-shaped frame having a transversely extending member and a stand connected thereto for cooperation with said tool for supporting said implement independently of said tractor,
a tractor having oppositely disposed rear side support brackets for engagement with said standards, and
a downwardly and forwardly opening guide support channel on said tractor for receiving said transversely extending member whereby upon said transversely extending member being positioned in open end of said channel and said power means being operated to pivot said U-shaped frame and said boom towards each other said U-shaped frame pivots about an axis through said channel until said standards engage said support brackets whereupon continued operation of said power means causes said U-shaped frame to pivot about an axis through said support brackets and thereby moving said transversely extending member upwardly and rearwardly in said channel without said tractor having been moved forwardly.

3,939,998
VIALS EMPTYING APPARATUS

Walter Soltermann, Birsfelden, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland
Filed Dec. 3, 1974, Ser. No. 529,106
Claims priority, application Germany, Dec. 3, 1973, 2360201
Int. Cl.² B65G *65/40;* **B65B** *69/00*
U.S. Cl. 214—302 **9 Claims**

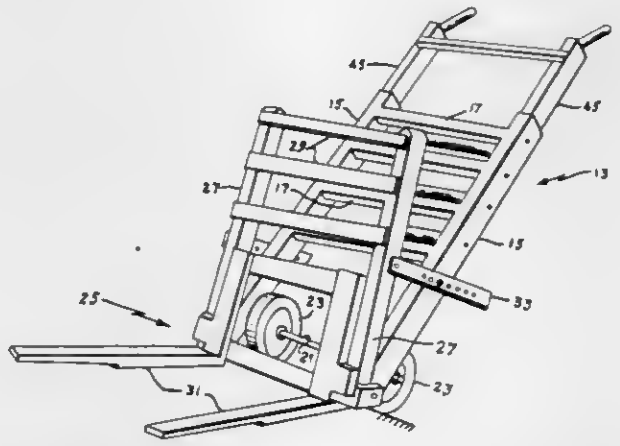
1. Apparatus for emptying disposable receptacles, comprising:
- a. severing means adapted to sever receptacles into two cup-like parts;
- b. conveying means for conveying receptacles past said severing means to be severed;
- c. a rotating spider which has tubular arms for supporting cup-like parts from the conveyor and which is rotatable about a substantially horizontal axis, the arms being adapted to be connected to a pressure gas source at least during part of each rotation;
- d. means to turn the two parts of each receptacle in the conveying means so that the severed apertures of such parts face towards the spider;
- e. means for locating each of the receptacle parts thus turned on to a rising spider arm;
- f. means for collecting liquid poured out of the receptacles;



and
- g. separate means for collecting cup-like parts.

3,939,999
FORKLIFT HAND TRUCK

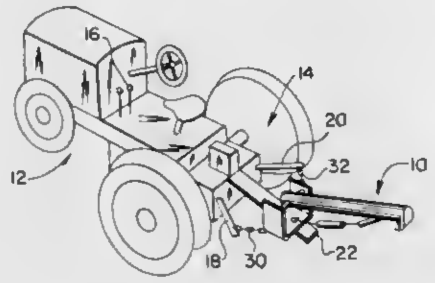
Edsel J. Nielson, Woods Cross, Utah, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Nov. 20, 1974, Ser. No. 525,595
Int. Cl.² B62B *1/06*
U.S. Cl. 214—370 **1 Claim**



1. In a tiltable hand truck having a main frame which includes side rails and handles at the rearward end thereof and carrying wheels with axle therefor at the forward ends, the improvement comprising extensions fitted into said side rails for extending the length thereof, the handles being attached to the rearward end of said extensions, a series of angular slots on the inner walls of said side rails, a corresponding series of counter weights insertable in said slots for counter balancing the work load, a V-shaped brace attached to said side rails and extending downwardly therefrom, a reach member extending rearward from said axle to said brace, a swivel wheel assembly attached to the lowermost portion of said brace for rolling contact with the ground surface, an angularly adjustable load support including a mast pivotally attached to the side rails at the forward end of said main frame and extending upwardly therefrom, a pair of adjustable mast supports pivotally attached between the sides of said mast and the side rails of the main frame, and a pair of forks extending outwardly from the lower end of said mast for insertion under a workload whereby the angle of said load support relative to the hand truck can be varied to obtain the maximum work advantage depending on the size, shape and weight of the workload.

3,940,000
UNIVERSAL HYDRAULIC LIFT ATTACHMENT FOR TRACTORS

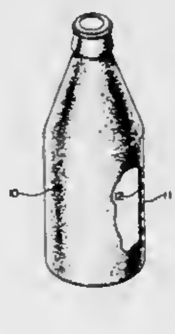
C. K. Mousel, Arapahoe, Nebr. 68922
Filed May 16, 1974, Ser. No. 470,588
Int. Cl.² E02F *3/62*
U.S. Cl. 214—766 **7 Claims**



1. A hydraulic lift assembly attachable to a tractor having a draw bar, a hitch with vertically pivotable arms, and a hydraulic system for operating the arms and connectable hydraulic attachments, said lift assembly comprising:
a frame mountable on and attachable to the draw bar;
means for mounting said frame to the draw bar;
two elongated connecting means, each connecting means connected at a first end to said frame and connectable at the other end to a corresponding arm of the hitch, said lift assembly removably mounted on and primarily supported by said draw bar and additionally supported and stabilized by the lift arms through said connecting means;
a boom pivotably mounted to said frame and extending outwardly therefrom;
and hydraulic piston means for raising and lowering said boom, said hydraulic piston means mounted at one end to said frame and mounted at the other end to said boom and connectable to the hydraulic system of the tractor.

3,940,001
RECYCLABLE PLASTIC CONTAINERS

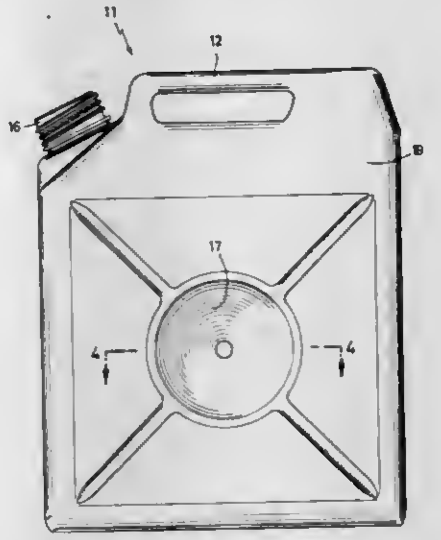
Albert J. Haefner, and Michael E. Kucsma, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.
Continuation-in-part of Ser. No. 295,515, Oct. 6, 1972, abandoned. This application May 6, 1974, Ser. No. 467,144
Int. Cl.² B65D *23/02, 25/14*
U.S. Cl. 215—1 C **40 Claims**



1. A rigid narrow-necked plastic bottle having laminated walls, the laminated walls comprising:
- a. a fluid-barrier lamina of a flexible non-frangible material which is highly impermeable to fluids, and
- b. a load-bearing lamina of a frangible plastic material which will delaminate from said fluid barrier lamina when said bottle is crushed.

3,940,002
PLASTIC JERRY CAN

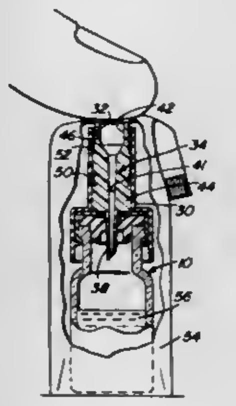
Wolfram Schiemann, Eugen-Nagele-Strasse, 714 Ludwigsburg, Germany
Division of Ser. No. 347,572, April 3, 1973. This application Dec. 6, 1974, Ser. No. 530,155
Claims priority, application Germany, Apr. 6, 1972, 2216524
Int. Cl.² B65D *1/18*
U.S. Cl. 215—1 C **14 Claims**



1. A plastic jerry can comprising an outside wall which consists of a surface-stabilized low-warpage material of sufficiently high diffusion density and sufficiently low surface, skin effect resistance, which material is injected in the form of shells forming a portion of the shape of said jerry can, and
a contiguous blow molded plastic wall sealed onto and around the interior surface of the shells.

3,940,003
SAFETY CAP FOR MEDICAMENT VIAL HAVING PUNCTURABLE SEAL

Roger R. Larson, Champaign, Ill., assignor to Pharmaco, Inc., Champaign, Ill.
Filed May 7, 1974, Ser. No. 467,802
Int. Cl.² B65D *41/20, 51/22;* **A61J** *1/08*
U.S. Cl. 215—247 **6 Claims**

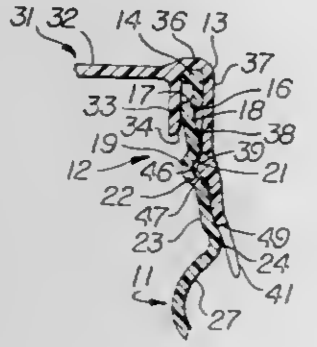


1. For use in connection with a container having a puncturable seal, a closure cap for support from said container in position with a mounting portion of said cap disposed outwardly of said seal, a tubular needle structure having one pointed end supported from said mounting portion for movement toward and away from the outer side of said seal between a first position with said one pointed end retracted away from said seal and a second position with said one pointed end projected through the seal, said mounting portion of said cap and said needle structure including coacting means progressively and increasingly yieldingly resisting movement of said needle structure from said first position to a third position intermediate said first and second positions with said pointed

end at least initially engaged with said seal and then releasing said needle structure for free movement from said third position to said second position.

3,940,004
WIDEMOUTH JAR NECK AND PLASTIC CAP CONSTRUCTION

George W. Faulstich, San Carlos, Calif., assignor to Three Sisters Ranch Enterprises, San Carlos, Calif.
Filed Oct. 15, 1974, Ser. No. 514,599
Int. Cl.² B65D *41/48*
U.S. Cl. 215—256 4 Claims

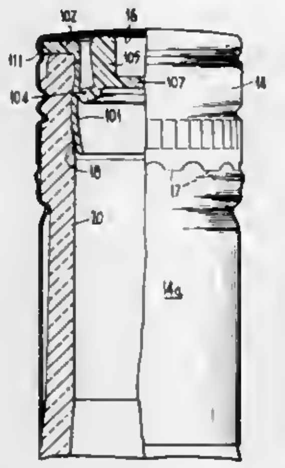


1. In combination, a thin-walled container neck, said neck formed with a cylindrical upper end having an inwardly-turned top flange, an inwardly-turned upper neck bead below said upper end, said upper neck bead comprising a downwardly-inwardly slanted shoulder, the inside diameters of said flange and of said upper neck bead being approximately the same, a conical outwardly-downwardly first slanted portion below said shoulder of said upper neck bead, a lower inwardly-turned neck bead below said first slanted portion, an outwardly-downwarddly second slanted portion below said lower neck bead, and an external bead below said second slanted portion; and a deformable, flexible plastic cap, said cap having a top disc having a short, depending inner skirt and a peripheral outer skirt, said outer skirt having a cylindrical upper portion parallel to said inner skirt, the spacing between said inner skirt and said cylindrical upper portion being substantially greater than the thickness of the wall of said container neck, an upper internal cap bead below said upper portion, a weakening groove below said upper internal bead and a lower internal cap bead below said weakening groove, said outer skirt being flared outwardly below said lower internal cap bead so that said cap rests in stable fashion on said neck prior to said cap being seated on said neck;

the top of said flange fitting against the underside of said disc, said flange being compressed between said inner skirt and said upper portion of said outer skirt, said upper neck bead being in sealing engagement with the outside of said inner skirt, said upper cap bead fitting in sealing engagement against said first slanted portion, said lower cap bead locking in said lower neck bead, the lower edge of said outer skirt fitting tightly against the outside of said second slanted portion of said neck and also fitting tightly against the top of said external bead of said neck so that said cap cannot be pulled off said neck by prying the lower edge of said cap upward with the fingers, the outer lower edge of said inner skirt being tapered and the bottom surfaces of both said upper and lower internal cap beads being slanted downwardly-outwardly so that downward pressure on said cap when said cap is resting on top of said neck seats said cap on said neck.

3,940,005
SAFETY CLOSURE MEANS FOR PRESSURIZED BOTTLES AND OTHER LIKE CONTAINERS

Rodney John Granat, Caulfield, Australia, assignor to A.C.I. Operations Pty. Limited, Melbourne, Australia
Filed Apr. 11, 1974, Ser. No. 460,199
Int. Cl.² B65D *41/60*
U.S. Cl. 215—325 13 Claims



1. A resealable safety closure which can be applied by conventional high speed capping equipment to annular openings in necked containers,

said closure comprising

metal capsule means having a crown and a skirt depending therefrom, said capsule means adapted to enclose at least a portion of the neck of said container and being convertible into a removably secured cap means by the in situ formation of screw threads thereon by a rolling operation while said capsule means is fitted on said neck, and

self-releasing plug means at least partly enclosed by and retained by said capsule means so that same may be simultaneously applied to and removed from said container,

said plug means comprising

tubular member means readily insertable into the container opening,

flange means near one end of said tubular member means and retained by the interior of said capsule means in axially slidable relationship thereto, said flange means adapted to seat upon the area of the container adjacently surrounding the opening when said tubular member means is disposed within the opening to limit movement of the tubular member means into the opening,

said tubular member means including

transversely expandable annular sealing area means located along said tubular member means an axial distance below said flange means sufficient to avoid substantial restriction by said flange means of transverse expansion of said sealing area means,

button member means located radially centrally of said tubular member means and engageable with the interior crown of said capsule means,

connecting means connecting said button means to said sealing area means wherein axial movement of said button means is translated by said connecting means to transverse movement of said sealing area means, said sealing area means capable of variation of expansion, for a predetermined axial movement of said button means, with the diameter of the opening of the container to effectively seal a relatively wide range of diameters of contents

said connecting means including

relatively rigid inclined wall means,

a relatively flexible annular first hinge means connecting said wall means to said sealing means,

a relatively flexible annular second hinge means connecting said wall means to said button means,

said inclined wall means extending downwardly and outwardly from said second hinge means to said first hinge means,

said connecting means being transversely narrower in axial cross section than said button means,

said first and said second hinge means being axially substantially thinner and transversely substantially narrower than said inclined wall means,

said cap means which is formable from said capsule means and said plug means cooperating so that when said capsule means is moved from an unsealed position to a sealed position, and converted to said cap means by screw thread formation,

i. said button means is moved fron an equilibrium position to an axially lower depressed position,

ii. said connecting means translates the axial movement of said button means into transverse expansion of said sealing area means from an unsealed position to a sealed position against the interior of said container neck,

said cap and said plug means furthermore cooperating so that when said cap is in said sealed position,

i. said button means is axially depressed,

ii. said plug means is in an unstable position,

iii. said sealing area means is in a transversely expanded position of sealing engagement against the interior neck of said container, said plug means then forming an air-tight barrier between the container contents and the surrounding atmosphere, and

iv. said second hinge means is axially closer to said flange means than said first hinge means,

said cap movable from said sealed position into an unsealed position by unscrewing same, said cap and said plug means cooperating when said cap is in said unsealed condition so that

i. said button means is in an equilibrium position,

ii. said plug means is in an equilibrium positon, and

iii. said sealing area means is out of sealing engagement with the interior neck of said container.

3,940,006
REFUSE HOPPER

Fred T. Smith, Dearborn Heights, Mich., assignor to Sargent Industries, Inc., Los Angeles, Calif.
Division of Ser. No. 264,021, June 19, 1972, Pat. No. 3,899,091. This application Feb. 8, 1974, Ser. No. 440,722
Int. Cl.² B65D *7/02*; B65F *3/00*
U.S. Cl. 220—1 T 12 Claims

1. In combination in a refuse hopper for use with packer means for compressing refuse in the refuse hopper for transfer of the refuse into a storage body and storage in the storage body comprising:

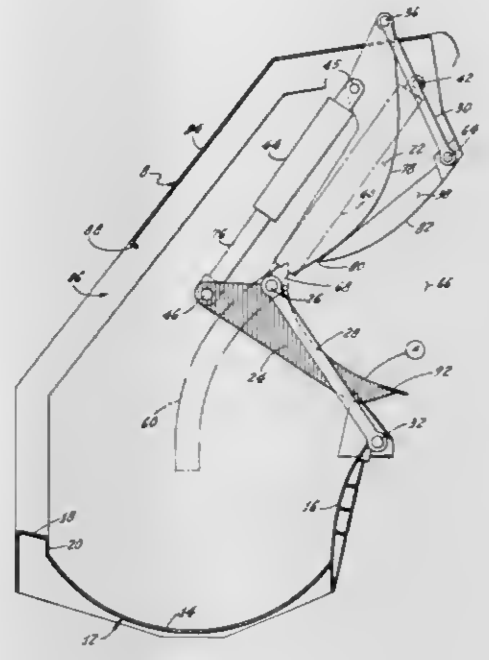
a rearwardly disposed lip over which refuse is dumped into said hopper;

an arcuate bottom portion extending forwardly in the arcuate configuration;

a vertically disposed wall portion contiguous to said lip and said curved bottom portion for facilitating the shearing of refuse overhanging the rearwardly disposed lip;

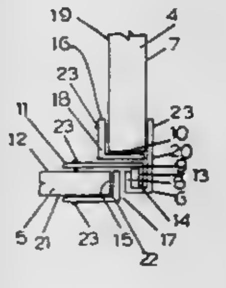
a vertically disposed packing surface contiguous to said curved bottom portion at the forward end of the curved bottom portion, and

side walls contiguous to the arcuate bottom portion and the wall portion and the packing surface to define the enclosure constituting the refuse hopper.



3,940,007
CONTAINERS

Aubrey Ronald Griffiths, P.O. Box 4014, Hamilton, New Zealand
Filed Oct. 22, 1974, Ser. No. 517,109
Int. Cl.² B65D *7/00*
U.S. Cl. 220—4 F 4 Claims



1. A container comprising:

a base;

a plurality of container sections each comprising four vertical sides;

each adjacent pair of sides including a first side having a corner member including at least a substantially J shaped part extending therefrom, and a second side having a corner member including at least a substantially L shaped part extending therefrom;

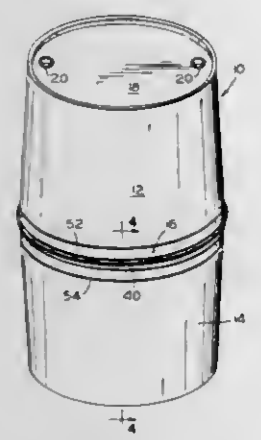
said first and second sides being relatively slidably movable with a toe of said L shaped part engaged between a toe and a stem of said J shaped part, with longitudinal movement of one of said sides relative to the other of said sides being prevented; and

a first L shaped member having a stem fixed to an inner face of said first side and a toe adjacent an end face of said first side.

3,940,008

COLLAPSIBLE REUSABLE BARREL FOR FLUIDS

Robert D. Flanders, 18040 Lower Boones Ferry Road, Tigard, Oreg. 97223
Filed May 22, 1972, Ser. No. 255,597
Int. Cl.² B65D *7/02, 45/16*
U.S. Cl. 220—5 R **2 Claims**

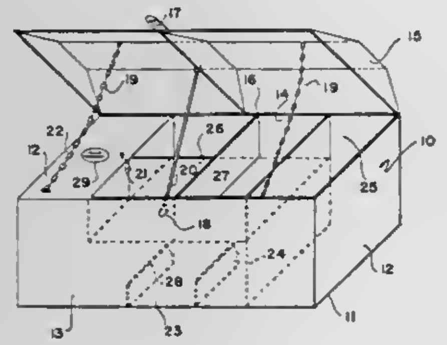


1. In a barrel for storing and shipping fluids and other materials comprised of a pair of frustrum-shaped shell-like barrel sections, each having a closed end and an open end larger than said closed end and being interchangeably nestable one within the other when disassembled, said barrel sections each having mating means for sealingly and detachably joining said open ends together with the respective interiors of said two barrel sections facing one another, the improvement wherein said mating means comprises: a pair of projecting flanges each extending peripherally around the open ends of said barrel sections and having a respective pair of lips formed peripherally around the edges thereof, a resilient gasket for inserting between said flange pair, and a plurality of unitary C-shaped clamp members spaced around the periphery of said flange pair for holding said flange pair in non-contacting close proximity with said gasket compressed therebetween, said clamp members having their respective ends bend inwardly toward one another for interlocking with said respective lips formed around said flange pair and being detachable from said flange pair by the pressing of said barrel sections together momentarily to increase the compression of said resilient gasket thereby freeing said clamp members from engagement with said flange pair.

3,940,009

TRUCK BOX

Julius Szeles, 1403-10th Ave., Regina, Saskatchewan, Canada
Filed Aug. 26, 1974, Ser. No. 500,718
Claims priority, application Canada, Aug. 28, 1973, 179795
Int. Cl.² B65D *87/00*
U.S. Cl. 220—20 **2 Claims**

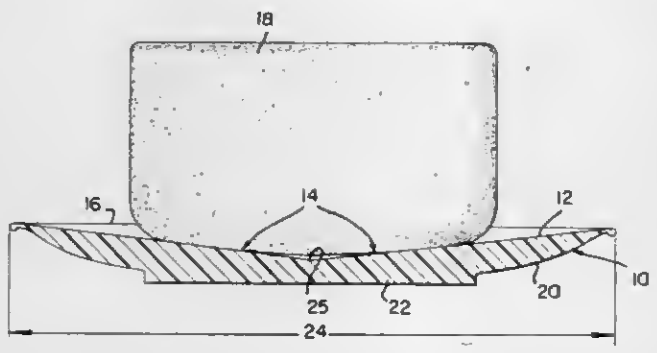


1. A box for use in open truck boxes and adapted to receive a spare tire and wheel comprising an open topped enclosure, cover means secured to the enclosure and adapted to selectively enclose the open top, at least one fuel storage tank formed within said box having a filler cap thereon, a divider in said box defining with said box and said tank, a tire and wheel storage area for the receipt and storage of the associated spare tire and wheel and tool storage areas also formed in said box, said fuel tank comprising an L-shaped fuel tank, one leg of said tank lying at one end of said box, the other leg of said fuel tank extending across the lower portion of said box and terminating spaced from the other end of said box, the space defined by the distal end of said other leg and the adjacent end wall of said box forming said tire and wheel storage area adapted to receive the associated spare tire and wheel vertically therein.

3,940,010

CAKE PLATE

Betty Sears, San Bruno, Calif., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Mar. 26, 1975, Ser. No. 562,255
Int. Cl.² A47G *19/00*
U.S. Cl. 220—23.86 **8 Claims**

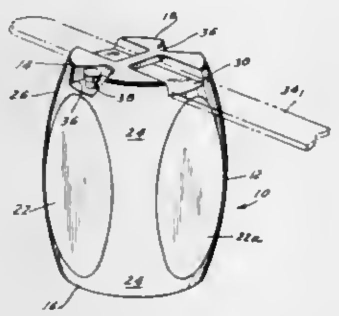


1. A circular dish comprising a food receiving top surface having a centrally pointed conical wall therein, an external side surface intersecting said top surface at the periphery of said top surface and a bottom external surface intersecting said side surface.

3,940,011

ALL PLASTIC DRUM

Robert A. Dubois, Marion, Ohio, and William H. Gushard, Staten Island, N.Y., assignors to Greif Bros. Corporation, Delaware, Ohio
Filed Mar. 26, 1975, Ser. No. 562,124
Int. Cl.² B65D *7/42*
U.S. Cl. 220—66 **14 Claims**

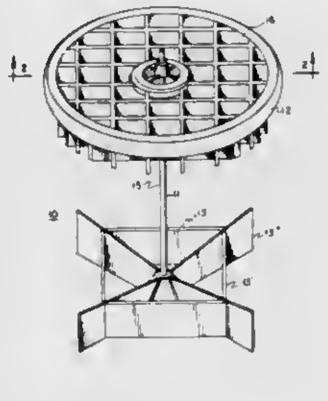


1. An industrial drum molded of resinous material comprising: an elongated hollow body member, said member having a circular top end, a circular bottom end, four flat sides spaced approximately 90° apart formed integrally with and disposed about said body member extending between said top and bottom ends, rounded surfaces blending adjacent sides with each other, surfaces blending said flat sides and said drum bottom end, the blending surfaces are arcuate with the diameter of the curves of the transverse sections progressing from the ends to the drum center progressively increasing, means closing the bottom end of the drum, means closing the top end of the drum, walls defining a cavity aligned with one of the flat faces extending downwardly from the outer circular periphery of said top end, a neck fitting extending upwardly from said cavity to a height below that of the means closing the top end of the drum, the cavity extending over a minor sector of the circle defined by the periphery of the top end, the cavity walls surrounding said fitting except from a vertically downward direction and a direction laterally toward the aligned flat face, and being accessible laterally from only the direction of the aligned flat face and from a vertically downward direction.

3,940,012

SPLASH GUARD FOR CUPS

Bruce N. Addington, 1402 Grant Ave., Boise, Idaho 83706
Filed Jan. 3, 1975, Ser. No. 538,501
Int. Cl.² A47G *19/22*
U.S. Cl. 220—90.4 **3 Claims**

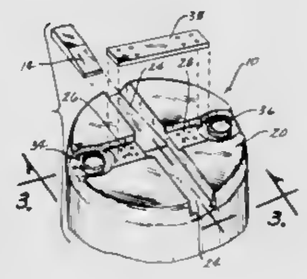


1. A splash guard for cups, comprising:
a pedestal having an outwardly, horizontally projecting base and on upstanding post issuing centrally from said base; and a vertically disposed openwork having a centrally disposed, vertically oriented sleeve operable to slide over said post, said sleeve being provided on its interior side with a pair of leaf-spring members which ride over the exterior of said post.

3,940,013

PLASTIC DRUM

Richard L. Bonnett, Eldora, Iowa, assignor to Quality Products, Inc., Eldora, Iowa
Filed Apr. 8, 1974, Ser. No. 459,064
Int. Cl.² B65D *25/28*
U.S. Cl. 220—94 R **7 Claims**

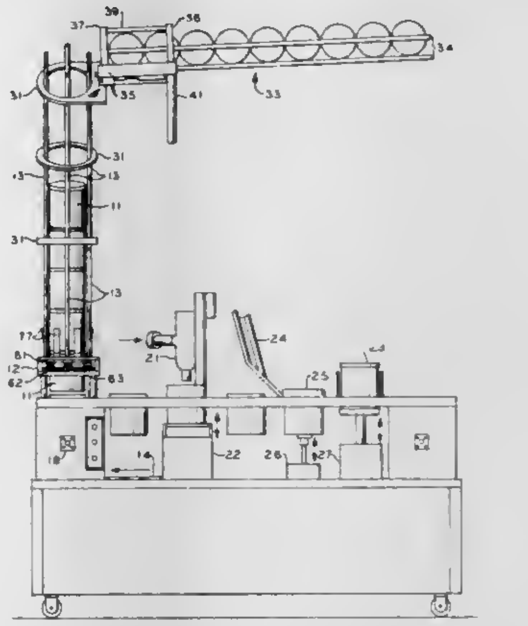


1. A drum, comprising,
a bottom portion,
a side wall means extending upwardly from said bottom,
a top portion closing the upper ends of said side wall means and dwelling in a substantially horizontal plane,
first and second channel means formed in said top portion and intersecting each other at substantially right angles, said first channel means being deeper than said second channel means and extending completely across said top portion,
a support bar means secured to said top portion and positioned in said second channel means and extending over and through said first channel means,
said first channel means being uninterrupted with protuberances to permit a tine means of a lifting apparatus to be inserted therein below said support bar means.

3,940,014

FEEDING METHOD AND APPARATUS FOR CONTAINERS

Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Apr. 29, 1974, Ser. No. 464,954
Int. Cl.² G07F *11/00*
U.S. Cl. 221—10 **18 Claims**



1. Apparatus for feeding unfilled containers comprising:
first conveyor means for providing a supply of containers having uniformly oriented open tops to a transfer station;
container release means located at said transfer station for permitting a container to pass said transfer station in response to receipt of a container advance signal by an actuation means operably connected to said container release means;
second conveyor means for accepting a container which has passed said transfer station and delivering said container to a container dispensing station;
container dispensing means located at said container dispensing station for orienting each container arriving at said container dispensing station and releasing each container; and
signal generating means for delivering said container advance signal to said container release actuation means in timed relationship with the operation of said container dispensing means.

3,940,015

REFILL DEVICE FOR GAS LIGHTERS

Ricardo Aguirre Gili, Barcelona, Spain, assignor to Flamagas S.A., Barcelona, Spain
Filed Jan. 9, 1974, Ser. No. 431,984
Int. Cl.² B67D *5/37*
U.S. Cl. 221—96 **2 Claims**

1. A refill device for gas operated lighters comprising:
a gas container having an end; a gas outlet valve at said end of said container; a collar around said container near its said one end and spaced from said outlet valve;
a separate cover having an axis and fitted on said container over said end; said cover having a top side away from said container; said cover including a plurality of compartments, which are arrayed around said cover axis in positions that enable access into the tops of said compartments through said cover top side and through an aper-

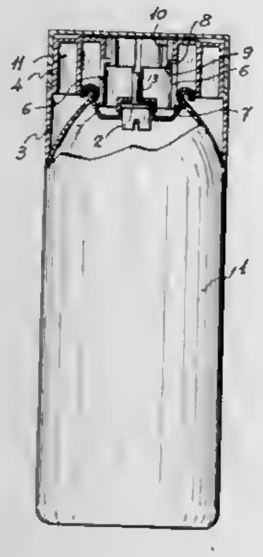
ture in a covering cap; each said compartment being for containing a different outlet valve adapter;

a plurality of outlet valve adapters; in each of at least some of said compartments is a respective said adapter; each said adapter being connectable to said outlet valve of said refill device and also to the inlet valve of a particular lighter;

said cover and said container being provided with respective complementary fastening elements, which said fastening elements are interengaged by pressing said cover and said container together;

said cover fastening elements comprise a plurality of resilient legs, arcuately curved around and arrayed around said cover axis; said legs being secured to and depending from said cover and extending toward said collar; said container fastening elements comprise said collar; said cover legs having lower end portions that are shaped to be snap fit onto said collar as said legs are deformed and resiliently snap return to shape upon motion toward one another of said container and said cover;

said cover legs having upper end portions; cover leg transverse flanges extending transversely of said cover axis and located at said cover leg upper end portions;



said cover top side having an opening therethrough at said cover legs for cap flaps to pass therethrough;

a separate cap overlying said cover; said cap having a central region from which depend a plurality of resilient depending flaps that extend through said cover opening and that are shaped to engage and be snap fit onto said cover leg transverse flanges as said flaps are deformed and resiliently snap return to shape upon motion toward one another of said cover and said cap; the connection of said cap flaps and said cover leg transverse flanges being such that said cap can be rotated with respect to said cover around said cover axis;

said cap being provided with a through aperture that is positioned in said cap so as to be alignable with said top of each said compartment in turn; said cap aperture being of a size sufficient to permit each said adapter to be drawn therethrough; said compartments being located around said cover axis such that rotation of said cap uncovers each said compartment in turn; said compartments being open topped at their said tops at said cover top side to communicate through said cap aperture with the exterior of said refill device.

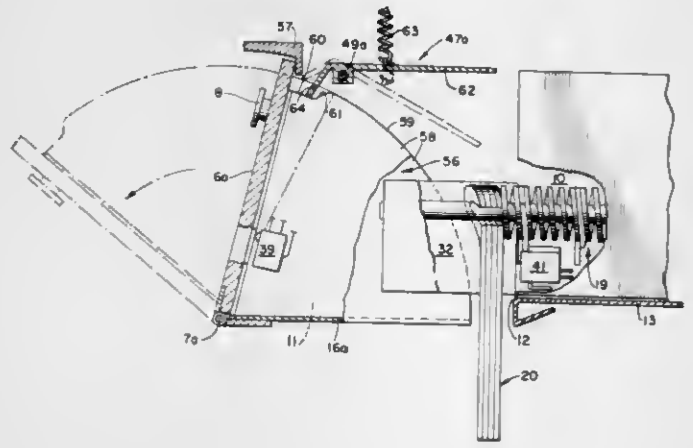
3,940,016
ARTICLE VENDING APPARATUS WITH DOOR INTERLOCK

Merril Krakauer, One Deer Path, Short Hills, N.J. 07078

Filed July 25, 1974, Ser. No. 491,828

Int. Cl.^{2} B65G *33/04*

U.S. Cl. 221—129 **21 Claims**



1. An article vending apparatus including, a cabinet having an interior storage compartment and an adjacent delivery compartment defining a storage/delivery cell, said storage compartment provided with a shelf having a forward discharge point and adapted to support a plurality of adjacent articles behind said point, said delivery compartment provided with a shelf, said cabinet including a movable door providing access to said delivery compartment, a movable gate assembly within said delivery compartment displaceable upon opening of said door to preclude customer access into said storage compartment, feeder means adjacent said storage compartment including means overlying said storage compartment shelf for engaging and advancing all articles within said storage compartment from the rear thereof to said discharge point and subsequently pushing same onto said delivery compartment shelf, displacing means for shifting said engaging means from a position overlying said storage compartment shelf to an alternate storage position, and said gate assembly including a pivotally mounted link to one side of said cell, a crossbar at one end of said link disposed in the rear of said delivery compartment, cam means at the other forward end of said link, and means carried by said door engageable with said cam means to raise said crossbar when said door is closed and lower said crossbar when said door is opened.

3,940,017
METHOD AND APPARATUS FOR DISPENSING BOWL-SHAPED OBJECTS OF A THIN MATERIAL ONE AT A TIME

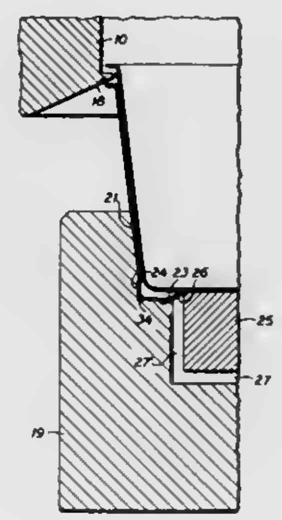
Klas Ingvar Helmer Borgstrom, Malmo, Sweden, assignor to Aktiebolaget Platmanufaktur, Malmo, Sweden

Filed Mar. 31, 1975, Ser. No. 563,884

Claims priority, application Sweden, Apr. 11, 1974, 74/04984

Int. Cl.^{2} B65H *3/08*

U.S. Cl. 221—211 **5 Claims**



5. In an apparatus as claimed in claim **3,** wherein the suction means is bowl-shaped having a cavity for receiving the bottom portion of the lowermost bowl-shaped object of the pile.

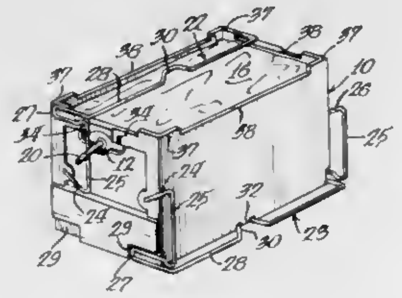
3,940,018
COMBINATION LIQUID CONTAINER AND DISPENSER

William R. Scholle, Corona del Mar, Calif., assignor to Scholle Corporation, Northlake, Ill.

Continuation-in-part of Ser. No. 291,952, Sept. 25, 1972, abandoned. This application Apr. 4, 1974, Ser. No. 457,707

Int. Cl.^{2} B65D *25/22*

U.S. Cl. 222—1 **11 Claims**



10. A method of packaging and dispensing milk in bulk form wherein the milk is to be dispensed from a bulk container adapted to fit into a standard dispensing cabinet having a maximum internal width, comprising the steps of providing a flexible bag filled with milk within an open top rigid case, said case having a width adapted to fit into said dispensing cabinet, dispensing said milk from said bag, removing and discarding said bag, augmenting the effective unyielding width of said case to a wider dimension, and processing said case with equipment responsive to cases having said wider dimension.

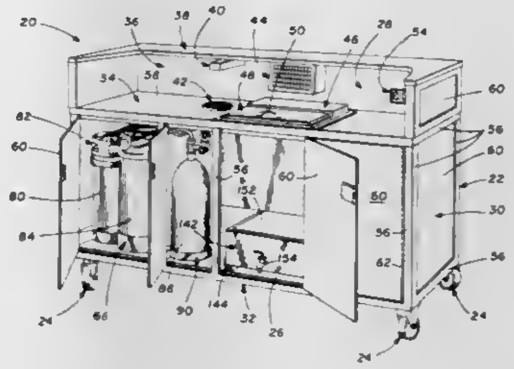
3,940,019
AUTOMATIC MIXED DRINK DISPENSING APPARATUS

Robert W. Kross, Dallas; Larry D. Fiel, Argyle; Charles R. Crockett; George B. Neely, both of Richardson, and Louis J. Benton, Plano, all of Tex., assignors to Leisure Products Corporation, Plano, Tex.

Filed Sept. 30, 1974, Ser. No. 510,655

Int. Cl.^{2} B67D *5/56*

U.S. Cl. 222—30 **39 Claims**



1. An automatic mixed drink dispensing apparatus comprising:

- a housing including a bottom wall, front and back walls, opposed side walls, and a top wall defining a mixed drink preparation zone;
- said walls of the housing defining therebetween a wholly enclosed liquor receiving zone characterized by means for receiving a plurality of quantities of different liquors each in its original container;
- means for securing the housing against access to the interior of the liquor receiving zone from any point around the entire exterior periphery thereof;
- said walls of the housing defining a wholly enclosed syrup receiving zone for receiving a plurality of quantities of different syrups each in its original container;
- said walls of the housing defining a wholly enclosed water receiving zone;
- said walls of the housing defining a wholly enclosed carbon dioxide receiving zone;
- ice receiving means mounted in the upper portion of the housing and accessible from the mixed drink preparation zone;
- liquid chilling means mounted in the bottom of the ice receiving means;
- a liquid dispensing head mounted on the housing and extending into the mixed drink preparation zone at a point over the top wall of the housing;
- drain pan means supported in the bottom of the housing and including valve means for selectively permitting fluid flow out of the drain pan means;
- drain means for directing liquids from a point in the mixed drink preparation zone under the dispensing head and from a point in the ice receiving means to the drain pan means;
- a plurality of liquor pumps each for withdrawing liquor from one of the quantities of liquor in the liquor receiving zone and for discharging the liquor through the dispensing head;
- syrup pumping means for withdrawing syrups from the quantities of syrup in the syrup receiving zone and for directing the syrups through the liquid chilling means and through the dispensing head;
- water pumping means for withdrawing water from the water receiving zone and for directing water through the liquid chilling means and through the discharge head;
- carbonating means for receiving water from the water pumping means, for receiving carbon dioxide gas from the carbon dioxide receiving zone, and for forming carbonated water;

means for directing carbonated water from the carbonating means through the liquid chilling means and through the dispensing head;

said liquors, syrups, water, and carbonated water defining a plurality of liquids available for formulating mixed drinks; and

electronic circuitry means for receiving a plurality of input signals each individual to a particular mixed drink and responsive thereto for selecting one or more of the plurality of liquids to be used in formulating a desired mixed drink and for effecting discharge of a predetermined quantity of each selected liquid through the dispensing head.

3,940,020

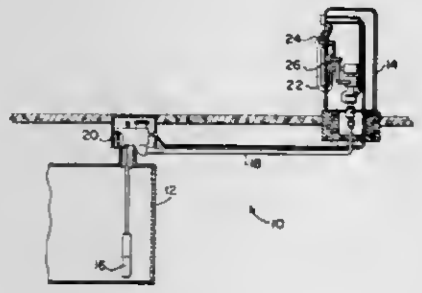
LEAK DETECTION SYSTEM AND METHOD

Rollin John McCrory, and George Dennis Robinson, Jr., both of Greensboro, N.C., assignors to Gilbert & Baker Manufacturing Company, Greensboro, N.C.

Filed Aug. 23, 1973, Ser. No. 390,786

Int. Cl.² B67D *5/14;* G01M *3/08*

U.S. Cl. 222—52 **26 Claims**



1. A leak detection system for use with a fluid pump, a dispenser, a dispenser valve for controlling fluid flow through said dispenser, a conduit connecting said pump and dispenser, pump control means for activating and initiating deactivation of said pump, and a second valve in said conduit to isolate said pump from said dispenser when a fluid is not being dispensed, said system comprising first means for enabling operation of said pump while said dispenser valve is closed by delaying deactivation of said pump for a finite predetermined period of time after said pump control means is operated to initiate deactivation of said pump, second means for ensuring leak free closure of said second valve when said dispenser valve is closed, and a leak detector including a member in fluid flow communication with said pump and with a portion of said conduit between said second valve and said dispenser, said member being responsive to a differential fluid condition between said second conduit portion and said pump, and signal means responsive to said member to indicate the existence of a predetermined differential fluid condition when said pump is operating and said dispenser valve is closed.

26. A method of detecting leaks in a system having a fluid pump, a dispenser, a conduit connecting said pump and dispenser and a valve in said conduit comprising the steps of

a. activating the pump and opening the dispenser to dispense fluid;

b. closing the dispenser;

c. applying a force on said valve from an energy source external to said valve to forceable seal the valve;

d. applying a predetermined pressure on the fluid in the portion of the conduit between the valve and dispenser within a predetermined period of time after the dispenser is closed;

e. sensing a flow of fluid in said portion of the conduit; and

f. energizing signal means if said flow of fluid is greater than a predetermined amount.

3,940,021

CAR HAVING PLURAL SIDE POURING LADLES

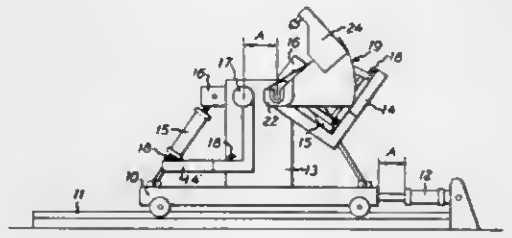
Rudolf Valentin Sillen, and Eric-Olof Sjögren, both of Ronneby, Sweden, assignors to Kockums Jernverksaktiebolag, Kallinge, Sweden

Filed Apr. 3, 1975, Ser. No. 564,803

Claims priority, application Sweden, Apr. 11, 1974, 7404981

Int. Cl.² B22D *41/04*, *41/12*

U.S. Cl. 222—129 **4 Claims**



1. An apparatus for pouring metals, preferably for use in association with automatic moulding machines, comprising a ladle car, arranged for travelling back and forth along a path of travel, two tiltable cradle means mounted in mirror-inversed relation to each other on said car, tilting shafts for said cradle means mounted on said car and extending substantially transversely to said path of travel of said car, means for tilting said cradle means by rotation about said tilting shafts, a removable ladle in each of said cradle means, said ladles in said cradle means being mirror-inversed to each other, and pouring spouts on said ladles, said pouring spouts having centerlines substantially colinear with the respective axes of said tilting shafts.

3,940,022

DOUBLE-TYPE CONTAINER FOR COOLING BEVERAGE

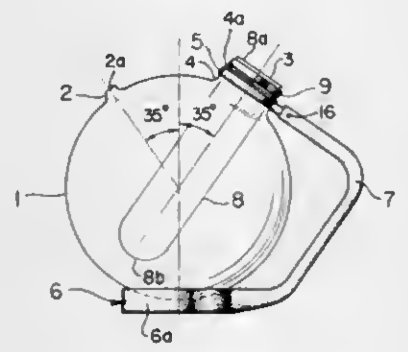
Komi Muramoto, No. 17-4 8-chome Miyamoto-cho, Funabashi, 273, Japan

Filed Oct. 2, 1974, Ser. No. 511,163

Claims priority, application Japan, June 26, 1974, 49-74281; June 29, 1974, 49-75993

Int. Cl.² B67D *5/60*

U.S. Cl. 222—130 **2 Claims**



1. A container comprising a closed container outer body having a supporting base portion, a pouring spout having a spout opening defined on said body extending upwardly to one side thereof, a receiving opening defined on said body on the opposite side thereof from said spout, and a cylindrical container extending through the receiving opening and through the center of said outer container body and supported on said outer container body and having an inner closed end, said closed outer container body comprising a spherical member, said pouring spout comprising a raised substantially cylindrical projection from the surface of said outer container body, said outer cylindrical body having an outwardly extending collar forming the rim around said receiving opening, said supporting base portion comprising a handle having a flattened base part supporting said spherical outer container body, an intermediate handle part and an upper part engaged around said collar, said handle including an encircling belt portion extending around said collar, said inner container having a belt therearound with downwardly projecting circumferentially spaced teeth engaged on the edge of said collar, the space between said teeth defining an air gap for the flow of air between said outer container body collar and said inner container.

3,940,023

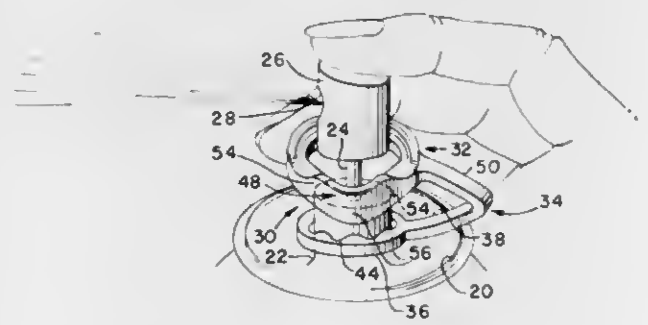
CHILD-PROOF SAFETY LOCKING DEVICE

Herbert R. Umstead, Warwick, N.Y., assignor to Avon Products, Inc., Suffern, N.Y.

Filed Nov. 27, 1974, Ser. No. 527,804

Int. Cl.² B65D *83/14*

U.S. Cl. 222—153 **14 Claims**



1. A safety locking device adapted for use in selectively locking an aerosol type valve assembly on aerosol container having a movable valve stem connected to a push-button actuator head which stem is slidable within a valve pedestal formed on the valve assembly to thereby prevent depression of the actuator head such that the contents of the container cannot be dispensed comprising, in integral combination, at least a pair of first and second locking means formed adjacent opposite ends of said locking device, said first locking means being adapted to be removably secured to the valve pedestal, and said second locking means being movable between locked and unlocked positions wherein whenever in the locked position it is interposed between the actuator head and the valve pedestal to prevent depression of the actuator head toward the valve pedestal, and wherein, in the unlocked position permits depression of the actuator head toward the valve pedestal, and biased hinge means having said first and second locking means respectively connected therewith for biasing said second locking means with respect to said first locking means such that whenever said first locking means is secured to the valve pedestal said second locking means is biased to the locking position, and for automatically returning said second locking means from said unlocked position to said locked position whenever application of force sufficient to overcome the bias of said biased hinge means for urging said second locking means toward the unlocked position is released, said second locking means includes a second locking member which defines therethrough a generally elliptical opening of sufficient dimension to permit the passage therethrough of the push-button actuator head whenever said second locking means is in the unlocked position, said second locking member also defining an obstruction portion which whenever said second locking means is in the locked position said obstruction portion is so situated to obstruct movement of the push-button actuator head towards the valve pedestal, said obstruction portion being defined by an integral V-shaped portion which gradually tapers upwardly towards the apex thereof for facilitating ranges of valve stem and push-button actuator head heights above said second locking means, said obstruction portion also being formed with a plurality of discrete generally parallel grooves for preventing side slip of said second locking member in response to downward movement of the push-button actuator head towards the valve pedestal whenever said second locking means is in said locked position.

3,940,024

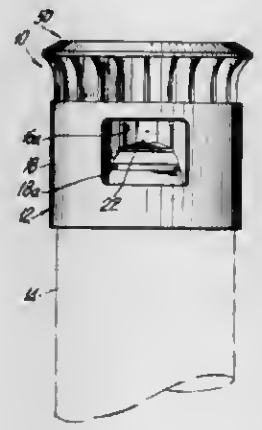
AEROSOL DISPENSING DEVICE

John A. Russo, Norwalk, Conn., and Mishel Greenberg, New Hyde Park, N.Y., assignors to Chesebrough Pond's Inc., Greenwich, Conn.

Filed Aug. 14, 1974, Ser. No. 497,398

Int. Cl.² B67D *5/06*

U.S. Cl. 222—182 **6 Claims**



1. An aerosol dispensing device adapted for use with a pressurized aerosol container for direct and prolonged evaporative dispensing, said container having a dispensing valve extending upwardly therefrom, which comprises: a base member adapted to engage the top of said container, said base member including a vertically extending open ended hub portion and a cylindrical wall portion spaced radially outwardly from said hub portion to define an annular receiving area therebetween; a valve actuator slidably positioned coaxially within said hub portion, said actuator having a downwardly facing, valve engaging chamber and a discharge passage extending from said chamber radially outwardly to the exterior of said actuator; said hub portion and wall portions defining dispensing ports in radial alignment with the outlet end of said passage; means for preventing relative angular movement between said actuator and said dispensing ports; a carrier member defining a central bore adapted to receive said hub therein and having a plurality of angularly spaced apart, radial ribs extending downwardly into said receiving area, said ribs defining a sector spray zone and a complementary annular shaped carrier zone; a strip of absorbent material positioned in the carrier zone of the ribs; means for interlocking said carrier to said base member while permitting relative angular rotation therebetween, whereby said spray zone may be aligned with said ports for direct dispensing of the container product and said carrier may be rotated to position said absorbent material in front of said discharge passage for dispensing of product thereon and prolonged evaporation therefrom.

3,940,025

AEROSOL SAFETY CAP WITH TWO PIECE FINGER ENTRY

Victor F. Anderson, Wenonah, N.J., assignor to Shell Oil Company, Houston, Tex.

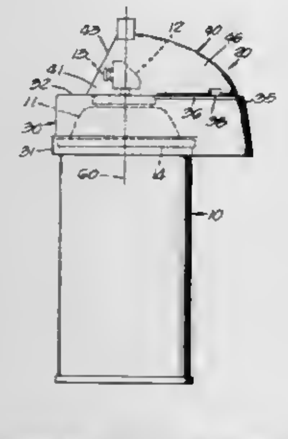
Filed Sept. 23, 1974, Ser. No. 508,364

Int. Cl.² B65D *83/14*, *55/02*

U.S. Cl. 222—182 **6 Claims**

6. An aerosol safety cap comprising a lower member and an upper member, said lower member including a horizontally extending platform portion, said upper member including a finger passageway portion, said upper member being rotatably

supported upon said lower member for rotation about a vertical axis relative to said lower member between first and second rotational alignment positions, the configuration of said members being such that in the first position of said upper member said two members cooperatively provide a downwardly opening finger passageway for access to the interior of the safety cap, but in the second position of said upper member, the horizontally extending platform portion of the lower member blocks finger access to the finger passageway portion of the upper member.



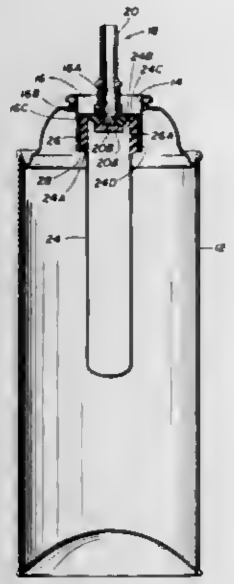
3,940,026
CONTAINER FOR PRESSURE DISPENSING OF FLUID

Calvin L. Kain, Bartlesville, Okla., assignor to KRDC, Bartlesville, Okla.

Continuation-in-part of Ser. No. 344,931, March 26, 1973, abandoned. This application July 13, 1973, Ser. No. 378,886

Int. Cl.² B67D *5/06*

U.S. Cl. 222—212 **11 Claims**



1. A container for pressure dispensing fluid products comprising:

a vessel having an opening in one end thereof;

a cover closing said vessel opening, the cover having an opening therein and having, as a portion thereof, a valve support sealably closing the cover opening;

valve means carried by said valve support for providing a fluid passageway therethrough;

an expandable and contractable pressure unit of elastomeric material having a tubular portion terminating at an open end with an annular surface, said annular surface being bonded to said vessel end cover, and means carried by the pressure unit for stiffening the tubular portion at and adjacent to the open end thereof; and

whereby fluid product contained by the pressure unit in an expanded position is expelled by return force exerted by the elastomeric material of the pressure unit.

3,940,027
DISPENSER FOR A BOTTLE TOP

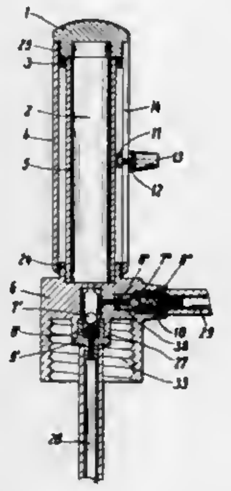
Karl Marterer, Waldenhausen, Germany, assignor to Firma Rudolf Brand, Wertheim, Germany

Filed Apr. 5, 1974, Ser. No. 458,242

Claims priority, application Germany, Aug. 30, 1973, 2343687

Int. Cl.² G01F *11/06*

U.S. Cl. 222—309 **13 Claims**



1. Liquid dispenser for bottle top having a cylinder and a plunger adjustable relative to said cylinder for drawing up an adjustable quantity of liquid such as reagent comprising said cylinder, a valve block including a suction valve and a discharge valve connected with said cylinder, said valve block being adapted to be threadedly mounted on a bottle, a cylinder sleeve provided with a scale received concentrically over said cylinder and being slidable and rotatable relative to said cylinder and being connected with said plunger, said plunger being slidable in said cylinder, and means being provided for adjusting the stroke of said plunger to determine and indicate a desired volume to be dispensed, said means comprising a contact ring fixed on said cylinder, and an adjustable excursion stop in said cylinder sleeve for cooperating with said ring, said cylinder sleeve defining a longitudinal slot, said adjustable excursion stop being disposed in said slot.

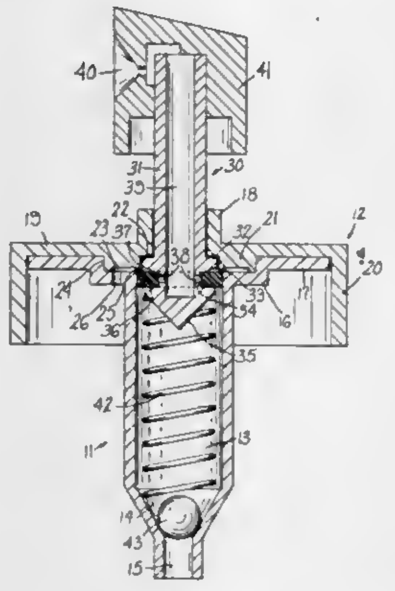
3,940,028
PUMP

Walter C. Beard, South St., Middlebury, Conn. 06762

Filed Sept. 16, 1974, Ser. No. 505,963

Int. Cl.² G01F *11/02*

U.S. Cl. 222—321 **11 Claims**



1. A dispensing pump and valve assembly for use with a container for liquid comprising, a chamber provided with an inlet to admit liquid from the container past a one-way valve, the chamber having a cylindrical wall, a cap fitted on said chamber, the cap having a portion of its under side spaced from a chamber surface to provide a channel in communication with the interior of the chamber and with the interior of the container, a plunger having a cylindrical stem portion adapted to pass freely through an opening in the cap, an annular flange having a downwardly facing surface, a second cylindrical surface portion adjacent said downwardly facing surface, a plunger base having an upwardly facing annular surface adjacent said second cylindrical surface portion, a longitudinal passage in the plunger, a lateral passage connecting said longitudinal passage with the second cylindrical surface portion, an annular washer of distortable material having a cylindrical inner surface and parallel upper and lower surfaces normal to said inner surface, the height of said inner surface being substantially constant and equal to the height of said second cylindrical surface portion and being less than the width of said washer across any radial section, said washer resting in sealing engagement against at least a portion of said downwardly facing surface, said upwardly facing annular surface and said chamber wall, and a spring biasing the plunger upward to hold the washer in a position to close off said channel.

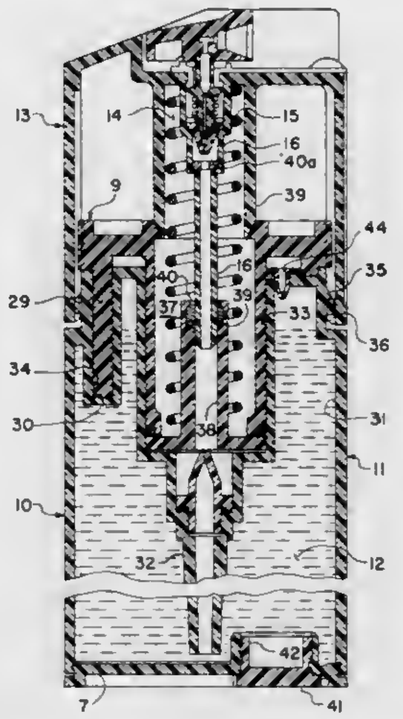
3,940,029
RECHARGEABLE SPRAYER WITH IMPROVED VALVE SYSTEM AND CHARGE CYCLE LIMIT STOP THEREFOR

William Horvath, Watchung, N.J., assignor to Thiokol Corporation, Newtown, Pa.

Continuation-in-part of Ser. No. 226,204, Feb. 14, 1972, Pat. No. 3,790,034. This application Dec. 13, 1973, Ser. No. 424,521. The portion of the term of this patent subsequent to Feb. 5, 1991, has been disclaimed.

Int. Cl.² B67D *5/32;* **G01F** *11/04*

U.S. Cl. 222—340 **28 Claims**



1. In a rechargeable liquid spayer comprising a rotatable container including a receptacle for holding a quantity of liquid, an opening for filling the receptacle with liquid, an inner, pressurizable chamber adapted to receive a charge of liquid from said receptacle, liquid conduit means for conducting said liquid charge from said receptacle to said chamber, a spray cap rotatably mounted on said container, a piston in said cap adapted to move therein and in said chamber, charging means on said container operatively associated with said piston for moving said piston in said cap and in said chamber when said container is rotated relative to said cap, compressible means in said cap positioned therein in biasing relation to said piston, a spray nozzle on said cap including; associated liquid conduit means communicating with said chamber, liquid discharge control means in said conduit for controlling discharge of liquid from said chamber, and differential pressure operated fluid control means in said container for controlling the passage of said liquid charge into said chamber and venting said receptacle to the atmosphere, the improvement comprising;

said differential pressure operated fluid control means comprising, a first valve element sealingly positioned in said receptacle liquid conduit means proximate one end of said charge chamber, said element having a hollow, resilient body and side walls, said side walls adapted to move apart in response to fluid pressure inside said body to expand said body and open said valve permitting liquid to flow into said chamber; and,

a second valve element sealingly fitted to said container having a hollow, resilient body and side walls, said side walls adapted to move apart in response to fluid pressure inside said body to expand said body and open said valve permitting air to flow into said receptacle.

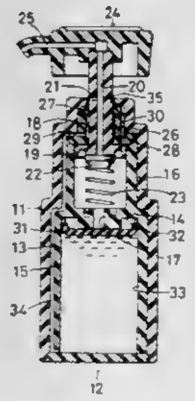
3,940,030
DISPENSER DEVICE FOR TAKING OUT CONTENTS

Hirosi Kondo, No. 30-4, Hanazono-cho, Nagasaki, Nagasaki, Japan

Filed Aug. 16, 1974, Ser. No. 498,227

Int. Cl.² B67D *5/54*

U.S. Cl. 222—384 **4 Claims**



1. An isolation type dispenser device comprising, in combination, a container having a cylinder therein and including a bottom member; an isolation member airtightly and slidably mounted within the cylinder and dividing the cylinder into a contents storage chamber and a propellant chamber; a piston rod slidable into the container, the piston rod having an axial passage and an orifice opening transversely therefrom, a dispenser head communicating with the passage and mounted on said piston rod; a spring within the container urging the piston rod upwardly; a pressure propellant generating means for creating compressed air by the descent of the dispenser head and the piston rod; a passage between the generating means and the propellant chamber within the cylinder for conducting compressed air thereto to act upon the isolation member; and a further passage between the contents storing chamber and the axial passage in said piston rod, whereby the contents in said contents storage chamber are forced under the pressure created by the generating means through the axial passage and the dispenser head to be dispensed.

3,940,031
REVERSE ACTING ROLLING DIAPHRAGM FOR EXPELLING LIQUIDS

Bernard Fishman, Fort Lee, N.J., assignor to Thiokol Corporation, Newtown, Pa.

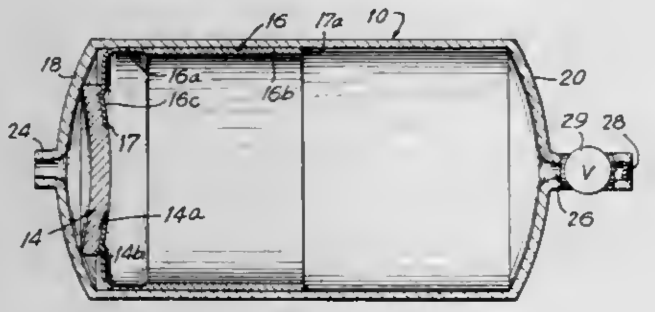
Filed Dec. 16, 1966, Ser. No. 602,420

Int. Cl.² B67D *5/04*

U.S. Cl. 222—386.5 **5 Claims**

1. A liquid storage tank of the type having a rolling diaphragm therein comprising a sleeve of flexible material attached to the tank at one end and to the periphery of a rigid

piston at the opposite end and adapted to be operated by a pressurizing medium acting on the piston in successive stages to roll the diaphragm back on itself and expel liquid from the tank, the combination with said tank and rolling diaphragm of a construction in which the diaphragm sleeve has a thick wall section to resist buckling or distortion of the diaphragm initially and between stages, a thin wall section adjacent the rigid piston to permit limited rolling of the diaphragm by the expansion of the liquid acting on the piston due to absorbed heat, and means for producing a first fold in the thin wall section of the diaphragm to initiate rolling of the diaphragm in one direction during the first stage of applied pressure and a reverse fold in the thin walled section of the diaphragm sleeve adjacent the piston to control the location of the limited rolling of the diaphragm sleeve by the expansion of liquid after the first stage of applied pressure.



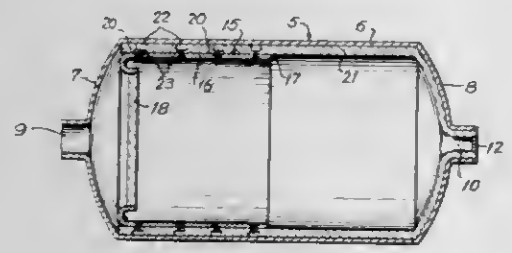
3,940,032
ROLLING DIAPHRAGMS FOR EXPELLING LIQUIDS

Milton Gershon, Morristown, N.J., assignor to Thiokol Corporation, Newtown, Pa.

Filed Dec. 16, 1966, Ser. No. 602,421

Int. Cl.^{2} B67D *5/04*

U.S. Cl. 222—386.5 **8 Claims**



1. In a tank for storing liquids having a rolling diaphragm for positively expelling liquid of the type comprising a sleeve conforming to the contour of a surrounding wall of the tank with one end attached thereto and its opposite end attached to a piston and which rolls back on itself upon the application of a pressurizing fluid against the piston to expel liquid from the tank, that improvement which comprises attaching the sleeve of the rolling diaphragm to a surrounding wall by a plurality of spot welds constructed to tear loose from the surrounding wall and of a number and spaced arrangement to resist radial buckling and release successively during rolling of the diaphragm sleeve.

3,940,033
COFFEE MEASURE

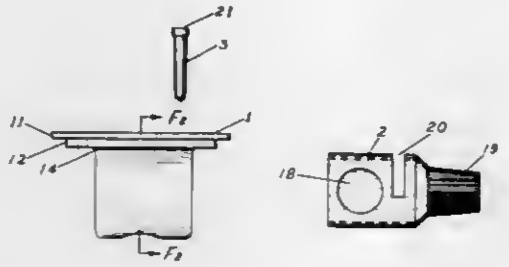
Norton T. Brian, 1129 Harrop St., Ogden, Utah 84404

Filed Nov. 1, 1974, Ser. No. 520,035

Int. Cl.^{2} G01F *11/28*

U.S. Cl. 222—452 **3 Claims**

1. A dispensing device for powdered or granular material with a unitary structure wherein there is a mounting flange, a depending body having an inlet, outlet and fixed measuring cavity therein, a cylindrical slot opening from one side and extending beyond the cavity, but not to the rear, so as to leave a core containing said cavity, and a cylindrical member fitted into said slot, having an opening therein which may be aligned with said inlet, outlet and cavity, being held into the main body by means of a pin, said pin acting also as a stop to limit rotation of said cylindrical member, allowing said opening in said member to align with inlet, outlet and cavity in main body, and means to rotate said member between inlet and outlet.



3,940,034
CONTAINER

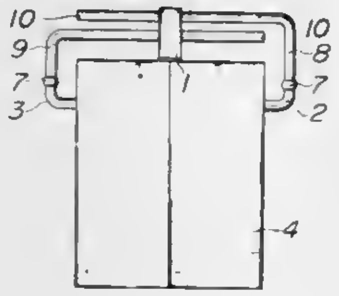
Mitiaki Adachi, 1167, Shimokurato-cho, Totsuka; Yokohama, Japan

Filed Nov. 19, 1973, Ser. No. 416,844

Claims priority, application Japan, Mar. 30, 1973, 48-038416

Int. Cl.^{2} B67D *3/00*

U.S. Cl. 222—478 **2 Claims**



1. A container being hexagonal in top plan to provide at least a pair of opposed flat sides and a pair of shorter flat sides disposed intermediate said first mentioned flat sides, a pipe extending from each of said first mentioned flat sides adjacent an upper edge thereof, said pipes having an upwardly extending and a horizontally extending portion connected therewith, a swivel joint disposed in said upwardly extending portions whereby said horizontally extending portion can be rotated about said swivel joint, the horizontal portions of said pipes being of a length sufficient to extend completely across the top of said container, said pipes being completely open throughout their length˙to communicate with the interior of said container at all positions of aid pipe.

3,940,035
FOLDED CARTON HAVING DISPENSING MEANS

Wilhelm Hüberli, Koniz, Switzerland, assignor to Zeiler A.G. Werk Koniz, Koniz, Switzerland

Filed Oct. 29, 1974, Ser. No. 518,946

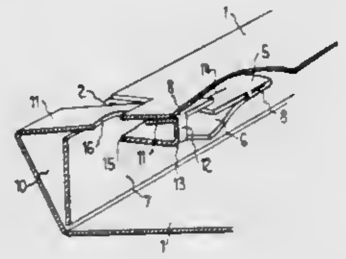
Claims priority, application Switzerland, Feb. 13, 1974, 1978/74

Int. Cl.^{2} B65D *3/00, 5/06*

U.S. Cl. 222—528 **7 Claims**

1. A folded carton having dispensing means, wherein said dispensing means comprises a displaceable slide which has two terminal positions, the first exposing a dispensing aperture and the second closing the dispensing aperture, the slide being connected by a first fold to a link portion, the link portion being connected by a second fold to a wall portion of the carton which is non-displaceable in a direction parallel to the

plane of the slide, the link being disposed for rotating displacement about said first and second folds and being sandwiched between portions of the carton which are capable of elastic displacement in a direction transverse to the plane of the slide, said portions of the carton being elastically spread upon rotating displacement of said link occurring during shifting of said slide from one of its terminal positions into the other, the link passing thereby through unstable intermediate positions, and said slide being firmly held in each of its terminal positions by the resilient force of said portions capable of elastic displacement.



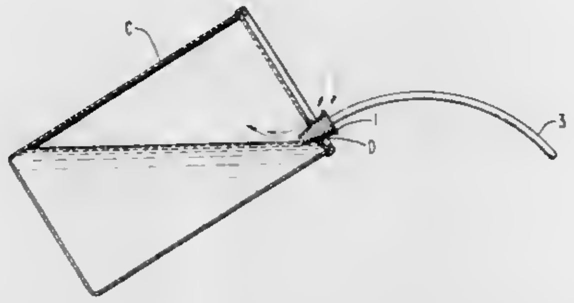
3,940,036
REMOVABLE POURING SPOUT ADAPTABLE TO DIFFERENT SIZE CONTAINER OPENINGS

Marvin Leon Parker, 5936 Ford Court, Brighton, Mich. 48116

Filed July 2, 1974, Ser. No. 485,106

Int. Cl.^{2} B67D *3/04*

U.S. Cl. 222—530 **4 Claims**



1. A pouring spout for a container having a discharge opening for pouring liquid contents therefrom, said spout comprising:

a plug having inner and outer ends and an opening therethrough extending from the inner end to the outer end for discharging contents from the container through said plug opening;

said plug having an outer periphery including an air-admitting external groove formed therein to admit air to the interior of the container during discharge of the contents therefrom through said plug opening;

an elongated discharge tube connected at one end with the plug opening to conduct contents from said plug opening;

said plug being formed of yieldable material and having an outer periphery formed by a plurality of circumferentially disposed resilient ribs, said ribs being spaced in a direction from said outer end to said inner end of said plug and being of gradually decreasing size from said outer end to said inner end to define a ribbed periphery which tapers toward said inner end to allow said plug to fit container discharge openings of various sizes, each rib including:

an outer surface extending away from the longitudinal axis of said plug opening in a direction toward said inner end and forming an acute angle relative to the longitudinal axis of said plug opening so as to be compressed by, and in firm engagement with, said container discharge opening when said plug is installed therein; and

a lateral side extending at an angle relative to said outer surface for engaging a lip of said container discharge opening to limit the insertion of said plug into said container discharge opening.

3,940,037
DISCHARGE FROM HOPPERS

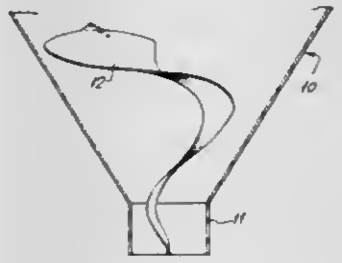
Lewis Ainsley Watson, Caarbrook, England, assignor to Simon-Carves Ltd., Cheshire, England

Filed June 21, 1974, Ser. No. 481,739

Claims priority, application United Kingdom, July 20, 1973, 34814/73

Int. Cl.^{2} B67D *3/00*

U.S. Cl. 222—564 **19 Claims**



1. In combination with a hopper at least the lower part of which is symmetrical about a substantially central vertical axis and whose cross-sectional area reduces gradually over said lower part toward an outlet, a device for facilitating the discharge of material from said hopper comprising a helical blade rigidly secured to extend in the direction of said axis within said lower part of the hopper, said blade being so constructed and arranged as to impart a circular component of motion to the material as it runs through the lower part of the hopper towards the outlet and the width of said blade decreasing gradually from a maximum at its upper end to a minimum at its lower end.

3,940,038
WATCH-BRACELET

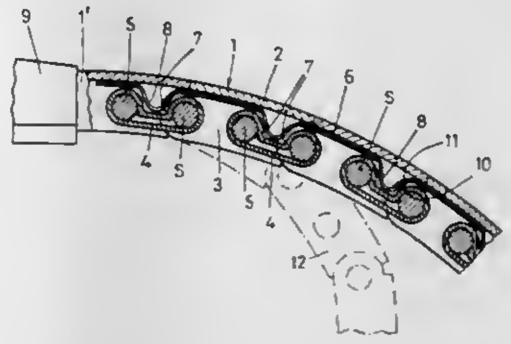
Georges Bernard Claude, 59, rue du Progres, 2300 La Chaux-de-Fonds, Switzerland

Filed Oct. 25, 1974, Ser. No. 518,069

Claims priority, application Switzerland, Nov. 16, 1973, 16136/73

Int. Cl.^{2} F16G *13/18*

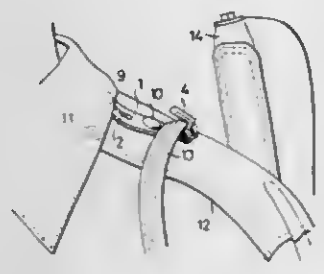
U.S. Cl. 224—4 J **8 Claims**



1. A watch-bracelet adapted to be attached to a watch-case and having two arms, each said arm comprising a series of links hinged to one another, each said link having a transverse profile in the shape of an arch and at least one longitudinal recess which opens inwardly and is open at each end of said link, the alignment of said recesses forming a groove extending longitudinally under said series of links of each said arm, said watch-bracelet further comprising a blade-spring lying against the bottom of each said groove and retaining means disposed under each said blade-spring between the arch-sides of said links, each said blade-spring having a curvature such that it urges the respective said arm to curl up, the first said link of each said arm being attached to said watch-case.

3,940,039
RETAINER FOR A SHOULDER SLING

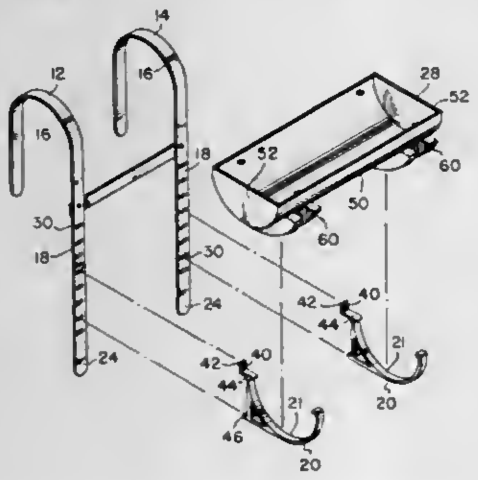
Tatsunori Sasaki, 6-3,Futaba-cho, Itabashi, Tokyo, Japan
Filed May 14, 1974, Ser. No. 469,887
Claims priority, application Japan, Apr. 10, 1974, 49-11605
Int. Cl.^{2} A45F *5/00*
U.S. Cl. 224—5 P **2 Claims**



1. A retainer for holding a shoulder sling on the shoulder portion of a garment comprising:
an elongated main body having an engaging hole adjacent one end thereof;
sling receiving means adjacent the other end of said body for receiving and preventing said shoulder sling from falling off of the retainer;
engaging means attached underneath the collar of said garment and engaged through the engaging hole in said main body for loosely and removably attaching said main body to said garment;
a metal plate secured to said main body bent at one end to form two stirrup openings spaced from each other above the outward surface of the metal plate when the metal plate is attached to the main body;
hook means rotatably fitted through and retained in the stirrup openings in said metal plate for holding the sling and preventing it from slipping off the shoulder of the garment;
a female portion of a snap closure positioned between said engaging hole and the other end of said main body; and
a male portion of a snap closure fitted underneath the collar of said garment at a position to receive the female portion when the main body is rotated about the engaging means, whereby the main body can be fastened underneath the collar of the garment out of sight when not needed to support a sling.

3,940,040
CARRYING DEVICE FOR A DOLL AND A CRADLE

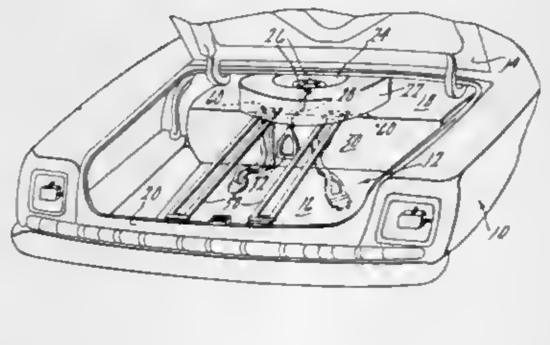
Earl M. Haulter, 200 N. Penn St., Shippensberg, Pa. 17251
Filed July 3, 1974, Ser. No. 485,708
Int. Cl.^{2} A45C *11/00*
U.S. Cl. 224—5 R **4 Claims**



1. A device for carrying an infant or a child's toy doll comprising:
a. a pair of curvilinear C-shaped first portions adapted to rest on the shoulders of a user of said device, and an elongated second portion depending from each C-shaped portion, each said second portion having a first major surface part facing a portion of said first portion and an oppositely disposed second major surface part, each elongated second portion having a plurality of perforations along at least a portion of the length thereof, thereby permitting the adjustment of the location of a supporting element and a receptacle member therealong;
b. a substantially C-shaped rigid supporting element releasably attached to each said second major surface part of said second portion by engaging selected ones of said perforations and projecting therefrom in a direction opposite said first portion;
c. a receptacle member removably attached to said supporting element, said receptacle having a substantially semicylindrical configuration;
d. a pair of rocker elements integral with the outer semicylindrical side of said receptacle said rocker elements being spaced for association with said rigid supporting elements, said rocker elements including a pair of rockers parallel to each other spaced apart the distance equal to a width of a supporting element, said supporting elements each being receivable between a respective pair of rockers.

3,940,041
SPARE TIRE EXTRACTION DEVICE

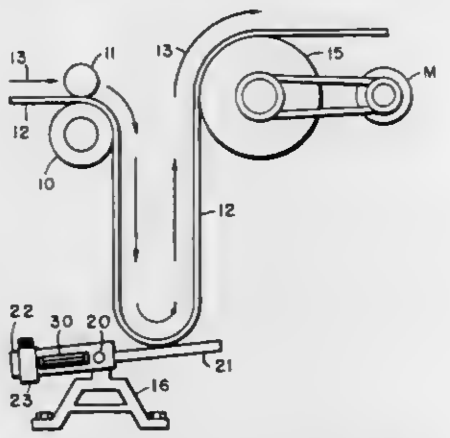
John A. Bott, 931 Lake Shore Drive, Grosse Pointe Shores, Mich. 48236
Filed May 14, 1973, Ser. No. 360,094
Int. Cl.^{2} B62D *43/00*
U.S. Cl. 224—42.12 **1 Claim**



1. In combination, an automobile body having a longitudinal axis and an interior storage area, a raised wall along an access side of said storage area, said wall extending generally perpendicular to said axis and transversely of said automobile body, a spare tire assembly including a tire and wheel, means in said storage area supporting said assembly in a substantially horizontal attitude and substantially parallel to said axis, said wheel having a plurality of bolt holes therein, said bolt holes being defined by a plurality of axes arranged generally parallel to said wall, and a flexible strap having a length equal to at least the radial distance between said bolt holes and the outer periphery of said assembly and having a handle at one end thereof and a fastening element at its opposite end, said fastening element extending generally parallel to said wall and engaged with one of said bolt holes, said strap having a main body portion arranged substantially parallel to said automobile body axis and extending radially of said assembly along the underside thereof from said one bolt hole to a position where said handle may be conveniently grasped by a person reaching over said wall into said storage area, whereupon said strap may be pulled toward said wall by the said person to cause said assembly to be biased rearwardly and upwardly of said storage area, whereby the rearwardly facing portion of said assembly is moved upwardly and rearwardly so that said assembly passes up and over said wall.

3,940,042
SPEED CONTROL DEVICE

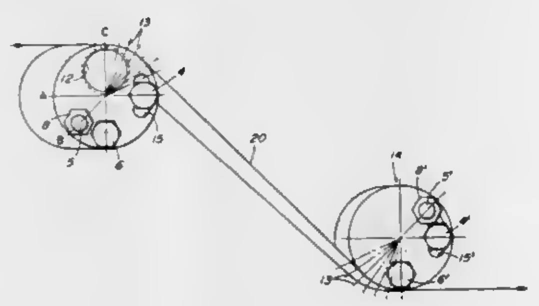
Norman A. Keck, 707 4th Ave., Joliet, Ill. 60433
Filed Oct. 24, 1974, Ser. No. 517,795
Int. Cl.^{2} B65H *25/04*
U.S. Cl. 226—44 **7 Claims**



1. In a machine wherein a flexible material is passed at varying speeds through one section of the machine and also through another section of the machine with the machine having a device coordinating the speed of said material and each of said sections, the improvement in said device comprising a tiltable structure, means sensitive to the extent of the material's sag between said sections for tilting said structure, an impedance element in the form of a coil about a straight longitudinal axis, said longitudinal axis extending substantially horizontally and radially of the axis of tilt of said structure, a strip of electrically conductive material parallel and spaced from said coil, said strip forming with said coil a straight raceway for a ball, a ball of electrically conductive material in said raceway whereby when said raceway is horizontal said ball is stationary but when inclined downwardly in one or another direction said ball is moved by gravity in said direction, and means sensitive to the impedance between one end of said coil and said ball for changing the speed of said material through one of said sections to bring the speed of said material in said sections more nearly into equilibrium.

3,940,043
ADJUSTABLE-BOW BAR OR ROLL AXLE

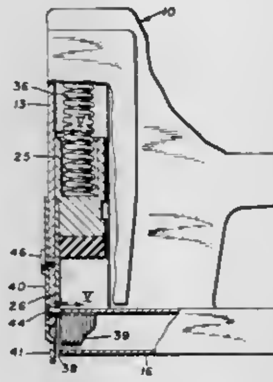
Robert E. Staples, Lakeville, Mass., assignor to Mount Hope Machinery Company, Tauoton, Mass.
Continuation-in-part of Ser. No. 365,055, May 30, 1973, abandoned. This application May 6, 1974, Ser. No. 467,151
Int. Cl.^{2} B65H *17/20*
U.S. Cl. 226—192 **13 Claims**



1. An adjustable-bow device having an arcuate outer surface portion adapted for wrapping by an indefinite length of sheet material wrapped partially thereabout, said device comprising a hollow cylindrical shell having a major longitudinal axis, and means for supporting said shell with a predetermined angular orientation;
first means for applying adjustable longitudinal stress to said shell along a first axis parallel to and spaced apart from said major axis, said first stress-applying means being constructed and arranged to bow said shell parallel to a first plane defined by said first axis and said major axis;
said shell being subject to a resultant force applied to said shell and lying in a second plane defined by said major axis and a second axis parallel to and spaced apart from said major axis, said resultant force tending to induce undesired curvature in said shell parallel to said second plane;
and second means constructed and arranged for applying adjustable longitudinal stress to said shell in said second plane and in opposition to said resultant force to remove said undesired curvature from said shell.

3,940,044
FASTENER DRIVER WITH SAFETY DEVICE

Gabriel M. LaPointe, Worcester, Mass., assignor to Parker Manufacturing Company, Worcester, Mass.
Filed Oct. 15, 1974, Ser. No. 514,850
Int. Cl.^{2} B25C *5/06*
U.S. Cl. 227—8 **4 Claims**



1. A driver for a series of fasteners, comprising
a. a housing having a handle and a fastener exit,
b. a guide mounted in the housing presenting the fasteners seriatim to the said fastener exit,
c. means mounted in the housing for driving a fastener through the exit, the said means including a spring-loaded hammer with a driver blade slidable toward and away from the exit and a lever provided to lift the hammer and then release it for the driving operation, the driver blade being provided with a median slot, and
d. a safety device mounted on the housing and normally inhibiting the driving of a fastener but allowing it when the exit is pressed against a surface, the safety device including a finger extending away from the housing adjacent the exit and movable by movement of the housing toward and away from the surface, the finger being biased by a spring into a normally-extended position where it inhibits the driving of a fastener, but can be moved into a retracted position by contact with the surface, in which position it allows the driving of the fastener, the safety device having an abutment that extends through the driver blade slot for engagement in the inhibiting position with the leading end of the series of fasteners, the slot being of sufficient size that the abutment does not interfere with the movement of the hammer and the driving blade.

3,940,045
MANUALLY POSITIONABLE WORK ELEMENT

William G. A. Verwey, Phoenix, Md., assignor to Precision Industries, Inc., Baltimore, Md.
Filed Oct. 2, 1974, Ser. No. 511,497
Int. Cl.^{2} B27F *7/02*
U.S. Cl. 227—101 **11 Claims**

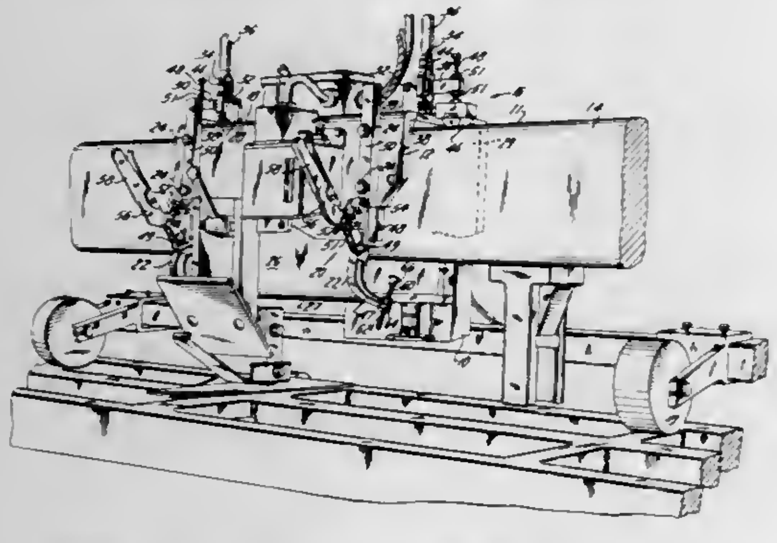
1. Apparatus for positioning a work element on a support rail, comprising, in combination,
at least one carriage adapted to be movably mounted on said support rail said carriage including a top member

adapted to be supported on said support rail, and at least one side surface member connected to said top member and depending adjacent said support rail, so that said work element may depend therefrom;

bearing means operably connected to said carriage and adjustable between engaging and retracted positions, said bearing means adapted to contact said support rail when in its engaging position and facilitate movement of said carriage along said rail;

means for selectively positioning said bearing means between engaging and retracted positions, said means comprising over-center toggle mechanisms connected to said bearing means, said toggle mechanisms movable between first and second positions, so that said bearing means may be in its engaging position when said toggle mechanism is in its first position and said bearing means may be in its retracted position when said toggle mechanism is in its second position; and

means for preventing the advance of said carriage along said support rail when said bearing means is in its retracted position, said means being adjustably connected to said carriage and adapted to engage said support rail.



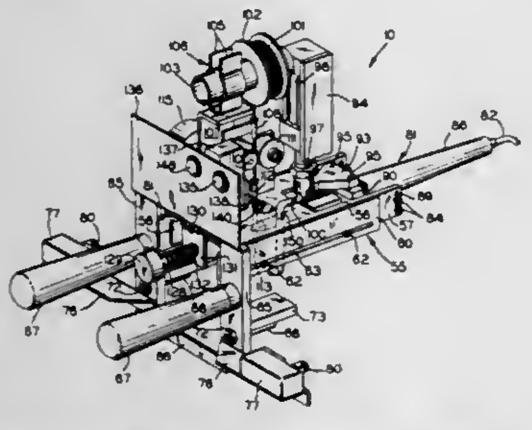
3,940,046
SOLDERING APPARATUS

Robert W. Fern, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Mar. 20, 1974, Ser. No. 452,985

Int. Cl.² B23K *3/00, 3/06*

U.S. Cl. 228—8 15 Claims



1. A soldering apparatus comprising: a frame, a soldering iron having a tip, means mounting said soldering iron on said frame for pivotal movement relative thereto in an arcuate path between a position of rest and a position of use, a supply of solder in strip form mounted on said frame, means intermittently feeding an increment of said solder strip into said arcuate path of travel in spaced relation to said soldering iron tip when disposed in said position of rest, and means for actuating said soldering iron to swing the tip thereof into engagement with said solder strip and sever said increment therefrom for delivery to said position of use.

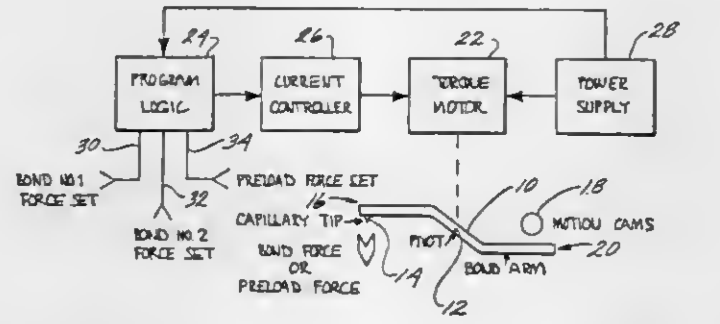
3,940,047
BONDING APPARATUS UTILIZING PIVOTALLY MOUNTED BONDING ARM

Joseph L. Laub, Claremont, and David W. Steinmeier, II, Temple City, both of Calif., assignors to Unitek Corporation, Monrovia, Calif.

Filed Jan. 16, 1974, Ser. No. 433,662

Int. Cl.² B23K *1/00*

U.S. Cl. 228—32 9 Claims



1. In a bonding apparatus, the improvement comprising

a bonding arm having a bonding tool attached at one end thereof;

electromechanical means operatively linked to the bonding arm for applying a variable amount of force to the bonding arm, the amount of force applied being proportional to the electrical energy supplied to the electromechanical means;

input means electrically connected to the electromechanical means for controlling the amount of electrical energy to be supplied to the electromechanical means, the input means comprising a plurality of adjustable energizing electric current sources selectively connectable to the electromechanical means, the plurality of sources including a first source for controlling the amount of force applied to the bonding arm by the electromechanical means when the bonding tool is in contact with a bonding location.

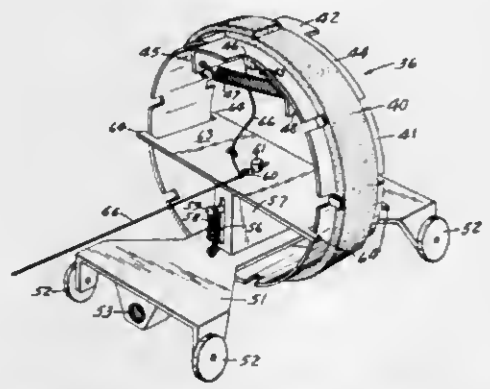
3,940,048
DEVICE FOR BACKING BUTT-WELDS BETWEEN TUBES

James H. Casey, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 21, 1975, Ser. No. 542,713

Int. Cl.² B23K *5/22*

U.S. Cl. 228—50 6 Claims



1. A backing device useful during fusion butt-welding between the ends of two tubular members having similar curvilinear inner surfaces, said device comprising:

a thin flexible support strip having overlapped end portions to provide an arcuate outer peripheral surface;

means guiding said overlapping end portions for relative longitudinal sliding movement to change the peripheral circumference of said support strip;

a strip of flexible refractory material comprising inorganic particles bound together with a flexible organic binder adapted to have a length dimension which is about the same as that of the inner circumference of the tubular members;

means for securing said strip of refractory material on the periphery of said support strip; and

means adapted for positioning said end portions to press said strip of refractory material into engagement with the inner surfaces of said butted tubes.

3,940,049
PROCESS FOR WELDING EXPLOSIVE-CLAD METAL SHEETS

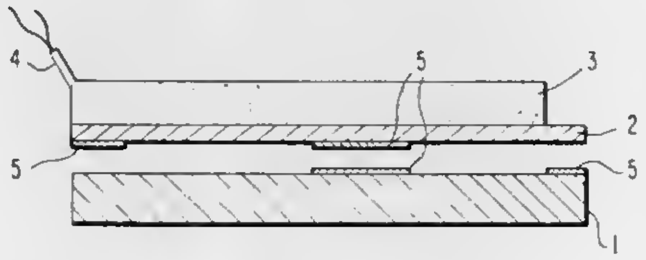
Ulf Richter, Burbach-Wurgendorf, and Antonius Korves, Ahlen, Westphalia, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft and Jacob and Korves GmbH, both of, Germany

Filed May 31, 1973, Ser. No. 365,407

Claims priority, application Germany, May 31, 1972, 2226484

Int. Cl.² B23K *31/02*

U.S. Cl. 228—107 34 Claims



1. In a process for joining an explosive-clad metal sheet composed of a base metal layer and a cladding metal layer to another element by welding, the improvement comprising carrying out explosive cladding to form said explosive-clad metal sheet in such a way that facing sections of said base metal layer and said cladding metal layer are unbonded in those portions of the explosive-clad metal sheet which will be welded to said element, and thereafter joining said element to the cladding metal layer of said explosive-clad metal sheet by welding only to portions of the cladding metal layer of said explosive-clad metal sheet in which said base metal layer and said cladding metal layer are unbonded.

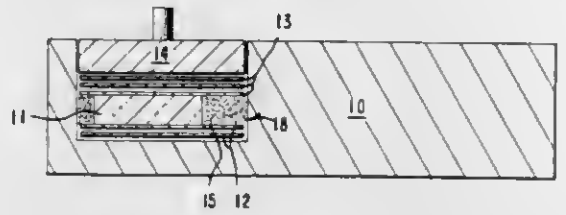
3,940,050
METHOD OF JOINING DIAMOND TO METAL

Donald R. Johnson, and James R. Sawers, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 333,144, Feb. 16, 1973, Pat. No. 3,856,480. This application Oct. 4, 1974, Ser. No. 512,044

Int. Cl.² B23K *31/02*

U.S. Cl. 228—122 5 Claims



1. In a process, for joining a diamond to a metal shank, of the type comprising the steps of applying an alloy selected from the group consisting of gold-tantalum alloys containing from about 1 to about 25 percent by weight of tantalum, and gold-niobium alloys containing from about 1 to about 10 percent by weight of niobium to opposing surfaces of said diamond and said metal shank, and melting said alloy in an inert atmosphere; the improvement wherein said process proceeds by placing a first layer of said alloy and then said diamond in a depression formed in said metal shank, filling the space around said diamond with an inert powdered material, covering said diamond and said powdered material with a second layer of said alloy, and clamping the above constituents in place with a metal cap using sufficient force to prevent movement of said diamond during the melting of said alloy.

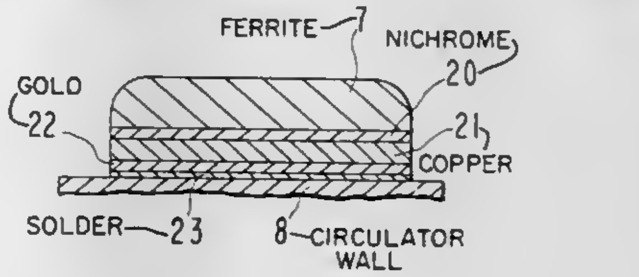
3,940,051
BONDING OF FERRITE TO METAL FOR HIGH-POWER MICROWAVE APPLICATIONS

Victor A. Vaguine, Palo Alto, and Dennis R. Nichols, San Jose, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Division of Ser. No. 337,059, March 1, 1974, Pat. No. 3,873,944. This application Oct. 8, 1974, Ser. No. 513,195

Int. Cl.² B23K *1/20*

U.S. Cl. 228—208 11 Claims



1. A method of bonding a gyromagnetic ferrite button for causing nonreciprocal transmission of power within a microwave circulator to a metal wall of said circulator, said method comprising the steps of depositing a plurality of metal layers in succession upon a portion of said button and then soldering said metallized button to said metal wall.

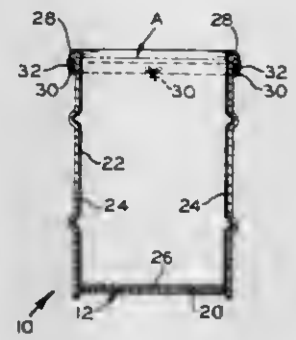
3,940,052
UNITARY CONTAINER LINER

Vincent Kenneth McHugh, 4533 Granville Court, Toledo, Ohio 43615

Continuation-in-part of Ser. No. 195,193, Nov. 3, 1971, abandoned. This application Apr. 29, 1974, Ser. No. 465,296

Int. Cl.² B65D *5/40, 25/14*

U.S. Cl. 229—14 BE 3 Claims



1. A unitary replaceable liner for a liquid container having side walls and a bottom, the liner being adapted to accommodate suction withdrawal and mechanical agitation of liquid contained thereby in the vicinity of the container bottom and comprising:

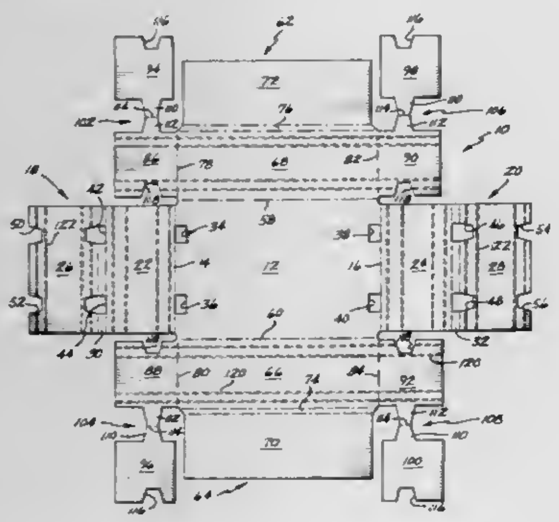
a pliant collapsible tubular portion having an opening at one end thereof;

a closed end wall having the pliant collapsible character of said tubular portion at the end of said tubular portion opposite said opening;

a base including an internal stiffener of a generally planar form independent of said tubular portion, and bonded generally around the periphery of said base to the inside of said closed end of said tubular portion, said internal stiffener conforming to the bottom of the container and providing clearance between said liner around the periphery of said internal stiffener and the side walls of the container for passage into the container of said liner, said tubular portion being conformable to the interior side walls of the container, said entire internal liner being stiff and non-collapsible under the forces imposed in suction withdrawal and mechanical agitation of the liquid contained by said liner throughout the planar dimension thereof to maintain said tubular portion in conformity with the side wall of the container and prevent collapse of said liner in the vicinity of the container bottom, said liner being impervious and inert to the liquid in the container to maintain separation between the liquid and the container; and

an external stiffener bonded to said closed end over substantially the entire periphery of said base and in general registry with said internal stiffener.

3,940,053
SINGLE-PIECE CONTAINER BLANK WITH MULTI-PLY END PANELS
Jack D. Putman, Bellevue, and Richard Wytko, Olympia, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.
Filed Aug. 1, 1974, Ser. No. 493,803
Int. Cl.^{2} B65D *5/22, 21/02*
U.S. Cl. 229—34 R **3 Claims**



1. A single-piece containerboard blank of the type that is erectable into a container having at least two side panels, two multi-ply end panels, and a bottom panel, comprising:

a generally rectangular bottom panel having longitudinal and transverse edges, and further having a pair of cutouts along each transverse edge,

a first end wall extending outwardly from each transverse edge of said bottom panel connected to said bottom panel through a hinge line, and forming the outermost wall in each of said multi-ply end panels,

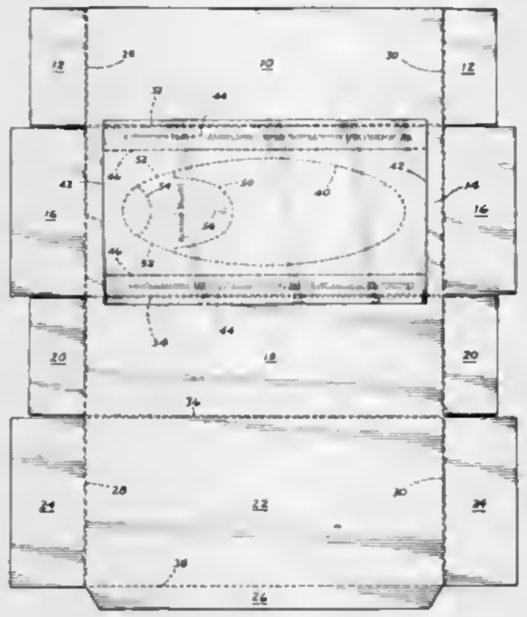
a first side wall extending outwardly from each longitudinal edge of said bottom panel connected to said bottom panel through a hinge line and forming the outer wall in each of said side panels,

first split interior end walls extending outwardly from each transverse edge of said first side walls having a longitudinal dimension that is equal to or less than one half of the transverse dimension of said first end walls and further having a cutout along the bottom longitudinal edge positioned so as to be in alignment with said plural cutouts in said bottom panel,

second split interior end walls extending outwardly in the transverse direction from the outer longitudinal edge of each of said first split interior end walls with said corresponding first and second split interior end walls being connected together by stacking tab means and with said second split interior end walls having cutouts along the outer longitudinal edges positioned so as to be in alignment with said plural cutouts in said bottom panel and having approximately the same longitudinal dimension as said first split interior end walls, and

said stacking tab means being comprised of two tab portions extending outwardly from opposing respective split interior end walls and hingedly connected together such that, when said container is erected, said stacking tabs will extend upwardly from the top edges of said multi-ply end panels.

3,940,054
TISSUE CARTON
Henry R. Goebel, and Joseph Flynn, both of Camarillo, Calif., assignors to Western Kraft Corporation, Camarillo, Calif.
Filed Nov. 15, 1974, Ser. No. 523,969
Int. Cl.^{2} B65D *17/16*
U.S. Cl. 229—51 D **4 Claims**



1. A tissue carton comprising:

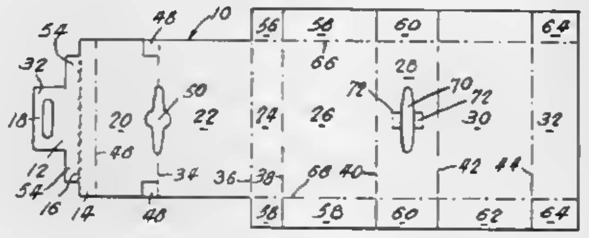
a. a blank of foldable carton material including top, bottom, and side panels and a plurality of end flaps connected thereto and foldable into carton-forming relation,

b. the top panel having an opening dimensioned to pass tissues contained in the carton,

c. a piece of transparent film material extending across the opening and secured to the underside of the top panel outwardly of the peripheral margin of the opening,

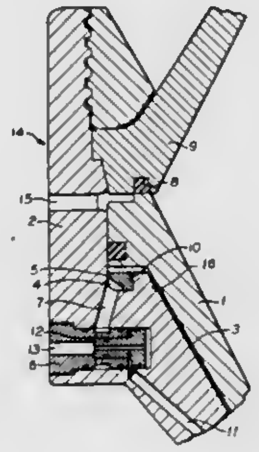
d. a pull tab for the piece of transparent film material comprising a perforation-defined segment of the top panel secured to the piece of transparent film material, the perforations defining said pull tab segment registering with and forming a continuation of the peripheral margin of the top panel opening.

3,940,055
END LOAD CONTAINER
Cecil Alan Rowley, Kirkland, Canada, assignor to Domtar Limited, W. Montreal, Canada
Filed July 26, 1974, Ser. No. 492,036
Claims priority, application Canada, Aug. 24, 1971, 121263
Int. Cl.^{2} B65D *5/46, 25/28*
U.S. Cl. 229—52 B **12 Claims**



1. A blank adapted to form an interior partition within a carton and an extensible handle member, said blank comprising a handle panel having a hand section and abutment flanges, a securing panel, a line of weakness connecting said handle panel to said securing panel to permit said handle panel to be torn therefrom, an envelope panel, a partition panel, said securing panel and said partition panel being connected to said envelope panel by substantially parallel fold lines positioned one on each end of said envelope panel and a handle opening along said fold line connection between said partition panel and said envelope panel, said opening permitting the handle section to be pulled through said opening into a carrying position wherein said flanges engage said fold line connection between said envelope and partition panels when said blank is formed into an interior partition.

3,940,056
SELF-CLEANING CENTRIFUGE DRUM
Reinhard Schmidt, Oelde, Germany, assignor to Westfalia Separator AG, Oelde, Germany
Filed Feb. 27, 1974, Ser. No. 446,450
Claims priority, application Germany, Feb. 27, 1973, 2309647
Int. Cl.^{2} B04B *1/14*
U.S. Cl. 233—20 A **7 Claims**



1. In a centrifugal separator comprising

a. a rotatably mounted separator drum having at least one sludge discharge passageway disposed at the radially outward periphery of the drum,

b. a piston valve disposed within the drum extending from adjacent the drum axis to adjacent the radially outward periphery of the drum, and being movable vertically to open and close the sludge discharge passageway(s) for desludging,

c. a closing chamber in the drum disposed outwardly of the piston valve extending from adjacent the axis of the drum to adjacent the radially outward periphery thereof, defined in part by the axially outward side of the piston valve, for receiving and discharging control fluid for, respectively, forcing the piston valve to the closed position and relieving force initiating the moving of the valve to its open position,

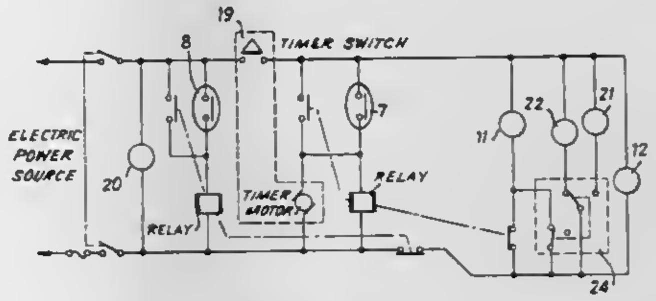
d. a release passage communicating with a radially outwardly disposed portion of the control chamber for receiving control fluid from the control chamber for discharge thereof from the drum,

e. a release valve in the release passage for closing the passage for holding control fluid in the control chamber and opening the passage for discharge of control fluid from the control chamber,

the improvement which comprises:

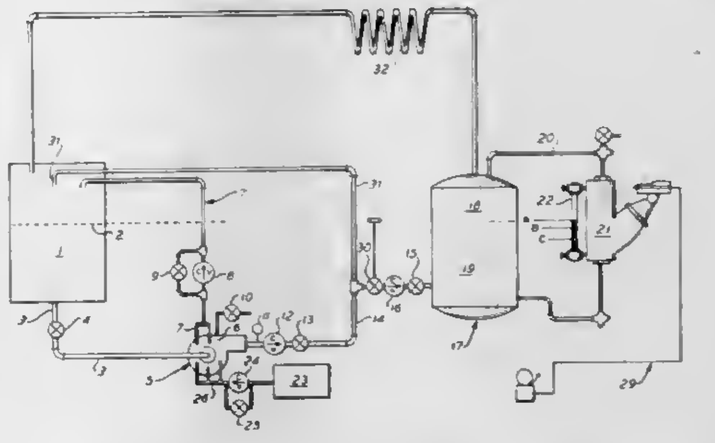
f. an annular chamber in the drum concentric with the drum axis and interposed between the closing chamber and the release passage for receiving control fluid from a peripheral portion of the control chamber and conveying the control fluid to the release passage, passageway means between said peripheral portion of the control chamber and the annular chamber such that with the release valve open, control fluid leaves the closing chamber through said passageway means so that the level of the control fluid is maintained concentric with the drum axis as the level in the control chamber moves radially outwardly so that tilting of the piston valve during emptying of the control chamber is prevented.

3,940,057
PRESSURE COOKING APPARATUS
Takafumi Oya, Kadoma; Yoshiyuki Kashiwagi, Kadoma, and Yoshihiro Kariya, Toyonaka, all of Japan, assignors to Rinnai Kabushiki Kaisha, Nagoya, Japan
Filed Oct. 29, 1974, Ser. No. 518,866
Claims priority, application Japan, Oct. 26, 1973, 48-122319; Oct. 26, 1973, 48-122318
Int. Cl.^{2} A23L *1/01;* **F24C** *3/12*
U.S. Cl. 236—20 **3 Claims**



1. Pressure cooking apparatus using a pressure container comprising sensing means for sensing when a pressure or a temperature within the pressure container reaches a set value upon heating of the pressure container, a timer means connected to the sensing means to be started upon energization thereof and to finish the cooking after the passage of a set time on the timer means, a heating means for heating the pressure container, and means coupled to the heating means and timer means for stopping the operation of the heating means after the passage of the set time of the timer means; said heating means comprising a gas burner, a conduit connected to said gas burner, a first control valve and a second control valve connected in series with each other in said gas conduit and a bypass passage small in diameter relative to said conduit connected in parallel with said first control valve, such that the first control valve is closed when the sensing means operates and the timer means is activated, and the second control valve is closed at the expiration of the operation of the timer means.

3,940,058
STEAM GENERATING SYSTEM INCLUDING MEANS FOR REINITIATING THE OPERATION OF A STEAM BOUND BOILER FEED PUMP
Orlin R. Norris, 263 Little St., Belleville, N.J. 07109
Filed Oct. 7, 1974, Ser. No. 512,498
Int. Cl.^{2} F24D *1/02*
U.S. Cl. 237—9 R **5 Claims**



1. An improved steam boiler system comprising:

a steam boiler;

a centrifugal pump for pumping water into said boiler, said pump having a low pressure input side and a high pressure output side;

a boiler feed line connecting said pump to said boiler;

a condensate tank for supplying water to said centrifugal pump;

a suction line connecting said condensate tank to said pump;

a heating system for passing steam from said boiler back to said condensate tank; and,

an automatic cool water injecting means for injecting cool water into said pump when said pump is in the steam bound condition, said automatic cool water injection means including:

- a source of relatively cool water;
- a cool water input line means connected between said source of cool water and the high side of said pump; and,
- a first pressure sensitive valve means for passing water to said cool water input line means whenever the pressure in the high side of said centrifugal pump drops below the pressure of said source of cool water.

3,940,059
METHOD OF FOG DISPERSION

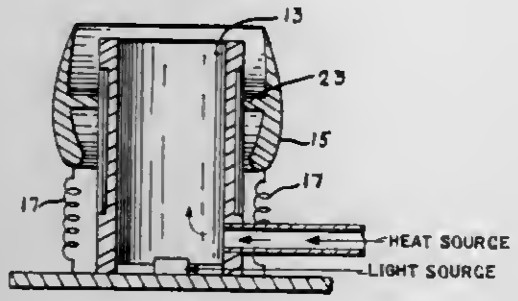
Richard S. Clark, China Lake, Calif.; Ronald L. Lininger, Ann Arbor, Mich., and David W. Reed, China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 4, 1971, Ser. No. 150,205
Int. Cl.² E01H *13/00*
U.S. Cl. 239—2 R 4 Claims

1. A method for dispersing a warm fog which comprises spraying into said fog a composition comprising, on a molar ratio, about 1 mole urea and about 1 mole ammonium nitrate, with from zero to 5 moles of water, wherein the amount of water for said composition comprising two said compounds is at least one-half mole.

3,940,060
VORTEX RING GENERATOR

Hermann Viets, 2511 S. Patterson Blvd., Dayton, Ohio 45409
Filed Aug. 23, 1974, Ser. No. 499,939
Int. Cl.² E01H *13/00*
U.S. Cl. 239—14 6 Claims

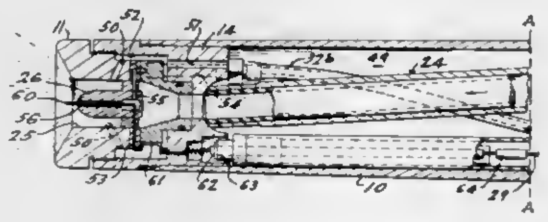


1. A vortex ring generator for use in clearing atmospheric obstacles in the path thereof, said vortex generator comprising a circular cylinder having a heat source in the base thereof, a ringwing surrounding the upper portion of said circular cylinder, and means for periodically raising and rapidly lowering said ringwing at a predetermined frequency rate to create a vortex therebehind, said vortex being highly concentrated for rapid upward movement thereby clearing the atmosphere for relatively great distances above the vortex generator.

3,940,061
ELECTROSTATIC SPRAY GUN FOR POWDER COATING MATERIAL

James J. Gimple; Charles T. Lasley, and Rogers, Daniel M., all of Toledo, Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio

Filed Sept. 16, 1974, Ser. No. 506,200
Int. Cl.² B05B *5/02, 1/28*
U.S. Cl. 239—15 5 Claims

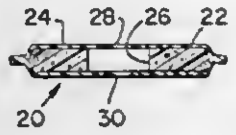


1. An electrostatic spray gun for the deposition of powdered coating material, said spray gun having a support means for an axial electrode, said electrode extending forwardly from said support means, a power supply to apply a charging voltage to said axial electrode to create an electrostatic field thereabout, means to discharge an air supported stream of powder coaxially with and around said electrode support means, means to supply an air stream to shape said powder stream to a desired configuration, and means to supply a flow of air axially through said support means in surrounding shielding relationship to said charging electrode, said air being caused to flow rapidly along the length of said electrode.

3,940,062
MOISTURE POD FOR THE PRESERVATION OF PERISHABLE COMESTIBLES

Don E. Rainey, 4525 NE. 21st Ave., Fort Lauderdale, Fla. 33308

Continuation of Ser. No. 394,809, Sept. 6, 1973, abandoned, which is a division of Ser. No. 280,746, Aug. 15, 1972, abandoned. This application Aug. 22, 1974, Ser. No. 499,857
Int. Cl.² A24F *25/00*
U.S. Cl. 239—56 5 Claims



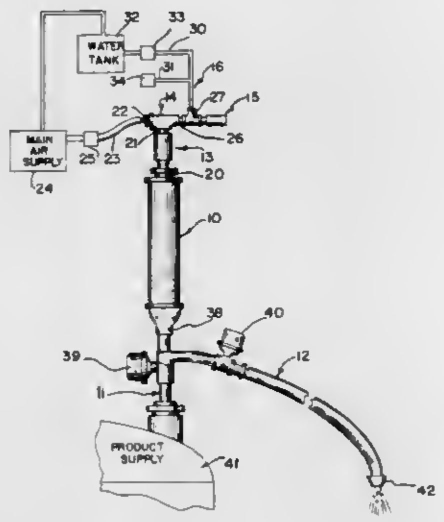
1. A moisture pod for use in a package of a perishable comestible product, consisting of:

- a. a water-containing, flexible, porous reservoir element of a water-absorbing material having an aperture formed therein and extending entirely therethrough; and
- b. a sheath of flexible, moisture-impervious film contiguous about and in closely enveloping relationship with said reservoir element, said sheath having an opening in at least one face thereof, said opening being smaller in diameter than said aperture and registering therewith, thereby permitting evolution or evaporation of water vapor from said reservoir element to the exterior of said sheath.

3,940,063
APPARATUS FOR SPRAY-COATING PRODUCT ONTO AN ARTICLE

Jon B. Baumgartner, Lisle, and James J. Morano, Orland Park, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed May 30, 1975, Ser. No. 582,145
Int. Cl.² B05B *15/02*; B65B *1/04*
U.S. Cl. 239—70 10 Claims



1. Apparatus for spray-coating a product onto an article comprising, a container adapted to be filled and emptied with product to effect spraying a measured amount of product onto an article, a fill and empty port at the bottom of the container, a supply of product, a spray line having a spray nozzle, first means for selectively interconnecting said supply and said fill and empty port, second means for selectively interconnecting the spray line and said fill and empty port, an air port at the upper end of the container, product level control means adjacent the air port responding to a predetermined product level for closing the air port when the product level in the container reaches said predetermined level, and a venturi eductor connected to the product level control means having an air inlet connected to an air supply and an outlet connected to a control valve for selectively opening and closing the outlet to atmosphere and creating negative and positive pressure conditions in the container, whereby said container is filled during the negative pressure condition and emptied during the positive pressure condition.

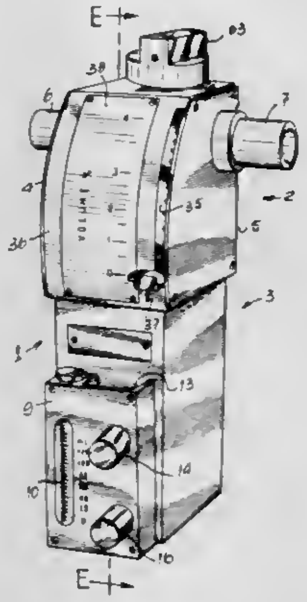
3,940,064
ATOMIZING EQUIPMENTS FOR ANESTHETIC LIQUID COMPOUNDS

Kentaro Takaoka, Avenida Bosque da Saude, 519, Sao Paulo, Brazil

Filed Feb. 10, 1975, Ser. No. 548,783
Claims priority, application Brazil, Aug. 19, 1974, 6804
Int. Cl.² B05B *7/26*; B67D *5/38*
U.S. Cl. 239—74 8 Claims

1. A vaporizing device useful for the carrying of liquid anesthesia by a carrier gas matrix, said device of the type utilizing two separate streams of carrier gas with the first of said streams not immediately contacting said liquid and the second of said streams contacting and carrying said liquid within said stream to a final mixing chamber in which said second stream is reunited and mixed with said first stream and the control of the amount of each of the streams helps to determine the amount of liquid anesthesia provided to the patient, the device comprising:

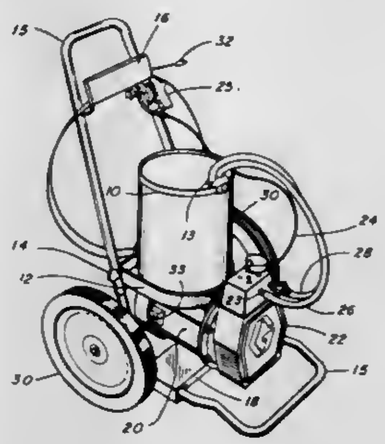
- a. a body shaped to allow for abutment at the sides of said body by another said device, said body including removable side panels, an upper section and a lower section;
- b. said lower section of said body defining a chamber for contacting mixing said anesthetic liquid with said second stream, said lower section including means for introduction of said liquid into said chamber, and a second conduit means including valve means for the introduction of said second stream;
- c. other conduit means for carrying said anesthetic enriched second stream into said final mixing chamber, said means including a conduit which interconnects said chambers and separate valve means for controlling the amount of said enriched second stream entering said final chamber;
- d. said upper section including first stream conduit means for carrying said first stream to said final mixing chamber including a valve means for controlling the amount of said first stream entering said chamber.



3,940,065
PORTABLE SPRAYING APPARATUS

Lyle A. Ware, Bloomington; Dennis J. Sundelius, St. Paul, and Marlin R. Melquist, Spring Lake Park, all of Minn., assignors to Graco Inc., Minneapolis, Minn.

Filed Mar. 14, 1975, Ser. No. 558,209
Int. Cl.² B05B *5/08, 9/043, 15/04, 3/18*
U.S. Cl. 239—146 6 Claims



1. Apparatus for spraying liquids from a container and for portable relocation to a work site without disconnecting the liquid coupling and spraying members, comprising:

- a. an L-shaped frame member having wheels mounted on axles near the intersection of the horizontal and vertical frame legs;
- b. a motor and pump assembly rigidly attached to the horizontal leg of said frame member;
- c. a liquid container shelf pivotally mounted along said frame member vertical leg and supported in a substantially horizontal position by said motor and pump assembly, whereby said shelf is elevated above said pump assembly and has its load-bearing center forward of said wheel axles;

d. a suction hose and a recirculating hose attached to said motor and pump assembly and having means for attachment to said liquid container;

e. spraying means, attached to said motor and pump assrmbly, for delivering sprayed liquid pumped by said motor and pump assembly; and

f. electric circuit means for interconnecting said spraying container shelf to a common electrical potential.

3,940,066

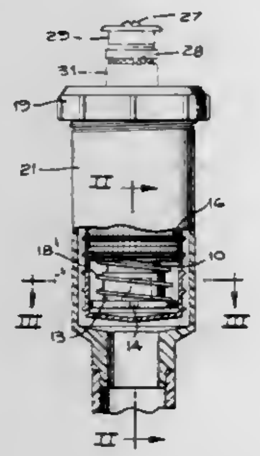
POP-UP SPRINKLER HEAD HAVING FLOW ADJUSTMENT MEANS

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcos, Calif.

Continuation-in-part of Ser. No. 487,578, July 11, 1974, abandoned. This application Oct. 16, 1974, Ser. No. 515,218

Int. Cl.² B05B *1/16, 1/30, 15/10*

U.S. Cl. 239—204 **13 Claims**



1. In an improved versatility sprinkler for varying the flow rate of fluid through a sprinkler head having a housing for receiving water under pressure and riser means mounted therein, said riser means having an inlet end within said housing and a discharge end, exteriorly of said housing, the improvement comprising:

first means formed at the discharge end of said riser means for adjusting the area of coverage of the fluid discharged from said riser means; and

second means associated with the inlet end of said riser means within said housing for adjusting the rate of flow of fluid from said housing into said riser in response to rotational movement of said riser means relative to said housing independently of the adjustment of said first means whereby the area of coverage of the fluid discharged from the riser means may be independently adjustable through manipulation of said first means and the flow rate of fluid discharged into the selected area of coverage is independently adjustable exteriorly of said housing through manipulation of the discharge end of said riser means.

3,940,067

AXISYMMETRICAL ANNULAR PLUG NOZZLE

Charles C. Cherry, McGregor, and Lewis C. King, Dallas, both of Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 3, 1969, Ser. No. 798,256

Int. Cl.² B63H *11/00*

U.S. Cl. 239—265.11 **9 Claims**

1. A composite annular nozzle for rocket motors comprising:

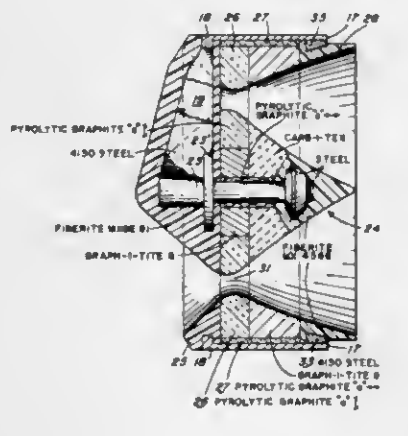
a steel shell forming a can-like body;

tripod arms secured at their free extremities to the shell;

a steel pin secured to the center of the tripod arms and extending aft substantially concentric with the shell body;

contoured inner walls formed of sections of materials other than steel secured to the inner wall of the shell body, said inner wall forming the outer contoured surface of the nozzle;

sections formed of a material other than steel, which when assembled on the center pin form a substantially cone shaped centerbody, the contoured outer shape of the centerbody forming the inner walls of the nozzle;



wherein the aft insert of the outer and inner contoured walls is formed of silica phenolic molding compound;

whereby an annular throat section is formed at the portion of narrowest opening between the outer wall and the inner wall of the nozzle.

3,940,068

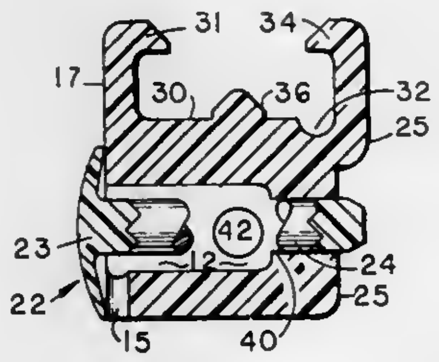
WINDSHIELD WIPER ARM WITH WATER DISTRIBUTION MEANS

Michael G. Mohnach, Merrillville, and John J. Plisky, Munster, both of Ind., assignors to The Anderson Company, Gary, Ind.

Filed Sept. 13, 1974, Ser. No. 505,743

Int. Cl.² B05B *1/10;* **B60S** *1/46*

U.S. Cl. 239—284 R **3 Claims**



1. A method for sealing a washer jet assembly having a housing with a distribution cavity and a reduced diameter opening aligned with said distribution cavity, a cover button having an integrally formed head portion and shank portion with the end of the shank portion remote from the head portion being inserted through the distribution cavity and forced through said reduced diameter opening, said head portion having a concave-shaped surface on the shank side thereof with said concave-shaped surface being seated against an open end of said distribution cavity, said head portion being pressed against said housing to flatten said concave shape to a flat shape, and the remote end of said shank portion being upset to form a flange to secure said cover button flat against said housing.

3,940,069

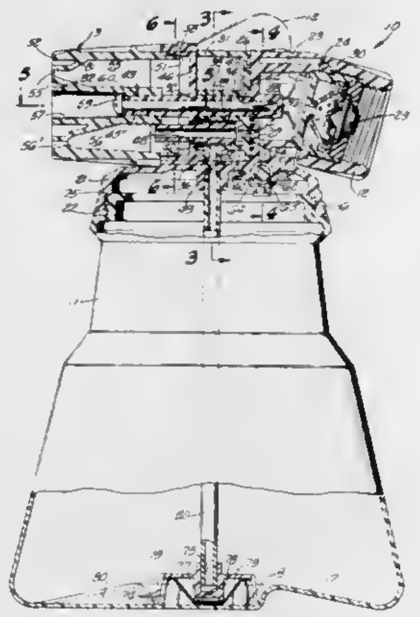
SPRAY APPARATUS

Rudolph M. Gunzel, Jr., San Marino; Donald R. James, West Covlna, and Tony Radecki, Altadena, all of Calif., assignors to Meiko, Incorporated, Los Angeles, Calif.

Filed Sept. 30, 1974, Ser. No. 510,764

Int. Cl.² B05B *7/04, 7/30, 1/16*

U.S. Cl. 239—318 **26 Claims**



1. Apparatus for mixing a liquid with pressurized water and providing a spray thereof, comprising:

an open-topped container for receiving a quantity of said liquid:

a cap carried by said container including means for connecting the cap to a supply of pressurized water with a water inlet opening in communication with said pressurized water and further having a port communicating with the container interior;

a cylindrical body rotatably mounted on said cap including first and second passages extending through said body, arranged to be individually aligned with said water inlet opening at respective different positions of rotation, said body having walls defining first and second openings interconnecting the respective first and second passages to the body exterior and so located as to align with the port in said cap when the respective passage is aligned with the water inlet opening;

a nozzle interconnected with said cylindrical body for ejecting a spray; and

a single, open-ended, hollow tube carried by said cap having one open end interconnected with said port in said cap and the other open end extending into said container, said tube other end terminating in means having an opening for receiving liquid from the container and said opening in said means having a lesser sectional area than that of the tube one open end or that of the port in said cap.

3,940,070

ATOMISER HAVING A PLUNGER TUBE

Michel Boris, Paris, France, assignor to Societe Technique de Pulverisation, Paris, France

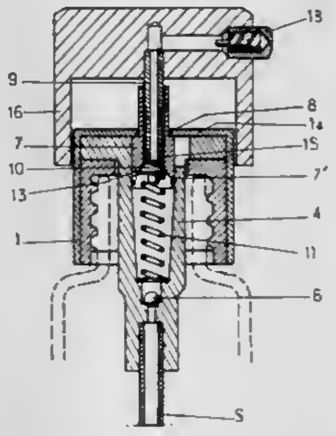
Filed Aug. 16, 1974, Ser. No. 498,068

Claims priority, application France, Aug. 16, 1973, 73.30656

Int. Cl.² B05B *9/043*

U.S. Cl. 239—333 **4 Claims**

1. In an atomiser comprising a plunger tube, a pump chamber connected to the plunger tube by means of a check valve, a piston having a lip slidably mounted in that chamber, a tube slidably mounted in that piston and operatively connected to the latter so that, when the tube is moved axially, it drives the piston, a control button carrying a nozzle connecting with the tube and capable of moving the latter when the button is pressed, a valve carried on the end of the tube opposite the button and capable of being applied on a seat at the lip end of the piston, the tube containing in proximity to said lip end at least one hole opening inside the piston, and a spring which is inserted between the valve and the bottom of the chamber and tends to apply the valve on its seat and, to bring the piston into a rest position in which it blocks a free air opening of the container holding the liquid to be sprayed, the improvement comprising: the pump chamber being of the shape of a truncated cone the surface of which is plane, the lip of the piston being of decreasing crosssection as it extends from the valve seat to the free end of the piston, the free end being situated at the larger base of the pump chamber in its rest position said free end having an outside diameter no less than the inside diameter of the larger base of the pump chamber and the free end being radially compressed by the pump chamber as it is moved axially into the pump chamber.



3,940,071

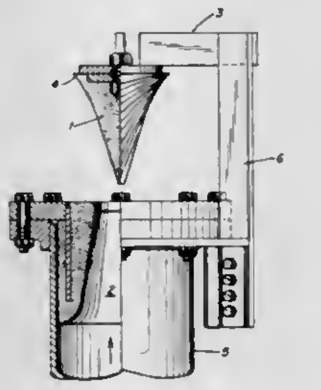
SPRAY NOZZLE FOR DISPERSING SAND SLURRY

Marvin Stevens Lassiter, Sr., Lakeland, Fla., assignor to American Cyanamld Co., Stamford, Conn.

Filed Oct. 29, 1973, Ser. No. 410,841

lot. Cl.² B05B *1/26*

U.S. Cl. 239—524 **2 Claims**



1. A spray nozzle unit comprising:

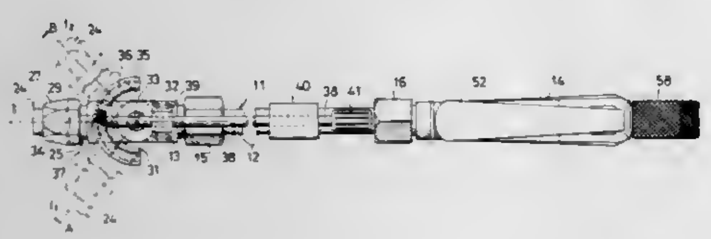
a nozzle mounted in a pipe tee for dispersing a sand slurry upward

a cone deflector with a configuration of a Tractrix curve mounted with brackets above the nozzle on a vertical arm which connects at its lower end to the pipe tee and

pressure means for propelling the sand slurry through the nozzle and against and away from the cone to cause a circular spray of the sand slurry.

3,940,072
SPRAY-EJECTING DEVICE

Yasuo Ishikawa, Yokohama, and Masahiro Ito, Tokyo, both of Japan, assignors to Tokico Ltd., Kawasaki, Japan
Filed Oct. 8, 1974, Ser. No. 513,170
Claims priority, application Japan, Oct. 11, 1973, 48-113201
Int. Cl.² B05B *15/08*
U.S. Cl. 239—587 3 Claims



1. A spray-ejecting device comprising:

an elongated tubular structure of a hand supporting type having passageways therein for passing therethrough a spray material to be spray-ejected and having a forward end and a rear end; a nozzle rotatably mounted on the forward end of the tubular structure in a manner to communicate with the passageways in the tubular structure and to be rotatable so that the direction of the centerline thereof is angularly adjustable relative to the centerline of the tubular structure, said nozzle being operable to spray-eject said spray material;

a valve mechanism for selectively shutting off and permitting supply of said spray material through the passageways of the tubular structure to the nozzle;

valve control means mounted in the vicinity of the rear end of the tubular structure for controlling the operation of the valve mechanism; and

adjustment means for rotating the nozzle relative to the tubular structure thereby to adjust the direction of spray-ejection from the nozzle,

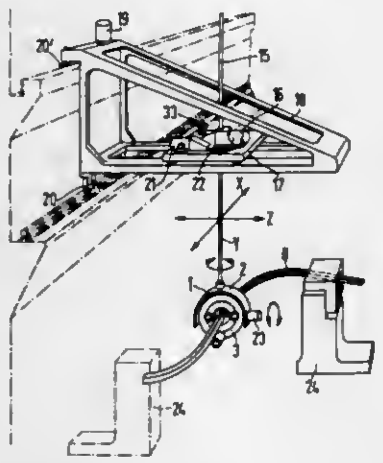
said adjustment means comprising a rotatable knob in the vicinity of the valve control means, a rotatable shaft having front and rear ends, said knob being fixed to the rear end of said rotatable shaft, said shaft extending forwardly from said knob substantially parallel to the tubular structure to a position in the vicinity of said nozzle, and rotating means coupled to the forward end of said rotatable shaft for displacing the nozzle in rotation thereby to adjust the direction of spray-ejection from the nozzle in accordance with the rotation of the rotatable shaft, said rotating means comprising a bevel gear fixedly mounted on the forward end of the rotatable shaft, a holding member unitarily holding the nozzle and pivotally supported by the tubular structure, and a rack part integrally mounted on the holding member and having a planar arcuate shape and a toothed face corresponding to a planar development of a bevel gear in mesh with said first mentioned bevel gear.

3,940,073
APPARATUS FOR WRAPPING A COMPOUND-CURVED CONDUCTOR BAR

Jochen Haeusler, Nuroberg-Laufamholz; Manfred Schmirl, aod Dietmar West, both of Nurnberg, all of Germany, assignors to Siemens Aktieogesellschaft, Munich, Germany
Filed Sept. 12, 1974, Ser. No. 505,257
Claims priority, application Germany, Sept. 18, 1973, 2346965
Iot. Cl.² H01F *11/04;* D02G *3/36*
U.S. Cl. 242—7.08 11 Claims

1. An apparatus for wrapping a compound-curved conductor bar with insulation material which comprises:

a. a winding head including,
  i. a guide ring,
  ii. a winding ring supported by said guide ring, said winding ring adapted to revolve within said guide ring,
  iii. at least one roll, for carrying said insulation material, positioned on said winding ring, and

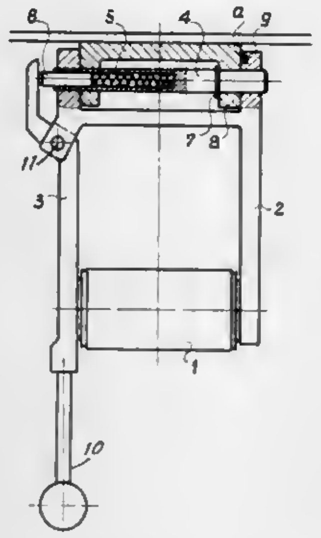


  iv. sensing means, positioned on said winding head, for measuring the change of position of said winding head relative to said conductor bar to thereby provide correctional signals proportional to the relative position between the two; and

b. means responsive to said correctional signals for adjusting the position of said winding ring such that the plane of said winding ring is maintained substantially perpendicular to the center line of said bar.

3,940,074
DEVICE FOR DAMPING VIBRATIONS OF THE BOBBIN HOLDER

Jozef Laski, and Jan Pacholski, both of Lodz, Poland, assignors to Centralne Biuro Techniczne Przemyslu Maszyn Wlokienniczych, Lodz, Poland
Filed Feb. 1, 1974, Ser. No. 438,713
Claims priority, application Poland, Feb. 7, 1973, 49914
Int. Cl.² B65H *54/42, 49/20*
U.S. Cl. 242—18 DD 2 Claims

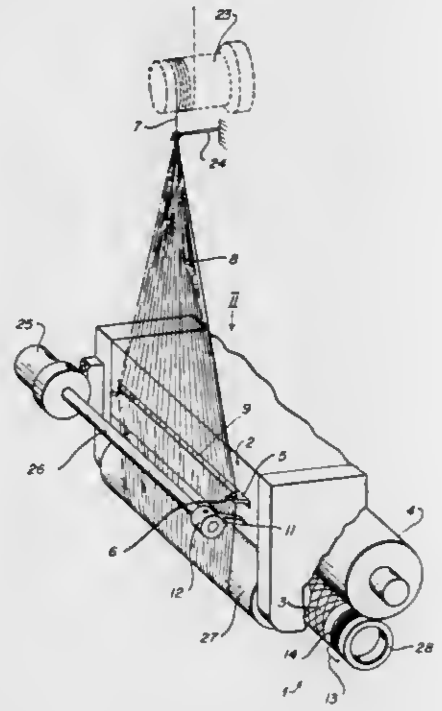


1. A yarn cross winding machine comprising, in combination:

a. a friction driven bobbin having a winding surface area;
b. a machine frame member;
c. a shaft having an axis and supported by said machine frame member, said shaft having one end which defines a recess therein;
d. a bobbin holder supported by said shaft for pivotal and axial movement relative thereto, comprising first and second arms for swingably supporting said bobbin, wherein said second arm is one end of a lever pivotably mounted to said first arm about an axis extending perpendicularly to said axis of said shaft; and
e. means for resiliently clamping said bobbin between said arms and for simultaneously urging a portion of said first arm against said machine frame member, thereby causing a friction generated force to dampen vibrations of said bobbin holder comprising:
  a spring disposed within said recess,
  a pin, slidably disposed within said recess, having one end upon which a force is exerted by said spring, and an opposite end in sliding contact with an end of said lever opposite said end of said lever which also is said second arm, and
  a stopper ring immovably mounted on said shaft, which abuts against said machine frame member and prevents axial movement of said shaft by the force exerted by said spring upon said shaft.

3,940,075
WINDING MACHINE

Erich Lenk, Remscheid, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany
Filed Jan. 15, 1974, Ser. No. 433,435
Claims priority, application Germany, Jan. 17, 1973, 2302095
Int. Cl.² B65H *54/34*
U.S. Cl. 242—18 PW 8 Claims



1. In a winding machine the combination including:

a traversing thread guide of substantially flat triangular shape, said guide extending into the thread traversal plane from one side thereof, being mounted for rectilinear reciprocating movement only, along a path parallel to said plane, having a thread-guiding slot opening into the thread traversal plane and two external side faces slanted towards the mouth of said slot, one of said slanted side faces being shorter than the other;

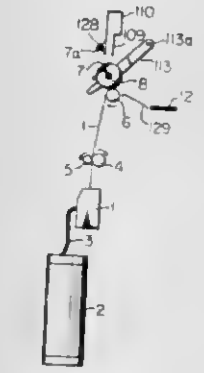
an auxiliary thread guide for lifting the thread out of said slot to form a reserve zone axially adjacent to the bobbin being wound, said auxiliary thread guide having an arm extending into the thread traversal plane from the opposite side thereof, and

means for moving said auxiliary thread guide, along a path extending on said opposite side at least partially parallel to the path of the traversing thread guide, into the thread reserve zone at a speed lower than the reciprocating speed of said traversing thread guide;

said arm of the auxiliary thread guide, with its free end, pointing at an acute angle in the direction of the thread reserve zone to provide a correspondingly slanted rear face, a correspondingly slanted front face and a recess at the root of said front face, said rear face being shaped so as to retain the thread in the slot of said traversing thread guide when the traversing thread guide, moving in the direction of said thread reserve zone, overtakes said auxiliary thread guide from the rear, and said front face being shaped so as to lift the thread out of said slot and capture it in said recess when the traversing thread guide, moving in the direction away from said thread reserve zone, passes said auxiliary thread guide from in front, and said retaining of the thread in the slot and lifting of the thread out of the slot being aided by the greater and lesser length, respectively, of said two side faces of said traversing thread guide.

3,940,076
APPARATUS FOR HANDLING A YARN END DURING A DONNING OPERATION ON A TEXTILE MACHINE

Takashi Kato, Kariya; Toshio Yoshizawa, Chiryu, and Yasuo Yamada, Kariya, all of Japan, assignors to Daiwa Boseki Kabushiki Kaisha and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, both of Osaka, Japan
Filed Apr. 11, 1974, Ser. No. 460,086
Claims priority, application Japan, Apr. 16, 1973, 48-42849; May 11, 1973, 48-52850; June 1, 1973, 48-62345
Int. Cl.² B65H *67/04*
U.S. Cl. 242—18 R 15 Claims



1. In an apparatus for doffing and donning in a textile machine having a spinning unit, a take up unit having a rotatably driven friction roller, a pivotably mounted cradle for releasably holding a bobbin in contact with said friction roller for rotating said bobbin with said friction roller, and delivery means mounted spaced from one side of said friction roller for continuously directing yarn from said spinning unit, whereby yarn from said spinning unit may be wound on a bobbin held in said cradle; the improvement wherein said cradle is manually pivotably movable toward and away from said friction roller, comprising a bobbin holder mounted in a fixed position with respect to said friction roller and including means for releasably holding fresh bobbins in the path of pivotal movement of said cradle away from said friction roller, said cradle having holding means for grasping a fresh bobbin held by said bobbin holder when said cradle is pivotally moved away from said friction roller, and means comprising a suction nozzle forming a temporary yarn passage, said suction nozzle being positioned on the same side of said friction roller as said delivery means to receive yarn from said delivery means and hold it out of contact with said friction roller, said friction roller and said bobbin holder being located on opposite sides of the yarn when the yarn is received by said suction means whereby, upon pivotal movement of said cradle from said bobbin holder toward said friction roller with a fresh bobbin held therein, yarn extending between said delivery means and said suction nozzle may be urged into contact with said friction roller for being wound on said fresh bobbin.

3,940,077

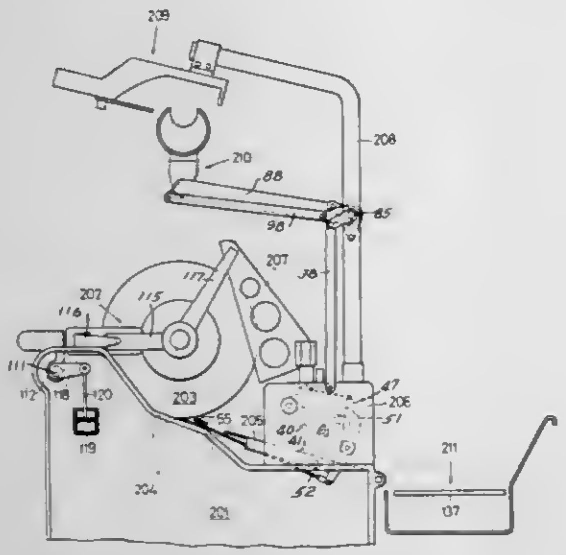
APPARATUS FOR AND A METHOD OF YARN DOFFING

Kenji Ohashi, Uji, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Aug. 6, 1973, Ser. No. 385,744

Int. Cl.² B65H *54/20, 67/04*

U.S. Cl. 242—35.5 A **6 Claims**



1. A doffing apparatus of an automatic winding machine having a frame, a plurality of winding units each carrying a package, conveying means to transport a full package and guiding drum means contacting the periphery of the package to drive the same, said doffing apparatus comprising guide plate means for guiding a full package to the conveying means, brake means engageable with the guiding drum means to stop the guiding drum means, means mounting the brake means adjacent the guiding plate in a position to be contacted and actuated by the guiding plate on movement of the guiding plate, means for moving the guiding plate to contact and actuate the brake means while the guiding drum means are still engaging a full package, cradle means supporting the package in contact with the guiding drum means, shutter plate means for opening the cradle means to release a full package, yarn transfer means mounted on said guide plate for transferring the yarn end connected with a full package to one end of the package, cutter means to cut said yarn end transferred by said yarn transfer means, and empty spool carrier means for carrying an empty spool to said cradle means to be supported by the cradle means.

3,940,078

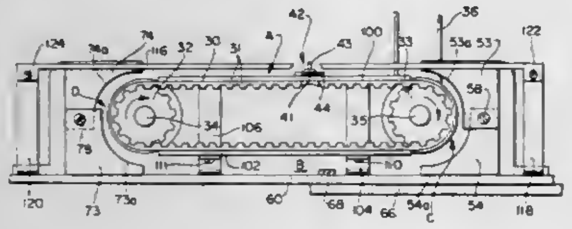
BELT TRAVERSE AND GUIDE MECHANISM

William M. Bense, Barrington, and Thomas W. Perino, Johnston, both of R.I., assignors to Leesona Corporation, Warwick, R.I.

Filed Aug. 12, 1974, Ser. No. 496,802

Int. Cl.² B65H *54/30*

U.S. Cl. 242—43 R **11 Claims**



1. Apparatus for traversing a strand onto a winding package having a longitudinal face comprising, a continuous looped conveyor having a pair of straight-away portions and opposed return portions to form a looped path, strand guide means carried around said looped path by said conveyor for engaging a strand along the entire length of said looped path and to reciprocate said strand across the longitudinal face of said package, and means to prevent rotation of said strand guide means as said strand guide means moves around said looped path, said means comprising a cam follower means associated with said strand guide means, cam means for contacting said follower means at least during the return portions of the travel of the follower means about said looped path.

3,940,079

YARN FEEDING DEVICE WITH CONSTANT ADJUSTABLE TENSION, PARTICULARLY FOR FEEDING YARNS TO WEAVING AND KNITTING MACHINES AND DEVICES

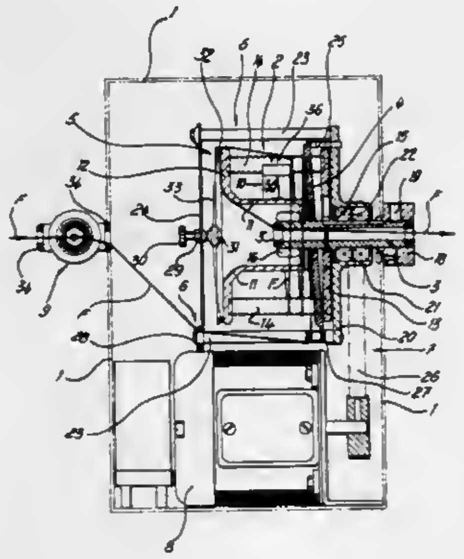
Sergio Vella, Biella, Italy, assignor to Roj & Vella S.p.A., Biella, Italy

Filed Feb. 12, 1974, Ser. No. 441,864

Claims priority, application Italy, Feb. 12, 1973, 20286/73

Int. Cl.² B65H *51/20*

U.S. Cl. 242—47.12 **7 Claims**



1. A yarn feeding device for drawing yarn from a supply and feeding it with constant adjustable tension to a weaving or knitting machine or the like, comprising a frame, a fixed hollow body consisting of a cage supported by a hollow shaft mounted cantilevered on said frame and having an inner funnel-shaped guide member, the yarn coming from said supply being wound into turns around the cage to form thereon a yarn reserve, a rotating framework mounted on said hollow shaft on the outside of said fixed cage, means to rotate said framework, oscillating means on said fixed cage and oscillated by said rotating framework to advance the yarn turns forming said reserve on the cage means to adjust and keep uniform the amount of said reserve, brake means bearing yieldably against the cage to tension the yarn leaving the device, means to adjust the pressure with which the brake means bears against the cage, the yarn unwinding from said reserve passing between the brake means and the cage, and subsequently through the funnel-shaped member, before coming out of the device in the same direction of its inlet into the device itself, said brake means comprising at least one braking element, elastically pressed in an axial direction against a free outer edge of said cage by said rotating framework, said braking element comprising a ring and a set of elastic spokes converging into a central hub of the ring, and an adjustable screw on the rotating framework acting against said hub to press the braking ring against the cage, said screw being coaxial with the hollow shaft and freely rotatable in said hub.

3,940,080

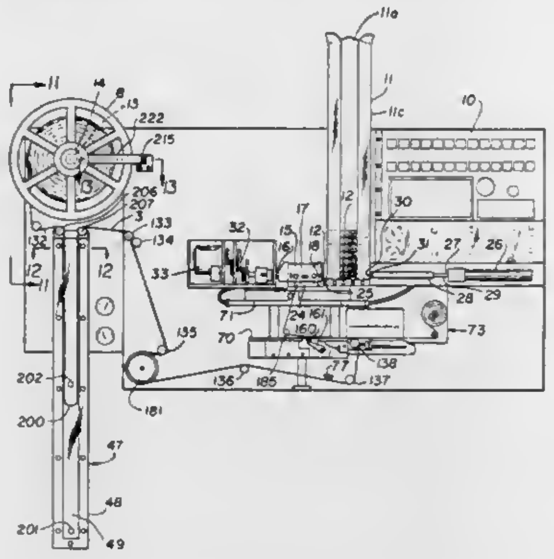
AUTOMATIC TAPE LOADING APPARATUS FOR CASSETTES AND THE LIKE

William P. Bennett, Northbrook, Ill., assignor to Programming Technologies, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 296,255, Oct. 10, 1972, Pat. No. 3,814,343. This application May 31, 1974, Ser. No. 474,894

Int. Cl.² G11B *15/58*; B65H *19/20*

U.S. Cl. 242—182 **16 Claims**



1. In an apparatus for automatically loading a plurality of cassettes of the type having at least one rotatable spool and a leader attached to said spool with a predetermined length of tape or the like including: a loading station; means for storing a plurality of cassettes to be loaded; means for advancing said cassettes, one at a time, from said storing means to said loading station; means for extracting the leader from each cassette in the loading station; means for feeding supply tape to be loaded from a rotatable reel thereof; splicing means for joining the leading end of said tape to the trailing end of said leader; rotatable drive means for rotating the spool of each cassette to wind a predetermined length of said tape therein; and cutting means to sever the tape upon completion of the winding operation, the improvement comprising a drive motor for imparting rotational movement of the reel of supply tape; a clutch-brake assembly operatively linking the drive motor and the reel to activate said reel and control the drag thereon; and means connected to the clutch-brake assembly for controlling the speed of the supply tape; said means including vacuum means for receiving a loop of supply tape and responsive to the size of said loop to correspondingly control the operation of the clutch-brake assembly to maintain a relatively constant loop size.

3,940,081

FLAT CORE FOR WEB WINDINGS

Eugene Joseph Kubicki, Sr., 10325 Hollingsworth Road, Kansas City, Kans. 66109

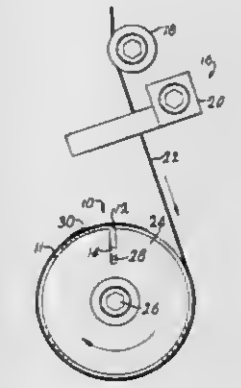
Filed Feb. 25, 1974, Ser. No. 445,074

Int. Cl.² B65H *75/02*

U.S. Cl. 242—68.5 **7 Claims**

1. A web core blank adapted to be used with a cylindrical, axially rotatable winding mandrel having an axial slot therein, said blank comprising:

- a generally flat, relatively thin flexible nonmetallic member of length and configuration for removable and circumferential positioning thereof about said mandrel in a closely fitting, circumscribing manner with the respective ends thereof proximally disposed and with a substantially smooth, projection-free outer arcuate web-receiving surface;
- means for joining said respective ends with maintenance of said substantially smooth, projection-free outer arcuate surface to present a web core about said mandrel; and
- a tongue connected to said member and being operable for insertion within said mandrel slot for precluding significant relative rotational movement of the web core when said mandrel is axially rotated,



said member having a perforation line spaced inwardly from one of the transverse edges of said member for defining said tongue, the latter being separable from the remainder of said member by tearing along said perforation line in order to present a substantially smooth inner arcuate surface on said web core upon removal of the latter from said mandrel.

3,940,082

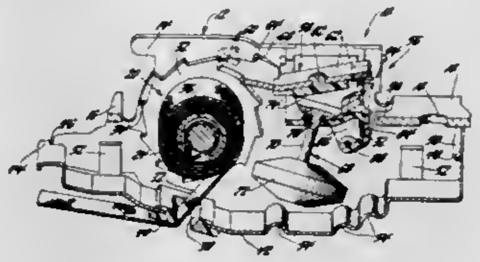
BLOCKING MEMBER FOR LOCKING MECHANISM OF A VEHICLE OCCUPANT RESTRAINT BELT RETRACTOR

Floyd I. Dully, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 10, 1975, Ser. No. 548,527

Int. Cl.² A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.4 A **3 Claims**



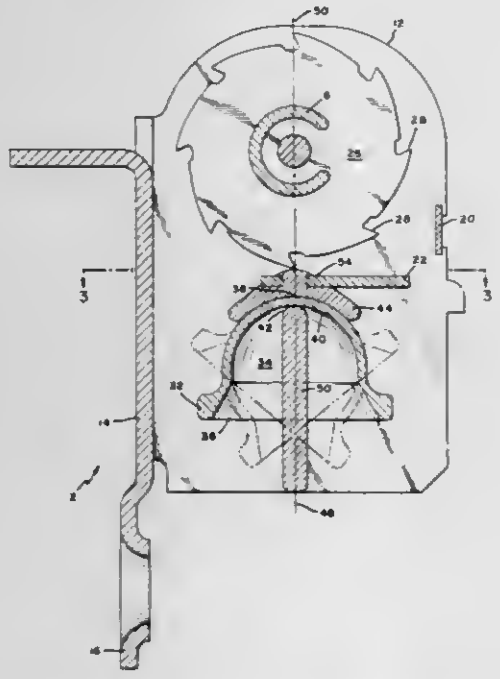
1. In a vehicle occupant restraint retractor including a housing, an elongated restraint belt, a reel attaching one end of the belt and being mounted on the housing for belt winding and unwinding rotation in opposite directions, and spring means for biasing the reel in the belt winding direction of rotation, an inertia sensitive mechanism for locking the reel against rotation relative the housing comprising:

- a locking member coacting between the housing and the reel and including a locking portion and an actuating portion, the actuating portion being movable from a first position to a second position to move the locking member from a nonlocking position to a locking position in which the reel is locked from rotation relative the housing, the actuating portion moving through an intermediate position between the first and second positions, a first inertia member movable in response to predetermined inertia forces, the first inertia member engaging the actuating portion of the locking member to effect movement of the locking member from the first position to the second position; and a second inertia member movable under the impetus of inertia forces and moving into the path of movement of the actuating portion between the first and intermediate positions thereof so that the second inertia member blocks movement of the locking member toward the nonlocking position, the second inertia member being tuned to the first inertia member and the locking member so as to move into the blocking relationship with the locking member as the actuating portion of the locking member reaches the intermediate position.

3,940,083
VEHICLE SENSITIVE RETRACTOR WITH BELL INERTIA MECHANISM

Robert L. Stephenson, Sterling Heights; Robert C. Pfeiffer, Rochester, and Yogendra Singh Loomba, Washington, all of Mich., assignors to Allied Chemical Corporation, New York, N.Y.

Filed July 10, 1974, Ser. No. 487,846
Int. Cl.² B65H *75/48*
U.S. Cl. 242—107.4 A **8 Claims**



1. In a vehicle-sensitive, inertia-operated safety belt retractor with a reel for winding the safety belt, means to lock the reel and thereby restrain an occupant of a vehicle during emergency situations, an inertia mechanism, a support mounted on said retractor for supporting the inertia mechanism and an actuating means responsive to said inertia mechanism for operating the means for locking the reel, the improvement wherein:

said support for the inertia mechanism is a support post having an upper end and a lower end;

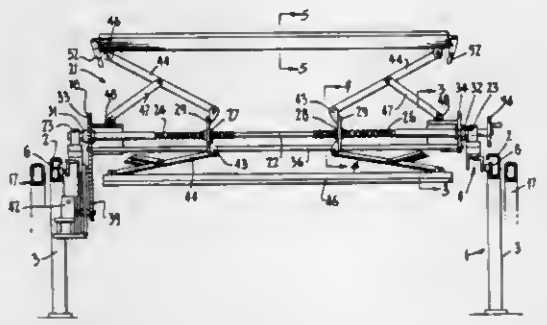
said inertia mechanism is a bell which rests on the upper end of said support post, said bell having a hollow interior, an open bottom and an interior surface; approximately the upper half of said interior surface of said bell having a substantially hemispherical interior pivot area; said upper end of said support post extending through the open bottom of said bell into said hollow interior of said bell; said bell having a plurality of support points within said interior pivot area of said bell, said upper end of said support post supporting said bell at different support points within said interior pivot area of said bell depending upon the orientation of said retractor resulting from installation in a vehicle, said bell having an infinite variety of operable static positions on said support post to which said bell is adjustable with reference to said support post according to the position in which the retractor is oriented by virtue of installation in the vehicle; during dangerous situations said bell pivotable with reference to said support post on any one of said different support points within said interior pivot area; and

said actuating means is disposed on top of said bell and is connected to said reel locking means, said actuating means having an unlocked position and a locked position, said actuating means being disposed in said unlocked position when said bell is in any one of said infinite variety of said operable static positions, said actuating means being moved to said locked position by said bell during dangerous situations to lock said reel and prevent further unwinding of said belt.

3,940,084
MEASURING AND CUTTING MACHINE

William Richard Leahy, 16 Buckley St., Footscray, Victoria, Australia

Filed Aug. 16, 1973, Ser. No. 388,784
Int. Cl.² B65H *75/24*
U.S. Cl. 242—110.2 **10 Claims**

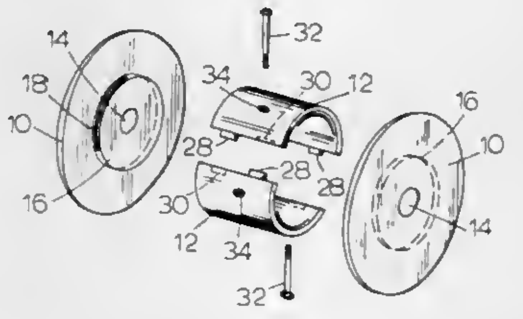


1. A machine for producing a plurality of lengths of sheet material from a roll of the material comprising a frame, fabric supporting means rotatably mounted on the frame, said fabric supporting means including at least three members spaced about the axis of rotation of said means and extending substantially parallel thereto, the members being mounted for selective movement towards or away from said axis to selectively vary the spacing of the members relative to each other, clamping means on at least one member to clamp the end of a length of sheet material to the said at least one member, driving means to rotate said members about said axis to thereby wind sheet material about the members so that one or more layers of material are supported by the members, and means for cutting said layers substantially parallel to the members to produce a plurality of lengths of said material of substantially equal length.

3,940,085
COLLAPSIBLE REEL

Kenneth E. Campbell, 4063 Old Orchard Road, York, Pa. 17402

Filed Feb. 7, 1975, Ser. No. 547,769
Int. Cl.² B65H *75/22*
U.S. Cl. 242—115 **10 Claims**

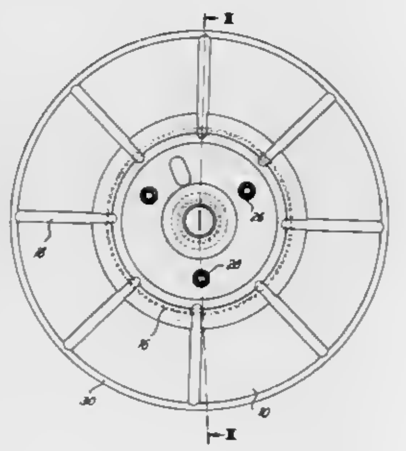


1. A collapsible reel comprising in combination, a pair of similar unitary flanges each having at least one planar face; a substantially tubular hub the opposite ends of which abut said planar faces of said flanges, said hub being composed of a plurality of similar arcuate segments having concave inner surfaces; and means detachably connecting said ends of said hub in abutting relationship respectively to said planar faces of said flanges comprising similar bosses fixed centrally to and extending axially from said planar faces of said flanges and having arcuate grooves in the peripheries of said bosses positioned therein axially outward from said planar faces of said flanges, said segments of said hub having on said concave surfaces thereof arcuate ribs complementary in shape and size to said arcuate grooves in said bosses and respectively received closely therein when said hub segments are positioned operatively between said flanges with the ends thereof abutting said planar faces of said flanges, and means connecting said segments to each other to maintain said hub connected operatively to said flanges.

3,940,086
REEL FOR A CABLE

Michel R. A. Stoquelet, 214 rue Chapu 77, Le-Mee-Sur-Seine, France

Filed Dec. 13, 1973, Ser. No. 424,449
Claims priority, application France, Nov. 23, 1973, 73.41752
Int. Cl.² B65H *75/14*
U.S. Cl. 242—118.6 **7 Claims**



1. A reel for very thin cables, such as telephonic cables, comprising, a hollow cylindrical core, two disc-shaped flanges made of a molded plastic material, each flange having a central aperture arranged to permit passage of a supporting spindle, and each flange being provided on its inner surface with an annular groove molded thereinto so as to have a radial size equal to the thickness of said core, the opposite annular end portions of said cylindrical core being removably received in the respective annular groove of the correspondng flange substantially without play and being supported therein radially inwardly and outwardly, a plurality of radial reinforcing ribs provided on the outer surface of each flange, each said rib extending radially outwardly from a position adjacent to but radially outwardly from the annular groove to a position adjacent the peripheral edge of the flange, the cross-sectional area of each said rib decreasing with increasing distance from the center of the flange, a stepped portion formed on the inner surface of each flange which is adjacent the central aperture, an inner tubular element arranged to act as a guide for the supporting spindle, the respective end portions of the tubular element being engaged with the stepped portion of each flange, and a plurality of tie rod means and nut connections arranged between the two flanges inwardly of said cylindrical core to urge the flanges toward one another.

3,940,087
SPOOL

Pierre Portal, Haute Marne 52, Bologne, France

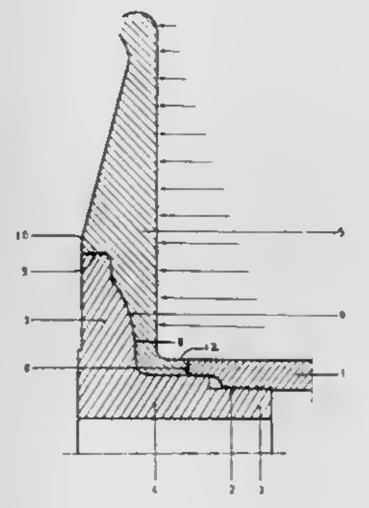
Filed Jan. 21, 1974, Ser. No. 435,285
Claims priority, application France, Jan. 24, 1973, 73.02550
Int. Cl.² B65H *75/14*
U.S. Cl. 242—118.62 **6 Claims**

1. In a spool, the combination of

A. a tubular drum having a longitudinal axis,
   1. said drum having at least one end;

B. a bracket connected to the drum at the said end,
   1. said bracket extending generally angularly outwardly from the axis,
   2. said bracket including a cooperating face,
   3. said bracket terminating radially outwardly in a flange connection having an outer edge of a first diameter measured at a first temperature,
   4. said bracket having a first coefficient of expansion; and

C. a flange removably affixed to the bracket,
   1. said flange extending generally angularly outwardly from the axis,
   2. said flange being provided with a bracket receiving cavity,



      a. said cavity receiving the flange connection therein,
      b. said cavity terminating radially outwardly in a peripheral edge,
   3. said flange having a second coefficient of expansion which is different from the first coefficient of expansion,
   4. the cavity peripheral edge having a second diameter measured at the first temperature,
   5. the second diameter being less than the first diameter when measured at a first temperature and the second diameter being greater than the first diameter when measured at an elevated temperature, and
   6. the outer edge of the bracket flange connection inwardly fitting within the peripheral edge of the flange cavity when the flange and bracket are heated to the elevated temperature.

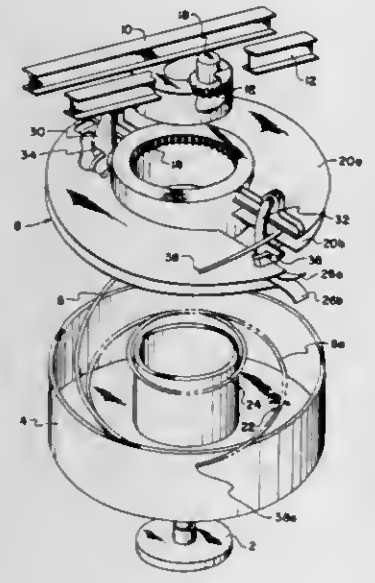
3,940,088
COILED-LINE PAY OFF METHOD AND APPARATUS

Trenton L. Brown, Bethel Park, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed June 19, 1974, Ser. No. 480,731
Int. Cl.² B65H *49/00*
U.S. Cl. 242—128 **2 Claims**

1. A method of feeding coiled line to an operation at a rate matching that at which the operation can accommodate the line, including the steps of situating a lead coil of the line on a spiral table, sensing the diameter of the lead coil on the table, and rotating the coiled line to pay off line to the operation, the rotating being increased or decreased in response to

decreases or increases in the lead coil diameter sensed in the step of sensing, wherein the improvement comprises turning the spiral table against the lead coil for accomplishing said step of situating the lead coil on the spiral table.



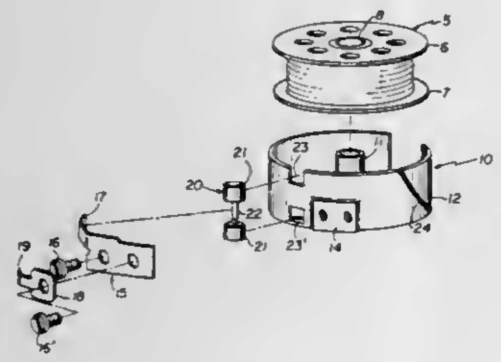
3,940,089
SEWING MACHINE THREAD CONTROL

Carl E. Lindquist, Nyack, N.Y., assignor to Willcox & Gibbs, Inc., New York, N.Y.

Filed May 31, 1974, Ser. No. 475,130

Int. Cl.² B65H *59/04;* D05B *57/14*

U.S. Cl. 242—156 14 Claims



1. In a sewing machine bobbin case (10) having means (11) to rotatably support a bobbin (5) with flanges (6, 7) thereon, means to control bobbin rotation and bobbin thread tension comprising

a roller (20) having its terminal end portions (21) in engagement with the edges of the flanges (6, 7) of the bobbin (1), said roller having a diameter at the engagement surface which is small with respect to the diameter of the bobbin flanges;

and yielding means (15, 17) yieldingly engaging the roller (20) and retaining the roller in position on the case and in yielding, frictional, rotational, engagement with the flanges (6, 7) of the bobbin, the yielding means applying a yielding drag on the roller which is transferred to the bobbin by engagement between the roller and the flanges of the bobbin.

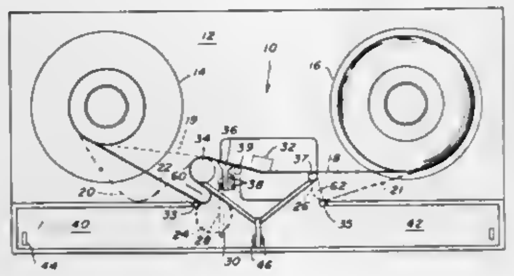
3,940,090
VACUUM COLUMN LOADING INTERLOCK

Richard W. Pembroke, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed Mar. 18, 1974, Ser. No. 451,893

Int. Cl.² G11B *15/58, 23/12*

U.S. Cl. 242—182 4 Claims



1. In a vacuum column-controlled magnetic tape deck, having a first and a second tape reels, a first and a second principal vacuum columns, and a single capstan at the mouth of said first column, near said first reel, the improvement in apparatus for automatically sequentially loading tape into said vacuum columns, comprising:

a. vacuum brake means to hold the tape extending between said reels, said brake mounted between said capstan and said second reel, and tubular means to connect said brake to a point spaced inside of and a selected distance from the mouth of said first column;

b. means to apply vacuum to said first and second vacuum columns;

c. means to slowly unreel said first reel, whereby said tape will cover and seal the mouth of said first column;

whereby when said tape seals the mouth of said first column vacuum will form in said first column and through said tubular means to said brake;

d. vacuum switch means responsive to the formation of vacuum in said first column to apply power to slowly unreel said second reel;

whereby said tape will cover and seal the mouth of said second column and said tape will be drawn into said second column; and

e. means responsive to the slow unreeling of said first reel and the movement of said tape inside said first column past said tubular means to remove the vacuum from said brake after the mouth of said second column has been sealed.

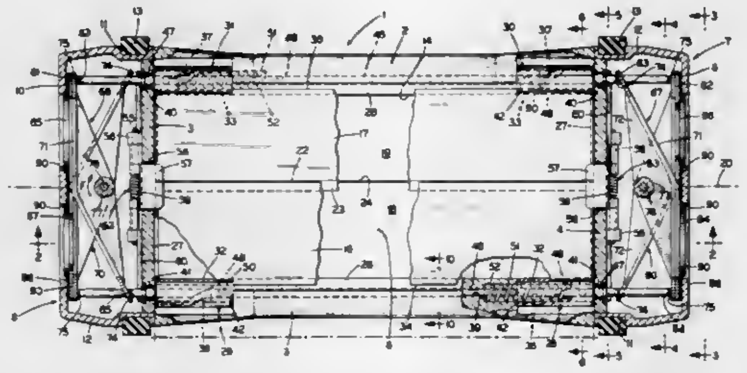
3,940,091
PNEUMATIC TUBE DOUBLE-DOOR SIDE OPENING CARRIER CONSTRUCTION

Peter J. Ekama, Malvern; Larry A. Morrison, North Canton, and Charles B. Barnett, Akron, all of Ohio, assignors to Diebold Incorporated, Canton, Ohio

Filed Mar. 12, 1975, Ser. No. 557,616

Int. Cl.² B65G *51/06*

U.S. Cl. 243—34 18 Claims



1. Pneumatic tube carrier construction of the type having a carrier shell formed by spaced side column members and spaced base members, and in which the base members are joined with and extend across the ends of the column members to form a payload compartment having at least one access side opening; first and second door means, each mounted on an opposite side column member for swinging movement between open and closed positions; each of said door means being adapted to close approximately one-half of the payload compartment side opening when in closed position; latch means adapted to hold the first and second door means in closed position; first housing means formed on at least one end of the carrier shell adjacent one of the base members; and control means mounted within the housing means and operably connected with the latch means and door means, said control means being actuated to unlatch the latch means and to move the door means outwardly into open position when the control means is engaged by an external actuator at a pneumatic tube terminal.

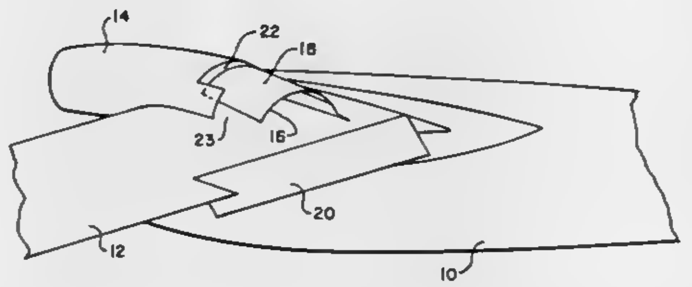
3,940,092
JET FLOW DEFLECTOR FOR AIRCRAFT

Edsel S. Farris, Burton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 7, 1974, Ser. No. 521,685

Int. Cl.² B64C *15/04*

U.S. Cl. 244—12 D 12 Claims



1. In an aircraft having jet propulsion means, a nacelle mounted in a wing of the aircraft and containing said propulsion means, said nacelle providing a nozzle at its end portion for discharging a jet flow in the aft direction of the aircraft, and deflector means on the nacelle movable between first and second positions, the deflector means engaging the nacelle at the aft end thereof in its first position to form a continuous interior surface with the nacelle constituting a part of said nozzle, and the deflector means being movable downwards and aft relative to the nacelle to its second position in which the deflector means deflects the jet flow downward and is spaced from the nacelle to provide additional jet flow in the aft direction over the deflector means between the nacelle and the upper surface of the deflector means to increase the effective nozzle area.

3,940,093
FLAP OR WING DROOP ARRANGEMENT FOR AN AIRCRAFT WING

Jean Cabriere, Vaucresson, France, assignor to Avions Marcel Dassault-Breguet Aviation, Paris, France

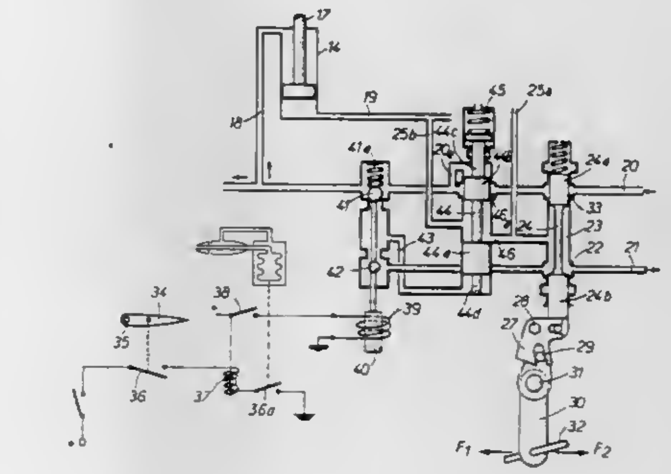
Filed May 28, 1974, Ser. No. 473,710

Claims priority, application France, May 29, 1973, 73.19462

Int. Cl.² B64C *9/24*

U.S. Cl. 244—42 A 6 Claims

1. In a device for controlling wing droops assembled on the leading edge of an aircraft wing and capable of occupying either a retracted position for flight in the clean configuration or an extended position projecting before and below the wing for producing extra lift, comprising a plurality of jacks for operating the droops, a hydraulic valve means adapted to regulate the supply of hydraulic fluid to said jacks, and control means for said valve means, the improvement wherein said control means comprises a pilot-operated manual control and an automatic control adapted to be actuated by an angle of attack detector of the aircraft, and said droop comprises two independent sections along its length, both of said two sections being operated simultaneously by said manual control through the simultaneous supplying of their jacks via said valve means, while only the section in each wing which is nearer the wing tip has the jacks therefor operatively connected to valve means by said automatic control.



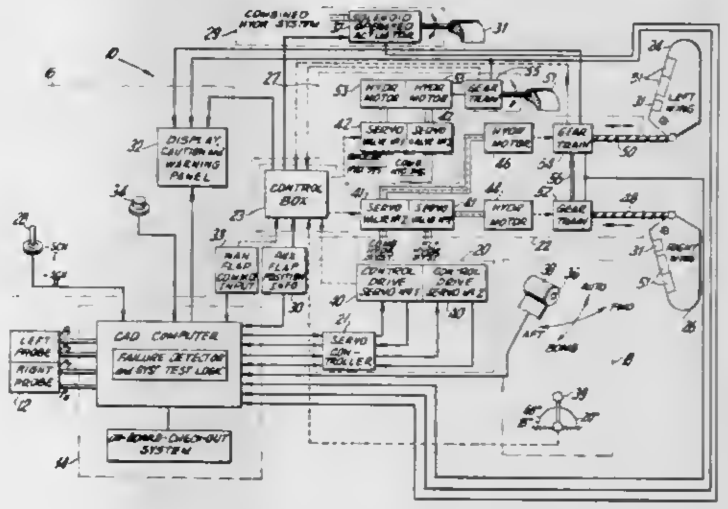
3,940,094
WING SWEEP CONTROL SYSTEM

Robert W. Kress, Lloyd Harbor, and Martin C. Stettler, Stony Brook, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Oct. 30, 1974, Ser. No. 519,279

Int. Cl.² B64C *13/18*

U.S. Cl. 244—77 D 30 Claims



1. A wing sweep control system for controlling the position of the wings of an aircraft, comprising:

a digital computer;

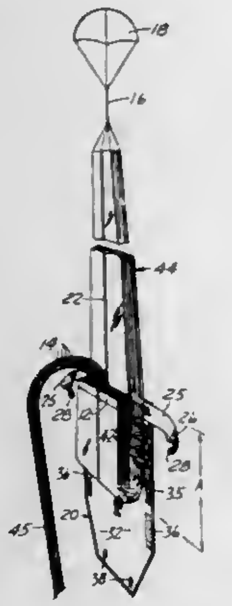
detector means for providing input signals representative of aircraft speed and altitude to said digital computer, said digital computer selecting a predetermined wing sweep angle within a given range of wing sweep angles in accordance with aircraft speed and altitude;

control means responsive to output signals from said computer;

actuator means mechanically coupled to the wings of the aircraft for positioning the wings in response to output signals from said control means; and

coupling means for synchronizing the movement of the wings.

3,940,095
PARACHUTE ASSEMBLY
Henry E. Asciutto, P.O. Box 1008, Romoland, Calif. 92380
Filed Oct. 10, 1974, Ser. No. 513,534
Int. Cl.² B64D *17/40*
U.S. Cl. 244—148 8 Claims



1. In parachute means of the type adapted for stowage in a parachute container including a parachute canopy, having the usual gores and a skirt, and suspension lines that connect the skirt to risers on a jumper's harness, the improvement comprising:

a flexible panel having a base portion with side edges and a free upper edge and a cover portion with side edges and a free lower edge, said flexible panel being shaped and sized so that it is foldable along a transverse line dividing its base portion from its cover portion to place the base portion and cover portion in superimposed relationship with their corresponding side edges in substantial juxtaposition for predetermined distances from said transverse line;

said flexible panel having a front face and a back face and said improvement including means securing the base portion of the panel, back face down, to the outer surface of said canopy to hold said base portion substantially flat thereagainst when the canopy is inflated, said cover portion being free of attachment to the canopy so that it can be folded up over said base portion along said transverse line;

said parachute means including yieldable fastening means for yieldably fastening the cover portion of said flexible panel in its folded position over said base portion, the yieldable fastening means being adapted to yieldably hold the cover and base portions in folded relationship and serving to maintain said corresponding side edges of the folded base and cover portions in relatively close proximity for said predetermined distances to thereby provide a pocket-like pouch therebetween when the parachute means is stowed in said container;

the base portion of said flexible panel being fastened to said canopy so that its side edges straddle a radial seam between adjacent gores of the canopy, and said transverse line runs substantially perpendicular to said radial seam at a predetermined distance from the skirt of the canopy;

said improvement being adapted to cooperate with the other parts of said parachute means so that the latter can be made into a compact parachute assembly shaped and dimensioned for stowage in said parachute container by the steps of;

forming said canopy into a compact elongate shape adjacent the back face of said panel with the skirt of the canopy at one end of the elongate shape and the apex of the canopy at the other end, the elongate shape being of a conventional configuration for parachute packing purposes in the sense that all of said suspension lines are brought together at its skirt end, the width of said flexible panel being such that the sides of said elongate shape are spaced inwardly from said corresponding side edges of the base and cover portions of the panel at least for said predetermined distances;

folding the skirt end of the elongate shape back so that the folded end of the said shape coincides substantially with the position of said transverse line;

grouping said suspension lines into a rope-like bundle;

folding the cover portion of said flexible panel over the folded skirt end of the elongate shape;

folding said rope-like bundle of suspension lines to zig-zag configuration across the folded cover portion of said flexible panel and releasably fastening the folds of said rope-like bundle in position against the flexible panel and folded canopy skirt, the fastening being accomplished by means of at least part of said yieldable fastening means and said at least part of said yieldable fastening means including said zig-zag configuration of the rope-like bundle and a plurality of fastening means engaging the opposite folds of the zig-zag configuration to cooperate with the rope-like bundle to confine the folded skirt of the canopy between the cover and base portions of said panel, said plurality of fastening means being yieldable to release the folds of the rope-like bundle in sequence in response to substantial pull on said rope-like bundle; and

doubling the elongate shape back on said folded panel to make the assembly compact;

whereby when the compact assembly is released for deployment in an airstream by a jumper using the parachute means, the drag on the compact assembly stretches out the folded portion of the elongate shape that is outside of the folded flexible panel and also stretches out said risers to exert pull on the rope-like bundle of suspension lines, and the pull on the rope-like bundle of suspension lines releases the zig-zag folds of the rope-like bundle from said plurality of fastening means in sequence to release the folded skirt from the flexible panel to permit the pull of the stretched suspension lines to unfold the folded skirt and turn the skirt into the airstream with subsequent inflation of the canopy, the airstream air being prevented from blowing directly into said pocket-like pouch of the folded flexible panel prior to release of the folded skirt therefrom and thereby causing a risk of premature release of the rope-like bundle of suspension lines from said fastening means, and premature inflation of the canopy, by virtue of the fact that the width of the folded end of said flexible panel exceeds that of the folded skirt and the further fact that said yieldable fastening means holds said corresponding side edges of the folded base and cover portions of said panel in said relatively close proximity for said predetermined distances prior to said release of said folded skirt.

3,940,096
RE-ORIENTATION OF A SPACECRAFT RELATIVE TO ITS ANGULAR MOMENTUM VECTOR
John Edward Keigler, Princeton, and Ludwig Muhlfelder, Livingston, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed Nov. 27, 1974, Ser. No. 527,836
Int. Cl.² B64G *1/10*
U.S. Cl. 244—165 4 Claims

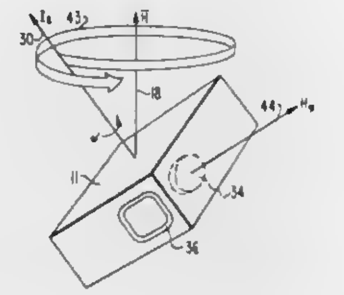
1. A system for orienting the attitude of a spin-stabilized vehicle in a given orbit, said vehicle including a body, a nutation damper, and a momentum wheel, comprising:

means for spinning said vehicle at a first spin rate about a first axis comprising the maximum moment of inertia of said vehicle whereby said first axis is in alignment with the angular momentum vector of the vehicle,

said momentum wheel being affixed to said body and oriented to spin about an axis perpendicular to said maximum moment of inertia axis, said perpendicular axis having a moment of inertia less than said maximum moment of inertia,

means for reducing the spin rate of said vehicle from said first spin rate to a second spin rate such that the angular momentum of said vehicle about said first axis at said second spin rate is substantially equal to a predetermined angular momentum for said vehicle corresponding to a predetermined angular momentum of said vehicle in said given orbit,

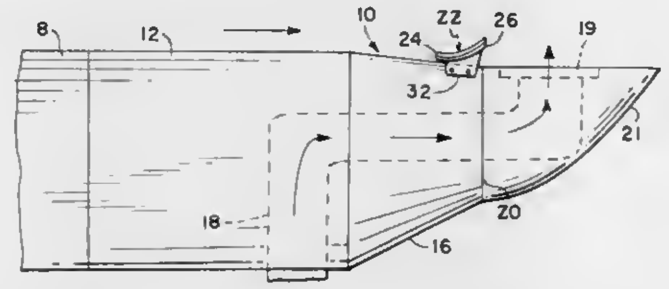
means for energizing said momentum wheel to rotate at a rate sufficient to provide and maintain nutational stability of said vehicle whereby said vehicle is effected to move initially in a divergent spiral through an angle in inertial space such that said momentum wheel axis and said transverse axis move toward said angular momentum vector in a converging spiral, and the spin rate of said body about said transverse axis is reduced to a third spin rate, said third spin rate being less than either of said first and second spin rates,



means for moving said transverse axis towards and maintaining coincidence with said angular momentum vector of said vehicle and moving said momentum wheel axis towards and maintaining a parallel relation with said angular momentum vector, said movement comprising damping of nutation by said nutation damper,

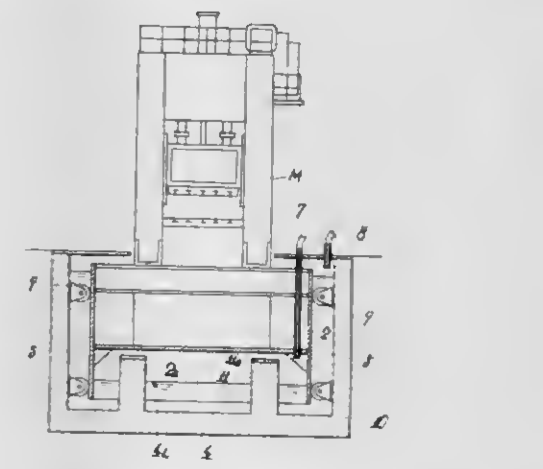
the angular momentum of said wheel being greater than the product of said third spin rate times the difference between said maximum moment of inertia and said transverse moment of inertia of said vehicle.

3,940,097
EXHAUST FLOW DEFLECTOR
John C. Wilson, Newport News, Va., and Craig S. Shaw, Middletown, Conn., assignors to The United States Government as represented by the National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.
Filed June 25, 1974, Ser. No. 482,967
Int. Cl.² B64D *33/04*
U.S. Cl. 244—23 D 5 Claims



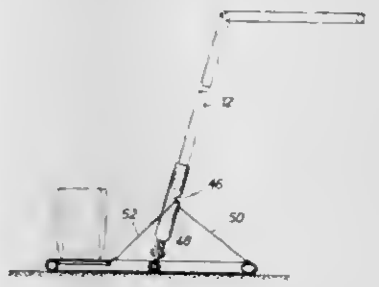
5. Apparatus for reducing spillover inherent when aircraft hot engine gases flowing through a curved duct exits from the exhaust exit end of the curved duct into a freestream air flow, comprising an elongated deflector having square end tips mounted entirely upstream of and adjacent the exhaust exit end of the curved duct and having a span at least equal to the diameter of the exhaust exit end of the curved duct and having a concave curvature surface formed along the span thereof, the span of said deflector being alined substantially normal to the direction of flow of the freestream air and the concave curvature surface inclined such that the freestream air flow flowing over the concave curvature surface is turned toward the direction of flow of the gas exiting from the exhaust end of the exhaust duct.

3,940,098
VIBRATION-ISOLATED FOUNDATION WHICH UTILIZES BUOYANCY
Shuhei Takasaki, Osaka, and Yasumoto Goto, Otsu, both of Japan, assignors to Osaka Prefectural Government, Osaka and Goto Drop Forging Co., Ltd., Kusatsu, both of, Japan
Filed June 11, 1973, Ser. No. 368,585
Claims priority, application Japan, June 20, 1972, 47-61725
Int. Cl.² F16M *13/00*
U.S. Cl. 248—20 4 Claims



1. A vibration-isolating foundation for a machine which produces vibrations or impact forces during operation, comprising an inertia block on which the machine is adapted to be supported and having a cavity on the bottom thereof, and a tank containing a body of liquid having an upper surface open to the atmosphere in which the said block is floated with said cavity in the liquid, supporting tables on the bottom of said tank below the inertia block and having a vertical dimension greater than the depth of said cavity, whereby at least part of the weight of the machine and the block is supported by the bouyancy of water applied to the block through the air in the cavity and thus transmission of a dynamic load produced by the operation of the machine through the liquid is reduced to a large degree and the machine can rest thereon when the machine is not in use.

3,940,099
APPARATUS FOR USE IN ERECTION OF TENT OR OTHER SHELTER ADJACENT A VEHICLE
Hubert D. McCleskey, 5715 Effingham, Houston, Tex. 77035
Filed July 11, 1974, Ser. No. 487,566
Int. Cl.² A45F *1/16;* A01K *97/08;* A45G *33/12;* G09F *17/00*
U.S. Cl. 248—38 2 Claims



1. A shelter support apparatus for use with a vehicle supported on at least two tires, comprising:

a generally planar base member having an exposed upper face of size adequate to receive thereon the print of a tire on a vehicle to weight said base in a fixed position, said base member having a structural frame member extending from its face such that it is laterally of the tire on said face;

a pivotally mounted rotatable upwardly opening bayonet socket carried on said from member and mounted for rotation about a selected axis;

an elongate pole adapted to support a shelter and having a lower end portion releasably connected into said socket for support thereof above said base;

a flexible cable means connected to said base member and said socket to control its angle of rotation about the selected axis and hence the position of said pole; and,

a second flexible cable means connected to said base and said socket member for limiting the angle of said socket in cooperation with said first flexible cable means wherein the second cable means acts oppositely of said first cable means.

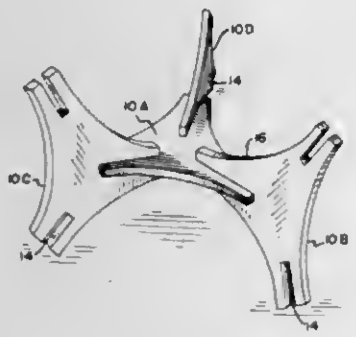
3,940,100
MODULAR CONSTRUCTION ELEMENT

Merrill W. Haug, 815 O'Farrell St., San Francisco, Calif. 94109

Filed Oct. 29, 1974, Ser. No. 518,344

Int. Cl.² F16M *11/20*

U.S. Cl. 248—188.1 **4 Claims**



1. In combination, a group of four inflexible, modular construction elements, each element being flat and having three equilaterally spaced legs with arc-shaped sides between each leg, each of the arc-shaped sides having the same radius of curvature, each of the legs further having a slot through its thickness which extends toward the centroid of the element, the width of the slots being only slightly greater than the thickness of the element, and at least one of the elements having the slot in each of its legs fully inserted in the slot in one leg of a separate one of the other three elements so that one element is oriented perpendicularly to the other three elements and is inflexible interlocked therewith to form a rigid, load bearing structure whose constituent elements are inflexible with respect to each other when so interlocked.

3,940,101
QUICK-BONDING ADHESIVELY ATTACHABLE SUPPORT PADS FOR PALLETIZING CONTAINERS

Charles A. Heidelbach, Geneva, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Aug. 2, 1974, Ser. No. 494,085

Int. Cl.² B65D *19/20*

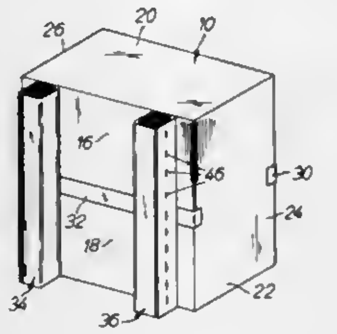
U.S. Cl. 248—346 **3 Claims**

1. A rigid load bearing support pad for quick attachment directly to the underside of a shipping container to space the container from a surface on which it rests, said pad having a lower side for disposition toward said surface and an upper side for disposition toward said underside of said container, said pad comprising:

a plurality of elongated strips of corrugated sheet material arranged to provide a stack of adjacent contiguous layers of said sheet material, each of said strips defining at least one of said layers and said adjacent contiguous layers of said sheet material being glued together, each of said layers of said corrugated sheet material having corrugations which are disposed normal to said upper side and said lower side of said support pad;

top and bottom rigid facing strips rigidly secured by gluing at the upper side and at the lower side of said stack, respectively, and transversely disposed with respect to said corrugations;

a coating of instant bonding adhesive disposed on the upper surface of said top facing strip and serving as the sole means to effect attachment of said support pad directly to said underside of said container when pressed thereagainst, and a removable protective sheet overlying said coating.



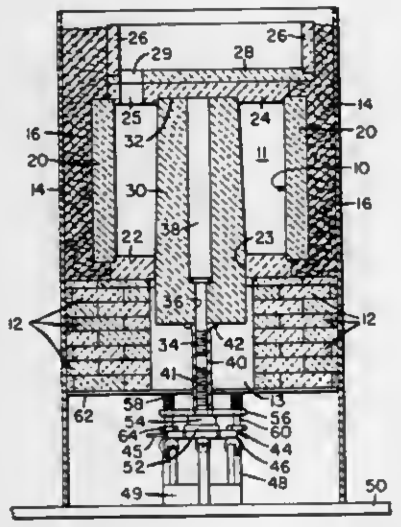
3,940,102
APPARATUS FOR REMOVING CORE DURING REFRACTORY MATERIAL FUSION CASTING

Edward L. Bedell, Jr., Louisville, Ky., assignor to Corning Glass Works, Corning, N.Y.

Filed June 12, 1974, Ser. No. 478,828

Int. Cl.² B29C *11/00*

U.S. Cl. 249—63 **6 Claims**



1. In molding apparatus for fusion casting of molten refractory material which comprises a mold having a surface or surfaces defining a casting mold cavity and at least one core normally extending into the mold cavity from said surface or one of said surfaces and adapted to engage the refractory material solidifying therearound,

wherein the improvement comprises, in combination

the core being formed of material having a melting temperature substantially above the temperature of the molten refractory material to be cast in the apparatus, also extending in the direction opposite from the mold cavity into an aperture in the mold, normally sealably engaging the walls of the aperture and adapted to be disengaged from the refractory material solidified therearound,

releasable stored energy means connected to the core through the aperture and adapted to effect the disengagement of the core from the refractory material solidified therearound upon release of the stored energy, the energy means including:

a connector having one end attached to the core,

spaced supporting means including rollers,

compression load means mounted on the end of the connector opposite the end thereof attached to the core and having means for normally engaging the supporting means to effect a compression load which is adapted to effect the aforesaid disengagement upon release of the load by disengagement of the compression load means from the supporting means, the compression load means including:

a pressure plate rotatably mounted on the end of the connector opposite the end thereof attached to the core and having, as the means for normally engaging the supporting means, peripheral bosses, extending radially of the rotation axis of the plate with the bosses being spaced in a pattern corresponding to that of the supporting means and normally engaged on the rollers thereof,

compressible means adapted to be placed in compression by the plate when the bosses are engaged on the rollers and, upon disengagement of the bosses from the rollers, adapted to have the compression thereof released to exert a force on the plate and thence the core via the connector to concurrently overcome frictional force between the core and refractory material solidified therearound and move the plate away from the mold, and

means for releasing the stored energy comprising means for disengaging the compression load means from the supporting means including:

means for rotating the plate, and

indented peripheral portions in the plate between pairs of adjacent bosses and, upon rotation of the plate, adapted to coincide with the position of the supporting means with the bosses disengaged from the rollers and to allow the plate to pass between the supporting means in a direction away from the mold such that the compression of the compressible means is released.

3,940,103
APPARATUS FOR INJECTION MOLDING A TAMPER-PROOF PLASTIC CAP

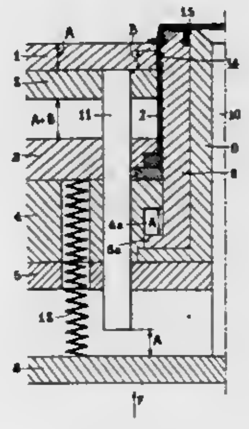
Fernand Hilaire, Monte Carlo, Monaco, assignor to Captocap Limited, Vaduz, Liechtenstein

Filed Feb. 7, 1975, Ser. No. 547,985

Claims priority, application France, Feb. 21, 1974, 74.05926

Int. Cl.² B29F *1/14*

U.S. Cl. 249—68 **3 Claims**



1. Mold for manufacturing a plastic closure comprising an external skirt formed with internal ribs corresponding to the ring portion and grooves of the neck of the container to be stopped, and bounding a guaranty strip partially tearable due to circular thinning grooves formed on the inner surface of said skirt, said mold comprising a compensation plate, a fixed base plate overlying said compensation plate, a sliding plate above said fixed plate, a resilient pusher between said base plate and said sliding plate, a cylindrical ejection ring solid with said sliding plate, a cylindrical core solid with said base plate, a shaped sleeve adapted to slide freely on said core and guided by an integral heel portion, said ejection ring being movable through a height equal to that of said notch formed in said base plate, a fixed plate disposed above said supporting plate and comprising holes for guiding said sleeve and ejection ring, an impression plate disposed above said fixed plate and formed with holes corresponding to the holes of said fixed plate, a push member secured to said impression plate and adapted to be actuated by said compensation plate, and a chamber defined between said impression plate and said sliding sleeve above said ejection ring and into which the plastic material is adapted to be injected.

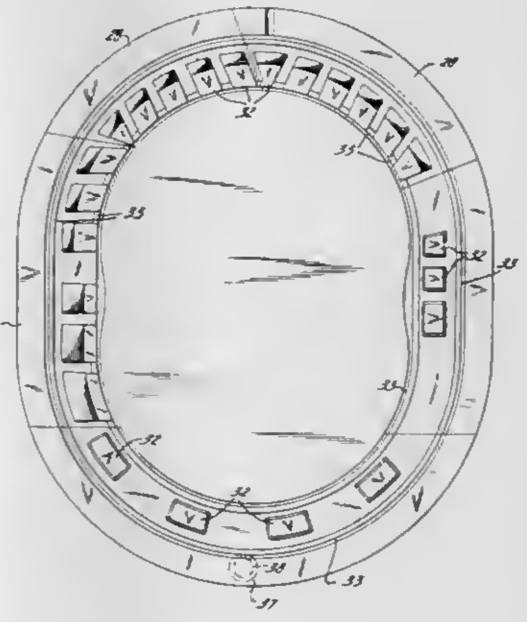
3,940,104
MOLD FOR DIE-CAST ROTOR HOUSING FOR ROTARY COMBUSTION ENGINES

Walter Ludwig Hermes, Cedar Grove; Murray Berkowitz, Woodcliff Lake, and Charles Lombaerde, Ridgewood, all of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Division of Ser. No. 489,595, July 18, 1974. This application Apr. 2, 1975, Ser. No. 564,359

Int. Cl.² B28B *7/16;* B22C *9/10*

U.S. Cl. 249—142 **5 Claims**



1. A permanent mold for pressure-casting a generally annular rotor housing shell for trochoidal engines, the shell having a longitudinal axis and parallel side faces normal to the axis and having an inner wall with a trochoidal inner surface and an outer wall spaced radially from the inner wall and having a plurality of generally axially oriented passages therethrough between the inner and outer walls and spaced circumferentially around the shell, the permanent mold comprising:

a. a pair of opposed side pieces each having a plug of trochoidal cross-section projecting inwardly therefrom parallel with the shell axis, each plug having a plane face on its projecting end, the plane faces meeting at the midplane of the mold, each of the side pieces being retractable along the line of the shell axis;

b. a plurality of opposed arcuate pieces of L-shaped cross-section circumferentially surrounding the side pieces, the first leg of each of the arcuate pieces being in contact with a side piece and the second leg extending to the midplane of the mold and having a plane face meeting the opposed plane face of the opposite arcuate piece;

c. the extending second legs of the arcuate pieces surrounding the trochoidal plugs of the side pieces and being radially spaced therefrom, the side pieces and the arcuate pieces collectively defining a generally annular mold cavity around the trochoidal plugs;

d. the inner faces of the first legs of each of the arcuate pieces having a plurality of fingers extending therefrom in the generally axial direction into the mold cavity and meeting like fingers from the opposite arcuate piece at the midplane of the cavity, the fingers of at least some of the arcuate pieces having their individual axes slanted from each side angularly to the mold axis to a position radially closer to the mold axis at their meeting point at the midplane; and

e. the arcuate pieces having slanted fingers being retractable in the direction parallel to the finger axes.

3,940,105

FORM SUPPORT FOR USE IN MAKING ARCHED CEILING

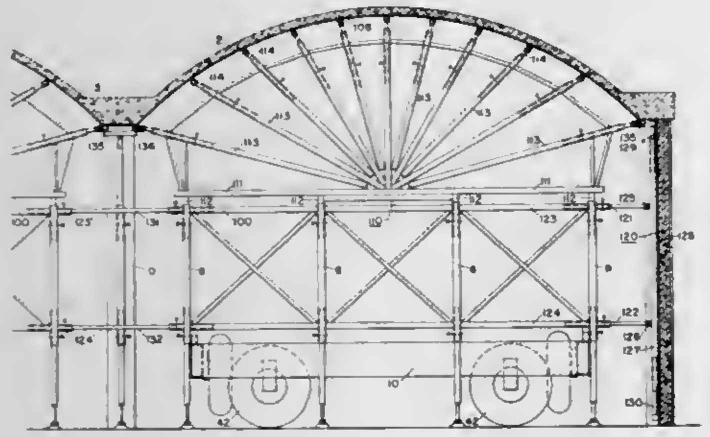
Charles E. Metrailer, 4656 Bluebonnet Drive, Baton Rouge, La. 70809

Filed Nov. 19, 1973, Ser. No. 416,961

Claims priority, application Canada, Apr. 12, 1973, 168579

Int. Cl.² E04G *11/56*

U.S. Cl. 249—209 **8 Claims**



1. A concrete pour form support for use in pouring of vaulted type roofs which is mounted on a transportable type carriage for moving as a unit from one job site to another, which concrete form support can be detached from the carriage, removed for further service and later reunited with the carriage for removal to a new pour position, the combination comprising

a horizontal frame assembly wherein is included a plurality of parallelly aligned, horizontally oriented beams, which lie in a common plane,

a plurality of vertically oriented posts affixed upon each of the said beams, each post being extended downwardly for attachment to the carriage,

a plurality of parallel sets of aligned tubular posts, the number of tubular posts in a set being substantially equal, the posts of each set radiating outwardly from substantially the center of the parallelly aligned, horizontally oriented beams constituting the horizontal frame assembly,

a plurality of cross-bars corresponding in number with the number of tubular posts in a set which radiate outwardly from a beam located in the horizontal frame assembly each cross-bar containing a plurality of downwardly projected, perpendicularly attached members which provide a telescoping fit with the tubular posts of the parallel sets of aligned tubular posts so that the said cross-bars can be adjusted inwardly or outwardly with regard to the aligned tubular posts to provide a surface which can be covered and rendered suitable for pouring thereon vaulted type concrete roof structures ranging in length of span and in contour from circular to elliptical.

3,940,106

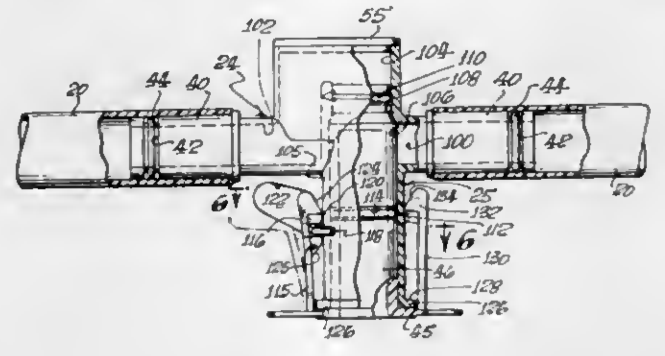
LATCHING VALVE FOR EXTENDIBLE WATERING SYSTEM FOR FOWLS

Harold W. Hart, and Warren H. Hart, both of Glendale, Calif., assignors to H. W. Hart Mfg. Co., Glendale, Calif.

Division of Ser. No. 208,750, Dec. 16, 1971, Pat. No. 3,826,467, which is a division of Ser. No. 888,554, Dec. 29, 1969, Pat. No. 3,664,305. This application Jan. 28, 1974, Ser. No. 436,988

Int. Cl.² F16K *35/00*

U.S. Cl. 251—100 **17 Claims**



1. In a valve, the combination of:

walls forming an inlet passage and an outlet passage spaced from each other in a first direction,

a wall forming a cylinder and having inner and outer ends and having its inner end in communication with the outlet passage and having its outer end opening onto the exterior of the valve, said cylinder extending axially in a second direction transverse to the first direction,

said cylinder extending across said inlet passage and having a side port in communication with the inlet passage;

a valve member slidingly mounted in said cylinder for axial movement in said cylinder between an inner closed position closing said side port to cut off the inlet passage and an outer open position uncovering the side port to permit fluid flow from the inlet passage through the side port into the cylinder and out of the inner end of the cylinder into the outlet passage,

first locking means disposed on the cylinder,

second means disposed on the cylinder in spaced relationship to the first means in the second direction, and

third means disposed on the valve member for cooperation with the first means, in a first limit position defined by the second and third means, for locking the third means on the first means in the first limit position and for cooperation with the second means for limiting the sliding movement of the valve member in the second direction to a second limit position.

10. Apparatus for controlling the flow of fluid through a pipeline for use by fowl, the pipeline having first and second pipes each having an inlet and an outlet, the first pipe being at the upstream end of the pipeline and the second pipe being at the downstream end of the pipeline, including,

a housing defining a first opening at the outlet side of the first pipe and defining a second opening at the inlet end of the second pipe and defining an axial passage in a direction transverse to the flow of fluid through the pipeline and at a position between the first and second openings,

a valve member slidable axially with the axial passage in the housing between first and second limit positions and having walls closing the opening in the inlet side of the first pipe in the first position and spaced from the opening in the inlet side of the first pipe in the second position to provide for the passage of fluid through the pipeline in the second position,

means disposed on the valve member in cooperative relationship with the axial passage in the housing in the first position of the valve member for sealing the housing and the valve member against the flow of fluid in the first position of the valve member,

first means on the housing member for defining a detent,

second means disposed on the housing in axially spaced relationship to the first means and defining a shoulder, and

third means disposed on the valve member and extending externally from the valve member and cooperative with the first means in the first limit position of the valve member for retaining the valve member in the first limit position and cooperative with the second means on the housing member in the second limit position for retaining the valve member in the second limit position.

3,940,107

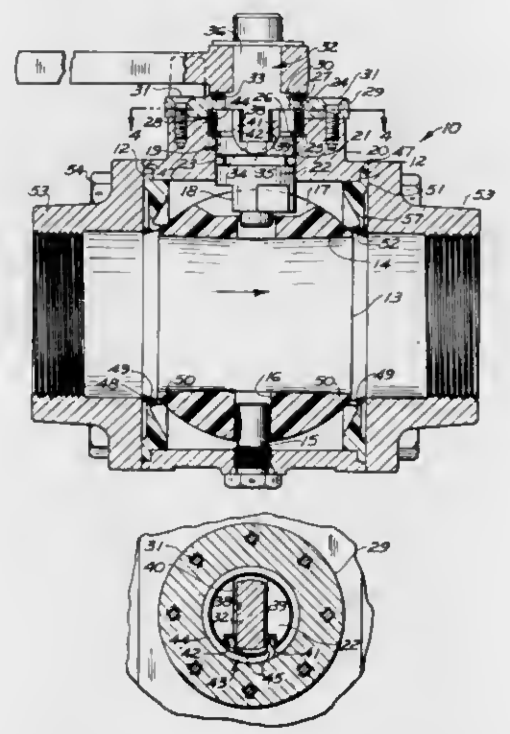
ROTARY VALVE WITH SPRING CLUTCH

George G. Allenbaugh, Jr., Wadsworth, Ohio, assignor to Premier Industrial Corporation, Cleveland, Ohio

Filed Sept. 6, 1974, Ser. No. 503,694

Int. Cl.² F16K *5/08*

U.S. Cl. 251—297 **7 Claims**



1. In a fluid flow control valve, the combination of a valve body, a flow control valve member mounted for axial rotation in said valve body, an adjustable control assembly rotatably mounted in said valve body and engaging said valve member to effect selective angular rotation thereof, said control assembly comprising a connector part engaging said valve member and a driver part operatively coupled to said connector part, and said control assembly including resilient contractible clutch means frictionally engaging said valve body and having end portions thereof disposed between said connector part and said drive part in the path of angular rotation thereof, said end portions being responsive to rotation of said drive part to cause contraction and release of said clutch means and being responsive to valve member-induced rotation of said connector part to cause expansion and locking of said clutch means on said body.

3,940,108

REINFORCEMENT RING AND SEAT FOR BUTTERFLY VALVE

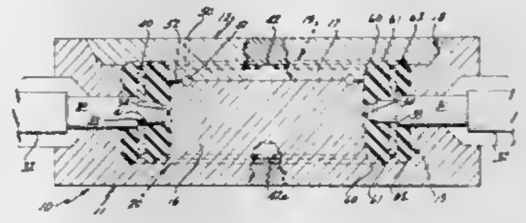
Robert B. Edwards, Milton Township, Cass County, Mich., assignor to Nibco Inc., Elkhart, Ind.

Filed Sept. 11, 1974, Ser. No. 504,855

Int. Cl.² F16K *1/226;* **B22D** *19/00*

U.S. Cl. 251—306 **1 Claim**

1. A seat for a butterfly valve, said seat being annular and having a central axially extending passageway therethrough; said seat having a body of molded elastomeric material, an annular rigid reinforcing ring embedded in said material; a pair of diametrically positioned shaft openings through said seat and said reinforcing ring having their central axis arranged radially of said seat; said seat having a pair of axial end faces; each of said end faces having a pair of radially spaced axially extending annular beads projecting outwardly from the surface thereof forming an annular recess therebetween, the improvement in said seat comprising: a pair of axially aligned support extensions projecting axially from opposite axial faces of said ring; said ring being radially aligned with said recesses and the maximum axial width of said extensions being no greater than the axial thickness of said body of molded elastomeric material at the bottoms of said recesses whereby said beads may be compressed to form a seal when said valve is installed without interference from said extensions.



3,940,109

LIFTING DEVICE FOR RAISING, LOWERING AND SUSPENDING HEAVY LOADS

Nils Harald Ahlgren, Skyttevagen 22, 133 00 Saltsjobaden, Sweden

Filed Jan. 29, 1975, Ser. No. 545,198

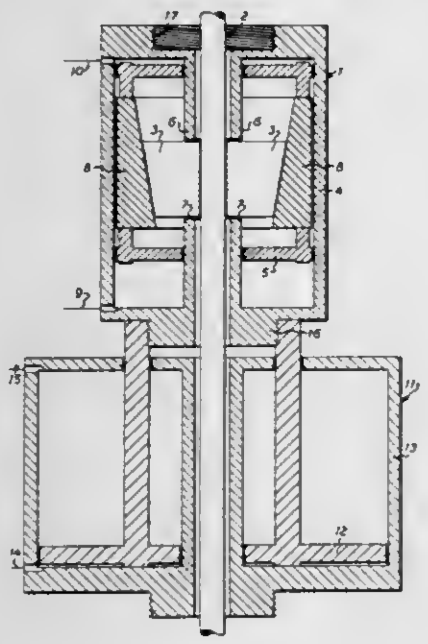
Claims priority, application Sweden, Jan. 30, 1974, 7401176; Mar. 14, 1974, 7403403

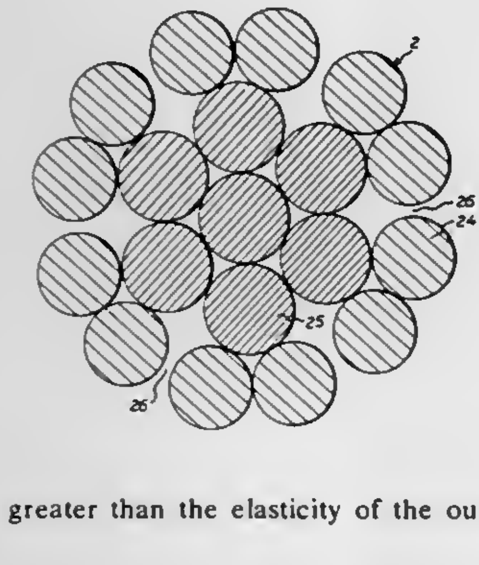
Int. Cl.² B66F *1/00*

U.S. Cl. 254—106 **5 Claims**

1. A lifting device for raising, lowering and suspending heavy loads comprising a climbing jack with alternating gripping means and a lifting element, where the lifting element for allowing repeated co-operation with the gripping means con-

sists of a plurality of outer wire elements and at least one inner wire element, where the elasticity of at least one inner wire element is greater than the elasticity of the outer wire elements.





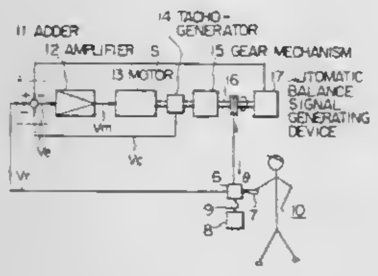
3,940,110
LIFTING APPARATUS

Kenro Motoda, 9-32-4, Kami-Kitazawa, Setagaya, Tokyo, Japan

Continuation-in-part of Ser. No. 460,473, April 12, 1974, abandoned, which is a continuation of Ser. No. 356,063, May 1, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,887

Int. Cl.^{2} B66D ***1/00***

U.S. Cl. 254—168 **1 Claim**



1. A lifting apparatus for moving a load on a load carrying section by driving a crane-type arm through a driving section with the aid of a target speed signal obtained by operating a control lever provided in an operating section, said lifting apparatus comprising:

a. a servo mechanism means, provided in said driving section, for moving said load carrying section with the aid of said target speed signal;

b. an automatic balance signal generating means, coupled to an output shaft of said servo mechanism means, for supplying an automatic balance signal to said servo mechanism means so that when said control lever is not operated, said load carrying section is maintained stopped;

c. a weight limit setting means operatively coupled to said operating section, for setting a weight limit which said lifting apparatus can safely move, said weight limit setting means comprising a spring member the top end of which moves vertically in proportion to the weight of a load, movement converting means coupled to the top end of said spring member for converting the vertical movement of said spring member into a rotational movement, a first potentiometer operatively connected to said movement converting means for converting the rotational movement into a voltage signal, and a voltage comparator for comparing said voltage signal with a reference voltage signal representative of said weight limit which is supplied thereto by a second potentiometer, thereby producing an output signal; and

d. a Zener diode connected through switching means in parallel to an input section of said servo mechanism means, said switching means being operated by said output signal produced by said voltage comparator when said voltage signal from said first potentiometer is equal to or greater than said reference voltage signal from said second potentiometer to maintain said load carrying section stopped, whereby when the weight of said load is equal to or greater than said weight limit, the load is not moved.

3,940,111
APPARATUS FOR APPLYING A DETERMINED FORCE TO AN ELEMENT CONNECTED TO AN INSTALLATION SUBJECTED TO ALTERNATING MOVEMENTS

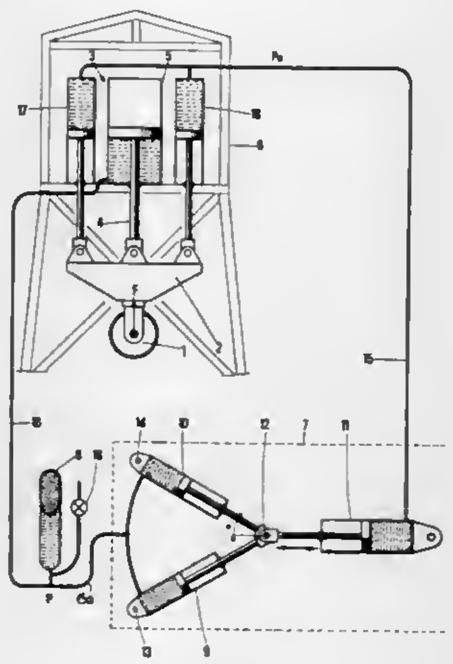
André Castela, Le-Mesnil-le-Roi, and Philippe Joubert, Meudon-la-Foret, both of France, assignors to Institut Francaise du Petrole, des Carburants et Lubrifiants, France

Filed May 2, 1973, Ser. No. 356,388

Claims priority, application France, May 5, 1972, 72.16072

Int. Cl.^{2} B66D ***1/48***

U.S. Cl. 254—172 **21 Claims**



1. An apparatus for an installation subjected to alternate displacements, wherein said apparatus maintains a predetermined force on an extended element connected to said installation, said apparatus comprising at least one main jack, at least one pressurized fluid accumulator, said main jack being supplied with said pressurized fluid from said accumulator for maintaining the extended element under tension, and a regulating device connected to said accumulator in parallel with said main jack, said regulating device comprising at least two regulating jacks whose axes form an angle therebetween, said regulating jacks being connected by at least one articulation, and said apparatus further comprising at least one adjusting jack connected to said regulating device, said adjusting jack applying an adjustment force on the extended element, and said adjusting jack having a fixed orientation in relation to that of said main jack, said adjusting jack applying said adjustment force to the extended element along the entire path of action of said main jack during changes in pressure in said accumulator and thereby adjust for changes in pressure in said accumulator, thereby producing the predetermined force on the extended element.

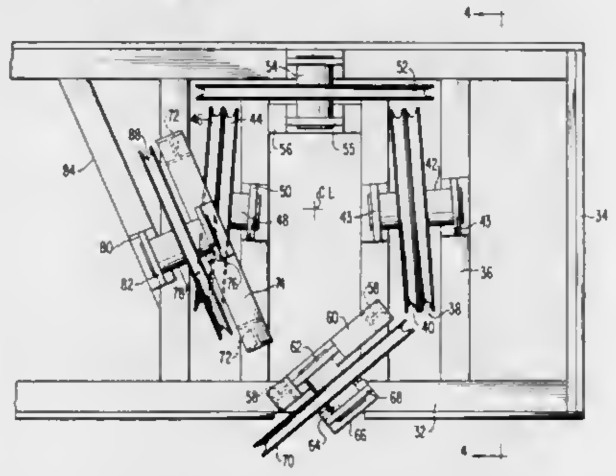
3,940,112
CROWN BLOCK

Freeman Roderick Lea, Orange, Calif., assignor to Santa Fe International Corporation, Los Angeles, Calif.

Filed Nov. 29, 1973, Ser. No. 420,255

Int. Cl.^{2} B66D ***1/36***

U.S. Cl. 254—190 B **27 Claims**



1. A crown block for use in well drilling apparatus having a mast, draw works and a travelling block comprising:

a frame having an open center in substantial vertical registration with the centerline of a well being drilled and adapted for mounting adjacent the top of the mast, a pair of sheaves carried by said frame on each of the opposite sides of the open center of said frame and adapted to reeve a drilling line thereabout and about the sheaves of a travelling block supported by the mast from said crown block, the pair of sheaves on one side of the open center of the frame lying on a common axis and the pair of sheaves on the other side of the open center of the frame lying on a common axis, a cross-over sheave carried by said frame for transferring the drilling line from the pair of sheaves on one side of the open center of said frame to the pair of sheaves on the other side of the open center of said frame, said cross-over sheave being spaced from the open center of said frame and located adjacent an edge of said frame, each of said pairs of sheaves being obliquely mounted relative to a side edge of said frame whereby planes containing a sheave of each pair thereof intersect at an acute angle on the side of said frame adjacent to which said cross-over sheave is mounted, a deadline sheave carried by said frame adjacent an edge thereof for reeving the drilling line from the travelling block and directing the line for securement to the drilling apparatus, a fastline sheave carried by said frame adjacent an edge thereof opposite the frame edge adjacent to which said cross-over sheave is located for reeving the drilling line from the draw works to a sheave carried by the travelling block, said fastline sheave and said deadline sheave being spaced from the open center of said frame and being obliquely mounted relative to a side edge of said frame and to planes containing said pairs of sheaves whereby planes containing said fastline sheave and said deadline sheave intersect at an acute angle to one side of said frame, the axes of said pairs of sheaves, said deadline sheave and said fastline sheave lying at different elevations in said crown block with the plane of operation of the deadline sheave intersecting the plane of operation of at least one of the pair of sheaves on one side of the open center of said block along a vertical line intersecting each said deadline sheave and the one sheave of the latter pair of sheaves.

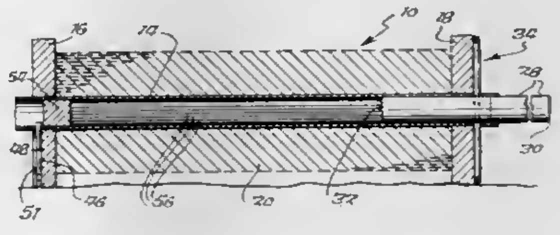
3,940,113
PORTABLE FENCE

William J. Hirsch, 211 Brantwood Road, Eggertsville, N.Y. 14226

Filed June 16, 1975, Ser. No. 587,409

Int. Cl.^{2} E04H ***17/16***

U.S. Cl. 256—24 **11 Claims**



1. A portable fence comprising:

a. storage means comprising a hollow elongated post element and a pair of guide elements connected to said post element at axially spaced locations thereon defining an open region between said guide elements in an axial direction and in all radial outward directions from said post element;

b. a length of flexible fencing fixed at one end to said post element and wound around said post between said guide elements so as to be stored thereon; and

c. a supporting element removably carried by said storage means, said supporting element being elongated and adapted to be driven in the ground adjacent one end thereof and to be operatively connected to said storage means adjacent the other end thereof in a manner supporting said post element in a generally vertical position and permitting rotation of said post element relative to said supporting element whereby said fencing can be withdrawn from said storage means for placement in a position of use with said post element supporting said fencing adjacent one end thereof.

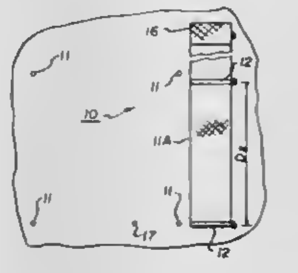
3,940,114
FENCING KIT

Joseph A. Rivelli, 5047 Oakton St., Skokie, Ill. 60076

Continuation of Ser. No. 353,306, April 23, 1973, abandoned. This application July 16, 1974, Ser. No. 488,934

Int. Cl.^{2} E04H ***17/14***

U.S. Cl. 256—32 **4 Claims**



1. A kit for fencing a small area such as a play area or the like without the need of special tools, said kit comprising:

a. a predetermined length of flexible fencing material having a total length less than the perimeter of said area by a small amount as measured by the permissive stretch of said fencing to enclose said area along said perimeter;

- b. a plurality of fence posts including means for securing each post to said flexible fencing with a distance between each post to a predetermined amount;
- c. a plurality of ground engaging members, each being separable from said fence posts, each being adapted to enter the ground and thereafter to have a fence post secured thereto;
- d. said ground engaging members being spaced from an adjacent one a selected modular distance which is slightly greater than corresponding distance between cooperating posts secured to said flexible fencing;
- e. a closing post having a dual function:
  - i. one being that of driving said ground engaging members into the ground one by one prior to the securement thereto to a related fence post,
  - ii. the other being that of driving the ground engaging member for said closing post prior to the securement to said last named ground engaging member of said closing post;
- f. said closing post having an internal diameter corresponding to the diameter of said ground engaging member, and having;
- g. a weight affixed therewithin spaced from an end thereof corresponding generally to the extent of said ground engaging member above the ground;
- h. said weight being of mass sufficient to enable said closing post to drive said ground engaging members readily into the ground.

3,940,115
EMULSIFYING AND DISPERSING APPARATUS

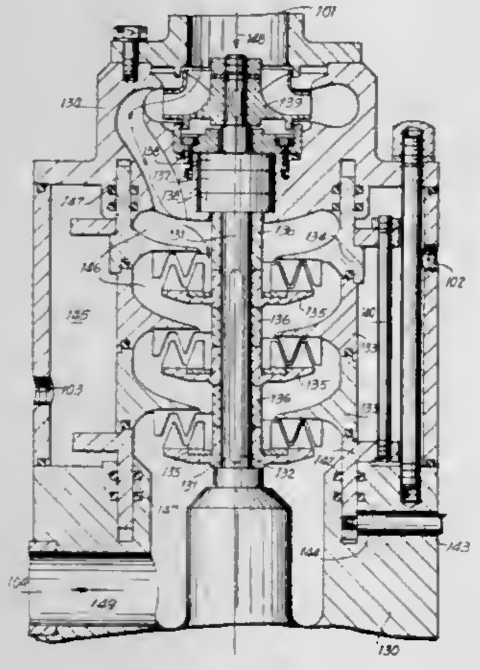
Manfred Zipperer, Etzenbach 141, 7813 Staufen; Br., Germany

Filed Apr. 1, 1974, Ser. No. 457,133

Claims priority, application Germany, Aug. 6, 1971, 2139497

Int. Cl.² B01F *7/16*

U.S. Cl. 259—7 **8 Claims**



1. An emulsifying dispersing apparatus comprising: a plurality of concentric cutting rims rotatable relative to each other, mounted in radial alternation on a stator and on a rotor, having a common axis of rotation, said rotor being rotatable relative to said stator; said rims including interacting teeth and defining therebetweeen a cavity which serves as a central feed chamber, and said teeth further interacting at very high speeds; a hollow tubular mounting of said stator for a shaft of said rotor; wherein opposite cutting flanks of said teeth are rotatable relative to one another in parallel alternation, said flanks being inclined at an acute angle to the common axis of rotation toward respective adjoining sides, when viewed from opposite directions; adjusting means for the axial displacement and adjustment of respective rims toward one another on said stator and said rotor, and thus of a clearance gap between said cutting flanks, to facilitate relative axial adjustment between said rotor and said stator even during operation of the apparatus; wherein the magnitude of the angle of parallel flanks of radially consecutive ones of said rims decreases to the common axis of rotation, looking from said feed chamber toward an outside one of said rims; and wherein said teeth are pyramidal in the radial cross-sectional direction and rectangular in the peripheral cross-sectional direction; the tooth roots between teeth of said consecutive rims lying higher than the tooth roots between adjacent teeth of the same rim, with the exception of the tooth roots of an outermost one of said rims and finally wherein said tubular mounting includes a pair of telescopingly adjustable and interlocking tubular members forming said adjusting means, threaded means for axially adjusting said tubular members, and lockscrew means for interlocking said tubular members, and a vernier scale on one of said tubular members, being alignable with markings on another one of said tubular members for determining the relative position of said adjusting means.

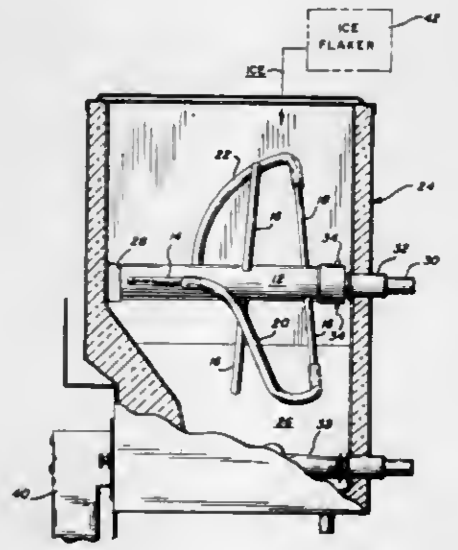
3,940,116
ICE DISPENSER

Jerry M. Verlinden; Gary D. Swinford, both of Denver; Kyle L. DeJaeger, Broomfield, and Michael W. Kennedy, Englewood, all of Colo., assignors to Mile High Equipment Company, Denver, Colo.

Filed Apr. 24, 1974, Ser. No. 463,615

Int. Cl.² B01F *7/04*

U.S. Cl. 259—45 10 Claims



1. In an ice storage or dispensing device for storing particulate ice in an agitated state or condition, including an ice storage hopper having interior wall means and an agitator assembly within the hopper for agitating the ice, said agitator assembly having spoke-like agitator members for churning through the particulate ice, the improvement which comprises agitator means secured to and extending between said spokes for wiping said interior wall means of the storage hopper, said agitator means being fabricated of pliable material so as to be bodily deformable by said particulate ice thereby minimizing tunneling in the particulate ice.

3,940,117
AGITATING APPARATUS

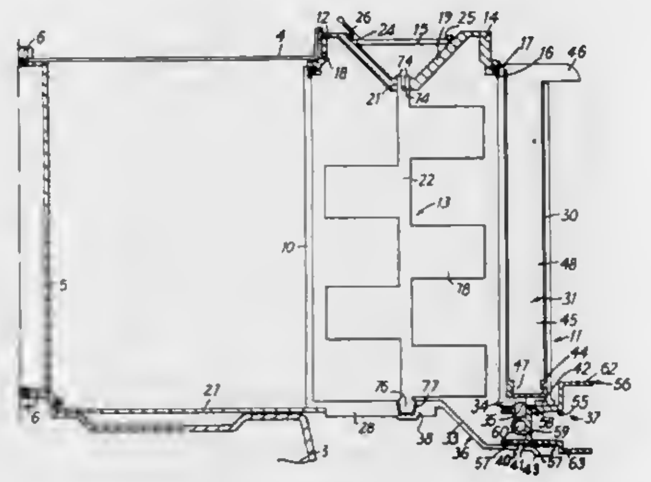
Charles Jonathan Briggs, London, England, assignor to Berger-Jenson & Nicholson, Ltd., London, England

Filed June 18, 1974, Ser. No. 480,355

Claims priority, application United Kingdom, June 22, 1973, 29650/73

Int. Cl.² B01F *9/12*

U.S. Cl. 259—58 3 Claims



1. An apparatus for mixing and dispensing liquids comprising a central support structure, a support member rotatably mounted on said support structure, a plurality of dispensing containers mounted on said support member and fixed relative thereto, a drive member mounted on the support structure and fixed relative thereto, a drive transmission device located adjacent the upper end of each container and rotatably mounted thereon, each of said drive transmission devices engaging said drive member, a stirring device depending from each drive transmission device into its associated container, and a removable closure member in each drive transmission device, wherein the apparatus is constructed and arranged so that when the support member is rotated each of the drive transmission and stirring devices is rotated by the drive member relative to the dispensing containers.

3,940,118
BLADE LIFTER FOR INSTALLATION INSIDE A REVOLVING DRUM

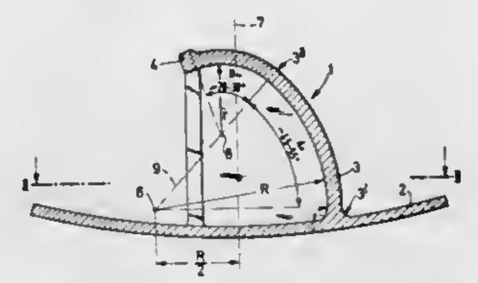
Otto Heinemann, Ennigerloh, and Rainer Philipp, Ahlen, both of Germany, assignors to Polysius AG, Neubeckum, Germany

Filed Aug. 31, 1973, Ser. No. 393,647

Claims priority, application Germany, Oct. 17, 1972, 7238023

Int. Cl.² B01F *9/06*

U.S. Cl. 259—89 11 Claims



1. A rigid blade lifting member for installation on a revolving drum comprising a mounting plate member for attachment to said drum to rotate therewith; and a blade shell joined at one end to and extending from said mounting member, said shell having at its other end a free rim forming a scoop edge, said shell being curved continuously from its one end to its other end, the radius of curvature of said shell from its one end to a point between its ends closer to said other end than to said one end being greater than the radius of curvature of said shell from said point to said other end.

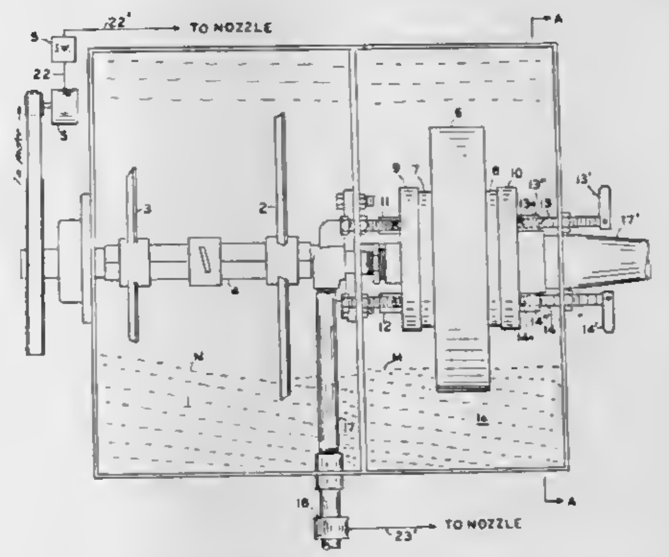
3,940,119
ROTOR GUN FOR THE AIR PLACEMENT OF GRANULAR AND CEMENTITIOUS MATERIALS

Ian M. Ridley, 34 Azalea Court, Plainview, N.Y. 11803

Filed June 6, 1974, Ser. No. 477,155

Int. Cl.² B28C *5/06*

U.S. Cl. 259—151 2 Claims



1. Rotor gun means for the air placement of granular and cementitious material, comprising,
  a mixing chamber for granular and cementitious materials,
  a driven shaft mounted parallel to the bottom of said chamber,
  a rotor freely floating on said shaft in predetermined space relation in said mixing chamber,
  said rotor comprising a motor driven wheel in the central portion of said chamber, said wheel having a plurality of apertures equally spaced about said rotor wheel, said apertures being adapted to pick up said material,
  and a source of high pressure air stream connected to blow said material from said apertures as said apertures pass said high pressure air stream, into an outlet nozzle without any bends or turns in the path of the air stream,
  a pair of resilient sealing pads, said rotor wheel passing between the pair of sealing pads, and means to adjustably mount at least one of said sealing pads in place, comprising a pair of steel plates one each on the outer sides of said pads and adjustable screw operated means for adjusting the pressure of one of said plates against one of said pads.

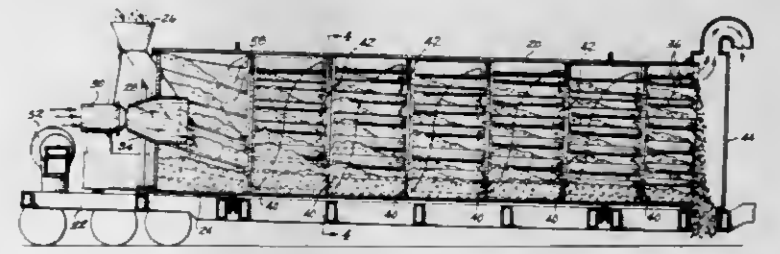
3,940,120
DUST FREE ASPHALT PRODUCTION METHOD AND APPARATUS

John S. Miller, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 5, 1974, Ser. No. 494,787

Int. Cl.² B28C *1/22, 5/46*

U.S. Cl. 259—158 6 Claims



2. The improvement substantially reducing the amount of fines emitted into the atmosphere by apparatus preparing asphalt paving material, said apparatus comprising:

a rotatable substantially horizontal mixer-drum having an inlet at one end and an outlet at the opposite end;

means inserting bituminous liquid and aggregate containing fines into said mixer-drum;

means causing hot air to pass through said mixer-drum entering at said inlet and exiting at said outlet; and,

a plurality of buckets disposed along the length of said mixer-drum in rows substantially equally spaced around the inside periphery of said mixer-drum, said plurality of buckets being so disposed as to lift and drop said bituminous liquid and aggregate containing fines in said mixer-drum as said mixer-drum is rotated and said hot air is passed through said mixer-drum so as to mix said bituminous liquid, said aggregate, and a portion of said fines and create a veil of bituminous liquid coated aggregate in a portion of said mixer-drum; said improvement comprising:

a. baffle means comprising a substantially vertical, flat, ring-shaped plate disposed adjacent the inner periphery of said mixer-drum deflecting said hot air passing through said mixer-drum from said inlet to said outlet through said mixer-drum into said veil of bituminous liquid coated aggregate, said baffle means being such that the progress of said aggregate and said air in volume passing through said mixer-drum is substantially unhindered while substantially all of said fines are directed toward and caused to impinge upon the asphalt coated aggregate comprising said veil.

3,940,121
METAL VAPOR-TRAPPING SYSTEM

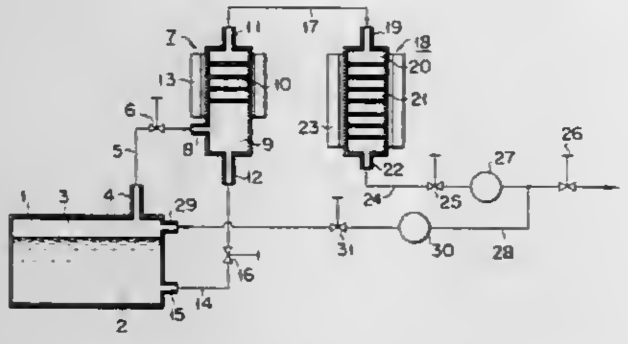
Masayoshi Ohno, and Osamu Ozaki, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Sept. 24, 1973, Ser. No. 399,919

Claims priority, application Japan, Sept. 26, 1972, 47-96505

Int. Cl. C21b *61/00*

U.S. Cl. 266—15 **6 Claims**



1. A metal vapor-trapping system for trapping vapors of liquid metal from a gaseous mixture consisting of said vapors and another gas which comprises:

a tank for holding a liquid metal heated to a prescribed temperature and a gaseous mixture consisting of vapors of said liquid metal and said another gas;

a first conduit connected at one end to the gas outlet of the tank;

a condensation device provided with a gas inlet connected to the other end of the first conduit, a gas outlet, and a liquid outlet, and provided with a plurality of packing members for progressively decreasing the temperature of said gaseous mixture from the gas inlet to the gas outlet and thereby trap substantially all of the metal vapors contained in the gaseous mixture by condensing the vapors into liquid;

first temperature control means associated with said condensation device for controlling the temperature of said gaseous mixture such that even when cooled, the gaseous mixture has its temperature near the gas outlet maintained at a higher level than the solidification point of the liquid metal;

a solidification device having a gas inlet and a gas outlet, and provided with a plurality of filters for progressively decreasing the temperature of said gaseous mixture conducted from said condensation device and passing through said filters from said gas inlet toward said gas outlet;

second temperature control means associated with said solidification device for controlling the temperature of said gaseous mixutre and for reducing said temperature of said gaseous mixture to a lower temperature level than the solidification point of the liquid metal so as to thereby solidify the small amount of metal vapors still remaining in the gaseous mixture, said solidified vapors being separated and deposited upon said filters within said solidification device; and

a second conduit connected at one end to the gas outlet of said solidification device so as to conduct a gas substantially free from metal vapors which has been drawn out through the gas outlet.

3,940,122
QUICK ACTING CLAMPING DEVICE

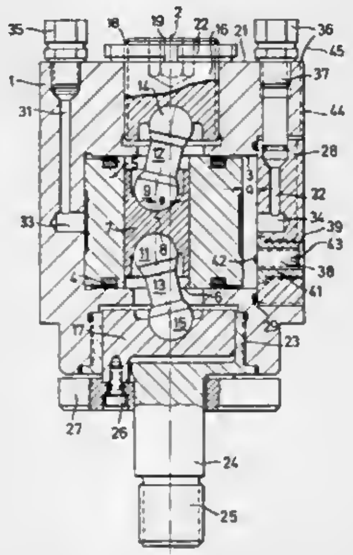
Wolfgang Janzen, Wilnsdorf, Obersdorf, Germany, assignor to Amsted-Siemagkette GmbH, Sieg, Germany

Filed Apr. 16, 1974, Ser. No. 461,424

Claims priority, application Germany, Apr. 18, 1973, 2319686

Int. Cl.² B23Q *3/06*

U.S. Cl. 269—23 **3 Claims**



1. Quick acting clamping device, such as for clamping tools, workpieces or devices on machine tools, comprising a cylindrical housing, an abutment mounted in said housing, a first part positioned within said housing for transferring clamping movement and being spaced from said abutment in the axial direction of said housing, a first pressure lever mounted in said housing and having its axis extending generally in the direction of the cylindrical axis of said housing and disposed between said abutment and said first part, said first pressure lever being displaceable between an unclamped position where its axis is disposed obliquely to the cylindrical axis of said housing and a clamped position where its axis is disposed substantially parallel to the cylindrical axis of said housing, wherein the improvement comprises that said housing has a first bore therethrough with the axis of the first bore extending transversely of the cylindrical axis of said housing, a piston positioned within said first bore for displacement therein in the axial direction of said first bore, said piston having an axial length less than the axial length of said bore, said piston having a second bore therethrough extending in the direction of the cylindrical axis of said housing, said first part being located within said second bore, one end of said abutment facing one end of said first part, a second part mounted within said housing and on the opposite side of said piston from said abutment and one side of said second part facing the other end of said first part, a second pressure lever having its axis extending generally in the direction of the cylindrical axis of said housing and disposed between the one side of said second part and the other end of said first part, said second pressure lever being displaceable between an unclamped position where its axis is disposed obliquely to the cylindrical axis of said housing and a clamped position where its axis is disposed substantially parallel to the cylindrical axis of said housing, said piston being displaceable through said first bore for displacing said first part in the axial direction of said first bore for moving said first and second pressure levers between the unclamped and clamped positions, means arranged in said housing for displacing said piston hydraulically, said means for hydraulically displacing said piston comprising a pair of passageways formed through said housing with each of said passageways opening into an opposite end of said first bore for introducing a pressurized hydraulic medium thereto for the displacement of said piston, said housing having an opening therein aligned with one end of said first bore, a cover sealingly secured to said housing and closing the opening aligned with the end of said first bore, one of said passageways extends through said housing and said cover to one end of said first bore, and a hollow screw bolt extending into the one of said passageways extending through said housing and cover for securing said cover to said housing.

3,940,123
CUTTING MACHINE CLAMPING DEVICE

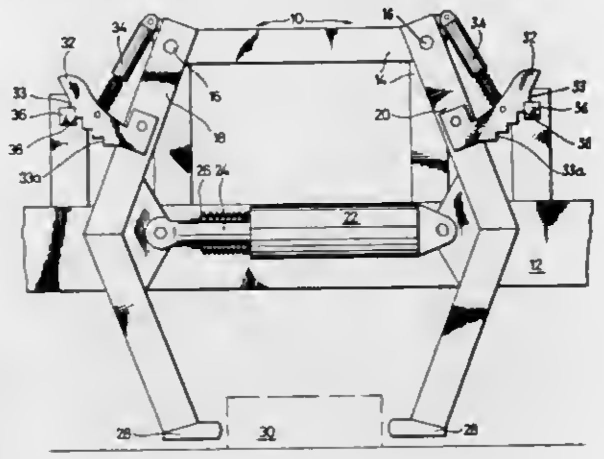
Klaus Herbener, Bruchkobel, and Ewald Schmitt, Bischilsheim, both ol Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed Oct. 2, 1974, Ser. No. 511,368

Claims priority, application Germany, Oct. 18, 1973, 2352295

Int. Cl.² B23K *7/10*

U.S. Cl. 266—23 R **8 Claims**



1. A cutting machine clamping device comprising, in combination, a cutting machine for separating workpieces into individual segments, said cutting machine including a cutting unit, mounting means for mounting said cutting unit above the workpiece to traverse the width of the workpiece whereby the cutting unit may cut therethrough, said mounting means including rail means for being disposed over and across the workpiece and on which the cutting unit may travel, said mounting means further including a workpiece clamping mechanism for detachably securing said cutting unit to the workpiece at a fixed position along the length thereof, said clamping mechanism including a pair of opposed levers, clamping means on an end of each of said levers, pivotal securing means mounting said levers for movement toward and away from each other along a predetermined path whereby said clamping means may be moved into and out of engaging contact with the workpiece, barrier means for movement into said path whereby the movement of said clamping levers away from the workpiece is limited to minimize the subsequent return movement of said clamping levers when its clamping means later re-engages the workpiece, said barrier means being adjustable for adjustably preselecting the distance of movement permitted by said clamping levers whereby the distance of movement may be controlled in accordance with the width of the workpiece, said barrier means including a toothed segment mounted on at least one of said clamping levers, a stationary stop member disposed in the path of movement of one of the teeth on said segment, and a lifting cylinder connected to said toothed segment for adjusting the position of said segment whereby a preselected tooth may be disposed for contacting said stop member.

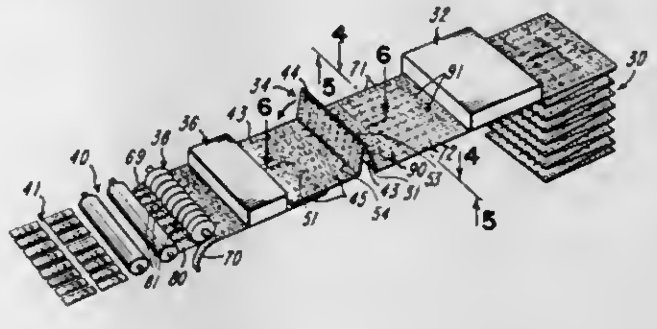
3,940,124
MULTI-PLY LOTTERY TICKETS OR LIKE ARTICLES, CONTINUOUS BUSINESS FORM AND METHOD FOR PRODUCING SAME

Edward L. Johnsen, 12 Fox Meadow Lane, Wayland, Mass. 01778

Filed Jan. 15, 1974, Ser. No. 433,461

Int. Cl. B65h *45/00;* **B42d** *42/00*

U.S. Cl. 270—61 F **12 Claims**



1. A method of producing a series of interconnected blanks suited for processing into individual lottery tickets or like articles comprising the steps of:

a. continuously advancing an endless web of material having upper and lower surfaces toward an accumulating station;

b. transversely subdividing said web into a series of interconnected blanks;

c. transversely trisecting each blank into a set of three contiguous panels each spanning the full width of the web;

d. selectively applying an adhesive to a portion of both surfaces of the web;

e. accumulating said series of interconnected blanks for further processing;

f. continuously advancing said interconnected blanks toward an indicia applying station;

g. applying original indicia directly to an upper surface of at least one panel of each set of contiguous panels; and

h. accordion folding and permanently bonding each set of contiguous panels in registered zig-zag relationship, thereby providing a series of interconnected multi-ply lottery tickets or like articles.

3,940,125
PICKING AND TRANSPORTING MEANS FOR FABRIC SECTIONS AND THE LIKE

Kenneth O. Morton, Troy, N.Y., assignor to Cluett, Peabody & Co., Inc., New York, N.Y.

Filed May 17, 1974, Ser. No. 471,029

Int. Cl.² B65H *3/06, 3/32*

U.S. Cl. 271—10 **30 Claims**

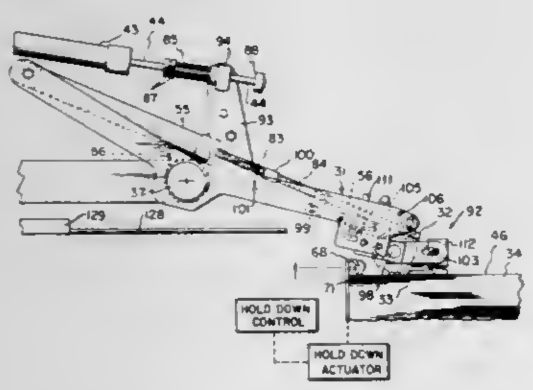
5. A picking apparatus for nipping and lifting a limp ply, which comprises

a. a movable gripping member movable about an axis and having an arcuate ply gripping surface,

b. lifting means supporting said member for rotary movement of its gripping surface about said axis,

c. means forming a ply stripping element extending from a point outside the arcuate surface of the gripping member to a point within the projected configuration of the member and disposed at a relatively shallow angle with the gripping surface of the member at the point of intersection of said stripping element with said gripping surface,
d. ply retaining shoe means positioned to yieldably press upon the ply stack, adjacent said ply gripping member, whereby ply material displaced by movement of said member is caused to buckle into a wave in the region between said member and said shoe, and
e. said stripping element and said shoe means forming an accumulation cavity for receiving said wave.

16. Apparatus for separating and transporting limp plies one at a time from a stack thereof, which comprises
a. means for gripping and lifting one edge portion of a top ply of the stack,

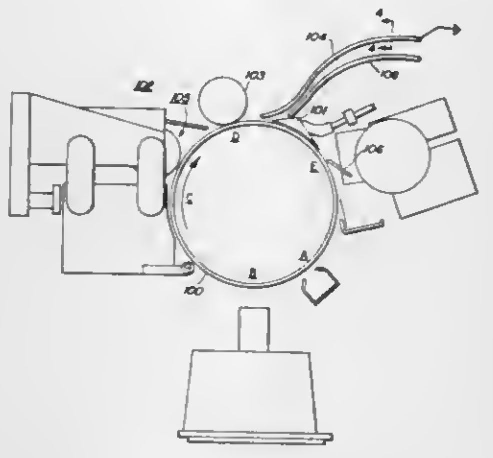


b. hold-down means for engaging the stack below the top ply in the region of said one edge,
c. a plate-like shutter means movable into interposition below said top ply and above the remainder of the stack, to fully separate said top ply from said stack,
d. means guiding said plate-like shutter for progressive interposing, longitudinal movement, entering adjacent said one edge and progressing toward and beyond the opposite edge,
e. means for reciprocating said plate-like shutter between an interposed position, between said stack and top ply, and a predetermined destination position, and
f. means independent of said gripping and lifting means effective to retain said top ply on said shutter during movement of the shutter and the ply to said destination position.

3,940,126
SHEET HANDLING MECHANISM

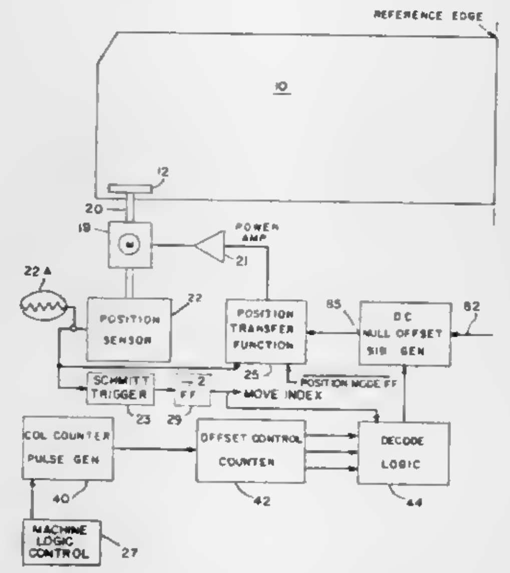
John William Douglas Cooper, Hitchin, England, assignor to Xerox Corporation, Stamford, Conn.
Filed June 11, 1974, Ser. No. 478,209
Claims priority, application United Kingdom, Dec. 21, 1973, 59537/73
Int. Cl.² B65H *29/56*
U.S. Cl. 271—174 **1 Claim**

1. The combination of an electrostatographic reproduction machine having means defining a photoconductive surface, means for charging the photoconductive surface, means for exposing the photoconductive surface to form an electrostatic latent image on the surface, means for developing the latent image, and means for transferring the developed image to a transfer sheet, with an improved stripping mechanism, the stripping mechanism comprising means for separating the leading edge of the transfer sheet from the photoconductive surface, a guide disposed adjacent to the separating means for guiding the transfer sheet, means for maintaining the guide at a reference voltage sufficient to set up an electrostatic attraction between the transfer sheet and guide after the leading edge of the transfer sheet has been separated from the photoconductive surface, means for forming a plurality of air gaps between the transfer sheet and the guide during movement of the transfer sheet over the guide, means separated from and extending along and beneath the guide for supporting the transfer sheet in the event the electrostatic attraction is insufficient to attract the transfer sheet to the guide, and means for preventing the transfer sheet from being electrostatically attracted to the supporting means during movement between the guide and the supporting means.



3,940,127
PROGRAMMABLY ALTERABLE INCREMENTING SYSTEM

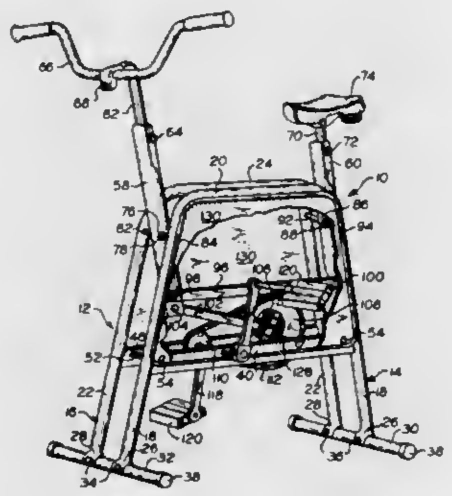
Neil J. Petusky, Norristown, and Ronald V. Kadyszewski, Aston, both of Pa., assignors to Decision Data Computer Corporation, Horsham, Pa.
Filed Apr. 8, 1974, Ser. No. 458,517
Int. Cl.² B65H *5/06*
U.S. Cl. 271—266 **6 Claims**



2. An incrementing system for punch cards, or like sheet material, said incrementing system being adapted to incrementally index said punch card or sheet material through a work station, comprising first means adapted to operatively engage the surface of said punch card or sheet material to thereby advance said card or sheet material through said work station, control means operatively connected to said first means to cause said punch card or sheet material to be selectively advanced a predetermined distance through said work station, and means operatively connected to said control means and adapted when set to introduce one or more predetermined corrective factors to compensate for differences in intended and actual incremental displacements introduced in the advancement of said punch card or sheet material through said work station said differences being brought about by changes in the dimensions of the operative components of said first means and/or in said punch card or sheet material.

3,940,128
EXERCISING APPARATUS

Bernardo P. Ragone, Lido Beach, N.Y., assignor to Vitamaster Industries, Inc., Brooklyn, N.Y.
Filed Jan. 6, 1975, Ser. No. 538,604
Int. Cl.² A63B *23/04*
U.S. Cl. 272—73 **19 Claims**



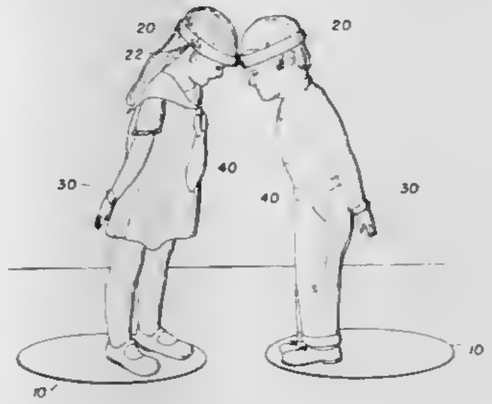
1. An exercising apparatus comprising:
a. a frame;
b. a pair of laterally spaced posts each pivotally mounted on said frame in a substantially upright position, each of said posts having upper and lower end portions;
c. handlebar means mounted on the upper end portion of one of said pair of posts;
d. seat means mounted on the upper end portion of the other one of said pair of posts;
e. drive means rotatably mounted on said frame;
f. a ring eccentrically mounted on said drive means for conjoint rotation therewith;
g. first linkage means having end portions connecting one of said pair of posts to said drive means;
h. one end portion of said first linkage means terminating in a collar member slideably mounted on said ring and the opposite end portion of said first linkage means pivotally connected to the lower end of one of said pair of posts;
i. second linkage means having end portions connecting said post together for conjoint pivotal movement;
j. one end portion of said second linkage means pivotally connected to the lower end of the other one of said pair of posts and the opposite end portion of said second linkage means pivotally connected to the lower end of said one of said pair of posts;

whereby rotation of said drive means causes said posts to oscillate together in the same directions and in substantially parallel relation throughout a cycle of operation of said apparatus.

3,940,129
GAME OF BALANCE

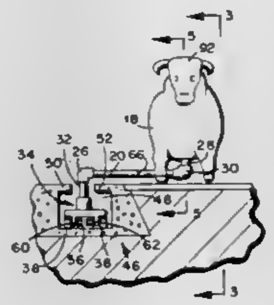
John A. Franco, Daly City, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Nov. 4, 1974, Ser. No. 520,280
Int. Cl.² A63F *9/00;* **A63B** *71/04*
U.S. Cl. 273—1 R **2 Claims**

1. A game device for playing a party game with two competing players comprising the following equipment:
a pair of headbands each formed of a strip of foam material enclosed by a flexible sheeting, with a fastening tab mounted externally adjacent one end of each strip for fastening to the other end of the said strip about a players head,
a pair of flexible wrist bands each formed of flexible sheeting in the form of a strip and each fitted with fastening means for joining the ends of each strip together about a pair of wrists of a player, and
a pair of circular discs, with both discs being of the same diameter, and with each disc being of a size to enable a player to place both feet upon a disc resting on a floor,
such that each player may stand on one of the two discs, with the discs located in general proximity to each other, with the two players fitted with the headbands and with the hands of the players fastened behind their backs in the wrist bands, and each of the players may attempt to push the other player out of the area bounded by the disc upon which he is standing by pushing his headband against the headband of the opposing player.



3,940,130
BULL FIGHTING GAME

William F. Fawcett, 1839 Port Seabourne Way, Newport Beach, Calif. 92660
Filed Oct. 3, 1974, Ser. No. 511,785
Int. Cl.² A63B *67/00*
U.S. Cl. 273—1 E **12 Claims**



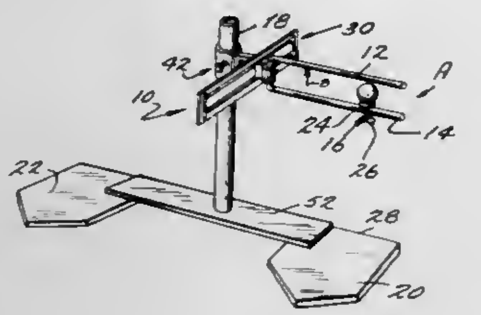
1. A simulated bull fight game comprising:
a simulated bull's figure;
a first support means for holding said simulated bull's figure;
an area in proximate relationship to said bull's figure adapted for a participant taking the part of a matador;
a cape for said participant;
optical sensor means in said bull to register the position of said cape in a participant's hand; and,
means to move said bull on said support means with respect to said participant in a manner simulating the movement of a bull in a bull ring so that a participant can partake with a cape in a simulated bull fight.

3,940,131
BATTING PRACTICE DEVICE

Ebba J. St. Claire, Jr., 52 Champlain Ave., Whitehall, N.Y. 12887
Filed Oct. 8, 1974, Ser. No. 513,176
Int. Cl.² A63B *69/40*
U.S. Cl. 273—26 R **10 Claims**

1. A batting device comprising
means for assisting a baseball player in developing a level swing of a conventional baseball bat, said means including

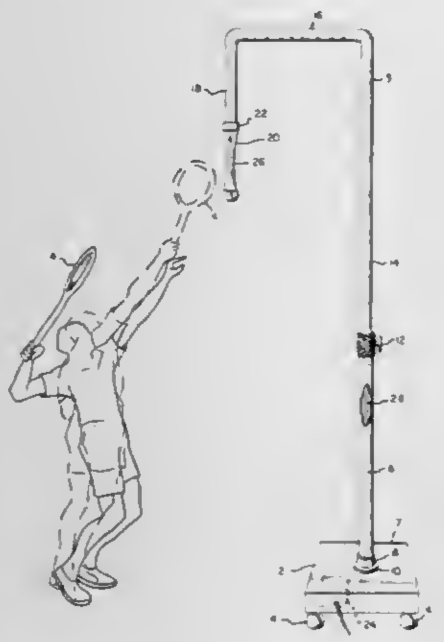
a pair of elongated generally horizontally extending vertically spaced parallel arms including an upper arm and a lower arm, said arms being vertically spaced a distance sufficient to allow the passage of the bottle-shaped portion of a horizontally disposed conventional baseball bat therebetween, said arms substantially lying in a single



vertical plane, said arms having no vertically extending connecting member at at least one of the ends thereof thereby forming an open end,
means located on said lower arm for supporting a baseball between said arms, and
means for supporting said pair of arms in their generally horizontally extending position.

3,940,132
TENNIS SERVICE INSTRUCTIONAL DEVICE

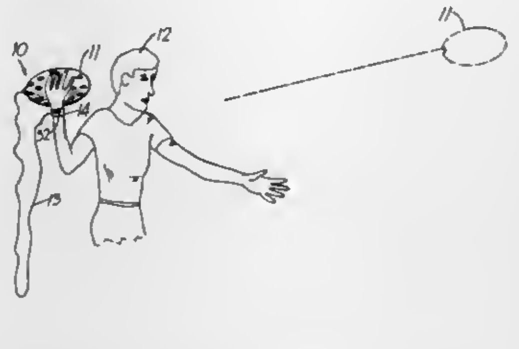
John S. Lopatto, III, 103 Gaylord Ave., Plymouth, Pa. 18561
Filed June 13, 1974, Ser. No. 479,183
Int. Cl.² A63B *61/00*
U.S. Cl. 273—29 A **5 Claims**



1. An apparatus for use as an aid in learning the service stroke in tennis comprising,
a substantially vertical overhead support,
supple flexibly yieldable tubular means suspended from said support,
said tubular means having a lower open end for seating against the uppermost portion of the surface of a tennis ball placed at a height above a player's head,
and means for applying suction to the other end of said tubular means with a force which is just sufficient to maintain the weight of the ball in said open end but to be overcome to release the ball by impact of a racquet striking against the ball during a service stroke.

3,940,133
BALL RETRIEVING APPARATUS

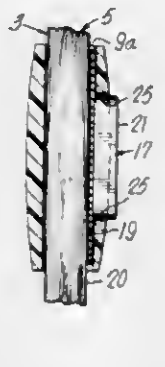
Benny I. Civita, Forest Hills, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed July 29, 1974, Ser. No. 492,689
Int. Cl.² A63B *43/02*
U.S. Cl. 273—58 C **7 Claims**



1. A ball retrieving apparatus used for a tossing of a ball in a forward direction, which comprises:
a. a thermoplastic foamed ball member;
b. an elastic rubber band;
c. an adjustable wrist support band;
d. a means for attaching said elastic rubber band to said adjustable wrist support band; and
e. a means for pivotally and detachably mounting said thermoplastic foamed ball member to said elastic rubber band.

3,940,134
HOCKEY STICK HANDLE DEVICE

Leo M. Bieganowski, 81 St. Charles Ave., Dorval, Quebec, Canada
Filed Dec. 5, 1973, Ser. No. 422,084
Claims priority, application Canada, Dec. 8, 1972, 158820
Int. Cl.² A63B *59/14*
U.S. Cl. 273—67 A **5 Claims**

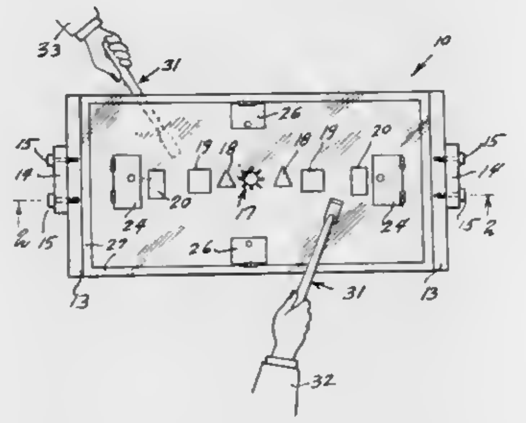


1. In a hockey stick including an elongated, generally-longitudinally-flexible handle having a substantially rectangular cross-section and a laterally-extending terminal blade extending vertically into the general plane of the rectangularly cross-sectioned handle, the improvement comprising, in combination, manually-operable, torque-increasing means optionally adjustable at a player's option during play when effecting a puck-propelling movement in a combined rotary and sweeping manipulation of the hockey stick, said torque-increasing means comprising a relatively short rigid sleeve member including an inner surface portion circumposed about the handle and an outer surface portion to be gripped by the player and being of a length short enough not to interfere with the general-longitudinal-flexibility of the hockey stick handle, said sleeve member being constructed and arranged to be optionally freely slidable along and non-rotatably mounted on said hockey stick handle and optionally-positionable therealong prior to a puck-propelling manipulation and increasing the hockey stick cross-section at the position at which said sleeve member is disposed, said sleeve member having means for

manually-displacing at least one inner surface portion of said sleeve member for frictionally engaging and locking the sleeve member relative to a confronting portion of said hockey stick handle so the sleeve member does not freely slide along the hockey stick handle whereby prior to effecting a puck-propelling manipulation the player can readily adjustably position the sleeve member and is afforded increased torque-generating means about the longitudinal axis of the hockey stick handle so that the increased torque can be correspondingly directed to the hockey stick blade.

3,940,135
HOCKEY GAME

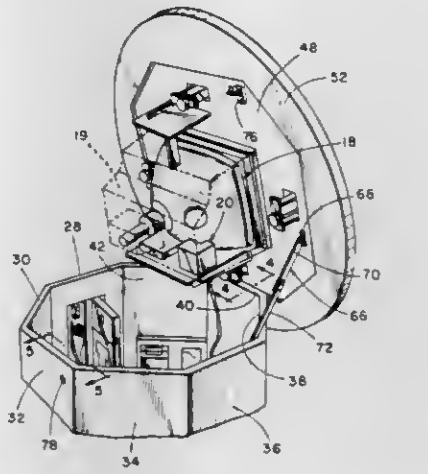
Samuel W. Cohen, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007
Continuation of Ser. No. 289,609, Sept. 18, 1972, abandoned, which is a continuation-in-part of Ser. No. 95,814, Dec. 7, 1970, abandoned. This application Mar. 25, 1974, Ser. No. 454,618
Int. Cl.² A63F *7/06, 9/14*
U.S. Cl. 273—85 F **14 Claims**



1. A hockey game comprising upper and lower plates, means for mounting said plates on peripheral sides thereof with the inner face of one plate in an opposing relationship to the inner face of the other plate to define a hollow board forming an arena simulating a hockey court, at least the upper plate being transparent, a goal in the space between said plates toward each end position of the arena, said opposing inner faces of said plates having a maximum uniform spacing in the arena area surrounding the goals and a smaller spacing inwardly toward the center of the board, a plurality of team members disposed slidably within the arena, said team members including a goalie of a height greater than said smaller spacing towards the center of the arena so that the movement of the goalie is confined to movement within the larger area surrounding the goals and prevented in the area of smaller spacing by contact of the goalie with the portion of a plate defining the area of smaller spacing, the heights of all of said team members other than said goalie being less than the space between the opposing inner faces of the plates over the entire area of said arena, each said team member including magnetically attractable material, magnetic actuator means having a planar surface adapted to glide on the outer surface of one of said plates for attracting a team member when it is aligned with the magnetically attractable material of a said team member, movement of the actuator means on the outer surface of a plate causing the magnetically attracted team member to move across the corresponding inner face of the plate with the actuator means as it is moved, and a non-magnetic puck for gliding on the inner surface of the lower plate adapted to be struck by a said team member as it is moved by a said actuator means.

3,940,136
AMUSEMENT DEVICE

Robert Ralph Runte, Buffalo Grove, Ill., assignor to Fascination, Ltd., Des Plaines, Ill.
Filed July 17, 1974, Ser. No. 489,081
Int. Cl.² A63F *3/00*
U.S. Cl. 273—85 R **6 Claims**



1. An amusement device comprising, an upright support adapted for mounting on a floor, a housing secured to and supported by the upper portion of the support at a selected height above the floor, said housing being open at its uppermost position, a table top hingedly connected to the housing to allow the top to be raised for exposing the interior of the housing, said top having a screen aperture in its center, a cathode ray tube secured to the top and having a screen positioned adjacent to the screen aperture to allow the screen to be viewed exteriorly of the top, electronic circuitry mounted on the interior surface of the top and electrically connected to the cathode ray tube to reproduce an image of a ball moving across the screen and a plurality of paddle images for giving the appearance of a paddle striking the ball and returning it, a plurality of manual control devices mounted on the top and accessible from the exterior of the top to manipulate selected portions of the electronic circuitry to move the paddle images on the screen, a coin control device mounted on the housing and electrically connected to the electronic circuitry to control the operation of electronic circuitry for the production of the images on the screen, a lock for releasably locking the top to the housing to control access to the interior of the housing, each of the manual control devices including a mounting plate positioned in the table top, each mounting plate covered by a portion of the top, a shaft aperture positioned below a portion of the mounting plate, a U-shaped bracket secured to the mounting plate and a portion of the electronic circuitry supported on the U-shaped bracket, a knob shaft rotatably mounted in the mounting plate and the U-shaped bracket and extending above the table top, said knob shaft connected to the portion of the electronic circuitry on the U-shaped bracket for controlling selected portions of the circuitry, and a knob mounted on the shaft exteriorly of the table top for operating the shaft, whereby a player turns the knob to move selectively an image across the screen.

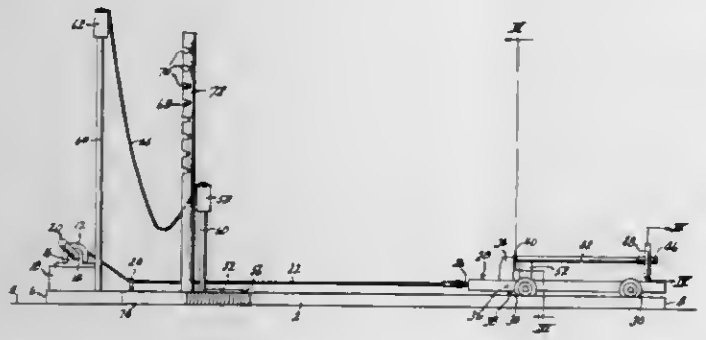
3,940,137
POLE VAULTING GAME APPARATUS

Cecil R. Taylor, 1232 S. Spring St., Independence, Mo. 64055
Filed Apr. 28, 1975, Ser. No. 572,467
Int. Cl.² A63F *9/02*
U.S. Cl. 273—85 C **10 Claims**

1. A pole vaulting game apparatus comprising:
a. a base forming an elongated horizontal track,
b. a carriage movable along said track,
c. operating means manually operable to advance said carriage along said track,
d. a pole carried by said carriage in a normally horizontal position but being pivoted to said carriage for upward and

forward pivotal movement in the direction of carriage advancement,

- e. a vaulting piece adapted to be frictionally mounted on the free end portion of said pole and to be released transversely therefrom when the friction of its mounting is overcome,
- f. cooperating trip members carried by said base and said carriage and operable to pivot said pole upwardly relative to said carriage at a predetermined point in the travel of said carriage,



- g. a stop member operable to arrest the upward pivotal movement of said pole before it reaches a vertical position, whereupon said vaulting piece is dislodged from said pole and propelled therefrom in an upward trajectory, and
- h. a horizontal bar extending transversely of said base thereabove, the object of the game being to cause said vaulting piece to pass over said bar.

3,940,138
RACING GAME DEVICE

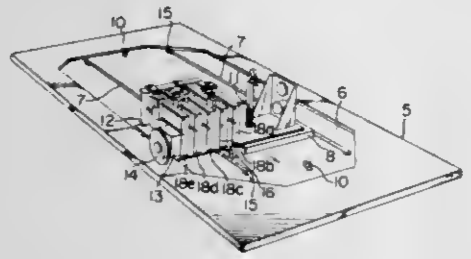
Shikanosuke Ochi, Tokyo, Japan, assignor to Kabushiki Kaisha Sega Enterprises, Tokyo, Japan

Filed Nov. 19, 1974, Ser. No. 525,280

Claims priority, application Japan, Sept. 6, 1974, 49-101908

Int. Cl.^{2} A63F *9/14*

U.S. Cl. 273—86 B 6 Claims



1. A racing game device comprising a horizontal racing course plate, a plurality of racing elements on said racing course plate having magnets therein, a horizontally extending support table positioned beneath said racing course plate and having a central recess therein, a pair of parallel rails extending across said central recess, a traveling base frame mounted on said parallel rails for horizontal movement back and forth along said rails, a rotatable table pivotally mounted on said traveling base frame and a traveling motor fixedly mounted on said traveling base frame and having a single driving wheel driven thereby and engaged with and running along said support table for moving said traveling base frame and said rotatable table along said rails in one direction, then pivoting said rotatable table in a curvilinear movement around the one end of the parallel rails and then moving the traveling base frame and said rotatable table along said rails in the other direction, and finally pivoting said rotatable table in a curvilinear movement around the other ends of the parallel rails, whereby the rotatable table moves in a path made up of straightaways and curves joining the straightaways, a plurality of magnet means, one corresponding to each receiving element, positioned side by side on said rotatable table in a direction transverse to the direction of said path and mounted on said rotatable table for movement back and forth on said table in the direction of said path and electric motor means coupled to said magnet means for randomly driving said magnet means in said movement.

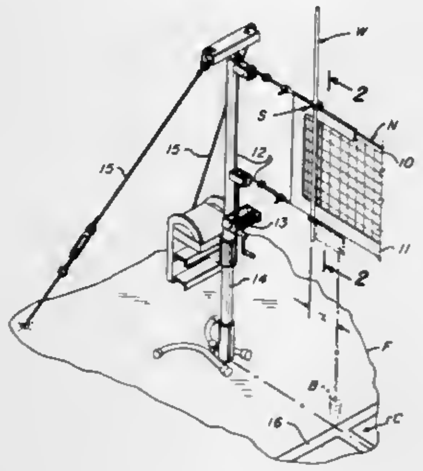
3,940,139
OUT-OF-BOUNDS WAND FOR VOLLEYBALL NET AND SUPPORT STRAP

Paul J. Barnes, 1859 S. Madison, Denver, Colo. 80210

Filed Apr. 28, 1975, Ser. No. 572,158

Int. Cl.^{2} A63B *71/00*

U.S. Cl. 273—95 R 9 Claims



1. An out-of-bounds indicator for a volleyball net, to indicate an out-of-bounds ball flight with respect to the volleyball court during a game, the indicator device comprising in combination with the net:

- a. an elongated rod having a length which is greater than the vertical dimension of the volleyball net,
- b. a narrow, elongated, elastic strap having an aperture at each end sized to fit said elongated rod, said member while in a relaxed condition having a length less than the vertical dimension of said volleyball net, and
- c. said rod being attached in a vertical position to said net by placing the rod in a vertical position alongside one side of the net and the strap on the opposite side of said net paralleling the rod with said rod being threaded through said apertures above and below said net and with a substantial portion of the rod extending above the top edge of the net.

3,940,140
VIBRATORY BOARD GAME APPARATUS

Burton C. Meyer, Downers Grove; Gordon A. Barlow, Skokie, and Jeffrey D. Breslow, Highland Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 30, 1974, Ser. No. 537,083

Int. Cl.^{2} A63F *3/00*

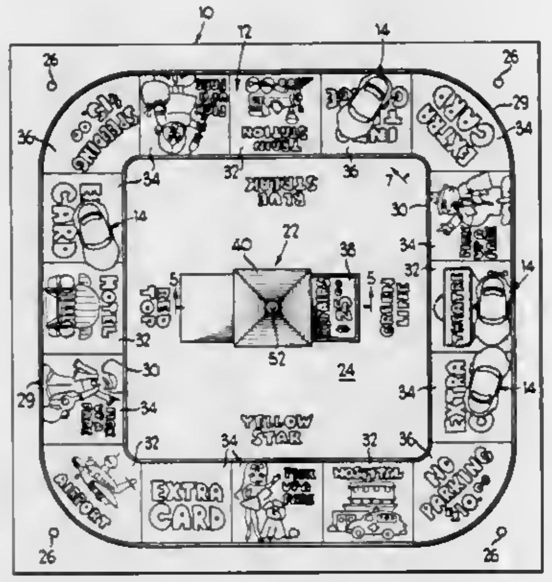
U.S. Cl. 273—109 18 Claims

1. A board game apparatus, comprising:

a plurality of playing pieces, at least one for each player of the game;

board means including a playing surface having means defining a plurality of individual stations defining a playing piece path of travel, the stations extending along substantially the entire playing piece path of travel and at least some of the stations being destination stations having indicia representative of different locations; and

manually selectively actuatable drive means associated with said pieces for stopping and starting the movement of all of said playing pieces simultaneously along the playing piece path of travel from one station to another in an attempt to have a player's or an opponent's playing piece stop at a particular station.



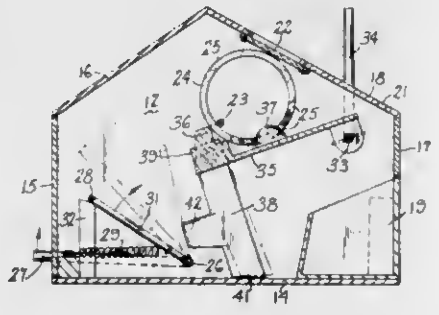
3,940,141
GAME DEVICE

Frank Gybowski, 34 Edgewood Way, New Haven, Conn. 06515

Division of Ser. No. 343,356, March 21, 1973, abandoned. This application Sept. 26, 1974, Ser. No. 509,447

Int. Cl.^{2} A63F *5/04*

U.S. Cl. 273—143 R 8 Claims



1. A game device having a stationary housing, comprising:

a pair of spaced apart, upstanding support members at opposite ends of the housing;

a first bar mounted horizontally on and between said support members;

at least one open-ended, hollow cylinder supported on said first bar with the inner surface of said cylinder in contact with said first bar, said cylinder having an inside diameter substantially greater than the diameter of said first bar and said cylinder having circumferentially disposed indicia on its outer surface;

player actuated mechanical means for striking the exterior surface of said cylinder, whereby said cylinder is caused to swing freely and eccentrically on and around said first bar;

mechanical means for braking said cylinder while said cylinder is swinging freely on and around said first bar to arrest the movement of said cylinder and place said indicia in a significant position relative to the housing; and

manually actuated means for moving said braking means into engagement with said cylinder.

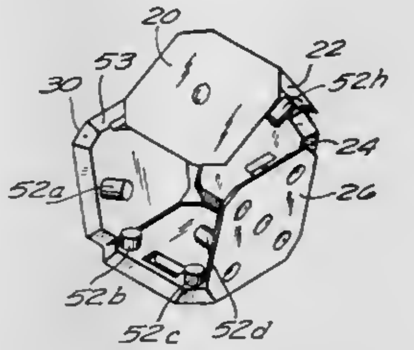
3,940,142
FOLD UP DIE CONSTRUCTION

Henry Hinz, Huntington, and Benjamin Stopek, West Hempstead, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Nov. 29, 1974, Ser. No. 528,112

Int. Cl.^{2} A63F *9/04*

U.S. Cl. 273—146 19 Claims



7. A die member comprising a foldable flat sheet having inner and outer surfaces on opposite sides thereof and six integrally formed sections adapted to respectively define facets of a generally cubical die; said sheet including foldable joint means integrally formed therewith for foldably joining each of said sheet sections to at least one other sheet section; said sheet sections being arrayed in a predetermined pattern whereby upon folding of at least some of said sections through 90° about said joint means, and in a direction towards the inner side of said sheet, the sheet sections form the facets of the die; cooperating means formed on at least some of said sheet sections for securing the sections together in a completed folded die configuration; and guide means formed on the inner side of said sheet on at least some of said sections for guiding the sections into mating relation with one another during folding, said guide means comprising a plurality of guide pins extending generally perpendicularly from the inner side of said sheet on at least some of said sheet sections and being arrayed in a predetermined pattern to define guide passages therebetween which receive and guide the pins with respect to one another.

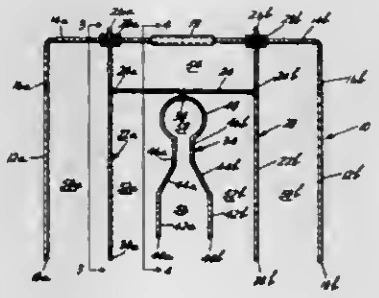
3,940,143
GOLF GAME DEVICE

Owen E. Jenkins, 3318 River Forest Drive, Fort Wayne, Ind. 46805

Filed Dec. 12, 1974, Ser. No. 531,998

Int. Cl.^{2} A63B *69/36*, *57/00*

U.S. Cl. 273—178 R 6 Claims



1. A game playing framework adapted for placement on a playing surface and having an open side receiving a ball comprising,

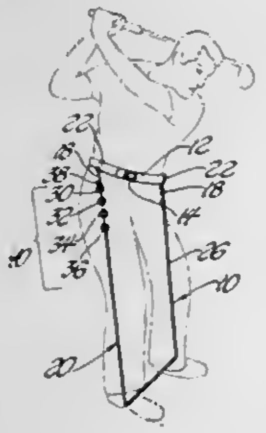
- a first open-sided frame having a pair of sides connected to and transversely spaced by a cross end member and being adapted to rest on a playing surface and having a plurality of depending support members to support and space said frame a predetermined distance from the playing surface,

- a second open-sided frame being placed interiorly of said first open-sided frame and having a pair of equal length parallel legs, said legs being connected intermediately of their length and transversely spaced by a cross arm,
- one end of each of said legs having a hook formed thereon with the open side of each of the hooks straddling and frictionally engaging said cross end member to provide for vertical adjustment of said second frame with respect to said cross end member,
- the other ends of said legs having supporting members depending therefrom to support said legs a predetermined distance from the playing surface,
- a third open-sided frame disposed interiorly of said second frame and having a first pair of transversely spaced segments substantially parallel to said legs and defining an open side, a second pair of segments connected respectively to said first pair of segments and converging therefrom, a third pair of inclined segments connected respectively to said second pair of segments and converging at an angle smaller than said first angle and being transversely spaced a predetermined distance to form a ramp for game balls, a ring section being connected to said third pair of segments to form a cup-shaped retainer for golf balls propelled through the areas defined by said first and second pair of segments and over the ramp formed by said third pair of segments.

3,940,144
GOLFER'S AID

Harold G. Dickie, 3830 Kingsway Drive, Highland, Mich. 48031

Filed Nov. 27, 1972, Ser. No. 309,703
Int. Cl.² A63B ***69/36***
U.S. Cl. 273—183 B **10 Claims**

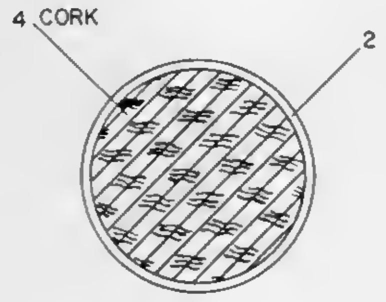


1. A golfer's aid device, comprising flexible substantially non-stretchable first and second elongated members physically detached from each other, said first and second elongated members being of unequal lengths as to have said first elongated member substantially shorter than said second elongated member, said first elongated member having first and second ends, said second elongated member having third and fourth ends, means for anchoring said first and third ends respectively adjacent one hip of the golfer, said second and fourth ends being provided with disconnectable connecting means effective for at times detachably connecting said second and fourth ends to each other, said connecting means being separate from but fixedly carried by said first and second elongated members, said second member being of a length such as to provide first and second generally upright portions interconnected by a lower disposed intermediate bight portion disposed adjacent the golfer's feet when said first and third ends of said first and second members are anchored and said second and fourth ends of said first and second elongated members are operatively connected to each other and said elongated members are hanging freely, said first upright portion being effective to combine with said first elongated member when operatively connected to each other by said connecting means to form a length functionally equal to the length of said second upright portion, said second elongated member being adapted when said second and fourth ends are operatively connected to each other to be placed under the golfer's feet to both limit the spread of the golfer's feet and to maintain the said golfer's knees flexed, at least one of said elongated members being provided with adjustment means for adjusting the overall length of said first and second elongated members when operatively connected to each other, said adjustment means being separate from but fixedly carried by said at least one of said elongated members.

3,940,145
GOLF BALL

Joseph A. Gentiluomo, 1456 Belmont Ave., Schenectady, N.Y. 12308

Continuation-in-part of Ser. No. 90,078, Nov. 16, 1970, abandoned. This application Feb. 28, 1974, Ser. No. 446,812
Int. Cl.² A63B ***37/02, 69/36***
U.S. Cl. 273—218 **12 Claims**



1. A medium range golf ball, comprising impact damping means for dissipating golf club impact energy, and patterned surface contouring of such design and dimensions that when operating in conjunction with said impact damping means will yield a ball that can be propelled with regulation golf clubs an on-the-fly distance of one-quarter to one-half the distance obtained with a regulation golf ball when hit under identical conditions; said on-the-fly distance being such that when said medium range ball is played on short golf courses with said regulation golf clubs, said short courses can be converted to operate on a par rating basis equivalent to par of regulation golf courses of similar complexity.

3,940,146
GOLF BALL COVER

James F. Little, Greenville, R.I., assignor to Uniroyal Inc., New York, N.Y.

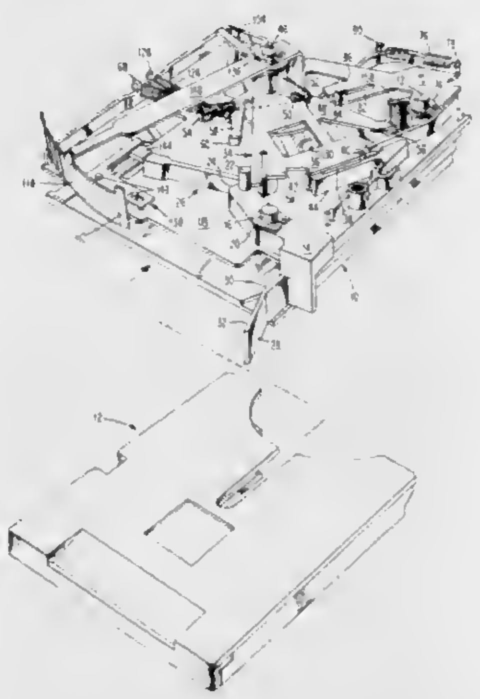
Continuation-in-part of Ser. No. 112,488, Feb. 3, 1971, abandoned. This application Aug. 21, 1972, Ser. No. 282,625
Int. Cl.² A63B ***37/12;*** **C08L** ***23/34***
U.S. Cl. 273—235 R **4 Claims**

1. In a golf ball made up of a core and a thermoplastic cover said cover containing: (a) an ionic copolymer of (1) at least 50 mole percent (based on the alphaolefin-acid copolymer) of one or more olefins selected from the group consisting of ethylene and alphaolefins having up to 10 carbon atoms and of (2) from 0.2 to 25 mole percent (based on the alphaolefin-acid copolymer) of an alpha, beta ethylenically unsaturated mono- or dicarboxylic acid having from 3 to 8 carbon atoms, said copolymer containing in substantially uniform distribution a metal ion having a valence of 1 to 3 in monocarboxylic acid containing copolymers and a valence of 1 in dicarboxylic acid-containing copolymers; and (b) from about 5 to about 10 parts by weight of a filler per 100 parts by weight of said ionic copolymer, the improvement comprising the addition to the cover composition of from about 5 to about 20 parts by weight, per 100 parts by weight of said ionic copolymer, of a chlorosulfonated polyethylene containing from 25 to 35 percent chlorine and from 0.1 to 1.4 percent sulfur.

3,940,147
MODULAR DISC EJECT APPARATUS FOR USE AS AN OUTPUT HOPPER AND CARTRIDGE HOLDER IN DICTATION AND TRANSCRIPTION SYSTEMS

Ronald Eugene Hunt, Austin, and William Melchior Jenkins, Leander, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 17, 1975, Ser. No. 559,350
Int. Cl.² G11B ***25/04, 1/02, 17/10***
U.S. Cl. 274—9 B **2 Claims**



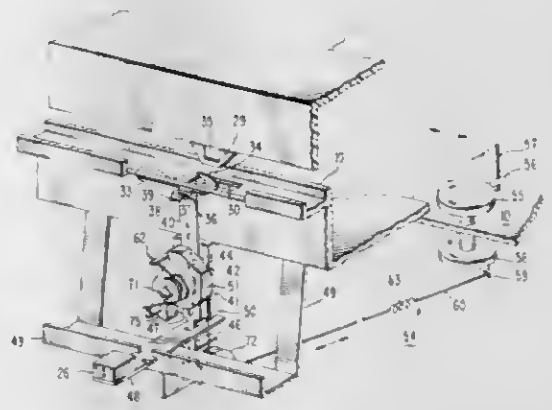
1. Apparatus for holding a cartridge for receiving ejected discs therein for use in an associated transcription or dictation system comprising in combination:

- a modular structure comprising a top support surface, and a bottom support surface having at least one wall integral thereto attached to said top support surface, thereby forming a front entry throat for said cartridge, and a side entry throat allowing said ejected discs to be received in said cartridge;
- cartridge eject lever means pivotally connected to a main pivot post integral to said top support surface, a front surface of said cartridge cooperating with said cartridge eject lever means after entry into said modular structure, causing rotation thereof;
- magnet support means pivotally connected to said main pivot post, said cartridge eject lever means cooperating with said magnetic support arm causing rotation thereof;
- an eject interlock reed switch secured to said top support surface of said modular structure, said reed switch disposed so as to be closed by said rotation of said magnetic support means when said cartridge is latched into said modular structure, whereby an enabling sensing is provided to said associated transcription or dictation system;
- disc counter means pivotally connected to said top support surface, said disc counter means being rotated by said ejected discs entering said cartridge; disc capacity indicator means pivotally connected to said main pivot post and operably connected to said disc counter means being rotated thereby, for providing a visual indication of the number of discs in said cartridge, and for cooperating with said magnetic support means causing rotation thereof, whereby said reed switch is opened when full disc capacity of said cartridge is obtained, thereby providing a disabling sensing to said associated transcription or dictation system inhibiting the ejection of said discs into said cartridge thereby preventing jamming of said apparatus; and
- push to latch, push to unlatch means pivotally connected to said bottom support surface, said push to latch, push to unlatch means cooperating with a front bottom surface of said cartridge during entry thereof thereby latching said cartridge into position to receive said ejected discs, said push to latch, push to unlatch means and said cartridge eject lever cooperating with said cartridge during a subsequent push motion thereby unlatching and ejecting said cartridge.

3,940,148
LID INTERLOCK APPARATUS FOR A DISC RECORD PLAYER

Leslie Albert Torrington, and Ronald Ray Oberle, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 30, 1975, Ser. No. 545,406
Claims priority, application United Kingdom, Nov. 18, 1974, 49927/74
Int. Cl.² G11B ***1/00, 5/012;*** **H04N** ***1/00***
U.S. Cl. 274—1 R **9 Claims**



1. In a playback system for recovering prerecorded signals by a signal pickup from a disc record rotatably mounted on a turntable, the playback system including a lid pivoted on a base for movement between a closed position and an open position, and a signal pickup housing reciprocably mounted on the base for travel between a standby mode and a playback mode, a lid interlock apparatus comprising:

- a lid release lever movably mounted on the base;
- lid latch means selectively responsive to manipulation of the release lever for releasably securing the lid;
- means conditionable between (1) a first condition decoupling, and (2) a second condition intercoupling, the release lever and the latch member; and
- means interconnecting the conditionable means and the signal pickup housing, wherein the interconnecting means is effective for conditioning the conditionable means (a) into the first condition when the housing is in the playback mode whereat manipulation of the release lever is ineffective to release the lid, and (b) into the second condition when the housing is in the standby mode whereat the latch member responsive to manipulation of the lever releases the lid, if the lid were in the closed position.

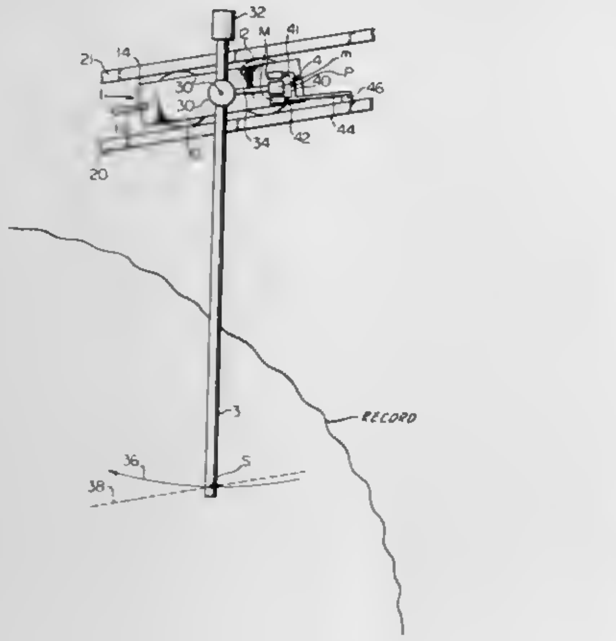
3,940,149
TONEARM LINEAR-DRIVE APPARATUS

Fumitaka Nagamura, 1-6-14 Tomigaya, Shibuya, Tokyo, Japan

Filed Feb. 4, 1974, Ser. No. 439,575
Claims priority, application Japan, Feb. 10, 1973, 48-016771
Int. Cl.² G11B ***3/10***
U.S. Cl. 274—23 A **4 Claims**

3. The tonearm support apparatus of claim 1 wherein said first magnetic member is attached to said tonearm adjacent to said pivot point, said braking means is a brake shoe which engages and disengages from a stationary surface on said

carriage guiding support means and said carriage brake operating member is a pivoted member which moves said brake shoe into and out of engagement with said stationary surface when said pivotally mounted tonearm and brake operating members are moved into and out of given relative angular positions.



3,940,150
PARTLY MELTING ROTATING HELICAL RING ASSEMBLY

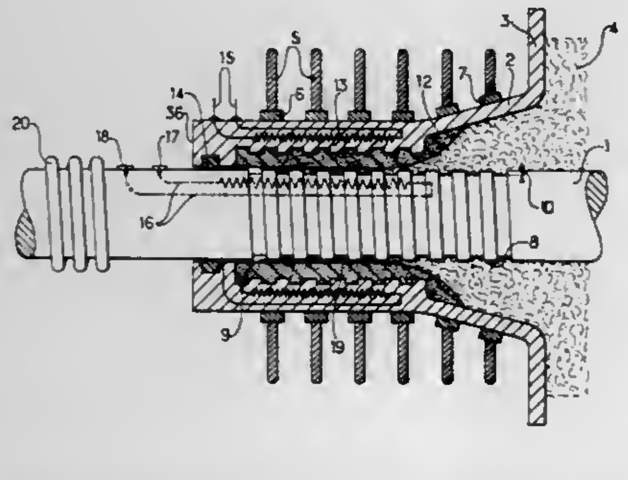
Jean Martin, Chatillon; Jean-Louis Ollier, Chilly Mazarin, and Paul Petit, Bagneux, all of France, assignors to Groupement pour les Activites Atomiques et Avancees "GAAA", Le Plessis Robinson, France

Filed Sept. 26, 1974, Ser. No. 509,603

Claims priority, application France, Oct. 1, 1973, 73.34998; Oct. 26, 1973, 73.38241; Nov. 12, 1973, 73.40130; Nov. 19, 1973, 73.41067

Int. Cl.² F16J *15/18, 15/40*

U.S. Cl. 277—22 **19 Claims**



1. A partly melting rotating helical seal assembly ensuring sealing with respect to fluids along a rotating shaft extending through a wall forming a chamber containing a fluid medium kept under pressure, said assembly comprising:

an outer metallic sleeve fixed relative to said wall, surrounding the rotating shaft and spaced radially therefrom a certain distance and having threads on its inner surface facing said shaft and having a radially inwardly extending flange at the end of said threads remote from said chamber, said flange terminating radially beyond said threads and forming seal means with said shaft relative to said fluid medium;

parallel threads having a depth of less than half a millimeter, cut in the shaft opposite the metallic sleeve;

cooling means for said metallic sleeve;

an intermediate sleeve arranged between the metallic sleeve and the threaded part of the shaft and being formed of a substance compatible with the fluid medium contained in the chamber, and cooled by said cooling means and frozen such that said intermediate sleeve is entirely solid and threaded to the outer sleeve and the intermediate sleeve when the shaft is motionless but capable of melting at its peripheral interface with the rotary shaft by the friction generated during rotation of the shaft; and

wherein said threads, within said shaft form a corresponding threaded liquid interface of said intermediate sleeve during shaft rotation to prevent said pressure fluid medium from escaping from said chamber along said shaft during its rotation.

3,940,151
GLANDS

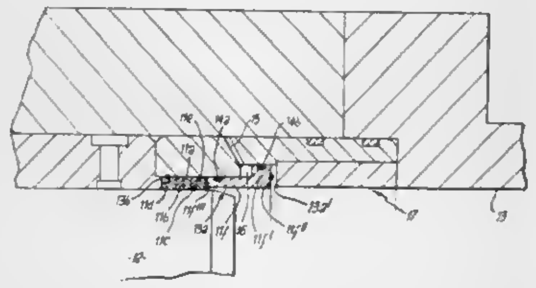
Reginald Andrew Phillips, Warrington, England, assignor to Dobson Park Industries Limited, England

Filed July 2, 1975, Ser. No. 592,457

Claims priority, application United Kingdom, Dec. 18, 1974, 54572/74

Int. Cl.² F16J *15/16*

U.S. Cl. 277—27 **10 Claims**



1. A gland seal arrangement for providing a fluid-tight seal between two relatively movable parts (12, 17), the said arrangement comprising an annular sealing member (11*a*) for disposal between said parts (12, 17) in sealing contact therewith, the said member (11*a*) being axially locatable in one said part (12, 17), and a thrust member (11*f*) arranged to act axially upon the said sealing member (11*a*), the said thrust member (11*f*) having a face (11*f*'') for exposure to the pressure of the fluid being sealed and being adapted, when subjected to such pressure, to urge the sealing member into such sealing contact.

3,940,152
PNEUMATIC SEAL

Jean Fournier, Chatou, France, assignor to Le Joint Francais, Paris, France

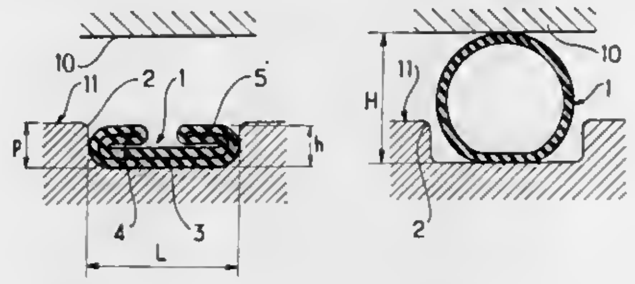
Filed Aug. 1, 1974, Ser. No. 493,947

Claims priority, application France, Sept. 6, 1973, 73.32157

Int. Cl.² F16J *15/46*

U.S. Cl. 277—34 **8 Claims**

1. In an inflatable and deflatable pneumatic seal consisting of a profiled casing made of an elastic material, the improvement wherein in the deflated condition, the casing comprises a flat base, a top collapsed on said base and at least one double thickness lateral sidewall which is at least folded in and down on the collapsed top.



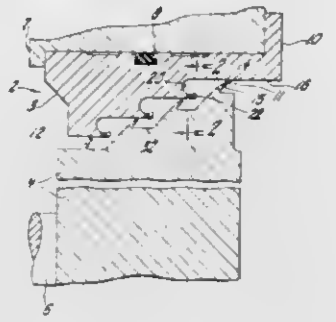
3,940,153
LABYRINTH SEAL

Harold L. Stocker, Brownsburg, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 9, 1974, Ser. No. 530,836

Int. Cl.² F16J *15/48;* **F02F** *11/00*

U.S. Cl. 277—57 **4 Claims**



1. A labyrinth seal comprising two relatively rotatable annular proximate members and having an upstream end and a downstream end, the said members being configured to define between them a succession of annular orifices and to define between them a doubly recurved flow path from each orifice to the next downstream orifice, the said flow path being bounded by a barrier having a hemi-toroidal surface downstream of the orifice to reverse the flow the first time after passing the orifice, the flow path extending over the barrier downstream of the second reversal; and the barrier defining outlets through the barrier substantially tangent to the said hemi-toroidal surface discharging into the flow path downstream of the second reversal to increase turbulence in the flow.

3,940,154
END FACE SEAL ASSEMBLIES

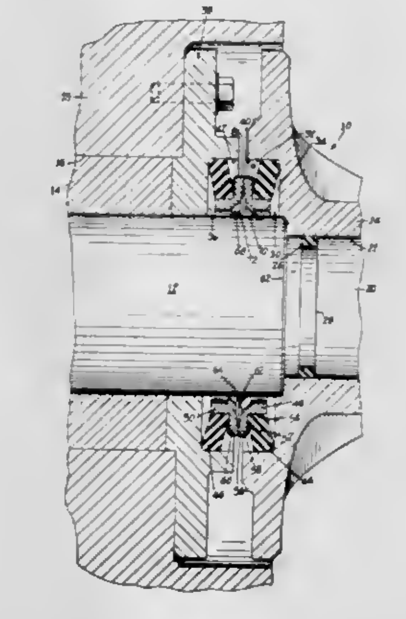
Burton K. Olsson, Park Ridge, Ill., assignor to Chicago Rawhide Manufacturing Company, Elgin, Ill.

Filed July 3, 1974, Ser. No. 485,363

Int. Cl.² F16J *15/34*

U.S. Cl. 277—92 **6 Claims**

1. An end face seal assembly for use in severe environments, said assembly comprising at least one generally annular, primary sealing ring having an axially facing, radially directed end face portion, at least a part of which is adapted to engage an oppositely directed mating part along a primary seal band area, an at least partially radially outwardly directed seat on said ring for receiving a portion of a secondary sealing member in driving engagement with said seat, an axially extending, radially inwardly directed annular inner ring surface, and a secondary sealing and driving member made entirely from an elastomeric material, said secondary member having at least a portion thereof adapted for snug secondary sealing engagement with said seat portion said beveled surface including a plurality of vanes disposed thereon said vanes being adapted to create turbulent flow of said lubricant whereby the distribution of said lubricant about the periphery of said seal ring will be facilitated, of said primary seal ring when an axial force is applied to said secondary sealing and driving member and when said member is at least partially confined against radially outward expansion, said secondary sealing and driving member being readily removable axially of said seat upon release of said axial forces and said radial confinement, said primary sealing ring further including at least one beveled surface defining a reservoir for receiving and retaining seal face lubricant, said surface lying between and joining an edge of said annular inner ring surface and an inner margin of said end face portion, said beveled surface being inclined at a substantial angle with respect to said end face portion, whereby, in the use of said seal, sufficient lubricant will be retained in said reservoir adjacent said end face portion to insure lubrication of said seal band upon initial movement of said machine parts.



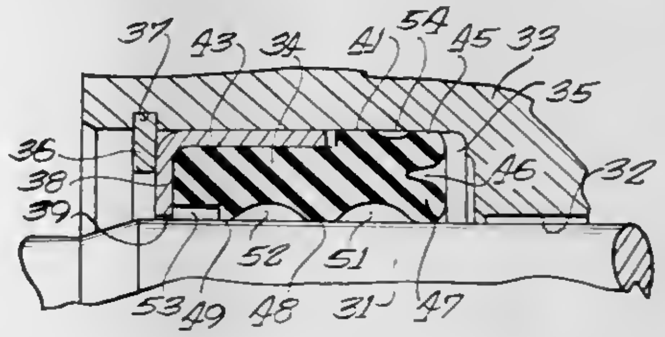
3,940,155
ELASTOMERIC SEAL

Rudolf F. Baumle, Mount Prospect, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sept. 20, 1974, Ser. No. 507,827

Int. Cl.² F16J *15/18, 15/32*

U.S. Cl. 277—183 **5 Claims**



1. In combination, a seal and a rotatable shaft of predetermined diameter located within a housing, said seal comprising a ring of imperforate elastomeric material having a generally cylindrical inner surface engaging the shaft and a generally cylindrical outer surface frictionally engaging the interior surface of the housing, means in said housing limiting axial movement of said seal, said seal ring having one end abutting said movement limiting means and an opposite free end provided with a pair of concentric annular inner and outer lips separated by an annular generally V-shaped groove defining

the lips, said groove and lips being exposed to pressure in said housing causing inward and outward movement of said lips in a generally radial direction to engage said shaft and housing, respectively, axially spaced annular rings on the cylindrical inner surface engaging the shaft and separated by a pair of concave recesses, said annular rings and annular lips all having rounded surfaces in contact with said shaft and housing, and one end of said seal having a cut-away counterbore on the cylindrical inner surface adjacent said movement limiting means to prevent extrusion of said elastomeric material between said movement limiting means and said shaft.

3,940,156

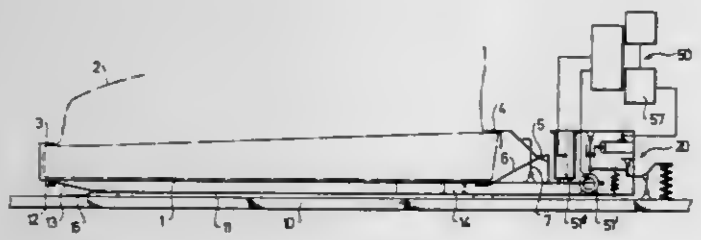
SAFETY SKI BINDING

Hannes Marker, Hauptstrasse 51-53, 81 Garmisch-Partenkirchen, Germany

Filed Sept. 24, 1974, Ser. No. 508,761

Int. Cl.² A63C *9/08*

U.S. Cl. 280—11.35 R **2 Claims**



1. A safety ski binding for the automatic release of a ski boot from a ski in case of danger to the skier, comprising:
- a ski having a surface;
- a base plate releasably mounted on said ski;
- a ski boot attaching means connected to said base plate for attaching a ski boot to said base plate;
- a locking means mountd on said ski for releasably locking said base plate to said ski, said locking means including a resilient base member having lateral edges mountable on said ski to undergo transverse and vertical movements with respect to said ski surface in response to forces exerted on the skier's leg, a locking member fixed to one end of said resilient base member, mounting means fixedly mounting the end of said resilient base member remote from said locking member to said ski, a deformable member fixed to said ski and attached to one of said resilient base member lateral edges for limiting said resilient base member transverse movement to a predetermined amount;
- connecting means fixed to said base plate releasably connected to said locking member;
- a force evaluating means associated with said connecting means; and
- an actuating means on said base plate cooperating with said force evaluating and connecting means for causing said connecting means to be released from said locking member when a dangerous amount of force is applied to the skier's leg; and
- means for limiting said resilient base member vertical movement to a predetermined amount, said predetermined amounts of resilient base member vertical and transverse movement corresponding to forces exerted on the skier's leg which are less than said dangerous amount of force required to cause said connecting means to be released from said locking member.

3,940,157

SKI STRUCTURE

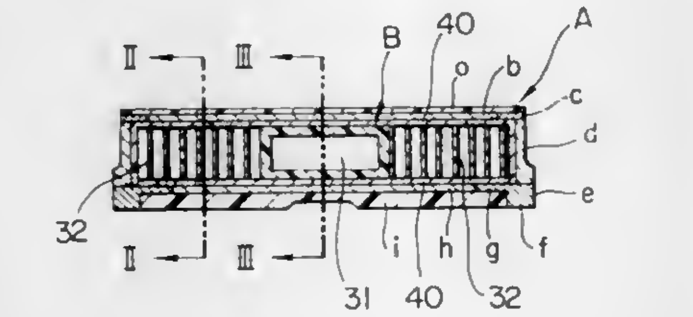
Kenichi Sakuma, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 31, 1974, Ser. No. 438,463

Claims priority, application Japan, Feb. 7, 1973, 48-16530[U]; Feb. 28, 1973, 48-25470[U]

Int. Cl.² A63C *5/00*

U.S. Cl. 280—11.13 L **5 Claims**



1. A ski structure comprising separate upper and bottom members defining a space therebetween which extends substantially the length of said ski; a single elastic, box-like inner core frame located within said space and extending longitudinally of the ski, said frame being dimensioned in width to occupy only a portion of said space; filling means on opposite sides of said core frame occupying substantially the remaining portion of said space laterally of the frame; and binding means within said space surrounding the frame and the filling means to hold same together as a unit.

3,940,158

SKI BRAKE

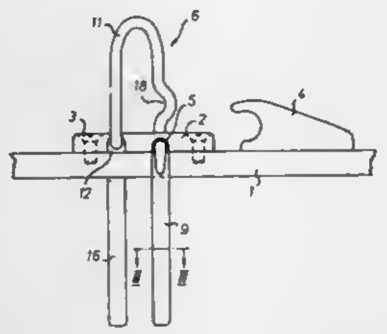
Hans Wehrli, Zurcherstrasse 81, Rapperswil, Switzerland

Continuation-in-part of Ser. No. 460,532, April 12, 1974, Pat. No. 3,884,487. This application Apr. 24, 1975, Ser. No. 571,109

Claims priority, application Switzerland, Feb. 18, 1975, 1969/75; Apr. 13, 1973, 5387/73

Int. Cl.² A63C *7/10*

U.S. Cl. 280—11.13 B **7 Claims**



1. In a ski brake securable to the upper surface of a ski and having, laterally of the ski, first and second brake spurs which are pivotable about first and second pivot axes, respectively, extending on the upper side of the ski transversely with respect to the longitudinal axis thereof and a holding lever depressible by the ski boot to hold said brake spurs in a rest position, said brake spurs being pivoted into their braking positions by spring action upon removal of a ski boot from the ski binding, the improvement in the brake comprising a wire bent so that one end portion forms a first one of said brake spurs, the other end portion forms the second one of said brake spurs, a first central shaft portion lies in the first one of said pivot axes, a second central portion is shaped into a holding loop forming said holding lever, and a third central shaft portion lies in the second one of said pivot axes, said first and second axes being paaralle! and longitudinally spaced apart, said holding loop acting as a spring which moves said spurs to their braking positions and having two positions, one position being against the ski when depressed by the ski boot and the other position being away from the ski when the ski boot is removed from the binding.

3,940,159

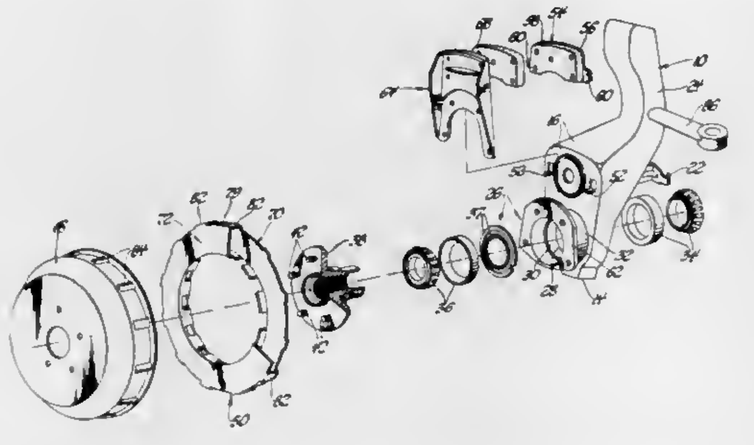
STEERING KNUCKLE ASSEMBLY

William L. Pringle, Grosse Pointe Shores, Mich., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 31, 1974, Ser. No. 519,522

Int. Cl.² B62D *7/18*

U.S. Cl. 280—96.1 **32 Claims**



1. A steering knuckle assembly comprising: an integral metal housing formed from metal plate, said housing having a top and a bottom with a front extending therebetween, said housing having an actuator opening extending through said front for receiving an actuator assembly, said housing including integral flanges extending rearwardly from and completely about the periphery of said front to define side flanges and top and bottom flanges, said housing being symmetrical on either side of a center line passing from top to bottom thereof, brake shoe supporting means disposed on said front of said housing on either side of said actuator opening for supporting a brake shoe extending over said actuator opening, arm support means extending through said side flanges for receiving a steering arm from either side thereof and wheel supporting means spaced from said actuator opening.

3,940,160

INDEPENDENT WHEEL SUSPENSION FOR MOTOR VEHICLES

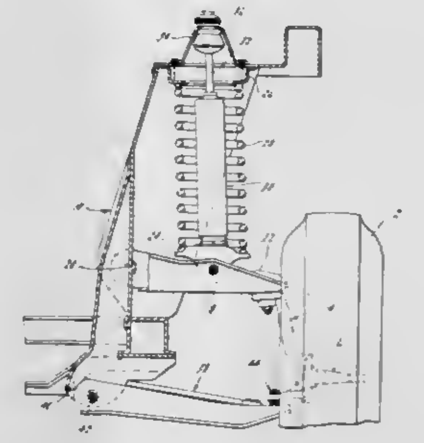
James J. Damon, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1974, Ser. No. 535,541

Int. Cl.² B60G *11/58*

U.S. Cl. 280—96.2 R **5 Claims**

1. An independent wheel suspension for a motor vehicle comprising vehicle body structure, a steerable wheel support member and suspension means interconnecting said body structure and said wheel support member;
- said suspension means including a suspension arm member having its inner end pivotally connected to said body structure;
- resilient pivot means connecting the outer end of said arm member to said wheel support member;
- said resilient pivot means comprising an elastomeric bushing and a ball and socket joint;
- said elastomeric bushing including an inner rigid sleeve, an intermediate annular elastomeric element and an outer rigid sleeve;
- said rigid sleeves and said elastomeric element having coaxial axes arranged generally vertical;
- said ball and socket joint having a ball stud with a shank portion positioned in and secured to said inner rigid sleeve;
- said ball and socket joint also having a socket positioned about a ball end of said ball stud;
- said socket of said ball and socket joint being rigidly secured to one of said members;



- said outer sleeve of said elastomeric bushing being rigidly secured to the other of said members;
- said elastomeric element being constructed to permit resilient horizontal deflection of said wheel support member relative to said arm member.

3,940,161

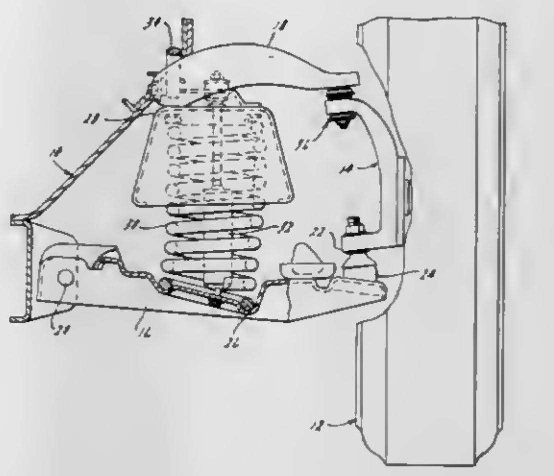
INDEPENDENT WHEEL SUSPENSION FOR A MOTOR VEHICLE

William D. Allison, Grosse Pointe Farms, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1974, Ser. No. 535,540

Int. Cl.² B60G *3/20*

U.S. Cl. 280—96.2 R **1 Claim**



1. A wheel suspension system for a motor vehicle comprising:
- vehicle body structure, a steerable wheel support member and suspension means interconnecting said body structure and said wheel support member;
- said suspension means including upper and lower suspension arms pivotally connected to said body structure;
- pivot means connecting said lower arm to said wheel support member;
- a suspension spring interposed between said lower arm and said body structure;
- resilient pivot means connecting the outer end of said upper arm to said wheel support member;
- said resilient pivot means comprising an elastomeric bushing and a ball and socket joint;

said elastomeric bushing including an inner rigid sleeve, an intermediate annular elastomeric element and an outer rigid sleeve;

said rigid sleeves and said elastomeric element having coaxial axes arranged generally vertical;

said ball and socket joint having a ball stud with a shank portion positioned in and secured to said inner rigid sleeve;

said ball and socket joint also having a socket positioned about a ball end of said ball stud;

said socket of said ball and socket joint being rigidly secured to said upper suspension arm;

said outer sleeve of said elastomeric bushing being rigidly secured to said wheel support member;

said elastomeric element being constructed to permit resilient horizontal deflection of said wheel support member relative to said upper suspension arm and thereby attenuate the transmission of vibrations from said wheel support member to said upper suspension arm;

a nut threadedly engaging the end of said ball stud and constructed to compressively load said elastomeric element thereby increasing the spring rate of said elastomeric element resisting said resilient horizontal deflection of said wheel support member relative to said upper suspension arm;

said inner sleeve surrounding said shank constructed to limit the compressive loading of said elastomeric element and thereby limit the spring rate of said elastomeric element.

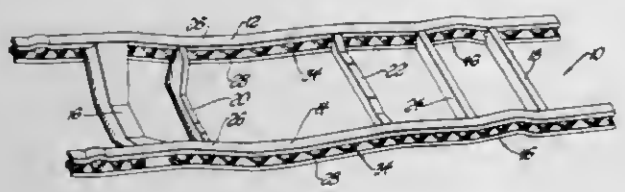
3,940,162
STRUCTURAL MEMBER

Gerald R. Winslow, Royal Oak, and Jack J. Ritchie, Washington Township, both of Mich., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 13, 1974, Ser. No. 532,403

Int. Cl.^{2} B62D *21/00*

U.S. Cl. 280—106 R **13 Claims**



1. A vehicle frame assembly comprising: first and second parallel and spaced-apart structural members and a plurality of cross members connecting said structural members; each of said structural members including an upper plate member, a lower plate member, said upper and lower plate members being spaced apart a distance equal to variable X, and a reinforcing web comprising a plurality of web segments extending back and forth between said plate members in zigzag fashion, said web segments meeting said plate members at a web angle equal to variable θ; said structural member including a region having a higher load requirement wherein the distance between the points of intersection of adjacent web segments with said plate members is shorter for both of said upper and lower plate members than in regions having lesser load requirements, the distance between said points of intersection being reduced by varying at least one of said variables.

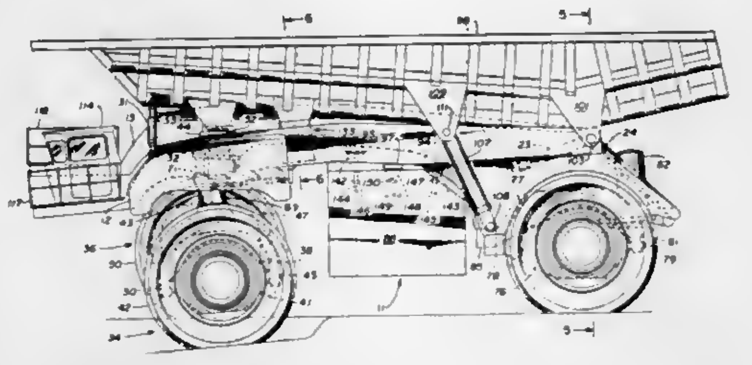
3,940,163
VEHICLE FOR TRAVERSING ROUGH TERRAIN

Leo W. Davis; Marion D. Lackey; John Reuben Ross, and Bryant Trenary, all of Dallas, Tex., assignors to Marion Power Shovel Company, Inc., Marion, Ohio

Continuation of Ser. No. 395,535, Sept. 10, 1973, abandoned, which is a continuation of Ser. No. 67,901, Aug. 28, 1970, abandoned. This application Aug. 12, 1974, Ser. No. 496,720

Int. Cl.^{2} B62D *21/00*

U.S. Cl. 280—106 R **18 Claims**



1. A vehicle capable of traversing rough terrain, which vehicle includes a frame comprising:

a pair of elongated side members;

a first crossmember joining said side members in a spaced apart relationship and having a pivotal portion to permit said side members to rotate relative to each other in parallel planes; and

a second crossmember also joining said side members in a spaced apart relationship, each end of said second crossmember being pivotally connected to one of said side members to permit limited rotation of said side member while providing lateral restraint on the side member, and said second crossmember being unattached to structure which would limit its vertical and horizontal displacement during rotation of said side members as said vehicle traverses rough terrain.

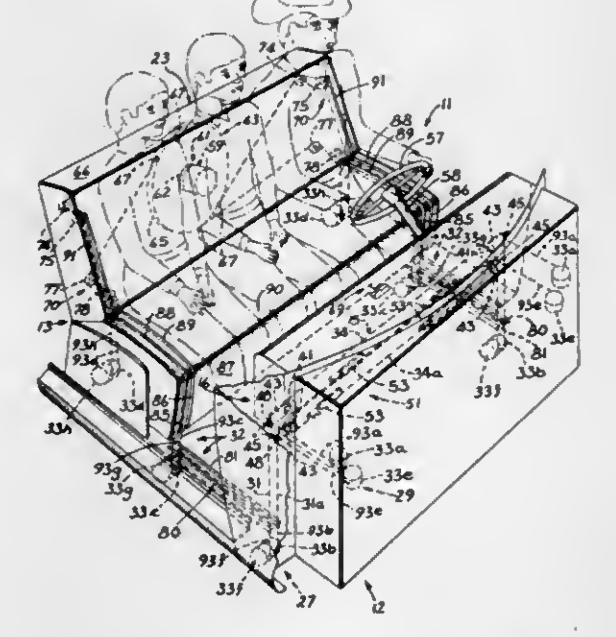
3,940,164
PASSIVE RESTRAINT SAFETY BELT SYSTEM

Tse Quong Non, 2315 S. Wentworth Ave., Chicago, Ill. 60616

Filed Oct. 16, 1974, Ser. No. 515,304

Int. Cl.^{2} B60R *21/02*

U.S. Cl. 280—150 SB **11 Claims**



1. A safety belt system for a vehicle comprising at least one belt movable from a stowage position to a restraint position at a vehicle occupant's chest to restrain the occupant's upper body, means to shift said belt from the stowage position to the restraining position, means on said belt allowing the same to turn and to move upwardly along the occupant's body toward the occupant's chest, recess means associated with the backrest portion of the vehicle seat for receiving a portion of the belt as the belt comes to the occupant's chest, power operated means for returning said belt from said restraining position after restraining the occupant to the stowage position, an electrical control means operable with a deceleration or acceleration of said vehicle of at least one predetermined magnitude to operate said shifting means to shift said belt automatically from said stowage position to said restraint position, and means to guide said belt to a position about the occupant's chest.

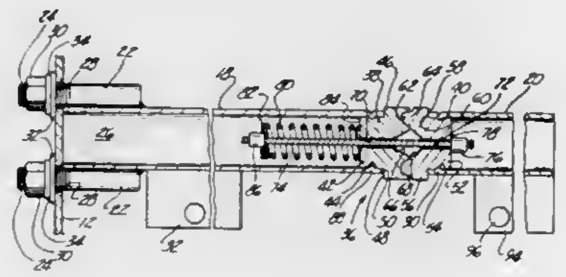
3,940,165
HANGER FOR VEHICLE MUD FLAPS

Nash P. Sogoian, 1417 21st St., Detroit, Mich. 48216

Filed Apr. 18, 1974, Ser. No. 461,870

Int. Cl.^{2} B62B *9/16*

U.S. Cl. 280—154.5 R **2 Claims**



1. A hanger for a vehicular mud flap comprising an elongated tubular first support member, means carried at one end of said first support member for mounting said first support member to a vehicle, an elongated tubular second support member carried at the free end of said support member and in axial alignment therewith, means carried longitudinally on said first and second support members for securing a mud flap thereto, a helical spring in a state of compression disposed within one of said support members and having one end attached to the free end of said helical spring and having the other end of said cable attached to the other of said support members, a first mating member disposed at the free end of said first support member, and a second mating member disposed in the attached end of said second support member adjacent said first mating member, wherein one of said mating members includes an annular ridge adapted to register with a cooperating annular recess formed on the other of said mating members, wherein the means carried at one end of said first support member for mounting said first support member to said vehicle frame comprises a pair of studs welded to the outer periphery of said first support member substantially parallel with the longitudinal axis of said first support member and substantially diametrically opposed to each other so that the threaded portions of said studs extend beyond the end of said first support member, said frame being provided with a pair of apertures adapted to receive said stud threaded portions therethrough and locking means adapted to engage said stud threaded portions after extension of said stud threaded portion through said apertures.

3,940,166
AUXILIARY RETENTION BELT AND SUPPORT CUSHION FOR SEAT OF OPEN VEHICLES

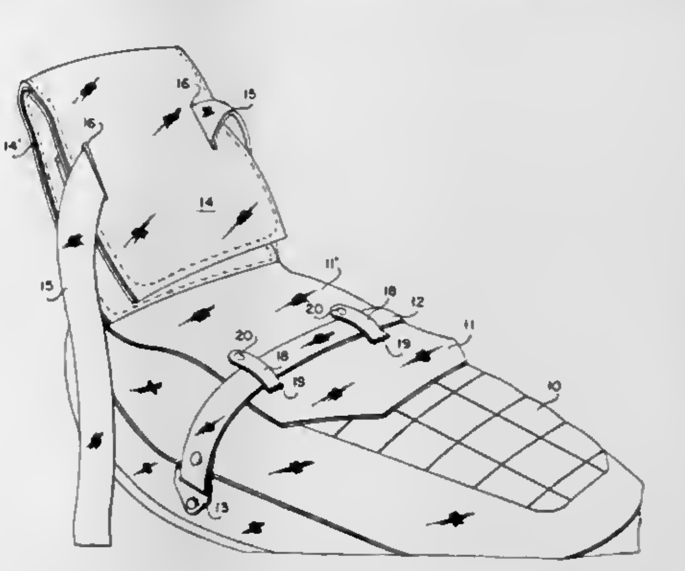
Clarence O. Smithea, Suite 302, 1911 Jefferson Davis Highway, Arlington, Va. 22202

Filed Sept. 10, 1974, Ser. No. 504,744

Int. Cl.^{2} B60R *21/10*

U.S. Cl. 280—290 **5 Claims**

1. An occupant retention device for an open vehicle having a plural occupant, straddle seat, said device comprising a cushion retained in a substantially upright position adjacent the back of a passenger on said seat; an extension sheet integrally connected to said cushion and lying horizontally on said seat; a transverse strap extending across said seat and over said extension sheet for releasably securing said device to said vehicle; and a belt secured to said cushion for extending around both said passenger and the operator of said vehicle.



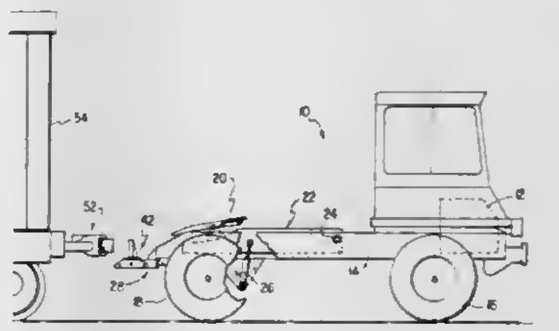
3,940,167
CONVERTIBLE TRAILER/RAIL CAR TRACTION UNIT

Gilbert B. Pilz, Toledo, Ohio, assignor to Young Ottawa, Inc., Bowling Green, Ohio

Filed Jan. 30, 1975, Ser. No. 545,390

Int. Cl.^{2} B60D *1/00*

U.S. Cl. 280—456 R **5 Claims**



1. A convertible trailer/rail car traction unit, comprising; a self propelled vehicle supporting a fifth wheel and rail car coupler in tandem for conjoint movement with said vehicle along a path of coupling movement; and means mounting one of said fifth wheel and rail car coupler for movement relative to said vehicle into and out of said path of coupling movement.

3,940,168
TUBE AND FITTING STRUCTURE

Albert J. Balon, 9717 Greenhaven Parkway, Brecksville, Ohio 44131

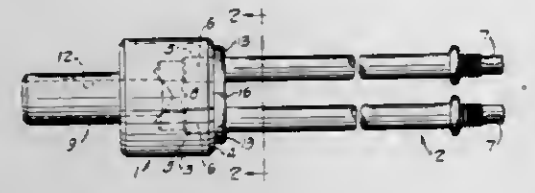
Continuation-in-part of Ser. No. 378,318, July 11, 1973. This application Nov. 14, 1973, Ser. No. 415,551

Int. Cl.^{2} F16L *39/00*

U.S. Cl. 285—132 **8 Claims**

1. A tube and fitting assembly comprising fitting means having a plurality of bore means therein each having an internal wall and an opening with a periphery, said fitting means also having an external surface surrounding each said bore means opening, and a plurality of elongated tube means each having an end and an external wall adjacent thereto, each said tube end and a portion of said associated tube means adjacent thereto being disposed in a said bore means, means co-acting between said fitting means and tube means within each said

bore means limiting the inward, axial displacement of a part of said tube means nearer said end than the portion of said tube means most remote from said end and within said bore means, each said tube means having a sealing engagement with said wall of said bore means within which it is disposed, and a sealing bead means integral with each said tube means wall and in sealing engagement with said external surface of said fitting means adjacent said bore means opening within which said tube means is disposed, each said sealing bead means being in tangential interlocking relationship with a contiguous sealing bead means.



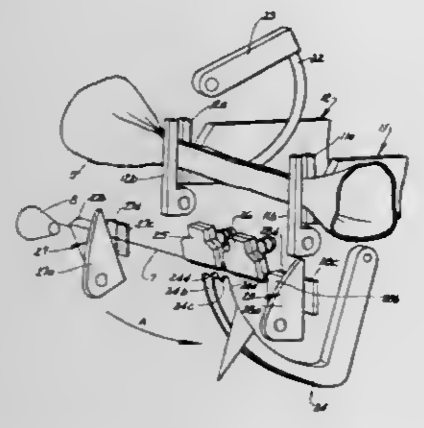
3,940,169
LOOP KNOT TYING METHOD AND APPARATUS

Ronald W. Kock, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 22, 1974, Ser. No. 517,110

Int. Cl.² B65H *69/04*

U.S. Cl. 289—1.5 **44 Claims**



1. Apparatus for forming a simple loop knot of segment of flexible strand-like material about a portion at least of a product, said apparatus comprising a head, means on said head for clamping and holding said product in a position to receive said loop knot, means on said head for forming said strand segment into a U-shaped loop behind said product, said U-shaped loop having a pair of legs joined by a base portion, means on said head for frictionally engaging the free ends of said loop legs, means on said head for engaging the base portion of said strand loop and carrying said base portion of said loop forwardly of said product and about said portion at least thereof and means on said head for removing said free ends of said loop legs from said frictional engagement means and drawing said free ends through said base portion of said strand loop to form said simple loop knot.

3,940,170
HAND PINNER AND KNEE KICKER

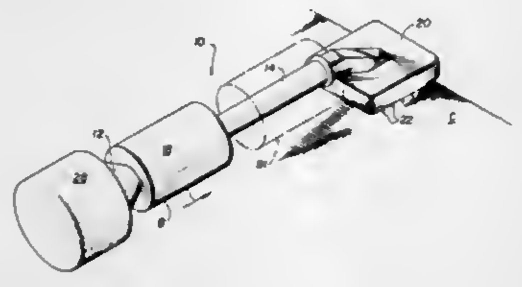
William H. Williams, Rte. 2, Box 299-W, Monroe, La. 71201

Filed June 28, 1974, Ser. No. 484,113

Int. Cl.² A47G *27/04*

U.S. Cl. 294—8.6 **1 Claim**

1. The combination with a knee kicker having a shank, a carpet-engaging head with depending prongs, and a padded head engageable by the knee to stretch the carpet; of a peripheral shoulder formed on said shank adjacent to said carpet engaging head and defining a stop; and a weight slidably mounted on said shank and forcefully moveable by hand from the padded head to and against said stop to impart a sharp tug to said carpet by said carpet engaging-head.



3,940,171
LIFTING DEVICE, PARTICULARLY FOR LIFTING AND TRANSPORTING BUILDING BOARDS, SUCH AS PLASTER AND WOOD PARTICLE BOARDS

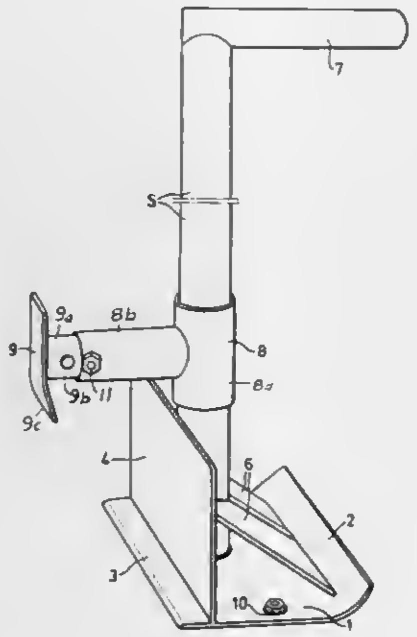
Bertil Sigvard Carlsson, Elvegarden, Bankeryd, Sweden

Filed Apr. 26, 1973, Ser. No. 354,758

Claims priority, application Germany, Apr. 27, 1972, 161387U]

Int. Cl.² B66F *15/00;* B65G *7/12*

U.S. Cl. 294—15 **7 Claims**



1. A lifting device for lifting and transporting a building board such as a plaster or wood particle board or the like, comprising:
- a bearing support comprising a bottom plate having a forward portion for supporting said board in use and a rearwardly extending curved portion curved upwardly for pivoting said bottom plate thereabout to lift said board while supported in use on said forward portion;
- a column connected to said bearing support and extending upwardly therefrom for effecting pivoting of said bottom plate about said curved portion by rearwardly displacing of said column from an upstanding position in a direction toward said curved portion;
- a pressure plate freely mounted for rotation about said column and freely slidable axially along said column and positionable in use at a rearward position to clear said board while supported in use on said forward portion and rotatable to a forward position for bearing against a major surface of said board in use on said forward portion while said board is positioned against a generally vertical work surface on which said board is to be disposed; and
- a tubular tee comprising a sleeve portion, and a stem fixed to said pressure plate and projecting from said sleeve portion, said sleeve portion having an axial bore extending therethrough mounted with said column extending through said axial bore for free rotation about said column and freely slidable axially along said column, said pressure plate and said tubular tee being gravity biased to slide downwardly along said column to maintain said pressure plate bearing against said board in use while said board is supported on said forward portion and while said board is positioned against said generally vertical work surface, and to bear on said board and progressively slide downwardly along said column as said column is progressively rearwardly displaced to effect pivoting of said bottom plate and lifting of said board while maintaining said pressure plate bearing against said board and thereby to maintain said board positioned against said generally vertical work surface during the lifting of said board, whereby said board is maintained in a lifted position while supported on said forward portion and positioned against said work surface and bearing downwardly on said forward portion upon release of said column.

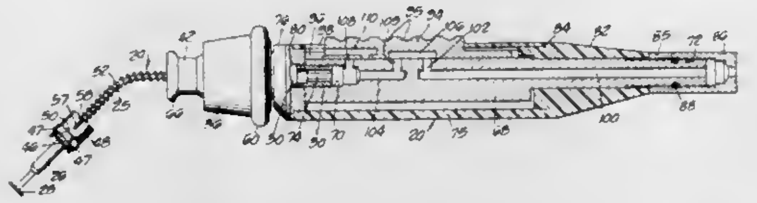
3,940,172
VACUUM-ACTUATED PICK-UP INSTRUMENT

Clifford L. Hutson, Glendale, and Leonidas C. Miller, Monterey Park, both of Calif., assignors to Clifford L. Hutson, Glendale, Calif.

Filed Apr. 22, 1974, Ser. No. 462,591

Int. Cl.² B25J *7/00*

U.S. Cl. 294—64 R **13 Claims**



2. In a vacuum-actuated pick-up instrument for handling small objects, the combination of:
- an elongated body forming an inner air passage for communication with a controlled vacuum source;
- an air tube to pick up objects by vacuum action;
- cooperative means on an inner end of the air tube and on a forward end of the body, respectively, releasably connecting the inner end of the air tube with said air passage in the body;
- a hub member surrounding the air tube forwardly of said cooperative means; and
- annular means on the forward end of the body surrounding said cooperative means and extending forward therefrom, said annular means forming a socket forwardly of said cooperative means to embrace the hub member and to cooperate with said cooperative means to stabilize the rigid air tube, said annular means being slidable forwardly against the hub member to cause disconnection of said cooperative means.

3,940,173
SAFETY HOOK

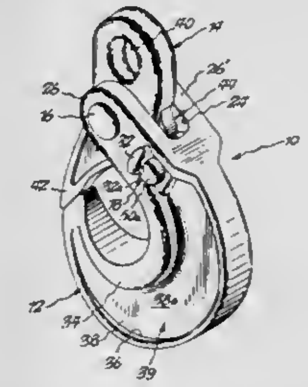
Otmar M. Ulbing, Webster, N.Y., assignor to Columbus McKinnon Corporation, Tonawanda, N.Y.

Filed Feb. 10, 1975, Ser. No. 548,627

Int. Cl.² B66C *1/36*

U.S. Cl. 294—82 R **4 Claims**

1. In a safety hook including a hook body portion having a mounting portion, a load bearing portion and a hook gripping portion connecting said mounting and load bearing portions, said mounting portion being formed with a slot to define a pair of spaced ears, said ears having a pair of axially aligned openings; a pivot pin extending transversely between said ears and being end supported within said aligned openings; a keeper having a pointed end portion, said keeper being mounted by said pivot pin intermediate said ears for movements about a pivot axis between hook closed and open positions, wherein said pointed end portion is disposed in and removed from engagement with said load bearing portion, respectively; and a latch device carried by said hook body portion for releasably retaining said keeper in said hook closed position, the improvement wherein:
- said mounting portion is formed with an opening arranged to extend transversely thereof and essentially parallel to said pivot axis, said opening communicating with said slot at a point intermediate the ends thereof, and said mounting portion having an abutment partially blocking one end of said ends of said opening;
- said latch device includes a member mounted within said opening for reciprocating movements lengthwise thereof between latched and unlatched positions, and spring means arranged within said opening for biasing said member into said latched position; and
- said keeper is formed with a rib arranged intermediate said ears, said rib having opposite side surfaces and an edge surface arranged to face said opening, said edge surface having a notch formed therein, said latched position of said member being defined by engagement of one end of said member with said abutment, said one end of said member being accessible to an operator of said safety hook through said one end of said opening to permit operator pressure to be applied to said one end of said member for moving said member against the bias of said spring means from said latched position into said unlatched position, said member when in said latched position being engageably received within said notch to prevent movement of said keeper from said hook closed position and when in said unlatched position being removed from within said notch to permit movements of said keeper between said hook closed and open positions.



3,940,174
POULTRY TRAILER

Frank E. Mayes, Rte. No. 1, Farmington, Ark. 72730

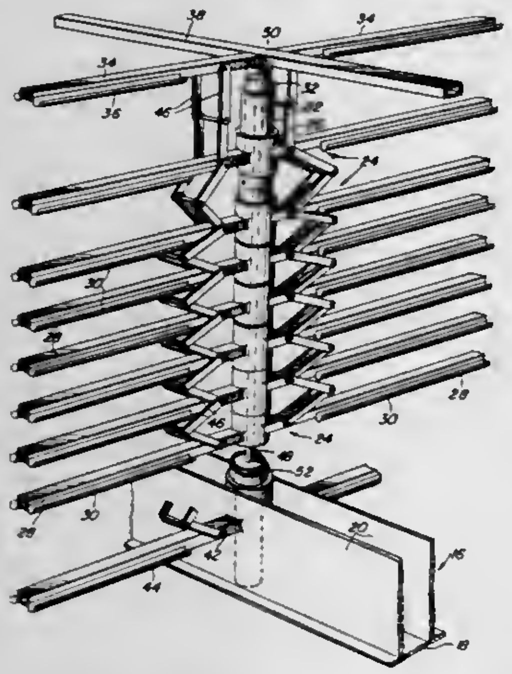
Filed Jan. 31, 1974, Ser. No. 438,444

Int. Cl.² B60P *3/00*

U.S. Cl. 296—3 **7 Claims**

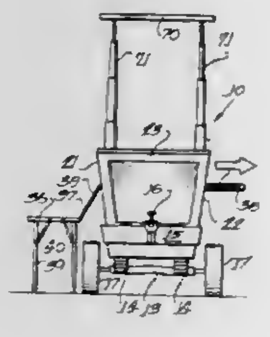
1. A poultry storage rack comprising a base, a plurality of elongated upright vertically extending supports supported at their lower end portions from said base at points spaced therealong, said supports each including means at least partially enclosing a passage defined thereby extending longitudinally thereof and having a series of horizontally extending support units for the support of a poultry basket therefrom mounted on the exterior thereof and spaced one above the other for vertical adjustment therealong, each support unit consisting of at least one support arm cantilevered outward from its support, lost motion connecting means connecting each support unit to the support unit therebelow for upward displacement of the lower unit with the unit thereabove in response to elevation of the upper unit a predetermined distance above the lower unit and allowing downward displacement of the upper unit relative to the unit therebelow below a level spaced said predetermined distance above the lower unit; elevating

means extending along each of said passages and connected between the corresponding upright support and the associated upper support unit for raising and lowering the latter relative to said support said elevating means being operable in unison.



3,940,175
MULTI-PURPOSE COMBINATION TRAILER AND PICNIC TABLE

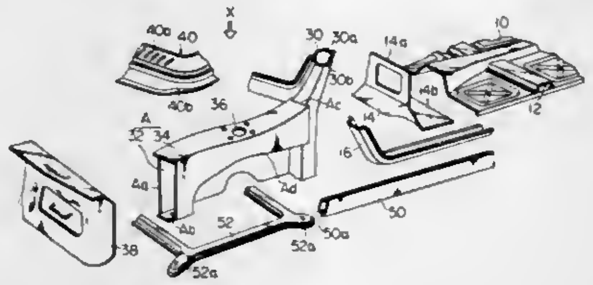
Jimmy R. Robison, Rte. 8, Box 541, Tulsa, Okla. 74106
Filed Sept. 9, 1974, Ser. No. 504,452
Int. Cl.² B60P *3/02*
U.S. Cl. 296—22 7 Claims



1. A multi-purpose combination trailer and picnic table intended for towing behind automobiles comprising:
- a horizontally disposed frame having longitudinally extending side frame members and transversely extending cross frame members;
- an axle extending transversely of the frame and having a wheel rotatably supported on each end thereof;
- a tongue associated with the front end portion of the frame and projecting outwardly therefrom adapted to be connected to the towing automobile;
- a horizontal bottom surface supported by the frame;
- a pair of transversely spaced apart longitudinally extending vertically disposed side wall members;
- a pair of longitudinally spaced apart transversely extending vertically disposed front and back end wall members interconnecting the side wall members at opposite ends thereof;
- a compartment defined by the wall members and bottom floor member and opening out of the top of the trailer;
- a flat rectangularly shaped cover member closing the top of the compartment and movable relative thereto between a position providing access to the compartment and a position completely closing the compartment;
- a pair of flat elongated rectangularly shaped bench members, each member of a length less than the length of an associated sidewall slot and associated with the slot to be slid therethrough between a protected enclosed storage position within the trailer compartment and an operable position disposed exteriorly of the trailer in a position in the proximity of the cover member whereby the upper surface of the cover member may be utilized as a table top by a person disposed on said bench members;
- means for guiding the movement of the benches between the exterior use and the interior storage position; and
- a canopy telescopically supported relative to the cover member to be elevated thereabove to provide a shade and weather protective element therefor.

3,940,176
VEHICLE BODY CONSTRUCTION

Hiroshi Ito, and Seikichi Yoshitsugu, both of Tokyo, Japan, assignors to Nissan Motor Co., Ltd., Yokohama City, Japan
Filed June 10, 1974, Ser. No. 478,042
Claims priority, application Japan, June 12, 1973, 48-69997; June 21, 1973, 48-73674; June 26, 1973, 48-75606
Int. Cl.² B62D *27/00*
U.S. Cl. 296—28 F 3 Claims

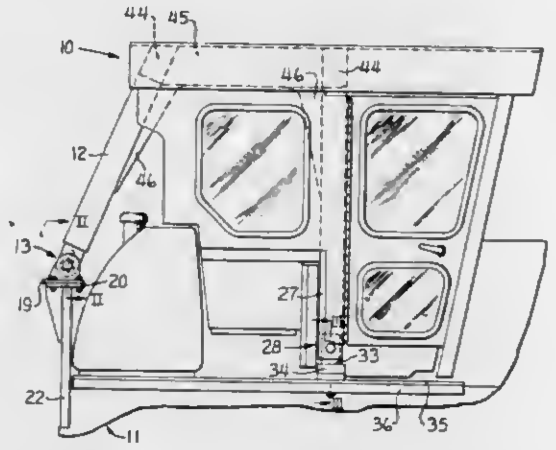


1. In a body structure for a motor vehicle driven by an engine, the combination comprising a pair of transversely spaced, vertically extending front pillers; a pair of transversely spaced, longitudinally extending front floor side members secured to said front pillers and extending rearwardly therefrom; a front floor member mounted between said front floor side members and forming a part of a passenger cabin; a dashboard panel separating the passenger cabin from an engine room; a cross member transversely extending between and connected to said front floor side members and to said front floor member; a pair of transversely spaced, longitudinally extending dash side members, said dash side members being secured to said dashboard panel at front portions of said dash side members and also secured to said front floor member at rear portions of said dash side members, said dash side members extending longitudinally to positions to cross said cross member such that impact shocks transmitted to the dash side members are transmitted through the floor panel to the cross member; a pair of transversely spaced, longitudinally extending reinforcing members connected at their rearward portions to said front pillers; a sub-frame provided in front of said dashboard panel to support the engine thereon, said sub-frame being connected at its front portion to said reinforcing member and at its rearward portion to said dash side members so that impact shocks are delivered simultaneously to the dash side members and the front pillars.

3,940,177
VIBRATION-ISOLATED CAB FOR TRACTORS

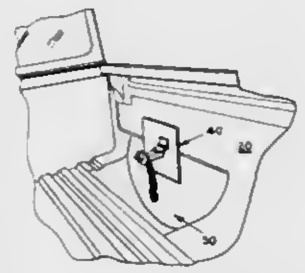
Bruce W. Miers, Peoria Heights; Arthur E. Olt, Jr., Pekin; Richard Van Rossem, Canton, and John D. Wait, Jr., Dunlap, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 8, 1974, Ser. No. 495,590
Int. Cl.² B62D *23/00*
U.S. Cl. 296—35 R 3 Claims

1. An earthworking vehicle disposed for movement along a longitudinal axis thereof comprising a frame, an operator's protective cab disposed on said frame, and mounting means mounting said cab on said frame, said mounting means comprising a pair of laterally spaced first posts inter-connected between a back side of said cab and said frame, first vibration damping means comprising a resilient bushing assembly mounted in a transverse bore formed through a lower end of each of said posts, said bushing assembly including a cylindrical bearing bushing rotatably mounted on the shank of a bolt means releasably attached between a pair of upstanding support legs secured to said frame, an annular elastomeric bushing mounted on said bearing and a cylindrical sleeve mounted on said elastomeric bushing and in said bore, the bearing bushing having an axial length substantially equal to the lateral distance between inner surface portions of said support legs and being clamped axially therebetween by said bolt means, a pair of laterally spaced second posts disposed forwardly on said vehicle relative to said first posts, the lower ends of said second posts being tubular and telescopically mounted on upstanding support members releasably secured to said frame, second vibration damping means comprising the said first resilient bushing assembly mounted in a transverse bore through said upstanding support member, said bolt means securing the tubular posts to the support members whereby said posts are isolated from vibrations in said frame during operation of said vehicle and by completely releasing said upstanding support member and partially releasing said first bolt means, said frame and cab may be pivoted backwards.



3,940,178
SPARE TIRE MOUNTING

Edward L. Leveque, Rte. 1, M-55, Wellston, Mich. 49689
Filed Jan. 18, 1974, Ser. No. 434,371
Int. Cl.² B62D *43/08*
U.S. Cl. 296—37.2 11 Claims



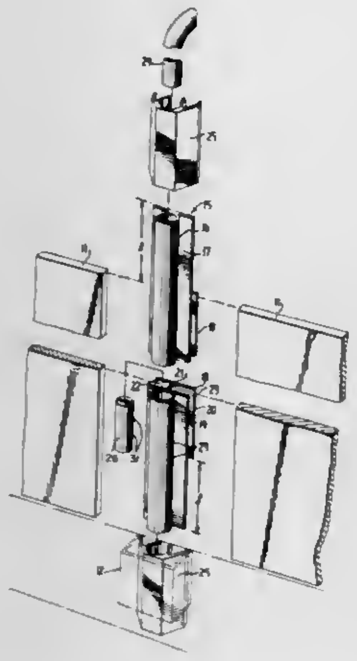
1. Apparatus for mounting a spare wheel and tire in a vehicle such as a pick-up truck comprising a cab, a rear window in said cab, a cargo box having a floor, and side walls which extend above said floor rearwardly of said cab to a level no higher than the bottom of said rear window, the height of said side walls above said floor generally being less than the diameter of one of the wheels and tires used to movably support said vehicle, a wheel housing along and immediately adjacent each side of said side walls for covering a wheel and tire when mounted for support of the vehicle, said housings each having a height no greater than said side walls and a predetermined width extending out from the side wall along which it is located, the distance between said wheel housings permitting insertion of cargo along said cargo box floor between said housings and said height of said housings permitting cargo to extend over said housings along the top edges of said side walls; means for mounting a spare wheel and tire generally parallel to and adjacent one of said side walls behind said cab and accessible from the interior of the cargo box such that no portion of the spare wheel and tire extends above the top of said one side wall; the spare wheel and tire being of the type including a central support having a tire-receiving rim extending about the periphery thereof and laterally of either side thereof, the central support including a vehicle axle-receiving aperture located centrally therein and a plurality of apertures for securing the wheel and tire to the axle spaced about the axle-receiving aperture; said mounting means including a well recessed a predetermined distance below said floor adjacent said one side wall for receiving the spare wheel and tire, and securing means for securing the spare wheel and tire within said well including means for engaging the side surface of the central support adjacent said one side wall when the spare wheel and tire is received in said well; said engaging means including a rigid member, a plate secured on one end of said rigid member, at least one stud extending outwardly from said plate, and hinge means for securing the end of said rigid member opposite said one end to said one side wall adjacent said well; said plate adapted to abut the said side surface of the central support adjacent said axle-receiving aperture while said stud projects through one of the securing apertures for securing the central support to said plate; said hinge means allowing pivotal movement of said engaging means between an operative position for engaging and securing the spare wheel and tire and an inoperative position for insertion of the spare wheel and tire in said well, said width of said wheel well being sufficiently wider than the width of the spare wheel and tire received therein to allow said wheel and tire to be tilted and slid past said securing means when they are pivoted, said well width being no greater than said predetermined width of said wheel housing along said one wall whereby when no cargo is loaded in said cargo box, a driver of said vehicle has unimpeded visibility over said side wall in the area of said mounting means when the spare wheel and tire are secured therein, said mounting means permitting the loading of any cargo in said cargo box such as a camper or the like which would otherwise fit between and over said wheel housings.

3,940,179
FLATBED SIDE PANEL STAKE

Thomas McBride, Owensboro, Ky., assignor to ECK Miller Transportation Corporation, Owensboro, Ky.
Filed June 5, 1974, Ser. No. 476,390
Int. Cl.² B60P *7/06*
U.S. Cl. 296—43 3 Claims

1. A stake configuration for use with a trailer flatbed to support side panels comprising:
- a tubular member,
- a plate member tangentially integral and coextensive along one of its faces with the tubular member along the longitudinal dimension,
- a T-shaped member, the leg thereof being integral with the plate member along the other face of the latter to form grooves to receive the side panels, the longitudinal dimension of the T-shaped member being less than the longitudinal dimension of the tubular and plate members, opposite ends of the T-shaped member in the longitudinal dimension being spaced at equal distances from opposite ends of the coextensive tubular and plate members in the longitudinal dimension located nearest thereto, such that either end of the stake configuration may be received by the flatbed,
- means mounted within the tubular member and positioned closer to one end of the tubular member relative to the other end to vary the height at which the transverse por-

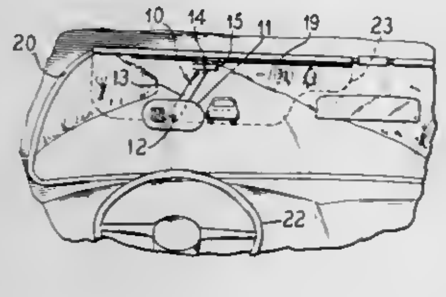
tion of tarpaulin bowed rods are received within the tubular member and stopped and supported from the flatbed, depending on which end of the stake configuration is received by the flatbed.



3,940,180

GLARE ELIMINATING DEVICE

Louis T. Altschul, 1325 E. Lake Ave., Glenview, Ill. 60025
Filed Aug. 19, 1974, Ser. No. 498,640
Int. Cl.^{2} B60J *3/02*
U.S. Cl. 296—97 D **5 Claims**



1. A glare eliminating device for use on vehicles, comprising:

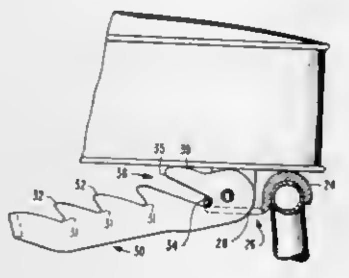
a flat support arm having an upper and lower end,
a flat shielding portion of an opaque material pivotally attached centrally to said lower end of said support arm,
an L-shaped mounting bracket comprised of a bottom surface and an upright rib, pivot means attaching said rib to said upper end of said support arm providing for pivotal movement in the plane of said rib,
a surface of pressure sensitive releasably-engaging means affixed to said bottom surface of said L-shaped mounting bracket,
and a cooperating surface of pressure sensitive releasably-engaging means affixed to an area forwardly and above the steering wheel of an automobile,

whereby said glare eliminating device can be horizontally positioned by selectively bringing the cooperating surface of pressure sensitive releasably-engaging means of said L-shaped mounting bracket in contact with a selected point on said surface of pressure sensitive releasably-engaging means, and can be vertically adjusted by radial movement of said support arm to position the shielding portion in any selected area in front of the driver, thereby obscuring objectionable sunlight or headlights of on-coming cars while driving at night.

3,940,181

ADJUSTABLE HASSOCK

Thomas M. Cheek, Jr., Richmond, Va., assignor to Dart Industries, Inc., Los Angeles, Calif.
Continuation of Ser. No. 361,824, May 18, 1973, abandoned. This application Oct. 24, 1974, Ser. No. 517,727
Int. Cl.^{2} A47C *9/12*
U.S. Cl. 297—439 **8 Claims**



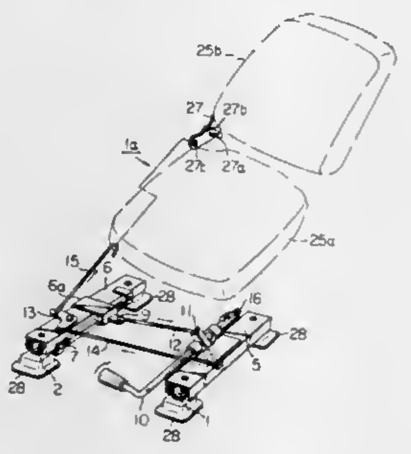
1. An adjustable hassock comprising:

a unitary base;
detent means connected to said base; and,
a seat portion rotatably mounted on said base including a movable brace element pivotably attached to said seat having a multiplicity of teeth with indented portions for releasably retaining said seat on said detent means, said element having an inner edge which generally faces said seat and an elongated open ended slot disposed at an end thereof adjacent said seat for slidably guiding said element on said detent means to a position beneath said seat when said seat is placed in a closed position; said slot extending angularly from an open end at said edge a distance substantially greater than the indented portions toward a closed end at a location adjacent where said brace element is pivotably attached.

3,940,182

SEAT POSITION CONTROL MECHANISM HAVING A POSITION MEMORY ELEMENT

Takeo Tamura, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Aug. 29, 1974, Ser. No. 501,781
Claims priority, application Japan, Aug. 31, 1973, 48-98535
Int. Cl.^{2} A47C *1/02*
U.S. Cl. 297—341 **2 Claims**



1. A seat position control mechanism for a vehicle seat assembly having a substantially horizontal seat and a normally upright backrest pivotable relative to the seat for forward tilting movement, the control mechanism comprising:

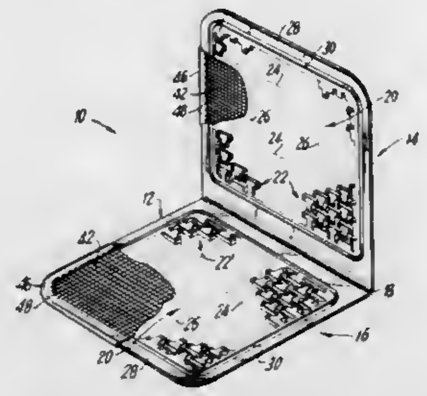
stationary guides having a plurality of spaced latch engaging means and fixedly attached to the vehicle floor under the seat;
slide members slidable on said stationary guides and attached to the seat;

an elongate member disposed parallel with one of said stationary guides and an associated slide member and having first and second latch engaging apertures therein, each being arranged in registry with one of said latch engaging means of said stationary guide;
a first spring-loaded latch on said elongate member and normally engaged with said first aperture and one of said latch engaging means of said stationary guide;
a second spring-loaded latch on said slide member and normally engaged with said second aperture of said elongate member and another latch engaging means of said stationary guide;
a manual control shaft axially rotatably supported by the slide member and engageable with said first and second latches to cause the same to disengage from the respective latch engaging means and said latch engaging apertures when said control shaft is manually turned, the engagement of said control shaft with said first latch being such that said elongate member is movable with said slide member; and
means for connecting the backrest with said second latch in such manner that upon the forward tilting movement of the backrest said second latch is disengaged from said another latch engaging means and said second aperture to thereby allow said slide member to be moved forward and then backward to the position determined by the engagement of said first latch with said first latch engaging aperture and said one of the latch engaging means of said stationary guide, and at this position said second latch is engaged in said second aperature and said another latch engaging means.

3,940,183

BODY SUPPORT PANEL AND MAT MADE THEREFROM

Samuel M. Seltzer, 85 Athens Road, Short Hills, Millburn, N.J. 07078, and Saul Dennison, 7 Wedgewood Drive, West Orange, N.J. 07052
Filed Dec. 4, 1974, Ser. No. 529,337
Int. Cl.^{2} A47C *7/02*
U.S. Cl. 297—453 **13 Claims**

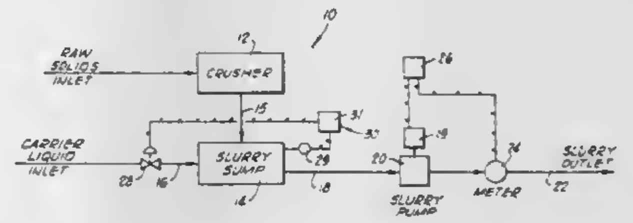


1. A support panel for use as a ventilated body support mat, the panel comprising an array of sections arranged in columns and rows, each of said sections including a transverse head portion and a longitudianl stem portion projecting perpendicularly from a central region of said transverse head portion to define T-shaped elements, said transverse head portions and said longitudinal stem portions being respectively directed along directions parallel to the directions of said rows and columns, said T-shaped elements extending between and collectively defining two spaced substantially parallel faces of the panel, each of said T-shaped elements having a T-shaped surface disposed in one of said faces and having wall portions substantially normal to said faces extending from the periphery of said T-shaped surface in said one face to said other face; elongate connecting portions collectively defining the other of said faces and extending between said wall portions in the other of said faces for connecting adjacent T-shaped elements, said T-shaped elements in adjacent rows being staggered and intermeshed with each longitudinal stem portion along direction of said rows being disposed between ends of adjacent transverse head portions in adjacent columns and each transverse head portion along direction of said rows being disposed between adjacent longitudinal stem portions in adjacent columns, said T-shaped elements providing a lattice of elongate substantially uniform width channels each extending about the periphery of an associated T-shaped element and oriented parallel to one of the directions of said rows and columns with the continuity between said channels aligned along the directions parallel to said rows and columns being repeatedly interrupted by said T-shaped elements, whereby the stiffness of the panel is enhanced and excessive flexing thereof is prevented along all directions along said panel including the longitudinal and transverse directions of said columns and rows respectively when a person is supported on the mat, and said channels are provided to permit the flow of ventilating air therethrough.

3,940,184

METHODS AND SYSTEMS FOR HYDRAULICALLY TRANSPORTING SOLIDS

David L. McCain, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed May 21, 1974, Ser. No. 471,871
Int. Cl.^{2} B65G *53/30*
U.S. Cl. 302—14 **13 Claims**



1. A method of forming a slurry comprising particulate solids and a liquid carrier and transporting said slurry through a conduit comprising the steps of:

a. flowing a continuous stream of said carrier liquid into a sump;
b. introducing said particulated solids without fluid carrier into said sump so that a solids-carrier liquid slurry is formed therein;
c. pumping said slurry out of said sump and through said conduit;
d. measuring the flow rate through said conduit;
e. adjusting the pump speed during the pumping of said slurry out of said sump by an amount responsive to said measurements of variations in said flow rate in said conduit in a manner to maintain said flow rate substantially constant; and
f. changing the flow rate of said stream of carrier liquid flowing into said sump in inverse proportion to changes in the flow rate of particulated solids introduced therein so that the flow rate of slurry formed in said sump is maintained substantially constant.

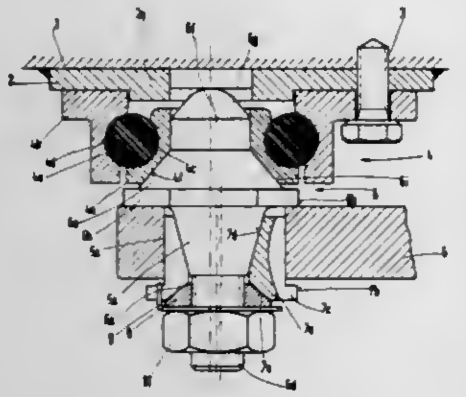
3,940,185

CENTERING DEVICE FOR RAIL BRAKE MAGNETS ON VEHICLES

Ernst Katzer, Munich, Germany, assignor to Koorr-Bremse GmbH, Munich, Germany
Filed Apr. 2, 1975, Ser. No. 564,287
Claims priority, application Germany, Apr. 2, 1974, 2415858
Int. Cl.^{2} F16C *29/02;* **F16D** *65/34*
U.S. Cl. 308—3 R **12 Claims**

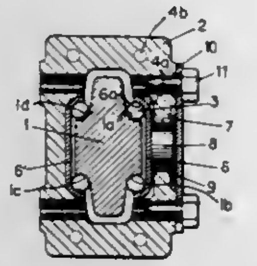
1. A device for centering a rail brake magnet in the raised inoperative position with respect to the vehicle structure from which it is suspended, and comprising a centering element on one of said vehicle structure and magnet having a centering bore with a first conical surface around said bore, the other of said vehicle structure and magnet having a bore therein and

an eccentric sleeve rotatably received within said bore, a centering pin having a second conical surface thereon engageable with said first conical surface when the magnet is in the raised position, said pin having a peripheral portion eccentric with respect to said first and second conical surfaces and rotatably received within said eccentric sleeve, and means for securing said eccentric sleeve to said other of the vehicle structure and magnet after adjustably rotating said sleeve.



3,940,186
ADJUSTABLE BALL GROOVE SLIDE

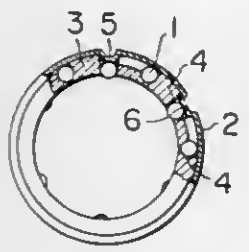
Sven Walter Nilsson, Goteborg, Sweden, assignor to SKF Industrial Trading and Development Company, B.V., Jutphaas, Netherlands
Filed Oct. 11, 1973, Ser. No. 405,373
Int. Cl.^{2} F16C *29/12*
U.S. Cl. 308—6 C **4 Claims**



1. In a ball groove slide device including a beam having a longitudinal axis and a slide axially slidable thereon, the beam having a predetermined cross-section and the slide having a first aperture therethrough of cross-section corresponding generally to that of said beam and through which said beam extends in said sliding relationship, the device further including a plurality of balls in at least one recirculation path at least a portion of which path is parallel to said axis and is formed in part by an axially extending first ball-bearing groove in said beam, the improvement in combination therewith comprising a pressure member carrried by said slide and having an inner side adjacent said first groove in the beam and an opposite outer side, the inner side including an axially-extending second groove engaging balls in said first groove, and adjustment means carried by said slide for providing a selectively variable force on said pressure member inward against said balls which are thus urged against said first groove in the beam, for varying the play between said beam and said slide, and wherein said adjustment means comprises a plunger which is carried by said slide and contacts said pressure member, and locking means on said slide for securing said adjustment means and for urging said plunger inward against said pressure member with said selectively variable force, and wherein said slide comprises a wall adjacent said pressure member, and said wall includes therethrough a second aperture in which is situated said plunger, and said locking means comprises a cover contacting said plunger and fastener means urging said cover inward against said plunger which is thus urged inward toward said beam.

3,940,187
ANTIFRICTION BEARING FOR SLIDING MEMBERS

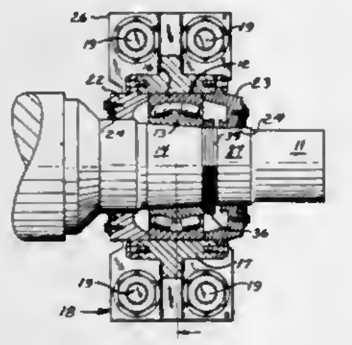
Minoru Suda, 220, Ooto, Yono, Saitama, Japan
Filed July 18, 1974, Ser. No. 489,546
Claims priority, application Japan, July 20, 1973, 48-80645
Int. Cl.^{2} F16C *17/16*
U.S. Cl. 308—6 C **4 Claims**



1. An antifriction bearing bush comprising a thin cylindrical outer sleeve having an end wall and at least three equidistant axially extending convex portions formed on the inner surface thereof except for one end, a cylindrical ball retainer fitting within said thin cylindrical outer sleeve having at least three axially oblong grooves on the outside thereof, the said oblong grooves being composed of two straight sections and two curved sections, one of said straight sections and an adjacent portion of each curved section being cut completely through said ball retainer, said straight section also having extended straight sectional grooves reaching the ends of said cylindrical ball retainer, the depth of said straight sectional grooves being complementary to said convex portions on said outer sleeve, two segments of said convex portion of said outer sleeve which overlie the ends of said straight section of said ball retainer being of less convexity than the remainder of said convex portion, balls within one portion of said oblong grooves which contact said convex portion and simultaneously extend beyond the inner surface of said ball retainer and balls within the remaining portion which are enclosed by the ball retainer and said outer sleeve, and means within the end of said sleeve not having an end wall to retain said ball retainer within said sleeve.

3,940,188
BEARING HOUSING ADAPTABLE TO REWORKED SHAFT BY REVERSAL

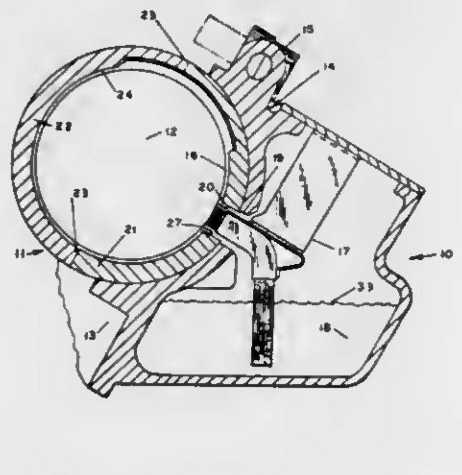
Robert Keith Newell, Cedar Rapids, Iowa, assignor to Pettibone Corporation, Chicago, Ill.
Filed May 22, 1974, Ser. No. 472,303
Int. Cl.^{2} F16C *13/00*
U.S. Cl. 308—15 **5 Claims**



1. A bearing housing having positioning formations for cooperating with securing means to predetermine the axial location of a housing-base center along an axis extending through the bearing housing, and structure located with axial nonsymmetry with respect to said formations to provide a bearing chamber the center of which is axially displaced from said base center, said bearing housing being, in part at least, reversible so that the axial displacement of the center of the bearing-receiving chamber will be displaced axially in the opposite direction from the direction of the original displacement, the bearing housing being adapted to receive a shaft end with its diameters increasing in the direction inwardly from the end of the shaft providing shaft dimensions within which the shaft can be reworked to bearing-contours similar to its original bearing-contours but relocated inwardly to match the inward shifting of the center of the bearing-receiving chamber upon reversal of the bearing housing parts.

3,940,189
TRACTION MOTOR BEARING LUBRICATION ASSEMBLY

Richard J. Renk, and George F. Boller, both of Winona, Minn., assignors to Gladys D. Miller, Winona, Minn.
Filed Mar. 6, 1975, Ser. No. 556,129
Int. Cl.^{2} B61F *17/08;* **F16C** *1/23, 33/10, 33/66*
U.S. Cl. 308—132 **25 Claims**



1. A bearing for use with a traction motor suspension assembly wherein a member is carried on the axle to reduce the oil losses through said bearing comprising,
  a bearing body having an arcuate bearing surface defining an axial sleeve portion adapted to engage a surface of said axle,
  said bearing body having a first recessed groove formed circumferentially in the periphery of said bearing surface into which said member extends and is rotated with said axle,
  a passage communicating with said first groove, said passage being located to allow excess lubricant which enters said first groove to be moved into said passage by rotation of said member with said axle,
  a second recessed groove in the periphery of said bearing surface, and,
  means connecting said second groove with said first groove to allow excess lubricant from said second groove to move to said first groove.

13. A bearing as claimed in claim 1 wherein said passage communicates with said first groove at a point above the bottommost part of said first groove.

14. A bearing comprising,
  a arcuate bearing surface sized to engage a journal,
  a first groove in which a rotating member may move during rotation of a journal,
  a passage communicating with said first groove to allow a lubricant to be moved away from said groove and into said passage by said member during rotation thereof,
  a second groove, and
  means connecting said second groove to said first groove so lubricant collecting in said second groove can move into said first groove and be moved by said member into said passage.

24. An assembly as claimed in claim 15 wherein said bearing is provided with a window and wherein said first groove is disposed axially from said window and said second groove is spaced axially outwardly from said first groove.

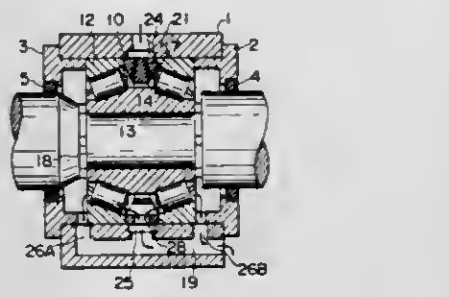
3,940,190
HYDROCARBON CONVERSION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of Ser. No. 288,864, Sept. 13, 1972, Pat. No. 3,846,282. This application Oct. 29, 1974, Ser. No. 518,926
Int. Cl.^{2} C10G *35/08*
U.S. Cl. 208—137 **13 Claims**

1. A process for reforming a gasoline fraction which comprises contacting said fraction in the presence of hydrogen at reforming conditions with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 weight percent platinum or palladium, about 0.01 to about 2 weight percent iridium, about 0.01 to about 5 weight percent nickel, about 0.01 to about 5 weight percent of a Group IV-A metal, and about 0.1 to about 3.5 weight percent halogen, wherein the platinum or palladium, iridium, nickel, and Group IV-A metal are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum or palladium, iridium, and nickel are present in the corresponding elemental metallic states, and wherein substantially all of the Group IV-A metal is present in an oxidation state above that of the corresponding elemental metal.

3,940,191
MULTIPLE-ROW ROLLER BEARING

Shunzo Tomioka; Kinpei Okano, and Toshiyuki Kajiwara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan
Filed Oct. 10, 1973, Ser. No. 404,892
Claims priority, application Japan, Oct. 13, 1972, 47-102487
Int. Cl.^{2} F16C *1/24*
U.S. Cl. 308—187 **33 Claims**



1. A multiple row roller bearing comprising
at least two rows of roller bearings, each of said rows including inner and outer races for said roller bearings,
first means for separating the outer races of respective rows of said roller bearings, said first means including nozzle means for injecting lubricant to said roller bearings and discharge means for discharging said lubricant from said roller bearings,
second means for supplying said lubricant to said nozzle means, and
third means for exhausting said lubricant from said discharge means, said third means being independent and separated from said second means such that a positive flow of said lubricant through said roller bearings is effected.

3,940,192

HOUSING FLANGE FOR WORM GEAR BEARINGS

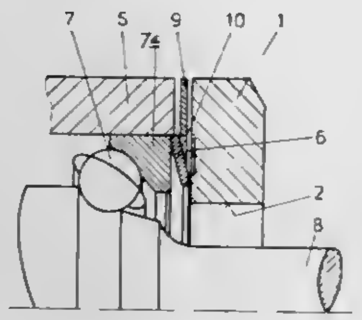
Gerhard Hagele, Hohenstadt, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed July 16, 1974, Ser. No. 489,034

Claims priority, application Germany, Aug. 1, 1973, 7328067

Int. Cl.² F16C *13/00*

U.S. Cl. 308—189 R **2 Claims**



1. An arrangement for effecting a precisely determined axial force on a thrust bearing within a housing:

comprising a housing having a bearing race therein;

a cover on said housing;

a conical ring-like spring having an edge compressed by said cover to effect axial force of the other edge on said bearing race;

and an annular groove in said cover disposed to freely accommodate a bowed portion of said spring as it bows under compression, so as to maintain a precise force on said bearing by avoiding abutment between said bowed portion and said cover.

3,940,193

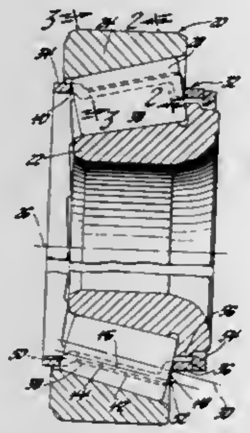
ROLLER BEARING SEPARATOR

Edward W. Molloy, Port Clinton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 356,772, May 3, 1973, abandoned. This application Jan. 30, 1974, Ser. No. 437,789

Int. Cl.² F16C *33/00;* B21D *53/12*

U.S. Cl. 308—218 **13 Claims**



1. An angular contact roller bearing comprising

relatively rotatable inner and outer races having a common longitudinal axis,

a plurality of rollers disposed between said races in rollable engagement therewith,

said rollers having longitudinal axes angularly disposed with respect to said common longitudinal axis of said races about which said rollers respectively revolve during operation of the bearing, and

a separator rolled to annular form from a strip of sheet metal, said separator having windows receiving said rollers and comprising cylindrical end ring portions of equal diameter disposed on opposite sides of an imaginary conical surface defined by said longitudinal axes, said end ring portions being interconnected by a plurality of cross bars having an asymmetrical configuration and major portions angularly disposed with respect to said common longitudinal axis of said bearing engaging and guiding said rollers along a majority of their lengths.

3,940,194

WHEEL BEARING APPLICATION OF DRIVEN WHEELS FOR MOTOR VEHICLES

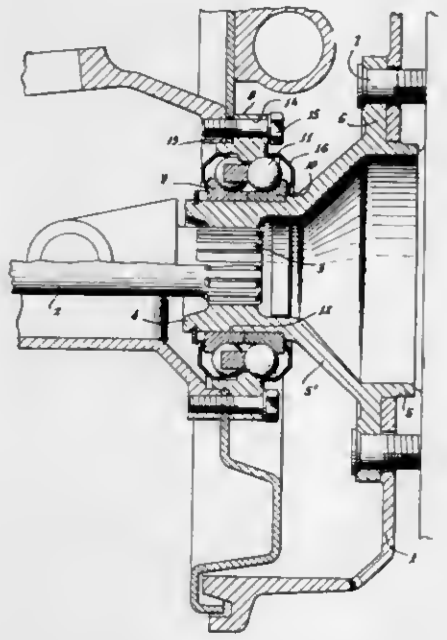
Sture Lennart Asberg, Partille, Sweden, assignor to SKF Nova AB, Goteborg, Sweden

Filed Nov. 5, 1973, Ser. No. 413,120

Claims priority, application Sweden, Nov. 6, 1972, 14307/72

Int. Cl.² F16C *33/30*

U.S. Cl. 308—236 **2 Claims**



1. A wheel bearing assembly, including same for a wholly unloaded, rigid rear shaft, comprising:

a. a sleeve portion;

b. drive means disposed in said sleeve portion, said drive means being adapted to transfer torsional moment from a drive shaft through a plurality of splines on said shaft which floatably engage the inner portion of said sleeve; and

c. a bearing disposed about said sleeve portion and comprising a moment-carrying, play-adjusted, inner-ring-rotated rolling bearing, said bearing comprising an inner ring member comprising two separate rings disposed directly adjacent to each other, and fitted on said sleeve portion, said two separate rings secured together on said sleeve portion between first and second axially spaced apart means located on said sleeve portion at opposite sides of said separate inner rings, said inner bearing rings being axially fixed in position relative to said sleeve independent of axial movement of said shaft, and a one-piece outer ring and rolling bodies disposed between said inner and outer rings.

3,940,195

REFRIGERATION CABINET

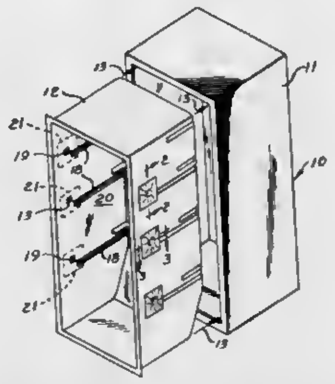
Harry Lucian Tillman, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 11, 1974, Ser. No. 514,123

Int. Cl.² A47B *81/00*

U.S. Cl. 312—214 **7 Claims**

1. A refrigeration cabinet comprising: an outer shell; a relatively thin plastic liner spaced from said shell to provide an insulating space therebetween, said liner having a projecting portion extending into said insulating space; cast resin foam insulation filling said insulating space between said shell and liner; and a thin parting agent sheet overlying said projecting portion and having an edge area spaced from said projecting portion and attached to said liner to define a surrounding space about said projecting portion for preventing said cast resin foam from closely embracing said projecting portion.



3,940,196

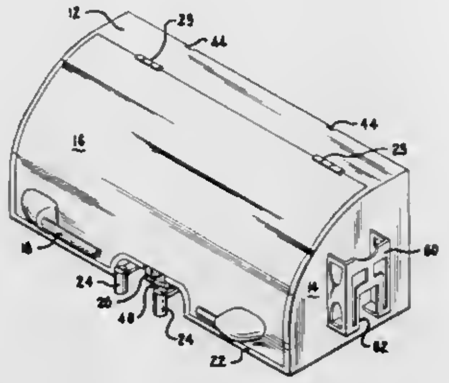
SAFETY CABINET FOR BATHTUB FAUCETS

Donald F. Ketchel, 7375 9th St., Apt. 224, Buena Park, Calif. 90620

Filed Nov. 14, 1974, Ser. No. 523,678

Int. Cl.² A47B *55/00*

U.S. Cl. 312—237 **7 Claims**



1. A faucet cabinet adapted to enclose faucet knobs for the protection of young children comprising: an enclosure adapted to mount over and enclose at least one faucet knob, said enclosure having a cover operable between a closed position enclosing at least one faucet knob and an open position exposing enclosed faucet knobs, and, latching means for latching said cover in said enclosed position, said latching means having a release with a bias means for providing a predetermined magnitude of force in operating said release, said predetermined magnitude of force being such that said release is operable by an adult and is inoperable by a young child.

3,940,197

METHOD OF MAKING A GLOW DISCHARGE READOUT DEVICE

Abul Abbas Mesbahuddin Ahmed, Beauford Manor, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 468,356, May 9, 1974, Pat. No. 3,891,883, which is a continuation-in-part of Ser. No. 300,631, Oct. 25, 1972, Pat. No. 3,818,556. This application Mar. 26, 1975, Ser. No. 562,081

Int. Cl.² H01J *9/00*

U.S. Cl. 316—17 **3 Claims**

1. A method for making a readout device, comprising the steps of:

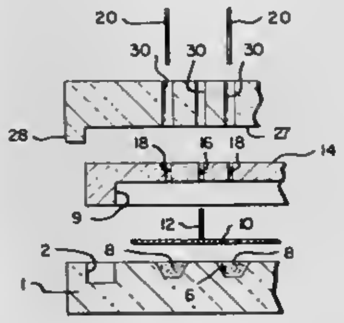
placing conductive material arranged in a predetermined pattern of anodes and cathodes on a fusible substrate provided with an integral raised frame,

locating conductive pins in contact with said material and extending in protruding relationship from said substrate,

locating a tube through said substrate,

heating said substrate to fuse said substrate in sealed encirclement around said tube and said pins and to adhere said anode and cathode conductive material to said substrate surface,

partially covering one of said cathodes with a coating of fusible material leaving an exposed portion of said partially covered cathode to provide a continuously energized cathode during operation of said readout device,



sealably adhering a transparent window on said frame to provide an envelope containing said pattern of anodes and cathodes,

introducing an illuminating type gas into said envelope through said tube, and

sealably closing said tube to provide a sealed envelope containing illuminating gas and anodes and cathodes with conductive pins protruding through said substrate and in contact with corresponding anodes and cathodes.

3,940,198

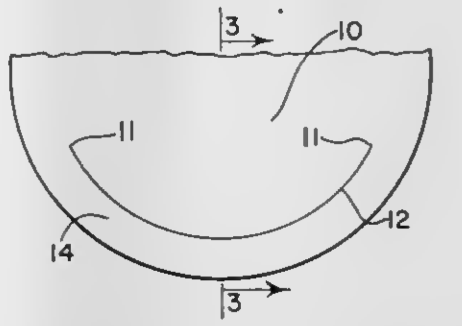
INTEGRAL MULTIFINGER CONTACT AND METHOD OF MAKING

Stephen Verner Andersen, Burbank, Calif., and Edwin Grant Swick, Bartlett, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 447,616, March 4, 1974, Pat. No. 3,905,318. This application Mar. 20, 1975, Ser. No. 560,420

Int. Cl.² H01R *39/00*

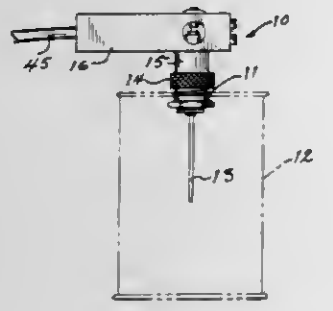
U.S. Cl. 339—5 M **3 Claims**



1. A one piece electrical wiper brush contact including a base portion adapted for attachment to a carrier, a plurality of slender, resilient, arc-like contact fingers, each extremity thereof integrally joined to the base, said contact fingers merging together at both regions of juncture with the base, the side edges of adjacent arc-like fingers being separated over substantially their entire length by a crescent shaped aperture, dimpled localized contact regions being formed in the fingers and substantially radially aligned thereon.

3,940,199
ROTARY CONTACTOR FOR THERMOCOUPLES

Oscar Frederick Ecklund, P.O. Box 279, Cape Coral, Fla. 33904
Filed Jan. 23, 1975, Ser. No. 543,406
Int. Cl.² H01R *39/00*
U.S. Cl. 339—6 R **8 Claims**



1. Connector means for use in electrically connecting first ends of a pair of stationary electrical leads to rotary thermocouple terminals mounted on a rotatable container, said thermocouple terminals being on a thermocouple projecting into the interior of said container for sensing the temperature of the contents therein, the second ends of said pair of stationary electrical leads being adapted to be electrically connected to terminals of a potentiometer responsive to voltage generated by said thermocouple, said connector means comprising:

a post-like rotary sub-assembly having a longitudinal axis about which it is adapted to rotate when said container rotates;

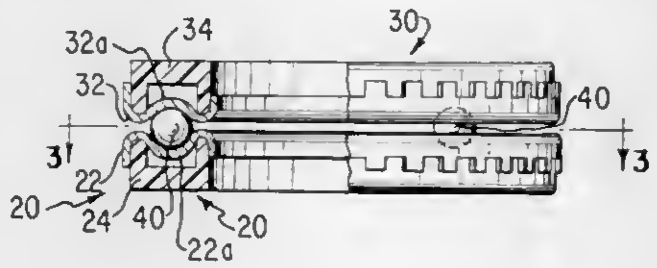
a stationary arm-like sub-assembly mounted on said post-like rotary sub-assembly;

said post-like rotary sub-assembly comprising, a base having mounted therein in electrically insulated relationship two contact pins one of which is formed of thermocouple material A corresponding to one material of said thermocouple and the other of which is formed of a different thermocouple material B corresponding to the other material forming said thermocouple, both of said pins having terminal portions at one end of said base for electrical connection with said pair of thermocouple terminals and said contact pin formed of material A projecting axially from the opposite end of said base, a slip ring sleeve formed of material B embracingly mounted in non-conductive relationship on said axially projecting pin portion with the end of said slip ring sleeve adjacent said base being electrically connected to said contact pin formed of material B, first sleeve bearing and/or brush means formed of material B embracing said slip ring sleeve, first conductor means formed of material B electrically connecting said first sleeve bearing and/or brush means to a first end of one of said stationary electrical leads and which is formed of material B, second sleeve bearing and/or brush means formed of material A embracing said projecting pin portion at a location spaced from said slip ring, and second conductor means formed of material A connecting said second sleeve bearing and/or brush means to a first end of the second of said stationary electrical leads and which is formed of material A;

and, said stationary arm sub-assembly comprising, a body member receiving therein said axially projecting pin portion and providing seats for said first and second sleeve bearing and brush means, and said body member providing support for said first and second conductor means and said first ends of said stationary electrical leads.

3,940,200
ELECTRICAL CONDUCTOR ARRANGEMENT INCLUDING FLEXIBLE RACE CONSTRUCTION

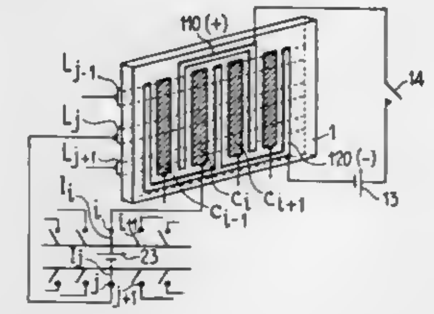
Robert Z. Schreffler, 12817 Richmond St., Chester, Va. 23831
Filed Mar. 4, 1975, Ser. No. 555,277
Int. Cl.² H01R *39/00*
U.S. Cl. 339—8 PB **8 Claims**



1. An electrical connector arrangement for conducting electrical current between rotating and non-rotating members, said arrangement comprising a first, non-rotating race means, a second, rotating race means spaced from said first race means and adapted to be connected to a rotating shaft, and bearing means located between said race means for providing electrical current conduction between said race means, at least one of said race means comprising an annular flexible race member constructed of an electrically conductive material and a support member for supporting the circumferential edges of said race member while leaving unsupported an annular central portion of said race member located between said circumferential edges, so that said race member makes flexible contact with said bearing means.

3,940,201
STORAGE-TYPE ELECTRO-OPTICAL MODULATOR

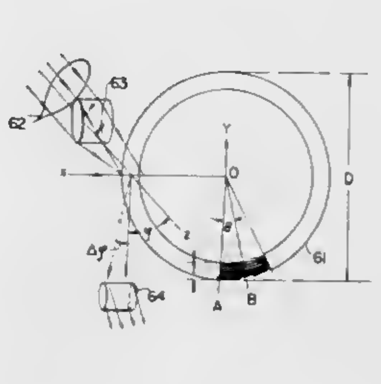
Francois Micheron, and Philippe Bied-Charreton, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed May 22, 1974, Ser. No. 472,307
Claims priority, application France, May 29, 1973, 73.19496
Int. Cl.² G02F *1/03;* G03H *1/04*
U.S. Cl. 350—3.5 **11 Claims**



1. A storage-type electro-optical modulator, designed for modulating a radiated energy beam under the control of electrical input signals, said modulator comprising: a plate of homogeneous material capable of switching, under the action of an electric field, from a first stable state exhibiting certain optical properties to a second state exhibiting different optical properties; said plate having two large faces and being equipped, parallel to one of said faces, with a first network of parallel coplanar electrodes interconnected for forming two interdigital comb structures, and with a second network of distinct coplanar electrodes interleaved with those of the first network; said plate furthermore being equipped, parallel to the other of said faces and at the opposite side to said first and second networks, with a third network of distinct coplanar electrodes parallel with a direction making an angle with the direction of the electrodes of said second network; the electrodes of said second and third networks being constituted by a photoconductive material transparent to said radiated energy beam; said modulator further comprising illuminating means, provided to drive conductive said photoconductive material during a phase of selective application of said electrical input signals to the electrodes of said second and third networks, and electrical erase means energizing said first network of parallel coplanar electrodes during an erase phase, means being provided for shutting off said illumination means during said erase phase.

3,940,202
LIGHT BEAM DEFLECTION SYSTEM

Makoto Kato, and Yoshihiro Okino, both of Kyoto, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 319,674, Dec. 29, 1972, abandoned. This application Aug. 20, 1974, Ser. No. 498,934
Claims priority, application Japan, Dec. 31, 1971, 47-2483
Int. Cl.² G02B *5/32*
U.S. Cl. 350—3.5 **2 Claims**



1. A light beam deflection system comprising a light beam deflection disc having a surface divided into a plurality of identical contiguous blocks of interference fringe patterns each occupying a sector of an annulus on the surface of said disc, said sector being defined by first and second radial lines, the fringe pattern within each of said blocks comprising approximately circumferential fringe lines having a given radial spacing along said first radial line and a greater radial spacing along said second radial line, the radial spacing between said circumferential fringe lines along radial lines intermediate said first and second radial lines increasing in the direction from said first radial line to said second radial line,

means for rotating said disc, and

means for focusing a coherent light beam to a radially extending line on a portion of said disc having an interference fringe pattern block, the width of said line in the circumferential direction being substantially less than the circumferential width of said block, said beam being deflected as said disc is rotated.

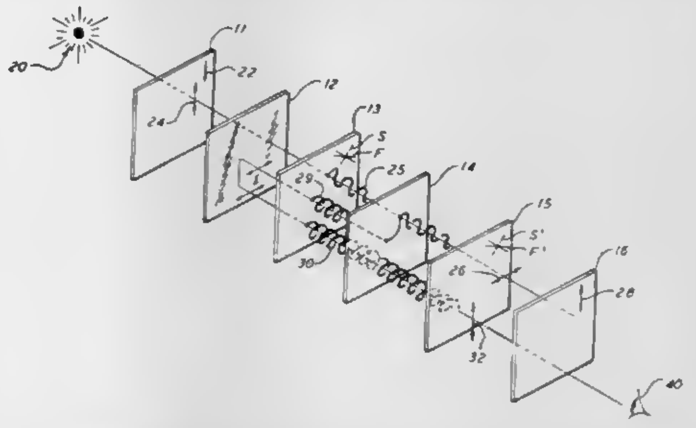
3,940,203
IMAGE-FORMING APPARATUS

Joseph Anthony La Russa, Yorktown Heights, N.Y., assignor to Farrand Optical Co., Inc., Valhalla, N.Y.
Filed Apr. 1, 1975, Ser. No. 564,188
Int. Cl.² G02B *5/32, 27/28*
U.S. Cl. 350—3.5 **6 Claims**

5. Apparatus for forming at or closer than infinity a dispersion-free image of a polychromatic primary image comprising:

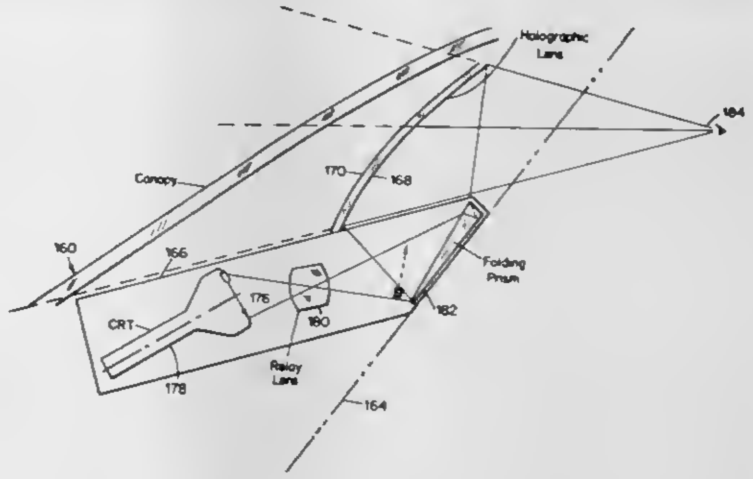
a reflection-type monochromatic holographic analog of a concave mirror arranged to receive light from said primary image on a side of the analog; and

optical means associated with said analog for reflecting a fraction of the light transmitted from said primary image through said analog back to the other side of the analog of said mirror for reflection thereby; for transmitting light so reflected to an observer; and for blocking the direct transmission of light transmitted from said primary image through said analog to said observer.



3,940,204
OPTICAL DISPLAY SYSTEMS UTILIZING HOLOGRAPHIC LENSES

Roger J. Withrington, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Jan. 23, 1975, Ser. No. 543,604
Int. Cl.² G02B *5/32, 27/00*
U.S. Cl. 350—3.5 **25 Claims**



1. A display system having a holographic lens constructed with two coherent sources located relatively close to entrance and exit pupils thereof, and which deviates the axial ray coming from an object surface through an off-axis angle into an exit pupil and which has a focal surface with axial coma and axial astigmatism, said display system having

first means along said axial ray between said object surface and said holographic lens to compensate said axial coma, and

second means along said axial ray between said object surface and said holographic lens to compensate said axial astigmatism.

3,940,205
ELECTROCHROMIC DEVICE HAVING AN INDIUM ELECTRODE

Richard Seely Crandall, and Brian Wilfred Faughnan, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.
Filed Sept. 9, 1974, Ser. No. 504,358
Int. Cl.² G02F *1/36*
U.S. Cl. 350—160 R **16 Claims**

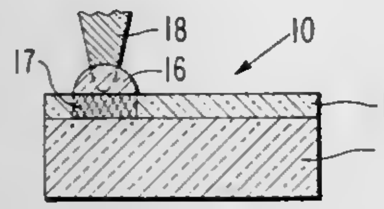
1. An electrochromic device comprising:

a substrate,

a layer of electrochromic material on said sustrate,

an electrolyte on at least a portion of said layer of electrochromic material, and

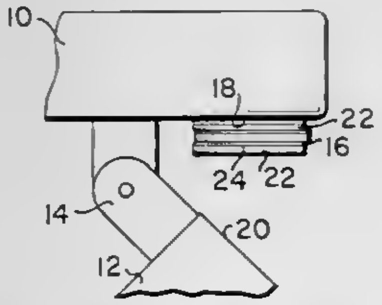
an electrode for contacting said electrolyte, said electrode being of a material capable of dissolving and forming positive ions when in contact with said electrolyte



whereby coloration occurs in said layer of electrochromic material.

3,940,206
BIASING PADS FOR EYEGLASS FRAMES

Erich Freund, 4845 California St., San Francisco, Calif. 94118
Filed Dec. 30, 1974, Ser. No. 537,095
Int. Cl.² G02C *5/14*
U.S. Cl. 351—111 **1 Claim**



1. Biasing pads for eyeglass frames having a lens frame and a pair of temple bars pivotaly abutting the frame, said pads mounted between the lens frame and the abutting end of the temple bars so as to bias the temple bars inwardly against the head of the wearer, said biasing pads being made from a yieldable, nonresilient material, and each of said pads having an adhesive layer thereon whereby said pads may be joined in a plurality of plys so the effective thickness of the pads may be selectively varied as desired.

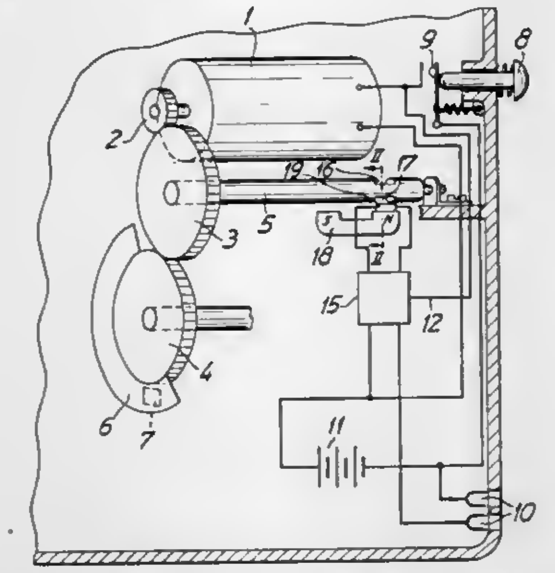
3,940,207
SOFT, TOUGH LOW REFRACTIVE INDEX CONTACT LENSES

Archie E. Barkdoll, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 152,076, June 11, 1971, abandoned. This application Feb. 26, 1974, Ser. No. 445,916
Int. Cl.² G02C *7/04*
U.S. Cl. 351—160 **12 Claims**

1. A soft, wettable, transparent contact lens for the eye constructed from at least one soft, tough, fluorine-containing polymer selected from the group consisting of tetrafluoroethylene/perfluoro(methyl vinyl ether), tetrafluoroethylene/-perfluoro(methyl vinyl ether)/vinylidene fluoride, tetrafluoroethylene/perfluoro[2(2-fluorosulfonylethoxy)propyl vinyl ether], vinylidene fluoride/hexafluoropropylene/tetrafluoroethylene, and vinylidene fluoride/hexafluoropropylene said lens having a concavoconvex structure with the concave surface conforming substantially to the shape of the eye surface, an optical zone, a refractive index in the range 1.3 to 1.4, a Clash-Berg torsion modulus in the range about 95 to about 1000 pounds per square inch, a Shore Durometer (A) hardness of 90 or less, a tensile strength (break) of at least about 100 psi, an elongation (break) of at least about 160 percent and a tear strength of at least about 5 lb/linear inch.

3,940,208
CONTROL FREQUENCY GENERATOR FOR A MOVIE CAMERA

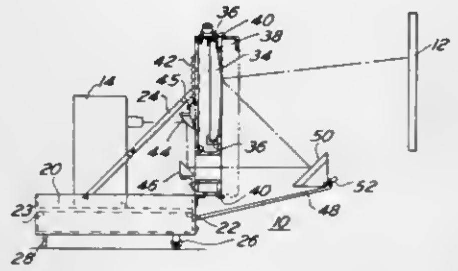
Johann Roth, Schwabhausen, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Jan. 21, 1974, Ser. No. 434,850
Claims priority, application Germany, Jan. 26, 1973, 2303932
Int. Cl.² G03B *31/00*
U.S. Cl. 352—12 **11 Claims**



1. In a movie camera, a control frequency signal generator for producing a picture and sound synchronizing sinusoidal control frequency signal including a magnetically discontinued region in a rotating member of said camera, a permanent magnet having one pole thereof disposed in the vicinity of said region to define therewith a magnetic circuit, and a magnetic flux sensing means disposed between said region and said pole of said permanent magnet and operable for producing said control frequency signal from the flux changes within the magnetic circuit during rotation of said member.

3,940,209
PROJECTOR CASE ASSEMBLY

Robert Portner, Blackwood, and Phillip Miller, Turnersville, both of N.J., assignors to Magna Mir, Inc., Philadelphia, Pa.
Filed July 12, 1974, Ser. No. 487,962
Int. Cl.² G03B *21/28*
U.S. Cl. 353—79 **3 Claims**



1. A projection case assembly unit for utilization with a standard projector and a system of mirrors which together provide enlarged exact images on a receiving surface removed from said projection case assembly comprising:

a two-part foldable device having first and second sides which when folded, said sides are substantially parallel one to another to provide a compartment therebetween and which when said device is opened, said sides provide a base member and an upright member;

means connected to said base member for supporting a projector upon said base member;

a first mirror which is convex;

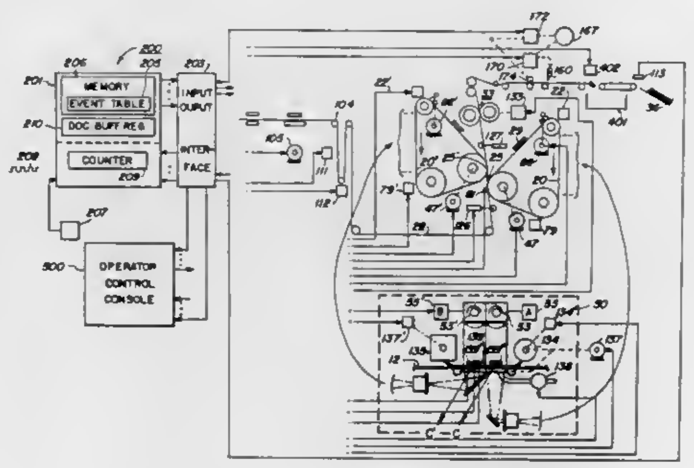
means for securing said first mirror on said upright member with said reflective surface of said mirror facing outwardly from said base member;

a second mirror which is substantially flat; and

an extension member removably attached to said device and when attached extending outwardly from said device including means by which said second mirror is attached thereto and positioned to receive a projected beam and direct the beam against said first mirror whereby an enlarged image can thereby be reflected onto the receiving surface.

3,940,210
PROGRAMMABLE CONTROLLER FOR CONTROLLING REPRODUCTION MACHINES

James M. Donohue, Los Alamitos, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 12, 1974, Ser. No. 496,661
Int. Cl.² G03G *15/00*
U.S. Cl. 355—14 **34 Claims**



1. In a reproduction machine for producing impressions of an original to be reproduced, the reproduction machine having a photosensitive member and a plurality of discrete operating components cooperable with one another and the photosensitive member to electrostatically produce impressions on support material, the improvement comprising:

a programmable controller for use in programming the machine to produce one or more reproduction runs, said controller including program storage means adapted to retain a master control program, said controller being adapted on programming to produce, in accordance with said master program, an individual set of instructions for actuating said components in integrated association with one another for each reproduction run programmed.

3,940,211
STEP-AND-REPEAT PROJECTION ALIGNMENT AND EXPOSURE SYSTEM

Karl-Heinz Johannsmeier, Mountain View, Calif., assignor to Kasper Instruments, Inc., Mountain View, Calif.
Continuation of Ser. No. 126,769, March 22, 1971, abandoned. This application Sept. 12, 1973, Ser. No. 396,413
Int. Cl.² G03B *27/42*
U.S. Cl. 355—53 **66 Claims**

1. A projection alignment and exposure system comprising:

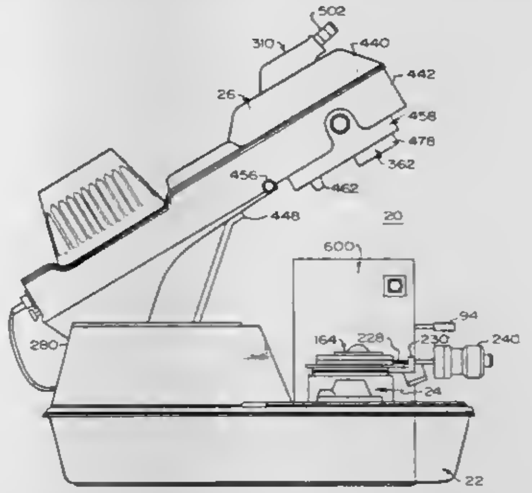
a base unit;

a floating unit floatingly supported on the base unit;

a wafer chuck, a reference member, a projection lens system, and a mask holder mounted on the floating unit so that the projection lens system is operable for producing an image of a selected region of a photosensitive-film-bearing surface of a wafer supported on the wafer chuck at a pattern-bearing surface of a mask supported on the mask holder and for producing an image of the pattern-bearing surface of the mask in an image plane positioned between the reference member and the wafer chuck and oriented parallel to a reference surface of the reference member;

said wafer chuck being movably mounted for positioning the photosensitive-film-bearing surface of the wafer in abutment with the reference surface of the reference member and for thereafter positioning the selected region of the photosensitive-film-bearing surface of the wafer at the image plane of the pattern-bearing surface of the mask;

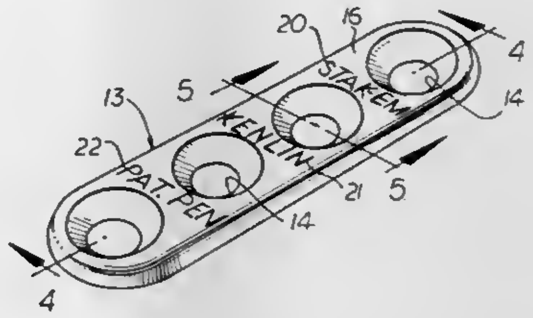
said mask holder being movable mounted for aligning the patternbearing surface of the mask with the selected region of the photosensitive-film-bearing surface of the wafer; and



an optical unit mounted on the base unit above the mask holder for providing a magnified view of the pattern-bearing surface of the mask and the image of the selected region of the photosensitive-film-bearing surface of the wafer while they are being aligned and for thereafter exposing the selected region of the photosensitive-film-bearing surface of the wafer.

3,940,212
FURNITURE BRACKET AND METHOD

Kenneth H. Gutner, 3285 Dato, Highland Park, Ill. 60035
Filed Apr. 2, 1975, Ser. No. 564,547
Int. Cl.² F16B *12/00*
U.S. Cl. 403—405 **3 Claims**

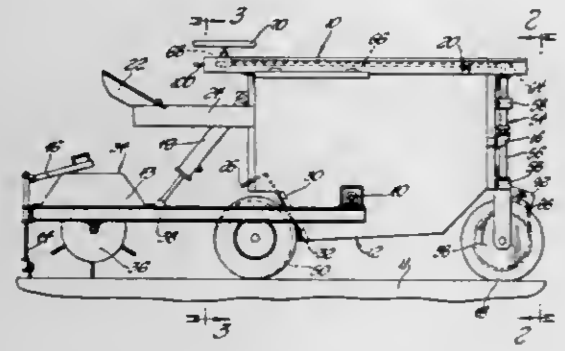


1. A bracket for securing vertically related, wood framed furniture pieces together comprising a generally rectangular, unitary metal body having length, width, and thickness dimensions with said length and width dimensions defining outer and inner faces, a plurality of aligned, longitudinally spaced openings extending through said thickness for receiving wood screws, said body on said inner face being equipped with a continuous perimetric flange extending generally perpendicularly away from said inner face, said inner face also being equipped with a generally frusto conical projection about each of said openings, each projection extending away from said inner face a distance from about 0.002 to about 0.025 inch further than said flange whereby said projections are adapted to bightingly engage said wood frames prior to engagement of said flange with said frames, said projections providing generally frusto conical recesses in said top surface to permit countersinking said wood screws.

3,940,213

DRIVE SYSTEM

Rymer H. Smith, Burgoon, Ohio, assignor to Wikel Manufacturing Co. Inc., Sandusky, Ohio
Filed Nov. 1, 1974, Ser. No. 519,837
Int. Cl.² E01C *19/18*
U.S. Cl. 404—111 **23 Claims**

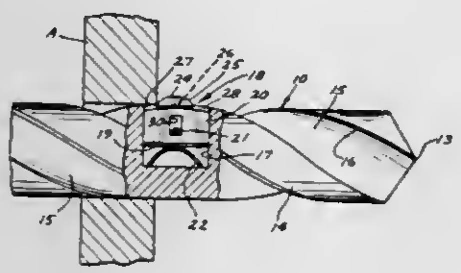


1. A vehicle of the type for applying a coating to a surface such as applying a sealant to asphalt pavement, said vehicle comprising: body means including reservoir means for storing and distributing a fluid, two driven wheels disposed in spaced-apart relationship along the longitudinal axis of said body means and adapted for continuous engagement with a support surface, one of said driven wheels being dirigible, support wheels disposed laterally of the longitudinal axis of said body means and spaced from said dirigible driven wheel, and variable drive means for driving said driven wheels.

3,940,214

DRILL BIT WITH DEBURRING DEVICE

Daryl E. Waschek, 1614 Sharon Drive, North Mankato, Minn. 56001
Filed Feb. 10, 1975, Ser. No. 548,250
Int. Cl.² B23B *51/08*
U.S. Cl. 408—26 **5 Claims**



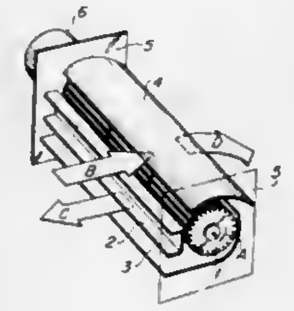
1. In a drill bit for drilling a hole through a piece of metal whereby burrs are formed on the edges of the hole, said bit having a shank for connection to a power source and a boring body comprising spiral auger portions separated by spiral grooves,

a. one of said spiral auger portions having an outwardly opening recess therein,
b. a deburring attachment disposed in said recess for radial sliding movement between outwardly extended and retracted positions,
c. stop means on the auger portion engaging said attachment to limit outward sliding movement thereof,
d. spring means disposed between the bit and the attachment yieldably biasing the attachment toward its outwardly extended position, and
e. said attachment including a cutter having a sharp outer cutting edge projecting beyond the peripheral surface of the auger portion to remove said burrs from the metal portions surrounding the hole.

3,940,215

BLOWER

Michimasa Hori, Yao, and Takeshi Aizawa, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 26, 1973, Ser. No. 427,733
Claims priority, application Japan, Dec. 28, 1972, 48-3330; May 14, 1973, 48-53431; Oct. 18, 1973, 48-117591
Int. Cl.² B23B *39/00*
U.S. Cl. 415—54 **18 Claims**

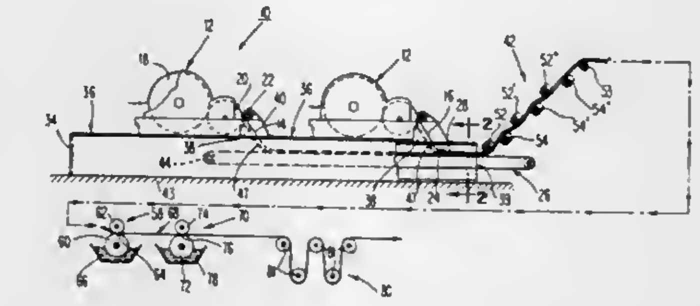


1. A blower for blowing air, comprising: a cross flow fan; a vortex stabilizing plate spaced apart from one side of the outer periphery of the fan; a back guider spaced apart from the outer periphery of the fan and extending from the side of said fan opposite said one side towards said stabilizing plate, said fan, said stabilizing plate and said back guider forming, on the same side of said fan, an air suction side and an air delivery side; and on said air suction side a flow dividing guider, which with said back guide forms a branching air delivery space on the opposite side of said air suction side, for dividing the air flow and enabling the air to flow in substantially two opposite directions from said air suction side back to said air delivery side and to said branching air delivery space, respectively.

3,940,216

APPARATUS FOR FORMING A NONWOVEN FIBROUS WEB

Thomas L. Hinckley, Millville, N.J., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Jan. 30, 1975, Ser. No. 545,499
Int. Cl.² B32B *5/12, 7/14*
U.S. Cl. 425—83 **4 Claims**



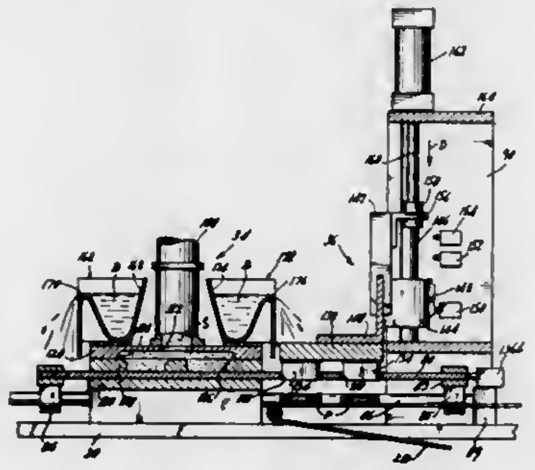
1. In an apparatus for forming a unitary nonwoven fibrous web from multiple laps of staple fibers:

A. lap forming means for forming said laps of staple fibers and for generating air currents;
B. a lap-confining channel defined in part by an upper, substantially horizontal delivery run of an air-impervious conveyor, said channel having an open down-stream end;
C. shield means for defining a flow path between the lap forming means and the lap-confining channel for directing said laps and air currents into said lap-confining channel with said laps in overlying relationship with each other and with the upper delivery run of the air-impervious conveyor;
D. drive means for moving said air-impervious conveyor to convey said overlying laps in a downstream direction through the open downstream end of said lap-confining channel; the improvement comprising:
E. a fiber spreading and reorienting section adjacent the upper delivery run of the conveyor downstream of the lap-confining channel, said fiber spreading and reorienting section including a plurality of bowed rolls spaced from each other in the machine direction of web formation with their axles extending in the cross-machine-direction of web formation, said axles being disposed along a generally upwardly inclined path from the horizontal delivery run of the conveyor, said generally upwardly inclined path being at an acute angle to the direction of movement of said delivery run, and the most upstream bowed roll of the fiber spreading and reorienting section being in adjacent, noncontacting relationship with the horizontal delivery run for receiving the overlying laps of staple fibers without compressing said laps against said delivery run.

3,940,217

APPARATUS FOR FORMING A SHAPED COMESTIBLE

John P. McCarthy, College Point; John Moyer, Garden City, both of N.Y., and Leonard Fischer, Elkridge, Md., assignors to DCA Food Industries, Inc., New York, N.Y.
Filed July 23, 1974, Ser. No. 491,468
Int. Cl.² A22C *7/00*
U.S. Cl. 425—98 **26 Claims**

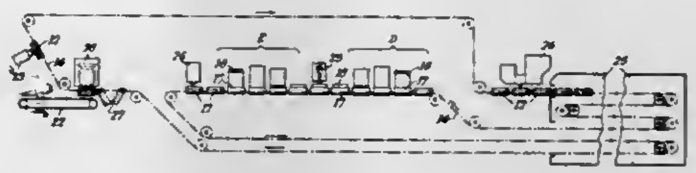


26. A machine for the formation of a shaped comestible from a foodstuff slurry, said machine comprising a forming station and a removing station, a forming plate having at least one forming cavity therein of a predetermined outer configuration for use in forming said foodstuff into a shape having said outer configuration, means mounting said forming plate for movement of said forming cavity between said forming station and said removing station, foodstuff delivery means in operative relation to said forming station for periodically supplying said forming cavity with a predetermined amount of said foodstuff, means in operative relation to said forming station for use in coating the unfilled forming cavity and the surface of said foodstuff delivered to said forming cavity with a release agent for aiding in the subsequent release of formed foodstuff from said forming cavity, means for use in preventing foodstuff not in said forming cavity from leaving said forming station, a punch in operative relation to said removing station and being of substantially the same outer configuration as said forming cavity, means mounting said punch for movement between a normal position wherein said punch does not intersect said forming cavity located at said removing station and an extended position wherein said punch intersects and extends into said forming cavity located at said removing station, means for operating said foodstuff delivery means to supply said predetermined amount of foodstuff and fill said forming cavity, means for transporting said filled forming cavity from said forming station to said removing station into alignment with said punch, control means including means being constructed and arranged to operate said punch from said normal to said extended position to urge said foodstuff from said filled forming cavity only upon said forming cavity being aligned therewith and further including means being constructed and arranged for operating said transporting means to move said forming cavity from said removing station toward said forming station only upon said punch returning to said normal position.

3,940,218

APPARATUS FOR THE MANUFACTURE OF CONFECTIONERY MADE OF PLURAL MATERIALS

Gordon Steels, Peterborough, England, assignor to Baker Perkins Holdings Limited, England
Filed July 3, 1974, Ser. No. 485,591
Int. Cl.² A23G *3/22, 3/12*
U.S. Cl. 425—112 **6 Claims**



1. Apparatus for moulding confectionery, comprising an endless conveyor, a series of moulds, each of which is divided into a first half attached to the conveyor and a second half which is hinged to and normally aligned with the first half, said conveyor carrying the moulds in sequence past a filling station, through a cooling zone to a folding station, then to an unfolding station and then to a discharge station and back to the filling station, a depositor at the filling station which is arranged to deposit different materials into moulding cavities in each half of each mould, mechanism disposed at the folding station for folding the second half of each mould about its hinge against the first half and effecting deposition of the contents of the moulding cavities thereof into the moulding cavities of the first half, mechanism disposed at the unfolding station for returning the folded second half of each mould into alignment with its first half, and means for inverting the moulds prior to arrival at the discharge station and turning them to cause their moulding cavities to face upwardly during their return to the filling station.

2. Apparatus according to claim 1, which includes a further depositor situated between the unfolding station and the discharge station and arranged to deposit a third material into the moulding cavities of the fixed halves only of the moulds, and in which the moulds are arranged to traverse the cooling zone again after leaving the further depositor.

3,940,219

COMPACT TELESCOPING TISSUE PROCESSING, EMBEDDING MICROTOME HOLDER AND STORAGE RECEPTACLE

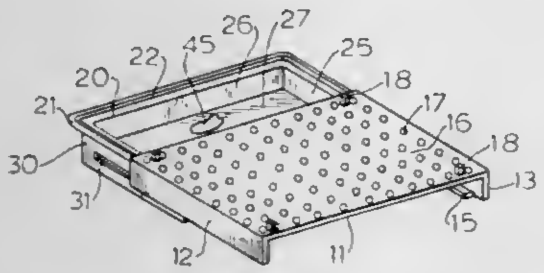
John E. P. Pickett, 3323 Pinafore Drive, Durham, N.C. 28212; Thomas D. Kinney, 3120 Devon Road, Durham, N.C. 27707, and Gene M. Winders, 5332 N. Willowhaven Drive, Durham, N.C. 27705
Filed July 11, 1974, Ser. No. 487,463
Int. Cl.² B65D *11/00, 81/18*
U.S. Cl. 425—117 **8 Claims**

1. A composite histologic tissue structure useful for transporting a tissue specimen through processing fluids during processing, providing a mold for embedding the specimen, holding the embedded specimen during microtome cutting and covering the remaining embedded specimen following cutting, comprising:

a. a rectangular open rigid mold and microtome block holding member formed by interconnecting smooth surfaced rectangular end and sidewalls with the interior wall surfaces thereof being formed with means for securement of a molded block thereon and the exterior wall surfaces thereof being formed to provide an indicia marking area to identify the specimen;

b. a rectangular pan receptacle and storage cover member formed by a thin rectangular bottom wall and interconnecting rectangular end and sidewalls, said pan and mold members being dimensioned such that said pan member walls may rest within said mold member walls during processing through processing fluids, the wall edges on one open end of said mold member having means for being detachably secured to the top wall edges of said pan member during the molding of said block; and

c. a top receptacle member formed by a central rectangular perforated wall and interconnecting rectangular sidewalls extending perpendicularly from the edges thereof, said top member sidewalls having means for detachably securing said mold member to said top member with said central wall covering said pan member while said pan member is resting within said mold member whereby said top member may combine with said mold and pan members to form a perforate receptacle having the depth of said pan section for purposes of processing through said liquids;



said mold and pan members in combination with said top member providing a receptacle for transporting the tissue specimen through the processing fluids, said mold member in combination with said pan member providing an embedding unit for molding and housing a paraffin body of depth greater than that of said receptacle used in processing, said mold member providing an exterior surface for clamping said mold member and the specimen embedded therein between the opposing jaws of a microtome clamp for presenting the embedded specimen to a microtome blade for cutting, and said mold member in combination with said pan member providing a housing for protecting the remaining specimen following cutting.

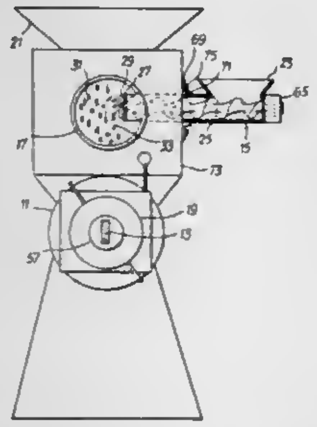
3,940,220

METHOD AND EQUIPMENT FOR THE MANUFACTURE OF VARIEGATED DETERGENT BARS

Alessaodro D'Arcangeli, Castelgandolfo, Italy, assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 206,412, Dec. 9, 1971, abandoned.
This application Jan. 7, 1974, Ser. No. 431,112
Claims priority, application Italy, Dec. 29, 1970, 55693/70
Int. Cl.^{2} B29F *3/12*

U.S. Cl. 425—131.1 **1 Claim**



1. Apparatus for manufacturing a variegated detergent bar which comprises:

a. first detergent plodding means,

b. second detergent plodding means,

c. a vacuum chamber communicating with said first and second plodding means,

d. a final third plodding means located below and communicating with said vacuum chamber,

e. said final plodding means including a mixing worm having a predetermined diameter

f. means for regulating the rate of feed to said final plodding means to leave from 30 to 70 percent of said worm immediately below said vacuum chamber uncovered during operation,

g. extrusion means including a pressure plate with a plurality of holes located at the downstream end of said final third plodder means.

h. rotating and cutting means disposed downstream from said extrusion means for imparting a transverse or radial motion to detergent passing through said pressure plate and cutting extruded detergent to desired length,

i. compression means disposed downstream from said rotating and cutting means,

j. said compression means including a chamber having a length less than one half of said predetermined diameter of said worm and,

k. final extrusion means disposed downstream from said compression means for forming said detergent into bar shape.

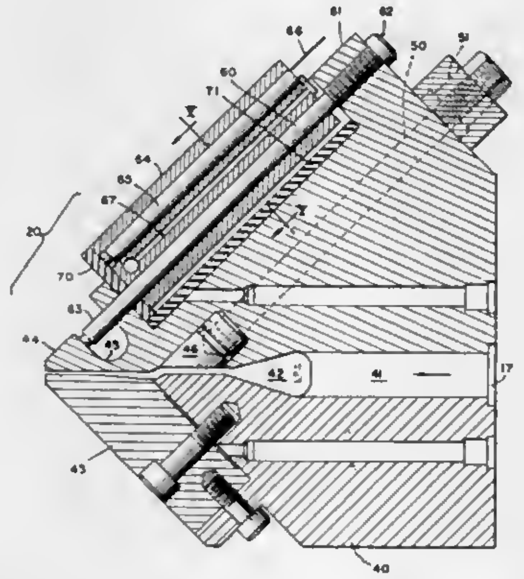
3,940,221

THICKNESS CONTROL SYSTEM FOR AN EXTRUSION DIE

Frank R. Nissel, Ambler, Pa., assignor to Welex Incorporated, King of Prussia, Pa.

Filed Sept. 10, 1973, Ser. No. 396,008
Int. Cl.^{2} B29F *3/04*

U.S. Cl. 425—141 **24 Claims**



1. In an extrusion die for continuously producing a sheet of material that has a substantial width in comparison to its thickness, the combination which comprises: means forming a slit which extends along the width of said die, said slit having an opening of variable thickness, means continuously forcing said material through said slit to form said sheet, slit opening control means including a plurality of spaced-apart elongated members each having capacity to expand and contract thermally, and each operatively arranged to adjust the slit opening at an individual location to control the sheet thickness at said location, a plurality of individual cooling means each connected and structurally located in heat exchange relationship with one of said elongated members upstream of said slit opening for positively cooling said elongated member, and a plurality of individual heating means also connected and structurally located in heat exchange relationship with each said elongated member to heat each said elongated member, means for individually alternately actuating and deactivating said heating means, said heating means having capacity to overcome the cooling of said cooling means on the elongated member with which they are associated, insulating means interposed between said die and both said heating and cooling means, such that the functions of said elongated members and the remainder of the die are substantially thermally independent of each other.

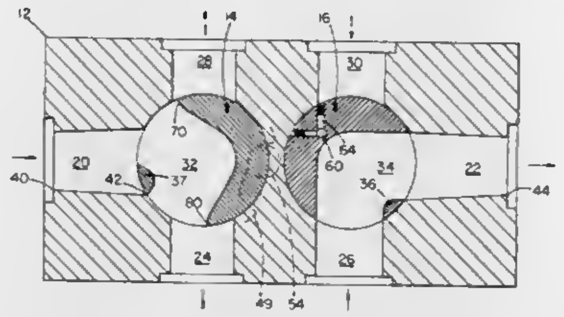
3,940,222

FILTER CHANGING VALVE UNIT

Julius Zink, Yarmouth Port, Mass., assignor to J. Zink Co., Inc., Yarmouth Port, Mass.

Continuation-in-part of Ser. No. 326,019, Jan. 23, 1973, abandoned. This application May 23, 1974, Ser. No. 472,614
Int. Cl.^{2} B29B *1/04*

U.S. Cl. 425—199 **10 Claims**



2. In combination with extrusion apparatus having a liquid source, a die and alternate filter elements, an interconnected double plug valve comprising

a valve housing

an inlet plug element and an outlet plug element seated in said housing, each said plug element having a flow passage therethrough, said inlet plug element having initial flow passage means, and said outlet plug element having vent passage means communicating with the exterior of said valve,

said valve housing having

- a first filter outlet passage to the first filter element and first return passage therefrom
- a second filter outlet passage to the second filter element and second return passage therefrom
- a source inlet passage from the source to said inlet plug element
- a die outlet passage from said outlet plug element to the die

said valve housing having two spaced bores defining internal housing surfaces, said passage having spaced openings in said housing surface

said plug elements being rotatably mounted within said housing bores and having external surfaces of revolution cooperating with said internal housing surfaces

said plug flow passages at their opposite ends having spaced openings in said plug element surfaces

each said housing bore having at least three said spaced openings in its internal housing surface,

the said flow passage spaced openings of the said plug element mounted in said bore being alternately connectable to selected pairs of said housing passage openings

and control means including connecting means between said plug elements for rotating said plug elements with respect to said housing

said inlet plug element being rotated between an initial position in which said inlet plug flow passage connects said source inlet passage with said first filter outlet passage and a position in which said inlet plug flow passage connects said source inlet passage with said second filter outlet passage,

said outlet plug element being rotated between an initial position in which said outlet plug flow passage connects said first return passage with said die outlet passage and a final position in which said outlet plug flow passage connects said second return passage with said die outlet passage

said control means initially rotating said inlet plug element to a filling position in which said inlet plug initial flow passage means connects said source inlet passage with said second filter outlet passage, without rotating said outlet plug element,

said outlet plug vent passage means communicating with said second return passage in said filling position of said inlet plug element

said control means thereafter rotating both plug elements at different rates and completing the rotation of both plug elements simultaneously

said vent passage means being removed from communication with said second return passage by rotation of said outlet plug element from its said initial position

whereby flow to the second filter element is begun and the second filter element is filled and deaerated before flow from the first filter element is cut off, and continuous flow from source to die is maintained without inclusion of air in said flow throughout the operation of the valve.

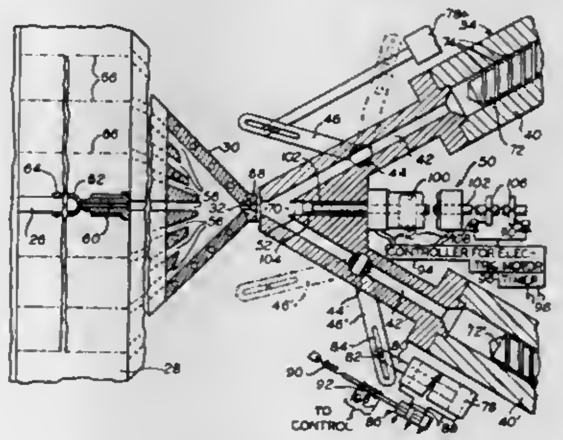
3,940,223

INJECTION OF PLASTIC IN MOLDING MACHINE

John J. Farrell, Green Brook, N.J., assignor to Farrell Patent Company, Greenbrook, N.J.

Filed Dec. 21, 1973, Ser. No. 427,333
Int. Cl.^{2} B29F *1/02, 1/06*

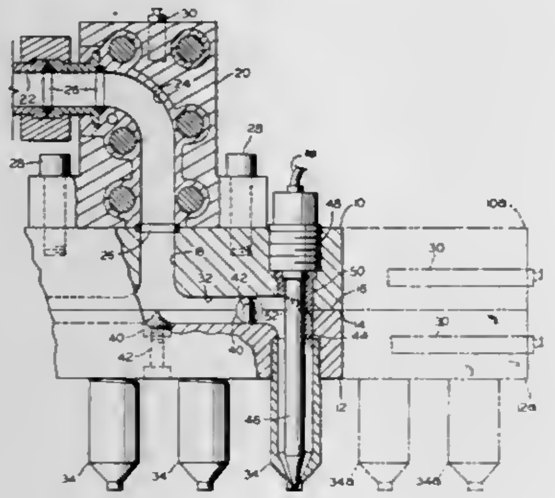
U.S. Cl. 425—244 **8 Claims**



1. Injection molding apparatus including an injection mold that opens for transfer of the injected material from the mold and that closes for the start of a subsequent injection cycle, a first and a second plasticizer, each of which fully charges the mold with the same kind of hot plastic material as the other plasticizer for alternate injection cycles, passages through which both plasticizers communicate with the mold, valve means for selectively shutting off the communication of each of the plasticizers from the mold for each alternate cycle, and control means connected to the valve means to shut off communication of the first plasticizer from the mold at the end of an injection operation of the first plasticizer and before the fully charged mold opens, the control means including means for operating the valve means to put the second plasticizer in communication with the mold following the next closing of the mold and while the first plasticizer is recovering for its next injection operation, characterized by the passages from the two plasticizers including a nozzle that connects with the mold at the entrance of a runner passage of the mold, said passages including a passage through the nozzle and branch passages from said nozzle passage to each of the plasticizers, the valve means being in said branch passages, means to draw back plastic material from the runner at the conclusion of each injection operation communicating with said nozzle and being located at the branch passages end of said nozzle.

3,940,224
CONSTANT VELOCITY MANIFOLD FOR INJECTION MOLDING MACHINE

Donald F. Armour, Bloomfield, Conn., assignor to Package Machinery Company, East Longmeadow, Mass.
Filed Jan. 16, 1974, Ser. No. 433,879
Int. Cl.^{2} B29F *1/00*
U.S. Cl. 425—247 2 Claims



1. A manifold structure for dividing a stream of molten material for delivery to the several cavities of a molding machine, said manifold comprising:

a. at least two manifold members one of which members defines an inlet passageway of circular sectional area (A), and at least one other manifold member defining a plurality (N) of outlet passageways,

b. a plurality of nozzles carried by said other manifold member and communicating with said outlet passageways,

c. said manifold members having planar mating surfaces which cooperate to define at least one circular cross passageway the midpoint of which cross passageway communicates with said inlet passageway to define two symmetrically arranged arcuate branches, the cross sectional area of said cross passageway branches being fractionally reduced from that of said inlet passageway inversely as related to the number (N) of such outlet passageways,

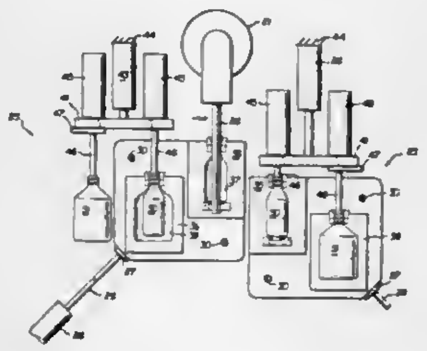
d. flow splitting passageway defining means also defined in said planar mating surfaces for connecting at least two outlet passageways to said cross passageway, said outlet passageways oriented parallel to one another and adapted to receive said nozzles perpendicularly with respect to said planar mating surfaces,

e. said cross passageways and flow splitting passageways providing equal length paths for said molten material to each of said outlet passageways, and

f. a plurality of elongated heating elements mounted in said one manifold member and extending coaxially into said outlet passageways and into said nozzles, and a faired collar for each such heating element, each collar being of generally annular cross section and including a fillet portion at the junction between said flow splitting passageway defining means and said outlet passageways to minimize the impedance to the flow of molten material being channeled from one to the other of these passageways.

3,940,225
BLOW MOLDING APPARATUS FOR STAGED INFLATION OF AN EXTRUDED PARISON

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Continuation of Ser. No. 359,062, May 10, 1973, abandoned, which is a division of Ser. No. 103,624, Jan. 4, 1971, Pat. No. 3,767,747. This application Jan. 13, 1975, Ser. No. 540,637
Int. Cl.^{2} B29C *5/06, 17/07*
U.S. Cl. 425—326 B 15 Claims



13. Apparatus for making a container or the like of a thermoplastic material, comprising:

means for extruding a freely pendant tube from an annular orifice at a first station;

a pre-form blow mold, said mold having an interior cavity;

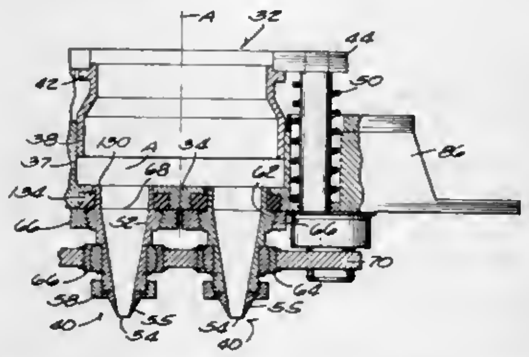
means for moving said pre-form mold to said first station, for enclosing the pre-form blow mold about said tube and for shifting said tube in said mold to a second station;

blow tube means selectively insertable into said tube at said second station for blowing said tube into a pre-form to fill the interior cavity of said pre-form mold and for supporting said blown pre-form independent of said pre-form mold;

a final blow mold having an interior cavity the shape and size of the container and being reciprocable between said second station and a third station for enveloping said blown pre-form and accomodating the expansion of said pre-form to the size and shape of the container.

3,940,226
APPARATUS FOR DISPENSING DOUGH IN A PATTERN UTILIZING MOVEABLE NOZZLES

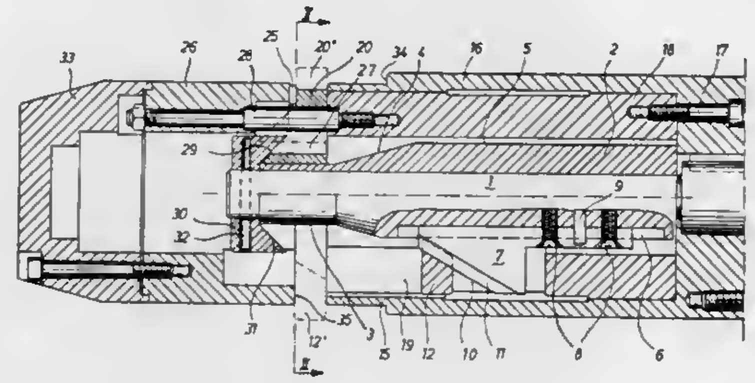
Albert F. L. Verhoeven, Grand Rapids, Mich., assignor to Werner Lehara, Inc., Grand Rapids, Mich.
Filed July 2, 1973, Ser. No. 375,667
Int. Cl.^{2} A21C *11/16*
U.S. Cl. 425—375 15 Claims



7. Apparatus for dispensing dough in a predetermined pattern onto a surface comprising, in combination: a support; a dough dispensing chamber secured to said support; one or more nozzles connected to the bottom of said chamber for dispensing dough from said chamber onto said surface, said nozzles mounted to said chamber for swivel movement relative said chamber and said support, the axis of each nozzle being rotatable at an angle to the direction of movement of dough from said chamber into said nozzles; plate means interconnecting said one or more nozzles jointly together, said plate means having a plurality of spaced openings through which each of said one or more nozzles extend; and drive means for moving said plate means circuitously with the plane of said plate means, said drive means when actuated driving said one or more nozzles circuitously by said plate means simultaneously together relative both said plate and said support causing said nozzles to deposit dough onto said surface in a preselected swirl design.

3,940,227
EXPANSIBLE MANDREL

Georg J. Strasser, Schutzengutli 19, CH-9220 Bischofszell, Switzerland
Filed June 20, 1974, Ser. No. 481,396
Int. Cl.^{2} B29C *17/00;* **B29D** *23/00*
U.S. Cl. 425—392 3 Claims



1. An expansion mandrel for forming an internal annular groove in a tubular element of a synthetic plastic material comprising first and second groups of plate segments being positionable alternately in side-by-side relation in the expanded position, said first plate segments being larger than said second plate segments, means on said mandrel for mounting said first group of plate segments for movement inwardly and outwardly in a radial plane of the mandrel, an operating rod axially reciprocable along the longitudinal axis of the mandrel, a conical portion on said rod engageable with said first plate segments to cam said first segments radially outwardly into the expanded position upon axial movement of said rod in a first direction, a plurality of wedge-shaped elements on said rod subsequent to said conical portion with respect to said first direction of movement and having inclined surfaces thereon with dove-tail guides therein slidably engaging said second segments, said second plate segments being movable axially and then radially, and stop means on said mandrel for stopping the axial movement of said second segments in the said radial plane of said first segments so that axial movement of said rod in said first direction will cam said second segments radially outwardly into the expanded position in alternate side-by-side relation with said first segments.

3,940,228
TELEPHONE CORD MANDREL END RETAINER

Richard H. Griffin, Riverside, R.I., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Aug. 8, 1974, Ser. No. 495,614
Int. Cl.^{2} B29C *17/02*
U.S. Cl. 425—403 11 Claims

1. A fixture for holding a wound wire cord comprising:

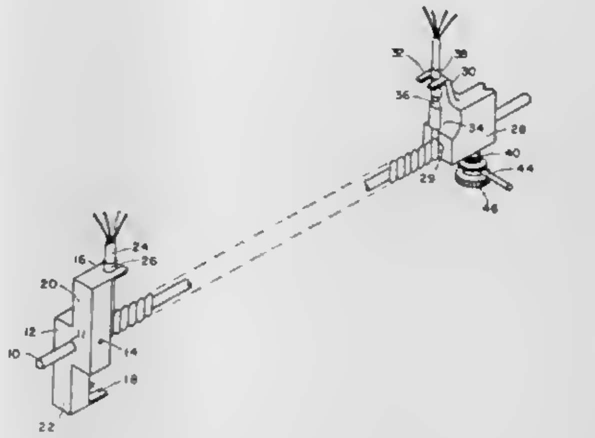
a mandrel,

a wire cord wound around said mandrel,

a first wire cord end retainer secured at one end of said mandrel for holding one end of said wound cord,

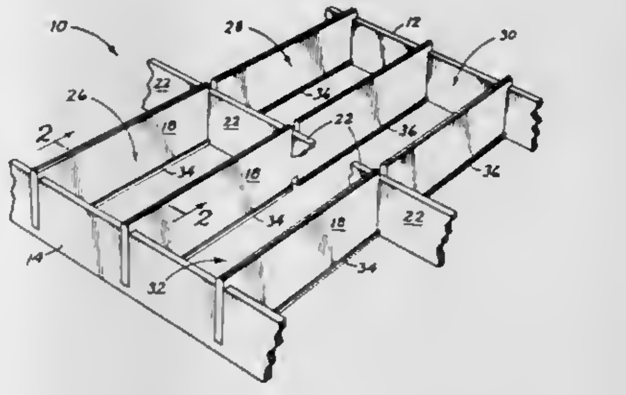
a second wire cord end retainer slidably secured at the other end of said mandrel for holding the other end of said wound cord, the body of said second retainer including a bore accommodating said mandrel and an arm extending upwardly at an angle from one side of said retainer, said arm including bifurcated fingers extending from said arm and adapted to receive the other end of said wire cord, said one side including a ledge spaced from said fingers, the space between said ledge and fingers being adapted to receive a strain relief member at said other end of said wire cord, and

means for detachably securing said second retainer at said other end of said mandrel.



3,940,229
APPARATUS FOR MANUFACTURING ROUGH FACED BRICKS

John R. Hutton, Vancouver, Wash., assignor to Columbia Machine, Inc., Vancouver, Wash.
Filed Feb. 22, 1974, Ser. No. 445,312
Int. Cl.^{2} B28B *3/06, 11/08, 13/05*
U.S. Cl. 425—436 R 7 Claims



1. Apparatus for manufacturing a brick having a roughened side surface, said apparatus comprising a mold including a plurality of interconnected side plates defining a cavity therebetween having substantially the shape of a brick to be formed and adapted to receive material for molding into brick shape, said side plates having a set of edge margins defining an opening therebetween through which a formed uncured brick may be discharged from the mold, one of said side plates having an elongate lip rigidly secured thereon adjacent said opening, said lip extending substantially parallel to said edge margin of the plate and projecting substantially normally into the path along which a side of a brick moves on being discharged from said mold operable to tear a portion of the material forming said brick from the surface of the brick as it is discharged from the mold to produce an irregularly roughened surface for said brick.

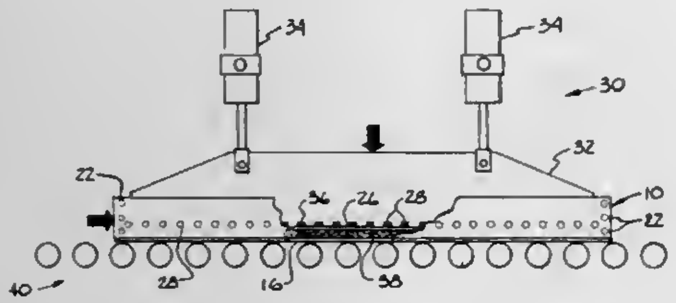
3,940,230
APPARATUS FOR MOLDING A PARTICLE BOARD

Edward Potter, Beaverton, Oreg., assignor to Edward Potter, Beaverton and Dant & Russell, Inc., Portland, both of, Oreg., part interest to each

Division of Ser. No. 359,687, May 14, 1973, which is a division of Ser. No. 297,999, Oct. 16, 1972, Pat. No. 3,804,935. This application Apr. 9, 1975, Ser. No. 566,296

Int. Cl.^{2} B29J *5/08*

U.S. Cl. 425—451.9 13 Claims



1. A mold for forming a highly densified particle board product of substantial thickness from a mixture of comminuted lignocellulosic material and binder, comprising:
   a. an elongate container having spaced, opposing side walls and a base which define a hollow interior, the top of said container being open;
   b. an elongate pressure member wholly insertable within said hollow interior of said container through the top thereof; and
   c. lock means for fastening said pressure member to said container in a position wholly within said container so as to retain said pressure member in said wholly inserted position, said lock means being positioned intermediate the ends of said elongate container.

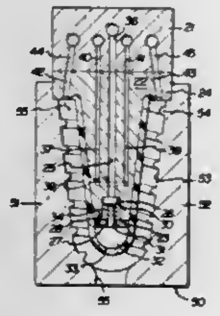
3,940,231
APPARATUS FOR MAKING BLOWN PLASTIC ARTICLES

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 443,092, Feb. 15, 1974, Pat. No. 3,882,218, which is a continuation of Ser. No. 225,448, Feb. 11, 1972, abandoned. This application Nov. 22, 1974, Ser. No. 526,327

Int. Cl.^{2} B29D *23/03*

U.S. Cl. 425—445 6 Claims



1. In an apparatus for making a blown plastic article by inflating interiorly of a blow mold a blowable pre-form of thermoplastic material having distendible side walls and a closed end wall, the improvements of a conditioning apparatus for ensuring the attainment of a desired orientation temperature of the pre-form prior to blowing of the pre-form to its final shape and including separable opposed chamber sections closeable in sealing relation upon the pre-form, said chamber sections cooperably defining an interior chamber having walls spaced substantially uniformly from the walls of the pre-form and having a closed end wall, and means for introducing a heat exchange fluid into the space intermediate the pre-form and the interior chamber walls, the fluid flowing into and through said space being in intimate surface contact with the side walls and the closed end wall of the pre-form.

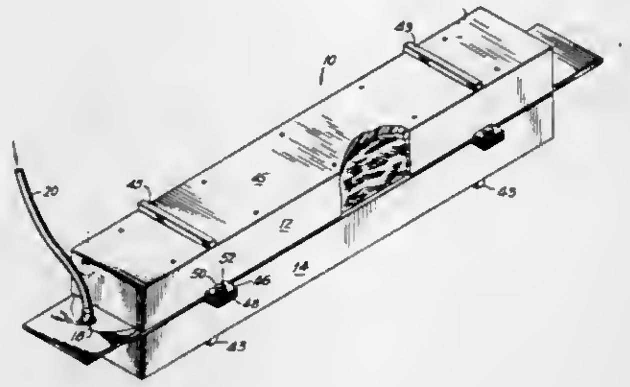
3,940,232
APPARATUS FOR MAKING ICE CUBES OR THE LIKE

Malcolm D. Stock, 93 Douglas Road, Staten Island, N.Y. 10304

Filed Apr. 1, 1974, Ser. No. 456,639

Int. Cl.^{2} A01J *25/12*

U.S. Cl. 425—447 3 Claims



3. A system for freezing a liquid into a plurality of readily separable forms comprising:
   a. mold means having a plurality of separate cavities, each cavity including a base wall and a plurality of side walls extending from said base wall;
   b. passageway means interconnecting adjacent cavities;
   c. a pliable package means to sealingly contain the liquid to be frozen, said mold means adapted to receive said pliable package means in its unfilled condition; and
   d. one way valve means for introducing the liquid to be frozen into said pliable package means after said pliable package means has been positioned in said mold means whereby said pliable package means with said liquid therein expands precisely against said base wall and said side walls and said passageway means so that said pliable package means containing said liquid substantially conforms to the volume of said cavities and said passageway means;
   e. a reservoir for containing the liquid to be frozen;
   f. means adapted to be connected to a source of liquid for filling said reservoir; and
   g. conduit means in fluid communication with the interior of said reservoir and adapted to be placed in fluid communication with said one way valve means for introducing the liquid into said pliable package means.

3,940,233
CANDLE WICKING

Richard C. Fox, San Rafael, and Thornton K. Jones, Greenbrae, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 19, 1974, Ser. No. 534,521

Int. Cl.^{2} F23D *3/18*

U.S. Cl. 431—325 7 Claims

1. A stiffened candle wick composition for use in a wax candle comprising a combustible wick and a stiffening agent comprising a substantially wax-insoluble polymer or copolymer having a Vicat softening point at least 2.5°C. higher than the melting point of the wax of said candle and which depolymerizes or pyrolyzes to substantially completely combustible products at a temperature above said softening point and not greater than the temperature of the flame of said candle when said candle is burned.

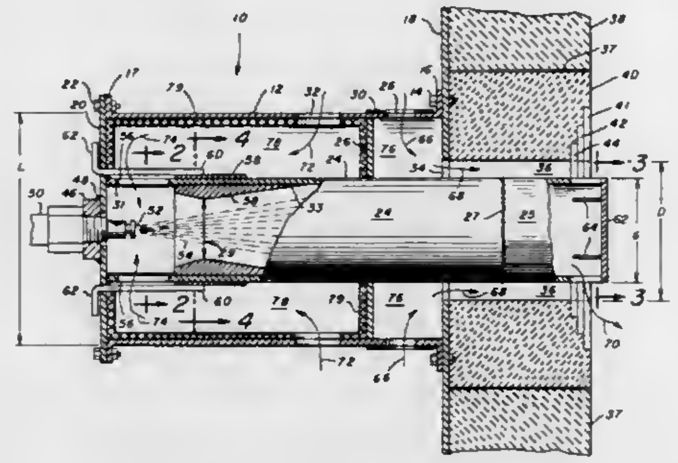
3,940,234
NOISELESS PMS BURNER

Robert D. Reed; John Smith Zink, and Hershel E. Goodnight, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed May 28, 1974, Ser. No. 473,356

Int. Cl.^{2} F23D *13/12*

U.S. Cl. 431—348 5 Claims



1. A quiet premix gaseous fuel burner assembly comprising:
   a. a cylindrical housing means of diameter L having a first end supported against an outside wall of a furnace, said wall having a tile lined opening of diameter D, where D is less than L, along the axis of said housing, the second end of said housing closed by a mounting plate;
   b. a gaseous fuel line with nozzle passing through said mounting plate along the axis of said housing, the pressureized gas flowing from said nozzle in an expanding cone of high velocity gas;
   c. a burner pipe of diameter d, where d is less than D mounted at its second end to said mounting plate coaxially with said housing and extending at least to an inside wall of said furnace, primary air openings in said burner pipe at its second end and means to control the area of said openings, a closure over the first end of said burner tube, and a plurality of longitudinal slots distributed circumferentially around said pipe at said first end;
   d. an annular plate in said housing closing off the annular space between said tube and said housing, forming a first plenum space between said plate and said furnace wall and a second plenum space between said annular plate and said mounting plate;
   e. a plurality of secondary air openings into said first plenum and means to vary the area of said secondary air openings, said openings adapted to pass secondary air into said first plenum and into the annular space between said burner pipe and said tile; and
   f. a plurality of air openings on the wall of said housing adjacent said annular plate to convey air into said second plenum thence into said primary air openings.

3,940,235
IMMERSION FUSING

Ernest A. Weiler, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 26, 1974, Ser. No. 500,411

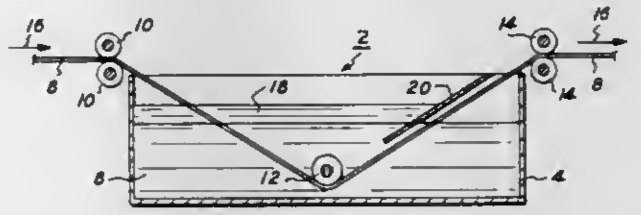
Int. Cl.^{2} F26B *13/00;* B05C *3/00*

U.S. Cl. 432—8 3 Claims

3. A method of fixing a heat fusible particulate material to a support material to which it has been applied in imagewise configuration, and of coating said support material said configuration of particulate material with a nonmetallic plasticizer, including:

moving said support material into a molten bath of metal and nonmetal plasticizer in which said nonmetal plasticizer floats atop said metal in the area where said support material moves into said bath, the movement of said support material being in a direction so as to contact said plasticizer before said metal, said plasticizer forming a coating on said support material and forming a vapor and oxidation barrier over said molten metal, said molten bath of metal being sufficient in size and heat content to effect a thermal fixing of said particulate material to said support material, and to effect a wringing of said coating of plasticizer,

moving said support material out of said molten bath of metal in an area where floating plasticizer is not present.



3,940,236
METHODS AND APPARATUS FOR THE HEAT TREATMENT OF FINE-GRAINED MATERIALS

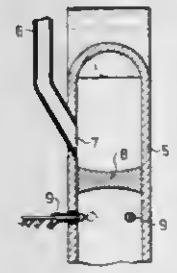
Paul Weber, Oelde; Hans Mollenkopf; Kurt Henning, both of Neubeckum; Otto Heinemann, Ennigerloh; Heinz-Herbert Schmits, Rheda; Wolfgang Rother, Stromberg; Horst Ritzmann, Enniger; Jurgen Wurr, Ennigerloh; Karl Krutzner, Jr., Neubeckum; Werner Schossler, Ahlen; Wolf Goldmann, and Georg Schepers, both of Ennigerloh, all of Germany, assignors to Polysius AG, Neubeckum, Germany

Filed May 13, 1974, Ser. No. 469,358

Claims priority, application Germany, May 15, 1973, 2324565

Int. Cl.^{2} F27B *15/12*

U.S. Cl. 432—14 15 Claims



1. A method for the heat treatment of fine-grained material prior to firing said material in a furnace having a vertical waste gas conduit, said method comprising conducting waste gas from said furnace upwardly through said conduit at a predetermined velocity; supplying fine-grained material having a grain size such that a substantial portion of said material will be entrained by said gas; introducing said material downwardly into said conduit at a first level between its upper and lower ends so that said material will fall downwardly through said conduit toward the lower end thereof prior to said portion being entrained by said gas; distributing said material over the cross-sectional area of said conduit following the introduction of said material to said conduit; and combusting fuel in said conduit at a level below said first level to provide a heating zone through which said material passes as it falls toward said lower end of said conduit and through which said portion of said material again passed following its being entrained by said gas.

8. Apparatus for the heat treatment of fine-grained material prior to firing said material in a furnace, said apparatus comprising a conduit having a substantially vertical portion; inlet means for introducing material to said conduit at a first level such that said material may fall downwardly through said vertical portion; means for distributing said material over the cross-sectional area of said conduit as it falls downwardly; means for combusting fuel in said conduit at a second level

lower than said first level to provide at said second level a heating zone through which said material may fall; and means for delivering waste furnace gas to said conduit at a level below said heating zone and at such velocity with respect to the grain size of said material that at least part of the material which falls through said heating zone is entrained in said gas and passed again through said heating zone.

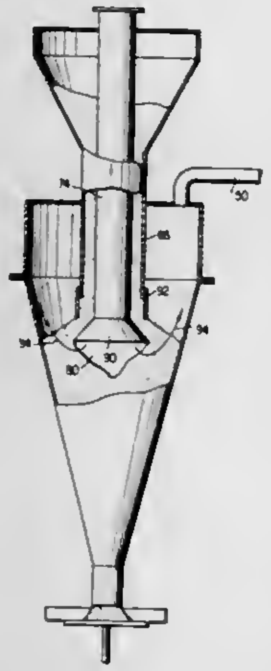
3,940,237
FURNACE EFFLUENT FILTER FOR A CARBON BAKING FURNACE

Juan M. Gonzalez, and William V. Nichols, Jr., both of Portland, Oreg., assignors to Reynolds Metals Company, Richmond, Va.

Filed Dec. 13, 1974, Ser. No. 532,740

Int. Cl.² F23J *15/00*

U.S. Cl. 432—72 **15 Claims**



1. In a carbon baking system having a furnace, and means for mixing carbonaceous aggregate with a suitable binder and forming the mixture into green carbon bodies for baking in said furnace at elevated temperature, the improvement comprising a filter unit for treating the furnace effluent using a bed of carbonaceous aggregate as the filter medium, with provision to recover the used carbonaceous filter material from said filter unit in a form suitable for making such green carbon bodies, said furnace effluent filter including:

- a vertically arrayed funnel-shaped housing through which said carbonaceous aggregate moves under the force of gravity;
- means for supplying the carbonaceous aggregate to maintain a bed thereof within said funnel-shaped housing;
- means located at the base of said funnel-shaped housing for controlling the withdrawal of carbonaceous aggregate from said funnel-shaped housing;
- an effluent entrance conduit vertically mounted in said funnel-shaped housing for directing the effluent generated by said furnace into the bed of carbonaceous aggregate located in said funnel-shaped housing; and,
- an outlet conduit for discharging the treated effluent gas to atmosphere after it has passed through a mass of said carbonaceous aggregate.

10. A carbon baking furnace and associated filter system for treating furnace effluent using carbonaceous aggregate as a filter medium, said filter system comprising:

- a vertically arrayed funnel-shaped housing through which said carbonaceous aggregate moves under the force of gravity, the angle defined by the walls of said funnel-shaped housing being less than or equal to the angle of slide of said carbonaceous aggregate;
- means for supplying the carbonaceous aggregate to maintain a bed thereof within said funnel-shaped housing;
- a valve located at the base of said funnel-shaped housing for regulating the rate of withdrawal of carbonaceous aggregate from said funnel-shaped housing;
- an effluent entrance conduit for directing the effluent generated by said furnace downwardly within the bed of carbonaceous aggregate located in said funnel-shaped housing; and,
- an outlet conduit for removing the treated effluent gas after it has passed through a mass of said carbonaceous aggregate.

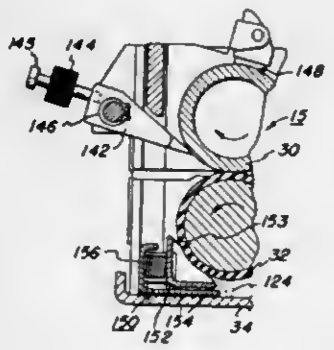
3,940,238
CLEANING STRUCTURE FOR AN ELASTOMERIC FUSER MEMBER

Ari Bar-on, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 24, 1974, Ser. No. 482,731

Int. Cl.² F27D *23/00*

U.S. Cl. 432—75 **4 Claims**



1. Contact fuser apparatus for fixing toner images to support sheets, said apparatus comprising:

- a heated fuser member;
- a resilient backup member;
- means including a support base for supporting said members such that they cooperate to move support sheets therebetween with said toner images contacting said heated fuser member, said backup member being disposed adjacent said base;
- means for cleaning toner from said backup member including a smooth surfaced member having a substantially planar portion positioned for contacting said backup member intermediate the ends of planar portion and forming a nip therebetween, the exit of said nip being disposed opposite said support base whereby toner particles accumulating at the exit of said nip fall upon said support base; said cleaning means comprising a triangular-shaped member and an angular support therefor wherein two sides of said triangular-shaped member are in intimate contact with the two sides of said angular support while said planar portion is unsupported thereby, said planar portion being the third side of said triangular member;
- means for movably supporting said cleaning means; and
- means for biasing said cleaning means into its operative position in engagement with said backup roll, said biasing means comprising a spring contacting one side of said triangular member for urging the triangular member in a first direction and said bias means further comprising said backup member for urging said triangular member in a second direction substantially perpendicular to said first direction.

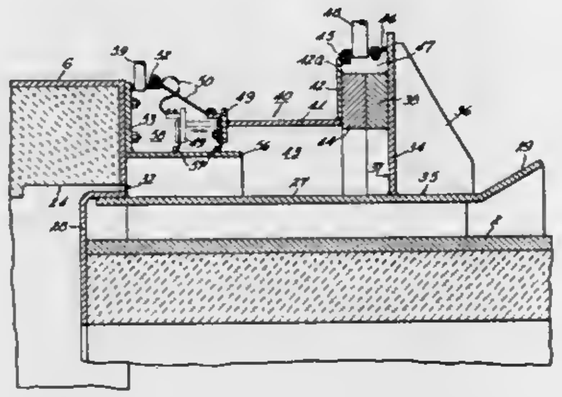
3,940,239
ROTARY REDUCING KILN SEAL

Eugene F. Rossi, Milwaukee, and Daryl R. Konzal, Colgate, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 16, 1974, Ser. No. 533,321

Int. Cl.² F27B *7/24;* **F26B** *25/00*

U.S. Cl. 432—115 **3 Claims**



1. In a generally horizontal rotary mineral reducing kiln having a stationary hood surrounding one end of the kiln, a sealing assembly for preventing the passage of gas through an annular clearance space between the hood and the kiln, the sealing assembly comprising:

a. an annular flange secured to and extending radially outward from the kiln and axially spaced from the hood;

b. a first annular seal ring secured concentrically on the flange to rotate with the flange and the kiln;

c. an axially movable assembly comprising a cylinder spaced around the kiln between the hood and the first seal ring, a second annular seal ring concentrically connected to an end of the movable cylinder for engagement with the first seal ring, wall means connected to the movable cylinder are arranged with a portion thereof radially outward of the seal rings for cooperating with the annular flange on the kiln to define an annular chamber encompassing the first and second seal rings, and gas delivery means connected to the annular chamber for introducing pressurized purge gas into the annular chamber to prevent leakage of other gas between the first and second seal rings;

d. an annular flexible diaphragm spaced around the kiln with an axial end thereof adjacent the cylinder of the floating assembly being circumferentially connected thereto in gas sealing relation, and an opposite end adjacent the hood being circumferentially connected to the hood in gas sealing relation;

e. means engaging the movable assembly and biased to push the movable assembly toward the annular flange on the kiln and maintain the second seal ring in engagement with the first seal ring; whereby upon thermal expansion of the kiln the flange and first seal ring will push the movable assembly to fold the flexible diaphragm, upon contraction of the kiln the biased means will push the movable assembly to expand the flexible diaphragm and toward the first seal ring, and with an effective seal being thereby maintained under variable operating conditions;

f. a cylindrical guide member which is circumferentially connected to the hood substantially concentric to the kiln and projects at least in part into an annular space between the outer periphery of the kiln and the inner periphery of the cylinder of the movable assembly; and

g. an annular flexible wiper which is circumferentially connected to the movable cylinder and projects radially inward thereof into engagement with the other periphery of the cylindrical guide member to shield the flexible diaphragm from high temperature gases within the kiln.

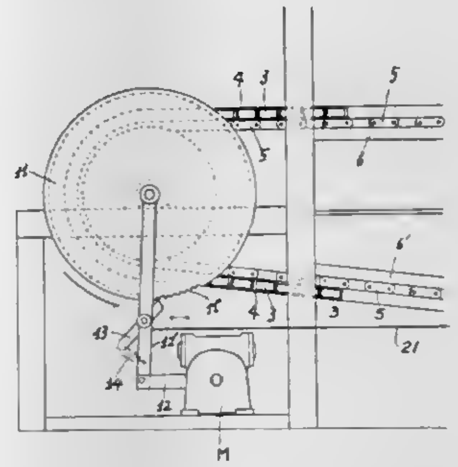
3,940,240
BAKING METHOD AND KILN FOR TILE

Muneo Noritake, and Masaharu Takeuchi, both of Aichi, Japan, assignors to INA Seito Co., Ltd., Tokoname, Aichi, Japan

Filed July 11, 1974, Ser. No. 487,804

Int. Cl.² F27B *9/14, 9/26*

U.S. Cl. 432—122 **3 Claims**



1. A method for baking tiles or the like in a baking apparatus which bakes the tiles in an upright position, said baking apparatus having:

- a tunnel kiln,
- an endless chain through the tunnel kiln which has L-shaped supporting receptacles attached thereto for supporting the items to be baked in an upright position as they pass through the kiln on the endless chain, said chain being supported and moved by gear wheels at the entrance of the kiln, and by sprockets at the exit from the kiln moved by a motive wheel, and
- a feeding means at the entrance to the kiln with an inclined feeding conveyor which conveys the items to be baked into the L-shaped receptacles,

said method comprising:

- intermittently rotating the motive wheel by driving means positioned outside the kiln, thereby causing the endless chain to move intermittently;
- intermittently conveying and loading the items to be baked onto the long back portion of the L-shaped receptacles on the endless chain by the intermittent rotation of the feeding conveyor in response to the intermittent rotation and stopping of the endless chain at the front of the kiln;
- passing the items to be baked through the kiln in an upright position at a speed of approximately 4 meters per hour.

2. In a baking apparatus for baking tiles or the like in an upright position, said baking apparatus having a tunnel kiln, and an endless chain through the tunnel kiln which has L-shaped supporting receptacles attached thereto for supporting the items to be baked in an upright position as they pass through the kiln on the endless chain, the improvements comprising:

- rotating means for rotating said endless chain through the kiln, said rotating means comprised of:
  - a notched wheel operatively connected to said endless chain at the exit from the kiln,
  - a motor having an eccentric axis positioned at the exit from and beneath said kiln,
  - crank shaft means connected at one end to said motor for movement therewith, and
  - a sending nail rotatably attached at middle portion thereof to said crank shaft means, the lower portion of said nail having a continuous downward moment and the upper portion of said nail being engageable with said notched wheel, whereby in response to the rotation of the motor, the crank shaft moves and causes the sending nail engaged with said notched wheel to rotate said wheel, thereby causing said endless chain to rotate;

feeding means at the entrance of the kiln for feeding the items to be baked into the support receptacles of the endless chains, said feeding means comprised of:
  inclined conveyor means spaced from the support receptacles at the entrance of the kiln for conveying the items to be baked in the kiln into the support receptacles,
  roller means operatively attached to said conveyor means for turning said conveyor means, and
  feed motor means pivotally mounted beneath said conveyor means and said roller means for pivoting, contacting, and rotating said roller means, whereby said conveyor means turns and feeds the items to be baked into the support receptacles; and
synchronizing means connected between the rotating means and the feeding means for synchronizing the feeding of the items to be baked with the intermittent motion of the endless belt, said synchronizing means comprised of:
  an axially mounted chain wheel beneath and at the front of the kiln under the feed motor means,
  a traction rope attached at one end to said crank shaft means,
  a chain attached to the free end of said traction rope and fitted partially around the circumference of said chain wheel,
  a weight attached to the free end of said chain fitted around said chain wheel,
  a cam coaxially mounted with said chain wheel for rotation as the chain wheel rotates,
  a moving rod resting against the circumference of said cam at one end and attached to said feed motor means at the other end, whereby movement of the crank shaft causing the intermittent movement of the endless chain causes the traction rope and chain attached thereto to move in the direction of the crank shaft, thus causing the chain wheel and its coaxially mounted cam to rotate against the moving rod and pivot the feed motor means attached thereto upward against the roller means, thereby turning the conveyor means and feeding the items to be baked into the support receptacles on the endless chain.

3,940,241
ROTARY KILN PLANT

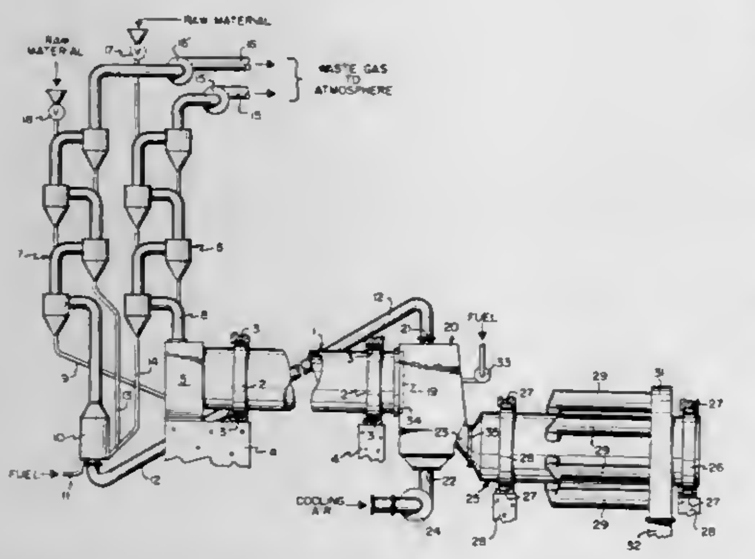
Rolf Dietrich Houd, Copeohagen Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Jan. 17, 1975, Ser. No. 541,993

Claims priority, application United Kingdom, Jan. 25, 1974, 3608/74

Int. Cl.² F27B *7/02, 15/16*

U.S. Cl. 432—106 **33 Claims**



1. A rotary kiln plant for calcining and sintering mineral materials such as cement raw materials which comprises separate means for preheating and calcining the raw materials, a rotary kiln for burning the raw materials and a rotary cooler means for cooling the materials burnt in the rotary kiln, a stationary chamber positioned intermediate the outlet portion of the rotary kiln and the inlet portion of the rotary cooler means in a manner to form a passage for the burnt kiln product from said kiln to said rotary cooler means in countercurrent with heated cooling air passing to said rotary kiln for use as combustion air, inlet means on said intermediate chamber for the admission of additional cooling air into said chamber, and outlet means on said intermediate chamber for discharging at least part of the preheated cooling air therefrom, said chamber outlet means communicating with said preheating and calcining means independently of said rotary kiln so as to by-pass said rotary kiln.

3,940,242
FLAT FLAME BURNER

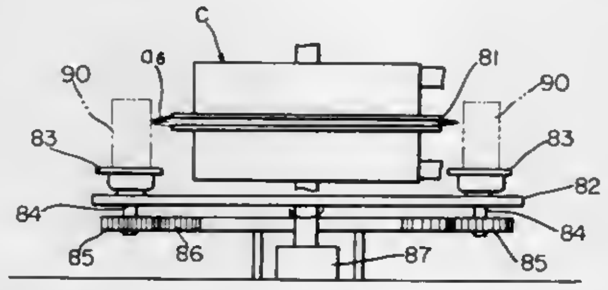
Yuji Matsumura, and Hiroyuki Mitsudomi, both of Nishinomiya, Japan, assignors to Osaka Gas Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 344,891, March 26, 1973, and a continuation-in-part of Ser. No. 139,709, May 3, 1971, abandoned. This application Dec. 18, 1974, Ser. No. 534,068

Claims priority, application Japan, May 6, 1970, 45-44377[U]; May 9, 1970, 45-45101[U]; Oct. 30, 1970, 45-108339[U]

Int. Cl.² F27B *9/14*

U.S. Cl. 432—124 **3 Claims**



1. A burner comprising a housing provided with a first perforated planar exterior wall, an axially apertured plate means disposed in spaced relation thereto, said axially apertured plate means serving to form one wall of a supplemental housing which further includes combustion air and gaseous fuel supply means, a rotary turntable means associated with said supplemental housing adapted to support a circumferentially disposed series of work holding means, each of said work holding means having a perpendicular axis and capable of supporting an article, means defining a second opening in the housing in axial alignment with the perforation in said wall, gas conduit means having an inner terminal portion coaxial with the said second opening in the housing, said conduit further including plural outlets spaced from the terminus, inlet means to introduce continuously swirling combustion air into said housing exteriorly of said gas inlet conduit and flame control means embodied with the first perforate wall to form a flame having a predetermined characteristic.

3,940,243
SEMICONDUCTOR WAFER BAKING AND HANDLING SYSTEM

Anthooy L. Adams, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

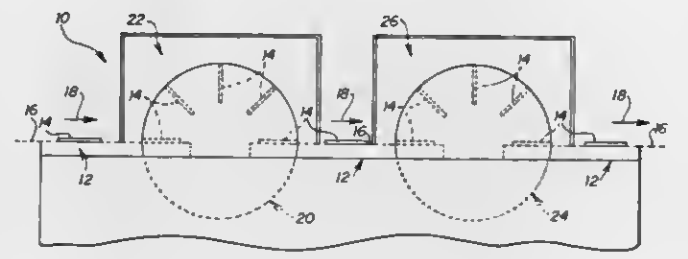
Filed Sept. 9, 1974, Ser. No. 504,580

Int. Cl.² F27B *9/00*

U.S. Cl. 432—144 **16 Claims**

1. A semiconductor wafer handling system comprising:
means for advancing semiconductor wafers along a predetermined path of travel including incoming and outgoing portions;
wheel means including a plurality of radially extending slot means each for receiving and supporting a semiconductor wafer;

means supporting the wheel means for rotation about an axis lying substantially in the plane of and extending substantially perpendicularly to the predetermined path of semiconductor wafer travel;
means for rotating the wheel means about the axis to sequentially align the slot means with the incoming portion of the path of semiconductor wafer travel so that the semiconductor wafers are received in the slot means from the incoming portion of the path to rotate received semiconductor wafers through a predetermined arc, and to subsequently sequentially align each slot means with the outgoing portion of the path of semiconductor wafer travel so that semiconductor wafers are removed from the slot means for travel along the outgoing portion of the path.



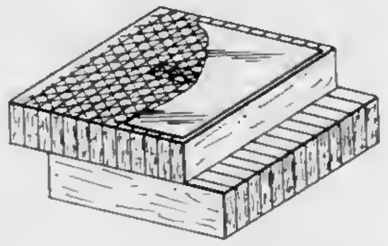
3,940,244
CERAMIC FIBER INSULATION MODULE

Robert A. Sauder; Gary R. Kendrick, and Dale Rich, all of Emporia, Kans., assignors to Sauder Industries, Inc., Emporia, Kans.

Filed Sept. 19, 1974, Ser. No. 507,484

Int. Cl.² F27D *1/00*

U.S. Cl. 432—247 **7 Claims**



1. An insulation module for lining an interior wall of a high temperature chamber comprising:
  a first block of high temperature insulating material, said first block comprising:
    a relatively cold face for positioning adjacent the interior wall of the high temperature chamber, and
    a relatively hot face, opposite said cold face, for exposure to a relatively cold face of a second black of high temperature insulating material; and
  a second block of high temperature insulating material, said second block comprising:
    a relatively cold face for positioning adjacent said relatively hot face of said first block, and
    a relatively hot face, opposite said cold face of said second block, for exposure to chamber heat;
  said first and said second blocks each comprising:
    a plurality of strips of resilient fiber insulation positioned adjacent each other in side-by-side relation, the fibers of said resilient strips being arranged in planes substantially perpendicular to the plane of said respective relatively hot faces of said first and said second blocks;
    said first and said second blocks being attached together, said strips of said first block being arranged to face in a lateral direction perpendicular to said strips of said second block to provide an insulation module attachable to the interior wall of the high temperature chamber.

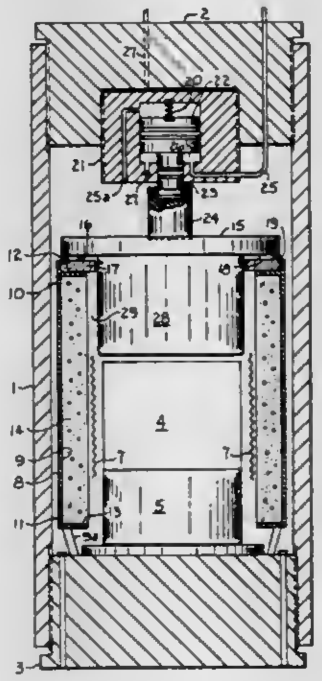
3,940,245
CONVECTION SHIELD FOR ISOSTATIC BONDING APPARATUS

Charles W. Smith, Jr., Fairview, and Franz Zimmerman, Erie, both of Pa., assignors to Autoclave Engineers, Inc., Erie, Pa.

Filed Dec. 18, 1974, Ser. No. 533,828

Int. Cl.² F27D *23/00*

U.S. Cl. 432—249 **10 Claims**



2. A furnace for isostatic pressing, diffusion bonding and the like comprising
  a pressure vessel having means for holding gas at high pressure, said vessel having tubular side walls with a top closure and a bottom closure,
  means for creating a hot zone in the upper part of the vessel and a cool zone in the lower part of the vessel,
  a convection shield having an impervious tubular shell open at the top and bottom and spaced inward from the vessel side walls and surrounding the hot and cool zones and having its open top spaced below said top closure,
  cover means for engaging and hermetically sealing the open top of the tubular shell and
  a refractory cement cast on the interior of the shell for providing thermal insulation for the hot zone and for blocking mass flow of gas through the cement to the shell.

3,940,246

SUBLIMATION TRANSFER AND ISOCYANATE FIXATION OF AMINO- OR HYDROXY-CONTAINING DYESTUFFS AND TRANSFER SHEETS THEREFOR

Raymond DeFago, Riehen; Hans-Joerg Angliker, Basel; Herbert Holzrichter, Murl; Werner Kneubuehler, Binningen, and Richard Peter, Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 245,648, April 19, 1972, Pat. No. 3,782,896. This application Sept. 19, 1973, Ser. No. 398,894

Claims priority, application Switzerland, Apr. 26, 1971, 6069/71

Int. Cl.^{2} D06P *5/06*

U.S. Cl. 8—2.5 A **25 Claims**

1. A transfer printing process for the manufacture of prints on a textile or non-textile, hydrophobic sheet which prints are heat-fast and fast to wet processing, comprising the steps of

a. applying to an auxiliary carrier web a sublimable dyestuff containing a hydroxyl group, an amino group or both,

b. transferring said dyestuff to said sheet by heat-induced sublimation or diffusion from said auxiliary carrier web.

c. subsequently providing to the printed area of said sheet an isocyanate compound, having only one isocyanate group per molecule, and which is capable of reacting with said dyestuff and fixing the dyestuff to the printed area of said sheet by reaction therewith.

3,940,247

DYE MIGRATION CONTROL WITH AMINE SALT OF POLY(VINYL METHYL ETHER/MALEIC ACID)

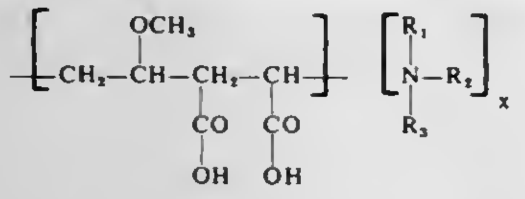
Derwin Sthare, Yorbalinda, Calif., and Richard F. Chambers, Pompton Lakes, N.J., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,113

Int. Cl.^{2} D06P *5/06*

U.S. Cl. 8—172 R **11 Claims**

1. In an aqueous dye bath liquid suitable for the impregnating of textile material with said dye, with subsequent drying prior to the fixing of said dye, the improvement comprising the incorporation in said dye bath of a polymeric antimigration additive in an amount within the range of from about 0.05% to about 0.50% by weight, based on the total weight of said dye bath, said additive being the amine salt of poly(vinyl methyl ether/maleic acid) having the unit structural formula:



$$\left[-CH_2-\overset{\overset{\displaystyle OCH_3}{|}}{CH}-\underset{\underset{\displaystyle OH}{\underset{|}{\underset{\displaystyle CO}{|}}}}{CH_2}-\underset{\underset{\displaystyle OH}{\underset{|}{\underset{\displaystyle CO}{|}}}}{CH}-\right]\left[\overset{\overset{\displaystyle R_1}{|}}{\underset{\underset{\displaystyle R_3}{|}}{N}}-R_2\right]_x$$

where x is from 0.5 to 2.0, R_1, R_2 and R_3 each being taken from the group consisting of H, CH_3, CH_2CH_3, $CH(CH_3)_2$, $CH_2CH_2CH_3$, CH_2CH_2OH and $CH_2CHOHCH_3$, with the exception that R_1, R_2 and R_3 are not all H and that R_1 and R_2 together may be a divalent unit taken from the group consisting of $-(CH_2)_{4-6}$ and $(-CH_2CH_2)_2O$, the presence of said additive serving to minimize uncontrolled dye migration to the surface of the dye-impregnated textile material during the drying of said material prior to fixing, thus enhancing the uniformity of the dyeing operation and the color properties of the dyed textile material.

3,940,248

METHOD FOR INHIBITING CORROSION OF METAL

Hideo Yamaguchi, Naruto; Takashi Kawasaki, Tokushima; Shigeo Takahashi, Tokushima, and Akiyoshi Inubuse, Tokushima, all of Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Osaka, Japan

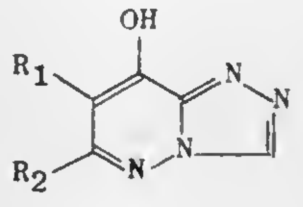
Filed June 13, 1973, Ser. No. 369,518

Claims priority, application Japan, June 15, 1972, 47-60172

Int. Cl.^{2} C23F *11/14*

U.S. Cl. 21—2.7 R **2 Claims**

1. A method for inhibiting corrosion of metal which comprises contacting a metal with a composition consisting essentially of an aqueous medium having dissolved therein an amount in the range of from 0.001 to 5 weight percent of at least one water-soluble 8-hydroxy-s-triazolo (b) pyridazine compound and water-soluble salts thereof selected from the group consisting of ammonium salts, alkali metal salts, hydrazine salts and amine salts, said water-soluble 8-hydroxy-s-triazolo(b)-pyradazine compound having the formula of



wherein R_1 is hydrogen atom or an alkyl group having 1 to 4 carbon atoms: R_2 is hydrogen atom, an alkyl having 1 to 10 carbon atoms, phenyl, hydroxyphenyl, nitrophenyl, benzyl, hydroxybenzyl or nitrobenzyl group.

3,940,249

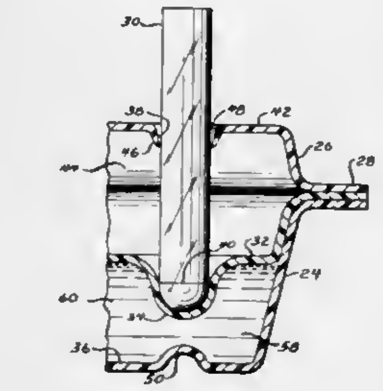
LABORATORY TESTING PROCEDURE

James E. McClurg, Omaha, Nebr., assignor to Streck Laboratories, Inc., Omaha, Nebr.

Continuation-in-part of Ser. No. 364,953, May 29, 1973, abandoned. This application June 17, 1974, Ser. No. 479,823

Int. Cl.^{2} B01L *9/06;* **F25D** *3/08;* **F28D** *13/00*

U.S. Cl. 23—230 R **1 Claim**



1. A laboratory testing procedure for specimens under refrigeration comprising the steps of

providing a test tube holder apparatus which includes a container having a bottom, walls extending upwardly from said bottom, and a top secured to and extending across the upper ends of said walls, said top having a plurality of spaced apart supports integrally formed therein extending downwardly therefrom toward said bottom for removably supporting the bottom portions of test tubes therein, said container being substantially filled with a freezable liquid material comprising H_2O and a material having colligative properties relative to H_2O, said container being equipped with a superstructure mounted a spaced distance above said top and equipped with an aperture aligned with each of said supports whereby a test tube is supported at two vertically spaced apart positions, said superstructure including a unitary member having a top panel with depending sidewalls, said sidewalls being connected to the perimeter of said container, said superstructure being positioned above said top a distance to support a test tube at at least one-quarter of the test tube height,

selectively introducing liquid materials to be tested into a plurality of test tubes,

placing said test tubes in generally vertical position with only the test tube bottom portions in contact with said top supports whereby the material in said container is adapted to maintain the materials in said test tube at a temperature below about 4°C. for up to about 8 hours and while said apparatus is in ambient room temperature,

maintaining said portions in heat transfer contact with said top,

thereafter selectively withdrawing said test tubes from said contact for further testing, and

analytically testing the contents of said test tubes.

3,940,250

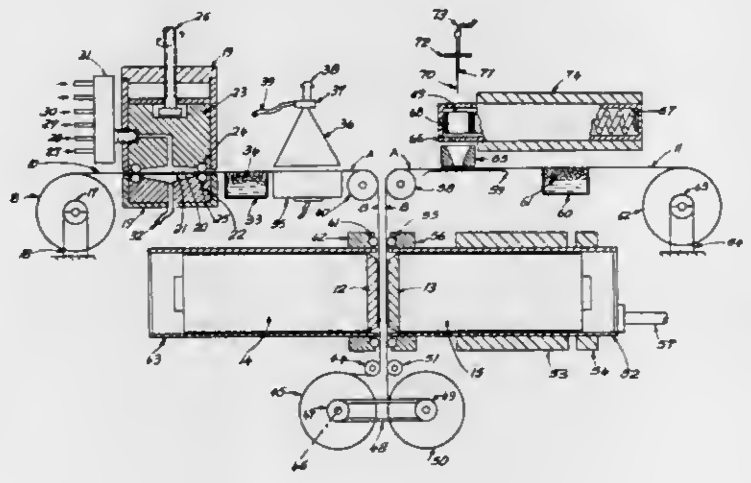
TESTING USING LUMINESCENT REACTION

Chris J. Plakas, Washington, D.C., and George S. Glaros, Perama-Piraeus, Greece, assignors to Vitatect Corporation, Alexandria, Va.

Continuation of Ser. No. 222,256, Jan. 31, 1972, abandoned. This application May 21, 1974, Ser. No. 471,854

Int. Cl.^{2} C12K *1/10;* **G01N** *33/16;* **G21H** *5/00*

U.S. Cl. 23—230 B **13 Claims**



1. A method of optically detecting the presence of biological cells as reactive materials in a sample containing a plurality of biological cells comprising the steps of:

A. filtrating said sample on a light-transmitting filter to produce a filtrate containing biological cells from the sample,

B. rupturing the cells in the residue while on said filter,

C. depositing a reagent on a light-transmitting surface,

D. bringing said surface and said filter into contact for luminescent reaction, and

E. detecting said luminescence as an indication of said biological cells as reactive materials present in said sample.

3,940,251

APPARATUS FOR DETECTING OR MEASURING A CONSTITUENT OF A GAS

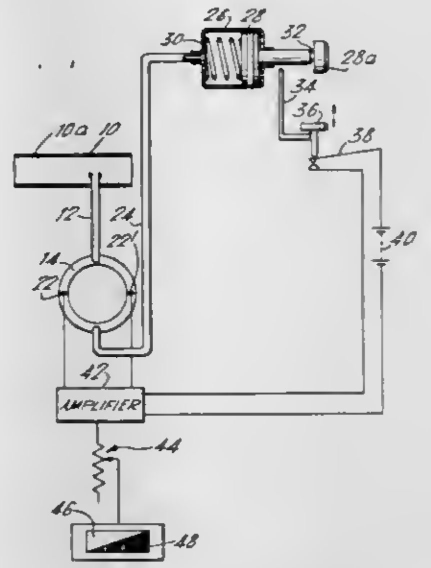
Thomas Parry Jones, 20 South Rd., Sully, Glamorgan, Wales, and Basil Martin Wright, Scots Hill House, Croxley Green, Rickmansworth, Herts, England

Filed Sept. 24, 1973, Ser. No. 399,944

Claims priority, application United Kingdom, Sept. 26, 1972, 44506/72

Int. Cl.^{2} G01N *27/52, 33/16*

U.S. Cl. 23—254 E **9 Claims**



1. Apparatus for detecting alcohol vapour in a gas and particularly for detecting alcohol vapour in exhaled breath, comprising a fuel cell, said fuel cell having inlet means for interposition in an intermediate position of a low resistance path along which breath is exhaled, said low resistance path comprising a tube including an inlet for receiving said gas, a first outlet for detachable connection to the inlet means and a vent port for venting at least some of the gas to atmosphere, means serially communicating with said inlet means through said fuel cell and actuable for drawing a predetermined sample volume of gas from the exhaled breath stream into said fuel cell, said fuel cell further including means for providing an electrical output signal dependent upon the amount of alcohol vapour in the gas sample, and measuring means coupled to the sensor output for measuring the magnitude of said electrical output signal.

3,940,252

APPARATUS FOR THE RELEASING OF MATERIALS FROM VOLUMINOUS PRECIPITATES OR SUSPENSIONS

Helmut Reinhardt, Rodenkirchen; Karl Trebinger, and Gottfried Kallrath, both of Wesseling, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, DT

Division of Ser. No. 343,170, March 20, 1973, Pat. No. 3,867,197. This application July 12, 1974, Ser. No. 488,152

Claims priority, application Germany, Mar. 27, 1972, 2214826

Int. Cl.^{2} B01D *12/00*

U.S. Cl. 23—270 R **3 Claims**

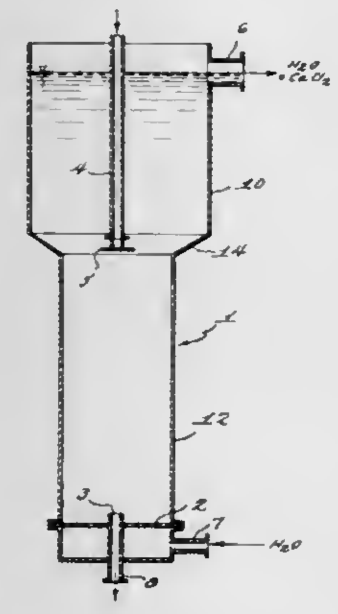
1. Apparatus for removing solvent soluble material from a voluminous suspension of solid material by countercurrent flow comprising

a vertical column having a vertical cylindrical upper wide portion, a vertical cylindrical lower narrow portion, and a frustoconical portion interconnecting said upper and lower portions, the cross-sectional area of said upper portion being approximately twice that of the lower portion,

first conduit means for introducing said suspension into said column extending from above and through said upper portion and terminating near the bottom of said frustoconical portion, dispersing means comprising a horizontal spray diffuser for providing a uniform distribution of the suspension over the entire cross-sectional area of said column lower portion, terminating said first conduit means at the beginning of said lower column portion,

second conduit means disposed near the bottom of said column for introducing said solvent,

means for evenly distributing said solvent introduced near said column bottom over the entire cross-sectional area of said column lower portion, said means including a horizontally disposed perforate member having a top portion thereof and located above said second conduit,

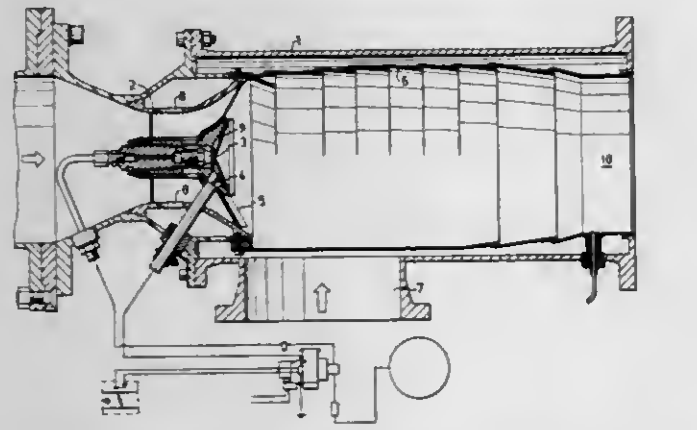


means for discharging purified suspension from said column, said means including a single discharge conduit extending from slightly above the top of said horizontally disposed member through said member to below the second conduit, and

means for removing solvent containing solubles released from the voluminous suspension, said means including a discharge device disposed in the top of said column upper portion and above the bottom termination of said first conduit means.

3,940,253
DEVICE FOR THE PURIFICATION OF PROCESS WASTE GASES

Karl Axel Zetterstrom, Trollhattan, Sweden, assignor to Volvo Flygmotor Aktiebolag, Trollhattan, Sweden
Filed Dec. 7, 1973, Ser. No. 423,371
Int. Cl.² F23G *7/06*
U.S. Cl. 23—277 C **3 Claims**



1. Apparatus for the purification by combustion of waste gases emanating from chemical processes and the like and having poisonous, odious and/or other noxious and/or corrosive constituents comprising:

an elongate outer casing,

an inner flame tube disposed within but spaced from said outer casing and providing an inner surface which is exposed to the combustion of the waste gases occurring in said flame tube,

means for admitting air into the space between said flame tube and said outer casing,

means comprising a multiplicity of through slots in said inner flame tube spaced about the periphery of said flame tube and along its length for permitting the flow of air from said space into said flame tube to flow as a thin film of air over the inner surface of said air tube,

means for burning a fuel at said inlet end of said flame tube,

means for spreading the flame from the burning fuel over the entire cross-sectional area of said flame tube,

and means for admitting the gases to be purified into an inlet end of said flame tube and for passing said gases through the flame of the burning fuel,

the purified gases following combustion in said flame tube exiting at the other end of said flame tube.

3,940,254
NICKEL CLAD STEEL COINAGE BLANK

Arthur G. McMullen, Edmonton; Michael J. H. Ruscoe, St. Albert; Maurice A. Clegg, and Ronald L. Prowse, both of Fort Saskatchewan, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada
Filed Oct. 21, 1974, Ser. No. 516,248
Claims priority, application Canada, Sept. 16, 1974, 209325
Int. Cl.² B32B *15/18*
U.S. Cl. 29—196.6 **3 Claims**

1. A coin blank comprising a core formed of low carbon steel having a carbon content below about 0.03 wt. %, a continuous cladding of nickel completely encasing said core, said cladding having a thickness of at least 0.05 mm on each of the opposed faces of the blank and a thickness, measured radially, of 2 to 4 times the face thickness at the edge thereof, a layer of interdiffused nickel and iron metallurgically bonding said cladding to said core, said blank having a hardness value of less than 65 on the Rockwell 30T hardness scale and said blank having an induced magnetism value B in a field of 150 oersteds of less than about 4000 gauss measured on an axis through the centre of and normal to the faces of the blank whereby said blank, after minting, possesses magnetic properties substantially similar to a pure nickel coin of similar size and shape.

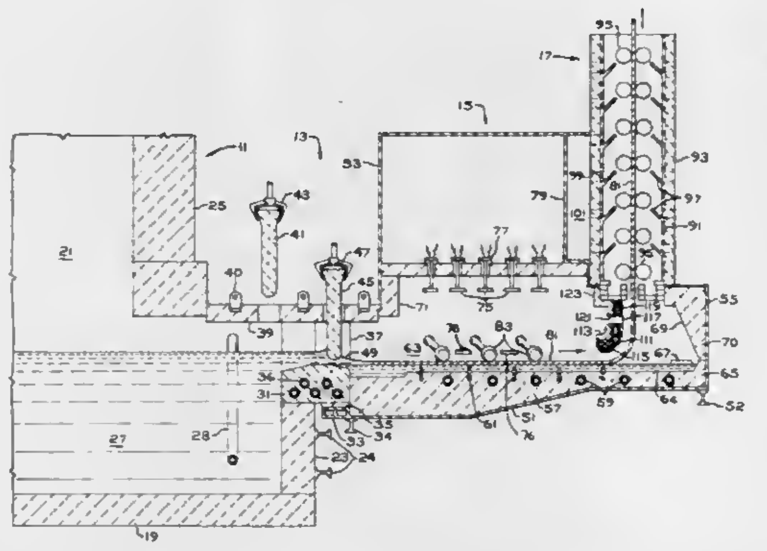
3,940,255
PROCESS FOR MAKING CORDIERITE GLASS-CERAMIC HAVING NUCLEATING AGENT AND INCREASED PERCENT CORDIERITE CRYSTALLINITY

Roy V. Harrington, Brecksville, and Donald F. Beal, Medina, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio
Filed Aug. 5, 1974, Ser. No. 494,737
Int. Cl.² C03C *3/22*
U.S. Cl. 65—33 **8 Claims**

1. In a process for producing a cordierite glassceramic by fusing a mixture of ingredients to form a melt consisting essentially of MgO, Al_2O_3, and SiO_2, quenching the melt to a solid glass, and then heating the solid glass to crystallize such oxides to a cordierite crystalline structure in the presence of a glassy phase; the improvement of increasing the amount of cordierite crystalline structure formed and reducing the amount of glassy phase obtained, comprising: admixing with said mixture or glass at any time prior to such heating step a nucleating agent in a relatively small amount of about 0.5% to about 3%, based on the weight of said solid glass, said agent consisting essentially of a metal compound, the metal of said compound being selected from a class consisting of Mo, Ta, Zr, Nb, Ti, Li, As and mixtures thereof, and said compound of the metal being selected from the class consisting of the metal itself, an oxide of the metal, a compound convertible to the oxide by heat, and lithium fluoride, comminuting said solid glass to an average particle size no greater than about minus 325 U.S. Standard sieve to provide substantially increased surface area, heating said particles and nucleating agent to a nucleating temperature and forming a plurality of sites for crystallization of said comminuted glass to a cordierite glass-ceramic by the combination of said relatively small amount of nucleating agent and said increased surface area, and then heating the particles and agent at a higher temperature to promote crystallization and form a cordierite glass-ceramic containing at least 80% by weight of a cordierite crystalline structure corresponding to $2MgO.2Al_2O_3.nSiO_2$, n being a whole number within the range of 5 to 8, said glass-ceramic having a coefficient of thermal expansion less than 1.60×10^{-6} inch/inch/°C from room temperature to 600°C as determined by the Orton dilatometer.

3,940,256
APPARATUS AND METHOD FOR CONTROLLING THE FLATNESS OF A NEWLY-FORMED CONTINUOUS SHEET OF FLAT GLASS

Joseph A. Gulotta, New Kensington; Leonard A. Knavish, Plum Borough, and John E. Sensi, Arnold, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Oct. 15, 1974, Ser. No. 514,977
Int. Cl.² C03B *18/02*
U.S. Cl. 65—65 A **13 Claims**



1. In the method of making flat glass wherein a layer of molten glass is delivered onto the surface of a pool of molten metal, the glass is advanced in a substantially horizontal path along the surface of the pool of molten metal, the glass is cooled during its advance to form a continuous sheet of glass and the continuous sheet of glass is lifted upwardly along a curved path from the pool of molten metal and then conveyed substantially vertically upwardly along a substantially vertical path away from the pool of molten metal; the improvement of

adjusting and maintaining the temperature in each of a plurality of discrete portions of the sheet of glass to be within 20°F. (10°C.) of the temperature of each other discrete portion of the advancing glass, the discrete portion of the glass being disposed from one another transversely across the width of the continuous sheet of glass as it is lifted from the pool of molten metal along the curved path such that its curvature is substantially uniform across all of its width as the continuous sheet of glass is lifted from its horizontal path of advance to its vertical path of conveyance.

8. In an apparatus for making flat glass comprising a forming chamber having a bottom, sidewalls, a roof, an inlet end and an outlet end and containing a pool of molten metal, means for delivering a layer of molten glass onto the surface of the pool of molten metal at the inlet end of the forming chamber, means for advancing the glass substantially horizontally along the surface of the pool of molten metal in a path extending from the inlet end of the forming chamber toward the outlet end thereof, means for cooling the glass during its advance to form a continuous sheet of glass, means for lifting the continuous sheet of glass upwardly along a curved path from the pool of molten metal and for conveying it substantially vertically upwardly therefrom; the improvement of

means for adjusting and maintaining the temperature in each of a plurality of discrete portions of the sheet of glass to be within 20°F. (10°C.) of the temperature of each other discrete portion of the advancing glass, the discrete portions of the glass being disposed from one another transversely across the width of the continuous sheet of glass as it is lifted from the pool of molten metal along the curved path for maintaining substantially uniform curvature across the width of the continuous sheet of glass as it is lifted from its horizontal path to its vertical path,

said temperature adjusting and maintaining means being disposed at least partially across the width of the forming chamber between its sidewalls and being spaced above the pool of molten metal beneath the roof of the forming chamber at a location at least partially overlying that at which glass is first lifted from the pool of molten metal.

3,940,257
SOIL CONDITIONING FERTILIZER COMPOUND

Ian M. Sherwin, and John R. Grubbe, both of Victoria, Canada, assignors to American Forest Industries Ltd., Victoria, Canada
Continuation-in-part of Ser. No. 688,023, Dec. 5, 1967, abandoned. This application Sept. 23, 1970, Ser. No. 74,867
Int. Cl.² C05F *11/00, 11/02*
U.S. Cl. 71—23 **2 Claims**

1. The method of combining particulate raw seaweed and particulate tree bark to produce a soil conditioning and fertilizing composition comprising;

providing particulate raw seaweed,

providing particulate tree bark,

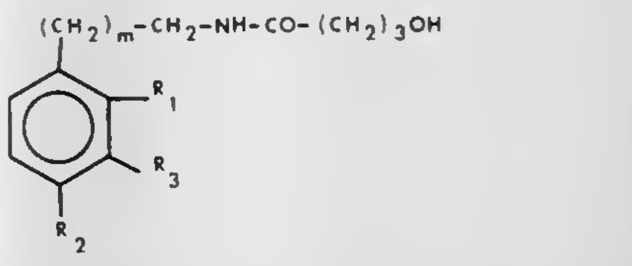
mixing the particulate seaweed and tree bark in a weight ratio of 10 parts tree bark to no more than about 1 part seaweed to assure uniform distribution of the seaweed throughout the bark, and

pulverizing the mixture to reduce the composition to particulate form and to cause the juices of the seaweed to wet the fibers of the tree bark.

3,940,258
METHOD FOR CONTROLLING AQUATIC WEEDS WITH N-PHENYLALKYL-γ-HYDROXYBUTYRAMIDE

Joseph P. Copes, Easton, Pa., assignor to GAF Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 202,595, Nov. 26, 1971, abandoned. This application Jan. 23, 1974, Ser. No. 435,935
Int. Cl.² A01N *9/00*
U.S. Cl. 71—66 **9 Claims**

1. The method of controlling the growth of aquatic weeds which comprises applying to the site where said growth is to be controlled, an effective amount of an herbicidal composition comprising as the active component, an N-phenylakyl-2-hydroxybutyramide having the following formula:



wherein *m* is 1 or 0; at least one of R_1 and R_3 is hydrogen and the other is hydrogen, methyl, chlorine or bromine, and R_2 is hydrogen, methyl, chlorine or bromine.

3,940,259

DIOXANE SUBSTITUTED-α-HALOANILIDES AS HERBICIDES

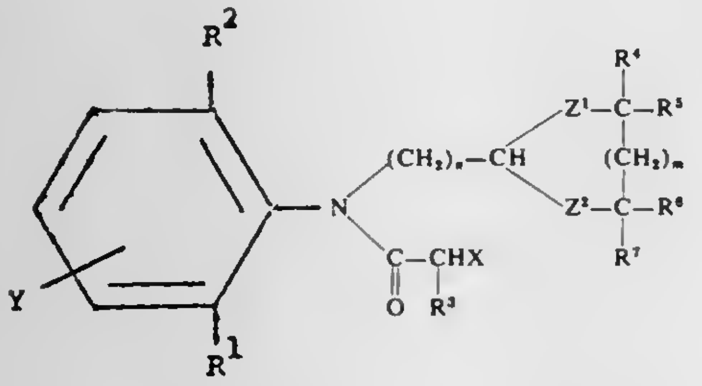
Sidney B. Richter, Chicago, and John Krenzer, Oak Park, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 357,746, May 7, 1973, Pat. No. 3,859,308. This application June 3, 1974, Ser. No. 475,461

Int. Cl.² A01N *9/00*

U.S. Cl. 71—88 **8 Claims**

1. A herbicidal composition comprising an inert carrier and, as the essential active ingredient, in a quantity toxic to weeds, a compound of the formula



wherein Y is selected from the group consisting of hydrogen, lower alkyl and halogen; R^1 is selected from the group consisting of hydrogen, lower alkyl and lower alkoxy; R^2 is lower alkyl; R^3, R^4, R^5, R^6 and R^7 are independently selected from the group consisting of hydrogen and lower alkyl; X is halogen; *m* is the integer 1; Z^1 and Z^2 are oxygen; and *n* is an integer from 1 to 2.

3,940,260

METHOD OF ERADICATING WOODY PLANTS

Ralph I. Kauffman, North Hills, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Oct. 8, 1971, Ser. No. 187,846

Int. Cl.² A01N *9/26*

U.S. Cl. 71—110 **4 Claims**

1. In the process of eradicating oak plants with a combined effective amount of A) trichloroacetic acid, its conventional salts and esters and B) a mixture containing equal proportions of 2,4-dichlorophenoxyacetic acid and 2,4,5-trichlorophenoxyacetic acid, their conventional salts and esters, the improvement consisting of applying onto the ground and over the root systems of said plants component A and applying to the foliage or upper portions of said plants component B wherein component A is applied in a ratio of about 2.5 to 5 parts for each part of component B.

3,940,261

PROCESS FOR PREPARING CRYSTALLINE SILVER PARTICLES HAVING ELECTRICALLY CONDUCTIVE SURFACES AND PRODUCT

Clarence C. Dannelly, and John M. McIntire, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 492,795, July 24, 1974, abandoned. This application Feb. 3, 1975, Ser. No. 546,661

Int. Cl.² C22B *5/00*

U.S. Cl. 75—.5 A **8 Claims**

1. Process for the reduction of water soluble silver salts to prepare crystalline silver particles ranging in size from about 10–100 microns, the silver particles being characterized by exceptionally clean, bright, electrically conductive surfaces, said process comprising reducing a water soluble silver salt in a redox reaction at a temperature of about 0° to about 50°C. for about 2 to 24 hours, said silver salt being present as an aqueous solution in a concentration of about 0.25–1.0 mole per liter of water, dilute nitric acid being present in the amount of 0.1 to 3 ml. per liter of silver salt solution, and a reducing agent characterized by an oxidation potential within —0.150 volts of the silver salt under the conditions of the reaction solution, solubility of about 0.025 or more moles per liter of water at 25°C., and being present in a concentration of 1 to 1.25 molar equivalents, based on the silver ion to be reduced, dissolved in about 0.5 to 2 liters of water.

4. Process for the reduction of silver nitrate to prepare crystalline silver particles ranging in size from about 10–100 microns, the silver particles being characterized by exceptionally clean, bright, electrically conductive surfaces, said process comprising:

a. preparing an aqueous solution of silver nitrate, the concentration of said silver nitrate being in the range of about 0.25–1.0 mole per liter of water;
b. adding dilute nitric acid in the ratio of about 0.1 to 3.0 ml. per liter of said aqueous solution;
c. preparing an aqueous solution of reducing agent characterized by a oxidation within —0.150 of the silver salt under the conditions of the reaction solution, solubility of at least about 0.25 mole per liter at 25°C., and being present in the concentration of 1 to 1.25 molar equivalents, based on the silver nitrate, dissolved in about 0.5 to 2 liters of water;
d. blending said aqueous solution of reducing agent and said aqueous solution of silver nitrate to thereby reduce said silver nitrate in a redox reaction, said reaction being at a temperature of about 0–50°C. for about 2 to 24 hours;
e. filtering and washing said silver particles until the filtrate is essentially clear, and
f. drying said silver particles.

3,940,262

REINFORCED FOAMED METAL

Leonard M. Niebylski, Birmingham; Chester P. Jarema, Detroit, both of Mich., and Thomas E. Lee, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 235,294, March 16, 1972, abandoned, which is a continuation-in-part of Ser. No. 155,342, June 21, 1971, abandoned. This application Feb. 22, 1974, Ser. No. 444,823

Int. Cl.² C21B *5/02;* **B22D** *27/00*

U.S. Cl. 75—20 F **14 Claims**

1. A process for producing a fiber reinforced aluminum-based metal foam, said process comprising dispersing with high speed stirring from about 0.1 to about 25 weight percent, based on the weight of said metal foam, of fibers from about 125 to about 1000 mils in length and having a ratio of length to diameter greater than 50 into a molten metal to be foamed which is aluminum or an aluminum alloy; increasing the viscosity of said molten metal by incorporating therein a viscosity-increasing agent selected from the group consisting of air, carbon dioxide, nitrogen, oxygen, water and the inert gases at a temperature of from about 20° to about 90°C above the liquidous point of said molten metal; foaming said molten metal by treating the thickened molten metal with a foaming agent which is a metal hydride selected from the group consisting of titanium hydride, zirconium hydride and hafnium hydride; and cooling the foamed metal to set said foam.

3,940,263

STEELMAKING WITH INERT GAS BLOWING

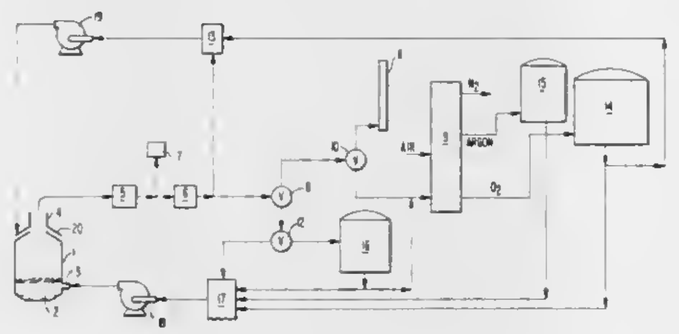
Bartolomeo Morello, Via Ottorino Lazzarini n. 12, Rome, Italy

Filed Sept. 25, 1974, Ser. No. 509,223

Claims priority, application Italy, Sept. 25, 1973, 52724/73

Int. Cl.² C21C *5/38*

U.S. Cl. 75—60 **6 Claims**



1. An oxygen steelmaking process for the selective removal of carbon from a bath of molten steel in a converter having a hood, said bath containing 10–18% by weight of chromium, comprising blowing into said bath an oxygen-argon mixture, removing dust and CO_2 from the effluent gases from said bath, passing one portion of said effluent gas beneath the hood of said converter thereby to reduce the flow of ambient air into said converter, and enriching another portion of said effluent gas in argon and recycling said enriched portion into said bath.

3,940,264

METHOD OF DISTRIBUTING MOLTEN METAL TO CONSUMER STATIONS

Sven Ivar Sieurin, Upplands Vasby, Sweden, assignor to Granges Essem Aktiebolag, Vasteras, Sweden

Filed May 31, 1973, Ser. No. 365,746

Claims priority, application Sweden, June 5, 1972, 7370/72

Int. Cl.² C22B *9/12;* **B22D** *35/04*

U.S. Cl. 75—65 R **7 Claims**

1. A process for distributing molten metal to consuming stations comprising the steps of providing a supply of molten metal in a heat insulated container having an enclosed atmosphere to establish a column of said molten metal in said container, the surface of said molten metal being exposed to said enclosed atmosphere in said container, while supplying heat to said column of molten metal to keep it at a desired temperature; leading off said molten metal from said container at a level substantially below the exposed surface of said column and passing it in open communication into one or more closed heat insulated and substantially horizontal distributing passages enclosing an atmosphere, to establish and maintain a substantially constant surface level of said led-off molten metal common to said container and said passages; supplying heat to said passages to keep the molten metal therein at a desired temperature; removing the molten metal from said passages at said consumer stations, thereby establishing and retaining on said molten metal in said container and passages a covering layer of slag formed in situ on said molten metal; and adding fresh solid metal to said supply of molten metal through said layer of slag in said container in such a manner as to maintain said slag layer on the surface of the molten metal in said container substantially undisturbed and to maintain said slag layer in said passages substantially unbroken.

3,940,265

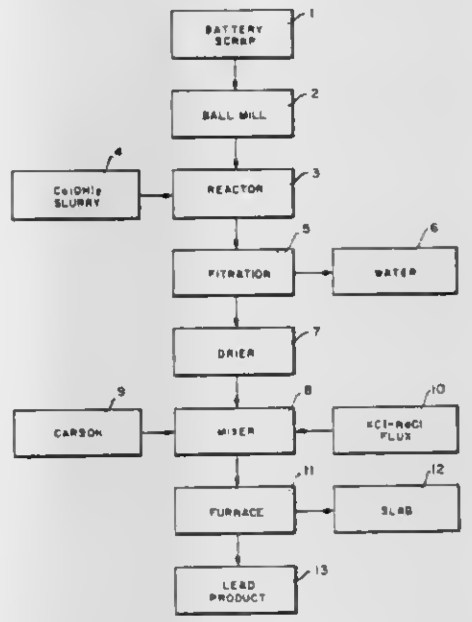
RECOVERY OF LEAD FROM BATTERY SCRAP

Donald A. Wilson, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed June 25, 1975, Ser. No. 589,999

Int. Cl.² C22B *13/00*

U.S. Cl. 75—77 **3 Claims**



1. A process for recovery of lead from lead battery scrap comprising (1) reacting the scrap with an aqueous slurry of calcium hydroxide to form a product comprising lead oxide and calcium sulfate, (2) filtering and drying the reaction product and (3) reacting the product with a mixture of carbon and a KCl-NaCl flux at a temperature of about 605° to 700°C to flux the calcium sulfate and reduce the lead oxide to metallic lead.

3,940,266

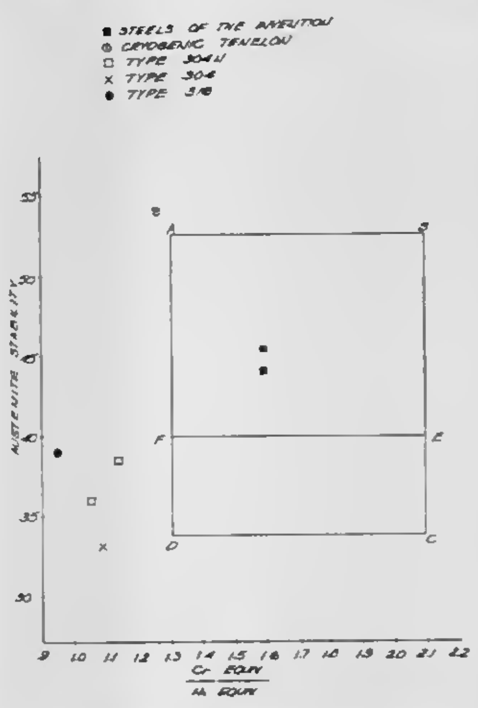
AUSTENITIC STAINLESS STEEL

George N. Goller, Towson, and Ronald H. Espy, Randallstown, both of Md., assignors to Armco Steel Corporation, Middletown, Ohio

Continuation of Ser. No. 238,862, March 28, 1972, abandoned, which is a continuation-in-part of Ser. No. 868,893, Oct. 23, 1969, abandoned. This application Feb. 25, 1974, Ser. No. 445,482

Int. Cl.² C22C *38/58*

U.S. Cl. 75—128 A **5 Claims**



1. An austenitic stainless steel consisting essentially of from 15.5% to 20% chromium, from 11% to 14% manganese, from 2.50% to 3.75% nickel, from 0.01% to 0.06% carbon, from

0.20% to 0.38% nitrogen, up to 0.06% phosphorus, up to 0.04% sulfur, up to 1% silicon, and remainder substantially iron except for incidental impurities, said steel having an austenite stability factor and a ferrite forming tendency, as hereinbefore defined, falling within the area ABEF of the accompanying graph, exhibiting no stress corrosion failure after 264 hours exposure to boiling magnesium chloride solution, by the hereinbefore described test, and having a Charpy V-notch impact strength of

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3,940,267
AUSTENITIC HEAT RESISTING STEEL

Tohru Mimino, Tokyo; Kazuhisa Kinoshita, Yokohama; Takayuki Shinoda, Tokyo, and Isao Minegishi, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 387,736, Aug. 13, 1973. This application Feb. 28, 1975, Ser. No. 553,945

Int. Cl.^{2} C22C *38/48, 38/50*

U.S. Cl. 75—128 G **2 Claims**

1. An austenitic heat resisting steel exhibiting excellent strength for a long period of time services at an elevated temperature consisting of the following composition;

C: 0.03 to 0.30%, Si: up to 1.00%,
Mn: up to 2.00%, Cr: 15.0 to 26.0%,
Ni: 7.0 to 22.0%.
0.02 to 1% of each of Nb(containing Ta) and Zr

wherein

the atomic ratio of (Nb+Zr) to C is within the range of 0.05 to 1.0, preferably 0.2 to 0.5 unavoidable impurities and the balance being Fe.

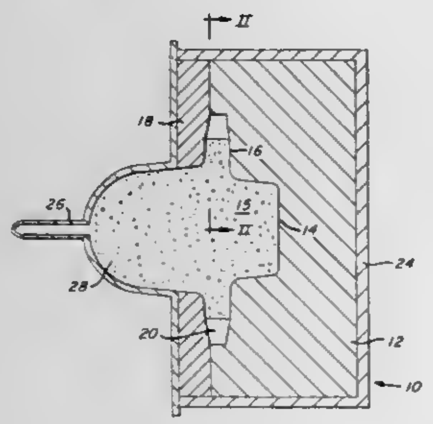
3,940,268
METHOD FOR PRODUCING ROTOR DISCS

John P. Catlin, Beaver, Pa., assignor to Crucible Inc., Pittsburgh, Pa.

Filed Apr. 12, 1973, Ser. No. 350,424

Int. Cl.^{2} B22F *3/00, 3/12*

U.S. Cl. 75—208 R **7 Claims**



1. A method for producing an article having at least one preformed alloy projection metallurgically bonded to a base of compacted alloy powder, said method comprising confining alloy powder in a cavity of a mold of nondeformable material, said mold cavity conforming to the desired configuration of said base of said alloy article, embedding a portion of said projection in said alloy powder within said mold cavity, sealing said mold cavity and said alloy powder confined therein against the atmosphere by enclosing the same in a collapsible container, heating said alloy powder, container and mold to an elevated temperature and compacting said alloy powder while at elevated temperature by the application of fluid pressure to compact the same to substantially full density and to metallurgically bond said preformed projection to said base of compacted alloy powder.

3. A method for producing a composite rotor disc having a hub of compacted alloy powder and a plurality of preformed alloy blades metallurgically bonded thereto, said method comprising confining alloy powder in a cavity of a mold of nondeformable material, said mold cavity having a first portion thereof conforming to the desired configuration of said hub and a second generally annular portion in communication with and surrounding said first portion, a plurality of preformed alloy blades positioned in spaced-apart relation with said second annular portion with a portion of each said blade being embedded in said alloy powder, sealing said mold cavity and said alloy powder confined therein against the atmosphere by enclosing the same in a collapsible container, heating said alloy powder, container and mold to an elevated temperature and compacting said alloy powder while at elevated temperature by the application of fluid pressure to compact the same to substantially full density to form said hub and to metallurgically bond said blades thereto.

3,940,269
SINTERED AUSTENITIC-FERRITIC CHROMIUM-NICKEL STEEL ALLOY

Theodore R. Bergstrom, Little Canada, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 743,588, July 10, 1968, Pat. No. 3,620,690. This application July 9, 1971, Ser. No. 161,916

Int. Cl.^{2} B22F *3/16*

U.S. Cl. 75—214 **24 Claims**

1. A process comprising blending powdered austenitic chromium-nickel stainless steel, or powdered elemental constituents thereof, with powdered ferrite stabilizer or reducible precursors thereof, and sintering the resulting blend to produce an austenitic-ferrite chromium nickel alloy.

3,940,270
REPRODUCTION SYSTEM UTILIZING ION MODULATOR AND DIELECTRIC IMAGING SURFACE

Gerald A. Krulik, Washington, W. Va., and Harvey J. Sable, Cleveland, Ohio, assignors to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed May 6, 1974, Ser. No. 467,391

Int. Cl.^{2} G03G *13/14*

U.S. Cl. 96—1.4 **12 Claims**

1. A process for electrophotographic reproduction which comprises

imparting a uniform electrostatic charge to a photoconductive ion modulator,

exposing the charged ion modulator to a pattern of light and shadow corresponding to an original image which is to be reproduced, thereby producing a latent electrostatic image thereon,

passing ions through the ion modulator carrying said latent electrostatic image to selectively impinge upon a duplex anodized aluminum dielectric surface comprising both barrier type aluminum oxide and porous type aluminum oxide on aluminum, thereby producing a latent electrostatic image thereon,

developing said latent electrostatic image with toner particles to produce a toned image thereon,

transferring said toned image to a receiving material and fixing said toned image upon said receiving material.

3,940,271
COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Masayoshi Kawai; Tadao Shishido; Shoji Ishiguro, and Tadao Sakai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

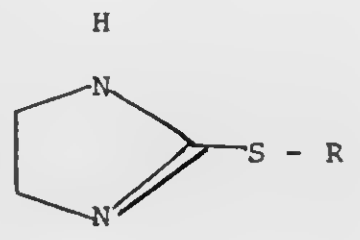
Filed Feb. 4, 1974, Ser. No. 439,675

Claims priority, application Japan, Feb. 2, 1973, 48-13514

Int. Cl.^{2} G03C *7/24, 7/00, 5/32, 1/76*

U.S. Cl. 96—4 **13 Claims**

1. A color photographic light-sensitive material comprising a support having coated thereon at least one light-sensitive silver halide emulsion layer containing a yellow dye-forming coupler, at least one light-sensitive silver halide emulsion layer containing a magenta dye-forming coupler, at least one light-sensitive silver halide emulsion layer containing a cyan dye-forming coupler, and at least one light-sensitive silver halide emulsion layer containing a compound represented by the following formula,



wherein R is an alkyl group having at least 12 carbon atoms.

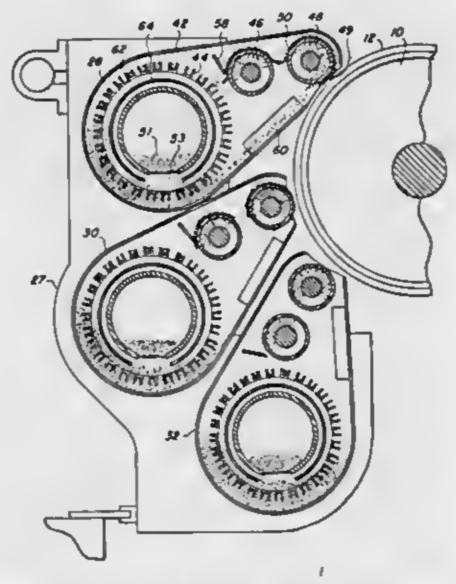
3,940,272
METHOD OF DEVELOPING AN ELECTROSTATIC LATENT IMAGE

James R. Davidson, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 255,259, May 22, 1972, Pat. No. 3,854,449. This application Jan. 4, 1974, Ser. No. 430,868

Int. Cl.^{2} G03G *15/01, 15/08, 15/09*

U.S. Cl. 96—1.4 **3 Claims**



1. A method of rendering visible an electrostatic latent image, including the steps of:

activating a drive system for moving an assembly which transports developer mix to a developer roll being rotated by the drive system, whereby the reaction torque produced by the drive system pivots a developer housing having the transport assembly and developer roll located therein to dispose the developer roll adjacent the latent image in operative communication therewith;

attracting toner particles from the developer roll to the latent image;

de-activating the drive system to substantially remove the reaction torque being applied to the developer housing; and

resiliently urging the developer housing to pivot disposing the developer roll in an inoperative position spaced from the latent image.

3,940,273
SEQUENTIAL PEELING FOR MASK PREPARATION FOR FABRICATION OF MICROWAVE CIRCUITS

Loyd L. Woodham, 1303 Walnut St., Albertville, Ala. 35950, and Raymon H. Aldridge, 219 Longwood Drive SW., Huntsville, Ala. 35801

Filed May 8, 1973, Ser. No. 358,424

Int. Cl.^{2} G03C *5/04, 5/00*

U.S. Cl. 96—27 R **1 Claim**

1. In the preparation of masks having opaque and translucent layers of film for fabrication of microwave circuits, the method of sequentially peeling a single mask for redundant use and comprising the steps of:

a. scribing a plurality of preselected empirically determined circuit combinations into a photographically opaque overlay film sheet without damaging a translucent substrate film;
b. removing the most simple circuit of opaque film from the scribed sheet;
c. photographing the resultant simple circuit comprising the remaining opaque and translucent film sheets;
d. peeling away the next most simple scribed circuit portion;
e. photographing the resultant circuit; and
f. repeating steps (d) and (e) until all desired circuits are photographed for further reduction.

3,940,274
SINGLE EMULSION PHASE AND AMPLITUDE TRANSPARENCY

Richard B. MacAnally, Altadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Dec. 26, 1973, Ser. No. 428,443

Int. Cl.^{2} G03C *5/00, 11/00, 5/04*

U.S. Cl. 96—38.3 **15 Claims**

1. The method of producing a transparency, from a single silver halide photosensitive emulsion layer deposited on a transparent substrate, in which both the amplitude and phase of light transmitted therethrough is independently spatially modulated, comprising

rendering said emulsion insensitive to light of a particular color within a predetermined thickness thereof, measured from the outside surface of the emulsion toward the substrate,

exposing said emulsion to an image of an amplitude mask in light of one color to which said emulsion, beyond said predetermined thickness, is sensitive,

exposing said emulsion to an image of a phase mask in light of another color to which said remainder of said emulsion is sensitive,

developing and fixing said film, to develop a silver image of said phase mask and of said amplitude mask therein,

controllably bleaching the developed silver image of said phase mask to produce an image which has phase variation, and

washing and drying said film.

3,940,275
RECORD MATERIAL AND MARKING LIQUID

Bruce W. Brockett; Ralph L. Marzocco, both of Dayton, and Fredrick D. Weaver, New Lebanon, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 220,413, Jan. 24, 1973, abandoned, and a continuation-in-part of Ser. No. 111,667, Feb. 1, 1971, abandoned. This application July 5, 1973, Ser. No. 376,636

Int. Cl.² C09D *11/00*

U.S. Cl. 106—19 3 Claims

1. In a substantially colorless but colorable marking liquid composition consisting essentially of an organic oil solution of a colorless reactant; the improvement comprising, as said reactant, (1) 1.7 to 2 weight percent of 3,3-bis(4-dimethylaminophenyl)-6-dimethylaminophthalide; (2) 0.0 to 1.5 weight percent of 3,7-bis(dimethylamino)-10-benzoyl phenothiazine; (3) 1.1 to 1.5 weight percent of a mixture of 2'-anilino-6'-diethylamino-3'-methylfluoran and 3,3-bis(1-ethyl-2-methylindol-3-yl)phthalide or 1.1 weight percent 2' anilino-6'-dielhylamino-3'-methylfluoran wherein a ratio, by weight, of component (3) to components (1) and (2) is less than 1 to 1 and wherein the combination of components, when colored, yields an apparent blue-colored mark which absorbs substantially all of the visible spectrum between 400 and 500 millimicrons.

3,940,276
SPINEL AND ALUMINUM-BASE METAL CERMET

Lois E. Wilson, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 1, 1973, Ser. No. 411,947

Int. Cl.² C04B *35/04, 35/10, 35/70*

U.S. Cl. 106—62 13 Claims

1. A dense, coherent, substantially homogeneous cermet composition of matter composed essentially of, on a weight basis, at least 60% magnesium aluminate spinel crystals, 0 to 10% alpha alumina crystals, 0 to 2% mullite crystals, 0 to 5% magnesium aluminum boride crystals and 10 to 30% aluminum-base metal phase.

3,940,277
GLASS-CERAMICS CONTAINING FIBERS EXHIBITING THERMOPLASTIC PROPERTIES

Joseph E. Pierson, and Stanley D. Stookey, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 1, 1974, Ser. No. 493,561

Int. Cl.² C03C *3/22*

U.S. Cl. 106—39.6 17 Claims

1. A glass-ceramic body exhibiting exceptional impact resistance consisting essentially of crystalline silica fibers contained within a residual glassy matrix, said fibers having a needlelike structure and being oriented in essentially a single direction, and said glass-ceramic body consisting essentially, by weight, of about 75–95% SiO_2 and 5–25% Na_2O and/or K_2O.

3,940,278
FIBER OPTICS

Warren W. Wolf, Reynoldsburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed June 10, 1974, Ser. No. 477,881

Int. Cl.² C03C *3/04, 13/00*

U.S. Cl. 106—52 1 Claim

1. A boron-free glass composition capable of being the core glass or cladding glass in a light transmitting optical fiber product; said glass composition consisting essentially by weight of:

Ingredient	Weight Percent
SiO_2	40 to 50
Al_2O_3	5 to 7
BaO	30 to 50
Na_2O	5 to 20
Sb_2O_3	0 to 0.05

and having an index of refraction ranging from 1.55 to 1.65.

3,940,279
SIZE-GRADED TERNARY BATCH FOR BONDED BASIC REFRACTORY SHAPES

Donald L. Guile, Horseheads, and Robert K. Smith, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed June 17, 1974, Ser. No. 480,284

Int. Cl.² C04B *35/04*

U.S. Cl. 106—58 9 Claims

1. A size-graded batch for the production of basic refractory bodies consisting essentially of, with percentages on the weight basis, a mixture of,

dead-burned magnesite and at least one refractory grain consisting essentially of on the oxide basis 50–67% MgO and 33–50% CaO and selected from the group of dead-burned grain and fused grain,

25–35% being a fine magnesite fraction whose particles are substantially all −100 Tyler mesh and composed of said dead-burned magnesite,

20–30% being an intermediate refractory grain fraction whose particles are substantially all in the range of −4+65 Tyler mesh, substantially all at least 2 $\sqrt{2}$ times the size of the largest allowed particle in said fine magnesite fraction, and composed of said refractory grain, and

40–50% being a coarse refractory grain fraction whose particles are substantially all in the range of −4+65 Tyler mesh, substantially all at least 2 $\sqrt{2}$ times the maximum allowed particle size in said intermediate refractory grain fraction and composed of said refractory grain.

3,940,280
CONCENTRATE FOR LIQUID COATING COMPOSITION FOR METAL SUBSTRATES

Jon A. deRidder, Ashtabula, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation of Ser. No. 246,154, April 21, 1972, abandoned. This application Feb. 25, 1974, Ser. No. 445,491

Int. Cl.² C08L *1/28;* **106** *190;193;193 M;204*

U.S. Cl. 106—193 M 18 Claims

1. A composition concentrate, said concentrate being adapted for blending with a liquid coating composition precursor that contains water-soluble inorganic compound, with said concentrate providing excellent foam suppression during blending and thereafter forming a liquid coating composition for application to a metal substrate, said concentrate being chromate-free and containing:

a. pulverulent metal flake;

b. between about 0.1–3 weight percent, exclusive of liquid medium, of water-soluble cellulose ether; and having,

c. water based liquid medium, containing water-dispersible organic liquid providing a weight ratio of said pulverulent metal flake to said organic liquid of from about 1:4 to about 4:1, and with said organic liquid being present in an amount sufficient to supply at least about 5 volume percent of said liquid to the total volume of said coating composition.

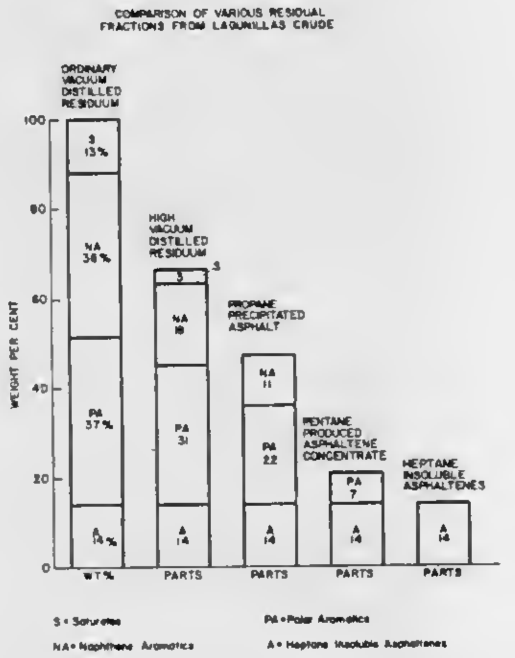
3,940,281
ASPHALT COMPOSITION UTILIZING ASPHALTENE CONCENTRATE

Luke W. Corbett, Mountainside, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Nov. 23, 1973, Ser. No. 418,663

Int. Cl.² C10C *3/00*

U.S. Cl. 106—278 6 Claims



1. An asphaltic composition comprising one volume of an asphaltene concentrate containing from 40 to 90 wt. % of heptane-insoluble asphaltenes and from 10 to 60 wt. % of polar aromatics *derived from an asphaltic residuum*, blended with from one to four volumes of a petroleum fraction selected from the group consisting of an aromatic solvent extract of a lubricating oil fraction, said extract having a viscosity index below 30, a vacuum gas oil having a boiling range within the limits of about 600° to 1200°F. atmospheric equivalent vapor temperatures, and a naphthene-aromatic fraction of a gas oil.

3,940,282
BLADE CLEANING OF SURFACES WITH REVERSE MOVEMENT

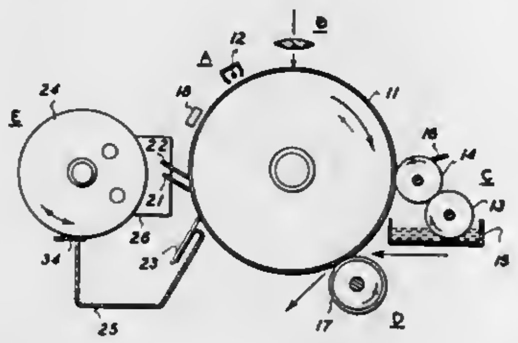
Stephen C. P. Hwa, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 24, 1974, Ser. No. 482,716

Claims priority, application United Kingdom, June 29, 1973, 31046/73

Int. Cl.² B08B *1/02*

U.S. Cl. 134—6 5 Claims



1. A method of cleaning liquid developer from an imaging surface which is capable of carrying an electrostatic latent image comprising intermittently moving the imaging surface in one direction relative to a stationary cleaning blade in engagement therewith with rest periods between periods of relative motion in said one direction, and before each such rest period reversing the relative motion between the stationary cleaning blade and the surface with the blade still in engagement with the surface and moving the cleaning blade away from said surface after reversing said relative motion.

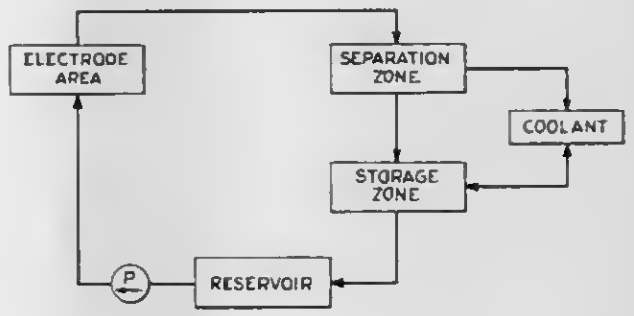
3,940,283
HALOGEN HYDRATES

Philip C. Symons, Birmingham, Mich., assignor to Energy Development Associates, Madison Heights, Mich.

Division of Ser. No. 320,806, Jan. 3, 1973, which is a continuation-in-part of Ser. No. 244,222, April 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 50,054, June 26, 1970, Pat. No. 3,713,888. This application Feb. 7, 1975, Ser. No. 547,886

Int. Cl.² H01M *10/00*

U.S. Cl. 136—6 E 11 Claims



1. An electrical energy storage device comprising:

1. an electrode compartment means with at least one positive electrode means and one negative electrode means therein;
2. an aqueous metal halide electrolyte solution in said electrode compartment means;
3. electrolyte inlet means and electrolyte outlet means in said electrode compartment means positioned so as to provide for a flow of electrolyte past the surface of said electrode means;
4. external communicating means connecting said electrolyte inlet means and electrolyte outlet means externally of said electrode compartment means to provide means for the flow of electrolyte from said electrolyte outlet means to said electrolyte inlet means;
5. circulating means in said external communicating means for circulating said electrolyte solution through said electrode compartment means and recirculating said electrolyte solution exiting from said electrolyte outlet means in said electrode compartment means through said external communicating means and back to said electrode compartment means; and
6. storage means with solid halogen hydrate therein, said storage means having communicating means communicating with electrolyte inlet means for passing the halogen hydrate, or the thermal decomposition products of the stored halogen hydrate, namely, halogen and water, to said electrolyte solution as it is being recirculated through said external communicating means.

3,940,284
NICKEL OXIDE ELECTRIC CURRENT PRODUCING CELL

Samuel Ruben, 52 Seacord Road, New Rochelle, N.Y. 10801

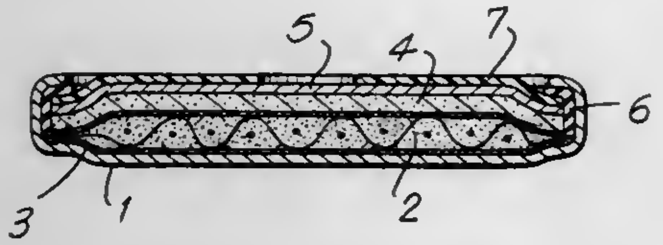
Filed Jan. 21, 1975, Ser. No. 542,694

Int. Cl.² H01M *4/38*

U.S. Cl. 136—24 6 Claims

1. An electric current producing cell having a cathode comprising a porous electrically conductive finely divided

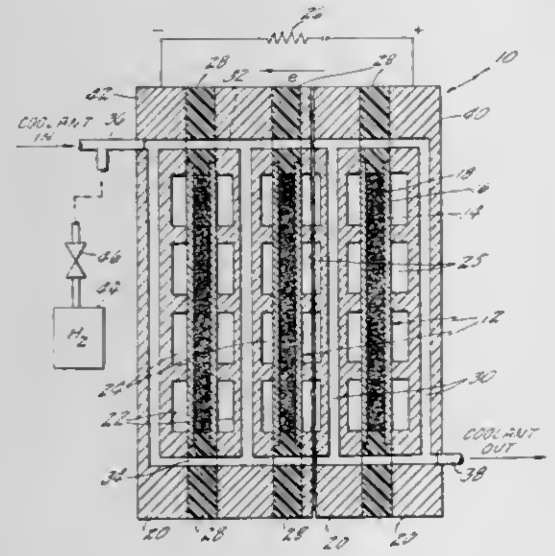
coating of carbon/silica gel bonded to and filling the spaces of a metal screen and an adherent deposition of a metal oxide cathodically deposited on and impregnating said coated screen.



3,940,285
CORROSION PROTECTION FOR A FUEL CELL COOLANT SYSTEM

Richard C. Nickols, Jr., and John C. Trocciola, both of Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 13, 1974, Ser. No. 532,565
Int. Cl.² H01M *8/04*
U.S. Cl. 136—86 R **24 Claims**



1. The combination of:

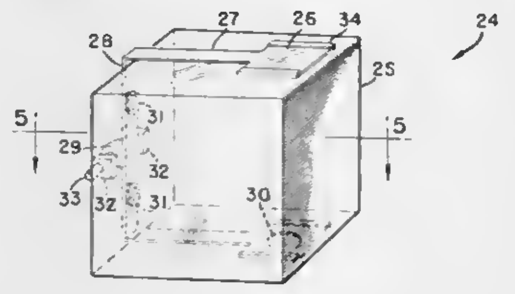
a fuel cell stack having a positive end and a negative end and comprising a plurality of cells connected electrically in series, said stack including components defining coolant channels for carrying a coolant fluid into heat exchange relationship with said cells and a coolant manifold passage extending from the positive to the negative end of said stack for distributing a coolant fluid to said channels, said components comprising an oxidizable material and being in electrical communication with said fuel cells and connecting them in series electrically; and

an ionically conductive coolant fluid within said manifold passage providing a path for shunt current from the positive to the negative end of said stack, said fluid including a gas mixed therein which oxidizes at the positive end of said stack at an electrochemical potential below which said material of said components at the positive end of said stack are oxidized for the level of shunt current through said fluid.

3,940,286
DEEP SEA PRESSURE COMPENSATED EXPENDABLE ENERGY SOURCE

Allen R. Waltz, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 13, 1975, Ser. No. 586,849
Int. Cl.² H01M *2/38*
U.S. Cl. 136—100 R **10 Claims**



1. A seawater activated battery for an oceanographic instrumentation package comprising:

A plurality of lateral walls enclosing a space for positioning seawater activated electrodes;

top and bottom panels spaced from one another and effectively sealing the top and bottom of said lateral walls such as to cooperate therewith to enclose a predetermined volume;

aperture means in said top and bottom panels to permit fluid passage therethrough;

closure means configured and positioned to sealably close said apertures to prevent fluid passage therethrough;

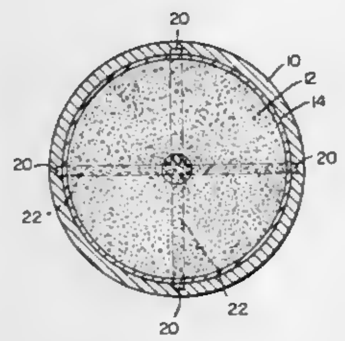
retention means effectively connected to said closure means for holding said closure means in the sealably closed position relative to said aperture to prevent movement thereof;

and actuation means to selectively overcome the action of said retention means for moving said closure means to a position permitting fluid flow through said apertures.

3,940,287
PRIMARY DRY CELL WITH GAS-VENTING PASSAGEWAY AROUND THE CATHODE MIX

Lewis Frederick Urry, North Olmsted, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 30, 1974, Ser. No. 537,594
Int. Cl.² H01M *6/06*
U.S. Cl. 136—107 **7 Claims**

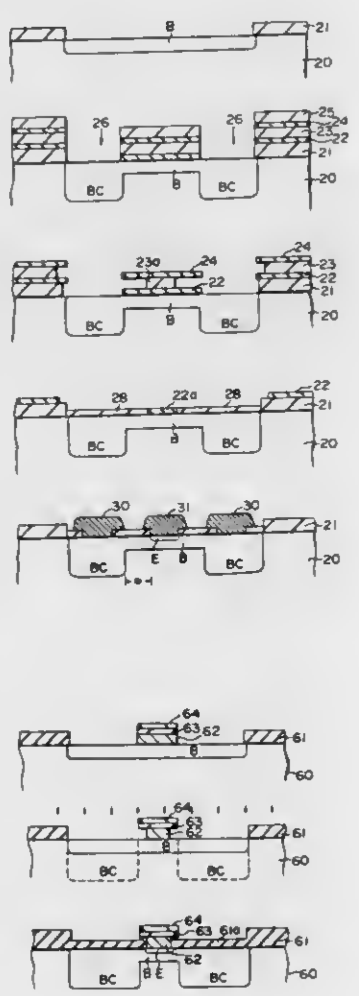


1. A primary dry cell comprising a metal anode cup having an open end which is gas-tightly sealed by a closure including a vent and having a cathode mix therein comprising particles of an oxidic depolarizer, finely-divided conductive material and an electrolyte, separated from the side wall of said anode cup by a porous, ionically permeable separator, said closure and said cathode mix defining a void space therebetween, wherein a gas-venting longitudinal groove in the side wall of said anode cup communicating with said void space to thereby enable gas normally entrapped near the bottom of said anode cup to pass freely around said cathode mix and into said void space from whence the gas can escape through said vent.

3,940,288
METHOD OF MAKING A SEMICONDUCTOR DEVICE

Mikio Takagi; Hajime Kamioka, both of Tokyo; Kazufumi Nakayama, Kawasaki, and Haruo Shimoda, Tama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 10, 1974, Ser. No. 468,876
Claims priority, application Japan, May 16, 1973, 48-54434; May 24, 1973, 48-58404
Int. Cl.² H01L *21/265*
U.S. Cl. 148—1.5 **19 Claims**



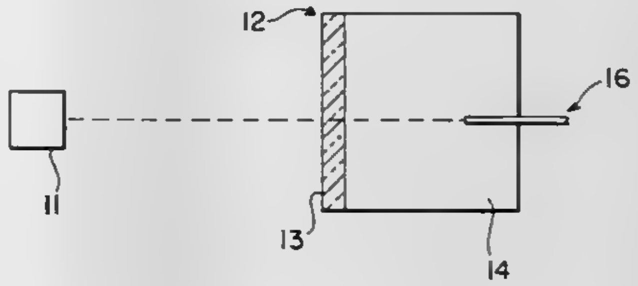
1. A method of making a semiconductor device comprising the steps of forming an insulating film on a semiconductor substrate; selectively removing said insulating film to form therein a window to expose the surface of said semiconductor substrate therethrough; forming in said window a semiconductor layer containing an impurity for diffusion, said semiconductor layer being small in area enough not to make contact with said insulating film; and diffusing the impurity by heat treatment from said semiconductor layer into said semiconductor substrate.

5. A method of making a semiconductor device according to claim 1, further comprising the steps of selectively removing said insulating film on the surface of said semiconductor substrate having formed therein a base region to form a window for impurity diffusion for an emitter; forming a polycrystalline silicon layer containing an impurity for the emitter on the entire area of the surface of the substrate assembly; patterning said polycrystalline silicon layer to be wider than the width of the emitter region ultimately obtained; selectively etching away that area of said insulating film on said base region which adjoins said polycrystalline silicon layer to leave said polycrystalline silicon layer in the form of an umbrella on said base region; effecting ion implantation of an impurity of the same conductivity type as said base region; and diffusing the impurity in said polycrystalline silicon layer by heat treatment into said base region to form therein said emitter region.

3,940,289
FLASH MELTING METHOD FOR PRODUCING NEW IMPURITY DISTRIBUTIONS IN SOLIDS

Charles L. Marquardt, Oxon Hill, and John F. Giuliani, Kensington, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 3, 1975, Ser. No. 546,472
Int. Cl.² H01L *21/268*
U.S. Cl. 148—1.5 **7 Claims**



1. A method of establishing an impurity concentration profile in a solid which comprises:

placing a solid with an impurity which has a segregation coefficient different from 1 by a factor greater than about 3 in an inert atmosphere;

attaching said solid to a heat sink;

flash melting said solid by a laser pulse with a duration from 1/10 to 1/1000 τ and an energy area density from E to 1 1/5E; and

allowing said solid to resolidify, thereby causing a freezing interface to pass through said solid.

3,940,290
PROCESS FOR PREPARING COPPER BASE ALLOYS

Michael J. Pryor; Jacob Crane, both of Woodbridge; Sam Friedman, and Eugene Shapiro, both of Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed July 11, 1974, Ser. No. 487,470
Int. Cl.² C22F *1/08;* C22C *9/06*
U.S. Cl. 148—2 **10 Claims**

1. A process for preparing wrought copper base alloys having good strength and bend characteristics, good solderability and low contact resistance which comprises:

A. providing a copper base alloy consisting essentially of from 7 to 14% nickel, from 1.5 to 3.3% tin with the minimum nickel plus tin content being 9.5%, a material selected from the group consisting of iron from 0.1 to 3%, cobalt from 0.1 to 3% and mixtures thereof wherein the minimum iron plus cobalt content in the alloy is 1.0%, balance copper;

B. hot rolling said alloy with a finishing temperature in excess of 550°C;

C. cold rolling said alloy with a cold reduction of at least 20%;

D. annealing said alloy at a temperature of from 300° to 850°C for at least 1 minute;

E. cold rolling the alloy with a reduction of at least 20%;

F. aging at a temperature of from 300° to 550°C for from 15 minutes to 24 hours; and

G. cold rolling the alloy with a reduction of from 20 to 55%, thereby providing a wrought copper base alloy having a fine grain size below 0.025 mm and characterized by the presence of a fine, dispersed magnetic phase containing said material selected from the group consisting of iron, cobalt and mixtures thereof.

3,940,291

INSULATIVE COATINGS FOR ELECTRICAL STEELS

James D. Evans, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Division of Ser. No. 237,344, March 23, 1972, Pat. No. 3,840,378, which is a continuation-in-part of Ser. No. 39,649, May 22, 1970, abandoned. This application Mar. 25, 1974, Ser. No. 454,074

Int. Cl.^{2} C23F *7/10*

U.S. Cl. 148—6.15 R **12 Claims**

1. A process of providing an insulative coating on oriented silicon steel sheet-gauge stock for electrical uses comprising the steps of applying to said stock a coating composition comprising an aqueous solution having a Mg/PO$_4$ mole ratio of from about 0.6 to about 1.5, said solution consisting essentially of an aqueous solution of phosphoric acid, magnesia, and at least one substance chosen from the class consisting of sulfuric acid, nitric acid and magnesium salts thereof, said substance being present in an amount sufficient for said solution to have a pH within a range of from about 0.5 to about 3.0, drying said coated stock and subjecting said coated stock to a heat treatment to form said insulative coating.

6. A process of providing an insulative coating on oriented silicon sheet-gauge stock for electrical uses comprising the steps of applying to said stock a coating composition comprising an aqueous solution having an Mg/PO$_4$ mole ratio of from about 0.6 to about 1.5, said solution consisting essentially of an aqueous solution of compounds chosen from the class consisting of mono-basic magnesium phosphate, di-basic magnesium phosphate, tri-basic magnesium phosphate, magnesia, and phosphoric acid, plus at least one substance chosen from the class consisting of sulfuric acid, nitric acid and magnesium salts thereof, said substance being present in an amount sufficient for said solution to have a pH within a range of from about 0.5 to about 3.0, drying said coated stock and subjecting said coated stock to a heat treatment to form said insulative coating.

3,940,292

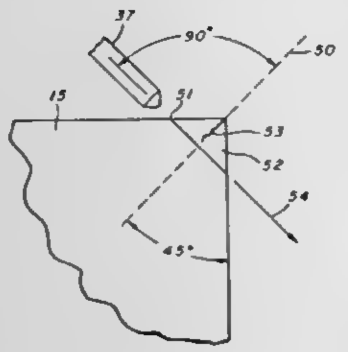
METHOD AND APPARATUS FOR FLAME-CUTTING CRACKED CORNER PORTIONS FROM CONTINUOUSLY CAST METAL WORKPIECES

Charles H. Bode, Jr., Bethel Park Borough, Allegheny County, and Thomas A. Cuscino, Scott Township, Allegheny County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 472,767, May 23, 1974, abandoned. This application Mar. 20, 1975, Ser. No. 560,424

Int. Cl.^{2} B23K *7/00*

U.S. Cl. 148—9 R **16 Claims**



1. In a continuous-casting operation in which a workpiece at an elevated temperature travels within a casting machine and is subject to having cracks form in its corners, a method of flame-cutting a cracked corner portion from the workpiece comprising moving the workpiece past a cutting torch which is aimed at an angle of about 80° to 100° with respect to a plane which bisects the adjacent corner angle of the workpiece, whereby the torch cuts the workpiece along a line spaced from the corner and removes a segment of material which is triangular in cross section.

3,940,293

METHOD OF PRODUCING AMORPHOUS CUTTING BLADES

Donald E. Polk, Morristown, and Robert C. Morris, Flanders, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 317,039, Dec. 20, 1972, Pat. No. 3,871,836. This application Jan. 27, 1975, Ser. No. 544,164

Int. Cl.^{2} C21D *1/00;* **B26B** *21/54*

U.S. Cl. 148—11.5 F **8 Claims**

1. In a process of preparing a metal cutting implement by shaping a metal strip into the desired implement form and sharpening a cutting edge on said implement, the improvement which comprises quenching a molten metal alloy under conditions producing the metal strip in at least 50 percent amorphous state, said metal alloy having the composition represented by M_aX_b, where M is at least one element selected from the group consisting of Ni, Fe, Co, Cr and V, X is at least one element selected from the group consisting of P, B, C, Si, Al, Sb, Sn, In, Ge and Be, *a* ranges from 65 atomic percent to 90 atomic percent and *b* ranges from 10 atomic percent to 35 atomic percent.

3,940,294

COOLING OF HOT ROLLED STEEL STOCK

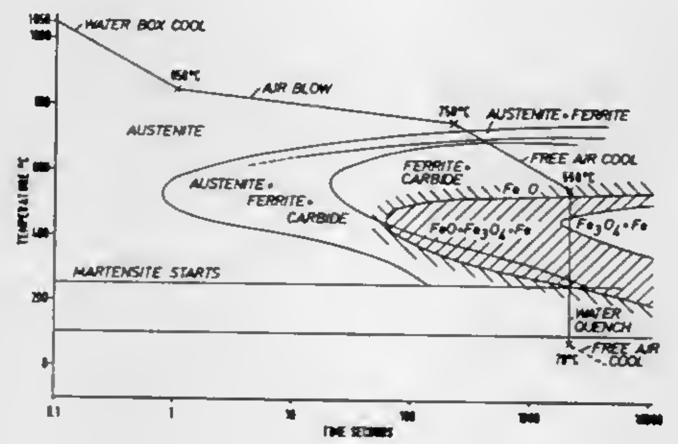
David Robert Sergeant, Maltby, near Rotherham, England, assignor to British Steel Corporation, London, England

Filed Oct. 7, 1974, Ser. No. 512,891

Claims priority, application United Kingdom, Oct. 17, 1973, 48350/73

Int. Cl.^{2} C21D *7/14*

U.S. Cl. 148—12 B **10 Claims**



1. A method of cooling hot rolled steel stock in which
the stock is rapidly cooled immediately after rolling to a temperature (t_1) not less than that at which transformation of the body of the stock from austenite begins,
it is then free air cooled to a temperature (t_2) not less than that at which scale transformation from wustite begins, and
it is then water cooled to quench-in and suppress the transformation of the scale to magnetite.

3,940,295

LOW EXPANSION ALLOYS

David Francis Lupton, Birmingham; John Jefferson Mason, Willenhall, and Peter John Penrice, Hollywood, all of England, assignors to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 466,286, May 3, 1974, abandoned. This application Oct. 25, 1974, Ser. No. 517,960

Claims priority, application United Kingdom, May 3, 1974, 21186/74; Mar. 4, 1974, 9641/74

Int. Cl.^{2} C22C *38/10, 38/12, 38/08, 38/52*

U.S. Cl. 148—38 **24 Claims**

2. A dimensionally stable casting being in the as-cast, heat treated condition and made from a high-strength low expansion carbidic alloy consisting essentially of, by weight, from about 21 to about 35 nickel, from about 5 to about 18% cobalt, from about 0.3 to about 2.5% carbon, up to about 3% chromium, from about 0.2 to about 1.2% vanadium, up to about 3% molybdenum, up to about 0.5% aluminum, up to about 0.5% silicon, up to about 2% manganese, up to about 2% zirconium, up to about 2% niobium, up to about 2% tungsten, up to about 0.1% magnesium, up to about 0.05% calcium, and up to about 0.2% in total of at least one of the group consisting of yttrium, lanthanum and the lanthanides, with the provisos that the sum of the chromium, molybdenum, vanadium, zirconium, niobium and tungsten contents is in the range of from 1 to 4, the sum of % Ni + 0.75 (%Co) = 30.5 to 55, and the nickel to iron ratio is equal to or greater than 0.4:1, the balance, apart from impurities, being essentially iron and said casting exhibiting at room temperature a predominantly austenitic structure.

3,940,296

METHOD FOR GROWING EPITAXIAL LAYERS FROM THE LIQUID PHASE

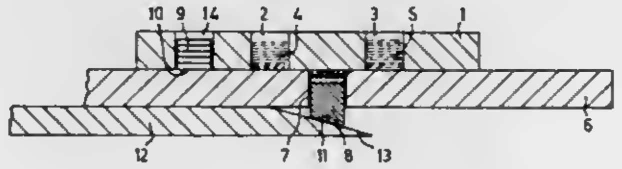
Theodorus Gerardus Jacobus van Oirschot; Willem Nijman, both of Eindhoven, Netherlands, and Marc Paul Andr Fougres, Paris, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 29, 1974, Ser. No. 464,790

Claims priority, application Netherlands, May 1, 1973, 73.6004

Int. Cl.^{2} H01L *7/38*

U.S. Cl. 148—171 **3 Claims**



1. Method of providing a semiconductor material layer on a substrate, comprising the steps of:

a. providing a substrate holder comprising a recess for retaining a substrate and a reservoir defining member, said substrate holder defining at certain times the lower side of said reservoir;
b. providing a semiconductor material in said reservoir;
c. providing in said recess said substrate that comprises a flat surface;
d. moving at least one of said reservoir defining member and said substrate holder with respect to the other so as to locate said substrate surface at said reservoir;
e. depositing said semiconductor material on said surface while said substrate surface is located at said reservoir;
f. moving said substrate vertically with respect to said reservoir at least after said semiconductor material depositing step and while said substrate is disposed at said reservoir; and
g. laterally moving said substrate to a point removed from said reservor, whereby said vertical and lateral movements of said substrate permit excess said semiconductor material to be removed from said layer by said reservoir defining member.

3,940,297

GELLED EXPLOSIVE COMPOSITION AND PROCESS

Frederick Bolza, Victoria, Australia, assignor to ICI Australia Limited, Melbourne, Australia

Filed Nov. 5, 1973, Ser. No. 413,046

Claims priority, application Australia, Nov. 30, 1972, 1440/72

Int. Cl.^{2} C06B *31/30*

U.S. Cl. 149—60 **15 Claims**

1. In the process for gelling water-bearing explosive compositions containing gum selected from the group consisting of galactomannans and xanthans with crosslinking agents in situ, the improvement which comprises incorporating in the reaction mixture a crosslinking agent comprising a redox system which system comprises at least one arsenious compound present in an amount from 0.01 to 5 millimoles per gram of said gum said gelation being conducted at a pH of from 4 to 8.

3,940,298

THERMAL LASER PUMPED WITH HIGH NITROGEN CONTENT PROPELLANTS

Werner F. Beckert, Las Vegas, Nev., and Ottmar H. Dengel, Front Royal, Va., assigoors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 6, 1974, Ser. No. 530,258

Int. Cl.^{2} C06B *25/34, 45/10;* **C07C** *76/02;* **H01S** *3/00*

U.S. Cl. 149—92 **17 Claims**

1. In a method of pumping thermal lasers comprising:

a. combusting a fuel and an oxidizer and (b) expanding the combustion products through a supersonic nozzle to produce a laser effect, the improvement wherein (1) said fuel comprises at least one selected from the group consisting of a tetrazole derivative, a ditetrazolyl derivative, a tetrazine derivative, a triazine derivative and a guanidine derivative, (2) said oxidizer comprises at least one selected from the group consisting of a high-energy aliphatic polynitro compound and a polynitroamine compound.

9. A composition comprising a fuel and an oxidizer suitable for use in a thermal laser:

a. said fuel being at least one selected from the group consisting of a guanidine derivative, a triazine derivative, a tetrazine derivative, a ditetrazolyl derivative, and a tetrazole derivative; and
b. said oxidizer being at least one selected from the group consisting of a high energy aliphatic polynitro compound and a polynitroamine.

3,940,299

METHOD FOR PRODUCING SINGLE-ORIENTED ELECTRICAL STEEL SHEETS HAVING A HIGH MAGNETIC INDUCTION

Isamu Goto; Isao Matoba, both of Chiba; Takuichi Imanaka, Kobe; Ko Matsumura, Chiba; Yoh Shimizu, Chiba; Tomomichi Goto, Chiba, and Takahiro Kan, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Sept. 26, 1974, Ser. No. 509,539

Claims priority, application Japan, Oct. 31, 1973, 48-121762

Int. Cl.^{2} H01F *1/04*

U.S. Cl. 148—111 **3 Claims**

1. In a method for producing single-oriented electrical steel sheets having a magnetic induction of more than 1.85 wb/m^2 including the steps of preparing raw material for the sheets, hot rolling the raw material to a hot strip having an intermedi-

ate gauge of 2–/4mm, subjecting said hot strip to repeated annealing and cold rolling steps including a final cold rolled steel sheet having its final gauge and subjecting the resulting sheets to a decarburization annealing and a final annealing to develop secondary recrystallized grains of (110) [001] orientation; the improvement comprising utilizing a raw material formulation consisting essentially of less than 4% of Si less than 0.06% of C, 0.02–0.2% of Mn, 0.005–0.1% in total of at least one of S and Se, at least one member selected from the group consisting of 0.015–0.4% of elements (Xi) and 0.2–1.0% of elements (X*j*), said element (X*i*) being at least one of As, Bi, Pb, P, Sn,; and said element (X*j*) being at least one of Ni and Cu, with the remainder of the materials being iron; said improvement further comprising a two-step final annealing including a secondary recrystallization annealing at a temperature of 800°-920°C. to fully develop the secondary recrystallized grains and a purification annealing at a temperature of 1,100°–1,200°C.

3,940,300

METHOD AND APPARATUS FOR EXTRUDING A LAYER OF EXTRUDABLE MATERIAL ON A BODY HAVING INACCESSIBLE ENDS

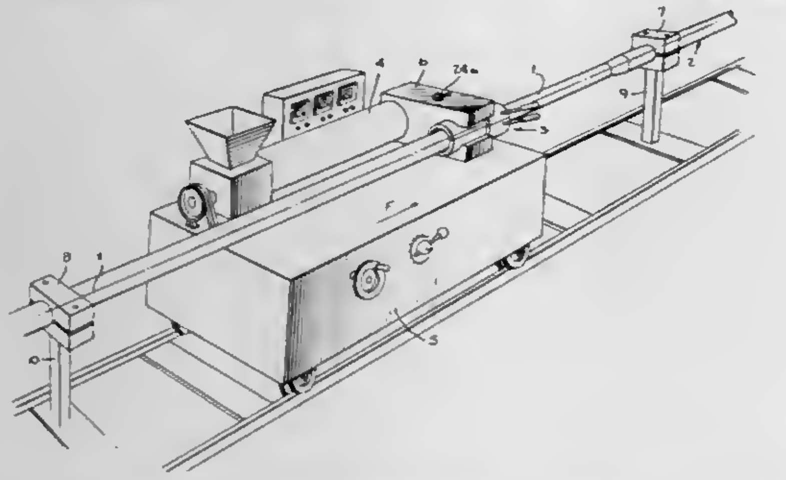
Paolo Gazzana Priaroggia, Milan, Italy, assignor to Industrle Pirelli S.p.A., Milan, Italy

Filed Jan. 14, 1974, Ser. No. 433,236

Claims priority, application Italy, Mar. 23, 1973, 22031/73

Int. Cl.² B29C *27/24;* H01B *7/02, 13/14, 13/24*

U.S. Cl. 156—49 **7 Claims**



1. In a method for applying a layer of extrudable material on a portion of an elongated body of indefinite length whose ends are not accessible, said portion having a predetermined cross-sectional dimension, comprising:

encircling said body at said portion by a split extrusion mold having at least one inlet opening, having means for extruding said layer on said body, having a length less than said portion and having a longitudinally extending, interior bore of a size greater than the cross-section of said body to permit relative longitudinal movement of said mold and said body;

connecting said mold to a source of said material in fixed relation to said mold;

while injecting said material from said source into said mold, causing relative movement between said mold and said body in a direction such that said portion passes through said mold and said layer is applied to said portion;

and terminating the injection of said material into said mold when said portion is covered by a layer of said material;

the steps of connecting said mold to said source, prior to injecting said material, by:

providing an extrusion head intermediate said source and said mold, said head having a longitudinally extending cavity defined by a unitary C-shaped wall, said cavity extending from one end to the other of said head for receiving said mold and engaging the exterior thereof, said head having a passageway therethrough with an outlet opening at the wall of said cavity for the passage of said material from said source to said mold and said head, in the form assumed thereby when it engages said mold, said head having a single longitudinally extending, unobstructed slot extending from one end to the other thereof and from the exterior of said head to said cavity to provide a longitudinally extending entrance into said cavity from the exterior of said head, said slot having a constant width at least as great as said predetermined dimension but less than the cross-sectional exterior of said mold;

inserting a length of said body into said head cavity through said slot and in a direction transverse to the length of said body;

encircling said body by said mold by placing it around a length of said body outside said head;

moving said mold and said head relative to each other in a direction longitudinally of said body to insert said mold into said head cavity between said body and said head and to align said outlet opening of said head with said inlet opening of said mold; and

holding said mold in fixed relation to said head.

3,940,301

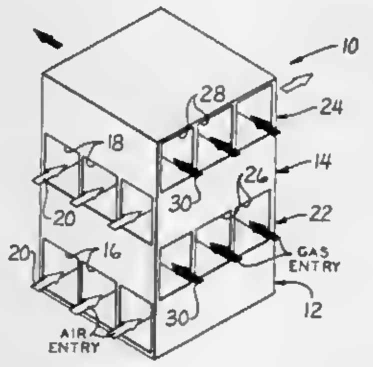
METHOD OF MANUFACTURING AN OPEN CELLULAR ARTICLE

Raymond L. Straw, Peoria, and Larry R. Wilson, Mossville, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 1, 1974, Ser. No. 493,755

Int. Cl.² B32B *31/20*

U.S. Cl. 156—155 **15 Claims**



1. A method of manufacturing a ceramic open cellular article comprising,

forming a ceramic based mixture into a plurality of sheets of wall forming members,

independently forming a disintegratable filler mixture into a plurality of wall support members,

then assembling said wall forming members and said support members in contiguous relation to provide a relatively solid structure with said wall forming members being disposed in edgeward contact with each other to form a plurality of joints therebetween,

subsequently heating said structure and permitting said support members to partially decompose while still bracing said wall forming members and causing said wall forming members to harden and said joints to fuse in a predetermined pattern, and

removing the remainder of said decomposed support members to provide a plurality of accurately-shaped openings in the ceramic article.

3,940,302

NON-WOVEN MATERIALS AND A METHOD OF MAKING THEM

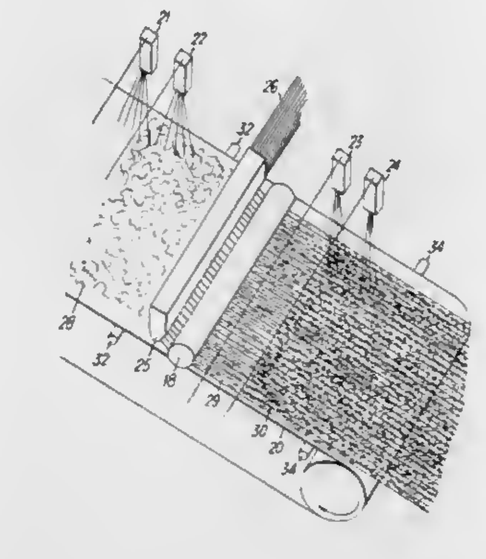
Keoneth Gerald Matthews, and John Richardson, both of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, Englaod

Division of Ser. No. 337,465, March 2, 1973. This application Feb. 4, 1975, Ser. No. 546,984

Claims priority, application United Kingdom, Mar. 2, 1972, 9803/72

Int. Cl.² D04H *3/08*

U.S. Cl. 156—167 **14 Claims**



1. A process for making a bonded non-woven web comprising depositing a blend of homofilaments and bicomponent filaments in a random and serpentine manner on an advancing collector surface, to form a non-woven layer, laying a warp of equispaced and parallel yarns of continuous bicomponent filaments on top of said non-woven layer and thereafter laying a second non-woven layer of a blend of bicomponent filaments and homofilaments, 20%–65% of the filaments of the non-woven layer being bicomponent filaments, said homofilaments, consisting of at least partly oriented polypropylene and the bicomponent filaments having two components arranged in a core/sheath relationship, the core component being not less than 30 percent by volume and not more than 80 percent by volume and being composed of at least partly oriented polypropylene, and the sheath being a copolyamide which is capable of being rendered adhesive in pressurized saturated steam at a pressure which leaves the core component substantially unaffected, and the equispaced and parallel yarns being composed of oriented bicomponent continuous filaments haveing a sheath/core relationship, the sheath component being a copolyamide which can be rendered adhesive in pressurized saturated steam at the pressure required to render the sheath component of the bicomponent filaments of the web adhesive, which steam pressure leaves the core component of the filaments comprising said equispaced and parallel yarns unaffected, there being at least 80 such yarns per meter (measured in the crosswise direction), and thereafter treating the structure in a steam chamber fitted with inlet and outlet steam seals, the steam chamber being supplied with saturated steam at a pressure which, together with the pressure applied by the seals on the structure serves to bond the bicomponent filaments at points of contact.

3,940,303

METHOD OF PRODUCING TARNISH RESISTANT COPPER AND COPPER ALLOYS AND PRODUCTS THEREOF

Elmer J. Caule, New Haven, Conn., assignor to Olin Corporation, New Haven, Coon.

Division of Ser. No. 177,292, Sept. 2, 1971, Pat. No. 3,764,400, which is a continuation-in-part of Ser. Nos. 59,684, July 30, 1970, Pat. No. 3,677,828, and Ser. No. 67,943, Aug. 28, 1970, Pat. No. 3,716,423. This application Mar. 26, 1973, Ser. No. 344,905

Int. Cl.² C23F *7/12*

U.S. Cl. 156—316 **11 Claims**

1. A method of producing a flexible laminate, comprising:
A. providing a material selected from the group consisting of copper foil and copper sheet,
B. applying to a surface of said material a phosphoric acid solution of at least 8 percent concentration and containing from 3.5 grams per liter up to the solubility limit of a material selected from the group consisting of sodium dichromate and potassium dichromate and mixtures thereof, for at least 2 seconds, to form a uniform, glassy-like, substantially pore-free coating of copper phosphate from 20 to 1000 Angstroms thick, provided that when the concentration of phosphoric acid is increased, the minimum dichromate concentration is proportionately increased,
C. rinsing said material for at least 2 seconds in water at a pH of at least 8.0 and at a temperature from about 90°C up to the boiling point,
D. drying said material, and
E. adhesively laminating a plastic film to said surface.

6. A method of producing a flexible laminate comprising:
A. providing a material selected from the group consisting of copper foil and copper sheet,
B. oxidizing a surface of said material to form a surface oxide film from 150 to 1000 Angstrom units in thickness
C. applying a phosphoric acid solution of at least 8 percent concentration to said oxide film to form thereon a uniform, glassy-like, substantially porefree coating of copper phosphate,
D. rinsing said material for at least two seconds in water at a pH of at least 8.0, and at a temperature from 90°C up to the boiling point,
E. drying said material, and
F. adhesively laminating a plastic film to said surface.

3,940,304

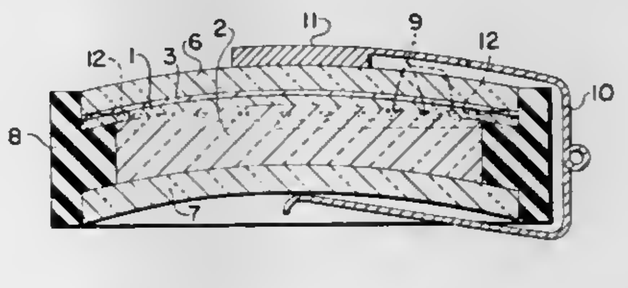
METHOD OF MAKING COMPOSITE LIGHT-POLARIZING ELEMENT

Norman W. Schuler, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 249,651, May 2, 1972, Pat. No. 3,833,289, which is a continuation-in-part of Ser. No. 41,504, May 28, 1970, abandoned, Division of Ser. No. 726,141, May 2, 1968, abandoned. This application Apr. 1, 1974, Ser. No. 456,606

Int. Cl.² B29F *1/10;* B32B *27/04;* B29C *6/00*

U.S. Cl. 156—245 **4 Claims**

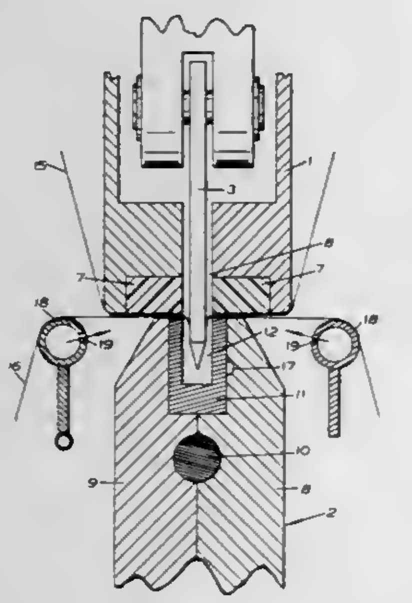


1. The method of manufacturing synthetic plastic light-polarizing ophthalmic lens which comprises:

applying as a continuous coating on each surface of a light-polarizing element a layer which enhances adhesion between said light-polarizing element and subsequently in situ polymerized lens components and significantly inhibits migration of lens constituents to said light-polarizing element during polymerization;
securing said coated light-polarizing element into a mold;
providing a continuous layer of a synthetic plastic monomeric material over the entire surface of each side of said light-polarizing element which will comprise the light transmission area of the ultimately formed lens; and
causing said monomeric material to polymerize thereby forming a composite light-polarizing ophthalmic lens.

3,940,305
TOOL FOR INTERCONNECTING SHEET WEBS BY WELDING

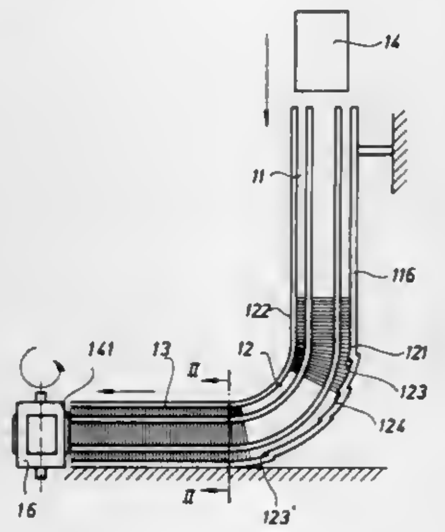
Folke Gustav Adolf Stenberg, Ookungalv, Sweden, assignor to IWEMA Forpacknings AB, Goteborg, Sweden
Filed Mar. 14, 1973, Ser. No. 340,967
Claims priority, application Sweden, Mar. 29, 1972, 4071/72
Int. Cl.² B32B *31/20*
U.S. Cl. 156—515 **5 Claims**



1. An improved tool for interconnecting sheet webs together by heat welding and for severing the interconnected sheets, said tool comprising two opposite jaws, the first of said jaws being devoid of any heating means and carrying cutting means, the second of said jaws being provided with heating means and being positioned opposite to said first jaw, said second jaw having an opening formed therein adapted to receive said cutting means when said jaws are brought together, an insert piece received in said opening in said second jaw and having a groove therein to receive said cutting means during the cutting operation, said insert piece being positioned level with the side of said second jaw facing said first jaw, said second jaw having side surfaces adjacent said insert piece forming longitudinal welding surfaces on either side of said insert piece, the material of said insert piece being considerably less heat conductive than the material of said second jaw for precluding the transmission of heat from said second jaw to said cutting means.

3,940,306
LABEL MAGAZINE FOR LABELING MACHINES

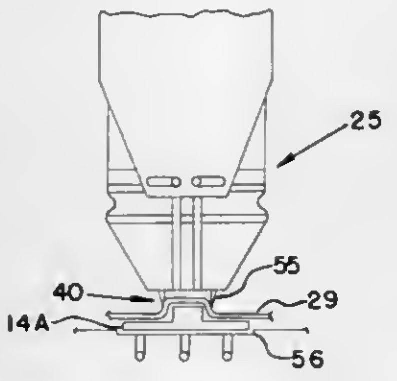
Hans Schmidl, Dortmund-Aplerbeck, Germany, assignor to Hermann Kronseder, Worth (Danube), Germany
Filed June 13, 1974, Ser. No. 479,013
Claims priority, application Germany, June 26, 1973, 2332848
Int. Cl.² B65C *9/08;* **B65G** *11/20;* **B65H** *1/00*
U.S. Cl. 156—570 **5 Claims**



1. In a label magazine having a bend formed by inside and outside magazine walls between which a pack of stacked labels is confined, the improvement for assisting packed labels located in the bend to negotiate the bend and comprising ratchet teeth formed on said outside wall of the bend to successively narrow and widen the space between said walls and cause fanning of the labels in the pack as they negotiate the bend.

3,940,307
APPARATUS FOR SECURING ARTICLES TO FILM-LIKE MATERIAL

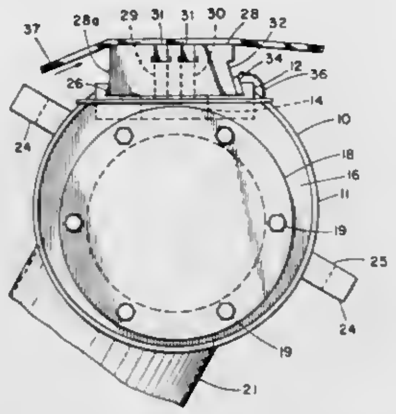
Samuel J. Rivman, White Plains, and Alvaro Da Costa, Garnerville, both of N.Y., assignors to Eastern Poly Packaging Company, Brooklyn, N.Y.
Division of Ser. No. 306,109, Nov. 13, 1972. This application Feb. 19, 1974, Ser. No. 443,653
Int. Cl.² B32B *31/00*
U.S. Cl. 156—514 **10 Claims**



1. An apparatus for securing a heat-sealable fastener having an upright projection to heat sealable film or the like comprising:
- a. means for positioning a snap fastener beneath said film;
- b. means for stretching said film across said projection;
- c. annular, rotatable knife means for forming an aperture in said film while stretched so that said projection extends therethrough;
- d. means for rotating said knife; and
- e. means for heat sealing said film to said fastener at least partially around said aperture.

3,940,308
SUCTION PIPE WITH QUICK DISCONNECT COVER

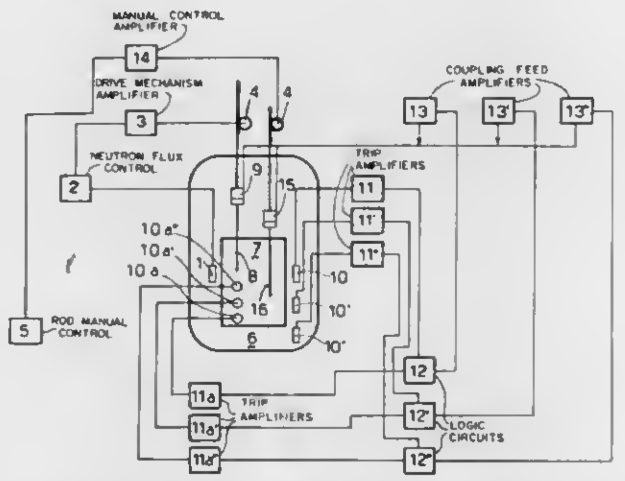
Phillip E. Blanchfield, Hortonville, Wis., assignor to Appleton Specialty Products Inc., Appleton, Wis.
Filed June 7, 1974, Ser. No. 477,453
Int. Cl.² D21F *1/48*
U.S. Cl. 162—363 **6 Claims**



1. A suction pipe for a paper machine comprising:
- a. a pipe adapted to be connected to a vacuum means, said pipe having a longitudinally extending dovetail seat that is tapered in the longitudinal direction from one end of the seat to the other and slots therethrough extending into the interior of said pipe;
- b. a cover having a tapered configuration complementary to the tapered configuration of said seat and mounted in said seat, said cover having passages therethrough aligned with said slots for conducting a liquid into said pipe; and
- c. an insert located between said cover and said pipe in said seat and providing an air tight seal with said pipe and cover, said insert having a portion extending above said seat, said insert being laterally removable from said seat upon longitudinal movement of said cover in said seat away from said air tight position to free said insert, said cover thereby being laterally removable from said seat.

3,940,309
ELECTROMAGNETIC SAFETY DEVICE FOR THE SUSPENSION OF THE RODS IN A NUCLEAR REACTOR

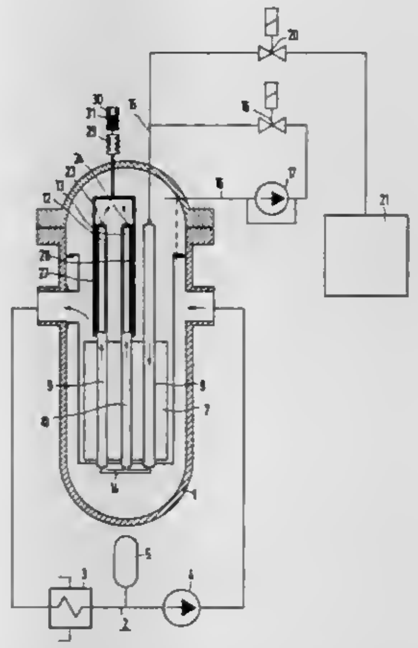
Franco Imperiali, Rome, Italy, assignor to Comitato Nazionale per l'Energia Nucleare, Rome, Italy
Filed Apr. 10, 1973, Ser. No. 349,691
Claims priority, application Italy, Apr. 14, 1972, 49626/72
Int. Cl. G21c *7/12, 7/18, 7/36*
U.S. Cl. 176—22 **2 Claims**



1. An electromagnet coupling for supporting a safety rod and a control-and-safety rod in a nuclear reactor which coupling comprises a plurality of electromagnet means acting in parallel on a single armature common to all of them each of said electromagnet means being provided with an energizing winding adapted for being fed separately from the other; in which coupling a fraction only of the total number of electromagnet means is necessary for holding the suspended rod.

3,940,310
NUCLEAR REACTOR

Leonhard Irion, Ruckersdorf, and Walter Kollmar, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Feb. 1, 1973, Ser. No. 328,674
Claims priority, application Germany, Feb. 2, 1972, 2204836
Int. Cl.² G21C *7/16*
U.S. Cl. 176—36 R **6 Claims**



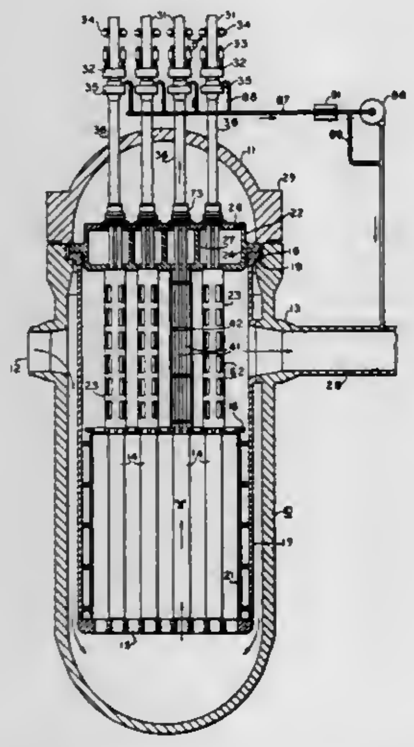
1. A pressurized-water reactor comprising a reactor pressure vessel having an inside with an upper portion and a lower portion, said portions containing pressurized-water core coolant, a nuclear core in said lower portion, said core comprising fuel element and at least three substantially vertical control rod guide tubes therein, said guide tubes having top and bottom ends, a duct interconnecting said bottom ends, a guide tube adaptor positioned in said upper portion of said vessel and above said core, said adaptor comprising a substantially vertically high-pressure feed line tube having a bottom end releasably connecting with said top end of a first one of said guide tubes, said adapter also including a substantially vertical guide tube extension for each of said other guide tubes, each said guide tube extension having a bottom end registered with a top end of a respective one of said other guide tubes, said extensions each having a top end having a passage for said coolant, and which is open to said vessel's said upper portion, a control rod reciprocative in each of said other guide tubes and their respective guide tube extensions, said first one of said guide tubes being void of any control rod said feed line tube having a top end, and means for controllably removing a portion of said coolant from said vessel and increasing the removed coolant's pressure and returning the coolant to said top end of said high-pressure feed line.

3,940,311
NUCLEAR REACTOR INTERNALS CONSTRUCTION AND FAILED FUEL ROD DETECTION SYSTEM

Erling Frisch, deceased, late of Pittsburgh, Pa. (by Dorothy Randal, executrix), and Harry N. Andrews, Export, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 219,781, Jan. 21, 1972, Pat. No. 3,817,829. This application July 9, 1973, Ser. No. 377,846
Int. Cl. G21c *7/08*
U.S. Cl. 176—36 R **13 Claims**

1. In a nuclear reactor having a pressure vessel with a removable closure head and fuel assemblies mounted within the vessel between a lower core plate and an upper core plate, in combination, means supporting the lower core plate and the fuel assemblies, an upper support plate mounted in the vessel,

support tubes extending between the upper support plate and the upper core plate to support the upper core plate, rectilinearly movable control rods for preselected fuel assemblies, drive shafts attached to the control rods, adapter tubes extending through the closure head, said drive shafts entering the vessel through the adapter tubes, a plurality of control rod guide tubes located in each of said support tubes and extending the length thereof, and at least one of said control rod drive shafts and its attached control rod in each of said guide tubes.



3,940,312

NUCLEAR FUEL AND PROCESS OF PREPARATION THEREOF

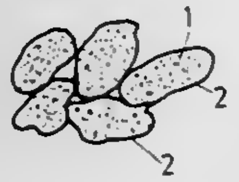
Walter Jan Van Lierde, Mechelen, Belgium, assignor to Studiecentrum Voor Kernenergie, "S.C.K.", Brussels, Belgium

Filed July 20, 1972, Ser. No. 273,368

Claims priority, application Belgium, July 26, 1971, 770488

Int. Cl. G21c *3/06*

U.S. Cl. 176—67 **3 Claims**



1. A nuclear fuel comprising monocrystalline particles with a maximum size lying between $20\ \mu$ and $400\ \mu$, of carbide of uranium or uranium-plutonium with vanadium carbide in supersaturated solution, and coated with a layer of vanadium carbide with a maximum thickness of $10\ \mu$.

3,940,313

DEVICE FOR DETECTING DEFECTIVE NUCLEAR REACTOR FUEL RODS

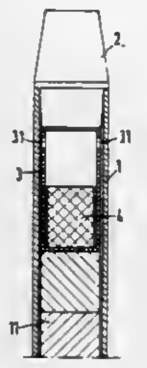
Josef Steven, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 240,511, April 3, 1972, abandoned. This application Nov. 21, 1973, Ser. No. 418,009

Int. Cl. G21c *3/16*

U.S. Cl. 176—68 **5 Claims**

1. A nuclear reactor fuel rod comprising a nonmagnetic tubular jacket having an end portion, an end cap closing said end portion, nuclear fuel in said jacket, said fuel and end cap defining therebetween a space inside of said jacket, a capsule-like housing positioned in said space, said housing being made of non-magnetic material and having at least one hole formed therethrough, a mixture of aluminum powder and a water-soluble mercury compound inside of said capsule-like housing, and ferromagnetic material inside of said capsule-like housing, said housing internally forming a space into which said mixture and said material can move.



3,940,314

NUCLEAR REACTOR FUEL ELEMENT

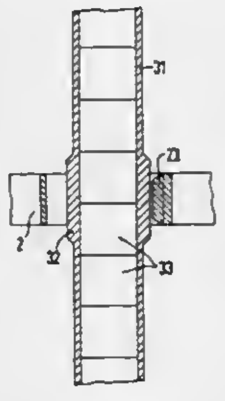
Diethelm Knodler; Hans Kropfl, both of Erlangen; Peter Rau, Mittelehrenbach, and Theodor Wittmann, Sassanfahrt, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 2, 1972, Ser. No. 231,322

Claims priority, application Germany, Mar. 10, 1971, 2111349

Int. Cl. G21c *3/30*

U.S. Cl. 176—78 **10 Claims**



1. A nuclear reactor fuel element comprising fuel rods having outsides and spacers contacting said outsides and maintaining said rods in spatial relationship; wherein the improvement comprises said rods each comprising a casing having one continuous hollow tubular wall having a length and having at least one tubular section along said length where said wall is of increased thickness, said sections forming said outsides contacted by said spacers and said casings containing nuclear fuel.

3,940,315

PRODUCTION OF CITRIC ACID BY SUBMERGED FERMENTATION

Helmut Hustede, Ladenburg (Neckar), Germany; Herman Rudy, deceased, late of Heidelberg, Germany; by Liselotte Rudy nee Ringelmann, heir; by Hans Rudy, heir, both of Heidelberg, Germany, and by Barbara Sallewsky nee Rudy, heir, St. Hermas, Canada, assignors to Joh. A. Benckiser GmbH, Ludwigshafen (Rhine), Germany

Filed Nov. 2, 1971, Ser. No. 195,076

Int. Cl.^{2} C12D *1/04*

U.S. Cl. 195—36 R **23 Claims**

1. The method of preparing mycelial pellets of a citric acid-producing miroorganism for the manufacture of citric acid in a carbohydrate-containing growth medium which comprises treating spores of a citric acid-producing microorganism in the carbohydrate-containing growth medium free of unbound cyanide ions by adding ferro- or ferri-cyanide ions during the physiologically intensive development period which takes place during the transition period ranging from the spore-swelling stage to the spore-germination stage, and forming mycelial pellets thereform.

3,940,316

PROCESS FOR THE PRODUCTION OF ORGANIC ACIDS BY BIOLOGICAL HYDROLYSIS

Auguste Commeyras, Clapiers; Alain Arnaud, Clermont L'Herault; Pierre Galzy, and Jean-Claude Jallageas, both of Montpellier, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Sept. 17, 1974, Ser. No. 506,717

Claims priority, application France, Sept. 19, 1973, 73.33613

Int. Cl.^{2} C12D *1/02*

U.S. Cl. 195—50 **10 Claims**

1. A process for preparing an organic acid by hydrolyzing the corresponding nitrile comprised of (a) suspending bacteria showing nitrilasic activity in a solution containing nitrile, (b) hydrolyzing said nitrile with said bacteria to form the organic acid, and (c) recovering said organic acid from said solution.

3,940,317

METHOD OF ISOLATION OF LYSOZYME

Friedrich D. Katz, 96-08 70th Ave., New York, N.Y. 11375; Louis Fishman, 143 N. Grove St., Valley Stream, N.Y. 11580, and Milton Levy, 39-95 48th St., New York, N.Y. 11104

Filed Apr. 6, 1973, Ser. No. 348,780

Claims priority, application Germany, Feb. 26, 1973, 2309440

Int. Cl.^{2} C07G *7/02, 7/022, 7/026*

U.S. Cl. 195—66 R **19 Claims**

1. A method of isolating lysozyme from a source thereof comprising:

a. treating an aqueous suspension of said lysozyme containing source material with deaminated squid chitin,
b. separating the chitin from said suspension, washing said chitin with aqueous acid and separating said aqueous acid from said chitin.

3,940,318

PREPARATION OF A PRIMARY TARGET FOR THE PRODUCTION OF FISSION PRODUCTS IN A NUCLEAR REACTOR

Hirofumi Arino, New Windsor, N.Y.; Frank J. Cosolito, Ringwood; Kenneth D. George, Boonton, both of N.J., and Alfred K. Thornton, New Hampton, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 100,918, Dec. 23, 1970. This application Nov. 6, 1973, Ser. No. 413,319

Int. Cl. B01k *3/00;* **C01g** *43/00*

U.S. Cl. 204—1.5 **3 Claims**

1. A process for the preparation of a primary target for the production of fission products in a nuclear reactor, said target being comprised of (a) an enclosed metallic cylindrical vessel sealed at its top and bottom, (b) means for permitting access to the interior of said vessel, and (c) a thin, continuous, uniform layer of a fissionable uranium material, integrally bonded to the inner cylindrical walls of said vessel, said process comprising the steps of:

a. electrodepositing a uranium material onto the inner cylindrical walls of said vessel by electrolyzing a system comprised of:
    i. an anode,
    ii. said vessel as the cathode,
    iii. an aqueous electrolytic bath containing at least one uranyl salt enriched in uranium 235 and having a pH of from about 4 to about 8 said electrolyzing being effected at a temperature of from about 50° to about 100°C; and at a current which is periodically and sequentially cycled from about 0.3 to about 0.6 to about 0.9 amperes, and
b. sealing said top and bottom of said vessel.

3,940,319

ELECTRODEPOSITION OF BRIGHT TIN-NICKEL ALLOY

Martin H. Pollack, Brooklyn, NY, assignor to NASGLO International Corporation, Flushing, N.Y.

Division of Ser. No. 482,279, June 24, 1974, which is a continuation-in-part of Ser. No. 389,579, Aug. 20, 1973, abandoned. This application Nov. 1, 1974, Ser. No. 519,833

Int. Cl.^{2} C25D *3/60*

U.S. Cl. 204—43 S **7 Claims**

1. An aqueous electroplating bath capable of depositing an alloy consisting essentially of 0.001–0.30 wt. % nickel and the balance tin, said bath consisting essentially of (a) a nickel salt selected from nickel sulfate, nickel fluoborate and nickel sulfamate, (b) a corresponding tin salt, (c) sulfuric acid, sulfamic acid, benzene sulfonic acid or fluoboric acid in an amount providing a pH of not higher than 1, and (d) an effective amount of a brightening agent, wherein the concentration of said tin salt is at least about 1 oz./gal. and the weight ratio of said nickel salt to said tin salt is at least 0.20 to 1.

3,940,320

ELECTRODEPOSITION OF COPPER

Otto Kardos, Ferndale; Donald A. Arcilesi, Mount Clemens, and Silvester P. Valayil, Pontiac, all of Mich., assignors to M & T Chemicals Inc., Greenwich, Conn.

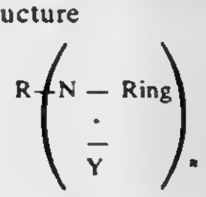
Continuation-in-part of Ser. No. 315,112, Dec. 14, 1972, abandoned. This application Nov. 21, 1974, Ser. No. 525,940

Int. Cl.^{2} C25D *3/38*

U.S. Cl. 204—52 R **10 Claims**

1. A process for electrodepositing copper from an aqueous acidic copper plating bath containing at least one member independently selected from each of the following two groups;

A. 0.005 to 40 grams per liter of an aryl N-heteroaromatic or N-heteroaliphatic ring compound or salt exhibiting the structure



$$R\left(\begin{array}{c}\text{N} - \text{Ring}\\ \cdot \\ \overline{\text{Y}}\end{array}\right)_n$$

wherein R is selected from the group consisting of phenyl, benzyl and p-xylyl and the N-Ring is selected from the group consisting of substituted and unsubstituted N-heteroaliphatic rings and substituted and unsubstituted N-heteroaromatic rings; Y is present or absent; Y, when present, represents an anionic moiety, *n* is save when R is p-xylyl *n* is 2; and

B. sulfoalkyl sulfide compounds containing the grouping —S—Alk—SO_3M where M is one gram-equivalent of a cation and —Alk— is a divalent aliphatic hydrocarbon group of 1 to 8 carbon atoms in an amount of 0.01 milligrams per liter to 1000 milligrams per liter.

3,940,321

METHODS OF TREATING ALUMINIUM

Ronald Alfred Charles Adams, Mitcham, England, assignor to Ozalid Group Holdings Limited, Loughton, Great Britain

Filed Mar. 21, 1975, Ser. No. 560,887

Int. Cl.^{2} C25D *11/08, 11/12*

U.S. Cl. 204—58 **10 Claims**

1. A method of treating aluminium, the method comprising the steps of first anodising the aluminium by electrolysis in sulphuric acid solution, then secondly anodising the said aluminium by electrolysis in phosphoric acid solution.

3,940,322

ELECTROPOLYMERIZATION OF DIFUNCTIONAL MONOMERS TO FORM POLYIMIDES

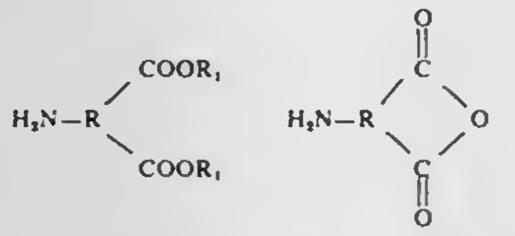
David C. Phillips, and William M. Alvino, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 13, 1974, Ser. No. 497,175

Int. Cl.^{2} C25B *3/00*

U.S. Cl. 204—59 R **13 Claims**

1. A method of polymerizing a monomer having a general formula selected from the group consisting of:



and mixtures thereof, where R is a trifunctional organic group and each R_1 is independently selected from hydrogen and salt groups, said $COOR_1$ and —CO— groups being viscinal or on the same carbon atom of R, comprising:

1. forming a solution of said monomer in a suitable non-interfering solvent organic; and
2. passing a direct electrical current through said solution at a current density of at least about 0.2 mA/cm^2.

3,940,323

ANODE FOR ELECTROLYTIC PROCESSES

Edward H. Cook, Jr., Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 494,110, Aug. 2, 1974, Pat. No. 3,882,002. This application May 5, 1975, Ser. No. 574,805

Int. Cl.^{2} C25B *1/26, 1/16, 11/08, 11/10*

U.S. Cl. 204—95 **8 Claims**

6. In a method of electrolyzing aqueous alkali metal chloride solutions in an electrolytic cell comprising an anode and a cathode wherein chlorine and an alkali metal hydroxide are formed, the improvement which comprises using as the anode, a composite structure comprising a valve metal substrate, a coating thereon of electroconductive tin oxide containing a doping amount of molybdenum, and an outer coating on the surface of the electroconductive tin oxide, of at least one of a noble metal or noble metal oxide.

3,940,324

METHOD OF DECOMPOSING CALCIUM CARBONATE

Iosif Gershevich Abramson, Varshavskaya ulitsa, 22, kv. 16, Leningrad, U.S.S.R.; Vasily Andreevich Glukhikh, Belgradskaya ulitsa, 10, korpus 1, kv. 5, Leningrad, U.S.S.R.; Solomon Isaakovich Danjushevsky, ploschad Chernyskevskogo, 7, kv. 79, Leningrad, U.S.S.R.; Georgy Borisovich Egorov, Grazhdansky prospekt, 90, korpus 2, kv. 103, Leningrad, U.S.S.R.; Raisa Andreevna Zozulya, 9 linia, 76, kv. 7, Leningrad, U.S.S.R.; Jury Vasilievich Nikiforov, Zanevsky prospekt, 30, kv. 23, Leningrad, U.S.S.R.; Rafail Manusovich Nudelman, Nevsky prospekt 61, kv. 1, Leningrad, U.S.S.R.; Alexandr Mikhailovich Khomyakov, Ivanovskaya ulitsa, 18, kv. 15, Leningrad, U.S.S.R.; Yanetta Markovna Tseitlin, prospekta Veteranov, 40, kv. 10, Leningrad, U.S.S.R.; Evgeny Grigorievich Komar, deceased, late of Leningrad, U.S.S.R.; by Khaya Semenovna Boguslavskaya, Kuznetsovskaya ulitsa 36, 26, Leningrad, U.S.S.R., administratrix; Olga Efremova Komar ulitsa Grazhdanskaya 16, Kv. 11, Pushkin Leningradsko oblasti, U.S.S.R., administratrix; Alexandr Eugenievich Komar, Kuznetsovskaya ulitsa, 36, Kv. 26, Leningrad, U.S.S.R., administrator.

Filed Dec. 4, 1974, Ser. No. 529,516

Int. Cl.^{2} B01J *1/10*

U.S. Cl. 204—157.1 H **6 Claims**

1. A method of decomposing calcium carbonate into calcium oxide and carbon dioxide gas, comprising exposing calcium carbonate to an ionizing radiation at a power of the absorbed radiation dose of at least 0.5 Mrad/s.

3,940,325

RADIATION-STERILIZED SHAPED ARTICLES OF OLEFIN POLYMERS

Seiji Hirao, Ichihara, Japan, assignor to Chisso Corporation, Osaka, Japan

Filed Aug. 24, 1973, Ser. No. 391,413

Claims priority, application Japan, Aug. 24, 1972, 47-84715

Int. Cl. B01j *1/10;* **C08f** *45/58, 1/10*

U.S. Cl. 204—159.20 **6 Claims**

6. A process for producing radiation-sterilized shaped articles of an olefin polymer without coloration and degradation in physical properties, which comprises shaping an olefin polymer or polymers containing 0.01 to 0.5% by weight based on the weight of the olefin polymer of at least one material selected from the group consisting of octadecyl 3,5-di-t-butyl-4-hydroxyhydrocinnamate and tetrakis (methylene (3,5-di-t-butyl-4hydroxyhydrocinnamate)) methane, and then irradiating with a sterilizing dose of high energy radiation, said olefin polymer being selected from the group consisting of homopolymers of propylene; homopolymers of porpylene containing therein 0.1–4% by weight based on the weight of homopolymers of propylene, of ethylene-propylene rubber; propylene-ethylene copolymers containing therein 0.5–20% by weight based on the weight of propylene, of ethylene; high density polyethylenes having a density of 0.950 to 0.965 g/c.c.; low density polyethylenes having a density of 0.905 to 0.925 g/c.c.; and homopolymers of propylene containing therein 0.5–4% by weight based on the weight of homopolymers of propylene, of high density or low density polyethylene.

3,940,326

METHOD OF COATING CATHODE HEATERS

Martha J. B. Thomas, Winchester; Richard A. Fowler, Ipswich, both of Mass., and Robert C. Larson, Exeter, N.H., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Feb. 16, 1972, Ser. No. 226,706

Int. Cl.^{2} C25D *13/02*

U.S. Cl. 204—181 **8 Claims**

1. In the process of coating heaters for use with indirectly heated cathodes of electron tubes the steps which comprise: preparing a solution containing dissolved tungsten and dissolved aluminum; atomizing said solution in a stream heated above the boiling point of water to yield dry particles containing an aluminum compound and a tungsten compound; first firing said particles to eliminate volatiles and convert said aluminum compound to alumina; second firing said particles at a higher temperature in a reducing atmosphere to reduce said tungsten compound to elemental tungsten; third firing said particles at a still higher temperature in a reducing atmosphere to crystallize said particles; dispersing said particles in a coating suspension and electrophoretically coating said heaters therewith.

3,940,327

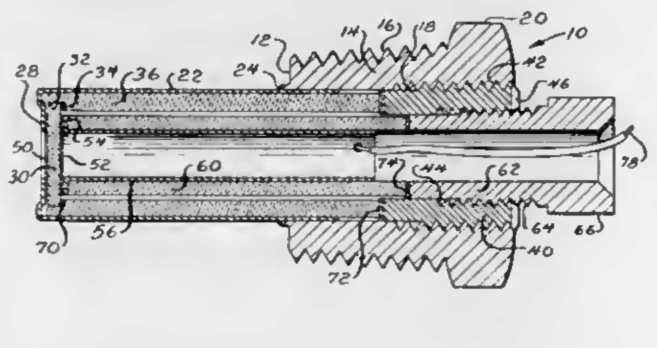
OXYGEN SENSING DEVICE

Melvin H. Wagner; Sandra B. Corcoran, both of Bartlett, and Carl F. Bauer, Chicago, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 11, 1975, Ser. No. 567,445

Int. Cl.^{2} G01N *27/46*

U.S. Cl. 204—195 S **10 Claims**



1. A measuring cell for determining the concentration of oxygen in a mixture of exhaust gases comprising: a hollow metal housing member having mounting means adapted to be received in a complementary opening in a combustion engine exhaust system for positioning the inner end of said housing member within said exhaust system while leaving the outer end outside the exhaust system, said housing member having a radially inwardly extending annular flange portion at its inner end; a solid electrolyte wafer positioned inside said housing at the inner end thereof, said solid electrolyte wafer having a first electrode coating on a first side thereof in tight mechanical and electrical contact with said inwardly extending flange portion, said solid electrolyte wafer having a second electrode coating on its second side; a hollow tubular metal member positioned concentrically within said housing and having a radially outwardly extending annular flange portion of less maximum diameter than the wafer positioned in tight mechanical and electrical contact with said second electrode coating; a first tubular insulating sleeve positioned in surrounding relation to said hollow tubular metal member so as to exert axial pressure on said outwardly extending flange portion; a second tubular insulating sleeve positioned between said first tubular insulating sleeve and the inner wall of said housing, said second tubular insulating sleeve having a radial portion which spaces and insulates the edge of said electrolyte wafer from said metal housing, said second tubular insulating sleeve further having a transverse surface portion in axial engagement with the second side of said electrolyte wafer at a location radially outwardly of said radially outwardly extending flange portion of said tubular metal member, sealing means positioned at at least the axial juncture of said second tubular insulating sleeve and said electrolyte wafer; and threaded locking means for applying axial pressure to each of said insulating sleeves.

3,940,328

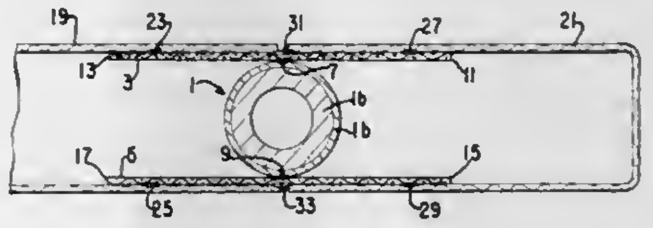
RECONSTRUCTED OR REPAIRED ELECTRODE STRUCTURE

Vaselios H. Thomas, Florence, Ala., and Gerald R. Pohto, Mentor, Ohio, assignors to Electronor Corporation, Panama City, Panama

Filed Apr. 11, 1974, Ser. No. 459,923

Int. Cl.^{2} C10G *19/00, 17/00*

U.S. Cl. 204—283 **15 Claims**



1. A repaired electrode comprising an elongated supporting riser having at least a surface coating of valve metal, at least a portion of a generally planar dimensionally stable previously used coated active electrode member bonded to said riser coating, a generally planar electrode second member having a new electrocatalytic coating thereon secured to at least one of said riser coating or a portion of said previously used electrode member.

3,940,329

HYDROCARBON CONVERSION WITH A MULTIMETALLIC CATALYTIC COMPOSITE

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 436,305, Jan. 24, 1974, which is a continuation-in-part of Ser. No. 233,819, March 10, 1972, Pat. No. 3,798,155. This application Aug. 1, 1974, Ser. No. 493,957

Int. Cl.^{2} C10G *35/08;* **B01J** *23/42*

U.S. Cl. 208—139 **14 Claims**

1. A process for converting hydrocarbon which comprises contacting the hydrocarbon, at hydrocarbon conversion conditions, with a catalytic composite consisting essentially of porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % rhodium, about 0.1 to about 3.5 wt. % halogen, and bismuth in an amount sufficient to result into an atomic ratio to bismuth of platinum or palladium of about 0.1:1 to about 1:1, wherein the platinum or palladium, rhodium, and bismuth are uniformly dispersed throughout the porous carrier material and wherein substantially all of the platinum or palladium, rhodium, and bismuth are present in the corresponding elemental metallic states.

3,940,330

TWO STAGE METAL-CONTAINING OIL HYDRODESULFURIZATION PROCESS EMPLOYING AN ACTIVATED ALUMINA SUPPORTED CATALYST IN EACH STAGE

Harold Beuther, Gibsonia; Suo W. Chun, Murrysville, and Angelo A. Montagna, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

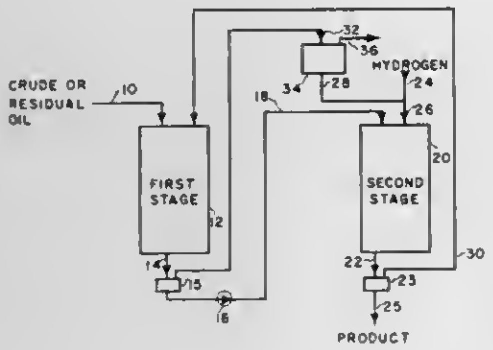
Filed Apr. 24, 1974, Ser. No. 463,620

Int. Cl.^{2} G10G *23/02*

U.S. Cl. 208—210 **15 Claims**

1. A process for hydrodesulfurizing a metal-containing hydrocarbon feed oil at a temperature between 600° and 1,000°F., and a hydrogen pressure between 50 and 5,000 psi comprising passing said feed oil and hydrogen through first and second hydrodesulfurization zones in series with interzone removal of gaseous by-products, the catalyst in said first and second zones comprising Group VI-B and Group VIII metals supported on alumina said alumina being prepared by drying

and calcining a crystalline alumina hydrate having 1.2 to 2.6 mols of water of hydration per mol of alumina, and maintaining the temperature in said second zone higher than the temperature in said first zone.



3,940,331

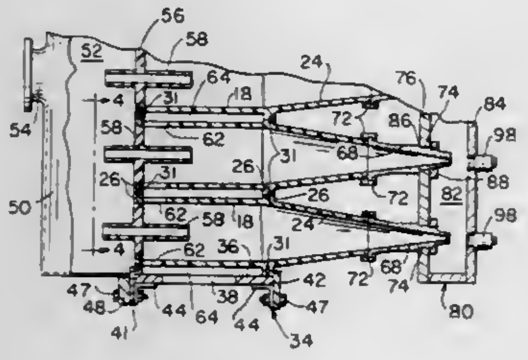
VORTICAL CYCLONE CLUSTER APPARATUS

Edward L. Rastatter, 340 E. 64th St. 11F, New York, N.Y. 10021

Filed Nov. 1, 1974, Ser. No. 519,810

Int. Cl.^{2} B04C *5/28*

U.S. Cl. 209—211 **23 Claims**



1. A cyclone assembly comprising a first wall member and a second wall member disposed in substantially parallel relation, means defining a plurality of corresponding sets of aligned openings within said first and second wall members, a cluster arrangement of elongated hydrocyclones having longitudinally extending parallel axes, each of said hydrocyclones including a rigid tubular inlet portion and a frusto conical portion having an apex end defining an outlet, said inlet portion of each of said hydrocyclone extending between a corresponding set of openings within said first and second wall members, a casing surrounding said first and second wall members and cooperating therewith to define a liquid supply chamber, means for directing a liquid at a substantial hydraulic pressure into said supply chamber, means forming an axially extending vortex passage for each of said hydrocyclones and projecting through the corresponding said opening within said first wall member, means defining a generally tangential inlet within said inlet portion of each hydrocyclone for directing the liquid from said supply chamber into said inlet portion of each hydrocyclone, means for rigidly securing said inlet portion of each said hydrocyclone to said first and second wall members, and said inlet portions of said hydrocyclones forming rigid connections between said first and second wall members to provide for withstanding the substantial hydraulic pressure of the liquid within said supply chamber.

3,940,332

TREATING WASTE WATER CONTAINING NITRILES AND CYANIDES

Akinori Kato, Hiratsuka, and Kenji Yamamura, Kamakura, both of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Dec. 20, 1974, Ser. No. 534,794

Claims priority, application Japan, Sept. 6, 1974, 49-101910

Int. Cl.^{2} C02C *5/10*

U.S. Cl. 210—2 **3 Claims**

1. A process for the microbiological degradation of nitriles and cyanides contained in a waste water effluent which comprises

i. adding at least one microorganism capable of degrading nitriles and cyanides to an aqueous sludge, said microorganism being the strain *Nocardia rubropertincta*, ATCC 21930;
ii. acclimating said microorganism to said activated sludge; and
iii. passing a waste water effluent containing nitriles and cyanides through the thus acclimated sludge whereby the microbiological disintegration of the nitriles and cyanides is accomplished, thus purifying the waste water effluent.

3,940,333

PROCESS FOR PHYSICALLY AND BIOLOGICALLY PURIFYING SEWAGE

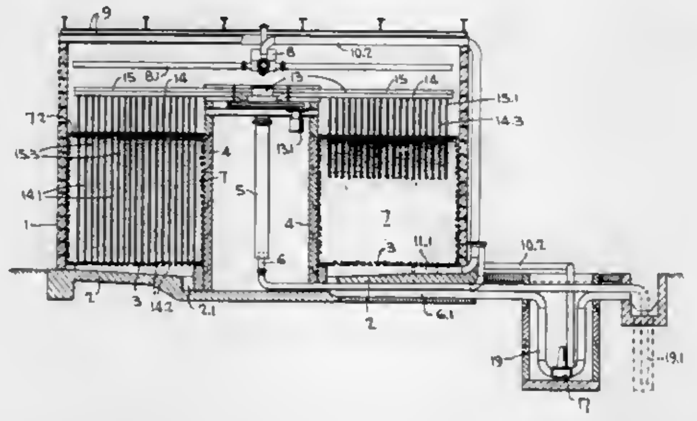
August Schreiber; Berthold Schreiber, and Erhard Schreiber, all of Bahnhofstrasse 45, 3001 Hannover-Vinnhorst, Germany

Division of Ser. No. 392,078, Aug. 27, 1973, Pat. No. 3,876,543. This application Sept. 25, 1974, Ser. No. 509,041

Claims priority, application Germany, June 25, 1973, 2332218

Int. Cl.^{2} C02C *1/04*

U.S. Cl. 210—17 **2 Claims**



1. A process for the purification of sewage by means of a filter-percolating filter filled with a non-abrasive granular filter material, comprising the steps of:

first distributing preliminarily clarified sewage equally over the surface of the filter material, so that the sewage trickles through the filter material;
then simultaneously ventilating the filter material by means of passing air therethrough;
then allowing the sewage to trickle through the filter material until sludge and microorganisms of the sewage have covered the surface of the filter material in increasing bulk and the passage of air through the filter material has increasingly been reduced as a result of the incrustations formed by the covering in the gaps of the filter material;
after such gaps have been covered following the above steps, the process further comprises filling the filter-percolating filter with rinsing water for the purpose of agitating and washing of the filter material;
blowing air under pressure into the filter so as to mix the filter material and rinsing water therein;
drawing in the largest portion of the sludge resulting during the preceeding steps from the mixture of retained rinsing water, filter material and sludge through suction pipes extending into the filter material,
draining off the rinsing water,
the mixing of the rinsing water and filter material and the drawing in of the sludge being carried out progressively in a horizontal direction by the passing of a rotation device and a sludge removal device including said suction pipes through the contents of the filter-percolator filter.

3,940,334

METHOD FOR SEPARATING OIL FROM WATER

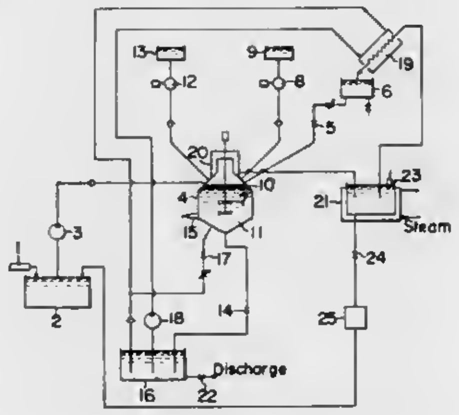
Tadashi Miyazawa, Tokyo, Japan, assignor to Kayaba Industry Co., Ltd.; Mitsubishi Industries, Ltd., both of Tokyo and E. C. Chemical Industries Co., Ltd., Osaka, all of, Japan

Filed Mar. 18, 1974, Ser. No. 451,763

Claims priority, application Japan, Mar. 16, 1973, 48-30595

Int. Cl.^{2} B01D *11/04*

U.S. Cl. 210—21 **9 Claims**



1. A method of separating oil from industrial waste water, comprising the steps of introducing into a treatment vessel industrial waste water which contains fat and oil at a level of about 100 parts per million to tens of thousands parts per million; agitating the waste water in said treatment vessel introducing paraffinic hydrocarbons with a specific gravity of less than 0.8 as a fat-and oil-extracting solvent agent into the waste water, and also a coagulant, in the course of said agitating step so that a layer of oil-containing scum forms on top of a body of treated clean water, said solvent agent being introduced in an amount of between 0.001 – 10% of the oil and fat and said coagulant being introduced in an amount of between 0.1 – 50% of the waste water; withdrawing the treated clean water into a treated-water pool; floating the layer of oil-containing scum upwardly in the treatment vessel by charging treated clean water from the treated-water pool into the treatment vessel at the lower part thereof until the layer of scum overflows the treatment vessel; introducing the overflowing layer of oil-containing scum into a distillation vessel and distilling the solvent therein to vaporized the solvent and form a residual oil-containing scum; recovering the solvent for re-use by introducing the solvent vapor to a condenser for condensation; filtering the residual oil-containing scum, from which the solvent has been recovered, in a filter so as to separate a liquid component; and recycling said filtered liquid component into the waste water to be treated.

3,940,335

FILTERING PROCESS AND APPARATUS

Peter Gabor Kalman, 51 Compayne Gardens, London N.W.6, England

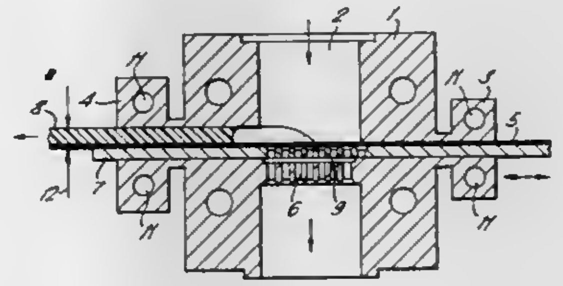
Filed Aug. 17, 1973, Ser. No. 389,183

Claims priority, application United Kingdom, Aug. 29, 1972, 40064/72; Oct. 10, 1972, 46683/72

Int. Cl. B01d *33/00*

U.S. Cl. 210—77 **24 Claims**

1. A process for filtering a substance flowing through a passage comprising introducing a filter by passing it through inlet and outlet ports flanking said passage so that a part of the filter extends across said passage, sealing said ports against substantial leakage therethrough of said substance, supporting at least said filter part extending across said passage by means of a filter backing support permeable to flow therethrough of substance filtered by said filter, said filter backing support being reciprocable in the direction of extension of said filter between said ports and across said passage, forcing said substance through said filter to filter the substance, and, when desired, effecting movement of said filter to introduce a fresh part thereof across said passage by moving said backing support in a direction to advance said filter under conditions such that the filter moves with the backing support, and subsequently retracting said backing support under conditions such as to prevent movement of the filter with the backing support.



3,940,336

METHOD FOR CLEANING SEMIPERMEABLE MEMBRANES

Clement C. Macevicz, and Charles W. Million, both of San Diego, Calif., assignors to Desalination Systems, Inc., Escondido, Calif.

Filed June 21, 1974, Ser. No. 481,522

Int. Cl.^{2} B01D *23/24;* B03B *3/00;* B08B *3/00*

U.S. Cl. 210—81 **7 Claims**

1. A method for cleaning a surface of a semipermeable membrane in a membrane process solution treatment system which comprises:

a. flushing the said surface of said semipermeable membrane with water at substantially atmospheric pressure and of purity greater than about one megohm resistivity.

3,940,337

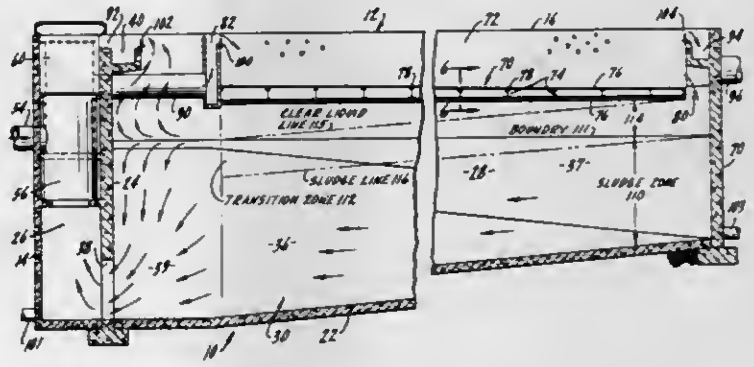
HORIZONTAL FLOW CLARIFIER

Herbert D. Robison, Norwood, Mass., assigoor to Ecodyne Corporation, Lincolnshire, Ill.

Continuation of Ser. No. 347,031, April 2, 1973, abaodoned. This application Nov. 18, 1974, Ser. No. 524,606

Int. Cl.^{2} B01D *21/24*

U.S. Cl. 210—197 **11 Claims**



1. Apparatus for separating suspended solids from liquids, comprising: a tank, a horizontally elongated settling corridor defined within said tank for directing liquid therethrough in a substantially horizontal flow direction so as to define an upper free-fall settling zone and a lower sludge zone; a liquid entrance at one end of the settling corridor; a sludge contact

zone defined within said tank for receiving liquid entering said tank; a secondary settling basin; a substantially vertical partition wall positioned in facing relationship to the liquid exiting from said settling corridor, said partition wall being positioned so as to define a passageway therebelow to receive the liquid from the sludge zone leaving said corridor and a passageway thereabove to receive liquid from the free-fall zone leaving said corridor; means associated with said partition wall for causing the horizontal flow rate of liquid in said sludge zone to be greater than the horizontal flow rate of liquid in said free-fall zone so as to cause a kinetic capture of solids settling from the free-fall zone into the sludge zone; said secondary settling basic having outlet means to direct liquid to service; and said sludge contact zone having sludge return means for directing liquid therefrom through said entrance and into said settling corridor.

3,940,338
LIFTING VEHICLE HAVING A CONTROL MEMBER ADJUSTABLE INTO THREE DIFFERENT POSITIONS

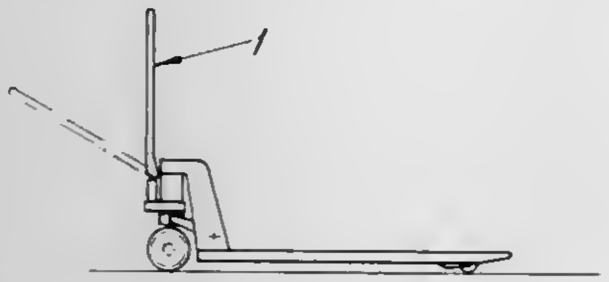
Anders Ivar Bryntse, Mjolby, and Karl-Erik Berkestad, Linkoping, both of Sweden, assignors to Ab Bygg- Och Transportekonomi (BT), Mjolby, Sweden

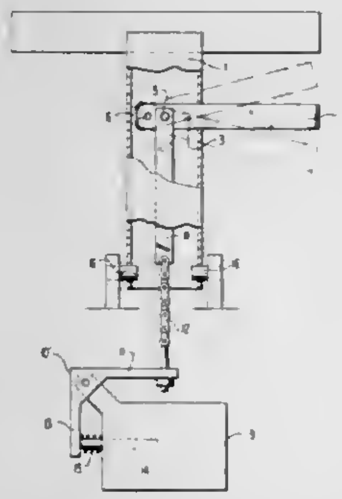
Continuation-in-part of Ser. No. 400,629, Sept. 25, 1973, abandoned. This application Mar. 27, 1975, Ser. No. 562,899

Claims priority, application Sweden, Oct. 3, 1972, 12733/72

Int. Cl.² B62D *21/14*

U.S. Cl. 254—2 R **3 Claims**





1. A vehicle having a lift-jack-operated lift device and a tiller, said tiller also comprising a pump rod for said lift jack, a control lever pivotally mounted in the upper part of said tiller and extending transversely therefrom and connected to one end of a link rod displaceably mounted lengthwise of said tiller, said link rod at its other end being connected to and controlling said lift device, said control lever taking three different positions, a first and a second outer position and a middle position, corresponding to three different displacement positions of the link rod, said link rod in these different positions setting the lift device for three different functions, said link rod further being spring loaded for moving said control lever into its second outer position, a locking device for said control lever for locking said lever only in its middle position and having such a weak force in relation to said spring, that when the control lever is manually kept in its first outer position against said spring and is released therefrom said lever will be automatically moved by said spring into said second outer position thereby passing the middle position without being locked there.

3,940,339
LITHIUM BORATE COMPLEX GREASE EXHIBITING SALT WATER CORROSION RESISTANCE

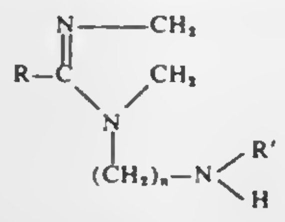
George A. Clarke, Jr., and Gary L. Harting, both of Westfield, N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Jan. 21, 1975, Ser. No. 542,800

Int. Cl.² C10M *3/18, 5/14, 7/20, 7/24*

U.S. Cl. 252—18 **7 Claims**

1. A lubricating grease composition of high dropping point and capable of protecting metal surfaces against salt water corrosion which comprises a major proportion of a mineral lubricating oil, from about 2 to 30 wt. % of a thickener system whose essential components include a lithium soap of a C_{12} to C_{24} hydroxy fatty acid and a monolithium salt of boric acid, wherein there are from 3 to 100 parts by weight of hydroxy fatty acid per part by weight of boric acid, and a salt-water-corrosion resisting amount of a combination of a dialkyl dimethyl ammonium nitrite, wherein the alkyl groups have 8 to 18 carbon atoms, and an amino imidazoline of the general structure:



wherein n is about 2 to 6, R is a C_6 to C_{22} aliphatic hydrocarbon group and R' is hydrogen or a C_1 to C_{12} alkyl group.

3,940,340
PERACYLATED POLYAMINES COMPATIBLE WITH OPTICAL BRIGHTENERS AS ACTIVATORS FOR INORGANIC PEROXO COMPOUNDS

Hans Walter Bucking; Peter Hess, both of Kelkheim, Taunus; Franz Konig, Frankfurt am Main; Wilfried Sahm, Kelkheim, Taunus, and Gerhart Schneider, Schneidhain, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 7, 1974, Ser. No. 431,044

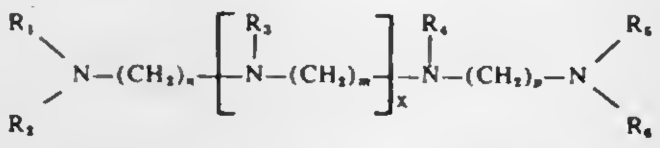
Claims priority, application Germany, Jan. 12, 1973, 2301437

Int. Cl.² C11D *7/54*

U.S. Cl. 252—102 **16 Claims**

1. A composition of matter consisting essentially of

a. 69 to 96.9% by weight of a detergent,
b. 0.1 to 1% by weight of an optical brightener and
c. 3 to 30% by weight of a compound of the formula



$$\begin{matrix}R_1\\ \quad\diagdown\\ \quad\diagup\\ R_2\end{matrix}\!\!N-(CH_2)_n-\left[\begin{matrix}R_3\\ |\\ N\end{matrix}-(CH_2)_m-\right]_x\begin{matrix}R_4\\ |\\ N\end{matrix}-(CH_2)_p-N\!\!\begin{matrix}R_5\\ \diagup\quad\\ \diagdown\quad\\ R_6\end{matrix} \qquad (1)$$

in which R_1 to R_6 are alkanoyl of 2 to 8 carbon atoms or benzoyl, *x* is an integer of zero to 3 and *n*, *m* and *p* are 2 or 3.

15. A composition of matter consisting essentially of an inorganic peroxo compound and a compound of formula I as defined in claim 1.

3,940,341
GRANULAR DETERGENT COMPOSITIONS

Frederick William Gray, Summit; Virgil John Richter, West Orange, and Andrew Henry Limekiller, Belle Meade, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 22, 1973, Ser. No. 343,986

Int. Cl.² C11D *7/54*

U.S. Cl. 252—105 **12 Claims**

1. Process for the production of hollow granules of detergent compositions containing sulfite which retains its content on storage under heated conditions which comprises forming an aqueous slurry containing an organic detergent and alkali metal sulfite, wherein, by weight based on the total non-volatile constituents of said slurry, the amount of detergent is from about 5% to about 40% and the amount of sulfite is from about 3% to about 70%, said slurry being at an elevated temperature of at least 90°F, agitating said slurry, spraying said slurry into a hot evaporative atmosphere of about 300°F to about 900°F to form air-containing hollow granules of the detergent composition containing at least 3% of sulfite.

3,940,342
AZEOTROPE OF 1,2-DICHLORO-1,1,2-TRIFLUOROETHANE AND TRICHLOROFLUOROMETHANE

William M. Hutchinson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 13, 1973, Ser. No. 396,814

Int. Cl.² C11D *7/50;* **C23G** *5/02*

U.S. Cl. 252—171 **5 Claims**

1. The substantially constant boiling admixture of (A) 1, 2 -dichloro- 1, 1, 2-trifluoroethane and (B) trichlorofluoromethane which at substantially atmospheric pressure is characterized as about 28–29 weight percent (A) and about 72–71 weight percent (B).

3,940,343
METHOD OF PREPARING HALOPHOSPHATE PHOSPHOR OF CONTROLLED PARTICLE SIZE

Donald J. Demarest, Butler, and Herman R. Heytmeijer, Whippany, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1973, Ser. No. 345,390

Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C09K *11/42*

U.S. Cl. 252—301.4 P **3 Claims**

1. An improved method of preparing halophosphate phosphor of controlled particle size by controlling the preparation of calcium hydrogen orthosphate raw mix ingredient, said method comprising:

a. precipitating calcium hydrogen orthophosphate di-hydrate crystals from a fluid formed by mixing a calcium chloride solution with a diammonium phosphate solution;
b. separating said precipitated di-hydrate crystals from the remainder of said fluid;
c. compacting said di-hydrate crystals by centrifuging, wherein said centrifuging subjects said crystals to a force of about 120–800 times the force of gravity for 5–200 seconds, said separating and compacting occurring concurrently;
d. deagglomerating said compacted crystals, wherein said deagglomeration is performed by high shear mechanical stirring of a slurry comprising said di-hydrate crystals and water, and the weight ratio of di-hydrate crystals to water is about 0.6–1.5, and said mechanical agitation is performed for a sufficient time to provide a distinct lessening of viscosity during said agitation;
e. converting said di-hydrate crystals into anhydrous calcium hydrogen orthophosphate crystals;
f. preparing a raw mix comprising said anhydrous calcium hydrogen orthophosphate crystals; and
g. firing said raw mix to form said halophosphate phosphor.

3,940,344
METHOD OF PRODUCING ACTIVATED CARBONS FROM PETROLEUM HEAVY MATERIALS IN A REACTION SOLVENT WITH A SULFONATING AGENT

Akira Yokogawa, Kasukabe; Mitsuyuki Mitooka, and Kenji Shima, both of Soka, all of Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Filed Sept. 13, 1973, Ser. No. 397,208

Claims priority, application Japan, Sept. 14, 1972, 47-92551

Int. Cl.² C01B *31/12, 31/10*

U.S. Cl. 252—422 **32 Claims**

1. A method of producing a granular activated carbon from a petroleum heavy oil or heavy residue which is solid at room temperature or liquid having a kinematic viscosity higher than 100 centistokes at 50°C and contains more than 70% by weight of carbon and not more than 0.1% by weight of total metal content, which process comprises adding a liquid, organic reaction medium material which can dissolve or disperse said petroleum heavy oil or heavy residue and is selected from the group consisting of halogenated lower aliphatic compounds, lower fatty acids, lower amides, dioxane, carbon disulfide and benzene into said petroleum heavy oil or heavy residue in an amount of 5 to 20 times by weight the amount of said petroleum heavy solid or heavy residue therein; adding a sulfonating agent capable of sulfonating said petroleum heavy oil or heavy residue into the resulting mixture in an amount of 0.2 to 20 times by weight the amount of said petroleum heavy oil or heavy residue; reacting the resulting mixture at a temperature of about 50° to about 155°C for from 30 minutes to 10 hours to conduct simultaneously sulfonation, oxidation and dehydro-poly-condensation reactions with said heavy oil or heavy residue, whereby said petroleum heavy oil or heavy residue is converted into a granular carbonized material which is not softened by an activation treatment; separating said liquid, organic reaction medium material and residual sulfonating agent from the carbonized material produced and activating the thus obtained carbonized material.

9. The method as claimed in claim 1, wherein said sulfonating agent is a complex salt obtained by reacting sulfuric trioxide with a compound selected from the group consisting of pyridine, dioxane, trimethylamine, dimethylaniline, thioxane, bis-(2-chloroethyl)ether, 2-methylpyridine, quinoline, dimethylformamide and triester phosphate, or a complex salt obtained by reacting chlorosulfonic acid with a compound selected from the group consisting of diethylether, dioxane and dimethylformamide.

32. The method as claimed in claim 1, wherein said sulfonating agent is selected from the group consisting of fluorosulfonic acid, sulfoallyl chloride, sulfamic acid, an acyl sulfate and an alkyl sulfate.

3,940,345
OLEFINE POLYMERIZATION CATALYST

Anthony David Caunt, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 268,505, July 3, 1972, abandoned. This application June 4, 1973, Ser. No. 367,002

Claims priority, application United Kingdom, July 13, 1971, 32856/71; June 9, 1972, 27010/72; Feb. 19, 1973, 7987/73

Int. Cl.² B01J *27/14, 27/16, 31/12, 31/14*

U.S. Cl. 252—429 B **28 Claims**

1. An olefine polymerisation catalyst consisting essentially of

1. one molecular proportion of a solid halide of titanium, vanadium or zirconium wherein the metal has a valency below its maximum,

2. from 0.05 up to 20 molecular proportions of at least one compound selected from the group consisting of Grignard reagents which are substantially ether free, $Mg[Al(C_2H_5)_4]_2$, $Mg(C_6H_5)_2$, lithium aluminium tetraalkyls, aluminium hydrocarbyl halides, aluminium hydrocarbyl sulphates, aluminium hydrocarbyl oxyhydrocarbyls, aluminium trihydrocarbyls and dihydrocarbyl aluminium hydrides, and
3. from 0.01 up to 10 molecular proportions of at least one phosphorus compound of the formula

$R_{3-n}P(Q)(E\text{-}Z\text{-}G)_n$

wherein

R is halogen, hydrocarbyl group, pyridyl, pyrrolyl, pyrrolidyl, piperidyl group, the group $-NR'_2$ or $-OR'$,

E is $-O-$, $-S-$, or $-NR'-$;

Z is a bivalent hydrocarbyl group such that E and G are separated by not more than 3 carbon atoms;

G is $-OR'$, $-SR'$, $-NR'_3$, $-PR'_2$, a pyridyl radical, a quinolyl radical, an isoquinolyl radical, a furyl radical or a tetrahydrofuryl radical;

R' is a hydrocarbyl group;

Q is an oxygen or sulphur atom; and

n is 1, 2, or 3, and wherein the amount of component (3) is not greater than the amount of component (2).

3,940,346

SUPPORTED MOLYBDENUM OR TUNGSTEN OXIDES TREATED WITH ORGANOALUMINUM COMPOUNDS AS CATALYSTS

Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 14, 1969, Ser. No. 816,052

Int. Cl.^{2} B01J *31/14*

U.S. Cl. 252—430 **16 Claims**

1. As a composition of matter, a catalyst consisting essentially of an admixture of a composite of (*a*) molybdenum oxide or tungsten oxide associated with a suitable support material, said composite having been activated in flowing air at a temperature of from about 500°F to about 1600°F, and (*b*) at least one organoaluminum compound of the formula R_aAlX_b wherein R is a saturated aliphatic or aromatic hydrocarbon having up to 20 carbon atoms; X is chlorine, bromine, iodine or fluorine, *a* is an integer of at least 1; *b* is 0, 1 or 2; and the total of *a* and *b* is 3, wherein the (*a*) component of the catalyst is contacted with excess nitric oxide or nitrosyl halide, or with a sufficient amount of an alkali or alkaline earth metal hydroxide or carbonate to provide from about 0.005 to about 5 weight percent of said alkali or alkaline earth metal hydroxide or carbonate prior to contact with (*b*) and subsequent to being subjected to high temperature; and wherein the molar ratio of (*b*) to (*a*) is in the range of from about 0.005:1 to 20:1 mols of (*b*) per mol of molybdenum or tungsten oxide present in (*a*).

11. As a composition of matter, a catalyst consisting essentially of an admixture of (*a*) a composite of molybdenum oxide or tungsten oxide associated with a suitable support material, said composite having been activated in flowing air at a temperature of from about 500°F to about 1600°F, and (*b*) at least one organoaluminum halide compound having the formula R_aAlX_b wherein R is a saturated aliphatic or aromatic hydrocarbon having up to 20 carbon atoms; X is chlorine, bromine, iodine, or fluorine; *a* is 1 or 2; *b* is 1 or 2; and the total of *a* and *b* is 3; and wherein the molar ratio of (*b*) to (a) is in the range of from about 0.005:1 to about 20:1 mols of (*b*) per mol of molybdenum or tungsten oxide contained in (*a*).

3,940,347

CALCIUM TUNGSTATE X-RAY PHOSPHORS AND METHOD FOR PREPARING SAME

Sixdeniel Faria, Towanda, and Lyle K. Williams, Wysox, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Continuation-in-part of Ser. No. 264,760, June 21, 1972, abandoned. This application Aug. 30, 1973, Ser. No. 393,141

Int. Cl.^{2} C09K *11/40*

U.S. Cl. 252—301.5 **6 Claims**

1. A calcium tungstate X-ray phosphor composition consisting essentially of a calcium tungstate host and from about 50 to about 200 parts per million, based upon the weight of calcium tungstate host, of vanadium as a dopant, said composition exhibiting no detectable persistence.

3. A process for producing a calcium tungstate phosphor suitable for x-ray intensifying screens, said process comprises

a. forming an aqueous reaction media consisting essentially of water-soluble calcium source and a water-soluble tungstate source, said calcium to tungsten ratio being greater than 1 in said solution

b. maintaining a temperature in said solution above about 80°C for at least 60 minutes to form a solid calcium tungstate precipitate having a Ca/W ratio of greater than 1,

c. separating the solid calcium tungstate,

d. adding from about 50 to about 200 ppm of a vanadium source and a fluxing material of potassium chloride,

e. heating said calcium tungstate to a temperature between about 700°C and 1150°C for a time sufficient to form a phosphor composition, and

f. washing said composition with water to remove any residual water-soluble contaminants.

3,940,348

REACTION CATALYST FOR THE ELIMINATION OF OXYHYDROGEN GAS IN LEAD-ACID STORAGE BATTERIES

Norbert Lahme, Hoppecke, and Gunter Sassmannshausen, Brilon, both of Germany, assignors to Accumulatorenwerk Hoppecke, Cologne, Germany

Filed Mar. 15, 1973, Ser. No. 341,577

Claims priority, application Germany, Mar. 18, 1972, 2213219

Int. Cl.^{2} B01J *21/04, 23/56*

U.S. Cl. 252—466 PT **8 Claims**

1. A unitary catalyst element for catalytically recombining into water a gas mixture of oxygen and hydrogen formed during operation of a lead-acid storage battery, comprising a single elongated catalyst carrier body in the form of a permeable coherent solid; an active metallic catalyst material of the platinum group carried on the surface of the permeable catalyst carrier body; and an axially disposed core member of highly heat conductive material enclosed within said catalyst carrier body.

3,940,349

COMPOSITIONS AND PROCESS FOR MAKING RIGID PLASTIC FOAMS OF MODIFIED VINYL ESTER RESINS AND SILICONE COMPOUNDS

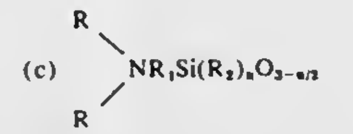
John M. Corbett, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 427,758, Dec. 26, 1973. This application Dec. 5, 1974, Ser. No. 529,884

Int. Cl.^{2} C08J *9/00, 9/30*

U.S. Cl. 260—2.5 S **14 Claims**

1. A non-aqueous thermosettable composition for making rigid plastic foams comprising a liquid resin consisting of 30 to 70 weight percent of a vinyl ester resin having pendant phthalate, isophthalate or terephthalate half ester groups and about 70 to 30 weight percent of a copolymerizable vinyl monomer, wherein said vinyl ester resin is prepared by reacting about equivalent amounts of an unsaturated monocarboxylic acid and a polyepoxide and esterifying at least about half of the hydroxyl groups formed from the acid-epoxide reaction to said half ester groups, and as a frothing agent at least about 1 pph of a copolymer containing (a) SiO_2 units, (b) $(CH_3)_3Si$-$O_{1/2}$ units and



$$\text{(c)}\quad \left.\begin{matrix}R\\ \\R\end{matrix}\right\rangle NR_1Si(R_2)_nO_{3-n/2}$$

units wherein the ratio of (b) units to the sum of the (a) and (c) units is about 0.4:1 to 1.2:1 and wherein n has a value of 0 to 2, R_2 is an alkyl group having 1 to 6 carbon atoms, R_1 is an alkylene radical of 1 to 6 carbon atoms and R is hydrogen, an alkyl radical of 1 to 6 carbon atoms or an aminoalkyl radical having 2 to 6 carbon atoms.

3,940,350

MOULDING COMPOSITIONS BASED ON UNSATURATED POLYESTERS, COPOLYMERISABLE VINYL MONOMERS AND CELLULOSE ESTERS

Bernhard Hess, Kapellen; Karl Raichle, Krefeld-Bockum; Hansjochen Schulz-Walz, Meerbusch; Bernd Peltzer; Ludwig Bottenbruch, both of Krefeld-Bockum, and Leonard Goerden, Grefrath, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Jan. 14, 1974, Ser. No. 433,347

Claims priority, application Germany, Jan. 20, 1973, 2302842

Int. Cl.^{2} C08L *1/14, 67/06*

U.S. Cl. 260—16 **4 Claims**

1. A mixture containing

A. 20–70% by weight of a non-crystallizing polyester which is the condensation product of an α,β-unsaturated dicarboxylic acid and a polyhydroxy compound and has an acid number between 10 and 100 and a hydroxyl number between 10 and 150,

B. 20–70% by weight of a copolymerizable vinyl monomer and

C. 3–30% by weight of cellulose acetobutyrate, cellulose acetopropionate or a mixture thereof,

said non-crystallizing polyester having

1. a styrene compatibility of between 50% by weight and 90% by weight of unsaturated polyester or
2. a styrene compatibility of between 35% by weight and 90% by weight of unsaturated polyester and a content of between 0.50 and 0.20 equivalent of α,β-ethylenically unsaturated dicarboxylic acid radicals per 100 g. of unsaturated polyester,

said percentages by weight of said (A), (B) and (C) being based on the total weight of (A), (B) and (C).

3,940,351

POLYMERIZATION OF CARBOXYLIC ACID MONOMERS AND ALKYL ACRYLATE ESTERS IN CHLOROFLUOROETHANE

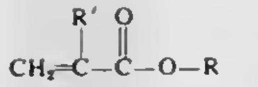
Robert K. Schlatzer, Jr., Chagrin Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 485,125, July 2, 1974. This application Mar. 11, 1975, Ser. No. 557,295

Int. Cl.^{2} C08L *5/00*

U.S. Cl. 260—17.4 SG **10 Claims**

1. A process for preparing copolymers of unsaturated copolymerizable carboxylic acid monomers and acrylic acid esters of the formula



$$CH_2{=}\overset{\overset{R'}{|}}{C}-\overset{\overset{O}{\|}}{C}-O-R$$

wherein R contains 10 to 30 carbon atoms and R' is hydrogen or methyl, comprising conducting copolymerization of from 95 to 50 weight percent of said acid monomer and 5 to 50 percent of said ester monomer in the presence of a haloalkane containing 1 to 2 carbon atoms and at least 4 halogen atoms.

3,940,352

PROCESS FOR PREPARATION OF LIGNIN RESIN

Axel Bengt Wennerblom, Pitea, and Alf Hugo Karlsson, Njurunda, both of Sweden, assignors to AB Casco, Stockholm, Sweden

Filed Feb. 21, 1974, Ser. No. 444,447

Claims priority, application Sweden, Feb. 21, 1973, 7302412

Int. Cl. C08g *14/14;* **C08h** *5/02*

U.S. Cl. 260—17.5 **7 Claims**

1. A two-step process for the preparation of a condensation product composed of lignosulfonate, phenol and formaldehyde,

the first step being an acid step wherein sulfite waste liquor is condensed at a temperature of at least 80°C with phenol and formaldehyde, at a pH of 0.2 – 4.0,

the second step being alkaline and a continuation of said condensation at a temperature of at least 60°C after addition of more formaldehyde and alkali to a pH exceeding 7.

3,940,353

PIGMENT DISPERSIONS AND LACQUERS CONTAINING COPOLYMER OF ISOBORNYL METHACRYLATE

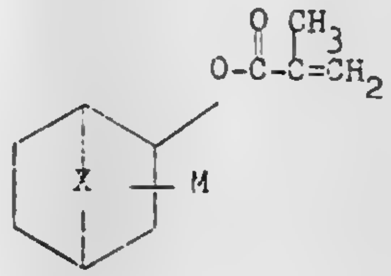
Richard Martorano, Marlton, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 241,467, April 15, 1972, abandoned, which is a continuation of Ser. No. 60,604, Aug. 3, 1970, abandoned. This application May 8, 1974, Ser. No. 468,942

Int. Cl.^{2} C09D *3/48, 3/66, 3/81*

U.S. Cl. 260—22 CB **13 Claims**

1. A lacquer of a blend of (A) a film-forming resin selected from natural oil modified alkyd resin, methacrylated alkyd resin, styrenated alkyd resin, cellulose ester resin, vinyl resin, or chlorinated rubber, with (B) an organic solvent solution of a copolymer of about 40 to 60% by weight of a compound of the formula



where X is selected from the group consisting of $-CH_2-$, $-CH(CH_3)-$, and $-C(CH_3)_2-$, and M is selected from the group consisting of a hydrogen atom and at least one methyl group, and 40 to 60% by weight of styrene, vinyl toluene, or at least one ester of acrylic acid or methacrylic acid and at least one aromatic, monocyclic aliphatic, or open chain aliphatic alcohol or alkoxy alcohol having from 1 to about 18 carbon atoms, said copolymer having an average molecular weight of from 1,000 to 8,500, the weight ratio of (A) to (B) being between 9:1 and 1:9.

2. The composition of claim 1 in which said compound is isobornyl methacrylate.

3,940,354
CEPHALOSPORAN COMPOUNDS

Jacques Martel, Bondy; René Heymes, Romainville, and André Lutz, Strasbourg, all of France, assignors to Roussel-UCLAF, Paris, France

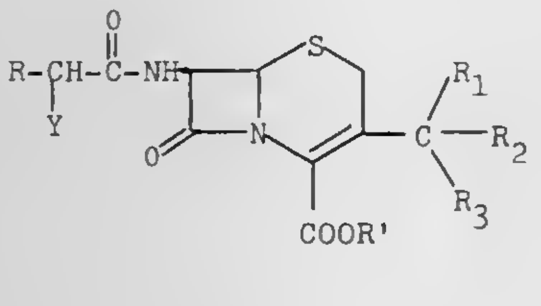
Filed Jan. 25, 1974, Ser. No. 436,502

Claims priority, application France, Jan. 31, 1973, 73.03315

Int. Cl.² C07D *501/18*

U.S. Cl. 260—243 C **4 Claims**

1. A compound selected from the group consisting of cephalosporan compounds of the formula



in the form of racemic mixtures or optically active isomers or in form of their cis or trans isomers or mixtures thereof wherein R is phenyl substituted with one hydroxyl, R' is selected from the group consisting of hydrogen and R'', R'' is an ester group easily removable by acid hydrolysis or hydrogenolysis selected from the group consisting of alkyl of of 1 to 6 carbon atoms optionally substituted by at least one chlorine and aralkyl of 7 to 15 carbon atoms, R_1 and R_2 are alkyl of 1 to 3 carbon atoms, R_3 is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, Y is selected from the group consisting of amino and Y', Y' is hydrogen and NHCOOZ, Z is straight or branched alkyl of 1 to 5 carbon atoms and their non-toxic, pharmaceutically acceptable addition salts with organic and inorganic acids and bases where appropriate with the proviso that when Y is amino, R' is hydrogen and when Y is amino or NHCOOZ, R is phenyl.

3,940,355
COMPOSITION AND METHOD FOR IMPARTING FIRE RESISTANCE AND WATER REPELLENCY TO FABRIC

John W. Engelbrecht, and John C. Lockard, both of New Haven, Mo., assignors to Kellwood Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 416,950, Nov., 1973, which is a continuation of Ser. No. 268,041, June 30, 1972. This application July 22, 1974, Ser. No. 490,485

Int. Cl.² C08L *91/00, 91/06, 91/08*

U.S. Cl. 260—28.5 AV **12 Claims**

1. A coating composition useful for imparting fire resistance and water-repellency to fabric comprising between about 5% and about 23% by weight of a liquid chlorinated paraffin, between about 20% and about 40% by weight of a resinous chlorinated paraffin, between about 4% and about 12% by weight of a copolymer of ethylene and vinyl acetate, between about 3% and about 18% by weight of a fire retardant, and up to about 15% by weight of an organic solvent.

3,940,356
ICE RELEASE AGENTS CONSISTING OF PSEUDO-PLASTIC COMPOSITIONS OF CROSSLINKED POLYACRYLIC ACID IN WATER-POLYGLYCOL MIXTURE

Peter G. Byrnes, Bloomfield Hills, Mich., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 29, 1974, Ser. No. 528,325

Int. Cl.² C09K *3/18*

U.S. Cl. 260—29.6 E **8 Claims**

1. Ice release composition which is effective on non-horizontal substrate surfaces comprising:

a. a mixture of an alkylene glycol having two to three carbon atoms and water in a glycol:water weight ratio of about 20:80 to about 90:10.

b. about 0.05 to about 1.0 parts of crosslinked polyacrylic acid per 100 parts of (a);

c. sufficient base to neutralize the crosslinked polyacrylic acid, said base selected from the class consisting of alkali metal hydroxides, ammonium hydroxide, alkyl amines having 4 to 12 carbon atoms, alkanolamines having 2 to 12 carbon atoms and morpholine; and

d. about 50 to about 100 parts of an alkanol, having one to three carbon atoms, per 100 parts of the combination of (a), (b) and (c).

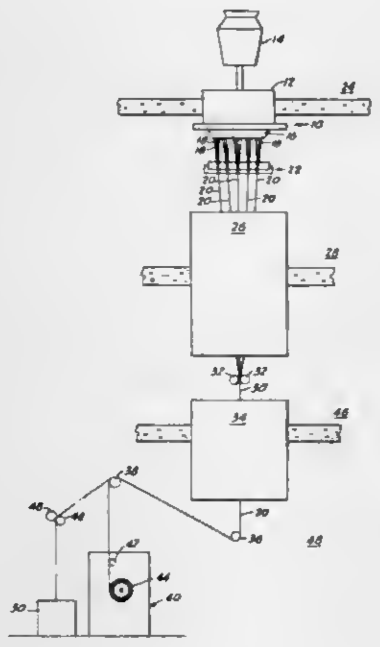
3,940,357
COATING AND COMBINED SIZING AND COATING COMPOSITION FOR GLASS FIBERS

Dennis M. Fahey, Aspinwall, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 314,284, Dec. 12, 1972, which is a continuation-in-part of Ser. No. 93,937, Dec. 1, 1970, abandoned. This application May 6, 1974, Ser. No. 467,333

Int. Cl.² C08L *61/06*

U.S. Cl. 260—29.3 **12 Claims**



1. In a glass fiber coating composition useful in preparing glass fibers for reinforcing elastomers comprising an aqueous dispersion of an elastomeric latex selected from the group consisting of natural and synthetic rubber latices and a rubber adhesive, the improvement comprising, as said adhesive, a zinc salt in an amount from 0.01 to 5 percent by weight based on the total weight of the coating composition, said zinc salt being capable of being complexed with ammonia and having a solubility constant of not less than 1×10^{-3}; and having present in the dispersion sufficient ammonia for complexing the zinc salt present.

3,940,358
NON-HYDRAULIC GROUTING COMPOSITION OF A WATER RESISTANT POLYMER EMULSION AND A MIXTURE OF A COARSE AND A FINE FILLER

Frank E. Bennett, Yardley, Pa., and Robert J. Kleinhans, Kingston, N.J., assignors to Tile Council of America, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 270,239, Sept. 15, 1972, abandoned, which is a division of Ser. No. 10,018, Feb. 9, 1970, abandoned. This application Dec. 13, 1972, Ser. No. 314,552. The portion of the term of this patent subsequent to Dec. 19, 1989, has been disclaimed.

Int. Cl.² C08L *47/00*

U.S. Cl. 260—29.6 R **16 Claims**

1. A non-hydraulic grouting composition which consists essentially of

a water-resistant polymer emulsion having a solids content of at least 40% by weight of the emulsion wherein the polymer is a polymer of an ethylenically unsaturated monomer;

10% to 35% by weight of the total composition of a fine filler having an average particle size less than 140 mesh;

at least 50% by weight of the total composition of a coarse filler characterized by an average particle size wherein not more than 10% passes a 140 sieve and none is retained on a number 6 sieve and an American Foundry Society grain Fineness Number less than 100 but greater than 10;

wherein the total composition has a viscosity of 50,000 to 2,000,000 cps, a total fine and coarse filler content of from about 70% to 90% by weight, and a total aqueous volatile component content of from 5% to 15% by weight.

3,940,359
SOIL-REPELLENT COATING COMPOSITIONS

William John Chambers, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 8, 1974, Ser. No. 468,199

Int. Cl.² C08L *27/12*

U.S. Cl. 260—29.6 F **8 Claims**

1. An aqueous dispersion containing a dispersant and 0.5% to 50% by weight of solid particles having a size less than 1μ, said particles consisting essentially of

a. 4 parts by weight of hydrous metal oxide particles,

b. from 1 to 16 parts by weight of polymer particles containing $—CF_3$ groups in an amount of from 0.5% to 92% by weight of said polymer, said polymer being a polymer of acrylic or methacrylic acid esterified with a fluorinated alcohol containing 2 to 12 carbon atoms and 1 to 3 $—CF_3$ groups, and having a Knoop hardness in bulk of at least 5.

3,940,360
SILANE CONTAINING COATING COMPOSITIONS

Charles Hobert Carder, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 12, 1974, Ser. No. 441,904

Int. Cl.² C08K *5/54, 9/06*

U.S. Cl. 260—29.1 SB **9 Claims**

1. A polymerizable acrylyl coating composition containing a polymerizable monomer, oligomer, or polymer having a methacrylyl, acrylyl, methacrylamide, acrylamide, methacrylonitrile, or acrylonitrile moiety in the molecule, and containing from 0.1 to 10 weight percent of said composition of a silane compound of the formula:

$R—Si—(OR')3$

wherein

R is vinyl,
 alkyl of from 1 to 8 carbon atoms,
 phenyl,
 $CH_2═CZCOOR''—$,
 $[CH_2═CZCOOH]_2 \,.\, H_2NR''═—$or
 $HOOCCH═CHCONHR''$;

Z is hydrogen or methyl;

R'' is divalent alkylene of from 1 to 6 carbon atoms;

R' is alkoxy of from 1 to 8 carbon atoms, alkoxyalkyloxy having a total of 8 carbon atoms or lower acyl having up to 5 carbon atoms.

3,940,361
DISPERSIONS OF STYRENE/ACRYLONITRILE COPOLYMERS

Eugene G. Sommerfeld, Penn Valley, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 11, 1972, Ser. No. 296,639

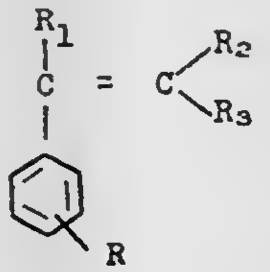
Int. Cl.² C08K *5/05, 5/06, 5/07, 5/15*

U.S. Cl. 260—30.4 N **12 Claims**

1. A composition comprising

A. 75–100 percent, by weight of solids, of a particulate copolymer of

1. 25–75 percent, by weight, of at least one monomer represented by the structure



where R, R_1, R_2 and R_3 are hydrogen or an alkyl radical of 1–5 carbon atoms;

and

2. 25–75 percent, by weight, of at least one ethylenically unsaturated nitrile monomer,

the total of (1) and (2) being 100 percent;

and

B. an organic liquid carrier comprising

1. 20–80 percent, by weight, of ethylene carbonate or propylene carbonate,

and

2. 20–80 percent, by weight, of an alkanol of 1–4 carbon atoms, acetone, methylethyl ketone, an ether alcohol, an ester of an ether alcohol or tetrahydrofuran.

3,940,362
CROSS-LINKED CYANOACRYLATE ADHESIVE COMPOSITIONS

Wendell C. Overhults, East Brunswick, N.J., assignor to Johnson & Johnson, East Brunswick, N.J.

Filed May 25, 1972, Ser. No. 257,036

Int. Cl.² C08F *236/12;* **C08K** *3/20, 3/36;* **C08L** *35/04*

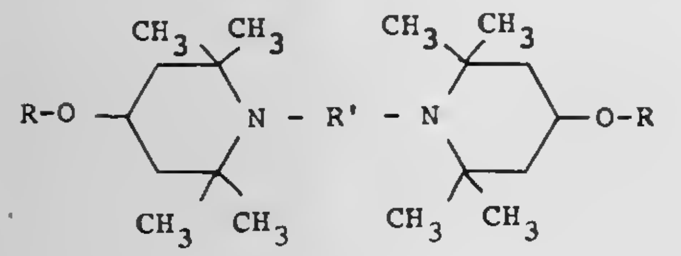
U.S. Cl. 260—42.16 **26 Claims**

1. An adhesive composition comprising a cement portion and a catalyst portion, the cement portion comprising from 5 to 95% by weight of a monomeric ester of an α-cyanoacrylic acid and from 95 to 5% by weight of a difunctional monomer diester of an acid from the group consisting of acrylic and methacrylic acid and a polyfunctional alcohol having at least two esterifiable hydroxy groups, and the catalyst portion comprising from about 2 to 15 parts by weight of a free radical catalyst for each hundred parts by weight of the total cement portion, and an amine activator therefor in the amount of from 5 to 150 mole percent of the free radical catalyst.

3,940,363
PIPERIDINE DERIVATIVES AND THEIR USE AS STABILIZERS

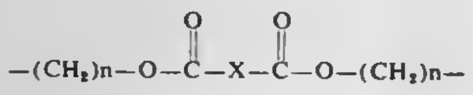
Keisuke Murayama; Syoji Morimura; Takao Yoshioka, and Tomoyuki Kurumada, all of Hiro, Japan, assignors to Sankyo Company Limited, Japan
Filed July 19, 1973, Ser. No. 380,547
Claims priority, application Japan, July 27, 1972, 47-75263
Int. Cl.² C08K *5/00*
U.S. Cl. 260—45.8 N **12 Claims**

1. A synthetic polymer composition stabilized against photo- and thermal-deterioration wherein there is incorporated, in a sufficient amount to prevent said deterioration, at least one compound selected from the group consisting of the compounds having the formula

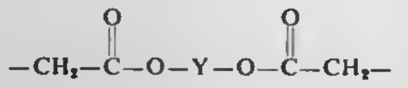

(I)

wherein

R′ represents an alkylene group which may be interrupted with an oxygen or sulfur atom, an alkenylene group, an alkynylene group, an aralkylene group, an aliphatic diacyl group, a group of the formula

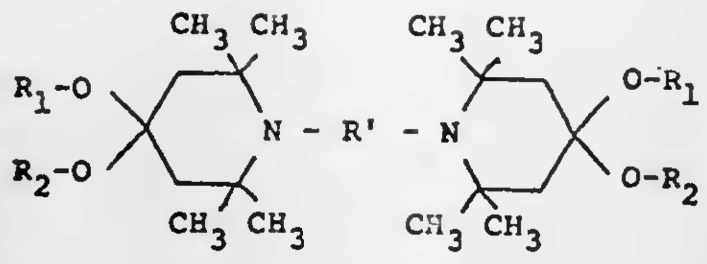

$$-(CH_2)n-O-\overset{O}{\overset{\|}{C}}-X-\overset{O}{\overset{\|}{C}}-O-(CH_2)n-$$

in which *n* is an integer of 1 or 2 and X is an alkylene group, or *o*-, *m*- or *p*-phenylene group or the carbon atoms of CO groups may be directly joined in the absence of X or a group of the formula


$$-CH_2-\overset{O}{\overset{\|}{C}}-O-Y-O-\overset{O}{\overset{\|}{C}}-CH_2-$$

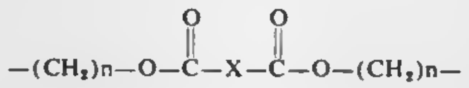
in which Y is an alkylene group or *o*-, *m*- or *p*-phenylene group; and

R represents hydrogen atom, an alkyl group, a cycloalkyl group, an aralkyl group, an aryl group, an alkoxycarbonylalkenyl group, an aliphatic, aromatic or heterocyclic monoacyl group, a N-substituted carbamoyl group, a N-substituted thiocarbamoyl group or a monovalent radical derived from an oxoacid, the compounds having the formula

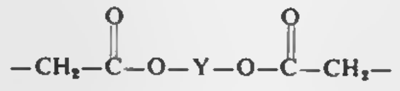

(II)

wherein

R′ represents an alkylene group which may be interrupted with an oxygen or sulfur atom, an alkenylene group, an alkynylene group, an aralkylene group, an aliphatic diacyl group, a group of the formula

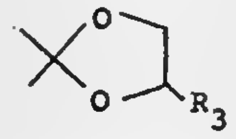

$$-(CH_2)n-O-\overset{O}{\overset{\|}{C}}-X-\overset{O}{\overset{\|}{C}}-O-(CH_2)n-$$

in which n is an integer of 1 or 2 and X is an alkylene group, or *o*-, *m*- or *p*-phenylene group or the carbon atoms of CO groups may be directly joined in the absence of X or a group of the formula

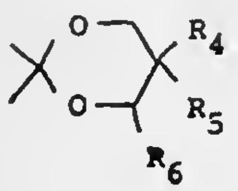

$$-CH_2-\overset{O}{\overset{\|}{C}}-O-Y-O-\overset{O}{\overset{\|}{C}}-CH_2-$$

in which Y is an alkylene group or *o*-, *m*- or *p*-phenylene group;

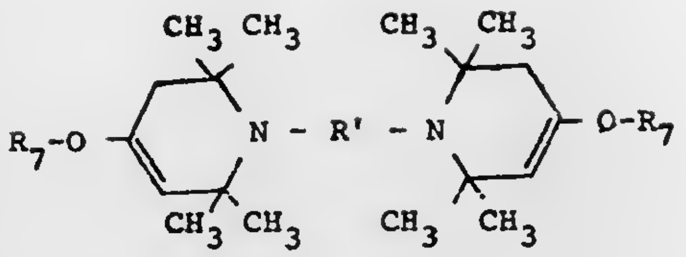
R_1 and R_2 individually represent a lower alkyl group or they jointly represent, together with the oxygen atoms, a group of the formula



in which R_3 is hydrogen atom, a lower alkyl group or hydroxymethyl or a group of the formula

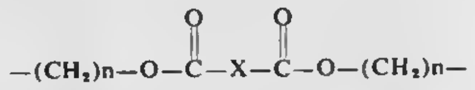


in which R_4 and R_5 may be the same or different and each represents hydrogen atom, a lower alkyl group or hydroxymethyl group and R_6 is hydrogen or a lower alkyl group, the compounds having the formula

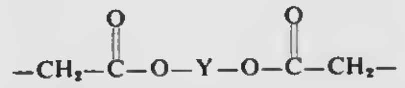

(III)

wherein

R′ represents an alkylene group which may be interrupted with an oxygen or sulfur atom, an alkenylene group, an alkynylene group, an aralkylene group, an aliphatic diacyl group, a group of the formula

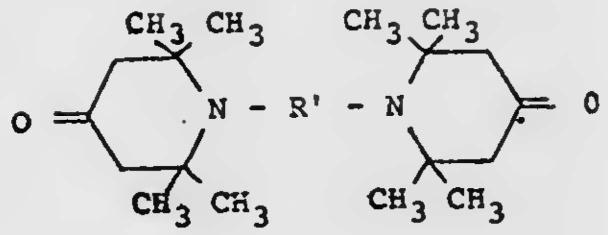

$$-(CH_2)n-O-\overset{O}{\overset{\|}{C}}-X-\overset{O}{\overset{\|}{C}}-O-(CH_2)n-$$

in which *n* is an integer of 1 or 2 and X is an alkylene group, or *o*-, *m*- or *p*-phenylene group or the carbon atoms of CO groups may be directly joined in the absence of X or a group of the formula


$$-CH_2-\overset{O}{\overset{\|}{C}}-O-Y-O-\overset{O}{\overset{\|}{C}}-CH_2-$$

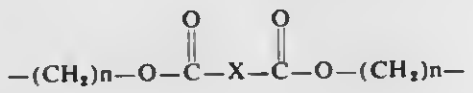
in which Y is an alkylene group or *o*-, *m*- or *p*-phenylene group; and

R_7 represents an alkyl group or an aralkyl group, and the compounds having the formula

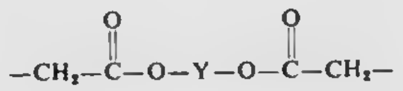

(IV)

wherein

R′ represents an alkylene group which may be interrupted with an oxygen or sulfur atom, an alkenylene group, an alkynylene group, an aralkylene group, an aliphatic diacyl group, a group of the formula


$$-(CH_2)n-O-\overset{O}{\overset{\|}{C}}-X-\overset{O}{\overset{\|}{C}}-O-(CH_2)n-$$

in which *n* is an integer of 1 or 2 and X is an alkylene group, or *o*-, *m*- or *p*-phenylene group or the carbon atoms of CO groups may be directly joined in the absence of X or a group of the formula

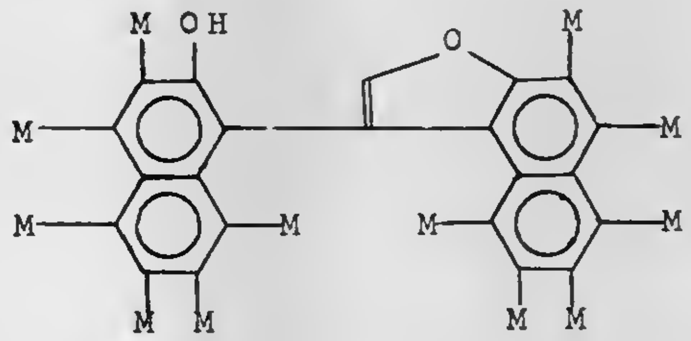

$$-CH_2-\overset{O}{\overset{\|}{C}}-O-Y-O-\overset{O}{\overset{\|}{C}}-CH_2-$$

in which Y is an alkylene group or *o*-, *m*- or *p*- phenylene group.

3,940,364
NAPHTHOFURANYLNAPHTHOL STABILIZERS

Robert W. Layer, Cuyahoga Falls, Ohio, assigoor to The B. F. Goodrich Company, Akron, Ohio
Filed May 2, 1975, Ser. No. 573,818
Int. Cl.² C08J *3/20*
U.S. Cl. 260—45.8 A **22 Claims**

1. A stabilized composition comprising 100 parts by weight of an organic material subject to the deleterious effects of oxygen, heat and light and from about 0.1 part to about 10 parts by weight of at least one naphthofuranylnaphthol having the formula



wherein each M is hydrogen, halogen, or an alkyl group containing from one to eight carbon atoms.

18. A composition of claim **15** wherein said naphthofuranylnaphthol is 1-[1-naphtho(2,1-b)furanyl]-2-naphthol.

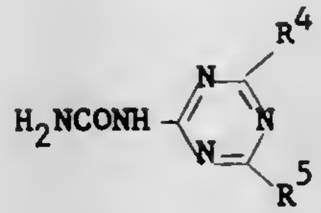
3,940,365
MOULDING COMPOSITION BASED ON POLY(OXYMETHYLENE)

Hans-Hermann Grossmann, Oberems, Taunus; Karlheinz Burg, and Gunter Sextro, both of Naurod, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed Sept. 26, 1974, Ser. No. 509,742
Claims priority, application Germany, Sept. 28, 1973, 2348808
Int. Cl.² C08K *5/20, 5/21*
U.S. Cl. 260—45.9 P **5 Claims**

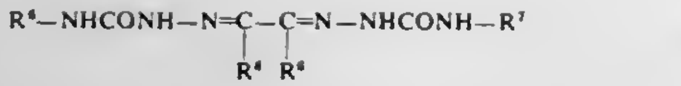
1. A moulding composition based on poly(oxymethylene) and consisting essentially of a mixture of

- A. 99.9 to 95 weight percent of a linear poly(oxymethylene),
- B. 0.05 to 2.5 weight percent of at least one phenolic oxidation stabilizer, and
- C. 0.05 to 2.5 weight percent of at least one compound having a nucleating effect and selected from
  - a. a urea having the formula

$$R-NHCONH-(NH)_x-(CO)_y-(CR^2=CR^3)_z-CONH-R^1, \quad (1)$$


(II)

or



$$R^6-NHCONH-N=\underset{R^8}{C}-\underset{R^9}{C}=N-NHCONH-R^7 \qquad (III)$$

wherein *x*, *y* and *z* are each zero or 1 and the sum of *x*, *y* and *z* is 1 or 2,

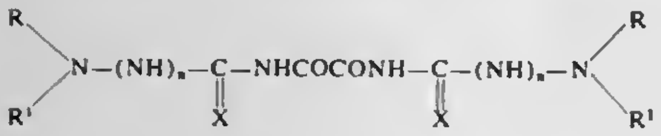
R and R^1 are each a hydrogen atom, an alkyl radical having from one to six carbon atoms or a phenyl radical,

R^2 and R^3 are each a hydrogen atom or an alkyl radical having one, two or three carbon atoms,

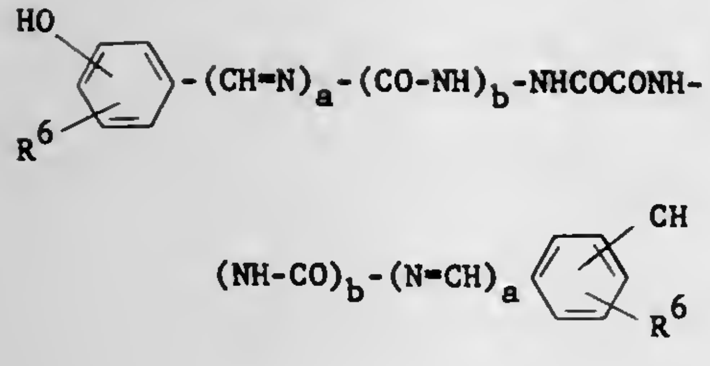
R^4 and R^5 are each an alkyl radical having from one to six carbon atoms or an amino or ureido group, both of which may be substituted with one or two alkyl radicals each having from one to six carbon atoms, and

R^6, R^7, R^8 and R^9 are each a hydrogen atom or an alkyl radical having from one to six carbon atoms,

b. an oxalic acid diamide of the formula

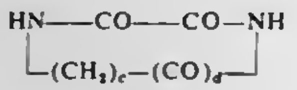


(IV)



(V)

or



(VI)

wherein *n* is zero or 1,

the sum of *a* and *b* is 1,

c is 1, 2 or 3, and

d is zero, or *c* is zero and *d* is 1,

X is an oxygen atom of an imino group, R and R^1 are each a hydrogen atom, an alkyl radical having from one to six carbon atoms or a phenyl radical, and

R^6 is a hydrogen atom or an alkyl radical having from one to six carbon atoms, and

c. an azodicarboxylic amide of the formula

$R^6-NH-CO-N=N-CO-NH-R^7$

wherein R^6 and R^7 are each a hydrogen atom or an alkyl radical having from one to six carbon atoms.

3,940,366
FLAME RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1973, Ser. No. 429,120

Int. Cl.^{2} C08K *5/42*

U.S. Cl. 260—45.9 R **13 Claims**

1. A flame retardant aromatic carbonate polymer composition comprising in admixture an aromatic carbonate polymer and a minor amount of a metal salt of a monomeric substituted aromatic sulfonic acid or mixtures thereof, and wherein said metal salts thereof are selected from the group consisting of the alkali metal salts and the alkali earth metal salts, and mixtures thereof, and said substituent on the metal salts of the substituted aromatic sulfonic acid is selected from the group consisting of an electron withdrawing radical and mixtures thereof.

3,940,367
PREPARATION OF HIGH MOLECULAR POLYESTERS OF 1,4-BUTANEDIOL

Herbert Pelousek, Dormagen; Alfred Horbach; Ludwig Bottenbruch, both of Krefeld-Bockum, and Rudolf Binsack, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 6, 1974, Ser. No. 495,190

Claims priority, application Germany, Aug. 10, 1973, 2340559

Int. Cl.^{2} C08G *63/34*

U.S. Cl. 260—45.95 R **7 Claims**

1. A process for the condensation of diols and dicarboxylic acid dialkyl esters wherein 1,4-butanediol or its mixture with at most 10 mol percent of another diol is condensed with a member selected from the group consisting of dialkyl esters of terephthalic acid, dialkyl esters of isophthalic acid and mixtures thereof or said selected member with at most 10 mol percent of at least one other dicarboxylic acid dialkyl ester, and wherein

a. 1 mol of the dicarboxylic acid dialkyl ester is transesterified with 1.05 to 1.9 mols of the diol in the presence of 0.01 to 0.4 percent by weight of titanic acid tetraalkyl ester based on the dicarboxylic acid dialkyl ester, at a pressure of 2–10 bars and a temperature of 180° to 230°C.,

b. the trans-esterification product is polycondensed in the melt at 230°–300°C. under reduced pressure of 0.1 to 5 mm Hg and

c. the polyester thus obtained is further condensed at a temperature of 5° to 50°C. below its melting point, under reduced pressure or under an inert gas atmosphere, until its intrinsic viscosity is from 0.6 to 1.9 dl/g.

3,940,368
ACRYLONITRILE COPOLYMERS SUITABLE FOR MAKING FLAME-RESISTING FIBERS

Luciano Console, Mirano-Venice; Ferdinando Bencini, San Donato Milanese, and Enzo Chiellini, Rosignano Solvay, all of Italy, assignors to Societa' Italiana Resine S.p.A., Milan, Italy

Filed Nov. 19, 1974, Ser. No. 525,141

Claims priority, application Italy, Nov. 28, 1973, 31753/73

Int. Cl.^{2} C08F *214/10, 220/44, 216/14, 220/46*

U.S. Cl. 260—63 HA **10 Claims**

1. A copolymer suitable for making self-extinguishing fibers, consisting essentially of at least 50 wt.% of acrylonitrile, from 2 to 30 wt.% of vinyl or vinylidene chloride, from 0 to 10 wt.% of a neutral, ethylenically unsaturated, non-halogenated monomer and from 2 to 40 wt.% of alpha-bromoacrylonitrile.

3. A copolymer suitable for making self-extinguishing fibers, consisting essentially of at least 50 wt.% acrylonitrile, from 2 to 30 wt.% vinyl or vinylidene chloride, from 0 to 10 wt.% of a neutral, ethylenically unsaturated, non-halogenated monomer, from 2 to 40 wt.% of alpha-bromoacrylonitrile and from 0.1 to 3 wt.% of a copolymerized monomer carrying sulphonic groups.

3,940,369
METHOD FOR PREPARING POLYURETHANES USING 3,9-BIS(2-HYDRAZIDOETHYL)-2-4,8,10-TETRAOXASPIRO-[5,5]-UNDECANE AS CHAIN EXTENDER

Toshio Yukuta, Tokyo, and Takashi Ohashi, Iruma, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Nov. 25, 1974, Ser. No. 527,080

Claims priority, application Japan, Nov. 28, 1973, 48-132549

Int. Cl.^{2} C08G *18/32;* **C07D** *319/04*

U.S. Cl. 260—75 NH **9 Claims**

1. A method for preparing polyurethane which comprises reacting 3,9-bis(2-hydrazidoethyl)-2,4,8,10-tetraoxaspiro-[5,5]-undecane as a chain extender with a prepolymer having terminal isocyanate groups produced by reacting an organic polyisocyanate with hydroxyl-containing compound having a number average molecular weight ranging from 400 to 5000, the equivalent ratio of the active hydrogen of the chain extender to the isocyanate group of the prepolymer ranging from 0.8 to 1.3.

3,940,370
METHOD OF MAKING POLYUREAS

Anthony L. DiSalvo, Stamford, Conn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 31, 1975, Ser. No. 563,763

Int. Cl.^{2} C08G *18/08, 18/71*

U.S. Cl. 260—77.5 CH **5 Claims**

1. Method of making a polyurea which comprises reacting an aliphatic diamine with trimethylisocyanatosilane in a closed, pressurized vessel at a temperature sufficiently high and for a time sufficiently long to produce a substantial quantity of said polyurea and separating said polyurea from by-products of the reaction.

3,940,371
DIAMON DISULFIDE CURATIVES FOR POLYURETHANES

Leslie Catron Case, 14 Lockeland, Winchester, Mass. 01890

Filed June 6, 1974, Ser. No. 476,932

Int. Cl.^{2} C08G *18/32*

U.S. Cl. 260—77.5 AM **38 Claims**

1. A cured polyurethane composition comprising the reaction product of (A) an organic polyisocyanate, (B) a polymeric diol, and (C) an organic diamino disulfide selected from the group consisting of

a. diamino diphenyl disulfides with amino groups located in different phenyl radicals and having the amino groups located in positions ortho to the disulfide group,

b. diamino dinaphthyl disulfides having melting points below 150° C., and with amino groups located in different naphthyl radicals,

c. organic diamino disulfides having the structure $NH_2-Ar-S-S-R'-NH_2$ or $NH_2-R'-S-S-R'-NH_2$ in which Ar is an aryl radical and R′ is a tertiary aliphatic or cycloaliphatic radical in which the amino group is attached to the tertiary carbon atom, and

d. organic diamino aryl disulfides in which one of the radicals attached to the disulfide group is a diaminoaryl radical and the other radical attached to the disulfide group is either an aryl or a lower alkyl radical, in which said (C) may have been reacted simultaneously with said (A) and (B), or in which said (A) and (B) may have been reacted together to form a polyurethane prepolymer before reaction with said (C).

3,940,372
MODIFIED MOLECULAR WEIGHT OF POLYLACTAMS

William L. Hergenrother, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 12, 1974, Ser. No. 496,417

Int. Cl.^{2} C08G *69/24, 81/00*

U.S. Cl. 260—78 L **29 Claims**

1. A molecular weight modified nylon, comprising: anionically polymerized lactam monomers having the formula

$$H\overline{N-(CH_2)_n-C}=O$$

wherein n is from 2 to 15, and containing from 0.001 to about 30 mole percent based upon the lactam of a hydrocarbon compound lacking any active hydrogen attached to an atom selected from the group consisting of nitrogen, oxygen and sulfur, and having a McEwen-Streitwieser-Applequist-Dessy scale pK_a of from about 15 to about 29.

3,940,373
COPOLYAMIDE OF CAPROLACTAM

Toshio Muraki; Yasuo Miura, and Hiroshi Kodama, all of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 27, 1974, Ser. No. 455,056

Claims priority, application Japan, Apr. 14, 1973, 48-41808

Int. Cl.^{2} C08G *69/14, 69/46*

U.S. Cl. 260—78 L **2 Claims**

1. A copolyamide which is soluble in methanol at room temperature to give a stable solution, said copolyamide being obtained by copolymerizing a three-component system consisting essentially, in the proportions defined by the triangular coordinates in the area defined by points a, b, c, d, e and f of the accompanying drawing, of the system consisting essentially of 20 – 55 percent of ϵ-caprolactam; 5 – 40 percent of a salt of hexamethylenediamine and adipic acid; and 20 – 60 percent of a salt of 1,3-cyclohexanebis (methylamine) and adipic acid, such proportions being expressed as percentages by weight.

3,940,374
SYNTHESIS OF POLYTHIOL POLYMER INTERMEDIATES FROM POLYUNSATURATED HYDROCARBONS

Alexis A. Oswald, Mountainside, N.J.; Wolfgang H. Mueller, Karlsruhe, Germany, and Daniel N. Hall, Summit, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 665,728, Sept. 6, 1967, Pat. No. 3,625,925. This application June 18, 1971, Ser. No. 154,627. The portion of the term of this patent subsequent to Dec. 7, 1988, has been disclaimed.

Int. Cl.^{2} C08G *23/00*

U.S. Cl. 260—79 **8 Claims**

1. A polythiol composition having the general formula: $(CYZ=CX)_d-Q-CHX-CYZ-(SR_1)_b-SH_{a-d}\ SH)_Q$ is a polyvalent radical selected from the group consisting of trimethylcarbinol, trimethylphosphate, trimethylol propane triformiate, triformoyl triazine, chlorosilane, silane, and cyclohexane radicals, R_1 is a radical selected from the group consisting of (1) a C_1–C_{30} divalent alkylene radical, (2) a C_2–C_{30} divalent unsaturated alkylene radical, (3) a C_8–C_{30} bis-alkylene substituted aromatic radical, (4) a C_6–C_{30} divalent aromatic radical, and (5) a C_2–C_{30} divalent organic radical containing either sulfur, oxygen or silicon in addition to carbon and hydrogen atoms, X, Y and Z are selected from the group consisting of C_1 to C_{30} alkyl radicals and hydrogen radicals, *a* varies from 3 to 4, *b* ranges from 0 to 30, and *d* varies from 0 to 1.

3,940,375

ARYLENE SULFIDE POLYMERS

Marion T. O'Shaughnessy, and Robert W. Campbell, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 7, 1974, Ser. No. 521,775

Int. Cl.^{2} C08G *75/16*

U.S. Cl. 260—79.1 **8 Claims**

1. A method for producing polymers comprising:

a. contacting an alkali metal salt of a halothiophenol represented by the formula XRSM, where R is a divalent hydrocarbon radical selected from arylene, alkyl-substituted arylene, cycloalkyl-substituted arylene, and aryl-substituted arylene, the number of carbon atoms in said R group being within the range of 6 to about 20; X is halogen selected from fluorine, chlorine, bromine, and iodine; and M is an alkali metal selected from lithium, sodium, potassium, rubidium, and cesium, said contacting in an organic amide in the presence of a dihalo aromatic compound to form a composition, and

b. maintaining at least a portion of said composition at polymerization conditions to produce a polymer.

3,940,376

PERMANENTLY ANTISTATIC SHAPED STRUCTURES OF ACRYLONITRILE POLYMERS

Francis Bentz, Cologne, and Gunther Nischk, Dormagen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

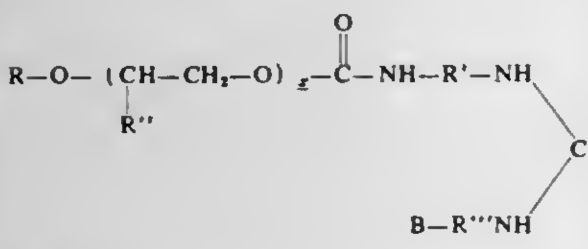
Filed Nov. 25, 1974, Ser. No. 527,073

Claims priority, application Germany, Nov. 30, 1973, 2359658

Int. Cl.^{2} C08F *28/00, 120/42, 220/42, 220/70*

U.S. Cl. 260—79.3 M **5 Claims**

1. A shaped article of an acrylonitrile polymer with at least one antistatic additive, comprising (A) 85 to 99.5 % by weight of an acrylonitrile copolymer consisting of at least 60 % by weight of copolymerised acrylonitrile and (B) of 0.5 to 15 % by weight of at least one compound corresponding to the general formula (I)



$$R{-}O{-}(\underset{R''}{\underset{|}{C}}H{-}CH_2{-}O)_z{-}\overset{O}{\overset{\|}{C}}{-}NH{-}R'{-}NH{-}C({=}O){-}NH{-}R'''{-}B \qquad (I)$$

in which

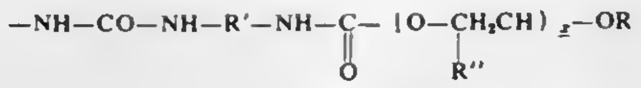
R represents a C_6–C_{18}-alkyl, cycloalkyl, aryl, aralkyl or alkaryl radical optionally substituted by halogen or alkyl,

a is an integer from 5 to 50,

R′ represents ann alkylene, arylene, aralkylene, alkarylene, cycloalkylene radical,

R″ represents hydrogen or a methyl group,

B represents hydrogen or the group



$$-NH-CO-NH-R'-NH-\underset{O}{\underset{\|}{C}}-(O-\underset{R''}{\underset{|}{C}}H_2CH)_z-OR$$

R‴ , where B is hydrogen, represents a C_6–C_{12}-arylene radical optionally substituted by halogen or alkyl, a C_3–C_{17}-alkylene radical or a cycloaliphatic radical, and, where B has the meaning different from hydrogen, R‴ represents a C_3–C_6-alkylene radical, a C_6–C_{12}-arylene radical optionally substituted by halogen or alkyl or a cycloaliphatic radical.

3,940,377

METHOD OF ACTIVATING POLYMERS

Carl Horowitz; Leon Pinczuk, and Michael Dichter, all of Brooklyn, N.Y., assignors to Polymer Research Corporation of America, Brooklyn, N.Y.

Division of Ser. No. 105,670, Jan. 11, 1971, abandoned. This application June 19, 1972, Ser. No. 264,020

Int. Cl.^{2} C08F *8/42, 8/36*

U.S. Cl. 260—79.5 NV **8 Claims**

1. Method of activating a polymeric material, which comprises subjecting a polymeric material the surface of which contains thereon a substance selected from the goup consisting of colloidal silver and silver oxide so that strongly ionic materials can be grafted onto said surface to the action of a sulfonating agent in a solvent medium hydrocarbon, whereby said polymeric material becomes rapidly sulfonated and easily subject to reaction with ionic materials including dyes.

3,940,378

METHOD FOR MANUFACTURING OF BUTADIENE-PROPYLENE COPOLYMERS

Junji Furukawa, Kyoto; Kazuo Haga, Kodaira, and Eiichi Kobayashi, Uji, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 143,242, May 13, 1971, abandoned. This application June 12, 1974, Ser. No. 478,730

Claims priority, application Japan, May 14, 1970, 45-40546

Int. Cl.^{2} C08F *2/06, 4/52, 36/06*

U.S. Cl. 260—85.3 R **8 Claims**

1. A method for manufacturing a high molecular weight elastomeric butadiene-propylene random copolymer whose propylene unit content is in the range of 3 to 45 mol% and wherein no propylene unit chain exists in the resulting copolymer chain, which comprises copolymerizing, in an inert solvent, butadiene and propylene in the mol ratio ranging from one to ten at a temperature ranging from 0°C to 80°C, in the presence of a catalyst system consisting of (1) at least one compound selected from the group consisting of titanium tetrachloride, titanium tetrabromide, titanium tetraiodide and vanadyl trichloride, (2) an organoaluminum compound having the formula, $AlR^1R^2R^3$ wherein R^1, R^2 and R^3 represent a hydrocarbon radical having 1 to 18 carbon atoms each of which may be the same or different, and (3) phosgene, in which said components (2) and (3) are mixed at room temperature prior to the addition of other catalysts and of monomers, the mol ratio of said component (1) to said component (2) being one to ten, the mol ratio of said component (2) to said component (3) being ten to one, said component (1) being used in the amount of 0.05 to 15 mmol based on 100 gr of the total amount of the monomers as charged.

3,940,379

PROCESS FOR CONTROLLED DEGRADATION OF PROPYLENE POLYMERS

Eugene G. Castagna, Clark; Albert Schrage, East Orange, and Michael F. Repiscak, West Orange, all of N.J., assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed May 21, 1973, Ser. No. 362,134

Int. Cl. C08f *27/22, 27/28*

U.S. Cl. 260—88.2 S **12 Claims**

1. A process for the controlled oxidative degradation and minimized thermal degradation of propylene polymers, comprising: contacting a propylene polymer exhibiting a first melt flow rate, with gaseous oxygen and with an organic or inorganic peroxide; melting and working said mixture of polymer, oxygen and peroxide in a high shear zone at a temperature and for a time sufficiently low to minimize thermal degradation while subjecting said propylene polymer to substantial oxidative degradation, said polymer being selected from the group consisting of polypropylene and copolymers of propylene and α-olefins of 2 to 6 carbon atoms; and recovering an essentially odor free propylene polymer exhibiting a second melt flow rate higher than said first melt flow rate.

3,940,380

P-GLU-D-PHE-TRP-SER-TYR-2-ME.ALA-LEU-ARG-PRO-H_2 AND INTERMEDIATES

Victor M. Garsky, Havertown, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 22, 1974, Ser. No. 526,344

Int. Cl.^{2} C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 LH **8 Claims**

1. A compound selected from the group consisting of
L-p-Glu-D-Phe-L-Trp-L-Ser-L-Tyr-2-Me·Ala-L-Leu-
-Arg-L-Pro-Gly-NH_2

and
R^4-L-p-Glu-D-Phe-L-Trp-L-Ser(R^3)-L-Tyr(R^2)-2-
Me·Ala-L-Leu-L-Arg(N^G-R^1)-L-Pro-Gly-R

and its non-toxic salts; wherein

R is selected from the class consisting of NH_2, OH, O-(lower)alkyl and O-benzyl; R^1 is selected from the class consisting of hydrogen and a protecting group for the N^{δ} , N^{ω} and $N^{\omega'}$ nitrogen atoms of arginine selected from nitro, tosyl, benzyloxycarbonyl and adamantyloxycarbonyl;

R^2 is selected from the class consisting of hydrogen and a protecting group for the phenolic hydroxyl group of tyrosine selected from tert-butyl, tetrahydropyranyl, trityl, benzyl, 2,6-dichlorobenzyl, benzyloxycarbonyl and 4-bromobenzyloxycarbonyl;

R^3 is selected from the class consisting of hydrogen and a protecting group for the alcoholic hydroxyl group of serine and is selected from acetyl, benzoyl, tetrahydropyranyl, tert-butyl, trityl, 2,6-dichlorobenzyl, benzyl and benzyloxycarbonyl;

R^4 is selected from the class consisting of hydrogen and an α-amino protecting group, with the proviso that at least one of R^1, R^2 and R^3 is a protecting group.

3,940,381

PHARMACEUTICALLY ACTIVE COMPOUNDS AND THEIR PREPARATION AND COMPOSITIONS

Laurens R. Boissevain, 8 rue Bel Respiro, Monte Carlo, Monaco

Filed Aug. 13, 1973, Ser. No. 387,822

Claims priority, application United Kingdom, Aug. 22, 1972, 13455/72

Int. Cl.^{2} C07G *3/00*

U.S. Cl. 260—210 R **6 Claims**

1. A sparingly soluble product containing a metal glycyrrhizinate selected from the group consisting of iron glycyrrhizinate and aluminium glycyrrhizinate in which the amount of glycyrrhizinic moieties is at least 5% by weight and at least two thirds of the glycyrrhizinic moieties are insoluble in water, the glycyrrhizinic moiety weight being calculated as acid, said product being obtained by heating an aqueous solution of the corresponding water-soluble metal glycyrrhizinate at a temperature of at least 70°C. for at least 6 hours.

3,940,382

1,2′-DI-N-SUBSTITUTED KANAMYCIN B COMPOUNDS

Hamao Umezawa; Kenji Maeda, both of Tokyo; Shinichi Kondo, Yokohama, and Sumio Umezawa, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Aug. 22, 1974, Ser. No. 499,601

Claims priority, application Japan, Aug. 29, 1973, 48-96177

Int. Cl.^{2} C07H *15/22*

U.S. Cl. 260—210 K **5 Claims**

1. A compound selected from the group consisting of 1,2′-di-N-(4-amino-2-hydroxybutyryl)-kanamycin B; 1,2′-di-N-(4-amino-2-hydroxybutyryl)-3′,4′-dideoxykanamycin B; 1,2′-di-N-isoserylkanamycin B; 1,2′-di-N-isoseryl-3′,4′-dideoxykanamycin B; and the pharmaceutically acceptable acid-addition salts thereof.

3,940,383

STREPTOZOTOCIN ANALOGS

Allan N. Fujiwara, Sunnyvale; Edward M. Acton, and David W. Henry, both of Menlo Park, all of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Dec. 12, 1974, Ser. No. 531,887

Int. Cl.^{2} C07H *5/06, 15/02*

U.S. Cl. 260—210 R **6 Claims**

1. The 3-methyl-3-nitrosoureido derivatives of the following amino sugars: methyl 3-amino-3-deoxy-β-D-xylopyranoside; methyl 3-amino-3-deoxy-α-D-altropyranoside; 3-amino-3-deoxy-1,2-O-isopropylidene-α-D-ribofuranose; methyl 3-amino-2,3,6-trideoxy-α-L-lyxohexopyranoside; and methyl 3-amino-3-deoxy-α-D-glucopyranoside.

3,940,384

METHYL HYDROXYPROPYL CELLULOSE ACETATE AND PROCESS

James Teng; Frank Dai, and Marcella C. Stubits, all of St. Louis, Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Aug. 13, 1973, Ser. No. 387,894

Int. Cl.^{2} C08B *13/00*

U.S. Cl. 260—226 **10 Claims**

1. The compound methyl hydroxypropyl cellulose acetate having a degree of molar substitution of hydroxypropyl groups of about 2 to about 8, a degree of substitution of methyl groups of about 0.1 to about 1, and a degree of substitution of acetyl groups of about 0.8 to about 2.5, and further characterized by being soluble in organic solvents and insoluble in water.

3,940,385

GLOSSY EMULSION COATING COMPOSITIONS CONTAINING SURFACE TREATED PIGMENTS OF OILOPHILIC NATURE AND METHOD

Richard Glenn Smith, Chagrin Falls, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation of Ser. No. 574,988, March 30, 1956, Pat. No. 3,775,360, which is a continuation-in-part of Ser. No. 230,841, June 9, 1951, abandoned, which is a continuation-in-part of Ser. No. 774,897, Sept. 18, 1947, abandoned. This application May 22, 1973, Ser. No. 362,746. The portion of the term of this patent subsequent to Nov. 27, 1990, has been disclaimed.

Int. Cl.² C08K *9/04;* **C09D** *3/06, 3/733, 5/02*

U.S. Cl. 260—23.7 A 9 Claims

1. An emulsion pigment-containing coating composition comprising a continuous aqueous phase and a discontinuous water insoluble oil phase containing dispersed in said discontinuous phase a titanium dioxide pigment which is surface coated with an organic compound effective to render said pigment oilophilic, said organic compound being characterized by at least one non-polar organic group containing a hydrocarbon structure of at least 8 carbon atoms, which group in the form of its monocarboxylic acid is soluble in oleoresinous varnishes and insoluble in water, and at least one polar group selected from the class consisting of carboxylic acids, salts of said carboxylic acids, esters of said carboxylic acids and cationic ammonium and amine surface active groups containing an ionizable negative radical of a water soluble acid, said organic compound being capable of adhering to said pigment surface when said coated pigment is emulsified and being capable of rendering said pigment surface oilophilic, said coating having been applied to said pigment prior to emulsification thereof and prior to dispersion of said coated pigment in said oil phase, and said discontinuous pigmented phase being capable of forming a continuous solid glossy film when dried.

3,940,386

SUBSTITUTED CINNAMOYL-PIPERAZINE-PYRIDYL COMPOUND

Suzanne Szabo, La Tour de Peilz; Francois Molnar, Blonay, both of Switzerland; Roland-Yves Mauvernay, Riom, France; Chau Levan, Monthey, Switzerland; Peter Radanov Statkov, Geneva, Switzerland; Danielle Straumann, Martigny, Switzerland, and Olga Lerik Milovanovic, Bex, Switzerland, assignors to Cermol S.A.

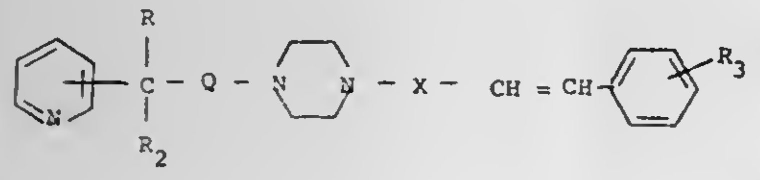
Filed June 21, 1974, Ser. No. 481,794

Claims priority, application Switzerland, June 29, 1973, 9528/73; May 20, 1974, 6899/74

Int. Cl.² C07D *401/06, 401/12*

U.S. Cl. 260—240 K 2 Claims

1. A compound of the formula



wherein X represents a carbonyl group >C=O or a methylene group —CH_2—,

R represents a phenyl, mono- or di-halophenyl or 2-pyridyl group,

R_2 represents hydrogen, hydroxy or a C_{1-3}-alkyl group,

R_3 represents 1 to 3 groups which can be hydrogen, halogen, C_{1-3}-alkyl, methoxy or dioxymethylene, and

Q represents the $(CH_2)_n$ group, *n* having the value 0, 1, 2, 3, the —CH=CH—CH_2— or —O—CH_2—CH_2— group.

3,940,387

YOHIMBINE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND THEIR APPLICATIONS

Germain Saint-Ruf, 83 Rue de l'Egalite, 45 Olivet; Pham Huu Chanh, 84, Rue du Muret, 31 Toulouse, both of France, and Buu Hoi, late of Paris, France

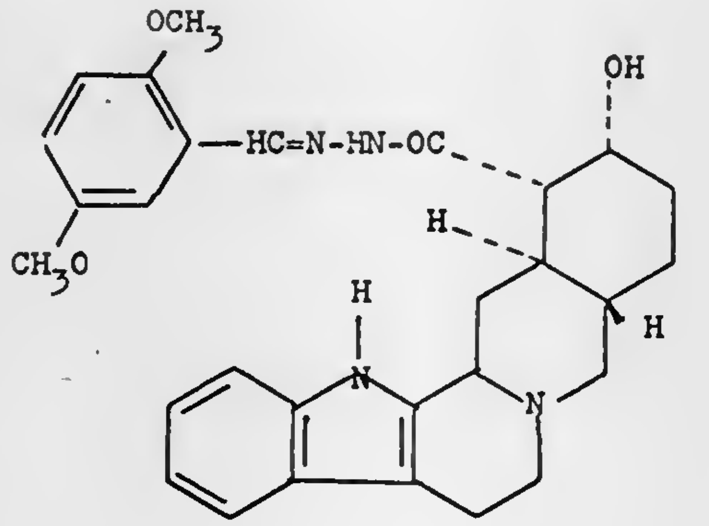
Filed May 5, 1972, Ser. No. 250,807

Claims priority, application France, May 6, 1971, 71.16350

Int. Cl. C07d *33/56*

U.S. Cl. 260—240 AL 3 Claims

1. The compound of formula



and its pharmaceutically acceptable acid addition salts.

3,940,388

TRIAZOLYLSTYRYL TRIAZOLES

Horst Aebli, Basel; Fritz Fleck, Botimingen, and Horst Schmid, Munchenstein, all of Switzerland, assignors to Sandoz Ltd., (Sandoz AG), Basel, Switzerland

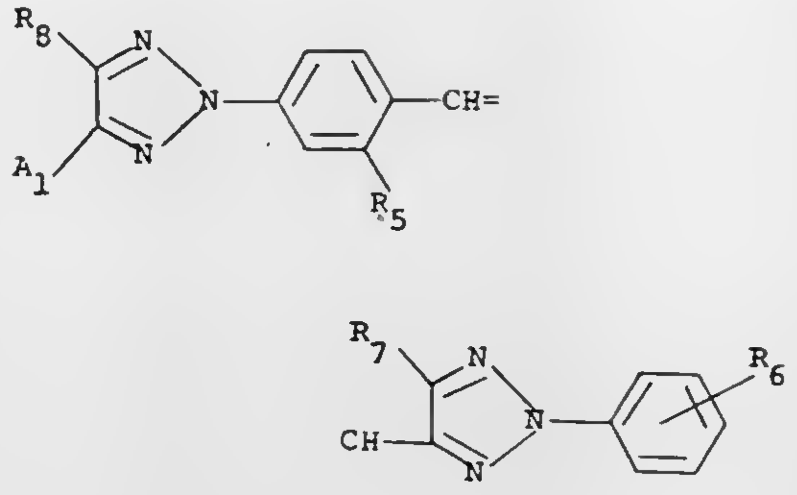
Continuation-in-part of Ser. No. 255,256, May 22, 1972, abandoned. This application Dec. 3, 1973, Ser. No. 421,002

Claims priority, application Switzerland, May 26, 1971, 7685/71

Int. Cl.² C07D *249/06*

U.S. Cl. 260—240.9 8 Claims

1. A compound of formula



in which

R_5 signifies a sulphonic acid, sulphonic amide, carboxylic amide or nitrile group,

R_6 signifies a hydrogen or chlorine atom, an alkyl radical of 1 to 4 carbon atoms or a carboxylic amide or nitrile group,

R_7 signifies a hydrogen or chlorine atom, or a methyl, hydroxymethyl or acetoxymethyl group,

R_8 signifies a hydrogen or chlorine atom or a methyl group, and

A_1 signifies a styryl, methylstyryl or nitrilostyryl radical,

and water soluble sulphonates thereof.

3,940,389

4 (3H)-OXOBENZO-2,1,3-THIADIAZINE-2,2-DIOXIDES

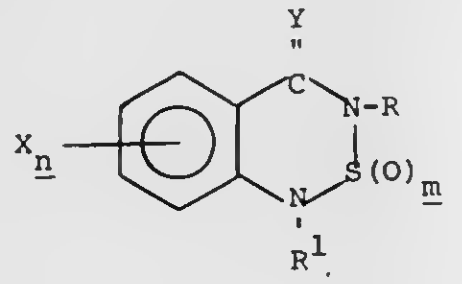
Lennon H. McKendry, and Walter P. Bland, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 398,139, Sept. 17, 1973, abandoned. This application Aug. 15, 1974, Ser. No. 497,582

Int. Cl.² C07D *285/16*

U.S. Cl. 260—243 R 12 Claims

1. A compound corresponding to the formula:



(I)

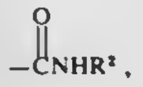
wherein:

each X independently represents halo, Y′R², Y″$CF_2C(Z)_3$, CF_3, nitro, or loweralkyl, with the proviso that at least one X is always halo or nitro;

n represents an integer of from 2 to 4, inclusive;

m represents an integer of 1 or 2;

R and R¹ each independently represent hydrogen, loweralkyl, haloloweralkyl, cycloalkyl, aryl, benzyl, alkenyl, haloalkenyl, alkynyl, haloalkynyl, —Y′R², —$SCCl_3$;



$$-\overset{O}{\overset{\|}{C}}NHR^2,$$

—NH_2, —SO_2aryl, —SO_2alkyl, —COOR³, —$C(CH_3)_2C \equiv CH$ or —$C(CH_3)_2C \equiv N$;

R² is hydrogen or loweralkyl of from one to about four carbon atoms;

R³ is loweralkyl;

each loweralkyl, haloloweralkyl or —SO_2alkyl group has from one to about six carbon atoms; halo represents any one or more of fluoro, chloro, bromo or iodo; cycloalkyl has from about three to about eight carbon atmos; aryl represents phenyl, methylphenyl or halophenyl; and alkenyl, haloalkenyl, alkynyl and haloalkynyl are each radicals having from about three to about six carbon atoms;

each Y, Y′ and Y″ independently represents a chalcogen group having an atomic number of from 8 to 16, inclusive;

each Z independently represents bromo, chloro, fluoro, or hydrogen;

and, where at least one of R or R¹ is hydrogen, the salts thereof, with organic or inorganic bases.

3,940,390

PROCESS FOR THE PRODUCTION OF 2,3,4,5,6,7-HEXAHYDROCYCLOPENTA-(3)-1,3-OXAZINE-2,4-DIONE COMPOUNDS

Rolf Jurgen Singer, and Gerhard Jager, both of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

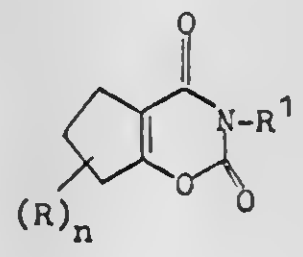
Filed Nov. 28, 1973, Ser. No. 419,841

Claims priority, application Germany, Dec. 13, 1972, 2260859

Int. Cl.² C07D *265/00, 273/00, 295/00*

U.S. Cl. 260—244 R 21 Claims

1. Process for the production of a 2,3,4,5,6,7-hexahydrocyclopenta-[e]-1,3-oxazine-2,4-dione compound of the formula



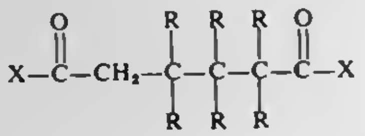
wherein

R is alkyl of up to 3 carbon atoms,

R¹ is alkyl of 1 to 12 carbon atoms, optionally substituted cycloalkyl of 5 to 8 carbon atoms, alkenyl of 2 to 6 carbon atoms, alkynyl with 1 to 6 carbon atoms and 1 or 2 halogen atoms, haloalkyl with 1 to 6 carbon atoms and 1 or 2 halogen atoms, alkoxyalkyl with 1 to 6 carbon atoms in the alkyl moiety and 1 to 4 carbon atoms in the alkoxy moiety, alkylthioalkyl with 1 to 6 carbon atoms in the alkyl moiety and 1 to 4 carbon atoms in the alkylthio moiety, alkoxycarbonylalkyl with 1 to 6 carbon atoms in the alkyl moiety and 1 to 4 carbon atoms in the alkoxy moiety, aralkyl with 6 to 10 carbon atoms in the aryl moiety and 1 to 3 carbon atoms in the alkyl moiety, cycloalkyl-alkyl with 5 to 8 carbon atoms in the cycloalkyl moiety and 1 to 4 carbon atoms in the alkyl moiety, and optionally substituted aryl of 6 to 10 carbon atoms, the optional substituents on the cycloalkyl or aryl radicals being halogen or alkyl with up to 3 carbon atoms; and

n is an integer of from 0 to 6 inclusive,

which process essentially comprises contacting an adipic acid halide of the formula



$$X-\overset{O}{\overset{\|}{C}}-CH_2-\underset{R}{\overset{R}{C}}-\underset{R}{\overset{R}{C}}-\underset{R}{\overset{R}{C}}-\overset{O}{\overset{\|}{C}}-X$$

wherein

R is hydrogen or alkyl of up to 3 carbon atoms; and

X is halogen,

with about 1 to 1.4 times the molar amount of an isocyanate of the formula

$O{=}C{=}N{-}R^1$

wherein

R^1 is defined as above,

in the presence of a tertiary amine, at a temperature from 80° to 180°C.

3,940,391

3,4-DIHYDRO-1,2,4-TRIAZINE COMPOUNDS

Wilfried Draber; Helmut Timmler, both of Wuppertal; Ludwig Eue, and Robert R. Schmidt, both of Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

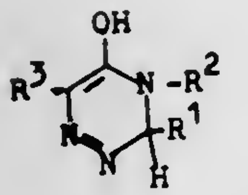
Filed Aug. 29, 1974, Ser. No. 502,249

Claims priority, application Germany, Sept. 18, 1973, 2346936

Int. Cl.² C07D *253/06*

U.S. Cl. 260—248 AS **20 Claims**

1. 3,4-Dihydro-1,2,4-triazine compound of the formula



(I)

wherein

R^1 is alkyl of up to six carbon atoms or cycloalkyl of from three to six carbon atoms;

R^2 is methyl, amino, alkylideneamino, methylamino, β-hydroxyethylamino, 2-furylmethylamino, aralkylamino of up to 12 carbon atoms or substituted aralkylamino of up to 12 carbon atoms wherein the substituents are selected from lower alkyl; and

R^2 is alkyl of up to four carbon atoms or aryl of up to 10 carbon atoms or substituted aryl of up to 10 carbon atoms in the aryl moiety wherein the substituents are selected from alkyl of from one to four carbon atoms, halogen, haloalkyl, nitro and phenoxy.

3,940,392

CERTAIN PYRAZINYLOXYPHENYL UREA COMPOUND

Howard Johnston, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 22, 1974, Ser. No. 435,616

Int. Cl.² C07D *241/18*

U.S. Cl. 260—250 BN **1 Claim**

1. N′-(4-((6-chloro-2-pyrazinyl)oxy)phenyl)-N,N-dimethylurea.

3,940,393

SYNTHESIS OF 2,6-DIAMINOPYRIMIDINES

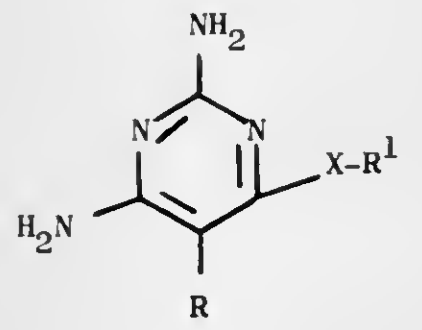
George Greenspan, Narberth; Richard W. Rees, Bryn Mawr, and Peter B. Russell, Villanova, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed June 21, 1974, Ser. No. 481,612

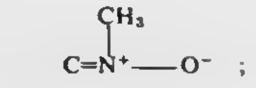
Int. Cl.² C07D *239/34, 239/42*

U.S. Cl. 260—256.4 N **10 Claims**

1. A compound of the formula:



wherein R is phenyl, 3-chlorophenyl, 4-chlorophenyl, or 3,4-dichlorophenyl, X is $C(OCH_3)_2$, $C(OC_2H_5)_2$, C=O, C=N—OH, C=N—NH_2, C=N—$N(CH_3)_2$, CHOH, or



$$C{=}\overset{CH_3}{\overset{|}{N^+}}{-}O^-\ ;$$

R^1 is alkyl of from 1 to 6 carbon atoms; and their pharmacologically acceptable acid addition salts.

3,940,394

(2-PYRIMIDINYLTHIO)ALKANOIC ACIDS, ESTERS, AMIDES AND HYDRAZIDES

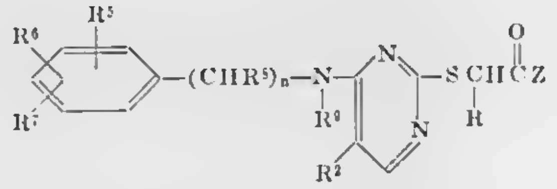
Arthur A. Santilli, Havertown; Anthony C. Scotese, King of Prussia, and Rudolph M. Tomarelli, Phoenixville, all of Pa.

Division of Ser. No. 240,266, March 31, 1972, Pat. No. 3,814,761. This application Oct. 24, 1973, Ser. No. 409,346

Int. Cl. C07d *51/40*

U.S. Cl. 260—256.5 R **3 Claims**

1. A compound of the formula:



in which

R, R^2, R^7, R^8 and R^9 are independently hydrogen or lower alkyl;

R^5 is lower alkyl, lower alkoxy, aryl of 6 to 10 carbon atoms, haloaryl of 6 to 10 carbon atoms or halo;

R^6 is hydrogen, lower alkyl, halo or lower alkoxy;

n is one of the integers 0, 1, 2 or 3; provided that when *n* is 0 and R^5 is lower alkoxy, R^6 is lower alkyl, halo or lower alkoxy; and

Z is —OH, —OM, lower alkoxy or $-(NH)_p-NH_2$, in which *p* is one of the integers 0 or 1 and M is an alkali metal, alkaline earth metal or ammonium cation.

3,940,395

4-AMINO-2-PHENYL-6-THIOPRYIMIDINES

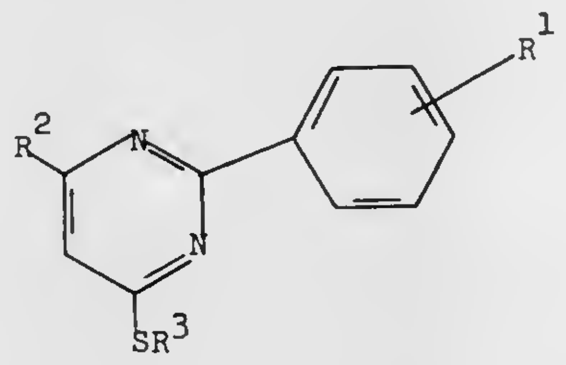
Arthur A. Santilli, Havertown, and Dong H. Kim, Wayne, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 854,300, Aug. 29, 1969, abandoned, Division of Ser. No. 590,198, Oct. 28, 1966, Pat. No. 3,498,984. This application Apr. 23, 1971, Ser. No. 137,060

Int. Cl.² C07D *239/40*

U.S. Cl. 260—256.5 R **20 Claims**

1. A compound selected from the group consisting of those having the formula:



wherein R^1 is selected from the group consisting of hydrogen, dichloro, halogen, methyl, ethyl, propyl and methoxy; R^2 is selected from the group consisting of amino, 4-methylpiperazino, 4-ethylpiperazino, methoxyethylamino, methoxypropylamino, 4-hydroxyethylpiperazino, hydroxyethylamino, hydroxypropylamino, hexahydroazepinyl, dimethoxyethylamino; diethyoxyethylamino, methylamino, ethylamino, propylamino and butylamino; and R^3 is selected from the group consisting of phenyl, halophenyl, ethylphenyl, methoxyphenyl, ethoxyphenyl, propoxyphenyl, benzyl, halobenzyl, methylbenzyl, methoxybenzyl, ethoxybenzyl and propoxybenzyl.

3,940,396

1,2,3,4,4A,5,7,7A-OCTAHYDROTHIENO[3,4-B]PYRAZINES 6,6-DIOXIDES

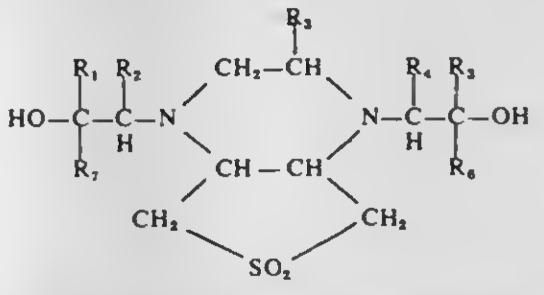
Walter Nudenberg, West Caldwell, N.J.; Edward L. Hagen, Woodbury, Conn.; Julian R. Little, Hendersonville, N.C., and Chung-Ling Mao, Sandy Hook, Conn., assignors to Uniroyal Inc., New York, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,590

Int. Cl.² C07D *295/10*

U.S. Cl. 260—268 BC **24 Claims**

1. A compound having the formula:



wherein R_1 and R_5 are the same or different and each represents a hydrogen atom, alkyl group having 1 to 10 carbon atoms, phenyl, hydroxymethyl, alkoxymethyl group having 2 to 7 carbon atoms, dimethoxymethyl, diethoxyethyl, tetrahydropyranoxymethyl, phenoxymethyl, o-, m-, p-toloxymethyl, o, m-, p-allylphenoxymethyl, o-, m-, p-chlorophenoxymethyl, β-cyanoethoxymethyl or sulfolanylmethyl group, R_2 and R_4 are the same or different and each represents a hydrogen atom, or lower alkyl group having 1 to 5 carbon atoms, R_1 together with R_2 or R_4 together with R_5 constitute a cyclohexylene group, R_3 is a hydrogen atom or methyl group, and R_6 and R_7 represent a hydrogen atom or methyl group.

3,940,397

2-[(SUBSTITUTED-PIPERAZINYL)ALKYL]-1H-BENZ-[DE]ISOQUINOLINE-1,3(2H)-DIONES

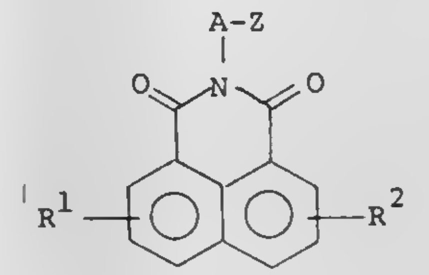
Peter C. Wade, Pennington, N.J., and Berthold Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 13, 1974, Ser. No. 523,293

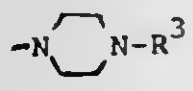
Int. Cl.² C07D *401/06*

U.S. Cl. 260—268 TR **22 Claims**

1. A compound of the formula



wherein R^1 and R^2 are each independently selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, lower alkylthio, nitro, cyano, amino, and trifluoromethyl; A is a straight or branched chain alkylene of 1 to 8 carbons; and Z is



wherein R^3 is selected from the group consisting of phenyl, phenyl-lower alkyl and substituted phenyl and phenyl-lower alkyl and said phenyl substituents are one or more selected from the group consisting of halogen, lower alkyl, lower alkoxy, lower alkylthio, nitro, amino, and trifluoromethyl; or the pharmaceutically acceptable acid addition salts thereof.

3,940,398

2-[[4-(AZINE OR DIAZINE OR TRIAZINE)-1-PIPERAZINYL]ALKYL]-1H-BENZ-[DE]ISOQUINOLINE-1,3(2H)-DIONES

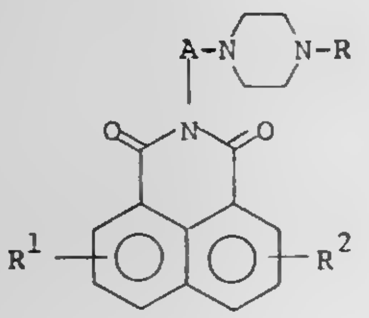
Peter C. Wade, Pennington, N.J., and Berthold Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 23, 1975, Ser. No. 543,558

Int. Cl.^{2} C07D *401/14*

U.S. Cl. 260—268 TR **12 Claims**

1. A compound of the formula:



wherein R^1 and R^2 are each independently selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, lower alkylthio, nitro, cyano, amino, and trifluoromethyl; A is a straight or branched chain alkylene of 1 to 8 carbons; and R is a heterocyclic ring selected from the group consisting of pyridinyl, diazine, triazine, and substituted pyridinyl, diazine, or triazine, wherein said heterocyclic ring is attached to the piperazine by way of an available carbon atom and said substituent is a lower alkyl, lower alkoxy, or halogen group attached to one or two available carbon atoms of said heterocyclic ring; or the pharmaceutically acceptable acid addition salts thereof.

3,940,399

PROCESS FOR THE PRODUCTION OF GAMMA QUINACRIDONE

Robert Jarl North, Clifton, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 29, 1974, Ser. No. 518,662

Int. Cl.^{2} C09B *48/00*

U.S. Cl. 260—279 QA **3 Claims**

1. A process for producing gamma quinacridone which comprises heating, between 80° and 120°C, a mixture of dianilinoterephthalic acid containing 10–20 weight percent of di-(ortho substituted) anilinoterephthalic acid in the presence of polyphosphoric acid and thereafter diluting the reaction mixture with water and recovering the precipitated gamma quinacridone, wherein the substituents on the di-(ortho substituted) anilinoterephthalic acid are halogens, alkyl containing 1 – 4 carbon atoms, alkoxy containing 1 – 4 carbon atoms, halogenated alkyl containing 1 – 4 carbon atoms or carboalkoxy containing 1 – 4 carbon atoms.

3,940,400

3-METHYL-4-PHENYL-1,2,3,4-TETRAHYDROBENZ[-G]ISOQUINOLINE HYDROBROMIDE

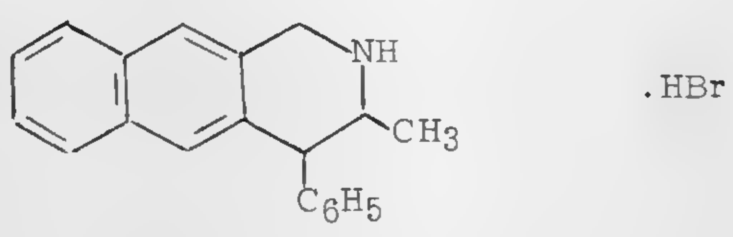
Thomas J. Schwan, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Nov. 14, 1974, Ser. No. 523,590

Int. Cl.^{2} C07D *217/08*

U.S. Cl. 260—286 R **1 Claim**

1. A compound of the formula:



3,940,401

4,4-(O-PHENYLENEDIOXY)-2,2,6,6-TETRAMETHYL PIPERIDINE

Keisuke Murayama; Toshimasa Toda; Eiko Mori; Katsuaki Matsui; Tomoyuki Kurumada; Noriyuki Onta, and Ichiro Watanabe, all of Tokyo, Japan, assignors to Sankyo Company Limited, Japan

Continuation of Ser. No. 336,981, March 1, 1973, abandoned, which is a division of Ser. No. 219,133, Jan. 19, 1972, Pat. No. 3,790,525. This application July 24, 1974, Ser. No. 491,489

Int. Cl.^{2} C07D *211/44*

U.S. Cl. 260—293.58 **1 Claim**

1. 4,4-(o-Phenylenedioxy)-2,2,6,6-tetramethylpiperidine.

3,940,402

TRIS(SUBSTITUTED AMINO) SULFONIUM SALTS

William Joseph Middleton, Chadds Ford, Pa., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Sept. 19, 1974, Ser. No. 507,426

Int. Cl.^{2} C07D *295/22*

U.S. Cl. 260—293.63 **28 Claims**

1. An anhydrous compound of the formula

$$(R^1R^2N)(R^3R^4N)(R^5R^6N)S^+X^-$$

wherein the R groups individually are alkyl of up to 20 carbon atoms each alkyl having at least 2 alpha-hydrogen atoms, with the proviso that any or all of the pairs R^1 and R^2, R^3 and R^4 and R^5 and R^6 taken together with the nitrogen atom to which they are attached from a pyrrolidino or piperidino ring, any substituents being alkyl of up to 8 carbon atoms, and X is selected from the group consisting of $(CH_3)_2SiF_2$, Cl, Br, I, CN, NCO, NCS, NO_2 and N_3.

3,940,403

SUBSTITUTED ACETIC ACID DERIVATIVES AND PRODUCTION THEREOF

Ryozo Maeda, Osaka, and Katsumi Hirose, Nishinomiya, both of Japan, assignors to Shionogi & Co., Ltd., Japan

Filed May 14, 1973, Ser. No. 360,065

Claims priority, application Japan, May 15, 1972, 47-48371

Int. Cl.^{2} C07D *213/55*

U.S. Cl. 260—294.8 G **24 Claims**

1. A compound selected from the group consisting of:

2-(2-chlorophenoxy-4-pyridyl)propionic acid
2-(2-phenoxy-4-pyridyl)propionic acid
2-(2-m-chlorophenoxy-4-pyridyl)propionic acid
2-(2-phenoxy-5-pyridyl)propionic acid
2-(2-p-chlorophenoxy-5-pyridyl)propionic acid
2-(2-phenylthio-5-pyridyl)propionic acid
2-(2-p-tolyloxy-5-pyridyl)propionic acid
2-(2-p-chlorophenylthio-4-pyridyl)propionic acid
2-(3-phenoxy-5-pyridyl)propionic acid
2-(2-phenoxy-4-methyl-5-pyridyl)propionic acid
2-(2-phenoxy-6-methyl-5-pyridyl)propionic acid
2-[2-(2,3-xylyloxy)-5-pyridyl]propionic acid
2-[2-(3,4-xylyloxy)-5-pyridyl]propionic acid
2-[2-(2,3-xylyloxy)-4-pyridyl]propionic acid
2-(2-phenoxy-3-methyl-5-pyridyl)propionic acid
2-[2-(2,4-xylyloxy)-5-pyridyl]propionic acid
2-(2-o-tolyloxy-5-pyridyl)propionic acid
2-(2-p-isobutylphenoxy-5-pyridyl)propionic acid
2-(2-o-chlorophenoxy-4-pyridyl)propionic acid
2-(2-m-chlorophenoxy-5-pyridyl)propionic acid
2-(2-o-chlorophenoxy-5-pyridyl)propionic acid
2-(2-phenoxy-5-pyridyl)propionic acid-N-oxide
2-(2-p-tolyloxy-4-pyridyl)propionic acid

or alkali metal or alkaline earth metal salts thereof.

3,940,404

2-SUBSTITUTED PHENYL-6-TRIFLUOROMETHYL-4-PYRIDYL-CARBINOLAMINES

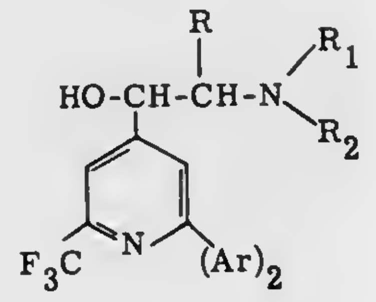
Arthur B. Ash, Detroit; Maurice P. La Montagne, Sterling Heights, and Anica Markovac, Lathrup Village, all of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 448,468, March 6, 1974, Pat. No. 3,886,167. This application Sept. 17, 1974, Ser. No. 506,684

Int. Cl.^{2} C07D *213/36*

U.S. Cl. 260—296 R **5 Claims**

1. Compound of the formula



and pharmaceutically acid addition salts thereof wherein

R is hydrogen, while

R_1 is hydrogen,lower-alkyl, or cycloalkyl of 3 to 10 carbon atoms

R_2 is lower-alkyl or cycloalkyl of 3 to 10 carbon atoms,R_2 being the same or different as R_1; and

$(Ar)_2$ is phenyl substituted by one trifluoromethyl, chloro, bromo, fluoro or methoxy substituent in the phenyl ring.

3,940,405

POLYACRYLONITRILE COMPOSITION ADMIXED WITH LOW BOILING ACETONITRILE FRACTION AND HIGH BOILING COMPATIBLE PLASTICIZER

George A. Serad, Edison, N.J., assignor to Celanese Corporation, Charlotte, N.C.

Continuation of Ser. No. 122,249, March 8, 1971, abandoned. This application June 13, 1973, Ser. No. 369,636

Int. Cl.^{2} C08L *33/20*

U.S. Cl. 260—29.6 AN **5 Claims**

1. A polyacrylonitrile composition for melt extrusion consisting essentially of at least 50 weight percent of a high acrylonitrile polymer containing at least 85 percent polymerized units from acrylonitrile admixed with a plasticizing amount of a plasticizing system of about 40 to 70 weight percent low boiling acetonitrile fraction, said acetonitrile fraction consisting essentially of acetonitrile-water mixtures containing up to about 35 percent water and about 60 to 30 percent high boiling compatible plasticizer, said compatible plasticizer consisting essentially of a cyclic-organic ester containing from 3 to 5 carbon atoms and enabling continuous melt extrusion of coherent, undegraded shaped articles at a feed rate of at least 0.05 grams per minute per die orifice, said orifice having a transverse cross-sectional area of to about 0.005 square inch, at temperatures and pressures of about 75° to 200°C and 50 to 15,000 pounds per square inch guage, said shaped articles being characterized by an apparent melt viscosity of about 10^4 to 10^6 poise enabling a draw down of at least 105 to 500 percent during an uptake of at least 3 meters per minute.

3,940,406

DERIVATIVES OF 1-PHENOXY-3-AMINO-PROPANE-2-OL AND PROCESS FOR THEIR PRODUCTION

Thomas Raabe, Heusenstamm; Josef Scholtholt, Frankfurt am Main, and Rolf-Eberhard Nitz, Bergen-Enkheim, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany

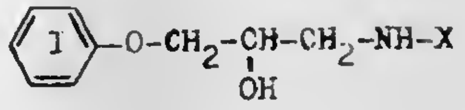
Filed May 21, 1973, Ser. No. 362,567

Claims priority, application Luxemburg, May 24, 1972, 65414

Int. Cl.^{2} C07D *213/36, 213/40*

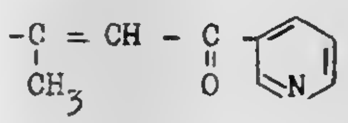
U.S. Cl. 260—296 AE **12 Claims**

1. Derivative of 1-phenoxy-3-amino-propane-2-ol of the formula

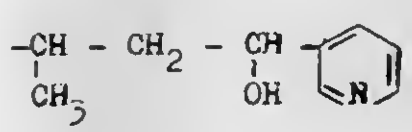


$$C_6H_5\text{-}O\text{-}CH_2\text{-}\underset{OH}{CH}\text{-}CH_2\text{-}NH\text{-}X \qquad I$$

in which X denotes



$$-\underset{CH_3}{C}=CH-\underset{O}{\overset{}{C}}-C_5H_4N \qquad (a) \text{ or}$$



$$-\underset{CH_3}{CH}-CH_2-\underset{OH}{CH}-C_5H_4N \qquad (b)$$

and the phenol nucleus I may be mono-, di- or tri-substituted by alkyl, alkenyl, alkinyl, cycloalkyl, cyclo-alkenyl, alkoxy, alkenyloxy, alkinyloxy, phenyl, halogen or the radical —NR_1R_2, in which R_1 stands for alkyl or an acyl radical derived from an aromatic or aliphatic carboxylic acid and R_2 stands for hydrogen or alkyl and their acid addition salts.

3,940,407

β-ADRENERGIC BLOCKING AGENTS IN THE 1,2,3-THIADIAZOLE SERIES

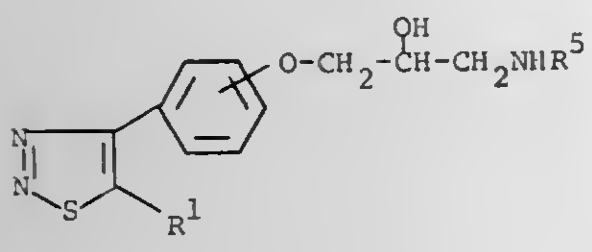
Joseph M. Muchowski, Mexico City, Mexico, and John H. Fried, Palo Alto, Calil., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Sept. 16, 1974, Ser. No. 506,659

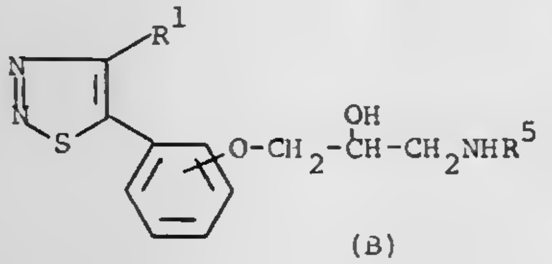
Int. Cl.² C07D *285/06*

U.S. Cl. 260—302 D **41 Claims**

1. A compound selected from the group of those represented by the following formulas:



(A)

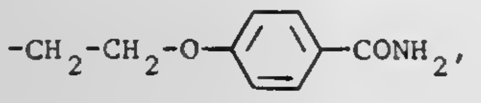


(B)

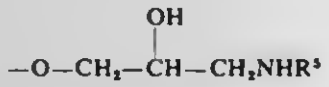
wherein

R^1 is selected from the group consisting of hydrogen, lower alkyl, phenyl, trifluoromethyl, carboxy, lower alkoxycarbonyl, cyano and an unsubstituted, monosubstituted or disubstituted aminocarbonyl group of the formula $CONR^3R^4$, wherein each of R^3 and R^4 is independently hydrogen, alkyl having 1 through 8 carbon atoms, phenyl or phenyl lower alkyl;

R^5 is hydrogen, lower alkyl, cyclomethylene containing from 3 to 7 carbon atoms, phenyl, phenyl lower alkyl, or the group



and the group



$$-O-CH_2-\overset{\overset{OH}{|}}{C}H-CH_2NHR^5$$

can be situated at the ortho-, meta- or para- positions with respect to the thiadiazole ring, and pharmaceutically acceptable acid addition salts thereof.

3,940,408

2-AMINO-5-HYDROCARBYLDITHIO-1,3,4-THIADIAZOLE COMPOUNDS

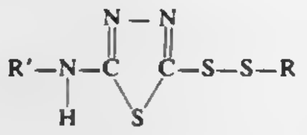
James O. Waldbillig, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 445,384, Feb. 25, 1974, Pat. No. 3,869,395. This application Sept. 9, 1974, Ser. No. 504,640

Int. Cl.² C07D *285/12*

U.S. Cl. 260—306.8 D **4 Claims**

1. As a new compound



where R is alkyl, aryl, alkaryl or aralkyl of from 1 to 30 carbons and R′ is hydrogen, alkyl, aryl, alkaryl or aralkyl of from 1 to 30 carbons and wherein said alkyl, aryl, alkaryl, and aralkyl are hydrocarbyl.

3,940,409

ALKYLIDENIMINO THIADIAZOLE CONTAINING MIXTURE

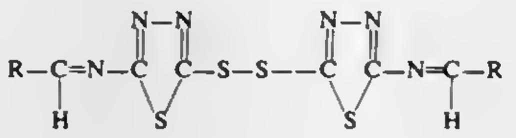
James O. Waldbillig, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Division ol Ser. No. 445,385, Feb. 25, 1974, Pat. No. 3,865,739. This application Sept. 9, 1974, Ser. No. 504,637

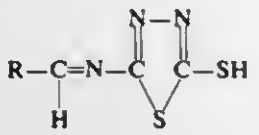
Int. Cl.² C07D *285/12*

U.S. Cl. 260—306.8 D **2 Claims**

1. A thiadiazole derivative mixture containing as a principal product an alkylidenimino thiadiazole characterized by the formula:



where R is alkyl of from 2 to 30 carbons, said mixture prepared by the process consisting essentially of first contacting 2-amino-5-mercapto-1,3,4-thiadiazole with an alkanal of the formula RCHO where R is alkyl of from 2 to 30 carbons at a temperature of between about 20 and 250°C. tuilizing a mole ratio of 2-amino-5-mercapto-1,3,4-thiadiazole to alkanal of between about 10:1 and 1:2 to form an intermediate thiadiazole product characterized by the formula:



and second contacting said thiadiazole intermediate with dimethyl sulfoxide at a temperatue of between about 20 and 150°C. utilizing a mole ratio of said intermediate to said dimethyl sulfoxide of between about 3:1 and 1:50 to form said thiadiazole derivative mixture, said first and second contacting conducted in the presence of a liquid solvent.

3,940,410

BIS-BENZONAZOLEDICARBONITRILES

Hans Kittl, Riehen, Switzerland, assignor to Sandoz Ltd., (Sandoz AG), Basel, Switzerland

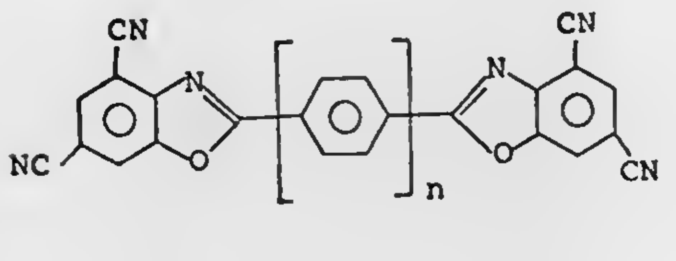
Filed Sept. 5, 1974, Ser. No. 503,277

Claims priority, application Switzerland, Sept. 11, 1973, 13022/73

Int. Cl.² C07D *263/62*

U.S. Cl. 260—307 D **3 Claims**

1. A compound of formula I,



I

in which *n* signifies 2 or 3.

3,940,411

5-AMINO-1-METHYL-3-(1-METHYL-5-NITRO-2-IMIDAZOLYL)-1H-1,2,4-TRIAZOLE

Goro Asato, Titusville; Gerald Berkelhammer, Princeton, and William Henry Gastrock, Hightstown, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 202,568, Nov. 26, 1971, Pat. No. 3,790,589, which is a division of Ser. No. 863,378, Oct. 2, 1969, Pat. No. 3,649,638, which is a continuation-in-part of Ser. No. 766,984, Oct. 11, 1968, abandoned. This application Oct. 25, 1973, Ser. No. 409,505

Int. Cl.² C07D *403/04*

U.S. Cl. 260—308 R **1 Claim**

1. 5-Amino-1-methyl-3-(1-methyl-5-nitro-2-imidazolyl)-1H-1,2,4-triazole.

3,940,412

2,4,5-TRICHLORO- AND 2,4,5-TRIBROMOIMIDAZOLE DERIVATIVES AND PESTICIDAL COMPOSITIONS CONTAINING THEM

Georg Pissiotas, Loerrach, Germany, assignor to Ciba-Geigy AG, Switzerland

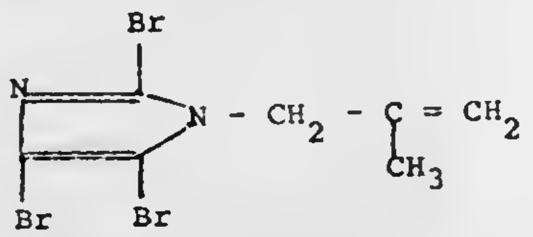
Filed June 23, 1970, Ser. No. 49,183

Claims priority, application Switzerland, July 4, 1969, 10262/69

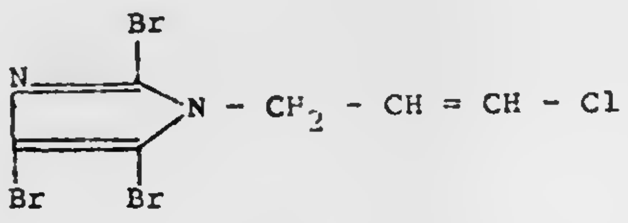
Int. Cl.² C07D *233/68*

U.S. Cl. 260—309 **3 Claims**

1. The compound of the formula



2. The compound of the formula



3,940,413

1-ETHYL-IMIDAZOLES

Wolfgang Kramer; Karl Heinz Buchel; Werner Meiser, and Manfred Plempel, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Germany

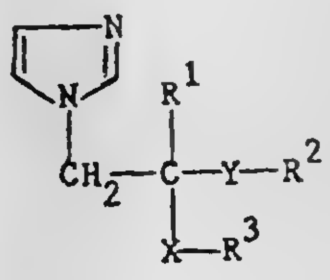
Filed Aug. 20, 1973, Ser. No. 390,042

Claims priority, application Germany, Aug. 29, 1972, 2242454

Int. Cl.² C07D *233/60*

U.S. Cl. 260—309 **29 Claims**

1. A compound of the formula



wherein

R^1 and R^3 are the same or different and are hydrogen, straight or branched-chain lower alkyl, straight or branched-chain lower alkenyl, cycloalkyl of 3 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms, aryl of 6 to 10 carbon atoms unsubstituted or substituted by 1 to 3 of the same or different substituents selected from the group consisting of halogen, halogenoalkyl of 1 or 2 carbon atoms in the alkyl moiety and 2 to 5 halogen atoms, straight or branched-chain alkyl of 1 to 4 carbon atoms, straight or branched-chain alkoxy of 1 to 4 carbon atoms, thioalkyl of 1 to 4 carbon atoms, alkylsulphonyl of 1 to 4 carbon atoms, nitro, cyano, phenyl and hydroxymethyl-substituted phenyl, or aralkyl of 6 to 10 carbon atoms in the aryl moiety and 1 to 4 carbon atoms in the alkyl moiety unsubstituted or substituted by 1 to 3 of the same or different substituents selected from the group consisting of halogen, halogenoalkyl of 1 or 2 carbon atoms in the alkyl moiety and 2 to 5 halogeno moieties, straight or branched-chain alkyl of 1 to 4 carbon atoms, straight or branched-chain alkoxy of 1 to 4 carbon atoms, thioalkyl of 1 to 4 carbon atoms, alkylsulphonyl of 1 to 4 carbon atoms, nitro, cyano, phenyl or hydroxymethyl-substituted phenyl;

R^2 is straight or branched-chain lower alkyl, straight or branched-chain lower alkynyl, cycloalkyl of 3to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms, aryl of 6 to 10 carbon atoms unsubstituted or substituted by 1 to 3 of the same or different substituents selected from the group consisting of halogen, halogenoalkyl of 1 or 2 carbon atoms in the alkyl moiety and 2 to 5 halogeno moieties, straight or branched-chain alkyl of 1 to 4 carbon atoms, straight or branched-chain alkoxy of 1 to 4 carbon atoms, thioalkyl of 1 to 4 carbon atoms, alkylsulphonyl of 1 to 4 carbon atoms, nitro, cyano, phenyl and hydroxymethyl-substituted phenyl, or aralkyl of 6 to 10 carbon atoms in the aryl moiety and 1 to 4 carbon atoms in the alkyl moiety unsubstituted or substituted by 1 to 3 of the same or different substituents selected from the group consisting of halogen, halogenoalkyl of 1 or 2 carbon atoms in the alkyl moiety and 2 or 5 halogen moieties, straight or branched-chain alkyl of 1 to 4 carbon atoms, straight or branched-chain alkoxy of 1 to 4 carbon atoms, thioalkyl of 1 to 4 carbon atoms, alkylsulphonyl of 1 to 4 carbon atoms, nitro, cyano, phenyl and hydroxymethyl-substituted phenyl;

X is C=O; and

Y is oxygen or sulphur;

or a pharmaceutically acceptable nontoxic salt thereof.

3,940,414

1-PHENOXY-[IMIDAZOLYL-(1)]-2-HYDROXY-ALKANES

Wolfgang Krämer; Karl Heinz Büchel, both of Wuppertal; Paul-Ernst Frohberger, and Hans Scheinpflug, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

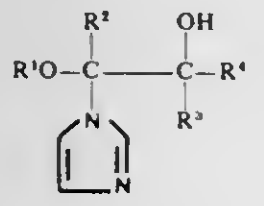
Filed June 17, 1974, Ser. No. 480,433

Claims priority, application Germany, June 30, 1973, 2333354

Int. Cl.² C07D *233/60*

U.S. Cl. 260—309 **6 Claims**

1. An imidazole of the formula



in which

- R^1 is optionally monosubstituted or disubstituted phenyl the substituents being selected from halogen, straight-chain or branched alkyl with 1 to 6 carbon atoms, alkoxy and alkylthio with, in either case, 1 to 4 carbon atoms, halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 halogen atoms, halogenoalkoxy and halogenoalkylthio with, in either case, 1 or 2 carbon atoms and 3 to 5 halogen atoms, carbalkoxy with 1 to 4 carbon atoms in the alkoxy moiety, o- and p-phenyl, and nitro;
- R^2 is hydrogen, straight-chain or branched alkyl with 1 to 6 carbon atoms or optionally monosubstituted phenyl, the substituents being selected from halogen, straight-chain or branched alkyl with 1 to 6 carbon atoms, alkoxy and alkylthio with, in either case, 1 to 4 carbon atoms, halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 halogen atoms, halogenoalkoxy and halogenoalkylthio with, in either case, 1 or 2 carbon atoms and 3 to 5 halogen atoms, carbalkoxy with 1 to 4 carbon atoms in the alkoxy moiety, o- and p-phenyl, and nitro;
- R^3 is hydrogen, alkyl or alkenyl with up to 6 carbon atoms, cycloalkyl with 5 to 6 carbon atoms, optionally substituted benzyl, the substituents being selected from fluorine, chlorine and alkyl and alkoxy, each with up to 4 carbon atoms; and
- R^4 is straight-chain or branched alkyl with 1 to 6 carbon atoms, straight-chain or branched alkenyl with 2 to 6 carbon atoms, cycloalkyl with 5 to 7 carbon atoms, optionally substituted phenyl, the substituents being selected from fluorine, chlorine and alkyl and alkoxy each with up to 4 carbon atoms,

or a salt thereof with fungicidal or plant growth-regulating activity.

3,940,415

1-(IMIDAZOLYL-1)-2-ARYLOXY-3-HYDROXY-ALKANES

Karl-Heinz Büchel; Wolfgang Krämer, both of Wuppertal; Paul-Ernst Frohberger, and Hans Scheinpflug, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

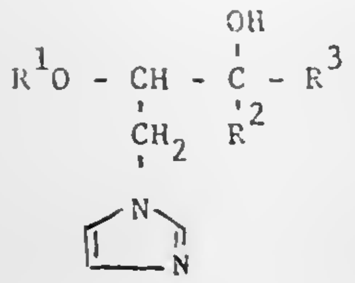
Filed Sept. 30, 1974, Ser. No. 510,833

Claims priority, application Germany, Oct. 5, 1973, 2350123

Int. Cl.² C07D *233/60*

U.S. Cl. 260—309 **5 Claims**

1. A 1-(imidazolyl-1')-2-aryloxy-3-hydroxy alkane of the formula



in which

- R^1 is an optionally monosubstituted or disubstituted phenyl or naphthyl radical with 6 to 10 carbon atoms, the substituents being selected from halogen, straight-chain or branched alkyl with 1 to 6 carbon atoms, alkoxy, alkylthio and alkylsulfonyl each with 1 to 4 carbon atoms, halogenoalkyl with 1 to 2 carbon atoms and 1 to 5 halogen atoms, halogenoalkoxy and halogenoalkylthio each with 1 or 2 carbon atoms and 3 to 5 halogen atoms, alkoxycarbonyl with 1 to 4 carbon atoms in the alkoxy moiety, phenyl in the o- and p- position, amino and nitro;
- R^2 is alkyl with up to 6 carbon atoms, or phenylalkyl or naphthylalkyl with 1 or 2 carbon atoms in the alkyl moiety and which may be monosubstituted on the phenyl or naphthyl moiety by fluorine, chlorine, alkyl with up to 4 carbon atoms or alkoxy with up to 4 carbon atoms;
- R^3 is straight-chain or branched alkyl with 1 to 6 carbon atoms, or hydrogen,

or a salt thereof with fungicidal activity.

3,940,416

BENZIMIDAZOLE SULPHONYL CHLORIDES

John Roger Corbett, Linton, and Albert Percival, Hauxton, both of England, assignors to Fisons Ltd., England

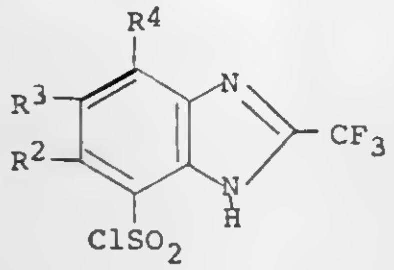
Division of Ser. No. 165,696, July 23, 1971, Pat. No. 3,823,154. This application Apr. 30, 1974, Ser. No. 465,675

Claims priority, application United Kingdom, July 29, 1970, 36673/70; Mar. 16, 1971, 7044/71

Int. Cl.² C07D *235/10*

U.S. Cl. 260—309.2 **6 Claims**

1. A benzimidazole sulphonyl chloride of the formula:



wherein R^2, R^3 and R^4, which may be the same or different, each represent halogen.

3,940,417

QUATERNISED BENZOFURANYL-BENZIMIDAZOLES

Hans Schlaepfer, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

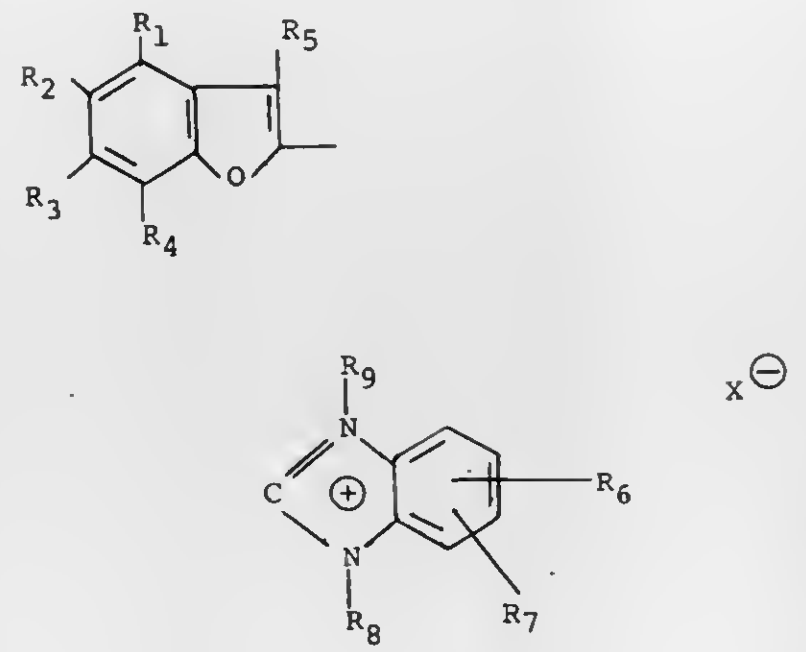
Continuation of Ser. No. 205,303, Dec. 6, 1971, abandoned. This application Aug. 22, 1974, Ser. No. 499,687

Claims priority, application Switzerland, Dec. 9, 1970, 18251/70

Int. Cl.² C07D *235/12, 307/81*

U.S. Cl. 260—309.2 **5 Claims**

1. A benzofurane of the formula



wherein

- R_1 denotes hydrogen or a lower alkyl group or together with R_2 denotes a fused benzene radical,
- R_2 denotes hydrogen, a lower alkyl or alkoxy group, chlorine, bromine, carboxyl, aminocarbonyl, sulphonic acid, aminosulphonyl, or together with R_3 denotes a fused benzene radical,
- R_3 denotes hydrogen, lower alkyl, alkoxy or together with R_4 denotes a fused benzene radical,
- R_4 denotes hydrogen, a lower alkyl group, chlorine or bromine,
- R_5 denotes hydrogen, a lower alkyl group or phenyl,
- R_6 denotes hydrogen, lower alkyl, lower alkoxy, chlorine, bromine, or phenyl,
- R_7 is hydrogen,
- R_8 denotes a lower alkyl group, a hydroxy-lower-alkyl group, cyanoethyl, phenyl which is unsubstituted or substituted by a chlorine, bromine, a lower alkyl or lower alkoxy group, or phenyl loweralkyl,
- R_9 denotes a lower alkyl group, a hydroxy-lower-alkyl group, phenyl lower-alkyl which is unsubstituted or substituted by chlorine or lower alkoxy, or the $—CH_2CN$, $—CH_2CONH_2$ or $—CH_2\text{-}COOR$ radical, wherein R represents alkyl with one to four carbon atoms, and
- X denotes halogen, lower alkylsulphonic acid or phenylsulphonic acid which is unsubstituted or substituted by lower alkyl.

3,940,418

ESTERS AND AMIDES OF 4,5-DIHYDROBENZ[G]INDAZOLE-3-CARBOXYLIC ACIDS AND RELATED COMPOUNDS

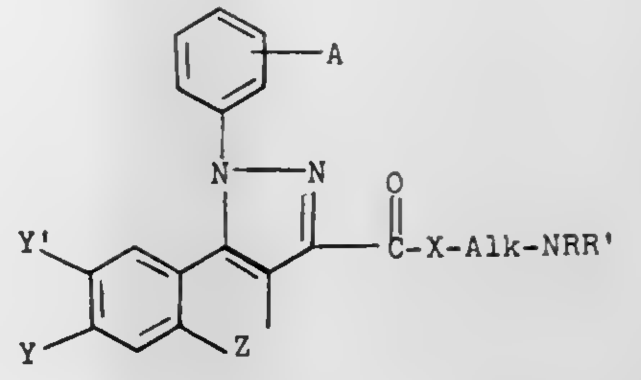
Robert W. Hamilton, Wilmette, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 242,232, April 7, 1972, abandoned. This application Apr. 3, 1974, Ser. No. 457,451

Int. Cl.² C07D *231/54;* **A61K** *31/415*

U.S. Cl. 260—310 R **8 Claims**

1. A compound of the formula



wherein A is selected from the group consisting of hydrogen, halogen, and methoxy; Y is selected from the group consisting of hydrogen, chlorine, and methoxy; Y' is hydrogen or methoxy; Z is methylene, ethylene, trimethylene, or vinylene; X is O or —NH—; Alk is lower alkylene containing up to 6 carbon atoms and separating the atoms attached thereto by at least two carbon atoms; NRR' is selected from the group consisting of di(lower alkyl)-amino wherein each lower alkyl group contains up to 6 carbon atoms, 1-pyrrolidinyl, and piperidino.

3,940,419

PHTHALIMIDE DERIVATIVES AND THEIR USE AS PLANT GROWTH REGULANTS

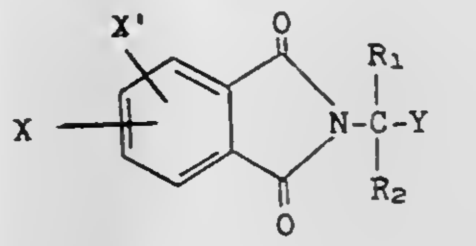
Robert Eugene Diehl, Trenton, and Bryant Leonidas Walworth, Pennington, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 348,355, April 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 282,537, Aug. 21, 1972, abandoned. This application July 25, 1973, Ser. No. 382,418

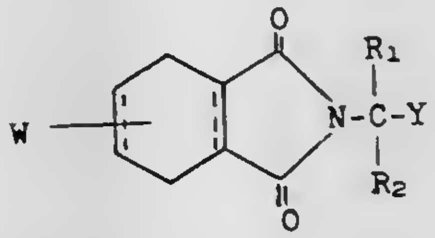
Int. Cl.² C07D *209/34*

U.S. Cl. 260—326 A **16 Claims**

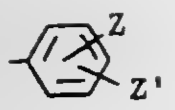
1. A compound having the formula:



or



wherein W is hydrogen or alkyl C_1–C_4 ; X and X' each represents hydrogen, halogen, alkyl C_1–C_4, CF_3, alkoxy C_1–C_4, benzyloxy, di(C_1–C_4)alkylamino, C_1–C_4 alkylthio, hydroxy, C_1–C_4 alkylsulfonyl, alkanoylamino C_1–C_4 or nitro; Y is $—CONHR_8$-$—CONR_3R_4$, $—CONHN(R_5)_2$, $—CONHN^+(R_6)_3$ .halide⁻ —CN or $—COR_7$ with the proviso that at least one of X and X' is a substituent other than hydrogen; R_1 and R_2 each represent alkyl C_1–C_4 or when taken together with the carbon to which they are attached form cycloalkyl C_4–C_{11} optionally substituted with methyl; R_3 and R_4 each represent hydrogen or alkyl C_1–C_4; R_5 and R_6 each represent alkyl C_1–C_2, R_7 is halogen, R_8 is $—CH_3$ or



where Z and Z' are hydrogen, alkyl C_1–C_2, halogen, $-CF_3$ or $-OCH_3$ and ===== is a single or double bond with the proviso that there be only 0 or 1 double bond in the ring.

3,940,420

COMPOUND, DITHIOBIS-(SUCCINIMIDYL PROPIONATE)

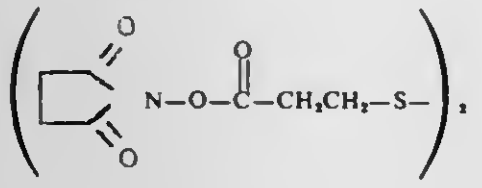
Paul K. Smith, Rockford, Ill., assignor to Pierce Chemical Company, Rockford, Ill.

Filed July 15, 1974, Ser. No. 488,541

Int. Cl.² C07D *207/12*

U.S. Cl. 260—326.26 **1 Claim**

1. The compound dithiobis-(succinimidyl propionate) represented by the formula



3,940,421

INTERMEDIATES FOR THE PREPARATION OF THIENOBENZOPYRANS AND THIOPYRANOBENZOPYRANS

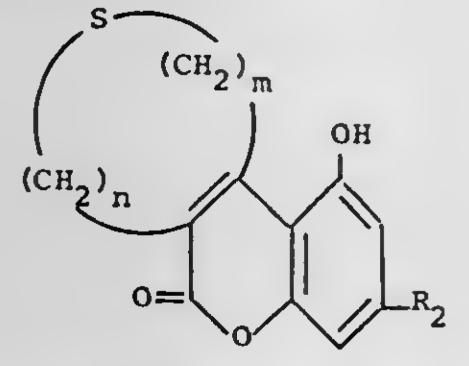
Raj K. Razdan, Belmont, and Harry G. Pars, Lexington, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Division of Ser. No. 210,170, Dec. 20, 1971, Pat. No. 3,883,551, which is a continuation-in-part of Ser. No. 852,928, Aug. 25, 1969, abandoned. This application Sept. 23, 1974, Ser. No. 508,065

Int. Cl.² C07D *333/00*

U.S. Cl. 260—327 TH **12 Claims**

1. A compound of the formula



wherein *m* and *n* are each 0, 1, 2 or 3 and *m* + *n* is 2 or 3 and R_2 is alkyl containing from 1 through 20 carbon atoms or cycloalkylloweralkyl in which the cycloalkyl group contains from 3 through 8 ring carbon atoms and the loweralkyl group contains from 1 through 6 carbon atoms.

3,940,422

AROMATIC CARBOXYLIC AMIDE DERIVATIVES

Kozaburo Harita, Hongo; Yukiyoshi Ajisawa, Okaya; Kinji Iizuka; Yukihiko Kinoshita, both of Matsumoto; Tetsuhide Kamijo, Shiojiri, and Michihiro Kobayashi, Toyoshina, all of Japan, assignors to Kissei Yakuhin Kogyo Kabushiki Kaisha, Japan

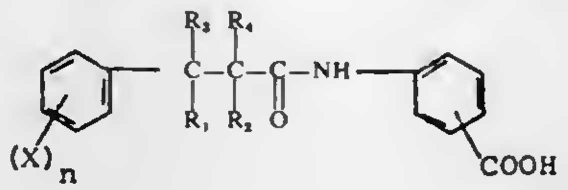
Filed Jan. 17, 1974, Ser. No. 434,252

Claims priority, application Japan, Jan. 18, 1973, 48-7359

Int. Cl.² C07D *317/50*

U.S. Cl. 260—340.5 **7 Claims**

1. A compound selected from the group consisting of an aromatic carboxylic amide derivative of the formula:



and therapeutically acceptable salts thereof, in which R_1 and R_2 are each a hydrogennatom or an alkyl group having 1–4 carbon atoms, R_3 and R_4 are each a hydrogen atom or together form another chemical bond, each X is a hydroxyl group, a halogen atom, an alkyl group having 1–4 carbon atoms and an alkoxy group having 1–4 carbon atoms, and *n* is an integer of 1–3, provided that when two X's are said alkyl or alkoxy groups, the alkyl groups thereof may be connected together into an alkylene group.

3,940,423

1,2-O-DIALKYLMETHYLIDENE-GLYCERO-3-PHOSPHATIDES

Hansjorg Eibl, Bovenden, and Alfar Nicksch, Goettingen-Nikolausberg, both of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Goettingen, Germany

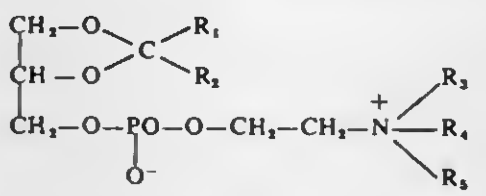
Filed Aug. 28, 1974, Ser. No. 501,182

Claims priority, application Germany, Sept. 6, 1973, 2345060

Int. Cl.² C07F *9/10*

U.S. Cl. 260—340.9 **4 Claims**

1. A phosphatide which is a compound of the formula



wherein R_1 and R_2 are alkyl having 9 to 17 carbon atoms, and R_3, R_4, and R_5 are hydrogen or methyl, or an acid addition salt of said compound.

3,940,424

LACTONES

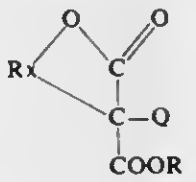
Kent P. Lannert, Freeburg, Ill., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 19, 1973, Ser. No. 426,295

Int. Cl.² C07D *307/32*

U.S. Cl. 260—343.6 **4 Claims**

1. A compound represented by the formula

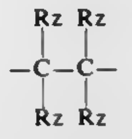


wherein:

Q is selected from the group consisting of bromine, chlorine, —O-alkali metal and —OH;

R is selected from the group consisting of hydrogen and alkyl groups containing from 1 to 20 carbon atoms, provided, that when Q is —O-alkali metal, bromine or chlorine, R is an alkyl group; and,

Rx is



$$-\underset{Rz}{\overset{Rz}{C}}-\underset{Rz}{\overset{Rz}{C}}-$$

Rz being hydrogen, alkyl, phenyl alkyl, alkoxy alkyl, alkoxy phenyl, alkoxy phenyl alkyl, and COOR; the total number of carbon atoms in Rx being from 2 to 22.

3,940,425

PROCESS FOR THE PRODUCTION OF POLYUNSATURATED COMPOUNDS

Karl Eiter, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Germany

Filed Aug. 28, 1974, Ser. No. 501,227

Claims priority, application Germany, Sept. 6, 1973, 2344985; May 28, 1974, 2425813

Int. Cl.² C07D *309/22;* **C07F** *7/02*

U.S. Cl. 260—345.9 **20 Claims**

1. A process which comprises

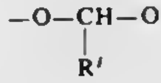
a. forming an intermediate complex by combining, in an organic solvent, at temperature of from −40° to +100°C and in the presence of at least one antioxidant,

i. a molar equivalent amount of a copper(I) halide or copper(I) cyanide,

ii. from 1 to 1.5 molar equivalent amount of an ethynyl reactant of the formula:

$R^1C{\equiv}CH$

in which R^1 is hydrogen, alkyl of 1 to 12 carbon atoms, alkenyl of 2 to 12 carbon atoms, alkynyl of 2 to 12 carbon atoms, polyalkenyl of up to 12 carbon atoms, polyalkynyl of up to 12 carbon atoms, or said alkyl, alkenyl, alkynyl, polyalkenyl or polyalkynyl substituted by tetrahydropyranyloxy, tri(lower alkyl)silyl, hydroxy, carboxy, carbo(lower alkoxy), carboxamide or a group of the formula:



$$-O-\underset{R'}{CH}-OR''$$

in which each of R' and R'' is alkyl of 1 to 5 carbon atoms; and

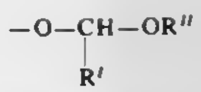
iii. from 1 to 1.5 molar equivalent amount of 1,8-diazabicyclo[5.4.0]undecene or 1,5-diazabicyclo[4.3.0]nonene, and

b. combining with said complex at least a molar equivalent amount of a second reactant of the formula:

XR^2

in which X is chloro, bromo or iodo and

R^2 is a mono- or poly-unsaturated aliphatic hydrocarbon of up to 12 carbon atoms, unsubstituted or substituted by tetrahydropyranyloxy, tri(lower alkyl)silyl, hydroxy, carboxy, carbo(lower alkoxy), carboxamide or a group of the formula:



$$-O-\underset{R'}{CH}-OR''$$

wherein each of R' and R'' is alkyl of 1 to 5 carbon atoms; said R^2 being selected so that X is comprised in said XR^2 on a terminal 3-X-prop-1-en-1-yl or 3-X-prop-1-yn-1-yl group, thereby coupling the ethynyl group of ethynyl reactant with the prop-1-en-1-yl or prop-1-yn-1-yl group of said second reactant to form a compound of the formula:

$R^1C{\equiv}CR^2$

in which R^1 and R^2 are as defined above.

3,940,426

PROCESS FOR PRODUCING BIPHENYLTETRACARBOXYLIC DIANHYDRIDES

Hiroshi Itatani; Mikito Kashima; Masaoki Matsuda; Hataaki Yoshimoto, and Hiroyuki Yamamoto, all of Ichihara, Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed Jan. 16, 1973, Ser. No. 324,050

Claims priority, application Japan, Apr. 3, 1972, 47-32554; May 19, 1972, 47-49143

Int. Cl.² C07D *307/89*

U.S. Cl. 260—346.3 **3 Claims**

1. A process for separating biphenyltetracarboxylic dianhydride isomers from a mixture of these isomers, which comprises fractionally crystallizing said mixture in a solvent selected from the group consisting of saturated aliphatic acid anhydrides and ketones while heating to a temperature of from about 50°C to about 250°C to thereby separate the mixture into its constituent isomers.

3,940,427

AZIDOSULFONYL COMPOUNDS

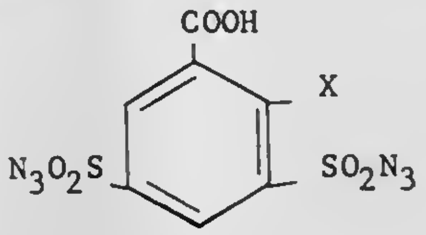
Peter Joseph Orenski, Ossining, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 26, 1974, Ser. No. 483,376

Int. Cl.² C07C *117/00*

U.S. Cl. 260—349 **3 Claims**

1. A diazidosulfonyl-containing aromatic carboxylic acid having the formula:



wherein X is selected from the group consisting of hydrogen and a hydroxyl radical.

3,940,428

METHANOL PRODUCTION

Anthony John Connell, and Alwyn Pinto, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 883,126, Dec. 8, 1969, abandoned. This application Dec. 7, 1972, Ser. No. 313,164

Claims priority, application United Kingdom, Dec. 30, 1968, 61663/68

Int. Cl.² C07C *31/04*

U.S. Cl. 260—449.5 **7 Claims**

1. In a process for producing methanol from a gaseous aliphatic hydrocarbon feedstock of empirical formula CH_x where x is between 2 and 4 which comprises steam reforming the feedstock to give a synthesis gas containing hydrogen and at least one carbon oxide selected from the group consisting of carbon monoxide and carbon dioxide, the amount of hydro-

gen in the resulting synthesis gas being in excess of the stoichiometric amount necessary to form methanol, and reacting the synthesis gas in a catalytic synthesis stage using a copper catalyst to obtain methanol, the improvement which comprises reacting the synthesis gas incompletely in said catalytic synthesis stage to give a reaction product of methanol and unreacted hydrogen and carbon oxide, separating methanol from the remaining gas in said reaction product, recycling the remaining gas comprising unreacted hydrogen and carbon oxide to said synthesis stage for further reaction to form more methanol, and controlling the amount of hydrogen thereby recycled to said synthesis stage to prevent undesired build-up of hydrogen in said synthesis stage by withdrawing a part of said remaining gas before it is recycled to said synthesis stage, separating the carbon oxide from the hydrogen in this withdrawn part and recycling only the separated carbon oxide from said withdrawn part to said synthesis stage for reaction with hydrogen to form further methanol.

3,940,429

OXIDATION OF UNSATURATED AMINES

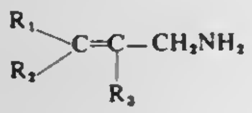
John S. McConaghy, Jr., and Dennis C. Owsley, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 9, 1974, Ser. No. 530,930

Int. Cl.^{2} C07C *120/00*

U.S. Cl. 260—465.9 **8 Claims**

1. A process for the production of an unsaturated nitrile which comprises reacting an unsaturated amine having the formula



or phenyl—CH$_2$NH$_2$ wherein R_1, R_2 and R_3 represent hydrogen or a C_1 to C_4 alkyl group with molecular oxygen in the presence of cuprous chloride, a nitrogen base that is not oxidized under the reaction conditions and a halide salt which is soluble in the nitrogen base and is selected from alkali metal halides, alkaline earth metal halides, quaternary ammonium halides, and phosphonium halides, the relative proportions of cuprous chloride and halide salt being from 1:10 to 10:1, at a temperature of from 0° to 200°C. and at atmospheric pressure or above.

3,940,430

SILANIZED ANTIMICROBIAL COMPOUNDS

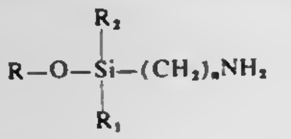
Mortimer Wilkes Brenner, Scarsdale, and Louis Laufer, New York, both of N.Y., assignors to Schwarz Services International Ltd., Mount Vernon, N.Y.

Filed Aug. 28, 1974, Ser. No. 501,058

Int. Cl.^{2} C07F *7/06, 7/10, 7/18*

U.S. Cl. 260—448.8 R **26 Claims**

1. An antimicrobial silanized compound having the formula



$$R-O-\overset{R_2}{\underset{R_1}{Si}}-(CH_2)_nNH_2$$

wherein R is a radical taken from the group consisting of a chlorinated phenol, bis-phenol or diphenyl ether, a 6 to 9 carbon atom alkyl or chlorine substituted dihydric phenol, an ortho or para hydroxybenzoic acid or a 1 to 12 carbon atom alkyl ester thereof; R_1 and R_2 are methoxy, ethoxy or propoxy; and *n* is 2 to 4.

3,940,431

DIMETHYL TEREPHTHALATE PREPARED BY THE ESTERIFICATION OF TEREPHTHALIC ACID

Horst-Dieter Wulf; Ferdinand List; Kurt Wember, and Norbert Wilke, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed May 18, 1973, Ser. No. 361,597

Claims priority, application Germany, May 20, 1972, 2224869

Int. Cl.^{2} C07C *69/82*

U.S. Cl. 260—475 R **9 Claims**

1. In the continuous method for the preparation of dimethyl terephthalate by the esterification of terephthalic acid with methanol in the gas phase, comprising vaporizing solid terephthalic acid with a hot methanol vapor stream in a pre-reactor and introducing the reaction product of the pre-reactor into a follow-up reactor having a solid bed catalyst to produce a hot gaseous dimethyl terephthalate product stream, part of this stream being the output of the process the improvement comprising recirculating a portion of said dimethyl terephthalate product stream to said pre-reactor.

3,940,432

PROCESS FOR MAKING ETHYLENE GLYCOL

Wellington E. Walker, Charleston, and Jean B. Cropley, South Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 371,353, June 19, 1973, abandoned. This application May 15, 1974, Ser. No. 470,115

Int. Cl.^{2} C07C *27/06, 29/16*

U.S. Cl. 260—449 R **7 Claims**

1. In the continuous process of producing ethylene glycol and methanol which comprises converting a mixture of a continuous feed of carbon monoxide and a continuous feed of hydrogen to produce ethylene glycol and methanol by contacting said mixture with a catalytic amount of rhodium in complex combination with carbon monoxide, at a temperature of between about 100°C. to about 375°C. and a pressure of between about 500 p.s.i.a. and about 50,000 p.s.i.a. sufficient to form said ethylene glycol and methanol, wherein the improvement comprises maintaining the concentration of ethylene glycol in the reaction mixture at less than about 5 gram moles per liter of reaction mixture from said reaction and maintaining the molar formation ratio between ethylene glycol and methanol in the reaction mixture in excess of about 0.3.

3,940,433

NOVEL 2-(ALKYLSULFINYL)ETHYL SULFATES AND COMPOSITIONS EMPLOYING SAME

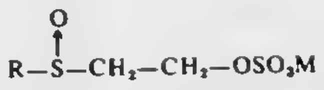
Vincent Lamberti, Upper Saddle River, and Wilder F. Pease, Norwood, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed June 6, 1974, Ser. No. 476,809

Int. Cl.^{2} C07C *141/02*

U.S. Cl. 260—458 **13 Claims**

1. A novel compound having the structure



$$R-\overset{\overset{O}{\uparrow}}{S}-CH_2-CH_2-OSO_3M$$

wherein R is a straight or branched chain alkyl radical having from 10–20 carbon atoms and M is selected from the group consisting of an alkali metal, ammonium, alkyl substituted ammonium and alkylolammonium cations, said alkyl groups having from 1–6 carbon atoms.

3,940,434

DICARBOXYLIC ACIDS AND DERIVATIVES

Georges Haas, Oberwil; Erwin F. Jenny, Basel, and Alberto Rossi, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

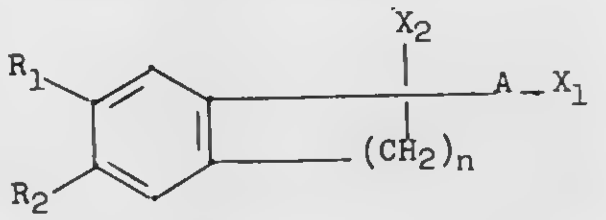
Filed Aug. 16, 1973, Ser. No. 389,105

Claims priority, application Switzerland, Aug. 24, 1972, 12538/72

Int. Cl.^{2} C07C *63/595, 69/76*

U.S. Cl. 260—475 SC **12 Claims**

1. A compound of the formula



(I)

wherein A denotes the direct bond or a methylene group, one of the groups R_1 and R_2 denotes hydrogen, halogen, lower alkyl with 1 to 4 carbon atoms, or trifluoromethyl and the other denotes a cycloalkyl group with 4 to 8 carbon atoms, X_1 and X_2 independently of one another denote a carboxyl group or a lower alkoxycarbonyl group with 2 to 5 carbon atoms, and *n* denotes an integer from 1 to 3, and pharmaceutically acceptable salts thereof.

3,940,435

PERFLUOROALKYL COMPOUNDS

Armin Hiestand, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,811

Claims priority, application Switzerland, Sept. 15, 1972, 13548/72; Feb. 2, 1973, 1560/73

Int. Cl.^{2} C07C *147/02, 147/14*

U.S. Cl. 260—481 R **11 Claims**

1. A perfluoroalkyl compound of the formula

$R_f-CH_2CH_2-SO_x-C_mH_{2m}A$

wherein

R_f is a perfluoroalkyl radical with 5 to 18 carbon atoms,
A is COOH, COOR,
R is alkyl with 1 to 20 carbon atoms,
x is 1 or 2 and
m is a whole number from 1 to 3, with the proviso that when A is carboxyl, then *m* is only 1 if *x* is 1.

3,940,436

SUBSTITUTED ETHANE DIPHOSPHONIC ACIDS AND SALTS AND ESTERS THEREOF

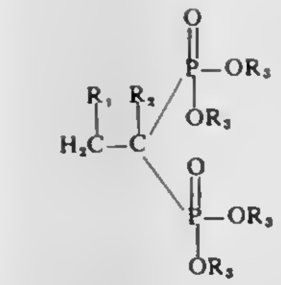
Al F. Kerst, Littleton, Colo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 27,988, April 13, 1970, Pat. No. 3,705,191. This application Aug. 23, 1972, Ser. No. 283,251

Int. Cl.^{2} C07F *9/38, 9/28*

U.S. Cl. 260—502.5 **7 Claims**

1. An ethane diphosphonate of the formula



wherein each R_3 is individually selected from the group consisting of hydrogen, alkali metal ions, alkaline earth metal ions, ammonium ions and lower alkyl amine ions, and R_1 and R_2 are either hydroxy or -N$(R_4)_2$ groups wherein R_4 is either hydrogen or alkyl, provided that R_1 or R_2, but not both, is always hydroxy.

3,940,437

STYRYL-DIPHENYL DERIVATIVES

Hugh Davidson, Castleford; Keith Trevor Johnson, Pontefract; Brian Ernest Leggeter, Wakefield, and Anthony John Moore, Leeds, all of England, assignors to Hickson & Welch Limited, Castleford, England

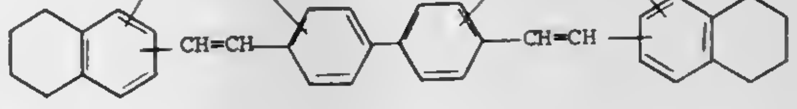
Filed July 24, 1973, Ser. No. 382,168

Claims priority, application United Kingdom, July 26, 1972, 35033/72

Int. Cl.^{2} C07C *143/24*

U.S. Cl. 260—505 C **3 Claims**

1. A compound of the formula



wherein R is -SO$_3$H and n is 0, 1 or 2, at least one -SO$_3$H group being present; or a salt thereof.

3,940,438

CRYSTALLINE RACEMIC 9α,11α,15(S)-TRIHYDROXY-5-CIS,13-TRANS-PROSTADIENOIC ACID

Ned M. Weinshenker, Palo Alto, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 146,491, May 24, 1971, abandoned. This application Sept. 21, 1973, Ser. No. 399,591

Int. Cl.^{2} C07C *61/38*

U.S. Cl. 260—514 D **1 Claim**

1. Crystalline, racemate 9α,11α,15(S)-trihydroxy-5-cis,-13-trans-prostadienoic acid wherein the crystals are characterized by the following X-ray diffraction data:

Interplanar Spacings, A°	
27.60	4.65
18.19	4.09
13.00	3.54
10.33	3.30
8.38	2.98
7.31	2.79
6.06	2.63
5.40	2.53
4.92	2.04
4.67	

and wherein the crystals system is monoclinic, the crystal habit is tubular, the optic sign is negative, and the melting point is 63.5°C to 64°C.

3,940,439
ACID CHLORIDE SYNTHESIS

Terence Alfred Harrow, High Wycombe, England, assignor to G. D. Searle & Co., Chicago, Ill.

Filed Nov. 14, 1973, Ser. No. 415,722

Int. Cl.² C07C *51/58, 57/06*

U.S. Cl. 260—544 Y **7 Claims**

1. A process for the manufacture of α-chloroacrylyl chloride which comprises contacting α-chloroacrylic acid with oxalyl chloride and isolating the product.

3,940,440
METHOD OF CONTROLLING UREA SYSTEM

Ivo Mavrovic, 530 E. 72nd St., New York, N.Y. 10021

Continuation of Ser. No. 88,272, Nov. 10, 1970, abandoned. This application May 9, 1974, Ser. No. 468,255

Int. Cl.² C07C *126/00*

U.S. Cl. 260—555 A **5 Claims**

1. In a urea synthesis process system with ammonium carbamate solution recycle, wherein fluid ammonia, fluid carbon dioxide and a solution comprising ammonium carbamate are reacted at elevated pressure and temperature to synthesize urea in a urea reactor, wherein a fluid product stream containing urea, water, unconverted ammonium carbamate and ammonia is subjected to the separation of an aqueous urea solution from unconverted reactants ammonium carbamate and ammonia, said separation being accomplished by heating said product stream in a decomposer system at reduced pressure for the purpose of decomposing said unconverted ammonium carbamate to gaseous NH_3 and CO_2, of vaporizing said ammonia and of expelling the total mixture of gaseous NH_3 and CO_2 from the aqueous urea solution together with some water vapor, and wherein said mixture of gaseous NH_3 and CO_2 containing some water vapor, separated from the residual aqueous urea solution, is partially or totally condensed in a condensing system to a liquid phase containing ammonium carbamate, ammonia and water, and said liquid phase is recycled to said urea reactor;

the improvement which comprises:

1. sensing a refractive index value of said liquid phase recycled to said reactor, said refractive index value being a function of the weight ratio of CO_2 as carbamate to water in said liquid phase;
2. detecting deviations of said sensed refractive index value from a reference value, which reference value corresponds to a reference weight ratio of CO_2 as carbamate to water in said liquid phase within the range of from about 0.2 to about 4; and
3. regulating the weight ratio of CO_2 to water in said liquid phase as a function of said deviations to substantially reduce said deviations, thereby maintaining said weight ratio substantially at said reference weight ratio.

3,940,441
N,N'-BISPHENOXYBENZYL-BRIDGED-DIAMIDES

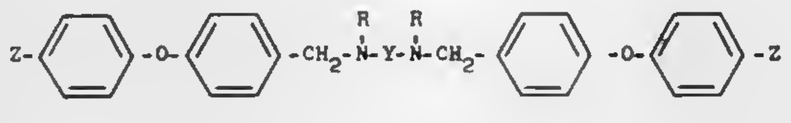
Alexander R. Surrey, Albany, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 331,325, Feb. 9, 1973, Pat. No. 3,876,701, which is a division of Ser. No. 29,643, April 17, 1970, Pat. No. 3,772,370, which is a continuation-in-part of Ser. No. 652,013, July 10, 1967, abandoned, which is a continuation of Ser. No. 390,451, Aug. 18, 1964, abandoned. This application July 15, 1974, Ser. No. 488,330

Int. Cl.² C07C *103/34*

U.S. Cl. 260—562 B **5 Claims**

1. A compound of the formula



wherein Z is nitro or amino; R is phenylcarbamyl or dihaloacetyl; and Y is alkylene having from two to ten carbon atoms and having its connecting linkages on different carbon atoms or said alkylene interrupted by O, S, NH, N(lower-alkyl), cycloalkylene having from three to six ring carbon atoms, phenylene or phenylene having from one to four lower-alkyl substituents.

3,940,442
RECYCLE PROCESS FOR THE PREPARATION AND PROCESSING OF A HYDROXYLAMMONIUM SALT SOLUTION

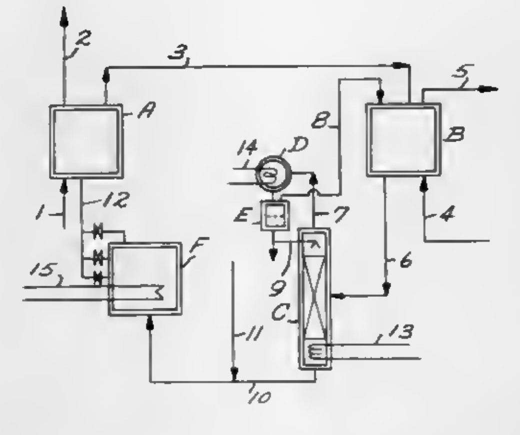
Abraham H. de Rooij, Geleen, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Continuation-in-part of Ser. No. 95,318, Dec. 4, 1970, abandoned, which is a continuation-in-part of Ser. No. 95,389, Dec. 4, 1970, abandoned. This application Jan. 17, 1975, Ser. No. 542,045

Claims priority, application Netherlands, Dec. 6, 1969, 6918366; Dec. 6, 1969, 6918367

Int. Cl.² C07C *131/04*

U.S. Cl. 260—566 A **5 Claims**



1. In a process for producing cyclohexanone oxime in which a buffered, acidic reaction medium comprising an aqueous solution containing phosphoric acid, or ammonium bisulphate is cycled from a hydroxylamine synthesis zone to a cyclohexanone oxime synthesis zone, and back to the hydroxylamine synthesis zone, wherein nitrate ions are obtained in said solution by addition of nitric acid to said solution just prior to introduction into the hydroxylamine synthesis zone and molecular hydrogen is added to the hydroxylamine synthesis zone, said nitrate ions being catalytically reduced to hydroxylamine with said molecular hydrogen in the presence of a supported palladium metal catalyst contained in the hydroxylamine synthesis zone, the solution rich in hydroxylamine from the hydroxylamine synthesis zone is fed with cyclohexanone to said cyclohexanone oxime synthesis zone wherein the hydroxylamine and the cyclohexanone react with each other to form cyclohexanone oxime, separating the cyclohexanone oxime and unreacted cyclohexanone from said solution and recycling said solution back to said hydroxylamine synthesis zone,

the improvement of substantially preventing the poisoning of said palladium catalyst consisting of reducing residual amounts of cyclohexanone and cyclohexanone oxime present in the solution after removal of the cyclohexanone oxime produced in the cyclohexanone oxime synthesis zone by heating said solution being recycled from the cyclohexanone oxime synthesis zone to the hydroxylamine synthesis zone to an elevated temperature in the range of 50° to 106° C. for a time sufficiently long enough so that residual amounts of cyclohexanone and cyclohexanone oxime are substantially reduced to below 0.02% by weight.

3,940,443
FUEL—AIR EXPLOSIVE BOMBLET

Cecil A. Glass, China Lake, Calif.

Filed July 14, 1965

Int. Cl.² F24B *25/12*

U.S. Cl. 102—6 **8 Claims**

8. In a device for forming a detonatable fuel-air cloud and effecting a detonation thereof, means including:

a sealed container;
a mass of inflammable fuel substantially filling said container;
a plurality of actuatable detonators fixed to said containers;
a detonatable burster charge mounted within said container and surrounded by said fuel adapted to be selectively detonated for thereby establishing an outwardly directed shock wave of a magnitude sufficient for rupturing said container, dividing said mass into a plurality of smaller masses and rapidly propelling said masses and said detonators outwardly from said containers through ambient atmospheric air, whereby a detonatable cloud of a fuel and air mixture may be thus established with said detonators being caused to pass therethrough; and
means connected with said detonators adapted to actuate said detonators as they pass through the cloud, whereby said cloud may be detonated in response to an actuation of the detonators.

3,940,444
NOVEL KETO-ETHERS

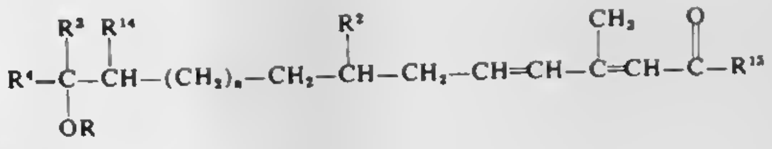
Clive A. Henrick, and John B. Siddall, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 222,800, Feb. 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 187,897, Oct. 8, 1971, Pat. No. 3,755,411, which is a continuation-in-part of Ser. Nos. 111,650, Feb. 1, 1971, Pat. No. 3,729,486, and Ser. No. 111,770, Feb. 1, 1971, abandoned. This application May 10, 1974, Ser. No. 468,856

Int. Cl.² C07C *49/20, 49/24*

U.S. Cl. 260—594 **13 Claims**

1. A compound selected from those of the following formula:



$$R^4-\underset{OR}{\overset{R^3}{C}}-\overset{R^{14}}{CH}-(CH_2)_n-CH_2-\overset{R^2}{CH}-CH_2-CH=CH-\overset{CH_3}{C}=CH-\overset{O}{\overset{\|}{C}}-R^{15}$$

wherein,

R is hydrogen, methyl or ethyl;
n is zero or one;
each of R^2, R^3 and R^4 is methyl or ethyl;
R^{14} is hydrogen or methyl; and
R^{15} is lower alkyl of one to three carbon atoms.

3,940,445
PRODUCTION OF 2-METHYL-4-HALOBUT-2-EN-1-ALS

Werner Reif, Frankenthal; Roman Fischer, and Horst Pommer, both of Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Oct. 15, 1970, Ser. No. 81,143

Claims priority, application Germany, Oct. 18, 1969, 1952649

Int. Cl.² C07C *47/14*

U.S. Cl. 260—601 H **9 Claims**

1. A process for the production of a 2-methyl-4-halobut-2-en-1-al having the formula $O=CH-C(CH_3)=CH-CH_2-Hal$ where Hal denotes chlorine or bromine by reacting at a temperature in the range of −10°C. to +100°C. in a reaction mixture consisting essentially of

A. a compound selected from the group consisting of 2-methylbut-3-en-1-al-2-ol, diacetals thereof of alkanols having one to four carbon atoms, acetals thereof of alkanediols having two to four carbon atoms and acylates thereof of monocarboxylic acids having two to four carbon atoms; with
B. a hydrogen halide selected from the group consisting of hydrogen chloride and hydrogen bromide in the form of a concentrated aqueous solution of said hydrogen halide, and
C. in the presence of finely divided copper or a copper salt.

3,940,446
DEHYDROGENATION OF ALCOHOLS

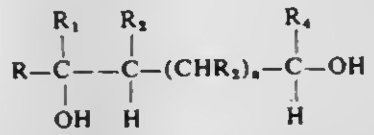
Samuel Kahn, Rutherford, N.J., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 8, 1971, Ser. No. 160,902

Int. Cl.² C07C *45/16*

U.S. Cl. 260—603 HF **6 Claims**

1. A process for the continuous liquid phase dehydrogenation of a primary or secondary alcohol which also contains a tertiary hydroxy group said alcohol possessing the following formula:



$$R-\underset{OH}{\overset{R_1}{C}}-\underset{H}{\overset{R_2}{C}}-(CHR_3)_n-\underset{H}{\overset{R_4}{C}}-OH$$

where R and R_1 are independently selected from the group consisting of alkyl, aryl, aralkyl and cycloalkyl, R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen, alkyl, aryl, aralkyl and cycloalkyl, and n is an integer of from 0 to 10, to the corresponding aldehyde or ketone without loss of said tertiary hydroxy group, which comprises effecting said dehydrogenation at a temperature of from about 200° to about 350°C. under a vacuum of from about 40 to about 250 mm. Hg. in contact with a stirred suspension of an alcohol dehydrogenation catalyst comprising cupric oxide in a mineral oil having a normal boiling point above about 350°C and an end boiling point within the range of from about 450° to about 550°C, and continuously recovering the aldehyde or ketone.

3,940,447

PROCESS FOR HYDROFORMYLATION OF OLEFIN HYDROCARBONS

Jin Sun Yoo, South Holland, Ill., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 32,411, April 27, 1970, abandoned. This application Dec. 7, 1973, Ser. No. 422,957

Int. Cl.² C07C *45/08*

U.S. Cl. 260—604 HF **9 Claims**

1. In the process for the hydroformylation of olefin hydrocarbons of 2 to about 16 carbon atoms the improvement which comprises conducting said hydroformylation in contact with a catalyst composition consisting of a major amount of a solid, sodium form crystalline alumino-silicate support, said crystalline aluminosilicate support having a silicato alumina mole ratio of from about 2:1 to 12:1, a sodium oxide-to-alumina mole ratio of from about 0.7:1 to 1.1:1 and pore diameters of from about 6 to 15 Angstroms, and a minor amount of providing about 0.2 to about 0.6 weight per cent rhodium, said rhodium composition having a mole ratio of ligand to metal of about 1.5:1to 3:1, said ligand being R_3P in which each R is independently selected from the group consisting of phenylalkyl, alkylphenyl, phenyl, and alkyl groups having from 2 to about 16 carbon atoms.

3,940,448

FORMALDEHYDE-DIAROMATIC ETHER REACTION PRODUCTS

Edgar F. Hoy, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 25, 1974, Ser. No. 445,514

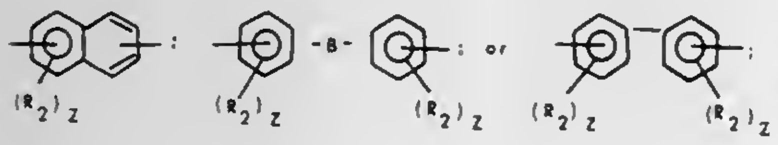
Int. Cl.² C07C *149/32*

U.S. Cl. 260—609 F **4 Claims**

1. A cogeneric liquid formaldehyde aromatic ether reaction product having the formulae

$$R_1-A(CH_2(OCH_2)_yA)_xCH_2(OCH_2)_yR_3 \quad \text{(I)}$$

wherein each A is an independently selected aromatic radical having the formula



each R_1 represents an independently selected radical from the group consisting of hydrogen, $-CH_2-OCH_2-_yR_3$ each R_2 represents an independently selected radical consisting of R_1, halogen or an alkyl group of 1 to 10 carbon atoms; R_3 represents a radical selected from the group consisting of hydrogen, methoxy, ethoxy, propoxy or —A—H when y is 1 or greater than 1 and methoxy, ethoxy, propoxy and —A—H when *y* is 0; *x* represents an integer from 0 to 60; *y* represents an integer from 0 to 4; *z* represents an integer from 0 to 2; and, B represents oxygen or sulfur, which may contain unreacted amounts up to 50% by weight of unreacted aromatic HAH of the total condensation product.

3,940,449

β,β-CHLORINATED AND BROMINATED ETHERS

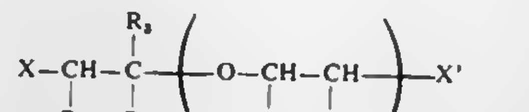
Corwin J. Bredeweg, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 15, 1972, Ser. No. 306,916

Int. Cl.² C07C *43/18*

U.S. Cl. 260—611 B **12 Claims**

1. A compound



$$X-CH(R_1)-C(R_2)(R_5)-\left(-O-CH(R_3)-CH(R_4)-\right)_n-X'$$

wherein X and X′ are independently chlorine or bromine, *n* is an integer from 1 to 4, one of R_1 and R_2 is hydrogen or a hydrocarbon group and the other is a hydrocarbon group, said hydrocarbon group being the residue of a C_8–C_{18} monoolefin or of a C_8–C_{16} vinyl aromatic, provided that the sum of the carbon atoms in R_1 and R_2 is from 6 to 16, one of R_3 and R_4 is hydrogen or methyl and the other is hydrogen, phenyl or an alkyl, monohydroxyalkyl, monochloroalkyl or monobromoalkyl group of from 1 to about 7 carbon atoms and R_5 is hydrogen, methyl, chloromethyl or bromomethyl.

3,940,450

PREPARATION AND RECOVERY OF ETHERS

Kung-You Lee, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 16, 1974, Ser. No. 533,057

Int. Cl.² C07C *41/12, 41/00*

U.S. Cl. 260—614 A **14 Claims**

1. The method which comprises

distilling a reaction mixture containing methanol and methyl t-butyl ether in a first distilling operation thereby forming first azeotrope overhead containing methanol and methyl t-butyl ether and first azeotrope bottoms containing methanol;

distilling said first azeotrope overhead containing methanol and methyl t-butyl ether in a second distillation operation in the presence of n-pentane thereby forming second azeotrope overhead containing methanol and n-pentane and second azeotrope bottoms containing desired product methyl t-butyl either; and

withdrawing said second azeotrope bottoms containing desired product methyl t-butyl ether.

3,940,451

PROCESS OF RECOVERING BHT VALUES FROM MOTHER LIQUORS OF THE CRYSTALLIZATION OF BHT OBTAINED BY ALKYLATING P-CRESOL WITH ISOBUTYLENE

Heliodoro Monroy, Insurgentes Sur 591-7th Floor, Mexico City, Mexico

Filed Sept. 6, 1974, Ser. No. 503,569

Int. Cl.² C07C *39/06*

U.S. Cl. 260—624 A **8 Claims**

1. A process for the recovery of 2,6di-tert-butyl-p-cresol from a starting non-crystallizable mother liquor obtained from the crystallization of 2,6-di-tert-butyl-p-cresol produced by the alkylation of p-cresol with isobutylene, said starting non-crystallizable mother liquor comprising diisobutylene and lower and higher cresol polymers which inhibit crystallization of 2,6-di-tert-butyl-p-cresol, which comprises the steps of:

a. thermally cracking said starting mother liquor at a temperature of from 200°C to 250°C, in the presence of an acid catalyst, in order to crack the lower and higher cresol polymers;

b. steam distilling the cracked mixture to remove the diisobutylene in the presence of an acid catalyst;

c. realkylating the cresols in the steam distilled reaction mixture by the addition of isobutylene; and

d. crystallizing the thus formed additional 2,6-di-tert-butyl-p-cresol.

3,940,452

ISOMERIZATION OF C_{10}-C_{70} OLEFINS OF VINYLIDENE STRUCTURE TO OLEFINS OF VINYL STRUCTURE

Werner Strassberger, Gersthofen, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 15, 1974, Ser. No. 497,943

Claims priority, application Germany, July 6, 1974, 2432586

Int. Cl.² C07C *5/30*

U.S. Cl. 260—683.2 **4 Claims**

1. A process for the manufacture of olefins having vinyl structure from olefins with vinylidene structure by isomerization, which comprises heating an olefin having vinylidene structure and containing from 10 to 70 carbon atoms in the molecule at a temperature of from 80° to 350°C in the presence of a silicate having sheet structure, pumice, or titanium dioxide as isomerization catalyst.

3,940,453

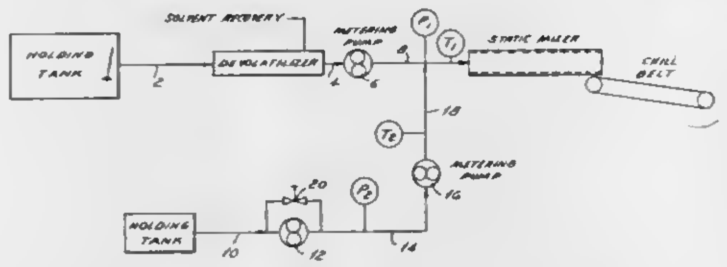
METHOD OF PREPARING HOMOGENEOUS THERMOSETTING POWDER PAINT COMPOSITION

Santokh S. Labana, Dearborn Heights; Amos Golovoy, Inkster, and Henk van Oene, Detroit, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 5, 1973, Ser. No. 422,230

Int. Cl.² C08L *63/00*

U.S. Cl. 260—836 **13 Claims**



1. A method of preparing a powder paint composition comprising

A. Introducing a liquid composition comprising a solution of inert solvent and an acrylic copolymer containing crosslinkable functional groups, said copolymer having a glass transistion temperature in the range of 40°C to 90° C and a number average molecular weight of between about 1,000 to 15,000 into a devolatilizing zone wherein:
   1. the liquid composition is heated above the melting point of said copolymer and above the temperature at which said inert solvent begins to vaporize, but below the point at which degradation occurs;
   2. the volatile components are withdrawn from the volatilizing zone; and
   3. the molten nonvolatile components are collected;

B. Feeding said nonvolatile components under pressure at a selected flow rate into a static mixer comprising a conduit containing fixed elements;

C. Simultaneously feeding a molten crosslinking agent for said copolymer into said static mixer under substantially the same pressure as said nonvolatile components and at a flow rate calculated to provide the mixture with between about 70% and about 130% of a stoichiometric quantity of crosslinking agent for said copolymer;

D. Passing said molten nonvolatile components and said crosslinking agent through said static mixer, which is maintained at a temperature above the melting point of all components but below about 600°F, the average residence time of the mixture within the static mixer being less than about one-half the gel time for the crosslinkable system;

E. Cooling said mixture of nonvolatile components and crosslinking agent to form a solid material; and

F. Pulverizing said solid material to form a powder.

3,940,454

TRANSPARENT HIGH IMPACT GRAFT POLYMERS

David O. Conley, Newark, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 272,254, July 17, 1972, abandoned, Continuation-in-part of Ser. No. 86,952, Nov. 4, 1970, abandoned, Continuation-in-part of Ser. No. 667,655, Sept. 14, 1967, abandoned. This application May 6, 1974, Ser. No. 467,321

Int. Cl.² C08L *9/00, 9/06*

U.S. Cl. 260—880 R **3 Claims**

1. A transparent graft polymer prepared in a manner whereby the refractive index of the polymerized grafting monomers, after polymerization in the presence of the substrate, is substantially equal to the graft polymer substrate, said graft polymer prepared by polymerizing about 90 percent by weight of methacrylonitrile in the presence of about 10 percent by weight of a rubbery polymeric substrate selected from the group consisting of conjugated diene homopolymers and copolymers consisting of a conjugated diene and up to about 40 percent by weight of a monomer selected from the group consisting of styrene, substituted styrene, alkyl acrylate and alkyl alkacrylate.

3,940,455

HYDROCARBON POLYMERS

Martin H. Kaufman, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 31, 1970, Ser. No. 68,575

Int. Cl.² C08L *23/22, 27/18*

U.S. Cl. 260—888 **4 Claims**

1. A method of compounding an elastomeric polymeric composition which comprises

dissolving an elastomeric polymer selected from the group consisting of butadiene-acrylonitrile rubber, ethylene-propylene rubber, butyl rubber, styrene-butadiene rubber, polyisoprene rubber, polychloroprene rubber, in a solvent selected from the group consisting of benzene, toluene, xylene, hexane, cyclohexane, petroleum ether to form a solution;

incorporating into said solution polytetrafluoroethylene to form a suspension;

coprecipitating said polymer and said polytetrafluoroethylene by mixing said suspension with a nonsolvent for said polymer whereby a precipitate forms;

separating said precipitate from said solvent and drying said precipitate.

3,940,456

THERMOPLASTIC COMPOSITION COMPRISING PVC AND CHLORINATED POLYETHYLENE

Hans-Helmut Frey, Bad Soden, Taunus, and Helmut Klug, Aystetten, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 421,528, Dec. 4, 1973, abandoned. This application Jan. 10, 1975, Ser. No. 539,946

Claims priority, application Germany, Aug. 31, 1973, 2343983

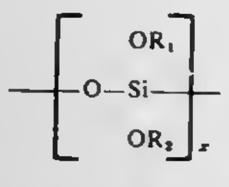
Int. Cl.² C08L *23/28*

U.S. Cl. 260—897 C **6 Claims**

1. Thermoplastic composition essentially consisting of

a. 98 to 50% by weight of a vinyl chloride polymer and

b. 2 to 50% by weight of a chlorinated low pressure polyethylene having a chlorine content of 25 to 42% by weight, a reduced specific viscosity of 1 to 5 dl/g, a residue value of 2 to 40%, measured by extraction in a 1 : 1 mixture of toluene and acetone, and a swelling value of 10 to 70%, measured in methylcyclohexane, the chloro-polyethylene being prepared by chlorination of low pressure polyethylene in water in the presence of 0.1 to 2% by weight of silicic acid and 0.01 to 1.0% by weight of siloxane oil consisting of the recurring unit



$$-\left[\begin{matrix} & \mathrm{OR_1} \\ \mathrm{O}- & \mathrm{Si}- \\ & \mathrm{OR_2}\end{matrix}\right]_x-$$

in which R_1 and R_2 each represent an alkyl radical, an aryl radical or an aralkyl radical, and x is an integer of from 10 to 10,000 the percentages being calculated on the polyethylene, at a chlorination temperature of from 50°C to 130°C, at least 10% by weight of the chlorine being incorporated at a temperature of from 120° to 130°C.

3,940,457

N-(N,N-DISUBSTITUTED-AMINOMETHYLIDENE)-(THIONO)THIOL-PHOSPHORIC ACID ESTERS AMIDES

Hellmut Hoffmann, Wuppertal; Ingeborg Hammann, Cologne, and Günter Unterstenhöfer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

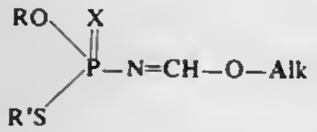
Continuation-in-part of Ser. No. 345,399, March 27, 1973. This application Sept. 12, 1974, Ser. No. 505,440

Claims priority, application Germany, Apr. 6, 1972, 2216552

Int. Cl.² C07F *9/24;* **A01N** *9/36*

U.S. Cl. 260—943 **7 Claims**

1. A phosphorylated iminoformic acid alkyl ester of the formula



in which
- R is alkyl with 1 to 6 carbon atoms,
- R' is alkenyl or alkynyl with up to 6 carbon atoms, lower alkylmercapto-lower alkyl, N-monomethylcarbamoylmethyl or N-mono-ethylcarbamoylmethyl,
- X is oxygen or sulfur, and
- Alk is an alkyl radical with 1 to 6 carbon atoms.

3,940,458

1-CARBAMOYL VINYL PHOSPHATES

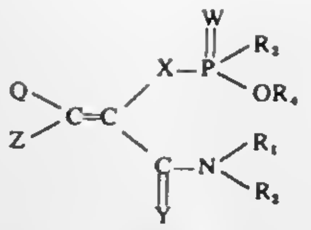
Jerry G. Stroog, Fanwood, and Roger P. Napier, Somerville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 230,475, Feb. 29, 1972, abandoned. This application Jan. 10, 1973, Ser. No. 322,316

Int. Cl.² C07F *9/113*

U.S. Cl. 260—943 **10 Claims**

1. A compound having the following general formula:



where X, Y and W are oxygen or sulfur, and R_1, R_2, R_3 and R_4 are each a radical selected from the group consisting of hydrogen, branched or unbranched alkyl (C_1–C_8), cycloalkyl (C_3–C_8), alkenyl (C_2–C_8), alkoxy (C_1–C_8), aryl, aralkyl (C_7–C_{14}), acetyl, carbalkoxy, alkylmercapto (C_1–C_8), carbamoyl (mono and dialkyl) and combinations thereof and which radical may have substituted thereon a member or members of the group consisting of hydroxy, halogen, alkoxy, cyano, carbalkoxy and combinations and multiples thereof and Q and Z are selected from the group consisting of R_1, R_2, R_3 and R_4 or from the group consisting of halogen (Cl, Br, F), cyano and alkylsulfonyl.

3,940,459

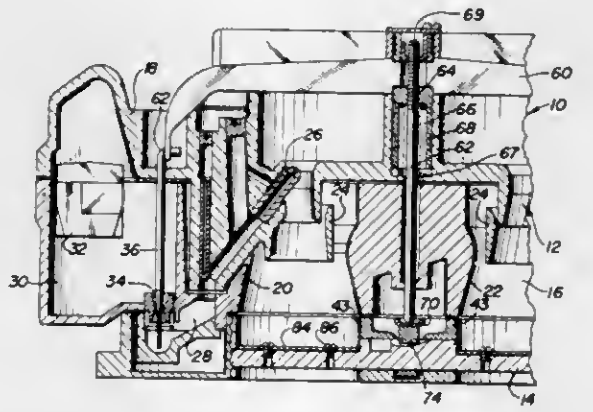
MEANS AND METHOD FOR SECURING A METERING ROD LIFTER CAM ON A THROTTLE SHAFT OF A CARBURETOR

Larry J. Tipton, Florissant; Donald A. Rebmann, Fenton, and Donald A. Reise, St. Ann, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,282

Int. Cl.² F02M *11/02*

U.S. Cl. 261—23 A **7 Claims**



1. An internal combustion engine carburetor comprising a body structure having a pair of spaced parallel mixture conduits, a throttle valve mounted across each of the mixture conduits to control the flow of air through the respective conduit, a throttle shaft extending through the mixture conduits and having an end portion projecting from one side of the body structure, means connected to said end portion for operation of said throttle shaft, a fuel passage to each of the mixture conduits each fuel passage having a fuel metering jet therein, a metering rod positioned within each of the metering jets and permitting an increased flow of fuel through the associated fuel passage when moved in an upward direction, a generally horizontally extending carrier arm extending between and connected to said metering rods for movement of said metering rods in a generally vertical direction, a push rod operatively connected to said arm and having its lower end positioned in the vicinity of said throttle shaft, a pivotally mounted cam follower engaging the lower end of the push rod, a cam on said throttle shaft in engagement with said follower, and means mounting said cam on said shaft, said mounting means including a cutaway portion of said shaft having a length greater than the thickness of said cam and an axially extending slot having an end communicating with said cutaway portion, said cam being C-shaped and having an inwardly projected tongue fitting within said slot and securing said cam in position on said shaft.

3,940,460

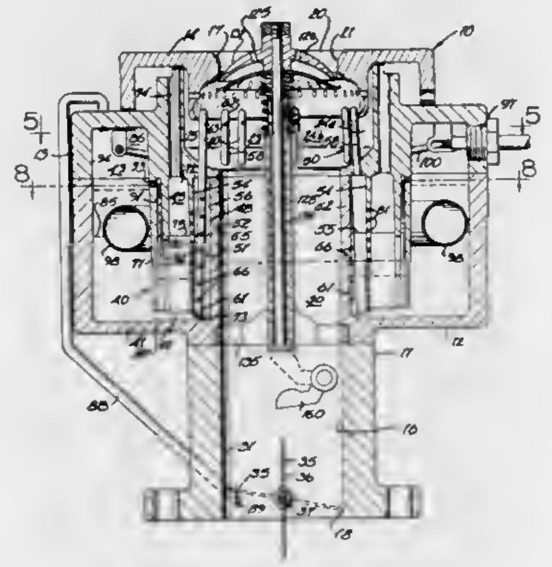
AIR-VALVE TYPE CARBURETOR

Clinton L. Graybill, P.O. Box 148, Superior, Mont. 59872

Filed Feb. 14, 1974, Ser. No. 442,383

Int. Cl.² F02M *7/06, 7/24*

U.S. Cl. 261—40 **21 Claims**



1. A carburetor for a vehicle internal combustion engine, comprising:
- a carburetor body having an induction duct passing therethrough in which the induction duct has an intermediate segment defining a mixing chamber in which air and fuel are mixed prior to passage of the mixture to the engine;
- said mixing chamber having a peripheral wall;
- a fuel delivery means communicating with the mixing chamber having a plurality of fuel nozzles at fuel discharge locations angularly spaced about the peripheral wall of the mixing chamber for delivering metered amounts of fuel into the mixing chamber at the plurality of locations;
- wherein the fuel delivery means includes (1) a fuel reservoir vented to the atmosphere, (2) a fuel well in liquid communication with the fuel reservoir and in vapor communication with the mixing chamber, and (3) a fuel line between the well and the nozzles for supplying fuel to the nozzles in which the amount of fuel supplied to the mixing chamber varies in relation to the difference between the atmospheric pressure and the mixing chamber vacuum pressure as reflected by the difference in fuel levels between the fuel reservoir and the fuel well;
- a throttle valve mounted in the induction duct downstream of the mixing chamber for regulating the flow of said mixture to the engine;
- a pressure sensitive air valve mounted in the induction duct at an entrance to the mixing chamber for regulating the amount of air flow into the mixing chamber in relation to the magnitude of vacuum pressure prevailing in the mixing chamber; and
- said air valve having a movable disc centrally mounted in the mixing chamber entrance for directing the air entering the mixing chamber in a path radially outward to the periphery of the disc and into the mixing chamber along the peripheral wall of the mixing chamber past the plurality of fuel discharge locations to receive fuel and for creating a pressure depression in the mixing chamber behind the valve disc to cause the air to flow radially inwardly from the peripheral wall forming a turbulent eddy in the pressure depression to thoroughly mix the fuel and air.

3,940,461

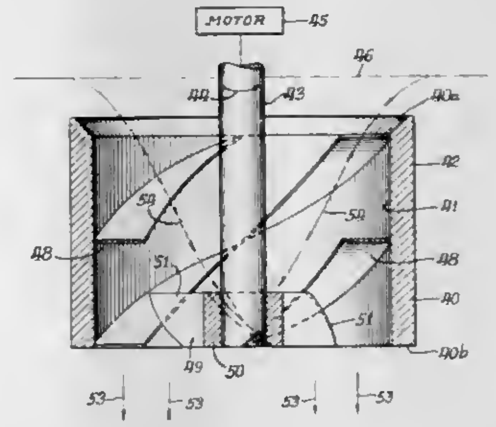
LIQUID AERATION METHOD AND PUMP APPARATUS WITH STATIONARY VANES AND DOWNWARD FLOW

Ernest J. Martin, Rolling Meadows, and Arvid A. Molitor, Elgin, both of Ill., assignors to Ernest J. Martin, Rolling Meadows, Ill.

Filed Feb. 15, 1974, Ser. No. 442,836

Int. Cl.² B01F *3/04*

U.S. Cl. 261—91 **8 Claims**



1. In a pump for use in aerating or cooling a body of liquid such as water having a normal surface level, said pump being of the type having rotationally stationary tube means about a vertical axis, a device connected to the tube means to support the tube means in the liquid with the bottom of the tube means below the normal surface level, power drive means, impeller means connected to said drive means and positioned below said normal surface level, said impeller means having blades pitched in a predetermined direction, and vane means within said tube means and affixed thereto, at least part of said vane means being pitched in the opposite of said predetermined direction, said vane means defining a central opening, said impeller means being positioned within said central opening, the improvement comprising:
- the tube means having a top below said normal surface level, and
- said power drive means rotating said impeller means in a direction such as to force the liquid downwardly in the tube means.

3,940,462

BUBBLE TRAY AND CAP ASSEMBLY FOR FLUID CONTACT APPARATUS

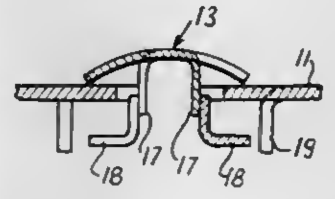
Vlastimil Braun, and Oto Vitek, both of Brno, Czechoslovakia, assignors to Chepos Zavody Chemicho a Potravinarskeho Strojirenstvi, Generalni Reditelstvi, Brno, Czechoslovakia

Continuation of Ser. No. 856,955, Sept. 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 464,982, June 18, 1965, abandoned. This application May 31, 1973, Ser. No. 365,576

Claims priority, application Czechoslovakia, June 27, 1964, 3710-64. The portion of the term of this patent subsequent to May 20, 1986, has been disclaimed.

Int. Cl.² B01D *3/20*

U.S. Cl. 261—114 VT **5 Claims**



1. A bubble tray and cap assembly for fluid contact apparatus for effecting intimate contact between a rising gaseous and/or vaporous phase and a descending liquid phase, comprising

A. a tray member having a plurality of elongated slots arranged in axially parallel spaced relationship adjacent each other

B. a plurality of elongated caps covering said slots, and mounted therein to be reciprocally movable transverse to the plane of said tray,

a. each cap having opposite lengthwise extending said portions above the upper surface of said tray member,

1. each of said portions having alternating parts downwardly bent forming a row of longitudinally spaced recesses, the recesses along one of said side portions being staggered with respect to the recesses along the edge of the other side portion, said recesses forming passages for said heavier descending liquid phase, said downwardly bent part constituting longitudinally spaced individual depending members spaced from the edge of said slots to deflect said liquid phase downwardly.

2. each of said depending members having a first portion extending downwardly through the respective slot and in a plane parallel to the longitudinal axis of the slot,

3. abutment means secured to said depending members and spaced from the underside of said tray member so as to engage said underside and limit the upward movement of the respective cap when lifted by said rising phase, and

b. said caps being arranged within said slots so that the lengthwise extending edges along one side of one of said caps and the downwardly bent parts along the opposite side of the next adjacent one of said caps lie along common lines transverse to the elongated axis of said slots to cause flow of said liquid phase from the one extending edge into the recess of the next adjacent cap and downwardly in the passage defined by said depending respective member.

3,940,463
RELATING TO THE REPAIR OF TIRES

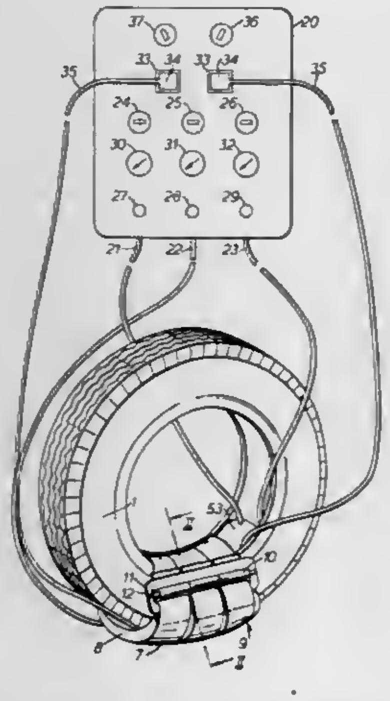
Alfred William Nicholson, 63 Addington Road, West Wickham, Kent, England

Filed Aug. 1, 1974, Ser. No. 494,353

Claims priority, application United Kingdom, Aug. 1, 1973, 36601/73

Int. Cl.^{2} B29H *5/16*

U.S. Cl. 264—36 **6 Claims**



1. Apparatus for use in curing a tire repair, comprising an inner heater pad to be applied to the inside of the tire in the area of the repair, a core to be positioned within said tire to support said inner heater pad against the inside of said tire, an outer heater pad to be applied to the outside of said tire in the area of said repair, a flexible harness to be positioned to extend through the center of said tire and around the outside of said tire in the area of said repair, said flexible harness including a plurality of straps to be positioned around said tire with the center-line of each said strap approximately radial and a buckle including an opening to admit a loop of each strap, said loops being side by side, and a pin to be inserted through said loops, the length of said pin being greater than the combined width of said straps, an inflatable bag to be positioned between said harness and said outer heater pad, means for pressurizing said inflatable bag, and means for heating said inner and outer heater pads to cure said repair.

5. A method for curing a tire repair comprising the steps of:

applying an inner heating pad to the inside of the tire in the area of the repair;

positioning a core within the tire for supporting said inner heater pad against the inside of the tire;

applying an outer heater pad to the outside of the tire in the area of the repair;

positioning a harness including a plurality of straps around the tire with the center line of each strap approximately radial;

passing a loop of each of said straps through an opening in a buckle whereby said loops are side by side;

inserting a pin through said loops, the length of said pin being greater than the combined width of the straps;

positioning an inflatable bag between the harness and the outer heater pad;

pressurizing the inflatable bag; and

heating the inner and outer heater pads to cure the repair.

3,940,464
PRODUCTION OF LACES AND GRANULES OF FIBRE-REINFORCED THERMOPLASTICS

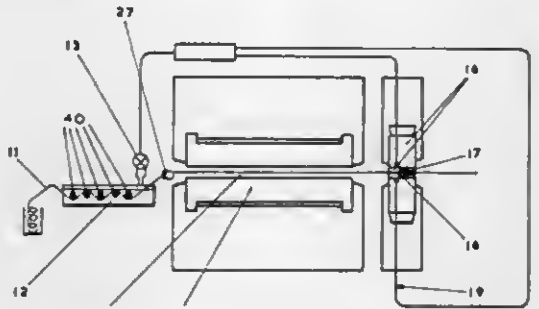
John Howard Davis, deceased, late of Bengeo, England; Richard C. Harwood, executor, Chalfont St. Giles, and Barbara Davis, executrix, Hertford, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sept. 27, 1974, Ser. No. 510,136

Claims priority, application United Kingdom, Oct. 9, 1973, 47077/73

Int. Cl.^{2} B29D *9/08*

U.S. Cl. 264—40 **6 Claims**



1. A method for the simultaneous production of a plurality of laces of fibre-reinforced thermoplastic polymers which comprises:

a. impregnating each of a plurality of rovings with a powdered thermoplastic polymer by applying an amount of the powder to the roving;

b. heating each impregnated roving in a separate chamber so as to melt the polymer which it contains;

c. heating, before or after the heating specified in (b), all the rovings in a common chamber and in contact with a common pool of molten polymer,

d. passing each roving through its own separate die to consolidate the roving into a lace with the removal of excess polymer into the melt pool, and

e. controlling the size of the melt pool by detecting the extent of the pool with at least one suitably placed detector and by correspondingly adjusting the amount of powdered thermoplastic polymer applied to the roving in response to changes in the extent of the melt pool whereby a lace of uniform composition is produced.

3,940,465
METHOD FOR REGULATING THE HARDENING TIME OF A PLASTIC MASS IN THE MOLD OF AN INJECTION MOLDING MACHINE

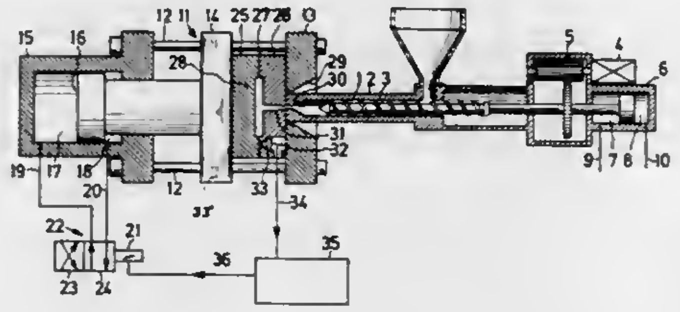
Hans Ulrich Hauser, Niederweningen, and Eduard Hartmann, Urdorf, both of Switzerland, assignors to Bucher-Guyer AG, Maschinenfabrik, Niederweningen, Switzerland

Filed Dec. 17, 1973, Ser. No. 425,607

Claims priority, application Germany, Jan. 3, 1973, 2300171

Int. Cl.^{2} B29F *1/00*

U.S. Cl. 264—40 **5 Claims**



1. A method of regulating the setting time of a thermosetting plastic mass in a mold of an injection molding machine, which mold is constituted by at least two mold halves defining therebetween a mold parting plane and forming a mold cavity, comprising the steps of injecting a thermosetting plastic mass into the mold cavity of the mold, the pressure of the mass in the mold cavity initially causing relative opening movement between the two mold halves, directly sensing the magnitude of a mold gap at the mold parting plane caused by such relative opening movement, and regulating the residence time and therefore the setting time of the thermosetting plastic mass in the mold cavity in response to the sensing of the magnitude of such mold gap and as a function of the recovery of such mold gap due to reclosing of the mold halves caused by the shrinkage of the thermosetting plastic mass as the latter sets.

3,940,466
METHOD OF PROVIDING A STRUCTURAL SHAPE

King W. Evers, Livermore, Calif., and George H. Larsen, Las Vegas, Nev., assignors to King W. Evers, Livermore, Calif. and George H. Larsen, Las Vegas, Nev.

Filed Dec. 7, 1973, Ser. No. 422,771

Int. Cl.^{2} B29G *7/00*

U.S. Cl. 264—45.3 **4 Claims**

1. A method of providing a structural shape comprising:

a. introducing dry waste paper into an operating hammer mill to make dry paper fibers;

b. withdrawing said dry paper fibers from said mill;

c. passing said dry paper fibers through a screen;

d. mixing said dry paper fibers with a thermosetting resin binder in water in the proportion by weight of paper fibers of from about 3–35% water and from 3–35% binder;

e. pressing the mixture at a pressure of from 3–600 psi while permitting said water to escape, and;

f. heating said mixture while under said pressure to a temperature of 250°–375°F. for from three to thirty minutes to cure said resin binder and thereby form said structural shape.

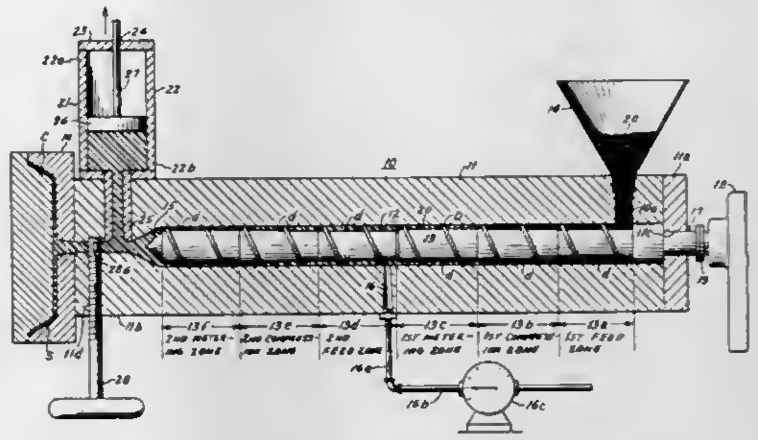
3,940,467
METHOD OF INJECTION MOLDING A STRUCTURAL FOAMED THERMOPLASTIC ARTICLE HAVING A UNIFORM SWIRL-FREE AND INDENT-FREE SURFACE

Armand E. Brachman, Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 381,289, July 20, 1973, abandoned. This application Dec. 18, 1974, Ser. No. 534,102

Int. Cl.^{2} B29D *27/00*; B29F *1/00*

U.S. Cl. 264—45.5 **8 Claims**



1. In a method for producing a foamed thermoplastic structural article characterized by a smooth, uniform swirl-free surface, wherein a substantially uniform foamable mixture of water and a melted thermoplastic resin is formed in an extruder and said mixture is advanced under a predetermined pressure from the extruder to an accumulator and subsequently to a cavity in a mold, which cavity is at a lower pressure than the pressure applied to the foamable mixture in the extruder and in the accumulator, whereby the water in the form of steam causes the melted thermoplastic resin to foam and expand to completely fill the cavity in the mold, the method comprising restricting the quantity of said water introduced into said melted thermoplastic resin in said extruder within a range of between about 0.1 to about 2.0 weight percent of the charge weight of the thermoplastic resin in the extruder.

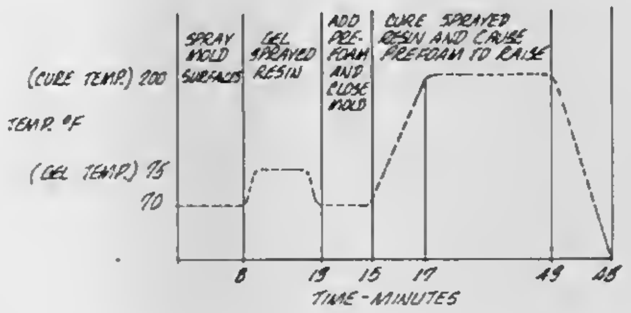
3,940,468
PROCESS FOR LAMINATING RIGID POLYURETHANE FOAM TO A GELLED POLYESTER RESIN

Reginald V. Tunstall, Santa Paula, Calif., assignor to Fibre-Thane Homes, Inc., Van Nuys, Calif.

Filed July 24, 1972, Ser. No. 274,200

Int. Cl.^{2} B29D *27/00*; B32B *27/40*; C08G *18/14*

U.S. Cl. 264—46.6 **5 Claims**



1. A process for laminating a rigid polyurethane foam to a gelled polyester resin comprising adding two mixtures to a pre-foam mixture of a polyisocyanate and polyol with sufficiently high functionality to form a rigid foam; said first mixture comprising:

about 2½% by weight of said polyisocyanate and polyol of an unsaturated polyester laminating resin, between 1 and 2% by weight based upon the total weight of added polyester resin of an organic amine catalyst, about 0.75% by weight based upon the total weight of added polyester of cobalt octoate, and said second mixture comprising:

about 2½% by weight based upon the total weight of said polyisocyanate and polyol of a polyester resin, between about 1.5 and 3% by weight based upon the total weight of added polyester resin of benzoyl peroxide and between about 0.15 and 0.75% by weight based upon the total weight of added polyester of dimethyl aniline; contacting the pre-foam mixture to a gelled polyester resin; curing the gelled polyester and pre-foam at elevated temperatures to produce a polyester-polyurethane foam laminate of improved adhesion.

3,940,469
PROCESS FOR FORMING HOLLOW FIBERS

Edward F. Steigelmann; Robert D. Hughes, both of Park Forest, Ill., and Joseph Gabor, Whiting, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Nov. 26, 1973, Ser. No. 419,091

Int. Cl.² D01D *5/04, 5/24*

U.S. Cl. 264—177 F **12 Claims**

1. A process for forming hollow, semi-permeable membrane fibers which comprises extruding a composition through an annular die at an elevated temperature to from said fibers, said composition consisting essentially of hydrophilic polymer and di(lower alkyl) sulfoxide solvent, said polymer consisting essentially of N-alkoxyalkyl polyamide and sufficient water-soluble polyvinyl alcohol to enhance the hydrophilic properties of the polyamide, said composition having a sufficient amount of water to inhibit degradation of the polymer at elevated temperature.

3,940,470
DIRECT RECOVERY OF METALS FROM FLUID ANHYDROUS METAL HALIDES DERIVED FROM MARINE NODULE HALIDATION

William S. Kane, Wicomico; Hugh L. McCutcheon, Gloucester Point, and Paul H. Cardwell, Zanoni, all of Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed Nov. 29, 1972, Ser. No. 310,605

Int. Cl.² C01G *3/00, 45/00, 51/00, 53/00*

U.S. Cl. 423—24 **16 Claims**

6. A process for obtaining metal values from ocean floor nodule ores, the ore comprising as major components the oxides of manganese and iron and as secondary components compounds of copper, cobalt and nickel, the process comprising halidating the nodule ore to form the halides of iron, copper, cobalt, nickel and manganese; vaporizing these halides to form a vaporous mixture comprising as the primary components manganese halide and iron halide and as the secondary components copper halide, cobalt halide and nickel halide; separating the nickel, cobalt and copper by passing the vaporous mixture of halides in contact with elemental manganese in order to precipitate metallic iron, copper, cobalt and nickel directly from the vapor and separating the remaining vapor therefrom; and selectively separating cobalt, nickel and copper from the iron by contacting the metallic cobalt, nickel, copper and iron with an aqueous ammoniacal carbonate solution to selectively dissolve cobalt, nickel and copper so as to form an aqueous solution comprising dissolved cobalt, nickel and copper and substantially free from iron and manganese; whereby the nickel, copper and cobalt values from the ocean floor nodule ore are separated from the primary manganese and iron components, thus rendering the further treatment to obtain these individual values in a pure state more accessible.

7. The process of claim 6 comprising in addition contacting the aqueous solution of nickel, cobalt and copper with a water-immiscible organic solution of a liquid ion exchange agent selected from the group consisting of alpha-hydroxyoximes and 8-hydroxyquinolines to selectively extract a pure metal value.

16. A process for obtaining metal values from ocean floor nodule ore, the ore comprising as major components the oxides of manganese and iron and as secondary components compounds of copper, cobalt and nickel, the process comprising halidating the nodule ore by reacting with a molten alkali metal or alkaline earth metal halide to form the halides of copper, cobalt, nickel and manganese; vaporizing these halides to form a vaporous mixture comprising as the primary component manangese halide and as the secondary components copper halide, cobalt halide and nickel halide; separating the nickel, cobalt and copper by passing the vaporous mixture of halides in contact with elemental manganese in order to precipitate metallic copper, cobalt and nickel directly from the vapor and separating the remaining vapor therefrom; and contacting the metallic cobalt, nickel and copper with an aqueous ammoniacal carbonate solution to dissolve cobalt, nickel and copper so as to form an aqueous solution comprising dissolved cobalt, nickel and copper and substantially free from iron and manganese; whereby the nickel, copper and cobalt values from the ocean floor nodule ore are separated from the primary manganese components, thus rendering the further treatment to obtain these individual values in a pure state more accessible.

3,940,471
REMOVAL OF RADON FROM HYDROCARBON STREAMS

John A. Favre, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 18, 1973, Ser. No. 361,606

Int. Cl.² C01F *13/00*

U.S. Cl. 423—249 **16 Claims**

1. A process for removal of radon from a radon-containing olefin hydrocarbon stream, which comprises

admixing carbon dioxide with said radon-containing olefinic hydrocarbon stream;

contacting the resultant stream with an olefin absorbing agent in a contacting zone to form an olefin/absorbing agent complex;

withdrawing from said contacting zone a first stream comprising said complex;

withdrawing from said contacting zone a second stream comprising radon and carbon dioxide;

passing said first stream to an olefin recovery zone wherein the olefin is separated from said absorbing agent;

withdrawing from said olefin recovery zone an essentially pure olefin as one product of the process;

passing said second stream to a radon recovery zone wherein radon is separated from said carbon dioxide; and

withdrawing from said radon recovery zone radon as a product of the process.

3,940,472
QUATERNARY SULFIDES AND SELENIDES CONTAINING BA OR SR AND SELECTED TRANSITION METALS

Paul Christopher Donohue, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 22, 1974, Ser. No. 472,424

Int. Cl.² C01B *19/00, 17/00;* **C01F** *11/00*

U.S. Cl. 423—511 **8 Claims**

1. A semiconducting composition with a $BaNiO_3$-type hexagonal crystal structure of the formula

$MM'_{1-y}M''_yX_3$

where

M is Ba or Sr,

M′ is one or more of Ta and Nb,

M″ is one or more of Cr, Mn, Fe, Co, Ni, Cu, Rh and Ir,

X is one or more of S and Se, and

y is 0.33 to 0.5,

with the proviso that, when M is Sr, the compound is of the formula

$SrTa_{0.5}M''_{0.5}S_3$

and M″ is one or more of Cr and Fe.

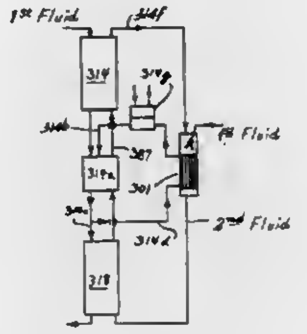
3,940,473
THERMAL CONTROL IN DUAL TEMPERATURE SYSTEMS

Jerome S. Spevack, New Rochelle, N.Y., assignor to Deuterium Corporation, White Plains, N.Y.

Continuation of Ser. No. 587,365, Sept. 26, 1966, abandoned, which is a continuation of Ser. No. 822,973, June 25, 1959, abandoned, which is a division of Ser. No. 188,925, Sept. 29, 1950, Pat. No. 2,895,803. This application Dec. 30, 1971, Ser. No. 214,494

Int. Cl.² C01B *5/02*

U.S. Cl. 423—580 **28 Claims**



1. In a method of the type which involves

a. the heating of a flow of carrier gas and the vaporizing thereinto of a chemically different liquid to be carried thereby, and

b. the subsequent cooling of such flow and condensation of such liquid therefrom after the same has been

c. subjected to treatment, the improvement that:

d. said heating and vaporizing step (a) is effected in a first zone,

e. said cooling and condensing step (b) is effected in a third zone from which said flow and liquid condensate are separately removed,

f. said treatment step (c) is effected in a second zone in which the said flow is further heated and has a further quantity of vapor of said liquid added thereto,

g. said flow is passed in sequence through said first, second and third zones,

h. a quantity of said liquid is brought into physical contact with said flow of gas in said first zone, and

i. heat for effecting the heating and vaporizing in said first zone is obtained from the cooling and condensation in said third zone and such heat is transferred to the flow in said first zone from the flow in said third zone by way of a countercurrent indirect contact heat exchange while maintaining said flows out of contact with each other.

3,940,474
GENERATION OF HYDROGEN

Chester W. Huskins, Huntsville, and Roy E. Patrick, Redstone Arsenal, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 6, 1974, Ser. No. 405,152

Int. Cl.² C01B *1/03*

U.S. Cl. 423—648 **4 Claims**

1. A method of generating hydrogen gas of high purity as required for chemical laser use, said method comprising:

i. placing a predetermined quantity, in powder form of unsolvated aluminum hydride selected from an unsolvated aluminum hydride that has a maximum absorption in the infrared at about 5.8 microns or that has an x-ray diffracting value of about 1451 in a container which is adapted for operating in an inert or vacuum environment;

ii. providing a heat source that includes a length of wire of predetermined diameter, a high melting point and of a predetermined composition of about 80% nickel and of about 20% chromium, said wire being adapted for electrically heating and said wire being positioned in contact with said unsolvated aluminum hydride under an inert or vacuum environment to rapidly bring said unsolvated aluminum hydride to a decomposition temperature range of from about 180° to about 185°C; and

iii. maintaining said temperature range for sufficient time to effect decomposition of said unsolvated aluminum hydride to liberate a desired quantity of hydrogen gas from said predetermined quantity of unsolvated aluminum hydride.

3,940,475
RADIOIMMUNE METHOD OF ASSAYING QUANTITATIVELY FOR A HAPTEN

Stanley Joseph Gross, Encino, Calif., assignor to Biological Developments, Inc., Encino, Calif.

Continuation-in-part of Ser. No. 45,558, June 11, 1970, abandoned. This application July 7, 1971, Ser. No. 160,559

Int. Cl. A61k *27/04*

U.S. Cl. 424—1 **1 Claim**

1. A radioimmune method of assaying quantitatively for a hapten, the hapten having a ring of aromatic character, which ring is capable of having a —N=N— group covalently bonded directly to an atom of said aromatic character ring, which method comprises contacting an aqueous sample containing the hapten under assay, a known quantity of a radioactively labeled marker which incorporates a hapten homologous to the hapten under assay, and an insolubilized antibody specific for the hapten under assay to competitively bind part of said labeled hapten and the hapten contained in said sample to the antibody; incubating the foregoing mixture until a two-phase system is produced comprising an insoluble or solid phase and an aqueous phase, and measuring the radioactivity of at least one of said two phases, the value of said radioactivity being a function of the concentration in said sample of the hapten under assay.

3,940,476
ORAL PREPARATIONS FOR PREVENTING DENTAL PLAQUE

Gerhard J. Haas, Woodcliff Lake, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 239,796, March 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 148,203, May 28, 1971. This application Sept. 24, 1973, Ser. No. 399,879

Int. Cl.² A61K *7/16*

U.S. Cl. 424—49 **1 Claim**

1. A method for inhibiting the formation of dental plaque, which comprises topically applying to the teeth as an active ingredient an amount of obtusastyrene, which is effective in inhibiting the formation of dental plaque.

3,940,477
COSMETIC SKIN COLORING COMPOSITIONS CONTAINING AMINATED γ-DIALDEHYDES

Guy Vanlerberghe, Par Claye-Souilly, and Georges Rosenbaum, Asnieres, both of France, assignors to L'Oreal, Paris, France

Continuation-in-part of Ser. No. 210,217, Dec. 20, 1971, Pat. No. 3,812,246. This application May 8, 1974, Ser. No. 468,086

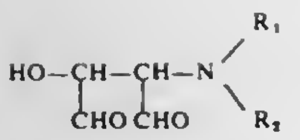
Claims priority, application Luxemburg, Dec. 24, 1970, 62317

Int. Cl.² A61K *7/021, 7/42*

U.S. Cl. 424—59 **8 Claims**

1. A cosmetic composition for coloring the skin having a pH between 2–5 and consisting essentially of a solution containing

1. 0.5–12 percent by weight of an aminated aldehyde of the formula



wherein R_1 is selected from the group consisting of hydrogen, methyl and hydroxyethyl, R_2 is selected from the group consisting of hydrogen, methyl, ethyl, propyl, isopropyl, butyl, hexyl, hydroxyethyl, cyclohexyl, benzyl, (1,2-diformyl-2-hydroxy) ethyl and 2-[(1,2-diformyl-2-hydroxy) ethylamino] ethyl and R_1 and R_2 together with the nitrogen atom to which they are attached form piperidinyl;

2. 0.2–5 percent of a member selected from the group consisting of colza oil, olive oil, peanut oil, cocoa oil and palm oil;
3. 5–40 percent by weight of a lower alkyl ester selected from the group consisting of isopropyl myristate and isopropyl palmitate; and
4. 35–80 percent by weight of ethanol.

3,940,478
PROTEOLYTIC ENZYMES AS ADJUNCTS TO ANTIBIOTIC PROPHYLAXIS OF CONTAMINATED WOUNDS

Leonard D. Kurtz, Woodmere, N.Y., assignor to Sutures, Inc., Coventry, Conn.

Filed Apr. 29, 1974, Ser. No. 465,309
Int. Cl.² A61K *37/48*

U.S. Cl. 424—94 **5 Claims**

1. A method for the prophylactic treatment of contaminated but non-infected, open wounds to prevent or at least reduce subsequent development of infection therein which comprises applying to the film of proteinaceous coagulum formed on the surface of said contaminated but non-infected open wounds a proteolytic enzyme in an amount of at least 2,000 N.F. units per wound to break down said film of proteinaceous coagulum.

3,940,479
NOVEL ANTIBIOTIC BN-109 SUBSTANCE, ITS PRODUCTION AND USE

Takashi Shomura, Yokohama; Shoji Omoto, Tokyo; Shinji Miyado, Yokohama; Hiroshi Watanabe, Yokohama; Shigeharu Inouye, Yokohama; Yujiro Yamada, Yokohama, and Taro Nüda, Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed July 17, 1974, Ser. No. 489,104
Int. Cl.² A61K *35/00*

U.S. Cl. 424—118 **5 Claims**

1. An antibiotic BN-109 substance, which is effective in inhibiting the growth of Gram-negative bacteria and having the following properties:

Appearance: White powder as a free base;
Solubility: Insoluble in common organic solvents and water, slightly soluble in diluted acid and alkaline, acetic acid dimethylformamide and dimethyl sulfoxide, and soluble in acidic methanol and acidic ethanol;
Mobility on filter paper electrophoresis: Behaves as an alkaline substance;
Rf values on TLC:
  0.86 (n-butanol-acetic acid-water (2:1:1)),
  0.38 (n-butanol-acetic acid-water (4:1:5, upper layer)),
  0.66 (n-butanol-pyridine-acetic acid-water (6:4:1:3));
$[\alpha]_D^{25}$ (*c* 0.5, methanol-acetic acid (1:1)): −4°;
Maximum UV absorption bands: Found at 279 mμ ($E_{1cm}^{1\%}$ = 34, in 0.1 N-NaOH, $E_{1cm}^{1\%}$ = 23 in 0.1 N-HCl);
IR absorption bands: Found at 3275, 2590, 1632, 1535, 1408, 1110 (cm^{-1}).
Color reactions:
  Positive ninhydrin, Ehrich and Dragendorff;
  Negative Sakaguchi, Pauly and Trevelian;
Elementary analysis: C, 52.73%; H, 7.27%; N, 12.77%;
Amino acid composition: α,γ-diamino butyric acid(4), serine(2), glutamic acid(1), glycine(1), alanine(1), valine(3), phenylalanine(1), tryptophan(2), and unknown animo acid(1);
Fatty acids: Contain 30% of acid ether-soluble fatty acids;
Molecular weight: 1900 to 2200

3,940,480
PROCESS FOR PRODUCTION OF STABILIZED POWDERY SECRETIN PREPARATION BY LYOPHILIZATION

Elichi Suenaga, Kunitachi; Shinro Tachibana, Narashino, and Nagayasu Sato, Machida, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1973, Ser. No. 354,883
Claims priority, application Japan, May 8, 1972, 47-44566
Int. Cl.² A61K *37/00*

U.S. Cl. 424—177 **5 Claims**

1. A process for producing a stabilized powdery secretin preparation which comprises lyophilizing an aqueous solution of secretin having a pH of 4–7 in the presence of a 2–10% aqueous solution of alanine as carrier for the secretin.

3,940,481
TREATMENT OF HEPATIC COMA WITH ISOMALTITOL

Hubert Schiweck, Obrigheim, Germany, assignor to Suddeutsche Zucker-Aktiengesellschaft, Mannheim, Germany

Filed Feb. 12, 1974, Ser. No. 441,888
Claims priority, application Germany, Feb. 14, 1973, 2307251
Int. Cl.² A61K *31/70*

U.S. Cl. 424—180 **3 Claims**

1. Method for the treatment of hepatic coma, which method comprises administering enterally to the patient an amount of isomaltitol effective for treating said hepatic coma.

3,940,482
SOLUBILIZATION OF THE ZINC SALT OF 1-HYDROXY-2-PYRIDINETHIONE

Paul Sheldon Grand, South Bound Brook, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 136,204, April 2, 1971, Pat. No. 3,785,985. This application Aug. 17, 1973, Ser. No. 389,326
Int. Cl.² A61K *31/555*

U.S. Cl. 424—245 **9 Claims**

1. A clear liquid composition for use as a bactericide or fungicide consisting essentially of ¼ to 20% by weight of the zinc salt of 1-hydroxy-2-pyridinethione, an aliphatic polyamine having the general formula

$$H_2N\{CH_2CH_2NH\}_nH$$

wherein *n* represents a number from 1 to 5, the weight ratio of said amine to said pyridinethione salt being from about ½ to 1 to about 5 to 1, and the balance being a solvent selected from the group consisting of water, C_2-C_3 monohydric alcohols, C_2-C_3 polyhydric alcohols, dimethyl formamide, dimethylacetamide, dimethylsulfoxide and mixtures thereof.

3,940,483
ANTIBIOTIC COMPOSITIONS AND METHOD

Friedrich Dursch, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 113,105, Feb. 5, 1971, abandoned. This application Oct. 18, 1971, Ser. No. 190,325
Int. Cl.² A61K *31/545*

U.S. Cl. 424—246 **4 Claims**

1. A dry solid antibiotic composition suitable for reconstitution as an injectable upon addition of water which comprises cephradine and sodium carbonate, the sodium carbonate being present in an amount sufficient to assure complete dissolution of the cephradine in an amount of sterile water

which provides a concentration of active cephradine of from about 50 to 500 milligrams per milliliter of water.

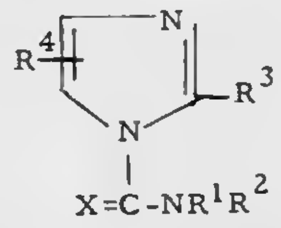
3,940,484
INSECTICIDAL COMPOSITIONS AND METHODS OF COMBATTING INSECTS USING SUBSTITUTED IMIDAZOLES

Maurice W. Baker; John C. Kerry; Kenneth J. Nichol; John R. Marshall; David M. Weighton, and Antonin Kozlik, all of Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

Continuation-in-part of Ser. No. 311,009, Nov. 30, 1972, Pat. No. 3,868,458. This application Nov. 21, 1973, Ser. No. 417,991
Claims priority, application United Kingdom, Dec. 7, 1971, 56781/71; July 26, 1972, 34981/72
Int. Cl.² A01N *9/22*

U.S. Cl. 424—248 **7 Claims**

1. An insecticidal composition which comprises an insecticidally effective amount of a compound of the formula



in which X is selected from the group consisting of oxygen and sulphur, R^3 is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, R^4 is selected from the group consisting of alkyl of 1 to 10 carbon atoms and cycloalkyl of 3 to 10 carbon atoms, and R^1 and R^2, together with the nitrogen atom to which they are attached, and R^1 and R^2, together with the nitrogen atom to which they are attached, form a morpholino group optionally containing 1 to 4 methyl substituents attached to carbon atoms of the ring, together with a suitable carrier. The insecticidal compositions are of particular value against insects, e.g., aphids, and against other pests, e.g., acarids.

3,940,485
TREATMENT AND PRE-TREATMENT OF DYSMETRIC DYSLEXIA BY IMPROVING SEQUENTIAL SCANNING AND OCULAR FIXATION ABILITIES AND THERAPEUTIC COMPOUNDS

Harold N. Levinson, 15 Lake Road, Great Neck, N.Y. 11020, and Jan Frank, 45 E. 82nd St., New York, N.Y. 10028

Continuation-in-part of Ser. No. 424,104, Dec. 12, 1973, abandoned. This application Nov. 29, 1974, Ser. No. 528,139
Int. Cl.² A61K *31/13, 31/24, 31/52, 31/54, 31/445, 31/495*

U.S. Cl. 424—250 **7 Claims**

1. A method of obviating eye tracking difficulties for a dysmetric dyslexic patient preparatory to said patient participating in reading or scanning activity, which method is based on the discoveries of a cerebellar-vestibular dysfunction and a resulting sub-clinical eye oscillation indicative of said dysfunction, said method comprising the steps of preceding any reading or scanning by such patient with an administered quantity of a cerebellar-vestibular harmonizing drug selected from the group consisting of cyclizine, cinnarizine, meclizine and buclizine in a dosage effective to suppress input to and within said patient's cerebellar-vestibular circuits, and only allowing reading or scanning activity by said patient during the effective period of said administered drug, whereby the adverse effect of said sub-clinical eye oscillation as input to said patient's cerebellar-vestibular circuits is obviated by said drug during said reading or scanning activity to thereby enhance said patient's eye tracking ability.

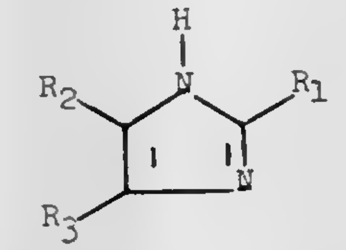
3,940,486
IMIDAZOLE DERIVATIVES IN THE TREATMENT OF PAIN

Konrad Fitzi, Neuallschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 247,431, April 25, 1972, abandoned. This application Apr. 18, 1974, Ser. No. 461,824
Claims priority, application Switzerland, May 11, 1971, 6967/71; Mar. 22, 1972, 4250/72
Int. Cl.² A61K *27/00*

U.S. Cl. 424—263 **2 Claims**

1. A pharmaceutical composition for treating pain in mammals comprising an effective amount of a compound of the formula



(I)

wherein R_1 represents isopropyl, sec.butyl, tert.butyl or p-chlorophenyl, one of the groups R_2 and R_2 represents a phenyl group or a p-methoxyphenyl, and the other represents a pyridyl group, or a pharmaceutically acceptable acid addition salt thereof and a pharmaceutical carrier.

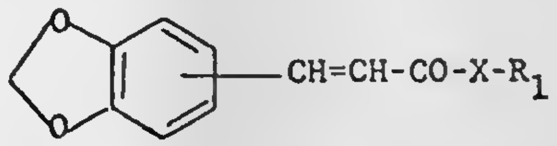
3,940,487
INSECTICIDE COMPOSITIONS COMPRISING A CARBAMATE AND A METHYLENEDIOXYPHENYL COMPOUND

Eric Arthur Stuart La Croix, Dorking, and Solomon Ezekiel Mhasalker, Worcester Park, both of England, assignors to Beecham Group Limited, Brentford, England

Filed Aug. 28, 1973, Ser. No. 392,301
Claims priority, application United Kingdom, Sept. 13, 1972, 42434/72
Int. Cl.² A01N *9/28*

U.S. Cl. 424—282 **8 Claims**

1. An insecticidal composition comprising equal parts of (a) a compound of formula (I):



(I)

wherein X is an oxygen atom or a bond joining R_1 to the carbonyl group and R_1 is alkyl of 1 to 12 carbon atoms or alkenyl of up to 12 carbon atoms; and (b) 1-naphthyl-N-methyl carbamate; 1-(2-methoxy-4-prop-2-en)-phenyl-N-methyl carbamate; or 3,5-di-t-butyl-phenyl-N-methyl carbamate; in combination with an insecticidally acceptable carrier.

3,940,488
REPELLENT AMINOALKYLDITHIOCARBAMIC ACIDS

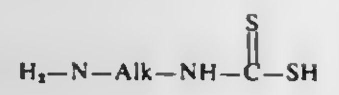
Paul-Ernst Frohberger, Leverkusen, Germany; Otto Ewald Urbschat, deceased, late of Cologne-Mulheim, Germany (by Gertrud Emma Maria Gerda Urbschat, administrator), and Gunther Hermann, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 358,221, May 8, 1973. This application Jan. 2, 1975, Ser. No. 538,427
Claims priority, application Germany, May 13, 1972, 2223467
Int. Cl.² A01N *9/12*

U.S. Cl. 424—286 **5 Claims**

1. A method of repelling rodents or ruminants comprising applying to a rodent or ruminant habitat a repellent amount

of a compound of the formula


(I)

$$H_2—N—Alk—NH—\overset{\overset{S}{\|}}{C}—SH$$

in which

Alk is an alkylene radical of 2 to 6 carbon atoms.

3,940,489
THERAPEUTIC COMPOSITIONS AND METHOD

Herbert Koppe, Ingelheim am Rhein; Albrecht Engelhardt, Mainz (Rhine), and Karl Zeile, Ingelheim am Rhein, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

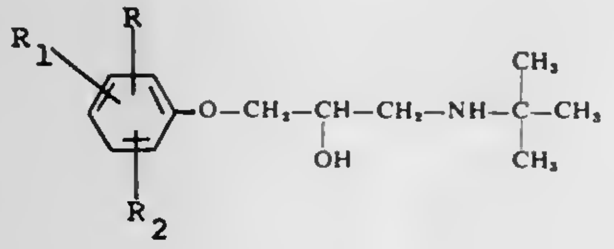
Division of Ser. No. 408,743, Oct. 23, 1973, Pat. No. 3,868,460, which is a division of Ser. No. 294,226, Oct. 2, 1972, which is a division of Ser. No. 36,676, May 12, 1970, Pat. No. 3,740,444, which is a continuation-in-part of Ser. No. 700,376, Jan. 25, 1968, Pat. No. 3,541,130. This application Sept. 3, 1974, Ser. No. 502,634

Claims priority, application United Kingdom, June 15, 1967, 27645/67; Germany, July 25, 1967, 93645; Feb. 6, 1967, 91070; June 15, 1967, 93025

Int. Cl.^{2} A61K *31/24*

U.S. Cl. 424—309 **10 Claims**

1. A composition having bradycardia and isoproterenol antagonistic activity comprising a small but effective amount of at least one active compound selected from the group consisting of racemates of 1-phenoxy-2-hydroxy-3-tert.-butylamino propanes of the formula



wherein R is COOR′ where R′ is alkyl of 1 to 4 carbon atoms; R$_1$ is selected from the group consisting of hydrogen, alkoxy and alkylthio of 1 to 4 carbon atoms and alkenyl and alkynyl of 2 to 4 carbon atoms and R$_2$ is selected from the group consisting of hydrogen, halogen and alkyl and alkoxyl of 1 to 4 carbon atoms, their optically active isomers and their nontoxic, pharmaceutically acceptable acid addition salts of said racemates and said optically active isomers and a major amount of a pharmaceutical carrier.

3,940,490
MEDICAMENTS HAVING PSYCHOTROPIC PROPERTIES

M. Antoine Stenger; Henri Cousse, and M. Gilbert Mouzin, all of Castres, France, assignors to Pierre Fabre S.A., Castres, France

Continuation of Ser. No. 264,501, June 20, 1972. This application Nov. 21, 1974, Ser. No. 525,951

Claims priority, application France, June 21, 1971, 71.22575; June 5, 1972, 72.20391

Int. Cl.^{2} A61K *31/165*

U.S. Cl. 424—230 **4 Claims**

3. A method of reducing convulsions in a host which comprises administering to the host an anticonvulsant amount of an N—C$_1$ to C$_4$-alkyl-5-bromo-ortho-cresotamide.

3,940,491
BACTERIAL SOURCE OF VITAMIN K FOR ANIMAL FEEDS

Richard E. Crutcher, Waukegan, and Victor W. Winkler, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 25, 1975, Ser. No. 571,828

Int. Cl.^{2} A23K *1/00;* **A23L** *1/30*

U.S. Cl. 426—2 **5 Claims**

1. A method for maintaining a proper level of vitamin K in animals comprising the steps of mixing a bacterial source of said vitamin K with an animal's feed and feeding said mixture to an animal.

3,940,492
CONTINUOUS FERMENTATION PROCESS

Lars Karl Johan Ehnstrom, Tullinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed June 25, 1974, Ser. No. 483,007

Claims priority, application Sweden, July 9, 1973, 7309617

Int. Cl.^{2} C12C *11/04, 11/08*

U.S. Cl. 426—16 **8 Claims**

1. In carrying out continuous fermentation in a wort substrate, the method which comprises feeding a flow of micro-organisms in a circuit including an elongated closed channel, continuously supplying wort to said circuit, subjecting the mixture of wort and micro-organisms to a centrifugal separating operation after fermentation has taken place in the circuit, thereby separating said mixture into three components, namely, fermented wort, a living cell mass and impurities, separately discharging said impurities component from the centrifugal separating operation, and continuously and separately discharging from the separating operation said fermented wort component and said living cell mass including living cells formed in said circuit.

3,940,493
NON-PROTEIN NITROGEN FEED PRODUCT AND METHOD FOR PRODUCING THE SAME

Wayne F. Fox, Des Moines, Iowa, assignor to Triple "F", Inc., Des Moines, Iowa

Continuation of Ser. No. 278,572, Aug. 7, 1972, abandoned. This application Dec. 13, 1973, Ser. No. 424,506

Int. Cl.^{2} A23K *1/22*

U.S. Cl. 426—69 **6 Claims**

1. The method of producing a palatable, nontoxic and substantially neutral pH food product for feeding ruminant animals comprising the steps of:

a. mixing together a predetermined quantity of an edible, ungelatinized starch-bearing food material selected from the group consisting of corn, sorghum, barley, oats, wheat, hay and silage, a predetermined amount of at least one nonprotein nitrogenous substance selected from the group consisting of urea, biuret, ethylene urea and ammonium carbamate, and a predetermined amount of bentonite,

b. the moisture content of the mixture being less than about 15% by weight, the amount of said nonprotein nitrogenous substance by weight in said mixture being about four times greater than the weight of the bentonite, and the starch bearing food being within a range of from 40.6 to 81.25 percent by weight so that the resultant food product has a total protein equivalent of from 50 to 100 percent by weight,

c. providing a confined path,

d. introducing the mixture at ambient temperature into one end of said confined path,

e. compressing the mixture over the full course of said path under progressively increasing compressive pressures to progressively heat the mixture by frictional heat only to a temperature of from 260°F. to 320°F., and then

f. substantially instantaneously reducing the compressive pressure on the mixture at the end of said path to atmospheric pressure to produce an expanded and gelatinized product having a moisture content of less than 13 percent.

3,940,494
LIQUID RUMINANT FEED SUPPLEMENT

Joseph F. Wilson, Bartlesville, Okla., and Robert S. Parish, Henderson, Colo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 295,828, Oct. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 102,885, Dec. 30, 1970, abandoned. This application July 29, 1974, Ser. No. 492,830

Int. Cl.^{2} A23K *1/22*

U.S. Cl. 426—69 **3 Claims**

1. A composition of matter consisting essentially of urea, ammonium phosphate and water, the weight percentages of the constituents being such as to fall within the polygon of four corners ABC and D drawn in a trilinear diagram defined by the weight percentages of the constituents as follows and as shown in FIG. 1:

	Urea	Ammonium Phosphate Solids	Water
A	28.0	25.4	46.6
B	23.5	21.2	55.3
C	31.0	7	62.0
D	38.3	8.4	53.3.

3,940,495
PROTEIN PRODUCT AND METHOD FOR FORMING SAME

Ronald J. Flier, Ladue, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Continuation of Ser. No. 600,471, Dec. 9, 1966, abandoned, which is a continuation-in-part of Ser. No. 381,853, July 10, 1964, abandoned. This application Jan. 17, 1973, Ser. No. 324,295

Int. Cl.^{2} A23J *3/00*

U.S. Cl. 426—104 **52 Claims**

1. A method of treating a protein-containing vegetable material having no more than a minor amount of fat and a protein content of at least about that of solvent-extracted soybean meal to form a porous fibrous food product comprising the steps of: moistening the protein-containing vegetable material to a moisture content of at least about 20% by weight and maintaining the pH of the mixture in a range which is slightly above or slightly below the neutral point of the vegetable material; mechanically working the moistened protein-containing vegetable material under temperatures in excess of 212°F. and elevated pressures; forcing the heated, pressurized, mechanically worked material through first restricted orifice means, maintaining the material under elevated temperatures and pressures as it emerges from said first restricted orifice means; the heat, pressure and mechanical working of the material prior to passage through said first restricted orifice means and the heat and pressure applied to said material after passage through said first restricted orifice means being such that upon release of the pressure it has the capability of forming a fibrous structure and then extruding the material through second restricted orifice means into an environment of a pressure substantially lower than said elevated pressures causing expansion of the product with moisture evaporation and the formation of a puffed and fibrous meat-like structure.

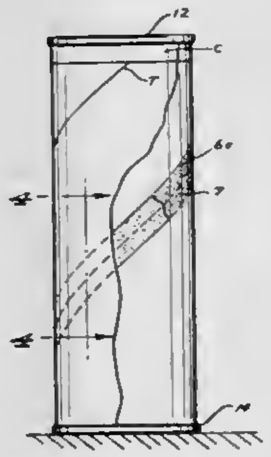
3,940,496
SPIRAL WOUND CAN HAVING DISCRETE LABEL AND REINFORCING ELEMENTS

Charles H. Turpin; Francis R. Reid, and James R. Leezer, all of Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Aug. 13, 1973, Ser. No. 387,830

Int. Cl.^{2} B65D *85/36, 5/54*

U.S. Cl. 426—123 **6 Claims**



1. A spirally wound composite cylindrical can adapted to be opened in two stages and having discrete label and reinforcing elements for packaging fresh leavened dough products, said can comprising:

a. a stiffening bodystock sheet of spirally wound configuration,

b. a butt joint between the adjacent side edges of the bodystock sheet, the butt joint extending generally longitudinally and spirally thereof,

c. a liner composed of a flexible sheet material bonded within the bodystock sheet,

d. a tensile element comprising a reinforcing strip removably, adhesively bonded to the outer surface of the bodystock sheet over the butt joint, the adhesive bond between the reinforcing strip and the bodystock sheet being rupturable and serving to hold the adjacent edges of the butt joint in close proximity with one another until the reinforcing strip is removed,

e. a label formed from flexible sheet material removably bonded to the outer surface of the bodystock sheet but unbonded to the adjacent outer surface of the reinforcing strip and portions of the bodystock laterally of the reinforcing strip to define an unbonded center section intermediate the side edges of the label.

f. a circumferentially extending collar cut through the label and reinforcing strip, the collar cut being positioned relatively close to one end of the container,

g. a portion of the edge of the label adjacent to the collar cut being unbonded to the underlying bodystock layer whereby the lifting tab is defined for the label allowing the label to be lifted manually and peeled away from the underlying bodystock material during a first opening stage without removing the reinforcing strip and,

h. lifting tab means operatively associated with the reinforcing strip to thereafter permit the separate removal of the reinforcing strip in a second opening stage from the bodystock to thereby weaken the butt joint by a factor of at least about 20% when the reinforcing strip is removed,

i. whereby the butt joint can then be separated substantially its entire length from one end of the can to the other to provide an opening in the can sufficiently large to withdraw the contents therethrough.

3,940,497

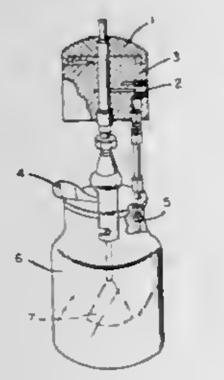
PREVENTING FOOD PRODUCTS FROM ADHERING

Simon Weil Arenson, 6602 Cooper Ridge Drive, Baltimore, Md. 21209

Continuation-in-part of Ser. No. 358,315, May 8, 1973, Pat. No. 3,881,029, which is a continuation-in-part of Ser. No. 299,920, Oct. 24, 1972, abandoned. This application Apr. 28, 1975, Ser. No. 572,509. The portion of the term of this patent subsequent to Apr. 29, 1992, has been disclaimed.

Int. Cl.² A23B *4/00*

U.S. Cl. 426—274 **11 Claims**



1. A method of preventing the adherence during freezing or during refrigeration of food products selected from the group consisting of meat, poultry and seafood in contact with one another which comprises applying a coating of hardened fat in powder form in an amount effective to prevent adherence during freezing or refrigeration to at least one contacting surface of said food products.

3,940,498

CHILL-PROOFING WITH SYNTHETIC MAGNESIUM SILICATES

Elbert Roy Butterworth, Littleton, and Willard John Duensing, Lakewood, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed Sept. 3, 1974, Ser. No. 502,267

Int. Cl.² C12C *7/14;* **C12H** *1/02, 1/04*

U.S. Cl. 426—423 **19 Claims**

1. A method of stabilizing aqueous liquids or aqueous liquid suspensions against chill haze formation comprising contacting said liquid or said suspension with an acid-treated synthetic magnesium silicate containing 13% or less by weight of magnesium, on an oxide basis, in an amount effective to eliminate or reduce said chill haze and seperating said silicate from said liquid or liquid suspension to provide an aqueous liquid or aqueous liquid suspension resistant to chill haze formation.

3,940,499

FOOD OR FLAVOR CONTAINING 2,6,6-TRIMETHYL-1-CYCLOHEXEN-1-YLACETALDEHYDE

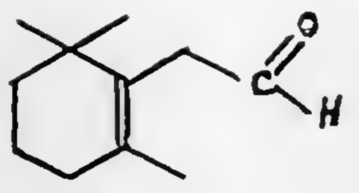
Alan Owen Pittet, Atlantic Highlands; Erich Manfred Klaiber, Neptune; Manfred Hugo Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y., and Joaquin Vinals, Red Bank, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sept. 19, 1974, Ser. No. 507,412

Int. Cl.² A23L *1/226, 1/235*

U.S. Cl. 426—534 **3 Claims**

1. A process for altering, modifying or enhancing the aroma or taste of a foodstuff comprising the step of adding to said foodstuff in an amount of from 0.5 ppm up to about 20 ppm by weight based on the total composition of 2,6,6-trimethyl-1-cyclohexen-1-ylacetaldehyde having the structure:



3,940,500

FLAVORING SEAFOOD WITH S-METHYL METHIONINE SALT

Daniel Richard Sortwell, III, 113 S. Main St., Sherborn, Mass. 01770

Filed Aug. 10, 1973, Ser. No. 387,496

Int. Cl.² A23L *1/226*

U.S. Cl. 426—535 **12 Claims**

1. The process which comprises adding to a seafood product an effective amount up to about 0.5% by weight of the seafood of a salt of S-methyl methionine to improve the flavor or impart flavor to the seafood product.

3,940,501

FONTINA CHEESE FLAVOR

Wolfram Gustav Freytag, Halstenbek; Karl Heinz Ney, Hamburg, and I. Poetoe Gde Wirotama, Rellingen, all of Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed July 12, 1974, Ser. No. 488,124

Claims priority, application Luxemburg, July 17, 1973, 68032

Int. Cl.² A23L *1/226*

U.S. Cl. 426—535 **7 Claims**

1. A process for imparting or enhancing a fontina cheese flavor to a foodstuff selected from the group consisting of processed cheese, processed cheese preparations, fresh cheese margarine cheese, creamed cheese, cheese fondu, and cheese powder, which comprises:

A. preparing a fontina cheese flavoring composition by admixing
  i. from 10 to 100 parts by weight of β-phenylpropionic acid;
  ii. from 20 to 300 parts by weight of non-terminal mono-methyl-substituted alkanoic acids having 4 to 6 carbon atoms, said substituted alkanoic acids comprising at least 50 percent by weight of iso-valeric acid;
  iii. from 0 to 600 parts by weight of straight chain alkanoic acids having from 2 to 8 carbon atoms, consisting of at least 20 percent by weight of butynic acid;
  iv. from 0 to 15 parts by weight of 1-alkanols and 2-alkanols having from 3 to 9 carbon atoms;
  v. from 0 to 20 parts by weight of alkanals having from 2 to 5 carbon atoms;
  vi. from 0 to 8 parts by weight of 2-alkanones having from 5 to 9 carbon atoms;
  vii. from 0 to 4 parts by weight of ethyl esters of straight chain alkanoic acids having from 4 to 8 carbon atoms; and
  viii. from 0 to 20 parts by weight of other cheese flavoring ingredients selected from the group consisting of diacetyl, methional and indole; and

B. admixing the mixture obtained by step (A) with said foodstuff in an amount such as to give from 10 to 100 mg/kg of β-phenylpropionic acid and from 20 to 300 mg/kg of the non-terminal mono-substituted alkanoic acids in the flavored foodstuff.

3,940,502

FLAVORING AGENT

Max Winter, Geneva, Switzerland; Irving M. Goldman, Niantic, Conn.; Fritz Gautschi, Commugny, Switzerland; Ivon Flament, Geneva, Switzerland, and Max Stoll, Geneva, Switzerland, assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 243,866, April 13, 1972, abandoned, which is a division of Ser. No. 70,560, Sept. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, April 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, April 30, 1965, abandoned. This application June 24, 1974, Ser. No. 482,691

Int. Cl.² A23L *1/226, 1/234*

U.S. Cl. 426—536 **24 Claims**

1. As a new composition of matter of soluble coffee material having added thereto a minor, but flavor-modifying amount of a compound selected from the group consisting of furfuryl methyl ether, furfuryl ethyl ether, furfuryl phenyl ether, difurfuryl ether and mixtures thereof.

3,940,503

COLORING PROCESS AND COLORED ARTICLES

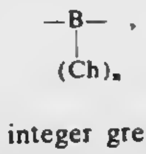
Nicolo Bellanca, San Jose, Calif., assignor to Dynapol, Palo Alto, Calif.

Filed Apr. 1, 1974, Ser. No. 456,669

Int. Cl.² A23L *1/275*

U.S. Cl. 426—540 **7 Claims**

1. A colored edible product comprising a translucent edible substrate having dissolved therein polymeric dye in a weight sufficient to yield a desired shade, said polymeric dye having a molecular weight of from about 2000 to 400,000 and consisting of one part by weight of chromophoric groups represented by Ch joined together by from 0.1 to 2 parts by weight of nonchromophoric linking groups represented by B into a structure represented by a structural formula selected from $\left(Ch\ B \right)_n$ and



$$\underset{(Ch)_n}{\underset{|}{-B-}}\ ,$$

wherein *n* is an integer greater than 1, said weight of polymeric dye being from about 0.4 to 0.9 times the weight of monomeric chromophoric groups Ch necessary to yield said desired shade.

3,940,504

OLEOMARGARINE WITH YELLOW FOOD COLORING

Simon S. Jackel, Westport, Conn., and Mortimer J. Horn, New York, N.Y., assignors to Baker Research Development Service, Inc., New York, N.Y.

Filed July 12, 1974, Ser. No. 488,154

Int. Cl.² A23D *3/00*

U.S. Cl. 426—540 **4 Claims**

1. An oleomargarine comprising a yellow colorant agent, the improvement wherein the yellow coloring agent comprises oleo resin of turmeric in an amount of from 0.006 to 3% by weight based on the weight of the oleomargarine and sufficient to impart to the margarine a yellow color with a greenish cast and oleo resin of paprika in an amount from 10 to 100% by weight based on the weight of the oleo resin of turmeric and sufficient to eliminate the greenish cast resulting from the use of oleo resin of turmeric alone.

3,940,505

PROCESS FOR DRYING FOODSTUFFS

Bernard H. Nappen, Cranford; Richard M. Boettger, Morristown, and Nicholas G. Marotta, Green Brook, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Sept. 25, 1974, Ser. No. 509,299

Int. Cl.² A23L *1/212*

U.S. Cl. 426—640 **7 Claims**

1. A method for drying foodstuffs comprising the steps of:
a. comminuting the uncooked foodstuff,
b. blending therewith a starch in an amount of 20–96% by anhydrous weight of the total mixture, and
c. drum drying the mixture of uncooked foodstuff and starch to a moisture level of less than 10%.

6. An extended dried uncooked foodstuff comprising a blend of a foodstuff in comminuted form together with a starch in an amount of 20–96% by anhydrous weight of the total mixture, which blend has been drum dried at a temperature of 290° to 350°F. to a desired moisture level.

3,940,506

SELECTIVE PLASMA ETCHING AND DEPOSITION

Rudolf August Herbert Heinecke, Harlow, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 3, 1974, Ser. No. 466,570

Claims priority, application United Kingdom, May 17, 1973, 23527/73

Int. Cl.² B05D *3/06*

U.S. Cl. 427—38 **18 Claims**

1. A process for etching an article comprised in part of silicon and in part of a substance selected from a group consisting of silica and silicon nitride, said process comprising the steps of:
  etching said article in a plasma containing fluorine, carbon and reducing species; and
  adjusting the concentration of reducing species in the plasma to which the article is exposed, whereby the relative etch rates of silicon and the second substance is controlled by adjusting said concentration.

3,940,507

ELECTRON BEAM RECORDING MEDIA AND METHOD OF RECORDING

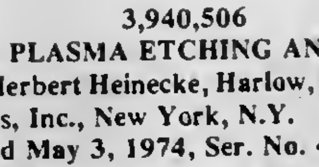
John Fech, Jr., Monmouth Junction, and Eugene Samuel Poliniak, Willingboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 448,825, May 3, 1974, abandoned. This application Oct. 24, 1974, Ser. No. 517,655

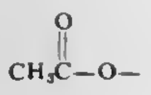
Int. Cl.² G03C *1/68*

U.S. Cl. 427—43 **12 Claims**

1. A medium for electron beam recording which comprises a film of a polymer having the formula

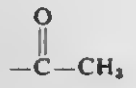


wherein R is H or



$CH_3\overset{O}{\overset{\|}{C}}-O-$

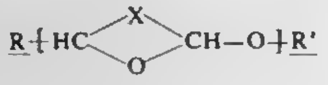
and R′ is H or



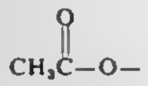
$-\overset{O}{\overset{\|}{C}}-CH_3$

and X is selected from the group consisting of branched or straight chain alkylene groups of 1 – 10 carbon atoms, saturated or unsaturated cycloalkylene groups and arylene groups of up to 10 carbon atoms and an electrically conductive layer on a support.

11. In the method of recording information whereby a modulated beam of electrons is scanned across the surface of a resist material which becomes more soluble in a developer solvent when impinged upon by a beam of electrons and the resist material is developed with a developer solvent so as to move the solubilized portion thereof, the improvement which comprises employing as the resist material a film of a polymer having the formula

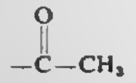


wherein R is H or



$CH_3\overset{O}{\overset{\|}{C}}-O-$

and R′ is H or



$-\overset{O}{\overset{\|}{C}}-CH_3$

and X is selected from the group consisting of branched or straight chain alkylene groups of 1 – 10 carbon atoms, saturated or unsaturated cycloalkylene groups and arylene groups of up to 10 carbon atoms and an electrically conductive layer on a support.

3,940,508

PRECOATING COLOR TELEVISION PICTURE TUBE FACEPLATE PANELS TO PROMOTE PHOSPHOR PATTERN ADHERENCE

Harold D. Wilcox, Elmira, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 16, 1974, Ser. No. 506,649

Int. Cl.² B05D *5/06*

U.S. Cl. 427—68 **5 Claims**

1. Method of applying an insoluble adherent precoat layer on the faceplate of a color television picture tube over which the phosphor pattern is deposited, which method comprises:

preparing an aqueous slurry containing from about 0.01 to 0.1 weight percent of normally soluble, low molecular weight polyvinyl alcohol having a molecular weight of less than about 50,000;

adjusting the pH of the aqueous slurry to a value of less than about 3;

uniformly dispersing a predetermined amount of the adjusted slurry over the faceplate and drying it thereon to form the insoluble precoat layer.

3,940,509

SEMI-CONDUCTING MATERIALS AND A METHOD FOR THE MANUFACTURE THEREOF

Karl J. Youtsey, Chicago, and William C. Holt, Jr., Prospect Heights, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 19, 1973, Ser. No. 426,280

Int. Cl.² H01L *3/24;* **B05D** *5/12*

U.S. Cl. 427—82 **10 Claims**

1. A method of manufacturing a semi-conducting pyropolymeric inorganic refractory oxide material which comprises heating a refractory oxide in an oxygen-free atmosphere with a pyrolyzable organic compound at a temperature in the range of from about 400° to about 800°C. for a sufficient time to form a mono-layer of carbonaceous pyropolymer on the surface of said refractory oxide, thereafter further heating the resultant semiconducting pyropolymeric inorganic refractory oxide material in an inert atmosphere at a temperature higher than the firstmentioned temperature and in the range of from about 700° to about 1200°C. for a sufficient time to form a semi-conducting pyropolymeric inorganic refractory oxide material having a temperature coefficient of resistance in a range of from about +20,000 to about −20,000 ppm/°C., and cooling and recovering the last-named material.

3,940,510

PROCESS FOR THE MANUFACTURE OF SILVER-COATED TUNGSTEN CARBIDE ELECTRODE MATERIAL

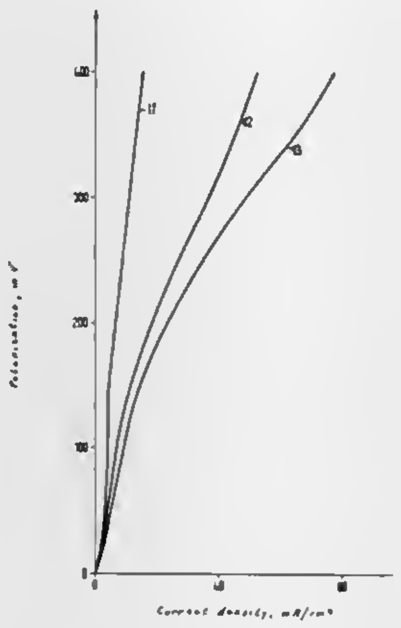
Karl Höhne, Erlangen, and Konrad Mund, Erlangen-Sieglitzhof, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 6, 1973, Ser. No. 394,772

Claims priority, application Germany, Sept. 12, 1972, 2244701

Int. Cl.² B08B *3/00;* **C25B** *11/00*

U.S. Cl. 427—115 **9 Claims**



1. A process for preparing silver-coated tungsten carbide particles adapted for use in manufacturing electrodes for fuel cells, which process comprises forming a suspension of finely divided particles of tungsten carbide in an alkaline solution, adding to said suspension a reducing agent capable of reducing silver ions in alkaline medium and also a silver salt soluble in said solution, the amounts of tungsten carbide and silver salt employed being sufficient to provide a silver content of approximately 10 to 20% by weight of said silver-coated tungsten carbide particles, and thereafter separating from said suspension silver-coated tungsten carbide particles.

3,940,511

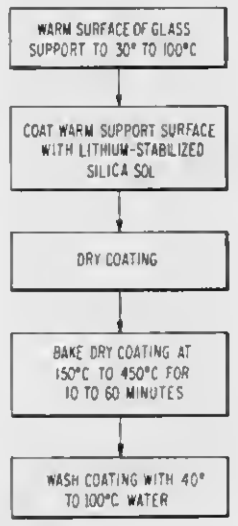
METHOD FOR PREPARING HAZE-RESISTANT LITHIUM-SILICATE GLARE-REDUCING COATING

Samuel Broughton Deal, Lancaster, and Donald Walter Bartch, Columbia, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed June 25, 1973, Ser. No. 373,601

Int. Cl.² H01J *31/00;* **B05D** *5/02;* **C03C** *17/22*

U.S. Cl. 427—165 **6 Claims**


WARM SURFACE OF GLASS SUPPORT TO 30° TO 100°C
COAT WARM SUPPORT SURFACE WITH LITHIUM-STABILIZED SILICA SOL
DRY COATING
BAKE DRY COATING AT 150°C TO 450°C FOR 10 TO 60 MINUTES
WASH COATING WITH 40° TO 100°C WATER

1. A method for preparing an optical viewing screen having glare-reducing viewing surface consisting essentially of the steps of

a. warming the surface of a glass support to about 30° to 100°C,

b. coating said surface with an aqueous solution contining a lithium-stabilized silica sol,

c. drying said coating,

d. baking said dry coating to about 150° to 450°C,

e. and then, subsequent to said baking step (d), washing said dry coating with water having a temperature above about 40°C.

3,940,512

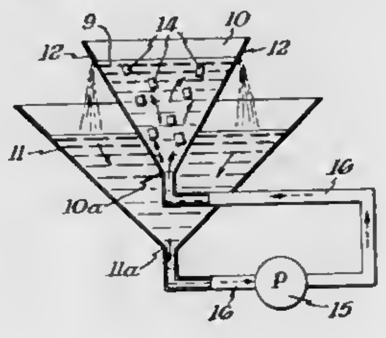
METHOD AND APPARATUS FOR CONCOMITANT PARTICULATE DEPOSITION IN ELECTROLESS PLATING, AND THE PRODUCT THEREOF

Theodore P. Christini, Dushore, Pa.; William P. Flynn, Georgetown, Md.; John B. Inskeep, and Harry J. McCauley, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 103,355, Jan. 25, 1971, Pat. No. 3,853,094. This application May 13, 1974, Ser. No. 469,499

Int. Cl.² B32B *15/04;* **C23C** *3/02*

U.S. Cl. 427—180 **1 Claim**



1. In the electroless plating of preconditioned articles of metal, ceramic, glass, polymer, wood or other material of small enough mass affording buoyant suspension within an electroless plating solution incorporating a soluble salt of a platable metal together with a soluble reductant for said metal, the obtainment of concomitant particle inclusion with the electroless plate of insoluble, inert non-catalytic particles in the size range of about 0.05μ to about 100μ comprising subjecting said articles to buoyant tumbling within a continously circulating expanding jet stream of said electroless plating solution containing a suspension of said particles for a sufficient time to obtain a preselected amount of electroless plating with concomitant deposition of said particles on said articles.

3,940,513

METHOD OF MAKING MOISTURE-RESISTANT POLYURETHANE-BASED PRESSURE-SENSITIVE ADHESIVES

Ralph L. Anderson, Columbia, S.C., assignor to Anchor Continental, Inc., Columbia, S.C.

Filed Feb. 19, 1974, Ser. No. 443,917

Int. Cl.² C09J *7/04*

U.S. Cl. 427—207 **25 Claims**

1. A method of making a moisture-resistant, polyurethane-based, pressure-sensitive adhesive which comprises carrying out the following steps with substantial exclusion of moisture in steps (1) through (5): (1) reacting an aromatic polyisocyanate with polyols of average molecularweight between 1500 and 5000 and hydroxyl number between 30 and 100 containing dissolved, compatible, tackifying resins in amount between 40 and 150 per cent of the combined weight of the polyol of step (1) and the elastomer of the following step (2), in the proportion of from 1.1 to 1.7 equivalents of isocyanate per equivalent of hydroxyl; (2) reacting a liquid hydroxylated elastomer of hydroxyl number between 20 and 60 with an aromatic polyisocyanate in the proportion of between 1.7 and 1.1 equivalents of isocyanate per equivalent of hydroxyl; (3) adding to the product of step (1) an amount of the product of step (2) to make a mixture containing between 6 and 25% of the product of step (2); (4) adding active polyurethane catalyst to the product of step (3) in amount between 0.3 and 5 per cent of the weight of polyurethane polymers therein; (5) coating the product of step (4) upon a stable, flexible, inert backing material in amount to leave a final weight of solids of between 3 and 11 grams per square foot; (6) heating the product of step (5) at a temperature of between 180° and 360°F. for a time sufficient to substantially complete the reaction of isocyanate and leave a dry coating, but not substantially longer.

3,940,514

METHOD OF COATING ELECTROSTATOGRAPHIC CARRIER PARTICLES

Donald Arthur Baker, Luton, and Peter Robert Billings, Ruislip Manor, both of England, assignors to Rank Xerox Ltd., London, England

Continuation of Ser. No. 35,801, May 8, 1970, abandoned. This application Dec. 17, 1973, Ser. No. 425,388

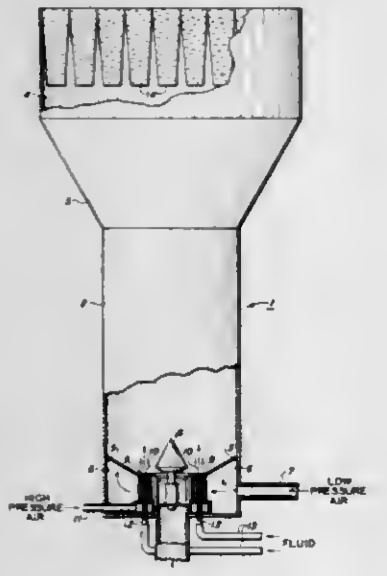
Claims priority, application United Kingdom, May 9, 1969, 23804/69

Int. Cl.² B05D *7/00*

U.S. Cl. 427—213 **8 Claims**

1. A method of coating electrostatographic carrier particles comprising introducing an upwardly flowing low pressure gas and a centrally located upwardly flowing high pressure gas at about one-third their full flow rate into a combined fluidized bed and spouted bed coating apparatus, loading said carrier particles into said coating apparatus, increasing the flow rate of said low pressure gas to its full flow rate of about 305 cubic feet per minute at S.T.P. with heating to about 40°C to bring said carrier particles to said temperature, increasing the flow rate of said high pressure gas to its full flow rate of about 16 cubic feet per minute at S.T.P. at about 1.5 atmospheres to form a fluidized bed of said carrier particles, introducing a solution or dispersion of coating material in a carrier liquid into said fluidized bed whereby said carrier particles are contacted with a cloud of atomized liquid droplets of said coating material in a disperse state resulting in a homogeneous distri-

bution of said liquid droplets among said carrier particles, and maintaining said fluidized bed of carrier particles at a temperature and for a time sufficient to volatilize and evaporate said carrier liquid.



3,940,515

DRY PROCESS FOR THE FINISHING OF ORGANIC MATERIAL

Fritz Mayer, Haltingen, Germany; Rudolf Keller, Riehen, and Werner Kuoz, Uerikoo, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 20, 1972, Ser. No. 316,805

Claims priority, application Switzerland, Apr. 7, 1972, 5135/72

Int. Cl.^{2} C08J *1/44;* **D06P** *7/00;* **B44C** *31/00*

U.S. Cl. 427—248 **7 Claims**

1. A dry process for the finishing of organic material, comprising the steps of

a. applying to an inert carrier a preparation containing a film-forming bonding agent which is stable below 250°C and at least one textile finishing agent selected from the group consisting of bacteriostats, fungistats, fungicides, antistatic agents, oil repellants, water repellants, handle-enhancing agents, and fire proofing agents which is transferable at atmospheric pressure above 80°C and below 250°C to the organic material,

b. contacting the treated side of the inert carrier with the surface of the organic material to be finished,

c. heating the inert carrier and the organic material in contact therewith to a temperature of above 80°C and below 250°C until a useful amount of the textile finishing agent has transferred to the organic material, and

d. separating the finished organic material from the inert carrier.

3,940,516

FIREPROOF INORGANIC PROTECTIVE COATING AND THE METHOD OF ITS PRODUCTION

Adam Gierek, Bryoow-Katowice; Stanislaw Pawlowski, Gliwice; Boleslaw Formanek, Bytom; Eugeniusz Piesiur, Chorzow; Grzegorz Pucka; Bogdan Blachnicki, both of Katowice; Jerzy Rychlewski, Chorzow, and Jaousz Gajda, Katowice, all of Poland, assignors to Politechnika Slaska im Wincentego Pstrowskiego, Gliwice, Poland

Filed Apr. 19, 1974, Ser. No. 462,536

Claims priority, application Poland, May 30, 1973, 162937

Int. Cl.^{2} B05D *3/02;* **C09D** *5/18*

U.S. Cl. 427—372 **3 Claims**

2. A method of producing a coated substrate comprising grinding to a grain size smaller than 0.5 mm (A) 5 to 15 percent by weight of a silicate oxide sinter or alloy comprising 50 to 65 percent by weight of Fe_2O_3 plus FeO in any weight proportion, 3 to 8 percent of CuO plus CuO_2 in any weight proportion, 2 to 7 percent by weight of CaO, 20 to 30 percent by weight of SiO_2, and 0 to 10 percent of other oxides selected from the group consisting of Al_2O_3, TiO, NiO, CoO, MgO, Na_2O and K_2O in any weight proportion and (B) 15 to 35 percent by weight of an anhydrous aluminosilicate substance in the natural state or which has been sintered at a temperature above 1,000°C, and said substance comprising 40 to 75 percent by weight of SiO_2, 10 to 45 percent by weight of Al_2O_3, 0 to 15 percent by weight of Fe_2O_2 plus FeO in any weight proportion, and 0 to 10 percent by weight of other oxides selected from the group consisting of TiO_2, CaO, MgO, Na_2O and K_2O in any weight proportion; mixing the ground material in a water solution of mono- or dibasic acid phosphates of aluminum, chromium, magnesium, or calcium or a mixture of said acid phosphates, the solution of acid phosphate having a density of 1.3 to 1.6 g/cc, and forming a suspensoid of said ground material in the solution; applying a coating of the suspensoid to the surface of a substrate and hardening the coating in air at a temperature from room temperature up to about 150°C.

3,940,517

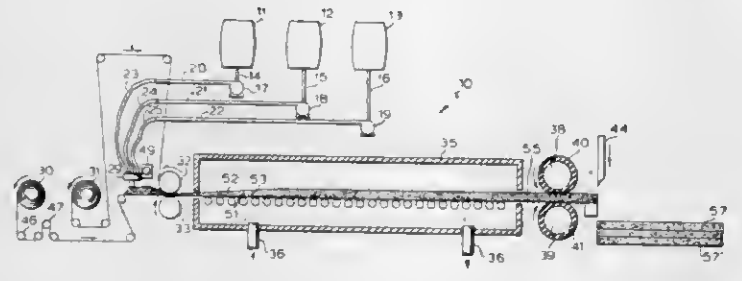
POLYISOCYANURATE FOAM, CATALYST COMPOSITION AND PROCESS FOR PRODUCING SUCH

Alberto DeLeon, St. Petersburg, Fla., assignor to The Celotex Corporation, Tampa, Fla.

Continuation of Ser. No. 322,841, Jan. 11, 1973, abandoned. This application Apr. 16, 1974, Ser. No. 461,271

Int. Cl.^{2} C08G *18/02*

U.S. Cl. 427—373 **13 Claims**



1. A process for producing a polyisocyanurate foam comprising the steps of:

I. admixing at one point from separate sources:

A. an organic polyisocyanate,

B. a diol having an equivalent weight of 30 to 100,

C. a catalytic composition comprising:

1. an alkali metal carboxylate which is a saturated aliphatic mono-carboxylic acid salt of an alkali metal,
2. polyoxyethylene polyol having a molecular weight between 150 and 450 in the presence of a blowing agent,

II. applying continuously the mixture comprising A, B, and C to a moving substrate, and then,

III. recovering the polyisocyanurate foam adhering to the substrate

wherein the equivalent ratio of A:B is 2:1 to 6:1, wherein the catalytic composition comprises from 0.01 to 5 weight percent of the polyisocyanurate foam.

3,940,518

BAKE TECHNIQUE FOR MANUFACTURING TETRAFLUOROETHYLENE COATED ROLLS

Edward F. Bowler, Jr., Webster; Joseph M. Stupin, Jr., Ontario, and Edward G. Williams, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 26, 1974, Ser. No. 464,384

Int. Cl.^{2} B05D *1/38;* **B30B** *3/00*

U.S. Cl. 427—379 **10 Claims**

1. A method for manufacturing a polymer coated roll for use in a xerographic reproducing apparatus comprising:

applying to the surface of the roll a tetrafluoroethylene primer;

drying the primer;

heating the primer-coated roll until the primer is baked;

applying to the surface of said roll a liquid coating consisting essentially of tetrafluoroethylene enamel;

drying said coating;

baking the coated roll at a temperature below the fusion temperature of tetrafluoroethylene resin;

applying at least one more additional liquid coating of tetrafluoroethylene enamel, drying, and baking of said coating after each application at a temperature below the fusion temperature of tetrafluoroethylene resin until the desired thickness of tetrafluoroethylene enamel on the surface is attained; and

heating the coated roll at a temperature sufficient to cause fusion of the tetrafluoroethylene coating.

3,940,519

PROCESS FOR SIZING CELLULOSE FIBRES

Karin Ulla Elisabet Helmer, and Berit Ingegärd Simonsson, both of Solna, Sweden, assignors to Kemaoord AB, Stockholm, Sweden

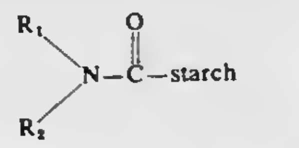
Filed May 15, 1974, Ser. No. 469,977

Claims priority, application Sweden, May 15, 1973, 7306875; May 15, 1973, 7306876; Mar. 13, 1974, 7403374

Int. Cl.^{2} C08B *19/06;* **D21D** *3/00, 3/20*

U.S. Cl. 427—395 **8 Claims**

1. A process for preparing hydrophobic paper products by bringing an aqueous suspension of cellulose fibers or a paper product into contact with a sizing agent and thereafter effecting drying, said sizing agent being a modified starch containing hydrophobic group having the general formula



$$\begin{matrix} R_1 & & \\ & N-\overset{\overset{O}{\|}}{C}-\text{starch} & \\ R_2 & & \end{matrix}$$

wherein R_1 is an organic, hydrophobic hydrocarbon group having 8 to 40 carbon atoms and R_2 is either a C_1–C_8 alkyl group or has the same meaning as R_1, said modified starch being prepared by reacting starch with a carbamoyl chloride having substituents R_1 and R_2 as defined above.

3,940,520

SULFO-FLUORINATION OF SYNTHETIC RESINS

Dale D. Dixon, Kutztown, and Larry J. Hayes, Trexlertown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 19, 1974, Ser. No. 443,460

Int. Cl.^{2} B05D *3/00*

U.S. Cl. 427—444 **5 Claims**

1. The process for improving the water transport or wicking properties of a synthetic polymer material which comprises sulfo-fluorinating the polymeric materials in a sealed reaction chamber by reacting said polymeric material with a self-activating gaseous medium comprising about 0.1 to about 20% by volume fluorine, 0.1 to about 50% by volume sulfur dioxide, not more than about 21% by volume oxygen, and the balance comprising inert gases for a time less than one hour and at a temperature for providing from $1 \times 10^{-9} \times 1 \times 10^{-3}$ mg fluorine and sulfur per square centimeter of polymeric material surface.

3,940,521

CHRISTMAS TREE ORNAMENT

Siegfried Hack, Toronto, Canada, assignor to The Raymond Lee Organization, Inc., a part interest

Filed Nov. 5, 1974, Ser. No. 520,988

Int. Cl.^{2} A47G *33/08*

U.S. Cl. 428—7 **2 Claims**

1. An ornament for Christmas trees, walls or the like which is to be detachably secured to a lamp bulb disposed on the tree, said ornament comprising:

a hollow decorated plastic member having a bulb receiving opening and an inside wall having an enlarged region; said region having a recess;

a horizontal cylinder having a tip at one end, said cylinder being disposed within the member with said tip being pivotally disposed in the recess; and

elongated clamping means secured to the other end of the cylinder within said member adjacent said opening to detachably receive and hold said lamp bulb, said means extending at right angles to said cylinder.

3,940,522

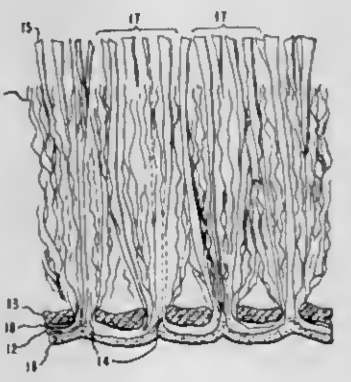
SYNTHETIC FIBERS AND PILE FABRICS MADE THEREFROM

John Humphrey Wessells, Signal Mountain, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 147,627, May 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 46,609, June 16, 1970, abandoned. This application Aug. 2, 1973, Ser. No. 384,952

Int. Cl.^{2} D03D *27/00;* **D04H** *11/00*

U.S. Cl. 428—17 **15 Claims**



1. Fabric comprising a backing and a multiplicity of fibers extending from said backing in the form of a cut pile layer and being secured thereto by an adhesive, said multiplicity of fibers comprising:

grass-like fibers comprising a rib and two webs which form a partially folded structure of bi-arcuate cross-section and having a denier per fiber of about 200 to 1500 and a major dimension of cross-section of at least about 0.02 inch, and

crimped fibers having a denier per fiber of about 6 to 150, with the proviso that:

1. said grass-like fibers and said crimped fibers each comprise at least about 10 weight percent of said multiplicity of fibers, and
2. the denier-per-fiber ratio of the said grass-like fibers to the said crimped fibers is greater than about 3:1.

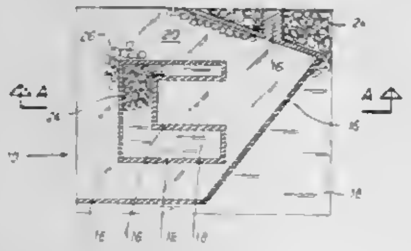
3,940,523
DECORATIVE MULTILAYER OBJECT

Georges Lecoeur, Thiers, and Henri Fontenille, Paris, both of France, assignors to Bercher S.A. Publicite Generale, Geneva, Switzerland

Continuation-in-part of Ser. No. 249,854, May 3, 1972, abandoned, Continuation-in-part of Ser. No. 249,854, May 3, 1972, abandoned. This application May 31, 1974, Ser. No. 475,245

Int. Cl.² B32B *3/18, 31/10, 31/12*

U.S. Cl. 428—38 **15 Claims**



1. A decorative object comprising
- a. a transparent support plate of polymethyl methacrylate, bearing at least on one surface,
- b. at least one decorative layer of polymethyl methacrylate coated on said support and consisting of horizontally separated zones of different colors,
- c. at least two transparent colorless vertical-barrier layer coatings of a cross-linked polymethyl methacrylate based composition, insoluble in monomeric and polymeric methyl methacrylate, the first layer being disposed between said support and said decorative layer and the second layer on the upper surface of said decorative layer, and
- d. horizontal-barrier elements consisting of strips cut from thermoplastic polyester sheets, said elements being fixed to said support plate by said first vertical-barrier layer and separating said horizontally adjacent differently colored zones of said decorative layer.

12. A method for manufacturing a decorative object, comprising the steps of
- a. providing a biplanar transparent support plate of polymethyl methacrylate,
- b. pouring thereon a solvent free liquid composition comprising monomeric methyl methacrylate with polymethyl methacrylate dissolved therein, a polyfunctional ester of methacyrlic acid, and a catlayst,
- c. curing said liquid composition at a temperature in the range of 15° to 40°C during 5 to 24 hours,
- d. placing on the surface of the cured liquid composition strips cut from a thin thermoplastic polyester sheet,
- e. fixing said strips by brushing with said liquid composition, and curing it,
- f. filling the horizontal spatial zones between said strips with a decorative composition comprising a solvent-free monomeric methyl methacrylate with polymethyl methacrylate dissolved therein, a catalyst and, if desired, a dyestuff or pigment,
- g. hardening said decorative composition at a termperature in the range of 15° to 40°C during 5 to 24 hours,
- h. pouring another liquid composition as in step (b) onto said hardened decorative composition, and
- i. curing this composition.

3,940,524
ARTICLE COMPRISING FOAM PLASTIC COVERED WITH AN OUTER SURFACE STRENGTHENING LAYER

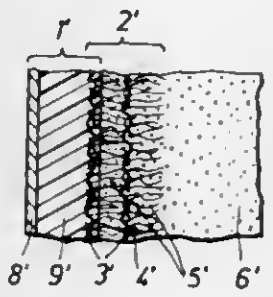
Peter Hoppe, Troisdorf; Gustav Drouveo, Bensberg-Moitzberg; Helmut Leyer, Opladen, and Johann Muller, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 250,942, May 8, 1972, abandoned. This application May 28, 1974, Ser. No. 473,958

Claims priority, application Germany, May 14, 1974, 2123975

Int. Cl.² B32B *5/18*

U.S. Cl. 428—86 **10 Claims**



1. In an article such as a structural member and the like having high static and dynamic strength values comprising a core of foamed material having bonded thereto at an outer portion thereof a bonded laminate composed essentially of an outer skin and a reinforcing insert comprising at least one mat-fiber fleece combination in which the mat and fiber fleece are joined so as to constitute a single unit, with the mat disposed adjacent the skin and the fiber fleece disposed adjacent the foamed core and the foamed core penetrating the fiber fleece, the improvement which comprises the material forming the skin penetrating from the skin, partially through the insert to an outer portion of the foamed core, and at least through the outermost mat so that the outermost mat is completely embedded in the material forming the skin.

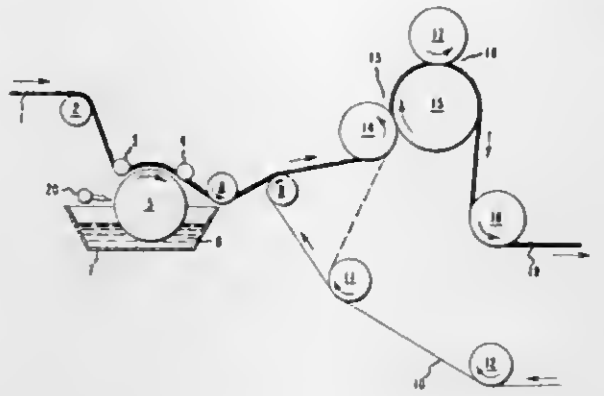
3,940,525
TUFTED CARPET HAVING A POLYOLEFIN FILM AS THE SECONDARY BACKING

Edward Cooper Ballard, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1974, Ser. No. 537,598

Int. Cl.² D03D *27/00;* **D04H** *11/00;* **D05C** *17/00*

U.S. Cl. 428—96 **14 Claims**



1. In a process for backsizing a tufted carpet having a primary textile backing and tufts of yarn protruding therefrom which comprises heating an ethylene/vinyl ester copolymer based hot melt adhesive backsizing composition to a temperature of about 160°F. to about 400°F., applying by a roll-coater a uniform coating of about 10–40 ounces per square yard of the composition in a molten state to the back side of the carpet while moving the carpet past the roll-coater, contacting the still molten adhesive coated back side of the carpet with a secondary backing, pressing the primary and secondary backings together and solidifying the adhesive, the improvement comprising the use of a polymer film, selected from the group consisting of polyethylene, polypropylene and ethylene/vinyl acetate copolymers having a vinyl acetate content of up to about 18% by weight as the secondary backing.

8. In a carpet comprising a primary backing stitched with closely spaced erect loops of yarn to form a tufted structure, an ethylene/vinyl ester copolymer based hot melt adhesive backsizing composition on the back side of said primary backing and a secondary backing adhered by said backsizing composition to said primary backing, the improvement comprising a secondary backing selected from the group consisting of polyethylene film, polypropylene film and ethylene/vinyl acetate copolymer film having a vinyl acetate content of up to about 18% by weight.

3,940,526
BRACED INSULATING ELEMENT AND METHOD FOR ITS MANUFACTURE

Houchang Fathi, Trondheim, Norway, assignor to Sintef, Trondheim, Norway

Filed May 15, 1974, Ser. No. 470,319

Claims priority, application Norway, May 15, 1973, 2006/73

Int. Cl.² B32B *3/12*

U.S. Cl. 428—117 **5 Claims**

1. A braced insulating element, particularly for use as a core material in a wall structure, said element comprising:
- a first plurality of parallelly spaced bracing members;
- a second plurality of parallelly spaced bracing members;
- said first and second pluralities of bracing members extending orthogonally and intersecting each other to form therebetween a plurality of closed quadrangular cells;
- each of said cells being filled by a building insulating material having low strength properties;
- said bracing members being rigid in directions of the respective planes thereof and individually flexible in directions perpendicular to said respective planes;
- said bracing members being continuously bonded to the respective adjacent insulating material;
- said element having a pair of major surfaces extending in planes perpendicular to said planes of said bracing members, said major surfaces being formed substantially by said insulating material; and
- said element having plural edge surfaces extending perpendicular to said major surfaces, each of said edge surfaces being formed by a bracing member.

3,940,527
FRICTION ARTICLE OF FLUOROELASTOMERS WITH CALCIUM OXIDE BONDED TO METAL

William D. Brandon, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 307,420, Nov. 17, 1972, abandoned. This application Oct. 19, 1973, Ser. No. 408,166

Int. Cl.² B32B *25/04, 25/02*

U.S. Cl. 428—141 **2 Claims**

1. A high shear and impact resistant friction article useful in clutch assemblies and brake assemblies, comprising a metallic back-up member, a roughened and oxidized surface comprising at least a portion of said metallic back-up member, and a fluoroelastomer selected from the group consisting of copolymers of hexafluoropropylene and vinylidene fluoride, and mixtures thereof, with from about 3 to about 15 parts of calcium oxide per hundred parts of fluoroelastomer evenly dispersed therethroughout, said fluoroelastomer being applied to said roughened oxidized surface and simultaneously cured and in the same operation directly bonded without use of a bonding agent other than said fluoroelastomer-calcium oxide dispersion to said roughened and oxidized surface.

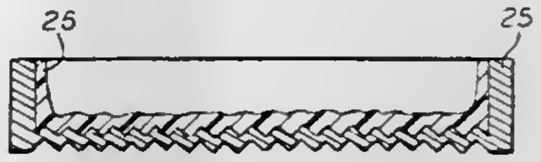
3,940,528
RIGID PLASTICS TILE WITH TEXTURED SURFACE

Arthur H. Roberts, 12 Lynnwood Drive, Westbury, N.Y. 11590

Division of Ser. No. 22,117, March 30, 1971, abandoned, which is a continuation of Ser. No. 526,605, Feb. 10, 1966, abandoned, which is a continuation-in-part of Ser. Nos. 455,764, May 14, 1965, Pat. No. 3,405,026, and Ser. No. 475,989, July 30, 1965, Pat. No. 3,414,456, and Ser. No. 523,778, Jan. 28, 1966, Pat. No. 3,419,455, and Ser. No. 526,667, Feb. 7, 1966, Pat. No. 3,420,729, said Ser. Nos. 455,764, Ser. No. 475,989, Ser. Nu. 523,778, and Ser. No. 525,667 being a continuation-in-part of Ser. No. 22,002, Apr. 13, 1960, abandoned. This application Dec. 17, 1971, Ser. No. 209,176. The portion of the term of this patent subsequent to Oct. 7, 1985, has been disclaimed.

Int. Cl.² B32B *1/00*

U.S. Cl. 428—161 **17 Claims**



1. A rigid composite impact resistant tile comprising a facing component and a backing component, the facing component being a premolded pliable organic plastic material having a textured front surface and a wall thickness ranging from about 15½ mils to about 250 mils, the backing component being a rigid structural member that is in supporting relationship to the facing component, rigidly maintaining the latter in its premolded shape, said backing component being solidified from a fluid state in intimate adherent contact with the entire rear surface of the facing component, said composite tile having a thickness of from about 1/16 of an inch to about 2 inches, said facing component, when free of the backing component, being itself at least temporarily deformable by hand pressure and being essentially void-free and having been premolded to its final shape and its final and textural characteristics, said premolded textured front surface of the facing component having a texture which embodies in a positive form the texture of its negative mother mold, wherein the completed tile is free of composite sidewalls at its extremities that would have rear surfaces which would define a cavity with the rear surface of the composite front wall of the tile, and wherein the backing component comprises a plastic material which is a member of the class consisting of (a) a rigid polyester composition, (b) a rigid epoxy resin composition, (c) a rigid elastomer composition comprising a filler and an elastomer, wherein there is at least about 200 weight parts of filler for each 100 weight parts of elastomer, (d) a rigid thermosetting plastic foam composition in a thermoset state, and (e) asphalt, said polyester composition comprising the condensation product of a dibasic acid and a diol and also comprising a cross-linking monomer reactant in a crosslinked state.

3,940,529
NON-NESTED TWO-PLY ABSORBENT FIBROUS SHEET MATERIAL

Richard R. Hepford, Folcroft, Pa., and Clifford J. Roberts, Jr., Turnersville, N.J., assignors to Scott Paper Company, Philadelphia, Pa.

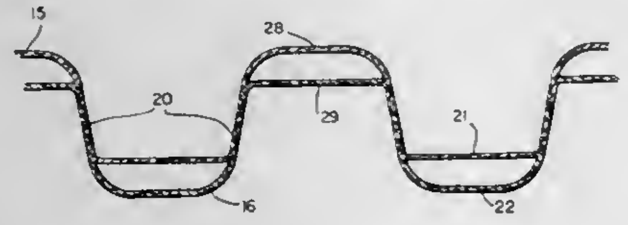
Filed July 5, 1973, Ser. No. 376,383

Int. Cl.² B32B *3/00, 3/28*

U.S. Cl. 428—178 **10 Claims**

1. A soft, absorbent, fibrous sheet material of papermaking fibers comprising:
- two webs joined together with inner surfaces facing each other, each web having a plurality of crests and depressions on its inner surface,
- the crests on each web being positioned between the crests on the other web and extending beyond the crests on the

other web toward and spaced from the depressions on the other web, and



the two webs being connected to each other at locations intermediate the crests and depressions on at least one of the webs.

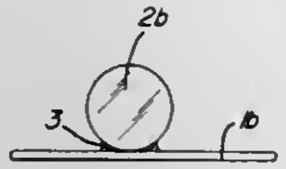
3,940,530
SUPPORT MEDIA WITH SUPPORTED OBJECT

William E. Loeb, Martinsville, and Mark A. Spivack, Wachtung, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 256,531, May 24, 1972, Pat. No. 3,864,202, which is a division of Ser. No. 167,252, July 29, 1971, abandoned. This application Nov. 25, 1974, Ser. No. 527,159

Int. Cl.^{2} B32B *3/16, 5/16;* **G01N** *3/56*

U.S. Cl. 428—206 1 Claim



1. An article of commerce which is a simulated rain field consisting essentially of an essentially flat film of p-xylylene polymer having a thickness of up to about 25,000 A and wholly supporting one or more discrete objects which are bonded thereto on at least one face thereof, said objects being in the form of encapsulated liquid droplets, the total surface area of said objects facing said film being less than the total surface area of the supporting face of said film, said supported objects being ohmically isolated with respect to non-supported objects; each of said objects having a particle size of up to about 5 millimeters and supported on said film so as to cover up to about 80 per cent of the surface of said field.

3,940,531
STAIN DECORATED GLASS-CERAMIC ARTICLE

Henry M. Demarest, Jr., Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 340,513, March 12, 1973, Pat. No. 3,852,052. This application Sept. 3, 1974, Ser. No. 502,575

Int. Cl.^{2} B32B *7/02, 17/00*

U.S. Cl. 428—207 1 Claim

1. A stain-decorated glass-ceramic article comprising:

a solid body of fine-grain crystals dispersed in a glassy matrix, the crystals forming the major portion thereof, and including silica, alumina, lithia, and a crystal-nucleating agent, but substantially free of arsenic and antimony oxides;

a tin-penetrated zone extending into said body at least 5 microns from at least one surface of said body and in which the tin ion concentration is greater than that in interior portions of said body;

a colorant-penetrated zone extending into said body from 1 to 40 mils from portions of said at least one surface of said body and in which the concentration of colorant, selected from the group consisting of platinum, palladium, silver, and gold, is greater than in interior portions of said body.

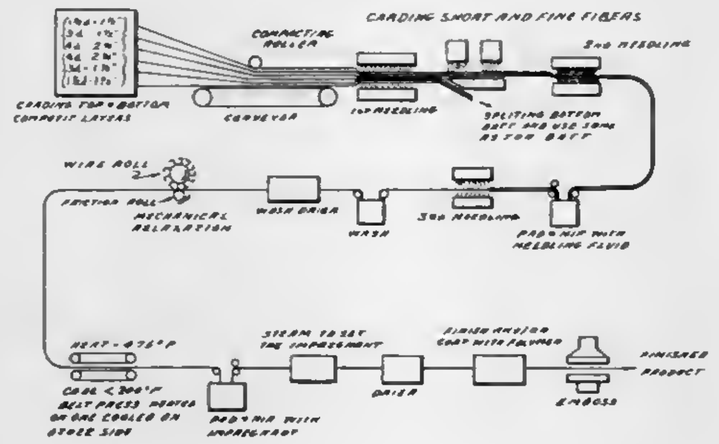
3,940,532
NEEDLED TEXTILE FABRIC WITH A THIN POLYMERIC COATING THEREON

Alexander M. Smith, II, Elkin, N.C., assignor to The Fiberwoven Corporation, Elkin, N.C.

Division of Ser. No. 221,614, Jan. 28, 1972, Pat. No. 3,817,820. This application Apr. 2, 1974, Ser. No. 457,351The portion of the term of this patent subsequent to June 18, 1991, has been disclaimed.

Int. Cl.^{2} B32B *5/06, 5/22*

U.S. Cl. 428—218 37 Claims


CARDING SHORT AND FINE FIBERS
COMPACTING ROLLER
2ND NEEDLING
CARDING TOP + BOTTOM COMPOSIT LAYERS
CONVEYOR
1ST NEEDLING
SPLITING BOTTOM BATT AND USE SAME AS TOP BATT
WIRE ROLL
FRICTION ROLL
MECHANICAL RELAXATION
WASH DRIER
WASH
3RD NEEDLING
PAD & NIP WITH NEEDLING FLUID
HEAT
STEAM TO SET THE IMPREGNANT
FINISH AND/OR COAT WITH POLYMER
FINISHED PRODUCT
COOL
BELT PRESS HEATED ON ONE COOLED ON OTHER SIDE
PAD & NIP WITH IMPREGNANT
DRIER
EMBOSS

1. An artificial leather comprising

1. a needled textile fabric base of high bulk density and a controlled axis of flexure and being composed of needled textile fibers coherently entangled into an integral structure with a face surface and back surface, said structure having an overall bulk density of at least 6 pounds per cubic foot and a bulk density gradient wherein the bulk density increases from the back surface to the face surface, said needled structure having an axis of flexure which lies within about 0.4 of the distance from the face surface to the back surface; and

2. a polymeric coating disposed on the face surface of the said fabric base and where the thickness of the coating is from 4 to 20 mils.

3,940,533
METHOD OF ATTACHING METAL COMPOUNDS TO POLYMER ARTICLES

Andre Arsac, Millery, France, assignor to Rhone-Poulenc-Textile, France

Filed Apr. 20, 1973, Ser. No. 353,730

Claims priority, application France, Apr. 24, 1972, 72.14762

Int. Cl.^{2} D04B *1/00;* **B05D** *5/12*

U.S. Cl. 428—225 7 Claims

1. A method for improving the antistatic properties of a fiber selected from the group consisting of polyamide, polyester, polyamide-imide and aromatic polyamide fibers, which comprises treating the fiber with hydrogen sulfide under a pressure slightly over atmospheric or with an aqueous bath of thioacetamide or thiourea and thereafter impregnating the resulting product by immersing it in an aqueous solution containing a water soluble salt of copper, silver, tin, lead or mercury which will react with the said sulfur compound and form an electrically conductive deposit on the said fiber.

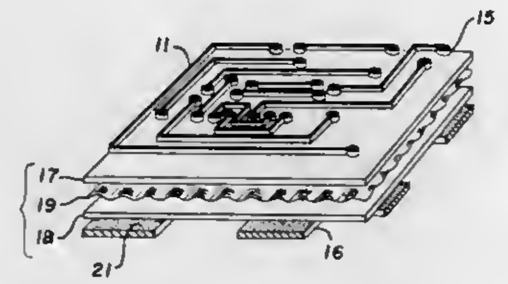
3,940,534
ELECTRICAL LAMINATE

Herbert J. Fick, Northfield, and Edward J. Mahagnoul, Faribault, both of Minn., assignors to G. T. Schjeldahl Company, Northfield, Minn.

Continuation-in-part of Ser. No. 413,695, Nov. 7, 1973, abandoned. This application Aug. 5, 1974, Ser. No. 494,771

Int. Cl.^{2} B32B *17/12*

U.S. Cl. 428—228 8 Claims



1. In laminate means for electrically isolating and supporting an electrically conductive metallic layer; the laminate consisting of at least one electrically conductive layer disposed upon a substrate surface, the substrate portion comprising, in combination:

a. woven glass cloth base pad means interposed between a pair of outer substrate layers of polyester mat, said woven glsss cloth consisting essentially of glass filamentary fibers with a thickness of between about 1 and 5 mils, and woven together to form a fabric;

b. said polyester mat comprising a mat of spunbonded continuous filamentary polyester fibers with the fibers having a bulk fiber content of between about 85% to 92% of first polyester fibers consisting essentially of oriented polyethylene terephthalate with a certain first melting point, balance of a second thermoplastic polyester fibers consisting essentially of non-oriented polyethylene terephthalate and having a significantly lower melting point than said first polyester fibers, and with said polyester mat having a weight of between about 20 and 30 grams per square yard.

3,940,535
REVERSIBLE MOISTURE-VAPOR-ABSORPTIVE SHEET STRUCTURES AND PROCESS

Rudolf Gaeth, Limburgerhof, and Roland Linke, Weinheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Nov. 21, 1973, Ser. No. 418,068

Claims priority, application Germany, Nov. 23, 1972, 2257393

Int. Cl.^{2} D03D *25/00;* **D04H** *13/00*

U.S. Cl. 428—260 9 Claims

1. A process for the manufacture of reversibly moisture-vapor-absorptive sheet material which comprises:

a. applying an aqueous solution of a water-soluble vinyl ether polymer to a base material which is gas permeable; whereby said base material is impregnated with said aqueous solution;

b. heating said impregnated base material sufficiently to cause said water soluble vinyl ether polymer to precipitate from said solution whereby said polymer is fixed in said base material;

c. cross-linking said vinyl ether polymer; and

d. drying said sheet material, the amount of water soluble vinyl ether polymer applied to said base in a) being sufficient to produce a final sheet material containing from 10 to 70% by weight of said polymer.

3,940,536
MECHANICALLY REINFORCED HIGH POROSITY PARTIALLY FUSED GLASS FIBER GALVANIC SEPARATOR

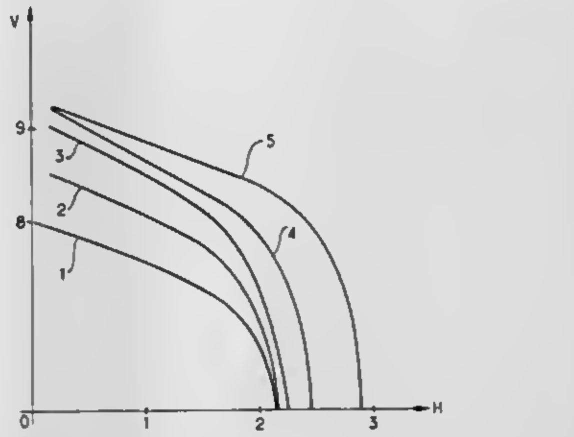
Johann Pitsch, and Pierre Lasserre, both of Nanterre, France, assignors to Compagnie Europeenne d'Accumulateurs, Paris and Societe Fulmen, Clichy, both of, France

Filed July 3, 1973, Ser. No. 376,245

Claims priority, application France, July 3, 1972, 72.24031

Int. Cl.^{2} D04H *1/58*

U.S. Cl. 428—288 5 Claims



1. In a separator for a galvanic element comprising glass fibers agglomerated by partial fusion and having a diameter of a few microns, the improvement comprising: a thermal hardened coating on said agglomerated fibers, said coating consisting of grains of thermo-hardened, synthetic material immersed in a natural or synthetic latex; said synthetic material and said natural or synthetic latex being in sufficient amount such that said thermal hardened coating of grains of thermo-hardened synthetic material immersed in said natural or synthetic latex acts to mechanically reinforce the knots in the glass fiber network resulting from partial fusion of the glass fibers without blocking the pores of the partially fused fiber network.

3,940,537
FIBROUS MATS

Joseph P. Burns, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.

Filed July 12, 1973, Ser. No. 378,442

Int. Cl.^{2} D04H *1/58;* **B32B** *5/16;* **D04H** *1/60*

U.S. Cl. 428—288 8 Claims

1. A styrene insoluble fibrous mat comprising a fibrous material and a binder resin, said resin comprising the single step reaction product of

a. a first alpha-beta ethylenically unsaturated monomer selected from the group consisting of styrene, vinyl esters, vinyl chloride, lower alkyl methacrylates, lower alkyl acrylates, lower alkyl itaconates, lower alkyl maleates, and lower alkyl fumarates;

b. a second alpha-beta ethylenically unsaturated monomer selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, maleic acid, fumaric acid, maleamic acid, maleamide, furamide, N-monoalkyl/aryl substituted amides, hydroxyethyl acrylate, and hydroxypropyl methacrylate; and

c. a modifier selected from the group consisting of epoxy resins, melamine formaldehyde resins, and urea formaldehyde resins; wherein the amount of binder resin is equal to from about 3 percent to about 8 percent by weight based on the total weight of said mat and said binder resin comprises from about 75% to about 98% by weight of said first monomer, from about 1% to about 10% by weight of said monomer, and from about 1% to about 15% by weight of said modifier.

4. A method of preparing a styrene insoluble fibrous mat, said method comprising

a. preparing a mat comprising a fibrous material and a binder resin, wherein the amount of binder resin is equal to from about 3 percent to about 8 percent by weight based on the total weight of said mat, said resin comprising a mixture of

  i. from about 75% to about 98% by weight of a first alpha-beta ethylenically unsaturated monomer selected from the group consisting of styrene, vinyl esters, vinyl chloride, lower alkyl methacrylates, lower alkyl acrylates, lower alkyl itaconates, lower alkyl maleates, and lower alkyl fumarates;

  ii. from about 1% to about 10% by weight of a second alpha-beta ethylenically unsaturated monomer selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, maleic acid, fumaric acid, maleamic acid, maleamide, furamide, N-monoalkyl/aryl substituted amides, hydroxyethyl acrylate, and hydroxypropyl methacrylate; and

  iii. from about 1% to about 15% by weight of a modifier selected from the group consisting of epoxy resins, melamide formaldehyde resins, and urea formaldehyde resins; and

b. heating said mat to a temperature of from 150°C. to about 250°C. for a time sufficient to cure said mat to a styrene insoluble state.

3,940,538

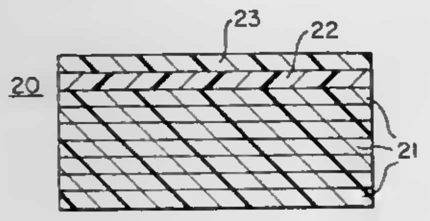
DECORATIVE MELAMINE LAMINATES WITH HIGH YIELD CORE STOCK

Salvatore E. Palazzolo, Hampton, and Harold O. McCaskey, Jr., Allendale, both of S.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 1, 1972, Ser. No. 285,697

Int. Cl.^{2} B32B *5/14, 5/26, 5/28;* **D21H** *5/14*

U.S. Cl. 428—318 **10 Claims**



1. A high pressure decorative laminate comprising a unitary consolidated combination of (1) a melamine formaldehyde resin impregnated decorative paper layer bonded to (2) a base of a plurality of core sheets impregnated with a phenol formaldehyde resin, at least a portion of the core sheets having an apparent density of about 2.7–3.1 and an air porosity of about 5–15 seconds and having an essentially homogeneous distribution of both hardwood and softwood cellulosic fibers and essentially free of wood slivers containing from about 8 up to 15 percent total lignin based on total weight, at least about 65 percent of said fibers being hardwood fibers, a major portion of said lignin being hardwood lignin, the softwood lignin not exceeding about 2.8 percent of the total weight.

3,940,539

PRESSURE-SENSITIVE RECORDING SHEET

Tsukasa Horinouchi, Chigasaki; Setsuya Egawa, and Masahiro Sakamoto, both of Kanagawa, all of Japan, assignors to NCR Corporation, Dayton, Ohio

Filed June 6, 1974, Ser. No. 477,122

Claims priority, application Japan, Oct. 31, 1973, 48-121832

Int. Cl.^{2} B41M *5/02, 5/12*

U.S. Cl. 428—323 **16 Claims**

1. A smudge-resistant pressure-sensitive sheet recording system having at least one surface and four components for producing a colored mark on application of pressure, comprising:

  i. solid polymeric color-developing material located on a surface of the recording system;

  ii. colorless, color-forming material reactive with (i) to yield a colored mark;

  iii. liquid solvent including (ii) dissolved therein, having only a weak affinity for (i) and contained in a multitude of microcapsules located on a surface of the recording system;

  iv. liquid solvent miscible with (iii), having a strong affinity for (i) and contained in a multitude of microcapsules located on a surface of the recording system;

the microcapsules containing (ii) and (iii) having droplets of liquid with an average diameter of about 1 to 3 microns greater than the average diameter of droplets in the microcapsules containing (iv) and;

the components being contiguously located in the recording system such that when a microcapsule containing (ii)) and (iii) is ruptured, released liquid contacting (i) nevertheless forms insignificant color due to lack of affinity of (iii) for (i) and when a microcapsule containing (iv) is ruptured, released liquid contacting (i) forms insignificant color because no (ii) is present and when microcapsules containing (i) and (iii) and microcapsules containing (iv) are ruptured, (ii), (iii), and (iv) combine and, on contact with (i), yield a colored mark.

8. A smudge-resistant pressure-sensitive sheet recording system having at least one surface and four components for producing a colored mark on application of pressure, comprising:

  i. solid polymeric color-developing material located on a surface of the recording system;

  ii. colorless, color-forming material reactive with (i) to yield a colored mark;

  iii. liquid solvent selected from the group consisting of castor oil, esters of trimellitic acid, chlorinated paraffin, esters of phthalic acid, diphenylether, diisopropylnaphthalene and hydrogenated terphenyl, including (ii) dissolved therein, having only a weak affinity for (i) and contained in a multitude of microcapsules located on a surface of the recording system;

  iv. liquid solvent selected from the group consisting of diarylmethane, diarylethane, monoisopropylnaphthalene, esters of maleic acid, triaryldimethane and lower-alkyl diphenyl, miscible with (iii), having a strong affinity for (i) and contained in a multitude of microcapsules located on a surface of the recording system;--

the components being contiguously located in the recording system such that when a microcapsule containing (ii) and (iii) is ruptured, released liquid contacting (i) nevertheless forms insignificant color due to lack of affinity of (iii) for (i) and when a microcapsule containing (iv) is ruptured, released liquid contacting (i) forms insignificant color because no (ii) is present and when microcapsules containing (ii) and (iii) and microcapsules containing (iv) are ruptured, (ii), (iii), and (iv) combine and, on contact with (i), yield a colored mark.

3,940,540

NON-SLIP BUILT-UP ROOFING

Robert J. Schmidt, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 4, 1971, Ser. No. 103,846

Int. Cl.^{2} B32B *9/00, 11/00;* **C09J** *3/30;* **E04B** *2/00*

U.S. Cl. 428—332 **14 Claims**

1. In a built-up roof using at least two layers of asphalt-precoated felts in layers, the improvement comprised of said layers bound together by at least one binding layer of the residuum of an aqueous latex modified bituminous emulsion, in which (1) the weight ratio of the latex solids to bitumen is in the range of from 1:2.0–30 and (2) said binding layer has a thickness of from about 0.002 to about 0.01 inch.

3,940,541

METHOD FOR THE PRODUCTION OF A DECORATIVE GYPSUM BOARD

Shiosaku Kanatsu, and Akira Takahara, both of Tokyo, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed June 6, 1973, Ser. No. 367,494

Int. Cl.^{2} B32B *31/12*

U.S. Cl. 428—342 **5 Claims**

1. Decorative gypsum board which comprises gypsum sandwiched between sheets of gypsum board card paper, at least one of said sheets comprising a low-weight basis decorative paper coated with 1–5 g/m^2 based upon the solid component of a urethane resin and laminated to gypsum board card paper.

3. In the production of decorative gypsum board wherein a hemihydrate gypsum slurry is placed between sheets of gypsum board card paper, at least one of which is decorative, and dried to produce said board, the improvement comprising coating low-weight basis decorative paper with a urethane resin in an amount of 1–5 g/m^2 based on the solid component, drying the resin-coated paper, laminating the resultant paper to a gypsum board card paper, and utilizing said laminated paper as the decorative card paper upon which the slurry is placed.

3,940,542

POLYURETHANE HYDROGEL FIBERS AND TAPES AND COMPOSITES WITH NATURAL AND OTHER SYNTHETIC FIBERS OR FILMS

Robert John Knopf, St. Albans; Virgil Edison Matthews, and Allen Paul Jones, Jr., both of Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 18, 1974, Ser. No. 480,566

Int. Cl.^{2} B32B *27/08;* **C08G** *18/14;* **B32B** *27/40*

U.S. Cl. 428—364 **46 Claims**

1. An article of manufacture comprising a composite of (I) a tape or fiber of a water swellable, lightly crosslinked, hydrogel polymer of the isocyanato terminated prepolymer comprising the reaction product of:

  i. a poly(alkyleneoxy) polyol having an average molecular weight up to about 25,000 wherein the alkyleneoxy group contains from 2 to 4 carbon atoms, and

  ii. an organic diisocyanate, said prepolymer lightly crosslinked with an equivalent amount of a crosslinking agent of the group:

  iii. water or organic polyamine; wherein said poly(alkyleneoxy) polyol is a mixture of a major amount of a poly(ethyleneoxy) diol having an average molecular weight of from about 4,000 to about 25,000 and a minor amount of a higher polyol of the group poly(alkyleneoxy) triol or poly(alkyleneoxy) tetrol or aliphatic polyhydroxyl compound of the formula $C_nH_{2n+2-m}(OH)_m$ wherein n has a value of 3 to 6 and m has a value of 3 to 4 or mixtures thereof, said triol or tetrol having an average molecular weight of from about 92 to 5,000 wherein the mole ratio of diol to higher polyol in said mixture is from about 6:1 to 40:1; wherein the equivalents ratio of isocyanato groups to hydroxyl groups is from about 1.2:1 to about 1.6:1; wherein the organic polyamine is a primary or secondary diamine or triamine and wherein the equivalents of reactive crosslinking groups in said crosslinking agent used in equivalent to the number of equivalents of isocyanato groups present in said prepolymer; in combination with (II) a natural or a different synthetic fiber or film.

3,940,543

UNITARY SPUN COMPOSITE FILAMENT

Kazuya Chimura; Takashi Kaneko; Shunichi Takashima; Masao Kawashima, and Ryuichi Nakazono, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1973, Ser. No. 388,164

Claims priority, application Japan, Aug. 14, 1972, 47-81306

Int. Cl.^{2} D02G *3/04*

U.S. Cl. 428—373 **10 Claims**

1. A unitary spun composite filament consisting essentially of (*a*) a block copolymer, as the first component, having a melting point of not lower than 170°C and consisting essentially of 35 to 80% by weight of a polyester, as the hard segment, containing not less than 80% by mole of a tetramethylene terephthalate unit and 20 to 65% by weight of units derived from polytetramethyleneether glycol having a molecular weight of 500 to 5000 and (*b*) a polyester, as the second component, containing not less than 80% by mole of a tetramethylene terephthalate unit, said components (*a*) and (*b*) being present in the filament in a side-by-side relationship and bonded together.

3,940,544

PRODUCTION OF POLYESTER YARN

Robert Moore Marshall, Chester, and Kimon Constantine Dardoufas, Richmond, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 28, 1974, Ser. No. 484,055

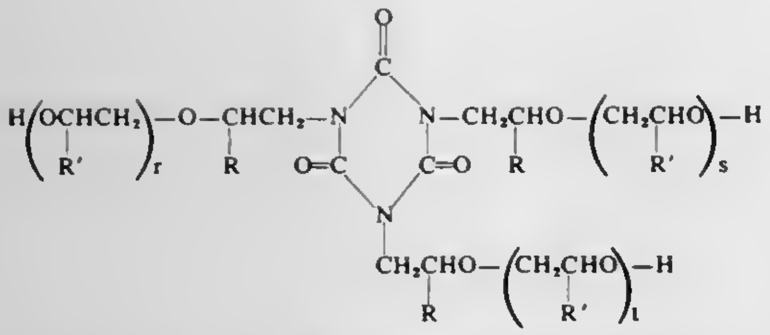
Int. Cl.^{2} B29H *9/02;* **B32B** *25/02, 27/02*

U.S. Cl. 428—378 **3 Claims**

1. A synthetic filamentary yarn comprised of polyethylene terephthalate filaments having a carboxyl end group content of less than 25 meq./kg., which are first treated with from about 0.3 to about 0.6 weight percent based on the weight of the yarn of a liquid finish composition consisting essentially of about 10 to about 20 weight percent of said composition of each hexadecyl stearate and refined coconut oil, about 3.0 to about 6.0 weight percent of said composition of ethoxylated tallow amine, about 10 to about 20 weight percent of said composition of ethoxylated lauryl alcohol, about 8.0 to about 12.0 weight percent of said composition of sodium salt of alkylaryl sulfonate, about 1.0 to about 3.0 weight percent of dinonyl-sodium-sulfo-succinate, about 1.0 to about 3.0 weight percent of said composition of 4,4'-thio-bis-(3-methyl-6-tert-butylphenol), about 35 to 50 weight percent of said composition of white mineral oil having a boiling point of between 510° and 620° F. wherein at least about 0.15 to about 0.30 weight percent is retained on said yarn, and then said yarn is treated with 0.5 to 1.5 weight percent based on the weight of the yarn of a finish composition consisting essentially of a polyalkylene glycol compound having the formula

$$R-(O-R_1-O-R_2)_n-OH$$

where R_1 and R_2 are the same or different alkylene units having 1 to 5 carbon atoms, R is an alkyl group containing 1 to 8 carbon atoms, and n has a value to produce a molecular weight of 300 to 600; about 5 to 35 parts per 100 parts by weight of said polyalkylene glycol compound of a triol compound having the formula



wherein R and R′ are independently at each occurrence hydrogen, methyl or ethyl and *r*, *s*, and *t* are integers from 1 to about 20; and 1 to 6 parts per 100 parts by weight of the polyalkylene glycol compound of a polyepoxide compound having at least two epoxy groups, a melting point below 150° C. and a molecular weight below 3,000.

3,940,545

PROCESS FOR BINDING SILICEOUS FIBERS

A. Carey Williams, P.O. Box 16347 Bel Air Station, Mobile, Ala. 36616

Division of Ser. No. 276,314, July 31, 1972, Pat. No. 3,827,900. This application May 23, 1974, Ser. No. 472,830

Int. Cl.^{2} B32B *9/00;* **D02G** *3/00*

U.S. Cl. 428—392 **9 Claims**

1. Process for reducing the static charge and binding siliceous fibers, said process comprising first forming an aqueous composition comprising about 30 to about 70 percent by weight of water, 1 part of at least 1 lower alkanol of 1 to 4 carbon atoms, about 0.8–4 parts of at least 1 polybasic water-soluble acid having 2 or 3 acidic groups per molecule and a molecular weight of less than about 250, about 1–5 parts by weight of a lower alkylene polyol or poly(lower alkylene glycol), and about 0.1–1 parts of at least 1 water-soluble siliconate which reduces the surface tension of pure distilled water by at least 50 percent when used in an amount of 0.4 weight percent therein, wherein said lower alkanol and said lower alkylene polyol or poly(lower alkylene glycol) are mixed together prior to the addition thereto of said polybasic acid, applying the resulting composition to siliceous fibers at a temperature from about 35° to about 100°F in an amount corresponding to at least 1 oz. of said composition per 30 lbs. of siliceous fibers, and then drying said fibers to form a dried coating of said composition thereon.

3,940,546

CHLORINATED SILICEOUS MATERALS AS FILLERS AND REACTANTS

Jean Mercier, Kessel-Lo; Marc Della Faille, La Neuve Cour, and Claude Bleiman, Kessel-Lo, all of Belgium, assignors to Gerdec, Paris, France

Division of Ser. No. 270,625, July 11, 1972, Pat. No. 3,839,062. This application Mar. 11, 1974, Ser. No. 449,683

Claims priority, application France, July 13, 1971, 71.25714

Int. Cl.^{2} B05D *5/00;* **B32B** *9/04*

U.S. Cl. 428—446 **15 Claims**

1. A process which comprises reacting a chlorinated mineral with at least one polymerizable monomer in the presence of a free radical initiator, said chlorinated mineral having a siliceous framework of a phyllosilicate in which 5–80% by weight of the octahedral layers are removed and chlorine atoms linked to the said framework through Si—Cl bonds.

3,940,547

ADHESIVE POLYOLEFIN COMPOSITION

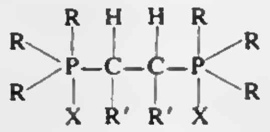
Donald G. Needham, and Ray D. Griffin, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 2, 1973, Ser. No. 412,282

Int. Cl.^{2} B32B *15/08, 27/06, 27/30*

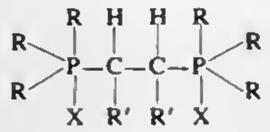
U.S. Cl. 428—463 **28 Claims**

1. A laminate comprising a first layer of a first material selected from the group consisting of suitable metals, elastomers, resins, and combinations thereof and a second layer bonded to said first layer, said second layer being formed of a composition comprising a polyolefin, an acetylenic diperoxy crosslinking agent, a halogenated phosphorus-nitrogen compound represented by the formula



where R′ is selected from the group consisting of hydrogen and alkyl radicals having 1 to 3 carbon atoms, R is a cyano alkyl radical having 2 to 6 carbon atoms, and X is chlorine, bromine, or iodine; ammonium polyphosphate having at least 45 percent of phosphate in the form of polyphosphates; and dimer of hexachlorocyclopentadiene; said first material being a material to which said composition of said second layer will adhere.

10. The process of bonding a suitable first surface to a suitable second surface, said process comprising combining a polyolefin, an acetylenic diperoxy crosslinking agent, ammonium polyphosphate having at least 45 percent of phosphate in the form of polyphosphates, dimer of hexachlorocyclopentadiene, and a halogenated phosphorus-nitrogen compound represented by the formula



where R′ is selected from the group consisting of hydrogen and alkyl radicals having 1 to 3 carbon atoms, R is a cyano alkyl radical having 2 to 6 carbon atoms, and X is chlorine, bromine, or iodine; depositing the thus-prepared polyolefin composition between said suitable first surface to which it is capable of adhering and said suitable second surface to which it is capable of adhering; heating said polyolefin composition, said first surface, and said second surface to a temperature above the melting point of said polyolefin composition; maintaining said polyolefin composition, said first surface, and said second surface at said temperature for a period of time sufficient to permit a crosslinking reaction to take place; and cooling said polyolefin, said first surface, and said second surface.

3,940,548

SURFACE TREATMENT OF RUBBER ARTICLES WITH AN ALKYL HYPOHALITE

Yoshihiro Todani, Kamakura, and Toshio Ohkawa, Yokohama, both of Japan, assignors to Nippon Zlln Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 290,409, Sept. 19, 1972, abandoned. This application Feb. 26, 1974, Ser. No. 445,894

Int. Cl.^{2} B32B *25/04, 25/12*

U.S. Cl. 428—492 **14 Claims**

1. A process for treating the surfaces of shaped articles of rubber, which comprises contacting the surfaces of shaped articles of rubber containing carbon-to-carbon unsaturated double bonds, with an alkyl hypohalite selected from one of

the group consisting of C_{1-5} alkyl hypohalites and halo- C_{1-5} alkyl hypohalites.

3,940,549

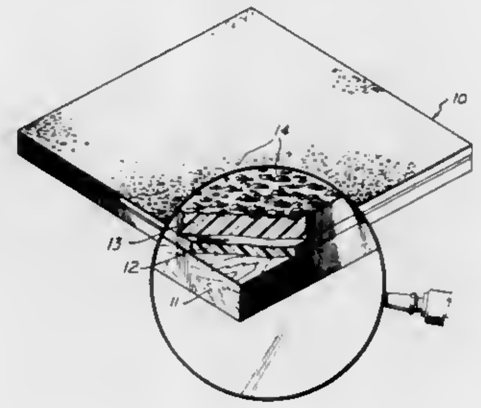
FIRE-RESISTANT RESIN

Howard A. Whittum, Worcester, and Michael J. Hjelm, Ashby, both of Mass., assignors to Advance Coatings Co., Westminster, Mass.

Filed Mar. 30, 1973, Ser. No. 346,354

Int. Cl.^{2} B32B *27/30*

U.S. Cl. 428—500 **13 Claims**



1. A fire-resistant product comprising a flammable substrate and a layer of fire-retardant material bonded to the surface of the substrate, said material resulting from polymerization of a mixture comprising from 4–50 wt.% of a first monomer chosen from the group consisting of hydroxy ethylacrylate, hydroxy propylacrylate, hydroxy butylacrylate, ethylene glycol monoethyl ether acrylate and diacetone acrylamide, from 0–50 wt.% of an alkyl methacrylate monomer, and from 30–70 wt.% of a chlorinated paraffin containing from 40–75 wt.% chlorine and including a heat intumescents substance.

3,940,550

ULTRAFINE NATURAL CALCIUM CARBONATES AS COATING PIGMENTS IN COATED PAPERS

Pierre Delfosse, Paris, France, and Alfred Bosshard, Oftringen, Switzerland, assignors to Pluss-Staufer AG, Switzerland

Filed Oct. 15, 1973, Ser. No. 406,430

. Claims priority, application Germany, Oct. 18, 1972, 2251099

Int. Cl.^{2} B32B *23/08, 27/10*

U.S. Cl. 428—511 **13 Claims**

1. Paper coated with a composition comprising an ultrafine natural calcium carbonate as a pigment, said pigment having an average statistical particle diameter of from 0.5 to 0.7 μm, a maximum diameter of from 3.0 to 4.0 μm, and a specific surface area of at least 12 sq.m./g.

3,940,551
APPARATUS AND METHOD FOR THE MELT REDUCTION OF IRON OXIDES

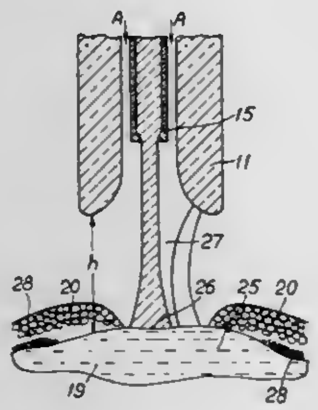
Bernt Ling, and Bjorn Widell, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Mar. 28, 1974, Ser. No. 455,949

Claims priority, application Sweden, Mar. 30, 1973, 7304515

Int. Cl.² H05B *7/20*

U.S. Cl. 13—9 R **7 Claims**



1. An apparatus for the melt reduction of iron oxide material and comprising a hearth having an electrically conductive lower portion, a tubular electrode extending downwardly towards said hearth and having a lower end, means conducting direct current to said conductive portion and to said electrode with the latter forming a cathode and causing the formation of a melt meniscus extending above the level of a melt in said hearth and positioned beneath the lower end of said electrode, and means for feeding iron oxide material in particle form through said electrode and its said lower end so as to fall on said meniscus.

3,940,552
WATER-COOLED PANEL FOR ARC FURNACE

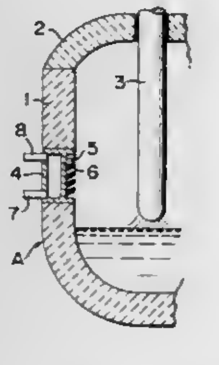
Susumu Mizuno, Nagoya, Japan, assignor to Daido Seiko Kabushiki Kaisha, Japan

Filed Jan. 17, 1975, Ser. No. 541,925

Claims priority, application Japan, Jan. 23, 1974, 49-10713[U]

Int. Cl.² F27D *1/04*

U.S. Cl. 13—35 **2 Claims**



1. A water-cooled panel of an arc furnace so as to form a portion of the furnace wall, characterized in that the panel has an outer surface exposed to the inside of the arc furnace, said exposed surface being provided with a plurality of fins, said fins being welded to said exposed surface and being upwardly inclined and arranged in grid or checkerboard pattern.

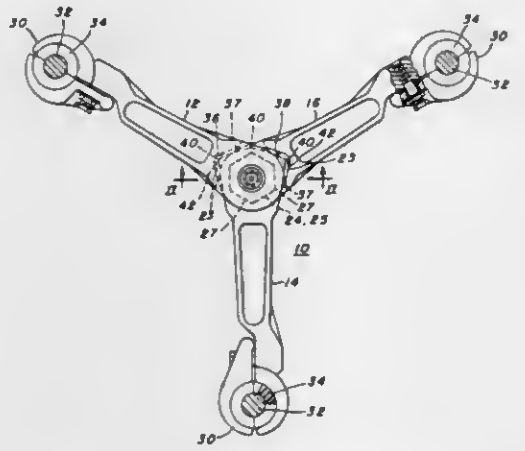
3,940,553
FRAMELESS SPACER WITH VISCOELASTIC DAMPING MEANS

Ronald G. Hawkins, Massena, N.Y., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 24, 1975, Ser. No. 552,181

Int. Cl.² H02G *7/14, 7/12*

U.S. Cl. 174—42 **8 Claims**



1. A lightweight, inexpensive frameless damper spacer for parallel, overhead conductors comprising at least two, rigid, spacer arms, rigid pin means pivotally connecting the arms together adjacent a central location of the spacer, means at the end of each arm remote from said central location for clamping each of the arms to a respective overhead conductor, opposed recesses provided respectively in the arms adjacent said central location, a relatively thick, resilient viscoelastic disc located and secured between said arms and in said recesses, the opposed recesses and disc having matching configurations that function to hold the viscoelastic disc against relative rotation with respect to the arms when relative rotation of the arms occurs about said rigid pin means.

3,940,554
AUTOMATIC FREQUENCY CONTROL DEVICE FOR TELEVISION RECEIVER

Mitsuya Masuda, Ibaraki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Aug. 2, 1974, Ser. No. 494,091

Claims priority, application Japan, Aug. 16, 1973, 48-92192; Oct. 17, 1973, 48-117227

Int. Cl.² H04N *5/50*

U.S. Cl. 178—5.8 AF **6 Claims**

1. An automatic frequency control device for a television receiver comprising

a. a mixer for mixing a received TV signal with the output of a local oscillator,

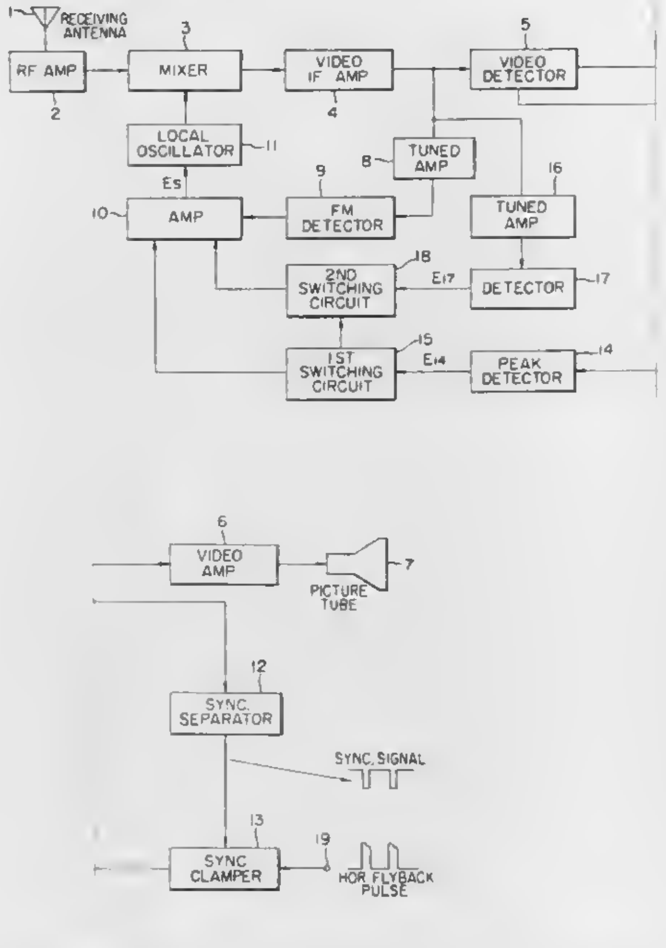
b. said local oscillator coupling its output of a predetermined oscillation frequency to said mixer,

c. a video intermediate frequency amplifier for amplifying the output of said mixer,

d. an FM detector for detecting the output of said video intermediate frequency amplifier, the S-shaped output voltage of said FM detector being coupled to said local oscillator so as to automatically correct the oscillation frequency thereof,

e. means connected to said video intermediate amplifier and bypassing said FM detector for detecting the signal with a frequency equal to the video intermediate frequency minus the difference between said video intermediate frequency and the sound intermediate frequency of the adjacent receiving channel, and

f. means for correcting said S-shaped output voltage in response to the output of said detecting means so as to prevent the pull-in of the sound carrier of the adjacent receiving channel.



3,940,555
PICTURE SIGNAL TRANSMISSION SYSTEM

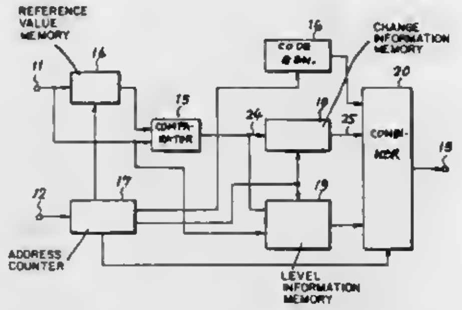
Kitsutaro Amano, Yokohama; Hiroshi Sasaki, Nagareyama, and Tatsuo Maruyama, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Aug. 21, 1973, Ser. No. 390,187

Claims priority, application Japan, Aug. 23, 1972, 47-83630

Int. Cl.² H04N *5/38*

U.S. Cl. 178—6 **7 Claims**



1. In a picture signal transmission system having a transmission medium for transmitting therethrough after coding a picture signal obtained by scanning at least one picture to be transmitted, and

detection means provided for detecting a difference between a representative level value of each picture element unit formed by one picture element and a forecast value, obtained in accordance with a predetermined rule and based on a representative level value of adjacent ones of said picture element units; the improvement comprising: transmission means connected to the detection means and said transmission medium for transmitting first level information and second level information to said transmission medium, said first level information indicating for each picture element by a bit of binary information, whether or not the said difference exceeds a predetermined threshold value for a group of picture elements corrresponding to a predetermined area of the picture, said second level information indicating level information of particular picture elements on each side of which said difference exceeds the threshold value.

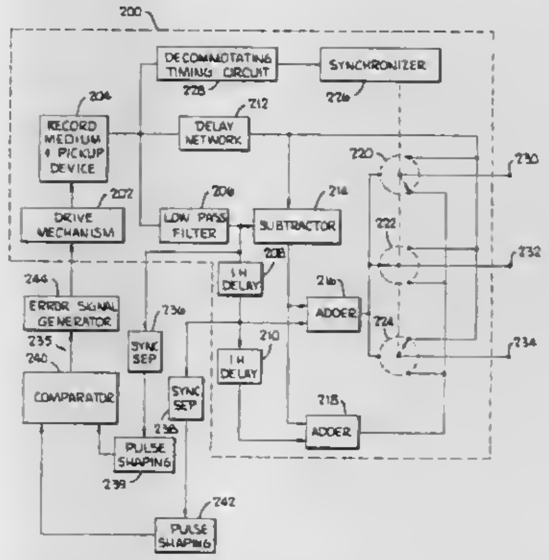
3,940,556
TIMING ERROR DETECTING AND SPEED CONTROL SYSTEM

Charles D. Boltz, Jr., Greenwood, Ind., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 284,511, Aug. 29, 1972. This application June 12, 1974, Ser. No. 478,653

Int. Cl.² H04N *5/76;* **G11B** *17/00;* **H02K** *7/10*

U.S. Cl. 178—6.6 R **2 Claims**



1. In a video playback system wherein a prerecorded composite video signal is recovered from a record medium by a pickup device when relative motion is established between said record medium and said pickup device, a timing error detecting and speed control system comprising:

drive means for establishing a relative motion between said record medium and said pickup device;

means coupled to said drive means and responsive to an error signal for adjusting said drive means to control the speed of said relative motion;

signal processing circuits coupled to said pickup device including means for deriving signal information from said composite video signal which nominally recurs at the desired horizontal line scanning rate of said composite video signal;

means coupled to said deriving means for delaying said signal information for a period of time corresponding to one horizontal period at the desired horizontal line scanning rate;

error signal generating means coupled to said delay means for developing an error signal by comparison of said delayed and undelayed signal information, said error signal being representative of the deviation of said signal information recurrence rate from said desired horizontal line scanning rate; and

means for applying said error signal to said adjusting means such that said adjusting means adjusts said drive means to cause the speed of said relative motion to change in a direction tending to reduce the deviation of said signal information recurrence rate from said desired horizontal line scanning rate;

wherein said error signal generating means comprises a bistable multivibrator, having a pair of input terminals and an output terminal, and subject to operation in either of two stable states;

wherein said error signal generating means also includes first pulse generating means coupled to said recurring signal information deriving means and responsive to said undelayed signal information for developing a trigger pulse in response to each appearance of said recurring signal information at the output of said deriving means, and second pulse generating means coupled to said delaying means and responsive to said delayed signal information for developing a trigger pulse in response to each appearance of said recurring signal information at the output of said delaying means;

wherein said error signal generating means further includes means for applying the trigger pulse output of said first pulse generating means to a first of said pair of multivibrator input terminals, and means for applying the trigger pulse output of said second pulse generating means to a second of said pair of multivibrator input terminals; said multivibrator being subject to switching to one stable state when trigger pulse appearance at said first multivibrator input terminal occurs during pulse absence at said second input terminal and under conditions of multivibrator operation in the other stable state, and being subject to switching to said other stable state when trigger pulse appearance at said second multivibrator input terminal occurs during pulse absence at said first input terminal and under conditions of multivibrator operation in said one state; and

wherein said adjusting means is coupled to said output terminal, and comprises braking means subject to energization only when said multivibrator is in said other of said two stable states.

3,940,557
SUBTRACTIVE IMAGE ANALYSIS

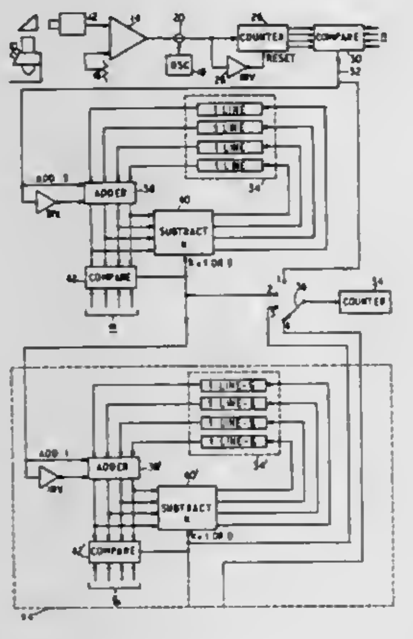
Gerald Marvio Gardner, Saffron Walden, England, assignor to Image Analysing Computers Limited, England

Filed Feb. 18, 1975, Ser. No. 550,737

Claims priority, application United Kingdom, Feb. 20, 1974, 7995/74; Feb. 22, 1974, 8346/74

Int. Cl.² H04N *1/18*

U.S. Cl. 178—6.8 **24 Claims**



1. A method of analysing a feature in a field comprising:

converting the video signal amplitude excursions to constant amplitude pulses by threshold detection;

releasing a series of timing pulses for the duration of each constant amplitude pulse and counting each series of timing pulses so released;

resetting the counting circuit in the absence of a timing pulse during a timing interval;

generating an overflow signal when the counter reaches a value n;

releasing timing pulses for the duration of each overflow signal so generated; and

analysing the timing pulses so released.

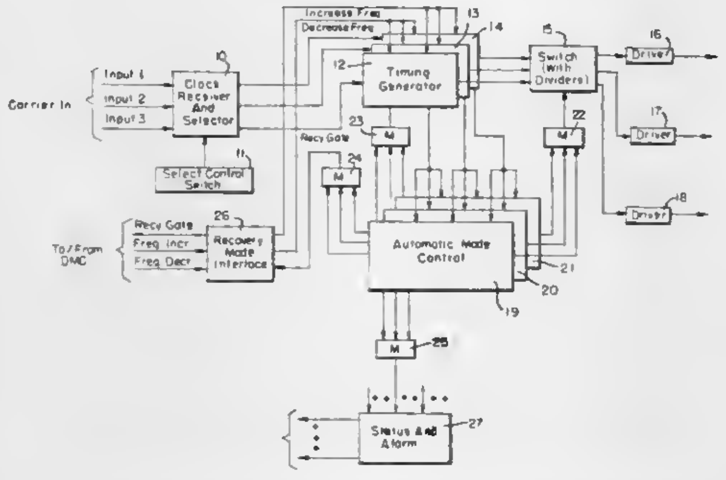
3,940,558
REMOTE MASTER/SLAVE STATION CLOCK

Ova Gene Gabbard, Germantown; Pradeep Kaul, Rockville, and Joaquin Hangen, Olney, all of Md., assignors to Digital Communications Corporation, Gaithersburg, Md.

Filed Jan. 31, 1975, Ser. No. 546,052

Int. Cl.² H04L *7/00*

U.S. Cl. 178—69.5 R **12 Claims**



1. A phase lock loop for generating a stable reconditioned signal in response to a remotely transmitted signal and for independently producing said signal when said remotely transmitted signal is unavailable, comprising:

an input port responsive to said remotely transmitted signal and having serially connected thereto,

a phase detector,

a low pass filter,

an analog to digital convertor,

a multiplexer,

a digital to analog convertor, and to a voltage controlled oscillator, said voltage controlled oscillator providing a second input to said phase detector,

memory means, including filter means, serially connected between said analog to digital convertor and said multiplexer for storing a filtered digital representation of the output of said analog to digital convertor,

means for detecting unavailability of said remotely transmitted signal, and

switch means responsive to detected failure of said remotely transmitted signal for controlling said multiplexer to be responsive only to said memory means.

3,940,559
COMPATIBLE FOUR CHANNEL RECORDING AND REPRODUCING SYSTEM

Benjamin B. Bauer, Stamford, Conn., assignor to CBS Inc., New York, N.Y.

Filed Apr. 18, 1974, Ser. No. 462,042

Int. Cl.² H04R *5/00*

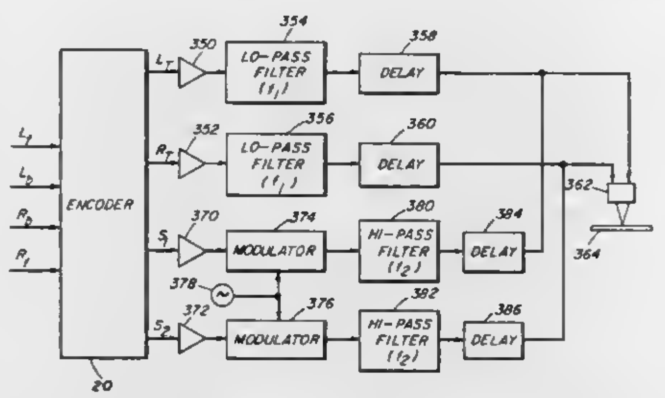
U.S. Cl. 179—1 GQ **6 Claims**

1. A compatible four channel sound system for use in conjunction with a recording system for recording four individual audio signals designated L_f, L_b, R_b and R_f on a recording medium having first and second primary information channels and a subsidiary information channel, said first and second primary information channels carrying information that is consistent and compatible with existing monophonic and stereophonic standards, comprising:

a. means for forming a first composite signal designated L_T which contains, to the extent they are present, L_f in a dominant proportion and L_b and R_b in sub-dominant proportions, L_b and R_b being phase shifted with respect to each other;

b. means for forming a second composite signal designated R_T which contains, to the extent they are present, R_f in a dominant proportion and L_b and R_b in sub-dominant proportions, L_b and R_b being phase shifted with respect to each other;

c. means for forming an auxiliary signal which consists of only the individual audio signals L_b and R_b, in equal proportion, to the extent they are present, both components of said auxiliary signal being in a 45° phase relationship



with the L_b and R_b components in said composite signals, L_T and R_T;

d. means for applying said first and second composite signals to said first and second primary information channels, respectively; and

e. means for applying said auxiliary signal to said subsidiary channel.

3,940,560
QUADRIPHONIC SOUND PICK-UP AND REPRODUCTION DEVICES

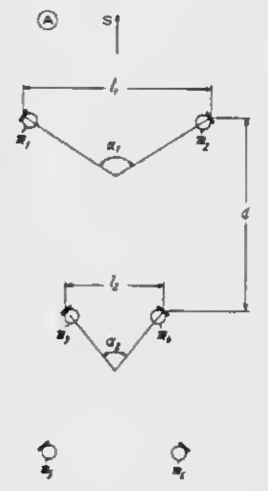
Roland J. Condamines, Chatillon-sous-Bagneux, France, assignor to Etablissement Public, Telediffusion de France, Paris, France

Filed Jan. 31, 1975, Ser. No. 545,831

Claims priority, application France, Jan. 31, 1974, 74.03269

Int. Cl.² H04R *5/00*

U.S. Cl. 179—1 GQ **3 Claims**



1. A sound pick-up device for multiphonic broadcasting and recording, comprising a first stereophonic pair of directional microphones disposed at a first given distance from a sonic scene to be transmitted and having a second stereophonic pair of directional microphones disposed at a second given distance from said sonic scene, said second distance being greater than said first distance by a quantity *d*, each microphone having a sound pick-up axes, the four microphones being disposed so that the spacing /2 between the microphones of the second pair is substantially less than the spacing /1 between the microphones of the first pair, and the angle of divergence α_2 of the sound pick-up axes of the second pair of microphones in the direction of the sonic scene is substantially less than the angle of divergance α_2 of the sound pick-up axes of the first pair of microphones; said device being characterized in that each of said pairs of microphones is arranged symmetrically with respect to a median vertical plane of said sonic scene.

3,940,561
SIMPLEX INTERCOMMUNICATION SYSTEM AND A TWO-WAY INTERCOMMUNICATION SYSTEM HAVING AN ELECTRONIC TRUNKING SCHEME

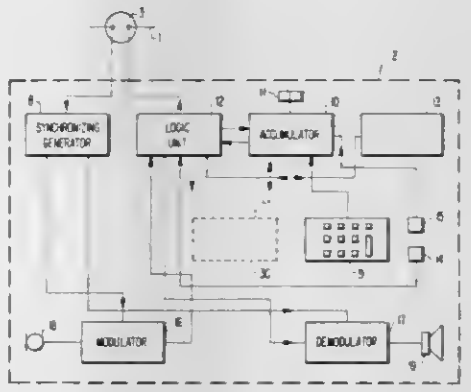
Günter Heinze, Aug.-Hecht-Str. 19, 605 Offenbach am Main; Willi Müller, Fuchstanzstr. 48, 6 Frankfurt am Main; Hans Ulrich von Zimmerman, Mengeder Str. 18a, 4355 Woltrop, and Karl-Heinz Schalomon, Gertrudenstr. 43, 4354 Datteln, all of Germany

Filed Oct. 30, 1973, Ser. No. 411,097

Claims priority, application Germany, Oct. 30, 1972, 2253101

Int. Cl.² H04J *3/02*

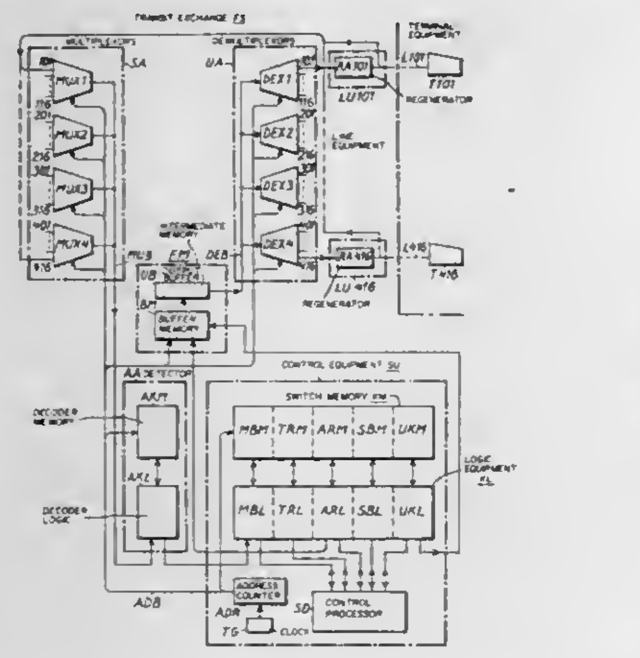
U.S. Cl. 179—15 AL **2 Claims**



1. A simplex or two-way intercommunciation system for a large number of subscriber stations, for example, permitting the connection of about 10 to 1000 subscribers, and having an electronic trunking scheme or system of establishing the connections, characterized in that both the transmission of signals and the establishment of connections is effected by the time-division multiplex process, in that all of the subscriber stations are connected to a wiring system for directed information transmission, said wiring system comprising a central synchronizing generator which supplies synchronizing signals for the time division multiplex operation, and in that the signal transmission to the wiring system is digital, the conversion of the analog speech signal into digital signal form and the recovery of the speech signal taking place in the subscriber stations, the conversion of the speech signals into digital signal form being effected according to the delta modulation process, and each subscriber being able only to respond via a time channel fixedly connected thereto, and a local synchronizing generator is provided in each subscriber station, said local synchronizing generator consisting essentially of a phase arrested loop, a meter, the counting capacity of which depends on the maximum number of subscribers and the requisite synchronizing impulses, and at least two digital comparators, the local synchronizing generator being synchronized by the central synchronizing generator and the particular time channel which is fixedly connected to the subscriber stations and the freely selectable time channels of the subscriber stations called being adapted to be determined by the meter and the comparator, and wherein the local synchronizing generator is designed to be used simultaneously for producing the interrogation impulses for the modulation and demodulation stages.

3,940,562
TRANSIT EXCHANGE FOR TIME DIVISION MULTIPLEX ASYNCHRONOUS DATA

Per-Olof Thyselius, Tyreso, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed July 24, 1974, Ser. No. 491,274
Claims priority, application Sweden, Aug. 10, 1973, 7310969
Int. Cl.² H04J *3/00*
U.S. Cl. 179—15 BA **7 Claims**

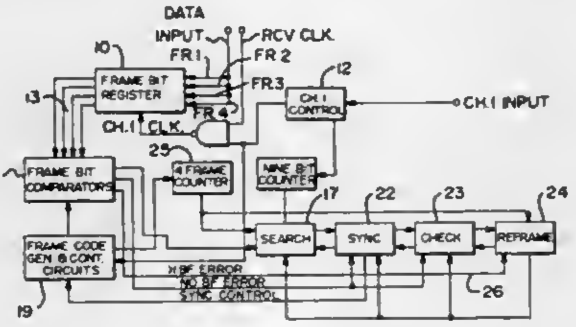


1. Apparatus in a transit exchange for the transmission of asynchronous data signals representing character elements having a given character structure and data rate from sending terminal equipments to receiving terminal equipments with the aid of a control equipment, including a computer, at least one sampling device common to a number of sending terminal equipments and arranged for working with the time division multiplex principle for sampling with the aid of sampling pulses a number of incoming lines for the instantaneous values of received data signals, and a detector means operating synchronously with said sampling device, said detector means including a decoder logic, operating in a time division mode, successively processing the sampling pulses to establish the binary value of each character element and, in correspondence with said binary value, to produce a binary indication signal, the improvement comprising an intermediate memory connected to said decoder logic for successive storage of indication values represented by the indication signal in an addressed location associated with the receiving terminal equipment, a read-out device including means for transferring cyclically from the intermediate memory the indication values, and a regeneration means associated with the receiving terminal equipment receiving said indication values for forming therefrom data signals which switch value in synchronism with the indication signals.

3,940,563
REFRAMING METHOD FOR A CARRIER SYSTEM HAVING A SERIAL DIGITAL DATA BIT STREAM

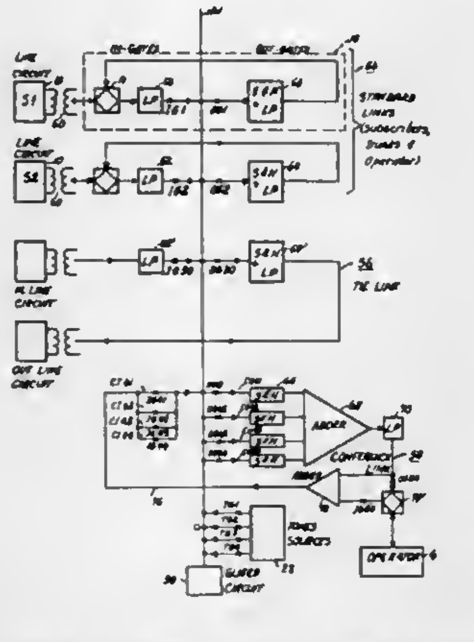
Dieter A. Susset, San Mateo, Calif., assignor to TRW Inc., Los Angeles, Calif.
Filed Oct. 23, 1974, Ser. No. 517,229
Int. Cl.² H04J *3/06*
U.S. Cl. 179—15 BS **3 Claims**

1. In a reframing method for a carrier system having a serial digital data bit stream having frames and multiframes which consist of a predetermined number of frames each frame having an additional frame bit used as a terminal frame code which is an alternating pattern of 1 and 0 bits every other frame and used as a signalling frame code for signalling frame detection which is a pattern of three 0 bits followed by three 1 bits every other frame said frame bit codes repeating themselves every multiframe said carrier system including a frame code generator for generating said frame bit codes said method comprising the following steps: storing a plurality of corresponding bits from each of at least four consecutive frames; searching for a valid terminal frame code in a group of four bits consisting of 1 corresponding bit from each of said four frame, said 4 bits, if valid, representing a unique frame of said multiframe; comparing said group of 4 bits in which a valid terminal frame code was found to 4 consecutive bits generated by said frame code generator; and synchronizing said generator to generate said multiframe code corresponding to said 4 valid bits.



3,940,564
TIME DIVISION MULTIPLEX SYSTEM WITH CONFERENCE LINK

Shelomo Orbach, Haifa, Israel, assignor to Tadiran Israel Electronics Industries Ltd., Tel-Aviv, Israel
Filed Oct. 24, 1974, Ser. No. 517,533
Claims priority, application Israel, Oct. 29, 1973, 43516
Int. Cl.² H04M *3/56*
U.S. Cl. 179—15 AT **7 Claims**

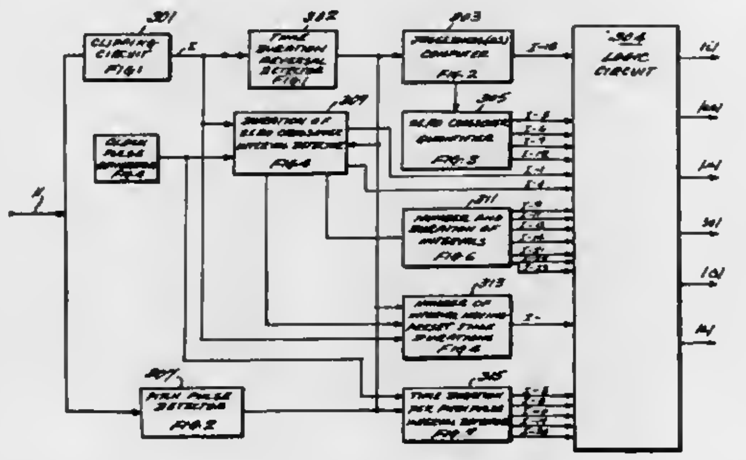


1. A time division multiplex system including a plurality of subscriber links each for connection to a subscriber line, the subscriber links including a switching network having an in-gate and an out-gate for each subscriber line for accessing it to a common transmission highway, and a common control for controlling the in-gates to sequentially connect a calling subscriber link to the common transmission highway in time-slots allotted to the called subscriber links and for controlling the out-gates to connect a called subscriber link to the common transmission highway in the time-slot of the calling subscriber, the improvement wherein the system further includes a conference link to the common transmission highway, the conference link including a plurality of incoming conference lines and a plurality of outgoing conference lines for effecting at least one conference connection between a plurality of the subscriber lines, a switching network including an in-gate in each incoming conference line and an out-gate in each outgoing conference line for accessing the lines to the common transmission highway, the common control including means for controlling the conference in-gates for sequentially connecting the incoming conference lines to the common transmission highway in specific time-slots allotted to them, and controlling the conference out-gates to connect a called outgoing conference line to the common transmission highway in the time-slot of a calling conferee subscriber, said means for controlling being comprised of a cyclic memory and means for recording therein the address of the called subscriber link or outgoing conference line in relation to the time-slot of the calling subscriber, and for recording therein the address of the calling subscriber link in relation to the time-slot of the called subscriber line or incoming conference line.

7. A time division multiplex system including a plurality of subscriber links each for connection to a subscriber line, the subscriber links including a switching network having an in-gate and an out-gate for each subscriber line for accessing the respective subscriber line to a common transmission highway, a common control for controlling the subscriber line in-gates to sequentially connect the calling subscriber links to the common transmission highway in time-slots allotted to the subscriber links, and for controlling the out-gates to connect a called subscriber link to the common transmission highway in the time-slot of the calling subscriber; an operator line; an operator in-gate for providing access of the operator line to the common transmission highway; a tone source; and a tone source in-gate for providing access of the tone source to the common transmission highway; said in-gates being maintained at different DC voltage levels, the DC voltage level of the subscriber links being at one extreme value, that of the operator line being at the other extreme value and that of the tone source being between the two extreme values whereby in the event of simultaneous opening of a plurality of said in-gates the voltage level of the operator line is effective to override the other lines, and that of the tone source is effective to override a subscriber link.

3,940,565
TIME DOMAIN SPEECH RECOGNITION SYSTEM

Klaus Wilhelm Liodenberg, 929 Osceola Ave., Winter Park, Fla. 32789
Filed July 27, 1973, Ser. No. 383,293
Int. Cl.² G10L *1/00*
U.S. Cl. 179—1 SA **7 Claims**



1. A speech recognition system comprising means for detecting the pitch pulse period of an input speech signal,

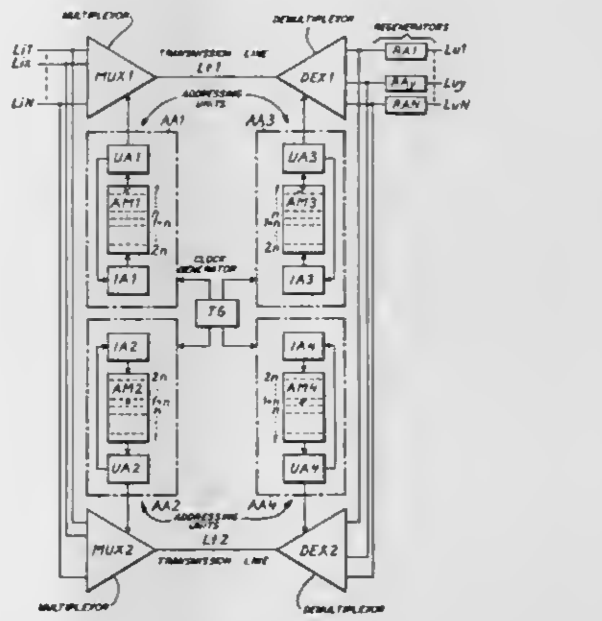
means for clipping said input speech signal to obtain the zero crossover pattern thereof,

means responsive to said pitch pulse period detecting means for quantizing the zero crossover pattern of said clipped input speech signal, and

means for classifying the quantized zero crossover pattern in accordance with the pattern of one of a plurality of phonemes.

3,940,566
ARRANGEMENT FOR PREVENTING INTERRUPTIONS IN A TIME DIVISION MULTIPLEX TRANSMISSION LINK FOR TRANSFER OF DATA

Martin Wilhelm Ivan Jeppsson, Bromma; Bruce William Lindstrom, Ekero, both of Sweden, and David John Russell, Heidelberg, Australia, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Sept. 12, 1974, Ser. No. 505,255
Claims priority, application Sweden, Sept. 27, 1973, 7313161
Int. Cl.² H04J *3/06*
U.S. Cl. 179—15 BF **5 Claims**



1. In a time division multiplex transmission link for the transfer of binary data from a number of inlets to a corresponding number of outlets, the combination comprising a first multiplexor, a first transmission line and a first multiplexor connecting the inlets to the outlets, a second multiplexor, a second transmission line and a second demultiplexor also connecting the inlets to the outlets, each of said multiplexors generating sampling values resulting from the cyclical scanning of the inlets in response to the receipt of first addressing signals wherein each addressing signal is associated with one of the inlets, each sampling value representing the instantaneous value of the data when an inlet is scanned, means for transferring the sampling values from said multiplexors via the associated transmission line to the associated demultiplexor, means in the demultiplexors for transferring the received sampling values to the outlets in response to the receipt of second addressing signals, wherein each second addressing signal is associated with one of the outlets, a first addressing means for sequentially generating a first set of said first addressing signals for transfer to said first multiplexor, a second addressing means for sequentially generating a second set of said first addressing signals for transfer to said second multiplexor, said first and second sets being interleaved in time, a third addressing means for sequentially generating a first set of said second addressing signals for transfer to said first demultiplexor, a fourth addressing means for sequentially generating a second set of said second addressing signals for transfer to said second demultiplexor, said first and second sets of said second addressing signals being interleaved in time, and synchronizing means for intersynchronizing said addressing means.

3,940,567

MULTIPLEX TRANSMISSION SYSTEM ON-OFF SIGNAL

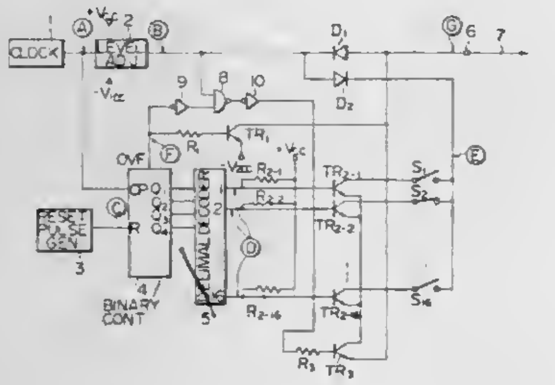
Shinichi Iki, Sagamihara, and Hideaki Kosugi, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Nov. 29, 1974, Ser. No. 528,240

Claims priority, application Japan, Dec. 5, 1973, 48-135256; Dec. 5, 1973, 48-135257

Int. Cl.^{2} H04J *3/12*

U.S. Cl. 179—15 BY **15 Claims**



1. A multiplex transmission system for transmitting a plurality of ON-OFF signals respectively corresponding to a plurality of channels through at least one transmission line, which comprises:

a transmitter including a clock pulse generator for generating clock pulses, a first level adjuster connected to said clock pulse generator for adjusting the top level of said clock pulses at a positive or negative level and the bottom level at a negative or positive middle level, first pulse sequence generator having the same number of output lines as the channels, for repeatedly producing pulse sequences in accordance with said clock pulses, each pulse sequence consisting of the same number of channel pulses respectively appearing on said output lines in synchronizm with said clock pulses, said first pulse sequence generator producing reset pulses each appearing at a leading position of each pulse sequence and each having an utmost negative or positive level of amplitude and applying said reset pulses to said transmission line, first gate means for passing therethrough the negative or positive component of the level-adjusted clock pulses to said transmission line, and a first gate circuit connected to said output lines, for passing therethrough the positive or negative component of the level-adjusted clock pulses to said transmission line in accordance with said channel pulses and said ON-OFF signals; and

a receiver including a separator for separating from each other negative and positive pulse signals on said transmission line, a reset pulse separator for separating said reset pulses from said negative pulse signal, a second level-up circuit connected to said separator for adjusting the top level of said negative pulse signal at said utmost positive or negative level second pulse sequence generator having the same number of output lines as the channels, for repeatedly producing the same pulse sequences as said pulse sequence in accordance with the separated reset pulses and the level-adjusted negative or positive pulse signal, the channel pulses respectively appearing on said output lines of said second pulses sequence generator, a plurality of second gate circuits connected to said output lines of said second pulse sequence generator, each for passing therethrough the separated positive or negative pulse signal when it is triggered by one of said channel pulses.

3,940,568

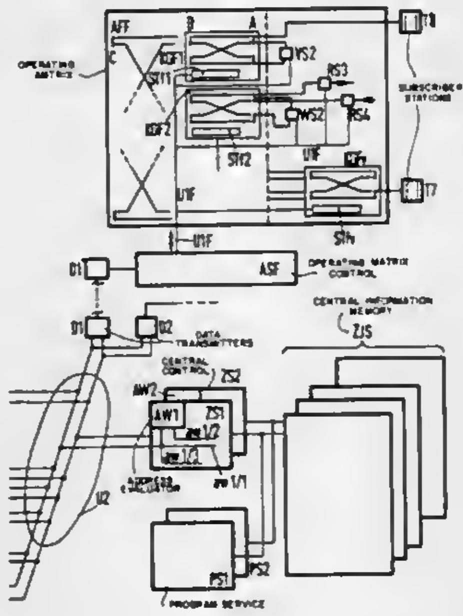
CIRCUIT ARRANGEMENT FOR TELEPHONE EXCHANGE INSTALLATIONS WITH CENTRAL CONTROL MEANS AND A PLURALITY OF INDIVIDUAL APPARATUSES HAVING A COMMON INFORMATION COMMUNICATION LINE CONNECTING THE INDIVIDUAL APPARATUS TO THE CENTRAL CONTROL MEANS

Karl Rutkowski, Pullach; Helmuth-Joachim Bock, Munich, and Peter Gerke, Grafelfing, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation-in-part of Ser. No. 780,461, Dec. 2, 1968, abandoned. This application Feb. 3, 1971, Ser. No. 112,224

Int. Cl.^{2} H04Q *3/54*

U.S. Cl. 179—18 ES **3 Claims**



1. A circuit arrangement for telecommunication installations wherein different types of messages, the type being a function of the origin of the message, are transmitted between a central control means and individual apparatuses, comprising:

- transmission line means connecting said central control and said individual apparatuses for information exchange,
- said individual apparatuses being formed into groups of like type,
- means associated with each said group of individual apparatuses for transmitting over said line means address information particularized to that group, indicating the identity of the group, and thereby the type of apparatus in that group,
- said individual apparatuses otherwise being operative to transmit information signals of like characteristics,
- a plurality of connection control means interposed in said transmission line means between said individual apparatuses and said central control means, each of said connection control means being connected to a plurality of individual apparatuses, each said connection control means including means for selecting one of a plurality of information signals received from the respective individual apparatuses connected thereto and for effecting a connection of the individual apparatus causing the transmission of the selected information signal to said transmission line means, said connection control means further including means for determining the address of an individual apparatus upon the production of an information signal from said individual apparatus and for transmitting said address jointly with the information to be transmitted to said central control means and
- means in said central control means for evaluating said information signals and said address information and for interpreting said evaluated information signals in accordance with the result of the evaluation of said address information.

3,940,569

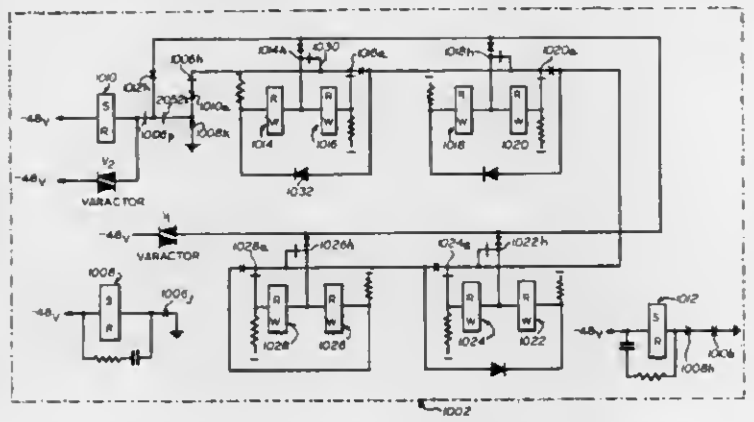
PROGRAMMABLE TOLL RESTRICTOR

Leslie B. Schonbrun, Port Washington, and Friedrich W. Schwaar, West Islip, both of N.Y., assignors to E & M Communications Corporation, New York, N.Y.

Filed Aug. 8, 1973, Ser. No. 386,620

Int. Cl.^{2} H04M *3/38*

U.S. Cl. 179—18 DA **14 Claims**



1. A toll restrictor for use in determining whether attempts to complete a trunk call are unrestricted, said toll restrictor being responsive to at least a first successively dialed three digit code of said call from said trunk and providing a control signal in response to said first dialed three digit code being a restricted code to prevent the completion of a call having said first dialed three digit code, said toll restrictor comprising a binary counting chain portion and a digit registration portion, said binary counting chain being responsive to dial pulses associated with each of said dialed digits in said code for providing a binary equivalent thereof, said dialed digits being successively individually provided to said counting chain one at a time; said counting chain portion successively individually providing said dialed digit binary equivalents to said registration portion for registration of said dialed digits; and said registration portion comprising a first and a second binary to decimal converter means for converting said first and second dialed digit binary equivalents to respective first and second signals corresponding to the equivalent decimal digit, said second binary to decimal converter means being further operable to convert said third dialed digit binary equivalent to a third signal corresponding to the equivalent decimal digit, first relay means responsive to said first and second signals for initially registering the first two successively dialed digits of said first dialed three digit code as a first tens digit group and responsive to said third signal for registering said last successively dialed digit of said first dialed three digit code as a second ones digit group, said first tens digit group enabling the provision of a family of ten three digit codes having a common first two dialed digits, and second relay means responsive to at least said first tens digit group for providing said control signal when at least said tens digit group indicates a restricted three digit code.

3,940,570

APPARATUS FOR COMBINING A CENTRAL TELEPHONE TRUNK LINE WITH A CUSTOMER TELEPHONE TRUNK LINE

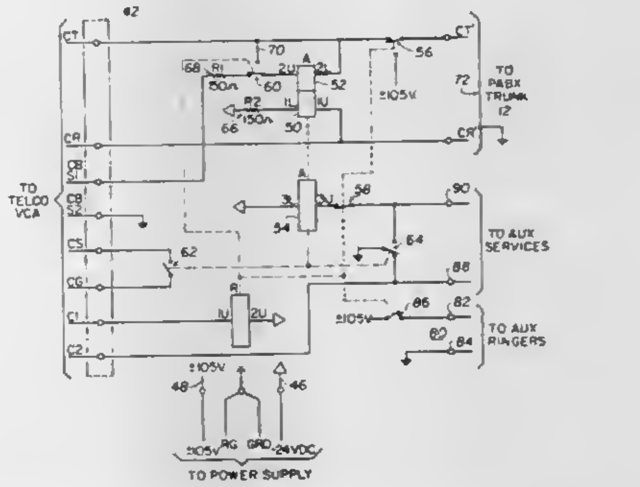
Edward Goudikian, Commack, N.Y., assignor to Tele-Assemblies, Farmingdale, N.Y.

Continuation of Ser. No. 167,418, July 29, 1971. This application Aug. 5, 1974, Ser. No. 495,079

Int. Cl.^{2} H04M *7/14*

U.S. Cl. 179—18 AH **5 Claims**

1. In a system for combining a central telephone trunk line of a central telephone exchange with the trunk line of a customer exchange having power feed, ring trip and dial pulse functions, wherein said central telephone exchange is provided with means for separating the dial, talk, and ring functions into a first partial circuit for providing a service signal to and from said customer trunk line, a second partial circuit for providing a ring signal to said customer trunk line, and a third partial circuit for voice transmission operable by completion of said first partial circuit, an interface system comprising a first circuit connected to said first partial circuit for controlling the operation of each of the power feed, ring trip and dial pulse of said customer exchange, a second circuit connected to said second partial circuit for controlling the ring signal from said telephone exchange, and a third circuit connected to said third partial circuit, a first relay located in a said second circuit having a winding connected between a DC source of current and ground, said first relay having a normally closed contact located in said third circuit operable on activation of said first relay to connect a lead of said customer trunk line to a source of AC ring current, a second relay located in said third circuit having at least two windings and a single core, said relay being operable by a current through either of said windings, one of said windings being connected between a DC source of current and one lead of said customer trunk line, the other of said windings being connected between ground and the other lead of said customer trunk line, said second relay having a normally open first contact in said first circuit operable on looping of said customer trunk line to complete said first partial circuit and establish service with said telephone exchange, and a normally closed second contact in said second circuit operable on looping of said customer trunk line to disconnect said first relay from said DC source of current and discontinue the AC ring current.



3,940,571

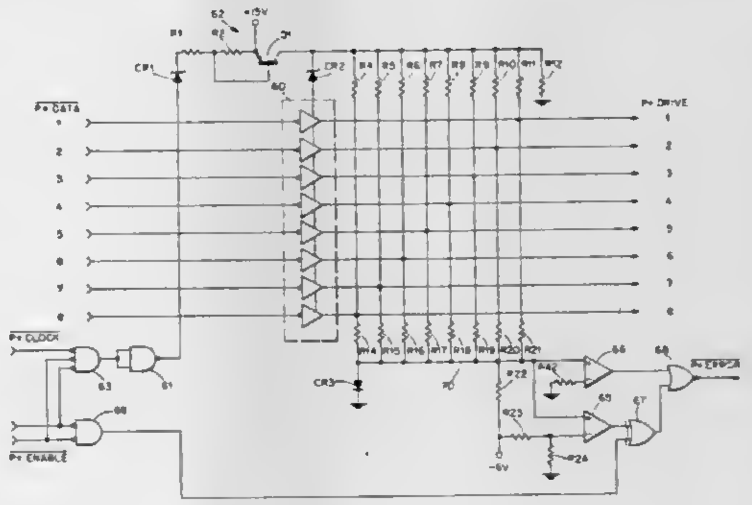
DRIVE CIRCUITRY WITH ERROR DETECTION

Albert H. Ashley, Holliston, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 4, 1974, Ser. No. 520,413

Int. Cl.^{2} H04M *3/00;* **G06F** *11/08*

U.S. Cl. 179—18 GF **7 Claims**



1. Apparatus for transmitting signals along a plurality of paths and for determining whether or not signals are being transmitted on a predetermined number of the paths, said apparatus including in combination

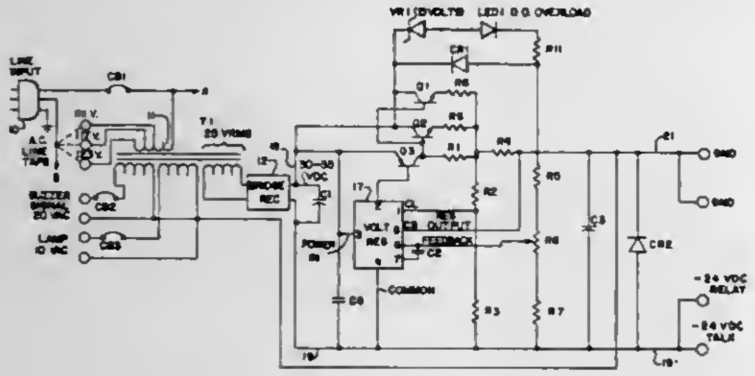
a plurality of signal paths;
a resistance network comprising an equal plurality of resistances, each resistance having one end connected to a different one of said signal paths and the other end connected to a common juncture, the voltage level produced at the common juncture being proportional to the number of signal paths having signals present thereon;
first detecting means coupled to said common juncture and operable to produce a first indication in response to a voltage level at said common juncture produced by a predetermined number (N) or more signal paths having signals present thereon during a detection period, and operable to produce a second indication in response to a voltage level at said common juncture produced by less than the predetermined number (N) of signal paths having signals present thereon during a detection period;
second detecting means coupled to said common juncture and operable to produce a first indication in response to a voltage level at said common juncture produced by less than said predetermined number plus one (N+1) signal paths having signals present thereon, and operable to produce a second indication in response to a voltage level at said common juncture produced by said predetermined number plus one (N+1) or more signal paths having signals present thereon; and
output means coupled to said first and second detecting means for producing an error signal in response to a second indication from the first detecting means or from the second detecting means.

3,940,572

POWER SUPPLY FOR KEY TELEPHONE SYSTEM

Robert L. Burgess, Upland, Calif., assignor to Dracon Industries, Chatsworth, Calif.

Filed Apr. 24, 1974, Ser. No. 463,439
Int. Cl.^{2} H04M *19/00*
U.S. Cl. 179—77 **1 Claim**



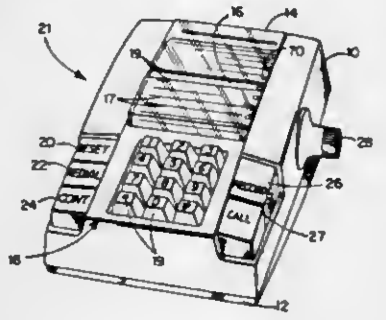
1. A power supply for a key telephone system having talk and relay circuits requiring a dc voltage and having lamps, buzzers and ringers requiring ac voltage said power supply comprising: voltage regulator means having an output line for supplying said dc voltage including foldback current means for sensing an overload output current for decreasing said dc voltage to provide a foldback voltage operating characteristic; transformer means for supplying a plurality of ac voltages for respective use with said lamps, buzzers and ringers and for supplying said voltage regulator means, said transformer means including a first transformer having a primary winding connection to a line input and three secondary windings for respectively providing said buzzer and lamp voltages and for supplying voltage regulator means, and including second transformer means having a primary winding connection to said line input for producing a ring voltage; rectifier means having a dc output and an input connected to one of said three secondary windings for producing at its dc output an unregulated dc voltage, said dc output being connected to and supplying said voltage regulator means; and overload means for visually indicating when said dc voltage on said output line decreases below a predetermined value including a series connected Zener diode and light emitting diode both connected between said output line and said unregulated dc output, said light emitting diode being activated when a sufficient voltage difference across said Zener diode causes it to conduct.

3,940,573

MANUALLY ACTUABLE REPERTORY DIALER

James W. Healy, Wakefield, and Argyle G. Lautzenhiser, Magnolia, both of Mass., assignors to DASA Corporation, Andover, Mass.

Filed July 5, 1974, Ser. No. 486,111
Int. Cl.^{2} H04M *1/46*
U.S. Cl. 179—90 BB **11 Claims**



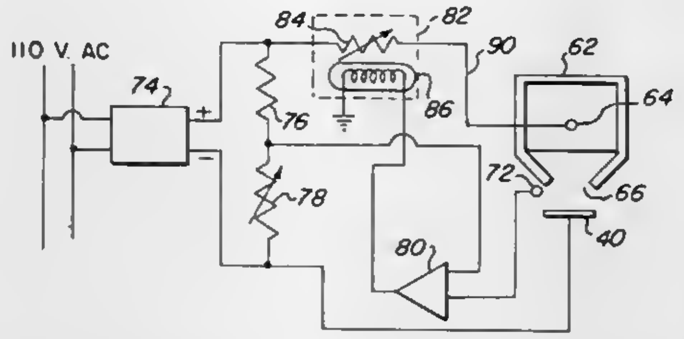
1. A telephone dialer comprising:
a magnetic recording medium;
means for recording representations of telephone numbers on respective portions of said recording medium including a magnetic record/reproduction head disposed in operative association with said magnetic recording medium;
means for selectively providing a recording and readout mode;
manually actuable mechanically operative means for causing during a first travel portion of a control button relative movement of said magnetic head and said medium to a start position and during a second travel portion of said control button controlled relative movement between said head and said medium from said start to a home position to selectively record or readout said representations of a telephone number.

3,940,574

REPRODUCTION OF INFORMATION FROM INFORMATION-BEARING DISCS

Leland Dale Green, Sierra Madre, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 20, 1973, Ser. No. 426,989
Int. Cl.^{2} G11B *9/06*
U.S. Cl. 179—100.1 B **3 Claims**



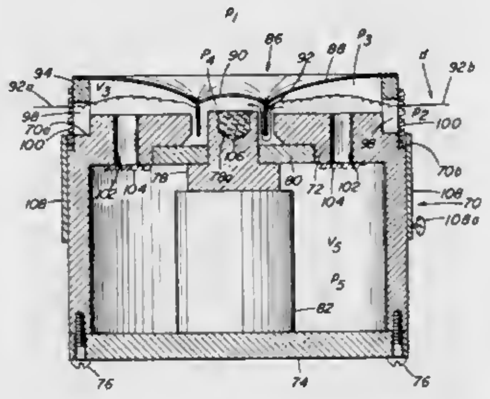
1. A method of reproducing information from a surface of an information-bearing disc wherein information is stored in accordance with the spacing between area of peak amplitude of a spiral track on said surface of said disc, and a stylus rides in the spiral track of said disc comprising:
depositing electrostatic charges uniformly on said surface of said disc, and
collecting said electrostatic charges from only the areas of peak amplitude of said spiral track of said surfaces of said disc, said collection of charge being achieved by the flow of said electrostatic charge from said areas of peak amplitude of said spiral track of said surface of said disc to said stylus riding in said spiral track of said disc.

3,940,575

DIRECTIONAL MICROPHONE

Benjamin B. Bauer, Stamford, Conn., assignor to CBS Inc., New York, N.Y.

Filed Mar. 3, 1975, Ser. No. 554,586
Int. Cl.^{2} H04R *1/38*
U.S. Cl. 179—121 D **7 Claims**



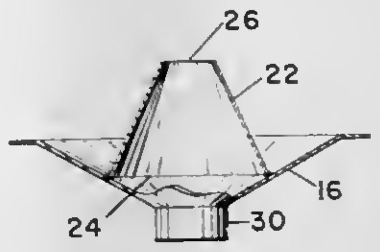
1. In a dynamic microphone, the combination comprising,
a body closed at one end by an annular magnetic pole-piece,
an inner magnetic pole-piece supported coaxially within said annular pole-piece and therewith defining a circular air gap,
an annular diaphragm support having a diameter much larger than the diameter of said air gap supported on said body generally coplanar with said air gap,
a circular vibratile diaphragm secured at its periphery to said annular support, said diaphragm having an active outer area portion of coneiform shape which intersects with a central portion of dome shape, the active area of said outer portion being larger than the area of said dome portion,
a circular coil having a diameter substantially equal to the diameter of said dome portion secured to said diaphragm concentrically with said dome portion and supported within said air gap, one side of said diaphragm being adapted to receive external sound pressure and said coil producing electric output signals as a function of the sound pressure impinging upon the diaphragm,
said diaphragm, said diaphragm support, and the surfaces of said annular and inner pole-pieces which confront said diaphragm enclosing a total volume divided by said air gap into two portions, the partial volume under the dome portion of the diaphragm being much smaller than the partial volume under the coneiform portion of the diaphragm,
first duct means formed in said diaphragm support having acoustical impedance adapted to serve as an acoustic duct between the external atmosphere and said total volume,
a second volume within said body enclosed in part by the surface of said annular pole-piece opposite the surface thereof which confronts said diaphragm,
second duct means formed in said annular pole-piece having acoustical impedance adapted to serve as an acoustic duct between said total volume and said second volume,
the acoustical impedance of said first and second duct means and said total and second volumes being so interrelated as to give the microphone a predetermined directional sensitivity pattern,
the partial volume under the coneiform portion of said diaphragm being sufficiently larger than the partial volume under the dome portion of said diaphragm that any sound pressure generated within the partial volume under the dome portion does not significantly affect the directional sensitivity pattern.

3,940,576

LOUDSPEAKER HAVING SOUND FUNNELLING ELEMENT

Herbert J. Schultz, 2627 Bourbon St., No. 3D, Orange, Calif. 92665

Filed Mar. 19, 1974, Ser. No. 452,614
Int. Cl.^{2} H04R *7/12*
U.S. Cl. 179—181 R **8 Claims**

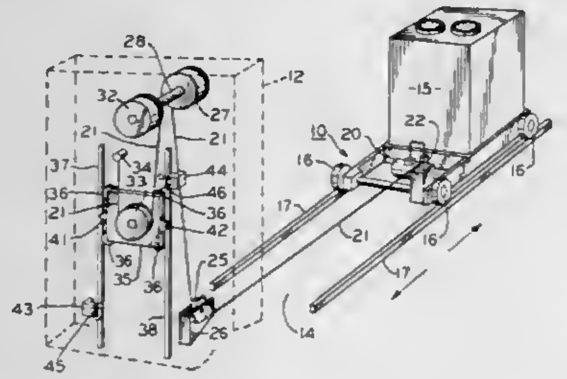


3. In a speaker of the kind in which a diaphragm is suspended at its margins from a frame and is caused to move in response to forces applied to its mid region, the improvement which comprises:
a funnelling member in the form of a tapered tube having a larger opening at one of its ends than the smaller opening at the other;
said funnelling member having the margin of its larger opening in engagement with and fixed to said diaphragm such that it encompasses said mid region at which said forces are applied;
means in the form of said smaller opening for permitting flow of air into and out of the interior of said funnelling member as an incident to application of force to said diaphragm;
said diaphragm being elliptical and conical;
said funnelling member being elliptical and conical and having its central line substantially coincident with that of said diaphragm; and
said funnelling member becoming less elliptical and approaching circularity in the direction away from said diaphragm and having a taper such that the diameter of the smaller opening is no greater than half of the greatest width of the larger opening of said member.

5. In a speaker of the kind in which a diaphragm is suspended at its margins from a frame and is caused to move in response to forces applied to its mid region, the improvement which comprises:
a funnelling member in the form of a tapered tube having a larger opening at one of its ends than the smaller opening at the other;
said funnelling member having the margin of its larger opening in engagement with and fixed to said diaphragm such that it encompasses said mid region at which said forces are applied;
means in the form of said smaller opening for permitting flow of air into and out of the interior of said funnelling member as an incident to application of force to said diaphragm;
the area of said diaphragm encompassed by said funnelling member being less than its total area;
said funnelling member having a length greater than the average dimension across said larger end of the funnelling member.

3,940,577
METHOD AND APPARATUS FOR CONTROLLING A TRANSFER CAR FROM A REMOTE STATION

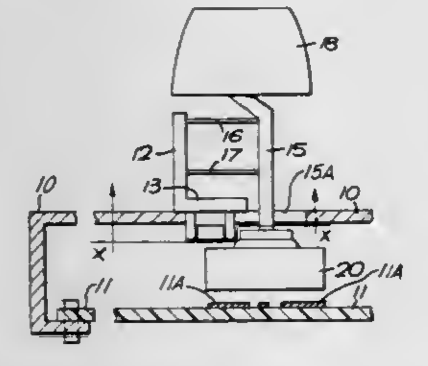
Donald E. Christofer, Willowick, Ohio, assignor to Stock Equipment Company, Cleveland, Ohio
Filed June 12, 1974, Ser. No. 478,588
Int. Cl.² H02G *11/00*
U.S. Cl. 191—12 R 15 Claims



1. Transfer apparatus comprising a wall, a carriage on one side of said wall adapted to move in a predetermined path between predetermined limit positions, said carriage having drive means adapted to move said carriage in either direction in said path; an elongated flexible control member connected to said carriage and passing through said wall to the other side of said wall; a rotatable member at the side of said wall at which said carriage is located onto which said flexible member winds as the carriage travels in one direction and from which it unwinds as the carriage travels in the other direction; a rotatable member at the other side of said wall to which said flexible member extends and on which said flexible member winds when said carriage is traveling in one direction and from which it unwinds when said carriage is traveling in the other direction; and means at the side of the wall opposite the side at which said carriage is located for controlling said drive means in response to the direction and amount of rotation of at least one of said rotatable members, whereby said carriage is stopped when reaching said limit positions.

3,940,578
KEYBOARD STRUCTURE HAVING PANEL MOUNTED KEY ACTUATORS WITH ELECTRICAL COMPONENT OPERATING ELEMENT

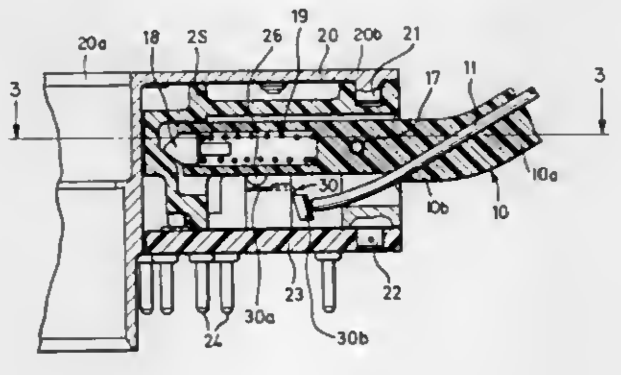
Peter Pointon, West Molesey, England, assignor to Alphameric Keyboards Limited, England
Filed Apr. 9, 1974, Ser. No. 459,901
Claims priority, application United Kingdom, Apr. 9, 1973, 16939/73
Int. Cl.² H01H *13/14, 36/00;* G06C *7/02*
U.S. Cl. 200—5 A 17 Claims

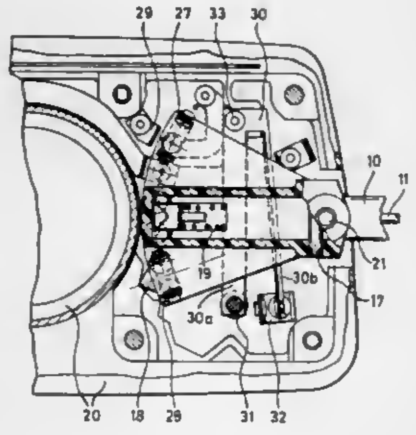


1. A keyboard for providing an electrical output on depression of a key, said keyboard comprising a chassis and a plurality of keys, wherein each key is formed of two substantially rigid members spaced apart with facing surfaces and at least a pair of parallel spaced resilient strips lying in separate planes spaced in a direction normal to said surfaces, said strips being of equal length, each extending between said rigid members and joining said rigid members to form a parallel motion linkage, one of said rigid members being mounted on the chassis with the planes of the strip parallel to the chassis, a key top mounted on the upper end of the second of said rigid members whereby, by depression of the key top, the second of the rigid members is movable towards and away from the chassis without tilting with respect to the chassis, and an operating element on the lower end of the second rigid member arranged for co-operation with an electric circuit element fixedly located with respect to the chassis.

3,940,579
PLURAL SWITCH CONSTRUCTION HAVING ROTARY AND LINEAR SWITCH CONTACT ASSEMBLIES OPERATED BY INDEPENDENT OPERATORS

Harro Bühl, Kirchheim; Herbert Erdelitsch, Bietigheim; Otto Machalitzky, Pleidelsheim, and Wolf Seitter, Marbach (Neckar), all of Germany, assignors to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH, Germany
Filed July 16, 1974, Ser. No. 488,984
Claims priority, application Germany, July 16, 1973, 2336064
Int. Cl.² H01H *9/00, 3/16*
U.S. Cl. 200—4 6 Claims

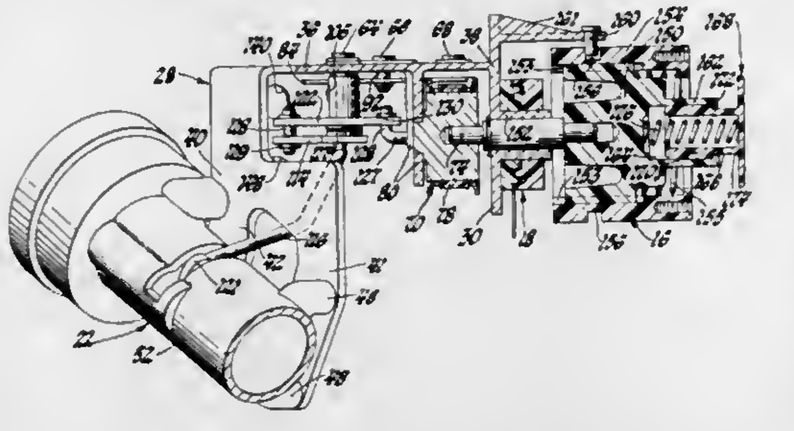




1. A switch, comprising a housing, a U-shaped spring contact in said housing having a first spring contact portion in a first plane and a second spring contact portion in a second plane disposed at an angle from said first plane, a switch lever, means disposed on and within said housing pivotally supporting said switch lever for pivotal movement in said first plane and said second plane, a first contact spaced from said first spring contact portion for operating a first operating circuit, a second contact spaced from said second spring contact portion for operating a second operating circuit, and a switching rod carried on said lever and being movable relatively thereto, said rod being displaceable independently of the pivotal position of said lever and having a rod portion engageable with said second spring contact portion to move it into engagement with said second contact and to permit disengagement therefrom, said lever being pivotal at least in one direction and having a lever portion engageable with said first spring contact portion to move it into engagement with and permit its disengagement from said first contact.

3,940,580
STARTER SWITCH FOR ENGINE RESPONSIVE TO VARIOUS TRANSMISSION OPERATIONAL STATES

Richard D. Williams, Fairport, and Fred G. Michaels, Pittsford, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 325,325, Jan. 23, 1973, Pat. No. 3,844,180. This application Aug. 19, 1974, Ser. No. 498,756
Int. Cl.² H01H *9/06*
U.S. Cl. 200—61.85 2 Claims

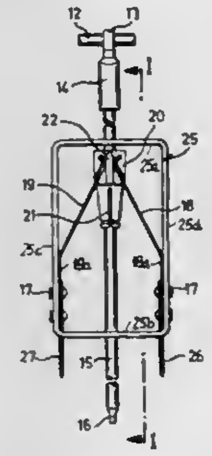


1. An actuating mechanism comprising a fixed hub member having an axial opening formed therethrough, a starter switch secured about said hub member and having two spaced sets of contacts mounted in a predetermined circle therein, a shaft rotatably mounted and axially located in said axial opening, rotary knob means secured on an end of said shaft and being manually rotatable into a plurality of predetermined positions including first and second positions, an axial pocket formed in the outer end of said rotary knob means, a starter button having a cylindrical extension formed thereon and slidably mounted in said axial pocket, a longitudinal passage formed through said rotary knob means parallel to said axial pocket and having the axis thereof aligned with said predetermined circle, a spring partially compressed and mounted through said cylindrical extension between said starter button and the bottom of said axial pocket, stop means formed on said cylindrical extension and around said axial pocket for limiting the outward movement of said cylindrical extension in said axial pocket under the force of said spring, and a rod-like member formed on said starter button and slidably mounted through said longitudinal passage and being operable to enter and thereby close one of said respective sets of contacts only when said rotary knob means is positioned in one of said respective first and second positions upon manual depression of said starter button against the force of said spring.

3,940,581
SWITCH CONSTRUCTION, PARTICULARLY FOR INDICATING AUTOMOBILE SEAT LOADING

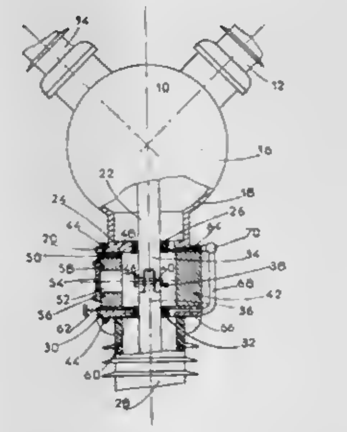
Helmut Dörr, Sachsenheim, Germany, assignor to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH, Germany
Filed Aug. 29, 1974, Ser. No. 501,840
Claims priority, application Germany, Sept. 15, 1973, 2346578
Int. Cl.² H01H *3/14*
U.S. Cl. 200—85 A 3 Claims

1. A switch, particularly a load responsive switch for indicating automobile seat loading, comprising a pair of first and second contact springs, means mounting said first and second contact springs so that their ends are biased together in electrical contacting engagement, a movable actuating rod having one end with means for connecting it to the seat which is to bear the load, and a switching member having a portion of non-conductive material carried by said actuating rod and movable therewith through a path to come between said first and second contact springs to separate them and to break the electrical connection therebetween, a housing having end walls with bores through which said actuating rod extends and which provide means for guiding said actuating rod for axial movement, said switching member having a sleeve portion with a bore through which said rod extends and being frictionally engaged with said rod so as to be displaceable therealong, said portion of non-conductive material comprising an upstanding switch contact separating member which is movable between said spring contacts.



3,940,582
MECHANICALLY OPERATED GAS BLAST CIRCUIT INTERRUPTER HAVING GASTIGHT ENCLOSURES

Cesar Castelli, Montfleury, and Eugene Vincent, La Tronche, both of France, assignors to Merlin Gerin, Grenoble, France
Filed Jan. 28, 1974, Ser. No. 436,925
Claims priority, application France, Mar. 7, 1973, 73.08648
Int. Cl.² H01H *33/56*
U.S. Cl. 200—148 B 7 Claims



1. A gastight gas-blast circuit interrupter of the puffer-type comprising:

at least one arc-extinguishing chamber having a gastight separable contact means containing enclosure filled with an arc-extinguishing gas under a pressure above atmospheric pressure, a seal in the wall of said enclosure, and a movable contact-operating rod traversing said wall in a gastight manner through said seal;

hollow insulating support means to support said chamber an appropriate distance from ground potential and having a gastight enclosure containing the same gas under a pressure above atmospheric pressure as the enclosure of said chamber, a seal in the wall of said enclosure of said support means, and a movable control rod traversing said wall of said enclosure of said support means in a gastight manner through the seal thereof,

said contact-operating rod and said control rod having confronting end portions extending externally of said enclosures and adapted to be coupled together in motion-transmitting relation to permit operation of said contact-operating rod by actuation of said control rod;

a gastight hollow junction housing joining said enclosures and accommodating said end portions,

said seals being disposed in the partition wall portions common to said housing and to said enclosures, respectively, said housing having removable wall means permitting the coupling and uncoupling of said end portions therethrough from the outside of said housing, and means for filling said housing with said gas under a pressure above atmospheric pressure.

3,940,583

ARC QUENCHING ARRANGEMENT

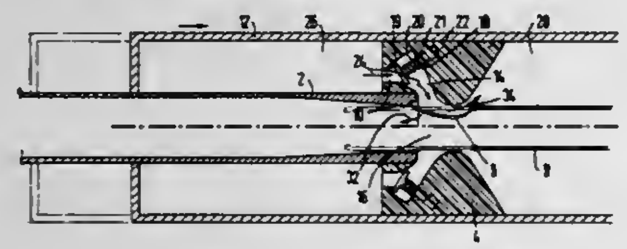
Walter Hertz, Erlangen-Buckenhof, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 25, 1974, Ser. No. 454,544

Claims priority, application Germany, Mar. 30, 1973, 2316009

Int. Cl.² H01H *33/70*

U.S. Cl. 200—148 A **7 Claims**



1. In a gas-flow circuit breaker, such as a blast piston breaker, in which gas is directed from a space of higher pressure to the vicinity of a quenching gap, said breaker including a fixed contact and a movable contact which when separated from an arc in said quenching gap, an improved arrangement for quenching and arc in said gap comprising:

a. insulating material arranged to form a plurality of flow canals to direct the flow of gas from the space of higher pressure onto the quenching gap, said flow canals being evenly spaced concentric to said quenching gap; and

b. a check valve in each of said canals arranged to permit flow only from the space of higher pressure toward said quenching gap.

3,940,584

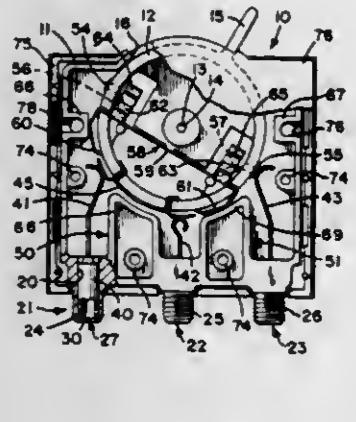
COAXIAL SWITCH FOR HIGH FREQUENCY SIGNALS

Jack D. Cauldwell, and George P. Gallanis, both of Dayton, Ohio, assignors to Arvin Industries, Inc., Columbus, Ind.

Filed June 19, 1974, Ser. No. 480,689

Int. Cl.² H01P *1/10*

U.S. Cl. 200—153 S **4 Claims**



1. A switch for use in wide band systems handling high frequency signals, comprising:

a hollow body having at least an inner surface which is electrically conductive,

first, second and third terminals on said body located in spaced relation,

each of said terminals having contact portions connected to said conductive surface of said body and also having contacts projecting into said body,

a rotor of electrically non-conductive material,

a movable contact carried on the circumference of said rotor and of a length to connect the contact of said first terminal alternatively with the contacts of either said second or third terminal,

means rotatably supporting said rotor in said body for arcuate movement of said movable contact to alternative positions connecting the first terminal to either the second or third terminal,

means connected to said rotor and extending externally of said body for moving said rotor,

electrically conductive partition means incorporated in said body and extending inwardly to adjacent the circumference of said rotor to form barriers to radiation from the exposed terminal contacts to each other.

3,940,585

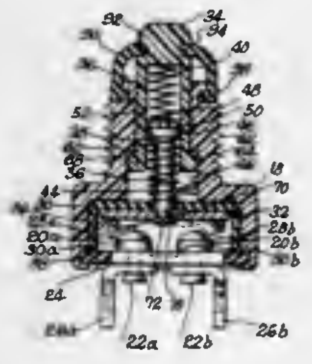
HEAVY DUTY PUSH-BUTTON ELECTRICAL SWITCH

William J. Schaad, Winnetka, Ill., assignor to Indak Manufacturing Corporation, Northbrook, Ill.

Filed May 13, 1974, Ser. No. 469,056

Int. Cl.² H01H *13/52*

U.S. Cl. 200—159 R **16 Claims**



1. An electrical switch,

comprising a casing,

a carriage member mounted in said casing for linear movement,

a conductive contactor disk mounted on said carriage member for free rotation relative thereto,

at least two conductive contacts mounted in said casing opposite said contactor disk for engagement by said disk to complete an electrical circuit between said contacts,

spring means acting between said carriage member and said casing for biasing said carriage member in a direction to move said contactor disk out of engagement with said contacts,

and a backstop in said casing and engageable by said contactor disk when said contactor disk is moved away from said contacts under the impetus of such spring means,

the engagement between said backstop and said contactor disk being effective to prevent rotation of said contactor disk,

the engagement between said contactor disk and said contacts also being effective to prevent rotation of said contactor disk,

said contactor disk being freely rotatable when in transit between said contacts and said backstop,

whereby vibration and other environmental factors cause said contactor disk to rotate relative to said carriage member so that said contactor disk presents fresh surface elements to said contacts during repeated cycles of use.

3,940,586

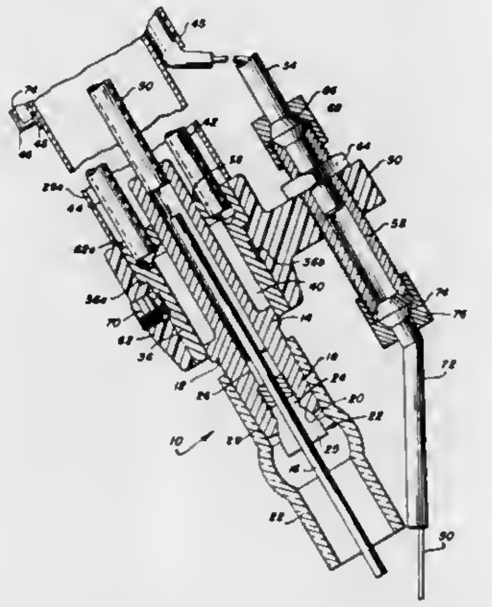
ELECTRIC ARC WELDING

James B. Stearns, and Donald W. Schmerling, both of York, Pa., assignors to ESAB Manufacturing, Inc., Charlottesville, Va.

Filed Mar. 26, 1973, Ser. No. 344,909

Int. Cl.² B23K *9/12*

U.S. Cl. 219—75 **22 Claims**



1. A manual arc welding torch comprising a handle to be guided by an operator, a head mounted on said handle, said head supporting a non-consumable electrode which is elongated along its longitudinal axis and having an outer end for establishing and maintaining an arc which extends substantially along said longitudinally axis outwardly from said outer end of said electrode toward a work piece spaced therefrom; conductor means for supplying current to said electrode for establishing and maintaining said arc; and means for feeding filler wire disposed such that a fed filler wire forms a feed path intersecting an extension of said longitudinal axis at a point outwardly of said outer end of said electrode, said feeding means including means for automatically, repetitively, advancing said filler wire after said arc is established and during the duration of said arc, said automatic, repetitive, advancing means advancing said filler wire along said feed path relative to said arc in repetitive incremental advancing strokes between alternate periods of dwell.

3,940,587

ADJUSTABLE STOP FOR A BOLT WELDING GUN

Norbert Oehry, Fl-Schaan, Liechtenstein, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

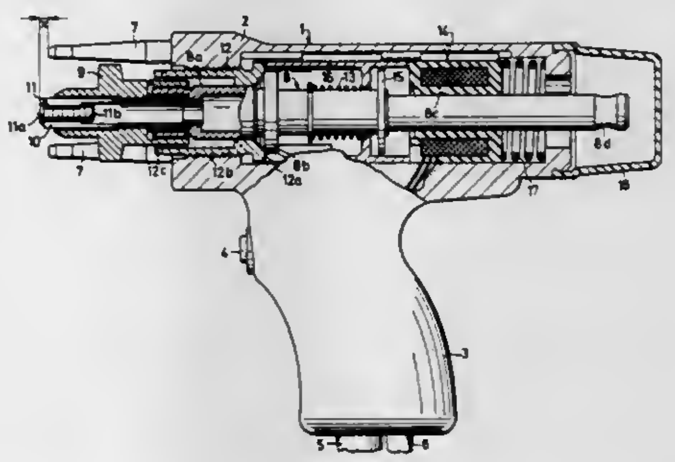
Filed Oct. 11, 1974, Ser. No. 514,215

Claims priority, application Germany, Oct. 15, 1973, 2351692

Int. Cl.² B23K *9/22*

U.S. Cl. 219—98 **10 Claims**

1. Welding gun for a capacitor discharge welding device comprising a housing forming an axially extending space therein having a forward end from which a bolt is welded to a workpiece and a rearward end, a plurality of supporting feet secured to and extending axially outwardly from the forward end of said housing, a thrust unit mounted in the space in said housing for movement in the axial direction of the space between a forward rest position and a rearward position in which position the thrust unit is held ready to be displaced forwardly for carrying out the welding operation, said thrust unit having a forward end adjacent the forward end of said housing and an oppositely directed rearward end closer to the rearward end of said housing, a collet chuck supported at the forward end of said thrust unit and extending axially outwardly therefrom and arranged to hold a bolt in position prior to the welding operation, a holding magnet located within and adjacent the rearward end of said housing, said holding magnet arranged to releaseably hold said thrust unit in its rearward position, a stop positioned within said housing in the path of movement of said thrust unit toward its forward rest position, said thrust unit including a spring biasing said thrust unit toward said stop and holding said thrust unit against said stop when said thrust unit is in the forward rest position, said collet chuck including stop means limiting the extent to which a bolt is inserted into the collet chuck, the axial dimension denominated as the lead in the forward rest position of said thrust unit between the free ends of said supporting feet spaced forwardly from the forward end of said housing and the forwardly located end of the bolt held in said collet chuck against said stop means and facing outwardly from said housing and forwardly of the free ends of said supporting feet being adjustable, wherein the invention comprises that said stop is axially adjustable relative to said housing and affords adjustment for the lead between the free ends of said supporting feet and the outwardly facing end of the bolt held in the collet chuck.



3,940,588

BOLT-WELDING GUN WITH MOVABLE SUPPORTING LEGS

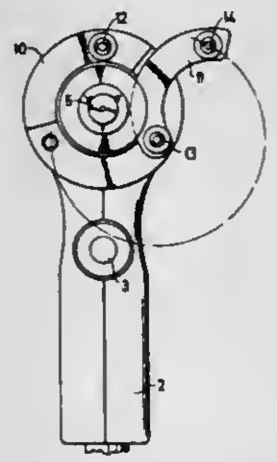
Norbert Oehry, and Rainer Wild, both of Schaan, Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Sept. 24, 1974, Ser. No. 508,899

Claims priority, application Germany, Sept. 25, 1973, 2348174

Int. Cl.² B23K *11/28*

U.S. Cl. 219—98 **8 Claims**



1. A bolt-welding gun having a front end from which bolts are welded to a surface, comprising a housing having a central axis extending in the direction in which the axes of bolts are oriented for attachment to a surface, a ring-shaped housing part secured to said housing at the front end of the gun, supporting legs mounted on and extending outwardly from the ring-shaped housing part in angularly spaced relation to provide at least a 3-point support for the gun as a bolt is welded

onto a surface, wherein the improvement comprises that said ring-shaped housing is constructed for varying the positional relation of said supporting legs at least in relation to the central axis of said housing so that the position of said supporting legs can be changed in accordance with various conditions experienced in welding the bolts to a surface, and at least a portion of said ring-shaped housing part having at least one said supporting leg mounted thereon is pivotally displaceable about an axis disposed in spaced parallel relation with the central axis of the housing.

3,940,589

PORTABLE COOKING EQUIPMENT

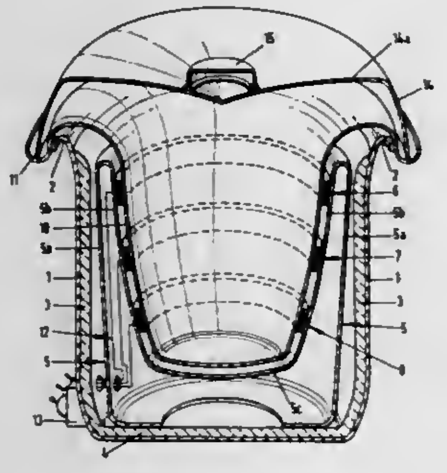
Earl Silas Tupper, Panama City, Panama, assignor to Tupl (Panama) S.A., Panama City, Panama

Continuation-in-part of Ser. No. 311,545, Dec. 4, 1972, abandoned. This application Nov. 20, 1973, Ser. No. 417,583

Claims priority, application United Kingdom, Dec. 8, 1971, 57035/71

Int. Cl.² F27D *11/02*

U.S. Cl. 219—433 **2 Claims**



1. A portable article of cooking equipment consisting of: an enclosure member, open at the top and comprising a surrounding wall formed of heat-insulating material and a base formed of heat-insulating material: a resilient support member within said enclosure member and having an internal wall portion defining an inner chamber open at the top and of decreasing cross-section from top to bottom, and a resilient support for said internal wall portion, said internal wall portion being spaced from said surrounding wall and from said base of said enclosure member; a plurality of strip electrical-resistance heating elements formed into a series of like loop-shaped members supported on the inner surface of said internal wall portion in a horizontal disposition and vertically spaced one from the other, thereby defining a space for receiving a cooking vessel resting by gravity against each element; resilient support means on said internal wall portion, said elements being mounted on said resilient support means to accommodate small deformations of fit between the elements and a cooking vessel held therein; electrical insulation means spacing said elements at least from said internal wall portion; separate electrically insulating electrical connections, one for each heating element; and electrical switching means mounted to the outer wall of said enclosure member and connected to said electrical connections, whereby said heating elements can be selectively controlled.

3,940,590

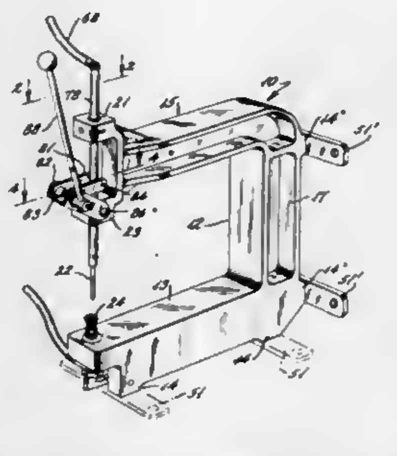
FUSED EYELETTING MACHINE

Loring E. Young, Jefferson, and William Jordan Siegel, Silver Spring, both of Md., assignors to Pace, Incorporated, Silver Spring, Md.

Filed July 16, 1974, Ser. No. 489,035

Int. Cl.² B21J *5/08*

U.S. Cl. 219—150 V **3 Claims**



1. In a portable machine for setting eyelets and the like comprising a C-shaped frame adapted to rest on a work surface; a lower setting tool mounted on the lower arm of the frame, an upper setting tool opposing said lower tool movably mounted on the upper arm of the frame, and a manually operated stop arrested travel actuating means associated with said upper tool for moving said upper tool into setting engagement with said lower tool; the improvement which comprises:

a bifurcated upper arm of the frame split into two tool mounting fingers, a mandrel portion of said upper tool being mounted in apertures in said fingers movable relative thereto; and

the travel actuating means mounted on the upper tool mandrel portion at a location thereon between said fingers.

3,940,591

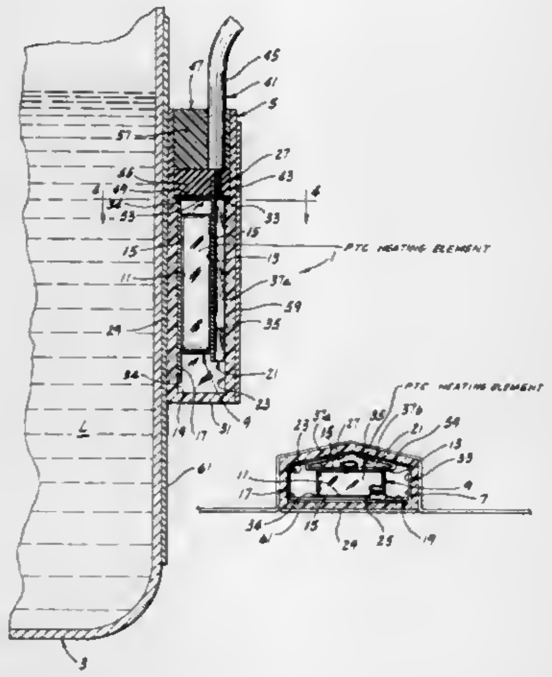
SELF-REGULATING ELECTRIC HEATER

Youn H. Ting, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 1, 1974, Ser. No. 484,850

Int. Cl.² H05B *3/02;* **H01C** *7/02*

U.S. Cl. 219—544 **3 Claims**



1. A self-regulating heater comprising:

a housing having a chamber therein;

a heating element constituted by a self-heating positive temperature coefficient resistor having low initial resistance which increases abruptly as its temperature rises above a given level, said element having first and second substantially parallel surfaces spaced from one another, said surfaces each having a layer of electrically conductive material applied thereto for forming an ohmic contact surface;

a heat sink comprising a plate of thermally and electrically conductive material, said heat sink plate being positioned in said housing chamber so that one face of said plate is in heat-transfer relation with a first inside surface of said housing, and so that the other side of said plate is in electrical contact and heat-transfer relation with said first surface of said element;

spring means of electrically conductive material disposed in said chamber between a second inside surface of said housing and said second surface of said element for biasing said heating element and said plate toward and into close heat-transfer relationship with the first inside surface of said housing;

first and second terminal means carried by the plate and spring means, respectively, for supplying electrical power to said element;

said second inside surface of said housing being generally trough-shaped and said spring means comprising a spring member having a first portion engageable with said second surface of said element and an outer marginal portion on each side of said first portion bent back on said first portion at an acute angle, said outer marginal portions being resiliently engageable with said trough-shaped surface thereby to guide the spring member as it is inserted into the chamber, to hold the spring member substantially centered widthwise with respect to the housing after said heater is assembled, and to resiliently maintain said element in heat transfer relationship with said plate and to maintain the latter in heat transfer relationship with said housing.

3,940,592

ELECTRICALLY HEATED ALIGNMENT PAD

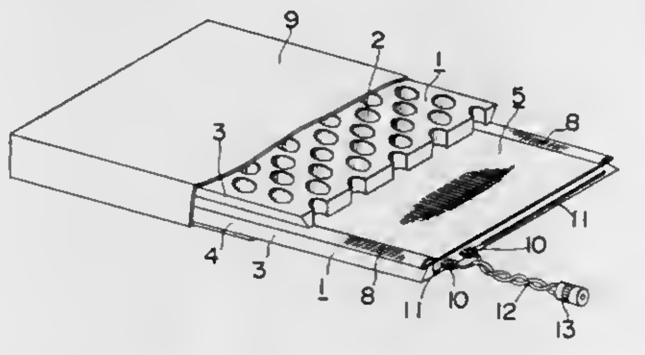
Keiji Shimizu, Tokyo; Hiroshi Yoshida, Musashino; Haruhisa Furuishi, Suita; Yoshihiro Murata, Katano; Hidenori Suzaki, Hirakata; Kuninori Azuma, Ikoma; Kinji Terawaki, Osaka, and Hiroshi Izumi, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma and Japanese National Railways, Tokyo, both of, Japan

Filed Nov. 29, 1973, Ser. No. 419,968

Claims priority, application Japan, Dec. 13, 1972, 47-124278

Int. Cl.² H05B *3/10*

U.S. Cl. 219—548 **11 Claims**



1. An electrically heated aligment pad which comprises at least one plate member of thermoplastic resin and at least one thin flat electric heater lying against said plate member for heating said plate member to soften said plate member, said plate member having a large plurality of apertures therein spread substantially uniformly over the whole area of said plate member and into which portions of said plate member around said apertures flow laterally when said plate member is in the heat softened condition and an external compression force is applied thereto for reducing the thickness of said plate, whereby an object through which the compression force is applied can be moved by the reduction of thickness of the alignment pad for adjusting the position thereof in the direction of the force being applied to the alignment pad.

3,940,593

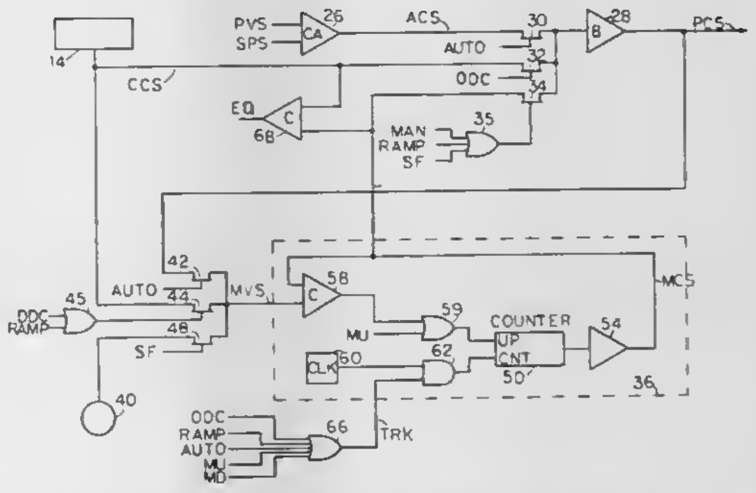
AUTOMATIC PROCESS CONTROLLER WITH DIGITAL MEMORY

Thomas M. Bleak, Whittier, and Paul L. Hansen, Brea, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 13, 1974, Ser. No. 497,098

Int. Cl.² G05B *07/00*

U.S. Cl. 235—150.1 **7 Claims**



1. An improved automatic process controller operable in manual, automatic and DDC modes, of the type having;

automatic control means for generating an automatic control signal during the automatic mode related to the deviation of a process value signal from a set-point signal and tracking a manual control signal during the manual mode;

manual control means for generating the manual control signal during the manual mode and tracking the automatic control signal during the automatic mode;

computer control means for generating a DDC signal related to a value generated in a computer during the DDC mode,

an output switch for selectively applying one of the control signals to the process to be controlled, wherein the improvement comprises:

a DDC switch for initiating a transfer to the DDC mode;

logic means responsive to the DDC switch for operating the output switch to apply the manual control signal to the process when a transfer to the DDC mode is initiated;

means responsive to the logic means for adjusting the manual control signal to become equal to the DDC signal at a rate compatible with process requirements; and

equality detecting means responsive to the logic means for operating the output switch to apply the DDC signal to the process after the manual control signal has become equal to the DDC signal.

3,940,594

AUTOMATIC PROCESS CONTROLLER WITH BUMPLESS OPERATION

Thomas M. Bleak, Whittier, and Paul L. Hansen, Brea, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 13, 1974, Ser. No. 497,097

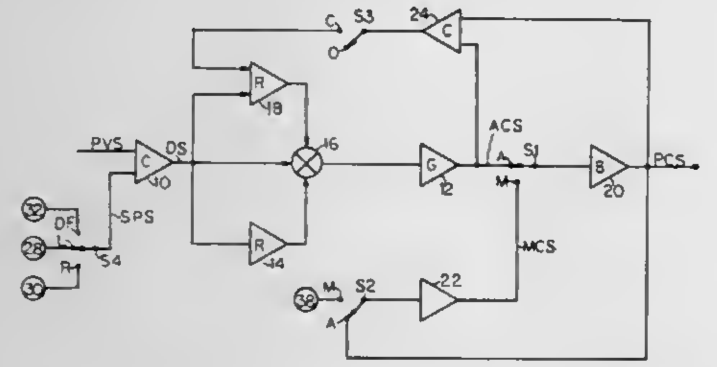
Int. Cl.² G05B *7/00*

U.S. Cl. 235—150.1 **18 Claims**

1. An improved automatic process controller having adjustable parameters operable in manual and automatic modes of the type having:

automatic control means for generating an automatic control signal during the automatic mode related to the deviation of a process value signal from a set-point signal,

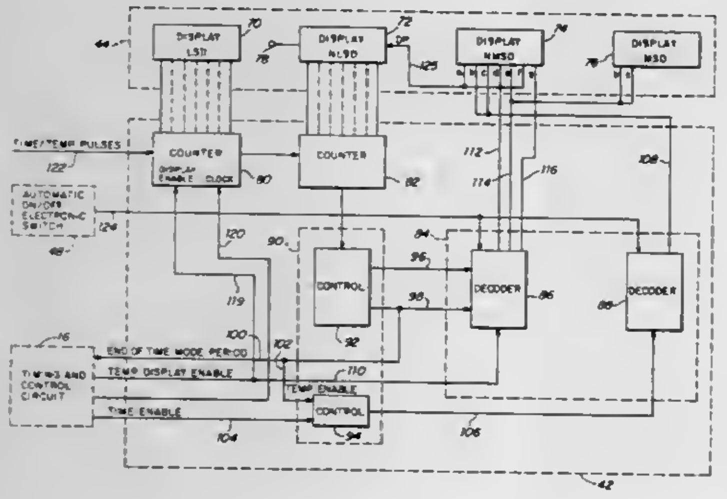
manual memory means for generating an adjustable manual control signal during the manual mode,
an output switch for selectively applying one of the control signals to the process to be controlled,
means to cause the automatic control signal to track the signal applied to the process during the manual mode, and
means to cause the manual control signal to track the signal applied to the process during the automatic mode, wherein the improvement comprises:
bumpless adjust means for initiating a change in the operation of the automatic control means;



first logic means responsive to actuation of the bumpless adjust means to operate the output switch to apply the manual control signal to the process;
a settle circuit for causing the automatic control signal to become equal to the signal applied to the process only when actuated;
second logic means responsive to actuation of the bumpless adjust means for generating a settle time period and for activating the settle circuit during the settle time period; and
third logic means for operating the output switch to apply the automatic control signal to the process at the end of the settle time period.

3,940,595
ELECTRONIC THERMOMETER DECODER AND DISPLAY SYSTEM

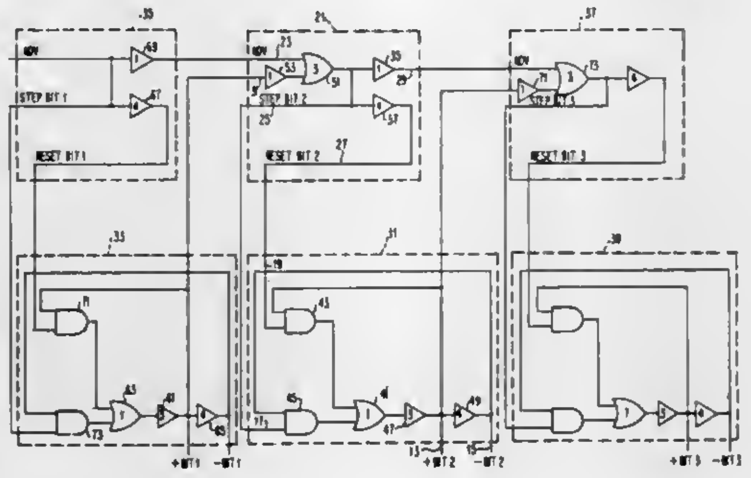
Robert Bruce Turner, Weymouth, Mass., assignor to American Medical Electronics Corporation, Newton Upper Falls, Mass.
Filed May 30, 1974, Ser. No. 474,400
Int. Cl.² G06M *3/06*
U.S. Cl. 235—92 EA **3 Claims**



1. An electronic thermometer system for measuring and displaying temperature in more than one power of a radix comprising:
a first radix counter for counting pulses representative of the temperature measured;
a first display device for displaying the count in said first radix counter;
a radix power increment switching circuit responsive to said first radix counter cycling through a first radix count for indicating that the first next radix power has been reached; and to said first radix counter cycling through a second radix count for indicating that the second next radix power has been reached;
a second display device for displaying said first next radix power;
a third display device for displaying said second next radix power; and
a decoder responsive to said radix power increment circuit indicating that the first next radix power has been reached for setting a first predetermined number in said second display device and responsive to said radix power increment switching circuit indicating that said second next radix power has been reached for displaying a different predetermined number in said second display device in place of said first predetermined number and displaying a second predetermined number in said third display device.

3,940,596
DYNAMIC LOGIC COUNTER

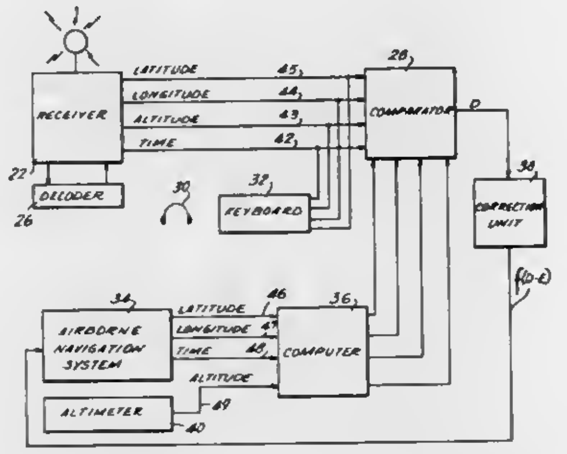
Richard Charles Paddock, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 369,022, June 11, 1973, abandoned. This application Apr. 24, 1975, Ser. No. 571,144
Int. Cl.² H03K *23/02*
U.S. Cl. 235—92 LG **14 Claims**



1. A counter comprising:
a plurality of dynamic logic circuit steering circuit controlled subcounters;
shift logic means having an advance input for receiving an advance signal to advance said counter, said shift logic further comprising:
first sampling logic having inputs connected to outputs of a first of said subcounters for sampling the contents thereof before the outputs of said first subcounter have changed state;
first incrementing logic having an input for receiving said advance signal and an output connected to an input of said first subcounter, said first incrementing logic being synchronized with dynamic logic memory stages of said first subcounter to increment said first subcounter in response to receipt of said advance signal and to propagate said advance signal;
second incrementing logic having an input for receiving said advance signal, an input connected to the output of said first sampling logic and an output connected to an input of a second of said subcounters, said second incrementing logic being synchronized with dynamic logic memory stages of said second subcounter to increment said second subcounter and to propagate said advance signal if said sampled contents of said first subcounter equal a predetermined count.

3,940,597
NAVIGATIONAL ERROR CORRECTING SYSTEM

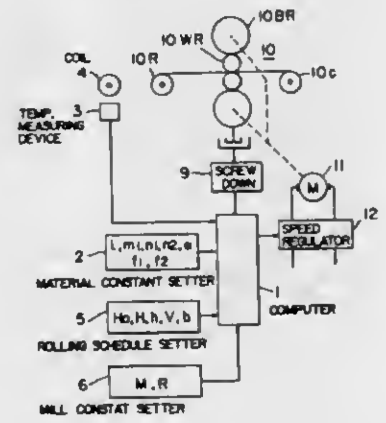
Paul L. DiMatteo, Huntington, N.Y., assignor to Dynell Electronics Corporation, Melville, N.Y.
Filed Dec. 5, 1974, Ser. No. 529,597
Int. Cl.² G06F *15/20*
U.S. Cl. 235—150.2 **22 Claims**



1. A method for determining the position of a predetermined vehicle in a group of vehicles comprising the steps of: measuring the position of said vehicle from aboard said vehicle; measuring the positions of all vehicles within said group from a predetermined reference position; transmitting from said reference position the measured positions of all vehicles to said group simultaneously; comparing in said predetermined vehicle all said measured positions with the position measured from said predetermined vehicle and deriving a comparison value; selecting the position associated with said vehicle from the transmitted positions of all vehicles of said group in dependence on predetermined selection rules; and applying a correction in the position of said predetermined vehicle dependent on said comparison value; said correction being applied when said comparison value is within predetermined limits related to the accuracy of measuring the position of said vehicle from aboard said vehicle, said correction being not applied when said comparison value is ambiguous by being less than a predetermined limit of said accuracy.

3,940,598
METHOD AND APPARATUS FOR CONTROLLING ROLL GAPS OF COLD ROLLING MILLS

Kunio Sekiguchi, Kawagoe, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Sept. 25, 1974, Ser. No. 509,227
Claims priority, application Japan, Sept. 28, 1973, 48-109110
Int. Cl.² B21B *37/00*
U.S. Cl. 235—151.1 **10 Claims**



1. A method of controlling the roll gap of a cold rolling mill comprising the steps of measuring the absolute temperature T(°K) of the metal strip being rolled, determining the deformation resistance K_f (kg/mm²) of the metal strip in accordance with an equation

$$K_f = l\,(\bar{r} + m)^{n_1} \cdot \epsilon^{n_2} \exp(\alpha/T)$$

where r represents the total reduction, ϵ the strain rate (sec⁻¹), T the strip temperature (°K), l and m constants, n_1 an exponent dependent upon the reduction, n_2 an exponent dependent upon the strain rate, and α an exponent dependent upon the temperature (°K); determining the exit strip temperature T_{EX} (°K) in accordance with an equation

$$T_{EX} = T_{EN} + \frac{1 - \frac{r}{4}}{1 - \frac{r}{2}} \cdot \frac{Km \cdot \ln\left(\frac{1}{1-r}\right)}{\rho\, S\, J}$$

where T_{EN} represents the entrance strip temperature, r the reduction, p the density (Kg/mm_3) of the material being rolled, S the specific heat (K cal/Kg °C) of the material, J the work equivalent of heat (Kg.mm/K cal), Km the mean deformation resistance, and l and m constants; determining the mean deformation resistance K_m in accordance with the following equations

$$K_m = 1.15\,l\,(\bar{r}_m + m)^{n_1} \cdot \epsilon^{n_2} \exp(\alpha/\bar{T}_m)$$
$$\bar{r}_m = \beta_1\,\bar{r}_{EN} + (1 - \beta_1)\,\bar{r}_{EX}$$
$$\bar{T}_m = \beta_2\,T_{EN} + (1 - \beta_2)\,T_{EX}$$

where L, m, n_1, n_2, ϵ, T_{EN}, T_{EX} and α have the meanings as defined for the equations for K_f and T_{EX}, β_1 represents the distribution coefficient of the reduction, β_2 the distribution coefficient of the temperature, $\bar{r}_m$ the mean total reduction, $\bar{T}_m$ the mean strip temperature (°K), $\bar{r}_{EN}$ the mean total reduction of the strip on the entrance side and $\bar{r}_{EX}$ the total reduction of strip on the exit side; determining the rolling load p (Kg/mm) by substituting the value of Km in an equation

$$p = Z \,.\, K_m \sqrt{R' \,.\, \Delta h \,.\, QP}$$

where Z represents a correction term for tension, R' the roll radius (mm) after the roll has been flattened a little by contact with the strip, Δh the amount of reduction and Qp the reduction function regarding the rolling force; determining the roll gap S_o (mm) by substituting the value of p in an equation

$$S_o = h - \frac{b \cdot p}{M}$$

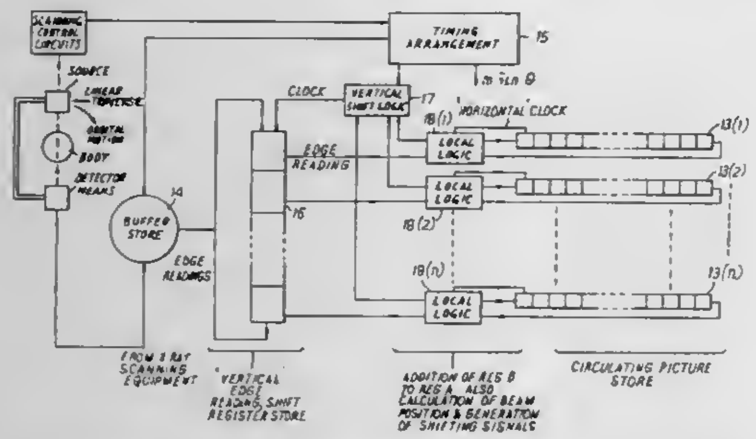
where h represents the thickness of the strip on the exit side, b the width of the strip, and M the mill constant (Kg/mm); and adjusting the roll gap in accordance with the value of S_o thus determined.

3,940,599
DATA PROCESSING ARRANGEMENTS

Godfrey Newbold Hounsfield, Newark; Paul Anthony Beaven, Langley, and Brian Herbert Lill, Flackwell Heath, all of England, assignors to E M I Limited, Hayes, England
Filed May 23, 1974, Ser. No. 472,872
Claims priority, application United Kingdom, May 23, 1973, 24773/73
Int. Cl.² G06F *15/34*
U.S. Cl. 235—151.3 **8 Claims**

1. A data processing arrangement including
a. first storage means for storing electrical signals indicative of the value of a function at each of a plurality of different spatial locations of a region,
b. second storage means for storing electrical signals indicative of the overall value of the function over linear combinations of some of said locations,
c. means for correlating the information stored in said first and second storage means, to update the signals stored in said first storage means which relate to the locations of said combinations, comprising
  i. means for shifting the information stored in each of said storage means at respective rates,

- ii. means for controlling said rates in dependence upon the disposition of said linear combinations of elements with respect to said region and
- iii. means for combining some of the information stored in said first and second storage means, and


SCANNING CONTROL CIRCUITS
SOURCE
LINEAR TRAVERSE
ORBITAL MOTION
BODY
DETECTOR MEANS
BUFFER STORE
14
TIMING ARRANGEMENT
15
CLOCK
VERTICAL SHIFT LOGIC
17
HORIZONTAL CLOCK
EDGE READING
EDGE READINGS
16
18(1)
18(2)
18(n)
LOCAL LOGIC
13(1)
13(2)
13(n)
FROM X RAY SCANNING EQUIPMENT
VERTICAL EDGE READING SHIFT REGISTER STORE
ADDITION OF REG B TO REG A ALSO CALCULATION OF BEAM POSITION & GENERATION OF SHIFTING SIGNALS
CIRCULATING PICTURE STORE

d. means for replacing the signals in said second storage means with other signals indicative of a further overall value of the function over further linear combinations of some of said locations so that the signals in said first storage means may be further updated.

3,940,600
METHOD AND APPARATUS FOR ON-LINE NON-INTERACTIVE BLENDING USING AN UNCOUPLING MATRIX

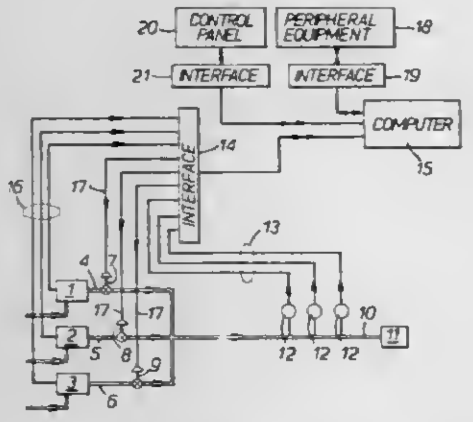
Michael Richard Alexander; Edward Duncan; Kenneth McClements, and John Roger Spencer, all of London, England, assignors to The British Petroleum Company Limited, London, England

Filed Mar. 26, 1974, Ser. No. 454,925

Claims priority, application United Kingdom, Apr. 4, 1973, 16057/73

Int. Cl.^{2} G06F *15/46;* G06G *7/58*

U.S. Cl. 235—151.12 **12 Claims**



1. A method of non-interactive blending, comprising the steps of:

monitoring a plurality of qualities of a blended product on line;

producing electrical signals representative of the selected qualities;

feeding the electrical signals to a control means;

operating on the electrical signals in the control means with an uncoupling matrix, which is an inversion of a matrix representing linear property indices of components of the blend, to produce output control signals;

feeding the output control signals to valve means, which respectively control the flow of each of the components of the blend, to simultaneously control the flow of all of the components to correct for any deviation without causing deviations of other qualities of the blended product.

3,940,601
APPARATUS FOR LOCATING FAULTS IN A WORKING STORAGE

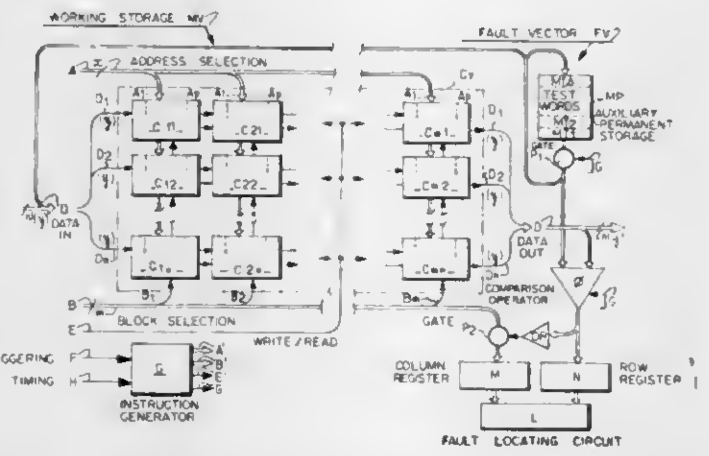
Michel Henry, and Gilles Jean Marcel Bottard, both of 94 Avenue Gambetta, Paris (20), France

Filed Aug. 30, 1974, Ser. No. 502,165

Claims priority, application France, Sept. 5, 1973, 73.32062

Int. Cl.^{2} G06F *11/00;* G11C *29/00*

U.S. Cl. 235—153 AC **8 Claims**



1. In a data processing system including a working storage consisting essentially in a plurality of identical components each having several selectively addressable store cells at which at least one bit of a data can be stored, said components being arranged in a matrix array wherein each column constitutes a block capable of storing several data words at respective addresses and wherein each row corresponds to at least one and the same bit position of said words, said working storage being further provided with circuit means operative for selectively writing or reading a data word at any predetermined address of any one of said blocks, a method for locating faults in said working storage, which comprises the preliminary step of determining a sequence of at least three test words each having as many bits as a data word and between which both logic states are distributed so that each bit presents each state at least once in said sequence, and which further comprises the operating steps of:

- — writing repetitively said sequence of test words at successive addresses of a first one of said blocks until all addresses thereof are filled, then reading out successively the content of each address of said first block and comparing same to that test word previously written at the said address, and whether any corresponding bits thereof differ, determining the position of said differing bits and registering the row of the involved defective component;
- — then repeating for said first block the aforesaid operating step with cyclic permutation of said test words in said sequence up to their initial ranking, to thereby register the rows of every defective components in said first block, and further registering together the relevant column;
- — and thereafter repeating the aforesaid steps for each block of said working storage, to thereby list every defective component thereof, each one being identified by the row and column to which it pertains.

3,940,602
SIGNAL PROCESSING IMAGER ARRAY USING CHARGE TRANSFER CONCEPTS

Isaac Lagnado, and Harper J. Whitehouse, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 23, 1974, Ser. No. 508,472

Int. Cl.^{2} G06G *7/19;* H01L *31/00*

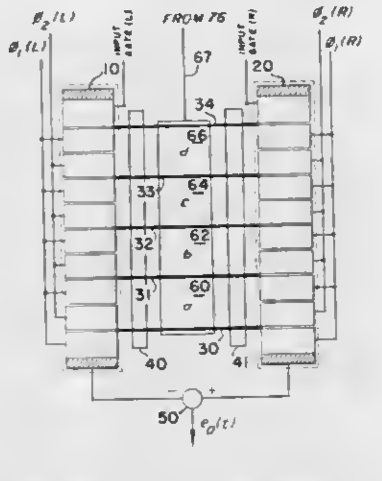
U.S. Cl. 235—181 **9 Claims**

1. An apparatus for image sensing and mathematical transformation comprising:

an array of optical sensors for sensing an image and storing a series of charge signals representative of said image;

first and second CCD shift registers, each said CCD shift register comprising a plurality of bits;

first and second distinct independently controlled transfer gate means for controlling the transfer of said charge signals from said array of optical sensors to said first and second CCD shift registers;



a plurality of diffusion stops arranged to permit the transfer of each charge signal of said series of charge signals from each element of said array of optical sensors to one of said plurality of bits in either of said first and second CCD shift registers.

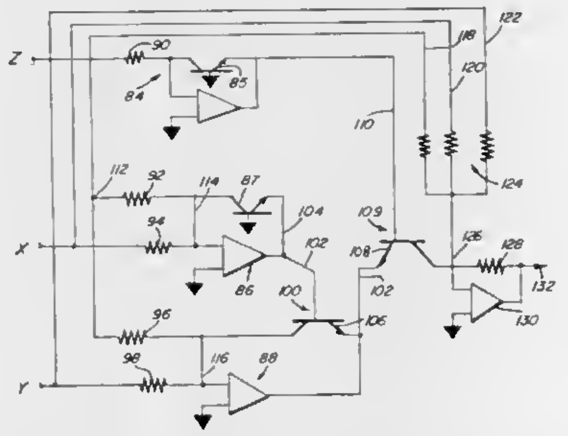
3,940,603
FOUR QUADRANT MULTIPLYING DIVIDER USING THREE LOG CIRCUITS

John I. Smith, 4505 Ellicott St., Washington, D.C. 20016

Filed July 2, 1974, Ser. No. 485,098

Int. Cl.^{2} G06G *7/16*

U.S. Cl. 235—195 **19 Claims**



1. An analog multiplying divider for three input variables x, y and z, the multiplying divider comprising:

first circuit means for performing a log transfer operation upon the variable z;

second circuit means for performing a log transfer operation upon at least the variable x;

third circuit means for performing a log transfer operation upon at least the variable y;

the third circuit means including first means for summing at least log y and the log x output from the second circuit means to form a summation signal which is a function of $\log x + \log y$;

second summing means having inputs thereof connected to the output of the first circuit means and the third circuit means for producing the antilog $(\log x + \log y - \log z)$; and

output means connected to the output of the second summing means for producing $(xy)/z$ at the output thereof.

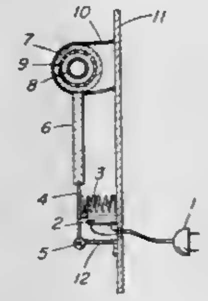
3,940,604
DEVICE FOR EMERGENCY LIGHTING

Michael McKay Rauhut, Bridgewater Township, Somerville County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 12, 1973, Ser. No. 423,949

Int. Cl.^{2} F21V *9/16*

U.S. Cl. 240—2.25 **9 Claims**



1. A device for displaying emergency lighting comprising a base plate, an extension plate extending vertically from and affixed at one end to said base plate, pivot means attached to the other end of said extension plate, a metallic plate affixed at one end by said pivot means to said extension plate to allow said metallic plate to swing about said pivot means, an elongated rigid rod affixed at one end to the other end of said metallic plate opposite said pivot means, clamping means affixed to the other end of said elongated rigid rod, bias means affixed at one end to said base plate and positioned on said base plate to contact said metallic plate when said metallic plate is pivoted about said pivot means to aligned said rigid rod substantially parallel with said base plate, an electromagnetic force means affixed at one end to said base plate adjacent said bias means and disposed to contact said metallic plate when said metallic plate is pivoted about said pivot means to align said elongated rigid rod substantially parallel to said base plate, electrical power means connected to said electromagnetic force means to create an electromagnetic force so that when said metallic plate contacts said electromagnetic force means the bias means is compressed, a chemiluminescent light device comprising at least two elongated containers each container sealed on both ends and each containing a chemical component of a multicomponent chemiluminescent system, said containers comprising a translucent outer container and at least one rigid frangible inner container located within said outer container, said outer container held in the center by said clamping means, a pair of restraining means loosely encompassing each end of said outer container and affixed to said base plate so that when the electrical power fails the compressed bias means will press against said metallic plate bending said flexible outer container sufficiently to break the inner frangible container and cause the chemical components to become admixed after the ends of the outer container slip free of said restraining means to display the chemical lighting device in a position vertical to said base plate.

3,940,605
CHEMILUMINESCENT MARKER APPARATUS

Robert L. Gerber, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 18, 1974, Ser. No. 533,905

Int. Cl.^{2} F21V *9/16*

U.S. Cl. 240—2.25 **6 Claims**

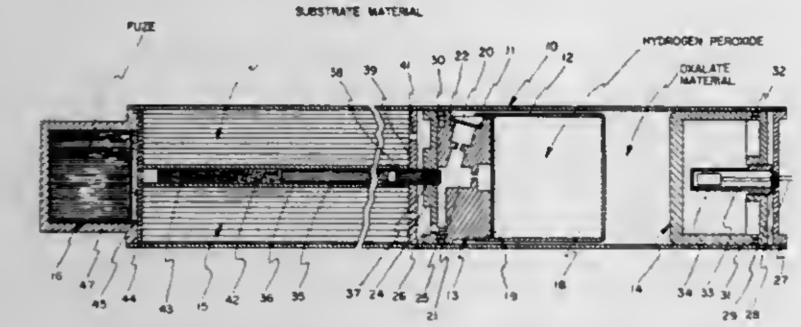
1. A chemiluminescent light apparatus for generating an illuminated marker comprising:

a tubular housing;

mixing means rigidly mounted within said tubular housing;

first and second fluid compartments within said tubular housing having frangible means separating said fluid compartments from said mixing means and adapted to deliver fluid to said mixing means upon rupture of said frangible means;

gas generator means having an explosive actuator for releasing a predetermined quantity of gas to cause a force to be exerted on said first and said second fluid compartments for rupturing said frangible means; and



light transmittable means attached to said mixing means for receiving and storing the mixed fluids;

whereby the light given off from the chemical action of the mixed fluid forms a means of illumination of a given area.

3,940,606

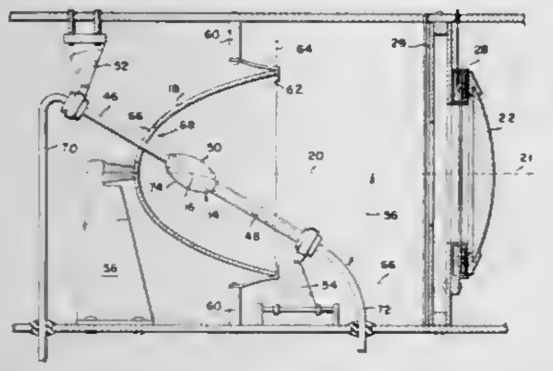
HIGH INTENSITY SPOTLIGHT

Thomas M. Lemons, Marblehead, Mass., assignor to Lighting Development Co., Needham Heights, Mass.

Filed July 19, 1974, Ser. No. 490,052

Int. Cl.^{2} F21M *7/00*

U.S. Cl. 240—41 R **7 Claims**



1. A light projecting apparatus comprising a concave, substantially prolate-spheroidal reflector having on the major axis thereof a first and a second focal point within and remote from the reflector respectively, a high intensity halide source positioned at said first focal point, the source having a opposed electrodes defining a source axis which is inclined with respect to said major axis at an angle between 25° and 35°.

3,940,607

PHOTO-ELECTRIC LIGHTNING DETECTOR APPARATUS

Edmund Philip Krider, Tucson, Ariz., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 9, 1974, Ser. No. 531,010

Int. Cl.^{2} H01J *39/12*

U.S. Cl. 250—209 **3 Claims**

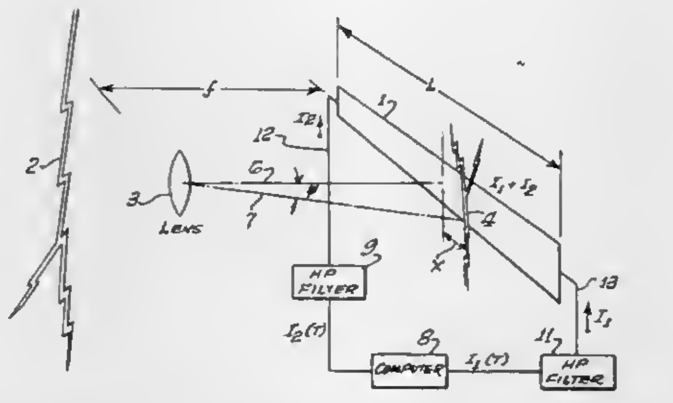
1. Photoelectric apparatus for monitoring the occurrence of a lightning discharge in the vicinity of a particular objective comprising:

a continuous linear single-axis position-sensing photodiode detector means of a length L deployed a predetermined distance from said objective;

an optical objective lens having a predetermined field of view for imaging a lightning discharge occuring within its view as a focused narrow-line channel bisecting said length L at varying locations dependent upon the location of the lightning discharge; said detector means being formed for producing two signal outputs each corresponding in magnitude to said variable location of said bisecting channel;

said lens and detector means each being relatively disposed one to the other and both being oriented relative to said objective for focusing said field of view on said detector means;

data acquisition means, and



circuit means coupling said two detector means outputs to said acquisition means, said circuit means including background filtering means for passing to said acquisition means signal information substantially wholly representative of the optical transients of the lightning discharge,

said acquisition means being responsive to said filtered information for providing angle to discharge data whereby precise information regarding the proximity of said discharge to said objective and its intensity is provided.

3,940,608

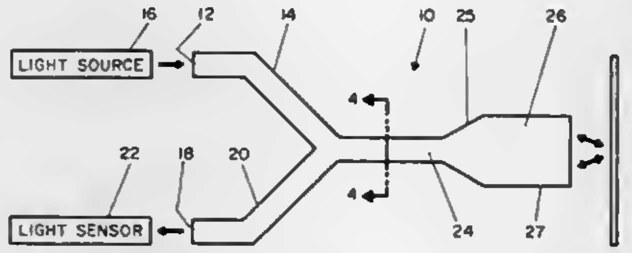
FIBER OPTIC DISPLACEMENT MEASURING APPARATUS

Curtis D. Kissinger, Gloversville, N.Y., and Bradford Howland, Cambridge, Mass., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Feb. 4, 1974, Ser. No. 439,339

Int. Cl.^{2} G02B *5/16*

U.S. Cl. 250—227 **11 Claims**



1. Optical apparatus for determining the displacement or position of an object comprising:

a. A light source and a light receiver for receiving light transmitted from said light source;

b. A fiber optic conduit of Y-shaped configuration having the end of one arm thereof positioned adjacent said light source and the other arm positioned adjacent said light receiver, said conduit arms forming a common bundle of optically conducting fibers in the base of said Y, some of which fibers are transmitting fibers for conducting light from said light source to a surface of said object and some of which are receiving fibers for conducting light reflected from the surface of said object to said light receiver so that said conduit is normally operative to conduct light from said light source and to conduct reflected light impinging on the end face of said common bundle to said light receiver; and

c. A sensing head having one end thereof fixedly mounted with the end of said common bundle and the other end adapted to be positioned adjacent the surface whose displacement or position is to be measured, said sensing head including lens means comprising a pair of projection lenses arranged in back-to-back relationship and operative to focus the image of the end face of said common bundle onto the surface of said object and refocus said image back onto said end face to provide for a minimum output from said light receiver for a given distance between said end of said sensing head and the surface of said object and an increase in output from said light receiver for any change in said given distance.

3,940,609

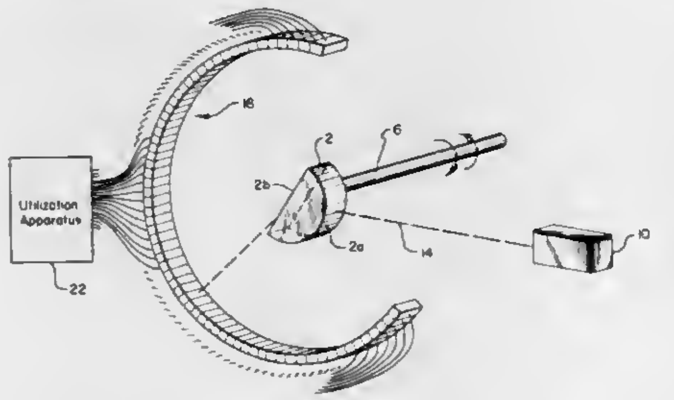
ANGULAR POSITION MEASURING APPARATUS

Dick E. Johnstun, 1355 E. Granada Drive, Sandy, Utah 84070

Filed Oct. 9, 1974, Ser. No. 513,218

Int. Cl.^{2} G01D *5/34*

U.S. Cl. 250—231 SE **9 Claims**



1. Apparatus for indicating angular position of a rotatable device comprising

a prism coupled to the device to rotate therewith,

means disposed laterally of the axis of rotation of the device for directing a beam of light to said prism, said beam passing through the prism and being refracted thereby, and

an array of photo detectors positioned about the prism so that the refracted beam of light will impinge on one of the photo detectors, the particular photo detector on which the refracted light impinges depending upon the angular position of the prism and thus of the device.

3,940,610

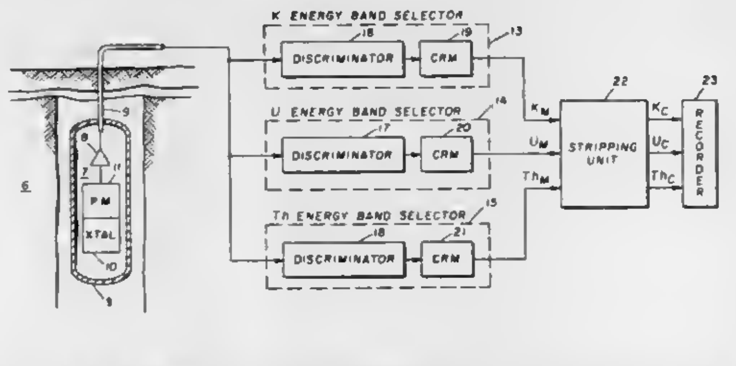
NATURAL GAMMA RADIATION BOREHOLE LOGGING SYSTEM

Charles L. Dennis, De Soto; Wyatt W. Givens, Dallas, and John B. Hickman, Grand Prairie, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 15, 1974, Ser. No. 443,073

Int. Cl.^{2} G01V *5/00;* **G01T** *1/20*

U.S. Cl. 250—253 **7 Claims**



1. In a system for determining the amounts of natural gamma radiation from potassium, uranium, and thorium in the earth formations and having a gamma-ray detector which provides an output representative of the total natural gamma radiation and three energy band selectors which discriminate the count rate output of the gamma-ray detector into potassium, uranium, and thorium energy band signals centered, respectively, about the energy levels at which potassium, uranium, and thorium exhibit peak gamma radiation intensities, the improvement comprising:

a. first means for producing the fraction of the count rate in the thorium energy band signal that represents the contribution of thorium gamma radiation to the total count rate of the uranium energy band signal,

b. second means for subtracting said fraction of the count rate of the thorium energy band signal from said total count rate of the uranium energy band signal,

c. third means for producing the fraction of the count rates in the uranium and thorium energy band signals that respectively represent the contributions of uranium gamma radiation and thorium gamma radiation to the total count rate of the potassium energy band signal, and

d. fourth means for subtracting said fractions of the count rates of the thorium and uranium energy band signals from said total count rate of the potassium energy band signal.

3,940,611

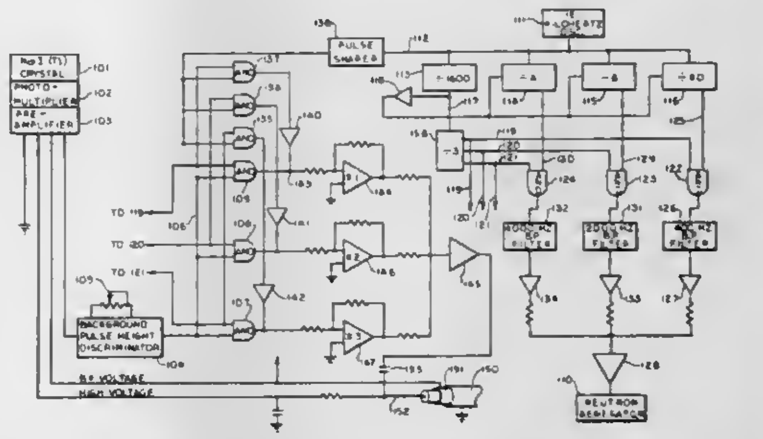
METHOD FOR DETERMINING THERMAL NEUTRON DECAY TIMES OF EARTH FORMATIONS

Dan M. Arnold, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed July 17, 1974, Ser. No. 489,329

Int. Cl.^{2} G01V *5/00*

U.S. Cl. 250—269 **8 Claims**



1. A method for determining the thermal neutron decay time of materials in the vicinity of a well borehole comprising the steps of:

continuously irradiating the earth formations in the vicinity of a well borehole with a phase coherent harmonically intensity modulated cloud of fast neutrons at first, second and third different modulations frequencies;

detecting as a function of time the intensity modulated thermal neutron population resulting from said irradiation at said at least three different modulation frequencies;

determining from said detected thermal neutron populations measured as a function of time, the tangents of the relative phase shift angles between said fast neutron cloud and said thermal neutron population at each of said first, second and third modulation frequencies;

combining said first and second phase angle tangents to derive a first approximation to the thermal neutron decay time of earth formations in the vicinity of a well borehole;

combining said first and third phase angle tangents to derive a second approximation to the thermal neutron decay time of earth formations in the vicinity of a well borehole; and

combining said first and second approximations of the thermal neutron decay time according to a predetermined relationship to derive a value for the true thermal neutron decay time of the earth formations in the vicinity of a well borehole.

3,940,612
METHOD FOR DETECTING AND LOCATING WATER-PRODUCING ZONES AND/OR WATER THIEF ZONES IN SUBTERRANEAN FORMATIONS

Derry D. Sparlin; Walter H. Fertl, both of Ponca City, Okla., and Gary C. Young, Pinole, Calif., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 4, 1974, Ser. No. 512,831
Int. Cl.² G01V *5/00*

U.S. Cl. 250—260 **12 Claims**

1. A method for detecting and locating water-producing zones in a subterranean formation penetrated by a well bore which comprises:

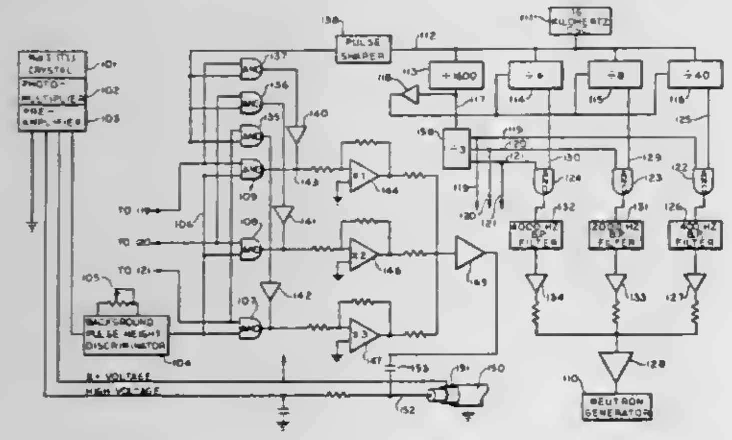
a. injecting into said formation an aqueous solution containing from about 0.01 to 7.5 weight percent of an irradiated water soluble compound selected from the group consisting of sodium silicate, water-soluble polymers, and polysaccharides produced by bacteria of the genus Xanthomonas on carbohydrates, said compound having preferential silica adsorptive characteristics;
b. passing said radioactivity detection means through the well bore and recording the measurement of radioactivity;
c. returning the reservoir to normal production;
d. passing said radioactivity detection means through the well bore and recording the measurement of radioactivity of said formation; and,
e. comparing the measurements of radioactivity to determine water producing zones.

3,940,613
THREE FREQUENCY MODULATED THERMAL NEUTRON LIFETIME LOG

Hans J. Paap, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed July 17, 1974, Ser. No. 489,330
Int. Cl.² G01V *5/00*

U.S. Cl. 250—269 **20 Claims**



1. A method for determining the thermal neutron decay time of earth formations in the vicinity of a well borehole comprising the steps of:

continuously irradiating the earth formations in the vicinity of a well borehole with a phase coherent harmonically intensity modulated cloud of fast neutrons having at least three different frequency modulation components;

detecting as a function of time the intensity modulated thermal neutron population resulting from said irradiation at said at least three different modulation frequencies;

determining from said detected thermal neutron populations measured as a function of time, the relative phase shift between said fast neutron cloud and said thermal neutron population at said at least three different modulation frequencies; and

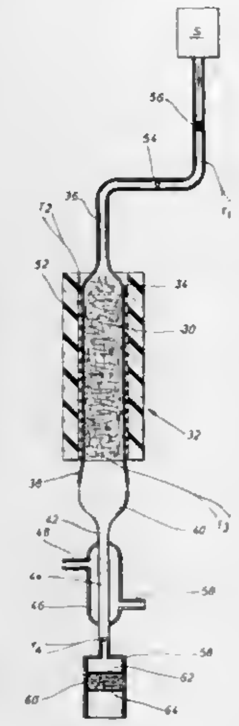
combining said three different modulation frequency relative phase shift measurements according to a predetermined relationship to derive an indication of the thermal neutron decay time of the earth formations in the vicinity of a well borehole.

3,940,614
METHOD AND APPARATUS FOR COLLECTION AND ANALYSIS OF MERCURY IN THE ATMOSPHERE

John R. Rhodes, Austin; David H. Weinstein, Brookshire, and Andrzej H. Pradzynski, Austin, all of Tex., assignors to Columbia Scientific Industries Corporation, Austin, Tex.

Filed Jan. 21, 1974, Ser. No. 434,774
Int. Cl. G01n *23/00*

U.S. Cl. 250—273 **13 Claims**



1. A method of detecting and measuring the concentration of mercury vapor in the atmosphere, comprising the steps of:

forcing a measured volume of air containing an unknown concentration of mercury vapor through a first fibrous material coated with a noble metal, for a predetermined period of time, to produce a first mercury amalgam of said noble metal on the surface of said first fibrous material;

heating said first fibrous material so as to vaporize the mercury deposited thereon;

passing a carrier gas through said first fibrous material to transport said vaporized mercury from the surface thereof;

passing said carrier gas containing the vaporized mercury through a second fibrous material also coated with a noble metal;

cooling said carrier gas immediately prior to passing it through said second fibrous material, to produce a second mercury amalgam on the surface of said second fibrous material; and

measuring the amount of mercury deposited on said second fibrous material by x-ray fluorescence analysis.

3,940,615
WIDE ANGLE ISOTOPE SEPARATOR

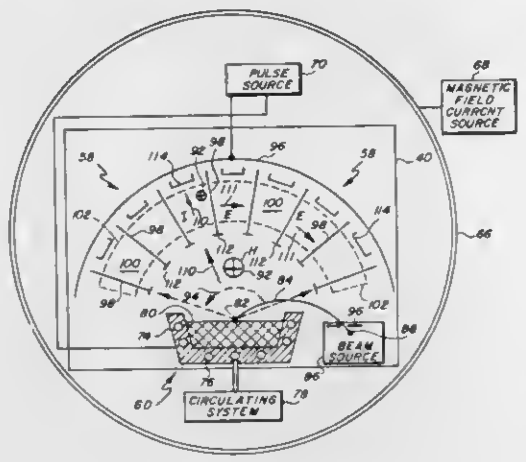
Arthur Kantrowitz, Cambridge, Mass., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Feb. 2, 1973, Ser. No. 328,955
Int. Cl.² B01D *59/44*; H01J *39/34*

U.S. Cl. 250—284 **31 Claims**

1. In a system for separating one isotope from an environment containing plural isotopes which are in a vapor state and wherein there is a generally radial vapor flow to the vapor with substantial local flow uniformity, apparatus comprising:

a plurality of adjacent chambers for collecting vapor components and defined by a plurality of plates between chambers, the plates being positioned parallel to the vapor flow generally to permit passage of said radial vapor flow through said chambers; and



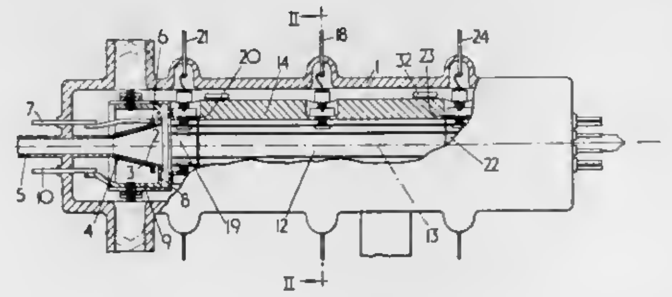
means for producing a trajectory within said chambers for said one isotope in said radial vapor flow different from the uniform local flow and toward one of said plurality of plates.

3,940,616
MASS SPECTROMETERS

Geoffrey William Ball, Apple Patch, Bellingdon Road, Bellingdon, Chesham, Buckinghamshire, England

Division of Ser. No. 217,600, Jan. 13, 1972, Pat. No. 3,840,742. This application Aug. 2, 1974, Ser. No. 494,278
Int. Cl.² H01J *39/34, 37/08*

U.S. Cl. 250—292 **2 Claims**



1. A mass spectrometer comprising an ion source, an ion filter and an ion detector, the ion source including two nested frusto-conical members, the inner member being in mesh form, the wider end of the inner frusto-conical member being adjacent the entry to the ion filter, a member containing a passage for introducing a gas to be ionized, said passage member being connected to the narrower end of the inner frusto-conical member, a source of r.f., the output of which is applied between the frusto-conical members, and a source of d.c., the output of which is applied between the frusto-conical members.

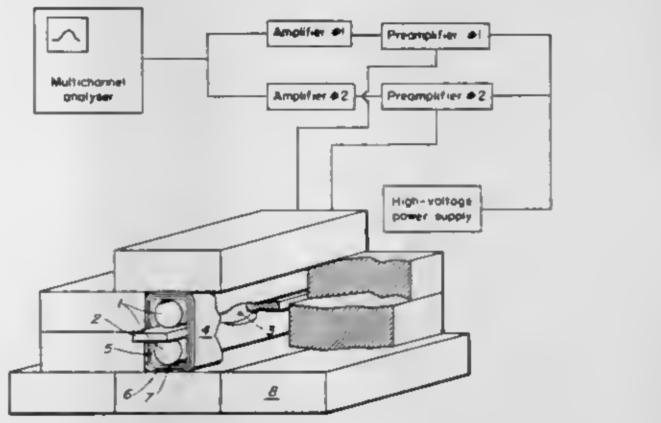
3,940,617
METHOD FOR NONDESTRUCTIVE FUEL ASSAY OF LASER FUSION TARGETS

Eugene H. Farnum, and R. Jay Fries, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 7, 1975, Ser. No. 565,932
Int. Cl.² G01T *1/61*

U.S. Cl. 250—303 **4 Claims**

1. A method of nondestructively determining the deuterium and tritium contents of laser fusion target microballoons which comprises (a) counting the x rays produced by the interaction of tritium beta particles with the walls of said microballoons, (b) comparing the number of counts for a designated period of time with a calibration curve of counts for various tritium contents for the same designated time period to obtain the tritium content, and (c) calculating the deuterium content utilizing the known initial D-T ratio and the known diffusion rates for D and T.



3,940,618
SAMPLING DEVICE FOR THE ANALYSIS OF A FLUID

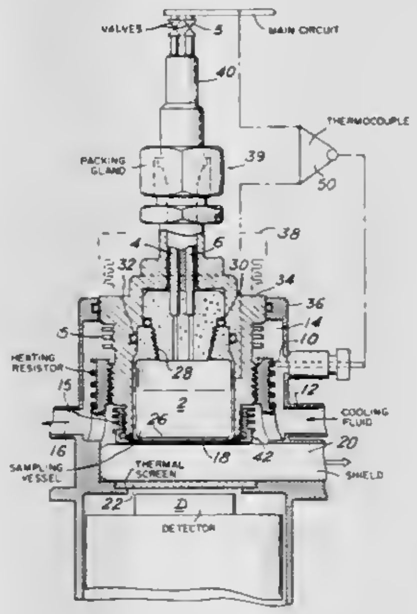
René Donguy, Verrieres le Buisson, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed May 15, 1974, Ser. No. 470,113

Claims priority, application France, May 21, 1973, 73.18377

Int. Cl.² G01N *21/24, 31/00*

U.S. Cl. 250—304 **13 Claims**



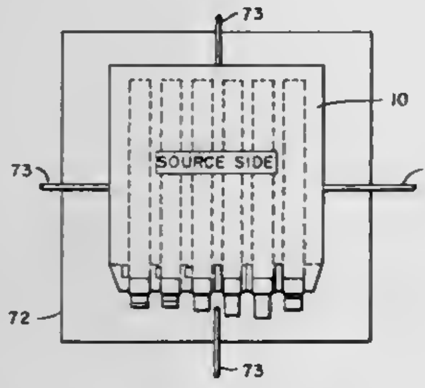
1. A method of sampling fluid circulating in a main circuit, said method comprising the steps of withdrawing a sample of said fluid from said main circuit and introducing said sample into a cavity which is heated in order to bring the conditions of temperature and pressure of the fluid within the cavity to the same values as in the main circuit, allowing said fluid to thermally stabilize, isolating said cavity from said main circuit after thermal stabilization, cooling said sampling unit after isolation, reducing the thickness of one of the walls defining said cavity to a thin window, and analyzing the fluid across said window.

3,940,619

METHOD FOR PRODUCING THREE-DIMENSIONAL REAL IMAGE USING RADIOGRAPHIC PERSPECTIVE VIEWS OF AN OBJECT

William A. Ellingson, and Alvin A. Read, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 30, 1974, Ser. No. 474,591
Int. Cl.^{2} G02B *27/00*
U.S. Cl. 250—313 4 Claims



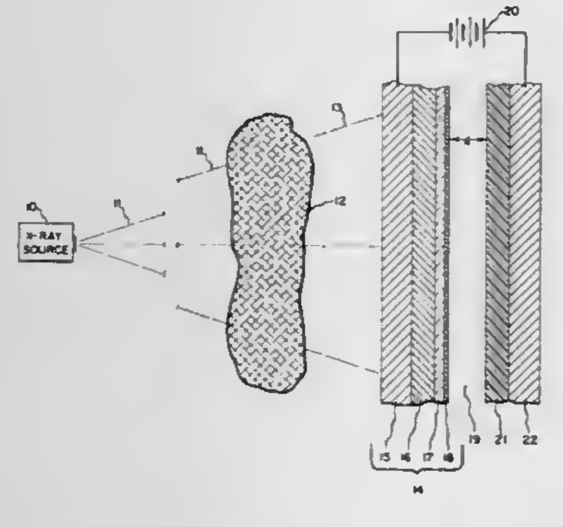
1. In a method of reconstructing a three-dimensional real image of an object, including preparing a plurality of radiographic images of said object, each from a different perspective, the improvement comprising: generating a reference beam of coherent light; generating an object beam of coherent light; passing said object beam of coherent light through ray back-tracing lens means and through said radiographic images to converge the same at a point on a path corresponding to the original path of rays used in irradiating said object with a source of penetrating radiation; illuminating a radiographic perspective with said converging object beam; and intercepting said converging object beam and said reference beam with a section of holographic recording medium between said path and said radiographic perspective for each of said radiographic perspectives, to thereby form a holographically-recorded image of each radiographic perspective containing the same perspective information in the original radiograph perspective.

3,940,620

ELECTROSTATIC RECORDING OF X-RAY IMAGES

John M. Houston, Schenectady; James R. Young, Rexford, and Nathan R. Whetten, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 3, 1974, Ser. No. 511,615
Int. Cl.^{2} G03B *41/16*
U.S. Cl. 250—315 A 11 Claims



11. An electrode comprising:

a. a first layer of a fluorescent material capable of emitting photons substantially in the ultraviolet spectral region by the action of X-rays impinging thereupon; and
b. a second ultraviolet sensitive layer adjacent said first layer so disposed as to be impinged by said photons and emitting electrons in response thereto, said ultraviolet sensitive layer being

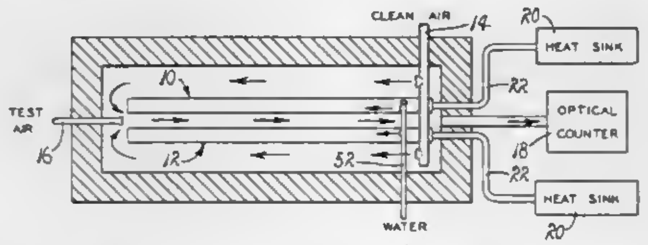
a material having photemissive properties in an oxidizing atmosphere.

3,940,621

HEAT TRANSFER DEVICE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Fletcher, and Larry R. Eaton, Huntington Beach, Calif.

Filed Jan. 21, 1975, Ser. No. 542,754
Int. Cl.^{2} G01T *5/04*
U.S. Cl. 250—335 3 Claims



1. In a diffusion cloud chamber, an improved internally supported heat transfer device comprising:

A. means including a pair of mutually spaced heat transfer plates, each being of a planar configuration, having a pair of opposed first surfaces defining therebetween a heat pipe chamber;
B. means defining a pair of mutually spaced heat pipe wicks disposed within said chamber and contiguously related to said pair of first surfaces;
C. means defining a foraminous spacer of a planar configuration interposed between said wicks in contiguous supporting engagement therewith; and
D. means externally related to said chamber for uniformly wetting a selected portion of a second surface of each heat transfer plate, opposite to the first surface thereof, comprising a foraminous sheet contiguously related thereto.

3,940,622

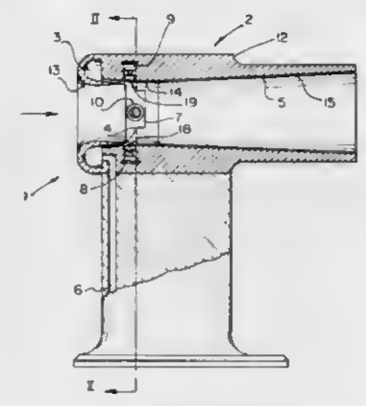
ICING DETECTOR

James R. Stallabrass; T. Rayman Ringer; Donald L. Bailey, all of Ottawa, and Patrick F. Hearty, Hull, all of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 397,689, Sept. 17, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,535
Claims priority, application Canada, Oct. 23, 1972, 154432
Int. Cl.^{2} G01J *1/00*
U.S. Cl. 250—338 20 Claims

1. An icing detector, for detecting the presence in the atmosphere of supercooled droplets, comprising:

a. a duct member having an annular plenum formed in one end thereof;
b. means for supplying pressurized gas to said plenum;
c. primary jet outlet means communicating with said plenum, said primary jet outlet means being disposed within the duct to induce secondary ambient air flow through the duct;
d. a probe mounted within said duct member so that supercooled water droplets suspended in the induced secondary ambient air flow impinge on said probe and form ice thereon; and
e. sensing means for detecting the presence of ice on said probe comprising an emitter for emitting radiation that is attenuated by ice and a radiation sensor, said emitter and sensor being mounted in the duct member so that ice formed on the probe occludes the radiation from the emitter to the sensor.

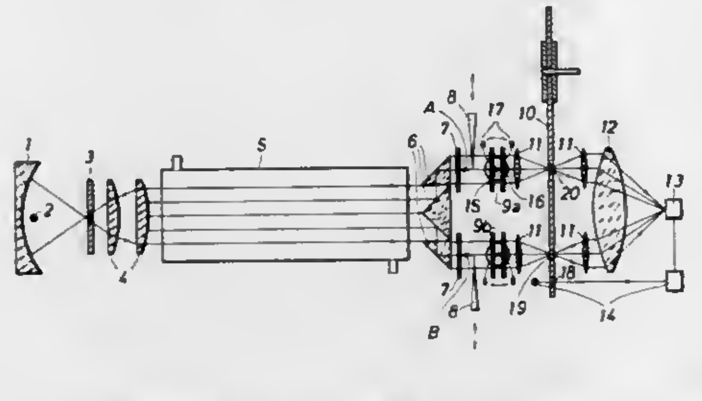


3,940,623

APPARATUS FOR MEASURING THE PROPORTION OR QUANTITY OF A COMPONENT IN A RADIATION-TRANSPARENT MIXTURE

Günter Hempowltz, and Jochen Pokar, both of Julich, Germany, assignors to Uranit, Uran-Isotopentrennungs-Gesellschaft m.b.H., Julich, Germany

Filed Oct. 7, 1974, Ser. No. 512,866
Claims priority, application Germany, Oct. 5, 1973, 2350004
Int. Cl.^{2} G01M *21/26*
U.S. Cl. 250—343 2 Claims



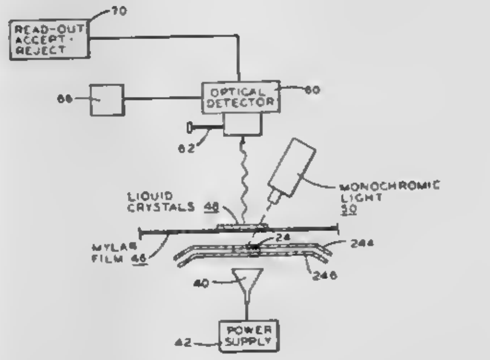
1. In an apparatus for measuring the proportion or quantity of a component of a radiation transparent mixture by discrete radiation absorption, including means for passing a beam through the mixture; beam splitting means disposed downstream of the mixture with respect to the travelling direction of the beam for splitting the beam into a measuring beam and a reference beam; a first narrow-band interference filter arranged in the path of the measuring beam; a second narrow-band interference filter arranged in the path of the reference beam; means disposed downstream of the filters for separately detecting the radiation intensities of the measuring beam and the reference beam; and means for forming the difference between the two radiation intensities, the difference between the two radiation intensities being a function of the proportion and quantity of the component; the improvement wherein said first filter has a transmitting wavelength slightly above the discrete absorption wavelength of the component for a perpendicular penetration of radiation and said second filter has a transmitting wavelength outside the absorption spectrum of the component; further comprising means for oscillating said filters in phase in a range of oscillation in which said first filter traverses the absorption maximum.

3,940,624

APPARATUS AND A METHOD FOR TESTING THE INTEGRITY OF A WELD

Eugene C. Simmons, Woodbury, Conn., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Nov. 29, 1972, Ser. No. 310,485
Int. Cl. G01t *1/16*
U.S. Cl. 250—358 R 6 Claims



1. The method of testing the structural integrity of a composite weld between two metal plates used as a terminal element and closure for a battery which comprises the steps of:

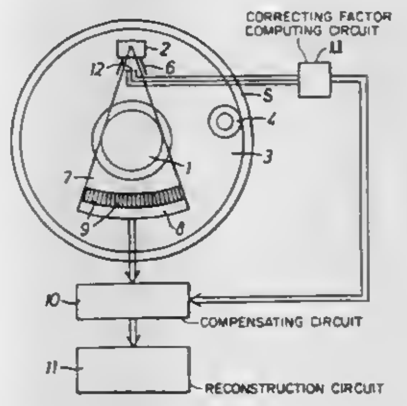
1. placing a material adjacent to and in contact with a first side of the weld spot area of the test specimen, the refractive index of said material measurably varying in response to varying temperatures transmitted thereto from the test specimen, the temperature transmitted being a function of the density of the weld between the two metal plates;
2. directing an incident beam of monochromatic light on a first side of said material of step (1), said beam of light emitted from a source positioned adjacent said material of step (1);
3. heating the test specimen by subjecting the second side thereof to a beam of infrared energy;
4. determining the integrity of the weld by measuring the degree of refraction of the reflected, refracted beam of monochromatic light by means of a detector device, the degree of refraction of said incident light beam being a function of the temperature of the material of step (1), which in turn is a function of the output temperature of the spot weld.

3,940,625

APPARATUS FOR EXAMINING OBJECTS BY MEANS OF PENETRATING RADIATION

Godfrey Newbold Hounsfield, Newark, England, assignor to E M I Limited, Hayes, England

Filed May 30, 1974, Ser. No. 474,767
Claims priority, application United Kingdom, June 1, 1973, 26325/73
Int. Cl.^{2} G01N *23/02*
U.S. Cl. 250—360 7 Claims

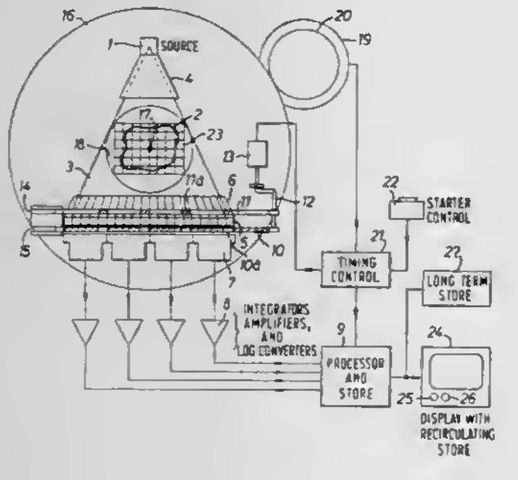


1. Apparatus for examining an object by means of penetrating radiation including,

1. means for generating radiation emitted in many directions,
2. means for collimating said radiation to produce a substantially planar, fan-shaped swath of said radiation,
3. detecting means, disposed between the generating means and the object, for monitoring the intensity of the radiation at spaced positions across the width of the swath,
4. means for deriving output signals representative of the transmission of said radiation along a plurality of laterally spaced beam paths extending longitudinally of the swath,
5. means for modifying said output signals in response to signals derived from said detecting means and
6. means for orbiting said generating means, detecting means and means for deriving output signals about a common axis in and substantially normal to the plane of the swath.

3,940,626
DETECTION OF RADIATION IN RADIOGRAPHIC APPARATUS

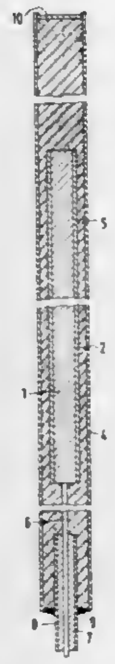
Godfrey Newbold Hounsfield, Newark, England, assignor to E M I Limited, Hayes, England
Filed Apr. 24, 1974, Ser. No. 463,829
Claims priority, application United Kingdom, May 5, 1973, 21525/73
Int. Cl.^{2} G01T *1/20*
U.S. Cl. 250—366 **8 Claims**


SOURCE
STARTER CONTROL
TIMING CONTROL
LONG TERM STORE
INTEGRATORS AMPLIFIERS, AND LOG CONVERTERS
PROCESSOR AND STORE
DISPLAY WITH RECIRCULATING STORE

1. Radiographic apparatus for examining a body by means of radiation such as X- or γ-radiation including,
- a. a source of said radiation arranged to irradiate a substantially planar slice of the body along a plurality of similar sets of rays, each set being directed through said body at a respective angle, or mean angle, with respect thereto
- b. detecting means, disposed on the side of the slice remote from the source, for detecting the radiation transmitted through the body along each of the rays; said detecting means including
  - i. a detector device arranged to receive radiation transmitted along one of the rays of a set and to provide output energy, of a wavelength different from that of the radiation, which is indicative of the amount of radiation received thereby and
  - ii. measuring means arranged to measure the intensity of said output energy,
- c. switching means for causing the measuring means to measure said output energy over a predetermined interval of time and
- d. means for substantially preventing the radiation being incident on the detector device during the predetermined interval.

3,940,627
SHIELDED-EMITTER NEUTRON DETECTOR

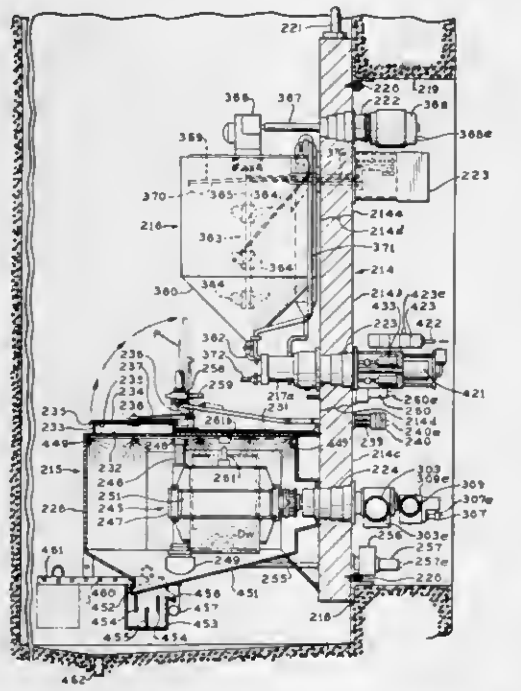
Erich Klar, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 1, 1974, Ser. No. 493,904
Claims priority, application Germany, Aug. 1, 1973, 2339004
Int. Cl.^{2} G01T *3/00*
U.S. Cl. 250—390 **6 Claims**



1. A self-powered neutron detector comprising a neutron-sensitive emitter, a collector enclosing said emitter, and insulation between said emitter and collector; wherein the improvement comprises said emitter being enclosed by a metal which is neutron-insensitive relative to said emitter and means for electrically interconnecting said metal and emitter.

3,940,628
APPARATUS AND PROCESS FOR HANDLING DANGEROUS FLUENT MATERIAL

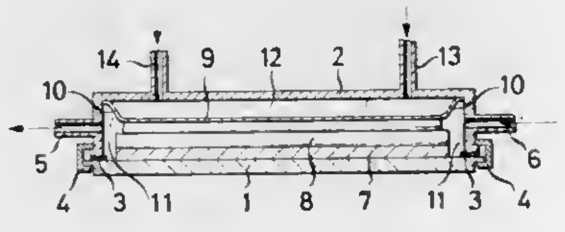
Arthur J. Stock, Lakewood; Donald E. Christofer, Willowick, and Joseph E. Brinza, Euclid, all of Ohio, assignors to Stock Equipment Company, Cleveland, Ohio
Division of Ser. No. 182,088, Sept. 20, 1971. This application Oct. 25, 1973, Ser. No. 409,372
Int. Cl. C09k *3/00*
U.S. Cl. 250—435 **10 Claims**



1. Apparatus for handling radioactive material comprising a rigid shield wall of material and thickness sufficient to reduce substantially harmful passage of radioactivity through said shield wall to a level that is not harmful to human operators; means, supported from one side of said shield wall that is exposed to radioactivity from said radioactive material, for handling radioactive material, said handling means including supporting means for supporting and moving a container adapted to contain radioactive material between a position at which radioactive material is introduced into said container through an opening thereof and a position at which closure means is placed to close said opening of said container, while said container is adjacent the side of the shield wall that is exposed to radioactivity, said handling means also including means at said last mentioned position operable to place closure means to close said opening of said container after radioactive material has been introduced therein; power means for operating said handling means located on the other side of said shield wall that is not exposed to radioactivity from said radioactive material; and movable means for driving said handling means, including said supporting means and said closure-placing means, which movable means extends through said shield wall to operate said supporting means and said closure-placing means from said power means without such harmful passage of radioactivity through said shield wall.

3,940,629
DEVICE FOR CLOSING AND OPENING VACUUM X-RAY FILM HOLDERS

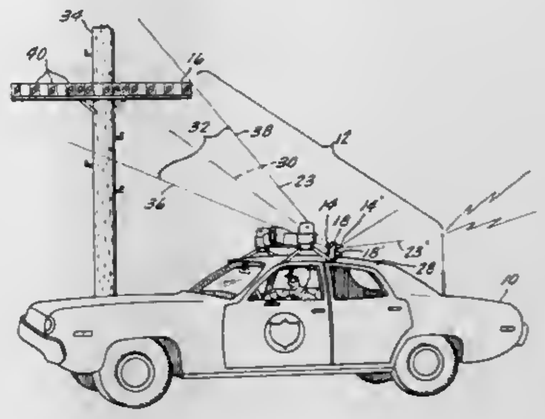
Andreas Schmitzer, Rebenweg 41, Kelheim, Donau, Germany
Filed Mar. 12, 1975, Ser. No. 557,743
Claims priority, application Germany, Mar. 23, 1974, 2414073
Int. Cl.^{2} G03B *41/16*
U.S. Cl. 250—480 **5 Claims**



1. A device for closing and opening vacuum film holders for X-ray films including
- a. means defining a chamber for receiving vacuum film holders for X-ray films;
- b. a pressure plate arranged inside said chamber and operable from the outside thereof selectively exerting pressure upon, and relieving pressure from, vacuum film holders inside said chamber;
- c. flexible partition means having inner ends integral with said pressure plate and having outer ends integral with said chamber-defining means subdividing said chamber into a main compartment and into an auxiliary compartment being tightly separated from each other to preclude any significant flow of air from one compartment to the other;
- d. first passageway means for selectively evacuating said main compartment and for admitting air at atmospheric pressure to said main compartment; and
- e. second passageway means for selectively evacuating said auxiliary compartment and for admitting air at atmospheric pressure to said auxiliary compartment.

3,940,630
VEHICLE LOCATOR

Francis H. Bergonz, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.
Filed Oct. 21, 1974, Ser. No. 516,631
Int. Cl.^{2} G08G *1/00*
U.S. Cl. 250—568 **6 Claims**



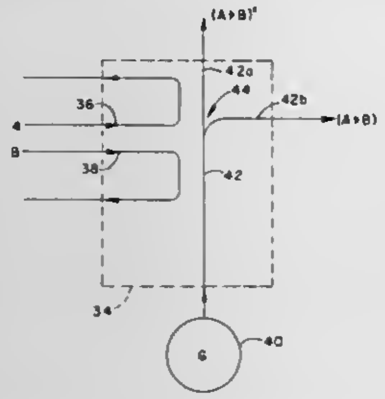
1. A system for locating at least one movable vehicle at predetermined locations comprising:
- a plurality of reflective arrays, each array including a plurality of reflectors in a coded pattern and being located at a predetermined location adjacent a path for the vehicle along which the location of the vehicle is to be determined, each array having a predetermined start code;
- a transmitter on the vehicle including means for producing at least one beam of radiant energy at ultraviolet frequencies, said transmitter beam having a vertically oriented fan shape which extends outwardly from the side of the vehicle to impinge and be reflected in accordance with said coded pattern by an array as the vehicle passes along the path; and
- a receiver on the vehicle including detector means to detect said coded pattern of reflected radiant energy from an array, said detector means being positioned in a vertical plane with respect to said transmitter beam producing means and including optical means for focusing said reflected radiant energy, filter means which pass only said ultraviolet frequencies, a detector element to convert said filtered radiant energy into electrical signals, means positioned between said detector element and said array to restrict the view of said detector element to one reflector at a time, means connected to said detector means to sense said start code including means to accommodate a predetermined range of bit rates, means to store said array code upon being enabled by said start code sensing means, and means to transmit said array code which indicates the predetermined location of said vehicle.

3,940,631
MAGNETIC BUBBLE LOGIC GATES

Paul T. Bailey, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Mar. 13, 1974, Ser. No. 450,875
Int. Cl.^{2} H03K *19/168;* **G11C** *11/14*
U.S. Cl. 307—88 LC **11 Claims**

1. A magnetic bubble gate comprising means defining a first magnetic bubble propagation track diverging at a point of divergence into downstream second and third magnetic bubble propagation tracks, said propagation tracks comprising means for transmitting a magnetic bubble in said first track through said point of divergence to said second track unless the bubble is repelled by bubble repulsion to said third track at said point of divergence, fourth and fifth magnetic bubble propagation tracks for receiving magnetic bubbles representing binary variables located on the same side of said first, second and third tracks such that said point of divergence lies between said third track on the one hand and said fourth and fifth tracks on the other hand, said fourth and fifth tracks

approaching at least near enough to said point of divergence that simultaneous bubbles on both of said fourth and fifth tracks will repel a simultaneous bubble at said point of divergence to said third track, and a bubble generator for applying a bubble to said first track at the same rate that binary variables are received by said fourth and fifth tracks.



3,940,632

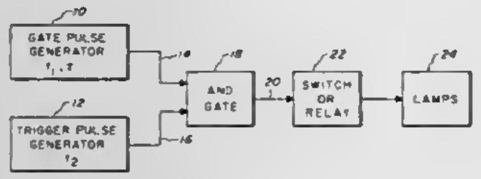
NONPREDICTABLE ACTUATOR FOR SWITCHES OR THE LIKE

Robert Allen Padgug, Williamsville, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Mar. 4, 1974, Ser. No. 447,607

Int. Cl.² H01H *7/00*

U.S. Cl. 307—112 12 Claims



1. A nonpredictable actuator for switches or the like, comprising;

a. first pulse generating means for producing a first output consisting of a train of pulses at a first frequency,
b. second pulse generating means for producing a second output of short pulses at a second frequency which is much lower than said first frequency, and
c. means responsive to said first and second outputs for generating an actuating signal for lamp circuits or the like only when said first and second output of pulses are coincidental.

3,940,633

GTO TURN-OFF CIRCUIT PROVIDING TURN-OFF GATE CURRENT PULSE PROPORTIONAL TO ANODE CURRENT

Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed July 1, 1974, Ser. No. 484,613

Int. Cl.² H03K *17/72*

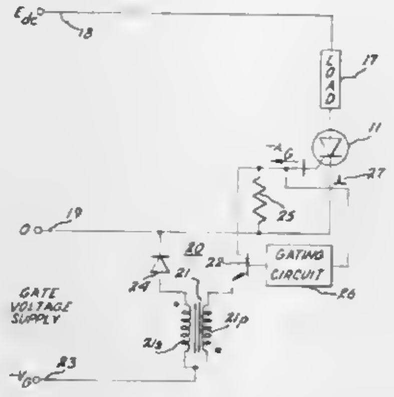
U.S. Cl. 307—252 C 5 Claims

1. A solid state circuit including a semiconductor device with a gate turn-off circuit comprising

a gate turn-off thyristor semiconductor device having an anode and a cathode and a gate terminal for controlling switching of said device between a conducting state in which anode current flows and a nonconducting state, said gate turn-off thyristor being coupled to a pair of unidirectional input voltage supply lines between which is applied an energizing voltage, and

turn-off circuit means for selectively generating a ramped turn-off gate current pulse with a peak magnitude which increases and decreases as said anode current increases and decreases,

said turn-off circuit means being comprised by a transformer having a primary winding connected in series with a controlled solid state switch device between said gate terminal and a negative unidirectional gate voltage supply line, and means for rendering conductive said controlled solid state switch for a selected interval to initiate generation of said gate turn-off current pulse, said transformer having a secondary winding connected in series with a diode and comprising means for returning excess energy stored in said primary winding to a selected voltage supply.



3,940,634

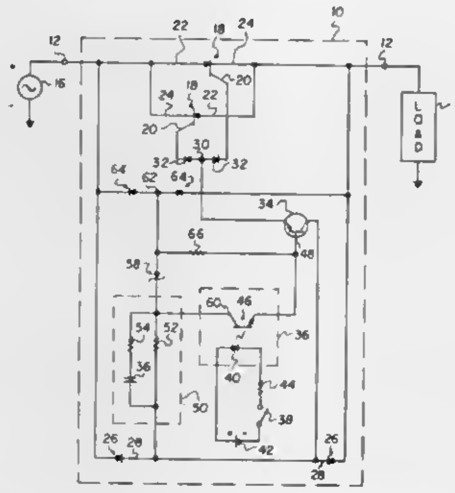
SOLID STATE AC POWER RELAY

Martin L. Grogan, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 14, 1975, Ser. No. 550,062

Int. Cl.² H03K *17/56*

U.S. Cl. 307—252 UA 6 Claims



1. A solid state AC power relay comprising:

bidirectional trigger switching means having two power terminals for passing AC current between an AC load and AC power source when triggered into conduction by a gate current during each AC alternation and a gate terminal for receiving said gate current;

a pair of rectifying diodes, with commonly connected cathodes, connected in series between said power terminals;

an optoelectronic coupler;

a three terminal control element having a controllable current path between two of its terminals for passing said gate current between the AC power source and said gate terminal under the control of an input signal applied to its third terminal, said third terminal being connected to said commonly connected cathodes via the phototransistor of said coupler so that said input signal is enabled to flow therebetween only when the light emitting diode of said coupler is energized, and

an RC charging circuit connected in series with said phototransistor between its collector and said commonly connected cathodes comprising a resistor in parallel with a series combination of a resistor and capacitor.

3,940,635

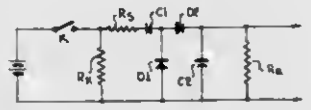
SELF-DAMPING CIRCUIT

Albert Meyer, Deer Park, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Aug. 29, 1974, Ser. No. 501,747

Int. Cl.² G10H *1/02;* H03K *17/26*

U.S. Cl. 307—294 6 Claims



1. A self-decay circuit, including a source of a dc voltage pulse, a resistance (Rk) connected across said source, a series circuit consisting of a first resistance (Rs) and a first capacitance (C1), a first diode (D2) poled to be conductive to said dc voltage pulse, a partial circuit consisting of a second resistance (Ra) and a second capacitance (C2), means connecting said series circuit, said first diode and said parallel circuit all in series in the order stated across said resistance (Rk), and a second diode connected in a series circuit and poled to discharge said first capacitance after termination of said dc voltage pulse, said first diode being poled to be conductive of current in response to said dc voltage pulse, said first and second resistances Rs and Ra being the sole resistances connected in series with said first capacitance (C1).

3,940,636

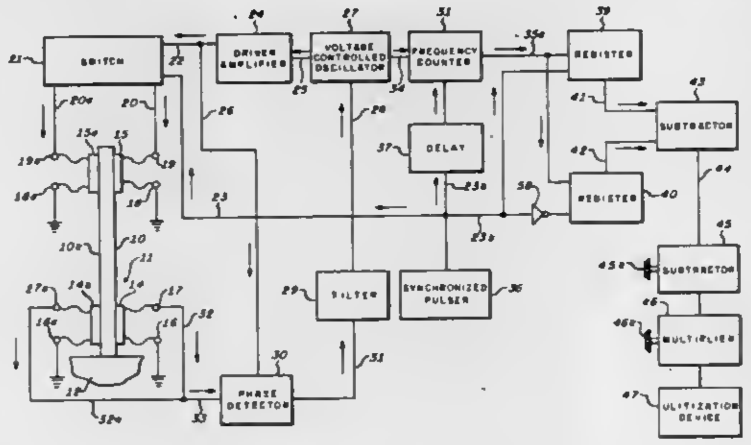
ACOUSTIC DELAY SURFACE WAVE MOTION TRANSDUCER SYSTEMS WITH ENHANCED STABILITY

Avraham Perahia, Sharon, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 3, 1975, Ser. No. 554,854

Int. Cl. H01l *41/08*

U.S. Cl. 310—8.1 10 Claims



1. Transducer means comprising:

flexure means having first and second opposed flexible surface layer means for separately propagating respective first and second acoustic waves along first and second respective predetermined paths therein,

first and second exciter means including switch means for alternately exciting and propagating said respective first and second acoustic waves along said first and second respective predetermined paths in response to respective alternate first and second exciter electric signals,

first and second receiver means along said respective first and second predetermined paths for alternately receiving and converting said respective first and second acoustic waves into respective first and second successive receiver electric signals,

voltage controllable oscillator means for alternately driving said first and second exciter means through said switch means,

phase detector means responsive to said voltage controllable oscillator means and alternately responsive to said first and second receiver means,

filter means responsive to said phase detector means for supply of a control voltage to said voltage controllable oscillator means, and

signal processor means responsive to said voltage controllable oscillator means for deriving a measure of the flexure of said flexure means for supply to utilization means.

3,940,637

POLYMERIC PIEZOELECTRIC KEY ACTUATED DEVICE

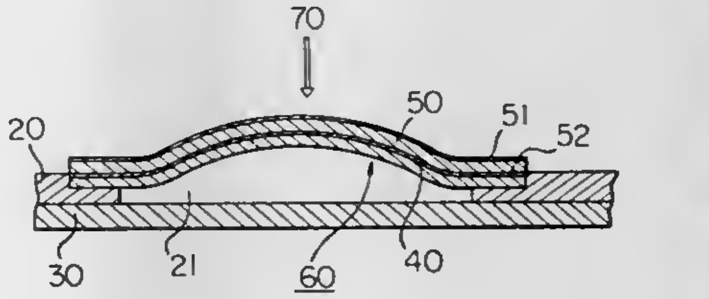
Hiroji Ohigashi, Kamakura; Reiko Shigenari, Fujisawa; Syozo Ogawa, and Nobuo Sekine, both of Kamakura, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 24, 1974, Ser. No. 463,787

Claims priority, application Japan, Oct. 15, 1973, 48-114708

Int. Cl.² H01L *41/04*

U.S. Cl. 310—8.5 7 Claims



1. A electrically non-contact key input device comprising a piezoelectric polymer film having layer electrodes on both surfaces thereof, and means for straining said film so that said film is extended or contracted along the surface of said film, said straining means defining a key, said straining means comprising a snap action elastic plate with an upwardly convex surface, said film being adhered to said plate in such a manner that said film is contracted along the surface thereof together with said snap action plate upon downward depression.

3,940,638

THIN QUARTZ OSCILLATOR WITH SUPPORT OF LEADS

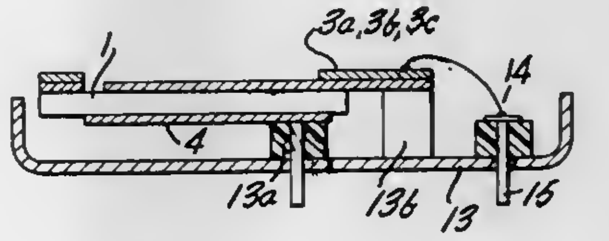
Toshio Terayama, 4-5-4-406, Nishikoiwa, Edogawa, Tokyo, Japan

Filed Sept. 4, 1973, Ser. No. 393,837

Claims priority, application Japan, Sept. 4, 1972, 47-103101

Int. Cl.² H01L *41/04*

U.S. Cl. 310—9.4 6 Claims



1. In combination:

a thin quartz substrate having a pair of opposed major surfaces and a longer length than a width thereof, a first metallic layer built-up on a major surface of said substrate and having an extension thereof extending laterally from an end of said substrate in a direction of the longer dimension defining an electrode integral and jointly with said first layer, a second metallic layer overlying said extension and extending over only a part of said first layer reinforcing said extension of said first layer and jointly therewith defining a strengthened electrode and a metallic mass comprising the same composition as said first layer disposed on said major surface spaced from said first layer and at an opposite end of said major surface,

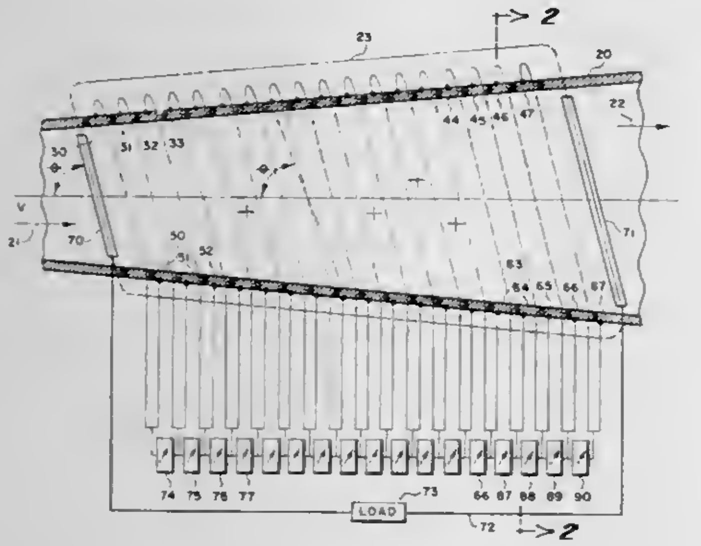
a case having a base plate;

a first support extending from the base plate of said case and having means mounting said substrate thereon at the second major surface of said substrate opposite the first-mentioned major surface; and

a second support extending from the base plate of said case and positioned to support a portion of said extension remote from said substrate.

3,940,639
MHD GENERATOR WITH UNIFORM VOLTAGE DISTRIBUTION

George R. Enos, Concord, N.H.; Richard J. Rosa, Cambridge, and Stanley W. Petty, Boxford, both of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.
Filed Feb. 15, 1974, Ser. No. 442,800
Int. Cl. H02n *4/02*
U.S. Cl. 310—11 **4 Claims**



1. An MHD generator for generating electricity from a moving stream of electrically conductive gas comprising:

a duct for conveying the gas stream, the duct having an inlet and an outlet,

means for establishing a magnetic field through said duct normal to the direction of gas flow,

terminal electrodes positioned along the duct at the inlet and outlet,

a plurality of discrete electrodes positioned at intervals along opposing walls of the duct,

certain of said discrete electrodes being directly opposed and lying in planes normal to the direction of gas flow, said generator having a rated Hall voltage between adjacent electrodes,

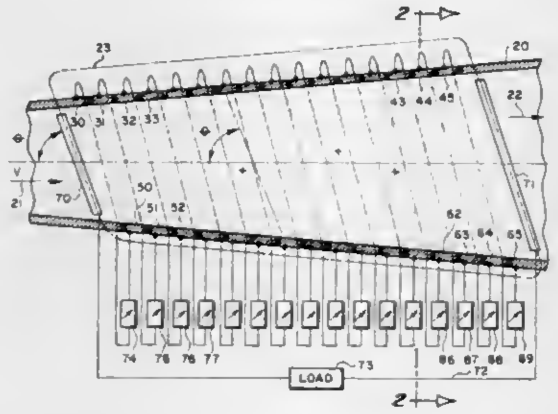
a plurality of first coupling means each coupling together different opposed discrete electrodes which lie in planes at an angle θ to the direction of gas flow,

second coupling means including a power transistor connected between and coupling together different adjacent electrodes for producing a voltage drop between said connected adjacent discrete electrodes sufficient to prevent damaging electrical differentials between said adjacent discrete electrodes, and

a control circuit for controlling the current flow through said transistor in response to the voltage across said transistor.

3,940,640
MHD GENERATOR WITH UNIFORM CURRENT DISTRIBUTION

Stanley W. Petty, Boxford; Richard J. Rosa, Cambridge, both of Mass., and George R. Enos, Concord, N.H., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.
Filed Feb. 15, 1974, Ser. No. 442,802
Int. Cl. H02n *4/02*
U.S. Cl. 310—11 **8 Claims**



1. An MHD generator for generating electricity from a moving stream of electrically conductive gas comprising,

a duct for conveying the gas stream, the duct having an inlet and an outlet,

means for establishing a magnetic field through said duct normal to the direction of gas flow,

terminal electrodes positioned along the duct at the inlet and outlet,

a plurality of discrete electrodes positioned at intervals along opposing walls of the duct,

certain of said discrete electrodes being directly opposed and lying in planes normal to the direction of gas flow, said generator having a rated Hall voltage between adjacent electrodes,

a plurality of coupling means each coupling together different opposed discrete electrodes which lie in planes at an angle θ to the direction of gas flow, said coupling means including a power transistor and current sensor in series between the opposing electrodes in a plane at said angle θ,

said coupling means producing a voltage drop between said connected discrete electrodes in the plane at angle θ sufficient to prevent current flow in said opposed electrodes from exceeding a damaging limit.

3,940,641
PLASMA JET ELECTRODE FOR MAGNETOHYDRODYNAMIC GENERATORS

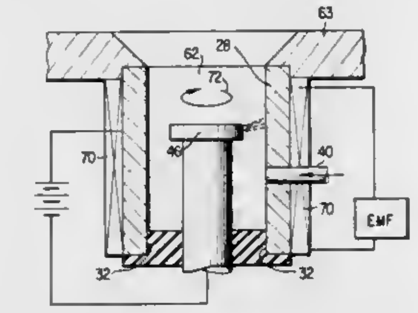
Milton T. Dooley, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.
Filed Apr. 5, 1974, Ser. No. 458,341
Int. Cl.² H02K *45/00*
U.S. Cl. 310—11 **26 Claims**

1. An MHD system having an anode assembly, a cathode assembly, duct means for passing a plasma stream therebetween, means for passing a magnetic flux across said duct means, and circuit means connecting said anode and cathode assembly, said system further comprising:

a collector of said anode assembly connected to said circuit means and having an opening therethrough for communication with said duct means;

an emitter of said anode assembly located adjacent said collector;

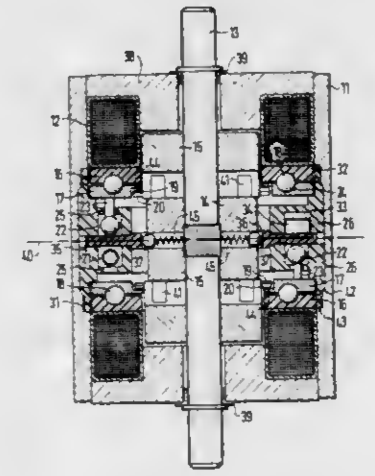
means to pass an ionizable gas between said collector and emitter; and



means for maintaining said collector positive relative to said emitter.

3,940,642
STEPPING MOTOR

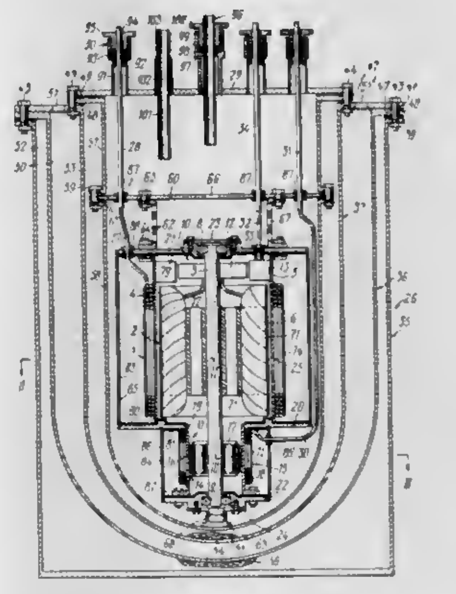
Karl Glaser, 7021 Stetten, Filder, Germany
Filed Nov. 7, 1974, Ser. No. 521,909
Int. Cl.² H02K *7/06*
U.S. Cl. 310—20 **16 Claims**



1. A stepping motor comprising a casing, at least one electromagnet disposed in the casing, a shaft which is mounted for rotation in the casing, a rotor fixed to the shaft, an armature rotationally fastened to the rotor and mounted on the shaft for longitudinal sliding and cooperating with the electromagnet, a first ball race concentric to the shaft and fastened to the casing, a second ball race cooperating with the first ball race and mounted for rotation in the casing, balls disposed between the races, the tracks of the races being so shaped that an axial force on the rotatable second ball race results in a rotary movement of the latter, a flange on the armature which engages behind the rotatable ball race and which carries spur teeth having inclined flanks and cooperating with corresponding spur teeth on the rotatable second ball race, restoring springs imparting to the rotatable second ball race an initial force opposite in direction to the rotation produced by the armature, a catch device for determining the steps, pins on the side of the rotatable ball race opposite the ball tracks, said pins extending axially away from the race, and an annular spring casing having peripheral slots which match with and engage said pins with compression springs positioned in the slot, said springs are supported at one end against the spring casing and at the other end act on the pins of the rotatable ball race.

3,940,643
CRYOGEN-COOLED SYNCHRONOUS COMPENSATOR

Zigurd Karlovich Sika, ulitsa Vaidavas, 27, kv. 40, and Daniel Petrovich Kikust, ulitsa Bikernieku, 81, kv. 34, both of Riga, U.S.S.R.
Filed June 18, 1974, Ser. No. 480,533
Int. Cl.² H02K *9/00*
U.S. Cl. 310—52 **7 Claims**



1. A cryogen-cooled synchronous compensator, comprising: a fixed cryostat;

an armature winding made of a material exhibiting superconductivity at sufficiently low temperatures;

a rotary assembly including a rotor with a starting motor and a field generator mounted on a shaft of the rotor;

a field winding arranged on said rotor and made of a material exhibiting superconductivity at predetermined low temperatures;

said armature winding and said rotary assembly being accommodated within said fixed cryostat;

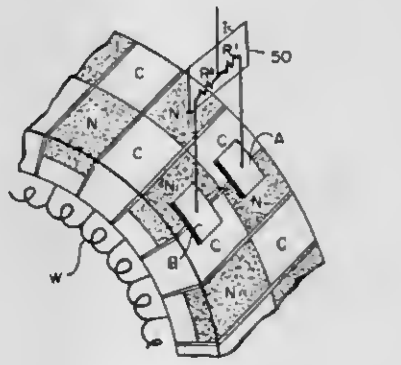
an airtight housing accommodated within said cryostat;

said rotary assembly being enclosed in said cryostat in said fixed airtight housing adapted to prevent the cryogen fluid from contacting the rotary members of the machine;

said rotary assembly being rotatably mounted in said airtight housing.

3,940,644
PLURAL BRUSH DC MACHINE AND COMMUTATOR ASSEMBLY

August Frederick Manz, Union, N.J., assignor to Union Carbide Corporation, New York, N.Y.
Filed Oct. 15, 1974, Ser. No. 514,733
Int. Cl.² H02K *13/00*
U.S. Cl. 310—148 **7 Claims**



1. In a direct current machine comprising: a field structure; an armature adapted for rotation within said field structure and having an armature winding consisting of a plurality of armature coils; a single commutator mounted for rotation with said armature and divided into a multiple number of commu-

tator bars each insulated from one another; said armature coils being electrically coupled to said commutator bars; and at least two commutating brush sets arranged for relative sliding engagement against the current transfer surface of each commutator bar along separate paths respectively, the improvement comprising: wherein the current transfer surface of each commutator bar includes at least one conducting section and one nonconducting section respectively with each section lying in a separate path and with the abutting sections of adjacent commutator bars arranged so as to form a checkerboard pattern of conducting and nonconducting sections along the separate paths traversed by each brush set; and circuit means for electrically coupling said brush sets to one another.

3,940,645

SMALL-SIZED SYNCHRONOUS MOTOR

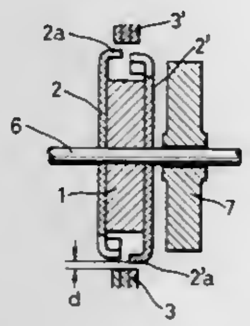
Ryoichi Takita, Urawa, Japan, assignor to Rhythm Watch Co. Ltd., Japan

Filed Oct. 24, 1974, Ser. No. 517,779

Claims priority, application Japan, Oct. 30, 1973, 48-124972

Int. Cl.^{2} H02K *21/12*

U.S. Cl. 310—156 **6 Claims**



1. A synchronous motor for clocks comprising, in combination, an axially elongated multiturn winding adapted to be energized by connection to a source of AC potential; a stator of magnetically permeable metal including a core extending through said winding and two substantially flat stator sections having first ends connected to respective opposite ends of said core and second ends in spaced opposed relation to define an air gap therebetween; said second ends conjointly forming a circular opening intersected by said air gap and having its periphery formed with peripherally spaced notches to define plural stator pole faces; and a substantially flat rotor of magnetically permeable metal secured to an arbor and disposed in said circular opening, said rotor including a thin substantially flat cylindrical permanent magnet polarized axially of said arbor and sandwiched between two flat circular discs of magnetically permeable metal; the peripheries of said discs being notched to form equiangularly spaced substantially rectangular poles having equal angular extents substantially equal to their angular spacing; the poles on one disc being north poles and those on the other disc being south poles; the poles on each of the two discs being bent to extend axially toward facing relation with the poles on the other disc and parallel to said arbor, with the poles on each disc being staggered peripherally relative to the poles on the other disc; the free ends of the poles on each disc being spaced axially from the free ends of the poles on the other disc to provide gap distance between the north and south poles, and the gap distance between the north and south poles being greater than the radial gap between the rotor poles and said stator pole faces.

3,940,646

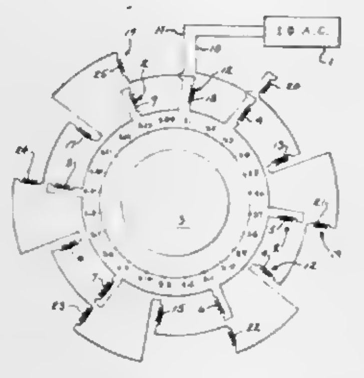
SINGLE-PHASE INDUCTION MOTOR

John B. Buckman, Troy, Ohio, assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Mar. 28, 1974, Ser. No. 455,670

Int. Cl.^{2} H02K *17/04*

U.S. Cl. 310—166 **9 Claims**



1. A single-phase induction motor operable when energized by a single-phase alternating current, comprising rotor means providing an output, a stator assembly mounted adjacent to said rotor means and having a plurality of spaced winding slots, main winding means including a coil positioned within a first slot for providing a first electrical phase axis when energized by the single-phase alternating current, auxiliary winding means including a coil positioned within a second slot for providing when energized a second electrical phase axis displaced by approximately 90 electrical degrees from said first phase axis, and pick-up winding means including a coil separate from said auxiliary coil and positioned within the electromagnetic field of said main coil and continually connected during the starting and running sequences of said motor in series closed loop electrical circuit with said auxiliary coil to provide a starting torque to said rotor means in response to the energization of said main coil by said single-phase alternating current.

3,940,647

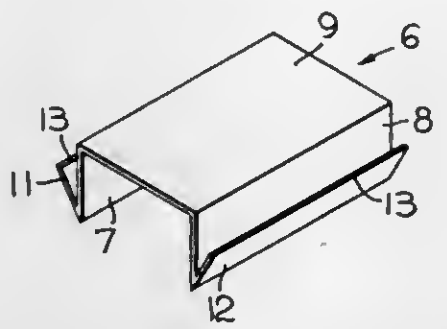
SLOT CLOSURE FOR DYNAMOELECTRIC MACHINE

John J. Keuper, Cold Spring, Ky.; Virgil R. Scardina, Milford, and Paul D. Wagner, Cincinnati, both of Ohio, assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 27, 1974, Ser. No. 527,810

Int. Cl.^{2} H02K *3/48*

U.S. Cl. 310—214 **6 Claims**



1. A slot closure for a dynamoelectric machine adapted to be positioned in a coil slot having side walls and a radially facing open end to hold the machine coil sides in place comprising: a substantially inverted U-shaped body portion having a pair of legs spaced apart a distance substantially equal to the width of said coil slot and connected together by a top portion; and a pair of outwardly disposed tabs connected to the outside of said legs having terminal end edges facing upwardly toward said top portion and when not inserted in said slot being spaced apart a distance greater than the normal width of said slot, said tabs being resilient and capable of being compressed to the width of said coil slot without losing their resiliency, said slot closure being insertable downwardly into said slot from said open end with the legs straddling the coil sides and the tabs being compressed by the slot side walls until the top portion engages the top of said coil side, said terminal end edges of said tabs engaging said side walls to prohibit removal of said slot closure upwardly from said open end of said coil slot.

3,940,648

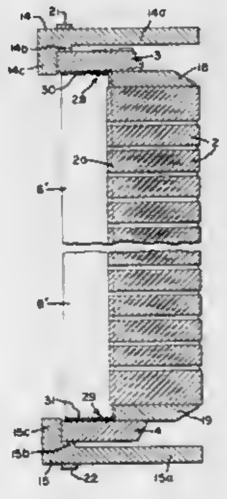
LAMINATED CORE AND SUPPORT ASSEMBLY FOR A DYNAMOELECTRIC MACHINE

Warren Pierce Wielt, and Luis Alberto Estrada, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 5, 1974, Ser. No. 503,269

Int. Cl.^{2} H02K *1/06*

U.S. Cl. 310—217 **6 Claims**



1. A dynamoelectric machine magnetic core assembly comprising, a stack of generally flat, insulated metal laminations arranged in face-to-face relationship to define a rotor-receiving bore, first and second clamping annuli positioned respectively at the opposite ends of said stack of laminations with an inner portion of each annulus extending radially outward from the stack, a first and a second annular spacer block disposed, respectively, between one clamping annulus and one end of the stack of laminations, a plurality of elongated bars having their respective ends welded to the respective radially outwardly extending portions of the sides of said annuli facing the ends of said stack, at least one of said annuli being formed with said inner portion thereof deflected axially outward with respect to said outer portion thereof, each of said bars being substantially equal in length and in the range of 4 to 60 mils shorter than the combined axial length of the stack of laminations and said shorter spacer blocks, thereby to cause the clamping annuli to apply a continuous compressive force on the stack of laminations.

3,940,649

SPARK PLUG CONSTRUCTION

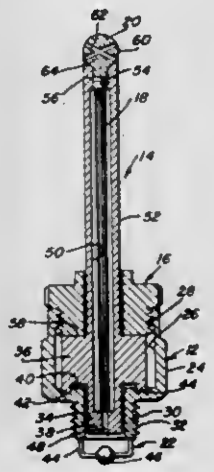
Francis E. Berstler, R.D. No. 2, Etters, Pa. 17319

Filed July 9, 1974, Ser. No. 486,854

Int. Cl.^{2} H01T *13/28, 13/56, 13/08*

U.S. Cl. 313—122 **4 Claims**

1. A spark plug including a tubular base having large and small diameter end portions and defining a small diameter central bore extending through the small diameter end portion, a coaxial large diameter bore extending through the large diameter end portion communicating with said small diameter bore and an annular shoulder at the inner end of the large diameter bore facing toward the outer end thereof, a one-piece tubular insulative body including a diametrically enlarged mid-portion and opposite smaller diameter end portions, said body being telescoped into the tubular base with said mid-portion loosely received in said large diameter bore and seated against said shoulder and one of said smaller diameter end portions projecting into and loosely received in said small diameter bore, at least the free end of said one smaller diameter end portion having a central bore formed therethrough terminating inwardly in an enlarged counterbore opening outwardly through the other small diameter end portion, an electrode rod loosely telescoped into said counterbore and seated in the inner end thereof, a combined closure and electrical terminal removably secured in the outer end of said counterbore and electrically engaged with the adjacent end of said rod, said small diameter end of said base including



a ground electrode including a portion thereof registered with but spaced from the outer end of said central bore, and a thrust nut telescoped over the other smaller diameter end portion of said insulating body, abutted against the adjacent axial end of said mid-portion and threadedly engaged in said large diameter bore, said shoulder including a peripherally continuous groove formed therein and the adjacent axial end of said enlarged mid-portion of said body includes a peripherally continuous rib tightly seated in said groove, the engagement of said rib in said groove comprising the sole area of direct contact of said insulative body with said base.

3,940,650

ELECTRIC INCANDESCENT LAMP

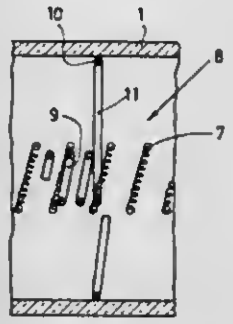
Eduard Jozef Philomena Janssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 19, 1975, Ser. No. 559,821

Claims priority, application Germany, Mar. 25, 1974, 7410382[U]

Int. Cl.^{2} H01K *1/18*

U.S. Cl. 313—222 **1 Claim**



1. An electric incandescent lamp, in particular a halogen incandescent lamp, comprising a tubular envelope which is closed at both ends by a pinch seal and in which a coiled-coil filament is stretched which extends coaxially in the envelope and which is supported in at least one place between the pinch seals by a support which is formed from a metal wire, of which support a first helically wound part supports the filament and a second part bears on the inner wall of the envelope, characterized in that the first part comprises at least two turns, the winding sense of which corresponds to that of the secondary

winding of the filament and which part is present inside the secondary winding of the filament.

3,940,651

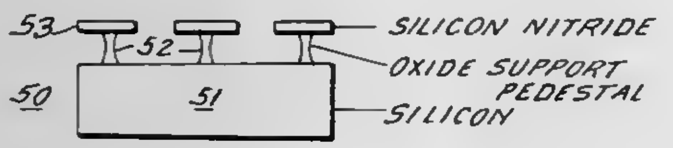
TARGET STRUCTURE FOR ELECTRONIC STORAGE TUBES OF THE COPLANAR GRID TYPE HAVING A GRID STRUCTURE OF AT LEAST ONE PEDESTAL MOUNTED LAYER

Steven R. Hofstein, Princeton, N.J., assignor to Princeton Electronics Products, Inc., North Brunswick, N.J.

Filed Mar. 8, 1974, Ser. No. 448,613

Int. Cl.^{2} H01J *31/08, 29/41*

U.S. Cl. 313—391 8 Claims



1. An electronic storage tube having a target structure including first means substantially unaffected by ionizing radiation which is present during operation of the tube for significantly improving the image retention time of the target structure wherein said tube comprises:

second means including means for generating an electron beam for applying a signal to the target structure to establish a desired stored charge distribution on the target structure representative of the image to be stored;

third means for detecting the stored charge distribution estalished on the target structure and wherein said first means comprises a pattern of conducting and insulating areas, said conducting areas being electrically connected to each other to form a conducting member having at least one planar surface;

said insulating areas being formed of first and second layers of insulating materials placed upon a first planar surface of said conducting member;

each of said layers having first and second planar surfaces, the first planar surface of a first one of said layers being in contact with the planar surface of the conducting member and the second planar surface of said one of said layers being in contact with the first planar surface of the second one of said layers;

the second planar surface of the second insulating layer which is furthest removed from said conducting member constituting the surface for storing the charge pattern;

said layers being arranged to overlie portions of said conducting member planar surface while the remaining portions of said conducting member planar surface are exposed to said electron beam;

at least one of said insulating layers being formed of an insulating material whose conductivity is unaffected by the presence of ionizing radiation to prevent the transfer of charge stored on the stored charge surface to significantly increase image retention time;

said one layer in contact with the conducting member forming slender pedestals for supporting and insulating the associated charge storage surface layer from said conducting member;

said pedestals having cross-sections smaller than their charge storage surfaces whereby the pedestals aid in preventing the transfer of charge from the charge storage surface to said conducting member.

3,940,652

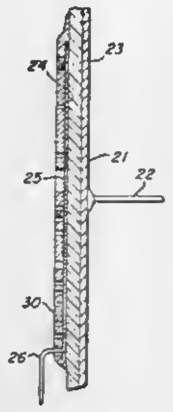
JUNCTION TARGET MONOSCOPE

Amos Picker, Sharon, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 228,732, Feb. 23, 1972, abandoned, which is a continuation of Ser. No. 37,552, May 15, 1970, abandoned. This application Jan. 10, 1974, Ser. No. 433,014

Int. Cl.^{2} H01J *31/16, 29/45*

U.S. Cl. 313—401 4 Claims



1. A signal generating device comprising:

an evacuated envelope;

a source of electrons positioned within said envelope;

a body comprising silicon semiconductor material spaced from said source within said envelope, said body having at least one junction therein providing a lower resistance to charge carrier flow in the forward direction than in the reverse direction;

said junction comprising a layer of P-type semiconductor material diffused into an N-type region of said semiconductor material and extending substantially continuously across the surface of said semiconductor body facing said source of electrons; said P-type layer having substantially less resistivity than said N-type region of said semiconductor material;

means producing charge carrier flow in said semiconductor material comprising electrodes contacting said semiconductor body on the opposite sides of said junction and means directing a beam of electrons from said source toward said junction;

means interposed between said source and said junction for varying the number of electrons of said beam striking said junction; and said means for varying said portion of electrons comprising a layer of insulating material impervious to penetration of electrons from said beam and having apertures therein through which electrons from said beam pass with sufficient velocity to produce charge carrier multiplication in said semiconductor material.

3,940,653

ARC DISCHARGE DEVICE, IN PARTICULAR A PLASMA BURNER

Claude R. Schnell, Brig; Kurt Hengartner, Visp, and Heinz Gross, Brig, all of Switzerland, assignors to Lonza Ltd., Gampel, Valais, Switzerland

Filed Sept. 6, 1974, Ser. No. 503,869

Claims priority, application Switzerland, Sept. 19, 1973, 13476/73

Int. Cl.^{2} H05H *1/26*

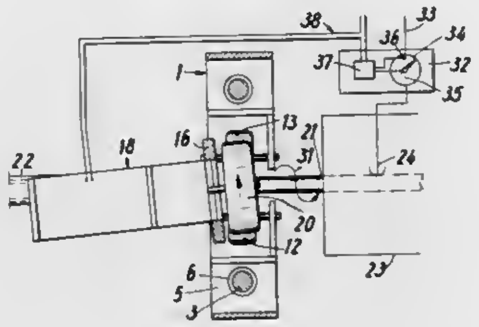
U.S. Cl. 314—69 9 Claims

1. A device for feeding a cylindrical bar-type electrode into a plasma burner and simultaneously rotating said electrode comprising:

supporting means sustaining the electrode on two longitudinally extending and circumferentially spaced surface lines thereof and having two non-deformable surfaces which in contact with the electrode have a substantially low coefficient of friction;

a driving roller having its axis inclined at an acute angle to said surface lines of the electrode;

a surface layer on said driving roller which is elastically deformable and in contact with said electrode and has a coefficient of friction substantially higher than that of said surfaces of said supporting means;



means for urging said driving roller against said electrode sustained by said supporting means, thereby pushing the electrode partially into said elastically deformable high friction surface layer of said driving roller and providing a contact area between said layer and said electrode; and

driving means connected with said driving roller for rotation thereof.

3,940,654

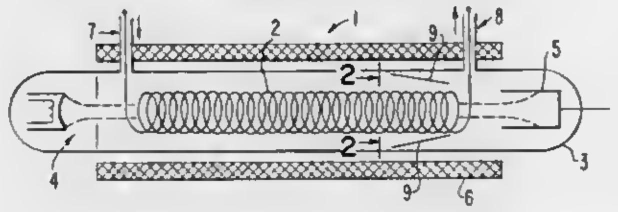
TRAVELING WAVE TUBE HAVING TAPERED LONGITUDINALLY DIRECTED LOADING CONDUCTORS AT THE OUTPUT

Lester M. Winslow, Buffalo Grove, Ill., assignor to Varian Associates, Palo Alto, Calif.

Filed Dec. 16, 1969, Ser. No. 885,517

Int. Cl.^{2} H01J *25/34*

U.S. Cl. 315—3.5 8 Claims



1. In a traveling wave tube amplifier, means forming a helix derived slow wave circuit arranged for electromagnetic interaction with a stream of electrons passable along said slow wave circuit, means at the downstream end of said slow wave circuit for coupling amplified radio frequency output signals from said slow wave circuit, THE IMPROVEMENT COMPRISING, means forming an elongated conductive loading structure disposed outside of said slow wave circuit and extending along said slow wave circuit for conducting radio frequency currents associated with the space outside of said slow wave circuit in a direction along the length of said slow wave circuit, said elongated conductive loading structure including at least a portion thereof which comprises an axially elongated radially projecting vane means for perturbing such radio frequency currents tending to flow circumferentially around the axis of said slow wave circuit, and the radial spacing from said loading structure to said slow wave circuit progressively decreasing toward the downstream end of said slow wave circuit in a region adjacent the downstream half of said slow wave circuit to progressively decrease the phase velocity of signal wave energy on said circuit for frequencies of such energy at the band edges of the operating passband of said circuit to increase the interaction efficiency of the traveling wave tube amplifier over its operating band.

3,940,655

MICROWAYE ELECTRONIC TUBE WITH AN IMPROVED COLLECTOR

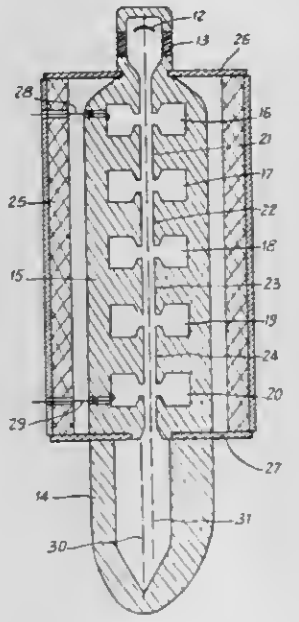
Pierre Palluel; Jean Hervier, and Jean Rousseau, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed June 13, 1974, Ser. No. 479,136

Claims priority, application France, June 19, 1973, 73.22306

Int. Cl.^{2} H01J *25/34*

U.S. Cl. 315—3.5 5 Claims



1. A microwave electronic tube comprising within an evacuated enclosure, arranged in alignment along an axis, an electron gun, an interaction space, a hollow collector for producing an electron beam propagating in operation from said gun through said space towards said collector, characterised in that said tube comprises means to produce a magnetic field on the path of said beam whose lines of force are parallel to said axis and means to stop said lines of force at the entrance of the beam into said collector so as to guide the electron beam through said entrance, whose axis is coincident with said axis, into said collector, in which it flares and impinges on a receiving area of the collector, and characterised in that at least the part of said collector on which said impingement takes place exhibits a portion having an axis of symmetry, said tube being further characterised in that said entrance axis is displaced in a transverse direction with respect to said axis of symmetry.

3,940,656

HIGH FREQUENCY TUBE APPARATUS

Curtis E. Ward; Maurice W. St. Clair, both of Palo Alto; James M. De Pue, Jr., Mountain View, all of Calif., and Albert J. Miller, Georgetown, Canada, assignors to Varian Associates, Palo Alto, Calif.

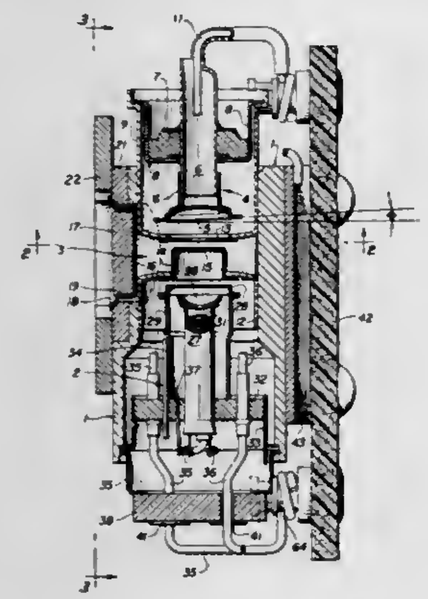
Filed June 13, 1957, Ser. No. 666,277

Int. Cl.^{2} H01J *9/38, 19/72, 25/22;* **H01P** *7/06*

U.S. Cl. 315—5.18 . 8 Claims

2. In a reflex klystron tube apparatus, means for forming a beam of electrons, a resonator means positioned along the beam path, said resonator means being apertured for the passage of the beam of electrons therethrough for electromagnetic coupling to the beam, reflector means disposed on the side of the resonator remote from said means for forming the beam of electrons, said reflector means serving for reflecting the electrons incident upon the reflecting fields of said reflector means back through said resonator means substantially along the incident beam path, said means for reflecting the electrons formed and arranged to impart a slight transverse

velocity to the electrons whereby they are caused to move transversely of and out of the beam in a small number of beam transits thereby minimizing unwanted amplitude and power modulation in the output signal of the tube apparatus.



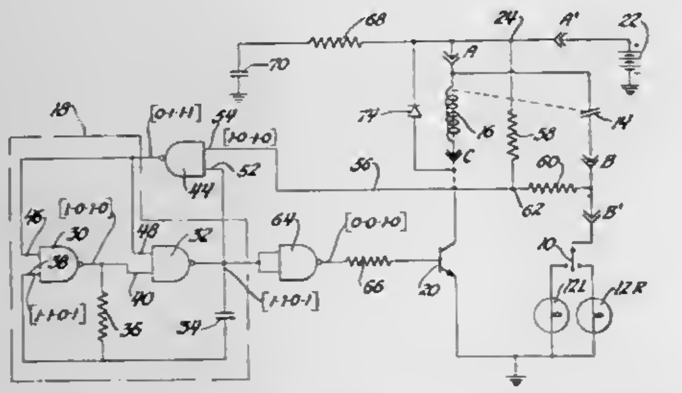
3,940,657
INTEGRATED CIRCUIT FLASHER

Stanley J. Kasiewicz, 29852 Springhill Drive, Southfield, Mich. 48076, and Earl Richard McIntyre, 4153 Hardwoods Drive, Orchard Lake, Mich. 48033

Filed Jan. 27, 1975, Ser. No. 544,243

Int. Cl.² B60Q *1/42*

U.S. Cl. 315—77 **10 Claims**



1. For use with a flasher circuit of the type comprising a voltage source, an electrically actuated switching means, a manually actuated switching means, a load device, both of said switching means and said load device being connected in a series circuit across the voltage source, said electrically actuated switching means being adapted for intermittent actuation under the control of periodic control signal from an oscillator when said manually actuated switching means is closed, whereby an intermittent voltage is applied across the load device, the improvement wherein said oscillator is a free running multivibrator having an output and an input and being adapted to produce a periodic control signal at said output when an enabling signal is applied to said input, said improvement further comprising enabling means having first and second inputs and an output, the first input of the enabling means being connected with said series circuit to sense the voltage across the load device, the second input of the enabling means being connected with the output of said oscillator, the output of the enabling means being connected with the input of the multivibrator, said enabling means being adapted to produce an enabling signal when the first and second input signals are in a predetermined state relative to each other whereby the multivibrator is caused to run so long as said manually actuated switch is closed.

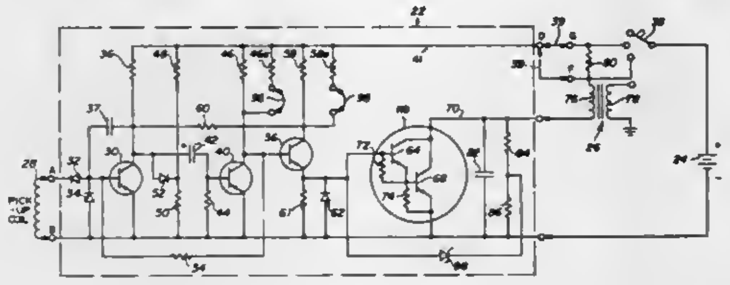
3,940,658
ELECTRONIC IGNITION CONTROL SYSTEM

Michael V. Allred, Irving, Tex., assignor to Superior Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 427,584, Dec. 26, 1973. This application May 20, 1974, Ser. No. 471,814

Int. Cl.² F02D *1/00*

U.S. Cl. 315—209 T **17 Claims**



7. A firing circuit in an ignition control system responsive to an electrical signal from a mechanical-to-electrical transducer and providing a control voltage to an ignition transformer generating a trigger voltage to a spark source, comprising in combination:
- a multiple stage pulse width amplifier having an input transistor and an output transistor;
- a capacitor filter connected between the collector and base electrodes of the input transistor;
- an output driver including a semiconductor amplifier connected to the output transistor and providing a control voltage to the ignition transformer; and
- a clamping circuit including a voltage dependent, symmetrical resistor that changes impedance when exposed to a high energy voltage connected across said semiconductor amplifier to provide overvoltage protection for said semiconductor amplifier.

3,940,659
DISCHARGE DEVICE CONTROL CIRCUIT INCLUDING A THYRISTOR

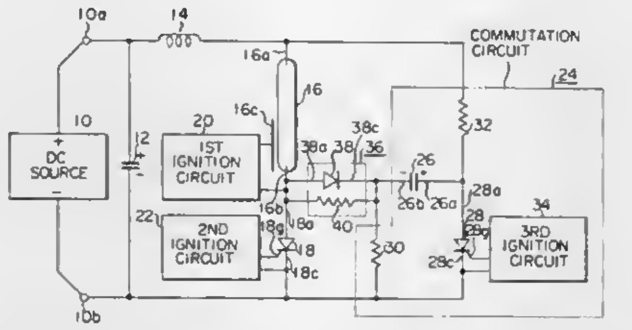
Suzuo Kojima, and Yoshio Fujimaru, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jan. 30, 1974, Ser. No. 437,788

Claims priority, application Japan, Jan. 31, 1973, 48-12671

Int. Cl.² H05B *41/32*

U.S. Cl. 315—241 P **7 Claims**



1. A control circuit for controlling an electric discharge device, comprising, in combination:
- a first circuit branch comprising an electric discharge device and a thyristor connected in series with said discharge device for controlling current flowing through said discharge device and flowing through the node at which said discharge device and said thyristor are connected;
- a second circuit branch connected in parallel with said first circuit branch, said second circuit branch comprising an impedance element connected to said discharge device and a switching element connected to said thyristor and to said impedance element to define a node therewith; and
- a third circuit branch connected between the node defined by said discharge device and said thyristor and the node defined by said impedance element and said switching element, said third circuit branch comprising a commutation capacitor for storing and applying a reverse voltage to said thyristor under control of said switching element to bias said thyristor from a conducting to a nonconducting state, and a diode connected in series with said commutation capacitor and having a polarity effective to prevent a voltage opposite the polarity of said reverse voltage and stored on said commutation capacitor from being applied to said thyristor.

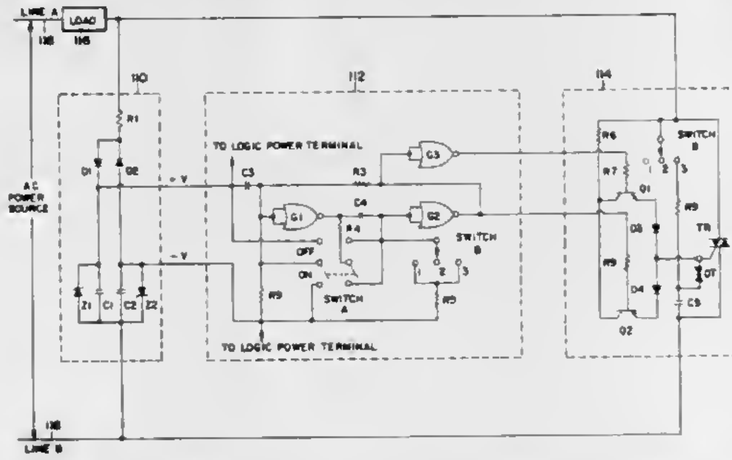
3,940,660
CIRCUITRY FOR LOAD CONNECTION AND DISCONNECTION

Frederick H. Edwards, 58 Sunset Ave., Amherst, Mass. 01002

Filed Dec. 14, 1973, Ser. No. 425,172

Int. Cl.² H05B *37/02;* **H01H** *7/00*

U.S. Cl. 315—360 **18 Claims**



1. In a circuit device for connection in series with a load and an AC power source such that power is delivered to the load during both positive and negative half-cycles and for the automatic disconnection of the load after a predetermined time interval, with the timing interval being variable over a period ranging from a few minutes to several hours and without restriction to a single value, the improvement comprising: output thyristor means for providing a conductive path for the load current, means connected to and controlling the output thyristor means for achieving conduction or nonconduction of the output thyristor means, timing circuit means connected to the controlling means for timing the automatic timing interval and including means for initiating or interrupting the automatic timing interval, means connected to the timing circuit means for changing the duration of the automatic timing interval, circuit voltage means for deriving a DC control voltage supply from the AC power source during periodic time intervals within the automatic timing interval when the output thyristor means is nonconductive, and means for providing the periodic time intervals during the automatic timing interval when the output thyristor means is nonconductive.

3,940,661
DEFLECTION SYSTEM WITH OVERSCAN PROTECTION

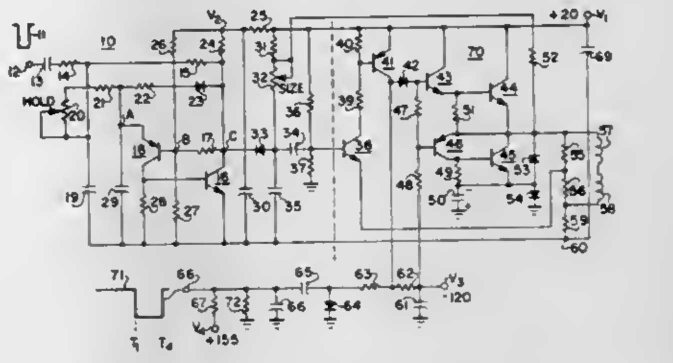
John Charles Peer, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 10, 1975, Ser. No. 548,182

Int. Cl.² H01J *29/56*

U.S. Cl. 315—370 **5 Claims**

1. A deflection system overscan protection circuit, comprising:
- an oscillator for producing a generally sawtooth waveform;
- a deflection winding;
- an amplifier coupled to said oscillator and said deflection winding and responsive to said sawtooth waveform for providing a generally sawtooth scanning current to said deflection winding;
- means for obtaining a parabolic voltage waveform from said deflection winding, which parabolic voltage waveform is proportional to the amount of scanning current through said deflection winding, and for coupling said parabolic voltage to said oscillator for superimposing said parabolic voltage on a direct current operating voltage of said oscillator such that a change in said parabolic voltage causes said oscillator to change its frequency, thereby changing the peak amplitude of said scanning current.



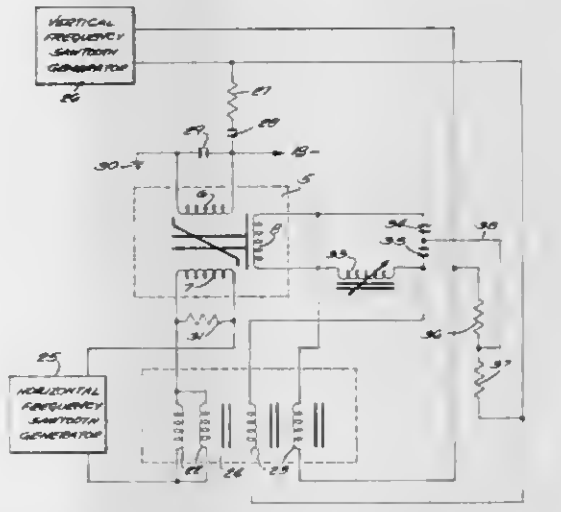
3,940,662
SATURABLE REACTOR FOR PINCUSHION DISTORTION CORRECTION

Patric C. Quirke, Whitewater, Wis., assignor to Whitewater Electronics, Inc., Whitewater, Wis.

Filed Mar. 14, 1974, Ser. No. 450,990

Int. Cl.² H01J *29/56*

U.S. Cl. 315—400 **10 Claims**


VERTICAL FREQUENCY SAWTOOTH GENERATOR
HORIZONTAL FREQUENCY SAWTOOTH GENERATOR

1. In apparatus for electromagnetically deflecting the electron beam of a cathode ray tube to cause it to scan a raster, comprising horizontal deflecting coil means by which the beam is deflected in one direction for linear scan at a horizontal frequency, vertical deflecting coil means by which the beam is deflected in another direction transverse to said one direction at a substantially lower vertical frequency, horizontal sawtooth generator means for generating a sawtooth wave current at said horizontal frequency, and vertical sawtooth generator means for generating a sawtooth wave current at said vertical frequency, means for correcting distortion of the raster comprising:
- A. a magnetically saturable core having a pair of portions that are in series magnetic circuit with one another and provide leg segments;
- B. a control coil wound transversely only around one of said leg segments of said core, said control coil in its association with said core having a high reactive impedance to current at the horizontal frequency;
- C. a parabolic wave shaping circuit in which said control coil is connected and which is connected with the vertical sawtooth generator means, for producing a control current which is at said vertical frequency and which has a substantially parabolic wave shape;

- D. a load coil
  1. wound transversely only around the other of said leg segments and
  2. connected in series circuit with the horizontal sawtooth generator means and with the horizontal deflecting coil means,

said load coil in its association with the core having a substantially low reactive impedance to current at the horizontal frequency and providing for modulation by said control current of the horizontal frequency sawtooth wave current flowing through the horizontal deflecting coil means; and

- E. magnetically saturable means defining a flux path which is in parallel magnetic circuit with said two leg segments of said core, and which can thus be threaded by flux induced by current through either of said coils in bypassing relation to the leg segment around which the other coil is wound.

3,940,663
DRIVE CIRCUIT FOR A MAIN CONTACTOR

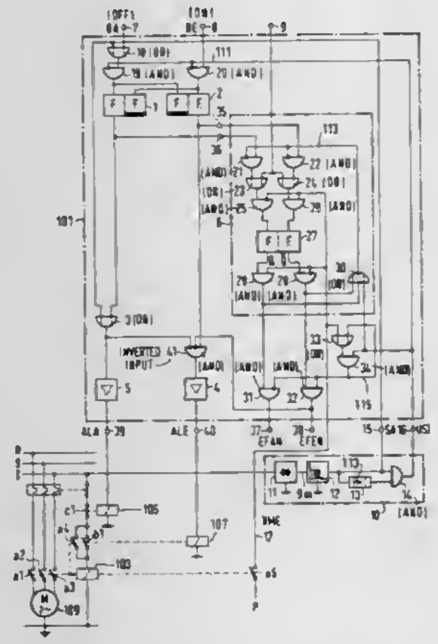
Werner Meier, Bubenreuth; Rudoll Schmidt, and Martin Kraft, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 30, 1975, Ser. No. 545,593

Claims priority, application Germany, Feb. 7, 1974, 2405908

Int. Cl.² H02H *3/24*

U.S. Cl. 317—23 5 Claims



1. In a drive circuit for a main contactor of the type which converts control commands from a command control transmitter into positioning commands for coupling contactors which switch the main contactors ON and OFF and which includes an end position error monitor forming end position error signals by comparing positioning command stored in command storage units with return signals from signalling contacts of the main contactor the improvement comprising:

- a. means for monitoring an undervoltage of the control voltage of the main contactor and providing a protection command output which is coupled to switch off the main contactor if the voltage falls below a specified limit;
- b. means for forming an undervoltage pulse output which begins with the occurence of the protection command and has a length which is the shorter of the length of the protection command and a predetermined maximum duration;
- c. first blocking gates coupling the end position error signals to the command control transmitter, said gates having said undervoltage pulse output as disabling inputs; and
- d. second blocking gates coupling the command storage units to inputs from the command control transmitter and having as disabling inputs said undervoltage pulse output.

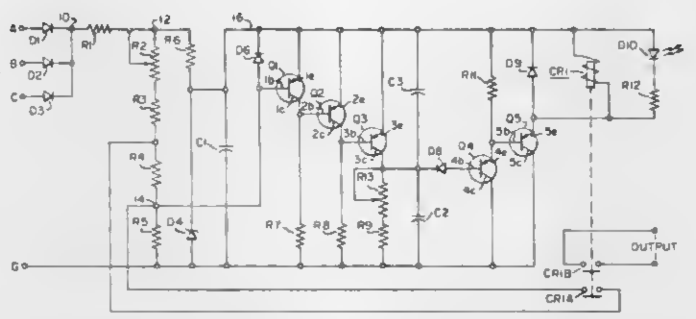
3,940,664
MULTI-PHASE VOLTAGE SENSING SWITCHING DEVICE

Joseph J. Matsko, Coraopolis, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 24, 1974, Ser. No. 482,191

Int. Cl.² H02H *3/24*

U.S. Cl. 317—31 12 Claims



1. A voltage sensitive switching device for monitoring conditions on multi-phase alternating current circuits, said device comprising:

- a. switch means having two operation states,
- b. switch operating means, activation or deactivation of said switch operating means changing said switch means from one operational state to another operational state,
- c. rectifier means having an input and an output, said input connectable to each phase of a multi-phase alternating current circuit,
- d. sensing means connected to said output of said rectifier means for activating said switch operating means when the local minima of the rectified voltage of the phase having the highest instantaneous voltage passes through a first level corresponding to a first predetermined percentage of single phase normal voltage, said sensing means deactivating said switch operating means when the local minima of the rectified voltage of the phase having the highest instantaneous voltage passes through a second level corresponding to a second predetermined percentage of single phase normal voltage.

3,940,665
CHASSIS DEVICE HAVING VENTED BASE AND RADIATION MEMBER FOR SUPPORTING HEAT SOURCES

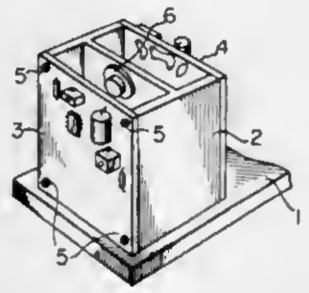
Hideki Seki, Saijo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 337,695, March 2, 1973. This application July 3, 1974, Ser. No. 485,613

Claims priority, application Japan, Mar. 6, 1972, 47-27699

Int. Cl.² H05K *7/20*

U.S. Cl. 317—100 2 Claims



1. A heat dissipation divice comprising a chassis base defining an air space therebelow and having at least one vent formed in a part thereof; at least one U-shaped heat radiation member attached to the upper surface of said chassis base, said member having a bridging portion and a pair of spaced parallel leg portions extending from both ends of said bridging portion for mounting thereon at least one heat source circuit element, each of said bridging and leg portions extending vertically upward from said chassis base and partially surrounding said vent on said chassis base; a printed circuit board extending across the opening between the leg portions of said U-shaped heat radiation member and attached to said leg portions and closing said opening by contacting the top of said chassis, said board and member forming therebetween an air flowing channel space connected to said vent, a heat source element being provided in said channel space and attached directly to the inside surface of the bridging portion of said radiation member opposite to said printed circuit board, the vertically upwardly extending bridging and leg portions of said heat radiation member having inside and outside heat radiation surfaces sufficient for radiating heat absorbed from said heat source element toward the ambient air space, the sizes of said printed circuit board and radiation member being sufficient to allow air flow from the air space below said chassis through said vent and said channel space to remove heat from said heat source circuit element and from the inside heat radiation surfaces of said bridging and leg portions.

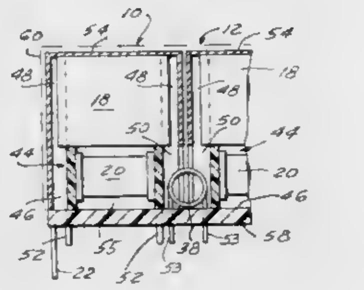
3,940,666
CIRCUIT MODULE WITH RECESS FOR RECEIVING A COUPLING COIL

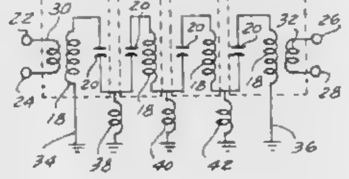
John Chesney, Roselle Park, N.J., and Chester R. Kruczek, East Longmeadow, Mass., assignors to General Instrument Corporation, Clifton, N.J.

Filed June 14, 1974, Ser. No. 479,191

Int. Cl.² H02B *1/04;* H03H *7/10*

U.S. Cl. 317—101 C 18 Claims





1. In combination with a circuit board, a circuit module for use with an active interconnecting electrical component for electrically connecting said module with other circuits on said board, externally of said module, said component being mounted on said board adjacent and independently of said module, said module comprising a base portion, one or more electrical circuit elements mounted on said base portion to form the module circuit, means on said base portion for mounting said module on said board and a side portion having members thereon an externally exposed recess, said recess being large enough to at least partially receive said interconnecting component therein.

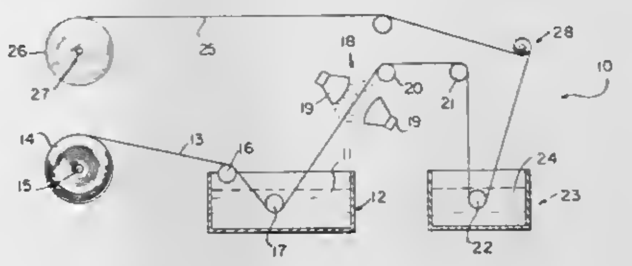
3,940,667
ELECTRICAL DEVICE AND METHOD OF MAKING THE SAME

Godlrey R. Pearce, Glasgow, Ky., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Mar. 4, 1974, Ser. No. 447,974

Int. Cl.² H01G *9/00*

U.S. Cl. 317—230 11 Claims



1. In combination an electrode and a polymer containing material for an electrical device, the electrode including metal containing material, the polymer containing material contiguous to the electrode, the polymer containing material at least semi-cured by radiation and retaining electrolyte.

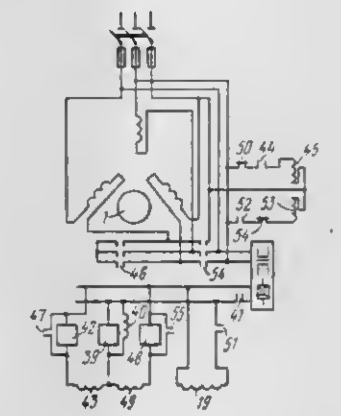
3,940,668
DUAL DUTY DRIVE WITH INDUCTION MOTOR

Voldemar Voldemarovich Apsit, ulitsa V. Latsisa, 2a, kv. 21; Alexei Petrovich Ustinsky, ulitsa Marupes, 33, kv. 29; Vladislav Alexandrovich Pugachev, ulitsa Moskovskaya 266, korpus 5, kv. 73, and Mikhail Maiorovich Usachev, ulitsa Suvorova 70, kv. 5, all of Riga, U.S.S.R.

Filed Aug. 16, 1973, Ser. No. 388,915

Int. Cl.² H02P *1/32*

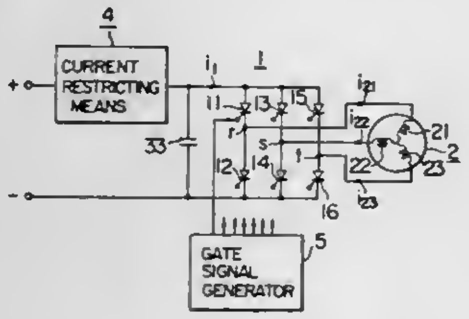
U.S. Cl. 318—226 3 Claims



1. A dual duty drive with an induction motor having a means for switching the windings there of from star to delta connection and vice versa, also comprising a reduction gear unit disposed at the output of said induction motor and intended for transmitting power to a controlled actuating mechanism, said reduction gear unit being adapted to operate both with a present step-down gear ratio and with a gear ratio equal to or approaching unity; a control means, operatively connected to said means for switching the windings of the induction motor and to said reduction gear unit, said control means having different operating positions, whereby in one position the windings of the induction motor are star connected and the reduction gear unit is caused to operate with a step-down gear ratio, whereas in the other position the induction motor windings are delta connected and the reduction gear unit is shifted to operate with a gear ratio equal to or approaching unity.

3,940,669
AC MOTOR CONTROL SYSTEM

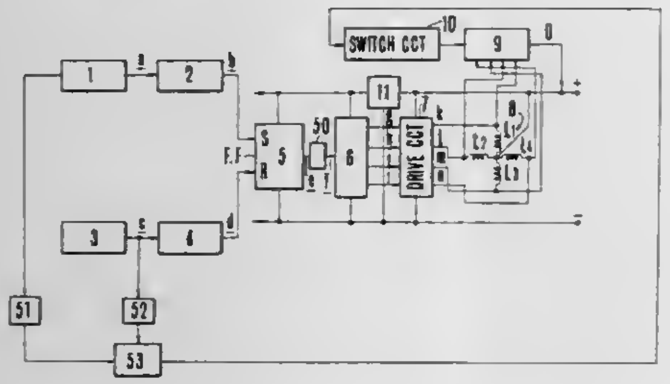
Takashi Tsuboi, and Tokunosuke Tanamachi, both of Katsuta, Japan, assignors to Hitachi, Ltd., Japan
Filed Nov. 22, 1974, Ser. No. 526,405
Claims priority, application Japan, Dec. 7, 1973, 48-136041
Int. Cl.² H02P *5/40*
U.S. Cl. 318—227 **7 Claims**



1. An A.C. motor control system comprising:
- a thyristor inverter including a plurality of thyristors adapted to be fed from a D.C. power source to thereby produce A.C. power;
- an A.C. motor connected to the output terminals of said inverter;
- a capacitor connected between the input terminals of said inverter, said capacitor forming an electrical oscillation circuit in combination with the inductance of the armature windings of said A.C. motor to pass a sinusoidal half-wave current through said armature windings when the thyristors of said inverter are triggered; and
- gate signal generating means repeatedly supplying the respective electrodes of said plurality of thyristors constituting said inverter with gate signals in predetermined sequence, whereby said motor is supplied with pulse currents.

3,940,670
SPEED CONTROL APPARATUS FOR A D.C. MOTOR HAVING HALL GENERATORS

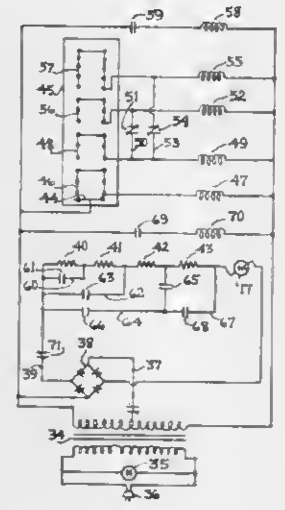
Kinji Tanikoshi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 4, 1974, Ser. No. 503,087
Claims priority, application Japan, Sept. 7, 1973, 48-100835
Int. Cl.² H02K *29/02*
U.S. Cl. 318—254 **9 Claims**



1. A D.C. motor and control system therefor comprising:
- a rotor having magnetic poles of opposite polarities thereon;
- a stator having flux-producing windings positioned in torque-producing relation to said rotor;
- detecting means for generating an electrical signal representing the instantaneously changing rotational speed of said D.C. motor;
- reference signal generating means for generating a reference signal corresponding to a predetermined constant speed of said D.C. motor;
- comparator means for comparing the electrical output signal of said detecting means with the reference signal from said reference signal generating means for providing a signal representing the difference between said two signals;
- Hall generators positioned in flux-sensing relationship to said magnetic poles for detecting the instantaneous rotational speed thereof, said Hall generators generating electrical signals of a frequency representing the instantaneously changing rotational speed of said D.C. motor and of an amplitude corresponding to the output signals from said comparator means;
- driving control means connected to the output of Hall generators and said stator windings for applying an exciting current to said windings in response to the output signal of said Hall generators;
- motor speed detecting means which detects voltage induced in said motor windings when motor driving current does not flow in said stator windings;
- switching means for supplying controlling current corresponding to the output signals from said motor detecting means to said stator windings in a direction opposite to the driving current; and
- second comparator means having a first input terminal which detects electrical signals from the detecting means and a second input terminal which detects reference signals, from the reference signal generating means, and generating control signal which puts the switching means into operation when the electrical signal from the detecting means are larger than the reference signals from the reference signal generating means.

3,940,671
CONTROL CIRCUIT FOR AMUSEMENT DEVICE

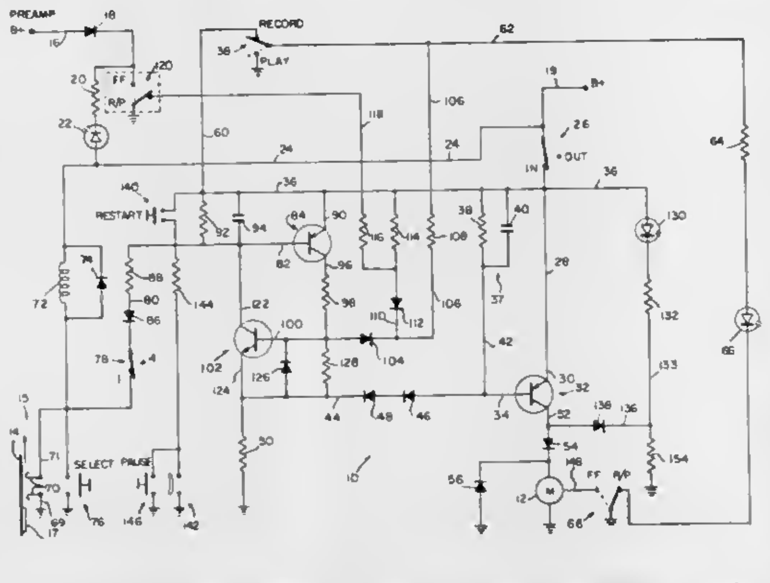
Jerry C. Koci, Barrington, Ill., assignor to Chicago Dynamic Industries, Inc., Chicago, Ill.
Filed Aug. 12, 1974, Ser. No. 496,390
Int. Cl.² H02P *5/30*
U.S. Cl. 318—349 **4 Claims**



1. A speed control system for use in an amusement device of the simulated driving type, including
- a. an electric motor,
- b. a circuit for energizing the motor,
- c. a plurality of resistors connected in series in said circuit for the motor, normally restricting an operating current to the motor,
- d. a plurality of relay switches connected in parallel, with certain of said relay switches in open shunt circuits with respect to certain of said resistors,
- e. a plurality of relays for activating said relay switches in the circuit for energizing the motor,
- f. means for selectively energizing said relays so as to close their respective said relay switches to shunt one or more of said resistors so as to increase the energizing current to the motor, and
- g. manually operated means for controlling the energization of certain of said relays by said means for selectively energizing said relays to render said relay switches of said certain relays ineffective to close a shunt circuit with respect to certain of said resistors.

3,940,672
TAPE RECORDING AND PLAYBACK CONTROL CIRCUIT

John D. Vogel, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.
Filed Aug. 14, 1974, Ser. No. 497,274
Int. Cl.² G11B *75/48;* **G05D** *3/06*
U.S. Cl. 318—467 **17 Claims**

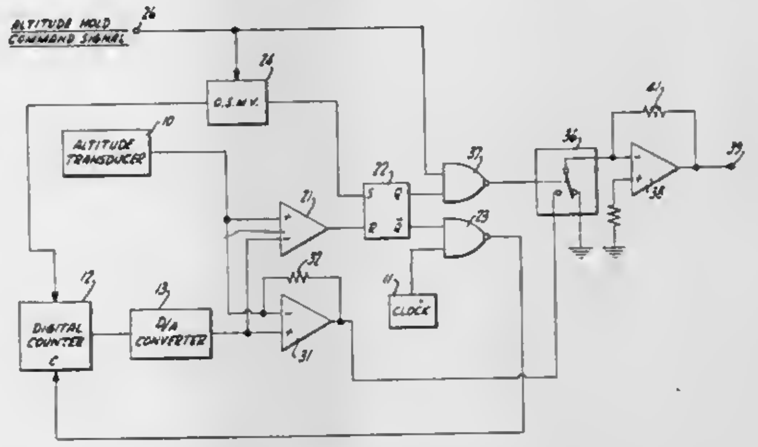


1. An electronic control circuit for controlling the energization of the tape drive motor of a tape recording and playing unit, comprising a voltage source connected to the drive motor for energizing said motor to convey tape past the unit recording and playing head; sensing means for detecting indicating means on the tape upon passage of said indicating means past the unit head; solid state switching means coupled between said sensing means and the motor for electrically disconnecting said voltage source from the motor upon detection of indicating means by said sensing means; and inhibit means having a diode with an anode and a cathode, said anode being connected to said solid state switching means and said cathode being connected to biasing means for selectively biasing said diode, said inhibit means being operative when said diode is forward-biased to prevent said solid state switching means from electrically disconnecting said voltage source from the motor.

3,940,673
AIRCRAFT ALTITUDE CONTROL SYSTEM

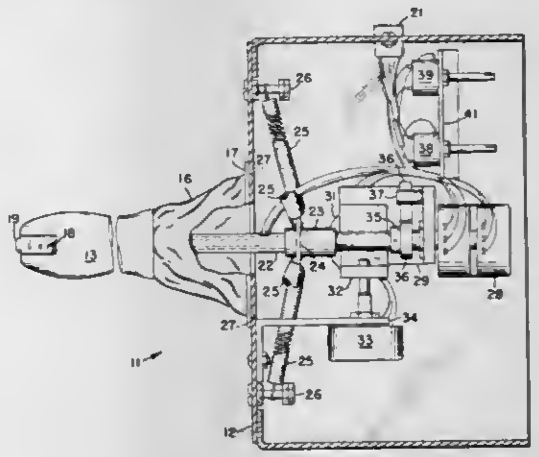
William W. Darlington, Sherman Oaks, Calif., assignor to Edcliff Instruments, Monrovia, Calif.
Continuation of Ser. No. 360,314, May 14, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,230
Int. Cl.² B64C *13/18;* **G05D** *1/08;* **H03K** *13/02*
U.S. Cl. 318—584 **4 Claims**

1. In a system for sampling and holding analog signals corresponding to the altitude of an aircraft and providing a control signal for maintaining the aircraft at the altitude corresponding to the level of the altitude signal when sampled, altitude transducer means for providing an analog altitude signal corresponding to the altitude of the aircraft, a source of clock pulses, digital counting means, digital-to-analog converter means connected to the counting means for providing an analog output signal having a level corresponding to the count registered by the counting means, gating means connected between the source of pulses and the counting means for passing pulses from the source to the counting means in the presence of an enabling signal and blocking the passage of pulses in the absence of the enabling signal, bistable means connected to the gating means and having first and second output states, said bistable means being adapted for delivering an enabling signal to the gating means when in its first output state, means for resetting the counting means to an initial level and setting the bistable means to its first output state in response to an externally applied command signal, comparator means responsive to the altitude and output signals for delivering a signal to the bistable means for switching the same to its second output state to remove the enabling signal from the gating means when the output signal reaches the level of the altitude signal, thereby blocking the delivery of further pulses to the counting means so that the count registered by the counting means and the output signal remain at levels corresponding to the altitude of the aircraft at the time the command signal is applied, and means responsive to the altitude and output signals for providing an altitude correction signal corresponding to the difference between the altitude signal and the output signal when the bistable means is in its second output state.



3,940,674
SUBMARINE OR VEHICLE STEERING SYSTEM

George H. Gill, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 14, 1972, Ser. No. 244,084
Int. Cl.² G05D *1/02;* **B63H** *25/02*
U.S. Cl. 318—589 **10 Claims**



1. A control system for selective actuation of four reversible DC motor systems comprising:
- a control handle movably mounted for rotation about three mutually perpendicular axes;
- first electromechanical transducer means mechanically coupled to said control handle for generating an electrical analog signal in response to movement of said control handle about each of said three axes;
- hand grip means mounted on said control handle and shaped to be gripped by a closed human hand for providing a handle engaging surface for said control handle

which may be operated for extended periods without fatique;

second electromechanical transducer means carried by said hand grip means and positioned thereon so as to be engagable by the thumb of an operator using the handle for providing an additional parameter of control than that provided by the handle coupled transducer means; and

circuit means connected to each of said electromechanical transducer means in such a fashion as to generate control signals for two of the four reversible DC motors which are dependent on movement of said control handle about two of said three axes and to generate control signals for each of the two remaining reversible DC motors each being independent of the other and dependent on movement of said handle about the remaining axis of movement of said control handle and the operation of the thumb engaged electromechanical transducer.

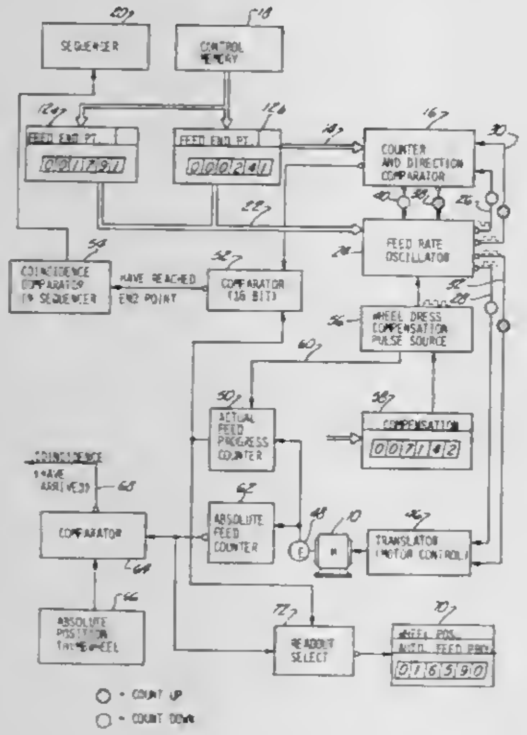
3,940,675
DIGITAL POSITIONING SYSTEM

Roger L. Schroeder, Springfield, Vt., assignor to Bryant Grinder Corporation, Springfield, Vt.

Filed Apr. 29, 1974, Ser. No. 465,333

Int. Cl.² G05B *19/28*

U.S. Cl. 318—603 **11 Claims**


SEQUENCER
CONTROL MEMORY
FEED END PT.
001791
FEED END PT.
000241
COUNTER AND DIRECTION COMPARATOR
FEED RATE OSCILLATOR
COINCIDENCE COMPARATOR IN SEQUENCER
HAVE REACHED END POINT
COMPARATOR (16 BIT)
WHEEL DRESS COMPENSATION PULSE SOURCE
ACTUAL FEED PROGRESS COUNTER
COMPENSATION
007142
COINCIDENCE (HAVE ARRIVED)
COMPARATOR
ABSOLUTE FEED COUNTER
E
M
TRANSLATOR (MOTOR CONTROL)
ABSOLUTE POSITION THUMBWHEEL
READOUT SELECT
WHEEL POS. ACTL. FEED PROG.
016590
○ = COUNT UP
○ = COUNT DOWN

1. A digital positioning system comprising: a bidirectional motor responsive to first pulses to move an output member through discrete increments; a source of digital pulses representing said increments said source having an add pulse output representing displacements in one direction and a substract pulse output representing displacements in the other direction; a plurality of individually settable input means for designating a plurality of sequentially selectable desired end positions of said output member, means for producing second pulses representing increments and direction of actual displacement thereof; first comparator means connected to the add and subtract pulse outputs and to the input means for sequentially comparing a net cumulative count of add and subtract pulses applied by the source to the motor with selected end position counts and controlling the flow of pulses from the source to equalize the net count with the selected end position count; and second comparator means for individually comparing the selected end position counts with actual pulse counts from the encoder to determine when the output member reaches the selected end position.

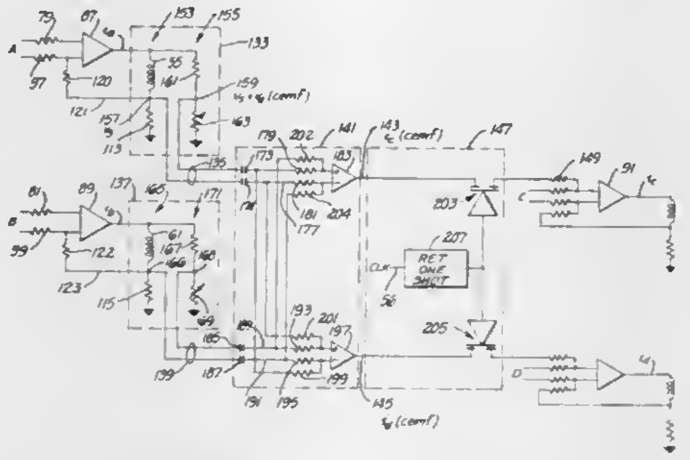
3,940,676
DAMPING CONTROL FOR POSITIONING APPARATUS

Tex Monroe Dudley, Palo Alto, Calif., assignor to Electroglas, Inc., Santa Clara, Calif.

Filed Oct. 11, 1974, Ser. No. 513,966

Int. Cl.² G05B *5/01;* H02K *41/02*

U.S. Cl. 318—612 **14 Claims**



1. A positioning apparatus including:

a first member forming a platen;

a second member adapted for controlled independent movement with respect to the first member;

a first coil carried by the second member and adapted to respond to a first electromagnetic force to position the second member with respect to the first member;

a second coil carried by the second member and disposed relative to the first coil, the second coil being adapted to respond to a second electromagnetic force to aid the first coil in positioning the second member with respect to the first member;

the first and second electromagnetic forces having variable characteristics for moving the second member relative to the first member and having constant characteristics for maintaining the second member at a predetermined point relative to the first member;

the second member having inertia characteristics for physically oscillating about the predetermined point following abrupt transitions from the variable to the constant characteristics of the first and second electromagnetic forces;

the first coil being responsive to the oscillating of the second member relative to the first member to produce in the first coil a first signal representative of a back-electromotive force in the first coil;

the second coil being responsive to the oscillating of the second member relative to the first member to produce in the second coil a second signal representative of a back-electromotive force in the second coil;

means for detecting the signal representative of the back-electromotive force in the first coil for producing a damping signal; and

means for introducing the damping signal to the second coil to damp the second signal representative of the backelectromotive force in the second coil and thereby inhibit the oscillating of the second member relative to the first member.

3,940,677
DIRECT-CURRENT STEPPING MOTOR DRIVE SYSTEM

Ronald Morino, Sea Cliff; William B. Tucker, East Norwich, and Raymond J. Keogh, Huntington, all of N.Y., assignors to Photocircuits Division of Kollmorgen Corporation, Hartford, Conn.

Filed Nov. 6, 1973, Ser. No. 413,334

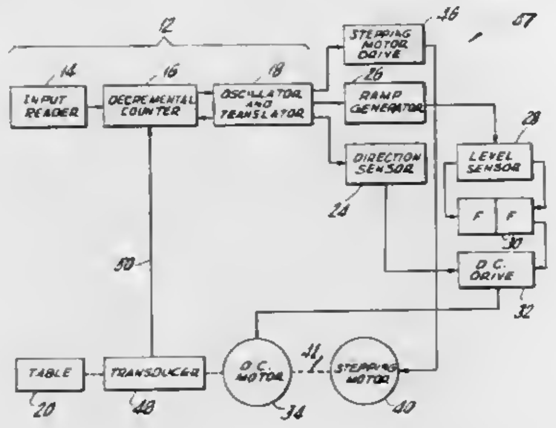
Int. Cl.² G05B *11/32, 19/40;* H02K *17/34*

U.S. Cl. 318—685 **7 Claims**

1. A drive system for developing a controlled mechanical output, comprising:

a stepping motor having a shaft which is rotatable in response to a first input signal means;

a direct-current motor having a shaft which is rotatable at constant torque in response to a second input signal means;



coupling means for directly coupling said shaft of said stepping motor and said shaft of said direct-current motor in tandem as a single shaft, said single shaft undergoing rotation in response to output signals from said first and said second input signal means to provide a controlled mechanical output.

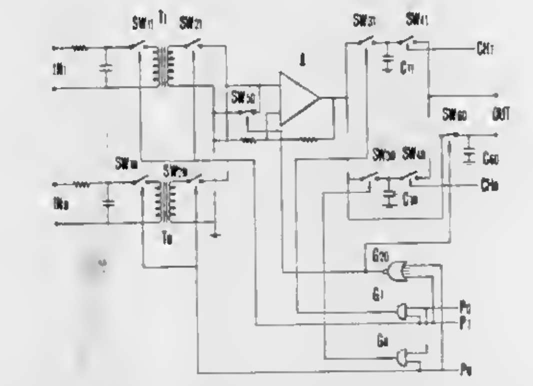
3,940,678
MULTI-INPUT SWITCHING MEANS

Hirnshi Koyama, Kamakura, Japan, assignor to Yamatake-Honeywell Company Ltd., Tokyo, Japan

Filed Dec. 31, 1974, Ser. No. 537,752

Int. Cl.² H02M *3/06;* H02J *15/00;* G11C *11/24*

U.S. Cl. 320—1 **7 Claims**



1. A multiplexing switching system comprising a plurality of signal input channels;

a plurality of reactive isolating means;

a plurality of multiplex switch members connected, respectively, between said input channels and said reactive isolating means;

means for actuating said multiplex switch means sequentially at a predetermined rate with a predetermined close-time for each actuation of each of said switch members;

a plurality of data storage devices;

a plurality of commutating switch members connected, respectively, between said reactive isolating means and said data storage devices;

means for actuating said commutating switch members synchronously with respect to said multiplex switch members but with a predetermined close-time which is less than the close-time of said multiplex switch members;

an output circuit;

a plurality of read-out scanning switch members connected, respectively, between said data storage devices and said output circuit; and

means for actuating said read-out scanning switches asynchronously with respect to said multiplexing switch members.

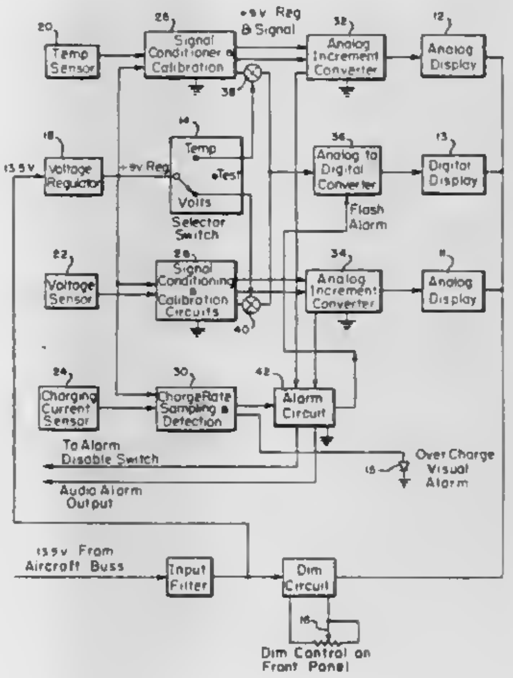
3,940,679
NICKEL-CADMIUM BATTERY MONITOR

Rowland Brandwein, Mission, and Mohan L. Gupta, Shawnee, Mission, both of Kans., assignors to Textroo, Inc., Providence, R.I.

Filed June 18, 1974, Ser. No. 480,479

Int. Cl.² H02J *7/00;* G01M *27/02*

U.S. Cl. 320—48 **6 Claims**



1. Device for monitoring nickel-cadmium battery which comprises:

a sensor for measuring the temperature of the battery, a sensor for measuring the voltage at the terminals of the battery and a sensor for measuring the magnitude of the current being discharged by and being charged to the battery, each of said sensors generating a sensor signal voltage that varies directly with the magnitude of the parameter being measured;

a temperature sensor signal voltage conditioning and calibrating means electrically connected to the temperature sensor, and a voltage sensor signal voltage conditioning and calibrating means electrically connected to the voltage sensor, each of said conditioning and calibrating means transforming the sensor signal voltage from the sensor connected thereto to a conditioned analog signal voltage the magnitude of which is in the same relative proportion to a predetermined reference voltage as the actual magnitude of the battery temperature is to a predetermined reference battery temperature and as the actual magnitude of the battery voltage is to a predetermined reference battery voltage;

continuous voltage gradient to incremental voltage gradient converter means electrically connected to each of said signal voltage conditioning and calibrating means, said converter means dividing the continuous voltage gradient of the conditioned analog signal voltage into a predetermined number of incrementally increasing analog signal voltage increments, whereby the actual signal voltage from each said signal voltage conditioning and calibrating means is converted to an analog signal voltage increment the magnitude of which corresponds approximately to the actual magnitude of the battery temperature and battery voltage as measured;

analog signal voltage increment indicator means electrically connected to each of the continuous to incremental voltage gradient converter means, each of said indicator means having a plurality of electrically energized visual display means, each of said display means corresponding to and being energized by one of said analog signal voltage increments, whereby said indicator means visually indicates the approximate magnitude of the battery temperature and battery voltage as measured;

selector switch means also electrically connected to each of the signal voltage conditioning and calibrating means, said selector switch being adapted to select and transmit the conditioned analog signal from the temperature signal or the voltage signal conditioning and calibrating means to an analog to digital converter means;

analog to digital converter means electrically connected to said selector switch means, said converter means converting the selected conditioned analog signal to a corresponding multibit digital signal;

an array of numeric visual display units electrically connected to said analog to digital converter means, said display units displaying in numeric form the actual magnitude of the battery temperature or the battery voltage, as selected by said selector switch means;

charge rate sampling means electrically connected to the battery charge sensor, said sampling means continuously measuring the magnitude of successive samples of the charge current and transmitting an alarm signal to a flash alarm means when the rate of increase of the charge current exceeds a predetermined values; and

flash alarm means electrically connected to each of said continuous to incremental voltage gradient converter means and to said charge rate sampling means, said alarm means transmitting a flash alarm signal to the analog to digital converter means when the temperature of the battery exceeds a predetermined value or when the voltage of the battery falls below or exceeds a predetermined value or when an alarm signal is received from the charge rate sampling means.

3,940,680
A.C. - D.C. POWER CONVERTER FOR D.C. LOAD

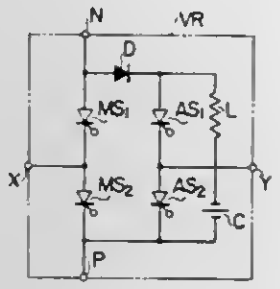
Tomio Tadokoro; Toshikatsu Kouno, and Akio Sasaki, all of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 24, 1974, Ser. No. 536,249

Claims priority, application Japan, Dec. 27, 1973, 48-144529; Jan. 14, 1974, 49-6593

Int. Cl.² H02M *7/00*

U.S. Cl. 321—27 R **6 Claims**



1. A power converter for regulating electric power supplied from a power source to a D.C. load, comprising a group of controlled rectifiers arranged to constitute a plurality of series circuits each including at least two said controlled rectifiers, said series circuits of said controlled rectifiers being connected in parallel to provide A.C. terminals at the series connection points of said controlled rectifiers and to provide D.C. terminals at the parallel connection points of said series circuits, a rectifier interposed between said parallel-connected series circuits of said controlled rectifiers, and a series circuit of a reactor and a capacitor connected in parallel with said series circuits of said controlled rectifiers.

3,940,681
WIDE AMPLITUDE RANGE DETECTING CIRCUIT

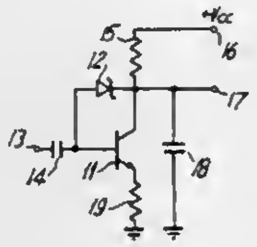
Mitsuo Ohsawa, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 9, 1974, Ser. No. 504,290

Claims priority, application Japan, Sept. 10, 1973, 48-101894

Int. Cl.² H02M *7/12*

U.S. Cl. 321—47 **10 Claims**



1. A detecting circuit comprising:

A. a rectifying transistor comprising a base, an emitter, and collector, said base and emitter comprising components of a base-emitter input circuit to receive an input signal to be rectified, and said collector and said emitter comprising parts of an output circuit;

B. Zener diode switching means connected directly in series between said collector and said base, and controlled by said input signal to be conductive when said input signal has a polarity that tends to make said transistor conductive and to be non-conductive when said input signal has the opposite polarity; and

C. an output terminal connected to said output circuit to derive therefrom a rectified signal corresponding to said input signal.

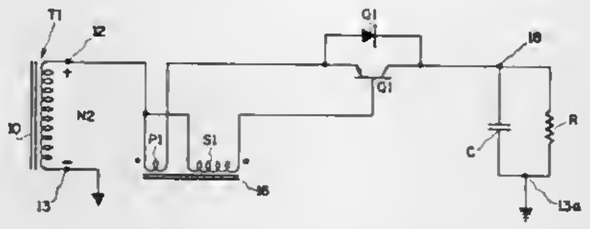
3,940,682
RECTIFIER CIRCUITS USING TRANSISTORS AS RECTIFYING ELEMENTS

John N. Park, Rexford; Robert L. Steigerwald, Scotia, and Loren H. Walker, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 406,162, Oct. 15, 1973. This application Nov. 22, 1974, Ser. No. 526,117

Int. Cl.² H02M *7/23, 7/21*

U.S. Cl. 321—47 **2 Claims**



1. A full wave active rectifying circuit comprising

a first transformer having a ferrite magnetic core and a winding with a center tap and two ends for supplying high frequency alternating-current input voltage with a frequency between 20 and 50 kilohertz,

a second transformer having a common magnetic core made of ferrite material and only four magnetically coupled windings including first and second pairs of opposite winding polarity primary and secondary windings, one end of said first pair of primary and secondary windings being connected together and to one end of said first transformer winding, and one end of said second pair of primary and secondary windings being connected together and to the other end of said first transformer winding,

first and second substantially alternately conductive silicon junction transistors each connected for inverted mode operation and each having an emitter, a base, a collector and a collector-base junction, said collectors being connected together and defining a first output terminal, the other ends of said first pair of primary and secondary windings being connected respectively to the emitter and base of said first transistor such that voltage blockage is performable by the collector-base junction thereof, the other ends of said second pair of primary and secondary windings being connected respectively to the emitter and base of said second transistor such that voltage blockage is performable by the collector-base junction thereof, and a diode connected between the emitter and collector of each of said first and second transistors with a polarity to conduct in the same direction as said respective transistors, and

a capacitor connected directly between said first output terminal and a second output terminal which is in turn effectively connected to the center tap of said first transformer winding.

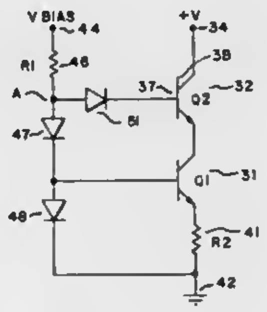
3,940,683
ACTIVE BREAKDOWN CIRCUIT FOR INCREASING THE OPERATING RANGE OF CIRCUIT ELEMENTS

Robert A. Blauschild, Sunnyvale, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Aug. 12, 1974, Ser. No. 496,554

Int. Cl.² H03F *3/10*

U.S. Cl. 323—4 **5 Claims**



1. In an active circuit for increasing the operating range of semiconductor circuit elements the active circuit being of the type connected between a power supply and a circuit element and including a transistor having a base, emitter and a collector, said transistor having a breakdown voltage, means biasing said transistor for providing a current path through said transistor to supply current to said circuit element and to develop a voltage thereacross and including means for biasing said transistor base and emitter as a forward biased junction for base current flow in a first direction and for biasing said base and collector of said transistor as a reverse biased junction and including unidirectional means for providing a low impedance to base current flow in said first direction, and a high impedance to base current flow in the opposite direction, said supply voltage exceeding a predetermined level to cause said transistor to breakdown, said breakdown voltage across said transistor opposing the supply voltage so that the operating range is increased and the actual voltage applied to the element does not exceed the breakdown voltage of the element said unidirectional means impeding base current flow in said opposite direction to prevent feedback of such current flow whereby said transistor breakdown occurs substantially at the open-base, collector to emitter rating of said transistor.

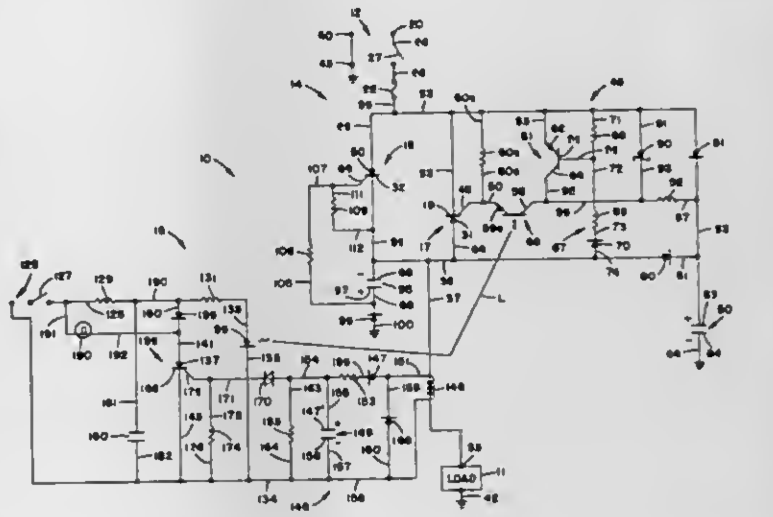
3,940,684
POWER CONTROLLER

Homer W. Heinzman, Arlington, and Albert J. Marek, Dallas, both of Tex., assignors to LTV Aerospace Corporation, Dallas, Tex.

Filed Feb. 20, 1974, Ser. No. 444,196

Int. Cl.² G05F *3/04*

U.S. Cl. 323—9 **6 Claims**



1. A power controller for controlling flow of alternating current from an alternating current input circuit to a load, said controller including:

a power transmission circuit connectible between the input circuit and the load having a master unidirectionally conductive device and a slave unidirectionally conducting device connected reversely in parallel between the input circuit and the load, said devices having control members and remaining conductive, once rendered conductive, during full alternate half cycles of the input voltage;

first means operatively associated with the control member of said master device for rendering said master device conductive during half cycles of voltage of one polarity of the input circuit comprising a capacitor, means for charging said capacitor during each half cycle of a second polarity, and a selectively conductive control means connected in series with and between said control member of said master device and said capacitor for selectively transmitting a potential of said second polarity from said capacitor to said control member of said master devices;

inhibitor means for preventing initiation of conduction of said master device during half cycles of voltage of said one polarity except at substantially the times of zero voltage cross-over between half cycles of said second polarity of the input circuit to half cycles of said one polarity when said control means is conductive; and,

means responsive to the operation of said master device operatively associated with said control member of said slave device for rendering said slave device conductive during each half cycle of input voltage of said second polarity only after each period of conduction of said master device during a half cycle of input voltage of said one polarity.

3,940,685
THYRISTOR-FIRING APPARATUS USING AN ACOUSTIC SURFACE WAVE DEVICE

Yasuo Ebata, Yokohama, Japan, assignor to Tokyo Shibaura Electrical Co., Ltd., Kawasaki, Japan

Filed June 3, 1974, Ser. No. 475,911

Claims priority, application Japan, June 1, 1973, 48-60777

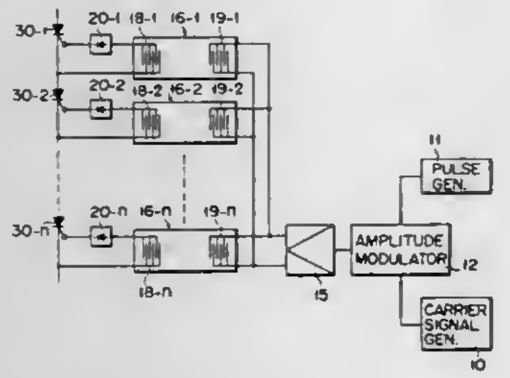
Int. Cl.² H02P *13/14*

U.S. Cl. 323—23 **2 Claims**

1. A thyristor firing apparatus comprising:

a plurality of series-connected thyristors each having a gate electrode, anode electrode and cathode electrode;

a plurality of acoustic surface wave devices each having a substrate of piezoelectric material and input and output transducer means disposed on said substrate;
control pulse generating means;
carrier signal generating means;
amplitude modulating means for amplitude modulating a carrier signal from said carrier signal generating means with a control pulse from said control pulse generating means;



a plurality of rectifier means each coupled between the gate electrode of each of said plurality of series-connected thyristors and said output transducer means and operative to apply a simultaneous firing signal to the gate electrode of each of said plurality of series-connected thyristor; and
means for coupling said amplitude modulating means to said input transducer means of said plurality of acoustic surface wave devices.

3,940,686
LINEAR OUTPUT BRIDGE CIRCUIT

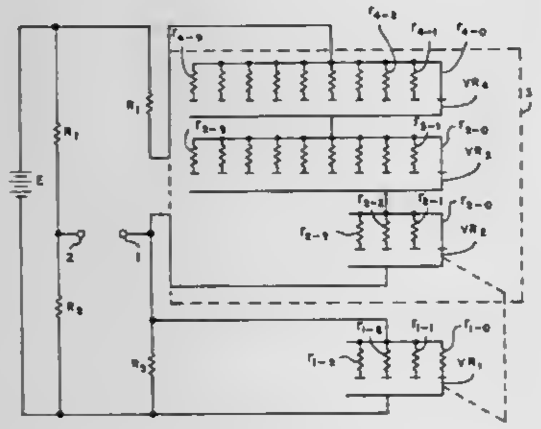
Kozo Tanaka, Fujisawa, and Tetsuyuki Onoda, Yokohama, both of Japan, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 1, 1974, Ser. No. 456,706

Claims priority, application Japan, June 18, 1973, 48-68447; Aug. 6, 1973, 48-92636

Int. Cl.² G01K *7/02*

U.S. Cl. 323—75 B **8 Claims**



1. A digital set point circuit comprising:
a pair of input terminals;
a pair of output terminals;
a bridge circuit having at least first, second, third and fourth impedance arms, said first and third impedance arms being connected together and to one of said input terminals, said second and fourth impedance arms being connected together and to the other of said input terminals, said first and second impedance arms being connected together and to one of said output terminals and said third and fourth impedance arms being connected together and to the other of said output terminals, said circuit containing sensor means;
one of said impedance arms comprising at least a most significant digit selector switch for switching between a plurality of digital set point devices; and,
another of said arms comprising a characterizing switch interlocked with said most significant digit selector switch, said characterizing switch for switching a plurality of characterizing devices, each characterizing device having a value associated with each digital set point device for providing an approximation of the operating characteristic of said sensing means to provide a substantially linear output from said bridge.

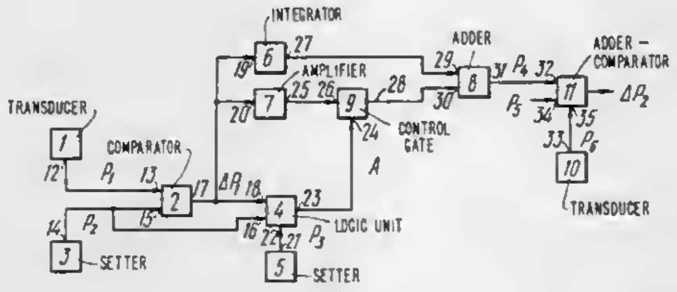
3,940,687
METHOD FOR CONTROLLING ACTIVE POWER DISTRIBUTION IN POWER TRANSMISSION LINES AND A CONTROLLER FOR EFFECTING SAME

Enver Bejukovich Akhundov, ulitsa Volgogradskaya, 21b, kv. 6; Vadim Andreevich Anischenko, ulitsa Gorkogo, 23, kv. 17; Vladimir Vasilievich Petrov, ulitsa Matusevicha, 6, kv. 45, and Petr Stepanovich Semashko, ulitsa Tipogralskaya, 3, kv. 65, all of Minsk, U.S.S.R.

Filed May 2, 1974, Ser. No. 466,186

Int. Cl.² G05F *1/66*

U.S. Cl. 323—101 **6 Claims**



1. A method for controlling the active power flow distribution in a power transmission line comprising the steps of:
a. presetting the value of active power flow in a power transmission line intended to be maintained in the process of controlling;
b. measuring the actual value of the active power flow in said power transmission line;
c. comparing said actual and preset values of active power flows in said power transmission line and deriving the difference therebetween;
d. converting the difference between said actual and preset values of active power flows in said power transmission line into the nearest maximum extrapolated difference between the preset and actual values of active power flow;
e. adding to obtain the sum of the nearest maximum extrapolated difference between the actual and preset values of active power flow thus obtained and the preset value of active power flow;
f. setting the permissible value of active power flow in said power transmission line to ensure stable operation of the power distribution system;
g. comparing said sum of comprised of the nearest maximum extrapolated difference between the actual and preset values of active power flow and the preset value of active power flow to said permissible value of active power flow in said power transmission line;
h. carrying out a proportional-plus-integral control of active power flow if said sum of the nearest maximum extrapolated difference between the actual and preset active power flow and the preset value of active power flow is greater than said permissible value of active power flow in said power transmission line, or alternately effecting an integral control of the active power flow if said sum of the nearest maximum extrapolated difference between, the actual and preset values of the active power flow and the preset value of actual power flow is smaller than said permissible value of active power flow in the said power transmission line.

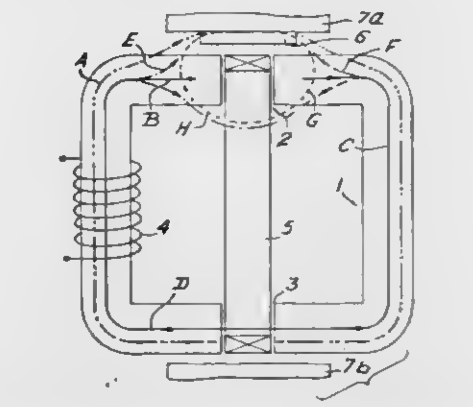
3,940,688
DEVICE FOR TESTING THE MAGNETIC PROPERTIES OF A MAGNETIC MATERIAL

Jean-Pierre Lazzari, Montfort L'Amaury, and Jean-Yves Valet, Beauchamp, both of France, assignors to Commissariat a l'Energie Atomique, Paris and Compagnie Internationale pour l'Informatique, Les Clayes Sous Bois, both of, France

Filed Sept. 30, 1974, Ser. No. 510,318

Int. Cl.² G01R *33/12*

U.S. Cl. 324—34 R **7 Claims**



1. A device for testing the magnetic properties of a test sample comprising a pair of U-shaped cores of magnetic material supported with their respective ends in an aligned and spaced relation to form a magnetic circuit, means for establishing an alternating flow of magnetic flux in said circuit, coil means extending through both of the gaps between the corresponding ends of said cores and arranged so that the magnetic flux passing through the coil means in one of said gaps cancels the effect of the magnetic flux passing through the coil means in the other gap, and means for supporting said test sample relative to said cores so that said test sample receives a portion of the flux passing through one of said gaps and establishes a circuit for said portion of said flux including the coil means in said latter gap to induce a voltage in said coil means and thus enable the magnetic properties of said test sample to be determined.

3,940,689
COMBINED EDDY CURRENT AND LEAKAGE FIELD DETECTOR FOR WELL BORE PIPING USING A UNIQUE MAGNETIZER CORE STRUCTURE

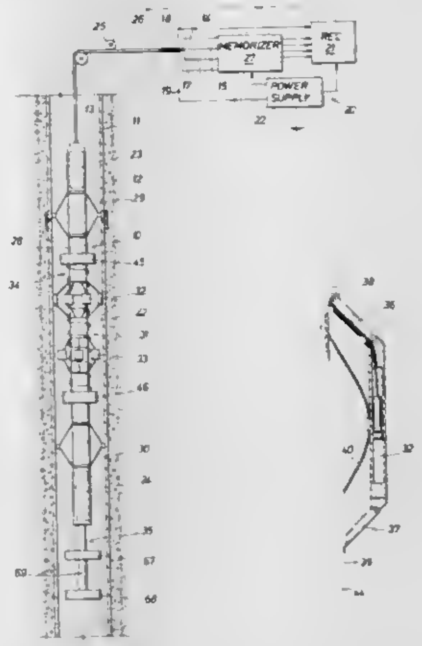
Wade M. Johnson, Jr., Los Alamos, N. Mex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 14, 1974, Ser. No. 469,935

Int. Cl.² G01R *33/12*

U.S. Cl. 324—37 **14 Claims**

1. Pipe-inspection apparatus adapted for locating magnetically-anomalous defects in or on either the interior or exterior walls of a string of well-bore piping having a known minimum internal diameter, a known relative magnetic permeability and a known transverse cross-sectional metal area, and comprising:
an elongated body adapted for suspension in such a piping string from a well-logging cable and including upper and lower longitudinally-spaced pole pieces respectively having a maximum outer diameter somewhat less than said known internal piping diameter and magnetically coupled to the opposite ends of an elongated reduced-diameter core member of a magnetic metal having a relative magnetic permeability no greater than said known piping permeability and a transverse cross-sectional metal area less than said known piping metal area;
flux-inducing means adapted for establishing a longitudinally-oriented unidirectional magnetic flux along an incremental portion of such well-bore piping located between said upper and lower pole pieces and including a magnetizing coil coaxially wound around said core member;
eddy-current inducing means adapted for establishing eddy currents along and adjacent to the interior wall of said incremental piping portion and including an electrical oscillator, and a plurality of output coils respectively coupled to said oscillator and cooperatively arranged at circumferentially-spaced intervals around said core member for being operatively positioned immediately adjacent to said interior wall to induce eddy currents therein;



defect-sensing means including a plurality of differentially-wound pairs of detecting coils cooperatively arranged at circumferentially-spaced intervals around said core member for being operatively positioned immediately adjacent to said interior wall to simultaneously detect flux-leakage variations as well as eddy-current variations appearing thereon and caused by magnetically-anomalous defects in said incremental piping portion during the movement of said detecting coils therethrough; and
defect-responsive circuit means operatively coupled to said detecting coils and cooperatively arranged for providing first and second output signals in response to said flux-leakage variations and said eddy-current variations respectively.

3,940,690
MULTI-PROBE FLUX LEAKAGE TESTING APPARATUS USING SKEWED PROBES

Peter J. Suhr, Garden City, and Edward D. Spierer, Belle Harbor, both of N.Y., assignors to Magnetic Analysis Corporation, Mount Vernon, N.Y.

Filed Aug. 13, 1974, Ser. No. 496,926

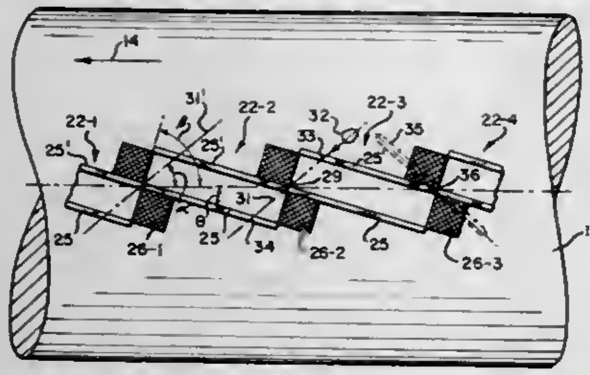
Int. Cl.² G01R *33/12*

U.S. Cl. 324—37 **10 Claims**

1. Multi-probe flux leakage testing apparatus for detecting flaws in an object relatively moving longitudinally and rotationally with respect to the probes which comprises
a. means for producing a steady state magnetic field in said object in the test region thereof,
b. a plurality of leakage-flux probes for producing respective signal outputs having positive and negative excursions corresponding to flaws passing thereby in said test region,
c. said probes each including a channel-shaped core of magnetic material of generally U-shaped cross-section and having spaced sides which are long compared to the thickness thereof and a coil encircling the core for producing said signal outputs,

d. said probes being arranged in succession along the longitudinal path of travel of a said object and skewed with respect to said longitudinal path of travel with an end of one probe adjacent an end of the next probe respectively,

e. means for rectifying and combining the positive portions of the signals from said probes and rectifying and combining the negative portions of the signals from said probes to yield positive and negative signals corresponding to the largest signal of each polarity simultaneously occurring in said probes,



f. adding means for adding said largest positive and negative signals to yield bipolar signals having corresponding positive and negative excursions,

g. and circuit means responsive to said bipolar signals for indicating flaws in a said object.

3,940,691

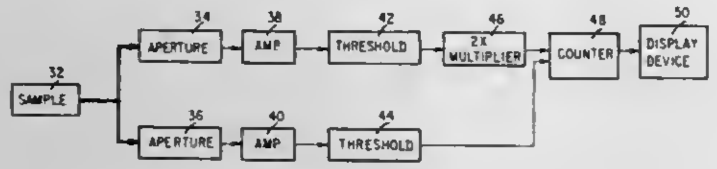
PARTICLE ANALYZER OF THE COULTER TYPE INCLUDING COINCIDENCE ERROR CORRECTION CIRCUITRY

Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Feb. 19, 1974, Ser. No. 443,428

Int. Cl.^{2} G01N *27/00*

U.S. Cl. 324—71 CP **19 Claims**



1. In a particle analyzer subject to coincidence errors in counting particle pulses, the combination including:

a first sensing zone arrangement for generating a first train of particle pulses having a first number of particle pulses in response to passage through said sensing zone of a sample containing a plurality of particles to be counted,

generating means for generating a second train of particle pulses having a second number of particle pulses and having a specific relationship to said first train of particle pulses defined by one of the sample volume, sample dilution and sensing zone volume for said first sensing zone arrangement, and

circuit means coupled to said first sensing zone arrangement and said generating means, for mathematically changing at least one of said first number of particle pulses in said first train of pulses and said second number of particle pulses in said second train of pulses, and second circuit means coupled to said first circuit means operative to accumulate said number of first and second particle pulses in said first and second trains of particle pulses for producing an error corrected particle pulse count.

3,940,692

APPARATUS FOR MONITORING RECURRENT WAVEFORMS

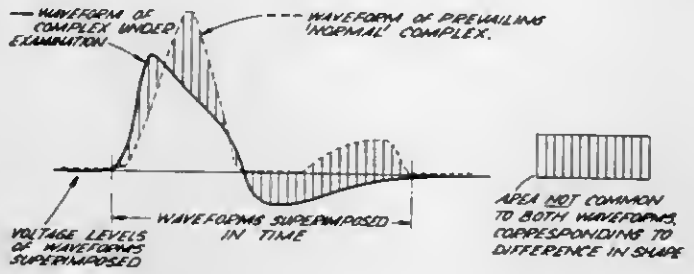
James McEwan McIntyre Neilson, Edinburgh, Scotland, assignor to The University of Edinburgh, Edinburgh, Scotland, a part interest

Filed Dec. 14, 1973, Ser. No. 424,815

Claims priority, application United Kingdom, Dec. 15, 1972, 48106/72

Int. Cl.^{2} G01R *23/16*

U.S. Cl. 324—77 R **33 Claims**



1. A method of monitoring a recurrent waveform to detect abnormal waveform complexes comprising the steps of integrating successive segments of a waveform complex, determining the difference between the integrated value of each segment in the complex and the integrated values of corresponding segments of $(p + 1)$ different normal waveform complexes, where p is an integer, to provide $(p + 1)$ sets of difference signals, quantitatively summing the difference signals associated with each normal waveform and producing a signal and/or record to indicate an abnormal complex if the total sum of the magnitudes of the difference signals associated with a first normal waveform complex exceeds a first threshold level and the sums of the magnitudes of the p other difference signals are not less than a second threshold level for each of the p other normal waveform complexes.

3,940,693

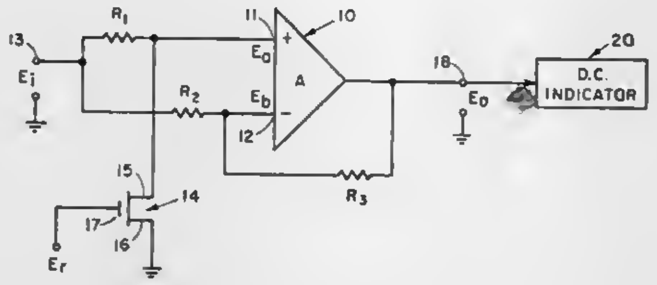
PHASE SENSITIVE DETECTOR

Neil L. Brown, Falmouth, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 24, 1974, Ser. No. 517,699

Int. Cl.^{2} H03D *13/00*

U.S. Cl. 324—83 A **2 Claims**



1. A phase sensitive detector comprising, in combination

an amplifier having a non-inverting input terminal, an inverting input terminal and an output circuit;

a first resistor having one side thereof connected to said non-inverting terminal;

a second resistor having one side thereof connected to said inverting terminal;

a third resistor connected between said output circuit and said inverting terminal to provide negative feedback for said amplifier, said second and third resistors having equal values;

means for connecting a first signal to both other ends of said first and second resistors; and

means for grounding said non-inverting terminal whenever a second signal has a particular polarity whereby the signal appearing in the output circuit of said amplifier has an average value which is indicative of the phase between said first and second signals.

3,940,694

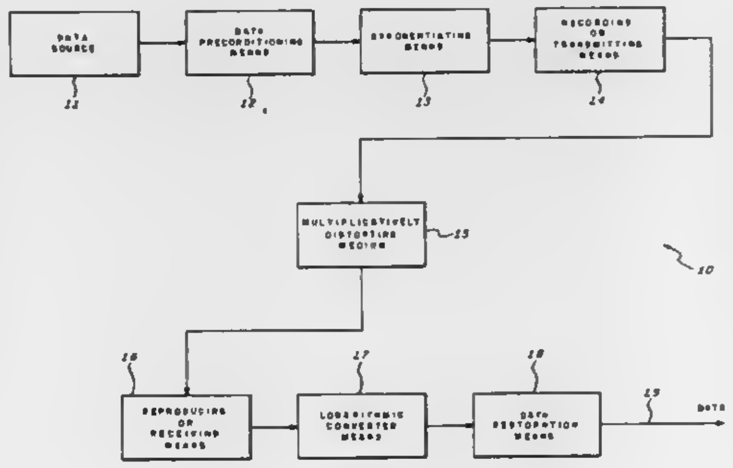
APPARATUS AND METHOD FOR REDUCING MULTIPLICATIVE GAIN VARIATION DISTORTIONS IN DATA RECORDING AND TRANSMISSION CHANNELS

Robert Price, Lexington, and John W. Craig, Sudbury, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Continuation of Ser. No. 193,898, Oct. 29, 1971. This application June 26, 1974, Ser. No. 483,340

Int. Cl.^{2} H04B *1/00, 1/10*

U.S. Cl. 325—42 **37 Claims**


DATA SOURCE
11
DATA PRECONDITIONING MEANS
12
EXPONENTIATING MEANS
13
RECORDING OR TRANSMITTING MEANS
14
MULTIPLICATIVELY DISTORTING MEDIUM
15
10
16
REPRODUCING OR RECEIVING MEANS
17
LOGARITHMIC CONVERTER MEANS
18
DATA RESTORATION MEANS
19
DATA

1. In combination for use with a data source for providing a sequence of data items

accumulator means responsive to said sequence of data items for algebraically accumulating said data items in accordance with a preconditioning function thereby forming a sequence of output partial sums respectively,

exponentiating means coupled to the output of said accumulator means and responsive to said sequence of output partial sums for sequentially providing an essentially exponential function thereof by sequentially raising a base to a power proportional to said output partial sums respectively, thereby providing a sequence of first signals respectively,

said first signals being subject to multiplicative distortions which are filterable with respect to said data items thereby providing a sequence of distorted first signals,

logarithmic converter means responsive to said sequence of distorted first signals for sequentially providing a logarithmic function thereof, respectively, inverse to said exponential function, thereby providing a sequence of second signals respectively,

said logarithmic converter means converting said multiplicative distortions to additive distortions,

subtractor means coupled to said logarithmic converter means for providing algebraic differences between said second signals in accordance with a function inverse to said preconditioning function, thereby performing a substractive operation providing a sequence of third signals representative of said sequence of data items, respectively, with said additive distortions substantially filtered therefrom by said subtractive operation, and

memory means in said subtracter means for storing at least one of said second signals occurring prior to the currently occurring of said second signals thereby providing signals for said subtracter means to provide said algebraic differences.

3,940,695

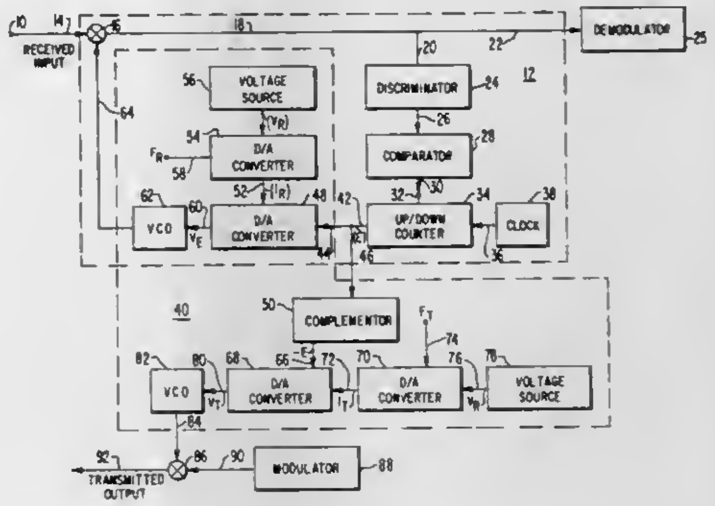
DOPPLER CORRECTION OF TRANSMISSION FREQUENCIES

Louis Sickles, II, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,764

Int. Cl.^{2} H04B *7/00*

U.S. Cl. 325—63 **6 Claims**



1. Apparatus for pre-compensating for doppler shift in a signal to be transmitted to a remote station comprising:

a. means, receptive of a signal from said remote station, said received signal deviating in frequency from a predetermined reception frequency due to doppler shift, for providing a digital signal representative of said frequency deviation;

b. digital multiplier means, responsive to said representative signal, for generating a doppler correction signal indicative of said frequency deviation multiplied by the negative of the ratio of a predetermined transmission frequency for said transmitted signal to said predetermined reception frequency; and

c. means, responsive to said doppler correction signal and to said signal to be transmitted, for translating in frequency said signal to be transmitted according to said doppler correction signal.

3,940,696

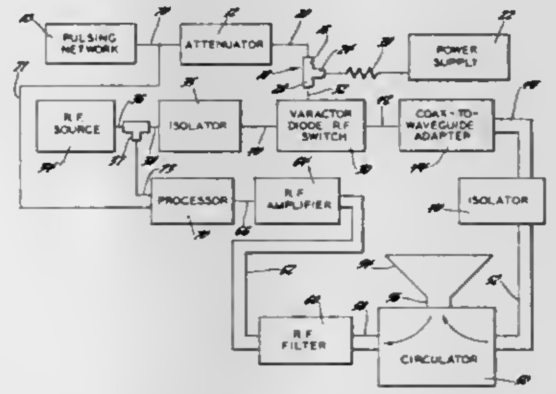
HIGH FREQUENCY, SHORT PULSE, BAND LIMITED RADAR PULSE GENERATOR FOR ULTRASHORT RANGE RADAR SYSTEMS

Louis L. Nagy, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 18, 1974, Ser. No. 525,004

Int. Cl.^{2} H04B *1/04*

U.S. Cl. 325—141 **2 Claims**



1. A band-limited RF pulse generator for ultrashort range pulse radar systems comprising: an RF switch, said switch including a varactor diode; means for generating a continuous RF signal; means coupling the RF signal to the RF switch, the RF switch normally attenuating the RF signal and being re-

sponsive to a voltage supplied to the varactor diode for transmitting the RF signal; a voltage pulse generator, said voltage pulse generator including an avalanche transistor having base, emitter and collector electrodes, means for biasing the avalanche transistor for operation in its avalanche region, the avalanche transistor switching from an off state to an on state when the voltage across its emitter and collector electrodes exceeds a specified level, a delay line having a first end coupled to the avalanche transistor and the means for biasing the avalanche transistor and an open end, the delay line being charged by the means for biasing the avalanche transistor, the voltage charge on the delay line comprising the voltage across the emitter and collector electrodes of the avalanche transistor, the avalanche transistor being switched from its off state to its on state to discharge the delay line, generate a voltage transient on the delay line and initiate an output voltage pulse when the delay line is charged to a voltage greater than the specified level, the voltage transient on the delay line propagating to and reflecting from the open end thereof and returning to the avalanche transistor to switch the avalanche transistor from its on state to its off state and terminate the output voltage pulse and initiate recharging of the delay line, the delay line having a length so that the time for the voltage transient to propagate to and reflect from the open end of the delay line and return to the avalanche transistor being just greater than the time for the avalanche transistor to switch from its off state to its on state; and means coupling the voltage pulses from the voltage pulse generator to the varactor diode, whereby the voltage pulses drive the RF switch to transmit the RF to generate ultrashort pulse, band-limited RF pulses.

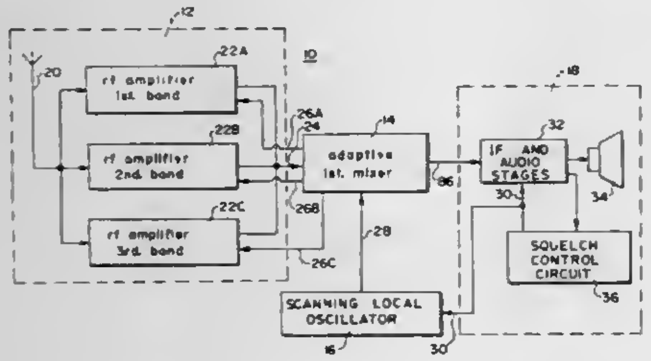
3,940,697
MULTIPLE BAND SCANNING RADIO

Eugene L. Morgan, Dix Hill, N.Y., assignor to Hy-Gain Electronics Corporation, Lincoln, Nebr.

Filed Dec. 2, 1974, Ser. No. 528,920

Int. Cl.^{2} H04B ***1/26***

U.S. Cl. 325—333 **9 Claims**



1. Radio apparatus comprising:

radio frequency means for receiving radio frequency energy through any of a plurality of different radio frequency paths;

mixer means for converting said radio frequency energy to intermediate frequency energy;

processing means for converting said intermediate frequency energy to audio sound vibrations;

control means for selecting the frequency of radio frequency energy that is to be converted to intermediate frequency energy;

said control means including local oscillator means for generating a plurality of different frequency local oscillations for application to said mixer means and control signals indicating the one of said different frequency local oscillations to be transmitted to said mixer means;

said mixer means including means for selecting one of said radio frequency paths in said radio frequency means in response to said control signals from said local oscillator means;

said mixer means including mixer input conductor means for carrying local oscillations to said mixer and a plurality of different possible conductive paths from said local oscillator means to said mixer input conductor means for said local oscillations;

some of said conductive paths having a different impedance than other of said conductive paths; and

means for selecting the path said local oscillations take to said mixer input conductor means in response to said signals.

3,940,698
MUTING CIRCUIT

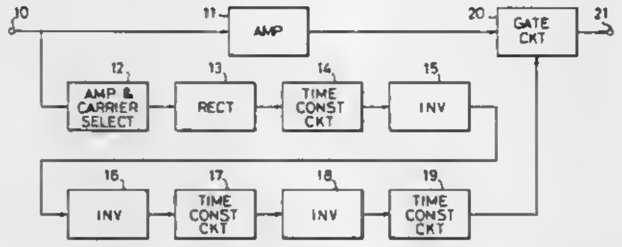
Yasuo Itoh, Tokyo, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed May 17, 1973, Ser. No. 361,218

Claims priority, application Japan, May 24, 1972, 47-51496

Int. Cl.^{2} H04B ***1/10***

U.S. Cl. 325—348 **15 Claims**



1. A muting circuit comprising a cascade of circuits including at least: input terminal means; means for detecting the level of a carrier wave component in an input signal appearing at said input terminal means; first time constant means having a first time constant characteristic for producing an output thereform with a first predetermined time constant in response to the detection of a predetermined signal strength level in the output of said level detecting means; second time constant means having a second time constant characteristic for producing an output thereof with a second time constant in response to the output of said first time constant means when a carrier wave component is detected at the input terminal means, the duration of said second time constant being longer than the duration of said first time constant, means for making said second time constant substantially zero when a carrier wave component is not detected by said level detecting means; third time constant means having a third time constant characteristic for producing an output therefrom with a third time constant in response to the output supplied from said second time constant means, the duration of said third time constant being longer than the duration of the second time constant; and means including a gate circuit coupled to said input terminal means and operating in response to the output signal supplied from said third time constant means to pass or block the input signal, said third time constant means holding said gate circuit in a conductive state to pass the signal during the period of time corresponding to the difference between the third and second time constants.

3,940,699
RADIO FREQUENCY ENERGY SIGNALLING APPARATUS

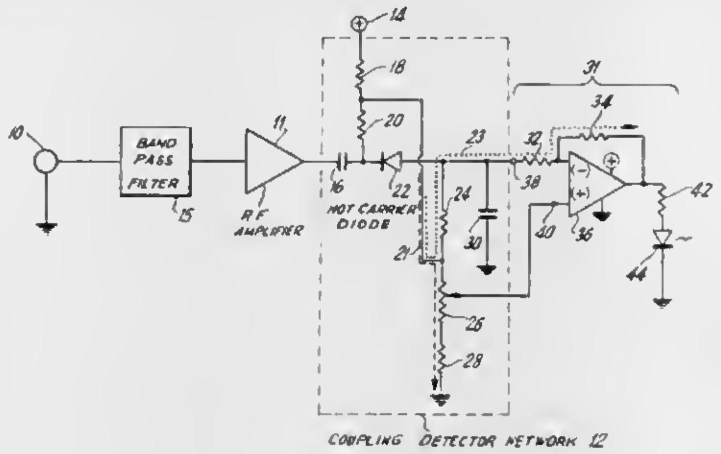
Djangar Emgushov, Philadelphia, Pa., assignor to Jerrold Electronics Corporation, Horsham, Pa.

Filed Jan. 14, 1975, Ser. No. 541,050

Int. Cl.^{2} H04B ***17/00;*** **G08B** ***21/00***

U.S. Cl. 325—363 **5 Claims**

1. In combination in radio frequency signal detecting apparatus for signalling the incidence of radio frequency energy of a predetermined spectrum exceeding a preselected adjustable threshold, an operational amplifier having inverting and noninverting input terminals and an output terminal, said operational amplifier including a difference amplifier having inverting and noninverting input terminals and an output terminal, said noninverting input terminal of said difference amplifier corresponding to said noninverting input terminal of said operational amplifier and said output terminal of said difference amplifier corresponding to said output terminal of said operational amplifier, a first resistor connected between the inverting input terminals of said operational amplifier and said difference amplifier and a second resistor connector between said inverting input and output terminals of said difference amplifier, a light emitting diode connecting to the output of said operational amplifier, and a coupling-detector network connected to the inverting and noninverting input terminals of said operational amplifier, said coupling-detector network including an input terminal, a third resistor and a potentiometer connecting said operational amplifier inverting input terminal to a fixed potential, means connecting the tap of said potentiometer to said operational amplifier noninverting input terminal, a capacitor connected in parallel with said third resistor and potentiometer, a detector diode connected between said coupling-detector network input terminal and the inverting input terminal of said operational amplifier, a potential source, and a fourth resistor connecting said potential source to the junction between said third resistor and said potentiometer.



3,940,700
METHOD AND INSTALLATION FOR THE DETECTION OF A SOURCE GENERATING ELECTRO-MAGNETIC OSCILLATIONS

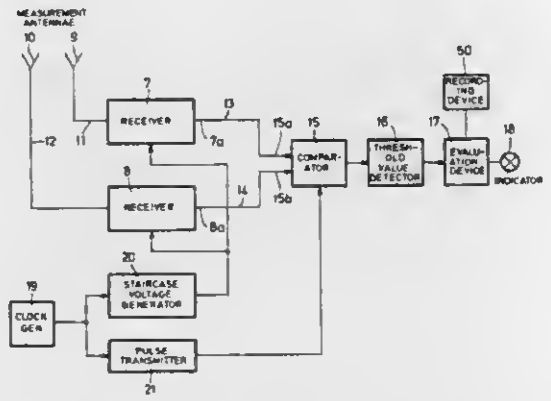
Markus Fischer, Bern, Switzerland, assignor to Paul Haas, Bern, Switzerland

Filed Aug. 10, 1973, Ser. No. 387,454

Claims priority, application Switzerland, Aug. 15, 1972, 12079/72

Int. Cl.^{2} H04B ***1/16***

U.S. Cl. 325—363 **14 Claims**



1. A method for detecting the presence of an unauthorized concealed source of electromagnetic energy comprising the steps of:

suspecting a location of a concealed source of electromagnetic energy;

receiving at a first location adjacent the suspected location of said concealed source the electromagnetic energy from said source;

measuring the magnitude of the field intensity of the electromagnetic energy of said source received at the first location;

randomly selecting a second location spatially separated from the first location;

receiving at the randomly selected second location the electromagnetic energy from said source;

measuring the magnitude of the field intensity of the electromagnetic energy of said source received at the second location;

detecting the difference between the field intensity magnitude measured at the first location and the field intensity magnitude measured at the second location; and

triggering an indication when the difference between the magnitudes of field intensities exceeds a predetermined magnitude greater than zero.

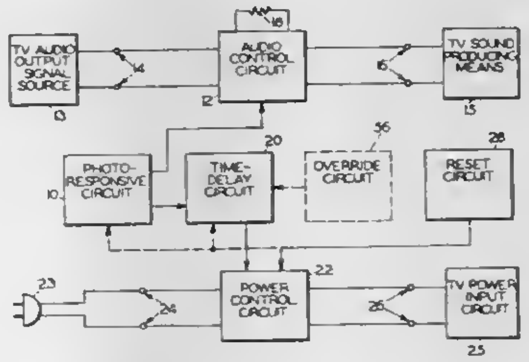
3,940,701
TELEVISION REMOTE CONTROL DEVICE

Edward Novitski, 1690 26th East, Eugene, Oreg. 97403

Filed Jan. 20, 1975, Ser. No. 542,494

Int. Cl.^{2} H04B ***1/16***

U.S. Cl. 325—392 **12 Claims**



11. A method for controlling a television receiver which produces an audio output, said method comprising:

a. muting the audio output automatically in response to the receipt of a first light signal;

b. measuring the time following the receipt of the first light signal; and

c. entirely disabling the television receiver automatically if a predetermined period of time is measured before a second light signal is received.

3,940,702
AUTOMATICALLY PRESETTING CHANNEL SELECTING SYSTEM

Jun'Ichi Yoshimura, and Tatsumi Watabe, both of Yokohama, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1974, Ser. No. 512,551

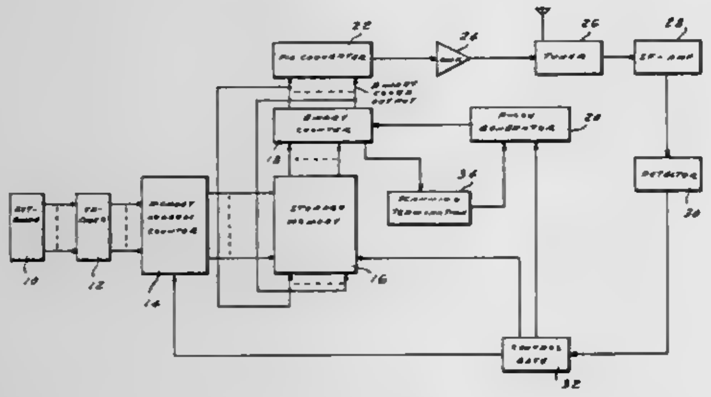
Claims priority, application Japan, Nov. 7, 1973, 48-125195

Int. Cl.^{2} H04B ***1/32***

U.S. Cl. 325—464 **4 Claims**

1. A channel selecting system for use in a receiver or the like having a first voltage controlled tuning element capable of tuning in a first frequency range and a second voltage control tuning element capable of tuning in a second frequency range, said system comprising means for detecting the presence of a broadcast signal at a selected frequency, means for generating a first data signal corresponding to the voltage level necessary to condition one of said elements to tune said frequency, storage means, control means operably connected to said detecting means and said storage means for actuating said storage means to store said first data signal, means for generating a voltage in accordance with said first data signal, a selected one of said tuning elements being conditionable by

said voltage to select a frequency in accordance therewith, a read-only memory having stored therein second data signals corresponding to voltages capable of conditioning each of said first and second tuning elements to the upper and lower limits



of their respective frequency ranges, means for comparing said first data signals with said second data signals and for generating an equality signal in the event said signals are equal and means for selecting one of said first and said second tuning elements in accordance with said equality signal.

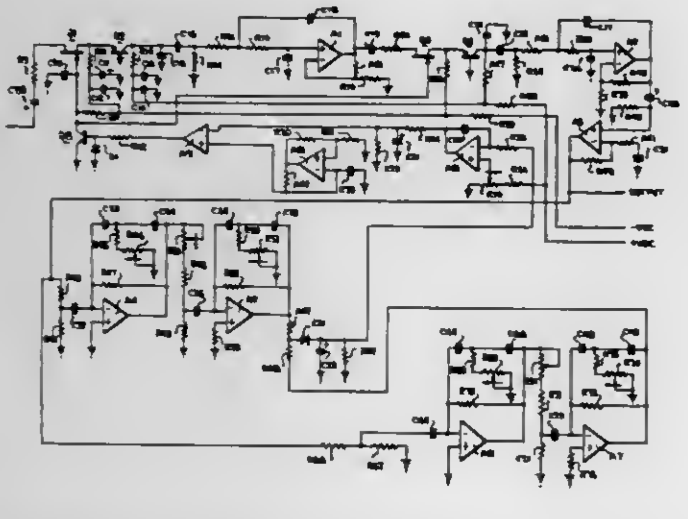
3,940,703
INTERMODULATION DISTORTION ANALYZER

Norris C. Hekimian, Rockville, Md., and James F. Turner, Oakton, Va., assignors to Hekimian Laboratories, Inc., Rockville, Md.

Division of Ser. No. 352,552, April 19, 1973, Pat. No. 3,862,380. This application Aug. 14, 1974, Ser. No. 497,482

Int. Cl.² H03B *21/00*

U.S. Cl. 328—144 6 Claims



1. An RMS detector circuit comprising:
an input terminal;
an output terminal;
a squaring circuit for receiving a first signal and providing a squared signal having an amplitude which is proportional to the square of the amplitude of said first signal;
gain control means for automatically adjusting signals applied to said input signal terminal to a signal at a substantially constant level, said gain control means including feedback means for maintaining said substantially constant level an inverse function of signal amplitude at said output signal terminal;
means for applying said signal at substantially constant level to said squaring circuit as said first signal; and
low pass filter means for eliminating all but DC components in the squared signal from said squaring circuit and applying said DC components to said output signal terminal;
wherein said gain control means comprises:
a high gain operational amplifier having an input terminal and an output terminal which provides an inverted version of the signal at said input terminal;
an operational transconductance amplifier having an input signal terminal, a bias control terminal, and an output terminal which provides an output current proportional to the product of the voltage at said input signal terminal times the current delivered to said bias control terminal;
means connecting the output signal from the output terminal of said operational amplifier to the input signal terminal of said operational transconductance amplifier;
a voltage to current converter for providing a control current proportional to the voltage at the output terminal of said RMS detector;
means for applying said control current to said bias control terminal; and
means for applying the current delivered from the output terminal of said operational transconductance amplifier to the input terminal of said operational amplifier.

3,940,704
SIGNAL LIMITER CIRCUITS

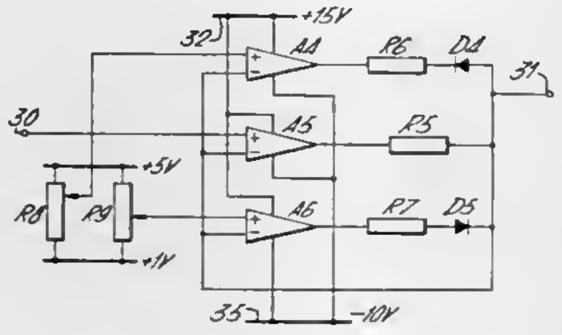
Charles Paul Bockett-Pugh, Bracknell, England, assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 14, 1974, Ser. No. 497,239

Claims priority, application United Kingdom, June 22, 1973, 29865/73

Int. Cl.² H03K *5/08*

U.S. Cl. 328—169 4 Claims



1. A dual limiter circuit comprising first and second operational amplifiers having their positive inputs fed with the two limiting voltages, a third operational amplifier having its positive input fed with the limiter circuit input voltage, a respective impedance for each amplifier connecting its amplifier output to the limiter circuit output, and a feedback connection from the limiter circuit output to the negative inputs of all three amplifiers, the arrangement being such that, whatever the value of the circuit input voltage, one of the amplifiers operates in its linear region and controls the circuit output voltage while the other two amplifiers are saturated in opposite senses.

3,940,705
AMPLIFYING CIRCUIT FOR PULSE SIGNALS

Shoichi Kurita, Kawasaki; Naohide Sata, Tokyo; Hideki Ogawa, Chiba, and Yoshitaka Hiratsuka, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 31, 1971, Ser. No. 207,451

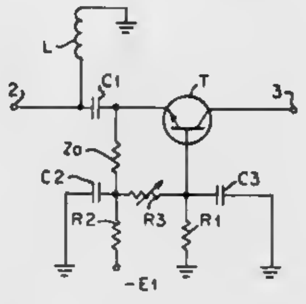
Claims priority, application Japan, Dec. 21, 1970, 45-115431

Int. Cl.² H03F *3/60*

U.S. Cl. 330—16 2 Claims

1. An amplifying circuit for pulse signals, comprising
a pulse signal input terminal for supplying pulse signals having a pulse duration *tw;*
a delay line having a predetermined characteristic impedance and a delay time *td*, the pulse duration *tw* being less than 2*td;*
a transistor having a grounded base electrode, an emitter electrode coupled to the input terminal via the delay line and a collector electrode;

an impedance having the value of the characteristic impedance of the delay line connected between the emitter and base electrodes of the transistor; and



an output terminal connected to the collector electrode of the transistor.

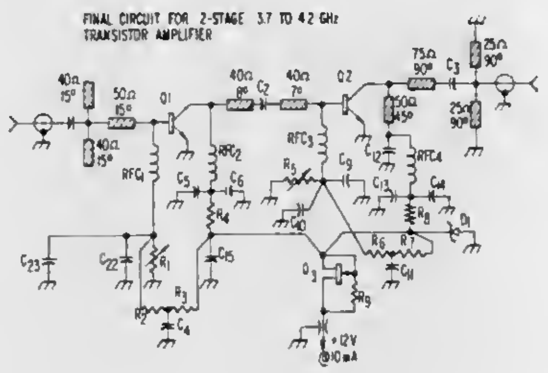
3,940,706
MICROWAVE TRANSISTOR AMPLIFIER

Ronald E. Stegens, Brookville, Md., assignor to Communications Satellite Corporation (Comsat), Washington, D.C.

Filed May 13, 1974, Ser. No. 469,444

Int. Cl.² H03F *3/04*

U.S. Cl. 330—21 7 Claims


FINAL CIRCUIT FOR 2-STAGE 3.7 TO 4.2 GHz TRANSISTOR AMPLIFIER
Q1
Q2
+12V

1. A broadband, low noise microwave transistor amplifier comprising:
a first bipolar transistor connected as a first common emitter amplifier stage,
an input distributed parameter impedance matching network connected to the base of said first transistor and having a source admittance selected to minimize the noise measure, *M*, of said first transistor defined by the equation

$$M = \frac{F - 1}{1 - \frac{1}{(G)}}$$

where *F* is the noise figure and *G* is the gain,
a second bipolar transistor connected as a second common emitter amplifier stage,
an interstage distributed parameter impedance matching network connected to the base of said second transistor and producing a second stage source admittance selected to minimize the noise measure, M, of said second transistor over at least a part of the amplifier bandwidth while yielding a net constant gain for the composite two stage amplifier,
said interstage network connecting the collector of said first transistor to the base of said second transistor and consisting of a short transmission line, and
an output matching network connected to the collector of said second transistor which produces a constant output impedance over a broad frequency range.

3,940,707
ELECTRONIC DEVICES FOR THE AUTOMATIC CONTROL OF GAIN AND ROLL-OFF IN AMPLIFIERS

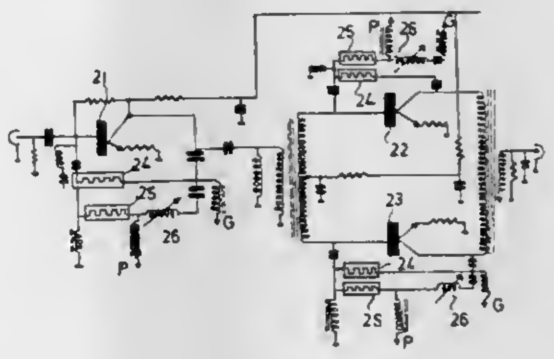
Rafael Herrera Fernandez, Madrid, Spain, assignor to Industrias Rumbo, S.A., Madrid, Spain

Filed June 5, 1974, Ser. No. 476,465

Claims priority, application Spain, June 6, 1973, 415581

Int. Cl.² H03G *3/30*

U.S. Cl. 330—29 2 Claims



1. In an electronic circuit for the automatic control of gain and roll-off in amplifiers having input and output terminals and feedback therebetween especially wide-band amplifiers for use in the primary line of tele-distribution systems, the improvement wherein the feedback network includes a first pure ohmic resistance, the value of which is automatically variable within preestablished limits as a function of the level of a variable intensity current pilot signal, a first capacitor coupling one side of said first ohmic resistance to the amplifier output terminal, and a second capacitor coupling the other side of said first ohmic resistance to the amplifier input terminal, an inductance having one side coupled between said one side of said first ohmic resistance and said first capacitor for applying a variable intensity current pilot signal to said first ohmic resistance, a return path for said variable intensity current pilot signal coupled between said other side of said first ohmic resistance and said second capacitor to furnish a control current to said first ohmic resistance causing it to change its ohmic value to achieve control of gain and roll-off, a second negative temperature coefficient ohmic resistance in series with an inductance in the feedback network and means provided to inject a pilot signal of lower frequency into said second ohmic resistance, said second ohmic resistance and said serially connected inductance being connected in parallel with said first ohmic resistance.

3,940,708
GAIN CONTROL CIRCUIT

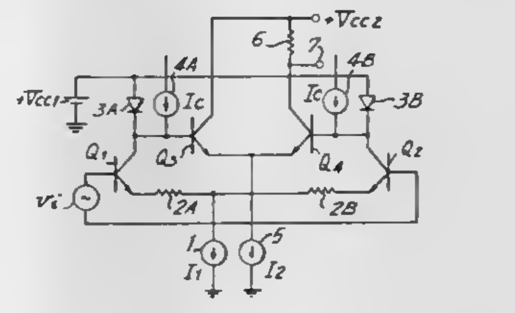
Takao Sumi, Tokyo, and Masayuki Hongu, Komae, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 11, 1975, Ser. No. 549,080

Claims priority, application Japan, Feb. 14, 1974, 49-18026

Int. Cl.² H03G *3/30*

U.S. Cl. 330—29 11 Claims

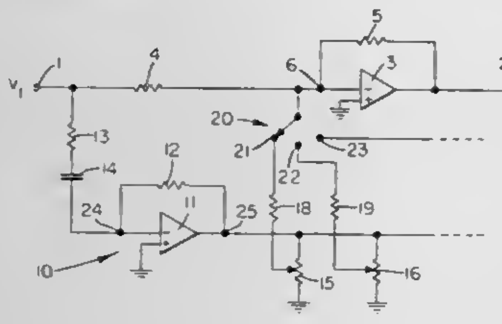


1. A gain control circuit, comprising:
first differential amplifier means coupled to a first constant current source, said first differential amplifier means

having input means for receiving an input signal differentially applied thereto and output means;
second differential amplifier means coupled to a second constant current source, said second differential amplifier means having input means connected to said first differential amplifier output means and output means for producing an amplified output signal;
unidirectional conducting means connected to said first differential amplifier output means as load impedance therefor; and
means for supplying a variable current to said first differential amplifier output means to control the current flowing in said unidirectional conducting means and thereby vary the load impedance presented by said unidirectional conducting means.

3,940,709
EQUALIZATION CIRCUIT

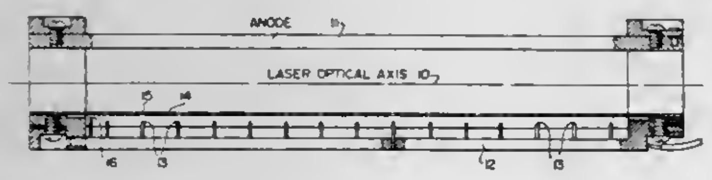
Alastair M. Heaslett, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Dec. 19, 1974, Ser. No. 534,357
Int. Cl.^{2} H03F *1/36*
U.S. Cl. 330—107 **13 Claims**



1. An equalization circuit comprising;
an input;
amplifying means connected to said input;
filter circuit means having an output connected to said input for providing a signal varying in amplitude with frequency at its output;
a plurality of adjustable resistances corresponding to a plurality of operating ranges connected to the output of said filter circuit means for adjusting the signal amplitude provided by the output; and,
switch means for selectively connecting one of said plurality of adjustable resistances to said amplifying means according to one selected operating range.

3,940,710
ARC CONTROLLED DISCHARGE SYSTEM

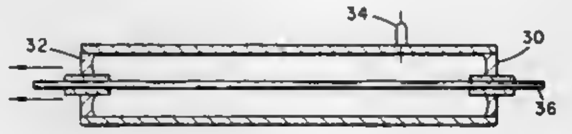
J. Jacques Lemay, Ancienne-Lorette, Canada, assignor to The Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada
Filed June 20, 1973, Ser. No. 371,729
Claims priority, application Canada, Jan. 15, 1973, 161285
Int. Cl.^{2} H01S *3/22, 3/097*
U.S. Cl. 331—94.5 PE **19 Claims**



8. In an excitation system for a transversely excited atmospheric pressure carbon dioxide gas laser of the type having an optical resonator with an optical axis, an anode positioned on one side of the optical axis of said laser and extending therealong, and a plasma forming plate and a cathode positioned on the opposite side of the optical axis and extending therealong, said cathode including a plurality of cathode pins extending toward said plasma forming plate, there being a hole in said plasma forming plate adjacent each of said cathode pins, the improvement comprising providing a subsidiary spark gap between said cathode and said plasma forming plate, said subsidiary spark gap having a breakdown voltage less than the breakdown voltage between said cathode pins and said plasma forming plate for forming an initial electrical discharge between said cathode and said plasma forming plate at said subsidiary spark gap for carrying most of the main discharge current from said cathode to said plate through said gap as an arc while preventing arcs but causing small glow discharges from said cathode pins to said plate to increase the uniformity and reliability of the main discharge from said plate to said anode.

3,940,711
CYLINDRICAL LASER RESONATOR

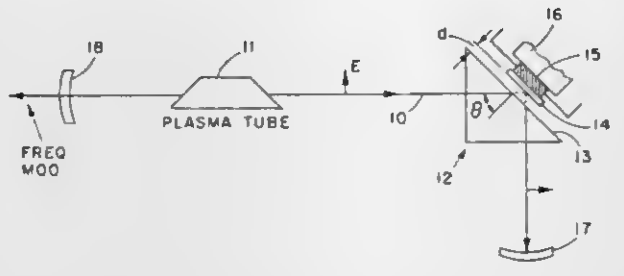
Lee W. Casperson, Los Angeles, Calif., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed Mar. 21, 1974, Ser. No. 453,603
Int. Cl.^{2} H01S *3/082*
U.S. Cl. 331—94.5 C **1 Claim**



1. In a laser:
a resonant cavity comprising two cylindrical resonators disposed in parallel relation to each other each having partially reflective inner surfaces and separated from each other by a conducting electrode.

3,940,712
MODULATION TECHNIQUES FOR LASERS

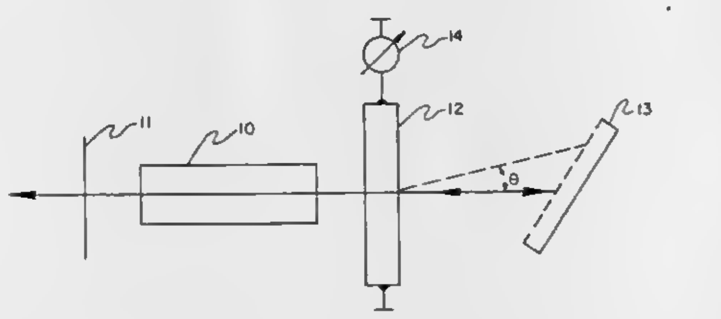
Matthew B. White, 258 Forest Ave., Cohasset, Mass. 02025
Filed Apr. 11, 1974, Ser. No. 460,245
Int. Cl.^{2} H01S *3/10*
U.S. Cl. 331—94.5 M **9 Claims**



1. Apparatus for frequency modulating a laser beam produced by a laser having a cavity of fixed dimensions comprising, in combination
an optical prism positioned within said cavity in the path of said laser beam,
the orientation of said prism and its index of refraction being such that said laser beam enters a first face of said prism, is incident on and experiences total internal reflection from a boundary surface of said prism when the medium in contact with this boundary surface is air and exits from a second face of said prism,
said laser beam, while experiencing such reflection, emerging from said boundary surface and traversing an external path before re-entering said boundary surface; and
means for altering the optical length of said external path thereby to change the phase of the laser beam exiting from said second face of said prism and the frequency of the laser beam leaving said cavity.

3,940,713
STIMULATED BRILLOUIN SCATTERED (SBS) TUNED LASER

Richard Swart Hughes, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 11, 1974, Ser. No. 522,387
Int. Cl.^{2} H01S *3/10*
U.S. Cl. 331—94.5 C **3 Claims**

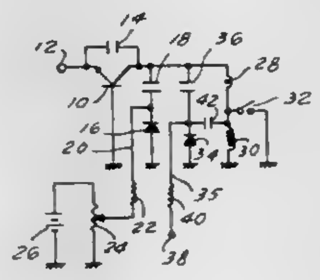


1. A rapidly tunable laser comprising;
a laser medium for producing an output beam;
an output mirror in line with said laser beam on one side of said laser medium;
reflective means in line with said laser beam on the side of said laser medium opposite that of said output mirror for reflecting said laser beam capable of responding to the angle of incidence of a beam thereon such that the reflected wavelength of the incident beam is determined by the angle of incidence on the reflective means;
piezoelectric semi-conductor means between said laser medium and said reflective means for causing said laser beam to angle scan;
means for creating an electric field within said semiconductor along a given direction in said semi-conductor;
means for causing stimulated Brillouin scattering in the semi-conductor;
and means for continuously varying either the magnitude or direction of the electric field in the semi-conductor so as to affect a change in the angle of the scattering;
said reflective means being responsive to the angle of incidence thereon of the laser beam, thereby determining the reflective wavelength and the frequency of the output laser beam from said output mirror.

3,940,714
AFC CIRCUIT WITH IMPROVED SENSITIVITY

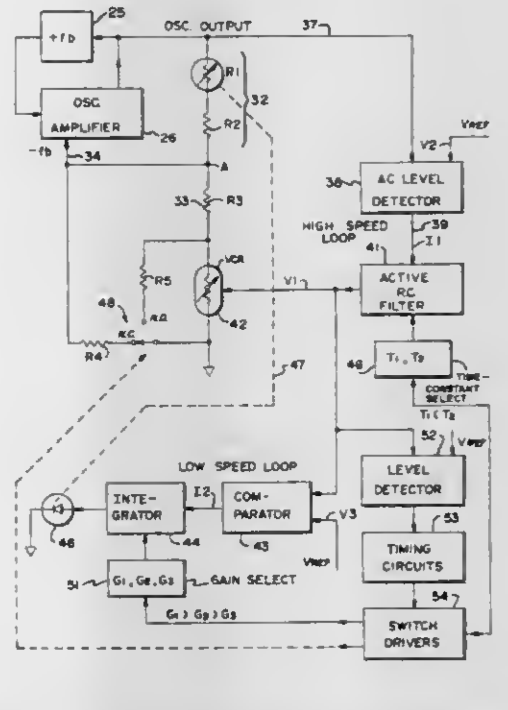
Shoji Sato, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Nov. 21, 1974, Ser. No. 525,869
Claims priority, application Japan, Dec. 27, 1973, 49-4915[U]
Int. Cl.^{2} H03B *5/12*
U.S. Cl. 331—117 R **1 Claim**

1. In an AFC circuit of a local oscillator or the like of the type having a first variable capacitance element and series connected first and second inductive elements, said inductive elements being connected in parallel with said first variable capacitance element, switch means for short circuiting said second inductive element, a first capacitor, a second variable capacitance element connected in series with said first capacitor, said second variable capacitance element and said first capacitor both being connected in parallel with said series connected inductive elements, the improvement comprising a second capacitor connected between the junction point of said series connected inductive elements and the junction point between said first capacitor and said second variable capacitance element so as to eliminate undesirable variations in the AFC sensitivity as the oscillator is switched between bands.



3,940,715
DISTORTION MEASUREMENT SYSTEM

Jack G. S. Lum, Sunnyvale, Calif., assignor to Sound Technology, Inc., Campbell, Calif.
Filed Sept. 25, 1974, Ser. No. 509,118
Int. Cl.^{2} H03B *5/26*
U.S. Cl. 331—141 **10 Claims**



1. Amplitude control apparatus for maintaining constant the output amplitude of an amplifier by a negative feedback loop between the output and an input of the amplifier said negative feedback loop comprising: a high speed feedback control loop including first means for comparing said output amplitude to a first reference voltage and providing a first error signal indicating a difference, voltage divider means between said output and input for precisely determining the negative feedback ratio, said divider means having first and second series resistive portions with a common point connected to said input, one of said resistive portions being responsive to said first error signal to vary its resistance in a manner to change said negative feedback ratio to reduce said error signal, said one resistive portion having an optimum operating range; a low speed feedback control loop including second means for comparing said first error signal to a second reference voltage and providing a second error signal, integrator means for integrating said second error signal and having an output, said other resistive portion of said voltage divider means being responsive to said integrator output to vary its resistance in a manner to change said negative feedback ratio in the same direction as said one resistive portion whereby said one resistive portion is returned to its optimum operating range.

3,940,716

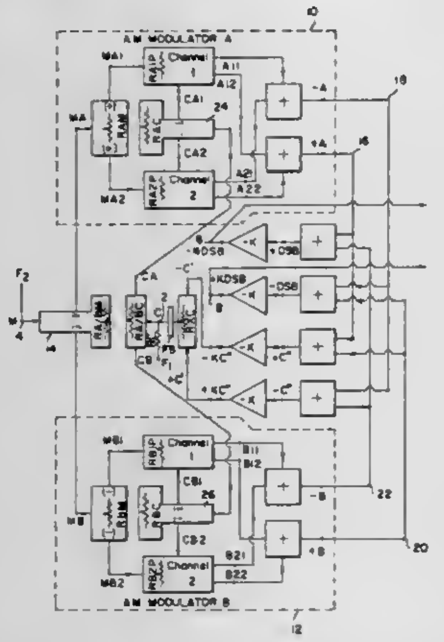
DOUBLE-BALANCED MODULATING AND DEMODULATING APPARATUS

Donald H. Gehring, 3364 Ardley Court, Falls Church, Va. 22041

Filed Sept. 4, 1974, Ser. No. 503,157

Int. Cl.^{2} H03C *1/54*; H03D *1/24*

U.S. Cl. 332—43 B **23 Claims**



1. A first double-balanced modulatingg and demodulating circuit for producing from carrier and modulating input signal sources at least one double sideband suppressed carrier signal, comprising

a. a pair of dual-channel amplitude modulators each operable to produce a pair of unsuppressed-carrier amplitude-modulated output signals (+A, −A; +B, −B), the unsuppressed carrier of one output of each pair of signals (+A, +B) of each amplitude modulator being inphase with said carrier signal and the unsuppressed carrier of the other output of each pair of signals (−A, −B) of each amplitude modulator being 180° out-of-phase with said carrier signal;

b. carrier signal phase inverter means (24, 26) for connecting said carrier signal source with each channel of said amplitude modulators to cause one channel of each amplitude modulator to operate on the positive portion of each cycle of said carrier signal and the other channel of each amplitude modulator to operate on the negative portion of each cycle of said carrier signal, thereby permitting full-wave operation of each amplitude modulator;

c. modulating signal phase inverter means (14) for supplying said modulating signal in opposite phases to said amplitude modulating circuits, respectively, thereby causing the envelopes of the outputs (+A, −A; +B, −B) of each of said amplitude modulating circuits, respectively, to be in phase opposition; and

d. first summing means (RS1, RS2) for combining the carrier-in-phase output signal (+A) of a first amplitude modulator with the carrier out-of-phase output signal (−B) of the other amplitude modulator to obtain a first double sideband output signal (+DSB) from which the carrier signal has been cancelled.

3,940,717

ACOUSTIC SURFACE WAVE DEVICES USING TL$_3$TAS$_4$ AND TL$_3$TASE$_4$ CRYSTALS

Thelma J. Isaacs, Murrysville, and Robert W. Weinert, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

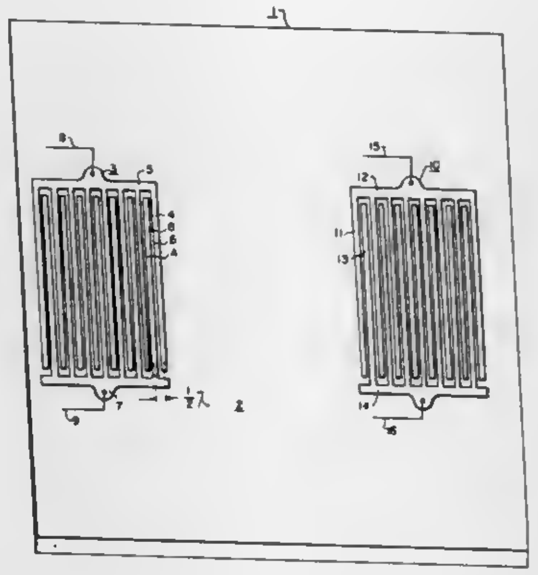
Filed Jan. 10, 1975, Ser. No. 540,193

Int. Cl.^{2} H03H *9/26, 9/30*; H01L *41/08, 41/18*

U.S. Cl. 333—30 R **15 Claims**

8. A method of delaying an electrical signal comprising:

1. passing said signal through a surface wave generating transducer mounted on a surface of a single crystal selected from the group consisting of Tl$_3$TaS$_4$, Tl$_3$TaSe$_4$ and mixtures thereof, within about 5% of stoichiometric, said surface being suitable for the propagation of surface waves; and



2. receiving said signal from a surface wave receiving transducer mounted on said surface positioned to receive surface waves emanating from said surface wave generating transducer.

3,940,718

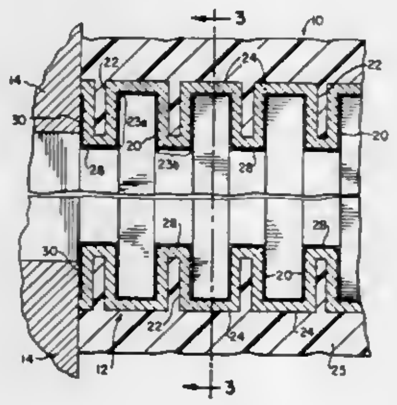
FLEXIBLE WAVE GUIDE AND METHOD FOR MAKING SAME

Hugo L. Vilkaitis, Thomaston, Conn., assignor to Tech Systems Corporation, Thomaston, Conn.

Filed Feb. 11, 1974, Ser. No. 441,422

Int. Cl.^{2} H01P *3/14*; F16L *11/14, 9/06*

U.S. Cl. 333—95 A **6 Claims**



1. A flexible microwave wave guide comprising a highly conductive continuous first layer defining a tube for the propagation of microwaves, said tube having a rectangular cross section and convolutions along its length, said convolutions extending substantially transverse to the direction of propagation of said microwaves, and said convolutions being substantially rectangular in cross section, a continuous convoluted support layer bonded to the outer surface of said first layer, and first coupling means secured to one end of said tube and second coupling means secured to the other end of said tube, the surfaces of the tube contiguous said first and said second coupling means defining and being situated in a plane substantially perpendicular to the longitudinal axis of the tube, said first and second coupling means having passages for the propagation of microwaves, said passage having a cross-sectional size smaller from the cross-sectional size of the tube.

3,940,719

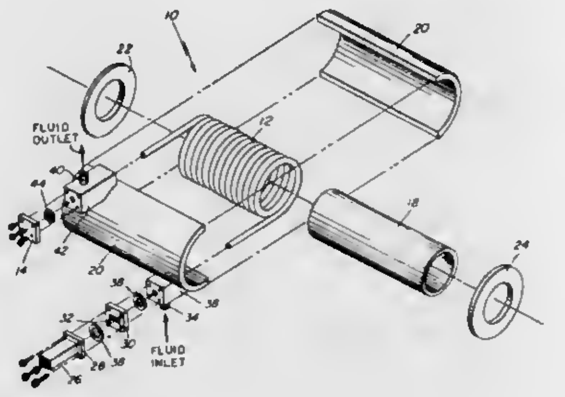
MICROWAVE WAVEGUIDE DISSIPATIVE LOAD COMPRISING FLUID COOLED LOSSY WAVEGUIDE SECTION

Alfred E. Booth, Marlboro, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 25, 1974, Ser. No. 518,019

Int. Cl.^{2} H01P *1/22, 1/26*

U.S. Cl. 333—22 F **9 Claims**



1. A microwave energy dissipative load device comprising:

a lossy section of waveguide transmission line of a poor electrically conductive non-magnetic material;

transition means adapted for coupling said lossy waveguide section to a main waveguide transmission line; and

means for circulating a fluid coolant adjacent to the walls of said lossy waveguide section for removing thermal energy generated by absorption of microwave energy.

3,940,720

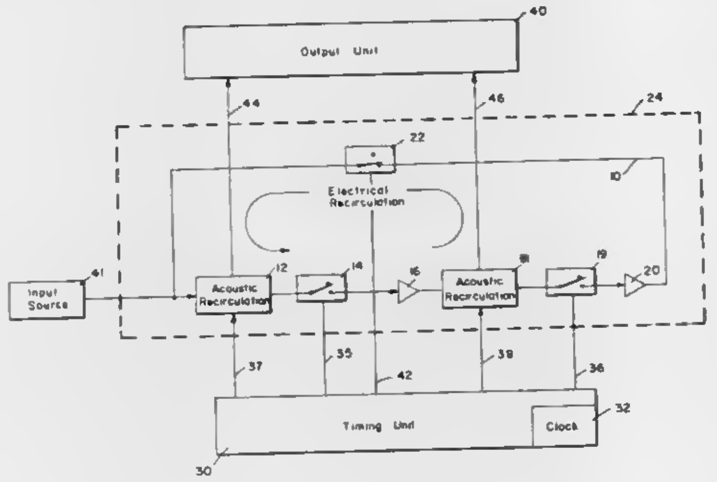
RECIRCULATING ELECTRIC AND ACOUSTIC TAPPED DELAY LINE

John B. Harrington, Los Alamitos, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 2, 1974, Ser. No. 466,426

Int. Cl.^{2} H03H *9/26, 9/30, 9/32*

U.S. Cl. 333—30 R **8 Claims**



1. A recirculating tapped delay line system comprising

a selected number of acoustic recirculating means each having a selected number of taps;

electrical recirculating means coupling said acoustic recirculating means in series and in a continuous loop; and

switching means coupled in the loop of said electrical circulating means at the output of each acoustic recirculating means for controlling the number of recirculations in each acoustic recirculating means.

3,940,721

CAVITY RESONATOR HAVING A VARIABLE RESONANT FREQUENCY

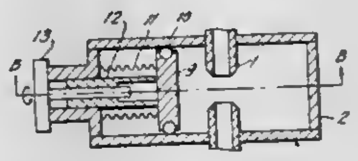
Yasuaki Kojima; Takayoshi Shinozaki, and Akira Takahashi, all of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

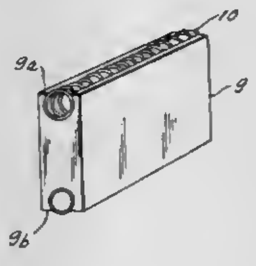
Filed Apr. 29, 1975, Ser. No. 572,730

Claims priority, application Japan, May 9, 1974, 49-53078

Int. Cl.^{2} H01P *7/06*

U.S. Cl. 333—83 R **4 Claims**





1. A cavity resonator having an adjustably tunable resonant frequency in which the tuning of the resonant frequency is maintained by means of a movable side plate provided within the hollow cavity resonator housing, characterized in that contactor pieces are supported by at least two opposite edges of said movable side plate whereby the contactor pieces slidably engage the adjacent interior surfaces of the housing to obtain high frequency short-circuiting to the cavity housing;

said contactor pieces being formed of metallic wires wound into coil shape wherein the outer diameters of the coils are each no greater than the distance between the opposed side plate edges in which the coil shape metallic wires are mounted.

3,940,722

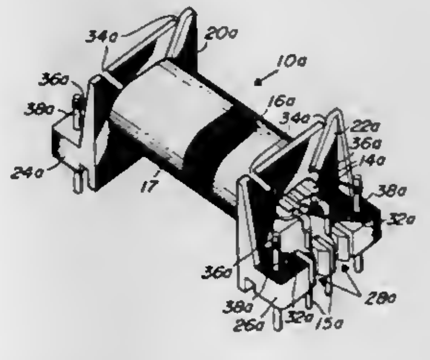
REED SWITCH RELAY

Thomas E. Fox, Park Ridge; John W. Scannell, Glenview, and Clifford H. Andersen, Park Ridge, all of Ill., assignors to C. P. Clare & Company, Chicago, Ill.

Filed Nov. 8, 1974, Ser. No. 521,951

Int. Cl.^{2} H01H *50/02*

U.S. Cl. 335—151 **12 Claims**



1. A bobbin for a reed switch relay comprising:

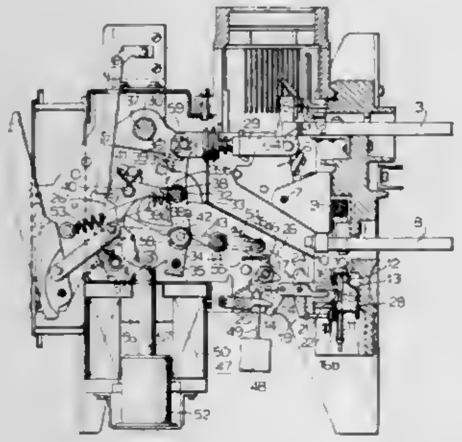
a central portion having a longitudinal passageway defined therein for receiving a reed switch of the type having a pair of wire leads extending from opposite ends thereof;

a pair of supporting legs integrally molded with said central portion; and a pair of resilient wire retaining members integrally molded with each of said supporting legs in alignment with said passageway for retaining said wire leads therebetween.

3,940,723

INSTANTANEOUSLY TRIPPING DEVICE FOR CIRCUIT INTERRUPTER

Masao Horikawa, Yamato-kooriyama, Japan, assignor to Terasaki Denki Sangyo Kabushiki Kaisha, Osaka, Japan
Filed May 20, 1974, Ser. No. 471,774
Claims priority, application Japan, May 21, 1973, 48-55593
Int. Cl.² H01H *9/00*
U.S. Cl. 335—174 **1 Claim**



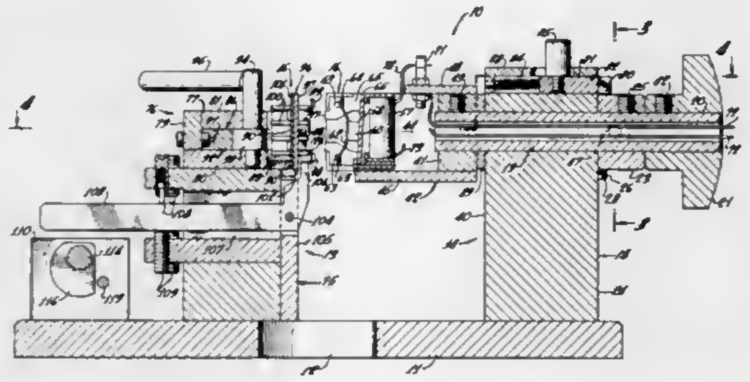
1. An instantaneously tripping device operative upon closing a circuit interrupter and comprising instantaneously tripping electromagnet means disposed to encircle a conductor, the electromagnet means including a movable iron core actuatable by a closing latch included in a switching mechanism for a circuit interrupter, through both a locking plate and a releasing plate and a stationary iron core operatively associated with the movable iron core so that, after the completion of the closing operation performed by the switching mechanism, and during the closure of the circuit interrupter, the locking plate locks the movable iron core in its locked position to prevent the movable iron core from being attracted by the stationary iron core, wherein the locking plate is released only in the closing process effected by the switching mechanism to permit the movable iron core to be attracted by the stationary iron core, and wherein, upon a flow of high current through the conductor due to the closure of contacts in the closing process effected by the switching mechanism, the movable iron core is operated to actuate the tripping device to open the contacts.

3,940,724

RELAY CONTACT ADJUSTING ARRANGEMENT

Thomas C. Cleary, Northport, and Joseph W. Schleisner, Valley Stream, both of N.Y., assignors to Deutsch Relays, Inc., Long Island, N.Y.
Filed Apr. 4, 1974, Ser. No. 457,919
Int. Cl.² H01H *1/48*
U.S. Cl. 335—197 **38 Claims**

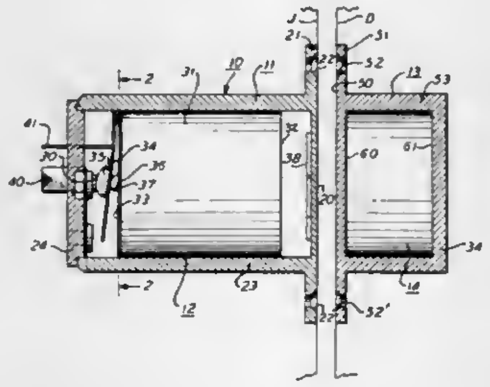
1. In combination with a relay having a movable means having movable contact means and fixed means having fixed contact means, a device for adjusting the spacing of the contacts of said relay comprising:
means for positioning said movable means in a first predetermined location,
means for positioning said fixed means in a second predetermined location such that said movable contact means is opposite said fixed contact means and spaced therefrom a distance greater than the spacing thereof in a completed relay,
and means for moving one of said contact means relative to the other of said contact means while said movable means is in said first predetermined location and said fixed means is in said second predetermined location for varying said spacing between said movable and said fixed contact means to a predetermined value.



3,940,725

SWITCHING APPARATUS

Nathan Verger, Great Neck, and Gerhard Schmidt, Rego Park, both of N.Y., assignors to Alarm Device Manufacturing Co., Syosset, L.I., N.Y.
Continuation of Ser. No. 440,660, Feb. 8, 1974, which is a continuation of Ser. No. 296,276, Oct. 10, 1972. This application Jan. 24, 1975, Ser. No. 543,672
Int. Cl.² H01H *36/00*
U.S. Cl. 335—207 **12 Claims**

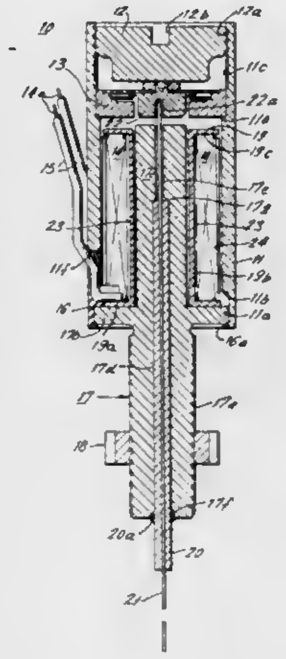


1. An apparatus for switching an alarm-signalling device, which is connectable to a protective circuit, which comprises:
a. a housing;
b. a switch which is disposed in the housing, which comprises:
1. a first contact;
2. a metal plate which is mounted in the housing;
3. a resilient support arm which extends into the housing from a location intermediate the first contact and the metal plate;
4. a second contact which is mounted on the resilient support arm so as to be disposed in alignment with and opposite to the first contact;
5. a first magnet which is reciprocally movable in the housing and which is magnetized so that opposite faces thereof define poles of opposite polarity, which is disposed so that one pole faces the resilient support arm and the other pole faces the metal plate; and
6. terminals connected to the first and second contacts, to which the leads from the protective circuit are connectable; and
c. a second magnet which is magnetized so that opposite faces thereof define poles of opposite polarity and which is positionable so that one pole thereof faces the portion of the housing in which the metal plate is mounted, which pole is of the same polarity as the pole of the first magnet which faces the metal plate so that the second magnet repels the first magnet when so positioned.

3,940,726

HIGH SPEED SOLENOID EMPLOYING MULTIPLE SPRINGS

Abraham H. Gershnow, Nashua, N.H., assignor to Centronics Data Computer Corporation, Hudson, N.H.
Filed Aug. 22, 1974, Ser. No. 499,632
Int. Cl.² H01F *7/16*
U.S. Cl. 335—274 **18 Claims**

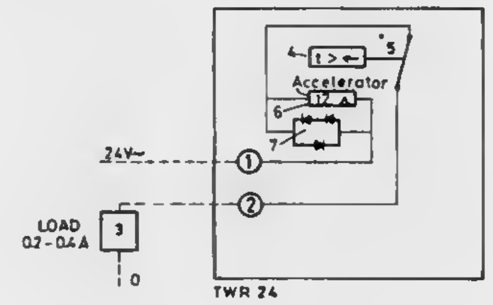


1. A high speed solenoid assembly for driving a print wire comprising:
a housing;
armature means in said housing movable between an impact and a rest position;
first spring means normally stabily biasing said armature only towards the rest position;
solenoid means for urging said armature means towards said impact position;
second spring means for exerting a biasing force directed towards the rest position upon said armature means only after said armature means has moved a predetermined distance towards said impact position;
said first and second spring means cooperatively operating to rapidly return said armature means to said rest position when said coil means is deenergized.

3,940,727

THERMOSTAT WITH AUTOMATIC ACCELERATOR

Flemming Thorsoe, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Continuation of Ser. No. 449,067, March 7, 1974. This application Mar. 12, 1975, Ser. No. 557,480
Claims priority, application Denmark, Mar. 12, 1973, 1329/73
Int. Cl.² H01H *61/00*
U.S. Cl. 337—1 **3 Claims**

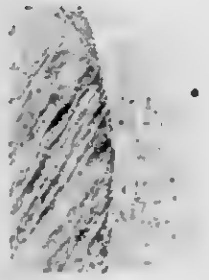


1. A thermostat assembly comprising only two terminals, conductor means forming a series circuit between said terminals, a switch in said circuit, temperature responsive bimetal means for operating said switch, a load in said circuit, an accelerator resistor assembly in said circuit in series with said load, said assembly including an accelerator resistor and diode means in parallel therewith, said diode means being arranged to operate with forward voltage drop thereacross to control the voltage drop across said resistor when current is admitted to said circuit through one of said terminals in the direction of said forward voltage drop.

3,940,728

ALLOY FOR A HIGH TEMPERATURE FUSE

Noboru Komatsu; Mikio Obayashi; Minoru Doi, all of Nagoya; Nobuyoshi Ota, Kariya, and Yoshio Iwai, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho and Nippondenso Co., Ltd., both of, Japan
Filed Aug. 3, 1973, Ser. No. 385,429
Claims priority, application Japan, Aug. 8, 1972, 47-79784
Int. Cl.² H01H *85/04*
U.S. Cl. 337—290 **4 Claims**

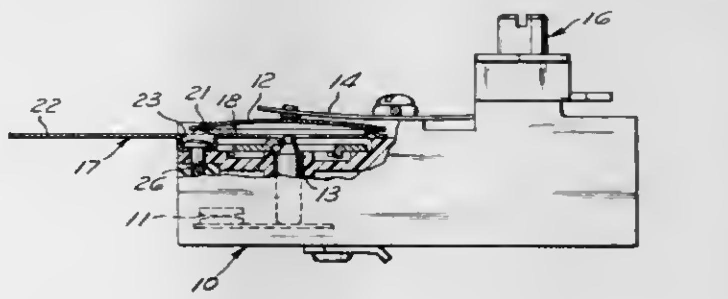


1. In a fuse having a pair of electrical terminals arranged in spaced relationship and insulated from each other, and a metal fuse element disposed adjacent the pair of terminals for forming the electrical connection therebetween, the improvement comprising the metal fuse element being of a metal alloy having a higher resistance to corrosion at elevated temperatures and a melting point at a fixed temperature within a range of 1000° to 1100°C, said alloy consisting of 10–14% aluminum, a second constituent in a range of 0–2.5% and the balance being copper, said second constituent consisting of at least one metal selected from a group consisting of nickel, manganese and iron.

3,940,729

THERMOSTAT WITH HEAT CONDUCTOR

Donald E. Place, Mansfield, Ohio, assignor to Therm-O-Disc Incorporated, Mansfield, Ohio
Filed Dec. 18, 1974, Ser. No. 534,143
Int. Cl.² H01H *37/32*
U.S. Cl. 337—377 **14 Claims**

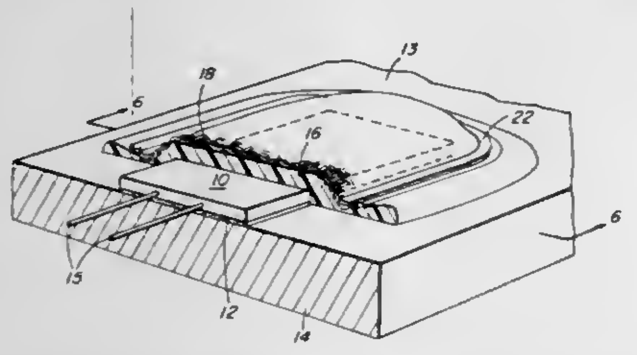


1. A thermostat comprising switch means, a bimetal snap disc movable with snap action upon reaching operating temperatures and connected to operate said switch means, and disc seat means formed of a conductor of heat material engaging and locating said disc, said disc seat means being provided with a flexible elongated projection extending from said thermostat permitting said projection to be deformed to extend to a desired location spaced from said body, said disc seat means

operating to conduct heat along said projection between said disc and said location spaced from said body and disc so that the temperature of said disc is determined at least in part by the temperature at said location and mounting means connecting said conductor to said body preventing movement of said projection from causing any substantial change in the calibration of said disc.

3,940,730
STRAIN GAGE CONSTRUCTION

Given A. Brewer, Marion, Mass., assignor to Brewer Engineering Laboratories, Inc., Marion, Mass.
Filed Feb. 18, 1975, Ser. No. 550,516
Int. Cl.² G01L *1/22*
U.S. Cl. 338—2 **3 Claims**



1. In a strain gage assembly for monitoring deformation of a metallic structure, the combination of

a strain-deformable resistance wire strain gage cemented to a surface of said structure,

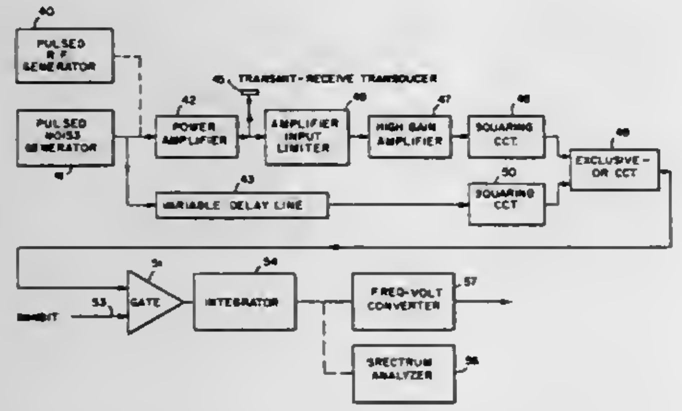
a protective barrier layer of a curable silicone plastic completely covering the exposed surface of said strain gage and extending therebeyond over a portion of said structure surface,

a metallic apertured overlay member covering that portion of said protective barrier layer that covers said strain gage and providing flange portions adjacent thereto, and

a sheet metal strip around said protected strain gage over said flange portions of said metal screen, part of said metal strip being welded through said silicone plastic barrier layer to said flange of said overlay member and to said structure surface, said barrier layer thereby providing a void-free seal surrounding said welds and said gage.

3,940,731
ULTRASONIC RANDOM SIGNAL DOPPLER FLOW MEASUREMENT SYSTEM

George R. Cooper, Lafayette, and Vernon L. Newhouse, West Lafayette, both of Ind., assignors to Purdue Research Foundation, Lafayette, Ind.
Filed Aug. 15, 1974, Ser. No. 497,614
Int. Cl.² G01S *9/66;* G01P *5/00*
U.S. Cl. 340—3 D **7 Claims**



1. A flow measurement device comprising:

a stationary random noise source having an output signal in the ultrasonic range;

a transmitter to transmit said output signal toward a target in a flowing medium, said target reflecting signals in said ultrasonic range;

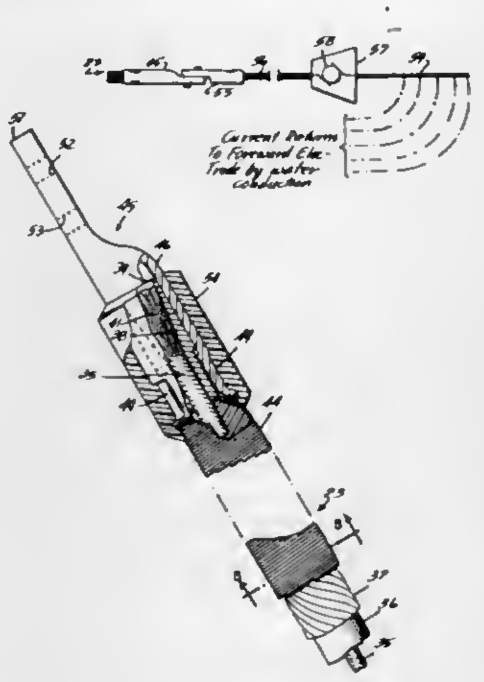
a delay means connected with said noise source to receive the output signal coupled to said transmitter;

a receiver to receive said output signal when reflected back from said target; and

signal processing means connected with said delay means and said receiver to receive the output therefrom and responsive thereto producing an output indicative of the frequency shift between said output signal as transmitted and received, said frequency shift being indicative of the flow rate of said medium.

3,940,732
BUOYANT ELECTRODE AND SYSTEM FOR HIGH SPEED TOWING

John A. Hudson, and Mitchell J. Yelverton, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 30, 1970, Ser. No. 24,016
Int. Cl.² H01B *7/12*
U.S. Cl. 340—4 E **8 Claims**



1. An improved oceanographic system adapted for being towed at high speed within a body of water for transferring electrical current thereto comprising:

an electrode;

central strain means disposed for effectively providing a central foundation for said electrode capable of withstanding high tensional loadings;

buoyant sleeve means surrounding said central strain means and substantially co-extensive therewith for providing a supporting force therefor;

a plurality of lightweight metal electrical conductor means placed in a predetermined pattern about the outer surface of said buoyant sleeve means, effectively forming a layer overlying said buoyant sleeve means for conduction of electricity therealong;

first connector means effectively connected to said central strain means at one end thereof for providing mechanical attachment thereto and effectively electrically connected to said plurality of electrical conductor means for electrical energy transfer therebetween;

lightweight conductor serving means effectively electrically and mechanically connected to said first connector means and disposed so as to be tightly wound about said predetermined pattern of the aforesaid plurality of lightweight metal electrical conductors and extending a predetermined distance therealong for providing retaining engagement thereof and electrical conduction therefrom;

second connector means effectively joined to the other end of said central strain means for attachment of auxiliary devices to be towed thereby;

insulated electrical conductor means effectively attached to said second connector means for current conducting cooperation therewith;

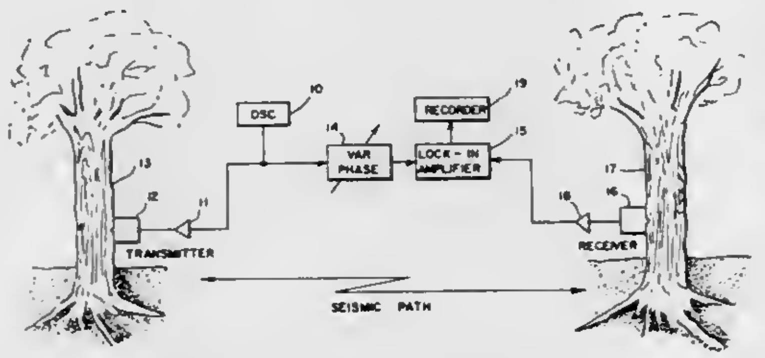
oceanographic instrument means effectively mechanically connected to said insulated electrical conductor means, so as to be towed thereby for performing predetermined oceanographic functions;

electrically operated means effectively attached to, and located within, said oceanographic instrument means and effectively electrically connected to said insulated electrical conductor means for activating said oceanographic means to perform said predetermined oceanographic functions; and

electrical current return electrode means effectively electrically connected to said electrically operated means, and effectively mechanically connected to said oceanographic instrument means, so as to be towed thereby, said electrical current return electrode means extending aft of said oceanographic instrument means and in electrical contact with said body of water for providing a current return path therethrough.

3,940,733
SEISMIC SURVEILLANCE SYSTEM

Ronald F. Johnson, Oakhurst, and Kurt Ikrath, Elberon, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed June 25, 1974, Ser. No. 482,947
Int. Cl.² H04B *11/00;* G01S *3/80*
U.S. Cl. 340—15 **11 Claims**



1. A method of detecting the presence of an intruder in an area under surveillance, comprising the steps of:

seismically exciting the trunk of an arboreal plant growing in said area, thereby to propagate a seismic wave in the earth via the roots of said plant;

detecting said seismic wave through seismic vibrations coupled from the earth to the trunk of a second arboreal plant growing in said area, via the roots of said plant;

comparing the phase of the detected seismic wave with the phase of the exciting wave; and then

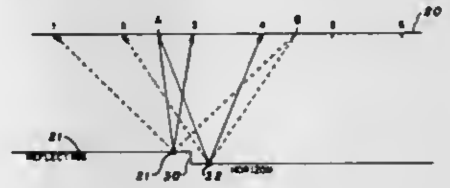
detecting the presence of said intruder by the changes induced in the relative phase of said two compared waves as said intruder walks on the earth through which said seismic wave is propagating.

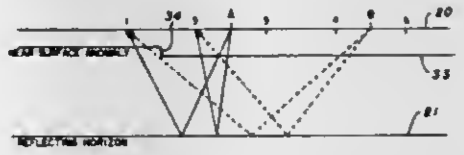
3,940,734
SEPARATE SURFACE, COMMON DEPTH POINT STACK

Clement J. Blum, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed June 22, 1973, Ser. No. 372,711
Int. Cl.² G01V *1/36*
U.S. Cl. 340—15.5 CP **24 Claims**

1. The method of delineating near surface anomalies in common depth point seismic surveying where a shot point and detector spread are moved successively along a traverse which comprises:

a. generating a first set of common depth point traces for said traverse with partial fold coverage by combining traces containing energy reflected from common depth points and detected in a first fraction of the surface locations in spreads of full fold detector locations, and



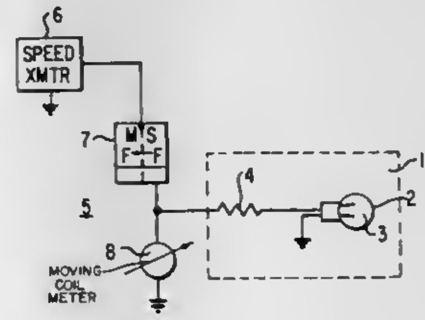


b. generating a second set of common depth point traces for said traverse with partial fold coverage by combining traces containing energy reflected from said common depth points and detected in a second fraction of the surface locations in spreads of full fold detector locations where said first fraction and said second fraction are spaced one from another on the earth's surface,

whereby the presence of near surface anomalies is indicated by differences between time occurrences of the same seismic event in said first and second sets.

3,940,735
DEVICE TO INDICATE NEED TO SERVICE OR INSPECT A MOTOR VEHICLE

Hartmut Kronenberg, Schwalbach, Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Germany
Filed Oct. 11, 1974, Ser. No. 514,104
Claims priority, application Germany, Oct. 26, 1973, 2353756
Int. Cl.² G01C *22/02*
U.S. Cl. 340—52 D **6 Claims**



1. A device for indicating the need for service or inspection of a motor vehicle because of the passage of a prespecified mileage since the device was zeroed, comprising:

A. a signal transmitter (6) for producing an electrical signal proportional to the actual speed of the motor vehicle,

B. an electrochemical ampere-hour sensor means (2, 9 or 13) connected to receive said signal and to integrate the amplitude of the signal over a time period, whereby the integrated signal provides a measure of the miles travelled by the vehicle, and

C. means connected with the sensor for supplying a signal to an operator of the motor vehicle when the integrated signal reaches a prespecified value.

3,940,736
DIGITAL CODE MONITOR SYSTEM

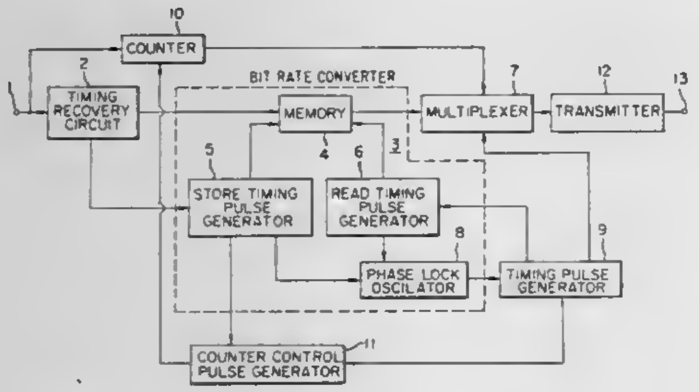
Hiroshi Inaba, and Etsugo Yoneda, both of Yokohama, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed July 24, 1974, Ser. No. 491,306

Claims priority, application Japan, Aug. 2, 1973, 48-87007; Aug. 22, 1973, 48-94742

Int. Cl.^{2} H04L *1/10*

U.S. Cl. 340—146.1 A **5 Claims**



1. A digital code monitor system comprising

A. a transmitting equipment comprising

a. bit-rate converting means for forming time slots by the bit rate conversion of an information pulse train

b. means for forming a check code representing the states of bits in a block consisting of a predetermined number of bits of said information pulse train before bit rate conversion and

c. means for inserting said check code and a frame synchronizing pulse into said time slots and transmitting said bit-rate converted information pulse train with said check code and said frame synchronizing pulse inserted therein to a receiving equipment; and

B. said receiving equipment comprising

a. means for extracting said check code and said frame synchronizing pulse from transmitted pulse train,

b. means for bit-rate converting said transmitted pulse train,

c. means for forming, in a manner exactly similar to that of forming said check code in said transmitting equipment, a check code from a bit-rate converted information pulse train, and

d. means for comparing said extracted check code with said second mentioned check code formed in said receiving equipment so as to detect whether said extracted and formed check codes coincide with each other or not.

3,940,737
METHOD OF AND DEVICE FOR SKELETONIZING CHARACTERS

Matthijs Beun, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 22, 1973, Ser. No. 325,880

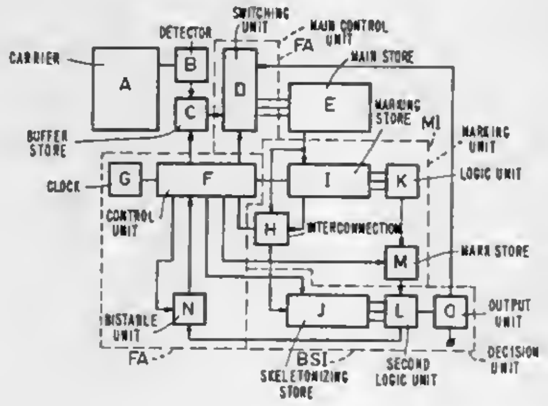
Claims priority, application Netherlands, Jan. 28, 1972, 7201225

Int. Cl.^{2} G06K *9/12*

U.S. Cl. 340—146.3 H **5 Claims**

1. A machine method of skeletonizing characters which are imaged on a two dimensional regular pattern of positions, a character position being distinguished from a background position by digital information being present, the characters being skeletonized for removal of redundant information in that the information of a character position is changed into that of a background position until a skeleton character is obtained whose stroke elements consist of a single series of character positions which succeed each other in accordance with an adjacency criterion, said skeletonizing being performed in cycles, the position of the character during skeletonizing being treated during a cycle in a regular and fixed sequence, said method comprising the steps of:

A. machine marking character positions which are situated at an edge of the character in accordance with an edge criterion in a first sub-cycle of a cycle by associating additional information with information of those character positions;



B. first testing by the use of a machine, each of the so-marked character positions in a second sub-cycle against a first indispensability criterion to determine whether to remove or maintain said character position; and

C. machine testing a maintained character position in a third sub-cycle in which the character positions removed in the second sub-cycle appear as background positions against a second indispensability criterion to remove or maintain the character position.

3,940,738
ELECTRIC LOCK

Lloyd L. Teeters, 17834 N. 18th Drive, Phoenix, Ariz. 85023

Filed July 10, 1974, Ser. No. 487,382

Int. Cl.^{2} G08B *21/00;* **H04Q** *9/00;* **E05B** *49/00*

U.S. Cl. 340—147 MD **5 Claims**

1. An electronic lock mechanism having a keyway slot for a key comprising in combination:

a control circuit comprising an optical sensing matrix having a plurality of optical sensors, each sensor being normally energized unless unterrupted by an object inserted in the keyway slot,

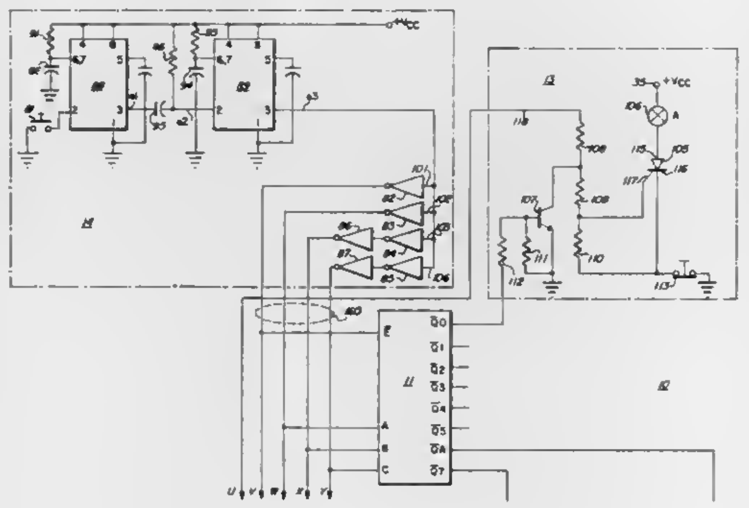
a logic decoder connected to said sensing matrix for receiving signals therefrom, said decoder responding to each of said signals received from said optical sensors and providing an alarm signal for all combinations of signals excepting a first predetermined combination of signals which generates a lock actuating signal and a second predetermined combination of signals which generates an unlock signal, and

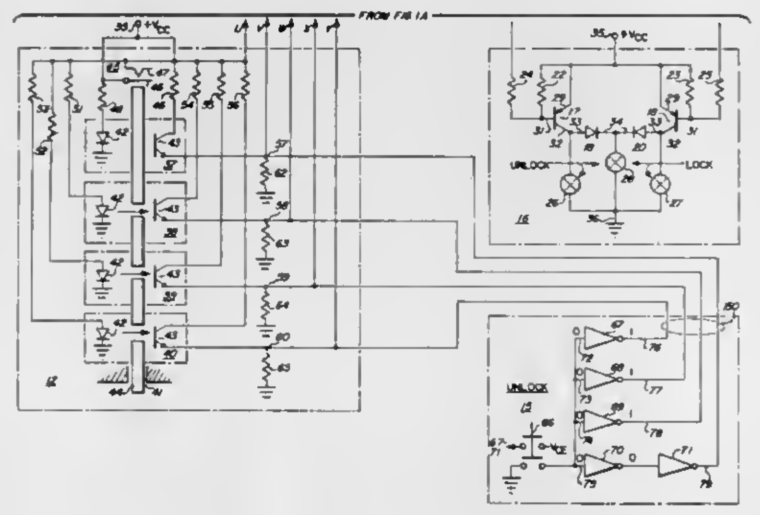
solenoid means for moving a door latching means,

said solenoid means being connected to said logic decoder and energized by said lock actuating signal and said unlock signal,

whereby the output of said decode logic controls the position of said latching means,

said control circuit further comprising a time delay circuit connected between said logic decoder and said solenoid means for providing time delay before the lock actuating signal is effective, and





an alarm latch connected to an alarm for receiving said alarm signal for actuating the alarm.

3,940,739
ALARM REPORTING SYSTEM

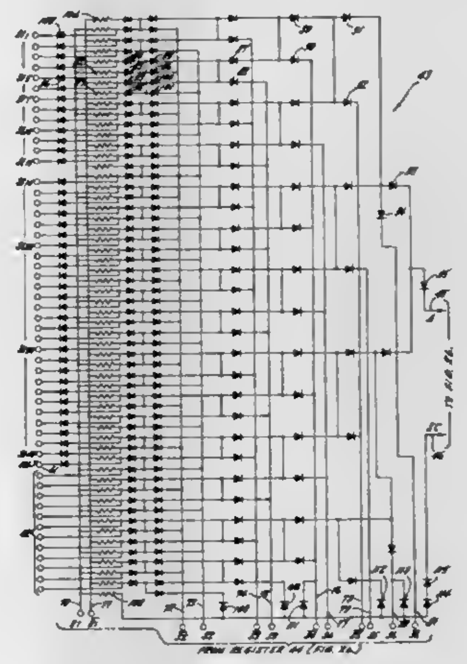
Donald J. Quimet, Mundelein, Ill., assignor to Telephone & Data Products, Inc., Mundelein, Ill.

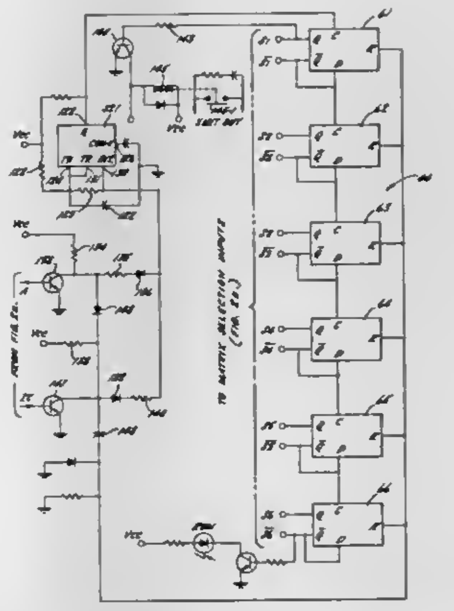
Filed July 5, 1974, Ser. No. 485,840

Int. Cl.^{2} G08B *13/08;* **H04Q** *1/32*

U.S. Cl. 340—164 R **19 Claims**

1. An alarm reporting system comprising in combination, a selection matrix having a plurality of alarm inputs, selector means coupled to the matrix for sequentially selecting each of the alarm inputs, clock means for producing a clock signal for sequencing the selector means, means coupling the matrix to the clock means and responsive to the status of the selected alarm input for controlling the period of said clock signal, interfacing means for producing a two level output signal including the clock period, means for coupling the output signal to a transmission means for transmission to a second station, and monitoring means at the second station, including means for receiving the transmitted signal and recovering the clock period therefrom, and means responsive to the period of





the recovered clock signal for indicating the status of each of the alarm inputs.

3,940,740
METHOD FOR PROVIDING RECONFIGURABLE MICROELECTRONIC CIRCUIT DEVICES AND PRODUCTS PRODUCED THEREBY

Leland I. Coontz, Orange, Calif., assignor to Actron Industries, Inc., Monrovia, Calif.

Filed June 27, 1973, Ser. No. 374,242

Int. Cl.^{2} H01L *21/70, 27/00*

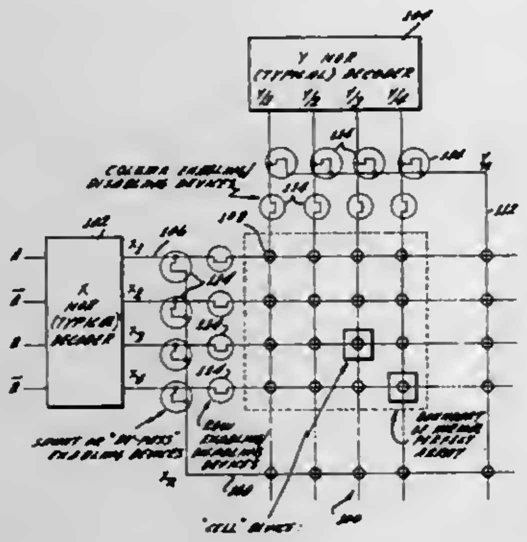
U.S. Cl. 340—166 R **11 Claims**

5. The combination with an integrated microelectronic memory array including a predetermined plurality of row and column selection conductors having memory cells at each intersection, for improving the production yield thereof comprising:

a. a redundant, duplicate row conductor having memory cells located at the intersections with the plurality of column conductors, said redundant row formed on the same unitary substrate and at the same time as the microelectronic memory array;

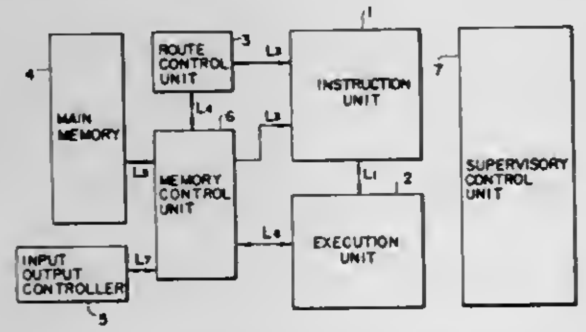
b. an electrically alterable switching circuit fabricated in each of the plurality of row conductors and in said duplicate row conductor, for selectively enabling and disabling individual row conductors, said electrically alterable switching circuits formed on the same unitary substrate and at the same time as the microelectronic memory array; and

c. altering means, integral with the memory array, formed on the same unitary substrate and at the same time as the microelectronic memory array, for selectively enabling individual ones of said switching circuits for testing the memory cells in the row associated therewith and for disabling those rows containing defective memory cells, whereby said redundant row is available to be substituted for a row containing a defective memory cell in attempting to achieve a memory array having a predetermined plurality of operable rows.



3,940,741
INFORMATION PROCESSING DEVICE FOR PROCESSING INSTRUCTIONS INCLUDING BRANCH INSTRUCTIONS

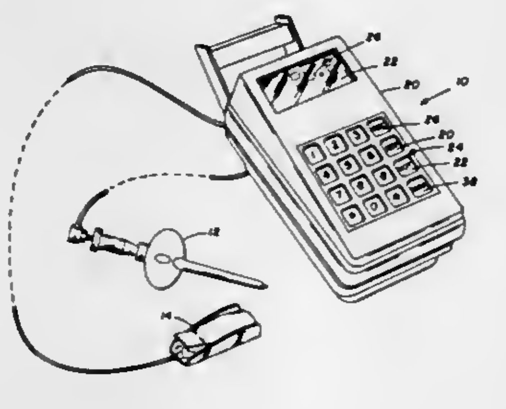
Hisashi Horikoshi, Tachikawa, and Shun Kawabe, Hachioji, both of Japan, assignors to Hitachi, Ltd., Japan
Filed July 5, 1973, Ser. No. 376,275
Claims priority, application Japan, July 5, 1972, 47-66680
Int. Cl.² G06F *9/20*
U.S. Cl. 340—172.5 **10 Claims**



1. An information processing device comprising, in combination:
  a route memory which includes
    route index memory means for storing branch target addresses of a plurality of branch target instructions, and
    route buffer memory means for storing branch target instructions at the corresponding branch target addresses stored in said route index memory;
  instruction unit means for picking up and decoding an instruction to be processed;
  referencing means, connected to said instruction unit and said route memory, for referencing the route index memory means by the address of the instruction to be processed from said instruction unit means when the decoding of the instruction is started by said instruction unit means, to detect the branch target address in said route index memory means coincident with the address of the instruction to be processed; and
  read-out means, connected to said route memory and said instruction unit means, for reading out the branch target instruction corresponding to the branch target address detected by said referencing means and for transferring the branch target instruction read-out from said route buffer memory means to said instruction unit means.

3,940,742
DATA ACQUISITION, STORAGE AND DISPLAY SYSTEM

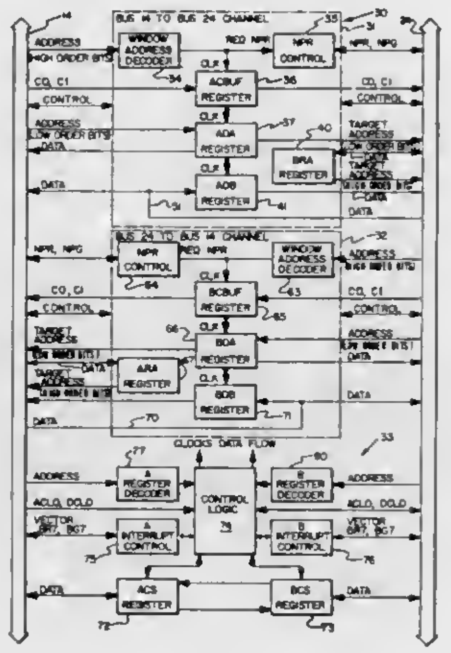
Emmett L. Hudspeth; Philip C. Richardson; John L. Neathery, Jr.; Jerald P. Dykstra; Allen D. Boger, Jr.; William B. Sims, Jr.; Glenn E. Hunt, and Tony M. Quisenberry, all of Austin, Tex., assignors to Medical Monitor Systems, Inc., Austin, Tex.
Filed Aug. 6, 1973, Ser. No. 385,699
Int. Cl.² G06F *3/05*
U.S. Cl. 340—172.5 **50 Claims**



1. In a medical data acquisition and storage system, comprising in combination:
  display means for providing a visual presentation of input medical data,
  at least one data input means for accepting externally generated data,
  a display register for receiving and holding externally generated data to be presented at said display means,
  first means for gating data from each of said input means to said display register,
  manual input means for generating input data to be gated to said display register,
  memory means having multiple address locations for storing data holding in said display register,
  second means for gating the data holding in said display register into said memory means for retention therein,
  a state controller connected to said means for gating for establishing the order of data gated to said display register from all of said input means,
  record means for actuating said second means for gating to transfer data from said display register to said memory means,
  memory control means responsive to the transfer of data from said display register to said memory means to actuate said state controller to advance the sequence of ordered data gated to the display register, and
  repeat means for actuating said state controller to repeat the gating of input data into said display register from the input means previously gated thereto.

3,940,743
INTERCONNECTING UNIT FOR INDEPENDENTLY OPERABLE DATA PROCESSING SYSTEMS

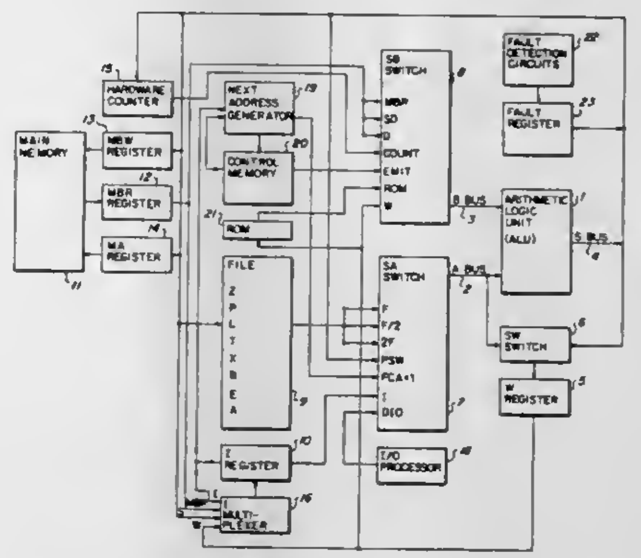
Brian P. Fitzgerald, Framingham, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Nov. 5, 1973, Ser. No. 412,572
Int. Cl.² G06F *15/16*
U.S. Cl. 340—172.5 **19 Claims**



1. In a data processing system including first and second buses for transferring data, address and control signals, means with a plurality of first storage locations connected to said first bus, each of said first storage locations being identified by an address on said first bus, means connected to said first bus for generating addresses including addresses for said first storage locations and other addresses, means for transmitting onto said first bus first transfer control signals for effecting a data transfer over said first bus, and means with a plurality of second storage locations connected to said second bus, each of said second storage locations being identified by an address on said second bus, the improvement of interconnecting means connected to said first and second buses comprising:
  A. a bidirectional data path for coupling data signals between the first and second buses,
  B. decoding means responsive to preselected ones of the other addresses on said first bus for enabling said interconnecting means,
  C. means responsive to the receipt of one of the preselected addresses in said decoding means for converting an address on the first bus to an address on said second bus corresponding to one of said second storage locations,
  D. means responsive to the first transfer control signals on the first bus for transferring data between said first bus and said bidirectional data path, and
  E. means for generating second transfer control signals in response to the address and first transfer control signals, said data processing system additionally including means responsive to second transfer control signals on said second bus for transferring signals between said second bus and the second addressed location identified by the address from said address conversion means to thereby transfer the data between said bidirectional data path and said one of said second storage locations.

3,940,744
SELF CONTAINED PROGRAM LOADING APPARATUS

Howard C. Mock, Rancho Palos Verdes; Kenneth N. Isaac, Tustin; Charles P. Disparte; Warren L. Hall, both of Palos Verdes Peninsula, and James Beasely, Sepulveda, all of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 17, 1973, Ser. No. 425,353
Int. Cl.² G06F *11/04, 9/00*
U.S. Cl. 340—172.5 **10 Claims**



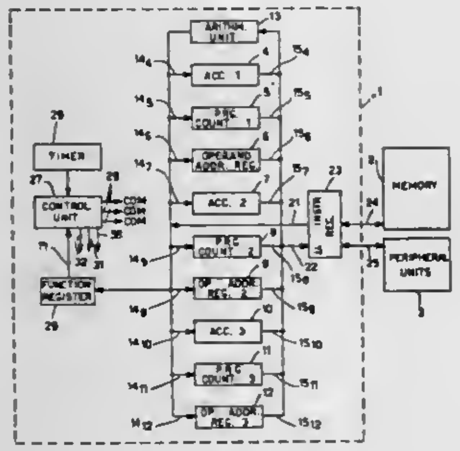
9. In a computer having a main memory for storing programs, diagnostic apparatus comprising:
  additional read-only memory for storing a program,
  a diagnostic program stored within said additional memory,
  circuit means for copying said diagnostic program from said additional memory into said main memory, and,
  a microprogrammable control memory means responsive to the execution of a micro-coded program contained within said control memory means for controlling said circuit means in the copying of said diagnostic program from said additional memory to said main memory.

3,940,745
DATA PROCESSING UNIT HAVING A PLURALITY OF HARDWARE CIRCUITS FOR PROCESSING DATA AT DIFFERENT PRIORITY LEVELS

Raoul Sajeva, Ivrea, Turin, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Turin, Italy
Filed Apr. 26, 1974, Ser. No. 464,726
Claims priority, application Italy, June 5, 1973, 68650/73
Int. Cl.² G06F *9/18, 9/16, 9/10*
U.S. Cl. 340—172.5 **5 Claims**

1. In a data processing unit of the type having a plurality of hardware data processing circuits for processing data at corresponding priority levels, a memory for storing microinstructions and, for each of said priority levels a program counter register for addressing in succession said microinstructions, wherein the improvement comprises:
  means controlled by a level change signal defined by a predeterined microinstruction executed by the circuits of a predetermined priority level for switching said unit from said predetermined level to a lower priority level, said predetermined microinstruction comprising a first character code for defining the priority level change microinstruction and a second character code for specifying an address;
  a first register included in said data processing unit for storing said first character code;
  a control unit connected to said first register for decoding said first character code and for generating a plurality of control signals in accordance with said predetermined microinstruction defined by said first character code;
  means responsive to said control signals for transferring the content of the program counter register of said lower

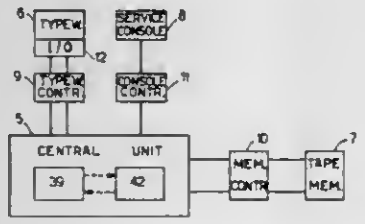
priority level into a predetermined location of said memory; and



means responsive to said control signals for storing the address specified by said second character code into said program counter register of said lower priority level.

3,940,746
SYSTEM FOR AUTOMATICALLY PROCESSING AND PRINTING THE CONTENTS AND THE FORMAT OF A TEXT

Vittore Vittorelli, Ivrea (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy
Continuation of Ser. No. 291,145, Sept. 15, 1972, abandoned. This application Aug. 5, 1974, Ser. No. 494,641
Claims priority, application Italy, Sept. 29, 1971, 70186; Apr. 19, 1972, 68214/72; July 14, 1972, 69276/72
Int. Cl.² G06K *7/00;* B41J *5/44*
U.S. Cl. 340—172.5 27 Claims



1. A system for automatically processing and printing the contents and the format of a text of lines of characters, the system comprising:

input means for developing character codes corresponding to desired characters to be entered into the system;

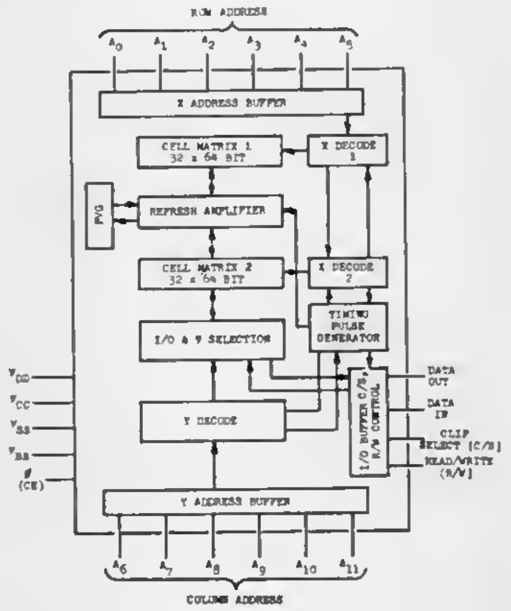
printing means receptive of character codes for printing characters in character lines each line having a maximum predetermined length;

storage means receptive of character codes for storing each of the codes associated with entered character lines into one of a plurality of storage blocks and for reading same, each block having a capacity for storing the code of one character line of said maximum predetermined length and comprising means defining an address for each block and means for indicating whether a block is free for storing code data therein; and

control means associated with said input means for controlling the operation of said storage means and said printing means, said control means comprising selecting means associated with the indicating means and the address defining means for automatically selecting a block free for storing code data therein and means associated with said selecting means for enabling said printing means to print the address of the free block and for enabling said storage means to record in the free block the character codes of the next character line subsequently entered by said input means.

3,940,747
HIGH DENSITY, HIGH SPEED RANDOM ACCESS READ-WRITE MEMORY

Chang-Kiang Kuo, and Norishisa Kitagawa, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 2, 1973, Ser. No. 385,122
Int. Cl.² G06F *13/00;* G11C *13/00*
U.S. Cl. 340—173 DR 3 Claims

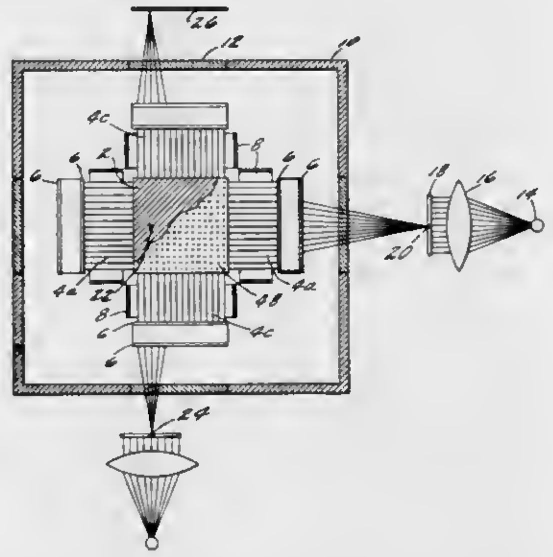


1. A random access memory device which comprises, in combination:

a. a data input terminal,
b. a data output terminal,
c. a matrix of memory storage cells arranged in rows and columns,
d. a plurality of sense and refresh amplifier means, one located in the center of each of said columns of storage cells, each amplifier means having a data line associated therewith and connected to each storage cell in the associated column, a portion of each data line being positioned on each side of the amplifier means, each amplifier means including two dummy storage cells, each dummy storage cell being directly coupled to a different one of the said portions of each data line,
e. address input means for providing a row select signal and a column select signal,
f. read/write means for determining whether a read or a write function is to be performed,
g. said cells being responsive to a selected row address signal and a read signal on said read means to place an indication of the data stored in each storage cell of said on the associated data line for all of the amplifier means,
h. means responsive to a selected column address signal to read out from the amplifier means associated with said selected column onto said row output terminal, to provide a read-out operation,
i. means responsive to a write signal to couple data from said data input terminal to said data line of the amplifier means associated with said column address signal, means responsive to said row address signal to cause said data at said line associated with said amplifier means to be stored in the storage cell in the selected column corresponding to said column address, and means responsive to said write signal to inhibit read-out to said data output terminal, and
j. the sense and refresh amplifier means functioning to restore data read-out from the storage cells to the data lines at full logic levels when read back into the respective cells.

3,940,748
OPTICAL INFORMATION PROCESSING SYSTEM WITH COLOR CENTER CRYSTAL

Arthur N. Carson, 14 Daniel Road, Bristol, Conn. 06010
Continuation of Ser. No. 525,484, Feb. 7, 1066, abandoned, which is a continuation of Ser. No. 217,858, Aug. 20, 1962. This application Nov. 14, 1969, Ser. No. 871,392
Int. Cl.² G11C *13/04*
U.S. Cl. 340—173 CC 20 Claims



1. Apparatus comprising a body having color centers therein normally in a first stable state, means to generate first and second coherent light beams of predetermined wave lengths, at least one of said beams containing information, means for directing said first and second beams to intersect at a selected part of said body to illuminate color centers in said selected part with both of said coherent light beams, said illuminated color centers being changed to a second stable state whereby information is stored in said body where said beams intersect, and means for irradiating said body with at least one coherent light beam to retrieve said information.

3,940,749
CIRCULATORY STORAGE NETWORK FOR CODED DATA

Enrico Cicognani; Alfonso Lamartina, and Riccardo Caldarella, all of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy
Continuation-in-part of Ser. No. 332,696, Feb. 15, 1973, abandoned. This application Feb. 20, 1975, Ser. No. 551,403
Claims priority, application Italy, Feb. 16, 1972, 20619/72
Int. Cl.² G11C *19/00, 21/00*
U.S. Cl. 340—173 RC 10 Claims

1. A network for the temporary storage of binary code words assigned to at least one outgoing channel, comprising:

input means for storing incoming code words;

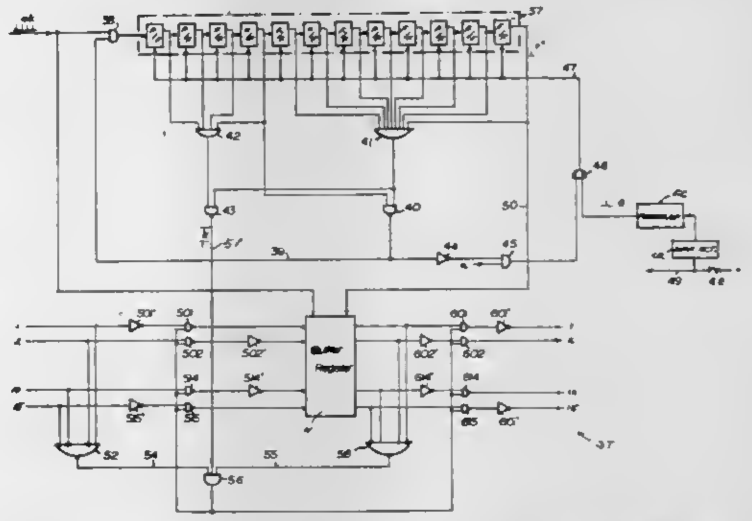
closed-loop memory means for continuously recirculating several code words in a recurrent cycle composed of a multiplicity of time slots;

insertion means for introducing an invariable binary heading into at least one of said time slots to mark the beginning of a cycle;

detector means coupled to said memory means for generating a periodic start pulse in response to circulation of said heading past a predetermined point of the closed loop preceding a one-word storage section thereof;

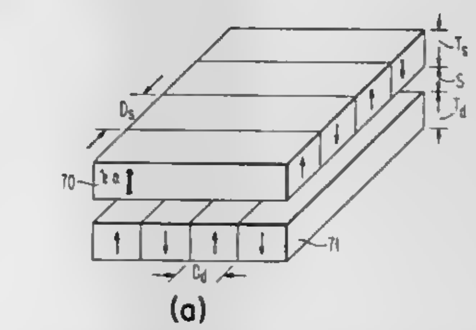
transfer means responsive to said start pulse and coupled to said memory means for entering a code word from said input means in a vacant time slot; and

control means responsive to the availability of said outgoing channel for establishing a short circuit for the circulating code words around said storage section while initiating the read-out therefrom of a code word destined for said outgoing channel, said control means being responsive to said start pulse from said detector means for opening said short circuit with generation of a vacant time slot immediately preceding said heading whereby the next code word entered from said input means by said transfer means occupies the last time slot of a cycle.



3,940,750
WALL TOPOLOGY STORAGE SYSTEM

Otto Voegeli, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 26, 1973, Ser. No. 344,659
Int. Cl.² G11C *11/15*
U.S. Cl. 340—174 TF 13 Claims



(a)

1. A data storage apparatus comprising a magnetic storage medium having a series of stripe domains separated by domain walls having at least one polarity reversal in the wall, the sign of said polarity reversal representing data stored in the wall, and

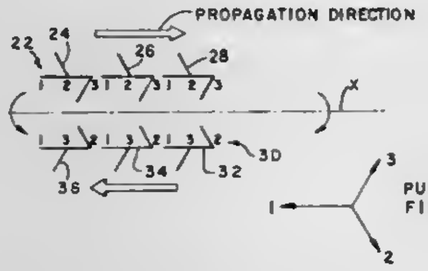
a drive film comprising a series of stripe domains separated by domain walls and located adjacent to and orthogonal to the stripe domains in said storage medium, wherein the intersections of the domain walls of said storage medium and of said drive film define bit locations.

3,940,751
MUTUALLY EXCLUSIVE PARALLEL-SIDED LOOPS

Robert M. Sandfort, St. Charles, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Mar. 27, 1974, Ser. No. 455,275
Int. Cl.² G11C *11/14, 19/08*
U.S. Cl. 340—174 TF 18 Claims

1. A field-accessed bubble propagation system, comprising a sheet of magnetic bubble material, means for producing and maintaining bubbles therein, a ferromagnetic overlay pattern operatively disposed on said sheet including a first bubble path

composed of discrete mutually exclusive circuit elements and a second bubble path parallel to said first path composed of discrete mutually exclusive circuit elements whose shape and orientation are symmetrical to the elements in said first path with respect to a symmetry line between and parallel to said first and second paths, and means for applying a magnetic drive field in the plane of said sheet to propagate bubbles simultaneously in opposite directions along said first and second paths, said discrete mutually exclusive circuit elements each being in the form of a stem aligned with the direction of propation having an angled arm at one end and another angled arm on the other side of said stem intermediate of the ends of said stem, said angled arms being like staggered branches projecting from said stem.



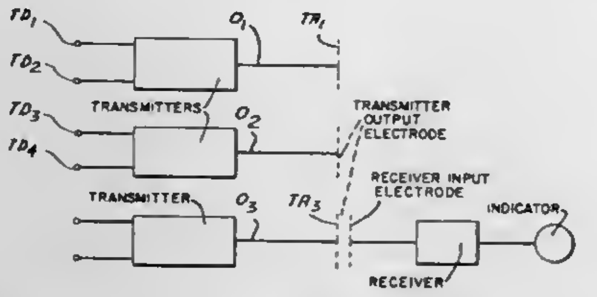
3,940,752
TRANSDUCING SYSTEM

Willard E. Bair, 405 Sunnycrest Court West, Urbana, Ill. 61801

Filed Feb. 26, 1974, Ser. No. 446,052

Int. Cl.² G08C *19/16*

U.S. Cl. 340—189 M **22 Claims**



1. A transducer system comprising a plurality of transmitters, each of said transmitters including means for generating an asymmetric wave form, the asymmetry of said wave being proportional to a quantity being transduced, each of said transmitters including a capacitive coupling output electrode, a receiver, said receiver including a capacitive coupling input electrode adapted to be selectively positioned closely adjacent and electrostatically coupled to any one of said transmitter electrodes to receive signals therefrom, said electrostatic coupling comprising the principal signal coupling between said transmitters and receiver, said receiver including means for converting said asymmetric wave to a representation of said transduced quantity in proportion to said asymmetry.

3,940,753
DETECTION OF PRESENCE OR ABSENCE OF FLAMES

Peter Müller, Oetwil a. See, Switzerland, assignor to Cerberus AG, Mannedorf, Switzerland

Filed Sept. 13, 1974, Ser. No. 505,627

Claims priority, application Switzerland, Sept. 25, 1973, 13722/73

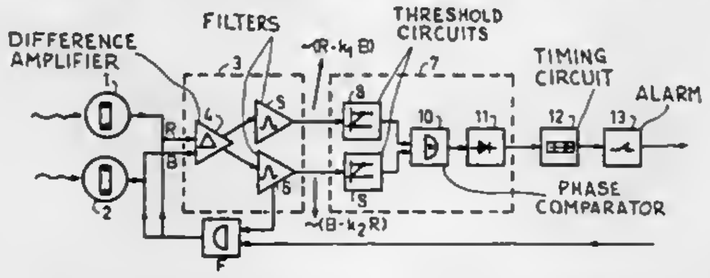
Int. Cl.² G08B *21/00*

U.S. Cl. 340—227 R **20 Claims**

1. Method to detect presence or absence of a flame in which at least two photo-electric sensors (1, 2) are provided, wherein each one of the sensors is sensitive to a predetermined spectral range of incident light and wherein the respective spectral ranges to which said sensors are sensitive are different;

the sensors providing at least two respective sensed signals, said method comprising

evaluating the relative relationship of the a-c components of the respective sensed signals from the sensors (1, 2) representative of presence of light in said spectral ranges and determining if these a-c components fall in a predetermined low-frequency band between two predetermined low frequency limits and, if so, providing a "flame present" signal if, and only if (a) the color temperature of the light incident on the respective sensors is lying between limits defined by said respective different spectral ranges and (b) the flicker of said light within both said limits is within said predetermined low frequency limits.



3,940,754
FLUID DETECTOR DEVICE IN A DRIVE MOTOR FOR AN UNDERGROUND MINING MACHINE

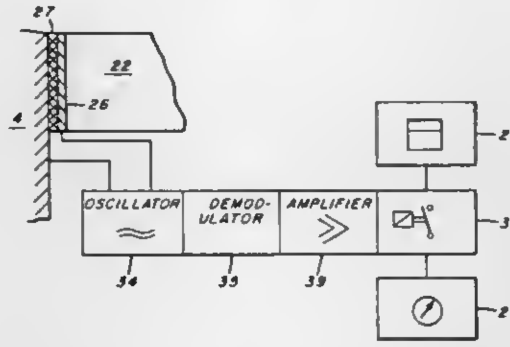
Karl-Heinz Weber, Witten-Heven, Germany, assignor to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany

Filed Aug. 2, 1974, Ser. No. 494,060

Claims priority, application Germany, Aug. 30, 1973, 2343752

Int. Cl.² G08B *21/00*

U.S. Cl. 340—242 **10 Claims**



1. Apparatus for detecting penetration of fluid in combination with a drive motor for an extracting machine such as a drum-type coal cutting machine employed for underground mining operations, said drive motor including windings within a motor housing, a motor shaft extending through end plates at the ends of the motor housing, bearing means supporting the motor shaft for rotation within the housing, and annular seal means between the motor shaft and the housing to normally prevent the passage of fluid into the housing from at least one end thereof, the improvement comprising:

capacitive means including at least one charged carrier probe spaced from said seal means along said motor shaft for ultimate support by the motor housing between the end plates in a manner such that fluid penetrating into the motor housing beyond said seal means contacts and reduces the capacitive charge of said capacitive means,

detecting means coupled in an electric circuit which includes said capacitive means for producing an electrical signal corresponding to a decrease capacitance of said capacitive means to thereby indicate penetration of fluid into the motor housing, and

means energized in response to said electrical signal.

3,940,755
PLASMA DISPLAY DRIVING APPARATUS

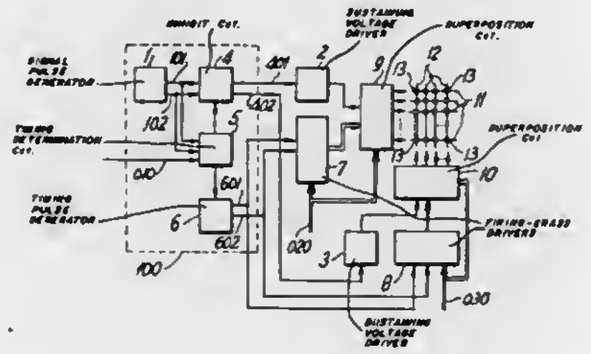
Masamichi Shutoh, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1974, Ser. No. 498,134

Claims priority, application Japan, Aug. 22, 1973, 48-94171

Int. Cl.² G08B *5/36*

U.S. Cl. 340—324 M **1 Claim**



1. In combination, an apparatus for driving a plasma discharge display including plural display generating electrodes, means for supplying a sustaining voltage pulse train, selective pulse inhibiting means connecting said sustaining pulses supplied by said supplying means therefor to the display electrodes, command responsive means for signalling a display change, said inhibiting means including means responsive to a signal provided by said command responsive means for suppressing one of said sustaining pulses provided by said supplying means therefor and means responsive to a signal provided by said command responsive means for supplying a display modifying signal to a display electrode during the time interval when said sustaining signal is suppressed by said inhibiting means, wherein said inhibiting means comprises gate means, and monostable multivibrator means for disabling said gate means for a timed interval.

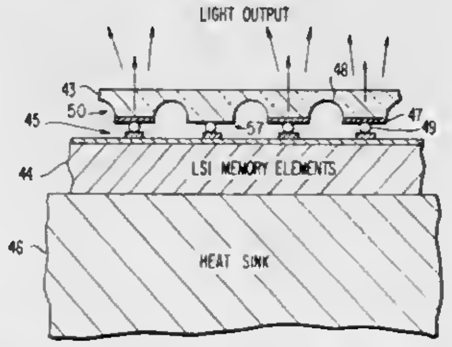
3,940,756
INTEGRATED COMPOSITE SEMICONDUCTOR LIGHT-MITTING DISPLAY ARRAY HAVING LED'S AND SELECTIVELY ADDRESSABLE MEMORY ELEMENTS

Alexander G. Flodlay, Cupertino, Calif., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1974, Ser. No. 497,991

Int. Cl.² G06F *3/14*

U.S. Cl. 340—324 M **6 Claims**



1. A composite integrated circuit light-emitting display array comprising:

a monolithic array of LED devices, each of said devices being adapted when energized to emit light observable from the front surface of said array, said monolithic array being constituted by a monolithic transparent GaP crystal, each of said LED devices constituting at least one diode having a separate p-n junction at which light is radiated, said junction being at the back surface of said crystal, said light being transmitted through said crystal for being observed at the front surface of said crystal;

a monolithic integrated circuit array of selectively addressable independent memory circuit elements corresponding to and adapted for energizing respective ones of said LED devices, said integrated circuit array being adjacent the back surface of said crystal; and

interconnection means sandwiched between said planar arrays for providing electrical interconnection between respective ones of said LED devices and said circuit elements at the back surface of the first-said array, said circuit elements being operable when addressed to selectively and independently energize said LED devices for causing emission of light observable from the front surface of the first-said array.

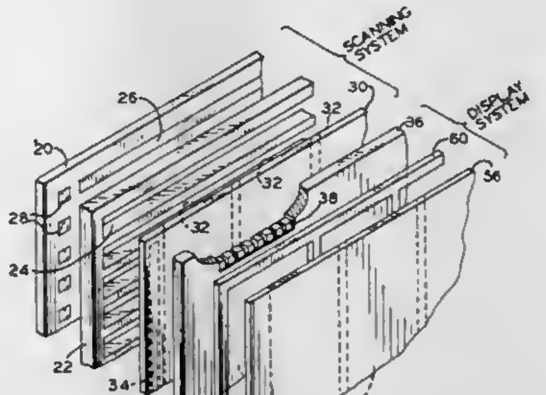
3,940,757
METHOD AND APPARATUS FOR CREATING OPTICAL DISPLAYS

Francis Jack Purchase, Waterloo, Canada, assignor to Autotelic Industries, Ltd., Ft. Erie, Canada

Filed Feb. 5, 1975, Ser. No. 547,126

Int. Cl.² G08B *5/36*

U.S. Cl. 340—324 M **30 Claims**

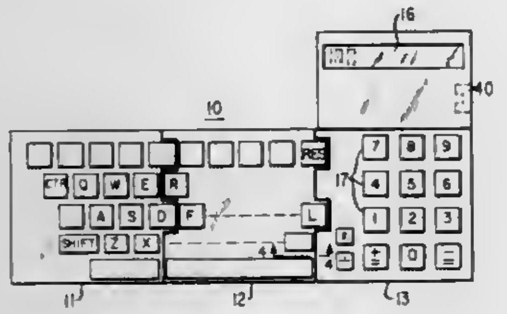


1. In an optical display device; at least one conductive member having at least one end exposed, light emitting means at said one end of said member responsive to a voltage applied to said member for developing light, a source of chronologically spaced voltage pulses, an impedance element serially connected between said source and said member, the impedance of said element being high when the element is dark and going low after a predetermined time delay when the element is illuminated, and illuminating means for illuminating said element for a period of time prior to the supply of a pulse thereto from said source, said period of time being at least as long as said time delay whereby the supply of a voltage pulse to said element results in substantially instantaneous actuation of said light emitting means.

26. The method of transmitting electric signals under the control of a radiation sensitive impedance element in which the time period of a said signal is substantially less than the time period required for the element to go to low impedance in the presence of radiation, said method comprising effecting the intermittent and repetitive supply of radiation to said element and the intermittent and repetitive supply of electric signals to said element in such timed relation that the element has low impedance when a said signal is supplied thereto.

3,940,758
EXPANDABLE KEYBOARD FOR ELECTRONIC POCKET CALCULATORS AND THE LIKE

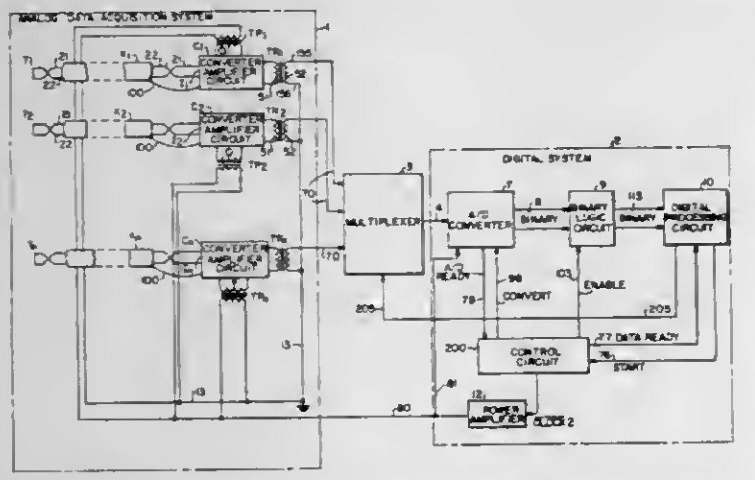
George D. Margolin, 174 W. 76 St., New York, N.Y. 10023
Filed Sept. 20, 1974, Ser. No. 507,756
Int. Cl.² G06F ***3/02***
U.S. Cl. 340—337 9 Claims



1. A keyboard arrangement including a first array of keys operative selectively on a first electronic circuit, said keyboard arrangement being physically detachable into a plurality of portions each bearing a section of said array of keys, each of said portions being adapted to electrically interconnect with adjacent keyboard portions for selective operation on said first electronic circuit.

3,940,759
ANALOG SIGNAL PROCESSING SYSTEM WITH CORRECTION FOR AMPLIFIER OFFSET

William E. Zitelli, Media, and Andras I. Szabo, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 24, 1974, Ser. No. 482,194
Int. Cl.² H03K ***13/02***
U.S. Cl. 340—347 AD 15 Claims



1. An analog signal processing system including an analog data acquisition subsystem for transmitting from remote locations at least one low-level analog signal;

analog to digital (A/D) converter means responsive to said analog input signal for converting the said signal into a digital input signal, and

a digital system for processing said digital input signal with said analog signal processing system comprising:

means within said data acquisition subsystem for converting one low-level analog signal into a pair of time-displaced analog input signals having opposite polarities, with each input signal of said pair carrying information relative to the magnitude of said low-level analog signal;

amplifier means successively responsive to each input signal of said pair of input signals for generating a corresponding pair of time-displaced amplified signals each having an offset error due to drift in said amplifier means;

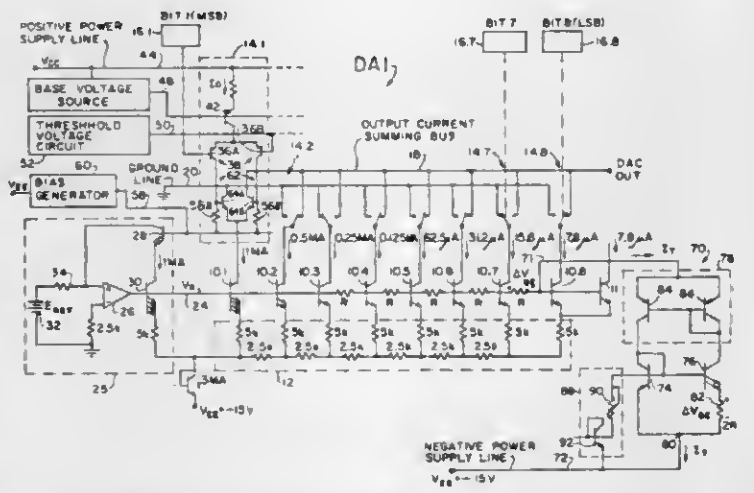
analog to digital converter means successively responsive to each amplified signal of said pair of amplified signals for generating a corresponding pair of successive digital output signals;

a digital subsystem including means for algebraically combining said of a pair digital output signals to derive one digital measurement signal characteristic of said magnitude of said one low level analog signal; and

means for digitally processing said digital measurement signal in relation to said data acquisition subsystem, in relation to said means for algebraically combining and in relation to said analog to digital converter means, whereby said offset error is substantially eliminated from said digital measurement signal.

3,940,760
DIGITAL-TO-ANALOG CONVERTER WITH CURRENT SOURCE TRANSISTORS OPERATED ACCURATELY AT DIFFERENT CURRENT DENSITIES

Adrian Paul Brokaw, Burlington, Mass., assignor to Analog Devices, Inc., Norwood, Mass.
Filed Mar. 21, 1975, Ser. No. 560,954
Int. Cl.² H03K ***13/04***
U.S. Cl. 340—347 DA 20 Claims


POSITIVE POWER SUPPLY LINE
BIT 1 (MSB)
BIT 7
BIT 8 (LSB)
DA1
BASE VOLTAGE SOURCE
THRESHOLD VOLTAGE CIRCUIT
BIAS GENERATOR
GROUND LINE
OUTPUT CURRENT SUMMING BUS
DAC OUT
NEGATIVE POWER SUPPLY LINE

1. In a digital-to-analog converter of the type formed with a plurality of current source transistors arranged to carry different levels of current according to a predetermined weighting pattern, the improvement which comprises:

a plurality of current source transistors arranged to operate at different current densities and therefore different base-to-emitter voltages when carrying said different levels of current;

resistance means connected between the bases of successive current source transistors; and

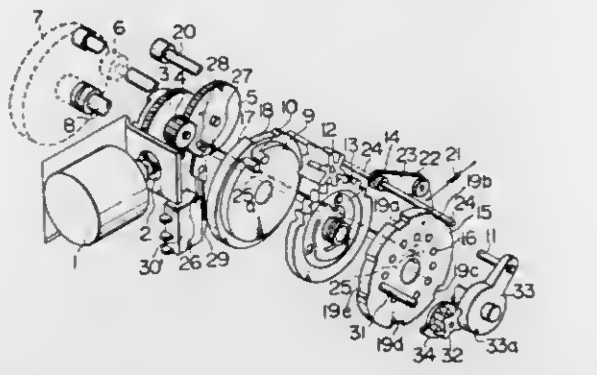
means for developing across the resistance means a voltage, varying with absolute temperature, corresponding to the difference between base to emitter voltages of the successive current source transistors;

whereby the emitter voltages of the successive current source transistors are equal and stable with respect to temperature, thereby providing accurate levels of weighted current in the converter and accurate digital-to-analog conversion.

3,940,761
MEMORY MECHANISM

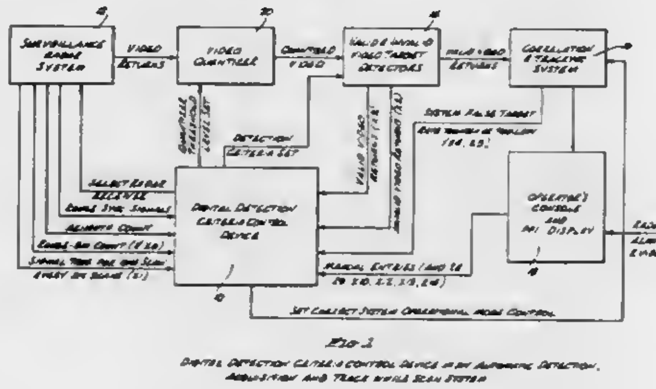
Kiyoyuki Arai, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan
Filed Dec. 5, 1974, Ser. No. 530,008
Claims priority, application Japan, Dec. 15, 1973, 48-139320
Int. Cl.² G08B ***5/30***
U.S. Cl. 340—373 5 Claims

1. In a memory mechanism for controlling change of informations in a plurality of information systems each including information to be incrementally changed and indicated in succession, the improvement which comprises actuation means adapted to be actuated in response to a predetermined input signal whenever said actuation means receives such a signal, a first memory wheel operated by said actuation means to incrementally change the informations in the first system of said information systems until a cycle of incremental information change is completed and having an intermittent transmission means, a first transmission wheel for engaging said intermittent transmission means to be operated thereby, a second memory wheel including a second transmission wheel engaging said first transmission wheel to be operated thereby and adapted to incrementally change the informations in the second system of said plurality of information systems each time said first memory wheel has made one complete rotation so as to complete a cycle of incremental information change each time said second memory wheel makes one complete rotation, a first camming portion formed in at least one selected position of said first memory wheel, a second camming portion formed in at least one position of said second memory wheel, lever means urged to act on said first and second memory wheels and adapted to be operated during the lever is in engagement with both said first and second camming portions and operation means operatively connected to said lever means to operate said first memory wheel to allow the first memory wheel to effect incremental information change in said first information system during said lever means is operating independent of said input signal whereby incremental change of the informations in the first information system is controlled.



3,940,762
DIGITAL DETECTION CRITERIA CONTROL DEVICE FOR VIDEO MAPPING, DETECTION PARAMETER CONTROL, OPTIMUM RADAR RECEIVER SELECTION AND REJECTION OF NON-MOVING TARGETS

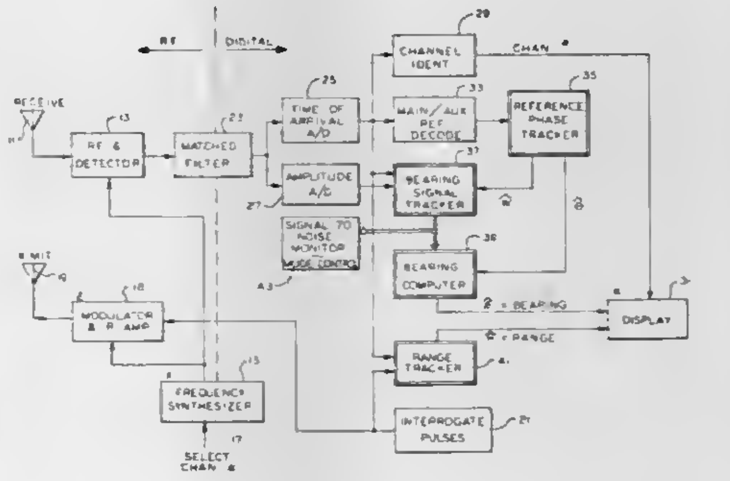
David A. Ethington, La Mirada; Richard D. Wilmot, Fullerton, and Herbert Y. Yamashiro, La Mirada, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Sept. 9, 1965, Ser. No. 486,047
Int. Cl.² G01S ***9/02***
U.S. Cl. 343—5 DP 6 Claims


SURVEILLANCE RADAR SYSTEM
VIDEO RETURNS
VIDEO QUANTIZER
QUANTIZED VIDEO
VALID & INVALID VIDEO TARGET DETECTORS
VALID VIDEO RETURNS
CORRELATION & TRACKING SYSTEM
QUANTIZER THRESHOLD LEVEL SET
DETECTION CRITERIA SET
VALID VIDEO RETURNS
INVALID VIDEO RETURNS
SYSTEM FALSE TARGET
SELECT RADAR RECEIVER
RANGE SYNC SIGNALS
AZIMUTH COUNT
RANGE-BIN COUNT
DIGITAL DETECTION CRITERIA CONTROL DEVICE
OPERATOR'S CONSOLE AND PPI DISPLAY
MANUAL ENTRIES
RADAR RANGE, AZIMUTH, SYNC & VIDEO DATA
SET CORRECT SYSTEM OPERATIONAL MODE CONTROL
FIG-1
DIGITAL DETECTION CRITERIA CONTROL DEVICE IN AN AUTOMATIC DETECTION, ACQUISITION AND TRACK WHILE SCAN SYSTEM

1. A digital detection criteria control device for operation in conjunction with a radar transmitter-receiver apparatus having range count and azimuth position signals and capable of generating a quantized video signal, said digital detection criteria control device comprising a memory having a predetermined number of words, each of said words having a plurality of sets of first, second and third bits, corresponding sets of said first, second and third bits within each word corresponding to quantum areas within one of a plurality of sectors constituting the surveillance area of said radar transmitter-receiver; means responsive to said range count and azimuth position signals for sensing successive bits of said memory at the same rate as and in synchronism with the bits of said quantized video signal; target detection apparatus responsive to said quantized video signal for determining whether target indications from said quantized video signal are valid or invalid; means for periodically generating code bits and writing said code bits in said memory in response to said target indications for each quantum area of said surveillance area; means for reading said code bits out from said memory in synchronism with coverage of said surveillance area by said radar transmitter-receiver; and means responsive to said code bits read out from said memory for providing control indications for successive corresponding quantum areas of said surveillance area and to switch to preselected types of receivers of said radar transmitter-receiver apparatus for said successive corresponding quantum areas.

3,940,763
DIGITAL TACAN SYSTEM

Ronald Y. Paradise, Hillsdale, N.J., assignor to The Singer Company, Little Falls, N.J.
Filed Apr. 5, 1974, Ser. No. 458,202
Int. Cl.² G01S ***9/02***
U.S. Cl. 343—6 DF 11 Claims



9. In a Tacan receiver, means to decode the Tacan bearing comprising:

a. means to detect the time of arrival of each signal pulse and to provide an output indicative thereof;

b. means to detect the amplitude of each signal pulse and to provide an output indicative thereof;

c. means to detect the time of arrival of a reference pulse;

d. digital computing apparatus having as inputs the output of said means to detect the time of arrival of each signal pulse, means to detect the amplitude of each signal pulse and means to detect the time of arrival of a reference pulse, said digital computing means programmed to:

1. compute from the time of arrival of said reference pulses using a first Kalman Filter, the estimated frequency and phase of the transmitted signal;
2. compute from the frequency, the amplitude and the estimated frequency, using a second Kalman Filter, an estimate of the state variables of the bearing signal; and
3. compute from said state variables and the estimated phase, the bearing of the receiver with respect to the transmitting station.

3,940,764

PULSE PAIR RECOGNITION AND RELATIVE TIME OF ARRIVAL CIRCUIT

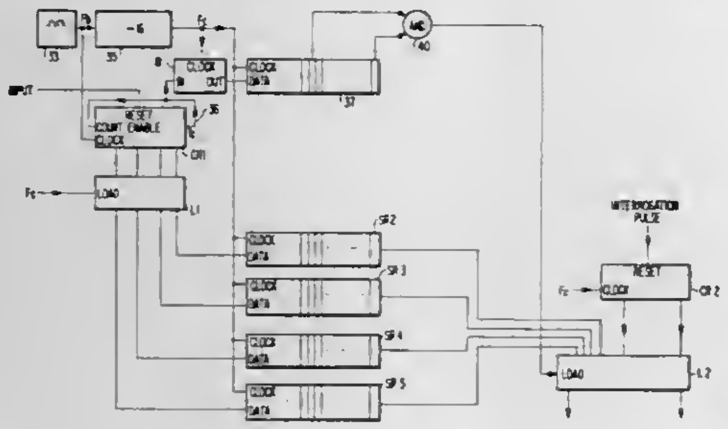
Dennis Edwin Beeswing, Romford, England, assignor to Elliott Brothers (London) Limited, London, England

Continuation-in-part of Ser. No. 543,153, Jan. 22, 1975, abandoned, which is a continuation of Ser. No. 403,762, Oct. 5, 1973, abandoned. This application Mar. 5, 1975, Ser. No. 555,639

Claims priority, application United Kingdom, Oct. 5, 1972, 45920/72

Int. Cl.² G01S *9/56;* **H03K** *5/20*

U.S. Cl. 343—6.5 LC **19 Claims**



18. In a transponder system aboard an aircraft, in combination:

clock means for generating fine clock pulses and coarse clock pulses, the coarse clock pulses being synchronized with the fine clock pulses and occurring at a frequency much less than the frequency of said fine clock pulses;

an input terminal receiving a pair of response pulses transmitted by a ground beacon in response to interrogation by the aircraft;

signal generating means for recognizing a particular time separation between said pair of response pulses and for generating a recognizing signal in response thereto, said signal generating means being driven by said coarse clock pulses whereby an unknown time delay occurs between response pulse reception and input to said signal generating means whereas a predetermined time delay occurs between input to said signal generating means and generation of said recognizing signal; and

means for determining said unknown time delay comprising counter means connected to said input terminal and to said fine clock pulses for counting fine clock pulses beginning at each response pulse reception and storage means connected to said coarse clock pulses for capturing the count of said counter means in synchronism with said coarse clock pulses, the captured count associated with one of said response pulses being available at the time of generation of said recognizing signal.

3,940,765

ARRANGEMENT FOR A PASSIVE RESPONDER FOR A POSITION FINDING SYSTEM

Wilhelm Grafinger; Lutz Knabe, both of Munich; Guenter Engelmann, Erkerode, and Kurt Wagenlehner, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

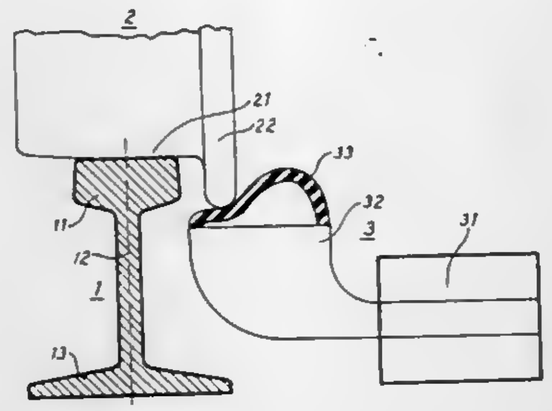
Filed May 9, 1974, Ser. No. 468,389

Claims priority, application Germany, May 14, 1973, 2324339

Int. Cl.² G01S *9/56;* **B61L** *25/00*

U.S. Cl. 343—6.8 R **10 Claims**

1. A passive responder for a position locating system for a wheeled railway vehicle moving on a track and in which said vehicle carries a microwave transmitter and receiver and transmits an interrogation signal to said passive responder the improvement wherein said responder includes a resonator member with several resonators which is mounted in the proximity of a rail of the track, a microwave antenna forming a part of said responder and pointed upwardly with its reciving and radiation opening in immediate proximity to the head of the rail, and a cover member of a dielectric material covering the upper end of said antenna and mounted so that it is engaged by the wheels of said vehicle as they roll by the responder on the rail.



3,940,766

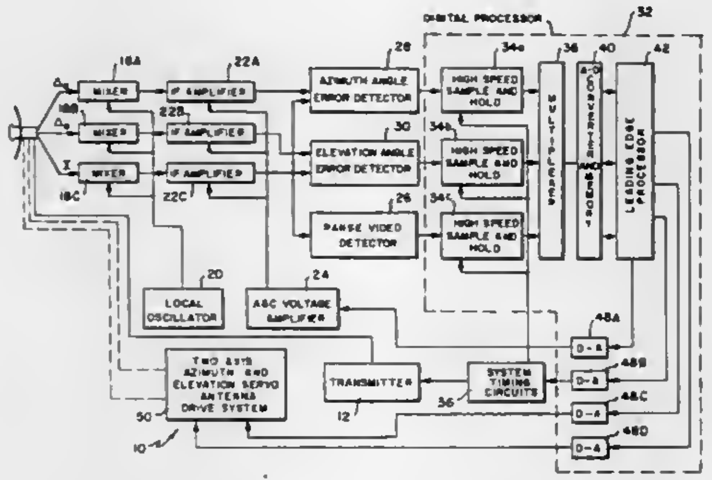
RANGE AND ANGLE DISCRIMINATOR FOR LEADING EDGE RADAR TRACKING

David C. Cross, and Dean D. Howard, both of Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 5, 1973, Ser. No. 349,517

Int. Cl.² G01S *9/02, 9/52*

U.S. Cl. 343—7.4 **10 Claims**



5. In a conventional monopulse, closed loop, digital tracking system having a video return signal supplied from range and bipolar azimuth angle and elevation angle tracking channels, a leading edge tracker comprising:

automatic threshold means for deriving a threshold signal from the video signal;

means for sequentially sampling said video signal;

accumulating means for summing said samples over sequential intervals;

comparison means for comparing each summed sequential interval with said threshold value and indicating when any of said summed sequential intervals exceeds said threshold value; and

means for generating error signals from said indication to correct errors in tracking.

3,940,767

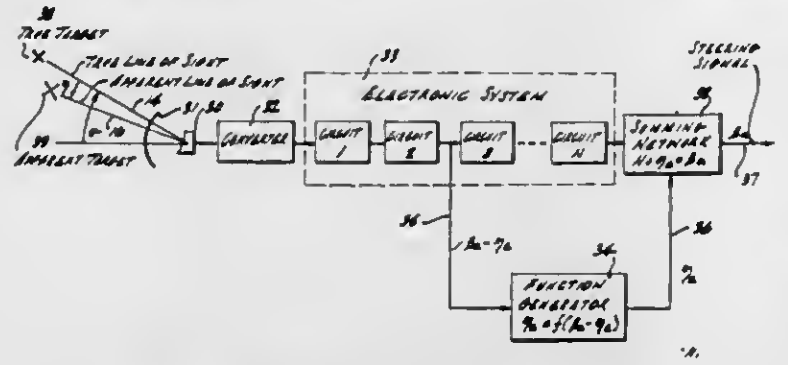
ELECTRONIC RADOME-ERROR COMPENSATION SYSTEM

Richard H. DeLano; Warren E. Mathews, both of Los Angeles; Edgar L. Arml, Palos Verdes Estates, and Keith W. Cochran, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 21, 1955, Ser. No. 483,206

Int. Cl.² G01S *9/02;* **H01Q** *1/42*

U.S. Cl. 343—16 R **13 Claims**



1. In a radar-controlled system including a radome-covered antenna adapted to receive a radar beam and to develop direction signals in accordance with the direction of said received beam, and an electronic receiver adapted to receive and convert said direction signals derived from said antenna to develop output signals in a predetermined manner, wherein said radome-covered antenna subjects said beam to radome-error, and wherein said radome-error is functionally related to the offset angle of said beam, an electronic radome-error compensating system comprising: means coupled to said radar-controlled system and responsive to said direction signals for developing a signal representative of said offset angle of said beam, a function generator coupled to said means for receiving information indicative of said offset angle, and a compensation input terminal in said radar-controlled system, said function generator being coupled to said input terminal and adapted to generate a compensating signal which is at all times the negative replica of the effective radome-error contribution to said direction signals as related to the position of said input terminal, whereby said compensating signals are added to said direction signals, thereby rendering said output signals substantially independent of said radome-error.

3,940,768

PRECISE PULSE REPETITION FREQUENCY MEASURING DEVICE AND SIGNAL SORTER

Robert C. Olsen, and Frederick O. Stahlhut, both of Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 7, 1969, Ser. No. 791,537

Int. Cl.² G01S *7/36*

U.S. Cl. 343—18 E **5 Claims**

1. An electronic signal processing device for performing precise real time measurement of the pulse repetition interval and frequency of pulse radar signals in a multi-signal environment, comprising:

input means for coupling to a radar receiver to receive said pulse radar signals therefrom;

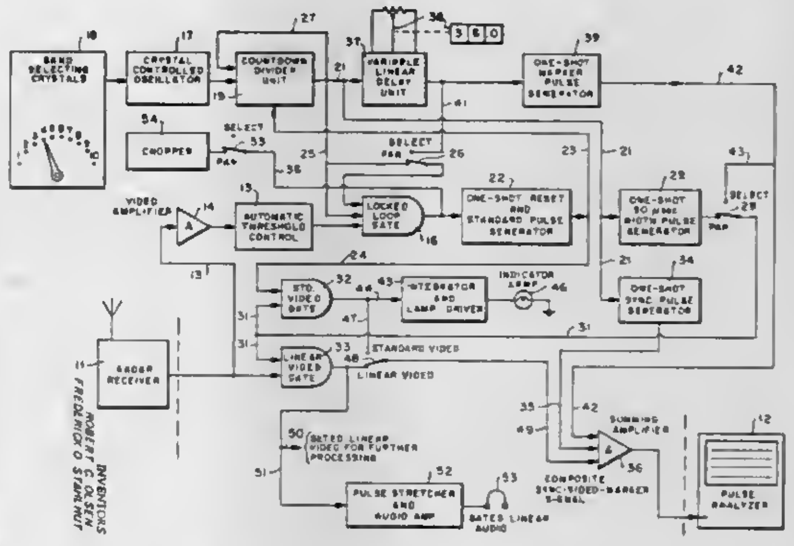
an automatic gating loop coupled to said input means, for receiving said pulse radar signals and separating said signals into discrete bands by pulse repetition interval and frequency;

synchronizing pulse generating means having input means coupled to said automatic gating loop, for producing video synchronizing pulses at its output means in response to control signals from said automatic gating loop;

a first video gating means having first and second input means and an output means, said first input means thereof being coupled to said automatic gating loop for receiving standard video pulses therefrom for each video pulse train within a selected one of said discrete bands, and said second input means thereof being for receiving enabling signals to control the passage of said standard video pulses from said first input means thereof to said output means thereof;

a second video gating means having first and second input means and an output means, said first input means thereof being coupled to said input means for receiving said pulse radar signals from said radar receiver, and said second input means thereof being coupled in parallel with said second input means of said first gating means for receiving said enabling signals to control the passage of said pulse radar signals from said first input means thereof to said output means thereof;

video gating signal generating means having input means coupled in parallel with said input means of said synchronizing pulse generating means to said automatic gating loop for receiving said control signals therefrom, and having output means switchably coupled to said second input means of each of said first and second video gating means, for producing said enabling signals at said output means thereof in response to said control signals from said automatic gating loop;



adjustably linear delay means having input means coupled to said automatic gating loop for receiving said control signals therefrom, having manually adjustable control means for determining the length of delay to be introduced by said delay means between the receipt of said control signals and the production of corresponding output signals, and having output means for providing the delayed said corresponding output signals thereat;

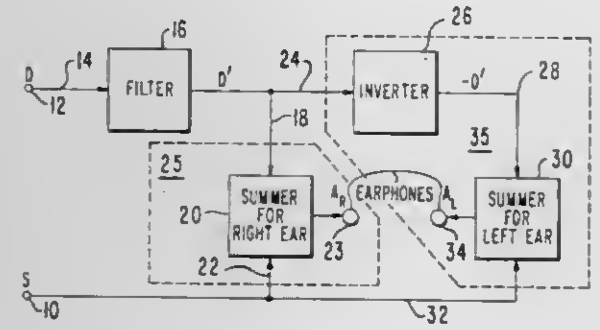
marker pulse generating means having input means coupled to said output means of said adjustable linear delay means for receiving said delayed corresponding output signals therefrom and producing a marker pulse of relatively short duration in response to each such signal, and having output means for providing said marker pulses thereat, said output means thereof being switchably coupled to said second input means of each of said first and second video gating means for providing said marker pulses as enabling signals thereto; and

summing amplifier means having a first input means coupled to said output means of said synchronizing pulse generating means for receiving said video synchronizing pulses therefrom, a second input means coupled to said output means of said marker pulse generating means for receiving said marker pulses therefrom, and a third input means switchably coupled to the respective output means of said first and second video gating means for alternatively receiving said standard video pulses from said first video gating means and said unknown pulse radar signals from said second video gating means, and having output means for providing thereat a composite signal comprised of said synchronizing pulses, said video pulses, and said marker pulses for coupling to a pulse analyzing display means.

3,940,769
BINAURAL AUDITORY PRESENTATION APPARATUS

Samuel Mark Sherman, Moorestown, and Leman Goldman, Jr., Pennsauken, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 21, 1974, Ser. No. 434,926
Int. Cl.² G01S *3/72, 9/22*
U.S. Cl. 343—113 R **5 Claims**



1. In a system wherein an audio-frequency sum signal and an audio-frequency difference signal are derived from frequency-distributed radio-frequency (RF) signals from at least one remote source, said RF signals being received at a plurality of reception means having a specified reference axis, a binaural auditory presentation apparatus comprising:

input means for receiving said sum signal and said difference signal;

filter means receptive of said difference signal for modifying the amplitude and phase of each frequency component of said difference signal;

first presentation means receptive of said sum signal and said filtered difference signal for deriving from said sum signal and said filtered difference signal a first audio-frequency output signal representative of said RF signals from said remote sources;

means, receptive of said filtered difference signal, for inverting said filtered difference signal; and

second presentation means, receptive of said sum signal and said inverted filtered difference signal, for deriving from said sum signal and said inverted filtered difference signal a second audio-frequency output signal representative of said RF signals from said remote sources;

said filter means modifying the amplitude and phase of each of said frequency components of said difference signal such that;

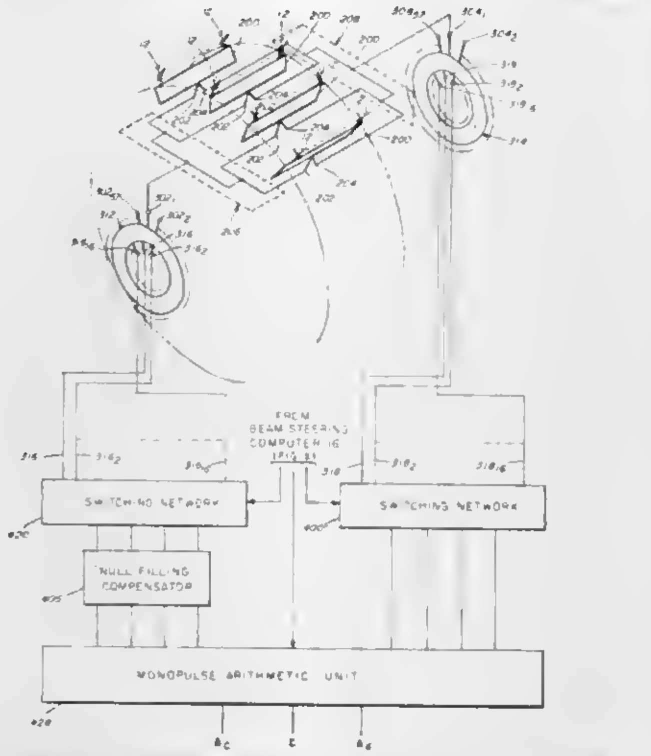
each of the frequency components of said first output signal representative of the RF signals from each respective individual remote source maintain substantially the same time differential between a presentation by said first presentation means and a presentation by said second presentation means of the corresponding frequency component of said second output signal, where each of said time differentials is a function of the position of said respective individual remote source with respect to said reference axis and each of said time differentials is of such a duration as to be binaurally discernable

and such that the amplitude ratio of each corresponding frequency component of said first and second audio-frequency output signals representative of the RF signals from each respective individual remote source is a function of the position of said respective individual remote source with respect to said reference axis.

3,940,770
CYLINDRICAL ARRAY ANTENNA WITH RADIAL LINE POWER DIVIDER

Matthew Fassett, Billerica, Mass., and Quirino Balzano, Pembroke Pines, Fla., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 24, 1974, Ser. No. 463,499
Int. Cl.² H01Q *19/06, 3/26*
U.S. Cl. 343—754 **5 Claims**



1. In a conformal antenna, the combination comprising:

a. a plurality of antenna elements arranged in rows about the periphery of the antenna;

b. a radio frequency lens having a plurality of output ports disposed about the periphery of such lens and a plurality of input ports disposed centrally within such periphery of the lens;

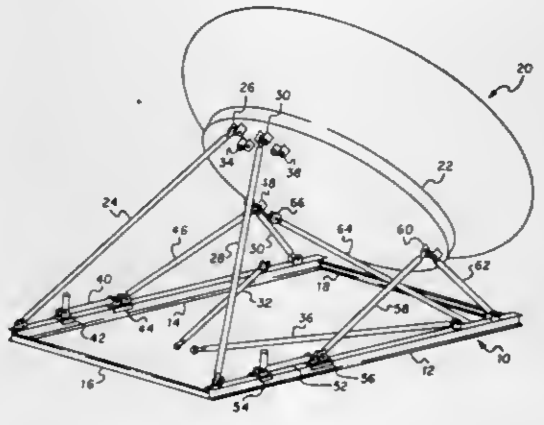
c. a switching network means, having a plurality of output terminals connected to the plurality of input ports and having four input terminals, for electrically coupling such four input terminals to a selected set of four of the plurality of input ports; and

d. means for coupling alternate ones of the four input terminals with like polarity and adjacent ones of such four input terminals with opposite polarity.

3,940,771
VARIABLE ANGLE SUPPORT APPARATUS

Charles E. Wild, Anna, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 21, 1975, Ser. No. 569,916
Int. Cl.² H01Q *1/08, 3/02*
U.S. Cl. 343—766 **8 Claims**



1. Support adjustment apparatus comprising, in combination:

base means having a generally horizontal reference;

load means to be supported and movable with respect to said base means and having a range of normal operating positions between 0° and 90° with respect to said base means;

first and second rigid members pivotally connected to both said base means and the portion of said load means closest to said base means when said load means is in its range of normal operating positions;

third rigid member means pivotally connected to said base means adjacent said first member means and pivotally connected to said load means adjacent said second member means to form, in combination with said load and base means, two substantially triangular and constant shape supporting configurations;

fourth and fifth rigid member means pivotally connected to said base means and to said load means, in an area removed from said first and second members, to form, in combination with one of said load means and said base means, a substantially triangular and constant shape supporting configuration while said load means is in its range of normal operating positions;

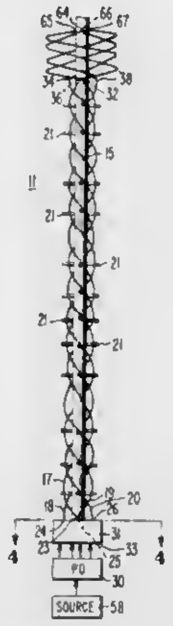
sixth and seventh member means pivotally connected to said base means and pivotally connected adjacent respectively said first and second members to form alterable triangular configurations between the associated members and one of said load means and said base means; and

means for adjusting said sixth and seventh members to change the alterable triangular configurations and simultaneously change the operating position of said load means with respect to said base means.

3,940,772
CIRCULARLY POLARIZED, BROADSIDE FIRING TETRAHELICAL ANTENNA

Oded Ben-dov, Medford, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 8, 1974, Ser. No. 522,132
Int. Cl.² H01Q *1/36*
U.S. Cl. 343—853 **7 Claims**



1. An antenna for radiating circularly polarized signals over a given range of frequencies omnidirectionally about and broadside a support mast comprising:

four conductors helically wound about and spaced from the support mast a given radial distance from the center of the support mast with each conductor of said four conductors spaced about 90° of arc about the support mast from the adjacent two of said four conductors.

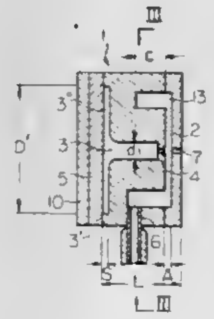
means for coupling equal power signals at the same frequency within said given range of frequencies to said four conductors so that in a plane perpendicular to the axis of the support mast the phase of the signals at one of said four conductors is 180° out of phase with the phase of the signals at the two of said four conductors adjacent thereto and is in phase with the phase of the signals at the one of said four conductors alternate therefrom,

said four conductors at a pitch angle and at a given radial distance such that each of said four conductors makes a complete turn about said support mast in a length along said four conductors about equal to two wavelengths at a frequency within said given range of frequencies whereby circularly polarized signals are radiated substantially broadside said support mast.

3,940,773
LIQUID DROPLET WRITING MECHANISM

Akira Mizoguchi; Kiyoshi Yamamori, and Yasutaka Hiromori, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Aug. 14, 1974, Ser. No. 497,372
Claims priority, application Japan, Aug. 16, 1973, 48-92199; Aug. 17, 1973, 48-92578
Int. Cl.² G01D *15/16*
U.S. Cl. 346—140 R **12 Claims**



1. In an arrangement for applying liquid droplets to a surface, comprising a liquid applying unit including a chamber having an intake channel connected to a liquid supply container and a discharge channel through which the liquid is discharged from the chamber into the atmosphere, means for producing short duration pressure increases in the liquid in the chamber, the chamber having means dividing the chamber into an outer chamber portion adjacent to the discharge channel and an inner chamber portion, a connecting channel in the dividing means connecting the outer and inner chamber portions, the connecting channel being axially aligned with the discharge channel and the intake channel being communicated with the outer chamber portion, the inner chamber portion having a larger diameter portion in contact with the pressure producing means and a smaller diameter portion adjacent to the connecting channel, the improvement comprising:

an intermediate reservoir chamber communicated with said outer chamber portion and with said intake channel; and

the ratio of the diameter of said larger diameter portion to the distance between the outer end of said discharge channel and said pressure producing means ranges from 0.15 to 1.0 inclusive,

whereby the liquid discharged through said discharge channel is replenished with the liquid in said intermediate reservoir chamber to enable the liquid in said outer chamber portion to respond to the rapid variations of said short duration pressure increases.

3,940,774

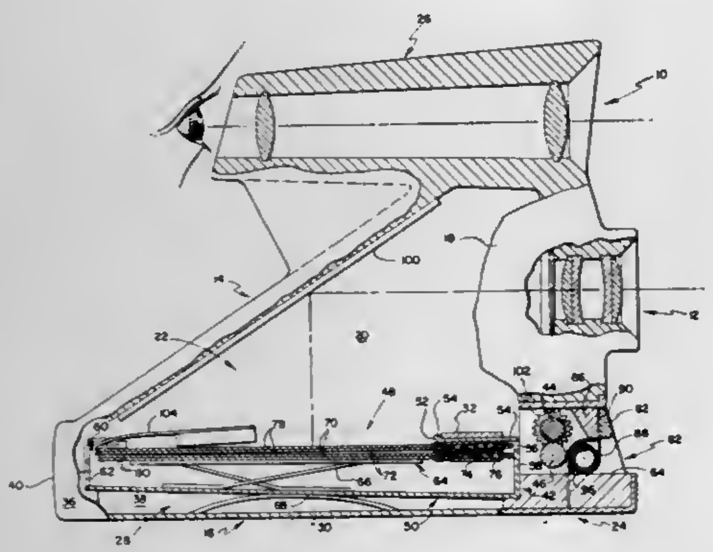
OPAQUE SHADE

Andrew S. Ivester, Charlestown, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 2, 1974, Ser. No. 466,371

Int. Cl.^{2} G03B *17/50*

U.S. Cl. 354—83 **45 Claims**



1. Photographic apparatus for processing an exposed film unit of the type including a plurality of superposed layers including photosensitive and transparent layers, and a processing composition including an opacifying agent which is adapted to be spread across the photosensitive layer comprising:

- means for supporting the film unit in position for exposure of the photosensitive layer;
- means for advancing the film unit subsequent to exposure away from said exposure position;
- pressure-applying means including a pair of juxtaposed members between which the exposed film unit is adapted to be advanced leading edge first during spreading of the processing composition;
- means defining an exit opening located forwardly of said pressure-applying means through which the film unit is adapted to be advanced to the exterior of said photographic apparatus; and
- opaque means mounted adjacent said exit opening for movement between non-extended and extended positions, said opaque means being movable toward said extended position with the leading edge of the film unit as it passes through said exit opening for covering in lighttight relation at least a predetermined area of the transparent layer as it passes from said exit opening sufficient to prevent ambient actinic light from being transmitted by portions of the transparent layer forward of said pressure-applying means to portions of the transparent layer rearwardly of said pressure-applying means, and toward said non-extended position while the predetermined area remains outside said photographic apparatus for progressively exposing the predetermined area to the ambient light.

3,940,775

MULTIPLE EXPOSURE OPTICAL RECORDING METHOD AND APPARATUS

Jurij Bodnar, 41 E. Third Ave., San Mateo, Calif. 94401

Continuation-in-part of Ser. No. 344,107, March 23, 1973, abandoned. This application Apr. 8, 1974, Ser. No. 458,725

Int. Cl.^{2} G03B *1/00*

U.S. Cl. 354—122 **7 Claims**

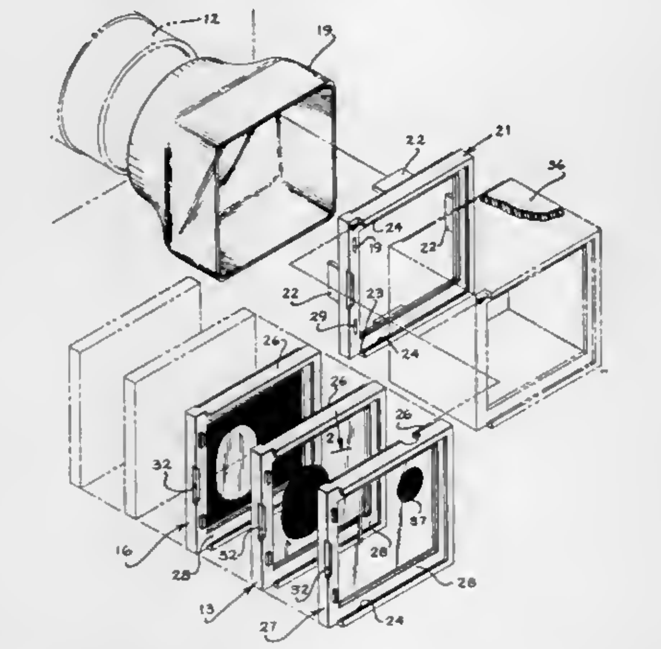
1. Apparatus providing a plurality of light modifying elements for individual positioning in front of the light entrance lens of a camera comprising:

a. a light shade;

b. means for removably securing said light shade to said camera in front of said lens at a position in which all light passed into said camera by said lens first passes through an entrance opening of said light shade; and

c. a support holder for said plurality of light modifying elements detachably secured to said light shade in front of said entrance opening, said support holder including for each of said light modifying elements:

1. a frame for supporting same;



2. means pivotally securing each of said frames to said holder for movement of said frame and the light modifying element supported thereby between an inactive position projecting outward of said holder into said light shade adjacent a side thereof and out of the field of view of said lens and an active position within said holder and in front of said entrance opening so that said light modifying element is in the field of view of said lens;

3. all of said frames and light modifying elements supported thereby being pivotable into positions within said holder for protection thereby whenever said holder is detached from said light shade.

3,940,776

MOTOR-DRIVE CONTROLLING APPARATUS

Isao Kondo, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 13, 1974, Ser. No. 469,678

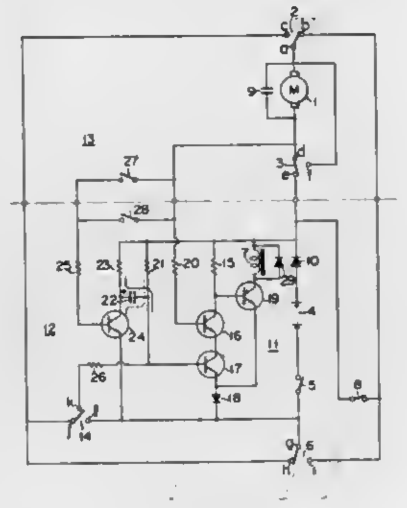
Claims priority, application Japan, May 18, 1973, 48-55223; May 30, 1973, 48-60710; Oct. 4, 1973, 48-111688

Int. Cl.^{2} G03B *1/18*

U.S. Cl. 354—173 **12 Claims**

1. A motor-drive controlling apparatus used in attachment with a still camera having a shutter releasing mechanism and a film winding mechanism to permit alternatively a single frame photographing operation and a continuous photographing operation to be carried out with film charged therein, comprising:

- an operating switch for initiating operation of the motor-drive controlling apparatus:
- a motor circuit coupled to said operating switch and including a drive motor operatively coupled to and selectively driving said shutter releasing mechanism and said film winding mechanism;
- a shutter switch coupled to said shutter releasing mechanism and actuated interlockingly with the operation of said shutter releasing mechanism;
- a timer circuit coupled to said shutter switch and operating in response to the respective operations of said shutter switch and said operating switch, said timer circuit including means responsive to the termination of an advance of film for changing its output condition at a predetermined time after the termination of an advance of film caused by, for example, termination of a charged film, the occurrence of a film-catch problem, or the like; and



- a control circuit coupled to said shutter switch and to said timer circuit and operating in response to the operation of said shutter switch and said output condition of said timer circuit for controlling the energization of said motor.

3,940,777

CASING OF A MECHANICAL MOUNTING FOR THE INTERCHANGEABLE LENSES AND A CAMERA SYSTEM USING THE SAME

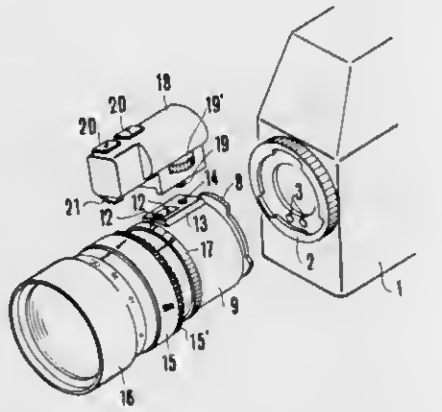
Yoshio Komine, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Japan

Filed Aug. 21, 1974, Ser. No. 499,161

Claims priority, application Japan, Aug. 27, 1973, 48-100412

Int. Cl.^{2} G03B *3/00, 13/02*

U.S. Cl. 354—197 **27 Claims**



1. In a camera system having a camera body unit with mounting-demounting means which is disposed on the camera body unit for mounting and demounting a lens unit, electric signal output means for providing electrical signals and camera electrical signal interconnecting means having one end electrically connected to said output means and the other end electrically connected to said mounting-demounting means, and an interchangeable lens unit which is selectively attachable to and detachable from said mounting-demounting means on the camera body unit, said lens unit comprising:

- photographing optical means forming images;
- a housing for carrying said optical means, apertures being provided at both ends of the optical means along the direction of the optical axis;
- mounting-demounting means disposed at least at one end of the lens unit housing to engage with and disengage from the mounting-demounting means disposed on the camera body unit for mounting the lens unit on the camera body unit; and lens unit electric signal interconnecting means provided inside the lens unit housing having one end being arranged for pressable contact with the electric signal interconnecting means provided in the camera body unit, when the two mounting-demounting means respectively provided on the camera body unit and the lens unit are mated with each other, said lens unit electrical signal interconnecting means having the other end being disposed to appear on an outside wall surface of the lens unit housing, said electric signal interconnecting means of the lens unit being provided with terminal pressing means for pressing at least one of the ends of the lens unit electric signal interconnecting means outwardly of the lens unit housing for bringing said end into contact with the electric signal camera interconnecting means, and wherein the electrical output of the output means in the camera body unit is passed by the camera interconnecting electric signal means and is arranged to be provided external to the lens unit by way of the lens unit electric signal interconnecting means.

3,940,778

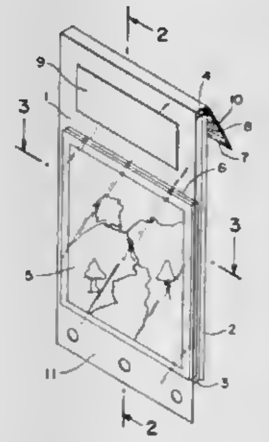
PHOTOGRAPH AND NEGATIVE HOLDER

Jules M. Craig, and Philip Karsted, both of Shingle Springs, Calif., assignors to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Oct. 7, 1974, Ser. No. 512,471

Int. Cl.^{2} G09F *1/10*

U.S. Cl. 354—282 **2 Claims**



1. A photograph and negative holder for displaying a developed photograph and a negative comprising:

- a first sheet of transparent material; a second sheet of transparent material in superposed relation with respect to the first sheet;
- an expandable bellows bonding strip interposed between the first sheet and the second sheet and attached along the edges of the first sheet and the edges of the second sheet;
- whereby the bonding strip, the first sheet and the second sheet define a single envelope having a single opening of sufficient size for receiving the photograph and the negative in contact with each other and in superposed relation to each other;
- a hinged flap having a first end and a second end, the first end attached to the first sheet, which overlaps the opening;
- a means for securing the hinged flap, at the second end, to the second sheet;
- a writing surface attached to the first sheet and in such a position so as not to obstruct the view of the photograph; and
- a third sheet attached to the edge of the first sheet and opposite the opening, having a plurality of holes in the third sheet for mounting in a loose-leaf binder.

3,940,779

INTERCHANGEABLE FINDER TYPE CAMERA

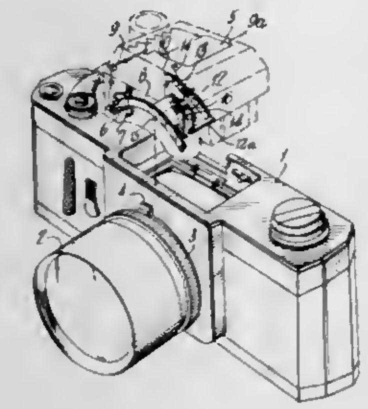
Yoshio Kuromoto, Toyonaka; Toshio Kobori, Sakai, and Masaru Obba, Saki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 27, 1974, Ser. No. 455,450

Claims priority, application Japan, Mar. 28, 1973, 48-35295

Int. Cl.^{2} G03B *13/00, 7/00*

U.S. Cl. 354—224 **11 Claims**



1. An exchangeable viewfinder type single lens reflex camera comprising:
- a camera body;
- an objective lens exchangeably mountable on said camera body and having a rotatable diaphragm ring;
- a viewfinder housing exchangeably mountable on said camera body, including,
- an exposure control device,
- an interlocking member movable between a first position preventing the transmission of diaphragm information from said diaphragm ring to said exposure control device and a second position for allowing such transmission; and
- blocking means movable between a first position for preventing the mounting of said viewfinder housing on said camera body when said interlocking member is in said first position and a second position for allowing such mounting only when said interlocking member is in said second position.

3,940,780

LIGHT-INTERCEPTING DEVICE FOR CAMERAS HAVING FOCAL PLANE SHUTTERS

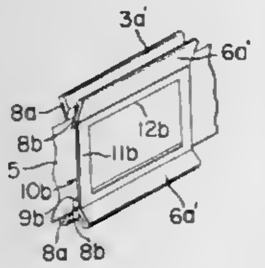
Akihiko Sato, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Oct. 10, 1974, Ser. No. 513,863

Claims priority, application Japan, Oct. 16, 1973, 48-119337

Int. Cl.^{2} G03B *9/28, 17/00*

U.S. Cl. 354—241 **8 Claims**



1. A light-intercepting device in a camera having a pair of picture-taking openings provided in a camera body and a focal plane shutter curtain situated between the picture-taking openings, the device preventing light from passing through the clearance between the shutter curtain and the camera body, the device comprising:
- a pair of resilient, opaque, planar light-intercepting members each having a rectilinear edge portion, the edge portion having a length greater than the dimension of the picture-taking opening parallel to the direction of movement of the shutter curtain; and
- support means for supporting each of said light-intercepting members, the rectilinear edge portion of each light-intercepting member being in resilient engagement with the shutter curtain, and an area of each light-intercepting member spaced from the rectilinear edge portion being fixedly secured to said support means.

3,940,781

CAMERA DIAPHRAGM DRIVE APPARATUS

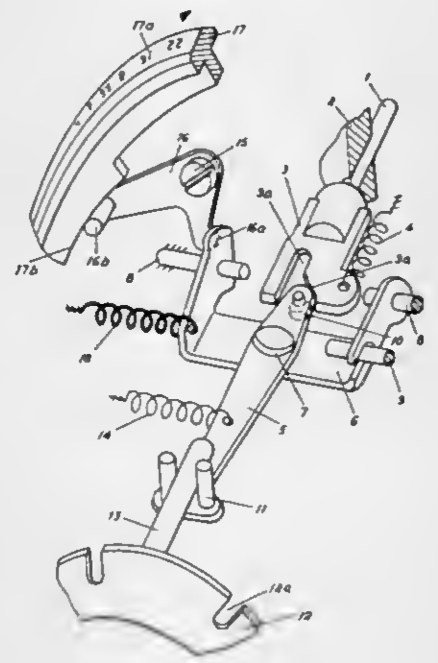
Wolfgang Krause, and Friedhelm Spanke, both of Gorlitz, Germany, assignors to Veb Pentacon Dresden, Dresden, Germany

Filed Dec. 2, 1974, Ser. No. 528,707

Claims priority, application Germany, Dec. 4, 1973, 175072

Int. Cl.^{2} G03B *9/02*

U.S. Cl. 354—272 **12 Claims**



1. In a camera with a shutter mechanism and an objective lens with preselectable diaphragm having blades therein the provision of a diaphragm drive apparatus within said objective lens and comprising:
- a. a diaphragm blade drive ring;
- b. a diaphragm preselector ring for manual preselection of the required diaphragm setting;
- c.
- d. a release mechanism operable by said release plunger;
- e. a drive lever having a cam follower provided on an arm thereof for effecting a driving connection between said release mechanism and the diaphragm blade drive ring, means for connecting said preselector ring to said drive lever for transmitting the preselected diaphragm setting to said drive lever.
- f. a cam surface on said release mechanism having one portion for effecting movement of the cam follower in engagement with said cam surface to drive said diaphragm blade drive ring and a second portion which does not impart movement to the cam follower, whereby on operation of the release plunger, the initial movement of the release mechanism on the driver lever effects closure of the diaphragm to its manually preselected position and on subsequent movement permits release of the camera shutter mechanism without further movement of the diaphragm.

3,940,782

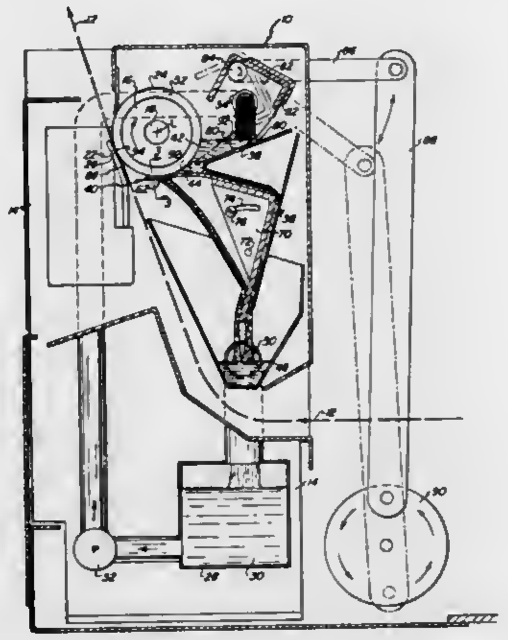
DIAZOTYPE DEVELOPING APPARATUS WITH LIQUID METERING ASSEMBLY

Robert P. Neeb, Wake Forest; Henry W. Patrick, and Ray H. Mumford, both of Raleigh, all of N.C., assignors to Diazit Company, Inc., Youngsville, N.C.

Filed Sept. 10, 1974, Ser. No. 504,752

Int. Cl.^{2} G03D *5/06*

U.S. Cl. 354—318 **16 Claims**



1. Apparatus for developing exposed diazotype sheet material by applying a predetermined amount of liquid developer to the sheet material, said apparatus comprising:
- a frame;
- an applicator roller mounted for rotation in a given direction upon the frame, said roller having a generally cylindrical surface;
- a metering blade assembly mounted upon the frame and urged against the surface of the applicator roller;
- means for supplying liquid developer at a first area of the roller surface located before the metering blade assembly in a direction opposite to said given direction; and
- means for urging the sheet material against a second area of the roller surface located beyond the metering blade assembly in said given direction;
- said metering blade assembly including a fine mesh screen biased into direct contact with a portion of the roller surface between the first and second areas for metering the supplied liquid developer to establish an accurately determined amount of liquid developer upon the surface of the roller as the surface passes across the screen.

3,940,783

MAJORITY CARRIERS-VARIABLE THRESHOLD RECTIFIER AND/OR VOLTAGE REFERENCE SEMICONDUCTOR STRUCTURE

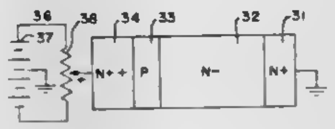
Bohumil Polata, Los Altos, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Feb. 11, 1974, Ser. No. 441,675

Int. Cl.^{2} H01L *29/90*

U.S. Cl. 357—13 **6 Claims**

1. A rectifier and reference structure utilizing majority charge carriers comprising: a one-conductivity support layer and means for making electrical contact to said support layer, a second one-conductivity layer having a concentration differing from and carried by the support layer, an opposite-conductivity layer carried by the second layer to form a first junction, a third one-conductivity layer carried atop the opposite-conductivity layer to form a second junction and means for making electrical contact to said third layer, said opposite-conductivity layer having a decreasing impurity concentration from said second junction to said first junction wherein the second one-conductivity, opposite-conductivity, and third one-conductivity layer impurity concentrations and the opposite-conductivity layer thickness are selected to form a first depletion region at said first junction, so that when voltage means of one polarity is applied between said contacts said structure opposes current flow until a voltage magnitude is reached which causes said first depletion region to extend through the predetermined thickness of the opposite conductivity layer to intercouple said second and third one-conductivity layers, said impurity concentrations being further selected to provide said first depletion region intercoupling before avalanche and Zener breakdown of said first junction,



and wherein said one-conductivity, opposite-conductivity and third one-conductivity layers have impurity concentrations further selected to form a second depletion region at said second junction, so that when voltage means of opposite polarity is applied between said contacts said structure opposes current flow until a voltage magnitude is reached which causes said second depletion region to extend through said predetermined thickness of the opposite-conductivity layer to intercouple said second and third one-conductivity layers, said impurity concentrations being further selected to provide said second depletion region intercoupling before avalanche and Zener breakdown of said second junction.

3,940,784

SEMICONDUCTOR DEVICE

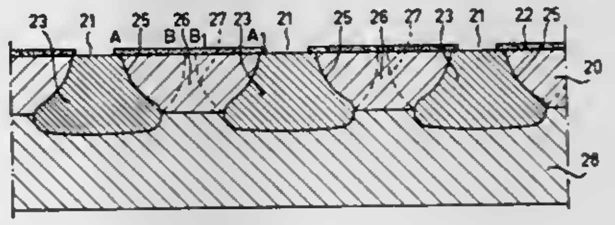
Daniel Diguet, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1974, Ser. No. 466,627

Claims priority, application France, May 4, 1973, 73.16132

Int. Cl.^{2} H01L *29/06, 29/161*

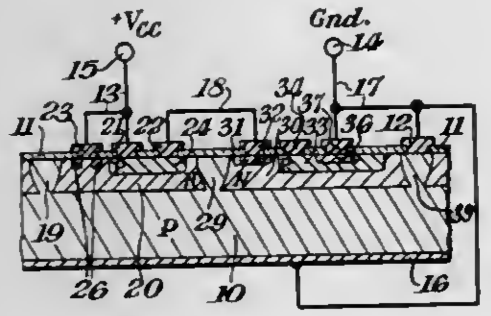
U.S. Cl. 357—20 **20 Claims**



1. A semiconductor device comprising a substrate, a monocrystalline semiconductor layer disposed on said substrate and comprising at least one semiconductor circuit element, said semiconductor layer having a first part located at the substrate side of said layer and a second part located at the surface of said layer, said first part comprising semiconductor material differing in chemical composition from that of said second part, said layer further comprising at least one region that is doped with a diffused impurity material and has a width dimension that first locally increases and then decreases in the direction from the surface of said semiconductor layer toward said substrate.

3,940,785
SEMICONDUCTOR I.C. WITH PROTECTION AGAINST REVERSED POWER SUPPLY

Robert C. Genesl, Sterling, Mass., assignor to Sprague Electric Company, North Adams, Mass.
Filed May 6, 1974, Ser. No. 467,179
Int. Cl.² H01L *27/04*; **H02H** *7/20, 3/18*; **H01L** *29/48*
U.S. Cl. 357—48 **7 Claims**



1. A semiconductor integrated circuit providing protection against a reversed power supply connection having a semiconductor substrate of one conductivity type, a plurality of spaced regions in said substrate each being adjacent to a common face of said substrate and each containing dopant impurities of a conductivity type opposite to said one type, a resistor being formed in a portion of one of said regions, a transistor being formed in a second of said regions, a conductor network connective means, including a terminal connected to said substrate; a terminal adapted to be connected to a fixed d.c. voltage source with respect to said substrate terminal and a connection between said resistor and said fixed voltage terminal, for the purpose of completing the connections in said semiconductor integrated circuit; wherein the improvement comprises a Schottky diode being formed by a metal layer contacting another portion of said one region, said metal layer being electrically connected to said fixed voltage terminal.

3,940,786
DEVICE FOR CONNECTING LEADLESS INTEGRATED CIRCUIT PACKAGE TO A PRINTED CIRCUIT BOARD

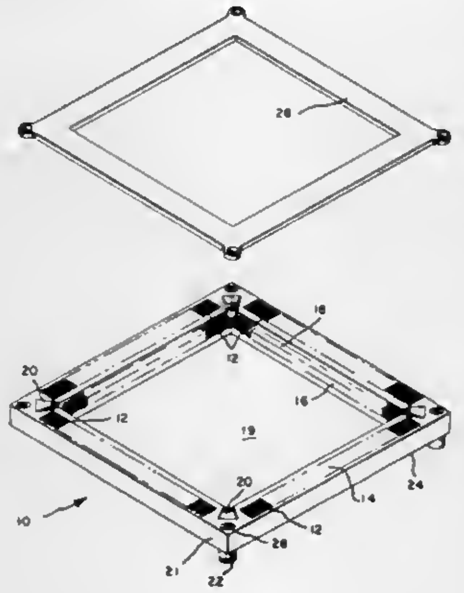
William Samuel Scheingold, Palmyra; Harold Lawrence Purdy, Hummelstown, and Frank Christian Youngfleish, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of Ser. No. 445,045, Feb. 22, 1974, Pat. No. 3,877,064. This application Feb. 4, 1975, Ser. No. 546,948
Int. Cl.² H01L *23/02;* **H02B** *1/04;* **H05K** *1/00*
U.S. Cl. 357—74 **1 Claim**

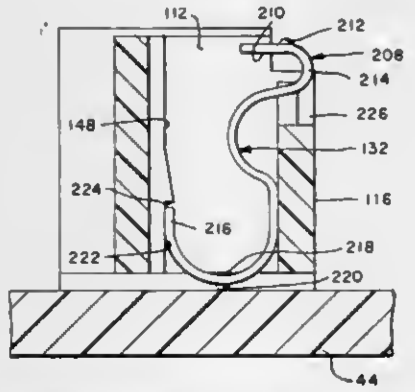
1. A device for connecting a leadless integrated circuit package to a printed circuit board, which comprises:

a. a square frame having a large center opening for receiving the integrated circuit package and having on each side defining the center opening a plurality of cavities which open out onto the inside face wall of the sides;

b. a plurality of contacts each having a lower portion resembling a S and an upper portion being doubled back to provide a double bend and a horizontally flat end, said contacts each having an upper contact point on the horizontally flat end and a lower contact point on the outside surface of the lowest-most curve of the S, said upper contact point adapted to engage a pad on the integrated circuit package which may be placed in the center opening in the frame and the lower contact point adapted to engage a pad on the printed circuit board thereby providing an electrical connection between the integrated circuit package and the printed circuit board; and

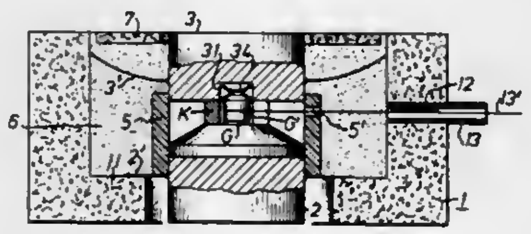
c. a bracket positionable on top of the frame and a integrated circuit package which may be placed in the center opening, said bracket and frame having aligned means thereon to fasten the bracket to the frame thereby securing the integrated circuit package to the frame.





3,940,787
MOUNTING FOR LOCKING DISC SHAPED SEMICONDUCTOR ELEMENT IN A HOUSING

Heinz Juchmann, Belecke, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany
Filed June 19, 1974, Ser. No. 480,847
Claims priority, application Germany, June 28, 1973, 2332896
Int. Cl.² H01L *23/16*
U.S. Cl. 357—75 **5 Claims**



1. In a disc-shaped semiconductor arrangement including: an annular ceramic housing having a hollow cylindrical interior and having an internal flange adjacent one end face thereof; first and second contacting discs having identical diqmeters; a semiconductor element interposed between said contacting discs and including a support disc disposed in the housing to be in contact with said first contacting disc, and having a diameter equal to that of said contacting discs, and a disc-shaped semiconductor body fastened via one of its end surfaces to the support disc and having at least one contact electrode fastened to the other of its end surfaces to be in contact with said second contacting disc; and an electrically insulating centering ring having an inner diameter matching

the diameter of said support disc and said contacting discs and provided with a passage for a connecting lead, said centering ring being disposed to center the contacting discs and the semiconductor element in the housing, the improvement wherein said arrangement further comprises:

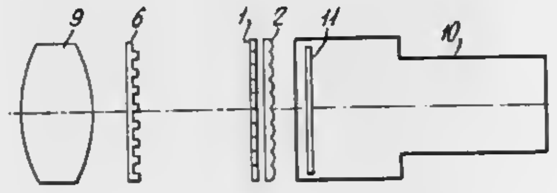
a first sheet metal supporting ring having its inner edge soldered to the perimeter of said first contacting disc and bearing against said internal flange of said housing, said first ring thereby supporting the unit formed by said contacting discs and said semiconductor element and one end of said centering ring resting on said first ring;

a second sheet metal supporting ring having its inner edge soldered to the perimeter of said second contacting disc and having a tooth-shaped outer edge, the outer diameter of said second ring being greater than the interior diameter of said housing and said second ring being press-fitted into said housing in a manner to cause said second contacting disc to be pressed against said semiconductor body and to be supported by the interior wall surface of said housing; and

a mass of elastic cast material filling said housing interior for connecting the unit formed by said contacting discs and said semiconductor element to said housing.

3,940,788
COLOR TELEVISION CAMERA OPTICAL SYSTEM

Haruo Abe; Masaichiro Konishi, and Teruo Hosokawa, all of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Dec. 6, 1973, Ser. No. 422,237
Claims priority, application Japan, Jan. 16, 1973, 48-6588
Int. Cl.² H04N *9/07*
U.S. Cl. 358—43 **2 Claims**



1. In a color television camera system including a photoelectric converting face, an optical system for forming a color modulated image on said photoelectric converting face comprising:

an objective lens disposed in front of said photoelectric converting face so as to focus an image of an object thereon;

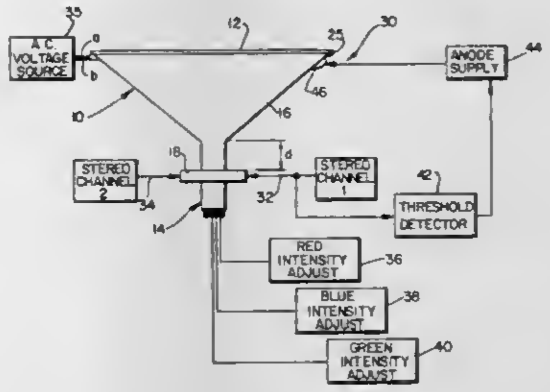
a color encoding filter disposed between said objective lens and said photoelectric converting face, said color encoding filter having a plurality of parallel color stripes;

a lenticular lens member disposed between said color encoding filter and said photoelectric converting face, said lenticular lens member having a plurality of side by side longitudinally extending cylindrical lenses parallel with said color stripes and being so located that an image of each color stripe is individually focussed on said photoelectric converting face by a corresponding one of said cylindrical lenses, respectively; and

a phase grating disposed in front of said color encoding filter having a transparent substrate and transversely spaced phase retarding, lontigudinal, transparent stripes disposed on a face of said substrate, said transparent stripes being parallel with said color stripes.

3,940,789
MULTICOLOR DISPLAY FOR THE VISUAL-AESTHETIC PORTRAYAL OF ELECTRIC SIGNALS

John E. Kratz, and Bruce W. Williams, both of Richmond, Va., assignors to Kew, Incorporated, Richmond, Va.
Filed July 13, 1973, Ser. No. 378,964
Int. Cl.² H04N *9/02*
U.S. Cl. 358—82 **20 Claims**



1. An apparatus for displaying colored aesthetic patterns of the information in two random electrical signals comprising:

a. a source of said random signals;

b. a color cathode ray tube, having a neck, a screen and a transition between said neck and said screen, said tube having a high voltage electrode and containing three electron beam guns within said neck for producing three electron beams each associated with a different one of three primary colors within the screen is adapted to be struck by said three electron beams, said screen having a plurality of phosphor dots of each of the three primary colors; and

c. a deflection yoke coupled to said electrical signals for deflecting the electron beams of said guns in response to said two electrical signals, said deflection yoke having a normal position on the neck of said cathode ray tube for allowing each dot to be struck by the electron beam from the gun of its associated color, said deflection yoke being positioned in back of its normal position to such a degree that substantial regions of dots of all three primary colors may be struck by the electron beams from any of the three guns.

11. An apparatus for displaying colored aesthetic patterns of the information in two stereophonic electrical signals comprising:

a. a source of said signals;

b. a color cathode ray tube having a neck, a screen, an axis perpendicular to the screen, a transition between said neck and said screen, three electron guns within said neck for producing three electron beams each associated with a different one of three primary colors, wherein the screen has a plurality of phosphor dots of each of the three primary colors and wherein any particular dot is normally adapted to be struck by its color associated electron beam;

c. means connected to the source for deflecting the electron beam from any of the three guns in response to the electrical signals; and

d. means for producing an a.c. field within the tube of sufficient strength to bend the electron beams to such a degree that throughout the screen substantial regions of dots of all three primary colors may be struck by the electron beams from any of the three guns while the beam from any of the guns is being deflected in response to the electrical signals.

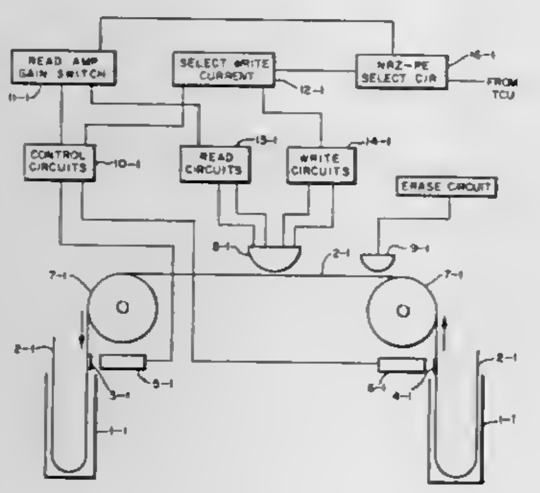
3,940,790
SYSTEM FOR CONTROL OF READ/WRITE ON MAGNETIC TAPE

Walter J. Conroy, Billerica; Robert S. Prescott, Lexington, and George G. Proulx, Bedford, all of Mass., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Continuation of Ser. No. 331,758, Feb. 13, 1973. This application July 17, 1974, Ser. No. 489,286

Int. Cl.² G11B *5/09*

U.S. Cl. 360—39 **7 Claims**



1. A control system for a computer tape transport system capable of utilizing various types of magnetic tapes and encoding techniques, and capable of operating in any single one of a plurality of modes, said control system optimally controlling read/write operations under various sets of conditions and comprising:

a. reflective patch means affixed to computer compatible magnetic tape mounted on said tape transport system, said patch means arranged in a preselected manner forming a code which identifies the type of tape that is mounted on the tape transport system;

b. electro-optical sensing means responsive to the coded arrangement of said reflective patch means for producing coded electric signals indicative of the type of tape mounted on said computer tape transport system;

c. a plurality of electrical control circuits coupled to said electro-optical sensing means responsive to selected ones of the coded electrical signals, said plurality of electrical circuits producing electrical control signals for optimally controlling said computer tape transport system in any one of the plurality of modes of operations, said plurality of control electrical circuits further comprising:

1. a plurality of inverting amplifying networks each having inverter input and output means for selectively introducing electrical signals to said plurality of inverting amplifying networks and selectively abstracting inverted amplified electric signals from said plurality of inverting amplifying networks; and,
2. a plurality of AND gate networks each having at least one AND gate input means and at least one AND gate output means, and wherein said inverter input means are coupled one each to an AND gate output means, and with said predetermined ones of said AND gate input means adapted for receiving a selected one of a plurality of electric signals, each selected signal representing a selected one of a predetermined number of functions indicative of the state of said tape drive, and wherein predetermined ones of said inverter output means are coupled to an AND gate input means of predetermined AND gates.

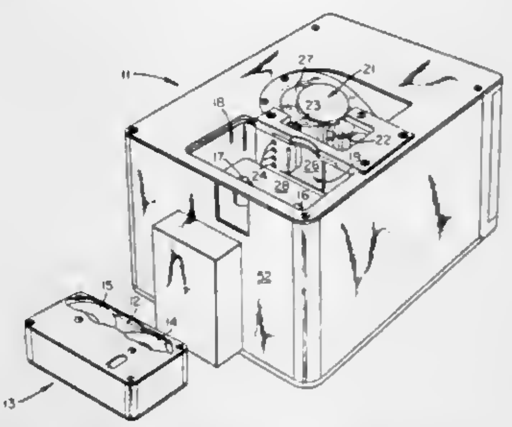
3,940,791
MAGNETIC TAPE TRANSPORT

Helmut L. Kayan, Redwood City, and Alfred F. Stahler, San Jose, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Aug. 19, 1974, Ser. No. 498,459

Int. Cl.² G11B *15/00, 23/04*

U.S. Cl. 360—95 **25 Claims**



1. In a rotary head type magnetic recording and/or reproducing apparatus having a cylindrical guide drum within which the rotary head is rotated, the combination comprising:

means for mounting a tape cassette in the apparatus;

a housing and differential air pressure means therefor for communicating with the mounted cassette and encompassing at least a portion of the guide drum to pull an elongated loop of tape from the cassette with a portion of the loop wrapped helically around the guide drum in the region of the rotary head; and

means operable at a predetermined length of the loop of tape to separate the opposite shanks of the loop.

3,940,792
TAPE RECORDER, PARTICULARLY CASSETTE RECORDER

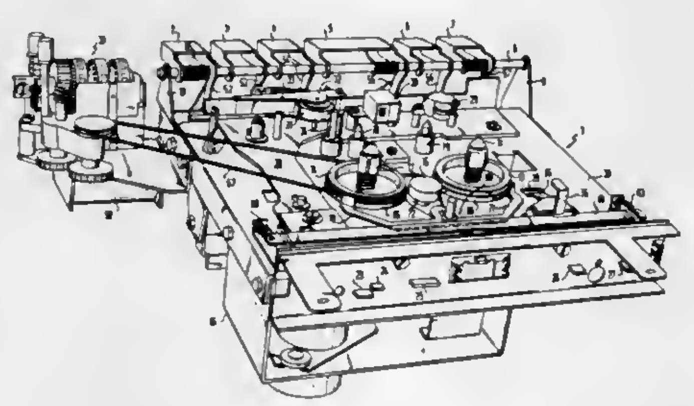
Karl Herleth, Munich, Germany, assignor to Uher Werke Munchen, Munich, Germany

Filed Feb. 27, 1974, Ser. No. 446,264

Claims priority, application Germany, Sept. 28, 1973, 2348941; Sept. 28, 1973, 2348940; Sept. 28, 1973, 2348938; Sept. 28, 1973, 2348939

Int. Cl.² G11B *15/00*

U.S. Cl. 360—96 **27 Claims**



1. A tape recorder, particulalry a cassette recorder, comprising a recorder housing, said recorder housing comprising therein tape reels for rewinding and unwinding a tape, sound recording and reproducing means, a driving system for moving the reels in two tape run directions, control buttons designed to set an appropriate function sequence [illegible] associated electric control system having contacts corresponding to said control buttons and which controls the given function sequence in accordance with the setting of said control buttons, the control buttons being arranged on one side of said recorder housing, slides positioned on said recorder housing and which extend thereacross, mechanically connecting said control buttons to said electric control system contacts transmitting the setting movements of said control buttons to the corresponding contacts of the electric control system, said slides having driving facilities and releasing facilities which move given mechanical recorder parts to the positions corresponding to the function sequences corresponding to the setting of said control buttons, a braking system for the reels including means for mounting said braking system on the recorder and means for connecting said braking system to the slides so that the braking system is actuated by selected settings of the slides.

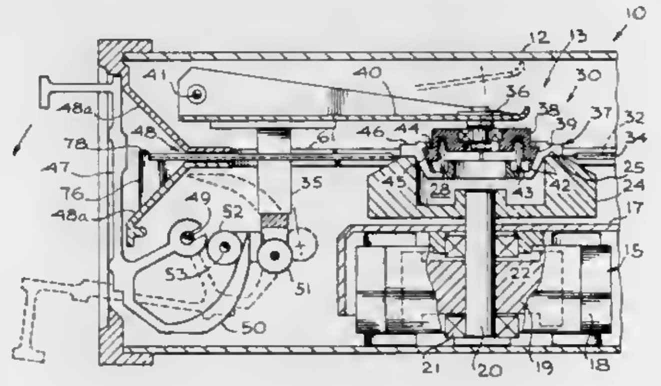
3,940,793
DISK POSITIONING MEANS FOR A FLEXIBLE MAGNETIC DISK DRIVE APPARATUS

Lewis W. Bleiman, Northridge, Calif., assignor to Pertec Corporation, Chatsworth, Calif.

Filed Dec. 18, 1974, Ser. No. 533,809

Int. Cl.² G11B *5/016, 25/04*

U.S. Cl. 360—99 **7 Claims**



1. An apparatus for rotating a flexible magnetic disk contained in a flat flexible cartridge, said apparatus comprising:

a housing;

disk clamp means mounted in said housing, said disk clamp means including a drive hub and a clamping member mounted for movement relative thereto between an open spaced apart position and a closed clamping position;

an entrance slot defined in said housing elongated in a first direction;

stationary guide means mounted in said housing for guiding a cartridge inserted through said entrance slot along a defined plane extending between said clamping member and drive hub when in said open position;

positioning means mounted adjacent to said entrance slot providing a fixed reference surface extending substantially transverse to and intersecting said defined plane; and

ejector means supported in said housing for resiliently bearing against the leading edge of said cartridge to urge the trailing edge of said cartridge against said fixed reference surface.

3,940,794
STACKED FLEXIBLE RECORD DISK STORAGE APPARATUS HAVING ENHANCED DISK SEPARATION

Donald E. Griffiths, Longmont, Colo.; Joseph H. Koestner, Hope Well Junction, N.Y., and David G. Norton, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 19, 1974, Ser. No. 480,990

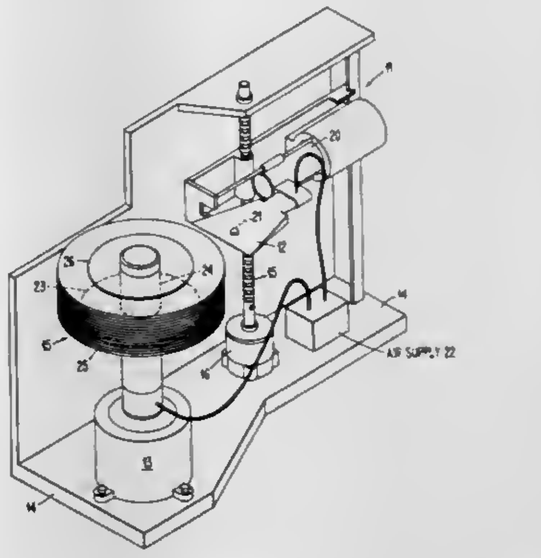
Int. Cl.² G11B *5/82, 25/04, 5/54*

U.S. Cl. 360—99 **135 Claims**

1. The method of operating signal storage apparatus having a stack of closely spaced-apart coaxial compliant circular record disks having a common axis for rotation at the center of all said circular record disks, the steps of:

rotating said stack of disks as a unit about said common axis;

applying first axial separating forces at a given radius to one of said disks to induce a primary bending mode in said stack;



applying additional axial separating forces in a predetermined radial juxtaposition to said first axial separating forces for axially moving a segment of said one disk by said separating forces to create a single harmonically shaped disk pack opening while maintaining said primary bending mode;

exchanging signals with a record disk abutting said opening; and

removing said axial separating forces from said one disk.

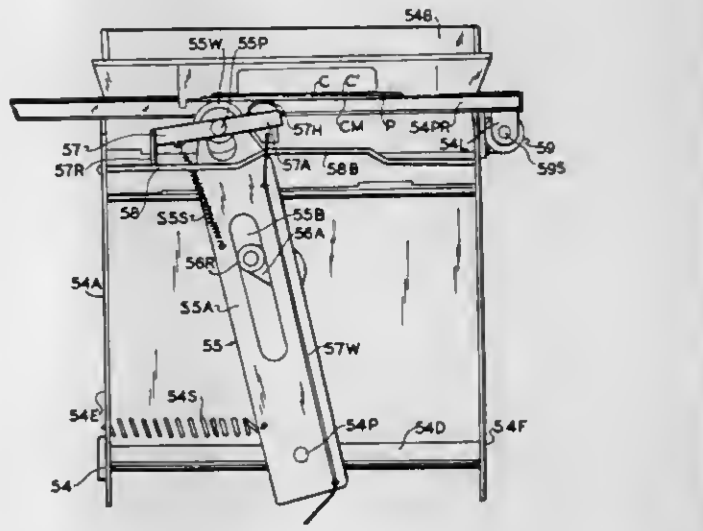
3,940,795
VERIFICATION APPARATUS USING A CARD SCANNING MEANS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 294,662, Oct. 13, 1972, Pat. No. 3,812,461, which is a continuation-in-part of Ser. No. 30,450, April 21, 1970, Pat. No. 3,696,335. This application May 20, 1974, Ser. No. 471,200

Int. Cl.² G11B *25/04, 21/02, 5/52, 5/80*

U.S. Cl. 360—101 **8 Claims**



1. A scanning reproduction apparatus for picking up signals recorded on record tracks of record members made of sheet material, such as cards or strips containing information recorded along selected portions thereof comprising:

a support,

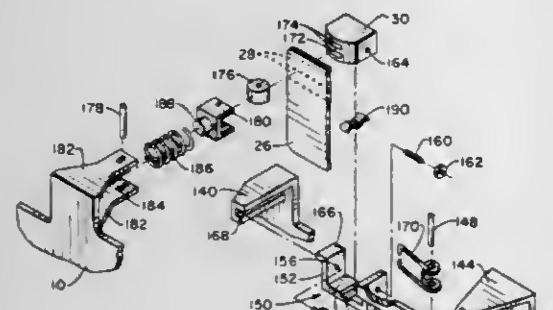
means for prepositioning a record sheet member on said support,

a scanning mechanism including an arm,

means for pivotally supporting said arm on said support adjacent to said sheet prepositioning means,
a scanning transducer supported by said arm and operable for generating output signals of information contained on a record sheet scanned thereby,
means for power driving said arm in pivotal movement on said support to cause said arm to carry said transducer across said prepositioned record sheet member to permit said transducer to scan information recorded on a selected portion of said sheet member,
means for controlling said means for power driving said arm to cause said arm to move in a first direction from a home location so as to carry said transducer in a given path across said sheet member while said transducer scans and transduces with respect to said selected portion of said sheet member and means for thereafter causing said arm to return to said home location.

3,940,796
CARD READOUT APPARATUS

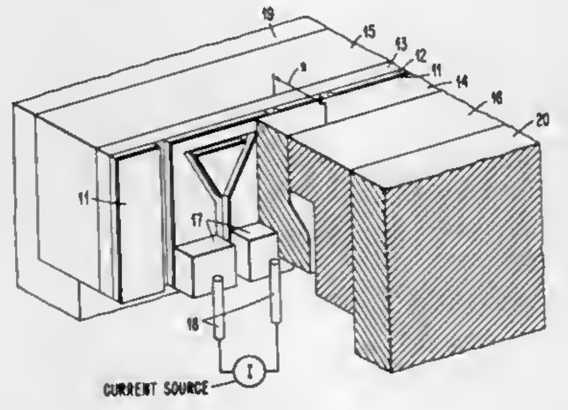
Marion W. Haun, Torrance; Robert J. Mos, Huntington Beach, and Arthur W. Riley, Sylmar, all of Calif., assignors to American Magnetics Corporation, Torrance, Calif.
Filed Apr. 5, 1974, Ser. No. 458,366
Int. Cl.² G11B *5/56, 21/24;* G06K *7/08*
U.S. Cl. 360—109 4 Claims



1. Signal head assembly comprising:
carrier means for carrying a thin flat record member adapted to have signal data recorded thereon;
means for mounting said carrier means for movement along a given path;
a signal head having a convex face and located adjacent said path with said face in position to bear against the record member;
a mounting arm positioned substantially parallel with said path and having a cradle formed therein;
means for mounting said arm for pivoting about an axis substantially parallel to said member and transverse to said path;
means for mounting said head in said cradle for pivoting about an axis substantially parallel to said path;
means for biasing said head against a record member held in said carrier;
abutment means opposite said head against which the member is pressed by said head.

3,940,797
SHIELDED MAGNETORESISTIVE MAGNETIC TRANSDUCER

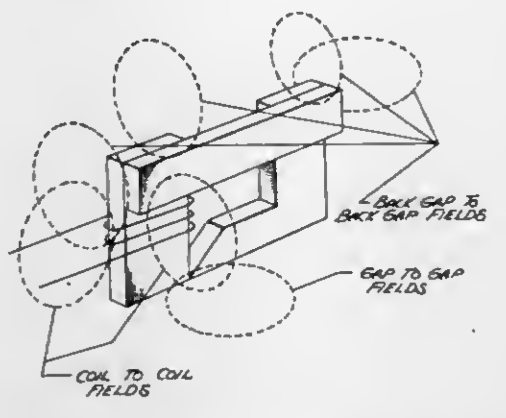
George W. Brock, Boulder; Frank B. Shelledy, Longmont; Sidney H. Smith, Broomfield, and Richard F. M. Thornley, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of Ser. No. 399,218, Sept. 20, 1973, Pat. No. 3,881,190. This application Feb. 10, 1975, Ser. No. 548,846
Int. Cl.² G11B *5/16, 5/22*
U.S. Cl. 360—113 15 Claims



1. A magnetic head for interacting with multiwavelength information recorded as magnetized areas spaced along a recording medium, including:
a pair of magnetically permeable members having opposing faces spaced apart a fixed distance, on the order of and less than the shortest wavelength of the recorded information, the edge of each of the two members closest to the medium lying in the same plane; and
a transducing element, including a single layer of material exhibiting the magnetoresistive effect disposed between the magnetically permeable members, closer to one of the members than the other, and having the edge closest to the medium lying in aforesaid plane.

3,940,798
CORE STRUCTURE WITH L-SHAPED BACK MEMBER AND MAGNETIC BONDING MATERIAL

Allen G. Rumpler, 5668 Encina Road, Goleta, Calif. 93017
Filed Sept. 30, 1974, Ser. No. 510,377
Int. Cl.² G11B *5/14, 5/115*
U.S. Cl. 360—127 9 Claims

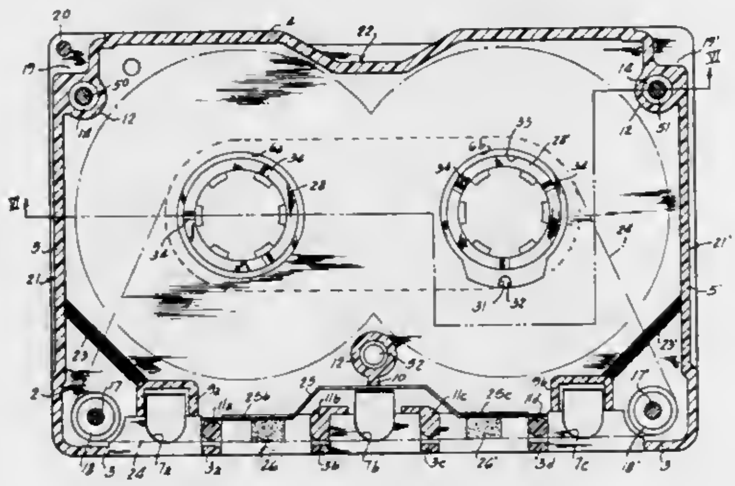


1. A magnetic head capable of converting electrical variations into magnetic variations, and magnetic variations into electrical variations to impinge a magnetic media, said magnetic head comprising:
a plurality of magnetic cores each comprising:
a U-type core having a non-magnetic gap adjacent said magnetic media;
a magnetic bar having a plurality of legs, forming the shape of a prism and having surfaces contiguous to said U-type core to provide a closed magnetic circuit;

a bonding means for bonding said magnetic bar to said U-type core and for magnetically coupling said magnetic bar with said U-type core, said bonding means containing a magnetic material; and a plurality of magnetic flux shields, one of said plurality disposed between each pair of magnetic cores of said plurality of magnetic cores.

3,940,799
TAPE CASSETTE WITH ERASURE PREVENTION RECESSES AT REAR CORNERS

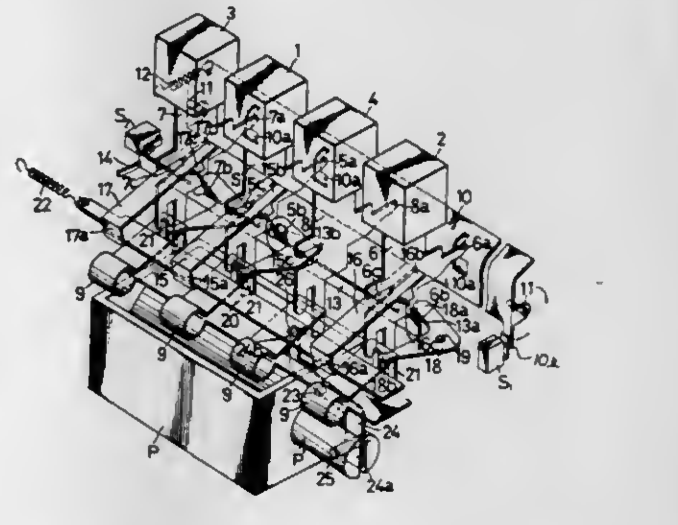
Isao Matsumoto, and Kenkichi Umeda, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 356,356, May 2, 1973, abandoned. This application Dec. 30, 1974, Ser. No. 537,575
Claims priority, application Japan, May 9, 1972, 47-53832[U]
Int. Cl.² G11B *23/04, 15/04*
U.S. Cl. 360—132 3 Claims



3. A tape cassette for use with a magnetic recording machine of the type having a transducer head, hub drive means, a machine mounted sensing means, an erasure protection means mounted on the machine and activated by said sensing means, and means to receive a cassette, comprising:
a cassette housing having top and bottom planar portions, a front wall, a back wall and a pair of sidewalls joining said top and bottom planar portions with the junction of said back and side walls defining rear corners,
a pair of hubs and means rotatably mounting said hubs in said housing;
a tape member wound on said hubs and movable therebetween in response to the rotation of said hubs;
recesses formed in said cassette housing at said rear corners and being open to said side and back walls over a ninety degree sector from either the side wall or back wall to receive and seat said machine sensing means whereby when said sensing means is seated in one of said recesses said erasure protection means is activated to prevent accidental erasure of said tape member; and
means on said cassette at the entrances to said recesses to block and prevent the seating of said sensing means in said recesses whereby erasure and recording of new material can occur.

3,940,800
MODE SELECTING DEVICE HAVING A TIME DELAY BETWEEN SELECTION AND ESTABLISHMENT OF AN OPERATING MODE FOR TAPE RECORDING AND/OR RECORDING APPARATUS

Hideo Tabuchi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed May 24, 1974, Ser. No. 473,188
Claims priority, application Japan, June 9, 1973, 48-68405[U]
Int. Cl.² G11B *15/02, 19/02, 15/04;* H01H *9/20*
U.S. Cl. 360—137 14 Claims



1. A mode selecting device for a tape recording and/or reproducing apparatus: comprising a plurality of push-button means, each selective actuation from a rest position to an active position for selecting corresponding operating modes of the apparatus; a plurality of movable transmission member means respectively corresponding to said push-button means each mounted for movement from a normal rest position to an operative position; electrically energized driving means for mechanically driving, when energized, the selected one of said transmission member means to cause the movement of said selected transmission member means to its operative position responsive to the selective actuation of the corresponding push-button means to its active position; electrically controllable first switch means having ON and OFF states and being connected with said driving means for energizing the latter when said first switch means is in said ON state; circuit means for controlling said first switch means including second switch means having a normal OFF state and being changed-over to, and retained in an ON state in response to actuation of any one of said push-button members, and delaying means having an initial condition for establishing said OFF state of said first switch means and being changed to an altered condition a predetermined time after said second switch means has been changed-over to said ON state of the latter for establishing said ON state of said first switch means; and third switch means having a normal OFF state and being temporarily changed-over to an ON state for restoring said delaying means to said initial condition in response to actuation of any one of said push-button members.

DESIGN PATENTS

GRANTED FEBRUARY 24, 1976

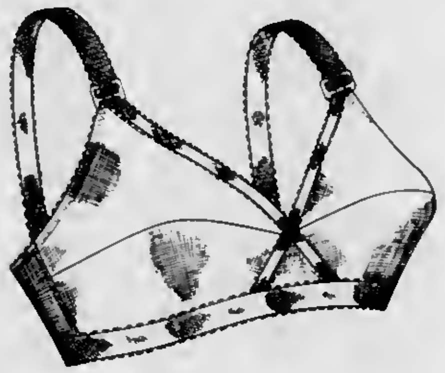
ERRATA

For CLASS	See PATENT NO.
006-131	238,950

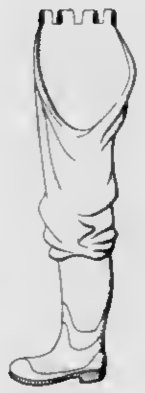
DESIGNS

FEBRUARY 24, 1976

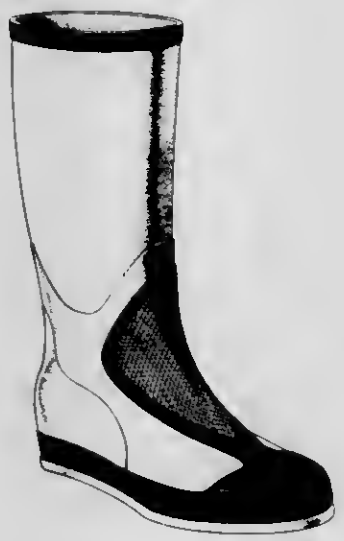
238,908
BRASSIERE
Sam Gnberman, Bayonne, N.J., assignor to Maidenform, Inc., New York, N.Y.
Filed Oct. 27, 1972, Ser. No. 301,501
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



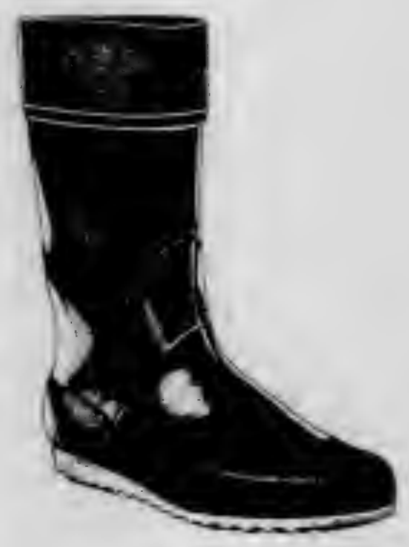
238,909
HIP BOOT
Paul Gustav Seved Johansson, Box 18, S–310, 38 Simlangsdalen, Sweden
Filed Nov. 29, 1974, Ser. No. 528,396
Claims priority, application Sweden Oct. 28, 1974
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—272



238,910
BOOT
Helge Persson, Viken, Sweden, and Paul Elvström, Horsholm, Denmark, assignors to Helsingborgs Gummifabriks Aktiebolag Tretorn, Helsingborg, Sweden
Filed June 13, 1974, Ser. No. 479,072
Claims priority, application Sweden Mar. 6, 1974
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—274

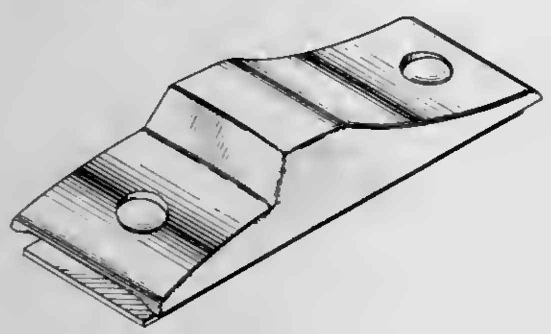


238,911
BOOT
Helge Persson, Viken, Sweden, assignor to Helsingborgs Gummifabriks Aktiebolag Tretorn, Helsingborg, Sweden
Filed July 24, 1974, Ser. No. 491,423
Claims priority, application Sweden Mar. 6, 1974
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—274



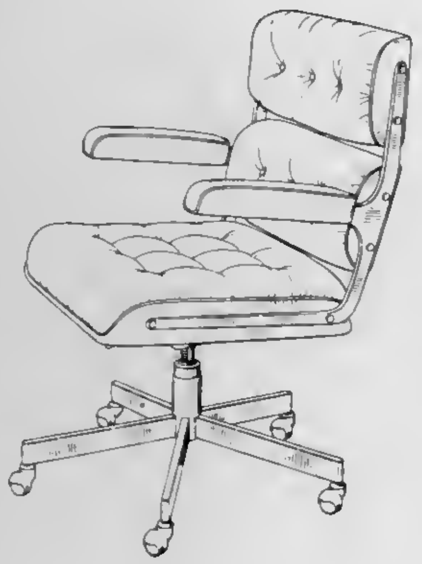
238,912
RIFLE SLING SHOULDER BRACKET

**Eugene W. Stephens, 1306 Mifflin St.,
Huntingdon, Pa. 16652
Filed Apr. 10, 1974, Ser. No. 459,691
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—400**



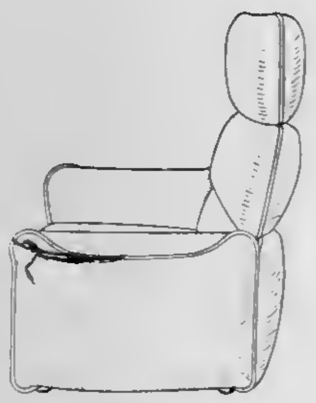
238,913
CHAIR

**Rudolf Rietz, Toronto, Ontario, Canada, assignor to
Chairtex Manufacturing Limited
Filed Aug. 12, 1974, Ser. No. 496,771
Claims priority, application Canada Feb. 14, 1974
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31**



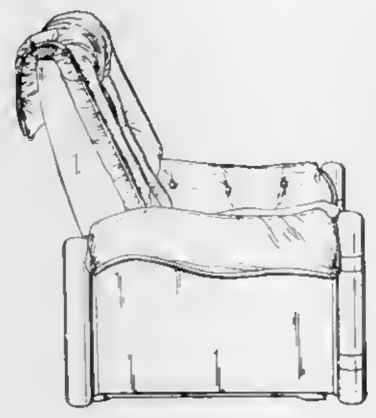
238,914
CHAIR

**Otto W. Zapf, Eschborn, West Germany, assignor to
Knoll International, Inc., New York, N.Y.
Filed June 17, 1974, Ser. No. 480,296
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71**



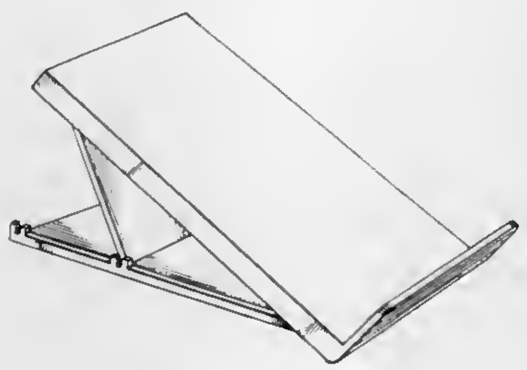
238,915
SEAT

**Stapleton Long, Morristown, Tenn., assignor to
The Berkline Corporation, Morristown, Tenn.
Filed Sept. 20, 1974, Ser. No. 507,671
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—71**



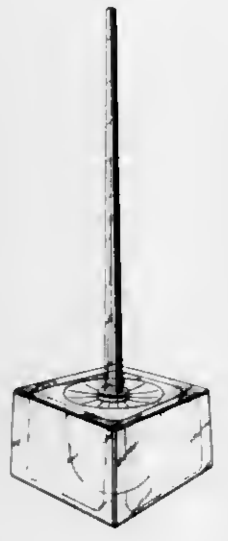
238,916
INSTRUMENT STAND

**Victor Cummins, 3630 Barham Blvd., Suite 201,
Los Angeles, Calif. 90068
Filed Nov. 4, 1974, Ser. No. 520,667
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—85**



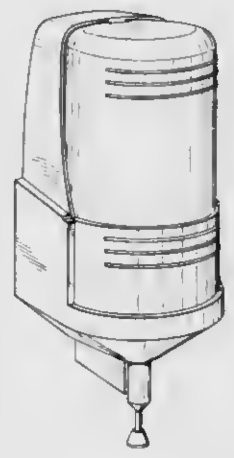
238,917
COMBINED BRUSH HOLDER AND BRUSH

**Guy Vrignaud, Grenoble, France, assignor to Allibert
Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,493
Claims priority, application France May 21, 1974
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D6—86**



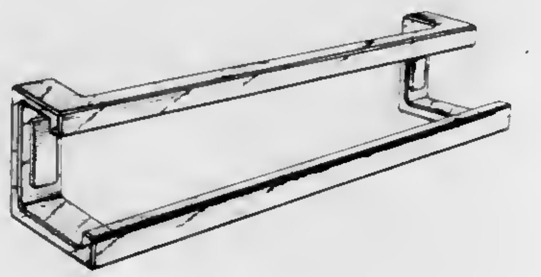
238,918
SOAP DISPENSER AND MOUNTING BRACKET THEREFOR

**William R. Breen, Toronto, Ontario, Canada, assignor to
W. R. Breen Limited, Rexdale, Ontario, Canada
Filed Jan. 7, 1975, Ser. No. 539,207
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—95**



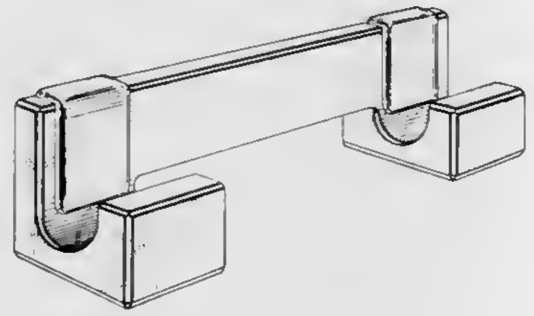
238,919
TOWEL RACK

**Guy Vrignaud, Grenoble, France, assignor to Allibert
Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,486
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—99**



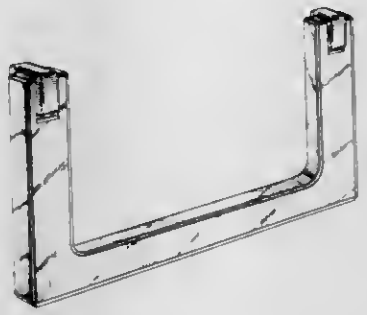
238,920
HOOK FOR TOWELS OR THE LIKE

**Guy Vrignaud, Grenoble, France, assignor to Allibert
Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,485
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—102**



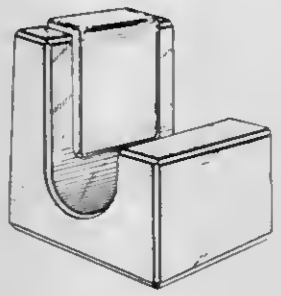
238,921
TOWEL RACK

**Guy Vrignaud, Grenoble, France, assignor to Allibert
Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,494
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—99**



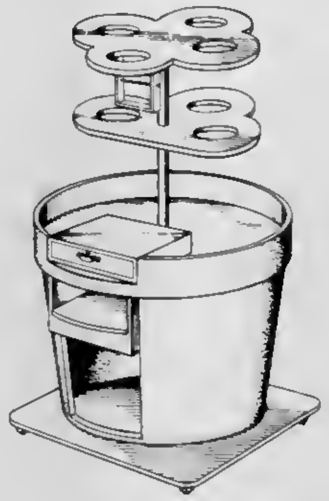
238,922
HOOK FOR TOWELS OR THE LIKE

**Guy Vrignaud, Grenoble, France, assignor to Allibert
Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,491
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—102**

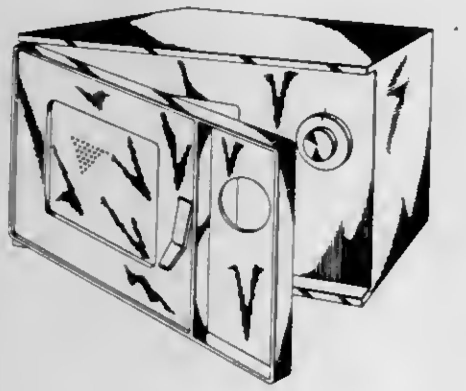


238,923
MERCHANDISING DISPLAY STAND

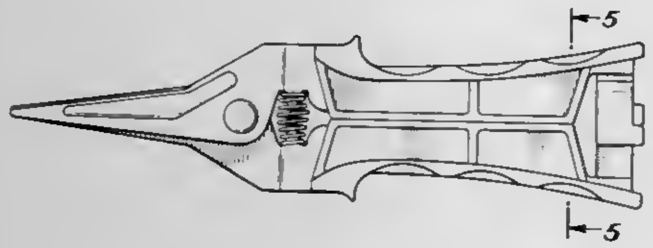
**Billie Swan Brown, 4339 Jett Road NW. 30327, and
Martha Lynn Bennett, 261 Colonial Homes Drive NW.
30309, both of Atlanta, Ga.
Filed June 26, 1974, Ser. No. 483,214
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—158**



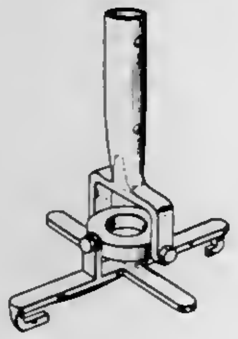
238,924
MICROWAVE OVEN
Arthur W. Vonderhaar, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio
Filed Feb. 24, 1975, Ser. No. 552,647
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



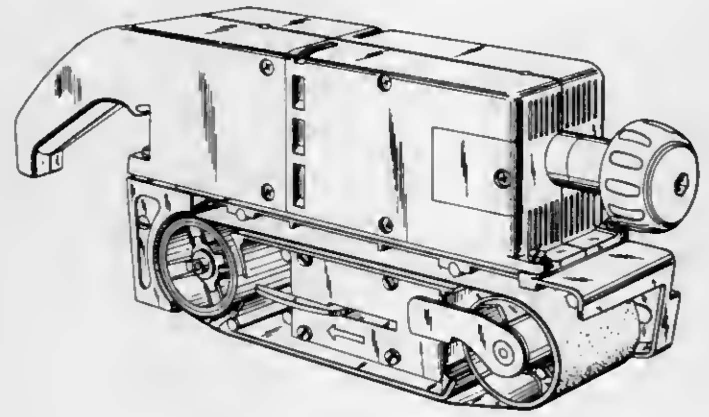
238,925
UTILITY SHEARS
Bernard R. Lavitch, 16253 Lovett Place, Encino, Calif. 91316, and Arthur Kelsen, 11701 Foster Road, Los Alamitos, Calif. 90720
Filed Oct. 7, 1974, Ser. No. 512,500
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—5



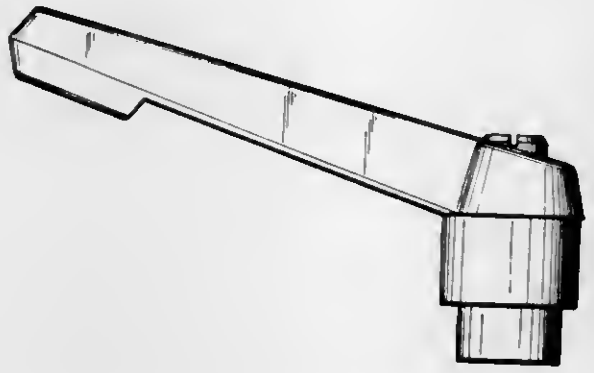
238,926
SPANNER WRENCH
Azel Thad Wall, Rte. 3, Box 37, Greensboro, N.C. 28310
Filed Jan. 21, 1975, Ser. No. 542,706
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—27



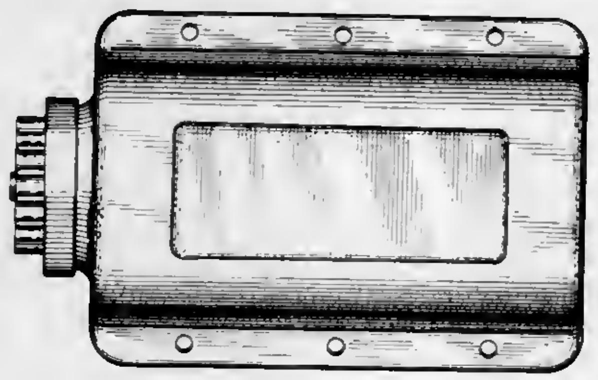
238,927
SURFACE BELT SANDER
Herbert Andre, Nuertingen-Raidwangen, and Ralph Muller, Frickenhausen, Germany, assignors to Karl M. Reich Machinenfabrik G.m.b.H., Nuertingen, Germany
Filed June 11, 1974, Ser. No. 478,285
Claims priority, application Germany Feb. 13, 1974
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—62



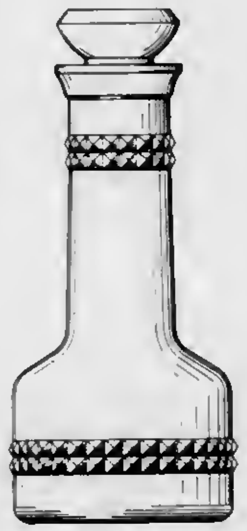
238,928
HANDLE
Heinrich Kipp, 7247 Sulz, Germany
Filed Jan. 17, 1975, Ser. No. 541,954
Term of patent 14 years
Int. Cl. D8—*05*; D15—*99*
U.S. Cl. D8—107



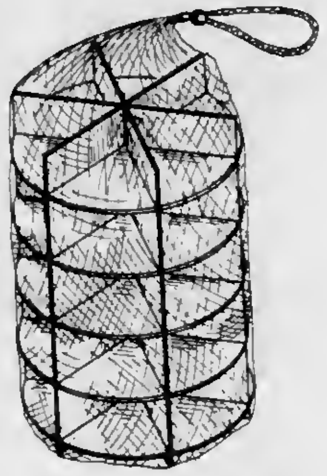
238,929
COMBINED SAFETY EQUIPMENT CONTAINER AND CLOSURE THEREFOR
Charles D. Piefer, 213 S. Washington St., Shelbyville, Ill. 62565
Filed Dec. 8, 1972, Ser. No. 313,447
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—59



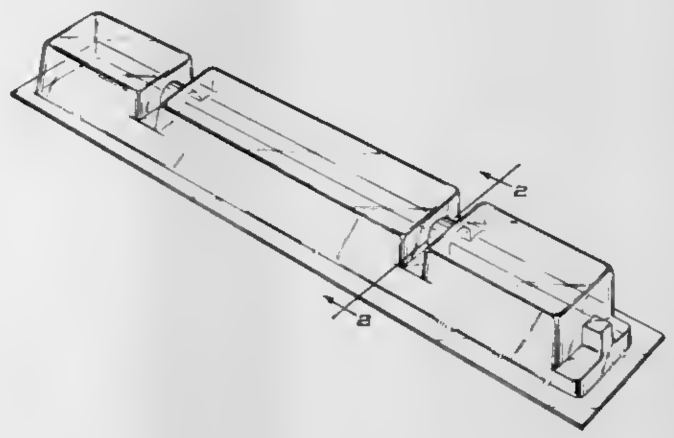
238,930
BOTTLE
Royal F. Dadmun, Jr., Baltimore, Md., and James B. Earle, Richardson, and Henry B. Jameson, Jr., Richard V. Kuska, and Daniel A. Leo, Dallas, Tex., assignors to Anderson, Clayton & Co., Houston, Tex.
Filed Oct. 10, 1974, Ser. No. 513,592
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—160



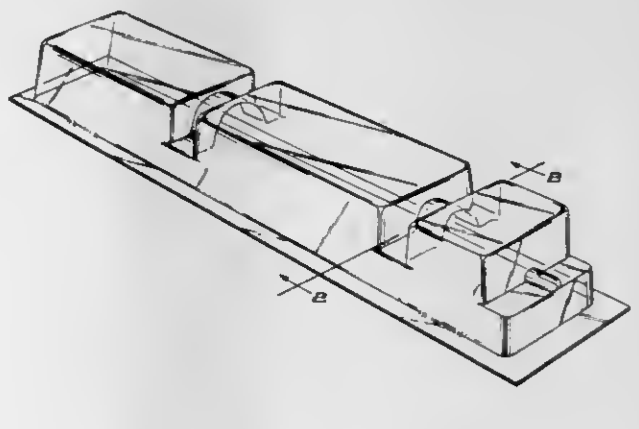
238,931
HAND CARRIED DISPLAY PACKAGE
Henry J. Du Molin, Rte. 1, Highway 23, Port Sulphur, La. 70083
Continuation-in-part of design application Ser. No. 247,907, Apr. 26, 1972. This application Sept. 13, 1973, Ser. No. 396,910
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—184



238,932
COVER FOR A HYPODERMIC SYRINGE PACKAGE
John E. Thomas, Matteson, Ill., assignor to Armour Pharmaceutical Company, Phoenix, Ariz.
Filed Jan. 21, 1974, Ser. No. 435,068
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—192



238,933
COVER FOR A HYPODERMIC SYRINGE PACKAGE
John E. Thomas, Matteson, Ill., assignor to Armour Pharmaceutical Company, Phoenix, Ariz.
Filed Jan. 21, 1974, Ser. No. 435,069
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—192

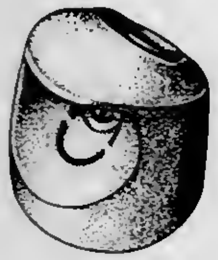


238,934

COMBINED OVERCAP AND ACTUATOR FOR A PRESSURIZED CONTAINER

Robert E. Corba, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed May 20, 1974, Ser. No. 471,425
Term of patent 14 years
Int. Cl. D9—*07*

U.S. Cl. D9—258

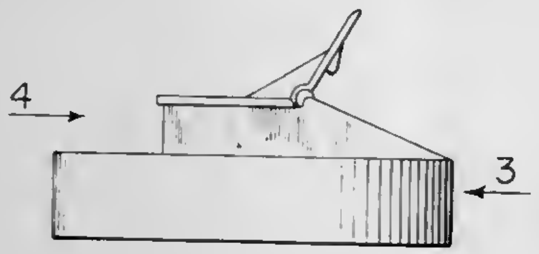


238,935

COMBINED MEASURING AND DISPENSING CAP

Siegfried H. Fahnrich, 232 Chestnut St., and Edmund Peter Hildebrandt, 6 Cedar St., both of Clinton, Mass. 01510
Filed Oct. 2, 1974, Ser. No. 511,300
Term of patent 14 years
Int. Cl. D9—*07*

U.S. Cl. D9—275

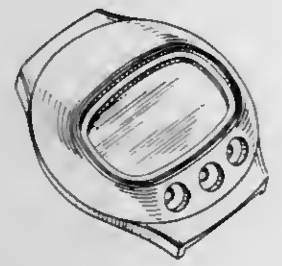


238,936

WATCH CASE

Midori Miyata, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha
Filed Apr. 1, 1974, Ser. No. 456,890
Claims priority, application Japan Oct. 30, 1973
Term of patent 14 years
Int. Cl. D10—*02*

U.S. Cl. D10—30

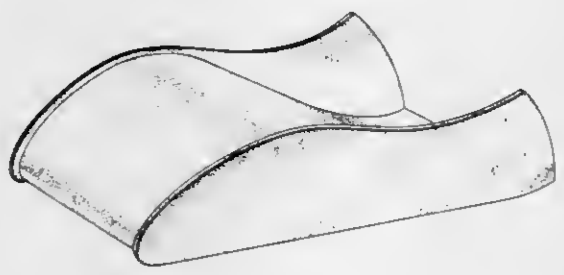


238,937

LIFTING BODY GLIDER OR THE LIKE

Joseph J. Szakacs, 1714 Washington Place, San Diego, Calif. 92103
Filed Mar. 21, 1975, Ser. No. 560,613
Term of patent 14 years
Int. Cl. D12—*07*

U.S. Cl. D12—72

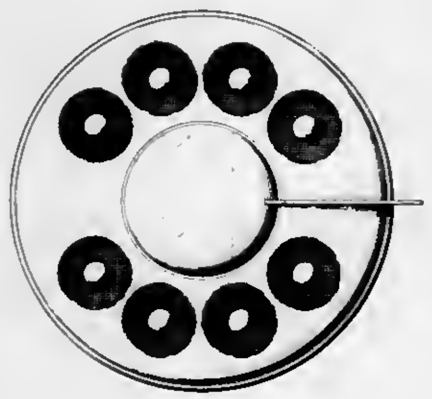


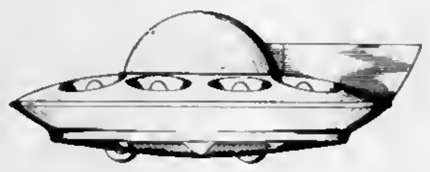
238,938

AIRCRAFT

Paul S. Moller, Dixon, Calif., assignor to Discojet Corporation, Davis, Calif.
Filed Mar. 24, 1975, Ser. No. 561,234
Term of patent 14 years
Int. Cl. D12—*07*

U.S. Cl. D12—79



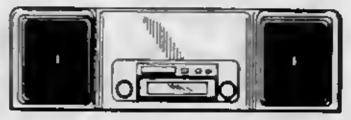


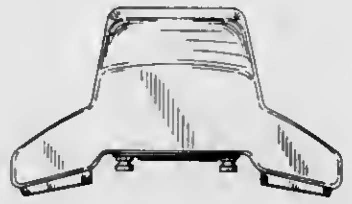
238,939

DASHBOARD HOUSING FOR A MOTORCYCLE OR THE LIKE

Joseph C. Weber, 1100 NE. 58th, Oklahoma City, Okla. 73111
Filed Dec. 5, 1974, Ser. No. 529,685
Term of patent 14 years
Int. Cl. D12—*11*

U.S. Cl. D12—114



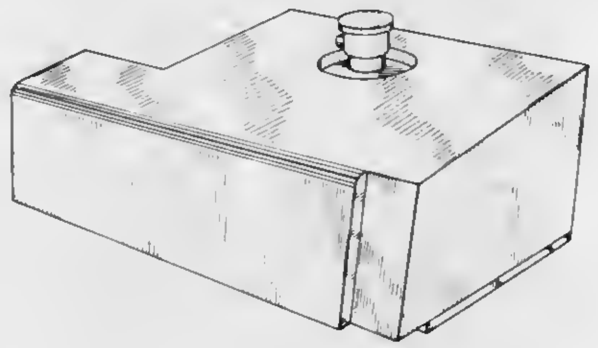


238,940

VEHICLE FUEL TANK

Michael R. Graeper, 2 Britten Court, Lake Oswego, Oreg. 97034
Filed June 27, 1974, Ser. No. 483,796
Term of patent 14 years
Int. Cl. D12—*16;* D23—*01*

U.S. Cl. D12—155

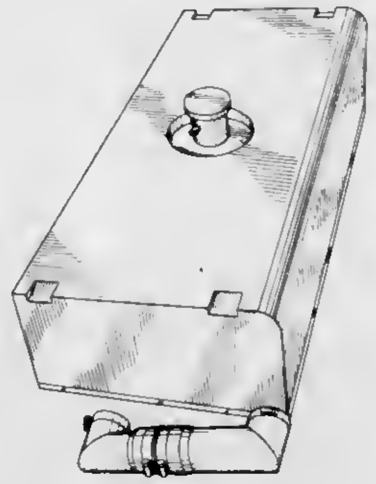


238,941

VEHICLE FUEL TANK

Michael R. Graeper, 2 Britten Court, Lake Oswego, Oreg. 97034
Filed June 27, 1974, Ser. No. 483,797
Term of patent 14 years
Int. Cl. D12—*16;* D23—*01*

U.S. Cl. D12—155

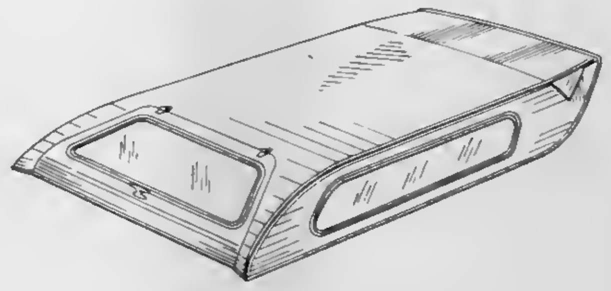


238,942

VEHICLE BODY COVER

Herbert O. Dixon, Jr., 802 N. 8th St., Clear Lake, Iowa 50428
Filed Aug. 29, 1973, Ser. No. 392,734
Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D12—156

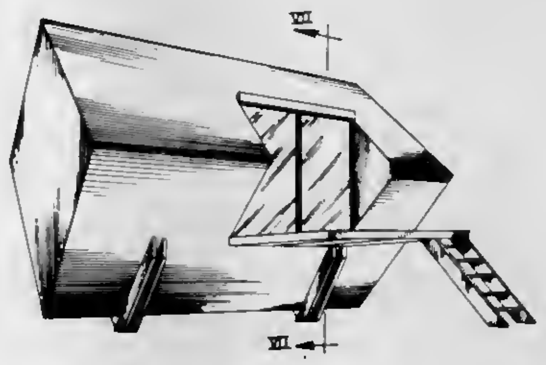


238,943

BUILDING STRUCTURE

William A. Curci, 4947 Fulton Drive NW., Canton, Ohio 44718
Filed Oct. 26, 1973, Ser. No. 410,196
Term of patent 14 years
Int. Cl. D25—*03*

U.S. Cl. D13—1 A

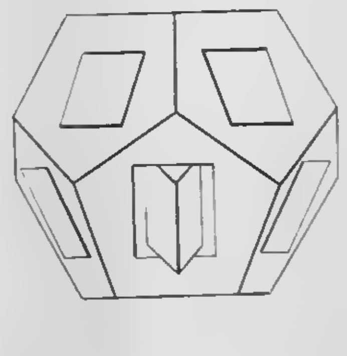


238,944

EDUCATIONAL DISPLAY AIDE

Vojko S. Milin, 375 E. Mosholu Parkway N., Bronx, N.Y. 10467
Filed Aug. 14, 1974, Ser. No. 497,548
Term of patent 14 years
Int. Cl. D19—*07*

U.S. Cl. D19—59

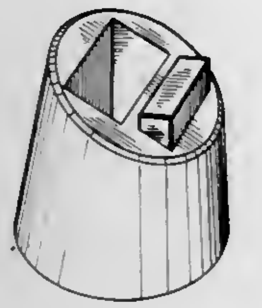


238,945

HOLDER FOR A STAPLE MACHINE AND STAPLES

William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed May 15, 1974, Ser. No. 470,137
Term of patent 14 years
Int. Cl. D19—*02*

U.S. Cl. D19—75

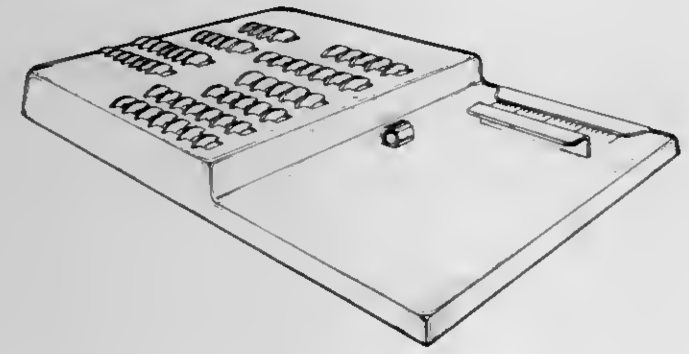


238,946

COMBINED INFORMATION RECORDER AND MEMO PAD HOLDER

Ronald Brunner, Salt Lake City, Utah, assignor to Carl Curtis, Springville, Utah
Filed Dec. 19, 1973, Ser. No. 426,128
Term of patent 7 years
Int. Cl. D19—*02*

U.S. Cl. D19—78

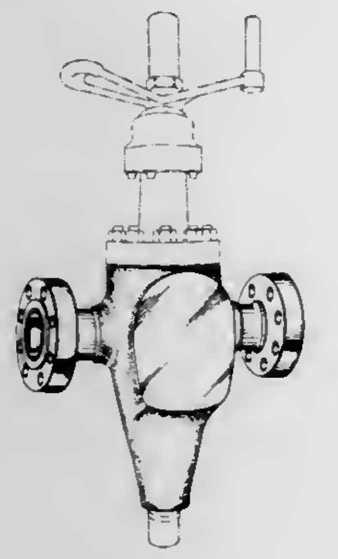


238,947

GATE VALVE BODY

Daniel R. Chilek, Rosenberg, and Floyd W. Lukens, Alvin, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed Apr. 16, 1974, Ser. No. 461,476
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—19

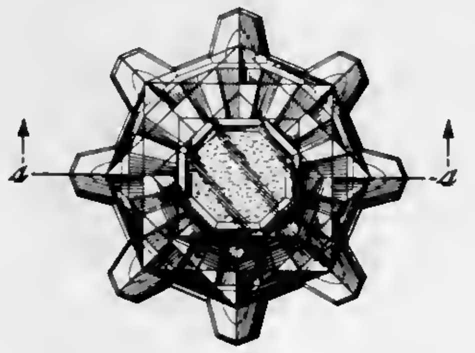


238,948

FAUCET HANDLE INSERT

Harper Landell, Fort Washington, Pa., assignor to Speakman Company
Continuation-in-part of abandoned design application Ser. No. 259,358, June 2, 1972. This application Feb. 14, 1973, Ser. No. 332,484
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—28

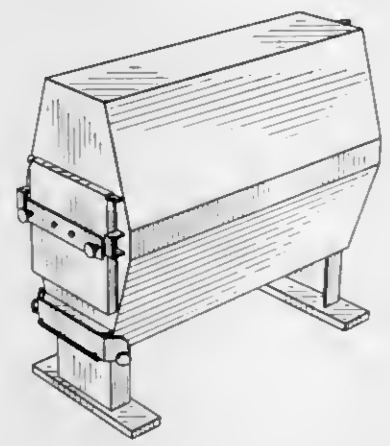


238,949

STOVE

Paul S. Giovagnoli, 4200 Birmingham Road, Kansas City, Mo. 64117
Filed Jan. 15, 1974, Ser. No. 433,547
Term of patent 14 years
Int. Cl. D23—*03, 05*

U.S. Cl. D23—97

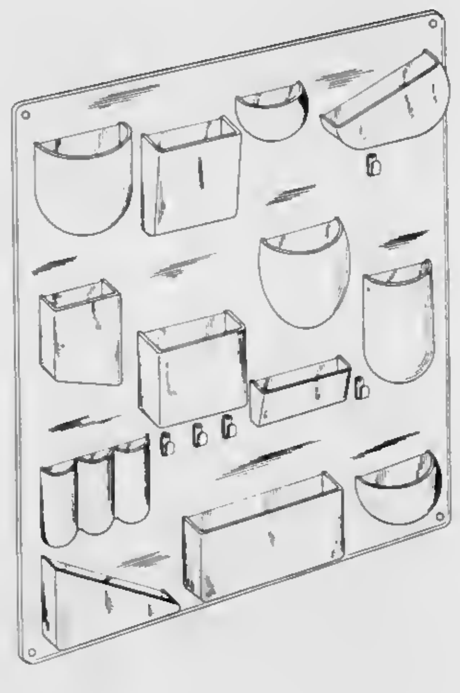


238,950

WALL RACK FOR HOLDING HOUSEHOLD ARTICLES

Dorothee Maurer-Becker, Habsburger Platz 2, Munich, Germany
Filed June 1, 1971, Ser. No. 149,123
Claims priority, application Germany Dec. 7, 1970
Term of patent 14 years
The term of this patent subsequent to Feb. 1, 1986, has been disclaimed
Int. Cl. D6—*04*

U.S. Cl. D6—131

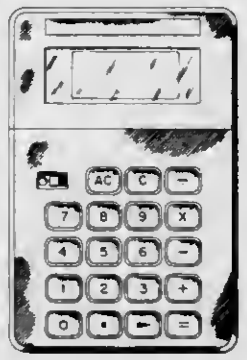


238,951

ELECTRONIC CALCULATOR

Lewis H. Herr, Lansdale, Paul W. Porter, Norristown, and John S. Kovacs, East Norristown, Pa., assignors to Sperry Univac Division, Sperry Rand Corporation, Blue Bell, Pa.
Filed Aug. 26, 1974, Ser. No. 500,546
Term of patent 3½ years
Int. Cl. D18—*01*

U.S. Cl. D26—5 C

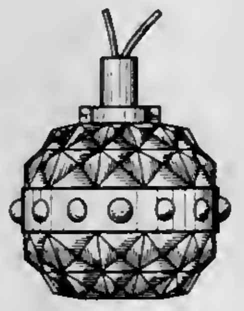


238,952

CHRISTMAS-TREE FESTOON

Malkarby Koichuevich Karkaev, ulitsa Gagarina 56b, kv. 57, and Viktor Tikhonovich Fedorov, ulitsa Kabardinskaya 178, kv. 3, both of Nalchik, U.S.S.R.
Filed Jan. 10, 1974, Ser. No. 432,328
Term of patent 14 years
Int. Cl. D11—*02*

U.S. Cl. D29—1 B

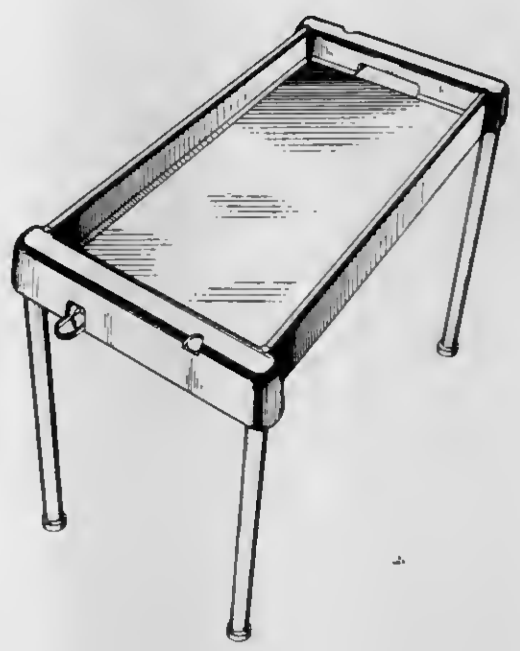


238,953

LEGGED GAME BOARD

Claudio Cecchetti, Milan, Italy, assignor to Arco Falc, Milan, Italy
Filed Apr. 30, 1973, Ser. No. 355,912
Term of patent 14 years
Int. Cl. D21—*02*

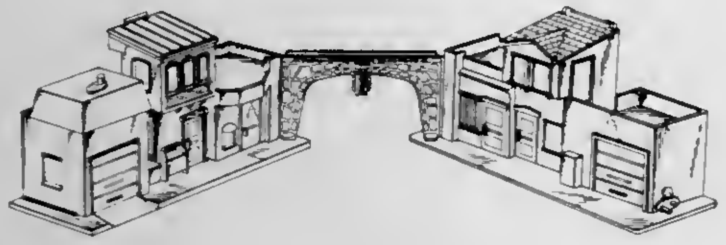
U.S. Cl. D34—5 SS



238,954

TOY VILLAGE

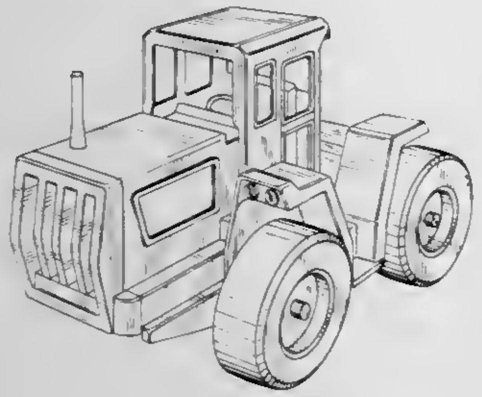
Ralph W. Crawford and Paul D. Snyder, East Aurora, N.Y., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 18, 1973, Ser. No. 425,706
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL



238,955

TOY TRACTOR

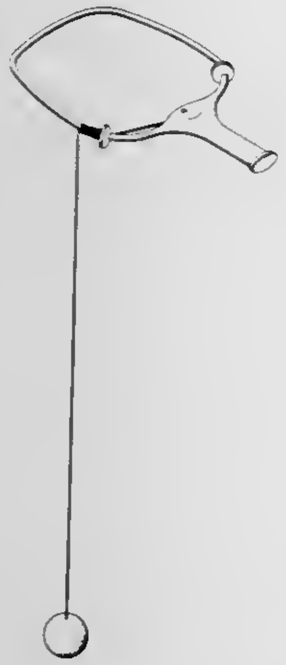
Vernon A. Peterson, Minneapolis, Minn., assignor to Tonka Corporation, Hopkins, Minn.
Filed Dec. 28, 1973, Ser. No. 429,355
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



238,956

TETHERED BALL TOY

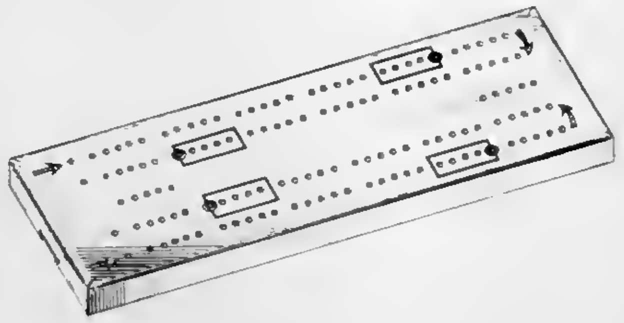
Floreen I. Evitt, 726 Molino, Long Beach, Calif. 90804
Filed Sept. 9, 1974, Ser. No. 504,339
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 P



238,957

CRIBBAGE BOARD

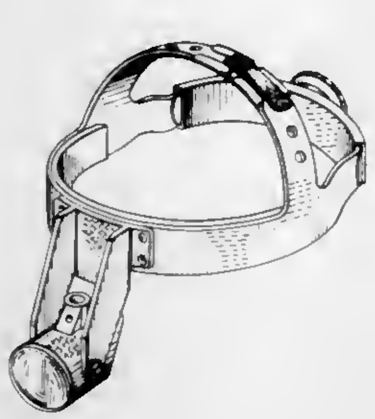
Chester H. Johnson, Maple Lake, Minn., assignor of a fractional part interest to Merchant, Gould, Smith & Edell, Professional Association, Minneapolis, Minn.
Filed Sept. 24, 1974, Ser. No. 508,737
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 TT



238,958

SURGICAL HEADLIGHT

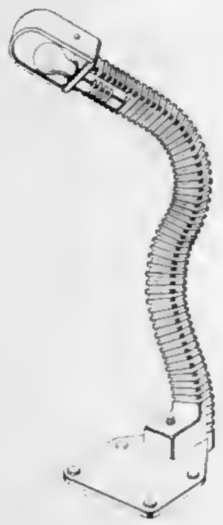
Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., New York, N.Y.
Filed Jan. 15, 1973, Ser. No. 323,704
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D48—20 H



238,959

LAMP

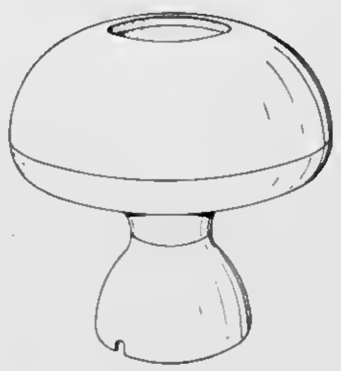
Masayuki Kurokawa, Tokyo, Japan, assignor to Yamagiwa Electric Co., Ltd., Tokyo, Japan
Filed June 6, 1974, Ser. No. 476,965
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 F



238,960

TABLE LAMP

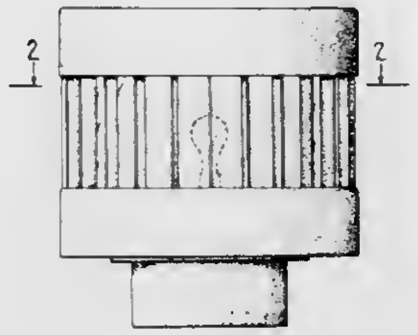
Jhi Hung Leung, Kowloon, Hong Kong, assignor to Star Industrial Company Limited, San Po Kong, Kowloon, Hong Kong
Filed July 31, 1974, Ser. No. 493,624
Claims priority, application Great Britain Apr. 11, 1974
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 R



238,961

BOLLARD LIGHT FIXTURE

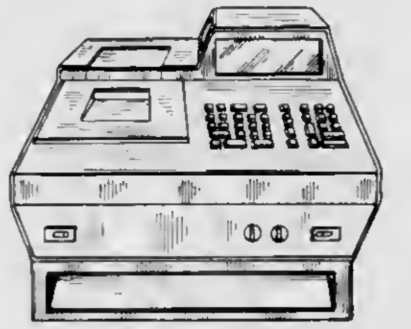
Marvin Paul Frieberg, New York, N.Y., assignor to Exterior Systems, Inc., Fairfield, N.J.
Filed June 19, 1974, Ser. No. 480,692
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



238,962

ELECTRONIC CASH REGISTER OR SIMILAR ARTICLE

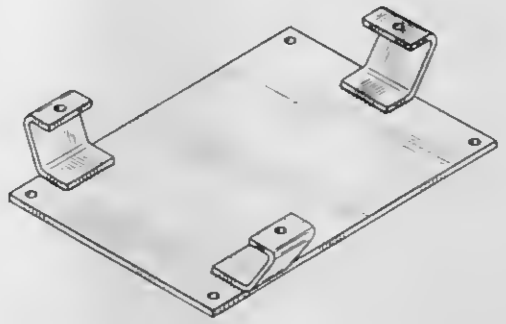
Freddie C. Webb, 7180 Edgebrook Lane, Hanover Park, Ill. 60103
Filed May 2, 1974, Ser. No. 466,450
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D52—4 A



238,963

COMPRESSOR MOUNT PLATE ASSEMBLY

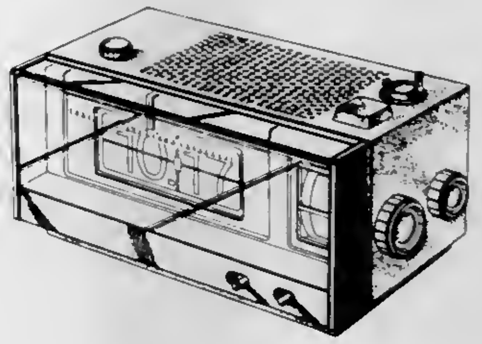
J. Fredrick Vinci, Forest City, Iowa, assignor to Winnebago Industries, Inc., Forest City, Iowa
Filed Feb. 24, 1975, Ser. No. 552,767
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D55—1 H



238,964

DIGITAL CLOCK RADIO

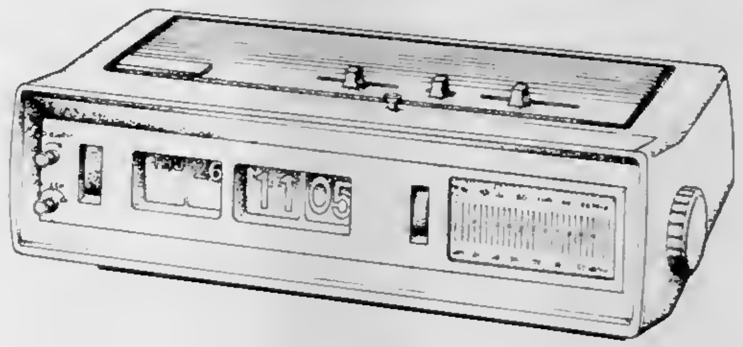
Benito Mishiro, Sakai-shi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Apr. 17, 1974, Ser. No. 461,767
Claims priority, application Japan Oct. 22, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



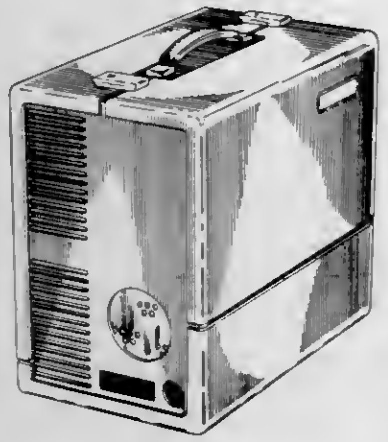
238,965

DIGITAL CLOCK RADIO

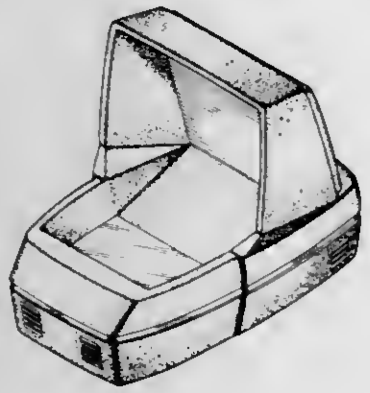
Robert F. Mansfield, Tokyo, Japan, assignor to Capehart Corporation, New York, N.Y.
Filed Sept. 18, 1974, Ser. No. 507,207
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



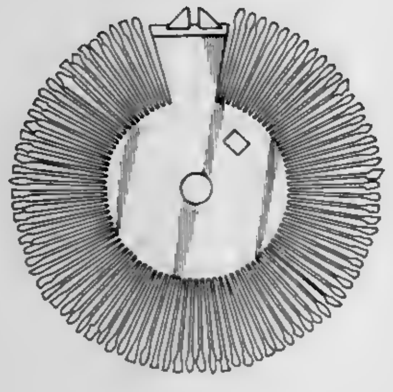
238,966
COPIER EVENT RECORDER
Claude H. Hutcheson, Jr., Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 19, 1973, Ser. No. 417,463
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 Q



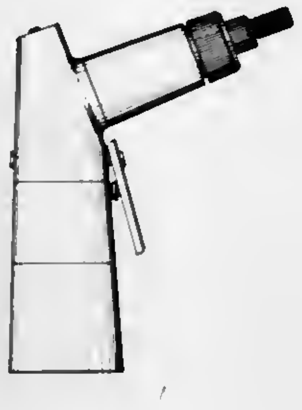
238,967
SOUND MOTION PICTURE PROJECTION AND VIEWING DEVICE
Bradley G. Scott, Los Angeles, Calif., assignor to United Visuals Incorporated, Los Angeles, Calif.
Filed May 10, 1974, Ser. No. 468,829
Term of patent 14 years
Int. Cl. D16—*03*
U.S. CL. 61—1 N



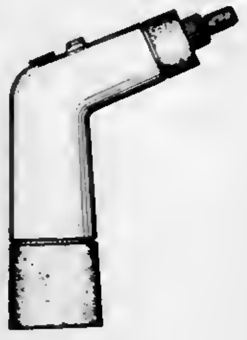
238,968
CHARACTER PRINT MEMBER
Roy J. Lahr, Sierra Madre, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 6, 1973, Ser. No. 422,391
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—11 R



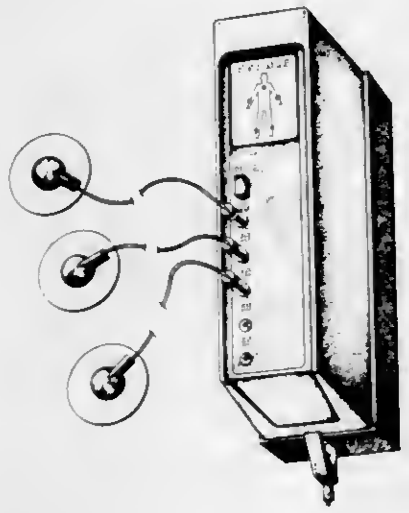
238,969
INJECTION DEVICE
Ronald Baum, Merion Station, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.
Filed May 9, 1974, Ser. No. 468,417
Term of patent 14 years
Int. Cl. D23—*01;* D24—*02*
U.S. Cl. D83—12 A



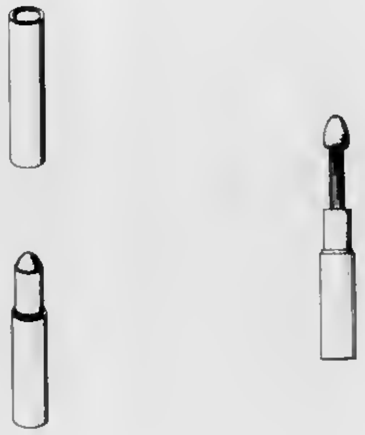
238,970
INJECTION DEVICE
Ronald Baum, Merion Station, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.
Filed May 9, 1974, Ser. No. 468,419
Term of patent 14 years
Int. Cl. D23—*01;* D24—*02*
U.S. Cl. D83—12 A



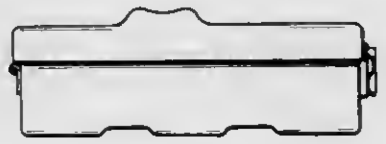
238,971
TRANSMITTER TO TRANSMIT ELECTROCARDIOGRAPHIC INFORMATION
Frank R. Nardi, Englewood, Colo., and Ralph E. Pasquarette, Jordan, Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 10, 1975, Ser. No. 548,285
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 F



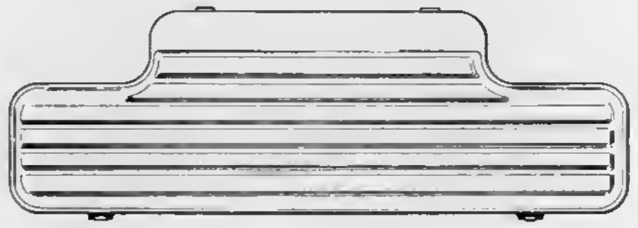
238,972
COSMETIC APPLICATOR
Jayne H. Greene, Germantown, and Ted I. Kingsford, Memphis, Tenn., assignors to Plough, Inc., Memphis, Tenn.
Filed Nov. 15, 1972, Ser. No. 304,437
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D86—10 G



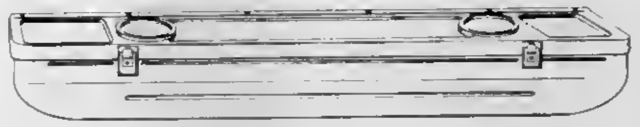
238,973
UTILITY BOX FOR VEHICLES
Arlyn E. Miller, 8 S. Beaver, Boise City, Okla. 73933
Filed Oct. 29, 1973, Ser. No. 410,705
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



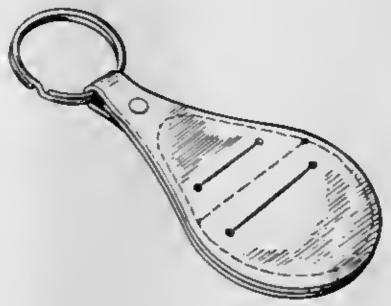
238,974
UTILITY BOX FOR VEHICLES
Arlyn E. Miller, 8 S. Beaver, Boise City, Okla. 73933
Filed Oct. 29, 1973, Ser. No. 410,706
Term of patent 14 years
Int. Cl. D03—*99*
U.S. Cl. D87—1 R



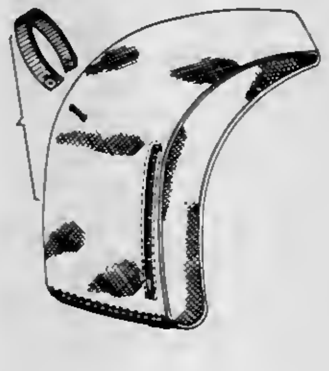
238,975
UTILITY BOX FOR VEHICLES
Arlyn E. Miller, 8 S. Beaver, Boise City, Okla. 73933
Filed Oct. 29, 1973, Ser. No. 410,707
Term of patent 14 years
Int. Cl. D03—*99*
U.S. Cl. D87—1 R



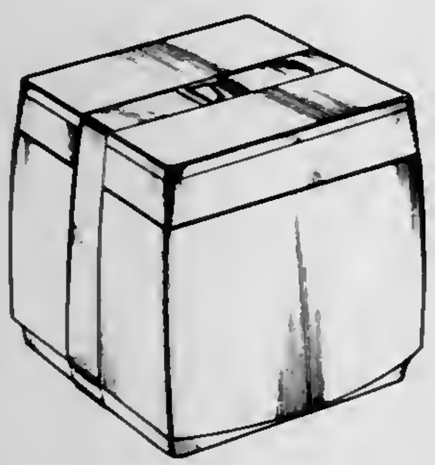
238,976
COMBINED KEY RING AND COIN HOLDER
Michael Dolas, 1164 Crestline Drive, Santa Barbara, Calif. 93105
Filed July 15, 1974, Ser. No. 488,452
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



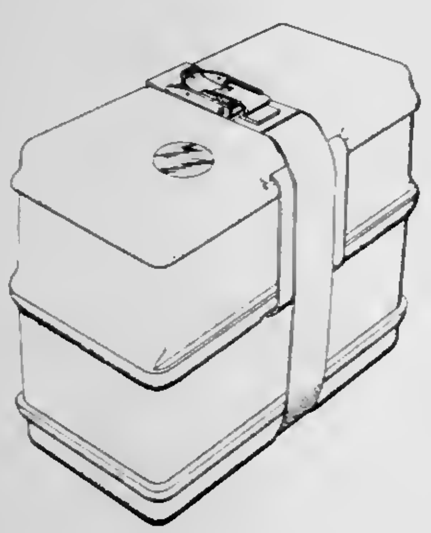
238,977
BANDOLIER WITH POCKET
Claudie C. Burthey, 1013 Elmira Ave., Durham, N.C. 27707
Filed July 19, 1974, Ser. No. 489,908
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



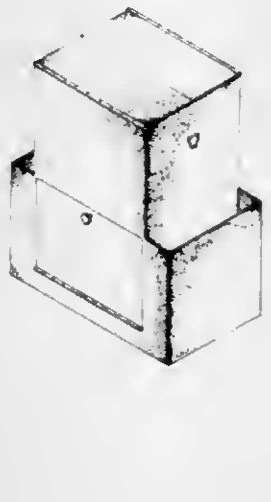
238,978
THERMODYNAMIC CONTAINER AND THE LIKE
Ira E. Getchell, Jr., 195 Evergreen Parkway, Oceanside, Calif. 92054, and Thomas D. Peat, 435 N. Myrtle Ave., Monrovia, Calif. 91016
Filed Aug. 12, 1974, Ser. No. 496,377
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



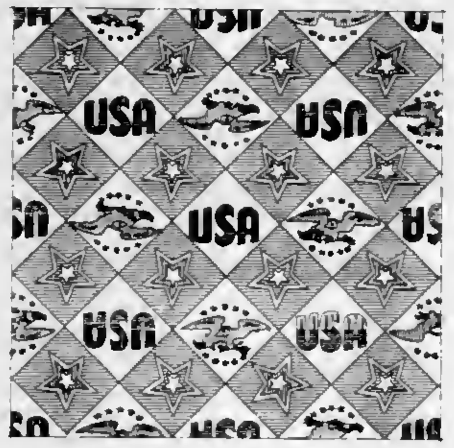
238,979
CONTAINER FOR PERSONAL BREATHING APPARATUS
Eugene N. Perry, Sunnyvale, and Orval D. Feldtman, Campbell, Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.
Filed Dec. 23, 1974, Ser. No. 535,516
Term of patent 14 years
Int. Cl. D3—*02;* D24—*02*
U.S. Cl. D87—1 R



238,980
PHOTO EQUIPMENT CARRYING CASE
Paul F. Bates, Sr., 139 Sackett Road, Westfield, Mass. 01085
Filed Oct. 9, 1974, Ser. No. 513,255
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—5 E



238,981
BATHING APPAREL FABRIC
Thomas M. Fry, Wyomissing, Charles A. Rist, Reading, and William F. Borda, Laureldale, Pa., assignors to Dolfin Corporation, Shillington, Pa.
Filed Nov. 8, 1974, Ser. No. 522,054
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 BB



INDEX OF APPLICANTS AND ASSIGNEES

OF

PATENT APPLICATIONS PUBLISHED ON THE 24TH DAY OF FEBRUARY, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Abbott Laboratories: *See—*
  - Tim-Wo Chu, Daniel; and Garmaise, David Lyon, B 554,848.
- Alferness, Clifton, to Medtronic, Inc. Demand cardiac pacemaker with input circuit portion of increased sensitivity. B 533,259, Cl. 128-419.0PG.
- Alps Motorola, Inc.: *See—*
  - Nishinakagawa, Motoshi, B 487,411.
- American Cyanamid Company: *See—*
  - Henderson, William Arthur, Jr.; and Ramirez, Fausto, B 455,481.
  - Pinto, Joseph Diago; and Kumar, Raj, B 544,476.
- Argoudelis, Alexander D.; Reusser, Fritz; and Whaley, Howard A., to Upjohn Company, The. Antibiotic U-47,929 and its preparation. B 542,226, Cl. 424-118.000.
- Asahi Glass Co., Ltd.: *See—*
  - Hayashi, Takao; and Matsuo, Masashi, B 351,455.
  - Kirimoto, Kazusuke; and Hayashi, Takao, B 470,576.
- Aurichio, Joseph A., to Stauffer Chemical Company. Process and polyvinyl chloride interpolymer composition for coating a material and the product therefrom. B 474,747, Cl. 428-515.000.
- Baker, Theodore H.; Ghafghaichi, Majid; Stevens, Richard C.; and Tuman, Daniel, to International Business Machines Corporation. Integrated circuit structure having a plurality of separable circuits. B 420,472, Cl. 317-101.00A.
- BASF Aktiengesellschaft: *See—*
  - Schefczik, Ernst; and Kast, Hellmut, B 492,039.
- Bayer Aktiengesellschaft: *See—*
  - Kabbe, Hans-Joachim; and Petersen, Uwe, B 442,810.
  - Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, B 503,345.
  - Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, B 515,642.
  - Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, B 545,299.
  - Schmidt, Gunter; and Metzger, Karl Georg, B 547,208.
  - Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, B 399,098.
  - Seng, Florin; and Ley, Kurt, B 513,781.
  - Waldmann, Helmut; Schwerdtel, Wulf; and Swodenk, Wolfgang, B 410,074.
- Bexten, Eugen J., to International Harvester Company. Adjustable fairlead roller system. B 489,685, Cl. 254-190.00R.
- Bhate, Suresh K.: *See—*
  - Heinrich, Theodore M.; and Bhate, Suresh K., B 526,289.
- Blumenfeld, Georg, to Dynamit Nobel Aktiengesellschaft. Method of preparing methylchloromethyltetrachlorobenzenes and di-(chloromethyl)-tetrachlorobenzenes. B 526,447, Cl. 204-163.00R.
- Booher, Claude R., Jr.; and Wiley, Elbert H., to Westinghouse Electric Corporation. Stator vane assembly for gas turbines. B 563,412, Cl. 415-136.000.
- Bossert, Friedrich: *See—*
  - Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, B 503,345.
  - Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, B 515,642.
  - Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, B 545,299.
- Bozzuto, Carl R.: *See—*
  - Klein, Herschel A.; and Bozzuto, Carl R., B 066,272.
- Brandhorst, Henry W., Jr., to United States of America, General Counsel-Code GP. Solar cell assembly. B 510,677, Cl. 136-89.000.
- Broman, Randolph: *See—*
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- Bruun, Lars Ojvind, to Bruun System AB. Tree felling apparatus. B 521,793, Cl. 144-34.00R.
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- Cameron Iron Works, Inc.: *See—*
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- Caterpillar Tractor Co.: *See—*
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- Cooke, George A.; and Houlihan, William J., to Sandoz, Inc. N-(3,4-methylenedioxy-phenyl)ureas. B 504,877, Cl. 260-340.500.
- Corning Glass Works: *See—*
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- Cort, Winifred, to Hoffmann-La Roche Inc. Synergistic antioxidant composition comprising ascorbic acid and 6-hydroxy-2,5,7,8-tetramethylchroman-2- carboxylic acid. B 569,125, Cl. 252-404.000.
- Denny, Dann W., to General Electric Company. Electrical switch. B 466,390, Cl. 200-339.000.
- Deschamps, Joseph P., to International Harvester Company. Single switch safety start system. B 490,647, Cl. 180-103.000.
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  - Wolcott, Dana Whitney, B 559,111.
- Eberle, Marcel K., to Sandoz, Inc. 1-Dioxolanylpropyl-3-indoleacrylic acid esters. B 547,547, Cl. 424-274.000.
- Farmer, William Robert. Colorcode speller. B 511,454, Cl. 35-36.000.
- Fay, Charles Robert, to Formica Corporation. Method and apparatus for controlling a material treater. B 520,075, Cl. 235-151.100.
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- Gardner, John Nicholson, to Hoffmann-La Roche Inc. Preparation and use of magnesium acetylene complex. B 460,846, Cl. 260-665.00R.
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- Geislinger, Leonhard. Elastic coupling. B 509,043, Cl. 64-27.00L.
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- Gumm, Peter; Krussig, Karl-Heinz; Lohmann, Jorg; and Zimmermann, Josef, to Hoechst Aktiengesellschaft. Apparatus for fastening a corrugated sheet to a flat sheet. B 411,765, Cl. 425-521.000.
- Habiger, Cyril W.; and Spivey, William J., to Caterpillar Tractor Co. Underspeed actuator with part throttle control. B 551,809, Cl. 60-431.000.
- Hajos, Zoltan George, to Hoffmann-La Roche Inc. Stereospecific total steroidal synthesis via substituted C/D-trans indanones. B 482,709, Cl. 260-240.00G.
- Hale, Richard A., to International Harvester Company. Hand and foot governor control system. B 525,809, Cl. 74-482.000.
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- Hardtmann, Goetz E., to Sandoz, Inc. 4-Phenyl-1-hydroxyalkylpyrazoles. B 535,437, Cl. 260-310.00R.
- Harshbarger, John H., to Visual Information Institute, Inc. Start-stop transistor colpitts oscillator circuit. B 571,219, Cl. 331-117.00R.
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- Hayashi, Takao; and Matsuo, Masashi, to Asahi Glass Co., Ltd. Method of preparing polyfluoroalkyl group containing compounds. B 351,455, Cl. 260-493.000.
- Hayashi, Takao: *See—*
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- Mango, Louis A., III, to General Electric Company. Flame resistant polystyrene. B 530,174, Cl. 260-93.50A.
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- McMichael, John D., to General Motors Corporation. Engine induction air flow control. B 502,652, Cl. 236-13.000.
- McNeel, William O., to GEO Space Corporation. Fluid-tight enclosure for geophone and cable. B 492,902, Cl. 174-52.00R.
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- Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. 2-Amino-1,4-dihydropyridine derivatives. B 515,642, Cl. 260-295.50A.
- Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. 3,6-Diamino-3,4-dihydro-2-pyridones. B 545,299, Cl. 260-295.50A.
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- Munk, Miner N., to Varian Associates. High pressure sample injector and injection method. B 490,547, Cl. 73-422.0GC.
- Nagasawa, Taro; Tomita, Mamoru; Tamura, Yoshitaka; and Mizota, Teruhiko, to Morinaga Milk Industry Co., Ltd. Tartar removed by electrodialysis and potassium level control in wine. B 572,726, Cl. 426-239.000.
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- Saucy, Gabriel; and Scott, John William, to Hoffman-La Roche Inc. Total steroid synthesis employing substituted isoxazole derivatives. B 476,372, Cl. 260-340.900.
- Schefczik, Ernst; and Kast, Hellmut, to BASF Aktiengesellschaft. Lactones of the benzazaxanthene series and dye-forming components for duplication processes. B 492,039, Cl. 260-287.00C.
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- Seng, Florin; and Ley, Kurt, to Bayer Aktiengesellschaft. Process for producing N-mono-substituted formamides. B 513,781, Cl. 260-561.00R.
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- Sims, Marion W., to General Electric Company. Wire stator core structure and method of making same. B 521,045, Cl. 310-254.000.
- Sims, Marion W., to General Electric Company. Segmented stator core structure and method for making same. B 521,046, Cl. 310-254.000.
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  - Howard, H. Keith, B 497,584.
- United States of America
  - General Counsel-Code GP: *See—*
    - Brandhorst, Henry W., Jr., B 510,677.
  - National Aeronautics and Space Administration: *See—*
    - McCandless, Lee C.; and Weber, Glenn E., B 462,424.
- U.S. Philips Corporation: *See—*
  - Magendans, Frederik; and te Raa, Gerhardus Albertus, B 504,056.
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  - Argoudelis, Alexander D.; Reusser, Fritz; and Whaley, Howard A., B 542,226.
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- Vater, Wulf: *See—*
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  - Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, B 515,642.
  - Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, B 545,299.
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  - Harshbarger, John H., B 571,219.

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  Frank, Burton E.; Legacy, Lloyd W.; and Walker, Dean S., B 576,859.

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  McCandless, Lee C.; and Weber, Glenn E., B 462,424.

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  Jaffe, Gerald Myer; and Weinert, Peter Hans, B 519,446.

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  Gary, Wardell; and Taylor, Glenn R., B 504,404.
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  Rice, Leslie R., B 481,930.
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Whaley, Howard A.: *See*—
  Argoudelis, Alexander D.; Reusser, Fritz; and Whaley, Howard A., B 542,226.

Wiley, Elbert H.: *See*—
  Booher, Claude R., Jr.; and Wiley, Elbert H., B 563,412.

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CLASSIFICATION OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM

DATE PUBLISHED FEBRUARY 24, 1976

NOTE.—First number, class; second number, subclass; third number, document number

			CAT.	PUB. DATE
	Class 8			
10.2		B 430,334	C	Jan. 27, 1976
14		B 460,388	C	Jan. 27, 1976
		B 497,473	C	Feb. 3, 1976
17		B 458,060	C	Jan. 13, 1976
62		B 507,476	C	Feb. 10, 1976
74		B 354,959	C	Feb. 17, 1976
84		B 495,903	C	Feb. 17, 1976
115.7		B 389,304	C	Jan. 27, 1976
142		B 423,867	C	Feb. 3, 1976
161		B 461,352	C	Jan. 13, 1976
174		B 344,967	C	Feb. 3, 1976
	Class 15			
147A		B 502,667	M	Feb. 24, 1976
229A		B 523,885	M	Feb. 17, 1976
256.53		B 579,116	M	Feb. 3, 1976
302		B 553,629	M	Feb. 24, 1976
	Class 17			
23		B 519,599	M	Feb. 17, 1976
2502		B 541,496	E	Jan. 27, 1976
	Class 21			
2.7R		B 527,999	C	Feb. 3, 1976
	Class 23			
230B		B 554,039	C	Feb. 24, 1976
273SP		B 431,785	C	Feb. 24, 1976
285F		B 565,180	C	Jan. 27, 1976
	Class 24			
75		B 532,476	M	Feb. 3, 1976
	Class 28			
1.6		B 497,292	M	Feb. 3, 1976
	Class 29			
96		B 546,911	M	Jan. 13, 1976
127		B 510,855	M	Jan. 27, 1976
237		B 503,436	M	Feb. 24, 1976
428		B 520,928	M	Jan. 13, 1976
578		B 561,732	M	Feb. 3, 1976
580		B 492,301	M	Jan. 13, 1976
	Class 32			
10A		B 491,501	M	Jan. 13, 1976
	Class 35			
36		B 511,454	M	Feb. 24, 1976
	Class 37			
8		B 558,819	M	Feb. 3, 1976
142A		B 511,099	M	Feb. 3, 1976
	Class 43			
129		B 442,866	M	Feb. 24, 1976
	Class 44			
2		B 496,792	C	Feb. 17, 1976
	Class 47			
57.6		B 548,028	M	Feb. 3, 1976
	Class 48			
73		B 541,376	C	Feb. 17, 1976
358		B 576,859	M	Feb. 24, 1976
	Class 51			
358		B 576,859	M	Feb. 24, 1976
	Class 52			
207		B 459,597	M	Feb. 17, 1976
484		B 522,354	M	Jan. 20, 1976
	Class 53			
77		B 508,878	M	Feb. 3, 1976
	Class 55			
105		B 490,806	C	Feb. 3, 1976
352		B 543,941	C	Jan. 13, 1976
	Class 56			
14.5		B 549,244	M	Jan. 27, 1976
15.9		B 558,973	M	Feb. 10, 1976
	Class 58			
21.13		B 516,825	M	Feb. 3, 1976
	Class 60			
226A		B 445,459	M	Feb. 3, 1976
304		B 502,540	M	Jan. 13, 1976
349		B 541,464	M	Feb. 17, 1976
422		B 526,445	M	Jan. 20, 1976
424		B 584,520	M	Jan. 27, 1976
425		B 535,386	M	Jan. 13, 1976
431		B 551,809	M	Feb. 24, 1976
445		B 400,871	M	Feb. 17, 1976
592		B 465,145	M	Jan. 27, 1976
645		B 538,472	M	Feb. 3, 1976
706		B 509,238	M	Feb. 24, 1976
	Class 61			
.5		B 554,283	M	Jan. 27, 1976
	Class 62			
306		B 522,009	M	Feb. 17, 1976
353		B 564,314	M	Jan. 20, 1976
	Class 64			
27L		B 509,043	M	Feb. 24, 1976
	Class 65			
3A		B 532,969	C	Jan. 13, 1976
49		B 517,858	C	Feb. 17, 1976
239		B 545,777	C	Jan. 27, 1976
	Class 66			
116		B 438,882	M	Feb. 24, 1976
	Class 71			
113		B 535,076	C	Jan. 20, 1976
	Class 72			
43		B 546,631	M	Feb. 3, 1976
56		B 489,290	M	Feb. 17, 1976
88		B 575,757	M	Jan. 27, 1976
391		B 516,537	M	Feb. 17, 1976
	Class 73			
24		B 506,744	M	Jan. 13, 1976
29		B 557,153	M	Feb. 3, 1976
37.7		B 532,319	M	Feb. 3, 1976
61.1R		B 511,909	M	Feb. 17, 1976
67.5H		B 522,309	M	Feb. 3, 1976
147		B 521,620	M	Jan. 27, 1976
190R		B 480,350	M	Feb. 10, 1976
302		B 464,290	M	Feb. 3, 1976
422GC		B 490,547	M	Feb. 24, 1976
437		B 528,401	M	Feb. 3, 1976
557		B 523,080	M	Feb. 17, 1976
	Class 74			
242.1A		B 567,854	M	Feb. 3, 1976
243C		B 558,818	M	Jan. 13, 1976
479		B 509,586	M	Feb. 3, 1976
481		B 497,021	M	Jan. 13, 1976
482		B 525,809	M	Feb. 24, 1976
527		B 470,170	M	Jan. 13, 1976
546		B 518,999	M	Feb. 3, 1976
765		B 500,945	M	Feb. 24, 1976
	Class 75			
.5BA		B 385,631	C	Jan. 27, 1976
84.1R		B 538,491	C	Feb. 17, 1976
101BE		B 452,938	C	Feb. 17, 1976
135		B 525,961	C	Jan. 13, 1976
156.5		B 411,471	C	Feb. 17, 1976
165		B 483,256	C	Feb. 10, 1976
	Class 83			
61		B 570,862	M	Feb. 24, 1976
425		B 545,935	M	Jan. 27, 1976

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		CAT.	PUB. DATE
Class 84			
1.16	B 556,897	M	Feb. 3, 1976
275	B 504,169	M	Jan. 13, 1976
Class 86			
1R	B 356,187	M	Jan. 20, 1976
Class 96			
1R	B 423,883	C	Jan. 27, 1976
1.4	B 200,759	C	Feb. 3, 1976
35	B 524,026	C	Feb. 10, 1976
35.1	B 462,893	C	Feb. 24, 1976
	B 530,873	C	Feb. 17, 1976
36.1	B 359,901	C	Jan. 13, 1976
45	B 455,759	C	Feb. 24, 1976
78	B 503,029	C	Jan. 27, 1976
Class 99			
335	B 557,299	M	Feb. 3, 1976
Class 101			
93.13	B 496,999	M	Jan. 27, 1976
93.14	B 481,600	M	Jan. 27, 1976
129	B 416,589	M	Jan. 27, 1976
401.3	B 494,234	M	Feb. 10, 1976
Class 102			
32	B 405,726	M	Jan. 13, 1976
42R	B 443,163	M	Feb. 3, 1976
69	B 412,068	M	Jan. 13, 1976
Class 106			
27	B 452,883	C	Jan. 27, 1976
57	B 502,773	C	Jan. 13, 1976
309	B 311,779	C	Feb. 10, 1976
Class 109			
15B	B 358,427	E	Feb. 3, 1976
Class 110			
8R	B 512,324	M	Feb. 17, 1976
Class 114			
144R	B 529,659	M	Feb. 24, 1976
Class 116			
124L	B 469,228	M	Feb. 17, 1976
124.4	B 467,412	M	Jan. 13, 1976
Class 118			
637	B 563,301	M	Feb. 17, 1976
Class 123			
8.45	B 570,172	M	Feb. 3, 1976
25R	B 447,440	M	Feb. 17, 1976
75B	B 563,780	M	Feb. 3, 1976
182	B 558,251	M	Jan. 13, 1976
325T	B 425,588	M	Jan. 13, 1976
Class 126			
271	B 512,745	M	Jan. 13, 1976
350A	B 537,903	M	Jan. 20, 1976
Class 128			
2.6R	B 534,574	M	Feb. 24, 1976
260	B 520,277	M	Feb. 17, 1976
	B 524,121	M	Feb. 3, 1976
419P	B 535,466	M	Jan. 27, 1976
419PG	B 533,259	M	Feb. 24, 1976
Class 131			
144	B 586,387	M	Feb. 3, 1976
Class 136			
86R	B 505,126	C	Feb. 10, 1976
	B 574,128	C	Feb. 17, 1976
89	B 510,677	C	Feb. 24, 1976
148	B 524,464	C	Feb. 10, 1976
202	B 378,513	C	Jan. 27, 1976
Class 137			
255	B 508,940	M	Feb. 17, 1976
596.12	B 514,687	M	Jan. 27, 1976
614.11	B 530,605	M	Feb. 3, 1976
625.46	B 528,756	M	Feb. 3, 1976
798	B 430,172	M	Jan. 13, 1976
Class 140			
92.1	B 590,158	M	Feb. 10, 1976
	B 590,159	M	Feb. 3, 1976
Class 144			
34R	B 521,793	M	Feb. 24, 1976
241	B 545,630	M	Jan. 27, 1976
Class 148			
1.5	B 518,226	C	Feb. 10, 1976
Class 152			
213R	B 445,690	M	Feb. 3, 1976
Class 156			
3	B 563,722	C	Jan. 13, 1976
66	B 497,584	C	Feb. 24, 1976
71	B 456,148	C	Jan. 13, 1976
73.6	B 414,481	C	Jan. 20, 1976
143	B 462,386	C	Jan. 13, 1976
159	B 339,446	C	Feb. 24, 1976
Class 160			
229R	B 505,813	M	Jan. 13, 1976
Class 162			
5	B 491,673	C	Feb. 17, 1976
133	B 431,072	C	Jan. 20, 1976
198	B 150,142	C	Jan. 27, 1976
290	B 478,739	C	Feb. 17, 1976
Class 164			
26	B 499,227	M	Jan. 27, 1976
60	B 511,885	M	Jan. 27, 1976
330	B 522,038	M	Feb. 3, 1976
Class 165			
13	B 543,078	M	Feb. 17, 1976
Class 166			
224	B 492,120	M	Feb. 24, 1976
272	B 569,519	M	Feb. 3, 1976
303	B 529,836	M	Feb. 3, 1976
311	B 511,156	M	Jan. 27, 1976
Class 173			
104	B 537,709	M	Jan. 13, 1976
170	B 567,058	M	Jan. 13, 1976
Class 174			
52R	B 492,902	E	Feb. 24, 1976
Class 176			
20R	B 384,330	C	Jan. 27, 1976
36R	B 367,621	C	Feb. 3, 1976
68	B 396,164	C	Feb. 3, 1976
Class 178			
6	B 546,426	E	Jan. 27, 1976
7.1	B 519,979	E	Feb. 3, 1976
7.3D	B 442,970	E	Feb. 3, 1976
7.5R	B 508,817	E	Feb. 3, 1976
58R	B 399,908	C	Jan. 13, 1976
88	B 561,764	E	Jan. 27, 1976
Class 179			
1A	B 513,756	E	Feb. 3, 1976
1CN	B 475,681	E	Jan. 20, 1976
1SM	B 476,577	E	Jan. 20, 1976
1G	B 554,594	E	Jan. 20, 1976
7.1R	B 545,050	E	Jan. 20, 1976
15AL	B 496,500	E	Feb. 3, 1976
81R	B 472,284	E	Jan. 13, 1976
170D	B 541,415	E	Feb. 3, 1976
Class 180			
5R	B 499,171	M	Jan. 27, 1976
49	B 433,094	M	Jan. 27, 1976
53R	B 551,527	M	Jan. 13, 1976
79.2R	B 533,968	M	Jan. 27, 1976
103	B 490,647	M	Feb. 24, 1976
Class 187			
.1R	B 436,724	M	Feb. 24, 1976
Class 188			
71.1	B 535,411	M	Feb. 24, 1976
73.6	B 533,056	M	Jan. 13, 1976
165	B 567,435	M	Feb. 3, 1976
218XL	B 562,698	M	Jan. 13, 1976
Class 192			
3.57	B 548,719	M	Feb. 17, 1976
4A	B 531,267	M	Feb. 24, 1976
Class 195			
29	B 418,489	C	Jan. 13, 1976
Class 196			
14.52	B 520,384	M	Jan. 27, 1976

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		CAT.	PUB. DATE
Class 197			
17	B 501,122	M	Feb. 17, 1976
18	B 535,391	M	Jan. 27, 1976
Class 198			
38	B 495,402	M	Feb. 17, 1976
129	B 569,646	M	Jan. 13, 1976
179	B 424,989	M	Feb. 3, 1976
202	B 499,352	M	Jan. 27, 1976
Class 200			
5R	B 579,104	E	Jan. 27, 1976
11TC	B 531,425	E	Feb. 3, 1976
38FA	B 494,383	E	Feb. 3, 1976
61.41	B 506,286	E	Jan. 20, 1976
67D	B 585,247	E	Feb. 3, 1976
83SA	B 428,877	E	Jan. 27, 1976
84C	B 453,533	E	Feb. 17, 1976
339	B 466,390	E	Feb. 24, 1976
Class 202			
227	B 513,280	C	Jan. 20, 1976
Class 204			
9	B 462,424	C	Feb. 24, 1976
15	B 542,135	C	Feb. 10, 1976
158HA	B 550,744	C	Feb. 17, 1976
159.18	B 498,205	C	Feb. 10, 1976
163R	B 526,447	C	Feb. 24, 1976
195S	B 843,038	C	Feb. 3, 1976
224M	B 534,314	C	Feb. 10, 1976
Class 206			
455	B 490,067	M	Jan. 27, 1976
Class 208			
15	B 437,596	C	Jan. 27, 1976
59	B 508,118	C	Feb. 17, 1976
78	B 467,250	C	Feb. 3, 1976
208R	B 508,119	C	Feb. 17, 1976
210	B 501,317	C	Jan. 13, 1976
253	B 438,916	C	Jan. 13, 1976
Class 210			
23H	B 364,797	C	Feb. 17, 1976
130	B 532,901	C	Jan. 13, 1976
Class 214			
18N	B 373,344	M	Feb. 3, 1976
58	B 555,772	M	Jan. 13, 1976
152	B 480,604	M	Jan. 13, 1976
Class 215			
216	B 541,015	M	Jan. 27, 1976
Class 219			
233	B 463,388	E	Feb. 10, 1976
273	B 403,507	E	Feb. 10, 1976
553	B 513,027	E	Feb. 17, 1976
Class 220			
23.83	B 529,156	M	Jan. 13, 1976
288	B 516,032	M	Jan. 27, 1976
337	B 578,447	M	Jan. 20, 1976
Class 222			
43	B 497,853	M	Feb. 17, 1976
67	B 521,480	M	Jan. 13, 1976
136	B 487,260	M	Jan. 27, 1976
306	B 559,954	M	Feb. 3, 1976
325	B 515,303	M	Jan. 20, 1976
Class 226			
21	B 504,778	M	Feb. 24, 1976
68	B 506,926	M	Feb. 17, 1976
Class 228			
190	B 473,972	M	Jan. 13, 1976
Class 229			
2.5	B 537,990	M	Jan. 13, 1976
17R	B 461,257	M	Jan. 13, 1976
62.5	B 429,157	M	Jan. 27, 1976
Class 235			
151.1	B 520,075	E	Feb. 24, 1976
151.34	B 492,946	E	Jan. 27, 1976
152	B 559,737	E	Jan. 20, 1976
154	B 534,016	E	Feb. 3, 1976
156	B 536,009	E	Jan. 27, 1976
181	B 520,924	E	Jan. 27, 1976
Class 236			
13	B 502,652	M	Feb. 24, 1976
15A	B 558,813	M	Feb. 3, 1976
Class 239			
424	B 580,921	M	Jan. 13, 1976
424	B 586,215	M	Jan. 20, 1976
652	B 520,534	M	Feb. 17, 1976
Class 240			
41.35R	B 454,283	E	Feb. 3, 1976
Class 242			
43R	B 521,600	M	Jan. 27, 1976
129.8	B 506,167	M	Feb. 10, 1976
Class 244			
134R	B 535,928	M	Jan. 13, 1976
169	B 423,441	M	Feb. 17, 1976
	B 511,346	M	Jan. 27, 1976
Class 248			
49	B 398,488	M	Feb. 24, 1976
73	B 494,806	M	Feb. 3, 1976
Class 249			
135	B 548,155	M	Jan. 13, 1976
Class 250			
210	B 515,908	E	Jan. 20, 1976
227	B 522,577	E	Jan. 27, 1976
	B 560,765	E	Feb. 3, 1976
291	B 500,981	E	Jan. 27, 1976
364	B 526,190	E	Feb. 17, 1976
402	B 451,534	E	Jan. 13, 1976
577	B 507,396	E	Feb. 10, 1976
Class 251			
1B	B 541,710	M	Feb. 24, 1976
58	B 429,434	M	Feb. 17, 1976
129	B 534,333	M	Feb. 17, 1976
319	B 490,589	M	Feb. 3, 1976
Class 252			
182	B 471,405	C	Feb. 10, 1976
301.1W	B 548,058	C	Feb. 17, 1976
301.4S	B 535,813	C	Jan. 27, 1976
364	B 370,309	C	Jan. 20, 1976
404	B 569,125	C	Feb. 24, 1976
408R	B 544,476	C	Feb. 24, 1976
429R	B 457,850	C	Feb. 10, 1976
432	B 509,640	C	Feb. 17, 1976
454	B 450,967	C	Jan. 13, 1976
500	B 479,242	C	Feb. 17, 1976
518	B 585,731	C	Feb. 3, 1976
543	B 403,766	C	Feb. 10, 1976
Class 254			
186R	B 511,407	M	Feb. 10, 1976
188	B 437,559	M	Feb. 3, 1976
190R	B 489,685	M	Feb. 24, 1976
Class 259			
4	B 486,614	N	Feb. 17, 1976
191	B 556,057	M	Jan. 13, 1976
Class 260			
2.5AC	B 497,194	C	Feb. 3, 1976
	B 537,102	C	Jan. 13, 1976
2.5AJ	B 557,856	C	Feb. 10, 1976
2.5AM	B 422,063	C	Feb. 3, 1976
2.5AR	B 483,606	C	Jan. 27, 1976
	B 502,589	C	Jan. 27, 1976
2.5AV	B 460,441	C	Jan. 13, 1976
2.5AW	B 483,762	C	Feb. 10, 1976
2.5R	B 471,579	C	Jan. 13, 1976
17R	B 510,998	C	Feb. 10, 1976
	B 519,487	C	Feb. 17, 1976
18TN	B 528,303	C	Feb. 10, 1976
23H	B054,859	C	Feb. 17, 1976
23XA	B 483,865	C	Jan. 13, 1976
28P	B 489,331	C	Feb. 17, 1976
28.5A5	B 501,540	C	Jan. 13, 1976
29.2EP	B 526,997	C	Jan. 13, 1976
29.2TN	B 414,266	C	Feb. 10, 1976
29.6N	B 494,440	C	Feb. 17, 1976
29.6TA	B 494,450	C	Feb. 17, 1976
30.4R	B 485,060	C	Feb. 17, 1976
32.6R	B 596,692	C	Feb. 17, 1976
33.6AQ	B 657,438	C	Jan. 20, 1976
33.6R	B 479,175	C	Feb. 17, 1976
33.8UA	B 497,780	C	Feb. 24, 1976
37EP	B 423,365	C	Feb. 17, 1976

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		CAT.	PUB. DATE
	B 441,605	C	Feb. 3, 1976
37R	B 465,955	C	Feb. 3, 1976
42.15	B 415,122	C	Feb. 10, 1976
42.18	B519,095	C	Feb. 24, 1976
45.75W	B 561,387	C	Feb. 10, 1976
45.8N	B 506,648	C	Feb. 3, 1976
45.85R	B 236,342	C	Feb. 10, 1976
46.5UA	B 528,962	C	Feb. 24, 1976
	B 528,966	C	Feb. 24, 1976
47EP	B 440,633	C	Feb. 10, 1976
63UY	B 470,576	C	Feb. 24, 1976
75N	B 521,125	C	Feb. 10, 1976
	B 521,126	C	Feb. 10, 1976
	B 521,127	C	Feb. 17, 1976
	B 521,128	C	Feb. 10, 1976
	B 552,489	C	Feb. 10, 1976
77.5CR	B 306,668	C	Feb. 3, 1976
78.5R	B 437,209	C	Feb. 3, 1976
78S	B 451,308	C	Feb. 17, 1976
82.1	B443,563	C	Feb. 24, 1976
88.2C	B 417,014	C	Jan. 13, 1976
93.5A	B 530,174	C	Feb. 24, 1976
112.5R	B 471,617	C	Feb. 10, 1976
	B 503,817	C	Jan. 13, 1976
140R	B 503,579	C	Feb. 10, 1976
147	B 383,697	C	Feb. 17, 1976
239A	B 349,370	C	Jan. 27, 1976
239D	B 520,256	C	Jan. 13, 1976
	B 536,935	C	Jan. 13, 1976
239.1	B 538,753	C	Feb. 10, 1976
	B 547,208	C	Feb. 24, 1976
239.3A	B 506,148	C	Feb. 3, 1976
240A	B 484,067	C	Feb. 17, 1976
240G	B 482,709	C	Feb. 24, 1976
243C	B 442,810	C	Feb. 24, 1976
	B 473,039	C	Feb. 10, 1976
	B 473,040	C	Feb. 10, 1976
	B 516,047	C	Feb. 10, 1976
	B 516,296	C	Feb. 3, 1976
	B 526,096	C	Feb. 3, 1976
244R	B 348,433	C	Feb. 3, 1976
247.7T	B 468,052	C	Feb. 10, 1976
248NS	B 537,711	C	Jan. 13, 1976
250BC	B 491,883	C	Feb. 3, 1976
251A	B 480,625	C	Feb. 24, 1976
256.4Q	B 503,345	C	Feb. 24, 1976
256.5R	B 531,096	C	Feb. 10, 1976
268BF	B 490,946	C	Feb. 17, 1976
274SA	B 494,944	C	Feb. 17, 1976
285.5	B 530,318	C	Jan. 13, 1976
287C	B 492,039	C	Feb. 24, 1976
293.54	B 545,464	C	Feb. 10, 1976
293.56	B 447,000	C	Feb. 3, 1976
293.57	B 426,802	C	Feb. 17, 1976
294.8D	B 526,510	C	Jan. 20, 1976
295.5A	B 515,642	C	Feb. 24, 1976
	B 545,299	C	Feb. 24, 1976
295.5B	B 458,617	C	Feb. 3, 1976
296R	B 477,252	C	Jan. 13, 1976
306.7C	B 385,024	C	Feb. 10, 1976
307D	B 486,280	C	Feb. 3, 1976
307H	B 471,836	C	Feb. 24, 1976
	B 554,848	C	Feb. 24, 1976
308A	B 488,111	C	Jan. 13, 1976
308D	B 532,005	C	Feb. 24, 1976
309.2	B 522,567	C	Feb. 17, 1976
	B 542,158	C	Jan. 13, 1976
310R	B 535,437	C	Feb. 24, 1976
326R	B 398,084	C	Feb. 3, 1976
326.5B	B 276,026	C	Feb. 3, 1976
326.5FN	B 484,269	C	Feb. 10, 1976
326.9	B 477,481	C	Feb. 3, 1976
327C	B 480,452	C	Feb. 10, 1976
330.5	B 552,498	C	Jan. 13, 1976
	B 574,996	C	Feb. 17, 1976
340.5	B 504,877	C	Feb. 24, 1976
340.9	B 476,372	C	Feb. 24, 1976
343.2R	B 491,032	C	Feb. 10, 1976
343.3	B 536,675	C	Jan. 20, 1976
343.3R	B 495,550	C	Feb. 3, 1976
	B 495,554	C	Feb. 3, 1976
346.2M	B 440,858	C	Feb. 3, 1976
	B 302,160	C	Feb. 3, 1976
346.4	B 485,051	C	Feb. 17, 1976
348.5L	B 521,324	C	Jan. 27, 1976
348.6	B 546,295	C	Jan. 20, 1976
378	B 431,713	C	Feb. 10, 1976
429.7	B 464,587	C	Feb. 3, 1976
429.9	B 455,481	C	Feb. 24, 1976
438.1	B 518,656	C	Feb. 17, 1976
448.2H	B 390,408	C	Feb. 3, 1976
448.2N	B 551,463	C	Feb. 17, 1976
465.5R	B 747,785	C	Feb. 10, 1976
465.9	B 456,900	C	Feb. 3, 1976
	B 530,925	C	Feb. 24, 1976
471R	B 385,483	C	Feb. 17, 1976
	B 388,521	C	Jan. 13, 1976
472	B 472,256	C	Jan. 13, 1976
483	B 410,074	C	Feb. 24, 1976
493	B 351,455	C	Feb. 24, 1976
501.12	B 544,899	C	Feb. 17, 1976
513R	B 494,669	C	Feb. 3, 1976
515A	B 390,031	C	Jan. 13, 1976
516	B 386,828	C	Feb. 3, 1976
534R	B 301,143	C	Jan. 27, 1976
544C	B 471,116	C	Feb. 17, 1976
554	B 529,974	C	Feb. 17, 1976
557R	B 386,257	C	Feb. 3, 1976
561R	B 513,781	C	Feb. 24, 1976
566A	B 513,014	C	Feb. 10, 1976
568	B 529,974	C	Feb. 17, 1976
580	B 503,742	C	Feb. 17, 1976
586C	B 438,484	C	Feb. 17, 1976
593R	B 468,350	C	Jan. 13, 1976
598	B 465,202	C	Feb. 24, 1976
601R	B 208,916	C	Jan. 13, 1976
604HF	B 472,241	C	Feb. 17, 1976
609E	B 474,573	C	Jan. 20, 1976
621H	B 501,128	C	Feb. 24, 1976
621K	B 470,348	C	Jan. 13, 1976
632R	B 553,584	C	Feb. 17, 1976
637R	B 519,446	C	Feb. 24, 1976
647	B 394,248	C	Jan. 27, 1976
648F	B 330,736	C	Feb. 3, 1976
665R	B 460,846	C	Feb. 24, 1976
668D	B 430,157	C	Feb. 17, 1976
674SA	B 426,274	C	Jan. 20, 1976
683.15D	B 428,103	C	Feb. 10, 1976
683.48	B 526,027	C	Feb. 17, 1976
859R	B 519,485	C	Feb. 10, 1976
873	B 465,688	C	Jan. 27, 1976
	B 519,486	C	Feb. 17, 1976
876B	B 575,851	C	Feb. 10, 1976
876R	B 589,966	C	Feb. 17, 1976
	B 461,184	C	Feb. 17, 1976
	B 580,826	C	Feb. 17, 1976
	B 589,966	C	Feb. 17, 1976
880B	B 510,458	C	Feb. 10, 1976
884	B 456,579	C	Feb. 10, 1976
890	B 495,408	C	Feb. 3, 1976
927N	B 369,221	C	Feb. 24, 1976
929	B 502,993	C	Feb. 17, 1976
937	B 512,373	C	Feb. 10, 1976
940	B 496,430	C	Feb. 10, 1976
942	B 386,673	C	Feb. 3, 1976
948	B 534,591	C	Feb. 17, 1976
Class 261			
39A	B 562,462	C	Jan. 13, 1976
98	B 480,702	C	Jan. 27, 1976
Class 264			
36	B 308,659	C	Jan. 27, 1976
51	B 506,144	C	Feb. 10, 1976
	B 508,369	C	Jan. 13, 1976
161	B 555,437	C	Feb. 3, 1976
225	B 453,759	C	Jan. 27, 1976
Class 270			
62	B 516,609	M	Feb. 24, 1976
Class 274			
37	B 526,388	M	Feb. 3, 1976
Class 277			
27	B 544,034	M	Feb. 17, 1976
81P	B 515,216	M	Feb. 17, 1976
184	B 426,819	M	Feb. 17, 1976
Class 280			
150.5	B 583,051	M	Feb. 3, 1976
236	B 572,642	M	Feb. 10, 1976
Class 290			
17	B 477,597	E	Feb. 17, 1976
Class 292			
254	B 549,964	M	Feb. 24, 1976
Class 293			
71P	B 552,932	M	Feb. 3, 1976
Class 296			
35R	B 443,647	M	Feb. 17, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
	B 463,671	M	Jan. 13, 1976
Class 298			
35M	B 510,588	M	Jan. 27, 1976
Class 299			
31	B 499,209	M	Feb. 24, 1976
Class 305			
27	B 506,566	M	Jan. 20, 1976
Class 307			
88.3	B 540,872	E	Jan. 20, 1976
137	B 466,444	E	Jan. 20, 1976
205	B 513,368	E	Feb. 3, 1976
232	B 540,078	E	Jan. 13, 1976
251	B 548,302	E	Feb. 17, 1976
255	B 492,688	E	Jan. 20, 1976
270	B 497,960	E	Jan. 20, 1976
293	B 519,932	E	Feb. 3, 1976
296	B 512,849	E	Feb. 3, 1976
Class 310			
4R	B 539,746	E	Feb. 17, 1976
9.6	B 501,482	E	Jan. 13, 1976
41	B 561,784	E	Jan. 27, 1976
90	B 458,500	E	Feb. 24, 1976
155	B 592,143	C	Jan. 27, 1976
168	B 526,289	E	Feb. 24, 1976
254	B 521,045	E	Feb. 24, 1976
	B 521,046	E	Feb. 24, 1976
259	B 521,044	E	Feb. 24, 1976
Class 313			
42	B 534,443	E	Jan. 27, 1976
60	B 513,706	M	Jan. 13, 1976
99	B 518,859	E	Feb. 3, 1976
273	B 531,929	E	Jan. 20, 1976
330	B 504,056	C	Feb. 24, 1976
366	B 515,455	E	Jan. 27, 1976
404	B 523,696	E	Jan. 13, 1976
452	B 160,045	E	Jan. 13, 1976
477	B 279,969	E	Jan. 13, 1976
Class 315			
169TV	B 463,322	E	Jan. 20, 1976
371	B 483,615	E	Jan. 27, 1976
388	B 516,002	E	Jan. 13, 1976
399	B 467,971	E	Jan. 13, 1976
408	B 516,564	E	Feb. 17, 1976
Class 317			
9R	B 488,634	E	Jan. 20, 1976
36TD	B 504,404	E	Feb. 24, 1976
101A	B 420,472	E	Feb. 24, 1976
120	B 527,187	E	Feb. 17, 1976
124	B 509,606	E	Feb. 3, 1976
259	B 506,461	E	Jan. 20, 1976
Class 318			
139	B 475,236	E	Feb. 3, 1976
231	B 511,886	E	Feb. 3, 1976
257	B 502,973	E	Jan. 27, 1976
Class 321			
2	B 533,734	E	Jan. 27, 1976
7	B 509,185	E	Feb. 3, 1976
61	B 495,759	E	Feb. 3, 1976
Class 323			
1	B 430,276	E	Jan. 20, 1976
17	B 459,811	E	Jan. 20, 1976
	B 583,089	E	Jan. 27, 1976
22T	B 501,181	E	Feb. 10, 1976
Class 324			
13	B 079,099	E	Jan. 13, 1976
51	B 534,767	E	Feb. 3, 1976
60C	B 540,218	E	Feb. 10, 1976
62	B 465,393	E	Jan. 27, 1976
Class 325			
40	B 558,220	E	Jan. 27, 1976
468	B 544,961	E	Jan. 13, 1976
Class 328			
129	B078,315	E	Feb. 10, 1976
155	B 550,693	E	Jan. 20, 1976
Class 330			
15	B 530,813	E	Feb. 17, 1976
33	B 439,542	E	Jan. 27, 1976
207P	B553,460	E	Feb. 3, 1976
Class 331			
44ST	B 527,669	E	Jan. 13, 1976
51	B 538,686	E	Jan. 13, 1976
94.5C	B 549,931	E	Jan. 20, 1976
94.5L	B 506,916	E	Feb. 3, 1976
94.5M	B 384,654	E	Feb. 24, 1976
94.5P	B 394,350	E	Jan. 13, 1976
116R	B 527,693	E	Feb. 3, 1976
117R	B 571,219	E	Feb. 24, 1976
Class 332			
9R	B 507,087	E	Feb. 17, 1976
Class 333			
30R	B 453,616	E	Jan. 27, 1976
31A	B 568,770	E	Feb. 10, 1976
72	B 534,991	E	Jan. 27, 1976
73W	B 339,194	E	Feb. 3, 1976
Class 335			
210	B 541,517	E	Jan. 13, 1976
253	B 515,452	E	Feb. 10, 1976
Class 338			
166	B 489,526	E	Feb. 3, 1976
202	B 528,761	E	Feb. 10, 1976
Class 340			
8L	B 270,274	E	Feb. 17, 1976
167B	B 568,226	E	Feb. 24, 1976
172.5	B 461,336	E	Feb. 3, 1976
	B 482,907	E	Jan. 20, 1976
	B 485,575	E	Feb. 24, 1976
173R	B 545,945	M	Jan. 27, 1976
174DC	B 443,712	E	Jan. 27, 1976
174TF	B 429,018	C	Feb. 10, 1976
	B 455,425	E	Feb. 3, 1976
	B 476,681	E	Jan. 13, 1976
	B 499,718	E	Jan. 27, 1976
198	B 546,665	E	Jan. 20, 1976
347AD	B 507,647	E	Jan. 27, 1976
	B 526,106	E	Jan. 27, 1976
347CC	B 498,500	E	Jan. 20, 1976
Class 343			
7A	B 248,240	E	Jan. 13, 1976
7.7	B 484,029	E	Feb. 10, 1976
100LE	B 488,395	E	Jan. 27, 1976
100LE	B 496,502	E	Jan. 20, 1976
786	B 547,994	E	Jan. 20, 1976
815	B 563,244	E	Jan. 27, 1976
Class 346			
75	B 512,964	E	Feb. 10, 1976
Class 350			
96WG	B 381,985	M	Feb. 3, 1976
	B 537,722	M	Feb. 3, 1976
103	B 586,663	M	Feb. 3, 1976
160LC	B 527,054	M	Feb. 17, 1976
173	B 469,947	M	Jan. 20, 1976
310	B 520,543	M	Jan. 27, 1976
320	B 548,440	M	Feb. 3, 1976
Class 354			
46	B 515,135	E	Feb. 17, 1976
70	B 533,580	E	Feb. 3, 1976
288	B 559,111	E	Feb. 24, 1976
298	B 489,328	E	Jan. 20, 1976
Class 355			
8	B 509,474	M	Feb. 17, 1976
17	B 493,501	M	Feb. 3, 1976
Class 356			
201	B 450,521	M	Feb. 17, 1976
Class 357			
16	B 496,487	E	Jan. 20, 1976
23	B 516,060	E	Feb. 17, 1976
36	B 508,961	E	Feb. 3, 1976
65	B 470,798	E	Jan. 20, 1976
72	B 481,930	E	Feb. 24, 1976
Class 358			
8	B 554,939	E	Feb. 10, 1976
41	B 502,289	E	Jan. 13, 1976
Class 360			
1	B 484,365	E	Jan. 27, 1976
15	B 283,941	E	Feb. 3, 1976
17	B 461,874	E	Jan. 27, 1976
27	B 427,883	E	Jan. 20, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
60	B 491,111	E	Feb. 17, 1976
78	B 487,411	E	Feb. 24, 1976
80	B 403,477	E	Feb. 3, 1976
81	B 500,176	E	Feb. 3, 1976
85	B 501,253	E	Feb. 3, 1976
130	B 579,806	E	Feb. 3, 1976
Class 401			
219	B 557,621	M	Feb. 3, 1976
Class 403			
107	B 513,789	M	Feb. 3, 1976
318	B 540,632	M	Jan. 13, 1976
Class 404			
71	B 452,672	M	Jan. 13, 1976
77	B 434,206	M	Feb. 3, 1976
Class 408			
124	B 501,993	M	Jan. 13, 1976
146	B 521,986	M	Feb. 3, 1976
Class 415			
14	B 471,735	M	Feb. 3, 1976
115	B 561,712	C	Feb. 17, 1976
136	B 563,412	M	Feb. 24, 1976
213R	B 512,547	M	Jan. 13, 1976
214	B 552,006	M	Feb. 3, 1976
Class 416			
61	B 549,394	M	Jan. 27, 1976
Class 423			
238	B 485,401	C	Jan. 27, 1976
242	B 066,272	C	Feb. 24, 1976
249	B 402,553	C	Feb. 17, 1976
283	B 521,984	C	Feb. 17, 1976
315	B 471,221	C	Jan. 13, 1976
390	B 549,198	C	Jan. 13, 1976
393	B 491,455	C	Feb. 3, 1976
448	B 414,028	C	Feb. 17, 1976
580	B 379,177	C	Jan. 27, 1976
Class 424			
9	B 426,424	C	Feb. 3, 1976
115	B 482,660	C	Feb. 10, 1976
118	B 542,226	C	Feb. 24, 1976
122	B 524,179	C	Jan. 13, 1976
177	B 490,995	C	Feb. 3, 1976
203	B 576,903	C	Feb. 3, 1976
230	B 487,133	C	Jan. 27, 1976
246	B 399,098	C	Feb. 24, 1976
257	B 374,588	C	Jan. 27, 1976
258	B 426,639	C	Feb. 3, 1976
263	B 466,929	C	Jan. 27, 1976
267	B 307,698	C	Feb. 3, 1976
	B 407,737	C	Feb. 3, 1976
270	B 521,711	C	Feb. 10, 1976
273	B 566,464	C	Feb. 3, 1976
274	B 496,431	C	Jan. 13, 1976
	B 547,547	C	Feb. 24, 1976
281	B 587,786	C	Feb. 17, 1976
311	B 457,862	C	Jan. 27, 1976
317	B 510,850	C	Feb. 3, 1976
362	B 495,489	C	Feb. 3, 1976
Class 425			
222	B 163,463	M	Jan. 27, 1976
384	B 562,813	C	Feb. 3, 1976
521	B 411,765	M	Feb. 24, 1976
Class 426			
3	B 583,712	C	Feb. 10, 1976
239	B 572,726	C	Feb. 24, 1976
276	B 535,944	C	Jan. 13, 1976
535	B 560,717	C	Feb. 10, 1976
548	B 439,778	C	Feb. 3, 1976
Class 427			
39	B 476,837	C	Jan. 20, 1976
70	B 381,709	C	Jan. 13, 1976
145	B 457,547	C	Feb. 17, 1976
186	B 537,085	C	Feb. 17, 1976
207	B 501,415	C	Jan. 13, 1976
343	B 160,099	C	Jan. 13, 1976
372	B 409,848	C	Jan. 27, 1976
389	B 519,377	C	Jan. 27, 1976
Class 428			
73	B 481,737	C	Jan. 13, 1976
289	B 402,929	C	Feb. 3, 1976
315	B 373,354	C	Jan. 27, 1976
341	B 450,196	C	Feb. 10, 1976
428	B 554,655	C	Feb. 24, 1976
434	B 457,886	C	Jan. 13, 1976
515	B 474,747	C	Feb. 24, 1976
Class 431			
175	B 534,313	M	Jan. 27, 1976
264	B 398,220	M	Feb. 3, 1976

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF FEBRUARY, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.C.I. Operations Pty. Limited: *See—*
Granat, Rodney John, 3,940,005.

A. O. Smith Corporation: *See—*
Buckman, John B., 3,940,646.

Aaen, Olav; and Rose, Edgar, to Outboard Marine Corporation. Variable transmission drive pulley assembly with selective drive. 3,939,720, Cl. 74-230.17E.

Aanstad, Ola J., to Westinghouse Electric Corporation. Acceleration control arrangement for turbine system, especially for HTGR power plant. 3,939,660, Cl. 60-661.000.

Ab Bygg- Och Transportekonomi (BT): *See—*
Bryntse, Anders Ivar; and Berkestad, Karl-Erik, 3,940,338.

AB Casco: *See—*
Wennerblom, Axel Bengt; and Karlsson, Alf Hugo, 3,940,352.

AB Volvo: *See—*
Stromberg, Jan Erling Gunnar, 3,939,722.

Abbott Laboratories: *See—*
Crutcher, Richard E.; and Winkler, Victor W., 3,940,491.

Abe, Haruo; Konishi, Masaichiro; and Hosokawa, Teruo, to Minolta Camera Kabushiki Kaisha. Color television camera optical system. 3,940,788, Cl. 358-43.000.

Abe, Masaru, to Bridgestone Tire Company, Ltd. Wide base type pneumatic tire for construction vehicle. 3,939,890, Cl. 152-209.00B.

Accumulatorenwerk Hoppecke: *See—*
Lahme, Norbert; and Sassmannshausen, Gunter, 3,940,348.

ACF Industries, Incorporated: *See—*
Tipton, Larry J.; Rebmann, Donald A.; and Reise, Donald A., 3,940,459.

Acton, Edward M.: *See—*
Fujiwara, Allan N.; Acton, Edward M.; and Henry, David W., 3,940,383.

Actron Industries, Inc.: *See—*
Coontz, Leland I., 3,940,740.

Adachi, Mitiaki. Container. 3,940,034, Cl. 222-478.000.

Adams, Anthony L., to Texas Instruments Incorporated. Semiconductor wafer baking and handling system. 3,940,243, Cl. 432-144.000.

Adams, Jack C., to Ecologenics Corporation. Incinerator, incineration system and method. 3,939,781, Cl. 110-8.00C.

Adams, Ronald Alfred Charles, to Ozalid Group Holdings Limited. Methods of treating aluminium. 3,940,321, Cl. 204-58.000.

Adaniya, Takeshi: *See—*
Kanbara, Shigeo; and Adaniya, Takeshi, 3,939,799.

Addington, Bruce N. Splash guard for cups. 3,940,012, Cl. 220-90.400.

Addressograph Multigraph Corporation: *See—*
Krulik, Gerald A.; and Sable, Harvey J., 3,940,270.

Adey, Anthony John; French, Geoffrey Richard; Leonard, Gordon Harris; and Williams, Malcolm, to C.A.V. Limited. Speed responsive control system for vehicle motor & transmission. 3,939,738, Cl. 74-859.000.

Advance Coatings Co.: *See—*
Whittum, Howard A.; and Hjelm, Michael J., 3,940,549.

Aebli, Horst; Fleck, Fritz; and Schmid, Horst, to Sandoz Ltd., (Sandoz AG). Triazolylstyryl triazoles. 3,940,388, Cl. 260-240.900.

Aeronca, Inc.: *See—*
Logsdon, Hillard Glenn, 3,939,868.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Commeyras, Auguste; Arnaud, Alain; Galzy, Pierre; and Jallageas, Jean-Claude, 3,940,316.

Ahlgren, Nils Harald. Lifting device for raising, lowering and suspending heavy loads. 3,940,109, Cl. 254-106.000.

Ahmed, Abul Abbas Mesbahuddin, to AMP Incorporated. Method of making a glow discharge readout device. 3,940,197, Cl. 316-17.000.

Ahrens, Barry Louis, to Deere & Company. Interlocked hand-and foot-operable engine speed control. 3,939,726, Cl. 74-513.000.

Air Products and Chemicals, Inc.: *See—*
Dixon, Dale D.; and Hayes, Larry J., 3,940,520.

Airpot Corporation: *See—*
Cohen, Arthur M., deceased; Evall, Irving; and Zalkin, Leonard, executors, 3,939,947.

Aisin Seiki Kabushiki Kaisha: *See—*
Ueda, Atsumi; and Kobashi, Uichiro, 3,939,859.

Aizawa, Takeshi: *See—*
Hori, Michimasa; and Aizawa, Takeshi, 3,940,215.

Ajisawa, Yukiyoshi: *See—*
Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, 3,940,422.

Akademiet for de Tekniske Videnskaber, Svejsecentralen: *See—*
Lund, Svend Aage; and Jensen, Palle Rasmus, 3,939,697.

Akhundov, Enver Bejukovich; Anischenko, Vadim Andreevich; Petrov, Vladimir Vasilievich; and Semashko, Petr Stepanovich. Method for controlling active power distribution in power transmission lines and a controller for effecting same. 3,940,687, Cl. 323-101.000.

Aktiebolaget Platmanufaktur: *See—*
Borgstrom, Klas Ingvar Helmer, 3,940,017.

Alarm Device Manufacturing Co.: *See—*
Verger, Nathan; and Schmidt, Gerhard, 3,940,725.

Albertazzi, Gastone, to Finike Italiana Marposs, Soc. In Accomandita Semplice di Mario Possati & C. Method and relevant apparatus for the indirect measurement of the longitudinal development of curved seats or grooves in mechanical workpieces. 3,939,567, Cl. 33-143.00L.

Albrecht, Erhard, to Rheinstahl Aktiengesellschaft. Fluidized furnace construction for burning partly dehydrated sludge. 3,939,782, Cl. 110-8.00F.

Aldag, Friedrich-Wilhelm; Scheipner, Robert Hans; and Schluessler, Helmut, to Demag Aktiengesellschaft. Power-driven impact tool having an impact-resistant hand grip assembly. 3,939,923, Cl. 173-162.000.

Aldridge, Raymon H.: *See—*
Woodham, Loyd L.; and Aldridge, Raymon H., 3,940,273.

Alexander, Michael Richard; Duncan, Edward; McClements, Kenneth; and Spencer, John Roger, to British Petroleum Company Limited, The. Method and apparatus for on-line non-interactive blending using an uncoupling matrix. 3,940,600, Cl. 235-151.120.

Alfa-Laval AB: *See—*
Ehnstrom, Lars Karl Johan, 3,940,492.

Alferov, Sergei Alexeevich: *See—*
Drozhzhin, Vladimir Kirillovich; Sergeev, Alexandr Pavlovich; Shevchenko, Vladimir Pavlovich; Buyanov, Vitaly Evdokimovich; Bolotov, Viktor Ivanovich; Yakut, Viktor Mikhailovich; Polenov, Jury Tikhonovich; Luchinsky, Nikolai Nikolaevich; Dvorkind, Mai Mikhailovich; Alferov, Sergei Alexeevich; Morozov, Alexandr Fedorovich; Anashkin, Alexandr Trofimovich; Avrutin, Isaak Zinovievich; and Voronova, Tatyana Moiseevna, 3,939,846.

Allan, Winford K., to McDonnell Douglas Corporation. Method and apparatus for cutting reinforced foam. 3,939,741, Cl. 83-52.000.

Allen, John. Control of accessories for toy or model vehicles. 3,939,605, Cl. 46-204.000.

Allenbaugh, George G., Jr., to Premier Industrial Corporation. Rotary valve with spring clutch. 3,940,107, Cl. 251-297.000.

Allied Chemical Corporation: *See—*
Marshall, Robert Moore; and Dardoufas, Kimon Constantine, 3,940,544.
North, Robert Jarl, 3,940,399.
Polk, Donald E.; and Bedell, John R., 3,939,900.
Polk, Donald E.; and Morris, Robert C., 3,940,293.
Stephenson, Robert L.; Pfeiffer, Robert C.; and Loomba, Yogendra Singh, 3,940,083.

Allis-Chalmers Corporation: *See—*
Keuper, John J.; Scardina, Virgil R.; and Wagner, Paul D., 3,940,647.
Rossi, Eugene F.; and Konzal, Daryl R., 3,940,239.

Allison, William D., to Ford Motor Company. Independent wheel suspension for a motor vehicle. 3,940,161, Cl. 280-96.20R.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Ling, Bernt; and Widell, Bjorn, 3,940,551.

Allred, Michael V., to Superior Industries, Inc. Electronic ignition control system. 3,940,658, Cl. 315-209.00T.

Alphameric Keyboards Limited: *See—*
Pointon, Peter, 3,940,578.

Alps Electric Co., Ltd.: *See—*
Sato, Shoji, 3,940,714.
Yoshimura, Jun'Ichi; and Watabe, Tatsumi, 3,940,702.

Alshits, Mikhail Yankelevich: *See—*
Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits, Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; Krasilnikova, Nonna Alexeevna, administrator; and Cherchintsev, Alexandr Nikolaevich, administrator, 3,939,684.

Altair, Incorporated: *See—*
Roth, Russell B., 3,939,821.

Altschul, Louis T. Glare eliminating device. 3,940,180, Cl. 296-97.00D.

Aluminum Company of America: *See—*
Brown, Trenton L., 3,940,088.
Hawkins, Ronald G., 3,940,553.

Alvino, William M.: *See—*
Phillips, David C.; and Alvino, William M., 3,940,322.

Alza Corporation: *See—*
Weinshenker, Ned M., 3,940,438.

Amano, Kitsutaro; Sasaki, Hiroshi; and Maruyama, Tatsuo, to Kokusai Denshin Denwa Kabushiki Kaisha. Picture signal transmission system. 3,940,555, Cl. 178-6.000.

Amano, Kozo. Practice board for contract bridge games. 3,939,577, Cl. 35-8.00B.

Amchem Products, Inc.: *See—*
Kauffman, Ralph I., 3,940,260.

American Chain & Cable Company, Inc.: *See—*
  Anderson, Clifford E., 3,939,700.
  Drayton, Walker E., 3,939,677.
American Cyanamid Company: *See—*
  Asato, Goro; Berkelhammer, Gerald; and Gastrock, William Henry, 3,940,411.
  Diehl, Robert Eugene; and Walworth, Bryant Leonidas, 3,940,419.
  Lassiter, Marvin Stevens, Sr., 3,940,071.
  Rauhut, Michael McKay, 3,940,604.
American Cystoscope Makers, Inc.: *See—*
  Curtiss, Lawrence E., 3,939,839.
American Forest Industries Ltd.: *See—*
  Sherwin, Ian M.; and Grubbe, John R., 3,940,257.
American Home Products Corporation: *See—*
  Garsky, Victor M., 3,940,380.
  Greenspan, George; Rees, Richard W.; and Russell, Peter B., 3,940,393.
  Santilli, Arthur A.; and Kim, Dong H., 3,940,395.
American Magnetics Corporation: *See—*
  Haun, Marion W.; Mos, Robert J.; and Riley, Arthur W., 3,940,796.
American Medical Electronics Corporation: *See—*
  Turner, Robert Bruce, 3,940,595.
AMF Incorporated: *See—*
  Johnson, Herman W., 3,939,740.
Amiad Systems Limited: *See—*
  Tabor, Hanani, 3,939,755.
AMP Incorporated: *See—*
  Ahmed, Abul Abbas Mesbahuddin, 3,940,197.
  Hart, Granville Spencer; and Brandewie, Joseph Edward, 3,939,552.
  Scheingold, William Samuel; Purdy, Harold Lawrence; and Youngfleish, Frank Christian, 3,940,786.
Ampex Corporation: *See—*
  Heaslett, Alastair M., 3,940,709.
  Kayan, Helmut L.; and Stahler, Alfred F., 3,940,791.
Amsted-Siemagkette GmbH: *See—*
  Janzen, Wolfgang, 3,940,122.
Amtsberg, Lester A., to Chicago Pneumatic Tool Company. Rotatable drill string having a torsionally elastic shaft driving connection with rock bit. 3,939,670, Cl. 64-27.00B.
Amundson, Paul H.; and Crout, Prescott D., to United States of America, Navy. Short range passive electromagnetic detector. 3,939,770, Cl. 102-19.200.
Analog Devices, Inc.: *See—*
  Brokaw, Adrian Paul, 3,940,760.
Anashkin, Alexandr Trofimovich: *See—*
  Drozhzhin, Vladimir Kirillovich; Sergeev, Alexandr Pavlovich; Shevchenko, Vladimir Pavlovich; Buyanov, Vitaly Evdokimovich; Bolotov, Viktor Ivanovich; Yakut, Viktor Mikhailovich; Polenov, Jury Tikhonovich; Luchinsky, Nikolai Nikolaevich; Dvorkind, Mai Mikhailovich; Alferov, Sergei Alexeevich; Morozov, Alexandr Fedorovich; Anashkin, Alexandr Trofimovich; Avrutin, Isaak Zinovievich; and Voronova, Tatyana Moiseevna, 3,939,846.
Anchor Continental, Inc.: *See—*
  Anderson, Ralph L., 3,940,513.
Anders, Edward O., to Global Marine, Inc. Double-acting pneumatic system for inducing motion in a floating vessel. 3,939,789, Cl. 114-40.000.
Andersen, Clifford H.: *See—*
  Fox, Thomas E.; Scannell, John W.; and Andersen, Clifford H., 3,940,722.
Andersen, Stephen Verner; and Swick, Edwin Grant, to Illinois Tool Works Inc. Integral multifinger contact and method of making. 3,940,198, Cl. 339-5.00M.
Anderson, Clifford E., to American Chain & Cable Company, Inc. Material hardness tester. 3,939,700, Cl. 73-83.000.
Anderson Company, The: *See—*
  Mohnach, Michael G.; and Plisky, John J., 3,940,068.
  Stratton, Donald W., 3,939,525.
Anderson, Ralph L., to Anchor Continental, Inc. Method of making moisture-resistant polyurethane-based pressure-sensitive adhesives. 3,940,513, Cl. 427-207.000.
Anderson, Victor F., to Shell Oil Company. Aerosol safety cap with two piece finger entry. 3,940,025, Cl. 222-182.000.
Andrews, Harry N.: *See—*
  Frisch, Erling, deceased; and Andrews, Harry N., 3,940,311.
Andrews, Lawrence Paul; Fox, Raymond Graham; Ludeman, Clayton Potter; Rounds, Thomas Wilbur, Jr.; Scuderi, Victor Anthony; and Strait, Douglas Howard, to International Business Machines Corporation. Interactive audio-visual instruction device. 3,939,579, Cl. 35-9.00A.
Angliker, Hans-Joerg: *See—*
  DeFago, Raymond; Angliker, Hans-Joerg; Holzrichter, Herbert; Kneubuehler, Werner; and Peter, Richard, 3,940,246.
Anheuser-Busch, Incorporated: *See—*
  Teng, James; Dai, Frank; and Stubits, Marcella C., 3,940,384.
Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich. Apparatus for conveying piles of newspapers in perpendicular directions. 3,939,961, Cl. 198-25.000.
Anischenko, Vadim Andreevich: *See—*
  Akhundov, Enver Bejukovich; Anischenko, Vadim Andreevich; Petrov, Vladimir Vasilievich; and Semashko, Petr Stepanovich, 3,940,687.
Appleton Specialty Products Inc.: *See—*
  Blanchfield, Phillip E., 3,940,308.
Apsit, Voldemar Voldemarovich; Ustinsky, Alexei Petrovich; Pugachev, Vladislav Alexandrovich; and Usachev, Mikhail Maiorovich. Dual duty drive with induction motor. 3,940,668, Cl. 318-226.000.
Arai, Kiyoyuki, to Copal Company Limited. Memory mechanism. 3,940,761, Cl. 340-373.000.
Arcilesi, Donald A.: *See—*
  Kardos, Otto; Arcilesi, Donald A.; and Valayil, Silvester P., 3,940,320.
Arenson, Simon Weil. Preventing food products from adhering. 3,940,497, Cl. 426-274.000.
Arino, Hirofumi; Cosolito, Frank J.; George, Kenneth D.; and Thornton, Alfred K., to Union Carbide Corporation. Preparation of a primary target for the production of fission products in a nuclear reactor. 3,940,318, Cl. 204-1.500.
Armco Steel Corporation: *See—*
  Evans, James D., 3,940,291.
  Goller, George N.; and Espy, Ronald H., 3,940,266.
Armi, Edgar L.: *See—*
  DeLano, Richard H.; Mathews, Warren E.; Armi, Edgar L.; and Cochran, Keith W., 3,940,767.
Armour, Donald F., to Package Machinery Company. Constant velocity manifold for injection molding machine. 3,940,224, Cl. 425-247.000.
Armstrong, Anthony Clubley, to Massey-Ferguson-Perkins Limited. Transmission control system. 3,939,933, Cl. 180-53.00R.
Arnaud, Alain: *See—*
  Commeyras, Auguste; Arnaud, Alain; Galzy, Pierre; and Jallageas, Jean-Claude, 3,940,316.
Arneson, Harold N.; and Heitlinger, Louis J., to General Electric Company. Physiological waveform detector. 3,939,824, Cl. 128-2.05A.
Arnold, Dan M., to Texaco Inc. Method for determining thermal neutron decay times of earth formations. 3,940,611, Cl. 250-269.000.
Arsac, Andre, to Rhone-Poulenc-Textile. Method of attaching metal compounds to polymer articles. 3,940,533, Cl. 428-225.000.
Arshansky, Mikhail Iosipovich: *See—*
  Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Tyagunov, Vladimir Arkadievich; Fedorov, Mikhail Ivanovich; Kalinin, Alexandr Ivanovich; Malikov, Konstantin Alexeevich; Arshansky, Mikhail Iosipovich; Petrov, Igor Nikolaevich; and Melnikov, Evgeny Valentinovich, 3,939,896.
Art-Phyl Creations: *See—*
  Hochman, Arthur, 3,939,985.
Arthur D. Little, Inc.: *See—*
  Razdan, Raj K.; and Pars, Harry G., 3,940,421.
Arvin Industries, Inc.: *See—*
  Cauldwell, Jack D.; and Gallanis, George P., 3,940,584.
  Vogel, John D., 3,940,672.
Asahara, Tomohiko: *See—*
  Nakayama, Yuzaburo; Yamamoto, Akinori; Asahara, Tomohiko; Shimamura, Masaharu; Tsuda, Yoshizo; Igawa, Keisuke; and Okamoto, Mitsuhiro, 3,939,636.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
  Yoshitomi, Hirohiko; Hashimoto, Junji; Kodama, Taro; and Hirose, Fujiharu, 3,939,681.
Asakai, Masaru; and Inamoto, Hiroshi, to Nissan Motor Co., Ltd. Window pane weather strip fixture. 3,939,608, Cl. 49-488.000.
Asato, Goro; Berkelhammer, Gerald; and Gastrock, William Henry, to American Cyanamid Company. 5-Amino-1-methyl-3-(1-methyl-5-nitro-2-imidazolyl)-1H-1,2,4-triazole. 3,940,411, Cl. 260-308.00R.
Asberg, Sture Lennart, to SKF Nova AB. Wheel bearing application of driven wheels for motor vehicles. 3,940,194, Cl. 308-236.000.
Asciutto, Henry E. Parachute assembly. 3,940,095, Cl. 244-148.000.
Asfour, Emil S. Apparatus for sorting tobacco leaves. 3,939,983, Cl. 209-73.000.
ASG Industries, Inc.: *See—*
  Bundy, Albert J., 3,939,780.
Ash, Arthur B.; La Montagne, Maurice P.; and Markovac, Anica, to United States of America, Army. 2-Substituted phenyl-6-trifluoromethyl-4-pyridyl-carbinolamines. 3,940,404, Cl. 260-296.00R.
Ashley, Albert H., to GTE Sylvania Incorporated. Drive circuitry with error detection. 3,940,571, Cl. 179-18.0GF.
Asquith, Anthony, to Girling Limited. Mechanical actuating system. 3,939,727, Cl. 74-516.000.
Assembly Machines, Inc.: *See—*
  Stevens, Donald, 3,939,544.
  Stevens, Donald S., 3,939,545.
Astra Pharmaceutical Products Inc.: *See—*
  Hansson, Bengt Eve; and Tischlinger, Edward A., 3,939,833.
Atlantic Richfield Company: *See—*
  Yoo, Jin Sun, 3,940,447.
Atlas Copco Aktiebolag: *See—*
  Brannstrom, Kurt Osten, 3,939,921.
Audi NSU Auto Union Aktiengesellschaft: *See—*
  Ruf, Max; and Steinwart, Johannes, 3,939,655.
Autoclave Engineers, Inc.: *See—*
  Smith, Charles W., Jr.; and Zimmerman, Franz, 3,940,245.
Automated Building Components, Inc.: *See—*
  Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; and Castillo, Adolfo, 3,939,548.
Autotelic Industries, Ltd.: *See—*
  Purchase, Francis Jack, 3,940,757.

Avco Everett Research Laboratory, Inc.: *See—*
  Enos, George R.; Rosa, Richard J.; and Petty, Stanley W., 3,940,639.
  Petty, Stanley W.; Rosa, Richard J.; and Enos, George R., 3,940,640.
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  Cabriere, Jean, 3,940,093.
Avon Products, Inc.: *See—*
  Umstead, Herbert R., 3,940,023.
Avrutin, Isaak Zinovievich: *See—*
  Drozhzhin, Vladimir Kirillovich; Sergeev, Alexandr Pavlovich; Shevchenko, Vladimir Pavlovich; Buyanov, Vitaly Evdokimovich; Bolotov, Viktor Ivanovich; Yakut, Viktor Mikhailovich; Polenov, Jury Tikhonovich; Luchinsky, Nikolai Nikolaevich; Dvorkind, Mai Mikhailovich; Alferov, Sergei Alexeevich; Morozov, Alexandr Fedorovich; Anashkin, Alexandr Trofimovich; Avrutin, Isaak Zinovievich; and Voronova, Tatyana Moiseevna, 3,939,846.
Axelsson, Per Axel Torbjorn. Tooth brush. 3,939,520, Cl. 15-167.00R.
Ayers, Joseph W. Impacting process. 3,939,613, Cl. 51-320.000.
Azuma, Kuninori: *See—*
  Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, 3,940,592.
B. F. Goodrich Company, The: *See—*
  Layer, Robert W., 3,940,364.
  Schlatzer, Robert K., Jr., 3,940,351.
B. V. Peximac: *See—*
  du Chambon, Michel Georges Jean Picard, 3,939,783.
Babcock & Wilcox Company, The: *See—*
  Brandby, Kenneth, 3,939,784.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
  Reif, Werner; Fischer, Roman; and Pommer, Horst, 3,940,445.
Bailey, Donald L.: *See—*
  Stallabrass, James R.; Ringer, T. Rayman; Bailey, Donald L.; and Hearty, Patrick F., 3,940,622.
Bailey, Paul T., to Monsanto Company. Magnetic bubble logic gates. 3,940,631, Cl. 307-88.0LC.
Bair, Willard E. Transducing system. 3,940,752, Cl. 340-189.00M.
Baker, Donald Arthur; and Billings, Peter Robert, to Rank Xerox Ltd. Method of coating electrostatographic carrier particles. 3,940,514, Cl. 427-213.000.
Baker, Jean A.: *See—*
  Rogers, Gary W.; Tottie, Leroy A.; Hamilton, Vaughn G.; Goodwin, Orville O.; and Baker, Jean A., 3,939,746.
Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, to Boots Company Limited, The. Insecticidal compositions and methods of combatting insects using substituted imidazoles. 3,940,484, Cl. 424-248.000.
Baker Perkins Holdings Limited: *See—*
  Steels, Gordon, 3,940.218.
Baker Research Development Service, Inc.: *See—*
  Jackel, Simon S.; and Horn, Mortimer J., 3,940,504.
Ball, Geoffrey William. Mass spectrometers. 3,940,616, Cl. 250-292.000.
Ballard, Edward Cooper, to Du Pont de Nemours, E. I., and Company. Tufted carpet having a polyolefin film as the secondary backing. 3,940,525, Cl. 428-96.000.
Balon, Albert J. Tube and fitting structure. 3,940,168, Cl. 285-132.000.
Balzano, Quirino: *See—*
  Fassett, Matthew; and Balzano, Quirino, 3,940,770.
Banker, Harold J., to Pram Inc. Apparatus and process for depositing electrostatically and magnetically responsive particulate matter on a conductive surface. 3,939,800, Cl. 118-636.000.
Banks, James W., to Chemetron Corporation. Mechanism to convert rotary motion to transverse motion. 3,939,718, Cl. 74-99.000.
Bar-on, Ari, to Xerox Corporation. Cleaning structure for an elastomeric fuser member. 3,940,238, Cl. 432-75.000.
Barchilon, John. Type correction aid. 3,939,963, Cl. 197-187.000.
Barenyi, Bela, to Daimler-Benz Aktiengesellschaft. Longitudinal bearer arrangement in vehicles. 3,939,934, Cl. 180-54.00R.
Barkdoll, Archie E., to Du Pont de Nemours, E. I., and Company. Soft, tough low refractive index contact lenses. 3,940,207, Cl. 351-160.000.
Barker, James N.; and Cartwright, Edward A., to Precision Thin Film Corporation. Safety system. 3,939,679, Cl. 70-277.000.
Barlow, Gordon A.: *See—*
  Meyer, Burton C.; Barlow, Gordon A.; and Breslow, Jeffrey D., 3,940,140.
Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
  Lenk, Erich, 3,940,075.
  Rehn, Karl-Heinz; and Middelmann, Heinz, 3,939,635.
Barnes, Paul J. Out-of-bounds wand for volleyball net and support strap. 3,940,139, Cl. 273-95.00R.
Barnes, Thomas W.; and Richmond, Albert R., to Richmond Manufacturing Company, The. Portable earth boring machine. 3,939,926, Cl. 175-24.000.
Barnett, Charles B.: *See—*
  Ekama, Peter J.; Morrison, Larry A.; and Barnett, Charles B., 3,940,091.
Barnett, Clarence E.: *See—*
  Barnett, Forest H.; and Barnett, Clarence E., 3,939,891.
Barnett, Forest H.; and Barnett, Clarence E. Non-skid device for vehicle wheels. 3,939,891, Cl. 152-225.00R.
Barratt, Robert O., to Foster Wheeler Energy Corporation. Helium heated bayonet tube steam generator. 3,939,804, Cl. 122-32.000.
Barry, Leonard D. Overhead transfer carrier and tracks. 3,939,775, Cl. 104-18.000.
Bartch, Donald Walter: *See—*
  Deal, Samuel Broughton; and Bartch, Donald Walter, 3,940,511.
Barton, David W.: *See—*
  Postma, Norman D.; and Barton, David W., 3,939,657.
BASF Aktiengesellschaft: *See—*
  Gaeth, Rudolf; and Linke, Roland, 3,940,535.
  Mania, Max Joachim; and Weidmann, Albrecht, 3,939,526.
Bashark, Larry Thomas, to Whirlpool Corporation. Stile and mullion heater control. 3,939,666, Cl. 62-150.000.
Bauer, Benjamin B., to CBS Inc. Compatible four channel recording and reproducing system. 3,940,559, Cl. 179-1.0GQ.
Bauer, Benjamin B., to CBS Inc. Directional microphone. 3,940,575, Cl. 179-121.00D.
Bauer, Carl F.: *See—*
  Wagner, Melvin H.; Corcoran, Sandra B.; and Bauer, Carl F., 3,940,327.
Baumgartner, Jon B.; and Moran, James J., to Nalco Chemical Company. Apparatus for spray-coating product onto an article. 3,940,063, Cl. 239-70.000.
Baumle, Rudolf F., to Borg-Warner Corporation. Elastomeric seal. 3,940,155, Cl. 277-183.000.
Baxter Laboratories, Inc.: *See—*
  Shine, Dennis F.; and Torau, Gunther W., 3,939,623.
Baxter, Robert Olin, to International Paper Company. Valve placement in a multi-ply, inflatable bag. 3,939,995, Cl. 214-10.50D.
Baxter, Samuel; and Changani, Pushpkumar Dewanmal, to Monsanto Chemicals Limited. Filter elements. 3,939,849, Cl. 131-269.000.
Bayer Aktiengesellschaft: *See—*
  Bentz, Francis; and Nischk, Gunther, 3,940,376.
  Buchel, Karl-Heinz; Kramer, Wolfgang; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 3,940,415.
  Draber, Wilfried; Timmler, Helmut; Eue, Ludwig; and Schmidt, Robert R., 3,940,391.
  Eiter, Karl, 3,940,425.
  Ellegast, Konrad, 3,939,639.
  Frohberger, Paul-Ernst; Urbschat, Otto Ewald, deceased; and Hermann, Gunther, 3,940,488.
  Hess, Bernhard; Raichle, Karl; Schulz-Walz, Hansjochen; Peltzer, Bernd; Bottenbruch, Ludwig; and Goerden, Leonard, 3,940,350.
  Hoffmann, Hellmut; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,940,457.
  Hoppe, Peter; Drouven, Gustav; Leyer, Helmut; and Muller, Johann, 3,940,524.
  Kramer, Wolfgang; Buchel, Karl Heinz; Meiser, Werner; and Plempel, Manfred, 3,940,413.
  Kramer, Wolfgang; Buchel, Karl Heinz; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 3,940,414.
  Pelousek, Herbert; Horbach, Alfred; Bottenbruch, Ludwig; and Binsack, Rudolf, 3,940,367.
  Singer, Rolf Jurgen; and Jager, Gerhard, 3,940,390.
Beal, Donald F.: *See—*
  Harrington, Roy V.; and Beal, Donald F., 3,940,255.
Beard, Walter C. Pump. 3,940,028, Cl. 222-321.000.
Beasely, James: *See—*
  Mock, Howard C.; Isaac, Kenneth N.; Disparte, Charles P.; Hall, Warren L.; and Beasely, James, 3,940,744.
Beaufrere, Albert H. Rotary disc regenerator. 3,939,904, Cl. 165-9.000.
Beaven, Paul Anthony: *See—*
  Hounsfield, Godfrey Newbold; Beaven, Paul Anthony; and Lill, Brian Herbert, 3,940,599.
Beckert, Werner F.; and Dengel, Ottmar H., to United States of America, Navy. Thermal laser pumped with high nitrogen content propellants. 3,940,298, Cl. 149-92.000.
Beckman Instruments, Inc.: *See—*
  Bleak, Thomas M.; and Hansen, Paul L., 3,940,593.
  Bleak, Thomas M.; and Hansen, Paul L., 3,940,594.
Becton, Dickinson and Company: *See—*
  Tulis, Jerry J., 3,939,971.
Bedell, Edward L., Jr., to Corning Glass Works. Apparatus for removing core during refractory material fusion casting. 3,940,102, Cl. 249-63.000.
Bedell, John R.: *See—*
  Polk, Donald E.; and Bedell, John R., 3,939,900.
Beecham Group Limited: *See—*
  La Croix, Eric Arthur Stuart; and Mhasalker, Solomon Ezekiel, 3,940,487.
Beeswing, Dennis Edwin, to Elliott Brothers (London) Limited. Pulse pair recognition and relative time of arrival circuit. 3,940,764, Cl. 343-6.5LC.
Belanger, Gerard: *See—*
  Blanchette, Henri; and Belanger, Gerard, 3,939,734.
Belge, Dieter, to Carl Valentin GmbH. Apparatus for imprinting selected characters on a movable record medium. 3,939,767, Cl. 101-99.000.
Bell Telephone Laboratories, Incorporated: *See—*
  Fendley, Richard L.; Hoenig, Gerhard E.; Poehlmann, George; and Prendergast, John M., Jr., 3,939,559.
Bellanca, Nicolo, to Dynapol. Coloring process and colored articles. 3,940,503, Cl. 426-540.000.

- Ben-dov, Oded, to RCA Corporation. Circularly polarized, broadside firing tetrahelical antenna. 3,940,772, Cl. 343-853.000.
- Bencini, Ferdinando: *See—*
  - Console, Luciano; Bencini, Ferdinando; and Chiellini, Enzo, 3,940,368.
- Bendix Corporation, The: *See—*
  - Schulien, Howard E.; Ficken, William H.; and Sgambati, Robert J., 3,939,716.
  - Zipin, Richard B., 3,939,704.
- Benepe, John A. Quick-removable bag closure. 3,939,533, Cl. 24-30.50R.
- Bennett, William P., to Programming Technologies, Inc. Automatic tape loading apparatus for cassettes and the like. 3,940,080, Cl. 242-182.000.
- Bense, William M.; and Perino, Thomas W., to Leesona Corporation. Belt traverse and guide mechanism. 3,940,078, Cl. 242-43.00R.
- Benton, Louis J.: *See—*
  - Kross, Robert W.; Fiel, Larry D.; Crockett, Charles R.; Neely, George B.; and Benton, Louis J., 3,940,019.
- Bentz, Francis; and Nischk, Gunther, to Bayer Aktiengesellschaft. Permanently antistatic shaped structures of acrylonitrile polymers. 3,940,376, Cl. 260-79.30M.
- Benz Vehicle Corporation: *See—*
  - Benz, William G., 3,939,931.
- Benz, William G., to Benz Vehicle Corporation. Electric starter drive for motor engaging vehicle drive wheel. 3,939,931, Cl. 180-13.000.
- Bercher S.A. Publicite Generale: *See—*
  - Lecoeur, Georges; and Fontenille, Henri, 3,940,523.
- Bereznicki, Bogdan, to Ford Motor Company. Threaded assembly. 3,939,889, Cl. 151-8.000.
- Berger-Jenson & Nicholson, Ltd.: *See—*
  - Briggs, Charles Jonathan, 3,940,117.
- Bergersen, Earl O. Orthodontic positioner with overbite or open bite correcting or relapse inhibiting capability. 3,939,598, Cl. 32-14.00B.
- Bergonz, Francis H., to McDonnell Douglas Corporation. Vehicle locator. 3,940,630, Cl. 250-568.000.
- Bergstresser, Ralph E., to Energy Innovations. Device for prolonging ignition spark. 3,939,814, Cl. 123-148.00A.
- Bergstrom, Theodore R., to Minnesota Mining and Manufacturing Company. Sintered austenitic-ferritic chromium-nickel steel alloy. 3,940,269, Cl. 75-214.000.
- Berkelhammer, Gerald: *See—*
  - Asato, Goro; Berkelhammer, Gerald; and Gastrock, William Henry, 3,940,411.
- Berkestad, Karl-Erik: *See—*
  - Bryntse, Anders Ivar; and Berkestad, Karl-Erik, 3,940,338.
- Berkowitz, Murray: *See—*
  - Hermes, Walter Ludwig; Berkowitz, Murray; and Lombaerde, Charles, 3,940,104.
- Bernaerts, Henry J. Dual piezoelectric fluid jet transfer valve. 3,939,857, Cl. 137-83.000.
- Bernett, Frank E.; and Kleinhans, Robert J., to Tile Council of America, Inc. Non hydraulic grouting composition of a water resistant polymer emulsion and a mixture of a coarse and a fine filler. 3,940,358, Cl. 260-29.60R.
- Bernier, Lornie J.; and Das, Tapan K., to Textron, Inc. Method of producing a dyeable coating on metal article. 3,939,547, Cl. 29-408.000.
- Bero, Robert D., to Plaskolite, Inc. Extruded plastic panel-holding strip having integral flexible hinge. 3,939,620, Cl. 52-716.000.
- Berstler, Francis E. Spark plug construction. 3,940,649, Cl. 313-122.000.
- Berti, Furio. Process for drying wood. 3,939,573, Cl. 34-26.000.
- Bethlehem Steel Corporation: *See—*
  - Brachman, Armand E., 3,940,467.
  - Gosse, Joseph F.; and Fehr, George V., 3,939,665.
- Beun, Matthijs, to U.S. Philips Corporation. Method of and device for skeletonizing characters. 3,940,737, Cl. 340-146.30H.
- Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., to Gulf Research & Development Company. Two stage metal-containing oil hydrodesulfurization process employing an activated alumina supported catalyst in each stage. 3,940,330, Cl. 208-210.000.
- Bied-Charreton, Philippe: *See—*
  - Micheron, Francois; and Bied-Charreton, Philippe, 3,940,201.
- Bieganowski, Leo M. Hockey stick handle device. 3,940,134, Cl. 273-67.00A.
- Big Elk Wood Corporation: *See—*
  - Smitherman, Stephen N.; and Dougherty, Lemuel A., 3,939,762.
- Billi, Giorgio. Clutch device for knitting machines. 3,939,672, Cl. 66-155.000.
- Billings, Peter Robert: *See—*
  - Baker, Donald Arthur; and Billings, Peter Robert, 3,940,514.
- Binsack, Rudolf: *See—*
  - Pelousek, Herbert; Horbach, Alfred; Bottenbruch, Ludwig; and Binsack, Rudolf, 3,940,367.
- Biological Developments, Inc.: *See—*
  - Gross, Stanley Joseph, 3,940,475.
- Bittner, John R., to General Electric Company. Carriage operated ribbon drive and reverse mechanism. 3,939,957, Cl. 197-151.000.
- Bivens, David J. Overhead brush system with lateral movement. 3,939,517, Cl. 15-53.00A.
- Bizerba-Werke, Wilhelm Kraut KG: *See—*
  - Muller, Ernst; and Butz, Alois, 3,939,749.
- Blachnicki, Bogdan: *See—*
  - Gierek, Adam; Pawlowski, Stanislaw; Formanek, Boleslaw; Piesiur, Eugeniusz; Pucka, Grzegorz; Blachnicki, Bogdan; Rychlewski, Jerzy; and Gajda, Janusz, 3,940,516.
- Blanchette, Henri; and Belanger, Gerard. Automatic transmission with centrifugal clutches. 3,939,734, Cl. 74-752.00E.
- Blanchfield, Phillip E., to Appleton Specialty Products Inc. Suction pipe with quick disconnect cover. 3,940,308, Cl. 162-363.000.
- Bland, Walter P.: *See—*
  - McKendry, Lennon H.; and Bland, Walter P., 3,940,389.
- Blanshine, Allison W., to Sperry Rand Corporation. Hay roll forming machine. 3,939,631, Cl. 56-341.000.
- Blattermann, Karl-Gunther; and Nolte, Gunther, to Conrad Scholtz AG. Conveyor belt. 3,939,965, Cl. 198-198.000.
- Blauschild, Robert A., to Signetics Corporation. Active breakdown circuit for increasing the operating range of circuit elements. 3,940,683, Cl. 323-4.000.
- Bleak, Thomas M.; and Hansen, Paul L., to Beckman Instruments, Inc. Automatic process controller with digital memory. 3,940,593, Cl. 235-150.100.
- Bleak, Thomas M.; and Hansen, Paul L., to Beckman Instruments, Inc. Automatic process controller with bumpless operation. 3,940,594, Cl. 235-150.100.
- Bleiman, Claude: *See—*
  - Mercier, Jean; Faille, Marc Della; and Bleiman, Claude, 3,940,546.
- Bleiman, Lewis W., to Pertec Corporation. Disk positioning means for a flexible magnetic disk drive apparatus. 3,940,793, Cl. 360-99.000.
- Blum, Clement J., to Texas Instruments Incorporated. Separate surface, common depth point stack. 3,940,734, Cl. 340-15.5CP.
- Bock, Helmuth-Joachim: *See—*
  - Rutkowski, Karl; Bock, Helmuth-Joachim; and Gerke, Peter, 3,940,568.
- Bockett-Pugh, Charles Paul, to Honeywell Inc. Signal limiter circuits. 3,940,704, Cl. 328-169.000.
- Bode, Charles H., Jr.; and Cuscino, Thomas A., to United States Steel Corporation. Method and apparatus for flame-cutting cracked corner portions from continuously cast metal workpieces. 3,940,292, Cl. 148-9.00R.
- Bodnar, Jurij. Multiple exposure optical recording method and apparatus. 3,940,775, Cl. 354-122.000.
- Boehringer Ingelheim GmbH: *See—*
  - Koppe, Herbert; Engelhardt, Albrecht; and Zeile, Karl, 3,940,489.
- Boeing Company, The: *See—*
  - Dunstan, Phillip Elwyn; and Shapiro, Sam, 3,939,959.
  - Farris, Edsel S., 3,940,092.
  - Miller, John S., 3,940,120.
  - Pinson, George T., 3,939,706.
- Boettger, Richard M.: *See—*
  - Nappen, Bernard H.; Boettger, Richard M.; and Marotta, Nicholas G., 3,940,505.
- Boger, Allen D., Jr.: *See—*
  - Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 3,940,742.
- Boguslavskaya, administratrix by Khaya Semenovna: *See—*
  - Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich, 3,940,324.
- by Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich. Method of decomposing calcium carbonate. 3,940,324, Cl. 204-157.10H.
- Bohn, Floyd O., to Dresser Industries, Inc. Combined gravel packing and perforating method and apparatus for use in well bores. 3,939,927, Cl. 175-4.520.
- Boissevain, Laurens R. Pharmaceutically active compounds and their preparation and compositions. 3,940,381, Cl. 260-210.00R.
- Bolex International SA: *See—*
  - Thevenaz, Jean, 3,939,975.
- Boller, George F.: *See—*
  - Renk, Richard J.; and Boller, George F., 3,940,189.
- Bolliger, Alfred R. Assembly for testing shock absorbers incorporated in vehicles. 3,939,692, Cl. 73-11.000.
- Bolotov, Viktor Ivanovich: *See—*
  - Drozhzhin, Vladimir Kirillovich; Sergeev, Alexandr Pavlovich; Shevchenko, Vladimir Pavlovich; Buyanov, Vitaly Evdokimovich; Bolotov, Viktor Ivanovich; Yakut, Viktor Mikhailovich; Polenov, Jury Tikhonovich; Luchinsky, Nikolai Nikolaevich; Dvorkind, Mai Mikhailovich; Alferov, Sergei Alexeevich; Morozov, Alexandr Fedorovich; Anashkin, Alexandr Trofimovich; Avrutin, Isaak Zinovievich; and Voronova, Tatyana Moiseevna, 3,939,846.
- Boltz, Charles D., Jr., to RCA Corporation. Timing error detecting and speed control system. 3,940,556, Cl. 178-6.60R.

- Bolza, Frederick, to ICI Australia Limited. Gelled explosive composition and process. 3,940,297, Cl. 149-60.000.
- Bonnett, Richard L., to Quality Products, Inc. Plastic drum. 3,940,013, Cl. 220-94.00R.
- Booth, Alfred E., to Raytheon Company. Microwave waveguide dissipative load comprising fluid cooled lossy waveguide section. 3,940,719, Cl. 333-22.00F.
- Booth, Eugene T., to United States of America, Energy Research and Development Administration. Apparatus for detecting leaks. 3,939,695, Cl. 73-40.700.
- Booth, William M., to Brondyke, Edward E. Hose reel. 3,939,862, Cl. 137-355.160.
- Boots Company Limited, The: *See—*
  - Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, 3,940,484.
- Borel, Joseph; Toupillier, Louise Peccoud nee; and Robert, Jacques, to Commissariat a l'Energie Atomique. Liquid crystal cell. 3,939,556, Cl. 29-592.000.
- Borg-Warner Corporation: *See—*
  - Baumle, Rudolf F., 3,940,155.
  - Conley, David O., 3,940,454.
  - Paul, Howard C.; and Tuzson, John J., 3,939,702.
  - Wentworth, Robert S., Jr., 3,939,872.
- Borgstrom, Klas Ingvar Helmer, to Aktiebolaget Platmanufaktur. Method and apparatus for dispensing bowl-shaped ohjects of a thin material one at a time. 3,940,017, Cl. 221-211.000.
- Boris, Michel, to Societe Technique de Pulverisation. Atomiser having a plunger tube. 3,940,070, Cl. 239-333.000.
- Borodin, Daniel J.: *See—*
  - Tolliver, Wilbur E.; and Borodin, Daniel J., 3,939,879.
- Bosshard, Alfred: *See—*
  - Delfosse, Pierre; and Bosshard, Alfred, 3,940,550.
- Bott, John A. Spare tire extraction device. 3,940,041, Cl. 224-42.120.
- Bottard, Gilles Jean Marcel: *See—*
  - Henry, Michel; and Bottard, Gilles Jean Marcel, 3,940,601.
- Bottenbruch, Ludwig: *See—*
  - Hess, Bernhard; Raichle, Karl; Schulz-Walz, Hansjochen; Peltzer, Bernd; Bottenbruch, Ludwig; and Goerden, Leonard, 3,940,350.
  - Pelousek, Herbert; Horbach, Alfred; Bottenbruch, Ludwig; and Binsack, Rudolf, 3,940,367.
- Bourns, Inc.: *See—*
  - Riley, Richard E., 3,939,558.
- Bowler, Edward F., Jr.; Stupin, Joseph M., Jr.; and Williams, Edward G., to Xerox Corporation. Bake technique for manufacturing tetrafluoroethylene coated rolls. 3,940,518, Cl. 427-379.000.
- Boyle, Donn G.: *See—*
  - Osborn, Robert O.; and Boyle, Donn G., 3,939,875.
- Boyle and Osborn: *See—*
  - Osborn, Robert O.; and Boyle, Donn G., 3,939,875.
- Brachman, Armand E., to Bethlehem Steel Corporation. Method of injection molding a structural foamed thermoplastic article having a uniform swirl-free and indent-free surface. 3,940,467, Cl. 264-45.500.
- Bradley, Curtis E. Fuel regenerated non-polluting internal combustion engine. 3,939,806, Cl. 123-3.000.
- Brandby, Kenneth, to Babcock & Wilcox Company, The. Fuel conduit. 3,939,784, Cl. 110-104.00R.
- Brandewie, Joseph Edward: *See—*
  - Hart, Granville Spencer; and Brandewie, Joseph Edward, 3,939,552.
- Brandigi, Carlo; and Fantechi, Giuliano. Device for forming a shaped cover for a flask. 3,939,759, Cl. 93-54.300.
- Brandon, William D., to Caterpillar Tractor Co. Friction article of fluoroelastomers with calcium oxide bonded to metal. 3,940,527, Cl. 428-141.000.
- Brandstetter, Helmut: *See—*
  - Hesler, Dietrich; Gresser, Gerhard; and Brandstetter, Helmut, 3,939,611.
- Brandwein, Rowland; and Gupta, Mohan L., to Textron, Inc. Nickel-cadmium battery monitor. 3,940,679, Cl. 320-48.000.
- Brannstrom, Kurt Osten, to Atlas Copco Aktiebolag. Method and device for damping the movement of a hammer piston. 3,939,921, Cl. 173-121.000.
- Braun Aktiengesellschaft: *See—*
  - Roth, Johann, 3,940,208.
- Braun, Vlastimil; and Vitek, Oto, to Chepos Zavody Chemicho a Potravinarskeho Strojirenstvi, Generalni Reditelstvi. Bubble tray and cap assembly for fluid contact apparatus. 3,940,462, Cl. 261-114.0VT.
- Braverman, Maynard: *See—*
  - Fisher, William J., 3,939,725.
- Bredeweg, Corwin J., to Dow Chemical Company, The. β,β-Chlorinated and brominated ethers. 3,940,449, Cl. 260-611.00B.
- Brekle, Erich; Herb, Eugen; and Klingel, Hans, to Trumph Maschinene AG, Firma. Copying tracer particularly for stamping machines. 3,939,566, Cl. 33-23.00K.
- Brenner, Mortimer Wilkes; and Laufer, Louis, to Schwarz Services International Ltd. Silanized antimicrobial compounds. 3,940,430, Cl. 260-448.80R.
- Breslow, Jeffrey D.: *See—*
  - Meyer, Burton C.; Barlow, Gordon A.; and Breslow, Jeffrey D., 3,940,140.
- Brewer Engineering Laboratories, Inc.: *See—*
  - Brewer, Given A., 3,940,730.
- Brewer, Given A., to Brewer Engineering Laboratories, Inc. Strain gage construction. 3,940,730, Cl. 338-2.000.
- Brian, Norton T. Coffee measure. 3,940,033, Cl. 222-452.000.
- Bridgestone Tire Company, Ltd.: *See—*
  - Abe, Masaru, 3,939,890.
  - Furukawa, Junji; Haga, Kazuo; and Kobayashi, Eiichi, 3,940,378.
  - Tezuka, Toshiyata; Kawakami, Hiroshi; and Miura, Katsutoshi, 3,939,663.
  - Yukuta, Toshio; and Ohashi, Takashi, 3,940,369.
- Bridgman, Henry. Medical aspiration system vacuum level indicator. 3,939,835, Cl. 128-276.000.
- Briggs, Charles Jonathan, to Berger-Jenson & Nicholson, Ltd. Agitating apparatus. 3,940,117, Cl. 259-58.000.
- Brill, Richard Henry: *See—*
  - Eaton, John Littell, Jr.; Brill, Richard Henry; and Myers, Walter E., 3,939,760.
- Brinza, Joseph E.: *See—*
  - Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., 3,940,628.
- British Aircraft Corporation Limited: *See—*
  - Medhurst, Cyril William, 3,939,797.
- British Gas Corporation: *See—*
  - Gray, David, 3,939,874.
- British Petroleum Company Limited, The: *See—*
  - Alesander, Michael Richard; Duncan, Edward; McClements, Kenneth; and Spencer, John Roger, 3,940,600.
- British Steel Corporation: *See—*
  - Sergeant, David Robert, 3,940,294.
- Brock, George W.; Shelledy, Frank B.; Smith, Sidney H.; and Thornley, Richard F. M., to International Business Machines Corporation. Shielded magnetoresistive magnetic transducer. 3,940,797, Cl. 360-113.000.
- Brockelsby, Norman D., to Dutton-Lainson Company. Pawl and ratchet construction for hand winch. 3,939,729, Cl. 74-575.000.
- Brockelsby, Norman D., to Dutton-Lainson Company. Anchor bracket and cleat. 3,939,793, Cl. 114-210.000.
- Brockett, Bruce W.; Marzocco, Ralph L.; and Weaver, Fredrick D., to NCR Corporation. Record material and marking liquid. 3,940,275, Cl. 106-19.000.
- Brodkin, Jury Markovich: *See—*
  - Jurovsky, Albert Yakovlevich; Zelenko, Gennady Samuilovich; and Brodkin, Jury Markovich, 3,939,712.
- Brodsky, Larry: *See—*
  - Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; and Castillo, Adolfo, 3,939,548.
- Brokaw, Adrian Paul, to Analog Devices, Inc. Digital-to-analog converter with current source transistors operated accurately at differentt current densities. 3,940,760, Cl. 340-347.0DA.
- Brondyke, Edward E.: *See—*
  - Booth, William M., 3,939,862.
- Brown, Neil L., to United States of America, Navy. Phase sensitive detector. 3,940,693, Cl. 324-83.00A.
- Brown, Trenton L., to Aluminum Company of America. Coiled-line pay off method and apparatus. 3,940,088, Cl. 242-128.000.
- Browning-Ferris Industries, Inc.: *See—*
  - Moberg, James W., 3,939,937.
- Bruce, Albert I., to GAR Industries Ltd. Stuffing box and blow out preventing device for polish rods of oil well pumping units. 3,939,910, Cl. 166-84.000.
- Bruckert, Klaus; Hoffmann, Herbert; Kutscher, Gerhard; Neubert, Rolf; and Wehling, Rolf, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method for automatically starting and stopping an open-end spinning machine. 3,939,638, Cl. 57-156.000.
- Bruel, Alain. Transverse beating device for a grape-gathering machine. 3,939,629, Cl. 56-330.000.
- Brunstetter, Frank H., to Hi-Torr Inventions Corporation. Erection aid for a penis. 3,939,827, Cl. 128-79.000.
- Bryant Grinder Corporation: *See—*
  - Mitchell, William A.; and Thayer, Charles V., 3,939,944.
  - Schroeder, Roger L., 3,940,675.
- Bryntse, Anders Ivar; and Berkestad, Karl-Erik, to Ab Bygg- Och Transportekonomi (BT). Lifting vehicle having a control member adjustable into three different positions. 3,940,338, Cl. 254-2.00R.
- Buchel, Karl-Heinz; Kramer, Wolfgang; Frohberger, Paul-Ernst; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. 1-(Imidazolyl-1)-2-aryloxy-3-hydroxy-alkanes. 3,940,415, Cl. 260-309.000.
- Buchel, Karl Heinz: *See—*
  - Kramer, Wolfgang; Buchel, Karl Heinz; Meiser, Werner; and Plempel, Manfred, 3,940,413.
  - Kramer, Wolfgang; Buchel, Karl Heinz; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 3,940,414.
- Bucher-Guyer AG, Maschinenfabrik: *See—*
  - Hauser, Hans Ulrich; and Hartmann, Eduard, 3,940,465.
- Bucking, Hans Walter; Hess, Peter; Konig, Franz; Sahm, Wilfried; and Schneider, Gerhart, to Hoechst Aktiengesellschaft. Peracylated polyamines compatible with optical brighteners as activators for inorganic peroxo compounds. 3,940,340, Cl. 252-102.000.
- Buckman, John B., to A. O. Smith Corporation. Single-phase induction motor. 3,940,646, Cl. 310-166.000.
- Buderus'sche Eisenwerke: *See—*
  - Jung, Anton Ladislaus; Lapczyna, Manfred; Mows, Peter; Schmidt-Burbach, Gerhard; and Strauss, Heinz, 3,939,765.
- Buhl, Harro; Erdelitsch, Herbert; Machalitzky, Otto; and Seitter, Wolf, to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH. Plural switch construction having rotary and linear switch contact assemblies operated by independent operators. 3,940,579, Cl. 200-4.000.

Bundy, Albert J., to ASG Industries, Inc. Apparatus for shipping flat glass without packing cases. 3,939,780, Cl. 105-367.000.
Burg, Karlheinz: *See*—
  Grossmann, Hans-Hermann; Burg, Karlheinz; and Sextro, Gunter, 3,940,365.
Burgess, Robert L., to Dracon Industries. Power supply for key telephone system. 3,940,572, Cl. 179-77.000.
Burke, Harry E.; and Meyer, Burton C., to Marvin Glass & Associates. Circular air glider. 3,939,602, Cl. 46-74.00D.
Burns, Joseph P., to ICI United States Inc. Fibrous mats. 3,940,537, Cl. 428-288.000.
Bush, Roberta F. Pattern fitting tool and method of custom fitting patters. 3,939,565, Cl. 33-17.00R.
Bustos, Rafael T.; and Orr, Ladd M., to Leggett & Platt, Incorporated. Solid plastic foam merchandise support. 3,939,987, Cl. 211-134.000.
Butler, John David: *See*—
  Clark, William E.; and Butler, John David, 3,939,551.
Butner, Dean C.; and Clark, Douglas C. Package inspection and handling system. 3,939,984, Cl. 209-74.00M.
Buttenschon, Ove Hviding. Life-saving device. 3,939,511, Cl. 9-342.000.
Butterworth, Elbert Roy; and Duensing, Willard John, to Johns-Manville Corporation. Chill-proofing with synthetic magnesium silicates. 3,940,498, Cl. 426-423.000.
Butz, Alois: *See*—
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Buyanov, Vitaly Evdokimovich: *See*—
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Byrnes, Peter G., to Union Carbide Corporation. Ice release agents consisting of pseudo-plastic compositions of crosslinked polyacrylic acid in water-polyglycol mixture. 3,940,356, Cl. 260-29.60E.
C.A.V. Limited: *See*—
  Adey, Anthony John; French, Geoffrey Richard; Leonard, Gordon Harris; and Williams, Malcolm, 3,939,738.
C. P. Clare & Company: *See*—
  Fox, Thomas E.; Scannell, John W.; and Andersen, Clifford H., 3,940,722.
C. V. P. Systems Inc.: *See*—
  Gidewall, Kenneth L.; and Heavner, Larry W., 3,939,624.
Cabriere, Jean, to Avions Marcel Dassault-Breguet Aviation. Flap or wing droop arrangement for an aircraft wing. 3,940,093, Cl. 244-42.00A.
Caldarella, Riccardo: *See*—
  Cicognani, Enrico; Lamartina, Alfonso; and Caldarella, Riccardo, 3,940,749.
California Institute of Technology: *See*—
  MacAnally, Richard B., 3,940,274.
Calspan Corporation: *See*—
  Padgug, Robert Allen, 3,940,632.
Campbell, Kenneth E. Collapsible reel. 3,940,085, Cl. 242-115.000.
Campbell, Robert W.: *See*—
  O'Shaughnessy, Marion T.; and Campbell, Robert W., 3,940,375.
Canadian Patents & Development Limited: *See*—
  Heggie, William S., 3,939,703.
  Stallabrass, James R.; Ringer, T. Rayman; Bailey, Donald L.; and Hearty, Patrick F., 3,940,622.
Canon Kabushiki Kaisha: *See*—
  Komine, Yoshio, 3,940,777.
  Tanikoshi, Kinji, 3,940,670.
Captocap Limited: *See*—
  Hilaire, Fernand, 3,940,103.
Carder, Charles Hobert, to Union Carbide Corporation. Silane containing coating compositions. 3,940,360, Cl. 260-29.1SB.
Cardwell, Paul H.: *See*—
  Kane, William S.; McCutchen, Hugh L.; and Cardwell, Paul H., 3,940,470.
Carl Valentin GmbH: *See*—
  Belge, Dieter, 3,939,767.
Carlsson, Bertil Sigvard. Lifting device, particularly for lifting and transporting building boards, such as plaster and wood particle boards. 3,940,171, Cl. 294-15.000.
Carrieres et Fours A Chaux Dumont-Wautier: *See*—
  Dumont, Philippe A., 3,939,693.
Carroll, John L. Combination air conditioning and fire protection system for a building. 3,939,914, Cl. 169-16.000.
Carson, Arthur N. Optical information processing system with color center crystal. 3,940,748, Cl. 340-173.0CC.
Cartwright, Edward A.: *See*—
  Barker, James N.; and Cartwright, Edward A., 3,939,679.
Case, Leslie Catron. Diamino disulfide curatives for polyurethanes. 3,940,371, Cl. 260-77.5AM.
Casey, James H., to Minnesota Mining and Manufacturing Company. Device for backing butt-welds between tubes. 3,940,048, Cl. 228-50.000.
Casperson, Lee W., to United States of America, Energy Research and Development Administration. Cylindrical laser resonator. 3,940,711, Cl. 331-94.50C.
Cassella Farbwerke Mainkur Aktiengesellschaft: *See*—
  Raabe, Thomas; Scholtholt, Josef; and Nitz, Rolf-Eberhard, 3,940,406.
Castagna, Eugene G.; Schrage, Albert; and Repiscak, Michael, to Dart Industries, Inc. Process for controlled degradation of propylene polymers. 3,940,379, Cl. 260-88.20S.
Castela, Andre; and Joubert, Philippe, to Institut Francaise du Petrole, des Carburants et Lubrifiants. Apparatus for applying a determined force to an element connected to an installation subjected to alternating movements. 3,940,111, Cl. 254-172.000.
Castelli, Cesar; and Vincent, Eugene, to Merlin Gerin. Mechanically operated gas blast circuit interrupter having gastight enclosures. 3,940,582, Cl. 200-148.00B.
Castillo, Adolfo: *See*—
  Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; and Castillo, Adolfo, 3,939,548.
Caterpillar Tractor Co.: *See*—
  Brandon, William D., 3,940,527.
  Miers, Bruce W.; Olt, Arthur E., Jr.; Van Rossem, Richard; and Wait, John D., Jr., 3,940,177.
  Penny, Robert Noel, 3,939,651.
  Straw, Raymond L.; and Wilson, Larry R., 3,940,301.
  Vinton, David S., 3,939,936.
  Zook, Donald G.; Miller, Kenneth J.; and Patton, Eugene K., 3,939,880.
Catlin, John P., to Crucible Inc. Method for producing rotor discs. 3,940,268, Cl. 75-208.00R.
Cauldwell, Jack D.; and Gallanis, George P., to Arvin Industries, Inc. Coaxial switch for high frequency signals. 3,940,584, Cl. 200-153.00S.
Caule, Elmer J., to Olin Corporation. Method of producing tarnish resistant copper and copper alloys and products thereof. 3,940,303, Cl. 156-316.000.
Caunt, Anthony David, to Imperial Chemical Industries Limited. Olefine polymerization catalyst. 3,940,345, Cl. 252-429.00B.
CBS Inc.: *See*—
  Bauer, Benjamin B., 3,940,559.
  Bauer, Benjamin B., 3,940,575.
Celanese Corporation: *See*—
  Serad, George A., 3,940,405.
Celotex Corporation, The: *See*—
  DeLeon, Alberto, 3,940,517.
Centralne Biuro Techniczne Przemyslu Maszyn Wlokienniczych: *See*—
  Laski, Jozef; and Pacholski, Jan, 3,940,074.
Centronics Data Computer Corporation: *See*—
  Gershnow, Abraham H., 3,940,726.
Cerberus AG: *See*—
  Muller, Peter, 3,940,753.
Cermol S.A.: *See*—
  Szabo, Suzanne; Molnar, Francois; Mauvernay, Roland-Yves; Levan, Chau; Statkov, Peter Radanov; Straumann, Danielle; and Lerik Milovanovic, Olga, 3,940,386.
Chambers, Richard F.: *See*—
  Sthare, Derwin; and Chambers, Richard F., 3,940,247.
Chambers, William John, to Du Pont de Nemours, E. I., and Company. Soil-repellent coating compositions. 3,940,359, Cl. 260-29.60F.
Champion Spark Plug Company: *See*—
  Gimple, James J.; Lasley, Charles T.; and Rogers, Daniel M., 3,940,061.
Chandler Evans Inc.: *See*—
  McCabe, Ralph P., 3,939,649.
Changani, Pushpkumar Dewanmal: *See*—
  Baxter, Samuel; and Changani, Pushpkumar Dewanmal, 3,939,849.
Chanh, Pham Huu: *See*—
  Saint-Ruf, Germain; Chanh, Pham Huu; and Hoi, Buu, 3,940,387.
Charbonney, Adrien Maurice, deceased (by Thorens, Jean-Jacques, legal representative), to ETA A.G. Ebauches-Fabrik. Calender timepiece movement comprising three indicators. 3,939,645, Cl. 58-85.500.
Chartet, Andre, to Societe Anonyme des Usines Chausson. Method for equalizing differential heat expansions produced upon operation of a heat exchanger and heat exchanger embodying said method. 3,939,908, Cl. 165-149.000.
Chauvelier, Claude: *See*—
  Guichard, Jean-Claude; and Chauvelier, Claude, 3,939,694.
Cheek, Thomas M., Jr., to Dart Industries, Inc. Adjustable hassock. 3,940,181, Cl. 297-439.000.
Chemetron Corporation: *See*—
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Chemische Werke Huls Aktiengesellschaft: *See*—
  Wulf, Horst-Dieter; List, Ferdinand; Wember, Kurt; and Wilke, Norbert, 3,940,431.
Chepos Zavody Chemicho a Potravinarskeho Strojirenstvi, Generalni Reditelstvi: *See*—
  Braun, Vlastimil; and Vitek, Oto, 3,940,462.
Cherchintsev, Alexandr Nikolaevich, administrator: *See*—
  Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits, Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; Krasilnikova, Nonna Alexeevna, administrator; and Cherchintsev, Alexandr Nikolaevich, administrator, 3,939,684.
Cherchintsev, Nikolai Alexandrovich, deceased: *See*—
  Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits,

Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; Krasilnikova, Nonna Alexeevna, administrator; and Cherchintsev, Alexandr Nikolaevich, administrator, 3,939,684.
Cherry, Charles C.; and King, Lewis C., to United States of America, Navy. Axisymmetrical annular plug nozzle. 3,940,067, Cl. 239-265.110.
Chesebrough Pond's Inc.: *See*—
  Russo, John A.; and Greenberg, Mishel, 3,940,024.
Chesney, John; and Kruczek, Chester R., to General Instrument Corporation. Circuit module with recess for receiving a coupling coil. 3,940,666, Cl. 317-101.00C.
Chevron Research Company: *See*—
  Fox, Richard C.; and Jones, Thornton K., 3,940,233.
  Schmidt, Robert J., 3,940,540.
Chicago Bridge & Iron Company: *See*—
  Rothrock, Elmer Weyman, 3,939,791.
Chicago Dynamic Industries, Inc.: *See*—
  Koci, Jerry C., 3,940,671.
Chicago Pneumatic Tool Company: *See*—
  Amtsberg, Lester A., 3,939,670.
Chicago Rawhide Manufacturing Company: *See*—
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  Console, Luciano; Bencini, Ferdinando; and Chiellini, Enzo, 3,940,368.
Chimura, Kazuya; Kaneko, Takashi; Takashima, Shunichi; Kawashima, Masao; and Nakazono, Ryuichi, to Mitsubishi Rayon Co., Ltd. Unitary spun composite filament. 3,940,543, Cl. 428-373.000.
Chiotan, Nicolae: *See*—
  Cioca, Gheorghe; Tigaeru, Nicolae; Ionescu, Agrippa; Chiotan, Nicolae; Constantinescu, Mihai; and Niculescu, Gheorghe, 3,939,831.
Chisso Corporation: *See*—
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Christini, Theodore P.; Flynn, William P.; Inskeep, John B.; and McCauley, Harry J., to Du Pont de Nemours, E. I., and Company. Method and apparatus for concomitant particulate deposition in electroless plating, and the product thereof. 3,940,512, Cl. 427-180.000.
Christofer, Donald E., to Stock Equipment Company. Method and apparatus for controlling a transfer car from a remote station. 3,940,577, Cl. 191-12.00R.
Christofer, Donald E.: *See*—
  Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., 3,940,628.
Chun, Sun W.: *See*—
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Ciba-Geigy AG: *See*—
  DeFago, Raymond; Angliker, Hans-Joerg; Holzrichter, Herbert; Kneubuehler, Werner; and Peter, Richard, 3,940,246.
  Pissiotas, Georg, 3,940,412.
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Ciba-Geigy Corporation: *See*—
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  Haas, Georges; Jenny, Erwin F.; and Rossi, Alberto, 3,940,434.
  Hiestand, Armin, 3,940,435.
  Mayer, Fritz; Keller, Rudolf; and Kunz, Werner, 3,940,515.
  Schlaepfer, Hans, 3,940,417.
Cicognani, Enrico; Lamartina, Alfonso; and Caldarella, Riccardo, to Societa Italiana Telecomunicazioni Siemens S.p.A. Circulatory storage network for coded data. 3,940,749, Cl. 340-173.0RC.
Cieszko, Joseph T.; and Moon, Charles L., to White Motor Corporation. Method and apparatus for cooling and deaerating internal combustion engine coolant. 3,939,901, Cl. 165-1.000.
Cioca, Gheorghe; Tigaeru, Nicolae; Ionescu, Agrippa; Chiotan, Nicolae; Constantinescu, Mihai; and Niculescu, Gheorghe, to Intreprinderea Flacara Rosie. Process for preparing medicinal dressings. 3,939,831, Cl. 128-156.000.
Cioni, Elisabetta; Cioni, Lucia; and Cioni, Rovena Anichini. Machine for automatic filling and sealing of glass vials. 3,939,626, Cl. 53-167.000.
Cioni, Lucia: *See*—
  Cioni, Elisabetta; Cioni, Lucia; and Cioni, Rovena Anichini, 3,939,626.
Cioni, Rovena Anichini: *See*—
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Civita, Benny I., to Lawrence Peska Associates, Inc., a part interest. Ball retrieving apparatus. 3,940,133, Cl. 273-58.00C.
Clark, Charles F. Relatively movable bodies and methods of making them. 3,939,586, Cl. 40-70.00R.
Clark, Douglas C.: *See*—
  Butner, Dean C.; and Clark, Douglas C., 3,939,984.
Clark, Edward C. Water closet water volume control. 3,939,507, Cl. 4-67.00A.
Clark, Gaylord J. Brush construction. 3,939,521, Cl. 15-179.000.
Clark, Richard S.; Lininger, Ronald L.; and Reed, David W., to United States of America, Navy. Method of fog dispersion. 3,940,059, Cl. 239-2.00R.
Clark, William E.; and Butler, John David, to Federal-Mogul Corporation. Method of making polytetrafluoroethylene sealing elements with hydrodynamic action. 3,939,551, Cl. 29-417.000.
Clarke, Frank H., Jr. Organic molecular model assembly. 3,939,581, Cl. 35-18.00A.
Clarke, George A., Jr.; and Harting, Gary L., to Exxon Research & Engineering Co. Lithium borate complex grease exhibiting salt water corrosion resistance. 3,940,339, Cl. 252-18.000.
Clarke-Gravely Corporation: *See*—
  Jones, Terry H., 3,939,527.
  Whitney, Robert P.; and Smith, Melvin R., 3,939,518.
Clarke, Peter G.; and Rayner, Bernard P., to Sterling Hydraulics Limited. Hydraulic control valve for remote receiver. 3,939,869, Cl. 137-595.000.
Claude, Georges Bernard. Watch-bracelet. 3,940,038, Cl. 224-4.00J.
Cleary, Thomas C.; and Schleisner, Joseph W., to Deutsch Relays, Inc. Relay contact adjusting arrangement. 3,940,724, Cl. 335-197.000.
Clegg, Maurice A.: *See*—
  McMullen, Arthur G.; Ruscoe, Michael J. H.; Clegg, Maurice A.; and Prowse, Ronald L., 3,940,254.
Cluett, Peabody & Co., Inc.: *See*—
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  Morton, Kenneth O., 3,940,125.
Cochran, Keith W.: *See*—
  DeLano, Richard H.; Mathews, Warren E.; Armi, Edgar L.; and Cochran, Keith W., 3,940,767.
Coffey, Elizabeth Jane Putnam. Educational board game apparatus. 3,939,578, Cl. 35-9.00R.
Cohen, Arthur M., deceased (by Cohen, Ruth S.); Evall, Irving; and Zalkin, Leonard, executors, to Airpot Corporation. Dashpot for either push or pull damping. 3,939,947, Cl. 188-282.000.
Cohen, Ruth S.: *See*—
  Cohen, Arthur M., deceased; Evall, Irving; and Zalkin, Leonard, executors, 3,939,947.
Cohen, Samuel W. Hockey game. 3,940,135, Cl. 273-85.00F.
Cole National Corporation: *See*—
  Hayes, Robert R., 3,939,534.
Colgate-Palmolive Company: *See*—
  D'Arcangeli, Alessandro, 3,940,220.
  Grand, Paul Sheldon, 3,940,482.
  Gray, Frederick William; Richter, Virgil John; and Limekiller, Andrew Henry, 3,940,341.
Collins, Terence John, to Qonaar Corporation. Check receiving and testing apparatus. 3,939,954, Cl. 194-102.000.
Columbia Machine, Inc.: *See*—
  Hutton, John R., 3,940,229.
Columbia Scientific Industries Corporation: *See*—
  Rhodes, John R.; Weinstein, David H.; and Pradzynski, Andrzej H., 3,940,614.
Columbus McKinnon Corporation: *See*—
  Ulbing, Otmar M., 3,940,173.
COM. E. IRA, S.r.C.: *See*—
  Pignatelli, Enrico, 3,939,866.
COMATEL — Comptoir Europeen de Materiel Electronique: *See*—
  Reggi, Romano, 3,939,542.
Comitato Nazionale per l'Energia Nucleare: *See*—
  Imperiali, Franco, 3,940,309.
Commeyras, Auguste; Arnaud, Alain; Galzy, Pierre; and Jallageas, Jean-Claude, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for the production of organic acids by biological hydrolysis. 3,940,316, Cl. 195-50.000.
Commissariat a l'Energie Atomique: *See*—
  Borel, Joseph; Toupillier, Louise Peccoud nee; and Robert, Jacques, 3,939,556.
  Donguy, Rene, 3,940,618.
  Lazzari, Jean-Pierre; and Valet, Jean-Yves, 3,940,688.
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  Kossoff, George, 3,939,707.
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  Stegens, Ronald E., 3,940,706.
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Compagnie Internationale pour l'Informatique: *See*—
  Lazzari, Jean-Pierre; and Valet, Jean-Yves, 3,940,688.
Condamines, Roland J., to Etablissement Public, Telediffusion de France. Quadriphonic sound pick-up and reproduction devices. 3,940,560, Cl. 179-1.0GQ.
Conley, David O., to Borg-Warner Corporation. Transparent high impact graft polymers. 3,940,454, Cl. 260-880.00R.
Connell, Anthony John; and Pinto, Alwyn, to Imperial Chemical Industries Limited. Methanol production. 3,940,428, Cl. 260-449.500.
Conrad Scholtz AG: *See*—
  Blattermann, Karl-Gunther; and Nolte, Gunther, 3,939,965.
Conroy, Walter J.; Prescott, Robert S.; and Proulx, George G., to Honeywell Information Systems, Inc. System for control of read/-write on magnetic tape. 3,940,790, Cl. 360-39.000.
Console, Luciano; Bencini, Ferdinando; and Chiellini, Enzo, to Societa' Italiana Resine S.p.A. Acrylonitrile copolymers suitable for making flame-resisting fibers. 3,940,368, Cl. 260-63.0HA.
Consolidated Devices, Inc.: *See*—
  Grabovac, Bosko, 3,939,924.
Consolidation Coal Company: *See*—
  Echtler, Joseph P., 3,939,709.
Constantinescu, Mihai: *See*—
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  - Nicolae; Constantinescu, Mihai; and Niculescu, Gheorghe, 3,939,831.
- Continental Oil Company: *See—*
  - McCain, David L., 3,940,184.
  - Sparlin, Derry D.; and Wahl, Harry A., 3,939,912.
  - Sparlin, Derry D.; Fertl, Walter H.; and Young, Gary C., 3,940,612.
- Conwed Corporation: *See—*
  - Wiegand, Donald E., 3,939,532.
- Cook, Edward H., Jr., to Hooker Chemicals & Plastics Corporation. Anode for electrolytic processes. 3,940,323, Cl. 204-95.000.
- Cook, Richard L., to Kayex Corporation. Apparatus for cleaning thin, fragile wafers of a material. 3,939,514, Cl. 15-21.00C.
- Coombes, William S., to Sheldahl, Inc. Punch for film products having improved slug removal facility. 3,939,743, Cl. 83-98.000.
- Coontz, Leland I., to Actron Industries, Inc. Method for providing reconfigurable microelectronic circuit devices and products produced thereby. 3,940,740, Cl. 340-166.00R.
- Cooper, George R.; and Newhouse, Vernon L., to Purdue Research Foundation. Ultrasonic random signal doppler flow measurement system. 3,940,731, Cl. 340-3.00D.
- Cooper, John William Douglas, to Xerox Corporation. Sheet handling mechanism. 3,940,126, Cl. 271-174.000.
- Coors Porcelain Company: *See—*
  - Coubrough, Lawrence E., 3,939,902.
- Copal Company Limited: *See—*
  - Arai, Kiyoyuki, 3,940,761.
- Copes, Joseph P., to GAF Corporation. Method for controlling aquatic weeds with N-phenylalkyl-γ-hydroxybutyramide. 3,940,258, Cl. 71-66.000.
- Corbett, John M., to Dow Chemical Company, The. Compositions and process for making rigid plastic foams of modified vinyl ester resins and silicone compounds. 3,940,349, Cl. 260-2.50S.
- Corbett, John Roger; and Percival, Albert, to Fisons Ltd. Benzimidazole sulphonyl chlorides. 3,940,416, Cl. 260-309.200.
- Corbett, Luke W., to Exxon Research and Engineering Company. Asphalt composition utilizing asphaltene concentrate. 3,940,281, Cl. 106-278.000.
- Corcoran, Sandra B.: *See—*
  - Wagner, Melvin H.; Corcoran, Sandra B.; and Bauer, Carl F., 3,940,327.
- Corning Glass Works: *See—*
  - Bedell, Edward L., Jr., 3,940,102.
  - Guile, Donald L.; and Smith, Robert K., 3,940,279.
  - Pierson, Joseph E.; and Stookey, Stanley D., 3,940,277.
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  - Arino, Hirofumi; Cosolito, Frank J.; George, Kenneth D.; and Thornton, Alfred K., 3,940,318.
- Coubrough, Lawrence E., to Coors Porcelain Company. Heat exchanger rim and hub with L-shaped cross-section. 3,939,902, Cl. 165-8.000.
- Coulter Electronics, Inc.: *See—*
  - Hogg, Walter R., 3,940,691.
- Cousse, Henri: *See—*
  - Stenger, M. Antoine; Cousse, Henri; and Mouzin, M. Gilbert, 3,940,490.
- Craig, John W.: *See—*
  - Price, Robert; and Craig, John W., 3,940,694.
- Craig, Jules M.; and Karsted, Philip, to Lawrence Peska Associates, Inc., a part interest. Photograph and negative holder. 3,940,778, Cl. 354-282.000.
- Crandall, Richard Seely; and Faughnan, Brian Wilfred, to RCA Corporation. Electrochromic device having an indium electrode. 3,940,205, Cl. 350-160.00R.
- Crane, Jacob: *See—*
  - Pryor, Michael J.; Crane, Jacob; Friedman, Sam; and Shapiro, Eugene, 3,940,290.
- Crathern, Charles F. H., III; and Twitchell, Sherman W., to Crathern Engineering Co., Inc. Process and apparatus for binding. 3,939,513, Cl. 11-1.00A.
- Crathern Engineering Co., Inc.: *See—*
  - Crathern, Charles F. H., III; and Twitchell, Sherman W., 3,939,513.
- Creps, Wendell D., to General Motors Corporation. Engine with dual sensor closed loop fuel control. 3,939,654, Cl. 60-276.000.
- Crockett, Charles R.: *See—*
  - Kross, Robert W.; Fiel, Larry D.; Crockett, Charles R.; Neely, George B.; and Benton, Louis J., 3,940,019.
- Cropley, Jean B.: *See—*
  - Walker, Wellington E.; and Cropley, Jean B., 3,940,432.
- Cross, David C.; and Howard, Dean D., to United States of America, Navy. Range and angle discriminator for leading edge radar tracking. 3,940,766, Cl. 343-7.400.
- Crout, Prescott D.: *See—*
  - Amundson, Paul H.; and Crout, Prescott D., 3,939,770.
- Crucible Inc.: *See—*
  - Catlin, John P., 3,940,268.
- Crutcher, Richard E.; and Winkler, Victor W., to Abbott Laboratories. Bacterial source of vitamin K for animal feeds. 3,940,491, Cl. 426-2.000.
- Cullen, Laurie J., to Wolff Manufacturing Company. Multi-pitch tool bar for track presses. 3,939,648, Cl. 59-11.000.
- Curd, Robert F., Jr. Lighted plastic discrepancy buoy. 3,939,510, Cl. 9-8.30E.
- Curtis, H. James, to Ryder Truck Rental, Inc. Valve stem lock. 3,939,894, Cl. 152-427.000.
- Curtiss, Lawrence E., to American Cystoscope Makers, Inc. Resectoscope and electrode therefor. 3,939,839, Cl. 128-303.150.
- Curtiss-Wright Corporation: *See—*
  - Hermes, Walter Ludwig; Berkowitz, Murray; and Lombaerde, Charles, 3,940,104.
- Cuscino, Thomas A.: *See—*
  - Bode, Charles H., Jr.; and Cuscino, Thomas A., 3,940,292.
- Czech, James I.; and Oakley, Roy C., Jr., to Whirlpool Corporation. Suspension mounting assembly for automatic washers. 3,939,674, Cl. 68-23.300.
- D. H. Baldwin Company: *See—*
  - Meyer, Albert, 3,940,635.
- D & H Industries, Inc.: *See—*
  - Heary, Ormond L.; and Smith, Raymond P., 3,939,599.
- Da Costa, Alvaro: *See—*
  - Rivman, Samuel J.; and Da Costa, Alvaro, 3,940,307.
- da Costa, Harry. Manually operable dechoking and resuscitating device. 3,939,830, Cl. 128-145.700.
- Dai, Frank: *See—*
  - Teng, James; Dai, Frank; and Stubits, Marcella C., 3,940,384.
- Daido Seiko Kabushiki Kaisha: *See—*
  - Mizuno, Susumu, 3,940,552.
- Daimler-Benz Aktiengesellschaft: *See—*
  - Barenyi, Bela, 3,939,934.
- Daiwa Boseki Kabushiki Kaisha: *See—*
  - Kato, Takashi; Yoshizawa, Toshio; and Yamada, Yasuo, 3,940,076.
  - Yoshizawa, Toshio; Yamada, Yasuo; Taniguchi, Toshinori; Kose, Tatsuo; Ohchi, Kazuo; and Hori, Kiyokazu, 3,939,634.
- Damon, James J., to Ford Motor Company. Independent wheel suspension for motor vehicles. 3,940,160, Cl. 280-96.20R.
- Dana Corporation: *See—*
  - Sink, William Howard; and Flotow, Richard Allen, 3,939,951.
- Dandois, Joseph E.: *See—*
  - Kalogerson, Thomas A.; and Dandois, Joseph E., 3,939,948.
- Danfoss A/S: *See—*
  - Thorsoe, Flemming, 3,940,727.
- Dangel, Stephen C.: *See—*
  - Lawson, John B.; and Dangel, Stephen C., 3,939,671.
- Danielson, Irvin R., to Thor Power Tool Company. Throttle valve construction for a percussion tool. 3,939,925, Cl. 173-170.000.
- Danjushevsky, Solomon Isaakovich: *See—*
  - Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administratrix, by Alexandr Eugenievich, 3,940,324.
- Dannelly, Clarence C.; and McIntire, John M., to Eastman Kodak Company. Process for preparing crystalline silver particles having electrically conductive surfaces and product. 3,940,261, Cl. 75-.50A.
- Dant & Russell, Inc.: *See—*
  - Potter, Edward, 3,940,230.
- D'Arcangeli, Alessandro, to Colgate-Palmolive Company. Method and equipment for the manufacture of variegated detergent bars. 3,940,220, Cl. 425-131.100.
- Dardoufas, Kimon Constantine: *See—*
  - Marshall, Robert Moore; and Dardoufas, Kimon Constantine, 3,940,544.
- Darlington, William W., to Edcliff Instruments. Aircraft altitude control system. 3,940,673, Cl. 318-584.000.
- Dart Industries, Inc.: *See—*
  - Castagna, Eugene G.; Schrage, Albert; and Repiscak, Michael, 3,940,379.
  - Cheek, Thomas M., Jr., 3,940,181.
- Darwin, Frank S. Textile shade marker. 3,939,766, Cl. 101-92.000.
- Das, Tapan K.: *See—*
  - Bernier, Lornie J.; and Das, Tapan K., 3,939,547.
- DASA Corporation: *See—*
  - Healy, James W.; and Lautzenhiser, Argyle G., 3,940,573.
- Datascope Corporation: *See—*
  - Grayzel, Joseph, 3,939,820.
- Daumann, Oskar Paul, to LICO-Sportschuhfabriken Link & Co., GmbH. Ice hockey boot. 3,939,583, Cl. 36-2.50R.
- Davidson, Hugh; Johnson, Keith Trevor; Leggeter, Brian Ernest; and Moore, Anthony John, to Hickson & Welch Limited. Styryl-diphenyl derivatives. 3,940,437, Cl. 260-505.00C.
- Davidson, James R., to Xerox Corporation. Method of developing a electrostatic latent image. 3,940,272, Cl. 96-1.400.
- Davis, Barbara, executrix: *See—*
  - Davis, John Howard, deceased; Harwood, Richard C., executor; and Davis, Barbara, executrix, 3,940,464.
- Davis, John Howard, deceased; Harwood, Richard C., executor; and Davis, Barbara, executrix, to Imperial Chemical Industries Limited. Production of laces and granules of fibre-reinforced thermoplastics. 3,940,464, Cl. 264-40.000.

- Davis, Leo W.; Lackey, Marion D.; Ross, John Reuben; and Trenary, Bryant, to Marion Power Shovel Company, Inc. Vehicle for traversing rough terrain. 3,940,163, Cl. 280-106.00R.
- Davis, Robert D., to Spectral Dynamics Corporation of San Diego. Method and apparatus for developing balance information for rotating equipments and assemblies. 3,939,715, Cl. 73-462.000.
- Davis, Ronald Percival, to Interlock Industries Limited. Window or the like stays. 3,939,529, Cl. 16-179.000.
- DCA Food Industries, Inc.: *See—*
  - McCarthy, John P.; Moyer, John; and Fischer, Leonard, 3,940,217.
- De La Rue Giori S.A.: *See—*
  - Giori, Gualtiero, 3,939,621.
- Deal, Samuel Broughton; and Bartch, Donald Walter, to RCA Corporation. Method for preparing haze-resistant lithium-silicate glare-reducing coating. 3,940,511, Cl. 427-165.000.
- Decision Data Computer Corporation: *See—*
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Favre, John A., to Phillips Petroleum Company. Removal of radon from hydrocarbon streams. 3,940,471, Cl. 423-249.000.
Fawcett, William F. Bull fighting game. 3,940,130, Cl. 273-1.00E.
Fech, John, Jr.; and Poliniak, Eugene Samuel, to RCA Corporation. Electron beam recording media and method of recording. 3,940,507, Cl. 427-43.000.
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Clark, William E.; and Butler, John David, 3,939,551.
Fedorov, Mikhail Ivanovich: *See*—
Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Tyagunov, Vladimir Arkadievich; Fedorov, Mikhail Ivanovich; Kalinin, Alexandr Ivanovich; Malikov, Konstantin Alexeevich; Arshansky, Mikhail Iosipovich; Petrov, Igor Nikolaevich; and Melnikov, Evgeny Valentinovich, 3,939,896.
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Fendley, Richard L.; Hoenig, Gerhard E.; Poehlmann, George; and Prendergast, John M., Jr., to Western Electric Company, Inc.; and Bell Telephone Laboratories, Incorporated. Methods of solid-phase bonding mating members through an interposed pre-shaped compliant medium. 3,939,559, Cl. 29-628.000.
Fern, Robert W., to Libbey-Owens-Ford Company. Soldering apparatus. 3,940,046, Cl. 228-8.000.
Fernandez, Rafael Herrera, to Industrias Rumbo, S.A. Electronic devices for the automatic control of gain and roll-off in amplifiers. 3,940,707, Cl. 330-29.000.
Ferro Corporation: *See*—
Harrington, Roy V.; and Beal, Donald F., 3,940,255.
Fertl, Walter H.: *See*—
Sparlin, Derry D.; Fertl, Walter H.; and Young, Gary C., 3,940,612.
Feterl, Leon G., to SOS Consolidated, Inc. Method of manufacturing a trailer frame structure. 3,939,553, Cl. 29-469.000.
Fiat-Allis Construction Machinery, Inc.: *See*—
Heidelbach, Charles A., 3,940,101.
Fiberwoven Corporation, The: *See*—
Smith, Alexander M., II, 3,940,532.
Fibre-Thane Homes, Inc.: *See*—
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Fick, Herbert J.; and Mahagnoul, Edward J., to G. T. Schjeldahl Company. Electrical laminate. 3,940,534, Cl. 428-228.000.
Ficken, William H.: *See*—
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Fiel, Larry D.: *See*—
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Findlay, Alexander G., to Monsanto Company. Integrated composite semiconductor light-emitting display array having LED's and selectively addressable memory elements. 3,940,756, Cl. 340-324.00M.
Finike Italiana Marposs, Soc. In Accomandita Semplice di Mario Possati & C.: *See*—
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Finlay, Ian C.: *See*—
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Finney, Philip F., to Thermo-Couple Products Company, Inc. Surface thermocouple. 3,939,554, Cl. 29-573.000.
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Winter, Max; Goldman, Irving M.; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 3,940,502.
Firstenberg, Harold S. Vehicle track retention device. 3,939,930, Cl. 180-5.00A.
Fischer, Gudrun: *See*—
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Fischer, Markus, to Haas, Paul. Method and installation for the detection of a source generating electro-magnetic oscillations. 3,940,700, Cl. 325-363.000.
Fischer, Roman: *See*—
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Fisher, William J., to Braverman, Maynard, a part interest. Remote switch actuating device. 3,939,725, Cl. 74-503.000.
Fishman, Bernard, to Thiokol Corporation. Reverse acting rolling diaphragm for expelling liquids. 3,940,031, Cl. 222-386.500.
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Fitzi, Konrad, to Ciba-Geigy Corporation. Imidazole derivatives in the treatment of pain. 3,940,486, Cl. 424-263.000.
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- Fox, Richard C.; and Jones, Thornton K., to Chevron Research Company. Candle wicking. 3,940,233, Cl. 431-325.000.
- Fox, Thomas E.; Scannell, John W.; and Andersen, Clifford H., to C. P. Clare & Company. Reed switch relay. 3,940,722, Cl. 335-151.000.
- Fox, Wayne F., to Triple "F", Inc. Non-protein nitrogen feed product and method for producing the same. 3,940,493, Cl. 426-69.000.
- Franco, John A., to Raymond Lee Organization, Inc., The, a part interest. Game of balance. 3,940,129, Cl. 273-1.00R.
- Frank, Eldon M., to F & W Company Inc. Tractor mounted implement device. 3,939,997, Cl. 214-131.00A.
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- Franz, Gunther; Heinrich, Karl; and Poppe, Herbert, to Hoechst Aktiengesellschaft. Unstretched polyethylene terephthalate yarn in continuous stretching and false twist texturizing processes. 3,939,637, Cl. 57-140.00R.
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  - Adey, Anthony John; French, Geoffrey Richard; Leonard, Gordon Harris; and Williams, Malcolm, 3,939,738.
- Freund, Erich. Biasing pads for eyeglass frames. 3,940,206, Cl. 351-111.000.
- Frey, Hans-Helmut; and Klug, Helmut, to Hoechst Aktiengesellschaft. Thermoplastic composition comprising PVC and chlorinated polyethylene. 3,940,456, Cl. 260-897.00C.
- Freytag, Wolfram Gustav; Ney, Karl Heinz; and Wirotama, I. Poetoe Gde, to Lever Brothers Company. Fontina cheese flavor. 3,940,501, Cl. 426-535.000.
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- Frisch, Erling, deceased (by Randal, Dorothy, executrix); and Andrews, Harry N., to Westinghouse Electric Corporation. Nuclear reactor internals construction and failed fuel rod detection system. 3,940,311, Cl. 176-36.00R.
- Frohberger, Paul-Ernst; Urbschat, Otto Ewald, deceased (by Urbschat, Gertrud Emma Maria Gerda, administrator); and Hermann, Gunther, to Bayer Aktiengesellschaft. Repellent aminoalkyldithiocarbamic acids. 3,940,488, Cl. 424-286.000.
- Frohberger, Paul-Ernst: *See—*
  - Buchel, Karl-Heinz; Kramer, Wolfgang; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 3,940,415.
  - Kramer, Wolfgang; Buchel, Karl Heinz; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 3,940,414.
- Frommelt, Cyril P.; and Frommelt, Sylvan J., to Dubuque Awning & Tent Company. Loading dock seal. 3,939,614, Cl. 52-2.000.
- Frommelt, Sylvan J.: *See—*
  - Frommelt, Cyril P.; and Frommelt, Sylvan J., 3,939,614.
- Fuji Photo Film Co., Ltd.: *See—*
  - Kawai, Masayoshi; Shishido, Tadao; Ishiguro, Shoji; and Sakai, Tadao, 3,940,271.
- Fujimaru, Yoshio: *See—*
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- Fujimoto, Shinichiro. Electromotive massage apparatus for beating and kneading body. 3,939,826, Cl. 128-55.000.
- Fujinami, Nobuakira; and Nagano, Tadashi, to Unicharm Kabushiki Kaisha. Article for treating menstrual fluid. 3,939,838, Cl. 128-290.00R.
- Fujitsu Limited: *See—*
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  - Takagi, Mikio; Kamioka, Hajime; Nakayama, Kazufumi; and Shimoda, Haruo, 3,940,288.
- Fujiwara, Allan N.; Acton, Edward M.; and Henry, David W., to Stanford Research Institute. Streptozotocin analogs. 3,940,383, Cl. 260-210.00R.
- Fukoku Kogyo Company Limited: *See—*
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- Furuishi, Haruhisa: *See—*
  - Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, 3,940,592.
- Furukawa, Junji; Haga, Kazuo; and Kobayashi, Eiichi, to Bridgestone Tire Company Limited. Method for manufacturing of butadiene-propylene copolymers. 3,940,378, Cl. 260-85.30R.
- G. D. Searle & Co.: *See—*
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  - Harrow, Terence Alfred, 3,940,439.
- G. T. Schjeldahl Company: *See—*
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- Gabbard, Ova Gene; Kaul, Pradeep; and Hangen, Joaquin, to Digital Communications Corporation. Remote master/slave station clock. 3,940,558, Cl. 178-69.50R.
- Gabor, Joseph: *See—*
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- Gaeth, Rudolf; and Linke, Roland, to BASF Aktiengesellschaft. Reversible moisture-vapor-absorptive sheet structures and process. 3,940,535, Cl. 428-260.000.
- GAF Corporation: *See—*
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  - Sthare, Derwin; and Chambers, Richard F., 3,940,247.
- Gaines, John W.: *See—*
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- Gallagher, Nicholas D.; Johnston, Herbert N.; Valihura, Robert J.; and Hull, Henry E., to United States of America, Interior. Adhesive guard hair removal. 3,939,676, Cl. 69-22.000.
- Gallanis, George P.: *See—*
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- GAR Industries Ltd.: *See—*
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- Garbuio, Carlo. Ski boot with flexible interconnected top and bottom portions. 3,939,582, Cl. 36-2.5AL.
- Gardner, Gerald Marvin, to Image Analysing Computers Limited. Subtractive image analysis. 3,940,557, Cl. 178-6.800.
- Garot, Claude, to Societe Universelle de Fabrication d'Appareils Menagers S.U.F.A.M. Linen drier. 3,939,574, Cl. 34-163.000.
- Garsky, Victor M., to American Home Products Corporation. p-Glu-D-Phe-Trp-Ser-Tyr-2-Me.Ala-Leu-Arg-Pro-NH_2 and intermediates. 3,940,380, Cl. 260-112.5LH.
- Gastrock, William Henry: *See—*
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- Gautschi, Fritz: *See—*
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- Gebhardt, Richard. Stow roller train for storage and conveyance of cargo. 3,939,962, Cl. 198-127.00R.
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- Geffriaud, Jean Paul: *See—*
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- Gehring, Donald H. Double-balanced modulating and demodulating apparatus. 3,940,716, Cl. 332-43.00B.
- General Crane Industries Limited: *See—*
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- General Dynamics Corporation: *See—*
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- General Electric Company: *See—*
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  - Bittner, John R., 3,939,957.
  - Hellman, Wayne R.; Gottschalk, Klaus; and De George, Edward C., 3,939,538.
  - Houston, John M.; Young, James R.; and Whetten, Nathan R., 3,940,620.
  - Mark, Victor, 3,940,366.
  - Nuss, James J., 3,939,817.
  - Park, John N.; Steigerwald, Robert L.; and Walker, Loren H., 3,940,682.
  - Sawyer, Thomas F., 3,939,895.
  - Steigerwald, Robert L., 3,940,633.
  - Wielt, Warren Pierce; and Estrada, Luis Alberto, 3,940,648.
- General Foods Corporation: *See—*
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- General Instrument Corporation: *See—*
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- General Motors Corporation: *See—*
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  - Dully, Floyd I., 3,940,082.
  - Horvath, Robert A., 3,939,658.
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  - Molloy, Edward W., 3,940,193.
  - Nagy, Louis L., 3,940,696.
  - Stocker, Harold L., 3,940,153.
  - Williams, Richard D.; and Michaels, Fred G., 3,940,580.
- Genesi, Robert C., to Sprague Electric Company. Semiconductor I.C. with protection against reversed power supply. 3,940,785, Cl. 357-48.000.
- Gentiluomo, Joseph A. Golf ball. 3,940,145, Cl. 273-218.000.
- George, Kenneth D.: *See—*
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- Gerber, Robert L., to United States of America, Navy. Chemiluminescent marker apparatus. 3,940,605, Cl. 240-2.250.
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- Gerke, Peter: *See—*
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- Gershnow, Abraham H., to Centronics Data Computer Corporation. High speed solenoid employing multiple springs. 3,940,726, Cl. 335-274.000.
- Gershon, Milton, to Thiokol Corporation. Rolling diaphragms for expelling liquids. 3,940,032, Cl. 222-386.500.
- Gettmann, Hermann, to Tour Agenturer AB. System for regulating the temperature in rooms, more particularly for cooling rooms. 3,939,905, Cl. 165-49.000.
- Giacosa, Dante, to Sira Societa Industriale Richerche Automotoristiche. Power unit for vehicles incorporating an automatic stepless speed change gear. 3,939,732, Cl. 74-701.000.
- Gidewall, Kenneth L.; and Heavner, Larry W., to C. V. P. Systems Inc. Packaging apparatus. 3,939,624, Cl. 53-112.00B.
- Gierek, Adam; Pawlowski, Stanislaw; Formanek, Boleslaw; Piesiur, Eugeniusz; Pucka, Grzegorz; Blachnicki, Bogdan; Rychlewski, Jerzy; and Gajda, Janusz, to Politechnika Slaska im Wincentego Pstrowskiego. Fireproof inorganic protective coating and the method of its production. 3,940,516, Cl. 427-372.000.
- Gilbert & Baker Manufacturing Company: *See—*
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- Gili, Ricardo Aguirre, to Flamagas S.A. Refill device for gas lighters. 3,940,015, Cl. 221-96.000.
- Gill, George H., to United States of America, Navy. Submarine or vehicle steering system. 3,940,674, Cl. 318-589.000.
- Gill, Walter L. Electric power means for vehicles. 3,939,935, Cl. 180-65.00R.
- Gillemot, George W., to Thompson, John T., a part interest. Cable reclamation method and apparatus. 3,939,882, Cl. 141-231.000.
- Gimple, James J.; Lasley, Charles T.; and Rogers, Daniel M., to Champion Spark Plug Company. Electrostatic spray gun for powder coating material. 3,940,061, Cl. 239-15.000.
- Giori, Gualtiero, to De La Rue Giori S.A. Processing of sheets of printed security papers into bundles and packets. 3,939,621, Cl. 53-23.000.
- Girling Limited: *See—*
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- Giuliani, John F.: *See—*
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- Glaros, George S.: *See—*
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- Glaser, Karl. Stepping motor. 3,940,642, Cl. 310-20.000.
- Glass, Cecil A., to United States of America as represented by the Secretary of the Navy. Fuel-air explosive bomblet. 3,940,443, Cl. 102–6.
- Glise, Andre: *See—*
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- Glotin, Bernard J. P.; and Guimard, Andre J., to Schlumberger Technology Corporation. Removable downhole measuring instruments with electrical connection to surface. 3,939,705, Cl. 73-151.000.
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  - Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich, 3,940,324.
- Goebel, Henry R.; and Flynn, Joseph, to Western Kraft Corporation. Tissue carton. 3,940,054, Cl. 229-51.00D.
- Goerden, Leonard: *See—*
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- Goldfein, Harold A., to Inca Inks, Inc. Hydrostatic transmission pump. 3,939,656, Cl. 60-381.000.
- Golding, Cyril George, to GKN Sankey Limited. Closure units for containers. 3,939,860, Cl. 137-212.000.
- Goldman, Irving M.: *See—*
  - Winter, Max; Goldman, Irving M.; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 3,940,502.
- Goldman, Leman, Jr.: *See—*
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- Goldmann, Wolf: *See—*
  - Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.
- Goller, George N.; and Espy, Ronald H., to Armco Steel Corporation. Austenitic stainless steel. 3,940,266, Cl. 75-128.00A.
- Golob, Theodore B.; Hauck, Sylvester J.; Jasinski, Stanley C.; Margerum, Bruce A.; and Jarvi, Antti, to Eaton Yale Ltd. Tree harvesting apparatus. 3,939,996, Cl. 214-82.000.
- Golovoy, Amos: *See—*
  - Labana, Santokh S.; Golovoy, Amos; and van Oene, Henk, 3,940,453.
- Gonos, Michael G.; Ives, Kenneth D.; and Vranka, Ronald S., to United States Steel Corporation. Method and apparatus for locating improperly positioned or bent rolls. 3,939,568, Cl. 33-143.00L.
- Gonzalez, Jose Leobardo, to Monocar HC Internacional, S.A. Vacuum advance regulating valve. 3,939,812, Cl. 123-117.00A.
- Gonzalez, Juan M.; and Nichols, William V., Jr., to Reynolds Metals Company. Furnace effluent filter for a carbon baking furnace. 3,940,237, Cl. 432-72.000.
- Goodnight, Hershel E.: *See—*
  - Reed, Robert D.; Zink, John Smith; and Goodnight, Hershel E., 3,940,234.
- Goodwin, Orville O.: *See—*
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- Gore, David E. Electroacoustic transducers. 3,939,942, Cl. 181-157.000.
- Goss, William M.: *See—*
  - Walters, Andrew C.; and Goss, William M., 3,939,686.
- Gosse, Joseph F.; and Fehr, George V., to Bethlehem Steel Corporation. Method for protecting metal H-piling in underwater environments and protected H-piling. 3,939,665, Cl. 61-54.000.
- Goto Drop Forging Co., Ltd.: *See—*
  - Takasaki, Shuhei; and Goto, Yasumoto, 3,940,098.
- Goto, Isamu; Matoba, Isao; Imanaka, Takuichi; Matsumura, Ko; Shimizu, Yoh; Goto, Tomomichi; and Kan, Takahiro, to Kawasaki Steel Corporation. Method for producing single-oriented electrical steel sheets having a high magnetic induction. 3,940,299, Cl. 148-111.000.
- Goto, Tomomichi: *See—*
  - Goto, Isamu; Matoba, Isao; Imanaka, Takuichi; Matsumura, Ko; Shimizu, Yoh; Goto, Tomomichi; and Kan, Takahiro, 3,940,299.
- Goto, Yasumoto: *See—*
  - Takasaki, Shuhei; and Goto, Yasumoto, 3,940,098.
- Gottschalk, Klaus: *See—*
  - Hellman, Wayne R.; Gottschalk, Klaus; and De George, Edward C., 3,939,538.
- Goudikian, Edward, to Tele-Assemblies. Apparatus for combining a central telephone trunk line with a customer telephone trunk line. 3,940,570, Cl. 179-18.0AH.

Gouvenot, Daniel: *See*—

Mazier, Georges; Geffriaud, Jean Paul; and Gouvenot, Daniel, 3,939,664.

Graalmann, Franz: *See*—

Varges, Gunter; and Graalmann, Franz, 3,939,790.

Grabovac, Bosko, to Consolidated Devices, Inc. Power torque wrench. 3,939,924, Cl. 173-163.000.

Grachev, Leonid Pavlovich: *See*—

Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,939,961.

Graco Inc.: *See*—

Ware, Lyle A.; Sundelius, Dennis J.; and Melquist, Marlin R., 3,940,065.

Grafinger, Wilhelm; Knabe, Lutz; Engelmann, Guenter; and Wagenlehner, Kurt, to Siemens Aktiengesellschaft. Arrangement for a passive responder for a position finding system. 3,940,765, Cl. 343-6.80R.

Graifer, Alexandr Khaimovich: *See*—

Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits, Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; Krasilnikova, Nonna Alexeevna, administrator; and Cherchintsev, Alexandr Nikolaevich, administrator, 3,939,684.

Granat, Rodney John, to A.C.I. Operations Pty. Limited. Safety closure means for pressurized bottles and other like containers. 3,940,005, Cl. 215-325.000.

Grand, Paul Sheldon, to Colgate-Palmolive Company. Solubilization of the zinc salt of 1-hydroxy-2-pyridinethione. 3,940,482, Cl. 424-245.000.

Granges Essem Aktiebolag: *See*—

Sieurin, Sven Ivar, 3,940,264.

Gray, David, to British Gas Corporation. External pipe coatings for a reinforced pipe. 3,939,874, Cl. 138-145.000.

Gray, Frederick William; Richter, Virgil John; and Limekiller, Andrew Henry, to Colgate-Palmolive Company. Granular detergent compositions. 3,940,341, Cl. 252-105.000.

Graybill, Clinton L. Air-valve type carburetor. 3,940,460, Cl. 261-40.000.

Grayzel, Joseph, to Datascope Corporation. Single-chamber, multisection balloon for cardiac assistance. 3,939,820, Cl. 128-1.00D.

Green, Leland Dale, to Xerox Corporation. Reproduction of information from information-bearing discs. 3,940,574, Cl. 179-100.10B.

Greenberg, Mishel: *See*—

Russo, John A.; and Greenberg, Mishel, 3,940,024.

Greene, George L.; Williams, Sylvester A.; and Franklin, Freddie L. Self-planter. 3,939,786, Cl. 111-3.000.

Greenspan, George; Rees, Richard W.; and Russell, Peter B., to American Home Products Corporation. Synthesis of 2,6-diaminopyrimidines. 3,940,393, Cl. 260-256.40N.

Greer, Homer L.; and Newbold, William F., to Honeywell, Inc. Closed pressure rebalance system for measuring the rate of fluid flow. 3,939,708, Cl. 73-205.00R.

Greif Bros. Corporation: *See*—

Dubois, Robert A.; and Gushard, William H., 3,940,011.

Gresser, Gerhard: *See*—

Hesler, Dietrich; Gresser, Gerhard; and Brandstetter, Helmut, 3,939,611.

Griffin, Ray D.: *See*—

Needham, Donald G.; and Griffin, Ray D., 3,940,547.

Griffin, Richard H., to International Telephone and Telegraph Corporation. Telephone cord mandrel end retainer. 3,940,228, Cl. 425-403.000.

Griffiths, Aubrey Ronald. Containers. 3,940,007, Cl. 220-4.00F.

Griffiths, Donald E.; Koestner, Joseph H.; and Norton, David G., to International Business Machines Corporation. Stacked flexible record disk storage apparatus having enhanced disk separation. 3,940,794, Cl. 360-99.000.

Griss, Peter: *See*—

Heimke, Gunther; Griss, Peter; Von Andrian-Werburg, Hanns; Heil, Herbert; and Wachter, Paul, 3,939,497.

Grogan, Martin L., to Rockwell International Corporation. Solid state AC power relay. 3,940,634, Cl. 307-252.0UA.

Gross, Heinz: *See*—

Schnell, Claude R.; Hengartner, Kurt; and Gross, Heinz, 3,940,653.

Gross, Richard S. Self-hinged, buoyant weir plate for skimmers. 3,939,505, Cl. 4-172.170.

Gross, Stanley Joseph, to Biological Developments, Inc. Radioimmune method of assaying quantitatively for a hapten. 3,940,475, Cl. 424-1.000.

Grossmann, Hans-Hermann; Burg, Karlheinz; and Sextro, Gunter, to Hoechst Aktiengesellschaft. Moulding composition based on poly-(oxymethylene). 3,940,365, Cl. 260-45.90P.

Groupement pour les Activites Atomiques et Avancees "GAAA": *See*—

Martin, Jean; Ollier, Jean-Louis; and Petit, Paul, 3,940,150.

Grubbe, John R.: *See*—

Sherwin, Ian M.; and Grubbe, John R., 3,940,257.

Grumman Aerospace Corporation: *See*—

Kress, Robert W.; and Stettler, Martin C., 3,940,094.

GTE Sylvania Incorporated: *See*—

Ashley, Albert H., 3,940,571.

Faria, Sixdeniel; and Williams, Lyle K., 3,940,347.

Thomas, Martha J. B.; Fowler, Richard A.; and Larson, Robert C., 3,940,326.

Guichard, Jean-Claude; and Chauvelier, Claude, to Institut National de Recherche Chimique Appliquee. Method and apparatus for measuring the concentration of solid particles suspended in a gas phase. 3,939,694, Cl. 73-28.000.

Guidoni, Christian. Brassiere with sliding ties, and arranged in a general "V" shape, in particular for bathing suits. 3,939,845, Cl. 128-492.000.

Guigliano, Anthony V., to Deltrol Corporation. Combination manual and pilot operated directional control valve. 3,939,870, Cl. 137-624.270.

Guile, Donald L.; and Smith, Robert K., to Corning Glass Works. Size-graded ternary batch for bonded basic refractory shapes. 3,940,279, Cl. 106-58.000.

Guimard, Andre J.: *See*—

Glotin, Bernard J. P.; and Guimard, Andre J., 3,939,705.

Gulbrandsen, Rudolph G.: *See*—

Kreeft, John; Stanislaw, Peter; and Gulbrandsen, Rudolph G., 3,939,537.

Gulf Research & Development Company: *See*—

Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., 3,940,330.

Gulf States Paper Corporation: *See*—

Vandemark, Joseph S.; and Seith, Robert T., 3,939,606.

Gulotta, Joseph A.; Knavish, Leonard A.; and Sensi, John E., to PPG Industries, Inc. Apparatus and method for controlling the flatness of a newly-formed continuous sheet of flat glass. 3,940,256, Cl. 65-65.00A.

Gunzel, Rudolph M., Jr.; James, Donald R.; and Radecki, Tony, to Meiko, Incorporated. Spray apparatus. 3,940,069, Cl. 239-318.000.

Gupta, Mohan L.: *See*—

Brandwein, Rowland; and Gupta, Mohan L., 3,940,679.

Gushard, William H.: *See*—

Dubois, Robert A.; and Gushard, William H., 3,940,011.

Gutner, Kenneth H. Furniture bracket and method. 3,940,212, Cl. 403-405.000.

Gybowski, Frank. Game device. 3,940,141, Cl. 273-143.00R.

Gyromat Corporation, The: *See*—

Wiggins, Richard F., 3,939,855.

H. W. Hart Mfg. Co.: *See*—

Hart, Harold W.; and Hart, Warren H., 3,940,106.

Haas, Georges; Jenny, Erwin F.; and Rossi, Alberto, to Ciba-Geigy Corporation. New dicarboxylic acids and derivatives. 3,940,434, Cl. 260-475.0SC.

Haas, Gerhard J., to General Foods Corporation. Oral preparations for preventing dental plaque. 3,940,476, Cl. 424-49.000.

Haas, Paul: *See*—

Fischer, Markus, 3,940,700.

Habgood, Gordon Alfred, to Girling Limited. Closed-loop type disc brake. 3,939,945, Cl. 188-73.400.

Hack, Siegfried, to Raymond Lee Organization, Inc., The, a part interest. Christmas tree ornament. 3,940,521, Cl. 428-7.000.

Haefner, Albert J.; and Kucsma, Michael E., to Ethyl Corporation. Recyclable plastic containers. 3,940,001, Cl. 215-1.00C.

Haeusler, Jochen; Schmirl, Manfred; and West, Dietmar, to Siemens Aktiengesellschaft. Apparatus for wrapping a compound-curved conductor bar. 3,940,073, Cl. 242-7.080.

Haga, Kazuo: *See*—

Furukawa, Junji; Haga, Kazuo; and Kobayashi, Eiichi, 3,940,378.

Hagele, Gerhard, to Zahnradfabrik Friedrichshafen AG. Housing flange for worm gear bearings. 3,940,192, Cl. 308-189.00R.

Hagen, Edward L.: *See*—

Nudenberg, Walter; Hagen, Edward L.; Little, Julian R.; and Mao, Chung-Ling, 3,940,396.

Hale, Frank L.: *See*—

Hale, John D.; Hale, Frank L.; and Hale, Samuel J., Jr., 3,939,949.

Hale, John D.; Hale, Frank L.; and Hale, Samuel J., Jr. Hydraulic system for braking truck engines. 3,939,949, Cl. 192-3.0TR.

Hale, Samuel J., Jr.: *See*—

Hale, John D.; Hale, Frank L.; and Hale, Samuel J., Jr., 3,939,949.

Hall, Daniel N.: *See*—

Oswald, Alexis A.; Mueller, Wolfgang H.; and Hall, Daniel N., 3,940,374.

Hall, Ervin T.; Talbert, Miles E.; Walsh, James R.; and Hinkle, Max E., to Thomasville Products, Inc. Mattress and cushioning construction. 3,939,508, Cl. 5-345.00R.

Hall, Warren L.: *See*—

Mock, Howard C.; Isaac, Kenneth N.; Disparte, Charles P.; Hall, Warren L.; and Beasely, James, 3,940,744.

Halverson, Maynard L., to Sweden Freezer Manufacturing Co. Frozen carbonated drink dispensing system. 3,939,667, Cl. 62-188.000.

Hamilton, George Henry; Turner, Robert McLean; and Ward, Jesse Lee, Jr., to Solar Energy Company. Solar energy heating module and assembly. 3,939,818, Cl. 126-270.000.

Hamilton, Robert W., to G. D. Searle & Co. Esters and amides of 4,5-dihydrobenz[g]indazole-3-carboxylic acids and related compounds. 3,940,418, Cl. 260-310.00R.

Hamilton, Vaughn G.: *See*—

Rogers, Gary W.; Tottie, Leroy A.; Hamilton, Vaughn G.; Goodwin, Orville O.; and Baker, Jean A., 3,939,746.

Hammann, Ingeborg: *See*—

Hoffmann, Hellmut; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,940,457.

Hanaoka, Masanori, to Toyota Jidosha Kogyo Kabushiki Kaisha. Engine misfire detection system. 3,939,711, Cl. 73-346.000.

Hangen, Joaquin: *See*—

Gabbard, Ova Gene; Kaul, Pradeep; and Hangen, Joaquin, 3,940,558.

Hanna, Daniel C. Module car wash. 3,939,516, Cl. 15-53.0AB.

Hansen, Paul L.: *See*—

Bleak, Thomas M.; and Hansen, Paul L., 3,940,593.

Bleak, Thomas M.; and Hansen, Paul L., 3,940,594.

Hansson, Bengt Eve; and Tischlinger, Edward A., to Astra Pharmaceutical Products Inc. Piston construction for syringes. 3,939,833, Cl. 128-218.00P.

Harasek, Richard J., to Motorola, Inc. Tunable electrical musical instrument. 3,939,751, Cl. 84-1.170.

Harcuba, Siegfried; and Dits, Herbert, to Harcuba, Siegfried. Profile press and precision cutting apparatus with a pressure multiplier. 3,939,747, Cl. 83-637.000.

Hardiman, Russell J.; and Smith, Stanley K., to Standard Pressed Steel Co. Tightening method and system. 3,939,920, Cl. 173-1.000.

Hare, Woodrow W.: *See*—

Harrell, Edsel A.; Sparks, Alton N.; Perkins, William D.; and Hare, Woodrow W., 3,939,883.

Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, to Kissei Yakuhin Kogyo Kabushiki Kaisha. Aromatic carboxylic amide derivatives. 3,940,422, Cl. 260-340.500.

Harrell, Edsel A.; Sparks, Alton N.; Perkins, William D.; and Hare, Woodrow W., to United States of America, Agriculture. Machine to fill insect rearing cells with diet. 3,939,883, Cl. 141-231.000.

Harrington, John B., to Hughes Aircraft Company. Recirculating electric and acoustic tapped delay line. 3,940,720, Cl. 333-30.00R.

Harrington, Roy V.; and Beal, Donald F., to Ferro Corporation. Process for making cordierite glass-ceramic having nucleating agent and increased percent cordierite crystallinity. 3,940,255, Cl. 65-33.000.

Harris, Arthur M., to Key Pharmaceuticals, Inc. Hemorrhoidal device. 3,939,842, Cl. 128-401.000.

Harris, Bert C.: *See*—

Ross, James A.; and Harris, Bert C., 3,939,776.

Ross, James A.; and Harris, Bert C., 3,939,778.

Harrow, Geoffrey A.; Mills, Walter D.; Wilson, John L.; and Finlay, Ian C., to Shell Oil Company. Liquid fuel vaporizing device for internal combustion engines. 3,939,813, Cl. 123-122.00A.

Harrow, Terence Alfred, to G. D. Searle & Co. Acid chloride synthesis. 3,940,439, Cl. 260-544.00Y.

Hart, Granville Spencer; and Brandewie, Joseph Edward, to AMP Incorporated. Method and apparatus for feeding a pair of wires. 3,939,552, Cl. 29-427.000.

Hart, Harold W.; and Hart, Warren H., to H. W. Hart Mfg. Co. Latching valve for extendible watering system for fowls. 3,940,106, Cl. 251-100.000.

Hart, Warren H.: *See*—

Hart, Harold W.; and Hart, Warren H., 3,940,106.

Harting, Gary L.: *See*—

Clarke, George A., Jr.; and Harting, Gary L., 3,940,339.

Hartmann, Eduard: *See*—

Hauser, Hans Ulrich; and Hartmann, Eduard, 3,940,465.

Harwood, Richard C., executor: *See*—

Davis, John Howard, deceased; Harwood, Richard C., executor; and Davis, Barbara, executrix, 3,940,464.

Hashimoto, Junji: *See*—

Yoshitomi, Hirohiko; Hashimoto, Junji; Kodama, Taro; and Hirose, Fujiharu, 3,939,681.

Hauck, Sylvester J.: *See*—

Golob, Theodore B.; Hauck, Sylvester J.; Jasinski, Stanley C.; Margerum, Bruce A.; and Jarvi, Antti, 3,939,996.

Haug, Merrill W. Modular construction element. 3,940,100, Cl. 248-188.100.

Haulter, Earl M. Carrying device for a doll and a cradle. 3,940,040, Cl. 224-5.00R.

Haun, Marion W.; Mos, Robert J.; and Riley, Arthur W., to American Magnetics Corporation. Card readout apparatus. 3,940,796, Cl. 360-109.000.

Hauser, Hans Ulrich; and Hartmann, Eduard, to Bucher-Guyer AG, Maschinenfabrik. Method for regulating the hardening time of a plastic mass in the mold of an injection molding machine. 3,940,465, Cl. 264-40.000.

Havera Development Ltd.: *See*—

Teisen, Mogens Roesdahl Groth, 3,939,717.

Hawkins, Ronald G., to Aluminum Company of America. Frameless spacer with viscoelastic damping means. 3,940,553, Cl. 174-42.000.

Hayes, John C., to Universal Oil Products Company. Hydrocarbon conversion with an acidic multimetallic catalytic composite. 3,940,190, Cl. 208-137.000.

Hayes, Larry J.: *See*—

Dison, Dale D.; and Hayes, Larry J., 3,940,520.

Hayes, Robert R., to Cole National Corporation. Wristband connector with integral pins. 3,939,534, Cl. 24-265.00B.

Healy, James W.; and Lautzenhiser, Argyle G., to DASA Corporation. Manually actuable repertory dialer. 3,940,573, Cl. 179-90.0BB.

Hearty, Patrick F.: *See*—

Stallabrass, James R.; Ringer, T. Rayman; Bailey, Donald L.; and Hearty, Patrick F., 3,940,622.

Heaslett, Alastair M., to Ampex Corporation. Equalization circuit. 3,940,709, Cl. 330-107.000.

Heavner, Larry W.: *See*—

Gidewall, Kenneth L.; and Heavner, Larry W., 3,939,624.

Heggie, William S., to Canadian Patents & Development Limited. Apparatus for measuring engine cylinder pressures. 3,939,703, Cl. 73-115.000.

Heidelbach, Charles A., to Fiat-Allis Construction Machinery, Inc. Quick-bonding adhesively attachable support pads for palletizing containers. 3,940,101, Cl. 248-346.000.

Heidkamp, Karl-Josef, to Otto Grosssteinbeck GmbH. Installation for mounting a door panel or rosette on a door. 3,939,680, Cl. 70-452.000.

Heil, Herbert: *See*—

Heimke, Gunther; Griss, Peter; Von Andrian-Werburg, Hanns; Heil, Herbert; and Wachter, Paul, 3,939,497.

Heimke, Gunther; Griss, Peter; Von Andrian-Werburg, Hanns; Heil, Herbert; and Wachter, Paul, to Friedrichsfeld GmbH. Steinzeug-und Kunststoffwerke. Fastening means for hip joint prosthesis sockets. 3,939,497, Cl. 3-1.912.

Heinecke, Rudolf August Herbert, to ITT Industries, Inc. Selective plasma etching and deposition. 3,940,506, Cl. 427-38.000.

Heinemann, Otto; and Philipp, Rainer, to Polysius AG. Blade lifter for installation inside a revolving drum. 3,940,118, Cl. 259-89.000.

Heinemann, Otto: *See*—

Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.

Heinrich, Karl: *See*—

Franz, Gunther; Heinrich, Karl; and Poppe, Herbert, 3,939,637.

Heinze, Gunter; Muller, Willi; von Zimmerman, Hans Ulrich; and Schalomon, Karl-Heinz. Simplex intercommunication system and a two-way intercommunication system having an electronic trunking scheme. 3,940,561, Cl. 179-15.0AL.

Heinzman, Homer W.; and Marek, Albert J., to LTV Aerospace Corporation. Power controller. 3,940,684, Cl. 323-9.000.

Heitlinger, Louis J.: *See*—

Arneson, Harold N.; and Heitlinger, Louis J., 3,939,824.

Hekimian Laboratories, Inc.: *See*—

Hekimian, Norris C.; and Turner, James F., 3,940,703.

Hekimian, Norris C.; and Turner, James F., to Hekimian Laboratories, Inc. Intermodulation distortion analyzer. 3,940,703, Cl. 328-144.000.

Hellman, Wayne R.; Gottschalk, Klaus; and De George, Edward C., to General Electric Company. Method of making discharge lamp having blow-molded arc tube ends. 3,939,538, Cl. 29-25.110.

Helm, Herbert W., to F. L. Smithe Machine Company, Inc. Drive for rotatable cutter mechanisms. 3,939,723, Cl. 74-401.000.

Helmer, Karin Ulla Elisabet; and Simonsson, Berit Ingegard, to Kemanord AB. Process for sizing cellulose fibres. 3,940,519, Cl. 427-395.000.

Hempowitz, Gunter; and Pokar, Jochen, to Uranit, Uran-Isotopentrennungs-Gesellschaft m.b.H. Apparatus for measuring the proportion or quantity of a component in a radiation-transparent mixture. 3,940,623, Cl. 250-343.000.

Hengartner, Kurt: *See*—

Schnell, Claude R.; Hengartner, Kurt; and Gross, Heinz, 3,940,653.

Henning, Kurt: *See*—

Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.

Henrick, Clive A.; and Siddall, John B., to Zoecon Corporation. Novel keto-ethers. 3,940,444, Cl. 260-594.000.

Henry, David W.: *See*—

Fujiwara, Allan N.; Acton, Edward M.; and Henry, David W., 3,940,383.

Henry, Michel; and Bottard, Gilles Jean Marcel. Apparatus for locating faults in a working storage. 3,940,601, Cl. 235-153.0AC.

Henry, Ormond L.; and Smith, Raymond P., to D & H Industries, Inc. Polishing device. 3,939,599, Cl. 32-59.000.

Hepford, Richard R.; and Roberts, Clifford J., Jr., to Scott Paper Company. Non-nested two-ply absorbent fibrous sheet material. 3,940,529, Cl. 428-178.000.

Herb, Eugen: *See*—

Brekle, Erich; Herb, Eugen; and Klingel, Hans, 3,939,566.

Herbener, Klaus; and Schmitt, Ewald, to Messer Griesheim GmbH. Cutting machine clamping device. 3,940,123, Cl. 266-23.00R.

Hercules Incorporated: *See*—

Zebree, David T., 3,939,772.

Hergenrother, William L., to Firestone Tire & Rubber Company, The. Modified molecular weight of polylactams. 3,940,372, Cl. 260-78.00L.

Herleth, Karl, to Uher Werke Munchen. Tape recorder, particularly cassette recorder. 3,940,792, Cl. 360-96.000.

Hermann, Gunther: *See*—

Frohberger, Paul-Ernst; Urbschat, Otto Ewald, deceased; and Hermann, Gunther, 3,940,488.

Hermes, Walter Ludwig; Berkowitz, Murray; and Lombaerde, Charles, to Curtiss-Wright Corporation. Mold for die-cast rotor housing for rotary combustion engines. 3,940,104, Cl. 249-142.000.

Hernandez, Ralph G. Tool for setting jointed flooring panels. 3,939,546, Cl. 29-278.000.

Hertz, Walter, to Siemens Aktiengesellschaft. Arc quenching arrangement. 3,940,583, Cl. 200-148.00A.

Hervier, Jean: *See*—

Palluel, Pierre; Hervier, Jean; and Rousseau, Jean, 3,940,655.

- Hesler, Dietrich; Gresser, Gerhard; and Brandstetter, Helmut, to Karl M. Reich Maschinenfabrik GmbH. Workpiece feeding apparatus, especially for machining equipment. 3,939,611, Cl. 51-139.000.
- Hess, Bernhard; Raichle, Karl; Schulz-Walz, Hansjochen; Peltzer, Bernd; Bottenbruch, Ludwig; and Goerden, Leonard, to Bayer Aktiengesellschaft. Moulding compositions based on unsaturated polyesters, copolymerisable vinyl monomers and cellulose esters. 3,940,350, Cl. 260-16.000.
- Hess, Peter: *See—*
  - Bucking, Hans Walter; Hess, Peter; Konig, Franz; Sahm, Wilfried; and Schneider, Gerhart, 3,940,340.
- Heymes, Rene: *See—*
  - Martel, Jacques; Heymes, Rene; and Lutz, Andre, 3,940,354.
- Heytmeijer, Herman R.: *See—*
  - Demarest, Donald J.; and Heytmeijer, Herman R., 3,940,343.
- Hi-Torr Inventions Corporation: *See—*
  - Brunstetter, Frank H., 3,939,827.
- Hibino, Yoshihiro: *See—*
  - Kaneko, Yasuhisa; Komatsu, Yasuhiko; Hibino, Yoshihiro; and Okada, Yasuo, 3,939,897.
- Hickman, John B.: *See—*
  - Dennis, Charles L.; Givens, Wyatt W.; and Hickman, John B., 3,940,610.
- Hickson & Welch Limited: *See—*
  - Davidson, Hugh; Johnson, Keith Trevor; Leggeter, Brian Ernest; and Moore, Anthony John, 3,940,437.
- Hidaka, Hideo; and Yamamoto, Setsuo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for regulating supply quantity of textile fibers to a weighing device. 3,939,929, Cl. 177-121.000.
- Hiestand, Armin, to Ciba-Geigy Corporation. Perfluoroalkyl compounds. 3,940,435, Cl. 260-481.00R.
- Hilaire, Fernand, to Captocap Limited. Apparatus for injection molding a tamper-proof plastic cap. 3,940,103, Cl. 249-68.000.
- Hilti Aktiengesellschaft: *See—*
  - Oehry, Norbert, 3,940,587.
  - Oehry, Norbert; and Wild, Rainer, 3,940,588.
- Hinckley, Thomas L., to Scott Paper Company. Apparatus for forming a nonwoven fibrous web. 3,940,216, Cl. 425-83.000.
- Hinkle, Max E.: *See—*
  - Hall, Ervin T.; Talbert, Miles E.; Walsh, James R.; and Hinkle, Max E., 3,939,508.
- Hinz, Henry; and Stopek, Benjamin, to Ideal Toy Corporation. Fold up die construction. 3,940,142, Cl. 273-146.000.
- Hirao, Seiji, to Chisso Corporation. Radiation-sterilized shaped articles of olefin polymers. 3,940,325, Cl. 204-159.200.
- Hiratsuka, Yoshitaka: *See—*
  - Kurita, Shoichi; Sata, Naohide; Ogawa, Hideki; and Hiratsuka, Yoshitaka, 3,940,705.
- Hiromori, Yasutaka: *See—*
  - Mizoguchi, Akira; Yamamori, Kiyoshi; and Hiromori, Yasutaka, 3,940,773.
- Hirose, Fujiharu: *See—*
  - Yoshitomi, Hirohiko; Hashimoto, Junji; Kodama, Taro; and Hirose, Fujiharu, 3,939,681.
- Hirose, Katsumi: *See—*
  - Maeda, Ryozo; and Hirose, Katsumi, 3,940,403.
- Hirsch, William J. Portable fence. 3,940,113, Cl. 256-24.000.
- Hitachi, Ltd.: *See—*
  - Horikoshi, Hisashi; and Kawabe, Shun, 3,940,741.
  - Sasayama, Takao, 3,939,811.
  - Tadokoro, Tomio; Kouno, Toshikatsu; and Sasaki, Akio, 3,940,680.
  - Tomioka, Shunzo; Okano, Kinpei; and Kajiwara, Toshiyuki, 3,940,191.
  - Tsuboi, Takashi; and Tanamachi, Tokunosuke, 3,940,669.
- Hjelm, Michael J.: *See—*
  - Whittum, Howard A.; and Hjelm, Michael J., 3,940,549.
- Hochman, Arthur, to Art-Phyl Creations. Hook display assembly. 3,939,985, Cl. 211-57.000.
- Hockaday, Robert C. Lettering guide apparatus. 3,939,588, Cl. 40-125.00A.
- Hoechst Aktiengesellschaft: *See—*
  - Bucking, Hans Walter; Hess, Peter; Konig, Franz; Sahm, Wilfried; and Schneider, Gerhart, 3,940,340.
  - Franz, Gunther; Heinrich, Karl; and Poppe, Herbert, 3,939,637.
  - Frey, Hans-Helmut; and Klug, Helmut, 3,940,456.
  - Grossmann, Hans-Hermann; Burg, Karlheinz; and Sextro, Gunter, 3,940,365.
  - Strassberger, Werner, 3,940,452.
- Hoenig, Gerhard E.: *See—*
  - Fendley, Richard L.; Hoenig, Gerhard E.; Poehlmann, George; and Prendergast, John M., Jr., 3,939,559.
- Hoffmann, Hellmut; Hammann, Ingeborg; and Unterstenhofer, Gunter, to Bayer Aktiengesellschaft. N-(N,N-disubstituted-aminomethylidene)-(thiono)thiol-phosphoric acid esters amides. 3,940,457, Cl. 260-943.000.
- Hoffmann, Herbert: *See—*
  - Bruckert, Klaus; Hoffmann, Herbert; Kutscher, Gerhard; Neubert, Rolf; and Wehling, Rolf, 3,939,638.
- Hofstein, Steven R., to Princeton Electronics Products, Inc. Target structure for electronic storage tubes of the coplanar grid type having a grid structure of at least one pedestal mounted layer. 3,940,651, Cl. 313-391.000.
- Hogg, Walter R., to Coulter Electronics, Inc. Particle analyzer of the coulter type including coincidence error correction circuitry. 3,940,691, Cl. 324-71.0CP.
- Hohne, Karl; and Mund, Konrad, to Siemens Aktiengesellschaft. Process for the manufacture of silver-coated tungsten carbide electrode material. 3,940,510, Cl. 427-115.000.
- Hoi, Buu: *See—*
  - Saint-Ruf, Germain; Chanh, Pham Huu; and Hoi, Buu, 3,940,387.
- Holly, Harry H., to Hollymatic Corporation. Molding apparatus. 3,939,530, Cl. 17-32.000.
- Holly, James A., to Hollymatic Corporation. Molding device. 3,939,531, Cl. 17-32.000.
- Hollymatic Corporation: *See—*
  - Holly, Harry H., 3,939,530.
  - Holly, James A., 3,939,531.
- Holt, William C., Jr.: *See—*
  - Youtsey, Karl J.; and Holt, William C., Jr., 3,940,509.
- Holzer, Anton, to Wien-Fischamender Metallwarenfabrik Josef Suschny & Sohne. Dowel. 3,939,974, Cl. 206-343.000.
- Holzrichter, Herbert: *See—*
  - DeFago, Raymond; Angliker, Hans-Joerg; Holzrichter, Herbert; Kneubuehler, Werner; and Peter, Richard, 3,940,246.
- Honeywell Inc.: *See—*
  - Bockett-Pugh, Charles Paul, 3,940,704.
  - Greer, Homer L.; and Newbold, William F., 3,939,708.
  - Tanaka, Kozo; and Onoda, Tetsuyuki, 3,940,686.
- Honeywell Information Systems, Inc.: *See—*
  - Conroy, Walter J.; Prescott, Robert S.; and Proulx, George G., 3,940,790.
- Hongu, Masayuki: *See—*
  - Sumi, Takao; and Hongu, Masayuki, 3,940,708.
- Hooker Chemicals & Plastics Corporation: *See—*
  - Cook, Edward H., Jr., 3,940,323.
- Hoppe, Peter; Drouven, Gustav; Leyer, Helmut; and Muller, Johann, to Bayer Aktiengesellschaft. Article comprising foam plastic covered with an outer surface strengthening layer. 3,940,524, Cl. 428-86.000.
- Horbach, Alfred: *See—*
  - Pelousek, Herbert; Horbach, Alfred; Bottenbruch, Ludwig; and Binsack, Rudolf, 3,940,367.
- Hori, Kiyokazu: *See—*
  - Yoshizawa, Toshio; Yamada, Yasuo; Taniguchi, Toshinori; Kose, Tatsuo; Ohchi, Kazuo; and Hori, Kiyokazu, 3,939,634.
- Hori, Michimasa; and Aizawa, Takeshi, to Matsushita Electric Industrial Co., Ltd. Blower. 3,940,215, Cl. 415-54.000.
- Horikawa, Masao, to Terasaki Denki Sangyo Kabushiki Kaisha. Instantaneously tripping device for circuit interrupter. 3,940,723, Cl. 335-174.000.
- Horikoshi, Hisashi; and Kawabe, Shun, to Hitachi, Ltd. Information processing device for processing instructions including branch instructions. 3,940,741, Cl. 340-172.500.
- Horinouchi, Tsukasa; Egawa, Setsuya; and Sakamoto, Masahiro, to NCR Corporation. Pressure-sensitive recording sheet. 3,940,539, Cl. 428-323.000.
- Horn, Mortimer J.: *See—*
  - Jackel, Simon S.; and Horn, Mortimer J., 3,940,504.
- Horowitz, Carl; Pinczuk, Leon; and Dichter, Michael, to Polymer Research Corporation of America. Method of activating polymers. 3,940,377, Cl. 260-79.5NV.
- Hortig, Wilhelm, to KM Engineering AG. Mechanism for centering metal hollow bodies during a drawing operation. 3,939,685, Cl. 72-361.000.
- Horvath, Eduard, to Otto Bock Orthopaedische Industrie KG. Epicyclic transmission with eccentric drive and thrust-transmitting bodies in stationary guide. 3,939,737, Cl. 74-805.000.
- Horvath, Robert A., to General Motors Corporation. Power brake booster. 3,939,658, Cl. 60-548.000.
- Horvath, William, to Thiokol Corporation. Rechargeable sprayer with improved valve system and charge cycle limit stop therefor. 3,940,029, Cl. 222-340.000.
- Hosokawa, Teruo: *See—*
  - Abe, Haruo; Konishi, Masaichiro; and Hosokawa, Teruo, 3,940,788.
- Hotte, Friedhelm: *See—*
  - Kuss, Eduard; and Hotte, Friedhelm, 3,939,690.
- Houd, Rolf Dietrich, to F. L. Smidth & Co. Rotary kiln plant. 3,940,241, Cl. 432-106.000.
- Hounsfield, Godfrey Newbold; Beaven, Paul Anthony; and Lill, Brian Herbert, to E M I Limited. Data processing arrangements. 3,940,599, Cl. 235-151.300.
- Hounsfield, Godfrey Newbold, to E M I Limited. Apparatus for examining objects by means of penetrating radiation. 3,940,625, Cl. 250-360.000.
- Hounsfield, Godfrey Newbold, to E M I Limited. Detection of radiation in radiographic apparatus. 3,940,626, Cl. 250-366.000.
- Houston, John M.; Young, James R.; and Whetten, Nathan R., to General Electric Company. Electrostatic recording of X-ray images. 3,940,620, Cl. 250-315.00A.
- Howard, Dean D.: *See—*
  - Cross, David C.; and Howard, Dean D., 3,940,766.
- Howland, Bradford: *See—*
  - Kissinger, Curtis D.; and Howland, Bradford, 3,940,608.
- Hoy, Edgar F., to Dow Chemical Company, The. Formaldehyde-diaromatic ether reaction products. 3,940,448, Cl. 260-609.00F.
- Huberli, Wilhelm, to Zeiler A.G. Werk Koniz. Folded carton having dispensing means. 3,940,035, Cl. 222-528.000.
- Hubers, Cornelis. Device comprising an expansion engine and a separate apparatus for feeding said engine. 3,939,652, Cl. 60-39.630.

- Hudson, John A.; and Yelverton, Mitchell J., to United States of America, Navy. Buoyant electrode and system for high speed towing. 3,940,732, Cl. 340-4.00E.
- Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., to Medical Monitor Systems, Inc. Data acquisition, storage and display system. 3,940,742, Cl. 340-172.500.
- Hughes Aircraft Company: *See—*
  - DeLano, Richard H.; Mathews, Warren E.; Armi, Edgar L.; and Cochran, Keith W., 3,940,767.
  - Ethington, David A.; Wilmot, Richard D.; and Yamashiro, Herbert Y., 3,940,762.
  - Harrington, John B., 3,940,720.
  - Withrington, Roger J., 3,940,204.
- Hughes, Richard Swart, to United States of America, Navy. Stimulated Brillouin scattered (SBS) tuned laser. 3,940,713, Cl. 331-94.50C.
- Hughes, Robert D.: *See—*
  - Steigelmann, Edward F.; Hughes, Robert D.; and Gabor, Joseph, 3,940,469.
- Huiber, Otto A.: *See—*
  - Misch, Dieter R.; and Huiber, Otto A., 3,939,688.
- Hull, Francis R. Marine pump-jet propulsion system. 3,939,794, Cl. 115-16.000.
- Hull, Henry E.: *See—*
  - Gallagher, Nicholas D.; Johnston, Herbert N.; Valihura, Robert J.; and Hull, Henry E., 3,939,676.
- Hunt, Glenn E.: *See—*
  - Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 3,940,742.
- Hunt, Ronald Eugene; and Jenkins, William Melchior, to International Business Machines Corporation. Modular disc eject apparatus for use as an output hopper and cartridge holder in dictation and transcription systems. 3,940,147, Cl. 274-9.00B.
- Hunter, Edwin J., to Toro Company, The. Pop-up sprinkler head having flow adjustment means. 3,940,066, Cl. 239-204.000.
- Huskins, Chester W.; and Patrick, Roy E., to United States of America, Army. Generation of hydrogen. 3,940,474, Cl. 423-648.000.
- Hustede, Helmut; Rudy, Herman, deceased; by Rudy nee Ringelmann, Liselotte, heir; by Rudy, Hans, heir; and by Sallewsky nee Rudy, Barbara, heir, to Joh. A. Benckiser GmbH. Production of citric acid by submerged fermentation. 3,940,315, Cl. 195-36.00R.
- Hutchinson, William M., to Phillips Petroleum Company. Azeotrope of 1,2-dichloro-1,1,2-trifluoroethane and trichlorofluoromethane. 3,940,342, Cl. 252-171.000.
- Hutson, Clifford L.; and Miller, Leonidas C., to Hutson, Clifford L. Vacuum-actuated pick-up instrument. 3,940,172, Cl. 294-64.00R.
- Hutton, John R., to Columbia Machine, Inc. Apparatus for manufacturing rough faced bricks. 3,940,229, Cl. 425-436.00R.
- Hwa, Stephen C. P., to Xerox Corporation. Blade cleaning of surfaces with reverse movement. 3,940,282, Cl. 134-6.000.
- Hy-Gain Electronics Corporation: *See—*
  - Morgan, Eugene L., 3,940,697.
- Hydril Company: *See—*
  - Mott, James D., 3,939,913.
- ICI Australia Limited: *See—*
  - Bolza, Frederick, 3,940,297.
- ICI United States Inc.: *See—*
  - Burns, Joseph P., 3,940,537.
- Ideal Toy Corporation: *See—*
  - Hinz, Henry; and Stopek, Benjamin, 3,940,142.
- Igawa, Keisuke: *See—*
  - Nakayama, Yuzaburo; Yamamoto, Akinori; Asahara, Tomohiko; Shimamura, Masaharu; Tsuda, Yoshizo; Igawa, Keisuke; and Okamoto, Mitsuhiro, 3,939,636.
- Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits, Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; by Krasilnikova, Nonna Alexeevna, administrator; and by Cherchintsev, Alexandr Nikolaevich, administrator. Two-roll machine for rolling-out disc-type articles. 3,939,684, Cl. 72-86.000.
- Iizuka, Kinji: *See—*
  - Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, 3,940,422.
- Ikeda, Tetsuo: *See—*
  - Murakami, Katsuhiko; Ikeda, Tetsuo; Miebori, Zenjiro; Noguchi, Kunio; and Nakanishi, Kaoru, 3,939,928.
- Iki, Shinichi; and Kosugi, Hideaki, to Nissan Motor Co., Ltd. Multiplex transmission system on-off signal. 3,940,567, Cl. 179-15.0BY.
- Ikrath, Kurt: *See—*
  - Johnson, Ronald F.; and Ikrath, Kurt, 3,940,733.
- Illinois Tool Works Inc.: *See—*
  - Andersen, Stephen Verner; and Swick, Edwin Grant, 3,940,198.
  - Koscik, Richard A., 3,939,752.
  - Neumayer, George Anton, 3,939,979.
- Image Analysing Computers Limited: *See—*
  - Gardner, Gerald Marvin, 3,940,557.
- Imanaga, Kojiro: *See—*
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- Imanaka, Takuichi: *See—*
  - Goto, Isamu; Matoba, Isao; Imanaka, Takuichi; Matsumura, Ko; Shimizu, Yoh; Goto, Tomomichi; and Kan, Takahiro, 3,940,299.
- Imperial Chemical Industries Limited: *See—*
  - Caunt, Anthony David, 3,940,345.
  - Connell, Anthony John; and Pinto, Alwyn, 3,940,428.
  - Davis, John Howard, deceased; Harwood, Richard C., executor; and Davis, Barbara, executrix, 3,940,464.
  - Doschko, Werner; and Pscheidl, Hans, 3,939,632.
  - Matthews, Kenneth Gerald; and Richardson, John, 3,940,302.
  - Steele, Daniel, 3,939,941.
- Imperial-Eastman Corporation: *See—*
  - Kotsakis, Mike D., 3,939,739.
- Imperiali, Franco, to Comitato Nazionale per l'Energia Nucleare. Electromagnetic safety device for the suspension of the rods in a nuclear reactor. 3,940,309, Cl. 176-22.000.
- INA Seito Co., Ltd.: *See—*
  - Noritake, Muneo; and Takeuchi, Masaharu, 3,940,240.
- Inaba, Hiroshi; and Yoneda, Etsugo, to Nippon Telegraph and Telephone Public Corporation. Digital code monitor system. 3,940,736, Cl. 340-146.10A.
- Inamoto, Hiroshi: *See—*
  - Asakai, Masaru; and Inamoto, Hiroshi, 3,939,608.
- Inca Inks, Inc.: *See—*
  - Goldfein, Harold A., 3,939,656.
- Indak Manufacturing Corporation: *See—*
  - Schaad, William J., 3,940,585.
- Industrias Rumbo, S.A.: *See—*
  - Fernandez, Rafael Herrera, 3,940,707.
- Industrie Pirelli S.p.A.: *See—*
  - Priaroggia, Paolo Gazzana, 3,940,300.
- Ing. C. Olivetti & C., S.p.A.: *See—*
  - Sajeva, Raoul, 3,940,745.
  - Vittorelli, Vittore, 3,940,746.
- Inoue, Michihiro; Kimura, Takeji; and Sato, Masaharu, to Matsushita Electric Industrial Co., Ltd. Electronic organ. 3,939,750, Cl. 84-1.220.
- Inoue, Naohiko, to Nissan Motor Co., Ltd. Automotive steering system. 3,939,938, Cl. 180-79.20R.
- Inouye, Shigeharu: *See—*
  - Shomura, Takashi; Omoto, Shoji; Miyado, Shinji; Watanabe, Hiroshi; Inouye, Shigeharu; Yamada, Yujiro; and Niida, Taro, 3,940,479.
- Inskeep, John B.: *See—*
  - Christini, Theodore P.; Flynn, William P.; Inskeep, John B.; and McCauley, Harry J., 3,940,512.
- Institut Francaise du Petrole, des Carburants et Lubrifiants: *See—*
  - Castela, Andre; and Joubert, Philippe, 3,940,111.
- Institut National de Recherche Chimique Appliquee: *See—*
  - Guichard, Jean-Claude; and Chauvelier, Claude, 3,939,694.
- Institute of Gas Technology: *See—*
  - Meissner, Herman P.; and Schora, Frank C., 3,939,803.
- Interlock Industries Limited: *See—*
  - Davis, Ronald Percival, 3,939,529.
- International Business Machines Corporation: *See—*
  - Andrews, Lawrence Paul; Fox, Raymond Graham; Ludeman, Clayton Potter; Rounds, Thomas Wilbur, Jr.; Scuderi, Victor Anthony; and Strait, Douglas Howard, 3,939,579.
  - Brock, George W.; Shelledy, Frank B.; Smith, Sidney H.; and Thornley, Richard F. M., 3,940,797.
  - Griffiths, Donald E.; Koestner, Joseph H.; and Norton, David G., 3,940,794.
  - Hunt, Ronald Eugene; and Jenkins, William Melchior, 3,940,147.
  - Paddock, Richard Charles, 3,940,596.
  - Voegeli, Otto, 3,940,750.
- International Flavors & Fragrances Inc.: *See—*
  - Pittet, Alan Owen; Klaiber, Erich Manfred; Vock, Manfred Hugo; Shuster, Edward J.; and Vinals, Joaquin, 3,940,499.
- International Harvester Company: *See—*
  - Winker, Bernard L.; and Gaines, John W., 3,939,919.
- International Nickel Company, Inc., The: *See—*
  - Lupton, David Francis; Mason, John Jefferson; and Penrice, Peter John, 3,940,295.
- International Paper Company: *See—*
  - Baxter, Robert Olin, 3,939,995.
- International Telephone and Telegraph Corporation: *See—*
  - Griffin, Richard H., 3,940,228.
- Intreprinderea Flacara Rosie: *See—*
  - Cioca, Gheorghe; Tigaeru, Nicolae; Ionescu, Agrippa; Chiotan, Nicolae; Constantinescu, Mihai; and Niculescu, Gheorghe, 3,939,831.
- Inubuse, Akiyoshi: *See—*
  - Yamaguchi, Hideo; Kawasaki, Takashi; Takahashi, Shigeo; and Inubuse, Akiyoshi, 3,940,248.
- Ionescu, Agrippa: *See—*
  - Cioca, Gheorghe; Tigaeru, Nicolae; Ionescu, Agrippa; Chiotan, Nicolae; Constantinescu, Mihai; and Niculescu, Gheorghe, 3,939,831.
- Iowa State University Research Foundation, Inc.: *See—*
  - Ellingson, William A.; and Read, Alvin A., 3,940,619.
- Irion, Leonhard; and Kollmar, Walter, to Siemens Aktiengesellschaft. Nuclear reactor. 3,940,310, Cl. 176-36.00R.
- Isaac, Kenneth N.: *See—*
  - Mock, Howard C.; Isaac, Kenneth N.; Disparte, Charles P.; Hall, Warren L.; and Beasely, James, 3,940,744.
- Isaacs, Thelma J.; and Weinert, Robert W., to Westinghouse Electric Corporation. Acoustic surface wave devices using Tl_3TaS_4 and Tl_3TaSe_4 crystals. 3,940,717, Cl. 333-30.00R.

Ishiguro, Shoji: *See—*
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Ishikawa, Yasuo; and Ito, Masahiro, to Tokico Ltd. Spray-ejecting device. 3,940,072, Cl. 239-587.000.

Itatani, Hiroshi; Kashima, Mikito; Matsuda, Masaoki; Yoshimoto, Hataaki; and Yamamoto, Hiroyuki, to UBE Industries, Ltd. Process for producing biphenyltetracarboxylic dianhydrides. 3,940,426, Cl. 260-346.300.

Ito, Hajime: *See—*
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Ito, Hiroshi; and Yoshitsugu, Seikichi, to Nissan Motor Co., Ltd. Vehicle body construction. 3,940,176, Cl. 296-28.00F.

Ito, Masahiro: *See—*
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Itoh, Takane; and Kamide, Takao, to Nissan Motor Co., Ltd. Operational circuitry for use in a gas turbine engine control system. 3,939,650, Cl. 60-39.28T.

Itoh, Yasuo, to Victor Company of Japan, Limited. Muting circuit. 3,940,698, Cl. 325-348.000.

ITT Industries, Inc.: *See—*
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Ives, Kenneth D.: *See—*
Gonos, Michael G.; Ives, Kenneth D.; and Vranka, Ronald S., 3,939,568.

Ivester, Andrew S., to Polaroid Corporation. Opaque shade. 3,940,774, Cl. 354-83.000.

Iwai, Yoshio: *See—*
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IWEMA Forpacknings AB: *See—*
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J. I. Case Company: *See—*
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J. Zink Co., Inc.: *See—*
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Jablonsky, Erich, to Zahnradfabrik Friedrichshafen AG. Fluid power steering system with valve operator control means. 3,939,757, Cl. 91-391.00R.

Jackel, Simon S.; and Horn, Mortimer J., to Baker Research Development Service, Inc. Oleomargarine with yellow food coloring. 3,940,504, Cl. 426-540.000.

Jacob and Korves GmbH: *See—*
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Jacobs, William M.: *See—*
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Jager, Gerhard: *See—*
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James, Donald R.: *See—*
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Jamison, Thomas H.: *See—*
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Janssen, Eduard Jozef Philomena, to U.S. Philips Corporation. Electric incandescent lamp. 3,940,650, Cl. 313-222.000.

Jantsch, Ottomar; Feigt, Ingmar; and Willig, Wolf Rudiger, to Siemens Aktiengesellschaft. Strip type radiation detector and method of making same. 3,939,555, Cl. 29-577.000.

Janzen, Wolfgang, to Amsted-Siemagkette GmbH. Quick acting clamping device. 3,940,122, Cl. 269-23.000.

Japanese National Railways: *See—*
Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, 3,940,592.

Jarema, Chester P.: *See—*
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Golob, Theodore B.; Hauck, Sylvester J.; Jasinski, Stanley C.; Margerum, Bruce A.; and Jarvi, Antti, 3,939,996.

Jenkins, Dennis H.; and Palacio, Luis, to Space Research Corporation. Spin-stabilized projectiles. 3,939,773, Cl. 102-93.000.

Jenkins, Owen E. Golf game device. 3,940,143, Cl. 273-178.00R.

Jenkins, William Melchior: *See—*
Hunt, Ronald Eugene; and Jenkins, William Melchior, 3,940,147.

Jenny, Erwin F.: *See—*
Haas, Georges; Jenny, Erwin F.; and Rossi, Alberto, 3,940,434.

Jensen, Palle Rasmus: *See—*
Lund, Svend Aage; and Jensen, Palle Rasmus, 3,939,697.

Jeppsson, Martin Wilhelm Ivan; Lindstrom, Bruce William; and Russell, David John, to Telefonaktiebolaget L M Ericsson. Arrangement for preventing interruptions in a time division multiplex transmission link for transfer of data. 3,940,566, Cl. 179-15.0BF.

Jerrold Electronics Corporation: *See—*
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Jersey Nuclear-Avco Isotopes, Inc.: *See—*
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Joh. A. Benckiser GmbH: *See—*
Hustede, Helmut; Rudy, Herman, deceased; Rudy nee Ringelmann, Liselotte, heir; Rudy, Hans, heir; and Sallewsky nee Rudy, Barbara, heir, 3,940,315.

Johannsmeier, Karl-Heinz, to Kasper Instruments, Inc. Step-and-repeat projection alignment and exposure system. 3,940,211, Cl. 355-53.000.

Johansson, Nils-Arne: *See—*
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John Zink Company: *See—*
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Johns-Manville Corporation: *See—*
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Johnsen, Edward L. Multi-ply lottery tickets or like articles, continuous business form and method for producing same. 3,940,124, Cl. 270-61.00F.

Johnson, Charles E.: *See—*
Kaye, Michael D.; Rock, Kingsley Carlton, Jr.; Johnson, Charles E.; and Showalter, J. Philip, 3,939,823.

Johnson, Charles R., to Global Marine, Inc. Automatic roughneck. 3,939,990, Cl. 214-1.00P.

Johnson, David G.: *See—*
Woerman, Delwin G.; Johnson, David G.; and Murphy, Donald F., 3,939,916.

Johnson, Donald R.; and Sawers, James R., Jr., to Du Pont de Nemours, E. I., and Company. Method of joining diamond to metal. 3,940,050, Cl. 228-122.000.

Johnson, Herman W., to AMF Incorporated. Wrapper cutter for automatic cigar wrapping machine. 3,939,740, Cl. 83-24.000.

Johnson & Johnson: *See—*
Overhults, Wendell C., 3,940,362.
Tunc, Deger C., 3,939,836.

Johnson, Keith Trevor: *See—*
Davidson, Hugh; Johnson, Keith Trevor; Leggeter, Brian Ernest; and Moore, Anthony John, 3,940,437.

Johnson, Richard D. Extensible tape devices. 3,939,592, Cl. 43-15.000.

Johnson, Ronald F.; and Ikrath, Kurt, to United States of America, Army. Seismic surveillance system. 3,940,733, Cl. 340-15.000.

Johnson, Wade M., Jr., to Schlumberger Technology Corporation. Combined eddy current and leakage field detector for well bore piping using a unique magnetizer core structure. 3,940,689, Cl. 324-37.000.

Johnston, Herbert N.: *See—*
Gallagher, Nicholas D.; Johnston, Herbert N.; Valihura, Robert J.; and Hull, Henry E., 3,939,676.

Johnston, Howard, to Dow Chemical Company, The. Certain pyrazinyloxyphenyl urea compound. 3,940,392, Cl. 260-250.0BN.

Johnstun, Dick E. Angular position measuring apparatus. 3,940,609, Cl. 250-231.0SE.

Jones, Allen Paul, Jr.: *See—*
Knopf, Robert John; Matthews, Virgil Edison; and Jones, Allen Paul, Jr., 3,940,542.

Jones, Terry H., to Clarke-Gravely Corporation. Portable surface cleaner. 3,939,527, Cl. 15-353.000.

Jones, Thomas Parry; and Wright, Basil Martin. Apparatus for detecting or measuring a constituent of a gas. 3,940,251, Cl. 23-254.00E.

Jones, Thornton K.: *See—*
Fox, Richard C.; and Jones, Thornton K., 3,940,233.

Joubert, Philippe: *See—*
Castela, Andre; and Joubert, Philippe, 3,940,111.

Juchmann, Heinz, to Licentia Patent-Verwaltungs-G.m.b.H. Mounting for locking disc shaped semiconductor element in a housing. 3,940,787, Cl. 357-75.000.

Jung, Anton Ladislaus; Lapczyna, Manfred; Mows, Peter; Schmidt-Burbach, Gerhard; and Strauss, Heinz, to Buderus'sche Eisenwerke. Trash compactor. 3,939,765, Cl. 100-100.000.

Jung, Rolf, to Krauss & Reichert Spezialmaschinenfabrik. Method and apparatus for automatically cutting fabrics and the like. 3,939,742, Cl. 83-56.000.

Junker, Bernhard T., to Monsanto Company. Wire extractor. 3,939,744, Cl. 83-118.000.

Junker, Bernhard T.: *See—*
Weeks, James E.; Runkle, Charles J.; Junker, Bernhard T.; and O'Connor, Gary E., 3,939,745.

Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; and Castillo, Adolfo, to Automated Building Components, Inc. Methods for fabricating wooden frames and the like. 3,939,548, Cl. 29-432.000.

Jurovsky, Albert Yakovlevich; Zelenko, Gennady Samuilovich; and Brodkin, Jury Markovich. Pneumatic differential pressure sensor. 3,939,712, Cl. 73-388.0BN.

Kabushiki Kaisha Ishida Koki Seisakusyo: *See—*
Murakami, Katsuhiko; Ikeda, Tetsuo; Miebori, Zenjiro; Noguchi, Kunio; and Nakanishi, Kaoru, 3,939,928.

Kabushiki Kaisha Komatsu Seisakasho: *See—*
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Kabushiki Kaisha Sega Enterprises: *See—*
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Kabushiki Kaisha Suwa Seikosha: *See—*
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Morozumi, Shinji, 3,939,642.
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Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
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Kadyszewski, Ronald V.: *See—*
Petusky, Neil J.; and Kadyszewski, Ronald V., 3,940,127.

Kahn, Evelyn G. Filing system. 3,939,585, Cl. 40-23.00A.

Kahn, Leonard R. System for illuminating the display of a wrist watch. 3,939,640, Cl. 58-23.00R.

Kahn, Samuel, to Universal Oil Products Company. Dehydrogenation of alcohols. 3,940,446, Cl. 260-603.0HF.

Kain, Calvin L., to KRDC. Container for pressure dispensing of fluid. 3,940,026, Cl. 222-212.000.

Kajiwara, Toshiyuki: *See—*
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Kalinin, Alexandr Ivanovich: *See—*
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Kallrath, Gottfried: *See—*
Reinhardt, Helmut; Trebinger, Karl; and Kallrath, Gottfried, 3,940,252.

Kalman, Peter Gabor. Filtering process and apparatus. 3,940,335, Cl. 210-77.000.

Kalogerson, Thomas A.; and Dandois, Joseph E., to Optimizer Control Corporation. Brake controlled ignition retarder. 3,939,948, Cl. 192-3.00R.

Kamide, Takao: *See—*
Itoh, Takane; and Kamide, Takao, 3,939,650.

Kamijo, Tetsuhide: *See—*
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Kamioka, Hajime: *See—*
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Kan, Takahiro: *See—*
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Kanatsu, Shinsaku; and Takahara, Akira, to Mitsui Toatsu Chemicals, Incorporated. Method for the production of a decorative gypsum board. 3,940,541, Cl. 428-342.000.

Kanbara, Shigeo; and Adaniya, Takeshi, to Nippon Kokan Kabushiki Kaisha. Magnetic force sealant for plating tank. 3,939,799, Cl. 118-620.000.

Kane, William S.; McCutchen, Hugh L.; and Cardwell, Paul H., to Deepsea Ventures, Inc. Direct recovery of metals from fluid anhydrous metal halides derived from marine nodule halidation. 3,940,470, Cl. 423-24.000.

Kaneko, Takashi: *See—*
Chimura, Kazuya; Kaneko, Takashi; Takashima, Shunichi; Kawashima, Masao; and Nakazono, Ryuichi, 3,940,543.

Kaneko, Yasuhisa; Komatsu, Yasuhiko; Hibino, Yoshihiro; and Okada, Yasuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method for producing heat-insulating casting. 3,939,897, Cl. 164-103.000.

Kantrowitz, Arthur, to Jersey Nuclear-Avco Isotopes, Inc. Wide angle isotope separator. 3,940,615, Cl. 250-284.000.

Kardos, Otto; Arcilesi, Donald A.; and Valayil, Silvester P., to M & T Chemicals Inc. Electrodeposition of copper. 3,940,320, Cl. 204-52.00R.

Kariya, Yoshihiro: *See—*
Oya, Takafumi; Kashiwagi, Yoshiyuki; and Kariya, Yoshihiro, 3,940,057.

Karl M. Reich Maschinenfabrik GmbH: *See—*
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Karlsson, Alf Hugo: *See—*
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Kashima, Mikito: *See—*
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Kashiwagi, Yoshiyuki: *See—*
Oya, Takafumi; Kashiwagi, Yoshiyuki; and Kariya, Yoshihiro, 3,940,057.

Kasiewicz, Stanley J.; and McIntyre, Earl Richard. Integrated circuit flasher. 3,940,657, Cl. 315-77.000.

Kasper Instruments, Inc.: *See—*
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Kato, Akinori; and Yamamura, Kenji, to Sumitomo Heavy Industries, Ltd. Treating waste water containing nitriles and cyanides. 3,940,332, Cl. 210-2.000.

Kato, Makoto; and Okino, Yoshihiro, to Matsushita Electric Industrial Co., Ltd. Light beam deflection system. 3,940,202, Cl. 350-3.500.

Kato, Takashi; Yoshizawa, Toshio; and Yamada, Yasuo, to Daiwa Boseki Kabushiki Kaisha; and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for handling a yarn end during a donning operation on a textile machine. 3,940,076, Cl. 242-18.00R.

Katsube, Takahiro: *See—*
Suzuki, Junichi; Matsuda, Toru; and Katsube, Takahiro, 3,939,610.

Katz, Friedrich D.; Fishman, Louis; and Levy, Milton. Method of isolation of lysozyme. 3,940,317, Cl. 195-66.00R.

Katzer, Ernst, to Knorr-Bremse GmbH. Centering device for rail brake magnets on vehicles. 3,940,185, Cl. 308-3.00R.

Kauffman, Ralph I., to Amchem Products, Inc. Method of eradicating woody plants. 3,940,260, Cl. 71-110.000.

Kaufman, Martin H., to United States of America, Navy. Hydrocarbon polymers. 3,940,455, Cl. 260-888.000.

Kaul, Pradeep: *See—*
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Kawabata, Hidetoshi: *See—*
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Kawabe, Shun: *See—*
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Kawahashi, Toshinori: *See—*
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Kawai, Kiyomitsu, to Naniwa Products Co., Ltd. Shell molding machine in which blown core can be ejected outside vise assembly. 3,939,899, Cl. 164-181.000.

Kawai, Masayoshi; Shishido, Tadao; Ishiguro, Shoji; and Sakai, Tadao, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 3,940,271, Cl. 96-4.000.

Kawakami, Hiroshi: *See—*
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Kawasaki Steel Corporation: *See—*
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Kayaba Industry Co., Ltd.: *See—*
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Kayan, Helmut L.; and Stahler, Alfred F., to Ampex Corporation. Magnetic tape transport. 3,940,791, Cl. 360-95.000.

Kaye, Michael D.; Rock, Kingsley Carlton, Jr.; Johnson, Charles E.; and Showalter, J. Philip, to United States of America, Health, Education and Welfare. Esophageal transducer. 3,939,823, Cl. 128-2.00S.

Kayex Corporation: *See—*
Cook, Richard L., 3,939,514.

Keck, Norman A. Speed control device. 3,940,042, Cl. 226-44.000.

Keigler, John Edward; and Muhlfelder, Ludwig, to RCA Corporation. Re-orientation of a spacecraft relative to its angular momentum vector. 3,940,096, Cl. 244-165.000.

Keller, Rudolf: *See—*
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Kellwood Company: *See—*
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Kemanord AB: *See—*
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Keogh, Raymond J.: *See—*
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Kernell, Samuel H. Spinning toy. 3,939,601, Cl. 46-47.000.

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Kerst, Al F., to Monsanto Company. Substituted ethane diphosphonic acids and salts and esters thereof. 3,940,436, Cl. 260-502.500.

Ketchel, Donald F. Safety cabinet for bathtub faucets. 3,940,196, Cl. 312-237.000.

Keuper, John J.; Scardina, Virgil R.; and Wagner, Paul D., to Allis-Chalmers Corporation. Slot closure for dynamoelectric machine. 3,940,647, Cl. 310-214.000.

Kew, Incorporated: *See—*
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- Key Pharmaceuticals, Inc., *See—*
  - Harris, Arthur M., 3,939,842.
- Kheifets, Rafail Efimovich: *See—*
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- Khomyakov, Alexandr Mikhailovich: *See—*
  - Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich, 3,940,324.
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- Kim, Dong H.: *See—*
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- Kimura, Takeji: *See—*
  - Inoue, Michihiro; Kimura, Takeji; and Sato, Masaharu, 3,939,750.
- King, Clarence J., to Straits Steel & Wire Co. Nesting container. 3,939,980, Cl. 206-507.000.
- King, Clarence J., to Straits Steel & Wire Co. Nesting basket. 3,939,981, Cl. 206-507.000.
- King, Lewis C.: *See—*
  - Cherry, Charles C.; and King, Lewis C., 3,940,067.
- King Nutronics Corporation: *See—*
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- Kinney, Alfred W., to Phillips Petroleum Company. Feeding method and apparatus for containers. 3,940,014, Cl. 221-10.000.
- Kinney, Thomas D.: *See—*
  - Pickett, John E. P.; Kinney, Thomas D.; and Winders, Gene M., 3,940,219.
- Kinoshita, Kazuhisa: *See—*
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- Kinoshita, Yukihiko: *See—*
  - Harita, Kozahuro; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, 3,940,422.
- Kissei Yakuhin Kogyo Kabushiki Kaisha: *See—*
  - Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, 3,940,422.
- Kissinger, Curtis D.; and Howland, Bradford, to Mechanical Technology Incorporated. Fiber optic displacement measuring apparatus. 3,940,608, Cl. 250-227.000.
- Kitagawa, Norishisa: *See—*
  - Kuo, Chang-Kiang; and Kitagawa, Norishisa, 3,940,747.
- Kitazume, Akio: *See—*
  - Miyasaka, Tsutomu; and Kitazume, Akio, 3,939,647.
- Kitterman, Lawrence Pete; and Rice, Howard Gene. Tray washing system. 3,939,854, Cl. 134-57.00R.
- Kittl, Hans, to Sandoz Ltd., (Sandoz AG). Bis-benzonazoledicarbonitriles. 3,940,410, Cl. 260-307.00D.
- Klaiber, Erich Manfred: *See—*
  - Pittet, Alan Owen; Klaiber, Erich Manfred; Vock, Manfred Hugo; Shuster, Edward J.; and Vinals, Joaquin, 3,940,499.
- Klar, Erich, to Siemens Aktiengesellschaft. Shielded-emitter neutron detector. 3,940,627, Cl. 250-390.000.
- Klein, Norman E., to Deering Milliken Research Corporation. Apparatus for dyeing and printing materials having improved means for support thereof. 3,939,675, Cl. 68-205.00R.
- Kleinhans, Robert J.: *See—*
  - Bernett, Frank E.; and Kleinhans, Robert J., 3,940,358.
- Klingel, Hans: *See—*
  - Brekle, Erich; Herb, Eugen; and Klingel, Hans, 3,939,566.
- Klug, Helmut: *See—*
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- KM Engineering AG: *See—*
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- Knabe, Lutz: *See—*
  - Grafinger, Wilhelm; Knabe, Lutz; Engelmann, Guenter; and Wagenlehner, Kurt, 3,940,765.
- Knavish, Leonard A.: *See—*
  - Gulotta, Joseph A.; Knavish, Leonard A.; and Sensi, John E., 3,940,256.
- Kneubuehler, Werner: *See—*
  - DeFago, Raymond; Angliker, Hans-Joerg; Holzrichter, Herbert; Kneubuehler, Werner; and Peter, Richard, 3,940,246.
- Knights, Robert Edgar. Windscreen wipers. 3,939,524, Cl. 15-250.040.
- Knodler, Diethelm; Kropfl, Hans; Rau, Peter; and Wittmann, Theodor, to Siemens Aktiengesellschaft. Nuclear reactor fuel element. 3,940,314, Cl. 176-78.000.
- Knopf, Robert John; Matthews, Virgil Edison; and Jones, Allen Paul, Jr., to Union Carbide Corporation. Polyurethane hydrogel fibers and tapes and composites with natural and other synthetic fibers or films. 3,940,542, Cl. 428-364.000.
- Knorr-Bremse GmbH: *See—*
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- Kobashi, Uichiro: *See—*
  - Ueda, Atsumi; and Kobashi, Uichiro, 3,939,859.
- Kobayashi, Eiichi: *See—*
  - Furukawa, Junji; Haga, Kazuo; and Kobayashi, Eiichi, 3,940,378.
- Kobayashi, Michihiro: *See—*
  - Harita, Kozaburo; Ajisawa, Yukiyoshi; Iizuka, Kinji; Kinoshita, Yukihiko; Kamijo, Tetsuhide; and Kobayashi, Michihiro, 3,940,422.
- Kobe Steel Ltd.: *See—*
  - Nishihara, Masao; Yamaguchi, Yoshihiro; Matsushita, Tomiharu; Yamasaki, Tatsuo; Nogushi, Masataka; and Nishioka, Kunihiko, 3,939,682.
- Kobori, Toshio: *See—*
  - Kuromoto, Yoshio; Kobori, Toshio; and Ohba, Masaru, 3,940,779.
- Koci, Jerry C., to Chicago Dynamic Industries, Inc. Control circuit for amusement device. 3,940,671, Cl. 318-349.000.
- Kock, Ronald W., to Procter & Gamble Company, The. Loop knot tying method and apparatus. 3,940,169, Cl. 289-1.500.
- Kockums Jernverksaktiebolag: *See—*
  - Sillen, Rudolf Valentin; and Sjogren, Eric-Olof, 3,940,021.
- Kodaira, Mitsuharu: *See—*
  - Nishimura, Izuhiko; and Kodaira, Mitsuharu, 3,939,641.
- Kodama, Hiroshi: *See—*
  - Muraki, Toshio; Miura, Yasuo; and Kodama, Hiroshi, 3,940,373.
- Kodama, Taro: *See—*
  - Yoshitomi, Hirohiko; Hashimoto, Junji; Kodama, Taro; and Hirose, Fujiharu, 3,939,681.
- Koestner, Joseph H.: *See—*
  - Griffiths, Donald E.; Koestner, Joseph H.; and Norton, David G., 3,940,794.
- Kojima, Suzuo; and Fujimaru, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Discharge device control circuit including a thyristor. 3,940,659, Cl. 315-241.00P.
- Kojima, Yasuaki; Shinozaki, Takayoshi; and Takahashi, Akira, to Nippon Electric Company, Ltd. Cavity resonator having a variable resonant frequency. 3,940,721, Cl. 333-83.00R.
- Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
  - Amano, Kitsutaro; Sasaki, Hiroshi; and Maruyama, Tatsuo, 3,940,555.
- Kolbe, William H.; and Unger, Donald C., to General Motors Corporation. Headlamp washer and wiper system. 3,939,523, Cl. 15-250.020.
- Kollmar, Walter: *See—*
  - Irion, Leonhard; and Kollmar, Walter, 3,940,310.
- Komar, administratrix, by Olga Efremova: *See—*
  - Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich, 3,940,324.
- Komar, Evgeny Grigorievich, deceased: *See—*
  - Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich, 3,940,324.
- Komatsu, Noboru; Obayashi, Mikio; Doi, Minoru; Ota, Nobuyoshi; and Iwai, Yoshio, to Kabushiki Kaisha Toyota Chuo Kenkyusho; and Nippondenso Co., Ltd. Alloy for a high temperature fuse. 3,940,728, Cl. 337-290.000.
- Komatsu, Yasuhiko: *See—*
  - Kaneko, Yasuhisa; Komatsu, Yasuhiko; Hibino, Yoshihiro; and Okada, Yasuo, 3,939,897.
- Komer, administrator by Alexandr Eugenievich: *See—*
  - Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich, 3,940,324.
- Komine, Yoshio, to Canon Kabushiki Kaisha. Casing of a mechanical mounting for the interchangeable lenses and a camera system using the same. 3,940,777, Cl. 354-197.000.
- Kondo, Hirosi. Dispenser device for taking out contents. 3,940,030, Cl. 222-384.000.
- Kondo, Isao, to Olympus Optical Co., Ltd. Motor-drive controlling apparatus. 3,940,776, Cl. 354-173.000.
- Kondo, Shinichi: *See—*
  - Umezawa, Hamao; Maeda, Kenji; Kondo, Shinichi; and Umezawa, Sumio, 3,940,382.
- Konig, Franz: *See—*
  - Bucking, Hans Walter; Hess, Peter; Konig, Franz; Sahm, Wilfried; and Schneider, Gerhart, 3,940,340.
- Konishi, Masaichiro: *See—*
  - Abe, Haruo; Konishi, Masaichiro; and Hosokawa, Teruo, 3,940,788.
- Konzal, Daryl R.: *See—*
  - Rossi, Eugene F.; and Konzal, Daryl R., 3,940,239.
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  - Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits, Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; Krasilnikova, Nonna Alexeevna, administrator; and Cherchintsev, Alexandr Nikolaevich, administrator, 3,939,684.
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  - Bruckert, Klaus; Hoffmann, Herbert; Kutscher, Gerhard; Neubert, Rolf; and Wehling, Rolf, 3,939,638.
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- Lagnado, Isaac; and Whitehouse, Harper J., to United States of America, Navy. Signal processing imager array using charge transfer concepts. 3,940,602, Cl. 235-181.000.
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- Larson, Roger R., to Pharmaco, Inc. Safety cap for medicament vial having puncturable seal. 3,940,003, Cl. 215-247.000.
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Layer, Robert W., to B. F. Goodrich Company, The. Naphthofuranylnaphthol stabilizers. 3,940,364, Cl. 260-45.80A.

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Lemelson, Jerome H. Verification apparatus using a card scanning means. 3,940,795, Cl. 360-101.000.

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Mader, Karl Werner. Multi-purpose funnel. 3,939,884, Cl. 141-333.000.

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Heinzman, Homer W.; and Marek, Albert J., 3,940,684.

Margerum, Bruce A.: *See*—

Golob, Theodore B.; Hauck, Sylvester J.; Jasinski, Stanley C.; Margerum, Bruce A.; and Jarvi, Antti, 3,939,996.

Margolin, George D. Expandable keyboard for electronic pocket calculators and the like. 3,940,758, Cl. 340-337.000.

Marion Power Shovel Company, Inc.: *See*—

Davis, Leo W.; Lackey, Marion D.; Ross, John Reuben; and Trenary, Bryant, 3,940,163.

Mark, Victor, to General Electric Company. Flame retardant polycarbonate composition. 3,940,366, Cl. 260-45.90R.

Marker, Hannes. Safety ski binding. 3,940,156, Cl. 280-11.35R.

Markovac, Anica: *See*—

Ash, Arthur B.; La Montagne, Maurice P.; and Markovac, Anica, 3,940,404.

Markowitz, Jack. Disposable blood collection and filtering device. 3,939,822, Cl. 128-2.00F.

Marotta, Nicholas G.: *See*—

Nappen, Bernard H.; Boettger, Richard M.; and Marotta, Nicholas G., 3,940,505.

Marquardt, Charles L.; and Giuliani, John F., to United States of America, Navy. Flash melting method for producing new impurity distributions in solids. 3,940,289, Cl. 148-1.500.

Marshall, John R.: *See*—

Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, 3,940,484.

Marshall, Robert Moore; and Dardoufas, Kimon Constantine, to Allied Chemical Corporation. Production of polyester yarn. 3,940,544, Cl. 428-378.000.

Martel, Jacques; Heymes, Rene; and Lutz, Andre, to Roussel-UCLAF. Cephalosporan compounds. 3,940,354, Cl. 260-243.00C.

Marterer, Karl, to Rudolf Brand, Firma. Dispenser for a bottle top. 3,940,027, Cl. 222-309.000.

Martin, Ernest J.; and Molitor, Arvid A., to Martin, Ernest J. Liquid aeration method and pump apparatus with stationary vanes and downward flow. 3,940,461, Cl. 261-91.000.

Martin, Jean; Ollier, Jean-Louis; and Petit, Paul, to Groupement pour les Activites Atomiques et Avancees "GAAA". Partly melting rotating helical ring assembly. 3,940,150, Cl. 277-22.000.

Martorano, Richard, to Rohm and Haas Company. Pigment dispersions and lacquers containing copolymer of isobornyl methacrylate. 3,940,353, Cl. 260-22.0CB.

Maruyama, Tatsuo: *See*—

Amano, Kitsutaro; Sasaki, Hiroshi; and Maruyama, Tatsuo. 3,940,555.

Maruzen Oil Co., Ltd.: *See*—

Yokogawa, Akira; Mitooka, Mitsuyuki; and Shima, Kenji, 3,940,344.

Marvin Glass & Associates: *See*—

Burke, Harry E.; and Meyer, Burton C., 3,939,602.

.eyer, Burton C.; Barlow, Gordon A.; and Breslow, Jeffrey D., 3,940,140.

Marzocco, Ralph L.: *See*—

Brockett, Bruce W.; Marzocco, Ralph L.; and Weaver, Fredrick D., 3,940,275.

Masengill, William W., Sr. Process of assembling furniture corner joints. 3,939,549, Cl. 29-432.000.

Maskulia, Evgeny Rozhdenevich: *See*—

Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits, Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; Krasilnikova, Nonna Alexeevna, administrator; and Cherchintsev, Alexandr Nikolaevich, administrator, 3,939,684.

Mason, John Jefferson: *See*—

Lupton, David Francis; Mason, John Jefferson; and Penrice, Peter John, 3,940,295.

Mason, Richard Bell, to Johns-Manville Corporation. Facing wall construction. 3,939,619, Cl. 52-509.000.

Massey-Ferguson-Perkins Limited: *See*—

Armstrong, Anthony Clubley, 3,939,933.

Masuda, Mitsuya, to Matsushita Electric Industrial Co., Ltd. Automatic frequency control device for television receiver. 3,940,554, Cl. 178-5.8AF.

Mathews, Warren E.: *See*—

DeLano, Richard H.; Mathews, Warren E.; Armi, Edgar L.; and Cochran, Keith W., 3,940,767.

Matoba, Isao: *See*—

Goto, Isamu; Matoba, Isao; Imanaka, Takuichi; Matsumura, Ko; Shimizu, Yoh; Goto, Tomomichi; and Kan, Takahiro, 3,940,299.

Matsko, Joseph J., to Westinghouse Electric Corporation. Multi-phase voltage sensing switching device. 3,940,664, Cl. 317-31.000.

Matsuda, Masaoki: *See*—

Itatani, Hiroshi; Kashima, Mikito; Matsuda, Masaoki; Yoshimoto, Hataaki; and Yamamoto, Hiroyuki, 3,940,426.

Matsuda, Toru: *See*—

Suzuki, Junichi; Matsuda, Toru; and Katsube, Takahiro, 3,939,610.

Matsui, Katsuaki: *See*—

Murayama, Keisuke; Toda, Toshimasa; Mori, Eiko; Matsui, Katsuaki; Kurumada, Tomoyuki; Onta, Noriyuki; and Watanabe, Ichiro, 3,940,401.

Matsumoto, Isao; and Umeda, Kenkichi, to Sony Corporation. Tape cassette with erasure prevention recesses at rear corners. 3,940,799, Cl. 360-132.000.

Matsumura, Ko: *See*—

Goto, Isamu; Matoba, Isao; Imanaka, Takuichi; Matsumura, Ko; Shimizu, Yoh; Goto, Tomomichi; and Kan, Takahiro, 3,940,299.

Matsumura, Yuji; and Mitsudomi, Hiroyuki, to Osaka Gas Kabushiki Kaisha. Flat flame burner. 3,940,242, Cl. 432-124.000.

Matsushita Electric Industrial Co., Ltd.: *See*—

Hori, Michimasa; and Aizawa, Takeshi, 3,940,215.

Inoue, Michihiro; Kimura, Takeji; and Sato, Masaharu, 3,939,750.

Kato, Makoto; and Okino, Yoshihiro, 3,940,202.

Masuda, Mitsuya, 3,940,554.

Mizoguchi, Akira; Yamamori, Kiyoshi; and Hiromori, Yasutaka, 3,940,773.

Seki, Hideki, 3,940,665.

Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, 3,940,592.

Matsushita, Tomiharu: *See*—

Nishihara, Masao; Yamaguchi, Yoshihiro; Matsushita, Tomiharu; Yamasaki, Tatsuo; Nogushi, Masataka; and Nishioka, Kunihiko, 3,939,682.

Matsuura, Norio. Tube fastener. 3,939,535, Cl. 24-283.000.

Matthews, Hugh B., to Sperry Rand Corporation. Geothermal energy system fluid filter and control apparatus. 3,939,659, Cl. 60-641.000.

Matthews, Kenneth Gerald; and Richardson, John, to Imperial Chemical Industries Limited. Non-woven materials and a method of making them. 3,940,302, Cl. 156-167.000.

Matthews, Virgil Edison: *See*—

Knopf, Robert John; Matthews, Virgil Edison; and Jones, Allen Paul, Jr., 3,940,542.

Mauvernay, Roland-Yves: *See*—

Szabo, Suzanne; Molnar, Francois; Mauvernay, Roland-Yves; Levan, Chau; Statkov, Peter Radanov; Straumann, Danielle; and Lerik Milovanovic, Olga, 3,940,386.

Mavrovic, Ivo. Method of controlling urea system. 3,940,440, Cl. 260-555.00A.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See*—

Eibl, Hansjorg; and Nicksch, Alfar, 3,940,423.

Mayer, Fritz; Keller, Rudolf; and Kunz, Werner, to Ciba-Geigy Corporation. Dry process for the finishing of organic material. 3,940,515, Cl. 427-248.000.

Mayes, Frank E. Poultry trailer. 3,940,174, Cl. 296-3.000.

Mayworm, Robert G., to Tower Products, Inc. Pouch made of coextruded polymers. 3,939,972, Cl. 206-219.000.

Mazier, Georges; Geffriaud, Jean Paul; and Gouvenot, Daniel, to Solmarine S.A. Large diameter tubular piles and the bedding thereof. 3,939,664, Cl. 61-53.580.

McBride, Thomas, to ECK Miller Transportation Corporation. Flatbed side panel stake. 3,940,179, Cl. 296-43.000.

McCabe, Ralph P., to Chandler Evans Inc. Fuel control. 3,939,649, Cl. 60-39.28R.

McCain, David L., to Continental Oil Company. Methods and systems for hydraulically transporting solids. 3,940,184, Cl. 302-14.000.

McCarthy, John P.; Moyer, John; and Fischer, Leonard, to DCA Food Industries, Inc. Apparatus for forming a shaped comestible. 3,940,217, Cl. 425-98.000.

McCaskey, Harold O., Jr.: *See*—

Palazzolo, Salvatore E.; and McCaskey, Harold O., Jr., 3,940,538.

McCauley, Harry J.: *See*—

Christini, Theodore P.; Flynn, William P.; Inskeep, John B.; and McCauley, Harry J., 3,940,512.

McClements, Kenneth: *See*—

Alexander, Michael Richard; Duncan, Edward; McClements, Kenneth; and Spencer, John Roger, 3,940,600.

McCleskey, Hubert D. Apparatus for use in erection of tent or other shelter adjacent a vehicle. 3,940,099, Cl. 248-38.000.

McClurg, James E., to Streck Laboratories, Inc. Laboratory testing procedure. 3,940,249, Cl. 23-230.00R.

McConaghy, John S., Jr.; and Owsley, Dennis C., to Monsanto Company. Oxidation of unsaturated amines. 3,940,429, Cl. 260-465.900.

McCormack, Gerald M. Apparatus for manufacturing wooden trusses and the like. 3,939,764, Cl. 100-100.000.

McCormick, John P. Tensiometer with remote sensing unit. 3,939,699, Cl. 73-73.000.

McCrory, Rollin John; and Robinson, George Dennis, Jr., to Gilbert & Baker Manufacturing Company. Leak detection system and method. 3,940,020, Cl. 222-52.000.

McCutchen, Hugh L.: *See*—

Kane, William S.; McCutchen, Hugh L.; and Cardwell, Paul H., 3,940,470.

McDonnell Douglas Corporation: *See*—

Allan, Winford K., 3,939,741.

Bergonz, Francis H., 3,940,630.

McGinty, Clarence E. Barbecue rotisserie apparatus. 3,939,761, Cl. 99-421.00H.

McHose, Charles W.: *See*—

Miller, Marshall W.; Vanden Broek, Christiaan J. H.; Stansbury, Benjamin H., Jr.; Jamison, Thomas H.; McHose, Charles W.; and Dubson, Paul T., 3,939,500.

McHugh, Vincent Kenneth. Unitary container liner. 3,940,052, Cl. 229-14.0BE.

McIntire, John M.: *See*—

Dannelly, Clarence C.; and McIntire, John M., 3,940,261.

McIntyre, Earl Richard: *See*—

Kasiewicz, Stanley J.; and McIntyre, Earl Richard, 3,940,657.

McKendry, Lennon H.; and Bland, Walter P., to Dow Chemical Company, The. 4 (3H)-Oxobenzo-2,1,3-thiadiazine-2,2-dioxides. 3,940,389, Cl. 260-243.00R.

McMahon, Patrick J. Metal coated articles. 3,939,834, Cl. 128-272.000.

McMullen, Arthur G.; Ruscoe, Michael J. H.; Clegg, Maurice A.; and Prowse, Ronald L., to Sherritt Gordon Mines Limited. Nickel clad steel coinage blank. 3,940,254, Cl. 29-196.600.

McReynolds, Oliver B. Seismic explosive charge loader and anchor. 3,939,771, Cl. 102-21.800.

McSherry, Thomas, to Woodstream Corporation. Crab or fish trap. 3,939,597, Cl. 43-105.000.

Mechanical Technology Incorporated: *See*—

Kissinger, Curtis D.; and Howland, Bradford, 3,940,608.

Med-Pak Corporation: *See*—

Miller, John J., 3,939,832.

Medhurst, Cyril William, to British Aircraft Corporation Limited. Rotary measuring instruments using inch or metric scale. 3,939,797, Cl. 116-115.500.

Medical Monitor Systems, Inc.: *See*—

Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 3,940,742.

Medley, Harold C., to Shugart Associates. Character belt apparatus with replaceable slugs for line printer. 3,939,768, Cl. 101-111.000.

Medtronic, Inc.: *See*—

Smyth, Nicholas P. D., 3,939,843.

Meier, Werner; Schmidt, Rudolf; and Kraft, Martin, to Siemens Aktiengesellschaft. Drive circuit for a main contactor. 3,940,663, Cl. 317-23.000.

Meiji Seika Kaisha, Ltd.: *See*—

Shomura, Takashi; Omoto, Shoji; Miyado, Shinji; Watanabe, Hiroshi; Inouye, Shigeharu; Yamada, Yujiro; and Niida, Taro, 3,940,479.

Meiko, Incorporated: *See*—

Gunzel, Rudolph M., Jr.; James, Donald R.; and Radecki, Tony, 3,940,069.

Meiser, Werner: *See*—

Kramer, Wolfgang; Buchel, Karl Heinz; Meiser, Werner; and Plempel, Manfred, 3,940,413.

Meissner, Herman P.; and Schora, Frank C., to Institute of Gas Technology. High temperature boiler and method. 3,939,803, Cl. 122-31.00R.

Melnikov, Evgeny Valentinovich: *See*—

Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Tyagunov, Vladimir Arkadievich; Fedorov, Mikhail Ivanovich; Kalinin, Alexandr Ivanovich; Malikov, Konstantin Alexeevich; Arshansky, Mikhail Iosipovich; Petrov, Igor Nikolaevich; and Melnikov, Evgeny Valentinovich, 3,939,896.

Melquist, Marlin R.: *See*—

Ware, Lyle A.; Sundelius, Dennis J.; and Melquist, Marlin R., 3,940,065.

Menzi, Ulrich, to Paillard S.A. Mechanism for selectively controlling at least two functions in a typewriter. 3,939,955, Cl. 197-17.000.

Mercier, Jean; Faille, Marc Della; and Bleiman, Claude, to Gerdec. Chlorinated siliceous materals as fillers and reactants. 3,940,546, Cl. 428-446.000.

Merlin Gerin: *See*—

Castelli, Cesar; and Vincent, Eugene, 3,940,582.

Mermelstein, Seymour, to Tyco Laboratories, Inc. Apparatus for capping containers. 3,939,627, Cl. 53-329.000.

Messer Griesheim GmbH: *See*—

Herbener, Klaus; and Schmitt, Ewald, 3,940,123.

Metrailer, Charles E. Form support for use in making arched ceiling. 3,940,105, Cl. 249-209.000.

Meyer, Albert, to D. H. Baldwin Company. Self-damping circuit. 3,940,635, Cl. 307-294.000.

Meyer, Burton C.; Barlow, Gordon A.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Vibratory board game apparatus. 3,940,140, Cl. 273-109.000.

Meyer, Burton C.: *See*—

Burke, Harry E.; and Meyer, Burton C., 3,939,602.

Mhasalker, Solomon Ezekiel: *See*—

La Croix, Eric Arthur Stuart; and Mhasalker, Solomon Ezekiel, 3,940,487.

Michaels, Fred G.: *See*—

Williams, Richard D.; and Michaels, Fred G., 3,940,580.

Michel, Eberhard, to Kraftwerk Union Aktiengesellschaft. Steam generator. 3,939,805, Cl. 122-32.000.

Micheron, Francois; and Bied-Charreton, Philippe, to Thomson-CSF. Storage-type electro-optical modulator. 3,940,201, Cl. 350-3.500.

Middelmann, Heinz: *See*—

Rehn, Karl-Heinz; and Middelmann, Heinz, 3,939,635.

Middleton, William Joseph, to Du Pont de Nemours, E. I., and Company. Tris(substituted amino) sulfonium salts. 3,940,402, Cl. 260-293.630.

Miebori, Zenjiro: *See*—

Murakami, Katsuhiko; Ikeda, Tetsuo; Miebori, Zenjiro; Noguchi, Kunio; and Nakanishi, Kaoru, 3,939,928.

Miers, Bruce W.; Olt, Arthur E., Jr.; Van Rossem, Richard; and Wait, John D., Jr., to Caterpillar Tractor Co. Vibration-isolated cab for tractors. 3,940,177, Cl. 296-35.00R.

Mikulec, Richard A. Workpiece transfer mechanism. 3,939,992, Cl. 214-1.0BB.

Mile High Equipment Company: *See*—

Verlinden, Jerry M.; Swinford, Gary D.; DeJaeger, Kyle L.; and Kennedy, Michael W., 3,940,116.

Miller, Albert J.: *See*—

Ward, Curtis E.; St. Clair, Maurice W.; De Pue, James M., Jr.; and Miller, Albert J., 3,940,656.

Miller, David C.; and Sutton, Clifton C., to Ethicon, Inc. Suture package. 3,939,969, Cl. 206-63.300.

Miller, Gladys D.: *See*—

Renk, Richard J.; and Boller, George F., 3,940,189.

Miller, John J., to Med-Pak Corporation. Liquid flow regulator and monitor for infusion system. 3,939,832, Cl. 128-214.00R.

Miller, John S., to Boeing Company, The. Dust free asphalt production method and apparatus. 3,940,120, Cl. 259-158.000.

Miller, Kenneth J.: *See*—

Zook, Donald G.; Miller, Kenneth J.; and Patton, Eugene K., 3,939,880.

Miller, Leonidas C.: *See*—

Hutson, Clifford L.; and Miller, Leonidas C., 3,940,172.

Miller, Marjorie A. Disposable pad. 3,939,502, Cl. 4-113.000.

Miller, Marshall W.; Vanden Broek, Christiaan J. H.; Stansbury, Benjamin H., Jr.; Jamison, Thomas H.; McHose, Charles W.; and Dubson, Paul T., to Thetford Corporation. Water closet. 3,939,500, Cl. 4-10.000.

Miller, Phillip: *See*—

Portner, Robert; and Miller, Phillip, 3,940,209.

Miller, William H., Jr., to United States of America, Energy Research and Development Administration. Variable percentage sampler. 3,939,714, Cl. 73-424.000.

Million, Charles W.: *See*—

Macevicz, Clement C.; and Million, Charles W., 3,940,336.

Mills, Walter D.: *See*—

Harrow, Geoffrey A.; Mills, Walter D.; Wilson, John L.; and Finlay, Ian C., 3,939,813.

Mimino, Tohru; Kinoshita, Kazuhisa; Shinoda, Takayuki; and Minegishi, Isao, to Nippon Kokan Kabushiki Kaisha. Austenitic heat resisting steel. 3,940,267, Cl. 75-128.00G.

Minardi, John E., to University of Dayton, The. Solar radiant energy collector. 3,939,819, Cl. 126-271.000.

Minegishi, Isao: *See*—

Mimino, Tohru; Kinoshita, Kazuhisa; Shinoda, Takayuki; and Minegishi, Isao, 3,940,267.

Mining Equipment Division of FMC Corporation: *See*—

Pyles, Harley G., 3,939,958.

Minister of National Defence of Her Majesty's Canadian Government, The: *See*—

Lemay, J. Jacques, 3,940,710.

Minnesota Mining and Manufacturing Company: *See*—

Bergstrom, Theodore R., 3,940,269.

Casey, James H., 3,940,048.

Minolta Camera Kabushiki Kaisha: *See*—

Abe, Haruo; Konishi, Masaichiro; and Hosokawa, Teruo, 3,940,788.

Kuromoto, Yoshio; Kobori, Toshio; and Ohba, Masaru, 3,940,779.

Tanaka, Susumu; Enoguchi, Yuji; and Kawabata, Hidetoshi, 3,939,801.

Misch, Dieter R.; and Huiber, Otto A., to Edge Saw Manufacturing Company. Volumetric calibration. 3,939,688, Cl. 73-3.000.

Mitani Shoji Kabushiki Kaisha: *See*—

Miyazawa, Kuniaki, 3,939,953.

Mitchell, William A.; and Thayer, Charles V., to Bryant Grinder Corporation. Oil-mist lubrication system. 3,939,944, Cl. 184-6.260.

Mitooka, Mitsuyuki: *See*—

Yokogawa, Akira; Mitooka, Mitsuyuki; and Shima, Kenji, 3,940,344.

Mitsubishi Denki Kabushiki Kaisha: *See*—

Kojima, Suzuo; and Fujimaru, Yoshio, 3,940,659.

Mitsubishi Industries, Ltd.: *See*—

Miyazawa, Tadashi, 3,940,334.

Mitsubishi Kinzoku Kabushiki Kaisha: *See*—

Saida, Youichi; Ito, Hajime; and Imanaga, Kojiro, 3,939,756.

Mitsubishi Rayon Co., Ltd.: *See*—

Chimura, Kazuya; Kaneko, Takashi; Takashima, Shunichi; Kawashima, Masao; and Nakazono, Ryuichi, 3,940,543.

Mitsudomi, Hiroyuki: *See*—

Matsumura, Yuji; and Mitsudomi, Hiroyuki, 3,940,242.

Mitsui Toatsu Chemicals, Incorporated: *See*—

Kanatsu, Shinsaku; and Takahara, Akira, 3,940,541.

Miura, Katsutoshi: *See*—

Tezuka, Toshiyata; Kawakami, Hiroshi; and Miura, Katsutoshi, 3,939,663.

Miura, Yasuo: *See*—

Muraki, Toshio; Miura, Yasuo; and Kodama, Hiroshi, 3,940,373.

Miyado, Shinji: *See*—

Shomura, Takashi; Omoto, Shoji; Miyado, Shinji; Watanabe, Hiroshi; Inouye, Shigeharu; Yamada, Yujiro; and Niida, Taro, 3,940,479.

Miyasaka, Tsutomu; and Kitazume, Akio, to Kabushiki Kaisha Suwa Seikosha. Structure of water-tight watch case. 3,939,647, Cl. 58-90.00R.

Miyazawa, Kuniaki, to Mitani Shoji Kabushiki Kaisha. Coin discriminating apparatus. 3,939,953, Cl. 194-100.00A.

Miyazawa, Tadashi, to Kayaba Industry Co., Ltd.; Mitsubishi Industries, Ltd.; and E. C. Chemical Industries Co., Ltd. Method for separating oil from water. 3,940,334, Cl. 210-21.000.

Mizoguchi, Akira; Yamamori, Kiyoshi; and Hiromori, Yasutaka, to Matsushita Electric Industrial Co., Ltd. Liquid droplet writing mechanism. 3,940,773, Cl. 346-140.00R.

Mizuno, Susumu, to Daido Seiko Kabushiki Kaisha. Water-cooled panel for arc furnace. 3,940,552, Cl. 13-35.000.

Moberg, James W., to Browning-Ferris Industries, Inc. Safety apparatus for service vehicle. 3,939,937, Cl. 180-77.00D.

Mobil Oil Corporation: *See*—

Dennis, Charles L.; Givens, Wyatt W.; and Hickman, John B., 3,940,610.

Strong, Jerry G.; and Napier, Roger P., 3,940,458.

Mock, Howard C.; Isaac, Kenneth N.; Disparte, Charles P.; Hall, Warren L.; and Beasely, James, to Xerox Corporation. Self contained program loading apparatus. 3,940,744, Cl. 340-172.500.

Mohnach, Michael G.; and Plisky, John J., to Anderson Company, The. Windshield wiper arm with water distribution means. 3,940,068, Cl. 239-284.00R.

Mohr, Robert N.; and Zlotoff, Howard J. Clasp for internal osseous fixation. 3,939,828, Cl. 128-92.00B.

Molitor, Arvid A.: *See*—

Martin, Ernest J.; and Molitor, Arvid A., 3,940,461.

Mollenkopf, Hans: *See*—

Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.

Molloy, Edward W., to General Motors Corporation. Roller bearing separator. 3,940,193, Cl. 308-218.000.

Molnar, Francois: *See*—

Szabo, Suzanne; Molnar, Francois; Mauvernay, Roland-Yves; Levan, Chau; Statkov, Peter Radanov; Straumann, Danielle; and Lerik Milovanovic, Olga, 3,940,386.

Monocar HC Internacional, S.A.: *See*—

Gonzalez, Jose Leobardo, 3,939,812.

Monogram Industries, Inc.: *See*—

Roberts, George C., 3,939,499.

Monroy, Heliodoro. Process of recovering BHT values from mother liquors of the crystallization of BHT obtained by alkylating p-cresol with isobutylene. 3,940,451, Cl. 260-624.00A.

Monsanto Chemicals Limited: *See*—

Baxter, Samuel; and Changani, Pushpkumar Dewanmal, 3,939,849.

Monsanto Company: *See*—

Bailey, Paul T., 3,940,631.

Findlay, Alexander G., 3,940,756.

Junker, Bernhard T., 3,939,744.

Kerst, Al F., 3,940,436.

Lannert, Kent P., 3,940,424.

McConaghy, John S., Jr.; and Owsley, Dennis C., 3,940,429.

Sandfort, Robert M., 3,940,751.

Weeks, James E.; Runkle, Charles J.; Junker, Bernhard T.; and O'Connor, Gary E., 3,939,745.

Montagna, Angelo A.: *See*—

Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., 3,940,330.

Montano, Joseph V.: *See*—

Kuenzig, Frederick J.; and Montano, Joseph V., 3,939,721.

Moon, Charles L.: *See*—

Cieszko, Joseph T.; and Moon, Charles L., 3,939,901.

Moore, Alvin Edward. Light-weight buoy. 3,939,509, Cl. 9-8.00R.

Moore, Anthony John: *See*—

Davidson, Hugh; Johnson, Keith Trevor; Leggeter, Brian Ernest; and Moore, Anthony John, 3,940,437.

Moran, James J.: *See*—

Baumgartner, Jon B.; and Moran, James J., 3,940,063.

Moran, Raymond D. Mobile trackway. 3,939,777, Cl. 104-137.000.

Morello, Bartolomeo. Steelmaking with inert gas blowing. 3,940,263, Cl. 75-60.000.

Morgan, Eugene L., to Hy-Gain Electronics Corporation. Multiple band scanning radio. 3,940,697, Cl. 325-333.000.

Mori, Eiko: *See*—

Murayama, Keisuke; Toda, Toshimasa; Mori, Eiko; Matsui, Katsuaki; Kurumada, Tomoyuki; Onta, Noriyuki; and Watanabe, Ichiro, 3,940,401.

Morimura, Syoji: *See*—

Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 3,940,363.

Morin, Jean, to Regie Nationale des Usines Renault. Planet carrier for a planetary gear train. 3,939,736, Cl. 74-801.000.

Morino, Ronald; Tucker, William B.; and Keogh, Raymond J., to Photocircuits Division of Kollmorgen Corporation. Direct-current stepping motor drive system. 3,940,677, Cl. 318-685.000.

Morozov, Alexandr Fedorovich: *See*—

Drozhzhin, Vladimir Kirillovich; Sergeev, Alexandr Pavlovich; Shevchenko, Vladimir Pavlovich; Buyanov, Vitaly Evdokimovich; Bolotov, Viktor Ivanovich; Yakut, Viktor Mikhailovich; Polenov, Jury Tikhonovich; Luchinsky, Nikolai Nikolaevich; Dvorkind, Mai Mikhailovich; Alferov, Sergei Alexeevich; Morozov, Alexandr Fedorovich; Anashkin, Alexandr Trofimovich; Avrutin, Isaak Zinovievich; and Voronova, Tatyana Moiseevna, 3,939,846.

Morozumi, Shinji, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece semiconductor intergrated circuit. 3,939,642, Cl. 58-23.00A.

Morris, Herman H. Balanced liquid level head pressure control systems. 3,939,668, Cl. 62-196.000.

Morris, Robert C.: *See*—

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Morton, Dale E., to Texas Instruments Incorporated. Optical thin film coater. 3,939,798, Cl. 118-7.000.

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Morton-Norwich Products, Inc.: *See*—

Schwan, Thomas J., 3,940,400.

- Mos, Robert J.: *See—*
  - Haun, Marion W.; Mos, Robert J.; and Riley, Arthur W., 3,940,796.
- Mossinsohn, Igal. Vehicle for cleaning pavements. 3,939,528, Cl. 15-340.000.
- Motoda, Kenro. Lifting apparatus. 3,940,110, Cl. 254-168.000.
- Motorola, Inc.: *See—*
  - Harasek, Richard J., 3,939,751.
- Mott, James D., to Hydril Company. Method of using a subsurface safety valve. 3,939,913, Cl. 166-314.000.
- Mount Hope Machinery Company: *See—*
  - Staples, Robert E., 3,940,043.
- Mousel, C. K. Universal hydraulic lift attachment for tractors. 3,940,000, Cl. 214-766.000.
- Mouzin, M. Gilbert: *See—*
  - Stenger, M. Antoine; Cousse, Henri; and Mouzin, M. Gilbert, 3,940,490.
- Mows, Peter: *See—*
  - Jung, Anton Ladislaus; Lapczyna, Manfred; Mows, Peter; Schmidt-Burbach, Gerhard; and Strauss, Heinz, 3,939,765.
- Moyer, John: *See—*
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- Muchowski, Joseph M.; and Fried, John H., to Syntex (U.S.A.) Inc. β-Adrenergic blocking agents in the 1,2,3-thiadiazole series. 3,940,407, Cl. 260-302.00D.
- Mueller, Wolfgang H.: *See—*
  - Oswald, Alexis A.; Mueller, Wolfgang H.; and Hall, Daniel N., 3,940,374.
- Muhlfelder, Ludwig: *See—*
  - Keigler, John Edward; and Muhlfelder, Ludwig, 3,940,096.
- Muirhead, Walter B. Condenser tube cleaning plug. 3,939,519, Cl. 15-104.06R.
- Muller, Ernst; and Butz, Alois, to Bizerba-Werke, Wilhelm Kraut KG. Band saw. 3,939,749, Cl. 83-814.000.
- Muller, Johann: *See—*
  - Hoppe, Peter; Drouven, Gustav; Leyer, Helmut; and Muller, Johann, 3,940,524.
- Muller, Peter, to Cerberus AG. Detection of presence or absence of flames. 3,940,753, Cl. 340-227.00R.
- Muller, Willi: *See—*
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- Mund, Konrad: *See—*
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- Murakami, Katsuhiko; Ikeda, Tetsuo; Miebori, Zenjiro; Noguchi, Kunio; and Nakanishi, Kaoru, to Kabushiki Kaisha Ishida Koki Seisakusyo. Weighing method and apparatus. 3,939,928, Cl. 177-25.000.
- Muraki, Toshio; Miura, Yasuo; and Kodama, Hiroshi, to Toray Industries, Inc. Copolyamide of caprolactam. 3,940,373, Cl. 260-78.00L.
- Muramoto, Komi. Double-type container for cooling beverage. 3,940,022, Cl. 222-130.000.
- Murata Kikai Kabushiki Kaisha: *See—*
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- Murata, Yoshihiro: *See—*
  - Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, 3,940,592.
- Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, to Sankyo Company Limited. Piperidine derivatives and their use as stabilizers. 3,940,363, Cl. 260-45.80N.
- Murayama, Keisuke; Toda, Toshimasa; Mori, Eiko; Matsui, Katsuaki; Kurumada, Tomoyuki; Onta, Noriyuki; and Watanabe, Ichiro, to Sankyo Company Limited. 4,4-(O-phenylenedioxy)-2,2,6,6-tetramethyl piperidine. 3,940,401, Cl. 260-293.580.
- Murphy, Donald F.: *See—*
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- Murphy, Robert; and Perusse, Norman J., to Wiremold Company, The. Method and apparatus for packaging insulated duct. 3,939,622, Cl. 53-24.000.
- Murphy, Wesley T., to Vercon Products, Inc. Foundation assemblies for building structures. 3,939,618, Cl. 52-274.000.
- Musgrave, Daniel D. Magazine emptying device. 3,939,590, Cl. 42-90.000.
- Muskin Corporation: *See—*
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- Nagano, Tadashi: *See—*
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- Nagy, Louis L., to General Motors Corporation. High frequency, short pulse, band limited radar pulse generator for ultrashort range radar systems. 3,940,696, Cl. 325-141.000.
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- Nakayama, Kazufumi: *See—*
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- Nakayama, Yuzaburo; Yamamoto, Akinori; Asahara, Tomohiko; Shimamura, Masaharu; Tsuda, Yoshizo; Igawa, Keisuke; and Okamoto, Mitsuhiro, to Toray Industries, Inc. Mixed yarn. 3,939,636, Cl. 57-140.0BY.
- Nakazono, Ryuichi: *See—*
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- Nappen, Bernard H.; Boettger, Richard M.; and Marotta, Nicholas G., to National Starch and Chemical Corporation. Process for drying foodstuffs. 3,940,505, Cl. 426-640.000.
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- National Distillers and Chemical Corporation: *See—*
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  - Ling, Robin Sydney Mackwood; and Lee, Alan John Clive, 3,939,496.
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- Neeb, Robert P.; Patrick, Henry W.; and Mumford, Ray H., to Diazit Company, Inc. Diazotype developing apparatus with liquid metering assembly. 3,940,782, Cl. 354-318.000.
- Needham, Donald G.; and Griffin, Ray D., to Phillips Petroleum Company. Adhesive polyolefin composition. 3,940,547, Cl. 428-463.000.
- Neely, George B.: *See—*
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- Neff, Gregor N. Insect feeding. 3,939,802, Cl. 119-51.00R.
- Neilson, James McEwan McIntyre, to University of Edinburgh, The, a part interest. Apparatus for monitoring recurrent waveforms. 3,940,692, Cl. 324-77.00R.
- Nelson, Merritt J., to Zin-Plas Corporation. Diverter spout valve mechanism. 3,939,865, Cl. 137-467.000.
- Neubert, Rolf: *See—*
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- Nichols, Amon. Pipe cutting mechanism. 3,939,561, Cl. 30-107.000.
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- Nickuls, Richard C., Jr.; and Trocciola, John C., to United Technologies Corporation. Corrosion protection for a fuel cell coolant system. 3,940,285, Cl. 136-86.00R.
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- Niebylski, Leonard M.; Jarema, Chester P.; and Lee, Thomas E., to Ethyl Corporation. Reinforced foamed metal. 3,940,262, Cl. 75-20.00F.
- Nielson, Edsel J., to United States of America, Air Force. Forklift hand truck. 3,939,999, Cl. 214-370.000.
- Niida, Taro: *See—*
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- Nishihara, Masao; Yamaguchi, Yoshihiro; Matsushita, Tomiharu; Yamasaki, Tatsuo; Nogushi, Masataka; and Nishioka, Kunihiko, to Kobe Steel Ltd. Method and machine for use in hydrostatic extrusion. 3,939,682, Cl. 72-60.000.
- Nishikubo, Yasuhiko, to Citizen Watch Co., Ltd. Crystal-controlled electronic timepiece with CMOS switching and frequency-dividing circuits. 3,939,643, Cl. 58-23.00A.
- Nishimura, Izuhiko; and Kodaira, Mitsuharu, to Kabushiki Kaisha Suwa Seikosha. Electronic circuit for individually correcting each digit of time displayed. 3,939,641, Cl. 58-23.00R.
- Nishioka, Kunihiko: *See—*
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- Non, Tse Quong. Passive restraint safety belt system. 3,940,164, Cl. 280-150.0SB.
- Noritake, Muneo; and Takeuchi, Masaharu, to INA Seito Co., Ltd. Baking method and kiln for tile. 3,940,240, Cl. 432-122.000.
- Norris, Orlin R. Steam generating system including means for reinitiating the operation of a steam bound boiler feed pump. 3,940,058, Cl. 237-9.00R.
- North, Robert Jarl, to Allied Chemical Corporation. Process for the production of gamma quinacridone. 3,940,399, Cl. 260-279.0QA.
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- Novak, Arne, to Wlajko Mihic. Cutting bit holder with reversible clamp. 3,939,540, Cl. 29-96.000.
- Novitski, Edward. Television remote control device. 3,940,701, Cl. 325-392.000.
- Nudelman, Rafail Manusovich: *See—*
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- Nudenberg, Walter; Hagen, Edward L.; Little, Julian R.; and Mao, Chung-Ling, to Uniroyal Inc. 1,2,3,4,4a,5,7,7a-Octahydrothieno[3,4-b]pyrazines 6,6-dioxides. 3,940,396, Cl. 260-268.0BC.
- Nuss, James J., to General Electric Company. Oven door handle construction. 3,939,817, Cl. 126-190.000.
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- Oehry, Norbert; and Wild, Rainer, to Hilti Aktiengesellschaft. Bolt-welding gun with movable supporting legs. 3,940,588, Cl. 219-98.000.
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- Ohigashi, Hiroji; Shigenari, Reiko; Ogawa, Syozo; and Sekine, Nobuo, to Toray Industries, Inc. Polymeric piezoelectric key actuated device. 3,940,637, Cl. 310-8.500.
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- Ohno, Masayoshi; and Ozaki, Osamu, to Tokyo Shibaura Electric Co., Ltd. Metal vapor-trapping system. 3,940,121, Cl. 266-15.000.
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Optimizer Control Corporation: *See—*

Kalogerson, Thomas A.; and Dandois, Joseph E., 3,939,948.

Orbach, Shelomo, to Tadiran Israel Electronics Industries Ltd. Time division multiplex system with conference link. 3,940,564, Cl. 179-15.0AT.

Orenski, Peter Joseph, to Union Carbide Corporation. Azidosulfonyl compounds. 3,940,427, Cl. 260-349.000.

Orr, Ladd M.: *See—*

Bustos, Rafael T.; and Orr, Ladd M., 3,939,987.

Ortiz, Carlos Mayer. System of suppressing the discharge casing string in deep-well vertical pumps. 3,939,909, Cl. 166-68.500.

Osaka Gas Kabushiki Kaisha: *See—*

Matsumura, Yuji; and Mitsudomi, Hiroyuki, 3,940,242.

Osaka Prefectural Government: *See—*

Takasaki, Shuhei; and Goto, Yasumoto, 3,940,098.

Osborn, Robert O.; and Boyle, Donn G., to Boyle and Osborn. Permeable flexible plastic tubing. 3,939,875, Cl. 138-178.000.

O'Shaughnessy, Marion T.; and Campbell, Robert W., to Phillips Petroleum Company. Arylene sulfide polymers. 3,940,375, Cl. 260-79.100.

Oswald, Alexis A.; Mueller, Wolfgang H.; and Hall, Daniel N., to Exxon Research and Engineering Company. Synthesis of polythiol polymer intermediates from polyunsaturated hydrocarbons. 3,940,374, Cl. 260-79.000.

Ota, Nobuyoshi: *See—*

Komatsu, Noboru; Obayashi, Mikio; Doi, Minoru; Ota, Nobuyoshi; and Iwai, Yoshio, 3,940,728.

Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See—*

Yamaguchi, Hideo; Kawasaki, Takashi; Takahashi, Shigeo; and Inubuse, Akiyoshi, 3,940,248.

Otto Bock Orthopaedische Industrie KG: *See—*

Horvath, Eduard, 3,939,737.

Otto Grosssteinbeck GmbH: *See—*

Heidkamp, Karl-Josef, 3,939,680.

Outboard Marine Corporation: *See—*

Aaen, Olav; and Rose, Edgar, 3,939,720.

Eichinger, Charles H., 3,939,807.

Overhults, Wendell C., to Johnson & Johnson. Cross-linked cyanoacrylate adhesive compositions. 3,940,362, Cl. 260-42.160.

Owens-Corning Fiberglas Corporation: *See—*

Wolf, Warren W., 3,940,278.

Owens-Illinois, Inc.: *See—*

Morrison, John; and Elser, William F., 3,939,787.

Uhlig, Albert R., 3,940,225.

Uhlig, Albert R., 3,940,231.

Owsley, Dennis C.: *See—*

McConaghy, John S., Jr.; and Owsley, Dennis C., 3,940,429.

Oy Tampella AB: *See—*

Salmi, Pekka, 3,939,943.

Oya, Takafumi; Kashiwagi, Yoshiyuki; and Kariya, Yoshihiro, to Rinnai Kabushiki Kaisha. Pressure cooking apparatus. 3,940,057, Cl. 236-20.000.

Ozaki, Osamu: *See—*

Ohno, Masayoshi; and Ozaki, Osamu, 3,940,121.

Ozalid Group Holdings Limited: *See—*

Adams, Ronald Alfred Charles, 3,940,321.

P. R. Mallory & Co. Inc.: *See—*

Pearce, Godfrey R., 3,940,667.

Simmons, Eugene C., 3,940,624.

Paap, Hans J., to Texaco Inc. Three frequency modulated thermal neutron lifetime log. 3,940,613, Cl. 250-269.000.

Pace, Incorporated: *See—*

Young, Loring E.; and Siegel, William Jordan, 3,940,590.

Pacholski, Jan: *See—*

Laski, Jozef; and Pacholski, Jan, 3,940,074.

Package Machinery Company: *See—*

Armour, Donald F., 3,940,224.

Paddock, Richard Charles, to International Business Machines Corporation. Dynamic logic counter. 3,940,596, Cl. 235-92.0LG.

Padgug, Robert Allen, to Calspan Corporation. Nonpredictable actuator for switches or the like. 3,940,632, Cl. 307-112.000.

Paillard S.A.: *See—*

Menzi, Ulrich, 3,939,955.

Palacio, Luis: *See—*

Jenkins, Dennis H.; and Palacio, Luis, 3,939,773.

Palazzolo, Salvatore E.; and McCaskey, Harold O., Jr., to Westinghouse Electric Corporation. Decorative melamine laminates with high yield core stock. 3,940,538, Cl. 428-318.000.

Palitex Project Company GmbH: *See—*

Lossa, Ulrich, 3,939,633.

Palluel, Pierre; Hervier, Jean; and Rousseau, Jean, to Thomson-CSF. Microwave electronic tube with an improved collector. 3,940,655, Cl. 315-3.500.

Paradise, Ronald Y., to Singer Company, The. Digital tacan system. 3,940,763, Cl. 343-6.0DF.

Parish, Robert S.: *See—*

Wilson, Joseph F.; and Parish, Robert S., 3,940,494.

Park, John N.; Steigerwald, Robert L.; and Walker, Loren H., to General Electric Company. Rectifier circuits using transistors as rectifying elements. 3,940,682, Cl. 321-47.000.

Parker Manufacturing Company: *See—*

LaPointe, Gabriel M., 3,940,044.

Parker, Marvin Leon. Removable pouring spout adapatable to different size container openings. 3,940,036, Cl. 222-530.000.

Parlagreco, Thomas J. Single step hair curler with independent self-contained supporting and securing means. 3,939,851, Cl. 132-34.00R.

Pars, Harry G.: *See—*

Razdan, Raj K.; and Pars, Harry G., 3,940,421.

Passarella, Michael T.: *See—*

Farnam, Robert G.; and Passarella, Michael T., 3,939,892.

Patrick, Henry W.: *See—*

Neeb, Robert P.; Patrick, Henry W.; and Mumford, Ray H., 3,940,782.

Patrick, Roy E.: *See—*

Huskins, Chester W.; and Patrick, Roy E., 3,940,474.

Patton, Eugene K.: *See—*

Zook, Donald G.; Miller, Kenneth J.; and Patton, Eugene K., 3,939,880.

Paul, Howard C.; and Tuzson, John J., to Borg-Warner Corporation. Engine torque sensor device. 3,939,702, Cl. 73-115.000.

Pawlowski, Stanislaw: *See—*

Gierek, Adam; Pawlowski, Stanislaw; Formanek, Boleslaw; Piesiur, Eugeniusz; Pucka, Grzegorz; Blachnicki, Bogdan; Rychlewski, Jerzy; and Gajda, Janusz, 3,940,516.

Pearce, Godfrey R., to P. R. Mallory & Co. Inc. Electrical device and method of making the same. 3,940,667, Cl. 317-230.000.

Pearson, Raymond H. Odor control ventilator. 3,939,506, Cl. 4-213.000.

Pease, Wilder F.: *See—*

Lamberti, Vincent; and Pease, Wilder F., 3,940,433.

Peer, John Charles, to RCA Corporation. Deflection system with overscan protection. 3,940,661, Cl. 315-370.000.

Pellerin, Emery A. Utensils for eating strands of foods. 3,939,562, Cl. 30-147.000.

Pelousek, Herbert; Horbach, Alfred; Bottenbruch, Ludwig; and Binsack, Rudolf, to Bayer Aktiengesellschaft. Preparation of high molecular polyesters of 1,4-butanediol. 3,940,367, Cl. 260-45.95R.

Peltzer, Bernd: *See—*

Hess, Bernhard; Raichle, Karl; Schulz-Walz, Hansjochen; Peltzer, Bernd; Bottenbruch, Ludwig; and Goerden, Leonard, 3,940,350.

Pembroke, Richard W., to Telex Computer Products, Inc. Vacuum column loading interlock. 3,940,090, Cl. 242-182.000.

Penny, Robert Noel, to Caterpillar Tractor Co. Mounting for attaching a tubular member in co-axial registration with an aperture in a wall. 3,939,651, Cl. 60-39.320.

Penrice, Peter John: *See—*

Lupton, David Francis; Mason, John Jefferson; and Penrice, Peter John, 3,940,295.

Pequignot, Michel. Method and apparatus for stimulating a heart to eliminate rhythmic abnormalities, especially tachycardias. 3,939,844, Cl. 128-419.0PG.

Perahia, Avraham, to Sperry Rand Corporation. Acoustic delay surface wave motion transducer systems with enhanced stability. 3,940,636, Cl. 310-8.100.

Percival, Albert: *See—*

Corbett, John Roger; and Percival, Albert, 3,940,416.

Perino, Thomas W.: *See—*

Bense, William M.; and Perino, Thomas W., 3,940,078.

Perkin-Elmer Corporation, The: *See—*

Estey, Willard E., 3,939,713.

Perkins, William D.: *See—*

Harrell, Edsel A.; Sparks, Alton N.; Perkins, William D.; and Hare, Woodrow W., 3,939,883.

Person, Abraham, to Global Marine, Inc. Parking brake for subsea mining lift system. 3,939,991, Cl. 214-1.00P.

Pertec Corporation: *See—*

Bleiman, Lewis W., 3,940,793.

Perusse, Norman J.: *See—*

Murphy, Robert; and Perusse, Norman J., 3,939,622.

Peschl, Ivan Anton Slavko Zdravko. Method and device for measuring the shearing stress of powdery and/or granular material. 3,939,701, Cl. 73-101.000.

Peter, Richard: *See—*

DeFago, Raymond; Angliker, Hans-Joerg; Holzrichter, Herbert; Kneubuehler, Werner; and Peter, Richard, 3,940,246.

Peterson, George N., to Dresser Industries, Inc. Reinforced grinding wheel. 3,939,612, Cl. 51-293.000.

Petit, Paul: *See—*

Martin, Jean; Ollier, Jean-Louis; and Petit, Paul, 3,940,150.

Petro, Claude; and Glise, Andre. Mnuld manufacturing device. 3,939,898, Cl. 164-150.000.

Petrov, Igor Nikolaevich: *See—*

Korshunov, Evgeny Alexeevich; Freidenzon, Evgeny Zakharovich; Tyagunov, Vladimir Arkadievich; Fedorov, Mikhail Ivanovich; Kalinin, Alexandr Ivanovich; Malikov, Konstantin Alexeevich; Arshansky, Mikhail Iosipovich; Petrov, Igor Nikolaevich; and Melnikov, Evgeny Valentinovich, 3,939,896.

Petrov, Vladimir Vasilievich: *See—*

Akhundov, Enver Bejukovich; Anischenko, Vadim Andreevich; Petrov, Vladimir Vasilievich; and Semashko, Petr Stepanovich, 3,940,687.

Pettibone Corporation: *See—*

Newell, Robert Keith, 3,940,188.

Petty, Stanley W.; Rosa, Richard J.; and Enos, George R., to Avco Everett Research Laboratory, Inc. MHD generator with uniform current distribution. 3,940,640, Cl. 310-11.000.

Petty, Stanley W.: *See—*

Enos, George R.; Rosa, Richard J.; and Petty, Stanley W., 3,940,639.

Petusky, Neil J.; and Kadyszewski, Ronald V., to Decision Data Computer Corporation. Programmably alterable incrementing system. 3,940,127, Cl. 271-266.000.

Pfarrwaller, Erwin, to Sulzer Brothers Limited. Gripper shuttle for weft yarns. 3,939,878, Cl. 139-125.000.

Pfeiffer, Robert C.: *See—*

Stephenson, Robert L.; Pfeiffer, Robert C.; and Loomba, Yogendra Singh, 3,940,083.

Pharmaco, Inc.: *See—*

Larson, Roger R., 3,940,003.

Philipp, Rainer: *See—*

Heinemann, Otto; and Philipp, Rainer, 3,940,118.

Phillips, David C.; and Alvino, William M., to Westinghouse Electric Corporation. Electropolymerization of difunctional monomers to form polyimides. 3,940,322, Cl. 204-59.00R.

Phillips Petroleum Company: *See—*

Farfaglia, Silvio T., 3,939,960.

Favre, John A., 3,940,471.

Hutchinson, William M., 3,940,342.

Kinney, Alfred W., 3,940,014.

Needham, Donald G.; and Griffin, Ray D., 3,940,547.

O'Shaughnessy, Marion T.; and Campbell, Robert W., 3,940,375.

Schirmer, Robert M., 3,939,653.

Volz, Herbert A., 3,939,662.

Wilson, Joseph F.; and Parish, Robert S., 3,940,494.

Zuech, Ernest A., 3,940,346.

Phillips, Reginald Andrew, to Dobson Park Industries Limited. Glands. 3,940,151, Cl. 277-27.000.

Photocircuits Division of Kollmorgen Corporation: *See—*

Morino, Ronald; Tucker, William B.; and Keogh, Raymond J., 3,940,677.

Picker, Amos, to Raytheon Company. Junction target monoscope. 3,940,652, Cl. 313-401.000.

Pickett, Earl H.: *See—*

Price, Macy J.; and Pickett, Earl H., 3,939,977.

Pickett, John E. P.; Kinney, Thomas D.; and Winders, Gene M. Compact telescoping tissue processing, embedding microtome holder and storage receptacle. 3,940,219, Cl. 425-117.000.

Pierce Chemical Company: *See—*

Smith, Paul K., 3,940,420.

Pierre Fabre S.A.: *See—*

Stenger, M. Antoine; Cousse, Henri; and Mouzin, M. Gilbert, 3,940,490.

Pierre, Jacques; and Simon, Pierre, to Pont-A-Mousson S.A. Assembly comprising a wheel and a disc brake disc, in particular for a railway vehicle. 3,939,946, Cl. 188-218.0XL.

Pierro, Joseph W. Adjustable support means. 3,939,986, Cl. 211-74.000.

Pierson, Joseph E.; and Stookey, Stanley D., to Corning Glass Works. Glass-ceramics containing fibers exhibiting thermoplastic properties. 3,940,277, Cl. 106-39.600.

Piesiur, Eugeniusz: *See—*

Gierek, Adam; Pawlowski, Stanislaw; Formanek, Boleslaw; Piesiur, Eugeniusz; Pucka, Grzegorz; Blachnicki, Bogdan; Rychlewski, Jerzy; and Gajda, Janusz, 3,940,516.

Pignatelli, Enrico, to COM. E. IRA, S.r.C. Fuel saving device. 3,939,866, Cl. 137-493.400.

Pillsbury Company, The: *See—*

Turpin, Charles H.; Reid, Francis R.; and Leezer, James R., 3,940,496.

Pilz, Gilbert B., to Young Ottawa, Inc. Convertible trailer/rail car traction unit. 3,940,167, Cl. 280-456.00R.

Pinczuk, Leon: *See—*

Horowitz, Carl; Pinczuk, Leon; and Dichter, Michael, 3,940,377.

Pinson, George T., to Boeing Company, The. High energy sensor. 3,939,706, Cl. 73-190.0EW.

Pinto, Alwyn: *See—*

Connell, Anthony John; and Pinto, Alwyn, 3,940,428.

Pissiotas, Georg, to Ciba-Geigy AG. 2,4,5-Trichloro- and 2,4,5-tribromoimidazole derivatives and pesticidal compositions containing them. 3,940,412, Cl. 260-309.000.

Pitsch, Johann; and Lasserre, Pierre, to Compagnie Europeenne d'Accumulateurs; and Societe Fulmen. Mechanically reinforced high porosity partially fused glass fiber galvanic separator. 3,940,536, Cl. 428-288.000.

Pittet, Alan Owen; Klaiber, Erich Manfred; Vock, Manfred Hugo; Shuster, Edward J.; and Vinals, Joaquin, to International Flavors & Fragrances Inc. Food or flavor containing 2,6,6-trimethyl-1-cyclohexen-1-ylacetaldehyde. 3,940,499, Cl. 426-534.000.

Place, Donald E., to Therm-O-Disc Incorporated. Thermostat with heat conductor. 3,940,729, Cl. 337-377.000.

Plakas, Chris J.; and Glaros, George S., to Vitatect Corporation. Testing using luminescent reaction. 3,940,250, Cl. 23-230.00B.

Plaskolite, Inc.: *See—*

Bero, Robert D., 3,939,620.

Platek, Stanley F. Dual purpose cleaning abstract. 3,939,515, Cl. 15-321.000.

Plempel, Manfred: *See—*

Kramer, Wolfgang; Buchel, Karl Heinz; Meiser, Werner; and Plempel, Manfred, 3,940,413.

Plisky, John J.: *See—*

Mohnach, Michael G.; and Plisky, John J., 3,940,068.

Pluss-Staufer AG: *See—*

Delfosse, Pierre; and Bosshard, Alfred, 3,940,550.

Poehlmann, George: *See—*

Fendley, Richard L.; Hoenig, Gerhard E.; Poehlmann, George; and Prendergast, John M., Jr., 3,939,559.

Poerink, Jannes Jonge. Apron or plate belt conveyor. 3,939,964, Cl. 198-195.000.

Pohto, Gerald R.: *See—*

Thomas, Vaselios H.; and Pohto, Gerald R., 3,940,328.

Pointon, Peter, to Alphameric Keyboards Limited. Keyboard structure having panel mounted key actuators with electrical component operating element. 3,940,578, Cl. 200-5.00A.

Pokar, Jochen: *See—*

Hempowitz, Gunter; and Pokar, Jochen, 3,940,623.

Polaroid Corporation: *See—*

Ivester, Andrew S., 3,940,774.

Schuler, Norman W., 3,940,304.

Polata, Bohumil, to Signetics Corporation. Majority carriers-variable threshold rectifier and/or voltage reference semiconductor structure. 3,940,783, Cl. 357-13.000.

Polenov, Jury Tikhonovich: *See—*

Drozhzhin, Vladimir Kirillovich; Sergeev, Alexandr Pavlovich; Shevchenko, Vladimir Pavlovich; Buyanov, Vitaly Evdokimovich; Bolotov, Viktor Ivanovich; Yakut, Viktor Mikhailovich; Polenov, Jury Tikhonovich; Luchinsky, Nikolai Nikolaevich; Dvorkind, Mai Mikhailovich; Alferov, Sergei Alexeevich; Morozov, Alexandr Fedorovich; Anashkin, Alexandr Trofimovich; Avrutin, Isaak Zinovievich; and Voronova, Tatyana Moiseevna, 3,939,846.

Poliniak, Eugene Samuel: *See—*

Fech, John, Jr.; and Poliniak, Eugene Samuel, 3,940,507.

Politechnika Slaska im Wincentego Pstrowskiego: *See—*

Gierek, Adam; Pawlowski, Stanislaw; Formanek, Boleslaw; Piesiur, Eugeniusz; Pucka, Grzegorz; Blachnicki, Bogdan; Rychlewski, Jerzy; and Gajda, Janusz, 3,940,516.

Polk, Donald E.; and Bedell, John R., to Allied Chemical Corporation. Apparatus for continuous casting metal filament on interior of chill roll. 3,939,900, Cl. 164-27.000.

Polk, Donald E.; and Morris, Robert C., to Allied Chemical Corporation. Method of producing amorphous cutting blades. 3,940,293, Cl. 148-11.50F.

Pollack, Martin H., to NASGLO International Corporation. Electrodeposition of bright tin-nickel alloy. 3,940,319, Cl. 204-43.00S.

Polymer Research Corporation of America: *See—*

Horowitz, Carl; Pinczuk, Leon; and Dichter, Michael, 3,940,377.

Polysius AG: *See—*

Heinemann, Otto; and Philipp, Rainer, 3,940,118.

Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.

Pommer, Horst: *See—*

Reif, Werner; Fischer, Roman; and Pommer, Horst, 3,940,445.

Pont-A-Mousson S.A.: *See—*

Pierre, Jacques; and Simon, Pierre, 3,939,946.

Poppe, Herbert: *See—*

Franz, Gunther; Heinrich, Karl; and Poppe, Herbert, 3,939,637.

Portal, Pierre. Spool. 3,940,087, Cl. 242-118.620.

Portner, Robert; and Miller, Phillip, to Magna Mir, Inc. Projector case assembly. 3,940,209, Cl. 353-79.000.

Postma, Norman D.; and Barton, David W., to Ford Motor Company. Multiple regenerators. 3,939,657, Cl. 60-526.000.

Potter, Edward, to Potter, Edward; and Dant & Russell, Inc., part interest to each. Apparatus for molding a particle board. 3,940,230, Cl. 425-451.900.

Power-Flo Products, Inc.: *See—*

Lewis, George E., 3,939,735.

PPG Industries, Inc.: *See—*

Demarest, Henry M., Jr., 3,940,531.

Fahey, Dennis M., 3,940,357.

Gulotta, Joseph A.; Knavish, Leonard A.; and Sensi, John E., 3,940,256.

Thomaswick, Ronald J., 3,939,978.

Pradzynski, Andrzej H.: *See—*

Rhodes, John R.; Weinstein, David H.; and Pradzynski, Andrzej H., 3,940,614.

Pram Inc.: *See—*

Banker, Harold J., 3,939,800.

Precision Industries, Inc.: *See—*

Verwey, William G. A., 3,940,045.

Precision Thin Film Corporation: *See—*

Barker, James N.; and Cartwright, Edward A., 3,939,679.

Premier Industrial Corporation: *See—*

Allenbaugh, George G., Jr., 3,940,107.

Prendergast, John M., Jr.: *See—*

Fendley, Richard L.; Hoenig, Gerhard E.; Poehlmann, George; and Prendergast, John M., Jr., 3,939,559.

Prescott, Robert S.: *See—*

Conroy, Walter J.; Prescott, Robert S.; and Proulx, George G., 3,940,790.

Priaroggia, Paolo Gazzana, to Industrie Pirelli S.p.A. Method and apparatus for extruding a layer of extrudable material on a body having inaccessible ends. 3,940,300, Cl. 156-49.000.

Price, Macy J.; and Pickett, Earl H. Sealing ring. 3,939,977, Cl. 206-400.000.

Price, Robert; and Craig, John W., to Sperry Rand Corporation. Apparatus and method for reducing multiplicative gain variation distortions in data recording and transmission channels. 3,940,694, Cl. 325-42.000.

Princeton Electronics Products, Inc.: *See—*

Hofstein, Steven R., 3,940,651.

Pringle, William L., to United States Steel Corporation. Railway truck assembly. 3,939,779, Cl. 105-180.000.

Pringle, William L., to United States Steel Corporation. Steering knuckle assembly. 3,940,159, Cl. 280-96.100.

Procter & Gamble Company, The: *See—*

Kock, Ronald W., 3,940,169.

Programming Technologies, Inc.: *See—*

Bennett, William P., 3,940,080.

Proulx, George G.: *See—*

Conroy, Walter J.; Prescott, Robert S.; and Proulx, George G., 3,940,790.

Prowse, Ronald L.: *See—*

McMullen, Arthur G.; Ruscoe, Michael J. H.; Clegg, Maurice A.; and Prowse, Ronald L., 3,940,254.

Pryor, Michael J.; Crane, Jacob; Friedman, Sam; and Shapiro, Eugene, to Olin Corporation. Process for preparing copper base alloys. 3,940,290, Cl. 148-2.000.

Pscheidl, Hans: *See—*

Duschko, Werner; and Pscheidl, Hans, 3,939,632.

Pucka, Grzegorz: *See—*

Gierek, Adam; Pawlowski, Stanislaw; Formanek, Boleslaw; Piesiur, Eugeniusz; Pucka, Grzegorz; Blachnicki, Bogdan; Rychlewski, Jerzy; and Gajda, Janusz, 3,940,516.

Pugachev, Vladislav Alexandrovich: *See—*

Apsit, Voldemar Voldemarovich; Ustinsky, Alexei Petrovich; Pugachev, Vladislav Alexandrovich; and Usachev, Mikhail Maiorovich, 3,940,668.

Purchase, Francis Jack, to Autotelic Industries, Ltd. Method and apparatus for creating optical displays. 3,940,757, Cl. 340-324.00M.

Purdue Research Foundation: *See—*

Cooper, George R.; and Newhouse, Vernon L., 3,940,731.

Purdy, Harold Lawrence: *See—*

Scheingold, William Samuel; Purdy, Harold Lawrence; and Youngfleish, Frank Christian, 3,940,786.

Putman, Jack D.; and Wytko, Richard, to Weyerhaeuser Company. Single-piece container blank with multi-ply end panels. 3,940,053, Cl. 229-34.00R.

Pyles, Harley G., to Mining Equipment Division of FMC Corporation. Variable discharge surge feeder and bolter. 3,939,958, Cl. 198-7.00R.

Qonaar Corporation: *See—*

Collins, Terence John, 3,939,954.

Quality Products, Inc.: *See—*

Bonnett, Richard L., 3,940,013.

Quimet, Donald J., to Telephone & Data Products, Inc. Alarm reporting system. 3,940,739, Cl. 340-164.00R.

Quirke, Patric C., to Whitewater Electronics, Inc. Saturable reactor for pincushion distortion correction. 3,940,662, Cl. 315-400.000.

Quisenberry, Tony M.: *See—*

Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 3,940,742.

Raabe, Thomas; Scholtholt, Josef; and Nitz, Rolf-Eberhard, to Cassella Farbwerke Mainkur Aktiengesellschaft. Derivatives of 1-phenoxy-3-amino-propane-2-ol and process for their production. 3,940,406, Cl. 260-296.0AE.

Radecki, Tony: *See—*

Gunzel, Rudolph M., Jr.; James, Donald R.; and Radecki, Tony, 3,940,069.

Radutsky, Grigory Avramovich: *See—*

Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,939,961.

Ragone, Bernardo P., to Vitamaster Industries, Inc. Exercising apparatus. 3,940,128, Cl. 272-73.000.

Raichle, Karl: *See—*

Hess, Bernhard; Raichle, Karl; Schulz-Walz, Hansjochen; Peltzer, Bernd; Bottenbruch, Ludwig; and Goerden, Leonard, 3,940,350.

Rainey, Don E. Moisture pod for the preservation of perishable comestibles. 3,940,062, Cl. 239-56.000.

Rakhmanova, Erlina Mavrikievna: *See—*

Ignatiev, Alexei Kirillovich; Volodin, Nikolai Ivanovich; Alshits, Mikhail Yankelevich; Maskulia, Evgeny Rozhdenevich; Graifer, Alexandr Khaimovich; Kurs, Lia Menakhimovna; Zelenov, Jury Ivanovich; Rakhmanova, Erlina Mavrikievna; Cherchintsev, Nikolai Alexandrovich, deceased; Krasilnikova, Nonna Alexeevna, administrator; and Cherchintsev, Alexandr Nikolaevich, administrator, 3,939,684.

Ralston Purina Company: *See—*

Flier, Ronald J., 3,940,495.

Randal, Dorothy, executrix: *See—*

Frisch, Erling, deceased; and Andrews, Harry N., 3,940,311.

Rank Xerox Ltd.: *See—*

Baker, Donald Arthur; and Billings, Peter Robert, 3,940,514.

Ranzi, Cristiana, Cesare Giannetta Ranzi, Giulio Ranzi, Riccardo Ranzi and Matteo Ranzi, heirs: *See—*

Ranzi, Ubaldo, deceased, 3,939,731.

Ranzi, Ubaldo, deceased (by Ranzi, Cristiana, Cesare Giannetta Ranzi, Giulio Ranzi, Riccardo Ranzi and Matteo Ranzi, heirs), to S.p.A. Ranzi Legnano. Differential torque multiplying device. 3,939,731, Cl. 74-688.000.

Rastatter, Edward L. Vortical cyclone cluster apparatus. 3,940,331, Cl. 209-211.000.

Rau, Peter: *See—*

Knodler, Diethelm; Kropfl, Hans; Rau, Peter; and Wittmann, Theodor, 3,940,314.

Rauhut, Michael McKay, to American Cyanamid Company. Device for emergency lighting. 3,940,604, Cl. 240-2.250.

Raymond International, Inc.: *See—*

Swenson, William J., 3,939,922.

Raymond Lee Organization, Inc., The: *See—*

Franco, John A., 3,940,129.

Hack, Siegfried, 3,940,521.

Thomson, William H., 3,939,989.

Rayner, Bernard P.: *See—*

Clarke, Peter G.; and Rayner, Bernard P., 3,939,869.

Raytheon Company: *See—*

Booth, Alfred E., 3,940,719.

Fassett, Matthew; and Balzano, Quirino, 3,940,770.

Picker, Amos, 3,940,652.

Razdan, Raj K.; and Pars, Harry G., to Arthur D. Little, Inc. Intermediates for the preparation of thienobenzopyrans and thiopyranobenzopyrans. 3,940,421, Cl. 260-327.0TH.

RCA Corporation: *See—*

Ben-dov, Oded, 3,940,772.

Boltz, Charles D., Jr., 3,940,556.

Crandall, Richard Seely; and Faughnan, Brian Wilfred, 3,940,205.

Deal, Samuel Broughton; and Bartch, Donald Walter, 3,940,511.

Fech, John, Jr.; and Poliniak, Eugene Samuel, 3,940,507.

Keigler, John Edward; and Muhlfelder, Ludwig, 3,940,096.

Peer, John Charles, 3,940,661.

Sherman, Samuel Mark; and Goldman, Leman, Jr., 3,940,769.

Sickles, Louis, II, 3,940,695.

Torrington, Leslie Albert; and Oberle, Ronald Ray, 3,940,148.

Read, Alvin A.: *See—*

Ellingson, William A.; and Read, Alvin A., 3,940,619.

Rebmann, Donald A.: *See—*

Tipton, Larry J.; Rebmann, Donald A.; and Reise, Donald A., 3,940,459.

Reed, David W.: *See—*

Clark, Richard S.; Lininger, Ronald L.; and Reed, David W., 3,940,059.

Reed, E. Smith, Jr.; and Scherbring, David J., to Toro Company, The. Spiker blade. 3,939,917, Cl. 172-555.000.

Reed, Robert D.; Zink, John Smith; and Goodnight, Hershel E., to John Zink Company. Noiseless pms burner. 3,940,234, Cl. 431-348.000.

Rees, Richard W.: *See—*

Greenspan, George; Rees, Richard W.; and Russell, Peter B., 3,940,393.

Reggi, Romano, to COMATEL — Comptoir Europeen de Materiel Electronique. Method for inserting connecting pins in a printed circuit and machine for executing said method. 3,939,542, Cl. 29-203.00B.

Regie Nationale des Usines Renault: *See—*

Morin, Jean, 3,939,736.

Rehn, Karl-Heinz; and Middelmann, Heinz, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Balloon limiter with wetting means in a textile machine. 3,939,635, Cl. 57-108.000.

Reid, Francis R.: *See—*

Turpin, Charles H.; Reid, Francis R.; and Leezer, James R., 3,940,496.

Reif, Werner; Fischer, Roman; and Pommer, Horst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of 2-methyl-4-halobut-2-en-1-als. 3,940,445, Cl. 260-601.00H.

Reinhardt, Helmut; Trebinger, Karl; and Kallrath, Gottfried, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Apparatus for the releasing of materials from voluminous precipitates or suspensions. 3,940,252, Cl. 23-270.00R.

Reise, Donald A.: *See—*

Tipton, Larry J.; Rebmann, Donald A.; and Reise, Donald A., 3,940,459.

Remele, Karl; and Weiberg, Dieter, to Remele, Karl. Device for printing and feeding covers to containers. 3,939,625, Cl. 53-131.000.

Rendle, Kenneth George, to Rosemount Engineering Company Limited. Method of making resistance thermometer sensors. 3,939,557, Cl. 29-612.000.

Renk, Richard J.; and Boller, George F., to Miller, Gladys D. Traction motor bearing lubrication assembly. 3,940,189, Cl. 308-132.000.

Repiscak, Michael: *See—*

Castagna, Eugene G.; Schrage, Albert; and Repiscak, Michael, 3,940,379.

Reynolds Metals Company: *See—*

Dooley, Milton T., 3,940,641.

Gonzalez, Juan M.; and Nichols, William V., Jr., 3,940,237.

Rheinstahl Aktiengesellschaft: *See—*

Albrecht, Erhard, 3,939,782.

Varges, Gunter; and Graalmann, Franz, 3,939,790.

Rhodes, John R.; Weinstein, David H.; and Pradzynski, Andrzej H., to Columbia Scientific Industries Corporation. Method and apparatus for collection and analysis of mercury in the atmosphere. 3,940,614, Cl. 250-273.000.

Rhone-Poulenc-Textile: *See—*

Arsac, Andre, 3,940,533.

Rhyne, William A.: *See—*

Rosborough, Jerry J.; and Rhyne, William A., 3,939,753.

Rhythm Watch Co. Ltd.: *See—*

Takita, Ryoichi, 3,940,645.

Rice, Howard Gene: *See—*

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Rich, Dale: *See—*

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Richardson, John: *See—*

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Richardson, Philip C.: *See—*

Hudspeth, Emmett L.; Richardson, Philip C.; Neathery, John L., Jr.; Dykstra, Jerald P.; Boger, Allen D., Jr.; Sims, William B., Jr.; Hunt, Glenn E.; and Quisenberry, Tony M., 3,940,742.

Richmond, Albert R.: *See—*

Barnes, Thomas W.; and Richmond, Albert R., 3,939,926.

Richmond Manufacturing Company, The: *See—*

Barnes, Thomas W.; and Richmond, Albert R., 3,939,926.

Richter, Sidney B.; and Krenzer, John, to Velsicol Chemical Corporation. Dioxane substituted-α-haloanilides as herbicides. 3,940,259, Cl. 71-88.000.

Richter, Ulf; and Korves, Antonius, to Dynamit Nobel Aktiengesellschaft; and Jacob and Korves GmbH. Process for welding explosive-clad metal sheets. 3,940,049, Cl. 228-107.000.

Richter, Virgil John: *See—*

Gray, Frederick William; Richter, Virgil John; and Limekiller, Andrew Henry, 3,940,341.

Ridley, Ian M. Rotor gun for the air placement of granular and cementitious materials. 3,940,119, Cl. 259-151.000.

Riessberger, Klaus: *See—*

Theurer, Josef; and Riessberger, Klaus, 3,939,774.

Riley, Arthur W.: *See—*

Haun, Marion W.; Mos, Robert J.; and Riley, Arthur W., 3,940,796.

Riley, Richard E., to Bourns, Inc. Method of forming an electrical network package. 3,939,558, Cl. 29-627.000.

Ringer, T. Rayman: *See—*

Stallabrass, James R.; Ringer, T. Rayman; Bailey, Donald L.; and Hearty, Patrick F., 3,940,622.

Rinker, James W.; and Jacobs, William M., to Exxon Research and Engineering Company. Corrosion resistant glass-reinforced plastic pipe liner. 3,939,873, Cl. 138-144.000.

Rinnai Kabushiki Kaisha: *See—*

Oya, Takafumi; Kashiwagi, Yoshiyuki; and Kariya, Yoshihiro, 3,940,057.

Ritchie, Jack J.: *See—*

Winslow, Gerald R.; and Ritchie, Jack J., 3,940,162.

Ritzmann, Horst: *See—*

Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.

Riva Calzoni S.p.A.: *See—*

Suzzi, Gianoberto, 3,939,994.

Rivelli, Joseph A. Fencing kit. 3,940,114, Cl. 256-32.000.

Rivman, Samuel J.; and Da Costa, Alvaro, to Eastern Poly Packaging Company. Apparatus for securing articles to film-like material. 3,940,307, Cl. 156-514.000.

Robert, Jacques: *See—*

Borel, Joseph; Toupillier, Louise Peccoud nee; and Robert, Jacques, 3,939,556.

Robert, Jean, to Saurer Diederichs (Societe Anonyme). Weft-beating mechanism with variable-stroke reed. 3,939,876, Cl. 139-26.000.

Roberts, Arthur H. Rigid plastics tile with textured surface. 3,940,528, Cl. 428-161.000.

Roberts, Clifford J., Jr.: *See—*

Hepford, Richard R.; and Roberts, Clifford J., Jr., 3,940,529.

Roberts, George C., to Monogram Industries, Inc. Recirculating electrolytic toilet. 3,939,499, Cl. 4-10.000.

Robinson, George Dennis, Jr.: *See—*

McCrory, Rollin John; and Robinson, George Dennis, Jr., 3,940,020.

Robison, Herbert D., to Ecodyne Corporation. Horizontal flow clarifier. 3,940,337, Cl. 210-197.000.

Robison, Jimmy R. Multi-purpose combination trailer and picnic table. 3,940,175, Cl. 296-22.000.

Robison, John Crosby, to Robison, Mildred M., a part interest. Basement sump construction. 3,939,863, Cl. 137-357.000.

Robison, Mildred M.: *See—*

Robison, John Crosby, 3,939,863.

Rock, Kingsley Carlton, Jr.: *See—*

Kaye, Michael D.; Rock, Kingsley Carlton, Jr.; Johnson, Charles E.; and Showalter, J. Philip, 3,939,823.

Rocka, Arthur J. Outboard motor protective cover. 3,939,795, Cl. 115-17.000.

Rockwell International Corporation: *See—*

Dickson, Fred D., 3,939,871.

Grogan, Martin L., 3,940,634.

Wild, Charles E., 3,940,771.

Rogers, Daniel M.: *See—*

Gimple, James J.; Lasley, Charles T.; and Rogers, Daniel M., 3,940,061.

Rogers, Gary W.; Tottie, Leroy A.; Hamilton, Vaughn G.; Goodwin, Orville O.; and Baker, Jean A., to Evans Products Company. Saw guard. 3,939,746, Cl. 83-544.000.

Rohm and Haas Company: *See—*

Martorano, Richard, 3,940,353.

Rohr Industries, Inc.: *See—*

Ross, James A.; and Harris, Bert C., 3,939,776.

Ross, James A.; and Harris, Bert C., 3,939,778.

Rohs, Ulrich. Axial-piston combustion engine. 3,939,809, Cl. 123-58.00B.

Roj & Vella S.p.A.: *See—*

Vella, Sergio, 3,940,079.

Rosa, Richard J.: *See—*

Enos, George R.; Rosa, Richard J.; and Petty, Stanley W., 3,940,639.

Petty, Stanley W.; Rosa, Richard J.; and Enos, George R., 3,940,640.

Rosborough, Jerry J.; and Rhyne, William A., to United States of America, Navy. Three axis coil magnetic minesweeping system. 3,939,753, Cl. 89-1.00M.

Rose, Edgar: *See—*

Aaen, Olav; and Rose, Edgar, 3,939,720.

Rosemount Engineering Company Limited: *See—*

Rendle, Kenneth George, 3,939,557.

Rosen, Henri E. Exercise apparatus. 3,939,932, Cl. 180-33.00C.

Rosenbaum, Georges: *See—*

Vanlerberghe, Guy; and Rosenbaum, Georges, 3,940,477.

Ross, James A.; and Harris, Bert C., to Rohr Industries, Inc. Railway truck magnetic suspension. 3,939,776, Cl. 104-23.0FS.

Ross, James A.; and Harris, Bert C., to Rohr Industries, Inc. Railway truck magnetic suspension method. 3,939,778, Cl. 104-148.0MS.

Ross, John Reuben: *See—*

Davis, Leo W.; Lackey, Marion D.; Ross, John Reuben; and Trenary, Bryant, 3,940,163.

Ross, Ulrich: *See—*

Rothert, Klaus-Dieter; Stilkenbaumer, Herbert; Fischer, Gudrun; Madler, Armin; and Ross, Ulrich, 3,939,710.

Rossi, Alberto: *See—*

Haas, Georges; Jenny, Erwin F.; and Rossi, Alberto, 3,940,434.

Rossi, Eugene F.; and Konzal, Daryl R., to Allis-Chalmers Corporation. Rotary reducing kiln seal. 3,940,239, Cl. 432-115.000.

Roth, Johann, to Braun Aktiengesellschaft. Control frequency generator for a movie camera. 3,940,208, Cl. 352-12.000.

Roth, Russell B., to Altair, Incorporated. Magnetically actuated tube compressing valve. 3,939,821, Cl. 128-1.00R.

Rothenbucher, Robert K., to Lummus Company, The. Air cooled exchanger. 3,939,906, Cl. 165-76.000.

Rother, Wolfgang: *See—*

Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.

Rothert, Klaus-Dieter; Stilkenbaumer, Herbert; Fischer, Gudrun; Madler, Armin; and Ross, Ulrich, to Siemens Aktiengesellschaft; and Diessel GmbH & Co. Liquid flow meter. 3,939,710, Cl. 73-253.000.

Rothrock, Elmer Weyman, to Chicago Bridge & Iron Company. Lateral support of an lng ship tank using flexible bracing. 3,939,791, Cl. 114-74.00A.

Rounds, Thomas Wilbur, Jr.: *See—*

Andrews, Lawrence Paul; Fox, Raymond Graham; Ludeman, Clayton Potter; Rounds, Thomas Wilbur, Jr.; Scuderi, Victor Anthony; and Strait, Douglas Howard, 3,939,579.

Rousseau, Jean: *See—*

Palluel, Pierre; Hervier, Jean; and Rousseau, Jean, 3,940,655.

Roussel-UCLAF: *See—*

Martel, Jacques; Heymes, Rene; and Lutz, Andre, 3,940,354.

Rowley, Cecil Alan, to Domtar Limited. End load container. 3,940,055, Cl. 229-52.00B.

Ruben, Samuel. Nickel oxide electric current producing cell. 3,940,284, Cl. 136-24.000.

Rudolf Brand, Firma: *See—*

Marterer, Karl, 3,940,027.

Rudy, Hans, heir: *See—*

Hustede, Helmut; Rudy, Herman, deceased; Rudy nee Ringelmann, Liselotte, heir; Rudy, Hans, heir; and Sallewsky nee Rudy, Barbara, heir, 3,940,315.

Rudy, Herman, deceased: *See—*

Hustede, Helmut; Rudy, Herman, deceased; Rudy nee Ringelmann, Liselotte, heir; Rudy, Hans, heir; and Sallewsky nee Rudy, Barbara, heir, 3,940,315.

Rudy nee Ringelmann, Liselotte, heir: *See—*

Hustede, Helmut; Rudy, Herman, deceased; Rudy nee Ringelmann, Liselotte, heir; Rudy, Hans, heir; and Sallewsky nee Rudy, Barbara, heir, 3,940,315.

Ruf, Max; and Steinwart, Johannes, to Audi NSU Auto Union Aktiengesellschaft; and Wankel GmbH. Rotary piston four-stroke internal combustion engine. 3,939,655, Cl. 60-286.000.

Rumpler, Allen G. Core structure with L-shaped back member and magnetic bonding material. 3,940,798, Cl. 360-127.000.

Runkle, Charles J.: *See—*

Weeks, James E.; Runkle, Charles J.; Junker, Bernhard T.; and O'Connor, Gary E., 3,939,745.

Runte, Robert Ralph, to Fascination, Ltd. Amusement device. 3,940,136, Cl. 273-85.00R.

Ruppe, Charles R., to Deering Milliken Research Corporation. Apparatus for imparting a random wrinkled or crushed appearance to pile fabrics. 3,939,536, Cl. 26-2.00R.

Ruscoe, Michael J. H.: *See—*

McMullen, Arthur G.; Ruscoe, Michael J. H.; Clegg, Maurice A.; and Prowse, Ronald L., 3,940,254.

Russell, Carroll E. Document transportation case. 3,939,982, Cl. 206-509.000.

Russell, David John: *See—*

Jeppsson, Martin Wilhelm Ivan; Lindstrom, Bruce William; and Russell, David John, 3,940,566.

Russell, Peter B.: *See—*

Greenspan, George; Rees, Richard W.; and Russell, Peter B., 3,940,393.

Russo, John A.; and Greenberg, Mishel, to Chesebrough Pond's Inc. Aerosol dispensing device. 3,940,024, Cl. 222-182.000.

Rutkowski, Karl; Bock, Helmuth-Joachim; and Gerke, Peter, to Siemens Aktiengesellschaft. Circuit arrangement for telephone exchange installations with central control means and a plurality of individual apparatuses having a common information communication line connecting the individual apparatus to the central control means. 3,940,568, Cl. 179-18.0ES.

Rychlewski, Jerzy: *See—*

Gierek, Adam; Pawlowski, Stanislaw; Formanek, Boleslaw; Piesiur, Eugeniusz; Pucka, Grzegorz; Blachnicki, Bogdan; Rychlewski, Jerzy; and Gajda, Janusz, 3,940,516.

Ryder, Francis E., to Ryder International Corporation. Contact lens capsule with indicating means. 3,939,968, Cl. 206-5.100.

Ryder International Corporation: *See—*

Ryder, Francis E., 3,939,968.

Ryder Truck Rental, Inc.: *See—*

Curtis, H. James, 3,939,894.

Sable, Harvey J.: *See—*

Krulik, Gerald A.; and Sable, Harvey J., 3,940,270.

Sahm, Wilfried: *See—*

Bucking, Hans Walter; Hess, Peter; Konig, Franz; Sahm, Wilfried; and Schneider, Gerhart, 3,940,340.

Saida, Youichi; Ito, Hajime; and Imanaga, Kojiro, to Mitsubishi Kinzoku Kabushiki Kaisha. Rotary type hydraulic servo-mechanism. 3,939,756, Cl. 91-370.000.

St. Clair, Maurice W.: *See—*

Ward, Curtis E.; St. Clair, Maurice W.; De Pue, James M., Jr.; and Miller, Albert J., 3,940,656.

St. Claire, Ebba J., Jr. Batting practice device. 3,940,131, Cl. 273-26.00R.

Saint-Ruf, Germain; Chanh, Pham Huu; and Hoi, Buu. Yohimbine derivatives, process for their preparation and their applications. 3,940,387, Cl. 260-240.0AL.

Sajeva, Raoul, to Ing. C. Olivetti & C., S.p.A. Data processing unit having a plurality of hardware circuits for processing data at different priority levels. 3,940,745, Cl. 340-172.500.

Sakai, Tadao: *See—*

Kawai, Masayoshi; Shishido, Tadao; Ishiguro, Shoji; and Sakai, Tadao, 3,940,271.

Sakaki, Yoshihiro; and Eishima, Kensuke, to Nissan Motor Co., Ltd. Seal assembly for a rotary regenerative heat exchanger. 3,939,903, Cl. 165-9.000.

Sakamoto, Masahiro: *See—*

Horinouchi, Tsukasa; Egawa, Setsuya; and Sakamoto, Masahiro, 3,940,539.

Sakuma, Kenichi, to Nippon Gakki Seizo Kabushiki Kaisha. Ski structure. 3,940,157, Cl. 280-11.13L.

Sallewsky nee Rudy, Barbara, heir: *See—*

Hustede, Helmut; Rudy, Herman, deceased; Rudy nee Ringelmann, Liselotte, heir; Rudy, Hans, heir; and Sallewsky nee Rudy, Barbara, heir, 3,940,315.

Salmi, Pekka, to Oy Tampella AB. Lubrication of piston operated drill with central flushing tube. 3,939,943, Cl. 184-6.140.

Sandfort, Robert M., to Monsanto Company. Mutually exclusive parallel-sided loops. 3,940,751, Cl. 340-174.0TF.

Sandoz Ltd., (Sandoz AG): *See—*

Aebli, Horst; Fleck, Fritz; and Schmid, Horst, 3,940,388.

Kittl, Hans, 3,940,410.

Sankyo Company Limited: *See—*

Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 3,940,363.

Murayama, Keisuke; Toda, Toshimasa; Mori, Eiko; Matsui, Katsuaki; Kurumada, Tomoyuki; Onta, Noriyuki; and Watanabe, Ichiro, 3,940,401.

Santa Fe International Corporation: *See—*

Lea, Freeman Roderick, 3,940,112.

Santilli, Arthur A.; Scotese, Anthony C.; and Tomarelli, Rudolph M. 2-Pyrimidinylthio)alkanoic acids, esters, amides and hydrazides. 3,940,394, Cl. 260-256.50R.

Santilli, Arthur A.; and Kim, Dong H., to American Home Products Corporation. 4-Amino-2-phenyl-6-thiopryimidines. 3,940,395, Cl. 260-256.50R.

Sargent, Frank T., to Thetford Corporation. Toilet. 3,939,501, Cl. 4-78.000.

Sargent Industries, Inc.: *See—*

Smith, Fred T., 3,940,006.

Sasabe, Yukiyoshi; and Suzuki, Kunihiko, to Nissan Motor Co., Ltd. Interlocking device for a manual power transmission system. 3,939,940, Cl. 180-82.00C.

Sasaki, Akio: *See—*

Tadokoro, Tomio; Kouno, Toshikatsu; and Sasaki, Akio, 3,940,680.

Sasaki, Hiroshi: *See—*

Amano, Kitsutaro; Sasaki, Hiroshi; and Maruyama, Tatsuo, 3,940,555.

Sasaki, Tatsunori. Retainer for a shoulder sling. 3,940,039, Cl. 224-5.00P.

Sasayama, Takao, to Hitachi, Ltd. Ignition apparatus for internal combustion engine. 3,939,811, Cl. 123-117.00R.

Sassmannshausen, Gunter: *See—*

Lahme, Norbert; and Sassmannshausen, Gunter, 3,940,348.

Sata, Naohide: *See—*

Kurita, Shoichi; Sata, Naohide; Ogawa, Hideki; and Hiratsuka, Yoshitaka, 3,940,705.

Sato, Akihiko, to Nippon Kogaku K. K. Light-intercepting device for cameras having focal plane shutters. 3,940,780, Cl. 354-241.000.

Sato, Hachiro, to Fukoku Kogyo Company Limited. Continuous press. 3,939,763, Cl. 100-93.00S.

Sato, Masaharu: *See—*

Inoue, Michihiro; Kimura, Takeji; and Sato, Masaharu, 3,939,750.

Sato, Nagayasu: *See—*

Suenaga, Eiichi; Tachibana, Shinro; and Sato, Nagayasu, 3,940,480.

Sato, Shoji, to Alps Electric Co., Ltd. AFC circuit with improved sensitivity. 3,940,714, Cl. 331-117.00R.

Sauder Industries, Inc.: *See—*

Sauder, Robert A.; Kendrick, Gary R.; and Rich, Dale, 3,940,244.

Sauder, Robert A.; Kendrick, Gary R.; and Rich, Dale, to Sauder Industries, Inc. Ceramic fiber insulation module. 3,940,244, Cl. 432-247.000.

Saurer Diederichs (Societe Anonyme): *See—*

Robert, Jean, 3,939,876.

Sawers, James R., Jr.: *See—*

Johnson, Donald R.; and Sawers, James R., Jr., 3,940,050.

Sawvell, Roger V.: *See—*

Scott, William B.; and Sawvell, Roger V., 3,939,748.

Sawyer, Thomas F., to General Electric Company. Method for casting directionally solidified articles. 3,939,895, Cl. 164-60.000.

Scannell, John W.: *See—*

Fox, Thomas E.; Scannell, John W.; and Andersen, Clifford H., 3,940,722.

Scardina, Virgil R.: *See—*

Keuper, John J.; Scardina, Virgil R.; and Wagner, Paul D., 3,940,647.

Scarnato, Thomas J. Hermetically sealable collapsible container. 3,939,887, Cl. 150-.500.

Scarnato, Thomas J. Hermetically sealable collapsible container. 3,939,888, Cl. 150-.500.

Schaad, William J., to Indak Manufacturing Corporation. Heavy duty push-button electrical switch. 3,940,585, Cl. 200-159.00R.

Schalomon, Karl-Heinz: *See—*

Heinze, Gunter; Muller, Willi; von Zimmerman, Hans Ulrich; and Schalomon, Karl-Heinz, 3,940,561.

Schapker, Richard L. Rain water run-off disperser. 3,939,616, Cl. 52-94.000.

Scheingold, William Samuel; Purdy, Harold Lawrence; and Youngfleish, Frank Christian, to AMP Incorporated. Device for connecting leadless integrated circuit package to a printed circuit board. 3,940,786, Cl. 357-74.000.

Scheinpflug, Hans: *See—*

Buchel, Karl-Heinz; Kramer, Wolfgang; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 3,940,415.

Kramer, Wolfgang; Buchel, Karl Heinz; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 3,940,414.

Scheipner, Robert Hans: *See—*

Aldag, Friedrich-Wilhelm; Scheipner, Robert Hans; and Schluessler, Helmut, 3,939,923.

Schepers, Georg: *See—*

Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.

Scherbring, David J.: *See—*

Reed, E. Smith, Jr.; and Scherbring, David J., 3,939,917.

Schiemann, Wolfram. Plastic jerry can. 3,940,002, Cl. 215-1.00C.

Schirmer, Robert M., to Phillips Petroleum Company. Gas turbine combustors and method of operation. 3,939,653, Cl. 60-39.650.

Schiweck, Hubert, to Suddeutsche Zucker-Aktiengesellschaft. Treatment of hepatic coma with isomaltitol. 3,940,481, Cl. 424-180.000.

Schjeldahl, Gilmore T., to Du Pont de Nemours, E. I., and Company. Bag and package making method. 3,939,628, Cl. 53-29.000.

Schlaepfer, Hans, to Ciba-Geigy Corporation. Quaternised benzofuranyl-benzimidazoles. 3,940,417, Cl. 260-309.200.

Schlatzer, Robert K., Jr., to B. F. Goodrich Company, The. Polymerization of carboxylic acid monomers and alkyl acrylate esters in chlorofluoroethane. 3,940,351, Cl. 260-17.4SG.

Schleisner, Joseph W.: *See—*

Cleary, Thomas C.; and Schleisner, Joseph W., 3,940,724.

Schluessler, Helmut: *See—*

Aldag, Friedrich-Wilhelm; Scheipner, Robert Hans; and Schluessler, Helmut, 3,939,923.

Schlumberger Technology Corporation: *See—*

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Schmid, Horst: *See—*

Aebli, Horst; Fleck, Fritz; and Schmid, Horst, 3,940,388.

Schmidl, Hans, to Kronseder, Hermann. Label magazine for labeling machines. 3,940,306, Cl. 156-570.000.

Schmidt-Burbach, Gerhard: *See—*

Jung, Anton Ladislaus; Lapczyna, Manfred; Mows, Peter; Schmidt-Burbach, Gerhard; and Strauss, Heinz, 3,939,765.

Schmidt, Calvin P., to Deering Milliken Research Corporation. Tire cord fabric. 3,939,893, Cl. 152-362.0CS.

Schmidt, Gerhard: *See—*

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Schmidt, Reinhard, to Westfalia Separator AG. Self-cleaning centrifuge drum. 3,940,056, Cl. 233-20.00A.

Schmidt, Robert J., to Chevron Research Company. Non-slip built-up roofing. 3,940,540, Cl. 428-332.000.

Schmidt, Robert R.: *See—*

Draber, Wilfried; Timmler, Helmut; Eue, Ludwig; and Schmidt, Robert R., 3,940,391.

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Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.

Schmitt, Ewald: *See—*

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Schmitzer, Andreas. Device for closing and opening vacuum x-ray film holders. 3,940,629, Cl. 250-480.000.

Schneible, Seth R., to Eyelet Specialty Co., Inc. Method of making a safety closure for a container. 3,939,788, Cl. 113-121.00A.

Schneider, Gerhart: *See—*

Bucking, Hans Walter; Hess, Peter; Konig, Franz; Sahm, Wilfried; and Schneider, Gerhart, 3,940,340.

Schnell, Claude R.; Hengartner, Kurt; and Gross, Heinz, to Lonza Ltd. Arc discharge device, in particular a plasma burner. 3,940,653, Cl. 314-69.000.

Schnelle, Charles Wayne, to Tasope' Limited. Dryer unit for printing plates. 3,939,575, Cl. 34-216.000.

Schoenberger, Philip J. Match packages. 3,939,970, Cl. 206-108.000.

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Scholle, William R., 3,940,018.

Scholle, William R., to Scholle Corporation. Combination liquid container and dispenser. 3,940,018, Cl. 222-1.000.

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Schonbrun, Leslie B.; and Schwaar, Friedrich W., to E & M Communications Corporation. Programmable toll restrictor. 3,940,569, Cl. 179-18.0DA.

Schora, Frank C.: *See—*

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Schossler, Werner: *See—*

Weber, Paul; Mollenkopf, Hans; Henning, Kurt; Heinemann, Otto; Schmits, Heinz-Herbert; Rother, Wolfgang; Ritzmann, Horst; Wurr, Jurgen; Krutzner, Karl, Jr.; Schossler, Werner; Goldmann, Wolf; and Schepers, Georg, 3,940,236.

Schrage, Albert: *See—*

Castagna, Eugene G.; Schrage, Albert; and Repiscak, Michael, 3,940,379.

Schreffler, Robert Z. Electrical conductor arrangement including flexible race construction. 3,940,200, Cl. 339-8.0PB.

Schreiber, August; Schreiber, Berthold; and Schreiber, Erhard. Process for physically and biologically purifying sewage. 3,940,333, Cl. 210-17.000.

Schreiber, Berthold: *See—*

Schreiber, August; Schreiber, Berthold; and Schreiber, Erhard, 3,940,333.

Schreiber, Erhard: *See—*

Schreiber, August; Schreiber, Berthold; and Schreiber, Erhard, 3,940,333.

Schroeder, Roger L., to Bryant Grinder Corporation. Digital positioning system. 3,940,675, Cl. 318-603.000.

Schuler, Norman W., to Polaroid Corporation. Method of making composite light-polarizing element. 3,940,304, Cl. 156-245.000.

Schulien, Howard E.; Ficken, William H.; and Sgambati, Robert J., to Bendix Corporation, The. Accelerometer with liquid hydrostatic gimbal support. 3,939,716, Cl. 73-516.00R.

Schuller, James T.; and Okolischan, Anton, to UMC Industries, Inc. Control for a vendor including card retention means. 3,939,952, Cl. 194-4.00C.

Schultz, Herbert J. Loudspeaker having sound funnelling element. 3,940,576, Cl. 179-181.00R.

Schulz-Walz, Hansjochen: *See—*

Hess, Bernhard; Raichle, Karl; Schulz-Walz, Hansjochen; Peltzer, Bernd; Bottenbruch, Ludwig; and Goerden, Leonard, 3,940,350.

Schulze, Rudolf; Schumacher, Horst; and Simora, Ferdinand, to VEB Kombinat Fortschritt Landmaschinen. Crop-feed arrangement for hay baler. 3,939,630, Cl. 56-341.000.

Schumacher, Ernest W., to Virginia Chemicals Inc. Combination liquid trapping suction accumulator and evaporator pressure regulator device including a drier and thermostatic expansion valve. 3,939,669, Cl. 62-217.000.

Schumacher, Horst: *See—*

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Schwaar, Friedrich W.: *See—*

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Schwan, Thomas J., to Morton-Norwich Products, Inc. 3-Methyl-4-phenyl-1,2,3,4-tetrahydrobenz[g]isoquinoline hydrobromide. 3,940,400, Cl. 260-286.00R.

Schwartztrauber, George H. Decoy. 3,939,591, Cl. 43-3.000.

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Scott, William B.; and Sawvell, Roger V., to W. A. Whitney Corporation. Hydraulic punch press with ram orienting mechanism. 3,939,748, Cl. 83-639.000.

Scott, William H. Apparatus for controlling dust emissions. 3,939,881, Cl. 141-91.000.

Scuderi, Victor Anthony: *See—*

Andrews, Lawrence Paul; Fox, Raymond Graham; Ludeman, Clayton Potter; Rounds, Thomas Wilbur, Jr.; Scuderi, Victor Anthony; and Strait, Douglas Howard, 3,939,579.

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Seitter, Wolf: *See—*

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Seki, Hideki, to Matsushita Electric Industrial Co., Ltd. Chassis device having vented base and radiation member for supporting heat sources. 3,940,665, Cl. 317-100.000.

Sekiguchi, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for controlling roll gaps of cold rolling mills. 3,940,598, Cl. 235-151.100.

Sekine, Nobuo: *See—*

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Seltzer, Samuel M.; and Dennison, Saul. Body support panel and mat made therefrom. 3,940,183, Cl. 297-453.000.

Semashko, Petr Stepanovich: *See—*

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Serad, George A., to Celanese Corporation. Polyacrylonitrile composition admixed with low boiling acetonitrile fraction and high boiling compatible plasticizer. 3,940,405, Cl. 260-29.6AN.

Sergeant, David Robert, to British Steel Corporation. Cooling of hot rolled steel stock. 3,940,294, Cl. 148-12.00B.

Sergeev, Alexandr Pavlovich: *See—*

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- Shell Oil Company: *See—*
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- Sherman, Samuel Mark; and Goldman, Leman, Jr., to RCA Corporation. Binaural auditory presentation apparatus. 3,940,769, Cl. 343-113.00R.
- Sherritt Gordon Mines Limited: *See—*
  - McMullen, Arthur G.; Ruscoe, Michael J. H.; Clegg, Maurice A.; and Prowse, Ronald L., 3,940,254.
- Sherwin, Ian M.; and Grubbe, John R., to American Forest Industries Ltd. Soil conditioning fertilizer compound. 3,940,257, Cl. 71-23.000.
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- Shigenari, Reiko: *See—*
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- Shimizu, Hiromichi. Toothbrush. 3,939,522, Cl. 15-244.00R.
- Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, to Matsushita Electric Industrial Co., Ltd.; and Japanese National Railways. Electrically heated alignment pad. 3,940,592, Cl. 219-548.000.
- Shimizu, Yoh: *See—*
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- Shine, Dennis F.; and Torau, Gunther W., to Baxter Laboratories, Inc. Plasma collection system. 3,939,623, Cl. 53-25.000.
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- Shinozaki, Takayoshi: *See—*
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- Shutoh, Masamichi, to Nippon Electric Co., Ltd. Plasma display driving apparatus. 3,940,755, Cl. 340-324.00M.
- Sickles, Louis, II, to RCA Corporation. Doppler correction of transmission frequencies. 3,940,695, Cl. 325-63.000.
- Siddall, John B.: *See—*
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  - Haeusler, Jochen; Schmirl, Manfred; and West, Dietmar, 3,940,073.
  - Hertz, Walter, 3,940,583.
  - Hohne, Karl; and Mund, Konrad, 3,940,510.
  - Irion, Leonhard; and Kollmar, Walter, 3,940,310.
  - Jantsch, Ottomar; Feigt, Ingmar; and Willig, Wolf Rudiger, 3,939,555.
  - Klar, Erich, 3,940,627.
  - Knodler, Diethelm; Krupfl, Hans; Rau, Peter; and Wittmann, Theodor, 3,940,314.
  - Meier, Werner; Schmidt, Rudolf; and Kraft, Martin, 3,940,663.
  - Rothert, Klaus-Dieter; Stilkenbaumer, Herbert; Fischer, Gudrun; Madler, Armin; and Ross, Ulrich, 3,939,710.
  - Rutkowski, Karl; Bock, Helmuth-Joachim; and Gerke, Peter, 3,940,568.
  - Steven, Josef, 3,940,313.
- Sieurin, Sven Ivar, to Granges Essem Aktiebolag. Method of distributing molten metal to consumer stations. 3,940,264, Cl. 75-65.00R.
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  - Polata, Bohumil, 3,940,783.
- Sika, Zigurd Karlovich; and Kikust, Daniel Petrovich. Cryogen-cooled synchronous compensator. 3,940,643, Cl. 310-52.000.
- Sillen, Rudolf Valentin; and Sjogren, Eric-Olof, to Kockums Jernverksaktiebolag. Car having plural side pouring ladles. 3,940,021, Cl. 222-129.000.
- Simmons, Eugene C., to P. R. Mallory & Co., Inc. Apparatus and a method for testing the integrity of a weld. 3,940,624, Cl. 250-358.00R.
- Simon-Carves Ltd.: *See—*
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- Simon, Pierre: *See—*
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- Simonsson, Berit Ingegard: *See—*
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- Singer Company, The: *See—*
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- Singer, Rolf Jurgen; and Jager, Gerhard, to Bayer Aktiengesellschaft. Process for the production of 2,3,4,5,6,7-hexahydrocyclopenta-(3)-1,3-oxazine-2,4-dione compounds. 3,940,390, Cl. 260-244.00R.
- Sink, William Howard; and Flotow, Richard Allen, to Dana Corporation. Diaphragm clutch spring having radial and rotational restraints. 3,939,951, Cl. 192-89.00B.
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- Sira Societa Industriale Richerche Automotoristiche: *See—*
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- SKF Nova AB: *See—*
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- Skinner, Emmett, to Lawrence Peska Associates, Inc., a part interest. Trundle and wheel with sounding means. 3,939,603, Cl. 46-114.000.
- Skvarenina, John A. Rotary compressor and condenser for refrigerating systems. 3,939,907, Cl. 165-86.000.
- Slawinski, Sr.; Walter V. Adjustable grid line device. 3,939,564, Cl. 33-1.00K.
- Smith, Alexander M., II, to Fiberwoven Corporation, The. Needled textile fabric with a thin polymeric coating thereon. 3,940,532, Cl. 428-218.000.
- Smith, Charles W., Jr.; and Zimmerman, Franz, to Autoclave Engineers, Inc. Convection shield for isostatic bonding apparatus. 3,940,245, Cl. 432-249.000.
- Smith, Clarence G.; and Lightfoot, Richard O., to Muskin Corporation. Apparatus for visually indicating when a pool filter is dirty. 3,939,796, Cl. 116-114.0PV.
- Smith, Fred T., to Sargent Industries, Inc. Refuse hopper. 3,940,006, Cl. 220-1.00T.
- Smith, John I. Four quadrant multiplying divider using three log circuits. 3,940,603, Cl. 235-195.000.
- Smith, Melvin R.: *See—*
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- Smith, Paul K., to Pierce Chemical Company. Compound, dithiobis-(succinimidyl propionate). 3,940,420, Cl. 260-326.260.
- Smith, Raymond P.: *See—*
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- Smith, Richard Glenn, to Sherwin-Williams Company, The. Glossy emulsion coating compositions containing surface treated pigments of oilophilic nature and method. 3,940,385, Cl. 260-23.70A.
- Smith, Robert K.: *See—*
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- Smith, Rymer H., to Wikel Manufacturing Co. Inc. Drive system. 3,940,213, Cl. 404-111.000.
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- Smith, Stanley K.: *See—*
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- Smithea, Clarence O. Auxiliary retention belt and support cushion for seat of open vehicles. 3,940,166, Cl. 280-290.000.
- Smitherman, Stephen N.; and Dougherty, Lemuel A., to Big Elk Wood Corporation. Apparatus for bundling firewood. 3,939,762, Cl. 100-4.000.
- Smyth, Nicholas P. D., to Medtronic, Inc. Transvenous electrode. 3,939,843, Cl. 128-404.000.
- Societa' Italiana Resine S.p.A.: *See—*
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- Societe Technique de Pulverisation: *See—*
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- Societe Universelle de Fabrication d'Appareils Menagers S.U.F.A.M.: *See—*
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- Sogoian, Nash P. Hanger for vehicle mud flaps. 3,940,165, Cl. 280-154.50R.
- Solar Energy Company: *See—*
  - Hamilton, George Henry; Turner, Robert McLean; and Ward, Jesse Lee, Jr., 3,939,818.
- Solmarine S.A.: *See—*
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- Soltermann, Walter, to Ciba-Geigy AG. Vials emptying apparatus. 3,939,998, Cl. 214-302.000.
- Sommerfeld, Eugene G., to Du Pont de Nemours, E. I., and Company. Dispersions of styrene/acrylonitrile copolymers. 3,940,361, Cl. 260-30.40N.
- Sony Corporation: *See—*
  - Matsumoto, Isao; and Umeda, Kenkichi, 3,940,799.
  - Ohsawa, Mitsuo, 3,940,681.
  - Sumi, Takao; and Hongu, Masayuki, 3,940,708.
  - Tabuchi, Hideo, 3,940,800.
- Sorkin, Roger. Foldable roof construction element. 3,939,615, Cl. 52-80.000.
- Sortwell, Daniel Richard, III. Flavoring seafood with S-methyl methionine salt. 3,940,500, Cl. 426-535.000.
- SOS Consolidated, Inc.: *See—*
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- Sound Technology, Inc.: *See—*
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- Space Research Corporation: *See—*
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- Spanke, Friedhelm: *See—*
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- Spann, Donald C. Restraining cuff. 3,939,829, Cl. 128-133.000.
- Spanondis, Michael E. Dental flosser. 3,939,853, Cl. 132-91.000.
- Sparks, Alton N.: *See—*
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- Sparlin, Derry D.; and Wahl, Harry A., to Continental Oil Company. Method for reducing the production of water from oil wells. 3,939,912, Cl. 166-295.000.
- Sparlin, Derry D.; Fertl, Walter H.; and Young, Gary C., to Continental Oil Company. Method for detecting and locating water-producing zones and/or water thief zones in subterranean formations. 3,940,612, Cl. 250-260.000.
- Spector, Donald. Inflatable terrarium assembly. 3,939,607, Cl. 47-34.00T.
- Spectral Dynamics Corporation of San Diego: *See—*
  - Davis, Robert D., 3,939,715.
- Spencer, John Roger: *See—*
  - Alexander, Michael Richard; Duncan, Edward; McClements, Kenneth; and Spencer, John Roger, 3,940,600.
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  - Price, Robert; and Craig, John W., 3,940,694.
  - Straeter, James E., 3,939,847.
- Spevack, Jerome S., to Deuterium Corporation. Thermal control in dual temperature systems. 3,940,473, Cl. 423-580.000.
- Spierer, Edward D.: *See—*
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- Spivack, Mark A.: *See—*
  - Loeb, William E.; and Spivack, Mark A., 3,940,530.
- Spivey, Donald K. Engine starter and bracket. 3,939,815, Cl. 123-185.0BA.
- Sprague Electric Company: *See—*
  - Genesi, Robert C., 3,940,785.
- Squires, Wayne H. Inspection tool or device. 3,939,569, Cl. 33-174.00L.
- Stahler, Alfred F.: *See—*
  - Kayan, Helmut L.; and Stahler, Alfred F., 3,940,791.
- Stahlhut, Frederick O.: *See—*
  - Olsen, Robert C.; and Stahlhut, Frederick O., 3,940,768.
- Stal-Refrigeration AB: *See—*
  - Lundvik, Bertil; and Johansson, Nils-Arne, 3,939,867.
- Stallabrass, James R.; Ringer, T. Rayman; Bailey, Donald L.; and Hearty, Patrick F., to Canadian Patents & Development Limited. Icing detector. 3,940,622, Cl. 250-338.000.
- Stamicarbon B.V.: *See—*
  - de Rooij, Abraham H., 3,940,442.
- Stamou, Sam. Holder for typewriter paper. 3,939,956, Cl. 197-133.00R.
- Standard Oil Company: *See—*
  - Steigelmann, Edward F.; Hughes, Robert D.; and Gabor, Joseph, 3,940,469.
- Standard Pressed Steel Co.: *See—*
  - Hardiman, Russell J.; and Smith, Stanley K., 3,939,920.
- Stanev, Tzvyatko Penchev; and Lambiev, Adrian Kostov, to DSO "Bulgarski Darjavni Jeleznitzi". Method and apparatus for impact testing railroad cars. 3,939,691, Cl. 73-11.000.
- Stanford Research Institute: *See—*
  - Fujiwara, Allan N.; Acton, Edward M.; and Henry, David W., 3,940,383.
- Stanislaw, Peter: *See—*
  - Kreeft, John; Stanislaw, Peter; and Gulbrandsen, Rudolph G., 3,939,537.
- Stansbury, Benjamin H., Jr.: *See—*
  - Miller, Marshall W.; Vanden Broek, Christiaan J. H.; Stansbury, Benjamin H., Jr.; Jamison, Thomas H.; McHose, Charles W.; and Dubson, Paul T., 3,939,500.
- Staples, Robert E., to Mount Hope Machinery Company. Adjustable-bow bar or roll axle. 3,940,043, Cl. 226-192.000.
- Statkov, Peter Radanov: *See—*
  - Szabo, Suzanne; Molnar, Francois; Mauvernay, Roland-Yves; Levan, Chau; Statkov, Peter Radanov; Straumann, Danielle; and Lerik Milovanovic, Olga, 3,940,386.
- Stearns, James B.; and Schmerling, Donald W., to ESAB Manufacturing, Inc. Electric arc welding. 3,940,586, Cl. 219-75.000.
- Steele, Daniel, to Imperial Chemical Industries Limited. Fuse cord. 3,939,941, Cl. 181-116.000.
- Steels, Gordon, to Baker Perkins Holdings Limited. Apparatus for the manufacture of confectionery made of plural materials. 3,940,218, Cl. 425-112.000.
- Stegens, Ronald E., to Communications Satellite Corporation (Comsat). Microwave transistor amplifier. 3,940,706, Cl. 330-21.000.
- Steigelmann, Edward F.; Hughes, Robert D.; and Gabor, Joseph, to Standard Oil Company. Process for forming hollow fibers. 3,940,469, Cl. 264-177.00F.
- Steigerwald, Robert L., to General Electric Company. GTO turn-off circuit providing turn-off gate current pulse proportional to anode current. 3,940,633, Cl. 307-252.00C.
- Steigerwald, Robert L.: *See—*
  - Park, John N.; Steigerwald, Robert L.; and Walker, Loren H., 3,940,682.
- Steinmeier, David W., II: *See—*
  - Laub, Joseph L.; and Steinmeier, David W., II, 3,940,047.
- Steinwart, Johannes: *See—*
  - Ruf, Max; and Steinwart, Johannes, 3,939,655.
- Stenberg, Folke Gustav Adolf, to IWEMA Forpacknings AB. Tool for interconnecting sheet webs by welding. 3,940,305, Cl. 156-515.000.
- Stenger, M. Antoine; Cousse, Henri; and Mouzin, M. Gilbert, to Pierre Fabre S.A. Medicaments having psychotropic properties. 3,940,490, Cl. 424-230.000.
- Stephenson, Robert L.; Pfeiffer, Robert C.; and Loomba, Yogendra Singh, to Allied Chemical Corporation. Vehicle sensitive retractor with bell inertia mechanism. 3,940,083, Cl. 242-107.40A.
- Sterling Drug Inc.: *See—*
  - Surrey, Alexander R., 3,940,441.
- Sterling Hydraulics Limited: *See—*
  - Clarke, Peter G.; and Rayner, Bernard P., 3,939,869.
- Stettler, Martin C.: *See—*
  - Kress, Robert W.; and Stettler, Martin C., 3,940,094.
- Steven, Josef, to Siemens Aktiengesellschaft. Device for detecting defective nuclear reactor fuel rods. 3,940,313, Cl. 176-68.000.
- Stevens, Donald, to Assembly Machines, Inc. Assembly machine having improved tooling mounting. 3,939,544, Cl. 29-208.00F.
- Stevens, Donald S., to Assembly Machines, Inc. Assembly machine actuator. 3,939,545, Cl. 29-208.00F.
- Sthare, Derwin; and Chambers, Richard F., to GAF Corporation. Dye migration control with amine salt of poly(vinyl methyl ether/maleic acid). 3,940,247, Cl. 8-172.00R.
- Stilkenbaumer, Herbert: *See—*
  - Rothert, Klaus-Dieter; Stilkenbaumer, Herbert; Fischer, Gudrun; Madler, Armin; and Ross, Ulrich, 3,939,710.
- Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., to Stock Equipment Company. Apparatus and process for handling dangerous fluent material. 3,940,628, Cl. 250-435.000.
- Stock Equipment Company: *See—*
  - Christofer, Donald E., 3,940,577.

Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., 3,940,628.
Stock, Malcolm D. Apparatus for making ice cubes or the like. 3,940,232, Cl. 425-447.000.
Stocker, Harold L., to General Motors Corporation. Labyrinth seal. 3,940,153, Cl. 277-57.000.
Stoll, Max: *See—*
  Winter, Max; Goldman, Irving M.; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 3,940,502.
Stookey, Stanley D.: *See—*
  Pierson, Joseph E.; and Stookey, Stanley D., 3,940,277.
Stopek, Benjamin: *See—*
  Hinz, Henry; and Stopek, Benjamin, 3,940,142.
Stoquelet, Michel R. A. Reel for a cable. 3,940,086, Cl. 242-118.600.
Storz-Endoskop GmbH: *See—*
  Storz, Karl, 3,939,840.
Storz, Karl, to Storz-Endoskop GmbH. Operation endoscope. 3,939,840, Cl. 128-303.150.
Stovall, William R. An improved power converter apparatus. 3,939,719, Cl. 74-128.000.
Straeter, James E., to Sperry Rand Corporation. Combine with improved feed plate. 3,939,847, Cl. 130-27.00T.
Strait, Douglas Howard: *See—*
  Andrews, Lawrence Paul; Fox, Raymond Graham; Ludeman, Clayton Potter; Rounds, Thomas Wilbur, Jr.; Scuderi, Victor Anthony; and Strait, Douglas Howard, 3,939,579.
Straits Steel & Wire Co.: *See—*
  King, Clarence J., 3,939,980.
  King, Clarence J., 3,939,981.
Strassberger, Werner, to Hoechst Aktiengesellschaft. Isomerization of C_{10}-C_{70} olefins of vinylidene structure to olefins of vinyl structure. 3,940,452, Cl. 260-683.200.
Strasser, Georg J. Expansible mandrel. 3,940,227, Cl. 425-392.000.
Stratton, Donald W., to Anderson Company, The. Locking plate for adjustable arms. 3,939,525, Cl. 15-250.350.
Straumann, Danielle: *See—*
  Szabo, Suzanne; Molnar, Francois; Mauvernay, Roland-Yves; Levan, Chau; Statkov, Peter Radanov; Straumann, Danielle; and Lerik Milovanovic, Olga, 3,940,386.
Strauss, Heinz: *See—*
  Jung, Anton Ladislaus; Lapczyna, Manfred; Mows, Peter; Schmidt-Burbach, Gerhard; and Strauss, Heinz, 3,939,765.
Straw, Raymond L.; and Wilson, Larry R., to Caterpillar Tractor Co. Method of manufacturing an open cellular article. 3,940,301, Cl. 156-155.000.
Streck Laboratories, Inc.: *See—*
  McClurg, James E., 3,940,249.
Stromberg, Jan Erling Gunnar, to AB Volvo. Arrangement for controlling gear changes in a motor vehicle gear box. 3,939,722, Cl. 74-336.000.
Strong, Jerry G.; and Napier, Roger P., to Mobil Oil Corporation. 1-Carbamoyl vinyl phosphates. 3,940,458, Cl. 260-943.000.
Stubits, Marcella C.: *See—*
  Teng, James; Dai, Frank; and Stubits, Marcella C., 3,940,384.
Studdard, James F., to West Tech Systems, Inc. Method and apparatus for aiming aircraft visual approach slope indicator. 3,939,571, Cl. 33-180.00R.
Studiecentrum Voor Kernenergie, "S.C.K.": *See—*
  Van Lierde, Walter Jan, 3,940,312.
Stupin, Joseph M., Jr.: *See—*
  Bowler, Edward F., Jr.; Stupin, Joseph M., Jr.; and Williams, Edward G., 3,940,518.
Suda, Minoru. Antifriction bearing for sliding members. 3,940,187, Cl. 308-6.00C.
Suddeutsche Zucker-Aktiengesellschaft: *See—*
  Schiweck, Hubert, 3,940,481.
Suenaga, Eiichi; Tachibana, Shinro; and Sato, Nagayasu, to Eisai Co., Ltd. Process for production of stabilized powdery secretin preparation by lyophilization. 3,940,480, Cl. 424-177.000.
Suhr, Peter J.; and Spierer, Edward D., to Magnetic Analysis Corporation. Multi-probe flux leakage testing apparatus using skewed probes. 3,940,690, Cl. 324-37.000.
Sulzer Brothers Limited: *See—*
  Demuth, Hans, 3,939,877.
  Pfarrwaller, Erwin, 3,939,878.
Sumi, Takao; and Hongu, Masayuki, to Sony Corporation. Gain control circuit. 3,940,708, Cl. 330-29.000.
Sumitomo Heavy Industries, Ltd.: *See—*
  Kato, Akinori; and Yamamura, Kenji, 3,940,332.
Sundelius, Dennis J.: *See—*
  Ware, Lyle A.; Sundelius, Dennis J.; and Melquist, Marlin R., 3,940,065.
Superior Industries, Inc.: *See—*
  Allred, Michael V., 3,940,658.
Surrey, Alexander R., to Sterling Drug Inc. N,N′-bisphenoxybenzyl-bridged-diamides. 3,940,441, Cl. 260-562.00B.
Susset, Dieter A., to TRW Inc. Reframing method for a carrier system having a serial digital data bit stream. 3,940,563, Cl. 179-15.0BS.
Sutton, Clifton C.: *See—*
  Miller, David C.; and Sutton, Clifton C., 3,939,969.
Sutures, Inc.: *See—*
  Kurtz, Leonard D., 3,940,478.
Suzaki, Hidenori: *See—*
  Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, 3,940,592.
Suzuki, Junichi; Matsuda, Toru; and Katsube, Takahiro, to Shatai Kogiyo Co. Ltd. Device and method of grinding metallic molds and products automatically. 3,939,610, Cl. 51-56.00R.
Suzuki, Kunihiko: *See—*
  Sasabe, Yukiyoshi; and Suzuki, Kunihiko, 3,939,940.
Suzzi, Gianoberto, to Riva Calzoni S.p.A. Stacking apparatus. 3,939,994, Cl. 214-6.00M.
Sweden Freezer Manufacturing Co.: *See—*
  Halverson, Maynard L., 3,939,667.
Swenson, William J., to Raymond International, Inc. Hydraulic hammer assembly. 3,939,922, Cl. 173-125.000.
SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH: *See—*
  Buhl, Harro; Erdelitsch, Herbert; Machalitzky, Otto; and Seitter, Wolf, 3,940,579.
  Door, Helmut, 3,940,581.
Swick, Edwin Grant: *See—*
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Swinford, Gary D.: *See—*
  Verlinden, Jerry M.; Swinford, Gary D.; DeJaeger, Kyle L.; and Kennedy, Michael W., 3,940,116.
Symons, Philip C., to Energy Development Associates. Halogen hydrates. 3,940,283, Cl. 136-6.00E.
Syntex (U.S.A.) Inc.: *See—*
  Muchowski, Joseph M.; and Fried, John H., 3,940,407.
Szabo, Andras I.: *See—*
  Zitelli, William E.; and Szabo, Andras I., 3,940,759.
Szabo, Suzanne; Molnar, Francois; Mauvernay, Roland-Yves; Levan, Chau; Statkov, Peter Radanov; Straumann, Danielle; and Lerik Milovanovic, Olga, to Cermol S.A. Substituted cinnamoyl-piperazine-pyridyl compound. 3,940,386, Cl. 260-240.00K.
Szeles, Julius. Truck box. 3,940,009, Cl. 220-20.000.
Szenczy, George, to Lipe Rollway Corporation. Orienter for square cylinders. 3,939,966, Cl. 198-240.000.
Tabor, Hanani, to Amiad Systems Limited. Linear hydraulic motor. 3,939,755, Cl. 91-224.000.
Tabuchi, Hideo, to Sony Corporation. Mode selecting device having a time delay between selection and establishment of an operating mode for tape recording and/or recording apparatus. 3,940,800, Cl. 360-137.000.
Tachibana, Shinro: *See—*
  Suenaga, Eiichi; Tachibana, Shinro; and Sato, Nagayasu, 3,940,480.
Tadiran Israel Electronics Industries Ltd.: *See—*
  Orbach, Shelomo, 3,940,564.
Tadokoro, Tomio; Kouno, Toshikatsu; and Sasaki, Akio, to Hitachi, Ltd. A.C. - D.C. power converter for D.C. load. 3,940,680, Cl. 321-27.00R.
Takagi, Mikio; Kamioka, Hajime; Nakayama, Kazufumi; and Shimoda, Haruo, to Fujitsu Limited. Method of making a semiconductor device. 3,940,288, Cl. 148-1.500.
Takahara, Akira: *See—*
  Kanatsu, Shinsaku; and Takahara, Akira, 3,940,541.
Takahashi, Akira: *See—*
  Kojima, Yasuaki; Shinozaki, Takayoshi; and Takahashi, Akira, 3,940,721.
Takahashi, Shigeo: *See—*
  Yamaguchi, Hideo; Kawasaki, Takashi; Takahashi, Shigeo; and Inubuse, Akiyoshi, 3,940,248.
Takahashi, Yasuie; and Tsuzuki, Isao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automotive vehicle shift control mechanism for manual transmissions. 3,939,724, Cl. 74-476.000.
Takaoka, Kentaro. Atomizing equipments for anesthetic liquid compounds. 3,940,064, Cl. 239-74.000.
Takasaki, Shuhei; and Goto, Yasumoto, to Osaka Prefectural Government; and Goto Drop Forging Co., Ltd. Vibration-isolated foundation which utilizes buoyancy. 3,940,098, Cl. 248-20.000.
Takashima, Shunichi: *See—*
  Chimura, Kazuya; Kaneko, Takashi; Takashima, Shunichi; Kawashima, Masao; and Nakazono, Ryuichi, 3,940,543.
Takeuchi, Masaharu: *See—*
  Noritake, Muneo; and Takeuchi, Masaharu, 3,940,240.
Takita, Ryoichi, to Rhythm Watch Co. Ltd. Small-sized synchronous motor. 3,940,645, Cl. 310-156.000.
Talbert, Miles E.: *See—*
  Hall, Ervin T.; Talbert, Miles E.; Walsh, James R.; and Hinkle, Max E., 3,939,508.
Tamura, Takeo, to Nissan Motor Co., Ltd. Seat position control mechanism having a position memory element. 3,940,182, Cl. 297-341.000.
Tanaka, Kozo; and Onoda, Tetsuyuki, to Honeywell Inc. Linear output bridge circuit. 3,940,686, Cl. 323-75.00B.
Tanaka, Susumu; Enoguchi, Yuji; and Kawabata, Hidetoshi, to Minolta Camera Kabushiki Kaisha. Magnetic brush developing apparatus. 3,939,801/Cl. 118-637.000.
Tanaka, Yoshimasa: *See—*
  Nishida, Kazumori; Kawahashi, Toshinori; and Tanaka, Yoshimasa, 3,939,950.
Tanamachi, Tokunosuke: *See—*
  Tsuboi, Takashi; and Tanamachi, Tokunosuke, 3,940,669.
Taniguchi, Toshinori: *See—*
  Yoshizawa, Toshio; Yamada, Yasuo; Taniguchi, Toshinori; Kose, Tatsuo; Ohchi, Kazuo; and Hori, Kiyokazu, 3,939,634.
Tanikoshi, Kinji, to Canon Kabushiki Kaisha. Speed control apparatus for a D.C. motor having hall generators. 3,940,670, Cl. 318-254.000.
Tasope' Limited: *See—*
  Schnelle, Charles Wayne, 3,939,575.

Tate, Jack F.: *See—*
  Maddox, Jim, Jr.; and Tate, Jack F., 3,939,911.
Taylor, Cecil R. Pole vaulting game apparatus. 3,940,137, Cl. 273-85.00C.
Taylor, Glenn N., to Kendall Company, The. Disposable diaper with fit improving means. 3,939,837, Cl. 128-287.000.
Tech Systems Corporation: *See—*
  Vilkaitis, Hugo L., 3,940,718.
Tecnologia Aplicada S.A.: *See—*
  Wallstein, Enrique Klien, 3,939,728.
Teeters, Lloyd L. Electric lock. 3,940,738, Cl. 340-147.0MD.
Teisen, Mogens Roesdahl Groth, to Havera Development Ltd. Power transmitting mechanism for reciprocating engines or pumps. 3,939,717, Cl. 74-60.000.
Tele-Assemblies: *See—*
  Goudikian, Edward, 3,940,570.
Telefonaktiebolaget L M Ericsson: *See—*
  Jeppsson, Martin Wilhelm Ivan; Lindstrom, Bruce William; and Russell, David John, 3,940,566.
  Thyselius, Per-Olof, 3,940,562.
Telephone & Data Products, Inc.: *See—*
  Quimet, Donald J., 3,940,739.
Telex Computer Products, Inc.: *See—*
  Pembroke, Richard W., 3,940,090.
Tellie, Paul E. Firearms with forestock. 3,939,589, Cl. 42-71.00R.
Teng, James; Dai, Frank; and Stubits, Marcella C., to Anheuser-Busch, Incorporated. Methyl hydroxypropyl cellulose acetate and process. 3,940,384, Cl. 260-226.000.
Tenney, Kenneth S.; and Tomo, Daniel, to National Distillers and Chemical Corporation. Containers for projectiles. 3,939,967, Cl. 206-3.000.
Terasaki Denki Sangyo Kabushiki Kaisha: *See—*
  Horikawa, Masao, 3,940,723.
Terawaki, Kinji: *See—*
  Shimizu, Keiji; Yoshida, Hiroshi; Furuishi, Haruhisa; Murata, Yoshihiro; Suzaki, Hidenori; Azuma, Kuninori; Terawaki, Kinji; and Izumi, Hiroshi, 3,940,592.
Terayama, Toshio. Thin quartz oscillator with support of leads. 3,940,638, Cl. 310-9.400.
Texaco Inc.: *See—*
  Arnold, Dan M., 3,940,611.
  Lee, Kung-You, 3,940,450.
  Maddox, Jim, Jr.; and Tate, Jack F., 3,939,911.
  Paap, Hans J., 3,940,613.
  Waldbillig, James O., 3,940,408.
  Waldbillig, James O., 3,940,409.
Texas Instruments Incorporated: *See—*
  Adams, Anthony L., 3,940,243.
  Blum, Clement J., 3,940,734.
  Kuo, Chang-Kiang; and Kitagawa, Norishisa, 3,940,747.
  Morton, Dale E., 3,939,798.
  Ting, Youn H., 3,940,591.
Textron, Inc.: *See—*
  Bernier, Lornie J.; and Das, Tapan K., 3,939,547.
  Brandwein, Rowland; and Gupta, Mohan L., 3,940,679.
Tezuka, Toshiyata; Kawakami, Hiroshi; and Miura, Katsutoshi, to Bridgestone Tire Company, Ltd. Oil fence having directional control device. 3,939,663, Cl. 61-1.00F.
Thayer, Charles V.: *See—*
  Mitchell, William A.; and Thayer, Charles V., 3,939,944.
Therm-O-Disc Incorporated: *See—*
  Place, Donald E., 3,940,729.
Thermo-Couple Products Company, Inc.: *See—*
  Finney, Philip F., 3,939,554.
Thetford Corporation: *See—*
  Miller, Marshall W.; Vanden Broek, Christiaan J. H.; Stansbury, Benjamin H., Jr.; Jamison, Thomas H.; McHose, Charles W.; and Dubson, Paul T., 3,939,500.
  Sargent, Frank T., 3,939,501.
Theurer, Josef; and Riessberger, Klaus, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Apparatus for bonding together pieces of track ballast. 3,939,774, Cl. 104-11.000.
Thevenaz, Jean, to Bolex International SA. Projection cassette. 3,939,975, Cl. 206-387.000.
Thibaut, Yves Albert Daniel, to U.S. Philips Corporation. Device for preventing unbalance in washing machines during spindrying. 3,939,673, Cl. 68-12.00R.
Thiokol Corporation: *See—*
  Fishman, Bernard, 3,940,031.
  Gershon, Milton, 3,940,032.
  Horvath, William, 3,940,029.
Thomas, Martha J. B.; Fowler, Richard A.; and Larson, Robert C., to GTE Sylvania Incorporated. Method of coating cathode heaters. 3,940,326, Cl. 204-181.000.
Thomas, Vaselios H.; and Pohto, Gerald R., to Electronor Corporation. Reconstructed or repaired electrode structure. 3,940,328, Cl. 204-283.000.
Thomasville Products, Inc.: *See—*
  Hall, Ervin T.; Talbert, Miles E.; Walsh, James R.; and Hinkle, Max E., 3,939,508.
Thomaswick, Ronald J., to PPG Industries, Inc. Flat glass shipping container. 3,939,978, Cl. 206-454.000.
Thompson, John T.: *See—*
  Gillemot, George W., 3,939,882.
Thompson, William J. Fire hydrant. 3,939,861, Cl. 137-299.000.
Thomson-CSF: *See—*
  Micheron, Francois; and Bied-Charreton, Philippe, 3,940,201.
  Palluel, Pierre; Hervier, Jean; and Rousseau, Jean, 3,940,655.
Thomson, William H., to Raymond Lee Organization, Inc., The, a part interest. Coupling apparatus. 3,939,989, Cl. 213-75.0TC.
Thor Power Tool Company: *See—*
  Danielson, Irvin R., 3,939,925.
Thorens, Jean-Jacques, legal representative: *See—*
  Charbonney, Adrien Maurice, deceased. 3,939,645.
Thornley, Richard F. M.: *See—*
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Thornton, Alfred K.: *See—*
  Arino, Hirofumi; Cosolito, Frank J.; George, Kenneth D.; and Thornton, Alfred K., 3,940,318.
Thorsoe, Flemming, to Danfoss A/S. Thermostat with automatic accelerator. 3,940,727, Cl. 337-1.000.
Three Sisters Ranch Enterprises: *See—*
  Faulstich, George W., 3,940,004.
Thurston, Walter; and Kerrigan, William. Male screw-forming members. 3,939,512, Cl. 10-10.00R.
Thyselius, Per-Olof, to Telefonaktiebolaget L M Ericsson. Transit exchange for time division multiplex asynchronous data. 3,940,562, Cl. 179-15.0BA.
Tigaeru, Nicolae: *See—*
  Cioca, Gheorghe; Tigaeru, Nicolae; Ionescu, Agrippa; Chiotan, Nicolae; Constantinescu, Mihai; and Niculescu, Gheorghe, 3,939,831.
Tile Council of America, Inc.: *See—*
  Bernett, Frank E.; and Kleinhans, Robert J., 3,940,358.
Tillman, Harry Lucian, to Whirlpool Corporation. Refrigeration cabinet. 3,940,195, Cl. 312-214.000.
Timmler, Helmut: *See—*
  Draber, Wilfried; Timmler, Helmut; Eue, Ludwig; and Schmidt, Robert R., 3,940,391.
Ting, Youn H., to Texas Instruments Incorporated. Self-regulating electric heater. 3,940,591, Cl. 219-544.000.
Tipton, Larry J.; Rebmann, Donald A.; and Reise, Donald A., to ACF Industries, Incorporated. Means and method for securing a metering rod lifter cam on a throttle shaft of a carburetor. 3,940,459, Cl. 261-23.00A.
Tischlinger, Edward A.: *See—*
  Hansson, Bengt Eve; and Tischlinger, Edward A., 3,939,833.
Toda, Toshimasa: *See—*
  Murayama, Keisuke; Toda, Toshimasa; Mori, Eiko; Matsui, Katsuaki; Kurumada, Tomoyuki; Onta, Noriyuki; and Watanabe, Ichiro, 3,940,401.
Todani, Yoshihiro; and Ohkawa, Toshio, to Nippon Zlin Co. Ltd. Surface treatment of rubber articles with an alkyl hypohalite. 3,940,548, Cl. 428-492.000.
Tokico Ltd.: *See—*
  Ishikawa, Yasuo; and Ito, Masahiro, 3,940,072.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
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Tokyo Shibaura Electric Co., Ltd.: *See—*
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Tokyo Shibaura Electrical Co., Ltd.: *See—*
  Ebata, Yasuo, 3,940,685.
Tolliver, Wilbur E.; and Borodin, Daniel J., to New York Wire Mills Corporation. Method and apparatus for forming pipe reinforcing cages and like closed loop objects. 3,939,879, Cl. 140-107.000.
Tomarelli, Rudolph M.: *See—*
  Santilli, Arthur A.; Scotese, Anthony C.; and Tomarelli, Rudolph M., 3,940,394.
Tomioka, Shunzo; Okano, Kinpei; and Kajiwara, Toshiyuki, to Hitachi, Ltd. Multiple-row roller bearing. 3,940,191, Cl. 308-187.000.
Tomo, Daniel: *See—*
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Torau, Gunther W.: *See—*
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Toray Industries, Inc.: *See—*
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  Nakayama, Yuzaburo; Yamamoto, Akinori; Asahara, Tomohiko; Shimamura, Masaharu; Tsuda, Yoshizo; Igawa, Keisuke; and Okamoto, Mitsuhiro, 3,939,636.
  Ohigashi, Hiroji; Shigenari, Reiko; Ogawa, Syozo; and Sekine, Nobuo, 3,940,637.
Toro Company, The: *See—*
  Hunter, Edwin J., 3,940,066.
  Reed, E. Smith, Jr.; and Scherbring, David J., 3,939,917.
Torrington, Leslie Albert; and Oberle, Ronald Ray, to RCA Corporation. Lid interlock apparatus for disc a record player. 3,940,148, Cl. 274-1.00R.
Tottie, Leroy A.: *See—*
  Rogers, Gary W.; Tottie, Leroy A.; Hamilton, Vaughn G.; Goodwin, Orville O.; and Baker, Jean A., 3,939,746.
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  - Kaneko, Yasuhisa; Komatsu, Yasuhiko; Hibino, Yoshihiro; and Okada, Yasuo, 3,939,897.
  - Takahashi, Yasuie; and Tsuzuki, Isao, 3,939,724.
- Trame, Charles E., to Everbrite Electric Signs, Inc. Display with interlocking strips. 3,939,584, Cl. 40-10.00R.
- Trebinger, Karl: *See—*
  - Reinhardt, Helmut; Trebinger, Karl; and Kallrath, Gottfried, 3,940,252.
- Trenary, Bryant: *See—*
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- Trumph Maschinene AG, Firma: *See—*
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- TRW Inc.: *See—*
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  - Boguslavskaya, Khaya Semenovna, administratrix; Glukhikh, Vasily Andreevich; Danjushevsky, Solomon Isaakovich; Egorov, Georgy Borisovich; Zozulya, Raisa Andreevna; Nikiforov, Jury Vasilievich; Nudelman, Rafail Manusovich; Khomyakov, Alexandr Mikhailovich; Tseitlin, Yanetta Markovna; Komar, Evgeny Grigorievich, deceased; Boguslavskaya, administratrix by Khaya Semenovna; Komar, administratrix, by Olga Efremova; and Komer, administrator by Alexandr Eugenievich, 3,940,324.
- Tsuboi, Takashi; and Tanamachi, Tokunosuke, to Hitachi, Ltd. AC motor control system. 3,940,669, Cl. 318-227.000.
- Tsuda, Yoshizo: *See—*
  - Nakayama, Yuzaburo; Yamamoto, Akinori; Asahara, Tomohiko; Shimamura, Masaharu; Tsuda, Yoshizo; Igawa, Keisuke; and Okamoto, Mitsuhiro, 3,939,636.
- Tsuzuki, Isao: *See—*
  - Takahashi, Yasuie; and Tsuzuki, Isao, 3,939,724.
- Tucek, Frank J., to J. I. Case Company. Tree harvester and processor. 3,939,886, Cl. 144-3.00D.
- Tucker, William B.: *See—*
  - Morino, Ronald; Tucker, William B.; and Keogh, Raymond J., 3,940,677.
- Tulis, Jerry J., to Becton, Dickinson and Company. Sterilant package assembly. 3,939,971, Cl. 206-205.000.
- Tunc, Deger C., to Johnson & Johnson. Water dispersible nonwoven fabric. 3,939,836, Cl. 128-284.000.
- Tunstall, Reginald V., to Fibre-Thane Homes, Inc. Process for laminating rigid polyurethane foam to a gelled polyester resin. 3,940,468, Cl. 264-46.600.
- Tup! (Panama) S.A.: *See—*
  - Tupper, Earl Silas, 3,940,589.
- Tupper, Earl Silas, to Tup! (Panama) S.A. Portable cooking equipment. 3,940,589, Cl. 219-433.000.
- Turner, James F.: *See—*
  - Hekimian, Norris C.; and Turner, James F., 3,940,703.
- Turner, Robert Bruce, to American Medical Electronics Corporation. Electronic thermometer decoder and display system. 3,940,595, Cl. 235-92.0EA.
- Turner, Robert McLean: *See—*
  - Hamilton, George Henry; Turner, Robert McLean; and Ward, Jesse Lee, Jr., 3,939,818.
- Turpin, Charles H.; Reid, Francis R.; and Leezer, James R., to Pillsbury Company, The. Spiral wound can having discrete label and reinforcing elements. 3,940,496, Cl. 426-123.000.
- Tuzson, John J.: *See—*
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- Tylan Corporation: *See—*
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  - Itatani, Hiroshi; Kashima, Mikito; Matsuda, Masaoki; Yoshimoto, Hataaki; and Yamamoto, Hiroyuki, 3,940,426.
- Uchiyama, Hideaki, to Kabushiki Kaisha Suwa Seikosha. Water tight watch case using an inorganic glass crystal. 3,939,646, Cl. 58-90.00R.
- Ueda, Atsumi; and Kobashi, Uichiro, to Aisin Seiki Kabushiki Kaisha. Unloader valve with flow divider. 3,939,859, Cl. 137-118.000.
- Uher Werke Munchen: *See—*
  - Herleth, Karl, 3,940,792.
- Uhlig, Albert R., to Owens-Illinois, Inc. Blow molding apparatus for staged inflation of an extruded parison. 3,940,225, Cl. 425-326.00B.
- Uhlig, Albert R., to Owens-Illinois, Inc. Apparatus for making blown plastic articles. 3,940,231, Cl. 425-445.000.
- Ulbing, Otmar M., to Columbus McKinnon Corporation. Safety hook. 3,940,173, Cl. 294-82.00R.
- UMC Industries, Inc.: *See—*
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- Umezawa, Hamao; Maeda, Kenji; Kondo, Shinichi; and Umezawa, Sumio, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. 1,2′-Di-N-substituted kanamycin B compounds. 3,940,382, Cl. 260-210.00K.
- Umezawa, Sumio: *See—*
  - Umezawa, Hamao; Maeda, Kenji; Kondo, Shinichi; and Umezawa, Sumio, 3,940,382.
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  - General Counsel-Code GP: *See—*
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  - National Aeronautics and Space Administration; administrator; with respect to an invention of:
    - Eaton, Larry R. Heat transfer device. 3,940,621, Cl. 250-335.000.
  - Navy: *See—*
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    - Beckert, Werner F.; and Dengel, Ottmar H., 3,940,298.
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    - Krider, Edmund Philip, 3,940,607.
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    - Olsen, Robert C.; and Stahlhut, Frederick O., 3,940,768.
    - Rosborough, Jerry J.; and Rhyne, William A., 3,939,753.
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- Unitek Corporation: *See—*
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- Urbschat, Gertrud Emma Maria Gerda, administrator: *See—*
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- Urbschat, Otto Ewald, deceased: *See—*
  - Frohberger, Paul-Ernst; Urbschat, Otto Ewald, deceased; and Hermann, Gunther, 3,940,488.
- Urry, Lewis Frederick, to Union Carbide Corporation. Primary dry cell with gas-venting passageway around the cathode mix. 3,940,287, Cl. 136-107.000.
- Usachev, Mikhail Maiorovich: *See—*
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  - Apsit, Voldemar Voldemarovich; Ustinsky, Alexei Petrovich; Pugachev, Vladislav Alexandrovich; and Usachev, Mikhail Maiorovich, 3,940,668.
- Vaguine, Victor A.; and Nichols, Dennis R., to Varian Associates. Bonding of ferrite to metal for high-power microwave applications. 3,940,051, Cl. 228-208.000.
- Valayil, Silvester P.: *See—*
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- Valet, Jean-Yves: *See—*
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- Valihura, Robert J.: *See—*
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- Valo, Antti Tapani. Equipment for transferring heaped tree trunk onto a transporter for further processing. 3,939,885, Cl. 144-2.00Z.
- Vandemark, Joseph S.; and Seith, Robert T., to Gulf States Paper Corporation. Mulch and methods of manufacturing and utilizing the same. 3,939,606, Cl. 47-9.000.
- Vanden Broek, Christiaan J. H.: *See—*
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- van der Lely, Cornelis; and van der Lely, Ary. Tine mountings. 3,939,918, Cl. 172-763.000.
- van Geffen, Johannes Adrianus. Piercing tools. 3,939,683, Cl. 72-71.000.
- Vanlseghem, Edmond J., Jr. Prefabricated table setting. 3,939,976, Cl. 206-390.000.
- Vanlerberghe, Guy; and Rosenbaum, Georges, to L'Oreal. Cosmetic skin coloring compositions containing aminated γ-dialdehydes. 3,940,477, Cl. 424-59.000.
- Van Lierde, Walter Jan, to Studiecentrum Voor Kernenergie, "S.C.K.". Nuclear fuel and process of preparation thereof. 3,940,312, Cl. 176-67.000.
- van Oene, Henk: *See—*
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- van Oirschot, Theodorus Gerardus Jacobus; Nijman, Willem; and Fougeres, Marc Paul Andre, to U.S. Philips Corporation. Method for growing epitaxial layers from the liquid phase. 3,940,296, Cl. 148-171.000.
- Van Rossem, Richard: *See—*
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- Varges, Gunter; and Graalmann, Franz, to Rheinstahl Aktiengesellschaft. Transport ship construction and method of loading floating cargo into a floatable cargo space of a ship. 3,939,790, Cl. 114-43.5VC.
- Varian Associates: *See—*
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  - Ward, Curtis E.; St. Clair, Maurice W.; De Pue, James M., Jr.; and Miller, Albert J., 3,940,656.
  - Winslow, Lester M., 3,940,654.
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- Veb Pentacon Dresden: *See—*
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- Vella, Sergio, to Roj & Vella S.p.A. Yarn feeding device with constant adjustable tension, particularly for feeding yarns to weaving and knitting machines and devices. 3,940,079, Cl. 242-47.120.
- Velsicol Chemical Corporation: *See—*
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- Vercon Products, Inc.: *See—*
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- Verger, Nathan; and Schmidt, Gerhard, to Alarm Device Manufacturing Co. Switching apparatus. 3,940,725, Cl. 335-207.000.
- Verhoeven, Albert F. L., to Werner Lehara, Inc. Apparatus for dispensing dough in a pattern utilizing moveable nozzles. 3,940,226, Cl. 425-375.000.
- Verlinden, Jerry M.; Swinford, Gary D.; DeJaeger, Kyle L.; and Kennedy, Michael W., to Mile High Equipment Company. Ice dispenser. 3,940,116, Cl. 259-45.000.
- Verwey, William G. A., to Precision Industries, Inc. Manually positionable work element. 3,940,045, Cl. 227-101.000.
- Victor Company of Japan, Limited: *See—*
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- Viets, Hermann. Vortex ring generator. 3,940,060, Cl. 239-14.000.
- Vilkaitis, Hugo L., to Tech Systems Corporation. Flexible wave guide and method for making same. 3,940,718, Cl. 333-95.00A.
- Vinals, Joaquin: *See—*
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- Vittorelli, Vittore, to Ing. C. Olivetti & C., S.p.A. System for automatically processing and printing the contents and the format of a text. 3,940,746, Cl. 340-172.500.
- Vock, Manfred Hugo: *See—*
  - Pittet, Alan Owen; Klaiber, Erich Manfred; Vock, Manfred Hugo; Shuster, Edward J.; and Vinals, Joaquin, 3,940,499.
- Voegeli, Otto, to International Business Machines Corporation. Wall topology storage system. 3,940,750, Cl. 340-174.0TF.
- Vogel, John D., to Arvin Industries, Inc. Tape recording and playback control circuit. 3,940,672, Cl. 318-467.000.
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  - Wade, Peter C.; and Vogt, Berthold Richard, 3,940,398.
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- Wade, Peter C.; and Vogt, Berthold Richard, to E. R. Squibb & Sons, Inc. 2-[(Substituted-piperazinyl)alkyl]-1H-benz[de]isoquinoline-1,3(2H)-diones. 3,940,397, Cl. 260-268.0TR.
- Wade, Peter C.; and Vogt, Berthold Richard, to E. R. Squibb & Sons, Inc. 2-[[4-(Azine or diazine or triazine)-1-piperazinyl]alkyl]-1H-benz[de]isoquinoline-1,3(2H)-diones. 3,940,398, Cl. 260-268.0TR.
- Wagenlehner, Kurt: *See—*
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Waldbillig, James O., to Texaco Inc. 2-Amino-5-hydrocarbyldithio-1,3,4-thiadiazole compounds. 3,940,408, Cl. 260-306.80D.
Waldbillig, James O., to Texaco Inc. Alkylidenimino thiadiazole containing mixture. 3,940,409, Cl. 260-306.80D.
Waldron, Bradley C., to King Nutronics Corporation. Temperature calibration system. 3,939,687, Cl. 73-1.00F.
Walker, Brooks. Engine speed responsive means for changing the position of a vacuum spark advance limiter stop. 3,939,810, Cl. 123-117.00A.
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Walters, Andrew C.; and Goss, William M., to Fabco, Incorporated. Wedge actuated cutting and/or forming tools. 3,939,686, Cl. 72-441.000.
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B 64,868	3,914,141	Oct. 21, 1975	B 289,883	3,925,063	Dec. 9, 1975
B 78,331	3,914,142	Oct. 21, 1975	B 290,328	3,924,838	Dec. 9, 1975
B 112,422	3,913,484	Oct. 21, 1975	B 291,104	3,925,007	Dec. 9, 1975
B 150,560	3,913,654	Oct. 21, 1975	B 291,694	3,925,339	Dec. 9, 1975
B 176,995	3,915,773	Oct. 28, 1975	B 292,054	3,915,877	Oct. 28, 1975
B 189,772	3,925,367	Dec. 9, 1975	B 292,126	3,914,465	Oct. 21, 1975
B 189,773	3,925,405	Dec. 9, 1975	B 292,140	3,914,340	Oct. 21, 1975
B 190,679	3,925,346	Dec. 9, 1975	B 292,300	3,927,167	Dec. 16, 1975
B 198,810	3,916,043	Oct. 28, 1975	B 292,563	3,923,653	Dec. 2, 1975
B 204,161	3,924,605	Dec. 9, 1975	B 293,378	3,923,725	Dec. 2, 1975
B 207,272	3,914,123	Oct. 21, 1975	B 293,437	3,913,414	Oct. 21, 1975
B 211,786	3,914,300	Oct. 21, 1975	B 294,103	3,924,396	Dec. 9, 1975
B 213,211	3,925,269	Dec. 9, 1975	B 294,579	3,916,737	Nov. 4, 1975
B 220,683	3,914,471	Oct. 21, 1975	B 294,673	3,916,023	Oct. 28, 1975
B 222,188	3,914,739	Oct. 21, 1975	B 295,481	3,921,593	Nov. 25, 1975
B 223,621	3,925,526	Dec. 9, 1975	B 295,674	3,916,107	Oct. 28, 1975
B 224,323	3,925,476	Dec. 9, 1975	B 295,860	3,923,880	Dec. 2, 1975
B 233,383	3,925,424	Dec. 9, 1975	B 299,267	3,917,106	Nov. 4, 1975
B 233,741	3,925,326	Dec. 9, 1975	B 300,353	3,921,734	Nov. 25, 1975
B 235,011	3,925,086	Dec. 9, 1975	B 302,271	3,929,130	Dec. 30, 1975
B 235,925	3,924,949	Dec. 9, 1975	B 302,692	3,924,598	Dec. 9, 1975
B 236,609	3,925,187	Dec. 9, 1975	B 302,836	3,923,573	Dec. 2, 1975
B 237,953	3,924,051	Dec. 2, 1975	B 302,998	3,928,233	Dec. 23, 1975
B 239,289	3,922,711	Nov. 25, 1975	B 303,011	3,930,188	Dec. 30, 1975
B 241,433	3,923,711	Dec. 2, 1975	B 303,655	3,924,642	Dec. 9, 1975
B 245,194	3,919,179	Nov. 11, 1975	B 303,702	3,914,131	Oct. 21, 1975
B 248,916	3,920,862	Nov. 18, 1975	B 304,687	3,924,783	Dec. 9, 1975
B 251,109	3,914,148	Oct. 21, 1975	B 305,417	3,915,882	Oct. 28, 1975
B 251,635	3,914,149	Oct. 21, 1975	B 305,868	3,921,463	Nov. 25, 1975
B 252,947	3,923,803	Dec. 2, 1975	B 305,881	3,923,478	Dec. 2, 1975
B 254,211	3,917,677	Nov. 4, 1975	B 306,829	3,925,411	Dec. 9, 1975
B 254,708	3,923,878	Dec. 2, 1975	B 306,938	3,916,050	Oct. 28, 1975
B 255,756	3,923,781	Dec. 2, 1975	B 307,677	3,915,276	Oct. 28, 1975
B 256,334	3,924,988	Dec. 9, 1975	B 308,661	3,924,349	Dec. 9, 1975
B 256,936	3,925,513	Dec. 9, 1975	B 308,892	3,919,624	Nov. 11, 1975
B 258,687	3,914,221	Oct. 21, 1975	B 309,207	3,914,743	Oct. 21, 1975
B 259,236	3,924,874	Dec. 9, 1975	B 309,499	3,922,002	Nov. 25, 1975
B 259,274	3,928,688	Dec. 23, 1975	B 309,681	3,927,374	Dec. 16, 1975
B 260,455	3,925,634	Dec. 9, 1975	B 309,755	3,919,468	Nov. 11, 1975
B 260,945	3,925,250	Dec. 9, 1975	B 309,756	3,914,136	Oct. 21, 1975
B 261,378	3,913,468	Oct. 21, 1975	B 309,860	3,922,485	Nov. 25, 1975
B 261,828	3,925,551	Dec. 9, 1975	B 310,149	3,924,705	Dec. 9, 1975
B 262,241	3,925,528	Dec. 9, 1975	B 310,271	3,923,689	Dec. 2, 1975
B 262,287	3,921,209	Nov. 18, 1975	B 311,313	3,925,142	Dec. 9, 1975
B 262,378	3,914,410	Oct. 21, 1975	B 311,317	3,918,975	Nov. 11, 1975
B 264,257	3,928,665	Dec. 23, 1975	B 311,413	3,925,515	Dec. 9, 1975
B 264,833	3,923,566	Dec. 2, 1975	B 311,910	3,924,357	Dec. 9, 1975
B 265,369	3,925,245	Dec. 9, 1975	B 311,911	3,925,233	Dec. 9, 1975
B 265,727	3,914,479	Oct. 21, 1975	B 312,139	3,925,530	Dec. 9, 1975
B 265,862	3,915,915	Oct. 28, 1975	B 312,477	3,923,714	Dec. 2, 1975
B 266,195	3,923,599	Dec. 2, 1975	B 313,098	3,925,045	Dec. 9, 1975
B 269,673	3,914,377	Oct. 21, 1975	B 313,531	3,925,548	Dec. 9, 1975
B 270,089	3,923,875	Dec. 2, 1975	B 313,594	3,924,626	Dec. 9, 1975
B 271,104	3,925,400	Dec. 9, 1975	B 313,900	3,915,932	Oct. 28, 1975
B 274,945	3,924,992	Dec. 9, 1975	B 314,049	3,920,588	Nov. 18, 1975
B 275,426	3,925,168	Dec. 9, 1975	B 314,255	3,923,764	Dec. 2, 1975
B 276,271	3,916,028	Oct. 28, 1975	B 314,271	3,921,845	Nov. 25, 1975
B 276,560	3,916,030	Oct. 28, 1975	B 314,489	3,925,016	Dec. 9, 1975
B 277,449	3,924,048	Dec. 2, 1975	B 314,800	3,930,087	Dec. 30, 1975
B 278,491	3,921,170	Nov. 18, 1975	B 314,977	3,923,459	Dec. 2, 1975
B 278,991	3,914,469	Oct. 21, 1975	B 315,363	3,920,673	Nov. 18, 1975
B 279,583	3,923,749	Dec. 2, 1975	B 315,397	3,923,963	Dec. 2, 1975
B 280,015	3,925,378	Dec. 9, 1975	B 315,731	3,914,108	Oct. 21, 1975
B 280,395	3,919,604	Nov. 11, 1975	B 316,014	3,920,861	Nov. 18, 1975
B 281,341	3,920,643	Nov. 18, 1975	B 316,239	3,913,546	Oct. 21, 1975
B 281,943	3,924,013	Dec. 2, 1975	B 316,917	3,925,494	Dec. 9, 1975
B 282,081	3,913,483	Oct. 21, 1975	B 317,080	3,925,324	Dec. 9, 1975
B 282,252	3,924,997	Dec. 9, 1975	B 317,347	3,923,552	Dec. 2, 1975
B 283,124	3,923,512	Dec. 2, 1975	B 317,624	3,925,167	Dec. 9, 1975
B 283,300	3,925,011	Dec. 9, 1975	B 318,195	3,915,699	Oct. 28, 1975
B 284,297	3,913,722	Oct. 21, 1975	B 318,618	3,915,365	Oct. 28, 1975
B 285,200	3,923,680	Dec. 2, 1975	B 318,640	3,925,186	Dec. 9, 1975
B 285,796	3,914,303	Oct. 21, 1975	B 318,745	3,916,571	Nov. 4, 1975
B 286,499	3,914,129	Oct. 21, 1975	B 319,226	3,925,082	Dec. 9, 1975
B 286,614	3,924,696	Dec. 9, 1975	B 319,339	3,916,056	Oct. 28, 1975
B 286,913	3,928,696	Dec. 23, 1975	B 319,402	3,919,568	Nov. 11, 1975
B 287,164	3,914,139	Oct. 21, 1975	B 319,414	3,928,666	Dec. 23, 1975
B 287,270	3,924,825	Dec. 9, 1975	B 320,261	3,924,033	Dec. 2, 1975
B 287,275	3,925,141	Dec. 9, 1975	B 320,452	3,925,083	Dec. 9, 1975
B 287,373	3,918,568	Nov. 11, 1975	B 320,603	3,915,571	Oct. 28, 1975
B 288,018	3,925,239	Dec. 9, 1975	B 321,018	3,921,623	Nov. 25, 1975
B 288,627	3,916,179	Oct. 28, 1975	B 321,101	3,917,163	Nov. 4, 1975
B 288,638	3,925,132	Dec. 9, 1975	B 321,938	3,923,889	Dec. 2, 1975
B 289,175	3,924,309	Dec. 9, 1975	B 322,182	3,925,390	Dec. 9, 1975

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DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 322,239	3,920,973	Nov. 18, 1975	B 346,613	3,923,545	Dec. 2, 1975
B 322,564	3,914,373	Oct. 21, 1975	B 346,901	3,915,583	Oct. 28, 1975
B 322,611	3,920,863	Nov. 18, 1975	B 348,083	3,923,774	Dec. 2, 1975
B 322,777	3,924,382	Dec. 9, 1975	B 348,383	3,923,452	Dec. 2, 1975
B 323,127	3,923,967	Dec. 2, 1975	B 348,495	3,914,654	Oct. 21, 1975
B 323,191	3,914,566	Oct. 21, 1975	B 348,558	3,914,109	Oct. 21, 1975
B 323,203	3,916,165	Oct. 28, 1975	B 349,141	3,915,363	Oct. 28, 1975
B 323,568	3,920,536	Nov. 18, 1975	B 349,177	3,914,033	Oct. 21, 1975
B 323,666	3,924,568	Dec. 9, 1975	B 349,231	3,915,831	Oct. 28, 1975
B 324,495	3,928,664	Dec. 23, 1975	B 349,321	3,916,103	Oct. 28, 1975
B 324,503	3,928,524	Dec. 23, 1975	B 349,948	3,914,557	Oct. 21, 1975
B 324,505	3,925,294	Dec. 9, 1975	B 350,025	3,927,415	Dec. 16, 1975
B 324,739	3,924,990	Dec. 9, 1975	B 350,143	3,924,419	Dec. 9, 1975
B 324,879	3,923,538	Dec. 2, 1975	B 350,219	3,917,802	Nov. 4, 1975
B 325,102	3,924,355	Dec. 9, 1975	B 350,245	3,914,331	Oct. 21, 1975
B 325,262	3,921,304	Nov. 25, 1975	B 350,523	3,924,726	Dec. 9, 1975
B 326,514	3,925,080	Dec. 9, 1975	B 350,589	3,927,419	Dec. 16, 1975
B 327,109	3,925,350	Dec. 9, 1975	B 350,708	3,923,871	Dec. 2, 1975
B 327,363	3,923,504	Dec. 2, 1975	B 350,843	3,915,461	Oct. 28, 1975
B 327,612	3,925,620	Dec. 9, 1975	B 351,055	3,914,074	Oct. 21, 1975
B 327,674	3,918,540	Nov. 11, 1975	B 351,218	3,914,186	Oct. 21, 1975
B 327,899	3,925,674	Dec. 9, 1975	B 351,222	3,921,179	Nov. 18, 1975
B 328,164	3,914,703	Oct. 21, 1975	B 351,348	3,923,563	Dec. 2, 1975
B 328,200	3,916,031	Oct. 28, 1975	B 351,421	3,914,733	Oct. 21, 1975
B 328,205	3,914,106	Oct. 21, 1975	B 351,493	3,914,758	Oct. 21, 1975
B 328,210	3,914,275	Oct. 21, 1975	B 351,535	3,915,239	Oct. 28, 1975
B 328,870	3,916,486	Nov. 4, 1975	B 351,665	3,919,701	Nov. 11, 1975
B 329,115	3,924,727	Dec. 9, 1975	B 351,672	3,914,000	Oct. 21, 1975
B 329,476	3,920,562	Nov. 18, 1975	B 351,735	3,913,385	Oct. 21, 1975
B 329,612	3,925,128	Dec. 9, 1975	B 351,863	3,914,700	Oct. 21, 1975
B 329,787	3,920,688	Nov. 18, 1975	B 351,883	3,924,657	Dec. 9, 1975
B 329,816	3,923,947	Dec. 2, 1975	B 351,926	3,914,133	Oct. 21, 1975
B 330,536	3,925,452	Dec. 9, 1975	B 351,939	3,913,480	Oct. 21, 1975
B 330,828	3,913,589	Oct. 21, 1975	B 352,445	3,928,746	Dec. 23, 1975
B 331,417	3,914,157	Oct. 21, 1975	B 352,934	3,913,692	Oct. 21, 1975
B 331,557	3,916,577	Nov. 4, 1975	B 352,950	3,922,590	Nov. 25, 1975
B 331,895	3,916,403	Oct. 28, 1975	B 352,965	3,921,926	Nov. 25, 1975
B 332,527	3,924,017	Dec. 2, 1975	B 353,317	3,916,446	Nov. 4, 1975
B 332,811	3,924,359	Dec. 9, 1975	B 353,387	3,924,404	Dec. 9, 1975
B 333,876	3,921,208	Nov. 18, 1975	B 353,546	3,913,273	Oct. 21, 1975
B 333,928	3,927,172	Dec. 16, 1975	B 354,008	3,925,081	Dec. 9, 1975
B 334,251	3,924,719	Dec. 9, 1975	B 354,098	3,925,547	Dec. 9, 1975
B 334,868	3,919,469	Nov. 11, 1975	B 354,145	3,927,279	Dec. 16, 1975
B 334,985	3,923,912	Dec. 2, 1975	B 354,296	3,914,580	Oct. 21, 1975
B 335,670	3,928,686	Dec. 23, 1975	B 354,510	3,928,658	Dec. 23, 1975
B 335,741	3,925,615	Dec. 9, 1975	B 354,889	3,913,204	Oct. 21, 1975
B 335,773	3,920,953	Nov. 18, 1975	B 354,979	3,914,251	Oct. 21, 1975
B 336,129	3,923,606	Dec. 2, 1975	B 355,095	3,925,656	Dec. 9, 1975
B 336,243	3,925,422	Dec. 9, 1975	B 355,269	3,914,561	Oct. 21, 1975
B 336,345	3,925,179	Dec. 9, 1975	B 355,510	3,913,704	Oct. 21, 1975
B 336,652	3,914,211	Oct. 21, 1975	B 355,595	3,925,649	Dec. 9, 1975
B 336,902	3,918,897	Nov. 11, 1975	B 355,876	3,925,685	Dec. 9, 1975
B 336,946	3,919,425	Nov. 11, 1975	B 356,032	3,928,636	Dec. 23, 1975
B 336,978	3,923,968	Dec. 2, 1975	B 356,253	3,925,025	Dec. 9, 1975
B 337,235	3,919,386	Nov. 11, 1975	B 356,602	3,927,393	Dec. 16, 1975
B 337,409	3,925,258	Dec. 9, 1975	B 356,724	3,924,586	Dec. 9, 1975
B 337,442	3,913,658	Oct. 21, 1975	B 357,039	3,924,406	Dec. 9, 1975
B 337,703	3,914,690	Oct. 21, 1975	B 357,057	3,913,738	Oct. 21, 1975
B 337,787	3,923,506	Dec. 2, 1975	B 357,131	3,924,453	Dec. 9, 1975
B 339,057	3,924,822	Dec. 9, 1975	B 357,402	3,914,180	Oct. 21, 1975
B 339,218	3,925,121	Dec. 9, 1975	B 357,682	3,924,973	Dec. 9, 1975
B 339,699	3,933,527	Jan. 20, 1976	B 357,803	3,919,470	Nov. 11, 1975
B 339,838	3,930,221	Dec. 30, 1975	B 358,174	3,924,958	Dec. 9, 1975
B 340,212	3,922,645	Nov. 25, 1975	B 358,244	3,913,411	Oct. 21, 1975
B 340,833	3,925,208	Dec. 9, 1975	B 358,311	3,923,561	Dec. 2, 1975
B 341,579	3,913,363	Oct. 21, 1975	B 358,939	3,924,713	Dec. 9, 1975
B 342,084	3,928,694	Dec. 23, 1975	B 359,174	3,914,117	Oct. 21, 1975
B 342,423	3,925,334	Dec. 9, 1975	B 359,187	3,924,525	Dec. 9, 1975
B 342,886	3,923,507	Dec. 2, 1975	B 359,540	3,915,235	Oct. 28, 1975
B 343,136	3,919,453	Nov. 11, 1975	B 359,740	3,936,212	Feb. 3, 1976
B 343,240	3,925,693	Dec. 9, 1975	B 359,791	3,929,430	Dec. 30, 1975
B 343,506	3,916,021	Oct. 28, 1975	B 359,825	3,921,344	Nov. 25, 1975
B 343,577	3,921,165	Nov. 18, 1975	B 359,946	3,914,132	Oct. 21, 1975
B 344,203	3,928,719	Dec. 23, 1975	B 359,947	3,914,653	Oct. 21, 1975
B 344,479	3,924,042	Dec. 2, 1975	B 360,208	3,923,750	Dec. 2, 1975
B 345,060	3,916,018	Oct. 28, 1975	B 360,296	3,916,720	Nov. 4, 1975
B 345,384	3,916,146	Oct. 28, 1975	B 360,719	3,915,715	Oct. 28, 1975
B 345,390	3,940,343	Feb. 24, 1976	B 360,910	3,925,696	Dec. 9, 1975
B 345,422	3,914,392	Oct. 21, 1975	B 361,265	3,923,569	Dec. 2, 1975
B 345,527	3,927,365	Dec. 16, 1975	B 361,443	3,927,405	Dec. 16, 1975
B 345,567	3,913,985	Oct. 21, 1975	B 361,569	3,914,554	Oct. 21, 1975
B 346,165	3,913,293	Oct. 21, 1975	B 361,604	3,922,702	Nov. 25, 1975
B 346,210	3,916,142	Oct. 28, 1975	B 361,734	3,915,764	Oct. 28, 1975
B 346,350	3,915,824	Oct. 28, 1975	B 362,589	3,914,012	Oct. 21, 1975
B 346,487	3,927,406	Dec. 16, 1975	B 363,205	3,923,744	Dec. 2, 1975
B 346,585	3,913,820	Oct. 21, 1975	B 363,337	3,928,639	Dec. 23, 1975

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DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 363,457	3,922,595	Nov. 25, 1975	B 387,687	3,918,151	Nov. 11, 1975
B 363,674	3,929,716	Dec. 30, 1975	B 387,761	3,914,245	Oct. 21, 1975
B 363,892	3,913,395	Oct. 21, 1975	B 387,790	3,925,380	Dec. 9, 1975
B 363,962	3,921,826	Nov. 25, 1975	B 387,818	3,918,935	Nov. 11, 1975
B 364,022	3,913,499	Oct. 21, 1975	B 388,580	3,923,712	Dec. 2, 1975
B 364,163	3,916,092	Oct. 28, 1975	B 389,070	3,914,171	Oct. 21, 1975
B 364,241	3,916,668	Nov. 4, 1975	B 389,285	3,914,631	Oct. 21, 1975
B 364,334	3,924,670	Dec. 9, 1975	B 389,327	3,924,504	Dec. 9, 1975
B 364,528	3,919,510	Nov. 11, 1975	B 389,639	3,914,626	Oct. 21, 1975
B 364,786	3,921,673	Nov. 25, 1975	B 389,726	3,921,010	Nov. 18, 1975
B 364,910	3,925,335	Dec. 9, 1975	B 389,807	3,922,623	Nov. 25, 1975
B 365,490	3,918,527	Nov. 11, 1975	B 389,932	3,913,268	Oct. 21, 1975
B 365,834	3,914,702	Oct. 21, 1975	B 389,933	3,913,267	Oct. 21, 1975
B 365,841	3,925,628	Dec. 9, 1975	B 390,679	3,913,668	Oct. 21, 1975
B 365,855	3,917,258	Nov. 4, 1975	B 390,732	3,913,878	Oct. 21, 1975
B 366,287	3,924,946	Dec. 9, 1975	B 391,184	3,914,214	Oct. 21, 1975
B 366,402	3,928,053	Dec. 23, 1975	B 391,210	3,914,220	Oct. 21, 1975
B 366,589	3,914,719	Oct. 21, 1975	B 391,437	3,915,416	Oct. 28, 1975
B 367,021	3,914,752	Oct. 21, 1975	B 391,509	3,925,175	Dec. 9, 1975
B 367,040	3,924,775	Dec. 9, 1975	B 391,675	3,916,017	Oct. 28, 1975
B 367,661	3,914,158	Oct. 21, 1975	B 392,154	3,923,809	Dec. 2, 1975
B 367,739	3,923,648	Dec. 2, 1975	B 392,242	3,926,636	Dec. 16, 1975
B 367,812	3,924,789	Dec. 9, 1975	B 392,696	3,916,175	Oct. 28, 1975
B 368,081	3,924,691	Dec. 9, 1975	B 392,732	3,914,903	Oct. 21, 1975
B 368,387	3,924,923	Dec. 9, 1975	B 392,753	3,916,341	Oct. 28, 1975
B 368,392	3,913,812	Oct. 21, 1975	B 392,894	3,914,763	Oct. 21, 1975
B 368,397	3,914,677	Oct. 21, 1975	B 393,163	3,914,535	Oct. 21, 1975
B 368,862	3,925,549	Dec. 9, 1975	B 393,970	3,914,638	Oct. 21, 1975
B 369,563	3,924,449	Dec. 9, 1975	B 394,088	3,914,740	Oct. 21, 1975
B 369,607	3,923,786	Dec. 2, 1975	B 394,188	3,924,591	Dec. 9, 1975
B 369,997	3,913,533	Oct. 21, 1975	B 394,300	3,914,159	Oct. 21, 1975
B 370,706	3,925,242	Dec. 9, 1975	B 394,712	3,916,306	Oct. 28, 1975
B 371,073	3,930,135	Dec. 30, 1975	B 395,478	3,922,577	Nov. 25, 1975
B 371,085	3,923,783	Dec. 2, 1975	B 395,496	3,919,435	Nov. 11, 1975
B 371,787	3,921,217	Nov. 18, 1975	B 395,671	3,920,418	Nov. 18, 1975
B 371,805	3,914,433	Oct. 21, 1975	B 395,889	3,913,190	Oct. 21, 1975
B 371,836	3,923,541	Dec. 2, 1975	B 396,025	3,913,869	Oct. 21, 1975
B 372,823	3,924,660	Dec. 9, 1975	B 396,551	3,921,929	Nov. 25, 1975
B 373,297	3,924,436	Dec. 9, 1975	B 397,027	3,923,736	Dec. 2, 1975
B 373,326	3,920,433	Nov. 18, 1975	B 397,527	3,913,488	Oct. 21, 1975
B 373,428	3,915,511	Oct. 28, 1975	B 397,990	3,914,848	Oct. 28, 1975
B 375,220	3,920,417	Nov. 18, 1975	B 398,262	3,913,481	Oct. 21, 1975
B 375,652	3,921,303	Nov. 25, 1975	B 398,551	3,924,924	Dec. 9, 1975
B 376,504	3,914,570	Oct. 21, 1975	B 398,597	3,913,743	Oct. 21, 1975
B 376,654	3,922,513	Nov. 25, 1975	B 398,625	3,920,996	Nov. 18, 1975
B 376,742	3,924,392	Dec. 9, 1975	B 399,292	3,914,810	Oct. 28, 1975
B 376,799	3,913,955	Oct. 21, 1975	B 399,304	3,919,567	Nov. 11, 1975
B 377,172	3,918,255	Nov. 11, 1975	B 399,349	3,925,694	Dec. 9, 1975
B 377,683	3,924,433	Dec. 9, 1975	B 399,766	3,915,667	Oct. 28, 1975
B 377,833	3,913,884	Oct. 21, 1975	B 400,080	3,925,163	Dec. 9, 1975
B 377,869	3,917,002	Nov. 4, 1975	B 400,293	3,923,719	Dec. 2, 1975
B 378,621	3,923,840	Dec. 2, 1975	B 400,310	3,915,507	Oct. 28, 1975
B 379,038	3,923,994	Dec. 2, 1975	B 401,133	3,924,443	Dec. 9, 1975
B 379,172	3,914,379	Oct. 21, 1975	B 401,992	3,924,898	Dec. 9, 1975
B 379,282	3,913,462	Oct. 21, 1975	B 402,065	3,925,413	Dec. 9, 1975
B 379,955	3,913,157	Oct. 21, 1975	B 402,555	3,914,688	Oct. 21, 1975
B 380,014	3,921,915	Nov. 25, 1975	B 403,140	3,913,486	Oct. 21, 1975
B 380,141	3,925,161	Dec. 9, 1975	B 403,355	3,913,352	Oct. 21, 1975
B 380,310	3,921,048	Nov. 18, 1975	B 403,990	3,914,684	Oct. 21, 1975
B 380,312	3,913,953	Oct. 21, 1975	B 403,996	3,916,016	Oct. 28, 1975
B 380,338	3,924,873	Dec. 9, 1975	B 404,290	3,924,918	Dec. 9, 1975
B 380,446	3,923,836	Dec. 2, 1975	B 404,437	3,915,200	Oct. 28, 1975
B 380,900	3,913,307	Oct. 21, 1975	B 405,136	3,915,565	Oct. 28, 1975
B 380,926	3,925,095	Dec. 9, 1975	B 405,137	3,915,566	Oct. 28, 1975
B 381,074	3,919,583	Nov. 11, 1975	B 405,160	3,924,821	Dec. 9, 1975
B 381,632	3,914,732	Oct. 21, 1975	B 405,248	3,926,294	Dec. 16, 1975
B 381,847	3,921,152	Nov. 18, 1975	B 405,305	3,922,111	Nov. 25, 1975
B 382,018	3,929,742	Dec. 30, 1975	B 405,360	3,913,403	Oct. 21, 1975
B 382,021	3,913,212	Oct. 21, 1975	B 405,495	3,924,577	Dec. 9, 1975
B 382,261	3,914,991	Oct. 28, 1975	B 405,938	3,920,109	Nov. 18, 1975
B 382,290	3,924,717	Dec. 9, 1975	B 406,065	3,914,199	Oct. 21, 1975
B 382,783	3,919,527	Nov. 11, 1975	B 406,357	3,924,529	Dec. 9, 1975
B 382,798	3,924,435	Dec. 9, 1975	B 407,736	3,924,463	Dec. 9, 1975
B 382,840	3,922,007	Nov. 25, 1975	B 407,357	3,924,614	Dec. 9, 1975
B 383,465	3,927,412	Dec. 16, 1975	B 407,728	3,925,240	Dec. 9, 1975
B 383,532	3,914,246	Oct. 21, 1975	B 408,487	3,924,046	Dec. 2, 1975
B 383,581	3,925,318	Dec. 9, 1975	B 408,749	3,914,116	Oct. 21, 1975
B 384,499	3,925,135	Dec. 9, 1975	B 409,026	3,925,497	Dec. 9, 1975
B 384,658	3,913,452	Oct. 21, 1975	B 409,220	3,915,648	Oct. 28, 1975
B 384,773	3,915,416	Oct. 28, 1975	B 409,251	3,922,620	Nov. 25, 1975
B 385,210	3,913,406	Oct. 21, 1975	B 409,657	3,927,362	Dec. 16, 1975
B 386,403	3,924,895	Dec. 9, 1975	B 409,816	3,921,317	Nov. 25, 1975
B 386,592	3,925,305	Dec. 9, 1975	B 410,062	3,923,855	Dec. 2, 1975
B 387,039	3,924,510	Dec. 9, 1975	B 410,168	3,914,717	Oct. 21, 1975
B 387,331	3,913,701	Oct. 21, 1975	B 411,145	3,914,168	Oct. 21, 1975
B 387,363	3,927,378	Dec. 16, 1975	B 411,356	3,919,649	Nov. 11, 1975

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B 411,483	3,925,196	Dec. 9, 1975	B 425,539	3,916,742	Nov. 4, 1975
B 411,633	3,914,741	Oct. 21, 1975	B 425,541	3,914,051	Oct. 21, 1975
B 412,516	3,927,417	Dec. 16, 1975	B 425,572	3,923,822	Dec. 2, 1975
B 412,619	3,925,292	Dec. 9, 1975	B 427,631	3,921,433	Nov. 25, 1975
B 412,867	3,924,587	Dec. 9, 1975	B 428,177	3,914,624	Oct. 21, 1975
B 413,006	3,914,850	Oct. 28, 1975	B 428,795	3,921,056	Nov. 18, 1975
B 413,546	3,924,314	Dec. 9, 1975	B 429,442	3,923,485	Dec. 2, 1975
B 414,129	3,925,484	Dec. 9, 1975	B 430,106	3,918,941	Nov. 11, 1975
B 414,288	3,925,537	Dec. 9, 1975	B 430,140	3,922,084	Nov. 25, 1975
B 415,113	3,915,717	Oct. 28, 1975	B 430,798	3,918,204	Nov. 11, 1975
B 415,124	3,915,944	Oct. 28, 1975	B 430,944	3,922,096	Nov. 25, 1975
B 415,845	3,925,076	Dec. 9, 1975	B 432,373	3,919,670	Nov. 11, 1975
B 415,847	3,914,208	Oct. 21, 1975	B 433,587	3,914,567	Oct. 21, 1975
B 415,957	3,925,635	Dec. 9, 1975	B 435,343	3,919,244	Nov. 11, 1975
B 415,977	3,927,359	Dec. 16, 1975	B 435,844	3,925,170	Dec. 9, 1975
B 416,598	3,923,473	Dec. 2, 1975	B 437,173	3,924,627	Dec. 9, 1975
B 416,832	3,924,975	Dec. 9, 1975	B 437,172	3,913,251	Oct. 21, 1975
B 416,710	3,923,746	Dec. 2, 1975	B 437,195	3,914,618	Oct. 21, 1975
B 416,933	3,924,968	Dec. 9, 1975	B 437,450	3,922,479	Nov. 25, 1975
B 417,299	3,918,235	Nov. 11, 1975	B 438,053	3,916,013	Oct. 28, 1975
B 418,121	3,925,023	Dec. 9, 1975	B 438,706	3,925,050	Dec. 9, 1975
B 418,153	3,925,251	Dec. 9, 1975	B 439,168	3,919,676	Nov. 11, 1975
B 418,302	3,913,252	Oct. 21, 1975	B 439,669	3,921,499	Nov. 25, 1975
B 419,327	3,921,197	Nov. 18, 1975	B 440,898	3,921,789	Nov. 25, 1975
B 419,481	3,924,970	Dec. 9, 1975	B 441,024	3,913,629	Oct. 21, 1975
B 420,016	3,914,572	Oct. 21, 1975	B 441,416	3,913,851	Oct. 21, 1975
B 420,148	3,927,414	Dec. 16, 1975	B 442,280	3,914,054	Oct. 21, 1975
B 420,514	3,923,929	Dec. 2, 1975	B 442,859	3,918,570	Nov. 11, 1975
B 420,568	3,925,069	Dec. 9, 1975	B 442,919	3,925,483	Dec. 9, 1975
B 421,026	3,914,785	Oct. 21, 1975	B 444,614	3,927,996	Dec. 23, 1975
B 421,362	3,924,817	Dec. 9, 1975	B 445,471	3,914,711	Oct. 21, 1975
B 421,383	3,925,047	Dec. 9, 1975	B 445,740	3,923,612	Dec. 2, 1975
B 421,797	3,914,023	Oct. 21, 1975	B 448,571	3,924,760	Dec. 9, 1975
B 422,399	3,928,656	Dec. 23, 1975	B 449,647	3,916,797	Nov. 4, 1975
B 422,467	3,924,804	Dec. 9, 1975	B 450,499	3,920,526	Nov. 18, 1975
B 422,949	3,921,873	Nov. 25, 1975	B 450,546	3,924,417	Dec. 9, 1975
B 424,415	3,919,458	Nov. 11, 1975	B 450,927	3,913,844	Oct. 21, 1975
B 424,462	3,920,522	Nov. 18, 1975	B 455,520	3,922,543	Nov. 25, 1975
B 424,572	3,924,979	Dec. 9, 1975	B 455,775	3,914,356	Oct. 21, 1975
B 424,748	3,924,395	Dec. 9, 1975	B 456,346	3,914,531	Oct. 21, 1975
B 425,035	3,914,025	Oct. 21, 1975	B 459,425	3,928,773	Dec. 23, 1975
B 425,345	3,922,015	Nov. 25, 1975	B 461,872	3,919,586	Nov. 11, 1975
B 425,470	3,923,796	Dec. 2, 1975	B 467,684	3,915,119	Oct. 28, 1975
			B 468,198	3,925,340	Dec. 9, 1975

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Arendt, Paul R.: *See*—
    Hutchinson, Henry P.; and Arendt, Paul R., Re. 28,725.
Cusano, Carmen M.: *See*—
    Holder, Charles B.; Rubin, Isaac D.; and Cusano, Carmen M., Re. 28,723.
Cutton, John G., to United States Steel Corporation. Method of making flat steel files. Re. 28,719, Cl. 72-203.000.
Dow Chemical Company, The: *See*—
    Sanders, Phillip F., Re. 28,722.
Ehrlich, Engelbert; and Schonfuss, Martin, to Nahwirkmaschinenbau Malimo Karl-Marx-Stadt. Textile material and manufacture. Re. 28,718, Cl. 66-192.000.
Farrell, John J., to Farrell Patent Company. Time saver plastic drawback valve assembly. Re. 28,721, Cl. 425-159.000.
Farrell Patent Company: *See*—
    Farrell, John J., Re. 28,721.
Holder, Charles B.; Rubin, Isaac D.; and Cusano, Carmen M., to Texaco Inc. Polycarbonate resins blended with acrylate elastomers for improved impact strength. Re. 28,723, Cl. 260–873.
Hutchinson, Henry P.; and Arendt, Paul R., to Satellite and Space Communications Systems, Inc. Satellite and space communications systems. Re. 28,725, Cl. 343-100.0ST.
Nahwirkmaschinenbau Malimo Karl-Marx-Stadt: *See*—
    Ehrlich, Engelbert; and Schonfuss, Martin, Re. 28,718.
Rubin, Isaac D.: *See*—
    Holder, Charles B.: Rubin, Isaac D; and Cusano, Carmen M., Re. 28,723.
Sanders, Phillip F., to Dow Chemical Company, The. Butadiene-styrene copolymer-cement composition and method of preparation. Re. 28,722, Cl. 260-29.70S.
Sargent Industries, Inc.: *See*—
    Smith, Fred T., Re. 28,717.
Satellite and Space Communications Systems, Inc.: *See*—
    Hutchinson, Henry P.; and Arendt, Paul R., Re. 28,725.
Schonfuss, Martin: *See*—
    Ehrlich, Engelbert; and Schonfuss, Martin, Re. 28,718.
Sedlak, Mirko S. Food plate service cover. Re. 28,720, Cl. 206-501.000.
Smith, Fred T., to Sargent Industries, Inc. Noise reduction apparatus and method. Re. 28,717, Cl. 60-428.000.
Sobel, Jay E., to Universal Oil Products Co. Isoparaffin alkylation with a lighter olefin and subsequently with a heavier olefin. Re. 28,724, Cl. 260-683.450.
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    Holder, Charles B.; Rubin, Isaac D.; and Cusano, Carmen M., Re. 28,723.
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Universal Oil Products Co.: *See*—
    Sobel, Jay E., Re. 28,724.

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    Vrignaud, Guy. 238,920.
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    Vrignaud, Guy. 239,922.
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Brunner, Ronald, to Carl Curtis. Combined information recorder and memo pad holder. 238,946, 2–24–76, Cl. D19—78.
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Cummins, Victor. Instrument stand. 238,916, 2–24–76, Cl. D6—85.
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Graeper, Michael R. Vehicle fuel tank. 238,941, 2–24–76, Cl. D12—155.
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Wall, Azel T. Spanner wrench. 238,926, 2–24–76, Cl. D8—27.

Webb, Freddie C. Electronic cash register or similar article. 238,962, 2–24–76, Cl. D52—4.

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Xerox Corp.: *See*—

Hutcheson, Claude H., Jr. 238,966.

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Yamagiwa Electric Co., Ltd.: *See*—

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CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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1.912	3,939,497
1.913	3,939,498
CLASS 4	
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67A	3,939,507
78	3,939,501
113	3,939,502
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98	3,939,518
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167R	3,939,520
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244R	3,939,522
250.02	3,939,523
250.04	3,939,524
250.35	3,939,525
306B	3,939,526
321	3,939,515
340	3,939,528
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270R	3,940,252
277C	3,940,253
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25.11	3,939,538
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208F	3,939,544
	3,939,545
278	3,939,546
408	3,939,547
417	3,939,551
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432	3,939,548
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458	3,939,550
469	3,939,553
573	3,939,554
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592	3,939,556
612	3,939,557
627	3,939,558
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180R	3,939,571
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163	3,939,574
216	3,939,575
242	3,939,576
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90	3,939,590
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90	3,939,596
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293	3,939,612
320	3,939,613
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274	3,939,618
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24	3,939,622
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140BY	3,939,636
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156	3,939,638
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276	3,939,654
286	3,939,655
381	3,939,656
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196	3,939,668
217	3,939,669
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86R	3,939,671
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57	3,939,678
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452	3,939,680
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19	3,939,693
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	3,939,697
73	3,939,698
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101	3,939,701
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205R	3,939,708
228	3,939,709
253	3,939,710
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476	3,939,724
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513	3,939,726
516	3,939,727
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611	3,939,730
688	3,939,731
701	3,939,732
740	3,939,733
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758	3,939,735
801	3,939,736
805	3,939,737
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636	3,939,800
637	3,939,801
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52	3,939,825
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79	3,939,827
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133	3,939,829
145.7	3,939,830
156	3,939,831
214R	3,939,832
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276	3,939,835
284	3,939,836
287	3,939,837
290R	3,939,838
303.15	3,939,839
	3,939,840
303.19	3,939,841
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404	3,939,843
419PG	3,939,844
492	3,939,845
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27R	3,939,846
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57R	3,939,854
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83	3,939,857
90	3,939,858
118	3,939,859
212	3,939,860
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355.16	3,939,862
357	3,939,863
385	3,939,864
467	3,939,865
493.4	3,939,866
514	3,939,867
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595	3,939,869
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